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Resource Conservation and Recovery Act Facility Investigation Report

for

SWMU 03 - Old Jeep Trail/ Little Sulphur Creek

Naval Surface Warfare Center Crane Division

Crane, Indiana

Volume II of II - Appendices

NAVFAC
Naval Facilities Engineering Command

Southern Division
Naval Facilities Engineering Command

Contract Number N62467-94-D-0888

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ACRONYM LIST

%D	Percent Difference
%R	Percent Recovery
%RSD	Percent Relative Standard Deviation
µg/kg	Micrograms per Kilogram
µg/L	Micrograms per Liter
2,4-D	2,4-Dinitrotoluene
2-ADNT	2-Amino-4,6 – dinitrotoluene
4-ADNT	4-Amino-2,6 - dinitrotoluene
ABG	Ammunition Burning Grounds
AET	Apparent Effects Threshold
amsl	Above Mean Sea Level
ANOVA	Analysis of Variance
ASTM	American Society for Testing and Materials
ATSDR	Agency for Toxic Substances and Disease Registry
AWQC	Ambient Water Quality Criteria
B&R	Brown & Root
BAFs	Bioaccumulation Factors
BC/BC	Big Clifty Sandstone/Beech Creek Limestone
BCF	Bioconcentration Factor
BERA	Baseline Ecological Risk Assessment
bgs	Below Ground Surface
BSAF	Biota Sediment Accumulation Factor
BTAG	Biological Technical Assistance Group
btor	Below top of riser
CAAA	Crane Army Ammunition Activity
CCCRA	Current Contamination Conditions Risk Assessment
CCME	Canadian Council of Ministers of the Enviornment
CCU	Continuing Calibration Verification
CDD	Chlorinated Dibenzo-p-dioxins
CDF	Chlorinated Dibenzofurans
CDI	Chronic Daily Intake
CEC	Cation Exchange Capacity
CFR	Code of Federal regulations

CLEAN	Comprehensive Long-Term Environmental Act Navy
CLP	Contract Laboratory Program
CMS	Corrective Measures Study
COC	Chemical of Concern
COPC	Chemical of Potential Concern
CRAVE	Carcinogenic Risk Assessment Verification Endeavor
CRQL	Contract-Required Quantitation Limit
CSF	Cancer Slope Factor
CSM	Conceptual Site Model
CTE	Central Tendency Exposure
CTO	Contract Task Order
DA_{event}	Absorbed Dose per Event
DBG	Dye Burial Grounds
DCE	Dichlorooctane
DI	Deionized
DL	Detection limit
DNAPL	Dense Non-Aqueous-Phase Liquid
DNB	Dinitrobenzene
DNT	Dinitrotoluene
DO	Dissolved Oxygen
DOE	Department of Energy
DON	Department of Navy
DPT	Direct-Push Technology
DQI	Data Quality Indicators
DRMO	Defense Reutilization and Marketing Operations
EDQL	Ecological Data Quality Level
EEQ	Ecological Effects Quotient
EOD	Explosive Ordnance Disposal
EPA	Environmental Protection Agency
EPC	Exposure-Point Concentration
EPT	Ephemeroptera, Plecoptera, Trichoptera
ERA	Ecological Risk Assessment
ER-L	Effects Range-Low
ER-M	Effects Range-Medium
EU	Exposure Unit
FAQs	Frequently Asked Questions

F_{oc}	Fraction of Organic Carbon
FOL	Field Operations Leader
FSP	Field Sampling Plan
ft^3/s	cubic feet per second
G-H	Golconda-Haney
gpm	Gallons per Minute
g/g-day	gram of food or water per gram of body weight per day
HA	Hand Auger
HASP	Health and Safety Plan
HDPE	High-Density Polyethylene
HEAST	Health Effects Assessment Summary Tables
HHRA	Human Health Risk Assessment
HI	Hazard Index
HMX	Octahydro-1,3,5,7-tetranitro-1,3,5,7-tetrazocine
HQ	Hazard Quotient
ICSAB	Interference Check Sample A and B
ICP	Inductively Coupled Plasma
ICV	Initial Calibration Verification
IDEM	Indiana Department of Environmental Management
IDL	Instrument Detection Limit
IDW	Investigation-Derived Waste
IEUBK	Integrated Exposure Uptake Biokinetic
ILCR	Incremental Lifetime Cancer Risk
IRIS	Integrated Risk Information System
K_d	Soil-Water Distribution Coefficient
K_{oc}	Organic Carbon-Water Partition Coefficient
K_{ow}	Octanol-Water Partition Coefficient
LAET	Lowest Apparent Effects Threshold
LCS	Laboratory Control Sample
LCSD	Laboratory Control Sample Duplicate
LD_{50}	Lethal Dose for 50 percent of Test Animals
LEL	Low Effects Level
LOAEL	Lowest-Observed-Adverse-Effect Level
LOEC	Lowest-Observed-Effects Concentration
LSC	Little Sulphur Creek
MCL	Maximum Contaminant Level

MDL	Method detection limit
mg/kg	Milligrams per kilogram
mg/L	Milligrams per liter
MHSPE	Ministry of Housing, Spatial Planning and Environment
MI	Mobility Index
mL	Milliliters
MS	Matrix Spike
MSD	Matrix Spike Duplicate
NAD	Naval Ammunition Depot
NAD27	1927 North American Datum
NAPL	Non-Aqueous-Phase Liquid
NAVFAC	Naval Facilities
NCEA	National Center for Environmental Assessment
NEESA	Naval Energy and Environmental Support Activity
ng/kg	Nanograms per Killogram
NGVD29	1929 National Geodetic Vertical Datum
NOAA	National Oceanic and Atmospheric Administration
NOAEC	No-Observed-Adverse-Effects Concentration
NOAEL	No-Observed-Adverse-Effects Level
NOEC	No-Observed-Effects Concentration
NSWC	Naval Surface Warfare Center
NTU	Nephelometric Turbidity Unit
NWSC	Naval Weapons Support Center
OJT	Old Jeep Trail
OPPTS	Office of Prevention, Pesticides, and Toxic Substances
ORNL	Oak Ridge National Laboratory
ORP	Oxidation-Reduction Potential
OSWER	Office of Solid Waste and Emergency Response
PAET	Probable Apparent Effects Threshold
PAHs	Polycyclic Aromatic Hydrocarbons
PCA	Tetrachloroethane
PCB	Polychlorinated Biphenyl
PCDD	Polychlorinated Dibenzo-p-Dioxin
PCDF	Polychlorinated Dibenzofuran
PCE	Tetrachloroethene
PEC	Probable Effects Concentration

PEL	Probable Effects Level
PEP	Propellants, Explosives, and Pyrotechnics
PID	Photoionization Detector
PPE	Personal Protective Equipment
PRG	Preliminary Remediation Goal
QA	Quality Assurance
QAPP	Quality Assurance Project Plan
QC	Quality Control
RAGS	Risk Assessment Guidance for Superfund
RBC	Risk-Based Criteria
RBTL	Risk-Based Target Limit
RCRA	Resource Conservation and Recovery Act
RCS	Release Characterization Study
RDA	Recommended Daily Allowance
RDX	Hexahydro-1,3,5-trinitro-1,3,5-triazine
RfDs	Reference Doses
RFI	RCRA Facility Investigation
RISC	Risk-Integrated System of Cleanups
RL	Reporting limit
RME	Reasonable Maximum Exposure
RPD	Relative Percent Difference
RRF	Relative Response Factor
S	Solubility
SCS	Soil Conservation Service
SD	Standard Deviation
SDG	Sample Delivery Group
SEL	Severe Effects Level
SERA	Screening-level Ecological Risk Assessment
SMCL	Secondary Maximum Contaminant Level
SOP	Standard Operating Procedure
SOUTHDIV	Southern Division
SQB	Sediment Quality Benchmarks
SQG	Soil Quality Guideline
SSLs	Soil Screening Levels
SVOC	Semivolatile Organic Compounds
SWDA	Safe Water Drinking Act

SWSL	Surface Water Screening Levels
SWMU	Solid Waste Management Unit
TAL	Target Analyte List
TCA	Trichloroethane
TCDD	Tetrachlorodibenzo-p-dioxin
TCE	Trichloroethylene
TEF	Toxicity Equivalence Factor
TEL	Threshold Effects Level
TEQ	Toxicity Equivalent
TNB	1,3,5 - Trinitrobenzene
TNT	2,4,6-Trinitrotoluene
TOC	Total Organic Carbon
TOM	Task Order Manager
TRVs	Toxicity Reference Value
TRW	Technical Review Workgroup
TSS	Total Suspended Solids
TtNUS	Tetra Tech NUS, Inc.
UCL	Upper 95 Percent Confidence Limit
UET	Upper Effects Threshold
USACE	U.S. Army Corps of Engineers
USDA	U.S. Department of Agriculture
UST	Underground Storage Tank
U.S. EPA	U.S. Environmental Protection Agency
UXO	Unexploded Ordnance
VOA	Volatile Organic Analysis
VOC	Volatile Organic Compound
VP	Vapor Pressure
WQS	Water-Quality Standards
WRS	Wilcoxon-Rank Sum

APPENDIX A

CORRESPONDENCE, BORING LOGS, AND MONITORING WELL CONSTRUCTION SHEETS

APPENDIX A-1

Correspondence Regarding the Collection of Additional Soil Samples
(Letter to U.S. EPA dated July 26, 2001)

TETRA TECH NUS, INC.
661 Andersen Drive ▪ Pittsburgh, Pennsylvania 15220-2745
(412) 921-7090 ▪ FAX (412) 921-4040 ▪ www.tetratech.com

PITT 07-1-044

July 26, 2001

Project Number N3960

Mr. Peter Ramanauskas
Project Manager
U.S. EPA Region 5 - Mail Code DRP-8J
77 West Jackson Boulevard
Chicago, Illinois 60604-3590

Reference: CLEAN Contract No. N62467-94-D-0888
Contract Task Order Number 0159

Subject: Little Sulphur Creek and Jeep Trail Resource Conservation and Recovery Act Phase III RCRA Facility Investigation

Dear Mr. Ramanauskas:

During the course of the fieldwork at the Jeep Trail Area of the Ammunition Burning Grounds (SWMU 7), additional soil samples were collected for analysis. The need to collect samples at additional locations was identified from information on historical activities obtained from NSWC Crane personnel during the course of fieldwork. Bill Gates (Southern Division Navy Engineering Command) has directed Tetra Tech NUS, Inc. (TtNUS) to provide you with the following regarding these additional soil samples.

- Figure 4-1A: This figure shows all of the proposed sample locations including the additional soil samples.
- Figure 4-1B: This figure shows only the additional soil sample locations
- Table 4-2A: This table lists all soils samples including the additional samples (Sample 34 through 48) and analyses to be performed on the samples.

Also, please note that the Navy has directed TtNUS to add perchlorate analysis to all soils samples. Therefore, this table shows the addition of perchlorate analysis to all soil samples (existing and additional).

Please contact Ralph Basinski at 412-921-8303 (e-mail basinskir@ttnus.com) regarding any questions or comments.

Sincerely,

Ralph R. Basinski

Ralph R. Basinski
Task Order Manager

RRB/vvp

Enclosures (3)

c: Mr. Tom Brent (letter with attachments)
Mr. Bill Gates (letter with attachments)
Ms. Debbie Wroblewski (letter only)
Mr. Mark Perry (letter with attachments)
Mr. R. Basinski (letter with attachments)
File CTO 0159 (letter with attachments)
File CTO 126 (letter with attachments)

TABLE 4-2A

SOIL SAMPLES AND LABORATORY ANALYSES
ABG STUDY AREA
NSWC CRANE, CRANE, INDIANA

Sample No.	VOC[5]	SVOC[5,6]	Herbicides [5]	Pesticides [6]	Dioxins / Furans	Explosives	Nitrocellulose	Metals[7]	Nitrate	Nitrite	Perchlorate
03-SS-01-0002[1]	-	-	-	-	-	X	X	-	X	X	X
03-SS-02-0002[1]	-	X	-	-	-	X	X	-	X	X	X
03-SB-02-????[1][8]	-	X	-	-	-	X	X	-	X	X	X
03-SB-02-????[1][8]	-	X	-	-	-	X	X	-	X	X	X
03-SS-03-0002[1]	-	-	-	-	-	X	X	-	X	X	X
03-SS-04-0002[1]	-	X	-	-	-	X	X	-	X	X	X
03-SB-04-????[1][8]	-	X	-	-	-	X	X	-	X	X	X
03-SB-04-????[1][8]	-	X	-	-	-	X	X	-	X	X	X
03-SS-05-0002[1]	-	X	-	-	-	X	X	-	X	X	X
03-SB-05-????[1][8]	-	X	-	-	-	X	X	-	X	X	X
03-SB-05-????[1][8]	-	X	-	-	-	X	X	-	X	X	X
03-SS-06-0002[1]	-	X	-	-	-	X	X	-	X	X	X
03-SB-06-????[1][8]	-	X	-	-	-	X	X	-	X	X	X
03-SB-06-????[1][8]	-	X	-	-	-	X	X	-	X	X	X
03-SS-07-0002[1]	-	X	-	-	-	X	X	-	X	X	X
03-SB-07-????[1][8]	-	X	-	-	-	X	X	-	X	X	X
03-SB-07-????[1][8]	-	X	-	-	-	X	X	-	X	X	X
03-SS-08-0002[1]	-	X	-	-	-	X	X	-	X	X	X
03-SB-08-????[1][8]	-	X	-	-	-	X	X	-	X	X	X
03-SB-08-????[1][8]	-	X	-	-	-	X	X	-	X	X	X
03-SS-09-0002[1]	-	X	-	-	-	X	X	-	X	X	X
03-SB-09-????[1][8]	-	X	-	-	-	X	X	-	X	X	X
03-SB-09-????[1][8]	-	X	-	-	-	X	X	-	X	X	X
03-SS-10-0002[1]	-	X	-	-	-	X	X	-	X	X	X

TABLE 4-2A

SOIL SAMPLES AND LABORATORY ANALYSES
ABG STUDY AREA
NSWC CRANE, CRANE, INDIANA

Sample No.	VOC[6]	SVOC[5,6]	Herbicides [5]	Pesticides [6]	Dioxins / Furans	Explosives	Nitrocellulose	Metals[7]	Nitrate	Nitrite	Perchlorate
03-SB-10-????[1][8]	-	X	-	-	-	X	X	-	X	X	X
03-SB-10-????[1][8]	-	X	-	-	-	X	X	-	X	X	X
03-SS-11-0002[1]	-	X	-	-	-	X	X	-	X	X	X
03-SB-11-????[1][8]	-	X	-	-	-	X	X	-	X	X	X
03-SB-11-????[1][8]	-	X	-	-	-	X	X	-	X	X	X
03-SS-12-0002[1]	-	-	-	-	-	X	X	-	X	X	X
03-SS-13-0002[1]	-	X	-	-	-	X	X	-	X	X	X
03-SB-13-????[1][8]	-	X	-	-	-	X	X	-	X	X	X
03-SB-13-????[1][8]	-	X	-	-	-	X	X	-	X	X	X
03-SS-14-0002[1]	-	X	-	-	-	X	X	-	X	X	X
03-SB-14-????[1][8]	-	X	-	-	-	X	X	-	X	X	X
03-SB-14-????[1][8]	-	X	-	-	-	X	X	-	X	X	X
03-SS-15-0002[1]	-	X	-	-	-	X	X	-	X	X	X
03-SB-15-????[1][8]	-	X	-	-	-	X	X	-	X	X	X
03-SB-15-????[1][8]	-	X	-	-	-	X	X	-	X	X	X
03-SS-16-0002[1]	-	X	-	-	-	X	X	-	X	X	X
03-SB-16-????[1][8]	-	X	-	-	-	X	X	-	X	X	X
03-SB-16-????[1][8]	-	X	-	-	-	X	X	-	X	X	X
03-SS-17-0002[2]	X	X	-	-	X	X	X	X	X	X	X
03-SB-17-????[2][8]	X	X	-	-	-	X	X	X	X	X	X
03-SB-17-????[2][8]	X	X	-	-	-	X	X	X	X	X	X
03-SS-18-0002[2]	X	X	-	-	-	X	X	X	X	X	X
03-SB-18-????[2][8]	X	X	-	-	-	X	X	X	X	X	X
03-SB-18-????[2][8]	X	X	-	-	-	X	X	X	X	X	X

TABLE 4-2A

SOIL SAMPLES AND LABORATORY ANALYSES
ABG STUDY AREA
NSWC CRANE, CRANE, INDIANA

Sample No.	VOC[5]	SVOC[5,6]	Herbicides [5]	Pesticides [6]	Dioxins / Furans	Explosives	Nitrocellulose	Metals[7]	Nitrate	Nitrite	Perchlorate
03-SS-19-0002[2]	X	X	-	-	-	X	X	X	X	X	X
03-SB-19-????[2][8]	X	X	-	-	-	X	X	X	X	X	X
03-SB-19-????[2][8]	X	X	-	-	X	X	X	X	X	X	X
03-SS-20-0002[2]	X	X	-	-	X	X	X	X	X	X	X
03-SB-20-????[2][8]	X	X	-	-	-	X	X	X	X	X	X
03-SB-20-????[2][8]	X	X	-	-	-	X	X	X	X	X	X
03-SS-21-0002[2]	X	X	-	-	-	X	X	X	X	X	X
03-SB-21-????[2][8]	X	X	-	-	-	X	X	X	X	X	X
03-SB-21-????[2][8]	X	X	-	-	-	X	X	X	X	X	X
03-SS-22-0002[2]	X	X	-	-	-	X	X	X	X	X	X
03-SB-22-????[2][8]	X	X	-	-	-	X	X	X	X	X	X
03-SB-22-????[2][8]	X	X	-	-	-	X	X	X	X	X	X
03-SS-23-0002[2]	X	X	-	-	X	X	X	X	X	X	X
03-SB-23-????[2][8]	X	X	-	-	-	X	X	X	X	X	X
03-SB-23-????[2][8]	X	X	-	-	-	X	X	X	X	X	X
03-SS-24-0002[2]	X	X	-	-	-	X	X	X	X	X	X
03-SB-24-????[2][8]	X	X	-	-	-	X	X	X	X	X	X
03-SB-24-????[2][8]	X	X	-	-	X	X	X	X	X	X	X
03-SS-25-0002[2]	X	X	-	-	X	X	X	X	X	X	X
03-SB-25-????[2][8]	X	X	-	-	-	X	X	X	X	X	X
03-SB-25-????[2][8]	X	X	-	-	-	X	X	X	X	X	X
03-SS-26-0002[2]	X	X	-	-	X	X	X	X	X	X	X
03-SB-26-????[2][8]	X	X	-	-	-	X	X	X	X	X	X
03-SB-26-????[2][8]	X	X	-	-	-	X	X	X	X	X	X

TABLE 4-2A

SOIL SAMPLES AND LABORATORY ANALYSES
ABG STUDY AREA
NSWC CRANE, CRANE, INDIANA

Sample No.	VOC[5]	SVOC[5,6]	Herbicides [6]	Pesticides [6]	Dioxins / Furans	Explosives	Nitrocellulose	Metals[7]	Nitrate	Nitrite	Perchlorate
03-SS-27-0002[3]	X	X	-	-	-	X	X	X	X	X	X
03-SB-27-????[3][8]	X	X	-	-	-	X	X	X	X	X	X
03-SB-27-????[3][8]	X	X	-	-	-	X	X	X	X	X	X
03-SS-28-0002[3]	X	X	-	-	-	X	X	X	X	X	X
03-SB-28-????[3][8]	X	X	-	-	-	X	X	X	X	X	X
03-SB-28-????[3][8]	X	X	-	-	-	X	X	X	X	X	X
03-SS-29-0002[4]	-	X	X	X	X	X	X	X	X	X	X
03-SS-30-0002[4]	-	X	X	X	X	X	X	X	X	X	X
03-SS-31-0002[4]	-	X	X	X	X	X	X	X	X	X	X
03-SS-32-0002[4]	-	X	X	X	X	X	X	X	X	X	X
03-SS-33-0002[4]	-	X	X	X	X	X	X	X	X	X	X
Additional Samples											
03-SS-34-0002[9]	-	X	-	-	-	X	X	X	X	X	X
03-SB-34-????[8][9]	-	X	-	-	-	X	X	X	X	X	X
03-SB-34-????[8][9]	-	X	-	-	-	X	X	X	X	X	X
03-SS-35-0002[9]	-	X	-	-	-	X	X	X	X	X	X
03-SS-36-0002[9]	-	X	-	-	-	X	X	X	X	X	X
03-SB-36-????[8][9]	-	X	-	-	-	X	X	X	X	X	X
03-SB-36-????[8][9]	-	X	-	-	-	X	X	X	X	X	X
03-SS-37-0002[9]	-	X	-	-	-	X	X	X	X	X	X
03-SS-38-0002[9]	-	X	-	-	-	X	X	X	X	X	X
03-SS-39-0002[9]	-	X	-	-	-	X	X	X	X	X	X
03-SB-39-????[8][9]	-	X	-	-	-	X	X	X	X	X	X
03-SB-39-????[8][9]	-	X	-	-	-	X	X	X	X	X	X

TABLE 4-2A

SOIL SAMPLES AND LABORATORY ANALYSES
ABG STUDY AREA
NSWC CRANE, CRANE, INDIANA

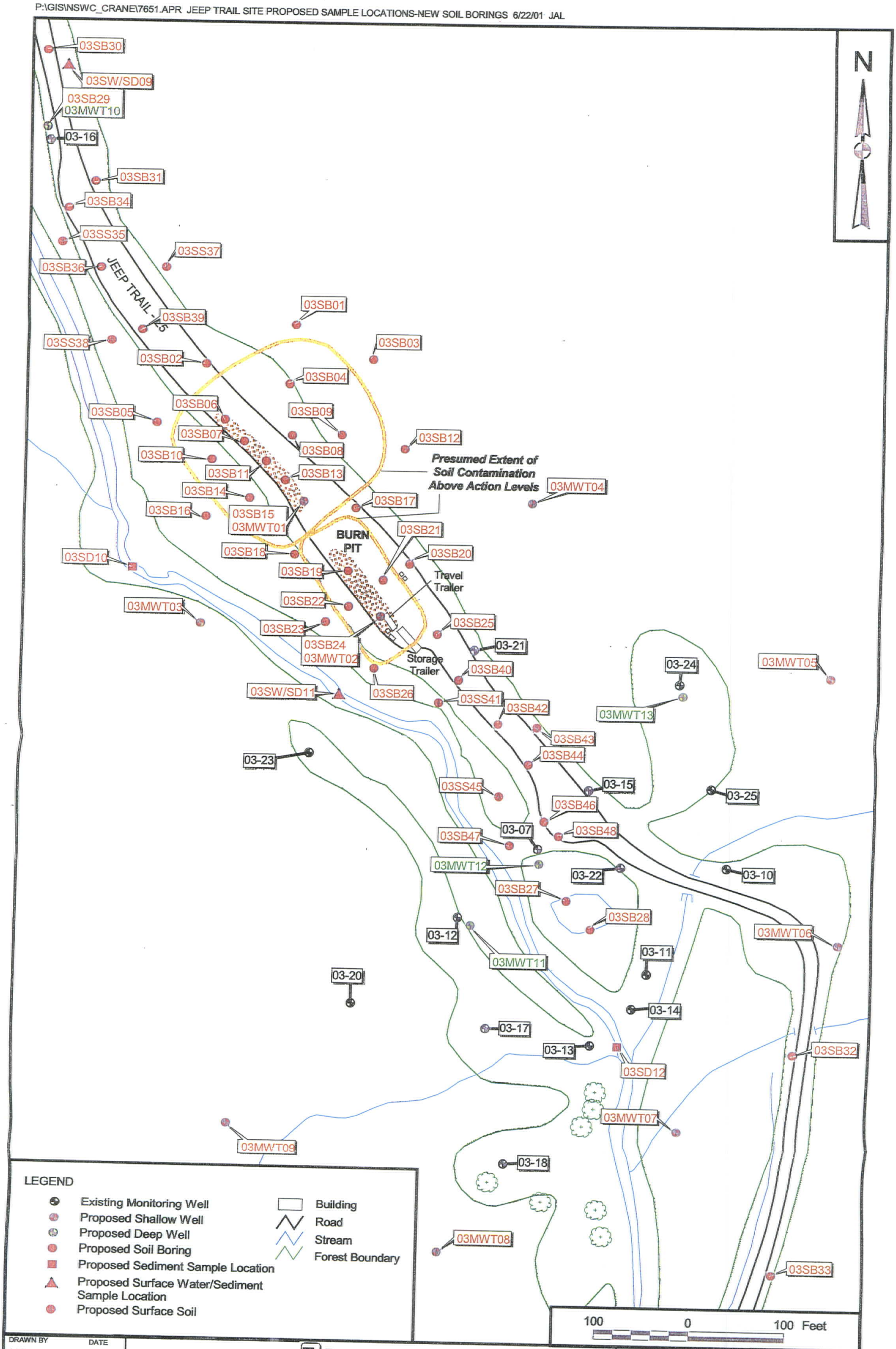
Sample No.	VOC[5]	SVOC[5,6]	Herbicides [6]	Pesticides [6]	Dioxins / Furans	Explosives	Nitrocellulose	Metals[7]	Nitrate	Nitrite	Perchlorate
03-SS-40-0002[9]	-	X	-	-	-	X	X	X	X	X	X
03-SB-40-????[8][9]	-	X	-	-	-	X	X	X	X	X	X
03-SB-40-????[8][9]	-	X	-	-	-	X	X	X	X	X	X
03-SS-41-0002[9]	-	X	-	-	-	X	X	X	X	X	X
03-SS-42-0002[9]	-	X	-	-	-	X	X	X	X	X	X
03-SB-42-????[8][9]	-	X	-	-	-	X	X	X	X	X	X
03-SB-42-????[8][9]	-	X	-	-	-	X	X	X	X	X	X
03-SS-43-0002[9]	-	X	-	-	-	X	X	X	X	X	X
03-SS-44-0002[9]	-	X	-	-	-	X	X	X	X	X	X
03-SS-44-????[8][9]	-	X	-	-	-	X	X	X	X	X	X
03-SS-44-????[8][9]	-	X	-	-	-	X	X	X	X	X	X
03-SS-45-0002[9]	-	X	-	-	-	X	X	X	X	X	X
03-SS-46-0002[10]	X	X	-	-	-	X	X	X	X	X	X
03-SB-46????[8][10]	X	X	-	-	-	X	X	X	X	X	X
03-SB-46-????[8][10]	X	X	-	-	-	X	X	X	X	X	X
03-SS-47-0002[10]	X	X	-	-	X	X	X	X	X	X	X
03-SB-47-????[8][10]	X	X	-	-	-	X	X	X	X	X	X
03-SB-47-????[8][10]	X	X	-	-	-	X	X	X	X	X	X
03-SS-48-0002[10]	X	X	-	-	-	X	X	X	X	X	X
03-SB-48-????[8][10]	X	X	-	-	-	X	X	X	X	X	X
03-SB-48-????[8][10]	X	X	-	-	-	X	X	X	X	X	X
Totals	45	113	5	5	13	116	116	75	116	116	116

TABLE 4-2A

SOIL SAMPLES AND LABORATORY ANALYSES
ABG STUDY AREA
NSWC CRANE, CRANE, INDIANA

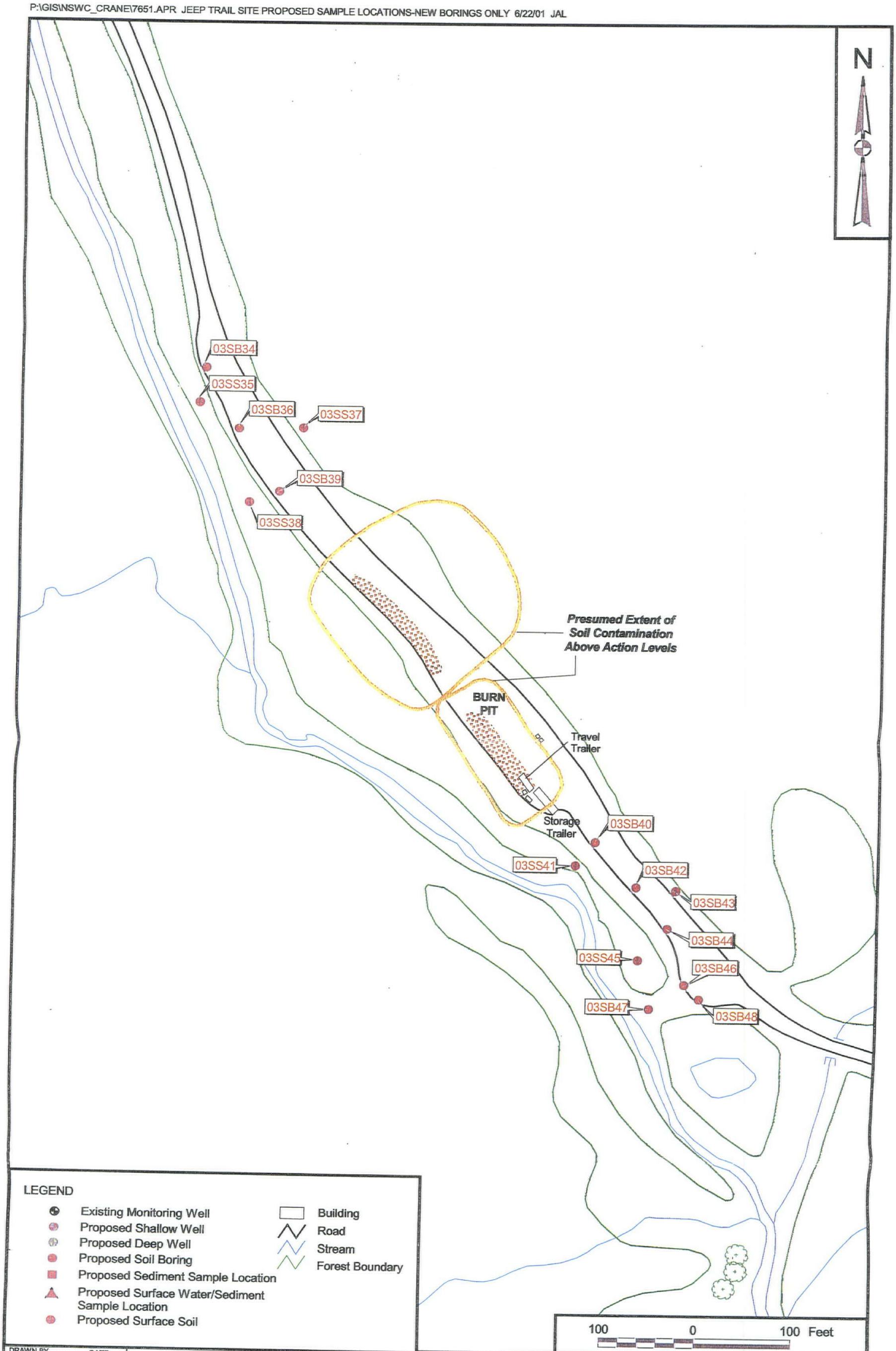
1 Burn Area
2 Burn Pit
3 Deposition
4 Reference
5 Appendix IX.
6 Excluding organophosphorus pesticides.
7 TAL metals plus Sn (total).
8 Sample depth to be determined during drilling.
9 Samples located in area between well 03-16 and the Burn Area, or between well 03-07 and the Burn Area, and receive Burn Area Analyses
10 Samples located near Fill Dump Area south of well 03-07, and receive Burn Pit analyses

P:\GIS\NSWC_CRANE\7651.APR JEEP TRAIL SITE PROPOSED SAMPLE LOCATIONS-NEW SOIL BORINGS 6/22/01 JAL



DRAWN BY J. LAMEY	DATE 6/22/01	Tetra Tech NUS, Inc.	CONTRACT NUMBER 0514 / OWNER NUMBER CTO 126
CHECKED BY —	DATE —	JEEP TRAIL PROPOSED SAMPLE LOCATIONS NAVAL SURFACE WARFARE CENTER CRANE, INDIANA	APPROVED BY — / DATE —
COST/SCHEDULE-AREA			APPROVED BY — / DATE —
SCALE AS NOTED			DRAWING NO. FIGURE 4-1A / REV 0

P:\GIS\NSWC_CRANE\7651.APR JEEP TRAIL SITE PROPOSED SAMPLE LOCATIONS-NEW BORINGS ONLY 6/22/01 JAL



DRAWN BY J. LAMEY	DATE 6/22/01	Tetra Tech NUS, Inc.	CONTRACT NUMBER 0514 / OWNER NUMBER CTO 126
CHECKED BY —	DATE —	JEEP TRAIL PROPOSED SAMPLE LOCATIONS NAVAL SURFACE WARFARE CENTER CRANE, INDIANA	APPROVED BY — / DATE —
COST/SCHEDULE-AREA			APPROVED BY — / DATE —
SCALE AS NOTED			DRAWING NO. FIGURE 4-1B / REV 0

APPENDIX A-2

Boring Logs of Soil Borings Drilled in June 2001

Tetra Tech NUS, Inc.

BORING LOG

PROJECT NAME: NSWC CRANE
PROJECT NUMBER: N3960
DRILLING COMPANY: EFS
DRILLING RIG: HURRICANE DPT

BORING NUMBER: 03SB02
DATE: 6/19/01
GEOLOGIST: BOB BALKOVIC
DRILLER: A. CERTAIN

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth /Ft.) or Screened Interval	Soil Density/ Consistency or Rock Hardness*	Color	Material Classification	USCS	Remarks	PID/FID Reading (ppm) Sample	Sampler BZ	Borehole	Driller BZ
	1					LT BR	TOP 1.2' GRAVELLY SILT	SM	SAMPLE 0933	0.0	0.0		0.0
	2					BLACK	W/ T. SAND + CINDERS			0.0			
	3				HARD	LT BR	1' SILT	ML		0.0			
S-1 0938	4		3.6 / 4'				2.4' CLAYEY SILT	ML		0.0			
	5					LT BR TAN	TOP .8' SILT W/ T. GRAVEL			0.0			
S-2 0952	6		2 / 2'				BOTT 1.2' F-SAND W/ SANDSTONE CHUNKS	SP		0.0		0.0	0.0
	7					TAN	1.2' F-SAND + S.S. CHUNKS			0.0			
S-3 1002	8		2 / 2'			YELL BR	.8' F-SAND W/ S.S. CHUNKS			0.0			
	9									0.0			
S-4 1006	10		1.8 / 2'							0.0			
				TD-10'									
						Sampled: 03SS 020002 @ 0940							
						Sampled: 03SB 020206 @ 1000							
						Sampled: 03SB 020600 @ 1010							

* When rock coring, enter rock brokeness.

** Include monitor reading in 6 foot intervals @ borehole. Increase reading frequency if elevated reponse read.

Drilling Area Background (ppm): 0.0

Remarks:

Converted to Well: Yes ____ No X Well I.D. #: ____

Tetra Tech NUS, Inc.

BORING LOG

PROJECT NAME: NSWC CRANE
PROJECT NUMBER: N3960
DRILLING COMPANY: E-J-S
DRILLING RIG: HURRICANE OPT

BORING NUMBER: 03SB04
DATE: 6/19/01
GEOLOGIST: BOB BALKUNAS
DRILLER: A. (BERTAZZI)

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth /Ft.) or Screened Interval	Soil Density/ Consistency or Rock Hardness	Color	Material Classification	USCS*	Remarks	PID/FID Reading (ppm) Sample	Backhoe Bkt	Breathing*	Drilling Bkt
	1					BROWN	TOP 4" CLAYEY SILT	ML	START @ 1300	0.0	0.0		
	2					↓	T-SAND + ORGANICS	↓		0.0			
	3					TAN	BOTT 3' F-SAND T-SILT	SP		0.0			
S1 1304	4		3.4 / 4'			↓	+ T.S.S. FRAGS	↓		0.0		0.0	0.0
	5					TAN	TOP .5' F-SAND T-SILT	SP		0.0			
	6					↓	+ T-SS. FRAGS	↓		0.0			
	7					BROWN	BOTT 2.8' F-SAND	SP		0.0			
S-2 1318	8		3.3' / 4'			↓	T-SILT	↓		0.0			
	9					TAN	F-SAND T-SILT			0.0			
S-3 1330	10		1.9' / 2'			BROWN	W/ S.S. FRAGS	↓		0.0			
				T.D. 10'									

Sampled: 03SS040002 @ 1306
Sampled: 03SB040206 @ 1320
Sampled: 03SB040610 @ 1332

* When rock coring, enter rock brokeness.
** Include monitor reading in 6 foot intervals @ borehole. Increase reading frequency if elevated reponse read.

Drilling Area Background (ppm): 0.0

Remarks:

Converted to Well: Yes ____ No X Well I.D. #: ____

Tetra Tech NUS, Inc.

BORING LOG

PROJECT NAME: NSWC CRANE
PROJECT NUMBER: N3960
DRILLING COMPANY: E.F.S.
DRILLING RIG: HURRICANE DPT

BORING NUMBER: 03SB05
DATE: 6/19/01
GEOLOGIST: BOB BALKOVEC
DRILLER: A. CERTAIN

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth /Ft.) or Screened Interval	Soil Density/ Consistency or Rock Hardness	Color	Material Classification	USCS*	Remarks	PID/FID Reading (ppm) Sample	Backpack BZ	Breathing Zone	Driller BZ
	1				MOIST	LT.	CLAY, SOME SILT,	CL	START @ 1640	0.0	0.0		
	2					BR	T-ORGANICS (LEAVES +			0.0			
	3						ROOTS)			0.0			
S-1 1651	4		4'		SOFT + MOIST				WET @ 3.5'	0.0		0.0	0.0
	5					BR	TOP .4' CLAY, T-SILT	CL		0.0			
S-2 1654	6		2'				BOTT 1.6' SS PEBBLES, SAND	SS	RUST COLORED PEBBLES	0.0			
	7					BR	SS PEBBLES + F-SAND		WEATHERED BEDROCK	0.0			
S-3 1704	8		2'							0.0			
	9					TELL	F-SAND W/ T-SS FRAGS	SP		0.0			
S-4 1713	10		2'			BR				0.0			
				T.D. 10'									

Sampled: 03SS050002 @ 1654
Sampled: 03SB050206 @ 1658
Sampled: 03SB050010 @ 1715

* When rock coring, enter rock brokeness.
** Include monitor reading in 6 foot intervals @ borehole. Increase reading frequency if elevated reponse read.

Drilling Area Background (ppm): 0.0

Remarks:

Converted to Well: Yes ____ No X Well I.D. #: ____

Tetra Tech NUS, Inc.

BORING LOG

PROJECT NAME: NSWC CRANE
PROJECT NUMBER: N3960
DRILLING COMPANY: EFS
DRILLING RIG: HURRICANE DPT

BORING NUMBER: 03SB06
DATE: 6/19/01
GEOLOGIST: BOB BAUKOVEC
DRILLER: A. CERTAZAN

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth /Ft.) or Screened Interval	Soil Density/ Consistency or Rock Hardness	Color	Material Classification	USCS*	Remarks	PID/FID Reading (ppm) Sample	Barrier BZ	Borehole	Driller BZ
	1					WHITE	TOP .5' SANDY, SILTY GRAVEL	GM	START @ 1014	0.0	0.0		
	2					LIGHT YELLOW	BOTT 2.9' CLAYEY SILT W/GRAVEL						
	3						AND SAND						
S-1 1017	4		3.4' / 4"						HAD PROBE STUCK IN HOLE 40 MIN DELAY			0.0	0.0
	5					LT.	CLAYEY SILT	ML		0.0			
S-2 1118	6		2' / 2"			BR	W/ T-SAND & GRAVEL			0.0			
	7					LT. BR	CLAYEY SILT			0.0			
S-3 1124	8		1.8' / 2"			YELLOW	W/ T-SAND		S.S. IN NOSE	0.0			
	9					LT.	SILTY SAND W/	SM		0.0			
S-4 1127	10		2" / 2"			BR	SANDSTONE PEBBLES FRAGS			0.0		0.0	0.0

Sampled: 03SS060007 @ 1020
Sampled: 03SB060206 @ 1120
Sampled: 03SB060610 @ 1130

* When rock coring, enter rock brokeness.

** Include monitor reading in 6 foot intervals @ borehole. Increase reading frequency if elevated reponse read.

Drilling Area Background (ppm): 0.0

Remarks:

Converted to Well: Yes ____ No X Well I.D. #: ____

Tetra Tech NUS, Inc.

BORING LOG

PROJECT NAME: NSWC CRANE
PROJECT NUMBER: N3960
DRILLING COMPANY: E.F.S
DRILLING RIG: HURRICANE DPT

BORING NUMBER: 03SB07
DATE: 6/19/03
GEOLOGIST: BOB BALLOUCH
DRILLER: A-CERRUO

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth /Ft.) or Screened Interval	Soil Density/ Consistency or Rock Hardness	Color	Material Classification	USCS*	Remarks	PID/FID Reading (ppm) Sample	Sampler BZ	Borehole**	Drilling BZ**
	1					TAN MUNSEL	TOP 1.4' F-SAND + GRAVEL	GP	SAMPLE 1339	0.0	0.0		
	2					7.5YR	BOTT 2.5' CLAYEY SILT	ML		0.0			
	3						W/ S.S. FRAGS	SM		0.0			
S-4 1343	4		2.4' / 4'						W/O PROBE STUCK IN HOLE	0.0			
	5					BROWN	CLAYEY SILT T-GRAVEL	ML	SAMPLE UP 1414	0.0			
S-2 1420	6		1.8' / 2'				+ SAND			0.0		0.0	0.0
	7						F-SAND W/ S.S CHUNKS	SP		0.0			
S-3 1425	8		1.4' / 2'				T-SILT			0.0			
	9									0.0			
S-4 1435	10		1.6' / 2'							0.0			
				T.D 10'									

Sampled: 03SS070002 @ 1346
Sampled: 03SB070206 @ 1422
Sampled: 03SB070610 @ 1438

* When rock coring, enter rock brokeness.
** Include monitor reading in 6 foot intervals @ borehole. Increase reading frequency if elevated reponse read.

Drilling Area Background (ppm): 0.0

Remarks:

Converted to Well: Yes ____ No X Well I.D. #: ____

Tetra Tech NUS, Inc.

BORING LOG

PROJECT NAME: NSWC CRANE
PROJECT NUMBER: N3960
DRILLING COMPANY: E.F.S
DRILLING RIG: HURRICANE DPT

BORING NUMBER: 03SB08
DATE: 6/19/01
GEOLOGIST: BOB BALKOVEC
DRILLER: A. CERTAIN

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth /Ft.) or Screened Interval	Soil Density/ Consistency or Rock Hardness	Color	Material Classification	USCS*	Remarks	PID/FID Reading (ppm) Sample	Breathing Zone	Borehole**	Drilling Zone
	1					WHITE	TOP 1.3' F-SAND + GRAVEL	GP	STAINED 1600	0.0	0.0		
	2					TAN		↓		0.0			
	3					LT.	BOTT 1.3' SILTY CLAY /	ML		0.0			
S-1 1604	4		2.6' / 4'			BR	CLAYEY SILT W/ F-SAND	CL		0.0			
	5						SILTY CLAY	CL		0.0			
S-2 1610	6		2' / 2'				↓	↓		0.0		0.0	0.0
	7					LT BR	TOP .9' SILTY CLAY	CL		0.0			
S-3 1624	8		1.8' / 2'			BR	BOTT .9' SAND + SS. CHUNKS	SP	RUST COLOR FE	0.0			
	9					BR 2				0.0			
S-4 1628	10		2' / 2'			YELL BR				0.0			
				T.D. 10'									

Sampled: 03SS 080002 @ 1606
Sampled: 03SB 080206 @ 1612
Sampled: 03SB 080610 @ 1630

* When rock coring, enter rock brokeness.
** Include monitor reading in 6 foot intervals @ borehole. Increase reading frequency if elevated reponse read.

Drilling Area Background (ppm): 0.0

Remarks: ** OFFSET SB 5' EAST DUE TO UXO CLEARANCE

Converted to Well: Yes ____ No X Well I.D. #: ____

Tetra Tech NUS, Inc.

BORING LOG

PROJECT NAME: NSWC CRANE
PROJECT NUMBER: N3960
DRILLING COMPANY: —
DRILLING RIG: HAND AUGER

BORING NUMBER: 03SB09
DATE: 6/23/04
GEOLOGIST: BOB BALLOVER
DRILLER: KEN MARCHUK

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth /Ft.) or Screened Interval	Soil Density/ Consistency or Rock Hardness	Color	Material Classification	USCS*	Remarks	PID/FID Reading (ppm) Sample	Bumpkin B.Z.	Breathing Zone	Driller B.Z.
	1					BR	SILT + ORGANICS	ML	@ 14" OFFSET	0.0			
	2				V.HARD	YELLOW BR	T-SAND, SILT, ~~S.S. FRAG~~	SP	HAND AUGERING				
	3				V.HARD	↓	F-SAND + S.S. FRAGS	GP					
	4				V.HARD	YELLOW BR	↓						
	5			T.D. 3.5'			REFUSAL @ 3.5'						
	6						5 OFFSETS						
	7												
	8												
	9												
	10												
							Sampled: 03SS090007 @ 0815		AD06230101				
							Sampled: 03SB 090204 @ 0845						
							Sampled: 03SB						

* When rock coring, enter rock brokeness.

** Include monitor reading in 6 foot intervals @ borehole. Increase reading frequency if elevated reponse read.

Drilling Area Background (ppm): 0.0

Remarks:

Converted to Well: Yes _____ No X Well I.D. #: _____

Tetra Tech NUS, Inc.

BORING LOG

PROJECT NAME: NSWC CRANE
PROJECT NUMBER: N3960
DRILLING COMPANY: E.F.S.
DRILLING RIG: HURRICANE DPT

BORING NUMBER: 03SB10
DATE: 6/20/01
GEOLOGIST: B.B. BALKAAT
DRILLER: A. CERTAZIO

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth /Ft.) or Screened Interval	Soil Density/ Consistency or Rock Hardness	Color	Material Classification	USCS*	Remarks	PID/FID Reading (ppm) Sample	Sampler BZ	Borehole**	Driller BZ**
	1					BLK	TOP .4' TOPSOIL	ML		0.0	0.0		
	2					YELL BR	BOTT 2.1' SOME CLAY & SAND	ML		0.0			
	3					BR	F-SAND + S.S. CHUNKS	SM		0.0			
S-1 1038	4		2.5' / 4'						CHUNK OF S.S. IN TOP	0.0			
	5					LT BR	TOP 1.2' SILTY SAND SOME CLAY + S.S. FRAGS	SM	RUST COLOR DX	0.0			
S-2 1040	6		1.5' / 2'			YELL BR	BOTT .8' F-SAND	SP		0.0	0.0	0.0	0.0
	7					YELL BR	F-SAND + S.S. FRAGS			0.0			
S-3 1105	8		1.9' / 2'			LT BR	T-SILT			0.0			
	9									0.0			
S-4 1117	10		2' / 2'							0.0			
				T.D. 10'									

Sampled: 03SS100002 @ 1040
Sampled: 03SB100206 @ 1049
Sampled: 03SB100610 @ 1120 FD06200102

* When rock coring, enter rock brokeness.

** Include monitor reading in 6 foot intervals @ borehole. Increase reading frequency if elevated reponse read.

Drilling Area Background (ppm): 0.0

Remarks:

Converted to Well: Yes ____ No X Well I.D. #: ____

Tetra Tech NUS, Inc.

BORING LOG

PROJECT NAME: NSWC CRANE
PROJECT NUMBER: N3960
DRILLING COMPANY: E.F.S
DRILLING RIG: HURRICANE DPT

BORING NUMBER: 03SB11
DATE: 6/19/03
GEOLOGIST: BOB BALLANCE
DRILLER: A. CERTAIN

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth /Ft.) or Screened Interval	Soil Density/ Consistency or Rock Hardness	Color	Material Classification	USCS*	Remarks	PID/FID Reading (ppm) Sample	Borehole	Borehole**	Drilling Area
	1			F.G. 0.		WHITE	TOP .8' F-SAND + GRAVEL T-SILT	GP	START @ 1440	0.0	0.0		0.0
	2					DK GRAY	2' CLAYEY SILT T-GRAVEL	ML		0.0			
	3						1.2' F-SAND + S.S. FRAGS	SP	RUST COLORED RX.	0.0			
S-1 1445	4		4' / 4'				↓	↓		0.0			
	5					BROWN	CLAYEY SILT W/ GRAVEL	ML		0.0			
S-2 1505	6		2' / 2'				T-SAND			0.0		0.0	0.0
	7					BROWN	F-SAND W/ SS. FRAGS	SP	RUST COLORED RX	0.0			
S-3 1516	8		1.8' / 2'				T-SILT			0.0			
	9					YELL				0.0			
S-4 1555	10		2' / 2'			GR				0.0			
				T.D. 16'									

Sampled: 03SS 110002 @ 1447
Sampled: 03SB 110206 @ 1508
Sampled: 03SB 110140 @ 1600

* When rock coring, enter rock brokeness.
** Include monitor reading in 6 foot intervals @ borehole. Increase reading frequency if elevated reponse read.

Drilling Area Background (ppm): 0.0

Remarks:

Converted to Well: Yes _____ No X

Well I.D. #: _____

Tetra Tech NUS, Inc.

BORING LOG

PROJECT NAME: NSWC CRANE
PROJECT NUMBER: N3960
DRILLING COMPANY: E.F.S.
DRILLING RIG: HURRICANE DPT

BORING NUMBER: 03SB13
DATE: 6/20/01
GEOLOGIST: BOB BALLOVER
DRILLER: A-CERTAZIN

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth /Ft.) or Screened Interval	Soil Density/ Consistency or Rock Hardness	Color	Material Classification	USCS*	Remarks	PID/FID Reading (ppm) Sample	Sampler BZ	Borehole**	Drillers BZ**
	1					WHITE BLACK	TOP 1.6' SAND, GRAVEL	GP	SAMPLE 0835	00	00		
	2					BROWN	SOME SILT	↓		00			
	3					↓	BOTT 2.4' F-SAND W/ T-GRAVEL	GM		00			
S1 0828	4		4" / 4"			↓	S.S. FRAGS + SILT	↓		00		00	00
	5					BROWN	CLAYEY SILT	CL		00			
3.2 0837	6		1.8" / 2"			↓	↓	↓		00			
	7					BROWN + TAN RED	F-COARSE SAND W/ S.S. FRAGS	SP		00			
3.3 0846	8		1.7" / 2"				SOME SILT + GRAVEL	↓		00			
	9					↓	↓	↓		00			
3.4 0858	10		1.9" / 2"			↓	↓	↓		00	↓		
				T.D. 10'									
						Sampled: 03SS 130002							
						Sampled: 03SB 130206							
						Sampled: 03SB 130610							

* When rock coring, enter rock brokeness.

** Include monitor reading in 6 foot intervals @ borehole. Increase reading frequency if elevated reponse read.

Drilling Area Background (ppm): 0.0

Remarks:

Converted to Well: Yes ____ No X Well I.D. #: ____

Tetra Tech NUS, Inc.

BORING LOG

PROJECT NAME: NSWC CRANE
PROJECT NUMBER: N3960
DRILLING COMPANY: E.F.S
DRILLING RIG: HURRICANE DPT

BORING NUMBER: 03SB14
DATE: 6/20/01
GEOLOGIST: BOB BALLOVER
DRILLER: A. CERTAIN

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth /Ft.) or Screened Interval	Soil Density/ Consistency or Rock Hardness	Color	Material Classification	USCS*	Remarks	PID/FID Reading (ppm) Sample	Backlight Bkg	Borehole	Driller Bkg
	1					BLK	TOP .5' TOP SOIL	PM		0.0	0.0		
	2					BR	BOTT 2.5' SILTY F-SAND	SM	RUST CHUNKS PR	0.0			
	3						W/ S.S. FRAGS	GM		0.0			
S-1	4		2.5' / 4'			↓	↓	↓		0.0		0.0	0.0
	5					BR	SILTY CLAY W/ S.S FRAGS	CL		0.0			
S-2	6		1.5' / 2'				+ SOME SAND	GC		0.0			
	7									0.0			
S-3	8		1.6' / 2'			↓	↓	↓		0.0			
	9				HARD	TAN	F-SAND - S.S FRAGS	SP		0.0			
S-4	10		1.4' / 2'		↓	YELLOW BR	↓	GP		0.0	↓		
				10' TD									

Sampled: 03SS140002 @ ~~1754~~ 1734
Sampled: 03SB140306 @ 1745
Sampled: 03SB140600 @ 1750

* When rock coring, enter rock brokeness.
** Include monitor reading in 6 foot intervals @ borehole. Increase reading frequency if elevated reponse read.

Drilling Area Background (ppm): 0.0

Remarks:

Converted to Well: Yes _____ No X Well I.D. #: _____

Tetra Tech NUS, Inc.

BORING LOG

PROJECT NAME: NSWC CRANE
PROJECT NUMBER: N3960
DRILLING COMPANY: E.F.S
DRILLING RIG: HURRICANE DPT

BORING NUMBER: 03SB15
DATE: 6/20/01
GEOLOGIST: BOB BALKOVITZ
DRILLER: A. CERTAZN

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth /Ft.) or Screened Interval	Soil Density/ Consistency or Rock Hardness	Color	Material Classification	USCS*	Remarks	PID/FID Reading (ppm) Sample	Borehole B2	Borehole**	Drillers B2**
	1					WHITE	TOP. 6" SAND + GRAVEL	GP		0.0			
	2					BROWN	1.6' SAND W/ S.S FRAGS	GM		0.0			
	3					↓	+ SOME CLAYEY SILT	GC		0.0			
S-1 0910	4		3.4' / 4'			↓	1.7' CLAYEY SILT	ML		0.0			
	5					BROWN	CLAYEY SILT W/ SAND	GM		0.0			
S-2 0914	6		1.9' / 2'			↓	+ SS. FRAGS	ML	WATER IN TUBE	0.0			
	7					BROWN	F-SAND + S.S FRAGS	GR		0.0			
S-3 0938	8		1.2' / 2'			↓	SOME CLAYEY SILT	SS		0.0			
	9					↓	F-SAND + S.S. FRAGS	SP		0.0			
S-4 0940	10		2' / 2'			↓	↓	↓		0.0			
				TD. 10'									

Sampled: 03SS 150007 @ 0912 MS/MSD
Sampled: 03SB 150206 @ 0921 FD062001
Sampled: 03SB 150610 @ 0950

* When rock coring, enter rock brokeness.

** Include monitor reading in 6 foot intervals @ borehole. Increase reading frequency if elevated reponse read.

Drilling Area Background (ppm): 0.0

Remarks:

Converted to Well: Yes ____ No X Well I.D. #: ____

Tetra Tech NUS, Inc.

BORING LOG

PROJECT NAME: NSWC CRANE
PROJECT NUMBER: N3960
DRILLING COMPANY: E.F.S
DRILLING RIG: HURRICANE DPT

BORING NUMBER: 03SB16
DATE: 6/20/01
GEOLOGIST: BOB BALKOVEC
DRILLER: A. CERTAIN

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth /Ft.) or Screened Interval	Soil Density/ Consistency or Rock Hardness	Color	Material Classification	USCS*	Remarks	PID/FID Reading (ppm) Sample	Barrier BZ	Borehole**	Driller BZ**
	1					BLACK	TOP .2' SILT-ORGANICS	ML	SVOC @1004	0.0	0.0		
	2					BR	1.4' CLAYEY SILT - SAND	ML		0.0			
	3						BOTT 1.5' CLAYEY SILT	GM		0.0			
S-1 1007	4		3.4' / 4'				SAND & S.S. FRAGS			0.0	0.0	0.0	0.0
	5						TOP 2.2'	GM		0.0			
	6							ML		0.0			
	7						BOTT 1.8' F-SAND + S.S.	SP		0.0			
S-2 1020	8		4' / 4'				FRAGS			0.0			
	9						SILTY CLAY W/ F-SAND	CL		0.0			
S-3 1027	10		1.4' / 2'				+ S.S. CHUNKS			0.0			
				~20.0'									

Sampled: 03SS160002 @1010
Sampled: 03SB160206 @1023
Sampled: 03SB160610 @1030

* When rock coring, enter rock brokeness.
** Include monitor reading in 6 foot intervals @ borehole. Increase reading frequency if elevated reponse read.

Drilling Area Background (ppm): 0.0

Remarks:

Converted to Well: Yes ____ No X Well I.D. #: ____

Tetra Tech NUS, Inc.

BORING LOG

PROJECT NAME: NSWC CRANE
PROJECT NUMBER: N3960
DRILLING COMPANY: EF-S.
DRILLING RIG: HURRICANE DPT

BORING NUMBER: 03SB17
DATE: 6/20/01
GEOLOGIST: BOB BAUMGARTE
DRILLER: A. CERRAZO

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth /Ft.) or Screened Interval	MATERIAL DESCRIPTION: Soil Density/ Consistency or Rock Hardness	Color	Material Classification	USCS*	Remarks	PID/FID Reading (ppm): Sample	Sample BZ	Borehole	Drillers BZ**
	1					brown	TOP .3' SAND + GRAVEL	GP		0.0	0.0		
	2				DRY	BR	3.7' CLAYEY SILT, T-SAND	ML		0.0			
	3						~ GRAVEL	GM		0.0			
S-1 1356	4		4' / 4'							0.0			
	5					LTBR	SILTY CLAY T w/ SS FRAGS	CL		0.0			
S-2	6		1.9' / 2'				T-SAND	GC		0.0			
	7						SILTY SAND, S.S. FRAGS	SM		0.0			
S-3	8		1.8' / 2'				T- CLAY			0.0		0.0	0.0
	9									0.0			
	10									0.0			
	11									0.0			
S-4	12		2' / 4'							0.0			
	13					LTBR	F-SAND w/ S.S FRAGS	SP		0.0			
	14					TELL	T-CLAY @ 15'	SS		0.0			
S-5	15		2' / 3'			92				0.0			
				TD. 15'									
						Sampled: 03SS170002 @ 1358							
						Sampled: 03SB170406 @ 1423							
						Sampled: 03SB 171214 @ 1431							

* When rock coring, enter rock brokeness.

** Include monitor reading in 6 foot intervals @ borehole. Increase reading frequency if elevated reponse read.

Drilling Area Background (ppm): 0.0

Remarks:

Converted to Well: Yes ____ No X Well I.D. #: ____

Tetra Tech NUS, Inc.

BORING LOG

PROJECT NAME: NSWC CRANE
PROJECT NUMBER: N3960
DRILLING COMPANY: NA
DRILLING RIG: HAND AUGER

BORING NUMBER: 03SB18
DATE: 6.24.01
GEOLOGIST: R. SIMPSON
DRILLER: KEN MARQUIS

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth /Ft.) or Screened Interval	MATERIAL DESCRIPTION: Soil Density/ Consistency or Rock Hardness*	Color	Material Classification	USCS*	Remarks	PID/FID Reading (ppm): Sample	Sample BZ	Borehole	Drilling Area
							WOODED						
	1				SOFT	BRN	MOIST, TR ROOTS, SILT	CL		0	0	0	0
	2				HARD	BLK	CLAY, SILT FLINT COAT, SILT		TR LIMESTONE FRG				
	3						SILT, SOME F. SAND TR. CLAY, SOME SAND STONE	ML					
	4												
	5			TD=4									
	6												
	7						3 ATTEMPTS						
	8						REFUSAL @ 2', 3.5', 4'						
	9												
	10						FLINT COAT, ASH @ 1.5-2.5'						

Sampled: 03SS180002 @ 1140
Sampled: 03SB180204 @ 1200
Sampled: 03SB ——

* When rock coring, enter rock brokeness.
** Include monitor reading in 6 foot intervals @ borehole. Increase reading frequency if elevated reponse read.

Drilling Area Background (ppm): 0

Remarks:

Converted to Well: Yes ____ No X Well I.D. #: ____

Tetra Tech NUS, Inc.

BORING LOG

PROJECT NAME: NSWC CRANE
PROJECT NUMBER: N3960
DRILLING COMPANY: E.F.S
DRILLING RIG: HURRICANE DPT

BORING NUMBER: 03SB19
DATE: 6/21/01
GEOLOGIST: BOB BALKOVIC
DRILLER: A. CERTAZIN

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth /Ft.) or Screened Interval	Soil Density/ Consistency or Rock Hardness	Color	Material Classification	USCS*	Remarks	PID/FID Reading (ppm) Sample	Sampler BZ	Borehole	Drilling EZ**
	1					WHITE	.3' SAND & GRAVEL	GP		0.0	0.0		
	2					DK GRAY	1' CLAY & SILT & SAND	CL		0.0			
	3					BLK	1.5' ASH, CINDERS		* BURNT METAL DEBRIS	0.0			
S-1	4		3' / 4'			BROWN	BOTT .4' SILTY CLAY, F SAND	CL		0.0		0.0	0.0
	5						TOP 2' SILTY CLAY W/			0.0			
	6						SOME SAND (F-GRAVELLY)			0.0			
	7						BOTT 1.7' SAND & S.S FRAGS	SP		0.0			
S-2	8		3.7' / 4'				SOME CLAY & SILT			0.0			
	9					BROWN	TOP 1.5'			0.0			
	10					YELL	BOTT 2.5' F SAND W/			0.0			
	11					DK &	S.S. FRAGS & CHUNKS			0.0			
S-3	12		3.8' / 4'			TAN				0.0		0.0	0.0
	13						TOP 5' S.S. FRAGS & F SAND			0.0			
	14					TAN &	BOTT 2.2' SANDY CLAY	CL		0.0			
S-4	15		2.7' / 3'			BR				0.0			
				T.D. 15'									
							Sampled: 03SS 190002 @ 1400						
							Sampled: 03SB 190204 @ 1410						
							Sampled: 03SB 191215 @ 1420		DUP FD06210101				

* When rock coring, enter rock brokeness.

** Include monitor reading in 6 foot intervals @ borehole. Increase reading frequency if elevated reponse read.

Drilling Area Background (ppm): 0.0

Remarks: SB MOVED 2.5' NORTH DUE TO UTIL CLEARANCE

Converted to Well: Yes ____ No X Well I.D. #: ____

Tetra Tech NUS, Inc.

BORING LOG

PROJECT NAME: NSWC CRANE
PROJECT NUMBER: N3960
DRILLING COMPANY: E.F.S
DRILLING RIG: HURRICANE DPT

BORING NUMBER: 03SB20
DATE: 6/20/03
GEOLOGIST: BOB BALKAME
DRILLER: A. CERTAZIO

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth /Ft.) or Screened Interval	Soil Density/ Consistency or Rock Hardness	Color	Material Classification	USCS*	Remarks	PID/FID Reading (ppm) Sample	Sampler BZ	Borehole**	Driller BZ**
	1					WHITE	TOP .4' SAND+GRAVEL	GP	SAMP @ 1554	0.0	0.0		
	2					BROWN	1.4' SANDY SILT T-SS	ML		0.0			
	3						FRAGS			0.0			
S-1	4		3.8' / 4'			BROWN	BOTT 2' SILTY CLAY	CL		0.0			
	5									0.0			
S-2	6		1.8 / 2'							0.0			
	7					BROWN	TOP .7' SILTY CLAY	CL		0.0			
S-3	8		1.7' / 2'				BOTT 1' SAND + S.S. FRAGS T-SILT	SP/GP		0.0		0.0	0.0
	9						SILTY SAND + SS FRAGS	SM		0.0			
	10							GP		0.0			
	11									0.0			
S-4	12		3.7' / 4'							0.0			
	13					TAN	TOP .5' SILTY CLAY + SAND	CL		0.0			
	14					YELL	BOTT 2' F-SAND W/ S.S	SP		0.0			
S-5	15		2.5' / 3'			GR	CHUNKS	SS		0.0			
				TD 15'									
							Sampled: 03SS200002 @ 1600						
							Sampled: 03SB200810 @ 1625		FD06200103				
							Sampled: 03SB201215 @ 1635						

* When rock coring, enter rock brokeness.

** Include monitor reading in 6 foot intervals @ borehole. Increase reading frequency if elevated reponse read.

Drilling Area Background (ppm): 0.0

Remarks:

Converted to Well: Yes _____ No X Well I.D. #: _____

Tetra Tech NUS, Inc.

BORING LOG

PROJECT NAME: NSWC CRANE
PROJECT NUMBER: N3960
DRILLING COMPANY: E.F.S.
DRILLING RIG: HURRICANE DPT

BORING NUMBER: 03SB21
DATE: 6/20/01
GEOLOGIST: BOB BALKAUCE
DRILLER: A. CERTAIN

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth /Ft.) or Screened Interval	MATERIAL DESCRIPTION: Soil Density/ Consistency or Rock Hardness	Color	Material Classification	USCS*	Remarks	PID/FID Reading (ppm): Sample	Sampler B.Z.	Borehole	Driller B.Z.
	1					WHITE	TOP .7' SAND + GRAVEL	GP	SUBZE 1446	0.0	0.0		
	2					BROWN	BOTT 3.1' SILTY CLAY	CL		0.0			
	3						T-ASH @ 2'		BLACK SUB. @ 2'	0.0			
S-1	4		4' / 4'							0.0			
	5					BROWN	SILTY CLAY W/ SAND	GC		0.0			
S-2	6		1.6 / 2'				GRAVEL	GM		0.0			
	7						TOP .6' SILTY CLAY	CL		0.0			
S-3	8		1.3 / 2'			RED TAN	BOTT .7' SAND + S.S. FRAGS			0.0		0.0	0.0
	9				V. STIFF	YELL	F-SAND T-SILT	SP		0.0			
	10					OR +	T-S.S. FRAGS			0.0			
	11					TAN				0.0			
S-4	12		3.5' / 4'							0.0		0.0	0.0
	13				V-STIFF	TAN +	F-SAND + S.S FRAGS	SP		0.0			
	14					YELL OR	SOME CLAY	SP		0.0			
S-5	15		2.4' / 3'							0.0			
				TD 15'									
						Sampled: 03SS21 0002 @ 1452							
						Sampled: 03SB21 1012 @ 1530							
						Sampled: 03SB21 1215 @ 1540							

* When rock coring, enter rock brokeness.

** Include monitor reading in 6 foot intervals @ borehole. Increase reading frequency if elevated reponse read.

Drilling Area Background (ppm): 0.0

Remarks:

Converted to Well: Yes ____ No X Well I.D. #: ____

Tetra Tech NUS, Inc.

BORING LOG

PROJECT NAME: NSWC CRANE
PROJECT NUMBER: N3960
DRILLING COMPANY: E.E.S
DRILLING RIG: HURRICANE DPT

BORING NUMBER: 03SB22
DATE: 6/21/01
GEOLOGIST: BOB BALLCOVER
DRILLER: A. CERTAIN

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth /Ft.) or Screened Interval	Soil Density/ Consistency or Rock Hardness	Color	Material Classification	USCS	Remarks	PID/FID Reading (ppm) Sample	Sample BZ	Borehole	Drilling BZ**
	1					WHITE	TOP .4' SAND & GRAVEL	GP		0.0	0.0		
S-1	2		1.5' / 2'			DK GRAY	BOTT 1.6' CLAY, T-SILT & SAND	CL		0.0			
	3					BLK	TOP 1.4' ASH, CINDERS		BURNT DEBRIS NAILS, PLASTICS	0.0			
S-2	4		1.7' / 2'			BROWN	BOTTOM .3' SILTY CLAY, T-SAND	CL		0.0		0.0	0.0
	5						TOP 2.2' SILTY CLAY			0.0			
	6						T-SAND			0.0			
	7						BOTT 1.5' SAND & S.S. FRAGS	SP		0.0			
S-3	8		3.7' / 4'				T-CLAY & SILT			0.0			
	9					BROWN	TOP .2'			0.0			
	10					YELLOW	BOTT 3.6' F. SAND W/ S.S	SP		0.0			
	11					TAN	FRAGS (SOME)			0.0			
S-4	12		3.8' / 4'							0.0		0.0	0.0
	13						TOP .7' SAME AS ABOVE			0.0			
	14					TAN	BOTT 2' CLAY W/ SOME	CL		0.0			
S-5	15		2.7' / 3'			BRN	SAND			0.0			
				T.D. 15'									

Sampled: 03SS 22 0002 @ 1300
Sampled: 03SB 22 0204 @ 1325
Sampled: 03SB 22 1215 @ 1340

* When rock coring, enter rock brokeness.
** Include monitor reading in 6 foot intervals @ borehole. Increase reading frequency if elevated reponse read.

Drilling Area Background (ppm): 0.0

Remarks: SB MOVED 2.5' NORTH DUE TO UXO CLEARANCE

Converted to Well: Yes _____ No X Well I.D. #: _____

Tetra Tech NUS, Inc.

BORING LOG

PROJECT NAME: NSWC CRANE
PROJECT NUMBER: N3960
DRILLING COMPANY: —
DRILLING RIG: HAND AUGER

BORING NUMBER: 03SB23
DATE: 06.24.01
GEOLOGIST: R. SIMPSON
DRILLER: R. MARQUIS

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth /Ft.) or Screened Interval	MATERIAL DESCRIPTION: Soil Density/ Consistency or Rock Hardness	Color	Material Classification: MOIST, TR ROOTS	USCS*	Remarks	PID/FID Reading (ppm): Sample	Sampler BZ	Borehole**	Driller BZ**
	1				SOFT	BRN	SANDY SILT, F. SAND	ML	MOIST	0	0	0	0
	2						TR CLAY						
	3			FLINT									
	4												
	5												
	6								WET				
	7												
	8					GRAY	CLAY SOME SILT	OL					
	9			FLINT ?									
	10						BLACK CLAY LAST 0.5'	OH					
				TD: 10'									
							FLINT COAT @ 3'						
							FLINT COAT (ASH LIKE) @ 8' ± BLACK						
							MAY HAVE FALLEN IN FROM ABOVE						
							DECAYING VEG. ON TOP OF BLACK @ 9.5'						
						Sampled: 03SS23 0002 @ 1216			+ MS/MSD				
						Sampled: 03SB23 0610 @ 1310							
						Sampled: 03SB —							

* When rock coring, enter rock brokeness.

** Include monitor reading in 6 foot intervals @ borehole. Increase reading frequency if elevated reponse read.

Drilling Area Background (ppm): 0

Remarks:

Converted to Well: Yes ____ No X Well I.D. #: ____

Tetra Tech NUS, Inc.

BORING LOG

PROJECT NAME: NSWC CRANE
PROJECT NUMBER: N3960
DRILLING COMPANY: E.F.S
DRILLING RIG: HURRICANE DPT

BORING NUMBER: 03SB24
DATE: 6/21/01
GEOLOGIST: BOB BALKOVEC
DRILLER: A. CERTAIN

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth /Ft.) or Screened Interval	Soil Density/ Consistency or Rock Hardness	Color	Material Classification	USCS*	Remarks	PID/FID Reading (ppm) Sample	Borehole Bz	Borehole**	Driller Bz**
	1					WHITE &	TOP 1.5' CLAYEY SILT, SAND	GM	START @ 1038	0.0	0.0		
	2					BR	+ GRAVEL	GC		0.0			
	3					BR	BOTT 5' SILTY CLAY	CL		0.0			
S-1 1041	4		2' / 4'			BLK	ASH IN TOP OF SLEEVE			0.0			
	5					↓	TOP 4' ASH + CINDERS			0.0			
S.2	6		1.4' / 2'			BR	1.5' SILTY CLAY W/ F-SAND	CL		0.0		0.0	0.0
	7					BR	SAND W/ S.S FRAGS	SP		0.0			
S.3	8		2.0' / 2'			RED	↓	↓		0.0			
	9				STIFF	TAN &	F-SAND W/ S.S FRAGS	SP		0.0			
	10					YELL OR	T-SILT	SS		0.0			
	11					↓	↓	↓		0.0			
S.4	12		3.7' / 4'			↓	↓	↓		0.0			
	13					TAN &	2.7' F-SAND W/ S.S FRAGS			0.0			
	14				↓	YELLOW OR	T-SILT	↓		0.0			
S.5	15		2.7' / 3'		SOFT	& BR	BOTT .4' SANDY CLAY	CL		0.0			
				T.D. 15'									

Sampled: 03SS240002 @ 1042
Sampled: 03SB240406 @ 1112
Sampled: 03SB241215 @ 1125 MS/MSD

* When rock coring, enter rock brokeness.
** Include monitor reading in 6 foot intervals @ borehole. Increase reading frequency if elevated reponse read.

Drilling Area Background (ppm): 0.0

Remarks: SB OFFSET 2.5' N DUE TO UXO CLEARANCE.

Converted to Well: Yes ____ No X Well I.D. #: ____

Tetra Tech NUS, Inc.

BORING LOG

PROJECT NAME: NSWC CRANE
PROJECT NUMBER: N3960
DRILLING COMPANY: E.F.S
DRILLING RIG: HYDRACRANE DRT

BORING NUMBER: 03SB25
DATE: 6/20/01
GEOLOGIST: BOB BALKAVEZ
DRILLER: A. CEPEDEZN

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth /Ft.) or Screened Interval	Soil Density/ Consistency or Rock Hardness	Color	Material Classification	USCS*	Remarks	PID/FID Reading (ppm) Sample	Borehole BZ	Borehole BZ	Drilling BZ
	1					WHITE	TOP .5' SAND & GRAVEL	GP	SWM @ 1645	0.0	0.0		
	2					BR	3.5' SILTY CLAY W/ S.S	CL		0.0			
	3						FRAGS (RED & RUST)	GC		0.0			
S-1	4		4" / 4"			↓		↓		0.0		0.0	0.0
	5					BROWN	SILTY CLAY W/ S.S. FRAGS	CL		0.0			
	6						SOME SAND			0.0			
	7									0.0			
S-2	8		4" / 4"			↓	↓	↓		0.0			
	9					BR	TOP .5' SILTY CLAY	CL		0.0			
	10					YELLOW	BOTT 3.4' F-SAND W/ S.S	SP		0.0			
	11					TAN	FRAGS			0.0			
S-3	12		3.9" / 4"			↓	↓			0.0		0.0	0.0
	13					↓	S.S. FRAGS & SOME SAND	↓		0.0			
S-4	14		1" / 1.5"	TD 13.5'			REFUSAL @ 13.5'			0.0	↓		
	15						NOT ENOUGH FOR A SAMPLE						

Sampled: 03SS250002 @ 1655
Sampled: 03SB250604 @ 1707
Sampled: 03SB REFUSAL

* When rock coring, enter rock brokeness.
** Include monitor reading in 6 foot intervals @ borehole. Increase reading frequency if elevated reponse read.

Drilling Area Background (ppm): 0-6

Remarks:

Converted to Well: Yes ____ No X Well I.D. #: ____

Tetra Tech NUS, Inc.

BORING LOG

PROJECT NAME: NSWC CRANE
PROJECT NUMBER: N3960
DRILLING COMPANY: —
DRILLING RIG: HAND AUGER

BORING NUMBER: 03SB26
DATE: 6.24-01
GEOLOGIST: K. SIMPSON
DRILLER: KEN MARQUIS

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth /Ft.) or Screened Interval	MATERIAL DESCRIPTION: Soil Density/ Consistency or Rock Hardness	Color	Material Classification	USCS*	Remarks	PID/FID Reading (ppm): Sample	Borehole BZ	Borehole	Drilling BZ
	1				SOFT	BRN	SILT AND FINE SAND TR CLAY	SM	MOIST TR ROOTS	0	0	0	0
	2				↓	↓	TR ASH	↓					
	3				STIFF								
	4								WET				
	5												
	6					↓	↓	↓					
	7					GRAY	CLAY	CH					
	8												
	9												
	10				↓	↓	↓	↓	↓				
				TD = 10'									

Sampled: 03SS 26 0002 @ 1340
Sampled: 03SB 260610 @ 1415 FD062401 01
Sampled: 03SB —

* When rock coring, enter rock brokeness.
** Include monitor reading in 6 foot intervals @ borehole. Increase reading frequency if elevated reponse read.

Drilling Area Background (ppm): 0

Remarks:

Converted to Well: Yes ____ No X Well I.D. #: ____

Tetra Tech NUS, Inc.

BORING LOG

PROJECT NAME: NSWC CRANE
PROJECT NUMBER: N3960
DRILLING COMPANY: —
DRILLING RIG: HAND AUGER

BORING NUMBER: 03SB27
DATE: 6-24-01
GEOLOGIST: K. SIMPSON
DRILLER: KEN MARQUS

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth /Ft.) or Screened Interval	MATERIAL DESCRIPTION: Soil Density/ Consistency or Rock Hardness	Color	Material Classification	USCS*	Remarks	PID/FID Reading (ppm): Sample	Sampler BZ	Borehole**	Driller BZ**
	1			S	SOFT	BRN	CLAY, SOME SILT TR SANDSTONE FRAGS	CL	MOIST TR ROOTS	0	0	0	0
	2				↓	↓	↓	↓					
	3				↓				WET				
	4				STIFF		↓		↓				
	5				↓		WET, SOME						
	6						GRAVEL, TR ASH						
	7				↓	↓		↓	↓				
	8			TD = 7'									
	9						REFUSAL @ 7'						
	10												
	11												
	12												
	13												
	14												
	15												
							Sampled: 03SS270002 @ 1455						
							Sampled: 03SB270206 @ 1550						
							Sampled: 03SB270607 @ 1600						

* When rock coring, enter rock brokeness.

** Include monitor reading in 6 foot intervals @ borehole. Increase reading frequency if elevated reponse read.

Drilling Area Background (ppm): 0

Remarks:

Converted to Well: Yes _____ No X Well I.D. #: _____

Tetra Tech NUS, Inc.

BORING LOG

PROJECT NAME: NSWC CRANE
PROJECT NUMBER: N3960
DRILLING COMPANY: ~~E.F.S.~~
DRILLING RIG: ~~HURRICANE~~ DPT HAND AUGER

BORING NUMBER: 03SB28
DATE: 6-24-01
GEOLOGIST: BOB BALKOVEC, RS
DRILLER: ~~A. CLEVELAND~~ KM

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth /Ft.) or Screened Interval	MATERIAL DESCRIPTION: Soil Density/ Consistency or Rock Hardness	Color	Material Classification	USCS*	Remarks	PID/FID Reading (ppm): Sample	Bumpkin BZ	Borehole	Driller BZ
	1				SOFT	BRN	CLAY WITH SILT TR F. SAND	CL	MOIST, TR ROOTS	0	0	0	0
	2				↓	↓	ROCK FRAGS/GRAVEL	↓	↓				
	3				STIFF		↓		WET				
	4				↓	↓	↓	↓	↓				
	5			TD = 4'									
	6												
	7												
	8						REFUSAL						
	9												
	10												
						Sampled: 03SS280002@1620							
						Sampled: 03SB280204@1640			FD062401 02				
						Sampled: 03SB28 —							

* When rock coring, enter rock brokeness.

** Include monitor reading in 6 foot intervals @ borehole. Increase reading frequency if elevated reponse read.

Drilling Area Background (ppm): 0

Remarks:

Converted to Well: Yes ____ No X Well I.D. #: ____

Tetra Tech NUS, Inc.

BORING LOG

PROJECT NAME: NSWC CRANE
PROJECT NUMBER: N3960
DRILLING COMPANY: E.F.S
DRILLING RIG: HURRICANE DPT

BORING NUMBER: 03SB34
DATE: 6/22/01
GEOLOGIST: BOB BALKOVEC
DRILLER: A. CERTAIN

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth /Ft.) or Screened Interval	Soil Density/ Consistency or Rock Hardness	Color	Material Classification	USCS*	Remarks	PID/FID Reading (ppm) Sample	Sampler BZ	Borehole	Drller BZ
	1					WHITE	TOP .8' SAND & GRAVEL	GP		0.0	0.0		
	2					BR	2.4' SAND & S.S. FRAGS	SG		0.0			
	3						W/ SOME SILTY CLAY	GC		0.0			
S-1	4		3.6' / 4'				BOTT .4' SILTY CLAY	CL		0.0			
	5					BR	SILTY CLAY W/ SAND			0.0			
S-2	6		1.8' / 2'				S.S. FRAGS			0.0		0.0	0.0
	7					YELLOW	F. SAND W/ S.S. FRAGS	SP		0.0			
	8					TAN	SOME CLAY & SILT	SM		0.0			
	9					BR		SC		0.0			
S-3	10		2.6' / 4'							0.0			
				TD-10'									
						Sampled: 03SS340002 @ 1330							
						Sampled: 03SB340200 @ 1338							
						Sampled: 03SB340610 @ 1343							

* When rock coring, enter rock brokeness.

** Include monitor reading in 6 foot intervals @ borehole. Increase reading frequency if elevated reponse read.

Drilling Area Background (ppm): 0.0

Remarks:

Converted to Well: Yes _____ No X Well I.D. #: _____

Tetra Tech NUS, Inc.

BORING LOG

PROJECT NAME: NSWC CRANE
PROJECT NUMBER: N3960
DRILLING COMPANY: E.F.S.
DRILLING RIG: HYDROZONE DPT

BORING NUMBER: 03SB36
DATE: 6/22/01
GEOLOGIST: BOB BAUCCHUS
DRILLER: A. CERTIPAN

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth /Ft.) or Screened Interval	Soil Density/ Consistency or Rock Hardness	Color	Material Classification	USCS*	Remarks	PID/FID Reading (ppm) Sampling	Barrier BZ	Breathing**	Driller BZ**
	1			1.5'		Brown	TOP .5' SAND + GRAVEL	GP		0.0			
	2					BR	3.5' SILTY CLAY, SAND	CL		0.0			
	3						W/ S.S FRAGS + SOME	GC		0.0			
S-1	4		4' / 4'				GRAVEL			0.0	0.0	0.0	
	5					BR	CLAYEY SILT W/ SAND	ML		0.0			
S-2	6		1.4' / 2'				+ GRAVEL	GM		0.0			
	7					BR	CLAYEY SILT W/ SAND	ML		0.0			
	8						+ SS. FRAGS	GM		0.0			
	9									0.0			
S-4	10		3.7 / 4'							0.0			
				TD. 10'									

Sampled: 03SS360002 @ 1310
Sampled: 03SB360206 @ 1317
Sampled: 03SB360610 @ 1324

* When rock coring, enter rock brokeness.
** Include monitor reading in 6 foot intervals @ borehole. Increase reading frequency if elevated reponse read.

Drilling Area Background (ppm): 0.0

Remarks:

Converted to Well: Yes ____ No X Well I.D. #: ____

Tetra Tech NUS, Inc.

BORING LOG

PROJECT NAME: NSWC CRANE
PROJECT NUMBER: N3960
DRILLING COMPANY: E.F.S
DRILLING RIG: HURRICANE DPT

BORING NUMBER: 03SB39
DATE: 6/22/01
GEOLOGIST: BOB BALKOVEC
DRILLER: A. CERTAIN

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth /Ft.) or Screened Interval	Soil Density/ Consistency or Rock Hardness	Color	Material Classification	USCS*	Remarks	PID/FID Reading (ppm) Sample	Breathing Zone	Borehole	Drilling Zone
	1					WHITE GRAY	TOP .4' SAND & GRAVEL SOME CLAY	GP		0.0			
	2					BRN	3.1' CLAY, SAND & GRAVEL	GP		0.0			
	3					GRAY	↓			0.0			
S-1	4		4' / 4'			YELLOW BRN	BOTT .5' SILTY CLAY	CL		0.0			
	5				NO257	NR	TOP 1.5' SILTY CLAY w/ GRAVEL	CL/GC	SAMPLE WATER @ 5'	0.0			
	6					↓	BOTT 2.4' F-SAND, W/SS	SP		0.0			
	7					↓	FRAGS	SS	& MOTTLED	0.0			
S-2	8		3.7' / 4'			BRN TAN	↓	↓		0.0	0.0	0.0	
	9					↓	↓	↓		0.0			
S-3	10		2' / 2'			↓	↓	↓		0.0			
				T.D. 10'									
						Sampled: 03SS390002 @ 1250							
						Sampled: 03SB390206 @ 1300							
						Sampled: 03SB390000 @ 1305							

* When rock coring, enter rock brokeness.

** Include monitor reading in 6 foot intervals @ borehole. Increase reading frequency if elevated reponse read.

Drilling Area Background (ppm): 0.0

Remarks:

Converted to Well: Yes ____ No X Well I.D. #: ____

Tetra Tech NUS, Inc.

BORING LOG

PROJECT NAME: NSWC CRANE
PROJECT NUMBER: N3960
DRILLING COMPANY: E.F.S.
DRILLING RIG: HURRICANE DPT

BORING NUMBER: 03SB40
DATE: 6/22/01
GEOLOGIST: BOB BALKOVEC
DRILLER: A. CERTAIN

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth /Ft.) or Screened Interval	Soil Density/ Consistency or Rock Hardness	Color	Material Classification	USCS*	Remarks	PID/FID Reading (ppm) Sample	Sampler BZ	Borehole**	Driller BZ**
	1					WHITE	TOP .7' GRAVEL + SAND	GP		0.0			
	2					BR	BOTT 2.3' SILTY CLAY W/	CL		0.0			
	3					DK GRAY	SOME SAND + S.S. FRAGS	GC		0.0			
S-1	4		3' 4'			↓	↓	↓		0.0			
	5					YELLOW	TOP .2' F. SAND + S.S FRAGS	SP		0.0			
	6					BR	2.5' CLAY, TR SILT	CL		0.0			
	7					↓	+ SAND	↓		0.0			
S-2	8		4' 4'			YELLOW BR	BOTT 1' SAND + SS. FRAGS	SP	& ROOTS	0.0			
	9					+ GRAY	SAND, S.S FRAGS	SP		0.0			
S-3	10		2' 2'			↓	" TR SILT	↓		0.0			
				TD. 10'									
						Sampled: 03SS400002 @ 1020							
						Sampled: 03SB400206 @ 1025							
						Sampled: 03SB400610 @ 1030							

* When rock coring, enter rock brokeness.

** Include monitor reading in 6 foot intervals @ borehole. Increase reading frequency if elevated reponse read.

Drilling Area Background (ppm): 0.0

Remarks:

Converted to Well: Yes ____ No X Well I.D. #: ____

Tetra Tech NUS, Inc.

BORING LOG

PROJECT NAME: NSWC CRANE
PROJECT NUMBER: N3960
DRILLING COMPANY: E.F.S.
DRILLING RIG: HURRICANE DRT

BORING NUMBER: 03SB42
DATE: 6/22/01
GEOLOGIST: BOB BALKOVEC
DRILLER: A. CERRAN

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth /Ft.) or Screened Interval	Soil Density/ Consistency or Rock Hardness	Color	Material Classification	USCS*	Remarks	PID/FID Reading (ppm) Sample	Bumpkin BZ	Borehole	Drillers BZ
	1					WHITE	TOP .9' SAND + GRAVEL	GP	SAMPLE OR 45	0.0	0.0		
S-1	2		2' / 2'			BR	BOTT 1.1' CLAYEY SILT SAND + T-GRAVEL	ML/GM		0.0			
	3						TOP .7' CLAYEY SILT SAND + SS FRAGS	SS / ↓		0.0			
S-2	4		1.9' / 2'				BOTT 1.7' CLAY T-SILT	CL		0.0			
	5						TOP 1.5' ↓	↓		0.0			
S-3	6		2' / 2'			↓	BOTT .5' SAND SS FRAGS, T-SILT	SP/GP		0.0		0.0	0.0
	7					BR	TOP 3.5' SAND SS FRAGS	SP		0.0			
	8					BRN	GRAVEL (PEA SIZE)	GP		0.0			
	9					↓	↓	↓		0.0			
S-4	10		4' / 4'			DK BRN	BOTT .5 CLAY, T-SILT	CL		0.0			
				TD, 10'									
						Sampled: 03SS420002 @ 0955							
						Sampled: 03SB420306 @ 1000							
						Sampled: 03SB420610 @ 1010							

* When rock coring, enter rock brokeness.

** Include monitor reading in 6 foot intervals @ borehole. Increase reading frequency if elevated reponse read.

Drilling Area Background (ppm): 0.0

Remarks:

Converted to Well: Yes ____ No X Well I.D. #: ____

Tetra Tech NUS, Inc.

BORING LOG

PROJECT NAME: NSWC CRANE
PROJECT NUMBER: N3960
DRILLING COMPANY: E.F.S.
DRILLING RIG: HURRICANE DPT

BORING NUMBER: 03SB44
DATE: 6/30/01
GEOLOGIST: BOB BALKOVEC
DRILLER: A. CERTAIN

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth /Ft.) or Screened Interval	MATERIAL DESCRIPTION: Soil Density/ Consistency or Rock Hardness	Color	Material Classification	USCS*	Remarks	PID/FID Reading (ppm): Sample	Background BZ	Borehole**	Drilling BZ**
	1					Lmbr	TOP .8' SAND & GRAVEL	GP		0.0			
S-1	2		1.8' / 2'			BR	BOTT 1' CLAYEY SILT W/ SAND & GRAVEL	ML/GM		0.0			
	3					↓	CLAYEY SILT	ML		0.0			
S-2	4		1.7' / 2'				↓	↓		0.0		0.0	0.0
	5						TOP .4' CLAYEY SILT	ML		0.0			
	6					↓	↓	↓		0.0			
	7					BR	BOTT 1.6' SAND & SB CHUNKS	GP		0.0			
S-3	8		2' / 4'			BRST	T-SILT	GP		0.0			
	9					↓	↓	↓		0.0			
S-4	10		1.5 / 2'							0.0			
				TD 10'									

Sampled: 03SS440002 @ 0930
Sampled: 03SB440206 @ 0940
Sampled: 03SB440606 @ 0945

* When rock coring, enter rock brokeness.

** Include monitor reading in 6 foot intervals @ borehole. Increase reading frequency if elevated reponse read.

Drilling Area Background (ppm): 0.0

Remarks:

Converted to Well: Yes ____ No X Well I.D. #: ____

Tetra Tech NUS, Inc.

BORING LOG

PROJECT NAME: NSWC CRANE
PROJECT NUMBER: N3960
DRILLING COMPANY: E.F.S.
DRILLING RIG: HURRICANE DPT

BORING NUMBER: 03SB46
DATE: 6/22/07
GEOLOGIST: BOB BALKOVEC
DRILLER: A. CERTAIN

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth /Ft.) or Screened Interval	MATERIAL DESCRIPTION: Soil Density/ Consistency or Rock Hardness	Color	Material Classification	USCS*	Remarks	PID/FID Reading (ppm): Sample	Sampler BZ	Borehole*	Drilling BZ*
	1					WHITE	TOP .5' SAND + GRAVEL	GP		0.0			
S-1	2		1.8' / 2'			BR	BOTT 1.5' SAND, SS FRAGS, ~ TRACE SILT/CLAY	SP		0.0			
	3					BLK	T-ASH @ 2.1'		T-ASH @ 2.1'	0.0			
S-2	4		1.9' / 2'			BR	1.8' CLAY SILT	CL		0.0		0.0	0.0
	5					↓	TOP .4' ↓			0.0			
S-3	6		1.4' / 2'			BR	BOTT 1' SAND + SS FRAGS	SP/GP		0.0			
	7					YELLOW BR	SAND + S.S. FRAGS	SP		0.0			
	8						T-SILT	GP		0.0			
	9									0.0			
S-4	10		3' / 4'							0.0			
				TD 10'									
						Sampled: 03SS460002 @ 0845			VOC'S 5-7'				
						Sampled: 03SB460206 @ 0853			VOC'S 2-4'				
						Sampled: 03SB460810 @ 0900			VOC'S 6-8'				
							↳ FD062201						

* When rock coring, enter rock brokeness.

** Include monitor reading in 6 foot intervals @ borehole. Increase reading frequency if elevated reponse read.

Remarks:

Drilling Area Background (ppm): 0.0

Converted to Well: Yes ____ No X Well I.D. #: ____

Tetra Tech NUS, Inc.

BORING LOG

PROJECT NAME: NSWC CRANE
PROJECT NUMBER: N3960
DRILLING COMPANY: E.F.S.
DRILLING RIG: HURRICANE DPT

BORING NUMBER: 03SB47
DATE: 6/22/01
GEOLOGIST: BOB BALKOVEC
DRILLER: A. CERTAIN

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth /Ft.) or Screened Interval	Soil Density/ Consistency or Rock Hardness	Color	Material Classification	USCS*	Remarks	PID/FID Reading (ppm) Sample	Sampler BZ	Borehole	Drilling BZ
	1					BR	CLAY, SILT, + F-SAND	CL		0.0	0.0		
	2						+ Some SS FRAGS + ROOTS	CL		0.0			
	3									0.0			
S1 0744	4		4" / 4"							0.0		0.0	0.0
	5					BR	SAND + SS FRAGS	SP		0.0			
S2	6		1.5" / 2"				2-SILT + CLAY	CP		0.0			
	7					BR	F-SAND, SS FRAGS			0.0			
	8									0.0			
	9					TAN				0.0			
S3	10		3.5" / 4"			BR	Some CLAY @ 3.5'	CL		0.0			

Sampled: 03SS47000S @ 0746 — VOC'S FROM 1.5-2'
Sampled: 03SB470306 @ 0755 — VOC'S FROM 4-6'
Sampled: 03SB470610 @ 0800 — VOC'S FROM 9-10'

* When rock coring, enter rock brokeness.
** Include monitor reading in 6 foot intervals @ borehole. Increase reading frequency if elevated reponse read.

Drilling Area Background (ppm): 0.0

Remarks:

Converted to Well: Yes ____ No X Well I.D. #: ____

Tetra Tech NUS, Inc.

BORING LOG

PROJECT NAME: NSWC CRANE
PROJECT NUMBER: N3960
DRILLING COMPANY: E.F.S.
DRILLING RIG: HURRICANE DPT

BORING NUMBER: 03SB48
DATE: 6/22/03
GEOLOGIST: BOB BALKOVICZ
DRILLER: A. CERTAIN

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth /Ft.) or Screened Interval	MATERIAL DESCRIPTION: Soil Density/ Consistency or Rock Hardness	Color	Material Classification	USCS*	Remarks	PID/FID Reading (ppm): Sample	Barrel/Air BZ	Borehole	Drilling BZ
	1					Brown	TOP .5' SAND + GRAVEL	GP		0.0			
	2					DB	2.1' CLAYEY SILTY SAND +	SM		0.0			
	3					↓	GRAVEL	GM		0.0			
S-1	4		3.3 / 4'			↓	.6' SANDY CLAY + SILT	CL		0.0			
	5				LOOSE	RUST	F-M SAND	SP		0.0			
S-2	6		1.5' / 2'		↓	BLUE	↓	↓	BLUE SAND 6	0.0	0.0	0.0	0.0
	7					↓	TOP .3' F-M SAND	SP		0.0			
S-3	8		2' / 2'			BR	BOTT 1.7' CLAY + SILT	CL		0.0			
	9					BRZJ	SAND + SS FRAGS	SP		0.0			
S-4	10		1.4' / 2'			RUST	+ SILT	SP		0.0			
				10.0'									
						Sampled: 03SS48 0003 @ 0812			VOC's .5-2'				
						Sampled: 03SB48 0006 @ 0820			VOC's 4-6'				
						Sampled: 03SB48 0010 @ 0828			VOC's 6-8'				

* When rock coring, enter rock brokeness.

** Include monitor reading in 6 foot intervals @ borehole. Increase reading frequency if elevated reponse read.

Drilling Area Background (ppm): 0.0

Remarks:

Converted to Well: Yes _____ No X Well I.D. #: _____

APPENDIX A-3

Boring Logs and Well Construction Sheets of Existing Wells
(Murphy, May 1996)

BORING LOG
FIELD DATA

Project NWSC Groundwater Study Site Crane, IN Date 8 Oct, 1981
Location Ammunition Burning Grounds Job No. 441-G150.11GR21/22
Drill Rig Failing Inspector J. Dunbar Operator D. Taylor Surface El 554.65 Boring No. WES-3-7-81

SAMPLE NUMBER	DATE TAKEN 1981	STRATUM FROM	STRATUM TO	DRIVE FROM	DRIVE TO	SAMPLE FROM	SAMPLE TO	TYPE OF SAMPLER	Hyd. Press	Cont.	CLASSIFICATION AND REMARKS
1	8 Oct	0.0		0.0	0.5	0.0	0.72	3" Shelby Tube	100	ST	Sandy clay (CL): dark brown in
1A				0.5	1.0	0.72	0.90		140	Jar	color, low plasticity, soft, and
				1.0	1.5				180		with 20 to 30% fine to coarse sand
				1.5	2.0				220		& fine gravel.
				2.0	2.5				300		Sample length: 0.90 ft
				0.0	5.0			7" Solid Auger			Cleanout:
2	8 Oct			5.0	5.5	5.0	6.24*	3"Fixed Piston Sampler	50	ST	Sandy clay (CL): same as above.
2A				5.5	6.0	6.24	6.44		50	Jar	
				6.0	6.5				100		
				6.5	7.0				140		Sample length: 1.44 ft
				7.0	7.5				200		
				5.0	10.0			7" Solid Auger			Cleanout:

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*3" Fixed Piston Sampler = 3" F.P.S.

Sheet 1 of 3 Sheets

BORING LOG
FIELD DATA

Project _____ Site _____ Date _____
Location _____ Job No. _____
Drill Rig _____ Inspector _____ Operator _____ Surface El _____ Boring No. WES-3-7-81

SAMPLE NUMBER	DATE TAKEN 1981	STRATUM FROM	STRATUM TO	DRIVE FROM	DRIVE TO	SAMPLE FROM	SAMPLE TO	TYPE OF SAMPLER	Hyd. Press	Cont.	CLASSIFICATION AND REMARKS
3	8 Oct			10.0	10.5	10.0	11.57	3" F.P.S.	25	ST	Sandy clay (CL): same except sand
3A				10.5	11.0	11.57	11.77		50	Jar	& gravel content increased to
				11.0	11.5				75		approx. 40 to 50%.
				11.5	12.0				140		Sample length: 1.77 ft
			13.0	12.0	12.5				180		
		13.0		10.0	15.0	—	—	7" Solid Auger	—	—	Cleanout: stratum change assumed.
4	8 Oct			15.0	15.5	15.0	16.33	3" F.P.S.	50	ST	Sandy gravel (GC): brown in color
4A				15.5	16.0	16.33	16.59		120	Jar	with 50% fine to coarse sandstone
				16.0	16.5				260		fragments and 50% sand and clay.
			17.0	16.5	17.0				300-500		
											Sample length: 1.59 ft
	8 Oct			15.0	28.0	—	—	5-5/8" Rock	Bit	—	Water at 17.5-18.0 ft
		17.0	22.2								Sandstone: weathered, brown, & soft
		22.2	24.0								Limestone: grey, hard, & fine-grained

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Sheet 2 of 3 Sheets

BORING LOG
FIELD DATA

Project _____ Site _____ Date _____
Location _____ Job No. _____
Drill Rig _____ Inspector _____ Operator _____ Surface El _____ Boring No. WES-3-7-81

SAMPLE NUMBER	DATE TAKEN	STRATUM		DRIVE		SAMPLE		TYPE OF SAMPLER			CLASSIFICATION AND REMARKS
		FROM	TO	FROM	TO	FROM	TO				
		24.0	28.0								Shale: dark grey & moderately
											soft
	9 Oct										Installed well after blowing hole
											of water & fall in.

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Sheet 3 of 3 Sheets

BORING LOG
FIELD DATA

Project NIUSC Groundwater Study Site [illegible] IN Date 3 November 82
Location Ammunition Burning Grounds. Job No. 441-6150.136R.21/22
Drill Rig Failing Inspector J. Dunber Operator D. Taylor Surface El 555.16 Boring No. WES-3-10-82

SAMPLE NUMBER	DATE TAKEN 1982	STRATUM FROM	STRATUM TO	DRIVE FROM	DRIVE TO	SAMPLE FROM	SAMPLE TO	TYPE OF SAMPLER			CLASSIFICATION AND REMARKS
	3 Nov.			0.0	1.5	—	—	6 3/4" Rock Bit	—	—	6" Casing to 1.5 ft. Stickup 0.5 ft
	3 Nov	0.0	2.0	0.0	28.0	—	—	5 5/8" Rock Bit	—	—	Clay (CL): dark brown, soft, organic, sandy at 5-10%.
		2.0	10.5	—	—	—	—	—	—	—	Sandstone: reddish brown, fine-grained, weathered, friable.
		10.5	12.0	—	—	—	—	—	—	—	Sandstone: white, fine-grained soft, slightly damp.
		12.0	12.5	—	—	—	—	—	—	—	Sandstone: reddish brown, fine-grained, soft
		12.5	14.5	—	—	—	—	—	—	—	Sandstone: white, fine-grained, soft.
		14.5	23.5	—	—	—	—	—	—	—	Sandstone: reddish brown, fine-grained, soft-medium, water-moisture between 16-17 ft
		23.5	26.0	—	—	—	—	—	—	—	Limestone: grey, hard, fine-grained

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Sheet 1 of 3 Sheets

BORING LOG
FIELD DATA

Project _____ Site _____ Date _____
Location _____ Job No. _____
Drill Rig _____ Inspector _____ Operator _____ Surface El _____ Boring No. WES-3-10-82.

SAMPLE NUMBER	DATE TAKEN	STRATUM FROM	STRATUM TO	DRIVE FROM	DRIVE TO	SAMPLE FROM	SAMPLE TO	TYPE OF SAMPLER			CLASSIFICATION AND REMARKS
		26.0	28.0								Shale: bluish grey, soft
	4 Nov.										Water in hole overnight
											at depth of 15.8 ft. Blew
											water from hole and set
											monitoring well as illustrated
											on page 3.

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Sheet 2 of 3 Sheets

CHECKED BY:	DATE:	SHEET NO.

0.0 — 555.16 ft MSL

Clay (CL): dark brown, soft low plasticity, 5-10% sandy

2.0

Sandstone: reddish brown to white, weathered, soft to hard, fine-grained, water-moisture between 16-17 ft.

23.5

Limestone: grey, hard, fine-grained.

26.0

Shale: blue grey, soft.

28.0

NWSC, Crane, Indiana.

Ammunition Burning Grounds

Lithology

Boring Number: WES-3-10-82

WES FORM NO. 1253
REV OCT 1968

BORING LOG
FIELD DATA

Project NNSC Groundwater Study. Site Crane, IN Date 4 November 82
Location Ammunition Burning Grounds Job No. 441-6150.136R21/22
Drill Rig Failing Inspector J. Dunbar Operator D. Taylor Surface El 551.59 Boring No. WES-3-11-82

SAMPLE NUMBER	DATE TAKEN 1982	STRATUM FROM	STRATUM TO	DRIVE FROM	DRIVE TO	SAMPLE FROM	SAMPLE TO	TYPE OF SAMPLER			CLASSIFICATION AND REMARKS
	4 Nov.	—	—	0.0	1.5	—	—	6 3/4" Rock Bit		—	6" Casing to 1.5 ft. Stickup 0.5 ft
	4 Nov.	0.0	2.5	0.0	20.8	—	—	5 5/8" Rock Bit		—	Clay (CL): dark brown, soft,
											organic, sandy at 5-10%, damp.
		2.5	3.5	—	—	—	—	—	—	—	Sandstone: light brown, fine-
											grained, medium hard.
		3.5	16.5	—	—	—	—	—	—	—	Sandstone: same except
											softer, water-moisture at
											9.5 ft, very weathered
		16.5	18.5	—	—	—	—	—	—	—	Limestone: very hard,
											no cuttings.
		18.5	20.8	—	—	—	—	—	—	—	Shale: blue grey, soft.
											Left hole open and moved
											to next location. Hole is
											very muddy and will monitor
											before installing well.
	5 Nov.	—	—	—	—	—	—	—	—	—	Water overnight at 16.6 ft.

WES FORM JAN 74 819 EDITION OF NOV 1971 MAY BE USED

Sheet 1 of 3 Sheets

BORING LOG
FIELD DATA

Project _____ Site _____ Date _____
Location _____ Job No. _____
Drill Rig _____ Inspector _____ Operator _____ Surface El _____ Boring No. WES-3-11-82

SAMPLE NUMBER	DATE TAKEN 1982	STRATUM FROM	STRATUM TO	DRIVE FROM	DRIVE TO	SAMPLE FROM	SAMPLE TO	TYPE OF SAMPLER			CLASSIFICATION AND REMARKS
	6 Nov										Water level at 13.50 ft at 8:33
	8 Nov										Water level at 9.62 ft at 9:50
	8 Nov.										Reset on boring and
											cleaned out to 20.5 ft.
											Set well as illustrated
											on page 3.

WES FORM JAN 74 819 EDITION OF NOV 1971 MAY BE USED

Sheet 2 of 3 Sheets

SUBJECT:	COMPUTED BY:	DATE:	FILE NO.
	CHECKED BY:	DATE:	SHEET NO.

0.0 — 551.59 ft. MSL

Clay(CL): dark brown, soft, organic matter, damp, sandy at 5-10%

2.5

Sandstone: light brown, soft, and very weathered, wet from 9.5 ft.

16.5

18.5

Limestone: very hard

Shale: blue-grey, soft

20.5.

NWSC, Crane, Indiana

Ammunition Burning Grounds

Lithology

Boring Number: WES-3-11-82

WES FORM NO. 1253
REV OCT 1968

BORING LOG
FIELD DATA

Project NWSC Groundwater Study Site Crane, IN Date 4 November 82
Location Ammunition Burning Grounds Job No. 441-6150.136R21/22
Drill Rig Failing Inspector J. Dunbar Operator D. Taylor Surface El 556.50 Boring No. WES-3-12-82

SAMPLE NUMBER	DATE TAKEN 1982	STRATUM FROM	STRATUM TO	DRIVE FROM	DRIVE TO	SAMPLE FROM	SAMPLE TO	TYPE OF SAMPLER			CLASSIFICATION AND REMARKS
	4 Nov.	—	—	0.0	1.5	—	—	6 3/4" Rock Bit		—	6" Casing to 1.5 ft. Stickup 0.5 ft
		0.0	14.7	0.0	28.2	—	—	5 5/8" Rock Bit		—	Sandstone: brown, soft, well layered,
											fine-grained.
		14.7	15.7	—						—	Sandstone with clay-shale,
											very soft.
		15.7	20.5	—						—	Sandstone: brown, fine-grained,
											medium.
		20.5	22.7	—						—	Sandstone: brown, fine-grained
											hard.
		22.7	24.7	—						—	Sandstone: brown, fine-grained,
											soft.
		24.7	25.2	—						—	Sandstone: brown, fine-grained,
											hard.
		25.2	28.2	—						—	Shale: blue grey, soft.
	5 Nov										Water overnight to 15.8 ft.
											Blew water from hole and

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Sheet 1 of 3 Sheets

BORING LOG
FIELD DATA

Project _____ Site _____ Date _____
Location _____ Job No. _____
Drill Rig _____ Inspector _____ Operator _____ Surface El _____ Boring No. WES-3-12-82

SAMPLE NUMBER	DATE TAKEN	STRATUM		DRIVE		SAMPLE		TYPE OF SAMPLER			CLASSIFICATION AND REMARKS
		FROM	TO	FROM	TO	FROM	TO				
											attempted to remove high
											accumulation of mud. Rinsed
											boring several times with
											clean water and blew water
											and mud from boring. Installed
											well as illustrated on page
											3.

WES FORM JAN 74 819 EDITION OF NOV 1971 MAY BE USED

Sheet 2 of 3 Sheets

SUBJECT:	COMPUTED BY:	DATE:	FILE NO.
	CHECKED BY:	DATE:	SHEET NO.

0.0 — 556.50 ft. MSL

Sandstone: brown, fine-grained, very soft to hard, wet after 16-17 ft.

25.2

Shale: blue grey, soft.

28.2'

NWSC, Crane, Indiana

Ammunition Burning Grounds.

Lithology

Boring Number: WES-3-12-82

WES FORM NO. 1253
REV OCT 1968

BORING LOG
FIELD DATA

Project NWSC Groundwater Study Site Crane, IN Date 5 November 82
Location Ammunition Burning Grounds Job No. 441-6150.13GR 21/22
Drill Rig Failing Inspector J. Dunbar Operator D. Taylor Surface El 550.48 Boring No. WES-3-13-82

SAMPLE NUMBER	DATE TAKEN 1982	STRATUM FROM	STRATUM TO	DRIVE FROM	DRIVE TO	SAMPLE FROM	SAMPLE TO	TYPE OF SAMPLER			CLASSIFICATION AND REMARKS
				0.0	1.4			6 3/4" Rock Bit			6" Casing to 1.4 ft. Stickup 0.6 ft
	5 Nov	0.0	1.4	0.0	25.0			5 5/8" Rock Bit			Clay (CL): dark brown, damp, soft,
											organic, sand at 5-10%.
		1.4	16.0								Sandstone: reddish brown to light
											brown, fine-grained, quartz
											sandstone, very friable to hard.
											Wet-moisture between 13-14 ft
		16.0	25.0								Shale: blue-grey, soft to hard.
											limestone ?
											Hole open overnight to monitor
											water level. Water level at
											8:23, 6 November is 14.9 ft.
	6 Nov	25.0	26.0	25.0	26.0			5 5/8" Rock Bit			Shale: blue-grey, hard
											Installed well as illustrated
											on page 2.

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Sheet 1 of 2 Sheets

SUBJECT:	CHECKED BY:	DATE:	SHEET NO.

0.0 — 550.48 ft MSL

1.4 — Clay(CL): dark brown, damp, soft, organic matter, sand at 5-10%.

Sandstone: reddish brown to light brown, fine-grained, quartz sand, very friable to hard, wet from 13-14 ft

16.0 — Shale: blue grey, soft to hard.

26.0

NWSC, Crane, Indiana

Ammunition Burning Grounds

Lithology

Boring Number: WES-3-13-82

WES FORM NO. 1253
REV OCT 1968

BORING LOG
FIELD DATA

Project NWSC Groundwater Study Site Crane, IN Date 6 November 82
Location Ammunition Burning Grounds Job No. 441-6150.136R21/22
Drill Rig Failing Inspector J. Dunbar Operator D. Taylor Surface El 550.54 Boring No. WES-3-14-82

SAMPLE NUMBER	DATE TAKEN 1982	STRATUM FROM	STRATUM TO	DRIVE FROM	DRIVE TO	SAMPLE FROM	SAMPLE TO	TYPE OF SAMPLER			CLASSIFICATION AND REMARKS
	6 Nov	0.0	2.0	0.0	4.5	—	—	6 3/4" Rock Bit	—	—	Clay (CL): dark brown, soft, organic matter, sandy at 5-10%, fine-gravel at 1-5%.
				0.0	4.3	—	—	6" Casing	—	—	Stickup - 0.7 ft
	6 Nov	2.0	14.6	4.5	6.1	—	—	4"x5½" Core Barrel		—	Sandstone: very weathered, fine-grained, reddish brown, black, and light brown, slightly damp to 10 ft, wet from 10 ft, rock is very friable with little recovery except for fragments of sandstone gravel and a sticky mixture of silt and very fine-grained sand.
				6.1	7.1			" "	"		
				7.1	9.1			" "	"		
				9.1	11.8			" "	"		
	8 Nov			—	11.8	—	—	5⅝" Rock Bit		—	Water at around 10 ft - Cleanout

WES FORM JAN 74 819 EDITION OF NOV 1971 MAY BE USED

Sheet 1 of 3 Sheets

BORING LOG
FIELD DATA

Project _____ Site _____ Date _____
Location _____ Job No. _____
Drill Rig _____ Inspector _____ Operator _____ Surface El _____ Boring No. WES-3-14-82

SAMPLE NUMBER	DATE TAKEN	STRATUM FROM	STRATUM TO	DRIVE FROM	DRIVE TO	SAMPLE FROM	SAMPLE TO	TYPE OF SAMPLER			CLASSIFICATION AND REMARKS
	8 Nov.			11.8	14.5	—	—	Splitspoon	—	—	Sandstone: brown, fine-grained,
											very weathered, wet, with
											50% mixture of wet silt and very
											fine-grained sand
	8 Nov			11.8	14.5	—	—	5 5/8" Rock Bit	—	—	Cleanout
											limestone?
	8 Nov	14.6	18.0	14.5	15.7	—	—	Splitspoon	—	—	Shale: grey, blue-grey, soft, sandy
	8 Nov			14.5	20.0	—	—	5 5/8" Rock Bit	—	—	Cleanout
		18.0	18.8	—	—	—	—	—	—	—	Limestone: grey, hard
		18.8	20.0	—	—	—	—	—	—	—	Shale: blue-grey, soft
	8 Nov.										Set well as illustrated page 3.

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Sheet 2 of 3 Sheets

SUBJECT:	CHECKED BY:	DATE:	SHEET NO.

550.54 ft MSL

0.0 — Clay (CL): dark brown, soft, organic matter, sandy at 5-10%, fine-gravel at 1-5%

20 — Sandstone: brown, black and light brown, damp to 10 ft, wet from 10 ft, very weathered, fine-grained, very friable. Rock is of very poor quality.

14.6 — Shale: grey, blue-grey, soft, sandy

18.0 — Limestone: grey, hard

18.8 — Shale: blue-grey, soft

20.0

NWSC, Crane, Indiana

Ammunition Burning Grounds

Lithology

Boring Number: WES-3-14-82

WES FORM NO. 1253
REV OCT 1968

BORING LOG
FIELD DATA

Project NWSC Groundwater Study Site Crane, IN Date 22 November 82
Location Ammunition Burning Grounds Job No. 441-6150136R21/22
Drill Rig Failing Inspector J. Dunbar Operator D. Taylor Surface El 557.55 Boring No. WES-3-15-82

SAMPLE NUMBER	DATE TAKEN 1982	STRATUM FROM	STRATUM TO	DRIVE FROM	DRIVE TO	SAMPLE FROM	SAMPLE TO	TYPE OF SAMPLER			CLASSIFICATION AND REMARKS
	22 Nov.			0.0	1.2			6 3/4" Rock Bit			6" Casing to 1.2 ft - 0.8 ft stickup
		0.0	1.5	0.0	30.5			5 5/8" Rock Bit			Clay (CL): brown, soft, damp, gravelly, cobbles (limestone).
		1.5	10.0								Sandstone: brown, light brown, reddish brown, weathered, fine-grained.
		10.0	10.3								Limestone: grey, hard
		10.3	21.5								Sandstone: same as above. damp and moist beginning around 18 ft. Wet at 20 ft.
		21.5	28.0								Limestone: grey, hard, fine-grained
		28.0	30.5								Shale: grey, soft
											Installed well as illustrated on page 2. Rinsed with water to clear out mud.

WES FORM JAN 74 819 EDITION OF NOV 1971 MAY BE USED

Sheet 1 of 2 Sheets

CHECKED BY:	DATE:	SHEET NO.

557.55 ft MSL

1.5	Clay(CL): brown, soft, damp, gravelly, cobbles(LMS)
	Sandstone: brown, light brown, reddish brown, weathered, fine-grained.
10.0 10.3	Limestone: gray, hard
	Sandstone: brown, light brown, reddish brown, weathered, fine-grained, damp at 18 ft, wet at 20 ft.
21.5	
	Limestone: gray, hard, fine-grained
28.0	
	Shale: gray, soft
30.5	

NWSC, Crane, Indiana

Ammunition Burning Grounds

Lithology

Boring Number: NES-3-15-82

WES FORM NO. 1253
REV OCT 1968

BORING LOG
FIELD DATA

Project NWSC Groundwater Study Site Crane, IN Date 23 November 82
Location Ammunition Burning Grounds Job No. 441-6150.136R 21/22
Drill Rig Failing Inspector J. Dunbar Operator D. Taylor Surface El 569.99 Boring No. WES-3-16-82

SAMPLE NUMBER	DATE TAKEN 1982	STRATUM FROM	STRATUM TO	DRIVE FROM	DRIVE TO	SAMPLE FROM	SAMPLE TO	TYPE OF SAMPLER			CLASSIFICATION AND REMARKS
				0.0	1.0	—	—	6 3/4" Rock Bit	—	—	6" Casing to 1.0 ft – Stick up 1 ft
	22 Nov	0.0	5.8	0.0	27.0	—	—	5 5/8" Rock Bit	—	—	Clay (CL): brown, soft, damp,
	23 Nov			27	39.2						gravelly.
		5.8	10.0	—						—	Sandstone: reddish brown, very
											weathered, fine-grained, clayey.
		10.0	27.0	—						—	Sandstone: reddish brown,
											brown, soft, fine-grained.
		27.0	29.3	—						—	Limestone: grey, hard, fine-grained
		29.3	36.8	—						—	Sandstone: brown, fine-grained, soft
		36.8	39.2	—						—	Shale (?): no recovery, soft
											Damp at 24 ft – no water
											overnight. Water encountered
											between 28 – 29 ft. Installed
											well as illustrated on page
											2. Large cavity from 30 ft. Required
											large amount of Pea Gravel.

WES FORM JAN 74 819 EDITION OF NOV 1971 MAY BE USED

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CHECKED BY:	DATE:	SHEET NO.

0.0 569.99 ft MSL

Clay (CL): brown, soft, damp, gravelly

5.8

Sandstone: reddish brown, very weathered, fine-grained, clayey.

10.0

Sandstone: reddish brown, brown, soft, fine-grained, damp at 24 ft

27.0

Limestone: grey, hard, fine-grained, wet at 29 ft

29.3

Sandstone: brown, fine-grained, soft

36.8

Shale (?): no recovery, soft

39.2

NWSC, Crane, Indiana

Ammunition Burning Grounds

Lithology

Boring Number: NES-3-16-82

WES FORM NO. 1253
REV OCT 1968

BORING LOG
FIELD DATA

Project NWSC Groundwater Study Site Crane, IN Date 24 NOVEMBER 82
Location Ammunition Burning Grounds Job No. 441-G150.13GR21/22
Drill Rig Failing Inspector J. Dunbar Operator D. Taylor Surface El 551.71 Boring No. WES-3-17-82

SAMPLE NUMBER	DATE TAKEN 1982	STRATUM FROM	STRATUM TO	DRIVE FROM	DRIVE TO	SAMPLE FROM	SAMPLE TO	TYPE OF SAMPLER			CLASSIFICATION AND REMARKS
	24 Nov	0.0	3.5	0.0	5.0	—	—	7" Folding Auger	—	—	Silt (ML): brown, damp, soft, approximately 30% fine-grained sand.
		3.5	5.0	—	—	—	—	—	—	—	Sandy gravel (GM): brown, dark brown, reddish brown, 50% fine to coarse, angular to rounded, sandstone gravel, remaining a sand, silt, clay mixture.
				0.0	1.0	—	—	6" Casing	—	—	Stickup 1.0 ft
		5.0	19.5	5.0	27.0	—	—	5 5/8" Rock Bit	—	—	Sandstone: brown, dark brown, very weathered – friable, brittle – fine-grained. Water at 16.3 ft.
		19.5	27.0	—	—	—	—	—	—	—	Shale: bluish grey, soft, uniform.

WES FORM JAN 74 819 EDITION OF NOV 1971 MAY BE USED

Sheet 1 of 3 Sheets

BORING LOG
FIELD DATA

Project _____ Site _____ Date _____
Location _____ Job No. _____
Drill Rig _____ Inspector _____ Operator _____ Surface El _____ Boring No. WES-3-17-82

SAMPLE NUMBER	DATE TAKEN	STRATUM		DRIVE		SAMPLE		TYPE OF SAMPLER			CLASSIFICATION AND REMARKS
		FROM	TO	FROM	TO	FROM	TO				
											Required to rinse and blow
											boring with fresh water
											several times to remove mud.
											Installed well as shown
											on page 3.

WES FORM JAN 74 819 EDITION OF NOV 1971 MAY BE USED

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CHECKED BY:	DATE:	SHEET NO.

551.71 ft MSL

Silt(ML): brown, damp, soft, approximately 30% fine-grained sand.

3.5

Sandy gravel(GM): brown, dark brown, reddish brown, 50% fine to coarse, angular to rounded sandstone gravel, remaining a sand, silt, clay, mixture.

5.0

Sandstone: brown, dark brown, very weathered, fiable-brittle, fine-grained, water at 16.3 ft

19.5

Shale: bluish grey, soft, uniform.

27.0

NWSC, Crane, Indiana

Ammunition Burning Grounds

Lithology

Boring Number: WES-3-17-82

WES FORM NO. 1253
REV OCT 1968

BORING LOG
FIELD DATA

Project NWSC Groundwater Study Site Crane, IN Date 14 January 83
Location Ammunition Burning Grounds Job No. 441-6150.13GR21/22
Drill Rig Failing Inspector J. Dunbar Operator D. Taylor Surface El 551.34 Boring No. WES-3-18-83

SAMPLE NUMBER	DATE TAKEN 1983	STRATUM FROM	STRATUM TO	DRIVE FROM	DRIVE TO	SAMPLE FROM	SAMPLE TO	TYPE OF SAMPLER			CLASSIFICATION AND REMARKS
	14 JAN	0.0	2.0	0.0	29.8			5 5/8" Rock Bit			Clay (CL): dark brown, soft, damp.
		2.0	3.5								Gravelly clay (GC): brown, reddish brown, fine to coarse gravel, moist.
		3.5	5.2								Sandstone: reddish brown, soft, very fine-grained.
		5.2	10.6								Sandstone: brown, soft to medium, very fine-grained.
		10.6	18.5								Sandstone: reddish brown, soft, water between 18.5-19.0 ft.
					FROM 18.5 TO 20.0 ft - v. weathered						
		18.5	20.0								Shale: greyish green, soft, uniform
		20.0	29.8								Sandstone: grey, reddish brown, very fine-grained
											Installed well as shown on page 2. Rinsed with fresh water, very muddy. Rock is v. fractured

WES FORM JAN 74 819 EDITION OF NOV 1971 MAY BE USED

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CHECKED BY:	DATE:	SHEET NO.

0.0 551.34 ft MSL

Clay(CL): dark brown, soft, damp

2.0

Gravelly Clay (GC): brown, reddish brown, fine to coarse gravel, moist.

3.5

5.2 Sandstone: reddish brown, soft, very fine-grained.

Sandstone: brown, soft to medium, very fine-grained

10.6

Sandstone: reddish brown, soft, very fine-grained.

18.5

Shale: greyish green, weathered, uniform, water between 18.5 and 19.0 ft

20.0

Sandstone: grey, reddish brown, very fine-grained.

29.8'

NWSC, Crane, Indiana

Ammunition Burning Grounds

Lithology

Boring Number: WES-3-18-83

WES FORM NO. 1253
REV OCT 1968

BORING LOG
FIELD DATA

Project NWSC Groundwater Study Site Crane, IN Date 15 JANUARY 83
Location Ammunition Burning Grounds Job No. 441-6150.136EE1/22
Drill Rig Failing Inspector J. Dunbar Operator D. Taylor Surface El 556.87 Boring No. WES-3-19-83

SAMPLE NUMBER	DATE TAKEN 1983	STRATUM FROM	STRATUM TO	DRIVE FROM	DRIVE TO	SAMPLE FROM	SAMPLE TO	TYPE OF SAMPLER			CLASSIFICATION AND REMARKS
	15 JAN	0.0	3.0	0.0	20.0			5 5/8" Rock Bit			Gravelly Clay (GC): brown, soft, damp, organic matter (roots), fine to coarse gravel.
		3.0	8.5								Sandstone: grey, white, soft, fine-grained.
		8.5	13.5								Sandstone: reddish brown, fine-grained, weathered.
		13.5	24.0								Sandstone (?): large cavity from 13.5 to 20.0, no cuttings return.
				0.0	24.0			6 3/4" Rock Bit			Cleanout for Casing
				0.0	24.0			7 3/4" Rock Bit			" " ". Water at 23.5 ft
		24.0	28.2	24.0	35.0			5 5/8" Rock Bit			Sandstone (?) harder
		28.2	35.0								Sandstone: grey, soft, slight return on cuttings, fine-grained
				Did not use casing. Able to drill without.							Installed well as shown on page 3. Rock is fractured

WES FORM JAN 74 819 EDITION OF NOV 1971 MAY BE USED

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CHECKED BY:	DATE:	SHEET NO.

0.0' 556.87

Gravelly Clay (CL): brown, soft, damp, organic matter (roots), fine to coarse gravel.

30

Sandstone: grey, white, soft, fine-grained

8.5

Sandstone: reddish brown, fine-grained, weathered

13.5

Sandstone (?) no cuttings returned, large cavity from 13.5 to 20.0

24.0

Sandstone (?): harder.

28.2

Sandstone: grey, soft, fine-grained, slight return on cuttings

350'

NWSC, Crane, Indiana

Ammunition Burning Grounds

Lithology

Boring Number: WSS-3-19-83

WES FORM NO. 1253
REV OCT 1968

BORING LOG
FIELD DATA

Project NWSC Groundwater Study Site Crane, IN Date 17 January 83
Location Ammunition Burning Grounds Job No. 441-6150.136R21/22
Drill Rig Failing Inspector J. Dunbar Operator D. Taylor Surface El 553.33 Boring No. WES-3-20-83

SAMPLE NUMBER	DATE TAKEN 1983	STRATUM FROM	STRATUM TO	DRIVE FROM	DRIVE TO	SAMPLE FROM	SAMPLE TO	TYPE OF SAMPLER			CLASSIFICATION AND REMARKS
	17 Jan	0.0	1.5	—	—	0.0	29.5	5 7/8" Rock Bit	—	—	Clay (CL): brown, soft, damp, sandy, organic matter (leaves).
		1.5	13.0	—	—	—	—	—	—	—	Sandstone: reddish brown, soft, weathered, fractured
		13.0	21.0	—	—	—	—	—	—	—	Sandstone: same, browner color, water at 19.5 ft.
		21.0	23.5	—	—	—	—	—	—	—	Sandstone: brown, hard, slightly weathered.
		23.5	29.5	—	—	—	—	—	—	—	Shale: greenish grey, soft, uniform.
											Installed well as shown on page 2. Rock is v. fractured.

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CHECKED BY:	DATE:	SHEET NO.

0.0 553.33 ft MSL

Clay (CL): brown, soft, damp, sandy, organic matter (leaves).

1.5

Sandstone: reddish brown, soft, weathered

13.0

Sandstone: brown, soft, weathered, water at 19.5

21.0

Sandstone: brown, hard, slightly weathered.

23.5

Shale: greenish grey, soft, uniform

29.5

NWSC, Crane, Indiana

Ammunition Burning Grounds

Lithology

Boring Number: WES-3-20-83

WES FORM NO. 1253
REV OCT 1968

BORING LOG
FIELD DATA

Project NWSC Groundwater Study Site Crane, IN Date 27 January 83
Location Ammunition Burning Grounds Job No. 441-6150.136821/22
Drill Rig Failing Inspector J. Dunbar Operator D. Taylor Surface El 558.28 Boring No. WES-3-21-83

SAMPLE NUMBER	DATE TAKEN	STRATUM FROM	STRATUM TO	DRIVE FROM	DRIVE TO	SAMPLE FROM	SAMPLE TO	TYPE OF SAMPLER			CLASSIFICATION AND REMARKS
				0.0	1.0			6 3/4" Rock Bit			6" Casing - Stickup 1.0 ft
		0.0	7.5					5 5/8" Rock Bit			Gravelly clay (CL): soft, brown clay with 40% fine to coarse sandstone gravel.
		7.5	8.5								Sandstone: brown, uniform, fine-grained, weathered, medium.
		8.5	22.6								Limestone: grey, fine-grained, very hard. Water at 17 ft.
		22.6	27.5								Shale: grey, dark grey, soft
											Installed well as shown in figure 2.

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Sheet 1 of 3 Sheets

CHECKED BY:	DATE:	SHEET NO.

0.0 558.28 ft MSL

Gravelly clay (CL): soft, brown clay with 40% fine to coarse sandstone gravel.

7.5'
8.5'

Sandstone: brown, fine-grained, uniform, weathered, medium

Limestone: grey, fine-grained, very hard, water at 17ft.

22.6'

Shale: grey, dark grey, soft.

27.5

NWSC, Crane, Indiana

Ammunition Burning Grounds

Lithology

Boring Number: WES-3-2ϕ-83

WES FORM NO. 1253
REV OCT 1968

BORING LOG
FIELD DATA

Project NWSC Groundwater Study Site Crane, IN Date 27 January 83
Location Ammunition Burning Grounds Job No. 441-6150.13G221/22
Drill Rig Failing Inspector J. Dunbar Operator D. Taylor Surface El 556.81 Boring No. WES-3-22-83

SAMPLE NUMBER	DATE TAKEN 1983	STRATUM FROM	STRATUM TO	DRIVE FROM	DRIVE TO	SAMPLE FROM	SAMPLE TO	TYPE OF SAMPLER			CLASSIFICATION AND REMARKS
	27 Jan			0.0	1.0			6 3/4" Rock Bit			6" Casing - Stickup 1.0 ft
		0.0	9.5	0.0	29.5			5 5/8 Rock Bit			Gravelly clay (CL): brown, soft, with 40% fine to coarse, weathered sandstone gravel.
		9.5	23.8								Sandstone: brown, fine-grained, weathered, soft. Very weathered from 13.0 to 15.5 and reddish brown. Water at 19.5 ft.
		23.8	27.7								Limestone: grey, fine-grained, very hard
		27.7	29.3								Slate: bluish grey, soft, uniform.
											Installed well as shown on page 2. ON 28 January 83

WES FORM JAN 74 819 EDITION OF NOV 1971 MAY BE USED

Sheet 1 of 3 Sheets

CHECKED BY:	DATE:	SHEET NO.

0.0 556.81 ft MSL

Gravelly clay(CL): brown, soft with 40% fine to coarse, weathered sandstone gravel

9.5

Sandstone: brown, fine-grained, weathered, soft. Very weathered from 13.0 to 15.5 ft and reddish brown. Water at 19.5 ft.

23.8

Limestone: grey, fine-grained, very hard

27.7

Shale: bluish grey, soft, uniform

29.5

NWSC, Crane, Indiana

Ammunition Burning Grounds

Lithology

Boring Number: WES-3-22-83

WES FORM NO. 1253
REV OCT 1968

BORING LOG
FIELD DATA

Project NWSC Groundwater Study Site Crane, IN Date 28 January 83
Location Ammunition Burning Grounds Job No. 441-G150.13GR21/22
Drill Rig Failing Inspector J. Dunbar Operator D. Taylor Surface El 561.40 Boring No. WES-3-23-83

SAMPLE NUMBER	DATE TAKEN 1983	STRATUM FROM	STRATUM TO	DRIVE FROM	DRIVE TO	SAMPLE FROM	SAMPLE TO	TYPE OF SAMPLER			CLASSIFICATION AND REMARKS
	28Jan			0.0	1.0			6 3/4" Rock Bit			6" Casing - 1 ft stickup
		0.0	5.0	0.0	29.7			5 5/8" Rock Bit			Clay (CL) and sandstone: brown, reddish brown, very weathered, soft.
		5.0	22.5								Sandstone: brown, fine-grained, very weathered, very soft, rock quality is poor to very poor. Water at 19.0 ft.
		22.5	24.0								Limestone: grey, very hard
		24.0	29.7								Shale: blueish grey, soft
											Installed well as shown on page 2.

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CHECKED BY:	DATE:	SHEET NO.

0.0 561.40 ft MSL

Clay (CL) and sandstone: brown, reddish brown, soft, very weathered, fine-grained

50

Sandstone: brown, fine-grained, very weathered, very soft, rock quality is poor to very poor. Water at 19. ft.

225

240

Limestone: grey, very hard

Shale: bluish grey, soft

29.7

NWSC, Crane, Indiana

Ammunition Burning Grounds

Lithology

Boring Number: WES-3-23-83

WES FORM NO. 1253
REV OCT 1968

BORING LOG
FIELD DATA

Project NWSC Groundwater Study Site Crane, IN Date 6 February 83
Location Ammunition Burning Grounds Job No. 441-6150.13GR21/22
Drill Rig Failing Inspector J. Dunbar Operator D. Taylor Surface El 587.50 Boring No. WES-3-24-83

SAMPLE NUMBER	DATE TAKEN 1983	STRATUM FROM	STRATUM TO	DRIVE FROM	DRIVE TO	SAMPLE FROM	SAMPLE TO	TYPE OF SAMPLER			CLASSIFICATION AND REMARKS
	6 Feb			0.0	1.0			6 3/4" Rock Bit			6" Casing - 1 ft Stickup
		0.0	1.5	0.0	40.0			5 5/8" Rock Bit			Clay (CL): reddish brown, soft, damp.
		1.5	6.0								Sandstone: tan, light brown, fine-grained, uniform, soft to medium.
		6.0	7.5								Sandstone and clay (CL): see above.
		7.5	15.0								Sandstone: tan, light brown, fine-grained, uniform, soft to medium.
		15.0	16.3								Sandstone: reddish brown, medium grained, soft.
		16.3	34.5								Sandstone: tan, light brown, fine-grained, uniform, soft to medium.
		34.5	38.5								Limestone: grey, very hard
		38.5	39.0								Sandstone: brown, fine-grained, soft

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BORING LOG
FIELD DATA

Project _____ Site _____ Date _____
Location _____ Job No. _____
Drill Rig _____ Inspector _____ Operator _____ Surface El _____ Boring No. WES-3-24-83

SAMPLE NUMBER	DATE TAKEN 1983	STRATUM FROM	STRATUM TO	DRIVE FROM	DRIVE TO	SAMPLE FROM	SAMPLE TO	TYPE OF SAMPLER			CLASSIFICATION AND REMARKS
	7Feb	39.0	60.0	40.0	60.0	—	—	5 5/8" Rock Bit	—	—	Limestone: grey, very hard.
											Very little to no cuttings
											after 40 ft. At 60 ft pulled
											rods and had water-mud on
											rods starting at 46 ft. Installed
											well as shown on page 5.
											Cavities at 48 ft and 55 ft
											ranging 1 ft in length.

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SUBJECT:	CHECKED BY:	DATE:	SHEET NO.

587.50 ft MSL

0.0

1.5 — Clay (CL): reddish brown; soft, damp.

Sandstone: tan, light brown, fine-grained, uniform, medium to soft.

6.0

7.5 — Sandstone and clay (CL): see above.

Sandstone: tan, light brown, fine-grained, uniform, medium to soft

150

163 — Sandstone: reddish brown, medium-grained, soft.

Sandstone: tan, light brown, fine-grained, medium to soft

34.5

Limestone: grey, very hard.

38.5

39.0 — Sandstone: brown, fine-grained, soft

Limestone: grey, very hard, very little to no cuttings from 40 ft. water at 46 ft, cavities at 48 ft and 55 ft ranging 1 ft in length.

600

NWSC, Crane, Indiana

Ammunition Burning Grounds

Lithology

Boring Number: WES-3-24-83

WES FORM NO. 1253
REV OCT 1968

BORING LOG
FIELD DATA

Project NWSC Groundwater Study Site Crane, IN Date 7 February 83
Location Ammunition Burning Grounds Job No. 441-6150.136R21/22
Drill Rig Failing Inspector J. Dunbar Operator D. Taylor Surface El 572.14 Boring No. WES-3-25-83

SAMPLE NUMBER	DATE TAKEN	STRATUM FROM	STRATUM TO	DRIVE FROM	DRIVE TO	SAMPLE FROM	SAMPLE TO	TYPE OF SAMPLER			CLASSIFICATION AND REMARKS
	7 Feb.			0.0	10	—	—	6 3/4" Rock Bit	—	—	6" Casing - 1 ft Stickup
		0.0	28.5	0.0	40.0	—	—	5 5/8" Rock Bit	—	—	Sandstone: tan, light brown,
											reddish brown, fine-grained,
											soft to medium with very
											soft weathered area at 7 ft.
											Water at 28 ft.
		28.5	40.0	—	—	—	—	—	—	—	Limestone: grey, very hard, fine
											grained, grading into a shale
											from 36 ft.
											Lost rock bit and 6 ft of drill
											rod in hole. Spent several hours
											attempting to remove and failed.
	8 Feb			0.0	40.0	—	—	5" Rock Bit	—	—	Moved over 5 ft and drilled
											another hole. Grouted up hole
											with rod. Lithology same as above
											Installed well as shown on

WES FORM JAN 74 819 EDITION OF NOV 1971 MAY BE USED

Sheet 1 of 4 Sheets

BORING LOG
FIELD DATA

Project _____ Site _____ Date _____
Location _____ Job No. _____
Drill Rig _____ Inspector _____ Operator _____ Surface El _____ Boring No. WES-3-25-83

SAMPLE NUMBER	DATE TAKEN	STRATUM		DRIVE		SAMPLE		TYPE OF SAMPLER			CLASSIFICATION AND REMARKS
		FROM	TO	FROM	TO	FROM	TO				
											page 3. Water coming in
											at 28 ft is very slow

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Sheet 2 of 4 Sheets

SUBJECT	CHECKED BY:	DATE:	SHEET NO.

0.0 572.14 ft MSL

Sandstone: tan, light brown, reddish brown, fine-grained, soft to medium, water at 28 ft.

28.5

Limestone: grey, very hard, fine-grained, grading into a shale from 36 ft

40.0

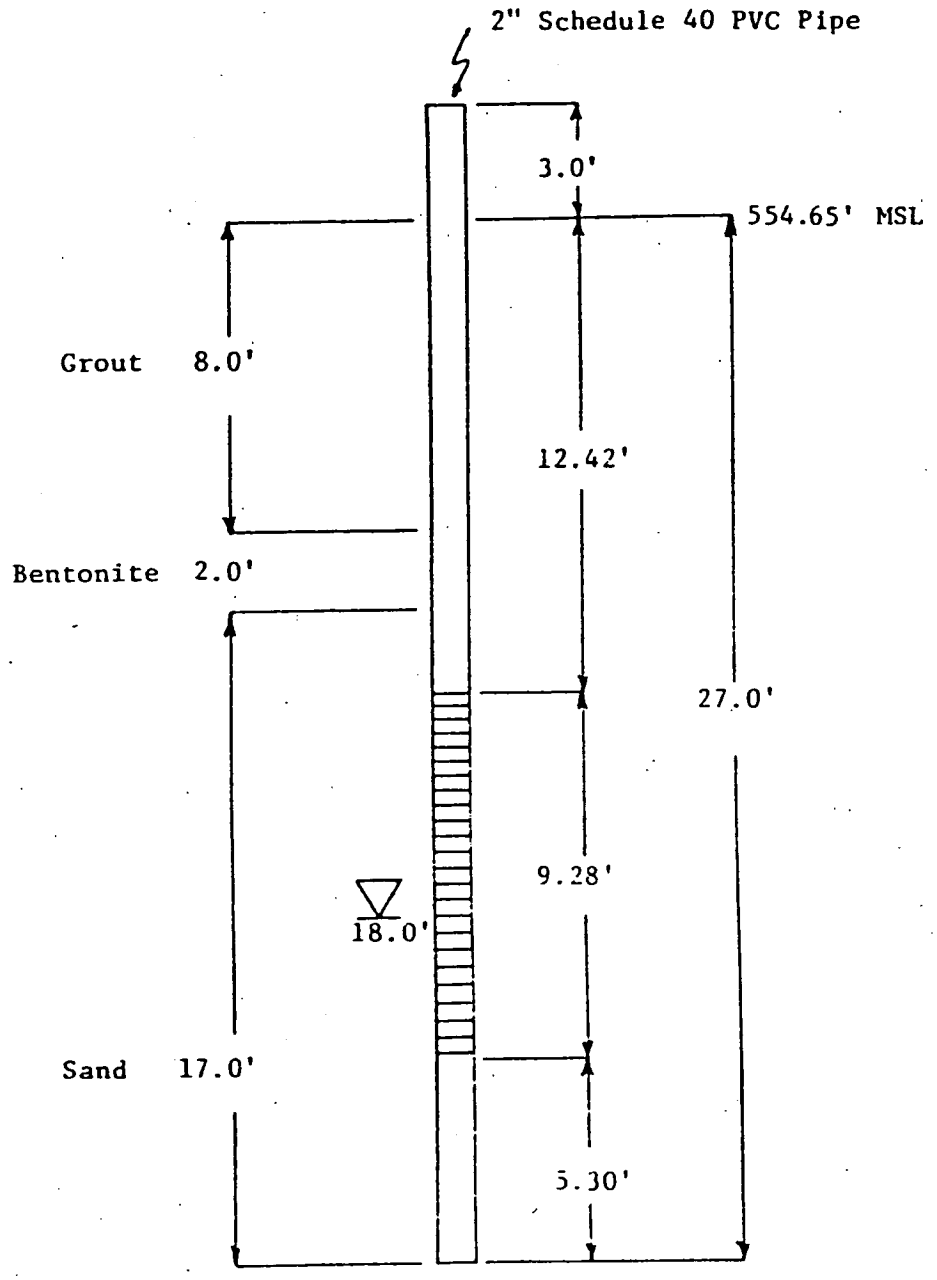
NWSC, Crane, Indiana

Ammunition Burning Grounds

Lithology

Boring Number: WES-3-25-83

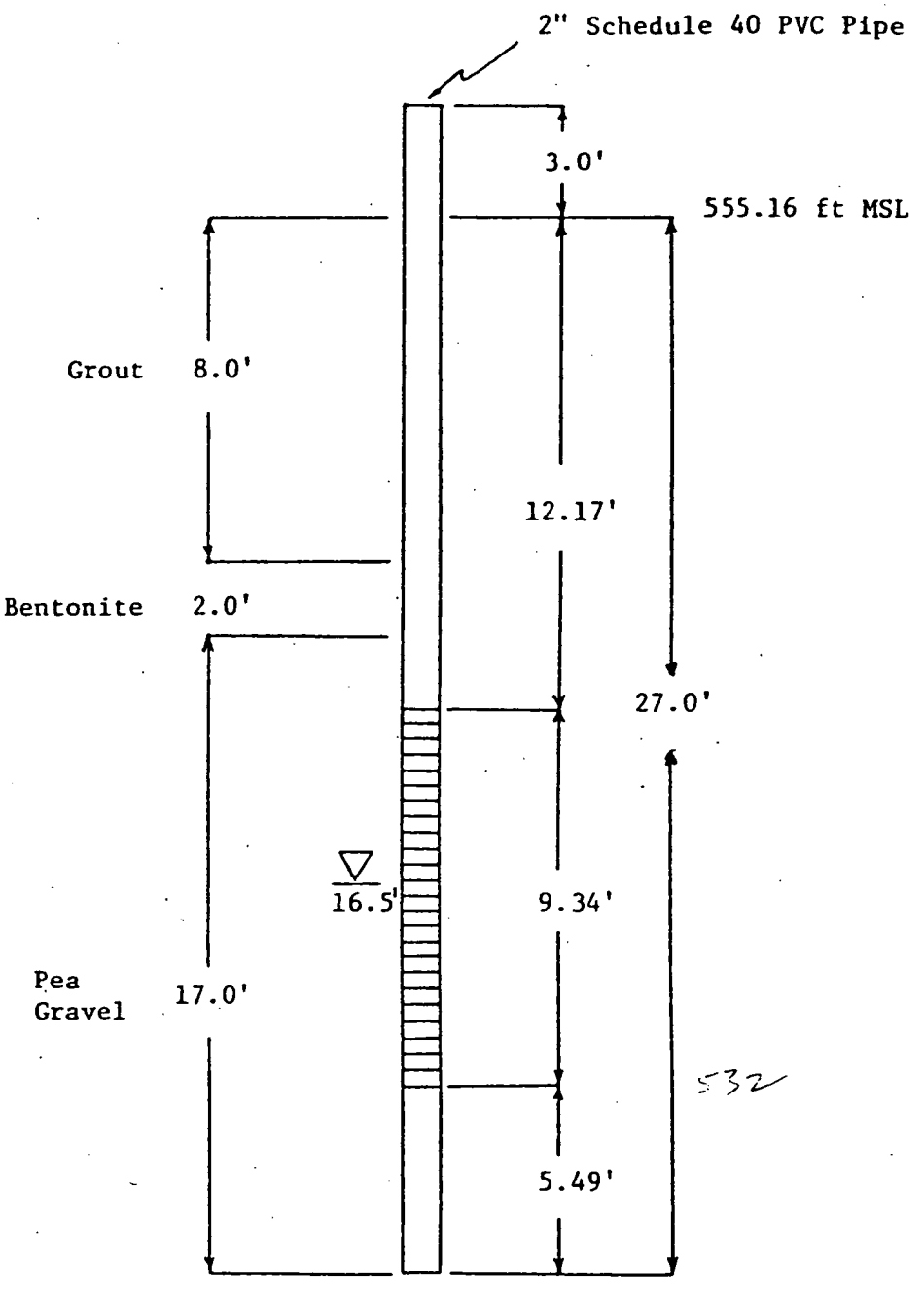
WES FORM NO. 1253
REV OCT 1968



Water depth at time of drilling

Well screen

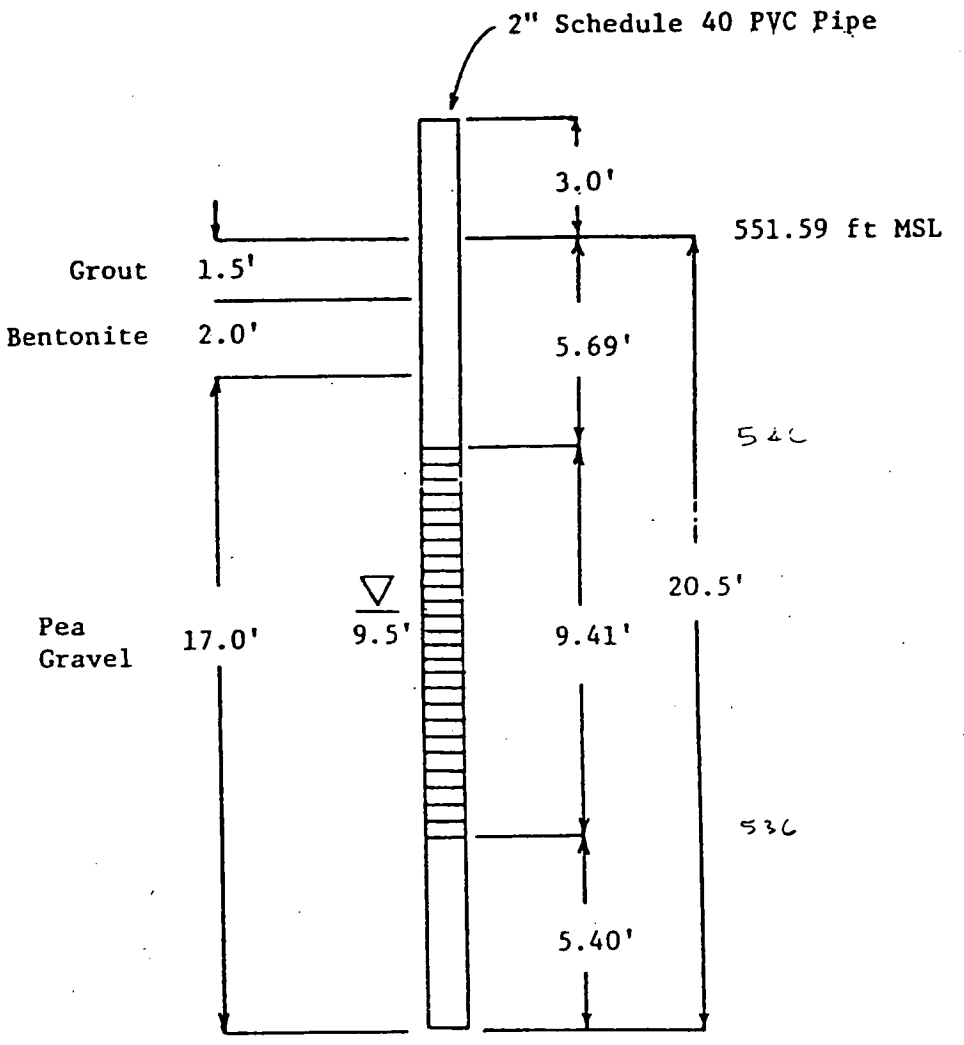
NWSC, Crane, Indiana
Ammunition Burning G
Well Completion
Boring Number: WES-



▽ Water depth at time of drilling

Well Screen

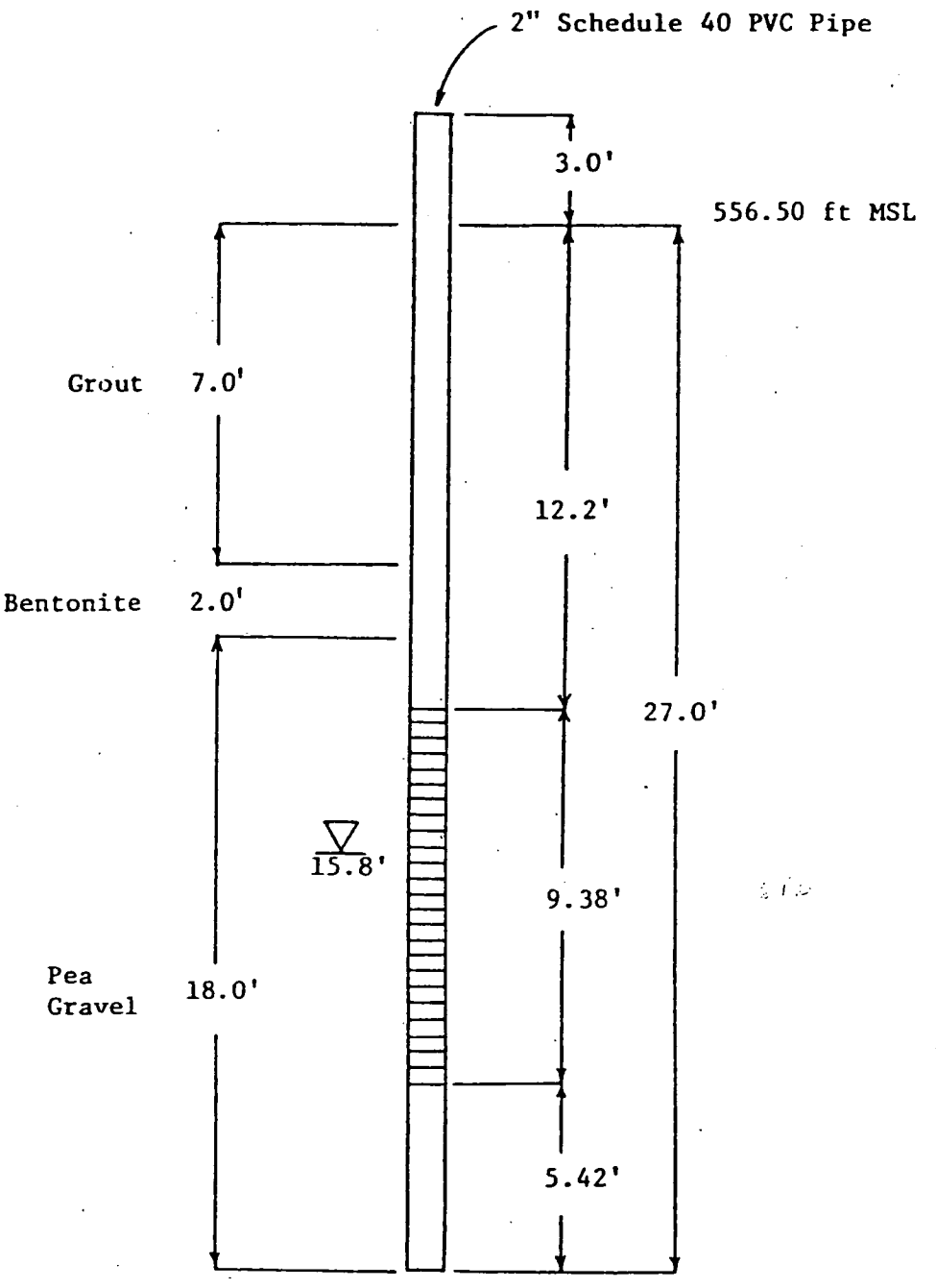
NWSC, Crane, Indiana
Ammunition Burning Grounds
Well Completion
Boring Number: WES-3-10-82



Water depth at time of drilling

Well Screen

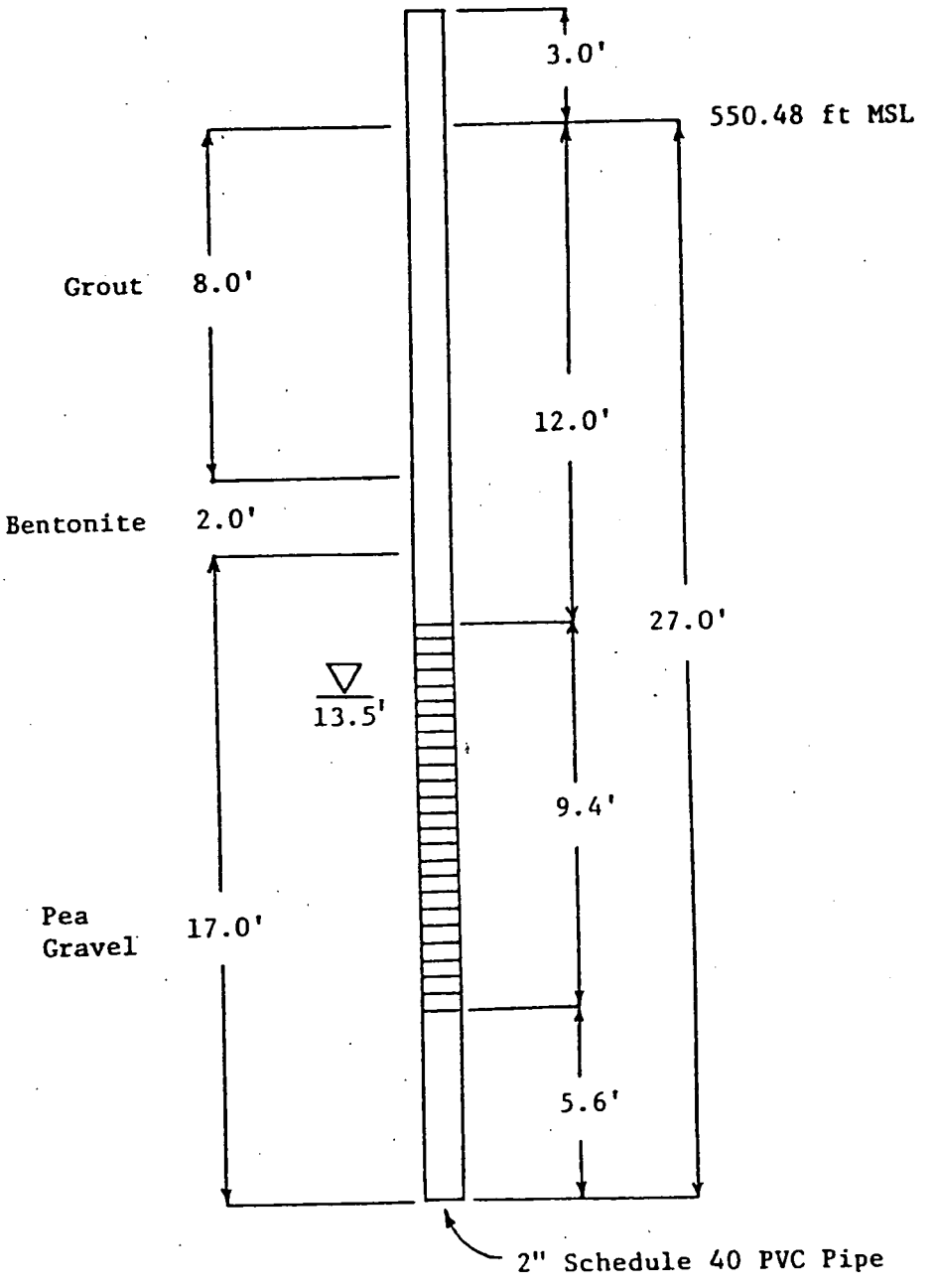
NWSC, Crane, Indiana
Ammunition Burning Grounds
Well Completion
Boring Number: WES-3-11-82



Water depth at time of drilling

Well Screen

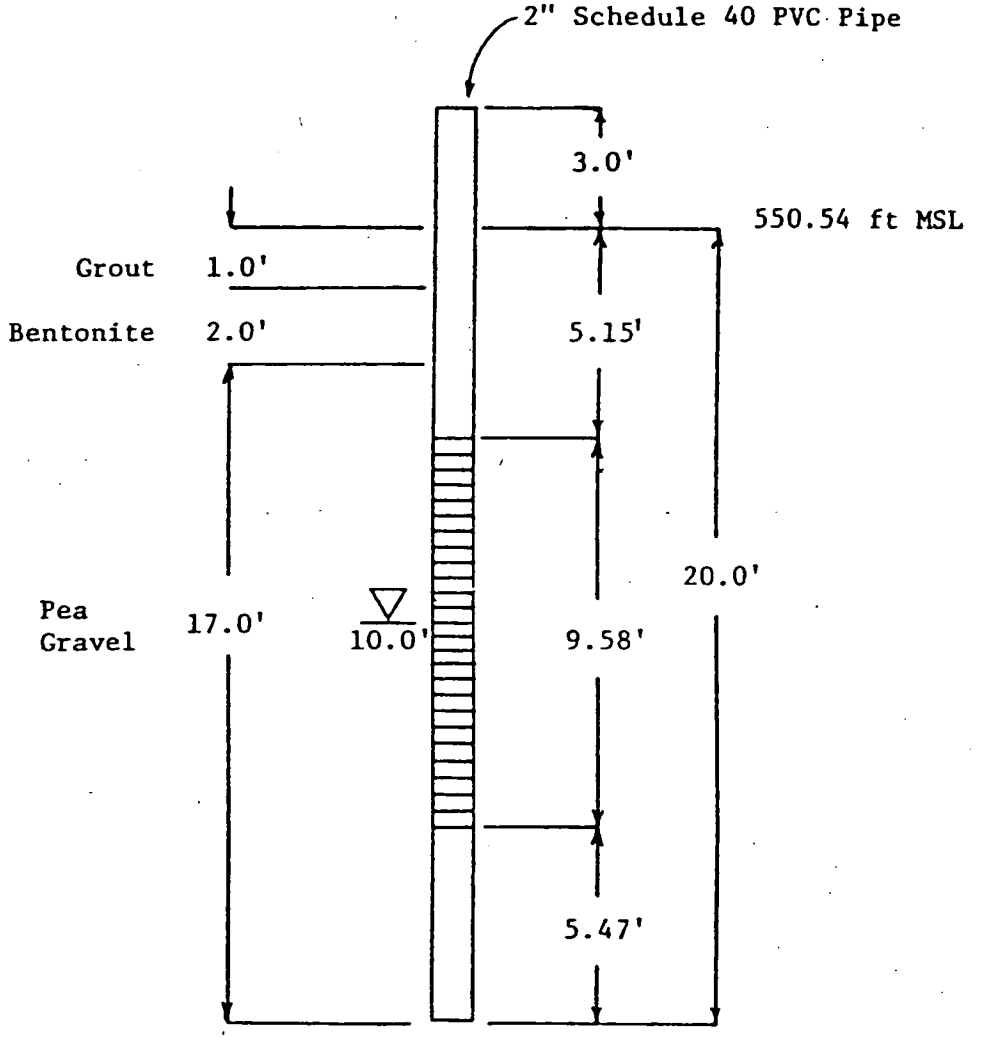
NWSC, Crane, Indiana
Ammunition Burning Grounds
Well Completion
Boring Number: WES-3-12-82



Water level at time of drilling

Well Screen

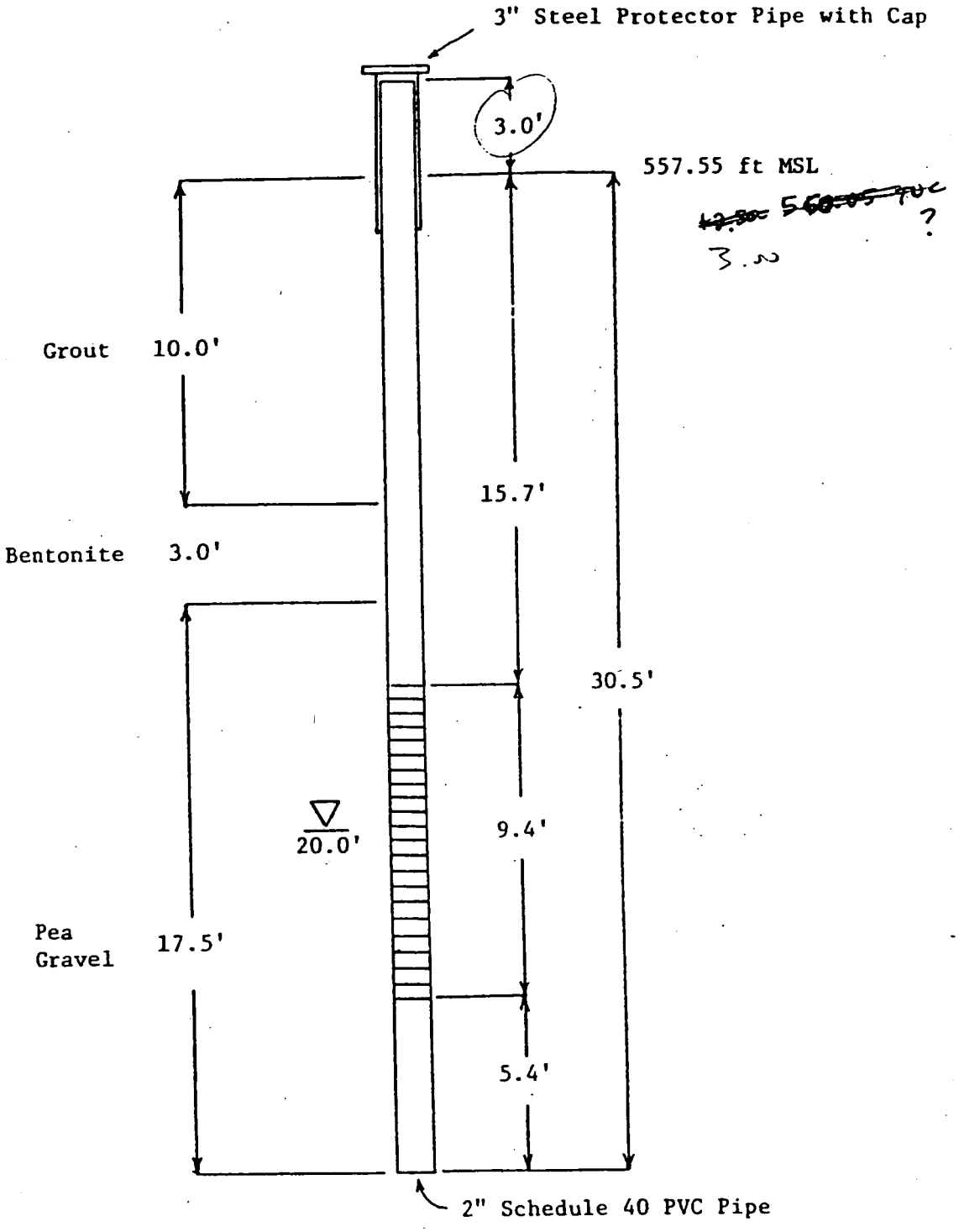
NWSC, Crane, Indiana
Ammunition Burning Grounds
Well Completion
Boring Number: WES-3-13-82



Water depth at time of drilling

Well Screen

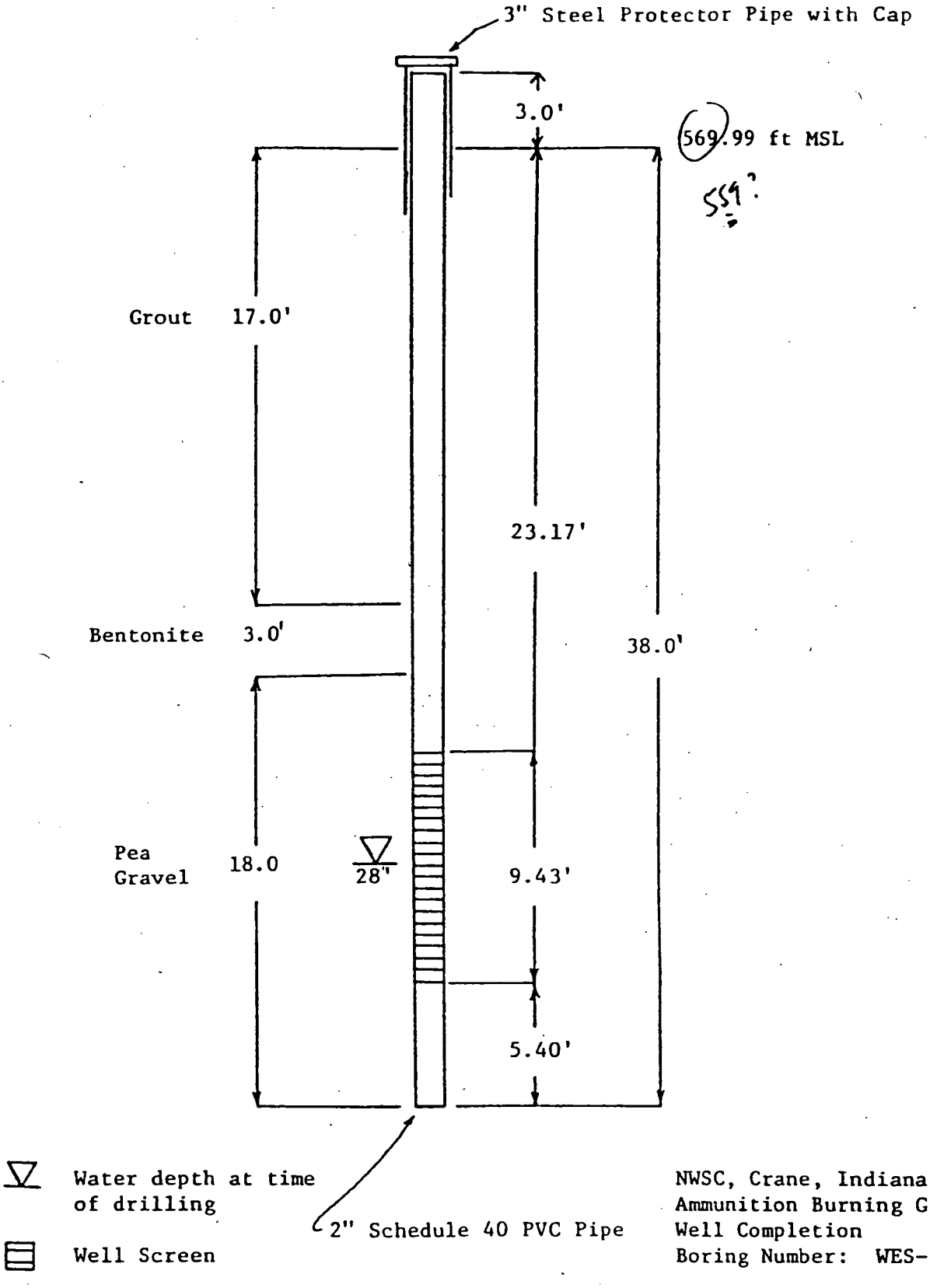
NWSC, Crane, Indiana
Ammunition Burning Grounds
Well Completion
Boring Number: WES-3-14-82



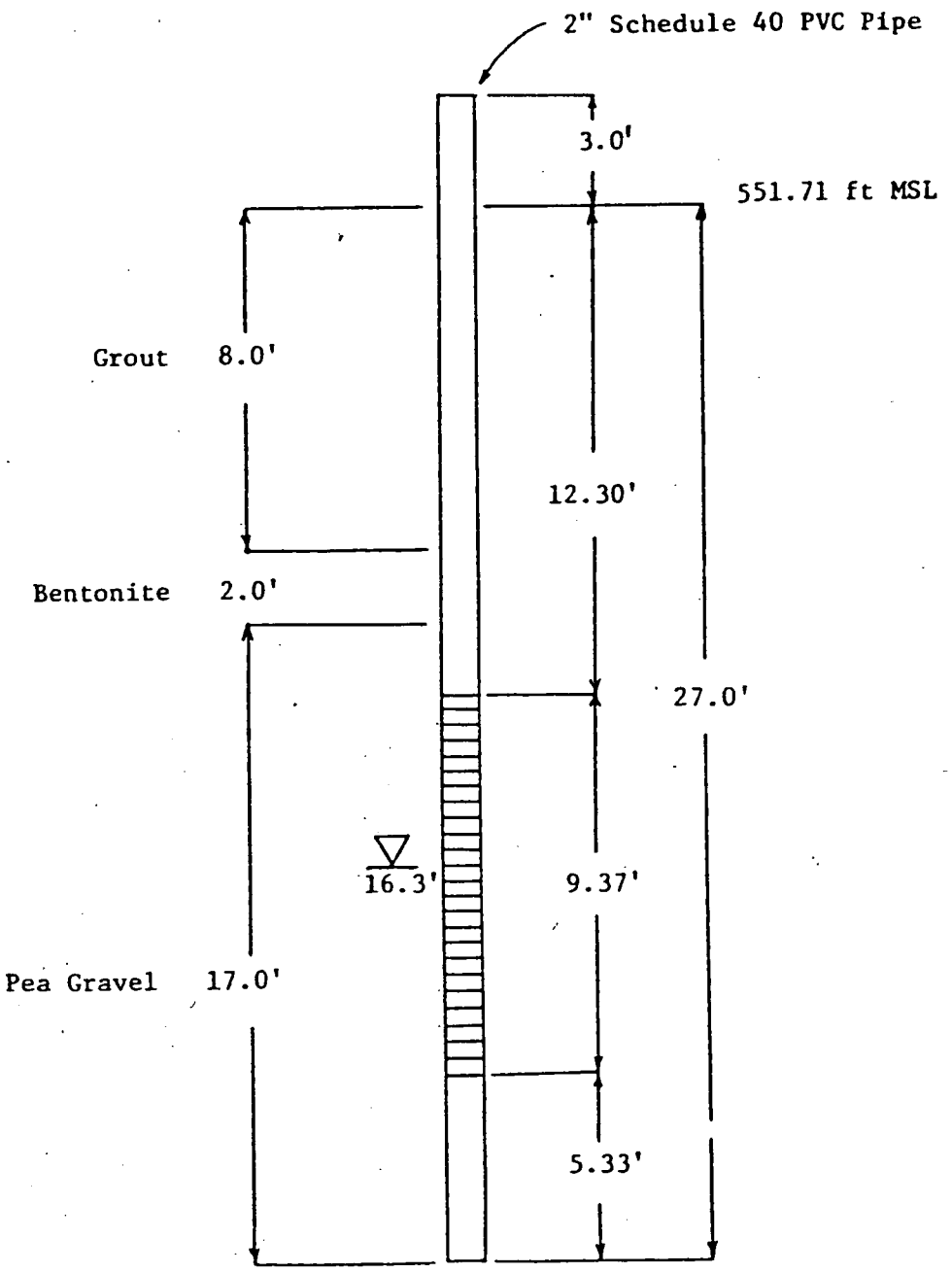
Water depth at time of drilling

Well Screen

NWSC, Crane, Indiana
Ammunition Burning Grounds
Well Completion
Boring Number: WES-3-15-82



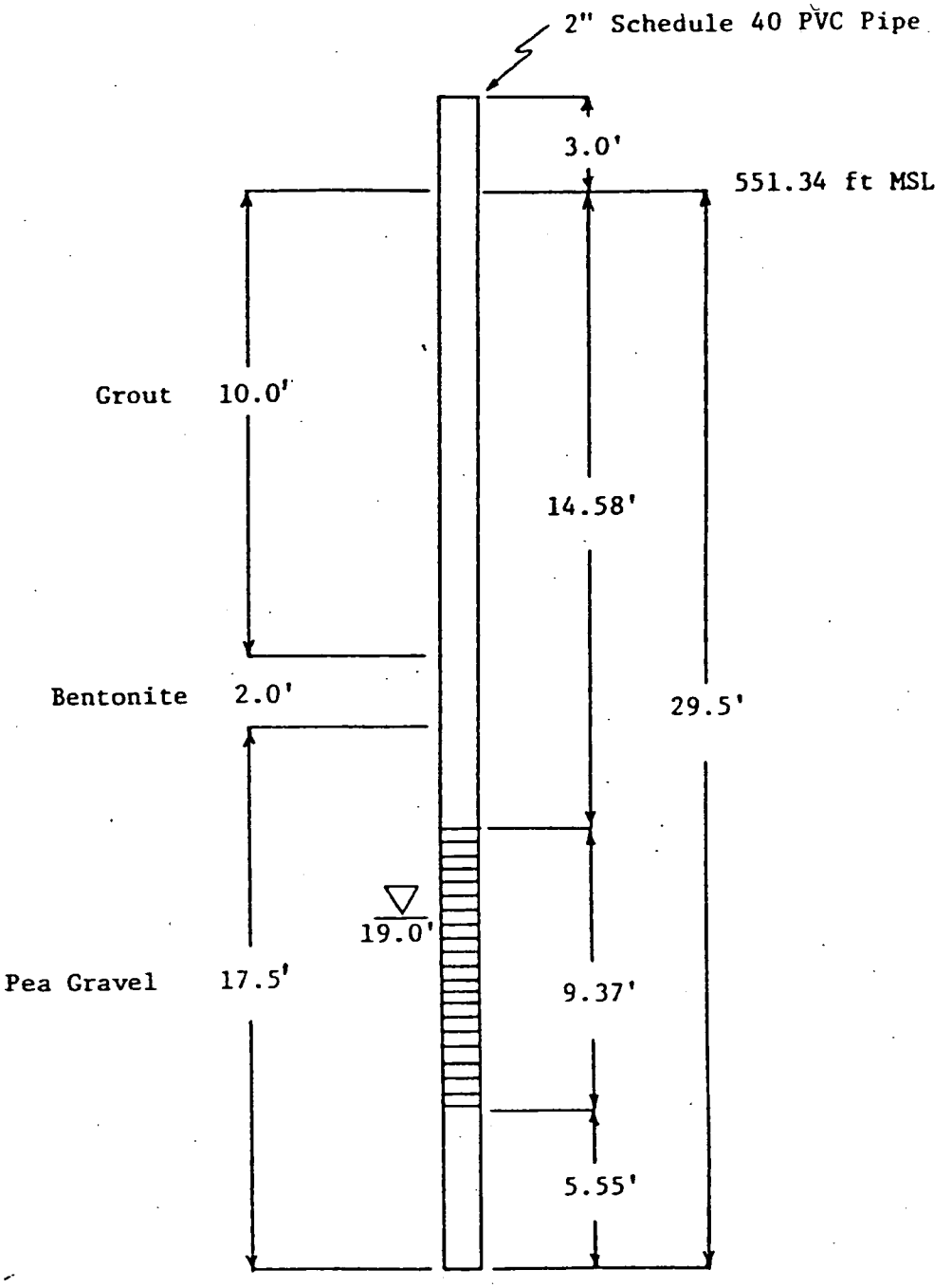
NWSC, Crane, Indiana
Ammunition Burning Grounds
Well Completion
Boring Number: WES-3-16-82



Water depth at time of drilling

Well Screen

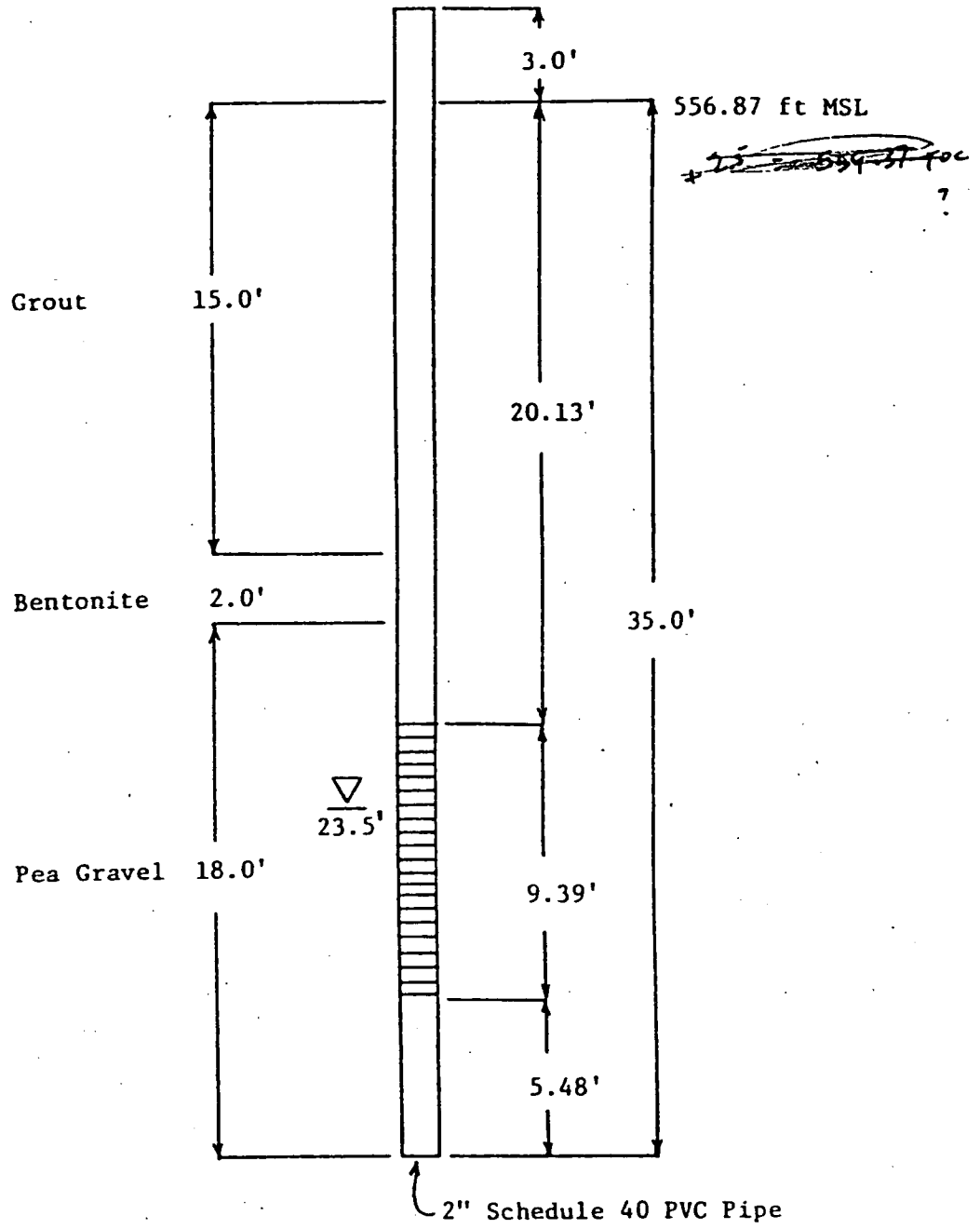
NWSC, Crane, Indiana
Ammunition Burning Grounds
Well Completion
Boring Number: WES-3-17-82



Water depth at time of drilling

Well Screen

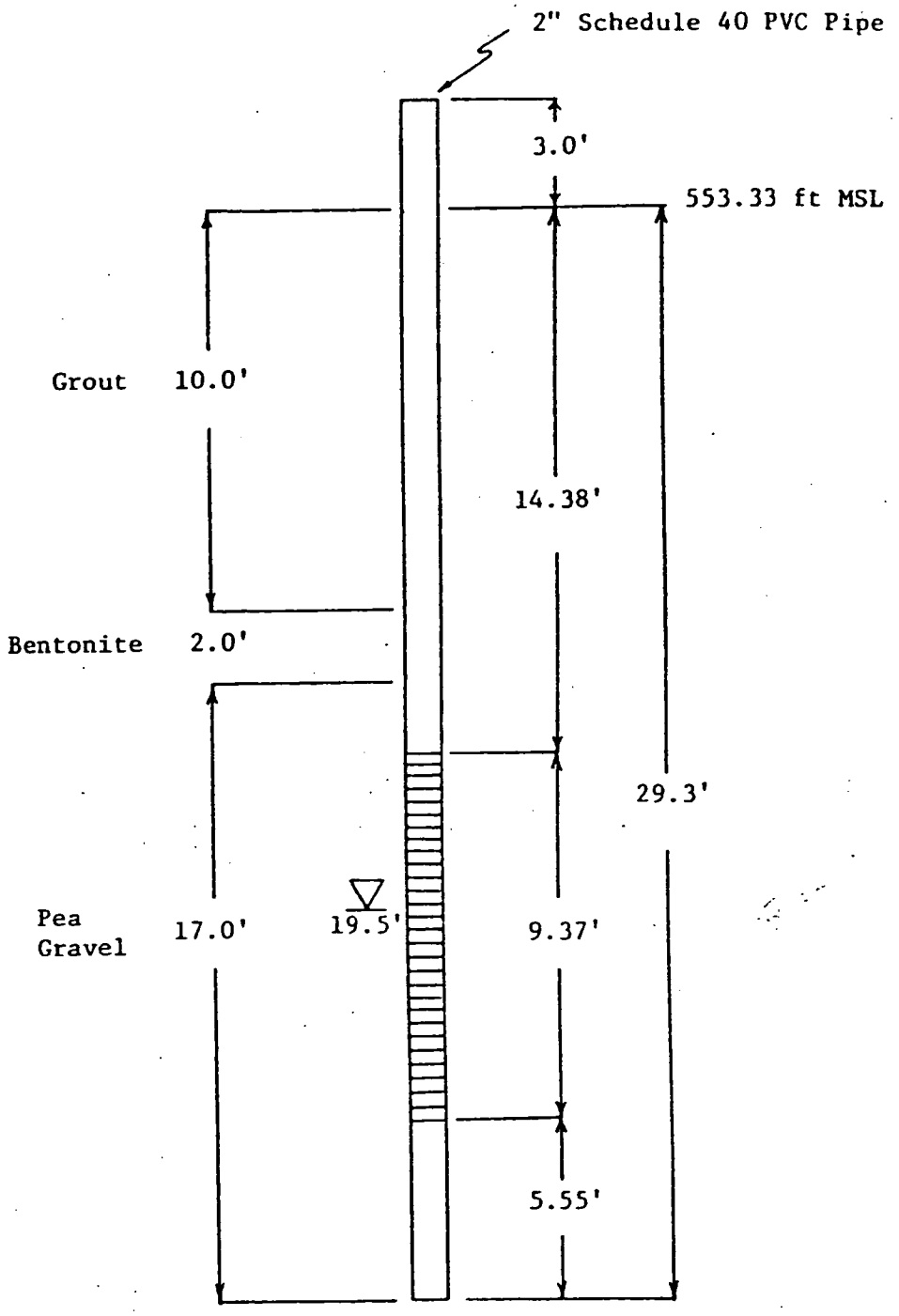
NWSC, Crane, Indiana
Ammunition Burning Grounds
Well Completion
Boring Number: WES-3-18-83



Water depth at time of drilling

Well screen

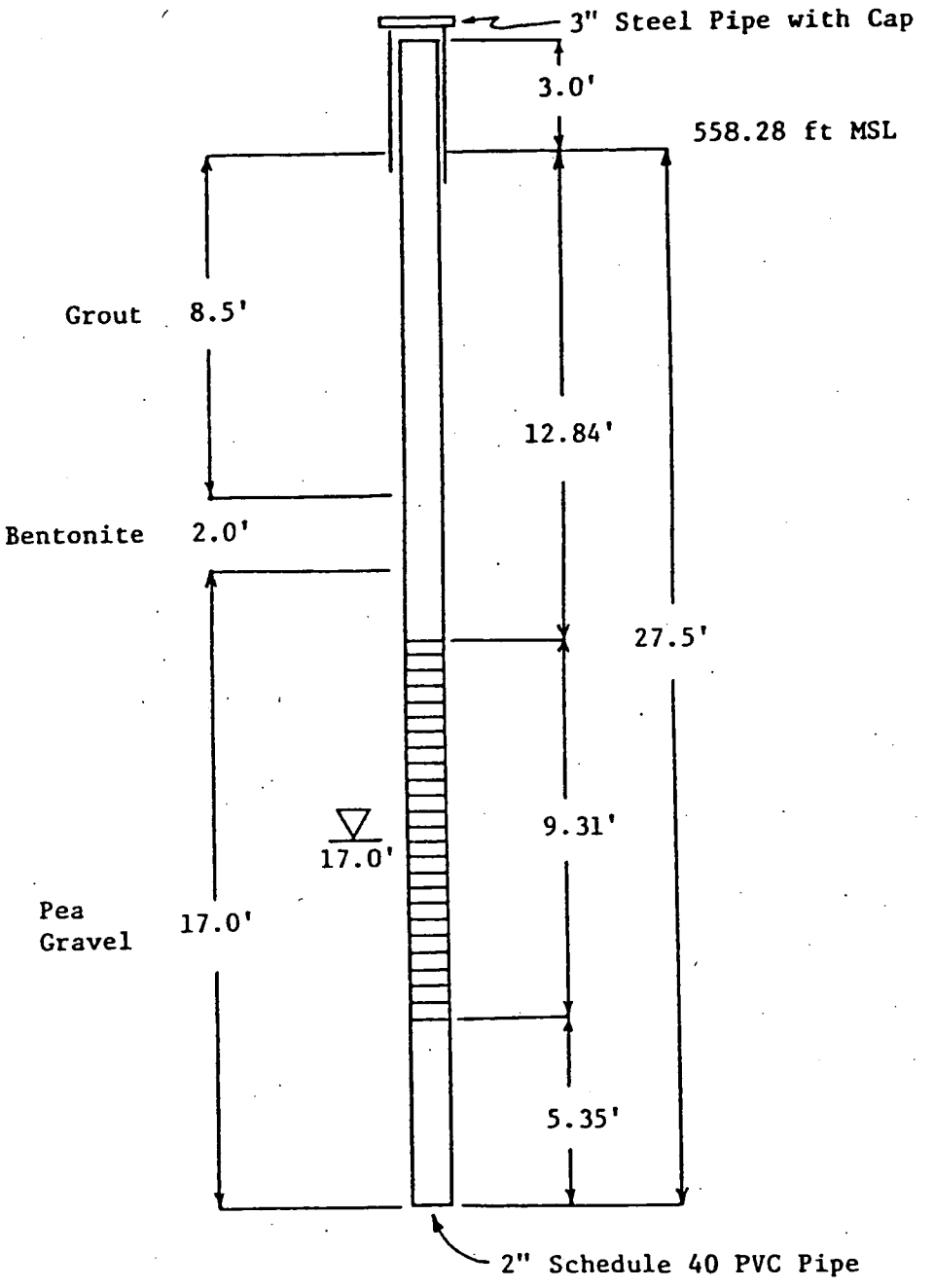
NWSC, Crane, Indiana
Ammunition Burning Grounds
Well Completion
Boring Number: WES-3-19-83



Water depth at time of drilling

Well Screen

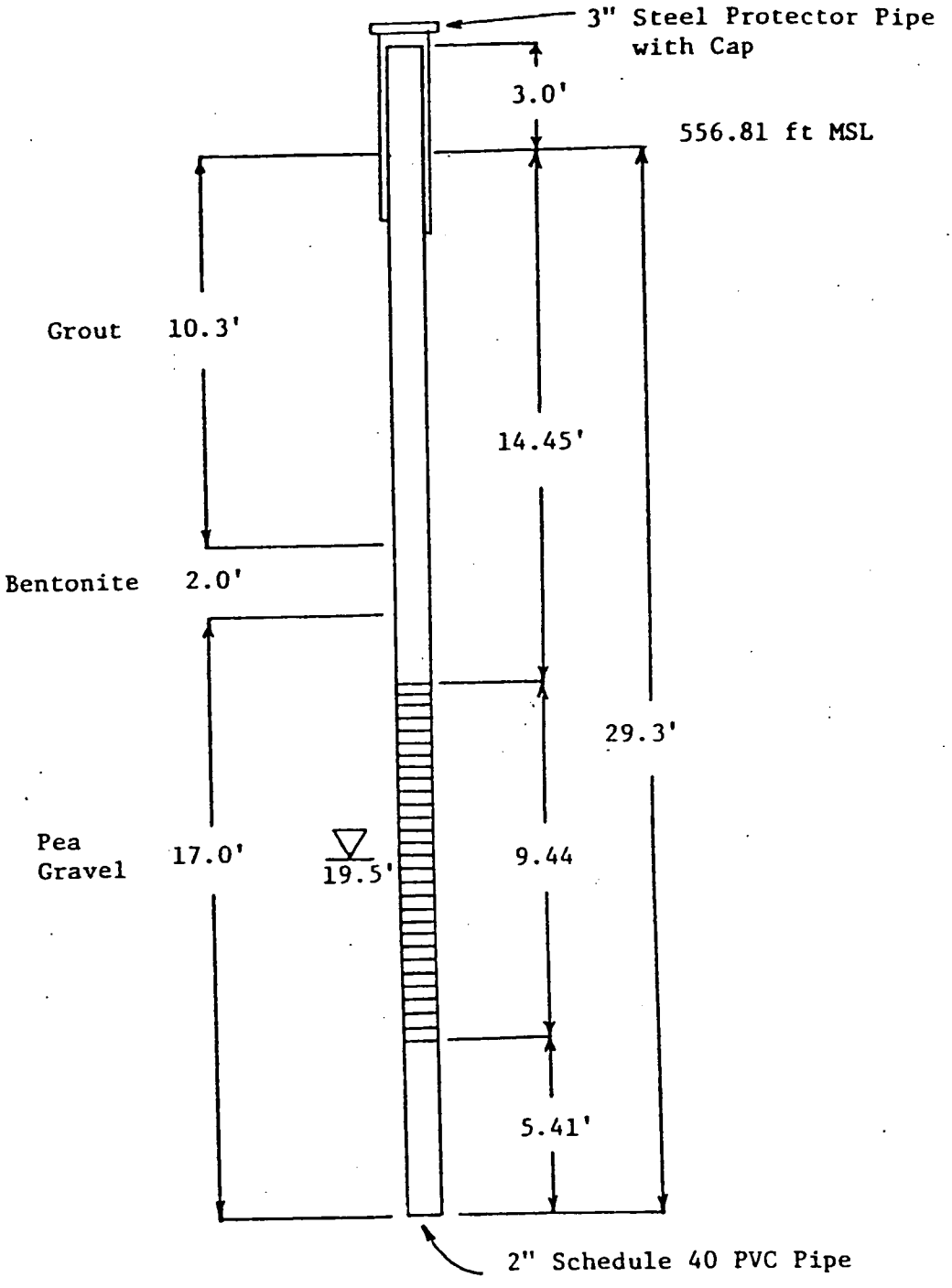
NWSC, Crane, Indiana
Ammunition Burning Grounds
Well Completion
Boring Number: WES-3-20-83



Water depth at time of drilling

Well Screen

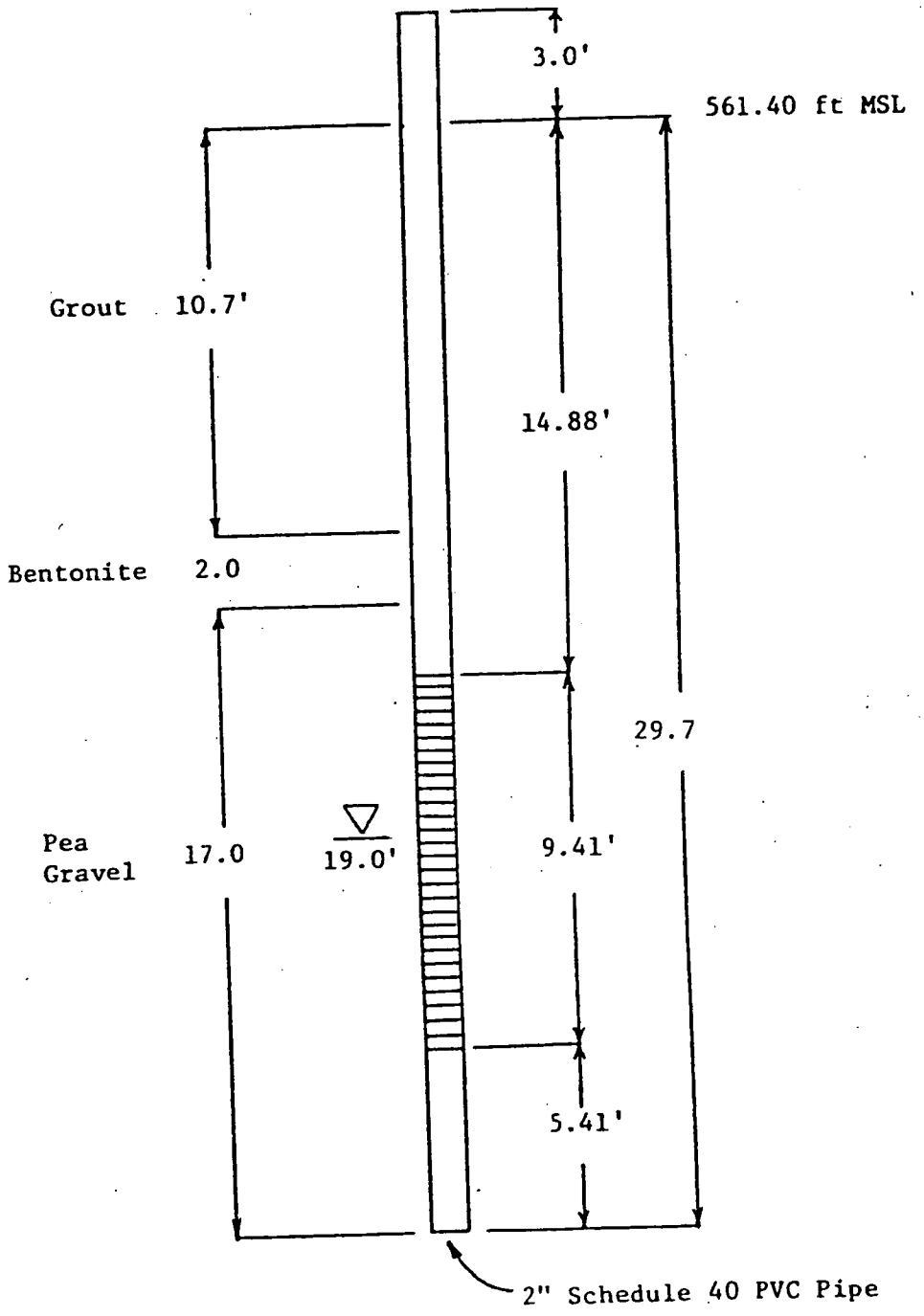
NWSC, Crane, Indiana
Ammunition Burning Grounds
Well Completion
Boring Number: WES-3-21-83



Water depth at time of drilling

Well Screen

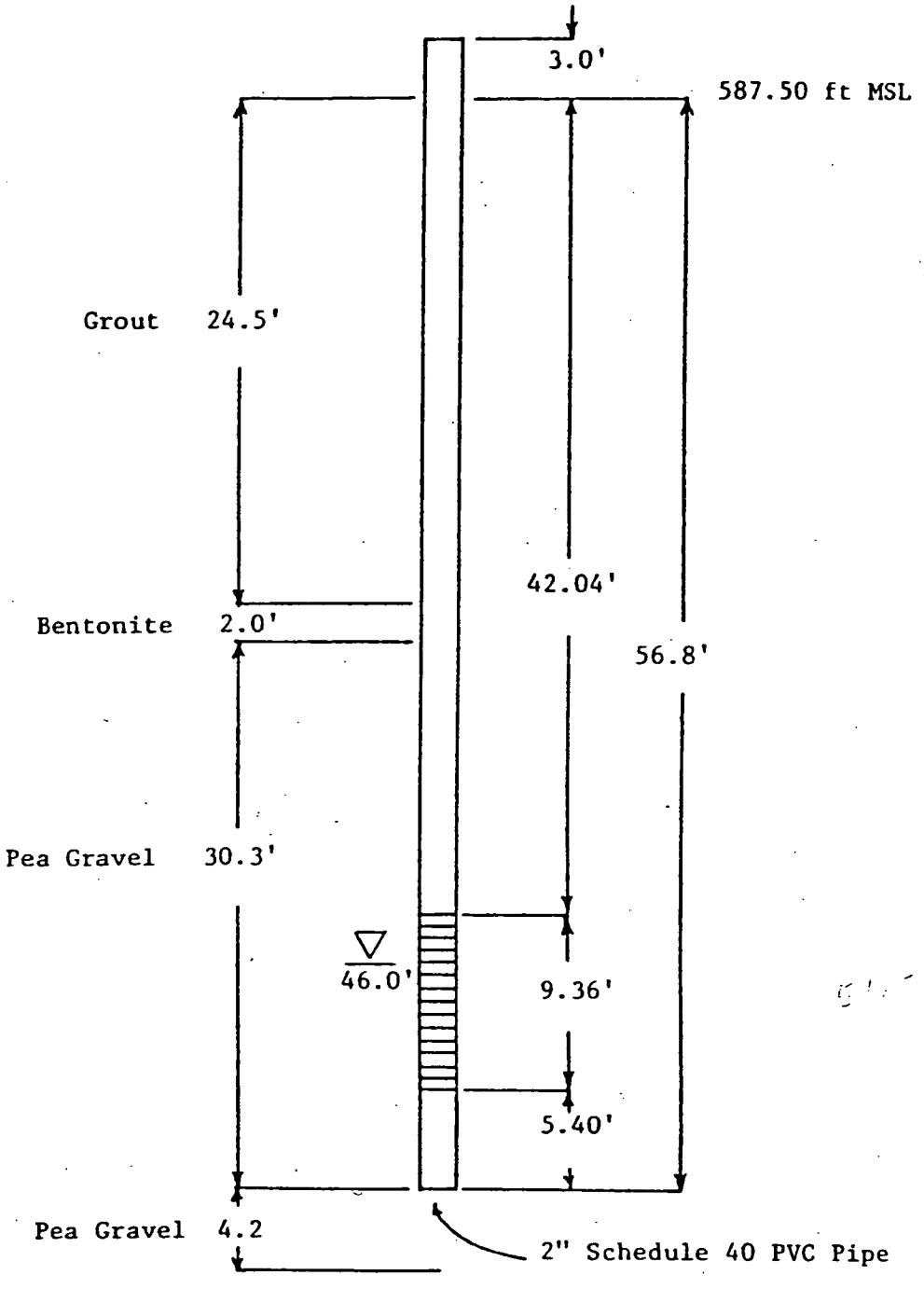
NWSC, Crane, Indiana
Ammunition Burning Grounds
Well Completion
Boring Number: WES-3-22-83



Water depth at time of drilling

Well Screen

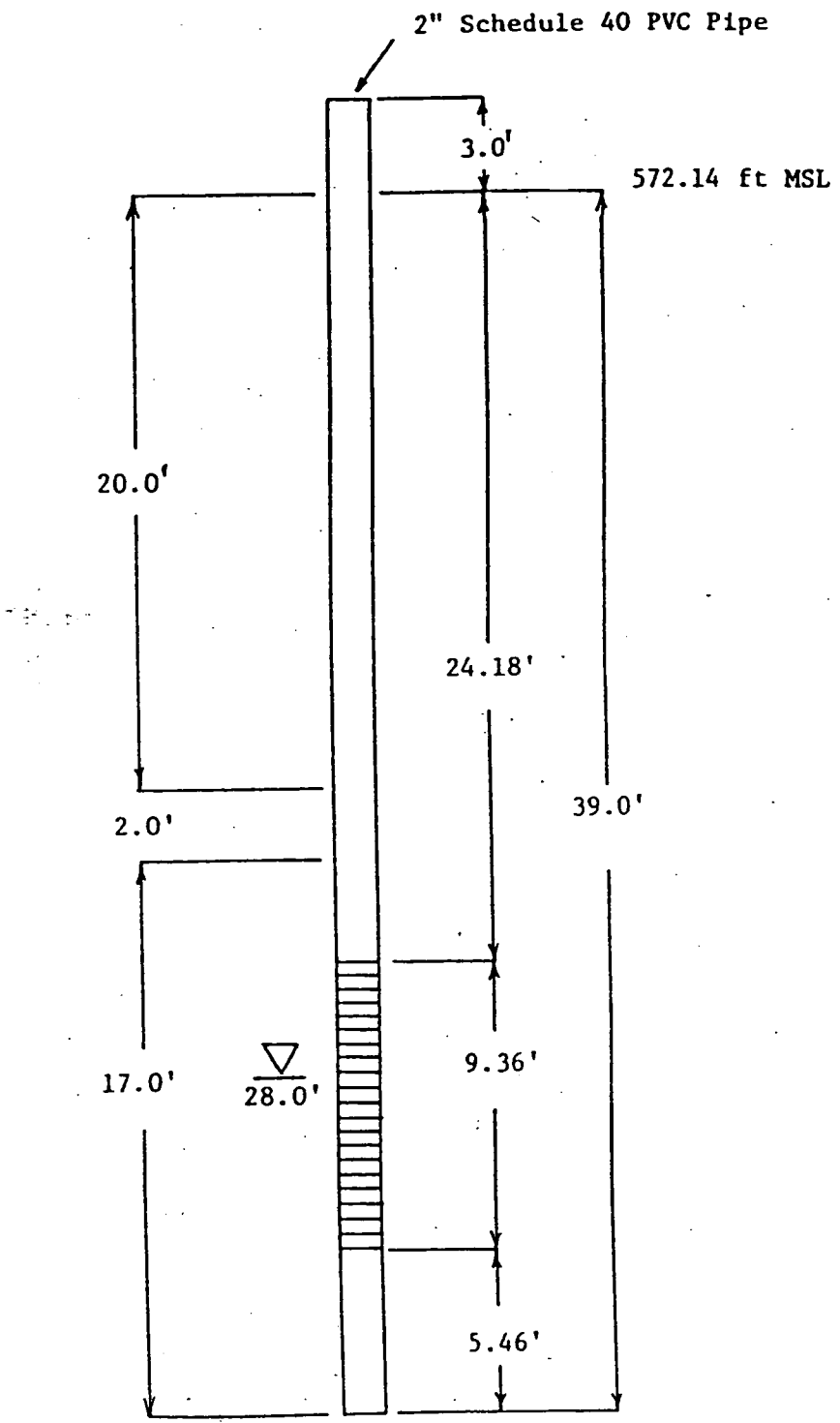
NWSC, Crane, Indiana
Ammunition Burning Grounds
Well Completion
Boring Number: WES-3-23-83



Water depth at time of drilling

Well Screen

NWSC, Crane, Indiana
Ammunition Burning Grounds
Well Completion
Boring Number: WES-3-24-83



Water depth at time of drilling

Well Screen

NWSC, Crane, Indiana
Ammunition Burning Ground
Well Completion
Boring Number: WES-3-25-

APPENDIX B

SAMPLE LOG SHEETS AND OTHER FIELD FORMS

APPENDIX B-1

Soil Sample Log Sheets

SOIL SAMPLE LOG SHEET

Project Site Name: NSWC Crane, IN
Project No.: CTO 126 job # N3960

Sample ID No.: 0355010002
Sample Location: 03SB01
Sampled By: TR E KM & RS
C.O.C. No.: 02349 LAUCKS

[X] Surface Soil
[ ] Subsurface Soil
[ ] Sediment
[ ] Other:
[ ] QA Sample Type:

Type of Sample:
[X] Low Concentration
[ ] High Concentration

GRAB SAMPLE DATA:

	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 6.8.01 Time: 1350 Method: HAND AUGER Monitor Reading (ppm): 0.0	0 - 2'	LT BRN TO BRN	MOIST, TR ROOTS, ~~LT~~ RS SILT, SOME CLAY, TR FINE SAND, TR SANDSTONE FRAGS. TR RED (RUST) NODULES

COMPOSITE SAMPLE DATA:

	Time	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date:				
Method:				
Monitor Readings (Range in ppm):				

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
~~Volatiles App. IX (VOC 1 + VOC 2)~~	(5) encore	—	
~~App. IX SVOC, SIM,~~ EXP, NC	8 oz w/m glass	—	
EXP, NC	8 oz w/m glass	✓	
~~Appx.IX Herb, Pest,~~ PCBs	8 oz w/m glass	—	
~~TAL Metals~~ plus Sn, Nitrite/Nitrate	8 oz w/m glass	—	
Nitrite/Nitrate	8 oz w/m glass	✓	
~~Dioxins/Furans~~	~~4 oz w/m glass~~	—	Triangle Lab
~~Perchlorate~~	~~4 oz w/m glass~~	—	APLC Lab

OBSERVATIONS / NOTES:

MONITOR READING (PPM)
BZ 0
BH 0

MAP:

SEE FIG 4-1

Circle if Applicable:

MS/MSD	Duplicate ID No.:
—	—

Signature(s): [illegible]

SOIL SAMPLE LOG SHEET

Project Site Name: NSWC Crane, IN
Project No.: CTO 126 job # N3960

Sample ID No.: 035S02000 2
Sample Location: 035B02
Sampled By: B Bauman / K Sampson
C.O.C. No.: 02362

[X] Surface Soil
[] Subsurface Soil
[] Sediment
[] Other:
[] QA Sample Type:

Type of Sample:
[X] Low Concentration
[] High Concentration

GRAB SAMPLE DATA:

	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 6.19.01 Time: 0440 Method: DPT Monitor Reading (ppm): 0.0	0 - 2'	Lt. Brn Black	Gravelly Silt w/ T-Sand + Cinders

COMPOSITE SAMPLE DATA:

Date:	Time	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Method:				
Monitor Readings (Range in ppm):				

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
~~Volatiles App. IX (VOC 1 + VOC 2)~~	~~(5) encore~~	—	
App. IX SVOC, SIM, EXP, NC	8 oz w/m glass	✓	
~~EXP, NC~~	~~8 oz w/m glass~~	—	
~~Appx IX Herb, Pest, PCBs~~	~~8 oz w/m glass~~	—	
~~TAL Metals plus Sn, Nitrite/Nitrate~~	~~8 oz w/m glass~~	—	
Nitrite/Nitrate	8 oz w/m glass	✓	
~~Dioxins/Furans~~	~~4 oz w/m glass~~	—	~~Triangle Lab~~
~~Perchlorate~~	~~4 oz w/m glass~~	—	~~APCC Lab~~

OBSERVATIONS / NOTES:

MAP:

Circle if Applicable:

MS/MSD	Duplicate ID No.:
—	—

Signature(s): Robert Balkovec

SOIL SAMPLE LOG SHEET

Project Site Name: NSWC Crane, IN
Project No.: CTO 126 job # N3960

[] Surface Soil
[X] Subsurface Soil
[] Sediment
[] Other:
[] QA Sample Type:

Sample ID No.: 03SB02020306
Sample Location: 03SB02
Sampled By: R Balkovec / K Sampson
C.O.C. No.: 02362

Type of Sample:
[X] Low Concentration
[] High Concentration

GRAB SAMPLE DATA:

	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 6-19-01 Time: 1000 Method: DPT Monitor Reading (ppm): 0.0	2'-6'	LT. BROWN & TAN	SILT, F-SAND, T-GRAVEL, AND SANDSTONE CHUNKS

COMPOSITE SAMPLE DATA:

	Time	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date:				
Method:				
Monitor Readings (Range in ppm):				

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
~~Volatiles App. IX (VOC 1 + VOC 2)~~	~~(5) encore~~	—	
App. IX SVOC, SIM, EXP, NC	8 oz w/m glass	✓	
~~EXP, NC~~	~~8 oz w/m glass~~	—	
~~Appx.IX Herb, Pest, PCBs~~	~~8 oz w/m glass~~	—	
~~TAL Metals plus Sn, Nitrite/Nitrate~~	~~8 oz w/m glass~~	—	
Nitrite/Nitrate	8 oz w/m glass	✓	
~~Dioxins/Furans~~	~~4 oz w/m glass~~	—	~~Triangle Lab~~
~~Perchlorate~~	~~4 oz w/m glass~~	—	~~APLC Lab~~

OBSERVATIONS / NOTES:

MAP:

Circle if Applicable:

MS/MSD	Duplicate ID No.:
—	—

Signature(s): Robert Balkovec

SOIL SAMPLE LOG SHEET

Project Site Name: NSWC Crane, IN
Project No.: CTO 126 job # N3960

[] Surface Soil
[X] Subsurface Soil
[] Sediment
[] Other:
[] QA Sample Type:

Sample ID No.: 035B020610
Sample Location: 035B02
Sampled By: BBALLARD/KSIMPSON
C.O.C. No.: 02362

Type of Sample:
[X] Low Concentration
[] High Concentration

GRAB SAMPLE DATA:

	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 6.19.01 Time: 1010 Method: DPT Monitor Reading (ppm): 0.0	6-10'	YELLOW & TAN	F SAND W/ SS CHUNKS

COMPOSITE SAMPLE DATA:

	Time	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date:				
Method:				
Monitor Readings (Range in ppm):				

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
~~Volatiles~~ App. IX (VOC 1 + VOC 2)	~~(3) encore~~	—	
App. IX SVOC, SIM, EXP, NC	8 oz w/m glass	✓	
~~EXP, NC~~	~~8 oz w/m~~ glass	—	
~~Appx.IX Herb~~, Pest, PCBs	~~8 oz w/m~~ glass	—	
~~TAL Metals plus Sn~~, Nitrite/Nitrate	~~8 oz w/m~~ glass	—	
Nitrite/Nitrate	8 oz w/m glass	✓	
~~Dioxine/Furans~~	~~4 oz w/m~~ glass	—	Triangle Lab
~~Perchlorate~~	~~4 oz w/m~~ glass	—	~~APLC Lab~~

OBSERVATIONS / NOTES:

MAP:

Circle if Applicable:

MS/MSD	Duplicate ID No.:
—	—

Signature(s): Robert Ballard

SOIL SAMPLE LOG SHEET

Project Site Name: NSWC Crane, IN
Project No.: CTO 126 job # N3960

Sample ID No.: 0355030002
Sample Location: 035B03
Sampled By: TR & KM&KS
C.O.C. No.: 02349 LAUCKS

[X] Surface Soil
[ ] Subsurface Soil
[ ] Sediment
[ ] Other:
[ ] QA Sample Type:

Type of Sample:
[X] Low Concentration
[ ] High Concentration

GRAB SAMPLE DATA:

	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 6.8.01 Time: 1405 Method: HAND AUGER Monitor Reading (ppm): 00	0-2'	LT BRN TO BRN	MOIST TR ROOTS, SILT, SOME CLAY, TR FINE SAND TR SANDSTONE FRAGS (RED)

COMPOSITE SAMPLE DATA:

	Time	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date:				
Method:				
Monitor Readings (Range in ppm):				

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
Volatiles ~~App. IX~~ (VOC 1 + VOC 2)	~~(5) encore~~	—	
~~App. IX SVOC, SIM~~, EXP, NC	~~8 oz w/m glass~~	—	
EXP, NC	8 oz w/m glass	✓	
~~Appx.IX Herb.~~ Pest, PCBs	~~8 oz w/m glass~~	—	
TAL ~~Metals~~ plus Sn, Nitrite/Nitrate	~~8 oz w/m glass~~	—	
Nitrite/Nitrate	8 oz w/m glass	✓	
Dioxins/Furans	~~4 oz w/m glass~~	—	Triangle Lab
Perchlorate	4 oz w/m glass	—	APLC Lab

OBSERVATIONS / NOTES:

MONITOR READING (PPM)
BZ 0
BH 0

MAP:

SEE FIG 4-1

Circle if Applicable:

MS/MSD	Duplicate ID No.:
—	—

Signature(s):

SOIL SAMPLE LOG SHEET

Project Site Name: NSWC Crane, IN
Project No.: CTO 126 job # N3960

[X] Surface Soil
[] Subsurface Soil
[] Sediment
[] Other:
[] QA Sample Type:

Sample ID No.: 0355040002
Sample Location: 035B04
Sampled By: B. BALKOVEC / RS
C.O.C. No.: 023362

Type of Sample:
[X] Low Concentration
[] High Concentration

GRAB SAMPLE DATA:

	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 6/19/01 Time: 1308 Method: DPT Monitor Reading (ppm): 0.0	0-2'	BROWN + TAN	FINE SAND, T-CLAYEY SILT

COMPOSITE SAMPLE DATA:

	Time	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date:				
Method:				
Monitor Readings (Range in ppm):				

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
~~Volatiles App. IX (VOC 1 + VOC 2)~~	~~(3) amber~~		
App. IX SVOC, SIM, EXP, NC	8 oz w/m glass	✓	
~~EXP, NC~~	~~8 oz w/m glass~~		
~~Appx.IX Herb, Pest, PCBs~~	~~8 oz w/m glass~~		
~~TAL Metals plus Sn, Nitrite/Nitrate~~	~~8 oz w/m glass~~		
Nitrite/Nitrate	8 oz w/m glass	✓	
~~Dioxins/Furans~~	~~4 oz w/m glass~~		~~Triangle Lab~~
~~Perchlorate~~	~~4 oz w/m glass~~		~~APTC Lab~~

OBSERVATIONS / NOTES:

MAP:

Circle if Applicable:

MS/MSD	Duplicate ID No.:
—	—

Signature(s): Robert Balkovec

SOIL SAMPLE LOG SHEET

Project Site Name: NSWC Crane, IN
Project No.: CTO 126 job # N3960

[] Surface Soil
[X] Subsurface Soil
[] Sediment
[] Other:
[] QA Sample Type:

Sample ID No.: 035B040206
Sample Location: 035B04
Sampled By: B. BALLOWE / RS
C.O.C. No.: 02362

Type of Sample:
[X] Low Concentration
[] High Concentration

GRAB SAMPLE DATA:

	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 6/19/01 Time: 1320 Method: DPT Monitor Reading (ppm): 0-0	2-6'	TAN, LT. BROWN	F-SAND, WITH TRACE SILT AND TRACE S.S CHUNKS

COMPOSITE SAMPLE DATA:

	Time	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date:				
Method:				
Monitor Readings (Range in ppm):				

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
~~Volatiles App. IX (VOC 1 + VOC 2)~~	~~(5) encore~~		
App. IX SVOC, SIM, EXP, NC	8 oz w/m glass	✓	
~~EXP, NC~~	~~8 oz w/m glass~~		
~~Appx.IX Herb, Pest, PCBs~~	~~8 oz w/m glass~~		
~~TAL Metals plus Sn, Nitrite/Nitrate~~	8 oz w/m glass		
Nitrite/Nitrate	8 oz w/m glass	✓	
~~Dioxins/Furans~~	~~4 oz w/m glass~~		Triangle Lab
~~Perchlorate~~	~~4 oz w/m glass~~		~~APLC Lab~~

OBSERVATIONS / NOTES:

MAP:

Circle if Applicable:

MS/MSD	Duplicate ID No.:

Signature(s): Robert Ballowe

SOIL SAMPLE LOG SHEET

Project Site Name: NSWC Crane, IN
Project No.: CTO 126 job # N3960

[] Surface Soil
[X] Subsurface Soil
[] Sediment
[] Other:
[] QA Sample Type:

Sample ID No.: 03SB040610
Sample Location: 03SB04
Sampled By: B.BALLOWE / K.SIMPSON
C.O.C. No.: 023662

Type of Sample:
[X] Low Concentration
[] High Concentration

GRAB SAMPLE DATA:

	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 6/19/01 Time: 1332 Method: DPT Monitor Reading (ppm): 0.0	6-10'	TAN + BROWN	F-SAND T-SILT W/ SS PEBBLS

COMPOSITE SAMPLE DATA:

Date:	Time	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Method:				
Monitor Readings (Range in ppm):				

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
~~Volatiles App. IX (VOC 1 + VOC 2)~~	~~(5) encore~~		
App. IX SVOC, SIM, EXP, NC	8 oz w/m glass	2	
~~EXP, NC~~	~~8 oz w/m glass~~		
~~Appx. IX Herb, Pest, PCBs~~	~~8 oz w/m glass~~		
~~TAL Metals plus Sn, Nitrite/Nitrate~~	~~8 oz w/m glass~~		
Nitrite/Nitrate	8 oz w/m glass	2	
~~Dioxins/Furans~~	~~4 oz w/m glass~~		~~Triangle Lab~~
~~Perchlorate~~	~~4 oz w/m glass~~		~~APLC Lab~~

OBSERVATIONS / NOTES:

MAP:

Circle if Applicable:

MS/MSD	Duplicate ID No.:
—	FD06190102

Signature(s): Robert Ballowe

SOIL SAMPLE LOG SHEET

Project Site Name: NSWC Crane, IN
Project No.: CTO 126 job # N3960

Sample ID No.: 035S03002
Sample Location: 035B03
Sampled By: B.B / K.S.
C.O.C. No.: 02363

[X] Surface Soil
[] Subsurface Soil
[] Sediment
[] Other:
[] QA Sample Type:

Type of Sample:
[X] Low Concentration
[] High Concentration

GRAB SAMPLE DATA:

	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 6/14/01 Time: 1654 Method: DPT Monitor Reading (ppm): 0.0	0-2'	Lt. Brown	CLAY, Some Silts, Leaves + Roots

COMPOSITE SAMPLE DATA:

	Time	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date:				
Method:				
Monitor Readings (Range in ppm):				

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
~~Volatiles App. IX (VOC 1 + VOC 2)~~	~~(3) encore~~	✓	
App. IX SVOC, SIM, EXP, NC	8 oz w/m glass		
~~EXP, NC~~	~~8 oz w/m glass~~		
~~Appx. IX Herb, Pest, PCBs~~	~~8 oz w/m glass~~		
~~TAL Metals plus Sn, Nitrite/Nitrate~~	~~8 oz w/m glass~~	✓	
Nitrite/Nitrate	8 oz w/m glass		
~~Dioxins/Furans~~	~~4 oz w/m glass~~		~~Triangle Lab~~
~~Perchlorate~~	~~4 oz w/m glass~~		~~APLC Lab~~

OBSERVATIONS / NOTES:

MAP:

Circle if Applicable:

MS/MSD	Duplicate ID No.:
—	—

Signature(s): Robert Balkovec

SOIL SAMPLE LOG SHEET

Project Site Name: NSWC Crane, IN
Project No.: CTO 126 job # N3960

[] Surface Soil
[X] Subsurface Soil
[] Sediment
[] Other:
[] QA Sample Type:

Sample ID No.: 03SB05D206
Sample Location: 03SB05
Sampled By: BB / RS
C.O.C. No.: 02363

Type of Sample:
[X] Low Concentration
[] High Concentration

GRAB SAMPLE DATA:

	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 6/19/01 Time: 1658 Method: DPT Monitor Reading (ppm): 0-0	2'-6'	Brown	F-SAND, SS Rx FRAGS. w/ CLAY, 7-5YR

COMPOSITE SAMPLE DATA:

	Time	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date:				
Method:				
Monitor Readings (Range in ppm):				

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
~~Volatiles App. IX (VOC 1 + VOC 2)~~	~~(5) encore~~	✓	
App. IX SVOC, SIM, EXP, NC	8 oz w/m glass		
~~EXP, NC~~	~~8 oz w/m glass~~		
~~Appx.IX Herb, Pest, PCBs~~	~~8 oz w/m glass~~		
~~TAL Metals plus Sn, Nitrite/Nitrate~~	~~8 oz w/m glass~~	✓	
Nitrite/Nitrate	8 oz w/m glass		
~~Dioxins/Furans~~	~~4 oz w/m glass~~		~~Triangle Lab~~
~~Perchlorate~~	~~4 oz w/m glass~~		~~APLC Lab~~

OBSERVATIONS / NOTES:

MAP:

Circle if Applicable:

MS/MSD	Duplicate ID No.:
—	—

Signature(s): Robert Balkovec

SOIL SAMPLE LOG SHEET

Project Site Name: NSWC Crane, IN
Project No.: CTO 126 job # N3960

[] Surface Soil
[X] Subsurface Soil
[] Sediment
[] Other:
[] QA Sample Type:

Sample ID No.: 035B05C010
Sample Location: 035B05
Sampled By: RB / 12.5
C.O.C. No.: 02363

Type of Sample:
[X] Low Concentration
[] High Concentration

GRAB SAMPLE DATA:

	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 6/19/01 Time: 1715 Method: DPT Monitor Reading (ppm): 0.0	6-10'	BROWN & YELLOW OR.	FINE SAND & SS ROCK FRAGS

COMPOSITE SAMPLE DATA:

	Time	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date:				
Method:				
Monitor Readings (Range in ppm):				

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
~~Volatiles App. IX (VOC 1 + VOC 2)~~	~~(5) encore~~		
App. IX SVOC, SIM, EXP, NC	8 oz w/m glass	✓	
~~EXP, NC~~	~~8 oz w/m glass~~		
~~Appx.IX Herb, Pest, PCBs~~	~~8 oz w/m glass~~		
~~TAL Metals plus Sn, Nitrite/Nitrate~~	~~8 oz w/m glass~~		
Nitrite/Nitrate	8 oz w/m glass	✓	
~~Dioxins/Furans~~	~~4 oz w/m glass~~		Triangle Lab
~~Perchlorate~~	~~4 oz w/m glass~~		APLC Lab

OBSERVATIONS / NOTES:

MAP:

Circle if Applicable:

MS/MSD	Duplicate ID No.:
—	—

Signature(s): Robert Balkcom

SOIL SAMPLE LOG SHEET

Project Site Name: NSWC Crane, IN
Project No.: CTO 126 job # N3960

Sample ID No.: 0355060002
Sample Location: 0355006
Sampled By: BB / RS
C.O.C. No.: 02362

[X] Surface Soil
[] Subsurface Soil
[] Sediment
[] Other:
[] QA Sample Type:

Type of Sample:
[X] Low Concentration
[] High Concentration

GRAB SAMPLE DATA:

	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 6/19/02	0-2'	WHITE, LIGHT & YELLOW ORANGE	CLAYEY SILT W/ GRAVEL SOME SAND
Time: 1070			
Method: DPT			
Monitor Reading (ppm): 0-2			

COMPOSITE SAMPLE DATA:

	Time	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date:				
Method:				
Monitor Readings (Range in ppm):				

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
~~Volatiles App. IX (VOC 1 + VOC 2)~~	~~(5) encore~~		
App. IX SVOC, SIM, EXP, NC	(2) 8 oz w/m glass	✓	
~~EXP, NC~~	~~8 oz w/m glass~~		
~~Appx.IX Herb, Pest, PCBs~~	~~8 oz w/m glass~~		
~~TAL Metals plus Sn, Nitrite/Nitrate~~	~~8 oz w/m glass~~		
Nitrite/Nitrate	(2) 8 oz w/m glass	✓	
~~Dioxins/Furans~~	~~4 oz w/m glass~~		~~Triangle Lab~~
~~Perchlorate~~	~~4 oz w/m glass~~		~~APLC Lab~~

OBSERVATIONS / NOTES:

MAP:

Circle if Applicable:

MS/MSD	Duplicate ID No.:
—	FD06190101

Signature(s): Robert Balkovec

SOIL SAMPLE LOG SHEET

Project Site Name: NSWC Crane, IN
Project No.: CTO 126 job # N3960

[] Surface Soil
[X] Subsurface Soil
[] Sediment
[] Other:
[] QA Sample Type:

Sample ID No.: 0358060206
Sample Location: 0358060
Sampled By: B.B/K.S
C.O.C. No.: 023362

Type of Sample:
[X] Low Concentration
[] High Concentration

GRAB SAMPLE DATA:

	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 6/19/01	2'-6'	Lt. Brown	Clayey Silt, w/ Gravel & T-Sand
Time: 1120			
Method: DPT			
Monitor Reading (ppm): 0.0			

COMPOSITE SAMPLE DATA:

	Time	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date:				
Method:				
Monitor Readings (Range in ppm):				

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
~~Volatiles App. IX (VOC 1 + VOC 2)~~	~~(5) encore~~		
App. IX SVOC, SIM, EXP, NC	8 oz w/m glass	✓	
~~EXP, NC~~	~~8 oz w/m glass~~		
~~Appx IX Herb, Pest, PCBs~~	~~8 oz w/m glass~~		
~~TAL Metals plus Sn, Nitrite/Nitrate~~	~~8 oz w/m glass~~		
Nitrite/Nitrate	8 oz w/m glass	✓	
~~Dioxins/Furans~~	~~4 oz w/m glass~~		~~Triangle Lab~~
~~Perchlorate~~	~~4 oz w/m glass~~		~~APLO Lab~~

OBSERVATIONS / NOTES:

MAP:

Circle if Applicable:

MS/MSD

Duplicate ID No.:

Signature(s): Robert Bal Kerr

SOIL SAMPLE LOG SHEET

Project Site Name: NSWC Crane, IN
Project No.: CTO 126 job # N3960

[] Surface Soil
[X] Subsurface Soil
[] Sediment
[] Other:
[] QA Sample Type:

Sample ID No.: 03SB060610
Sample Location: 03SB06
Sampled By: B.B. / R.S.
C.O.C. No.: 02362

Type of Sample:
[X] Low Concentration
[] High Concentration

GRAB SAMPLE DATA:

	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 6/19/01	6-10'	Lt. BR	CLAYEY SILT, SOME SAND W/ SANDSTONE FRAGS
Time: 1130			
Method: DPT			
Monitor Reading (ppm): 0.0			

COMPOSITE SAMPLE DATA:

Date:	Time	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Method:				
Monitor Readings (Range in ppm):				

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
~~Volatiles App. IX (VOC 1 + VOC 2)~~	~~(5) encore~~		
App. IX SVOC, SIM, EXP, NC	8 oz w/m glass	✓	
~~EXP, NC~~	~~8 oz w/m glass~~		
~~Appx. IX Herb, Pest, PCBs~~	~~8 oz w/m glass~~		
~~TAL Metals plus Sn, Nitrite/Nitrate~~	~~8 oz w/m glass~~		
Nitrite/Nitrate	8 oz w/m glass	✓	
~~Dioxins/Furans~~	~~4 oz w/m glass~~		Triangle Lab
~~Perchlorate~~	~~4 oz w/m glass~~		~~ARLC Lab~~

OBSERVATIONS / NOTES:

MAP:

Circle If Applicable:

MS/MSD	Duplicate ID No.:
—	

Signature(s): Robert Belpure

SOIL SAMPLE LOG SHEET

Project Site Name: NSWC Crane, IN
Project No.: CTO 126 job # N3960

Sample ID No.: 03SS07WW2
Sample Location: 03SB07
Sampled By: B. BALKOVEC
C.O.C. No.: 02362

[X] Surface Soil
[] Subsurface Soil
[] Sediment
[] Other:
[] QA Sample Type:

Type of Sample:
[X] Low Concentration
[] High Concentration

GRAB SAMPLE DATA:

	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 6/14/01	0-2'	TAN, WHITE, LT. BROWN	F-SAND + GRAVEL T-CLAY SILT
Time: 1346			
Method: DPT			
Monitor Reading (ppm): 0.0			

COMPOSITE SAMPLE DATA:

	Time	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date:				
Method:				
Monitor Readings (Range in ppm):				

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
~~Volatiles App. IX (VOC 1 + VOC 2)~~	~~(5) encore~~		
App. IX SVOC, SIM, EXP, NC	8 oz w/m glass	✓	
~~EXP, NC~~	~~8 oz w/m glass~~		
~~Appx.IX Herb, Pest, PCBs~~	~~8 oz w/m glass~~		
~~TAL Metals plus Sn, Nitrite/Nitrate~~	~~8 oz w/m glass~~		
Nitrite/Nitrate	8 oz w/m glass	✓	
~~Dioxins/Furans~~	~~4 oz w/m glass~~		~~Triangle Lab~~
~~Perchlorate~~	~~4 oz w/m glass~~		~~APLC Lab~~

OBSERVATIONS / NOTES:

MAP:

Circle if Applicable:

MS/MSD	Duplicate ID No.:
—	—

Signature(s): Robert Balkovec

SOIL SAMPLE LOG SHEET

Project Site Name: NSWC Crane, IN
Project No.: CTO 126 job # N3960

[] Surface Soil
[X] Subsurface Soil
[] Sediment
[] Other:
[] QA Sample Type:

Sample ID No.: 03SB070208
Sample Location: 03SB07
Sampled By: B. BALKOVEC
C.O.C. No.: 02362

Type of Sample:
[X] Low Concentration
[] High Concentration

GRAB SAMPLE DATA:

	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 6/14/01 Time: 1422 Method: DPT Monitor Reading (ppm): 0.0	2'-6'	LT. BROWN	CLAYEY SILT w/ T. GRAVEL + SAND

COMPOSITE SAMPLE DATA:

	Time	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date:				
Method:				
Monitor Readings (Range in ppm):				

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
~~Volatiles App. IX (VOC 1 + VOC 2)~~	~~(5) encore~~		
App. IX SVOC, SIM, EXP, NC	8 oz w/m glass	✓	
~~EXP, NC~~	~~8 oz w/m glass~~		
~~Appx.IX Herb, Pest, PCBs~~	~~8 oz w/m glass~~		
~~TAL Metals plus Sn, Nitrite/Nitrate~~	~~8 oz w/m glass~~		
Nitrite/Nitrate	8 oz w/m glass	✓	
~~Dioxine/Furans~~	~~4 oz w/m glass~~		~~Triangle Lab~~
~~Perchlorate~~	~~4 oz w/m glass~~		~~APLC Lab~~

OBSERVATIONS / NOTES:

MAP:

Circle If Applicable:

MS/MSD	Duplicate ID No.:

Signature(s): Robert Balkovec

SOIL SAMPLE LOG SHEET

Project Site Name: NSWC Crane, IN
Project No.: CTO 126 job # N3960

[] Surface Soil
[X] Subsurface Soil
[] Sediment
[] Other:
[] QA Sample Type:

Sample ID No.: 03SB070610
Sample Location: 03SB07
Sampled By: R. BALKOVEC
C.O.C. No.: 02362

Type of Sample:
[X] Low Concentration
[] High Concentration

GRAB SAMPLE DATA:

	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 6/14/01 Time: 1434 Method: DPT Monitor Reading (ppm): 0.0	5'-10'	BROWN	FINE SAND, W/ S.S. CHUNKS AND T-SILT

COMPOSITE SAMPLE DATA:

	Time	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date:				
Method:				
Monitor Readings (Range in ppm):				

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
~~Volatiles App. IX (VOC 1 + VOC 2)~~	~~(5) encore~~		
App. IX SVOC, SIM, EXP, NC	8 oz w/m glass	✓	
~~EXP, NC~~	~~8 oz w/m glass~~		
~~Appx.IX Herb, Pest, PCBs~~	8 oz w/m glass		
~~TAL Metals plus Sn, Nitrite/Nitrate~~	~~8 oz w/m glass~~		
Nitrite/Nitrate	8 oz w/m glass	✓	
~~Dioxins/Furans~~	~~4 oz w/m glass~~		~~Triangle lab~~
~~Perchlorate~~	4 oz w/m glass		~~APLC Lab~~

OBSERVATIONS / NOTES:

MAP:

Circle if Applicable:

MS/MSD	Duplicate ID No.:
✓	

Signature(s): Robert Balkovec

SOIL SAMPLE LOG SHEET

Project Site Name: NSWC Crane, IN
Project No.: CTO 126 job # N3960

Sample ID No.: 035S03S0002
Sample Location: 035B03
Sampled By: BB / KS
C.O.C. No.: 02363

[X] Surface Soil
[] Subsurface Soil
[] Sediment
[] Other:
[] QA Sample Type:

Type of Sample:
[X] Low Concentration
[] High Concentration

GRAB SAMPLE DATA:

	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 6/19/01	0-2'	WHITE + TAN + LT. BR	F SAND, SILTY CLAY, SILT + T-GRAVEL
Time: 1606			
Method: DPT			
Monitor Reading (ppm): 0.0			

COMPOSITE SAMPLE DATA:

	Time	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date:				
Method:				
Monitor Readings (Range in ppm):				

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
~~Volatiles App. IX (VOC 1 + VOC 2)~~	(5) encore		
App. IX SVOC, SIM, EXP, NC	8 oz w/m glass	✓	
~~EXP, NC~~	~~8 oz w/m glass~~		
~~Appx.IX Herb, Pest, PCBs~~	~~8 oz w/m glass~~		
~~TAL Metals plus Sn, Nitrite/Nitrate~~	~~8 oz w/m glass~~		
Nitrite/Nitrate	8 oz w/m glass	✓	
~~Dioxins/Furans~~	~~4 oz w/m glass~~		~~Triangle Lab~~
~~Perchlorate~~	~~4 oz w/m glass~~		~~APLO Lab~~

OBSERVATIONS / NOTES:

MAP:

Circle if Applicable:

MS/MSD	Duplicate ID No.:

Signature(s): Robert Balkovec

SOIL SAMPLE LOG SHEET

Project Site Name: NSWC Crane, IN
Project No.: CTO 126 job # N3960

Sample ID No.: 035B090206
Sample Location: 035B08
Sampled By: B.B / R.S
C.O.C. No.: 023363

[ ] Surface Soil
[X] Subsurface Soil
[ ] Sediment
[ ] Other:
[ ] QA Sample Type:

Type of Sample:
[X] Low Concentration
[ ] High Concentration

GRAB SAMPLE DATA:

	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 6/19/01	2'-6'	BROWN	SILTY CLAY, T-SAND
Time: 1612			
Method: DPT			
Monitor Reading (ppm): 0.0			

COMPOSITE SAMPLE DATA:

	Time	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date:				
Method:				
Monitor Readings (Range in ppm):				

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
~~Volatiles App. IX (VOC 1 + VOC 2)~~	~~(5) encore~~		
App. IX SVOC, SIM, EXP, NC	(2) 8 oz w/m glass	✓	
~~EXP. NC~~	~~8 oz w/m glass~~		
~~Appx.IX Herb, Pest, PCBs~~	~~8 oz w/m glass~~		
~~TAL Metals plus Sn, Nitrite/Nitrate~~	~~8 oz w/m glass~~		
Nitrite/Nitrate	(2) 8 oz w/m glass	✓	
~~Dioxins/Furans~~	~~4 oz w/m glass~~		~~Triangle Lab~~
~~Perchlorate~~	~~4 oz w/m glass~~		~~APLC Lab~~

OBSERVATIONS / NOTES:

MAP:

Circle if Applicable:

MS/MSD	Duplicate ID No.:
—	FD061901 03

Signature(s): Robert Balkwill

SOIL SAMPLE LOG SHEET

Project Site Name: NSWC Crane, IN
Project No.: CTO 126 job # N3960

[] Surface Soil
[X] Subsurface Soil
[] Sediment
[] Other:
[] QA Sample Type:

Sample ID No.: 03SB0610
Sample Location: 03SB08
Sampled By: BB/RS.
C.O.C. No.: 02363

Type of Sample:
[X] Low Concentration
[] High Concentration

GRAB SAMPLE DATA:

	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 6/12/01 Time: 1630 Method: DPT Monitor Reading (ppm): 0.0	6-10'	Brown + Yellow OR	Silty Clay, F-Sand w/ Sandstone Chunks

COMPOSITE SAMPLE DATA:

	Time	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date:				
Method:				
Monitor Readings (Range in ppm):				

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
~~Volatiles App. IX (VOC 1 + VOC 2)~~	~~(5) encore~~	✓	
App. IX SVOC, SIM, EXP, NC	8 oz w/m glass		
~~EXP, NC~~	~~8 oz w/m glass~~		
~~Appx.IX Herb, Pest, PCBs~~	~~8 oz w/m glass~~		
~~TAL Metals plus Sn, Nitrite/Nitrate~~	8 oz w/m glass	✓	
Nitrite/Nitrate	8 oz w/m glass		
~~Dioxins/Furans~~	~~4 oz w/m glass~~		~~Triangle Lab~~
~~Perchlorate~~	~~4 oz w/m glass~~		~~APIC Lab~~

OBSERVATIONS / NOTES:

MAP:

Circle if Applicable:

MS/MSD	Duplicate ID No.:
—	—

Signature(s): Robert Balkovec

SOIL SAMPLE LOG SHEET

Project Site Name: NSWC Crane, IN
Project No.: CTO 126 job # N3960

[X] Surface Soil
[] Subsurface Soil
[] Sediment
[] Other:
[] QA Sample Type:

Sample ID No.: 0355090002
Sample Location: 035809
Sampled By: BB/RM
C.O.C. No.: 02381

Type of Sample:
[X] Low Concentration
[] High Concentration

GRAB SAMPLE DATA:

	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 6/23/01 Time: 0815 Method: HAND AUGER Monitor Reading (ppm): 0-2	0-2	BROWN YELLOW ORANGE	SILT, ORGANICS, SAND + S.S. PEBBLES

COMPOSITE SAMPLE DATA:

Date:	Time	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Method:				
Monitor Readings (Range in ppm):				

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
~~Volatiles App. IX (VOC 1 + VOC 2)~~	~~(5) encore~~		
App. IX SVOC, SIM, EXP, NC	8 oz w/m glass	✓	
~~EXP, NC~~	~~8 oz w/m glass~~		
~~Appx IX Herb, Pest, PCBs~~	~~8 oz w/m glass~~		
~~TAL Metals plus Sn, Nitrite/Nitrate~~	~~8 oz w/m glass~~		
Nitrite/Nitrate	8 oz w/m glass	✓	
~~Dioxins/Furans~~	~~4 oz w/m glass~~		Triangle Lab
~~Perchlorate~~	4 oz w/m glass		~~APLC Lab~~

OBSERVATIONS / NOTES:

MAP:

Circle if Applicable:

MS/MSD	Duplicate ID No.:
—	FD062301 01

Signature(s): Robert Balkrer

SOIL SAMPLE LOG SHEET

Project Site Name: NSWC Crane, IN
Project No.: CTO 126 job # N3960

[] Surface Soil
[X] Subsurface Soil
[] Sediment
[] Other:
[] QA Sample Type:

Sample ID No.: 035B04W2004
Sample Location: 035B04
Sampled By: BB/RLS
C.O.C. No.: 023581

Type of Sample:
[X] Low Concentration
[] High Concentration

GRAB SAMPLE DATA:

	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 6/23/01 Time: 0845 Method: HAND AUGER Monitor Reading (ppm): 0.4	2-4'	YELLOW ORANGE	F-SAND + SS FRAGS

COMPOSITE SAMPLE DATA:

Date:	Time	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Method:				
Monitor Readings (Range in ppm):				

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
~~Volatiles App. IX (VOC 1 + VOC 2)~~	~~(5) encore~~		
App. IX SVOC, SIM, EXP, NC	8 oz w/m glass	✓	
EXP, NC	~~8 oz w/m~~ glass		
Appx.IX Herb. Pest. PCBs	8 ~~oz w/m~~ glass		
~~TAL Metals plus Sn, Nitrite/Nitrate~~	~~8 oz w/m~~ glass		
Nitrite/Nitrate	8 oz w/m glass	✓	
~~Dioxins/Furans~~	4 ~~oz w/m~~ glass		~~Triangle Lab~~
~~Perchlorate~~	4 ~~oz w/m~~ glass		~~APLC Lab~~

OBSERVATIONS / NOTES:

MAP:

Circle if Applicable:

MS/MSD	Duplicate ID No.:
—	—

Signature(s): Robert Belkner

SOIL SAMPLE LOG SHEET

Project Site Name: NSWC Crane, IN
Project No.: CTO 126 job # N3960

Sample ID No.: 0355100002
Sample Location: 035BID
Sampled By: B.B./RS
C.O.C. No.: 023166

[X] Surface Soil
[] Subsurface Soil
[] Sediment
[] Other:
[] QA Sample Type:

Type of Sample:
[X] Low Concentration
[] High Concentration

GRAB SAMPLE DATA:

	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 6/20/01 Time: 1040 Method: DPT Monitor Reading (ppm): 0.0	0-2'	BROWN + YELLOW	CLAY-SILT, SOME SAND & S.S. CHUNKS

COMPOSITE SAMPLE DATA:

	Time	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date:				
Method:				
Monitor Readings (Range in ppm):				

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
~~Volatiles App. IX (VOC 1 + VOC 2)~~	~~(5) encore~~		
App. IX SVOC, SIM, EXP, NC	8 oz w/m glass	✓	
~~EXP, NC~~	~~8 oz w/m glass~~		
~~Appx. IX Herb, Pest, PCBs~~	~~8 oz w/m glass~~		
~~TAL Metals plus Cn, Nitrite/Nitrate~~	~~8 oz w/m glass~~		
Nitrite/Nitrate	8 oz w/m glass	✓	
~~Dioxins/Furans~~	~~4 oz w/m glass~~		Triangle Lab
~~Perchlorate~~	~~4 oz w/m glass~~		APLC Lab

OBSERVATIONS / NOTES:

MAP:

Circle if Applicable:

MS/MSD	Duplicate ID No.:

Signature(s): Robert Balkenve

SOIL SAMPLE LOG SHEET

Project Site Name: NSWC Crane, IN
Project No.: CTO 126 job # N3960

[] Surface Soil
[] Subsurface Soil
[X] Sediment
[] Other:
[] QA Sample Type:

Sample ID No.: 035B10020b
Sample Location: 035B10
Sampled By: BB/RS
C.O.C. No.: 023366

Type of Sample:
[X] Low Concentration
[] High Concentration

GRAB SAMPLE DATA:

	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 6/20/01 Time: 1049 Method: DPT Monitor Reading (ppm): 0.0	2-6'	BROWN + YELLOW GR	SILT, SAND, SOME CLAY + S.S. FRAGS

COMPOSITE SAMPLE DATA:

Date:	Time	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Method:				
Monitor Readings (Range in ppm):				

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
~~Volatiles App. IX (VOC-1 + VOC-2)~~	~~(3) encore~~		
App. IX SVOC, SIM, EXP, NC	8 oz w/m glass	✓	
~~EXP, NC~~	~~8 oz w/m glass~~		
~~Appx.IX Herb, Pest, PCBs~~	~~8 oz w/m glass~~		
~~TAL Metals plus Sn, Nitrite/Nitrate~~	~~8 oz w/m glass~~		
Nitrite/Nitrate	8 oz w/m glass	✓	
~~Dioxins/Furans~~	~~4 oz w/m glass~~		~~Triangle Lab~~
~~Perchlorate~~	~~4 oz w/m glass~~		~~APG Lab~~

OBSERVATIONS / NOTES:

MAP:

Circle if Applicable:

MS/MSD	Duplicate ID No.:
—	—

Signature(s): Robert Balkovec

SOIL SAMPLE LOG SHEET

Project Site Name: NSWC Crane, IN
Project No.: CTO 126 job # N3960

[] Surface Soil
[X] Subsurface Soil
[] Sediment
[] Other:
[] QA Sample Type:

Sample ID No.: 035B10U610
Sample Location: 035B10
Sampled By: BB/RS
C.O.C. No.: 023666

Type of Sample:
[X] Low Concentration
[] High Concentration

GRAB SAMPLE DATA:

	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 6/20/01 Time: 1120 Method: DPT Monitor Reading (ppm): 0-0	6'-10'	Yellow Or + Lt. Brown	F-SAND + S.S. FRAGS, T-SALT

COMPOSITE SAMPLE DATA:

	Time	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date:				
Method:				
Monitor Readings (Range in ppm):				

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
~~Volatiles App. IX (VOC 1 + VOC 2)~~	~~(5) encore~~		
App. IX SVOC, SIM, EXP, NC	8 oz w/m glass	2	
~~EXP. NC~~	~~8 oz w/m glass~~		
~~Appx.IX Herb, Pest, PCBs~~	~~8 oz w/m glass~~		
~~TAL Metals plus Sn, Nitrite/Nitrate~~	8 oz w/m glass		
Nitrite/Nitrate	8 oz w/m glass	2	
~~Dioxine/Furans~~	~~4 oz w/m glass~~		Triangle Lab
~~Perchlorate~~	~~4 oz w/m glass~~		~~APLC Lab~~

OBSERVATIONS / NOTES:

MAP:

Circle if Applicable:

MS/MSD	Duplicate ID No.:
—	FD062001W2

Signature(s): Robert Balkcom

SOIL SAMPLE LOG SHEET

Project Site Name: NSWC Crane, IN
Project No.: CTO 126 job # N3960

[X] Surface Soil
[ ] Subsurface Soil
[ ] Sediment
[ ] Other:
[ ] QA Sample Type:

Sample ID No.: 035S11D002
Sample Location: 035B11
Sampled By: B BALKOVEC
C.O.C. No.: 023603

Type of Sample:
[X] Low Concentration
[ ] High Concentration

GRAB SAMPLE DATA:

	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 6/19/01 Time: 1447 Method: DPT Monitor Reading (ppm): 0-0	0-2'	WHITE + DK-GRAY	F-SAND, CLAY & SILT AND T-GRAVEL

COMPOSITE SAMPLE DATA:

	Time	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date:				
Method:				
Monitor Readings (Range in ppm):				

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
~~Volatiles App. IX (VOC 1 + VOC 2)~~	~~(5) encore~~		
App. IX SVOC, SIM, EXP, NC	8 oz w/m glass	✓	
~~EXP, NC~~	~~8 oz w/m glass~~		
~~Appx.IX Herb, Pest, PCBs~~	~~8 oz w/m glass~~		
~~TAL Metals plus Sn, Nitrite/Nitrate~~	~~8 oz w/m glass~~		
Nitrite/Nitrate	8 oz w/m glass	✓	
~~Dioxins/Furans~~	~~4 oz w/m glass~~		Triangle Lab
~~Perchlorate~~	~~4 oz w/m glass~~		APLC Lab

OBSERVATIONS / NOTES:

MAP:

Circle if Applicable:

MS/MSD	Duplicate ID No.:
—	—

Signature(s): Robert Balkovec

SOIL SAMPLE LOG SHEET

Project Site Name: NSWC Crane, IN
Project No.: CTO 126 job # N3960

Sample ID No.: 03SB1102006
Sample Location: 03SB11
Sampled By: B. BALKOVEC
C.O.C. No.: 02363

[] Surface Soil
[X] Subsurface Soil
[] Sediment
[] Other:
[] QA Sample Type:

Type of Sample:
[X] Low Concentration
[] High Concentration

GRAB SAMPLE DATA:

	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 6/19/01	2-6'	BROWN	F SAND, CLAYEY SILT W/ GRAVEL
Time: 1508			
Method: DPT			
Monitor Reading (ppm): 0.0			

COMPOSITE SAMPLE DATA:

	Time	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date:				
Method:				
Monitor Readings (Range in ppm):				

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
~~Volatiles App. IX (VOC 1 + VOC 2)~~	~~(5) encore~~		
App. IX SVOC, SIM, EXP, NC	8 oz w/m glass	✓	
~~EXP, NC~~	~~8 oz w/m glass~~		
~~Appx.IX Herb, Pest, PCBs~~	~~8 oz w/m glass~~		
~~TAL~~ Metals plus Sn, Nitrite/Nitrate	8 oz w/m glass		
Nitrite/Nitrate	8 oz w/m glass	✓	
~~Dioxins/Furans~~	~~4 oz w/m glass~~		Triangle Lab
~~Perchlorate~~	~~4 oz w/m glass~~		APLC Lab

OBSERVATIONS / NOTES:

MAP:

Circle if Applicable:

MS/MSD	Duplicate ID No.:

Signature(s): Robert Balkovec

SOIL SAMPLE LOG SHEET

Project Site Name: NSWC Crane, IN
Project No.: CTO 126 job # N3960

[] Surface Soil
[X] Subsurface Soil
[] Sediment
[] Other:
[] QA Sample Type:

Sample ID No.: 03SB110610
Sample Location: 03SB11
Sampled By: R. BALKOVEC
C.O.C. No.: 02363

Type of Sample:
[X] Low Concentration
[] High Concentration

GRAB SAMPLE DATA:

	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 6/19/01	6'-10'	LIGHT BROWN YELLOW	F SAND, T SILT W/ S.S. FRAGS
Time: 1400			
Method: DPT			
Monitor Reading (ppm): 0.0			

COMPOSITE SAMPLE DATA:

	Time	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date:				
Method:				
Monitor Readings (Range in ppm):				

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
~~Volatiles App. IX (VOC 1 + VOC 2)~~	~~(5) encore~~		
App. IX SVOC, SIM, EXP, NC	8 oz w/m glass	✓	
~~EXP, NC~~	~~8 oz w/m glass~~		
~~Appx. IX Herb, Pest, PCBs~~	~~8 oz w/m glass~~		
~~TAL Metals plus Sn, Nitrite/Nitrate~~	~~8 oz w/m glass~~	✓	
Nitrite/Nitrate	8 oz w/m glass		
~~Dioxins/Furans~~	~~4 oz w/m glass~~		~~Triangle Lab~~
~~Perchlorate~~	~~4 oz w/m glass~~		~~APLC Lab~~

OBSERVATIONS / NOTES:

MAP:

Circle if Applicable:

MS/MSD	Duplicate ID No.:
—	—

Signature(s): Robert Balkovec

SOIL SAMPLE LOG SHEET

Project Site Name: NSWC Crane, IN
Project No.: CTO 126 job # N3960

Sample ID No.: 035S120002
Sample Location: 035B12
Sampled By: KM & TR
C.O.C. No.: 02349 LAUCKS

- [x] Surface Soil
- [ ] Subsurface Soil
- [ ] Sediment
- [ ] Other:
- [ ] QA Sample Type:

Type of Sample:
- [X] Low Concentration
- [ ] High Concentration

GRAB SAMPLE DATA:

	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 6-8-01 Time: 1440 Method: HAND AUGER Monitor Reading (ppm): 0.0	0 - 2'	LT BRN TO BRN	MOIST, TR ROOTS, SILT SOME CLAY, TR F SAND TR SANDSTONE FRAGS.

MORE SAND BTM. 6"

COMPOSITE SAMPLE DATA:

	Time	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date:				
Method:				
Monitor Readings (Range in ppm):				

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
Volatiles App. IX (VOC 1 + VOC 2)	~~(5) encore~~	—	
App. ~~IX SVOC~~, SIM, EXP, NC	~~8 oz w/m glass~~	—	
EXP, NC	8 oz w/m glass	✓	
Appx IX ~~Herb, Pest~~, PCBs	~~8 oz w/m glass~~	—	
TAL ~~Metals plus~~ Sn, Nitrite/Nitrate	~~8 oz w/m glass~~	—	
Nitrite/Nitrate	8 oz w/m glass	✓	
~~Dioxine/Furans~~	~~4 oz w/m glass~~	—	Triangle Lab
~~Perchlorate~~	4 ~~oz w/m glass~~	—	APLC Lab

OBSERVATIONS / NOTES:

MONITOR READINGS (PPM)
BZ - 0
BH - 0

MAP:

SEE FIG 4-1

Circle if Applicable:

MS/MSD	Duplicate ID No.:
—	—

Signature(s): TR / SL

SOIL SAMPLE LOG SHEET

Project Site Name: NSWC Crane, IN
Project No.: CTO 126 job # N3960

Sample ID No.: 03SS130002
Sample Location: 1935B13
Sampled By: B. Balkovec
C.O.C. No.: 02363

[X] Surface Soil
[] Subsurface Soil
[] Sediment
[] Other:
[] QA Sample Type:

Type of Sample:
[X] Low Concentration
[] High Concentration

GRAB SAMPLE DATA:

	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 6/20/01 Time: 0831 Method: DPT Monitor Reading (ppm): 0.0	0-2	White, Black + Brown	F-Sand, Gravel w/ Some Silt

COMPOSITE SAMPLE DATA:

	Time	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date:				
Method:				
Monitor Readings (Range in ppm):				

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
~~Volatiles App. IX (VOC 1 + VOC 2)~~	~~(5) encore~~		
App. IX SVOC, SIM, EXP, NC	8 oz w/m glass	✓	
~~EXP, NC~~	~~8 oz w/m glass~~		
~~Appx.IX Herb, Pest, PCBs~~	~~8 oz w/m glass~~		
~~TAL Metals plus Sn, Nitrite/Nitrate~~	~~8 oz w/m glass~~		
Nitrite/Nitrate	8 oz w/m glass	✓	
~~Dioxins/Furans~~	~~4 oz w/m glass~~		Triangle Lab
~~Perchlorate~~	~~4 oz w/m glass~~		~~APLC Lab~~

OBSERVATIONS / NOTES:

MAP:

Circle if Applicable:

MS/MSD	Duplicate ID No.:
—	—

Signature(s): Robert Balkovec

SOIL SAMPLE LOG SHEET

Project Site Name: NSWC Crane, IN
Project No.: CTO 126 job # N3960

Sample ID No.: 03SB130206
Sample Location: 03SB13
Sampled By: B. Balkovec
C.O.C. No.: 02363

[] Surface Soil
[X] Subsurface Soil
[] Sediment
[] Other:
[] QA Sample Type:

Type of Sample:
[X] Low Concentration
[] High Concentration

GRAB SAMPLE DATA:

	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 6/30/01 Time: 0840 Method: DPT Monitor Reading (ppm): 0.0	2'-6'	BROWN	CLAYEY SILT, SAND & GRAVEL, S.S. FRAGS

COMPOSITE SAMPLE DATA:

	Time	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date:				
Method:				
Monitor Readings (Range in ppm):				

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
~~Volatiles App. IX (VOC 1 + VOC 2)~~	~~(5) encore~~		
App. IX SVOC, SIM, EXP, NC	8 oz w/m glass	✓	
~~EXP, NC~~	~~8 oz w/m glass~~		
~~Appx.IX Herb, Pest, PCBs~~	~~8 oz w/m glass~~		
~~TAL Metals plus Sn, Nitrite/Nitrate~~	~~8 oz w/m glass~~		
Nitrite/Nitrate	8 oz w/m glass	✓	
~~Dioxins/Furans~~	~~4 oz w/m glass~~		~~Triangle Lab~~
~~Perchlorate~~	~~4 oz W/m glass~~		APLC Lab

OBSERVATIONS / NOTES:

MAP:

Circle if Applicable:

MS/MSD	Duplicate ID No.:

Signature(s): Robert Balkovec

SOIL SAMPLE LOG SHEET

Project Site Name: NSWC Crane, IN
Project No.: CTO 126 job # N3960

[] Surface Soil
[X] Subsurface Soil
[] Sediment
[] Other:
[] QA Sample Type:

Sample ID No.: 03SB130610
Sample Location: 03SB13
Sampled By: B. Balkovec
C.O.C. No.: 02363

Type of Sample:
[X] Low Concentration
[] High Concentration

GRAB SAMPLE DATA:

	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 6/20/01 Time: 0400 Method: DPT Monitor Reading (ppm): 0-0	6'-10'	BROWN, TAN, & RED	F-C SAND, S.S. FRAGS, SOME SILT & GRAVEL

COMPOSITE SAMPLE DATA:

	Time	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date:				
Method:				
Monitor Readings (Range in ppm):				

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
~~Volatiles App. IX (VOC 1 + VOC 2)~~	~~(5) encore~~		
App. IX SVOC, SIM, EXP, NC	8 oz w/m glass	✓	
~~EXP, NC~~	~~8 oz w/m glass~~		
Appx.IX Herb, Pest, PCBs	~~8 oz w/m glass~~		
~~TAL Metals plus Sn, Nitrite/Nitrate~~	~~8 oz w/m glass~~		
Nitrite/Nitrate	8 oz w/m glass	✓	
~~Dioxins/Furans~~	~~4 oz w/m glass~~		Triangle Lab
~~Perchlorate~~	~~4 oz w/m glass~~		APLC Lab

OBSERVATIONS / NOTES:

MAP:

Circle if Applicable:

MS/MSD	Duplicate ID No.:

Signature(s): Robert Balkovec

SOIL SAMPLE LOG SHEET

Project Site Name: NSWC Crane, IN
Project No.: CTO 126 job # N3960

Sample ID No.: 035514 0002
Sample Location: 035B14
Sampled By: B. Balkovec
C.O.C. No.: 00397

[X] Surface Soil
[ ] Subsurface Soil
[ ] Sediment
[ ] Other:
[ ] QA Sample Type:

Type of Sample:
[X] Low Concentration
[ ] High Concentration

GRAB SAMPLE DATA:

	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 6/20/01 Time: 1734 Method: DPT Monitor Reading (ppm): 0-0	0-2'	Brown-Black	Silty F-Sand, S.S. Frags

COMPOSITE SAMPLE DATA:

	Time	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date:				
Method:				
Monitor Readings (Range in ppm):				

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
~~Volatiles App. IX (VOC 1 + VOC 2)~~	~~(5) encore~~		
App. IX SVOC, SIM, EXP, NC	8 oz w/m glass	✓	
~~EXP, NC~~	~~8 oz w/m glass~~		
~~Appx IX Herb, Pest, PCBs~~	~~8 oz w/m glass~~		
~~TAL Metals plus Sn, Nitrite/Nitrate~~	~~8 oz w/m glass~~		
Nitrite/Nitrate	8 oz w/m glass	✓	
~~Dioxins/Furans~~	~~4 oz w/m glass~~		~~Triangle Lab~~
~~Perchlorate~~	~~4 oz w/m glass~~		~~APLC Lab~~

OBSERVATIONS / NOTES:

MAP:

Circle if Applicable:

MS/MSD	Duplicate ID No.:
—	—

Signature(s): Robert Balkovec

SOIL SAMPLE LOG SHEET

Project Site Name: NSWC Crane, IN
Project No.: CTO 126 job # N3960

[] Surface Soil
[X] Subsurface Soil
[] Sediment
[] Other:
[] QA Sample Type:

Sample ID No.: 03SB140206
Sample Location: 03SB14
Sampled By: B. Balkover
C.O.C. No.: 00397

Type of Sample:
[X] Low Concentration
[] High Concentration

GRAB SAMPLE DATA:

	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 6/20/01 Time: 1745 Method: DPT Monitor Reading (ppm): 0.0	2'-6'	BROWN	SILTY CLAY w/ SS FRAGS + SOME SAND

COMPOSITE SAMPLE DATA:

	Time	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date:				
Method:				
Monitor Readings (Range in ppm):				

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
~~Volatiles App. IX (VOC 1 + VOC 2)~~	~~(5) encore~~		
App. IX SVOC, SIM, EXP, NC	8 oz w/m glass	✓	
~~EXP, NC~~	~~8 oz w/m glass~~		
~~Appx.IX Herb. Pest, PCBs~~	~~8 oz w/m glass~~		
~~TAL Metals plus Sn, Nitrite/Nitrate~~	~~8 oz. w/m glass~~		
Nitrite/Nitrate	8 oz w/m glass	✓	
~~Dioxins/Furans~~	~~4 oz w/m glass~~		~~Triangle Lab~~
~~Perchlorate~~	~~4 oz w/m glass~~		~~APCC Lab~~

OBSERVATIONS / NOTES:

MAP:

Circle if Applicable:

MS/MSD	Duplicate ID No.:
—	—

Signature(s): Robert Balkover

SOIL SAMPLE LOG SHEET

Project Site Name: NSWC Crane, IN
Project No.: CTO 126 job # N3960

[] Surface Soil
[X] Subsurface Soil
[] Sediment
[] Other:
[] QA Sample Type:

Sample ID No.: 035B140610
Sample Location: 035B14
Sampled By: B. Balkowe
C.O.C. No.: 00397

Type of Sample:
[X] Low Concentration
[] High Concentration

GRAB SAMPLE DATA:

	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 6/20/01 Time: 1750 Method: DPT Monitor Reading (ppm): 0.0	6-10'	BROWN, TAN, + YELLOW ORANGE	SILTY CLAY, F-SAND, + SS. FRAGS

COMPOSITE SAMPLE DATA:

	Time	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date:				
Method:				
Monitor Readings (Range in ppm):				

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
~~Volatiles App. IX (VOC 1 + VOC 2)~~	~~(5) encore~~	✓	
App. IX SVOC, SIM, EXP, NC	8 oz w/m glass		
~~EXP, NC~~	~~8 oz w/m glass~~		
~~Appx.IX Herb, Pest, PCBs~~	~~8 oz w/m glass~~		
~~TAL Metals plus Sn, Nitrite/Nitrate~~	~~8 oz w/m glass~~		
Nitrite/Nitrate	8 oz w/m glass	✓	
~~Dioxins/Furans~~	~~4 oz w/m glass~~		~~Triangle Lab~~
~~Perchlorate~~	~~4 oz w/m glass~~		~~APLC Lab~~

OBSERVATIONS / NOTES:

MAP:

Circle if Applicable:

MS/MSD	Duplicate ID No.:

Signature(s): Robert Balkowe

SOIL SAMPLE LOG SHEET

Project Site Name: NSWC Crane, IN
Project No.: CTO 126 job # N3960

Sample ID No.: 0355150002
Sample Location: 035B15
Sampled By: BB / LS
C.O.C. No.: 02366

[X] Surface Soil
[] Subsurface Soil
[] Sediment
[] Other:
[] QA Sample Type:

Type of Sample:
[X] Low Concentration
[] High Concentration

GRAB SAMPLE DATA:

	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 6/20/01 Time: 0912 Method: DPT Monitor Reading (ppm): 0-3	0-2'	WHITE & BROWN	SAND & GRAVEL SOME CLAYEY SILT

COMPOSITE SAMPLE DATA:

	Time	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date:				
Method:				
Monitor Readings (Range in ppm):				

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
~~Volatiles App. IX (VOC 1 + VOC 2)~~	~~(5) encore~~		
App. IX SVOC, SIM, EXP, NC	8 oz w/m glass	✓	
~~EXP, NC~~	~~8 oz w/m glass~~		
~~Appx.IX Herb, Pest, PCBs~~	~~8 oz w/m glass~~		
~~TAL Metals plus Sn, Nitrite/Nitrate~~	~~8 oz w/m glass~~		
Nitrite/Nitrate	8 oz w/m glass	✓	
~~Dioxins/Furans~~	~~4 oz w/m glass~~		~~Triangle Lab~~
~~Perchlorate~~	~~4 oz w/m glass~~		~~APLC Lab~~

OBSERVATIONS / NOTES:

MAP:

Circle if Applicable:

MS/MSD

Duplicate ID No.:

Signature(s): Robert Balkovec

SOIL SAMPLE LOG SHEET

Project Site Name: NSWC Crane, IN
Project No.: CTO 126 job # N3960

[] Surface Soil
[X] Subsurface Soil
[] Sediment
[] Other:
[] QA Sample Type:

Sample ID No.: 035B150206
Sample Location: 035B15
Sampled By: B. BALKOVEC
C.O.C. No.: 02366

Type of Sample:
[X] Low Concentration
[] High Concentration

GRAB SAMPLE DATA:

	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 6/30/01 Time: 0471 Method: DPT Monitor Reading (ppm): 0.0	2-6'	BROWN	CLAYEY SILT, SAND & S.S. FRAGS

COMPOSITE SAMPLE DATA:

	Time	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date:				
Method:				
Monitor Readings (Range in ppm):				

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
~~Volatiles App. IX (VOC 1 + VOC 2)~~	~~(5) encore~~		
App. IX SVOC, SIM, EXP, NC	8 oz w/m glass	2	
~~EXP, NC~~	~~8 oz w/m glass~~		
~~Appx.IX Herb, Pest, PCBs~~	~~8 oz w/m glass~~		
~~TAL Metals plus Sn, Nitrite/Nitrate~~	~~8 oz w/m glass~~		
Nitrite/Nitrate	8 oz w/m glass	2	
~~Dioxins/Furans~~	~~4 oz w/m glass~~		Triangle Lab
~~Perchlorate~~	~~4 oz w/m glass~~		APLC Lab

OBSERVATIONS / NOTES:

MAP:

Circle if Applicable:

MS/MSD	Duplicate ID No.:
—	FD06300101

Signature(s): Robert Balkovec

SOIL SAMPLE LOG SHEET

Project Site Name: NSWC Crane, IN
Project No.: CTO 126 job # N3960

[] Surface Soil
[X] Subsurface Soil
[] Sediment
[] Other:
[] QA Sample Type:

Sample ID No.: 03SB150010
Sample Location: 03SB15
Sampled By: B. Balkover
C.O.C. No.: 023666

Type of Sample:
[X] Low Concentration
[] High Concentration

GRAB SAMPLE DATA:

	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 6/20/01 Time: 0950 Method: DPT Monitor Reading (ppm): 0.0	6-10'	Brown	F-sand, s.s. pebbles, + some clayey silt

COMPOSITE SAMPLE DATA:

	Time	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date:				
Method:				
Monitor Readings (Range in ppm):				

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
~~Volatiles App. IX (VOC 1 + VOC 2)~~	~~(5) encore~~		
App. IX SVOC, SIM, EXP, NC	8 oz w/m glass	✓	
~~EXP, NC~~	~~8 oz w/m glass~~		
~~Appx.IX Herb, Pest, PCBs~~	~~8 oz w/m glass~~		
~~TAL Metals plus Cn, Nitrite/Nitrate~~	~~8 oz w/m glass~~		
Nitrite/Nitrate	8 oz w/m glass	✓	
~~Dioxins/Furans~~	~~4 oz w/m glass~~		~~Triangle Lab~~
~~Perchlorate~~	4 oz w/m glass		~~APLC Lab~~

OBSERVATIONS / NOTES:

MAP:

Circle if Applicable:

MS/MSD	Duplicate ID No.:
—	—

Signature(s): Robert Balkover

SOIL SAMPLE LOG SHEET

Project Site Name: NSWC Crane, IN
Project No.: CTO 126 job # N3960

Sample ID No.: 035S160002
Sample Location: 035B16
Sampled By: BP/RS
C.O.C. No.: 023766

[X] Surface Soil
[ ] Subsurface Soil
[ ] Sediment
[ ] Other:
[ ] QA Sample Type:

Type of Sample:
[X] Low Concentration
[ ] High Concentration

GRAB SAMPLE DATA:

	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 6/20/01 Time: 1010 Method: DPT Monitor Reading (ppm): 0.0	0-2'	BLACK + BROWN	CLAYEY SILT, T-SAND + ORGANICS

COMPOSITE SAMPLE DATA:

	Time	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date:				
Method:				
Monitor Readings (Range in ppm):				

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
~~Volatiles App. IX (VOC 1 + VOC 2)~~	(5) encore		
App. IX SVOC, SIM, EXP, NC	8 oz w/m glass	✓	
~~EXP, NC~~	~~8 oz w/m glass~~		
Appx.IX Herb, Pest, PCBs	8 oz w/m glass		
~~TAL Metals plus Sn, Nitrite/Nitrate~~	~~8 oz w/m glass~~		
Nitrite/Nitrate	8 oz w/m glass	✓	
~~Dioxins/Furans~~	~~4 oz w/m glass~~		Triangle Lab
~~Perchlorate~~	~~4 oz w/m glass~~		~~APLO Lab~~

OBSERVATIONS / NOTES:

MAP:

Circle if Applicable:

MS/MSD	Duplicate ID No.:
—	—

Signature(s): Robert Balkovec

SOIL SAMPLE LOG SHEET

Project Site Name: NSWC Crane, IN
Project No.: CTO 126 job # N3960

[] Surface Soil
[X] Subsurface Soil
[] Sediment
[] Other:
[] QA Sample Type:

Sample ID No.: 035B1602X6
Sample Location: 035B16
Sampled By: B.B / K.S
C.O.C. No.: 023366

Type of Sample:
[X] Low Concentration
[] High Concentration

GRAB SAMPLE DATA:

	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 6/20/01 Time: 1023 Method: DPT Monitor Reading (ppm): 0.0	2-6'	BROWN	CLAYEY SILT, SAND + S.S. FRAGS

COMPOSITE SAMPLE DATA:

	Time	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date:				
Method:				
Monitor Readings (Range in ppm):				

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
~~Volatiles App. IX (VOC 1 + VOC 2)~~	~~(5) encore~~		
App. IX SVOC, SIM, EXP, NC	8 oz w/m glass	✓	
~~EXP, NC~~	~~8 oz w/m glass~~		
~~Appx IX Herb, Pest, PCBs~~	~~8 oz w/m glass~~		
~~TAL Metals plus Sn, Nitrite/Nitrate~~	~~8 oz w/m glass~~		
Nitrite/Nitrate	8 oz w/m glass	✓	
~~Dioxins/Furans~~	~~4 oz w/m glass~~		~~Triangle Lab~~
~~Perchlorate~~	~~4 oz w/m glass~~		~~APLC Lab~~

OBSERVATIONS / NOTES:

MAP:

Circle if Applicable:

MS/MSD	Duplicate ID No.:
—	—

Signature(s): Robert Bulkeres

SOIL SAMPLE LOG SHEET

Project Site Name: NSWC Crane, IN
Project No.: CTO 126 job # N3960

[] Surface Soil
[X] Subsurface Soil
[] Sediment
[] Other:
[] QA Sample Type:

Sample ID No.: 035B16060
Sample Location: 035B16
Sampled By: BB / R-S
C.O.C. No.: 023366

Type of Sample:
[X] Low Concentration
[] High Concentration

GRAB SAMPLE DATA:

	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 6/20/01 Time: 1030 Method: DPT Monitor Reading (ppm): 0-0	6-6'	BROWN	F-SAND, SILTY CLAY, + SS. FRAGS

COMPOSITE SAMPLE DATA:

	Time	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date:				
Method:				
Monitor Readings (Range in ppm):				

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
~~Volatiles App. IX (VOC 1 + VOC 2)~~	~~(5) encore~~		
App. IX SVOC, SIM, EXP, NC	8 oz w/m glass		
~~EXP, NC~~	~~8 oz w/m glass~~		
~~Appx IX Herb, Pest, PCBs~~	~~8 oz w/m glass~~		
~~TAL Metals plus Cn, Nitrite/Nitrate~~	~~8 oz w/m glass~~		
Nitrite/Nitrate	8 oz w/m glass		
~~Dioxins/Furans~~	~~4 oz w/m glass~~		~~Triangle Lab~~
~~Perchlorate~~	~~4 oz w/m glass~~		~~APLC Lab~~

OBSERVATIONS / NOTES:

MAP:

Circle if Applicable:

MS/MSD	Duplicate ID No.:

Signature(s): Robert Balkovec

SOIL SAMPLE LOG SHEET

Project Site Name: NSWC Crane, IN
Project No.: CTO 126 job # N3960

[X] Surface Soil
[] Subsurface Soil
[] Sediment
[] Other:
[] QA Sample Type:

Sample ID No.: 035517 0007
Sample Location: 035517
Sampled By: B. Barnhart
C.O.C. No.: 02367/00395/00396

Type of Sample:
[X] Low Concentration
[] High Concentration

GRAB SAMPLE DATA:

	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 6/20/01 Time: 1358 Method: DPT Monitor Reading (ppm): 0.0	0-2'	Brown & White	Clayey Silt, Sand & Gravel

COMPOSITE SAMPLE DATA:

Date:	Time	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Method:				
Monitor Readings (Range in ppm):				

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
Volatiles App. IX (VOC 1 + VOC 2)	(5) encore	✓	
App. IX SVOC, SIM, EXP, NC	8 oz w/m glass	✓	
~~EXP, NC~~	~~8 oz w/m glass~~		
~~Appx IX Herb, Pest, PCBs~~	~~8 oz w/m glass~~		
TAL Metals plus Sn, Nitrite/Nitrate	8 oz w/m glass	✓	
~~Nitrite/Nitrate~~	~~8 oz w/m glass~~		
Dioxins/Furans	4 oz w/m glass	✓	Triangle Lab
Perchlorate	4 oz w/m glass	✓	APLC Lab

OBSERVATIONS / NOTES:

VOCs collected from .5-2'

MAP:

Circle if Applicable:

MS/MSD	Duplicate ID No.:
—	—

Signature(s): Robert Balkenbush

SOIL SAMPLE LOG SHEET

Project Site Name: NSWC Crane, IN
Project No.: CTO 126 job # N3960

[] Surface Soil
[X] Subsurface Soil
[] Sediment
[] Other:
[] QA Sample Type:

Sample ID No.: 035B170406
Sample Location: 035B17
Sampled By: B BALKOVER
C.O.C. No.: 02367/~~00365~~/00386

Type of Sample:
[X] Low Concentration
[] High Concentration

GRAB SAMPLE DATA:

	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 6/20/01	4-6'	LT. BROWN	SILTY CLAY, T-SAND + S/S FRAGS
Time: 1423			
Method: DPT			
Monitor Reading (ppm): 0.0			

COMPOSITE SAMPLE DATA:

	Time	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date:				
Method:				
Monitor Readings (Range in ppm):				

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
Volatiles App. IX (VOC 1 + VOC 2)	(5) encore	✓	
App. IX SVOC, SIM, EXP, NC	8 oz w/m glass	✓	
~~EXP, NC~~	~~8 oz w/m glass~~		
Appx.IX ~~Herb, Pest, PCBs~~	~~8 oz w/m glass~~		
TAL Metals plus Sn, Nitrite/Nitrate	8 oz w/m glass	✓	
~~Nitrite/Nitrate~~	~~8 oz w/m glass~~		
~~Dioxins/Furans~~	~~4 oz w/m glass~~		~~Triangle Lab~~
Perchlorate	4 oz w/m glass	✓	APLC Lab

OBSERVATIONS / NOTES:

MAP:

Circle if Applicable:

MS/MSD	Duplicate ID No.:
—	—

Signature(s): Robert Balkover

SOIL SAMPLE LOG SHEET

Project Site Name: NSWC Crane, IN
Project No.: CTO 126 job # N3960

[] Surface Soil
[X] Subsurface Soil
[] Sediment
[] Other:
[] QA Sample Type:

Sample ID No.: 035B171214
Sample Location: 035B17
Sampled By: R. BALKOVEC
C.O.C. No.: 02367/003946

Type of Sample:
[X] Low Concentration
[] High Concentration

GRAB SAMPLE DATA:

	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 6/20/01 Time: 1431 Method: DPT Monitor Reading (ppm): 0.0	12-14'	LT. BRN YELLOW OR	F SAND W/ S/S FRAGS. T-CLAY

COMPOSITE SAMPLE DATA:

Date:	Time	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Method:				
Monitor Readings (Range in ppm):				

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
Volatiles App. IX (VOC 1 + VOC 2)	(5) encore	✓	
App. IX SVOC, SIM, EXP, NC	8 oz w/m glass	✓	
~~EXP. NC~~	~~8 oz w/m glass~~		
~~Appx. IX Herb, Pest, PCBs~~	~~8 oz w/m glass~~		
TAL Metals plus Sn, Nitrite/Nitrate	8 oz w/m glass	✓	
~~Nitrite/Nitrate~~	~~8 oz w/m glass~~		
~~Dioxins/Furans~~	~~4 oz w/m glass~~	✓	~~Triangle Lab~~
Perchlorate	4 oz w/m glass	✓	APLC Lab

OBSERVATIONS / NOTES:

MAP:

Circle if Applicable:

MS/MSD	Duplicate ID No.:
—	—

Signature(s): Robert Balkovec

SOIL SAMPLE LOG SHEET

Project Site Name: NSWC Crane, IN
Project No.: CTO 126 job # N3960

Sample ID No.: 035S180002
Sample Location: 035B18
Sampled By: KS - KM
C.O.C. No.: 02381 / 02378

[X] Surface Soil
[ ] Subsurface Soil
[ ] Sediment
[ ] Other:
[ ] QA Sample Type:

Type of Sample:
[X] Low Concentration
[ ] High Concentration

GRAB SAMPLE DATA:

	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 6-24-01 Time: 1140 Method: HAND AUGER Monitor Reading (ppm): 0	0-2'	BRN SOME BLACK	MOIST, TR ROOTS SILT & CLAY

COMPOSITE SAMPLE DATA:

	Time	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date:				
Method:				
Monitor Readings (Range in ppm):				

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
Volatiles App. IX (VOC 1 + VOC 2)	(5) encore	✓	
App. IX SVOC, SIM, EXP, NC	8 oz w/m glass	✓	
~~EXP, NC~~	~~8 oz w/m glass~~	—	
~~Appx.IX Herb, Pest, PCBs~~	~~8 oz w/m glass~~	—	
TAL Metals plus Sn, Nitrite/Nitrate	8 oz w/m glass	✓	
~~Nitrite/Nitrate~~	~~8 oz w/m glass~~	—	—
~~Dioxins/Furans~~	~~4 oz w/m glass~~	—	~~Triangle Lab~~
Perchlorate	4 oz w/m glass	✓	APLC Lab

OBSERVATIONS / NOTES:

MAP:

Circle if Applicable:

MS/MSD	Duplicate ID No.:
—	—

Signature(s):

SOIL SAMPLE LOG SHEET

Project Site Name: NSWC Crane, IN
Project No.: CTO 126 job # N3960

[] Surface Soil
[X] Subsurface Soil
[] Sediment
[] Other:
[] QA Sample Type:

Sample ID No.: 03SB180204
Sample Location: 03SB18
Sampled By: KS - KM
C.O.C. No.: 02381/02378

Type of Sample:
[X] Low Concentration
[] High Concentration

GRAB SAMPLE DATA:

	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 6-24-01 Time: 1200 Method: HAND AUGER Monitor Reading (ppm):	2-4	BRN SOME BLACK	MOIST, CLAY, SILT SOME FLINT COAT & ASH

COMPOSITE SAMPLE DATA:

Date:	Time	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Method:				
Monitor Readings (Range in ppm):				

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
Volatiles App. IX (VOC 1 + VOC 2)	(5) encore		
App. IX SVOC, SIM, EXP. NC	8 oz w/m glass		
~~EXP. NC~~	~~8 oz w/m glass~~	—	
~~Appx.IX Herb, Pest.~~ PCBs	~~8 oz w/m glass~~	—	
TAL Metals plus Sn, Nitrite/Nitrate	8 oz w/m glass		
~~Nitrite/Nitrate~~	~~8 oz w/m glass~~	—	
~~Dioxins/Furans~~	~~4 oz w/m glass~~	—	~~Triangle Lab~~
Perchlorate	4 oz w/m glass		APLC Lab

OBSERVATIONS / NOTES:

MAP:

Circle if Applicable:

MS/MSD	Duplicate ID No.:
—	—

Signature(s):

SOIL SAMPLE LOG SHEET

Project Site Name: NSWC Crane, IN
Project No.: CTO 126 job # N3960

[X] Surface Soil
[ ] Subsurface Soil
[ ] Sediment
[ ] Other:
[ ] QA Sample Type:

Sample ID No.: 035S19 0002
Sample Location: 035S19
Sampled By: BB/KM
C.O.C. No.: 00397/00398

Type of Sample:
[X] Low Concentration
[ ] High Concentration

GRAB SAMPLE DATA:

	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 6/21/01 Time: 1400 Method: DPT Monitor Reading (ppm): 0.0	0-2'	DK. GRAY	CLAY, TRACE SAND

COMPOSITE SAMPLE DATA:

	Time	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date:				
Method:				
Monitor Readings (Range in ppm):				

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
Volatiles App. IX (VOC 1 + VOC 2)	(5) encore	✓	
App. IX SVOC, SIM, EXP, NC	8 oz w/m glass	✓	
~~EXP. NC~~	~~8 oz w/m glass~~		
~~Appx.IX Herb, Pest, PCBs~~	~~8 oz w/m glass~~		
TAL Metals plus Sn, Nitrite/Nitrate	8 oz w/m glass	✓	
~~Nitrite/Nitrate~~	~~8 oz w/m glass~~		
Dioxins/Furans	4 oz w/m glass		~~Triangle Lab~~
Perchlorate	4 oz w/m glass	✓	APLC Lab

OBSERVATIONS / NOTES:

MAP:

Circle if Applicable:

MS/MSD	Duplicate ID No.:
—	—

Signature(s): Robert Belkeve

SOIL SAMPLE LOG SHEET

Project Site Name: NSWC Crane, IN
Project No.: CTO 126 job # N3960

[] Surface Soil
[X] Subsurface Soil
[] Sediment
[] Other:
[] QA Sample Type:

Sample ID No.: 035SB190204
Sample Location: 035SB19
Sampled By: BB/RS
C.O.C. No.: 00397/00398

Type of Sample:
[X] Low Concentration
[] High Concentration

GRAB SAMPLE DATA:

	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 6/21/01 Time: 1410 Method: DPT Monitor Reading (ppm): 0.0	2-4'	BLACK + BROWN	ASH, SILTY CLAY, BURNT DEBRIS

COMPOSITE SAMPLE DATA:

Date:	Time	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Method:				
Monitor Readings (Range in ppm):				

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
Volatiles App. IX (VOC 1 + VOC 2)	(5) encore	✓	
App. IX SVOC, SIM, EXP, NC	8 oz w/m glass	✓	
~~EXP, NC~~	~~8 oz w/m glass~~		
~~Appx IX Herb, Pest, PCBs~~	~~8 oz w/m glass~~		
TAL Metals plus Sn, Nitrite/Nitrate	8 oz w/m glass	✓	
~~Nitrite/Nitrate~~	~~8 oz w/m glass~~		
~~Dioxins/Furans~~	~~4 oz w/m glass~~		~~Triangle Lab~~
Perchlorate	4 oz w/m glass	✓	APLC Lab

OBSERVATIONS / NOTES:

MAP:

Circle if Applicable:

MS/MSD	Duplicate ID No.:
—	—

Signature(s): Robert Belkner

SOIL SAMPLE LOG SHEET

Project Site Name: NSWC Crane, IN
Project No.: CTO 126 Job # N3960

[] Surface Soil
[X] Subsurface Soil
[] Sediment
[] Other:
[] QA Sample Type:

Sample ID No.: 03SB14L2L5
Sample Location: 03SB14
Sampled By: BB/KM
C.O.C. No.: 00347/00348/00395

Type of Sample:
[X] Low Concentration
[] High Concentration

GRAB SAMPLE DATA:

	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 6/21/01 Time: 1420 Method: OPT Monitor Reading (ppm): 0.0	12-15'	TAN, YELLOW OR + BROWN	F-SAND, S.S. FRAGS, SANDY CLAY

COMPOSITE SAMPLE DATA:

	Time	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date:				
Method:				
Monitor Readings (Range in ppm):				

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
Volatiles App. IX (VOC 1 + VOC 2)	(5) encore	10	
App. IX SVOC, SIM, EXP, NC	8 oz w/m glass	2	
~~EXP, NC~~	~~8 oz w/m glass~~		
~~Appx.IX Herb, Pest, PCBs~~	~~8 oz w/m glass~~		
TAL Metals plus Sn, Nitrite/Nitrate	8 oz w/m glass	2	
~~Nitrite/Nitrate~~	~~8 oz w/m glass~~		
Dioxins/Furans	4 oz w/m glass	2	Triangle Lab
Perchlorate	4 oz w/m glass	2	APLC Lab

OBSERVATIONS / NOTES:

MAP:

Circle if Applicable:

MS/MSD	Duplicate ID No.:
—	FD0621010101

Signature(s): Robert Balkovec

SOIL SAMPLE LOG SHEET

Project Site Name: NSWC Crane, IN
Project No.: CTO 126 job # N3960

[X] Surface Soil
[ ] Subsurface Soil
[ ] Sediment
[ ] Other:
[ ] QA Sample Type:

Sample ID No.: 0SS20 0002
Sample Location: 0SSB20
Sampled By: R. Balkover
C.O.C. No.: 02367/00346/00345

Type of Sample:
[X] Low Concentration
[ ] High Concentration

GRAB SAMPLE DATA:

	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 6/20/01	0-2'	BROWN	SANDY SILT, T-S.S. FRAGS
Time: 1600			
Method: DPT			
Monitor Reading (ppm): 0-0			

COMPOSITE SAMPLE DATA:

	Time	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date:				
Method:				
Monitor Readings (Range in ppm):				

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
Volatiles App. IX (VOC 1 + VOC 2)	(5) encore	✓	
App. IX SVOC, SIM, EXP, NC	8 oz w/m glass	✓	
~~EXP, NC~~	~~8 oz w/m glass~~		
~~Appx.IX Herb, Pest, PCBs~~	~~8 oz w/m glass~~		
TAL Metals plus Sn, Nitrite/Nitrate	8 oz w/m glass	✓	
~~Nitrite/Nitrate~~	~~8 oz w/m glass~~		
Dioxins/Furans	4 oz w/m glass	✓	Triangle Lab
Perchlorate	4 oz w/m glass	✓	APLC Lab

OBSERVATIONS / NOTES:

MAP:

Circle if Applicable:

MS/MSD	Duplicate ID No.:
—	—

Signature(s): Robert Balkover

SOIL SAMPLE LOG SHEET

Project Site Name: NSWC Crane, IN
Project No.: CTO 126 job # N3960

[] Surface Soil
[X] Subsurface Soil
[] Sediment
[] Other:
[] QA Sample Type:

Sample ID No.: 03SB20SB10
Sample Location: 03SB20
Sampled By: R. Balkovec
C.O.C. No.: 02367/00396

Type of Sample:
[X] Low Concentration
[] High Concentration

GRAB SAMPLE DATA:

	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 6/20/01 Time: 1625 Method: DPT Monitor Reading (ppm): 0<0	8-10	BROWN	SILTY SAND, SAND, S.S. FRAGS

COMPOSITE SAMPLE DATA:

	Time	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date:				
Method:				
Monitor Readings (Range in ppm):				

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
Volatiles App. IX (VOC 1 + VOC 2)	(5) encore	2	
App. IX SVOC, SIM, EXP, NC	8 oz w/m glass	2	
~~EXP, NC~~	~~8 oz w/m glass~~		
~~Appx IX Herb, Pest, PCBs~~	8 oz w/m glass		
TAL Metals plus Sn, Nitrite/Nitrate	8 oz w/m glass	2	
~~Nitrite/Nitrate~~	~~8 oz w/m glass~~		
~~Dioxins/Furans~~	~~4 oz w/m glass~~		~~Triangle Lab~~
Perchlorate	4 oz w/m glass	2	APLC Lab

OBSERVATIONS / NOTES:

MAP:

Circle if Applicable:

MS/MSD	Duplicate ID No.:
—	F006200103

Signature(s): Robert Balkovec

SOIL SAMPLE LOG SHEET

Project Site Name: NSWC Crane, IN
Project No.: CTO 126 job # N3960

[] Surface Soil
[X] Subsurface Soil
[] Sediment
[] Other:
[] QA Sample Type:

Sample ID No.: 03SB201215
Sample Location: 03SB82
Sampled By: B. Balkovec
C.O.C. No.: 02367/00396

Type of Sample:
[X] Low Concentration
[] High Concentration

GRAB SAMPLE DATA:

	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 6/20/01 Time: 1635 Method: DPT Monitor Reading (ppm): 0.0	12'-15'	TAN + YELLOW OR	SOME SILTY CLAY, F-SAND + S.S. FRAGS

COMPOSITE SAMPLE DATA:

Date:	Time	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Method:				
Monitor Readings (Range in ppm):				

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
Volatiles App. IX (VOC 1 + VOC 2)	(5) encore	✓	
App. IX SVOC, SIM, EXP, NC	8 oz w/m glass	✓	
~~EXP. NC~~	~~8 oz w/m glass~~		
~~Appx IX Herb. Pest. PCBs~~	~~8 oz w/m glass~~		
TAL Metals plus Sn, Nitrite/Nitrate	8 oz w/m glass	✓	
~~Nitrite/Nitrate~~	~~8 oz w/m glass~~		
~~Dioxins/Furans~~	~~4 oz w/m glass~~		~~Triangle Lab~~
Perchlorate	4 oz w/m glass	✓	APLC Lab

OBSERVATIONS / NOTES:

MAP:

Circle if Applicable:

MS/MSD	Duplicate ID No.:
—	—

Signature(s): Robert Balkovec

SOIL SAMPLE LOG SHEET

Project Site Name: NSWC Crane, IN
Project No.: CTO 126 job # N3960

[X] Surface Soil
[ ] Subsurface Soil
[ ] Sediment
[ ] Other:
[ ] QA Sample Type:

Sample ID No.: 03SS21 0002
Sample Location: 03SB21
Sampled By: B. BALKOVEC
C.O.C. No.: 02367/00396

Type of Sample:
[X] Low Concentration
[ ] High Concentration

GRAB SAMPLE DATA:

	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 6/20/01 Time: 1452 Method: DPT Monitor Reading (ppm): 0.0	0-2	WHITE + BROWN	SILTY CLAY, SOME SAND + GRAVEL + ASH.

COMPOSITE SAMPLE DATA:

	Time	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date:				
Method:				
Monitor Readings (Range in ppm):				

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
Volatiles App. IX (VOC 1 + VOC 2)	(5) encore	✓	
App. IX SVOC, SIM, EXP, NC	8 oz w/m glass	✓	
~~EXP, NC~~	~~8 oz w/m glass~~		
~~Appx.IX Herb Pest PCBs~~	~~8 oz w/m glass~~		
TAL Metals plus Sn, Nitrite/Nitrate	8 oz w/m glass	✓	
~~Nitrite/Nitrate~~	~~8 oz w/m glass~~		
~~Dioxins/Furans~~	~~4 oz w/m glass~~		~~Triangle Lab~~
Perchlorate	4 oz w/m glass	✓	APLC Lab

OBSERVATIONS / NOTES:

VOC'S COLLECTED @ 5-2'

MAP:

Circle if Applicable:

MS/MSD	Duplicate ID No.:
—	

Signature(s): Robert Balkovec

SOIL SAMPLE LOG SHEET

Project Site Name: NSWC Crane, IN
Project No.: CTO 126 job # N3960

[] Surface Soil
[X] Subsurface Soil
[] Sediment
[] Other:
[] QA Sample Type:

Sample ID No.: 03SB21 1012
Sample Location: 03SB21
Sampled By: B BALKOVEC
C.O.C. No.: 02367/003946

Type of Sample:
[X] Low Concentration
[] High Concentration

GRAB SAMPLE DATA:

	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 6/20/01 Time: 1530 Method: DPT Monitor Reading (ppm): 0.0	10-12	Dk. Brown + Yellow OR	F. SAND, TRACE + S.S. FRAGS

COMPOSITE SAMPLE DATA:

	Time	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date:				
Method:				
Monitor Readings (Range in ppm):				

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
Volatiles App. IX (VOC 1 + VOC 2)	(5) encore	✓	
App. IX SVOC, SIM, EXP, NC	8 oz w/m glass	✓	
~~EXP, NC~~	~~8 oz w/m glass~~		
~~Appx.IX Herb, Pest, PCBs~~	~~8 oz w/m glass~~		
TAL Metals plus Sn, Nitrite/Nitrate	8 oz w/m glass	✓	
~~Nitrite/Nitrate~~	~~8 oz w/m glass~~		
~~Dioxins/Furans~~	4 oz w/m glass		~~Triangle Lab~~
Perchlorate	4 oz w/m glass	✓	APLC Lab

OBSERVATIONS / NOTES:

MAP:

Circle if Applicable:

MS/MSD	Duplicate ID No.:
—	—

Signature(s): Robert Balkovec

SOIL SAMPLE LOG SHEET

Project Site Name: NSWC Crane, IN
Project No.: CTO 126 job # N3960

[] Surface Soil
[X] Subsurface Soil
[] Sediment
[] Other:
[] QA Sample Type:

Sample ID No.: 03SB21125
Sample Location: 03SB21
Sampled By: B. BALKOVEC
C.O.C. No.: 02367/002980

Type of Sample:
[X] Low Concentration
[] High Concentration

GRAB SAMPLE DATA:

	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 6/20/01	12-15'	TAN + YELLOW IR	F-SAND, W/ S.S FRAGS + SOME CLAY
Time: 1540			
Method: DPT			
Monitor Reading (ppm): ND			

COMPOSITE SAMPLE DATA:

	Time	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date:				
Method:				
Monitor Readings (Range in ppm):				

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
Volatiles App. IX (VOC 1 + VOC 2)	(5) encore	✓	
App. IX SVOC, SIM, EXP, NC	8 oz w/m glass	✓	
~~EXP, NC~~	~~8 oz w/m glass~~		
~~Appx.IX Herb, Pest, PCBs~~	~~8 oz w/m glass~~		
TAL Metals plus Sn, Nitrite/Nitrate	8 oz w/m glass	✓	
~~Nitrite/Nitrate~~	~~8 oz w/m glass~~		
~~Dioxine/Furans~~	~~4 oz w/m glass~~		~~Triangle Lab~~
Perchlorate	4 oz w/m glass	✓	APLC Lab

OBSERVATIONS / NOTES:

MAP:

Circle if Applicable:

MS/MSD	Duplicate ID No.:
—	—

Signature(s): Robert Balkovec

SOIL SAMPLE LOG SHEET

Project Site Name: NSWC Crane, IN
Project No.: CTO 126 job # N3960

[X] Surface Soil
[] Subsurface Soil
[] Sediment
[] Other:
[] QA Sample Type:

Sample ID No.: 03SS220002
Sample Location: 03SB22
Sampled By: B.B / K.M
C.O.C. No.: 003987 / 003990

Type of Sample:
[X] Low Concentration
[] High Concentration

GRAB SAMPLE DATA:

	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 6/21/01 Time: 1300 Method: DPT Monitor Reading (ppm): 0-2	0-2'	GRAY	CLAY, 2-SILT & SAND

COMPOSITE SAMPLE DATA:

	Time	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date:				
Method:				
Monitor Readings (Range in ppm):				

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
Volatiles App. IX (VOC 1 + VOC 2)	(5) encore	✓	
App. IX SVOC, SIM, EXP, NC	8 oz w/m glass	✓	
~~EXP. NC~~	~~8 oz w/m glass~~		
~~Appx.IX Herb, Pest, PCBs~~	~~8 oz w/m glass~~		
TAL Metals plus Sn, Nitrite/Nitrate	8 oz w/m glass	✓	
~~Nitrite/Nitrate~~	~~8 oz w/m glass~~		
~~Dioxins/Furans~~	~~4 oz w/m glass~~	~~✓~~	~~Triangle Lab~~
Perchlorate	4 oz w/m glass	✓	APLC Lab

OBSERVATIONS / NOTES:

MAP:

Circle if Applicable:

MS/MSD	Duplicate ID No.:
—	—

Signature(s): Robert Belkover

SOIL SAMPLE LOG SHEET

Project Site Name: NSWC Crane, IN
Project No.: CTO 126 job # N3960

Sample ID No.: 035B22 0204
Sample Location: 035B22
Sampled By: B.B / R.M
C.O.C. No.: 00397/00348

[] Surface Soil
[X] Subsurface Soil
[] Sediment
[] Other:
[] QA Sample Type:

Type of Sample:
[X] Low Concentration
[] High Concentration

GRAB SAMPLE DATA:

	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 8/21/01 Time: 1325 Method: DPT Monitor Reading (ppm): 0-0	2'-4'	BROWN + BLACK	ASH + SOME CLAY, BURNT MATERIALS METAL, NAILS.

COMPOSITE SAMPLE DATA:

	Time	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date:				
Method:				
Monitor Readings (Range in ppm):				

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
Volatiles App. IX (VOC 1 + VOC 2)	(5) encore	✓	
App. IX SVOC, SIM, EXP, NC	8 oz w/m glass	✓	
~~EXP, NC~~	~~8 oz w/m glass~~		
~~Appx.IX Herb, Pest, PCBs~~	~~8 oz w/m glass~~		
TAL Metals plus Sn, Nitrite/Nitrate	8 oz w/m glass	✓	
~~Nitrite/Nitrate~~	~~8 oz w/m glass~~		
~~Dioxins/Furans~~	4 oz w/m glass		Triangle Lab
Perchlorate	4 oz w/m glass	✓	APLC Lab

OBSERVATIONS / NOTES:

MAP:

Circle if Applicable:

MS/MSD	Duplicate ID No.:
—	—

Signature(s): Robert Bulkere

SOIL SAMPLE LOG SHEET

Project Site Name: NSWC Crane, IN
Project No.: CTO 126 job # N3960

[] Surface Soil
[X] Subsurface Soil
[] Sediment
[] Other:
[] QA Sample Type:

Sample ID No.: 035B22245
Sample Location: 035B22
Sampled By: BB/RM
C.O.C. No.: 00397/00398

Type of Sample:
[X] Low Concentration
[] High Concentration

GRAB SAMPLE DATA:

	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 6/21/01 Time: 1340 Method: DPT Monitor Reading (ppm): 0.0	12-15'	TAN, YELLOW OR BROWN	F. SAND + S.S PEBBLES, SOME CLAY

COMPOSITE SAMPLE DATA:

Date:	Time	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Method:				
Monitor Readings (Range in ppm):				

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
Volatiles App. IX (VOC 1 + VOC 2)	(5) encore	✓	
App. IX SVOC, SIM, EXP, NC	8 oz w/m glass	✓	
~~EXP, NC~~	~~8 oz w/m glass~~		
~~Appx. IX Herb, Pest, PCBs~~	~~8 oz w/m glass~~		
TAL Metals plus Sn, Nitrite/Nitrate	8 oz w/m glass	✓	
~~Nitrite/Nitrate~~	~~8 oz w/m glass~~		
~~Dioxine/Furane~~	~~4 oz w/m glass~~		~~Triangle Lab~~
Perchlorate	4 oz w/m glass	✓	APLC Lab

OBSERVATIONS / NOTES:

MAP:

Circle if Applicable:

MS/MSD	Duplicate ID No.:
—	—

Signature(s): Robert Bulkner

SOIL SAMPLE LOG SHEET

Project Site Name: NSWC Crane, IN
Project No.: CTO 126 job # N3960

[X] Surface Soil
[ ] Subsurface Soil
[ ] Sediment
[ ] Other:
[ ] QA Sample Type:

Sample ID No.: 035B23 0002
Sample Location: 035B23
Sampled By: KS - KM
C.O.C. No.: 02382/02378/00395

Type of Sample:
[X] Low Concentration
[ ] High Concentration

GRAB SAMPLE DATA:

	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 6-24-01 Time: 1216 Method: HAND AUGER Monitor Reading (ppm): 0.0	0-2'	BRN	MOIST, TR ROOTS SANDY SILT, F. SAND TR CLAY

COMPOSITE SAMPLE DATA:

Date:	Time	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Method:				
Monitor Readings (Range in ppm):				

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements		Collected	Other
Volatiles App. IX (VOC 1 + VOC 2)	(5) encore	12	✓	
App. IX SVOC, SIM, EXP, NC	8 oz w/m glass	1	✓	
~~EXP, NC~~	~~8 oz w/m glass~~		—	
~~Appx IX Herb, Pest, PCBs~~	~~8 oz w/m glass~~		—	
TAL Metals plus Sn, Nitrite/Nitrate	8 oz w/m glass	1	✓	
~~Nitrite/Nitrate~~	~~8 oz w/m glass~~		—	
Dioxins/Furans	4 oz w/m glass	2	✓	Triangle Lab
Perchlorate	4 oz w/m glass	2	✓	APLC Lab

OBSERVATIONS / NOTES:

MAP: X VOC FOR MS/MSD

Circle if Applicable:

MS/MSD	Duplicate ID No.:
YES	—

Signature(s): [illegible]

SOIL SAMPLE LOG SHEET

Project Site Name: NSWC Crane, IN
Project No.: CTO 126 job # N3960

[] Surface Soil
[X] Subsurface Soil
[] Sediment
[] Other:
[] QA Sample Type:

Sample ID No.: 03SB230610
Sample Location: 03SB23
Sampled By: KS-KM
C.O.C. No.: 02382/02378

Type of Sample:
[X] Low Concentration
[] High Concentration

GRAB SAMPLE DATA:

	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 6-24-01	KS	BRN, GRAY	CLAY, SOME SILT, SOME
Time: 1310	~~2~~ 6-10	BLACK	FINE SAND
Method: HAND AUGER			MOIST/WET
Monitor Reading (ppm): 0			

COMPOSITE SAMPLE DATA:

Date:	Time	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Method:				
Monitor Readings				
(Range in ppm):				

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
Volatiles App. IX (VOC 1 + VOC 2)	(5) encore	✓	
App. IX SVOC, SIM, EXP, NC	8 oz w/m glass		
~~EXP, NC~~	~~8 oz w/m glass~~	—	
~~Appx.IX Herb, Pest, PCBs~~	~~8 oz w/m glass~~	—	
TAL Metals plus Sn, Nitrite/Nitrate	8 oz w/m glass	✓	
~~Nitrite/Nitrate~~	~~8 oz w/m glass~~	—	
~~Dioxins/Furans~~	~~4 oz w/m glass~~	—	~~Triangle Lab~~
Perchlorate	4 oz w/m glass		APLC Lab

OBSERVATIONS / NOTES:

≈ 4' LOWER THAN JT ELEV.
10' TD = 14' ON JT

MAP:

Circle if Applicable:

MS/MSD	Duplicate ID No.:
—	—

Signature(s): [illegible]

SOIL SAMPLE LOG SHEET

Project Site Name: NSWC Crane, IN
Project No.: CTO 126 job # N3960

Sample ID No.: 03SS240002
Sample Location: 03SB24
Sampled By: B. BALKOVER/KLS
C.O.C. No.: 002397/002398

[X] Surface Soil
[ ] Subsurface Soil
[ ] Sediment
[ ] Other:
[ ] QA Sample Type:

Type of Sample:
[X] Low Concentration
[ ] High Concentration

GRAB SAMPLE DATA:

	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 6/28/01 Time: 1043 Method: DPT Monitor Reading (ppm): 0-2	0-2	WHITE-BROWN	SILTY CLAY, CLAYEY SILT, SAND GRAVEL, TRACE

COMPOSITE SAMPLE DATA:

	Time	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date:				
Method:				
Monitor Readings (Range in ppm):				

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
Volatiles App. IX (VOC 1 + VOC 2)	(5) encore	✓	
App. IX SVOC, SIM, EXP, NC	8 oz w/m glass	✓	
~~EXP, NC~~	~~8 oz w/m glass~~		
~~Appx. IX Herb, Pest, PCBs~~	~~8 oz w/m glass~~		
TAL Metals plus Sn, Nitrite/Nitrate	8 oz w/m glass	✓	
~~Nitrite/Nitrate~~	~~8 oz w/m glass~~		
~~Dioxins/Furans~~	~~4 oz w/m glass~~		~~Triangle Lab~~
Perchlorate	4 oz w/m glass	✓	APLC Lab

OBSERVATIONS / NOTES:

VOC'S COLLECTED @ (.5-2')

MAP:

Circle if Applicable:

MS/MSD	Duplicate ID No.:
—	

Signature(s): Robert Balkover

SOIL SAMPLE LOG SHEET

Project Site Name: NSWC Crane, IN
Project No.: CTO 126 job # N3960

[] Surface Soil
[X] Subsurface Soil
[] Sediment
[] Other:
[] QA Sample Type:

Sample ID No.: 03SB24 0406
Sample Location: 03SB24
Sampled By: BA/RR
C.O.C. No.: 00397/00398

Type of Sample:
[X] Low Concentration
[] High Concentration

GRAB SAMPLE DATA:

	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 6/28/01	4-6	BLACK-BROWN	SILTY CLAY, ASH, F-SAND + GRAVELS
Time: 1112			
Method: DPT			
Monitor Reading (ppm): 0-0			

COMPOSITE SAMPLE DATA:

Date:	Time	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Method:				
Monitor Readings (Range in ppm):				

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
Volatiles App. IX (VOC 1 + VOC 2)	(5) encore	✓	
App. IX SVOC, SIM, EXP, NC	8 oz w/m glass	✓	
~~EXP, NC~~	~~8 oz w/m glass~~		
~~Appx.IX Herb, Pest, PCBs~~	~~8 oz w/m glass~~		
TAL Metals plus Sn, Nitrite/Nitrate	8 oz w/m glass	✓	
~~Nitrite/Nitrate~~	~~8 oz w/m glass~~		
~~Dioxins/Furans~~	~~4 oz w/m glass~~		~~Triangle Lab~~
Perchlorate	4 oz w/m glass	✓	APLC Lab

OBSERVATIONS / NOTES:

MAP:

Circle if Applicable:

MS/MSD

Duplicate ID No.:

Signature(s): Robert Balkwill

SOIL SAMPLE LOG SHEET

Project Site Name: NSWC Crane, IN
Project No.: CTO 126 job # N3960

[] Surface Soil
[X] Subsurface Soil
[] Sediment
[] Other:
[] QA Sample Type:

Sample ID No.: 03SB241215
Sample Location: 03SB24
Sampled By: BB/KS
C.O.C. No.: 00347/00348

Type of Sample:
[X] Low Concentration
[] High Concentration

GRAB SAMPLE DATA:

	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 6/21/01			
Time: 1125	12-15'	TAN YELLOW + BROWN	F-SAND, SANDY CLAY, SS-PEBBLES T-SILT
Method: DPT			
Monitor Reading (ppm): 0-0			

COMPOSITE SAMPLE DATA:

	Time	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date:				
Method:				
Monitor Readings (Range in ppm):				

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
Volatiles App. IX (VOC 1 + VOC 2)	(12) ~~(5)~~ encore	12 ✓	
App. IX SVOC, SIM, EXP, NC	(2) 8 oz w/m glass	2 ✓	
~~EXP, NC~~	~~8 oz w/m glass~~		
~~Appx IX, Herb, Pest, PCBs~~	~~8 oz w/m glass~~		
TAL Metals plus Sn, Nitrite/Nitrate	8 oz w/m glass	1 ✓	
~~Nitrite/Nitrate~~	~~8 oz w/m glass~~		
Dioxins/Furans	(2) 4 oz w/m glass	2 ✓	Triangle Lab
Perchlorate	(2) 4 oz w/m glass	2 ✓	APLC Lab

OBSERVATIONS / NOTES:

MAP:

Circle if Applicable:
MS/MSD

Duplicate ID No.:

Signature(s): Robert Balkema

SOIL SAMPLE LOG SHEET

Project Site Name: NSWC Crane, IN
Project No.: CTO 126 job # N3960

Sample ID No.: 0355250002
Sample Location: 0355325
Sampled By: B. Balkcom
C.O.C. No.: 02367/00396/00345

[X] Surface Soil
[] Subsurface Soil
[] Sediment
[] Other:
[] QA Sample Type:

Type of Sample:
[X] Low Concentration
[] High Concentration

GRAB SAMPLE DATA:

	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 6/20/01 Time: 1655 Method: DPT Monitor Reading (ppm): 0.0	0-2'	BROWN	SILTY CLAY, W/ S.S FRAGS

COMPOSITE SAMPLE DATA:

	Time	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date:				
Method:				
Monitor Readings (Range in ppm):				

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
Volatiles App. IX (VOC 1 + VOC 2)	(5) encore	✓	
App. IX SVOC, SIM, EXP, NC	8 oz w/m glass	✓	
~~EXP, NC~~	~~8 oz w/m glass~~		
~~Appx IX Herb, Pest, PCBs~~	~~8 oz w/m glass~~		
TAL Metals plus Sn, Nitrite/Nitrate	8 oz w/m glass	✓	
~~Nitrite/Nitrate~~	~~8 oz w/m glass~~		
Dioxins/Furans	4 oz w/m glass	✓	Triangle Lab
Perchlorate	4 oz w/m glass	✓	APLC Lab

OBSERVATIONS / NOTES:

MAP:

Circle if Applicable:

MS/MSD	Duplicate ID No.:
—	

Signature(s): Robert Balkcom

SOIL SAMPLE LOG SHEET

Project Site Name: NSWC Crane, IN
Project No.: CTO 126 job # N3960

Sample ID No.: 03SB25-0608
Sample Location: 03SB25
Sampled By: R. BALLOVER
C.O.C. No.: 02367/003966

[ ] Surface Soil
[X] Subsurface Soil
[ ] Sediment
[ ] Other:
[ ] QA Sample Type:

Type of Sample:
[X] Low Concentration
[ ] High Concentration

GRAB SAMPLE DATA:

	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 6/20/01 Time: 1707 Method: DPT Monitor Reading (ppm): 0-0	6'-8'	BROWN	SILTY CLAY, S.S FRAGS + SOME SAND

COMPOSITE SAMPLE DATA:

	Time	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date:				
Method:				
Monitor Readings (Range in ppm):				

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
Volatiles App. IX (VOC 1 + VOC 2)	(5) encore	✓	
App. IX SVOC, SIM, EXP, NC	8 oz w/m glass	✓	
~~EXP, NC~~	~~8 oz w/m glass~~		
~~Appx.IX Herb, Pest, PCBs~~	~~8 oz w/m glass~~		
TAL Metals plus Sn, Nitrite/Nitrate	8 oz w/m glass	✓	
~~Nitrite/Nitrate~~	~~8 oz w/m glass~~		
~~Dioxins/Furans~~	~~4 oz w/m glass~~		~~Triangle Lab~~
Perchlorate	4 oz w/m glass	✓	APLC Lab

OBSERVATIONS / NOTES:

MAP:

Circle if Applicable:

MS/MSD	Duplicate ID No.:

Signature(s): Robert Ballover

SOIL SAMPLE LOG SHEET

Project Site Name: NSWC Crane, IN
Project No.: CTO 126 job # N3960

[X] Surface Soil
[] Subsurface Soil
[] Sediment
[] Other:
[] QA Sample Type:

Sample ID No.: 0355260002
Sample Location: 035B26
Sampled By: RS - KM
C.O.C. No.: 02382/02383/00795

Type of Sample:
[X] Low Concentration
[] High Concentration

GRAB SAMPLE DATA:

	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 6-24-01 Time: 1340 Method: HAND AUGER Monitor Reading (ppm): 0	0 - 2'	BRN	SILT & F. SAND, TR CLAY MOIST, TR. ROOTS

COMPOSITE SAMPLE DATA:

Date:	Time	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Method:				
Monitor Readings (Range in ppm):				

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
Volatiles App. IX (VOC 1 + VOC 2)	(5) encore	✓	
App. IX SVOC, SIM, EXP. NC	8 oz w/m glass	✓	
~~EXP. NC~~	~~8 oz w/m glass~~	—	
~~Appx.IX Herb. Pest. PCBs~~	~~8 oz w/m glass~~	—	
TAL Metals plus Sn, Nitrite/Nitrate	8 oz w/m glass	✓	
~~Nitrite/Nitrate~~	~~8 oz w/m glass~~	—	
Dioxins/Furans	4 oz w/m glass	✓	Triangle Lab
Perchlorate	4 oz w/m glass	✓	APLC Lab

OBSERVATIONS / NOTES:

MAP:

Circle if Applicable:

MS/MSD	Duplicate ID No.:
—	—

Signature(s):

SOIL SAMPLE LOG SHEET

Project Site Name: NSWC Crane, IN
Project No.: CTO 126 job # N3960

[] Surface Soil
[X] Subsurface Soil
[] Sediment
[] Other:
[] QA Sample Type:

Sample ID No.: 03 SB260610
Sample Location: 03SB26
Sampled By: KS - KM
C.O.C. No.: 02382/02383

Type of Sample:
[X] Low Concentration
[] High Concentration

GRAB SAMPLE DATA:

	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 6.24.01 Time: 1415 Method: HAND AUGER Monitor Reading (ppm): 0	6-10'	GRAY	CLAY, WET

COMPOSITE SAMPLE DATA:

Date:	Time	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Method:				
Monitor Readings (Range in ppm):				

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
Volatiles App. IX (VOC 1 + VOC 2)	(5) encore	✓	
App. IX SVOC, SIM, EXP, NC	8 oz w/m glass	✓	
~~EXP, NC~~	~~8 oz w/m~~ glass	—	
~~Appx IX Herb, Pest, PCBs~~	~~8 oz w/m~~ glass	—	
TAL Metals plus Sn, Nitrite/Nitrate	8 oz w/m glass	✓	
~~Nitrite/Nitrate~~	~~8 oz w/m~~ glass	—	
~~Dioxins/Furans~~	~~4 oz w/m~~ glass	—	~~Triangle Lab~~
Perchlorate	4 oz w/m glass	✓	APLC Lab
	2XVOL FOR DUP		

OBSERVATIONS / NOTES:

MAP:

Circle if Applicable:

MS/MSD	Duplicate ID No.:
—	FD 062401 01

Signature(s):

SOIL SAMPLE LOG SHEET

Project Site Name: NSWC Crane, IN
Project No.: CTO 126 job # N3960

[X] Surface Soil
[ ] Subsurface Soil
[ ] Sediment
[ ] Other:
[ ] QA Sample Type:

Sample ID No.: 035527 0002
Sample Location: 035B27
Sampled By: KS - RM
C.O.C. No.: 02382/02383

Type of Sample:
[X] Low Concentration
[ ] High Concentration

GRAB SAMPLE DATA:

	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 6-24-01 Time: 1455 Method: HAND AUGER Monitor Reading (ppm): 0	0-2	BRN	MOIST, TR ROOTS, CLAY SOME SILT TR SANDSTONE FRAGS

COMPOSITE SAMPLE DATA:

Date:	Time	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Method:				
Monitor Readings (Range in ppm):				

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
Volatiles App. IX (VOC 1 + VOC 2)	~~(5)~~ encore 4	✓	
App. IX SVOC, SIM, EXP, NC	8 oz w/m glass	✓	
~~EXP, NC~~	~~8 oz w/m glass~~	—	
~~Appx.IX, Herb, Pest, PCBs~~	~~8 oz w/m glass~~	—	
TAL Metals plus Sn, Nitrite/Nitrate	8 oz w/m glass	✓	
~~Nitrite/Nitrate~~	~~8 oz w/m glass~~	—	
Dioxins/Furans	~~4 oz w/m glass~~	—	~~Triangle Lab~~
Perchlorate	4 oz w/m glass	✓	APLC Lab

OBSERVATIONS / NOTES:

MAP:

Circle if Applicable:

MS/MSD	Duplicate ID No.:
—	—

Signature(s):

SOIL SAMPLE LOG SHEET

Project Site Name: NSWC Crane, IN
Project No.: CTO 126 job # N3960

[] Surface Soil
[X] Subsurface Soil
[] Sediment
[] Other:
[] QA Sample Type:

Sample ID No.: 03SB270206
Sample Location: 03SB27
Sampled By: RS - RM
C.O.C. No.: 02382/02383

Type of Sample:
[X] Low Concentration
[] High Concentration

GRAB SAMPLE DATA:

Date: 6-24-01	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Time:	2 - 6	BRN	WET, CLAY, SOME SILT TR SAND STONE FRAGS.
Method: HAND AUGER			
Monitor Reading (ppm): 0			

COMPOSITE SAMPLE DATA:

Date:	Time	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Method:				
Monitor Readings (Range in ppm):				

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
Volatiles App. IX (VOC 1 + VOC 2)	(4) encore 4	✓	
App. IX SVOC, SIM, EXP, NC	8 oz w/m glass	✓	
~~EXP, NC~~	~~8 oz w/m glass~~	—	
~~Appx.IX Herb, Pest.~~ PCBs	~~8 oz w/m glass~~	—	
TAL Metals plus Sn, Nitrite/Nitrate	8 oz w/m glass	✓	
~~Nitrite/Nitrate~~	~~8 oz w/m glass~~	—	
~~Dioxins/Furans~~	~~4 oz w/m glass~~	—	~~Triangle Lab~~
Perchlorate	4 oz w/m glass	✓	APLC Lab

OBSERVATIONS / NOTES:

MAP:

Circle if Applicable:

MS/MSD	Duplicate ID No.:
—	—

Signature(s): [illegible]

SOIL SAMPLE LOG SHEET

Project Site Name: NSWC Crane, IN
Project No.: CTO 126 job # N3960

[] Surface Soil
[X] Subsurface Soil
[] Sediment
[] Other:
[] QA Sample Type:

Sample ID No.: 035B270607
Sample Location: 035B27
Sampled By: KS - KM - RB
C.O.C. No.: 02382/02383

Type of Sample:
[X] Low Concentration
[] High Concentration

GRAB SAMPLE DATA:

	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 6-29-01 Time: 1600 Method: HAND AUGER Monitor Reading (ppm): 0	6-7'	BRN	WET, CLAY SOME SILT TR. SAND STONE FRAGS

COMPOSITE SAMPLE DATA:

	Time	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date:				
Method:				
Monitor Readings (Range in ppm):				

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
Volatiles App. IX (VOC 1 + VOC 2)	(4) encore 4	✓	
App. IX SVOC, SIM, EXP, NC	8 oz w/m glass	✓	
~~EXP, NC~~	~~8 oz w/m glass~~	—	
~~Appx IX Herb, Pest, PCBs~~	~~8 oz w/m glass~~	—	
TAL Metals plus Sn, Nitrite/Nitrate	8 oz w/m glass	✓	
~~Nitrite/Nitrate~~	~~8 oz w/m glass~~	—	
~~Dioxins/Furans~~	~~4 oz w/m glass~~	—	~~Triangle Lab~~
Perchlorate	4 oz w/m glass	✓	APLC Lab

OBSERVATIONS / NOTES:

MAP:

Circle if Applicable:

MS/MSD	Duplicate ID No.:
—	—

Signature(s):

SOIL SAMPLE LOG SHEET

Project Site Name: NSWC Crane, IN
Project No.: CTO 126 job # N3960

Sample ID No.: 0355280002
Sample Location: 035B28
Sampled By: RS BB, KM
C.O.C. No.: 023382/023383

[X] Surface Soil
[ ] Subsurface Soil
[ ] Sediment
[ ] Other:
[ ] QA Sample Type:

Type of Sample:
[X] Low Concentration
[ ] High Concentration

GRAB SAMPLE DATA:

	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 6.24.01 Time: 1620 Method: HAND AUGER Monitor Reading (ppm): 0	0 - 2	BRN	CLAY W/SILT MOIST ROCK FRAGS

COMPOSITE SAMPLE DATA:

	Time	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date:				
Method:				
Monitor Readings (Range in ppm):				

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
Volatiles App. IX (VOC 1 + VOC 2)	(5) encore	✓	
App. IX SVOC, SIM, EXP, NC	8 oz w/m glass	✓	
~~EXP, NC~~	~~8 oz w/m~~ glass	—	
~~App. IX Herb, Pest, PCBs~~	~~8 oz w/m~~ glass	—	
TAL Metals plus Sn, Nitrite/Nitrate	8 oz w/m glass	✓	
~~Nitrite/Nitrate~~	~~8 oz w/m~~ glass	—	
~~Dioxins/Furans~~	~~4 oz w/m~~ glass	—	~~Triangle Lab~~
Perchlorate	4 oz w/m glass	✓	APLC Lab

OBSERVATIONS / NOTES:

MAP:

Circle if Applicable:

MS/MSD	Duplicate ID No.:
—	—

Signature(s):

SOIL SAMPLE LOG SHEET

Project Site Name: NSWC Crane, IN
Project No.: CTO 126 job # N3960

[] Surface Soil
[X] Subsurface Soil
[] Sediment
[] Other:
[] QA Sample Type:

Sample ID No.: 03SB280204
Sample Location: 03SB28
Sampled By: KS, BB, KM
C.O.C. No.: 02382/02383

Type of Sample:
[X] Low Concentration
[] High Concentration

GRAB SAMPLE DATA:

	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 6.24.01 Time: 1640 Method: HAND AUGER Monitor Reading (ppm): 0	2-4	BRN	WET, CLAY WITH SILT ROCK FRAGS & GRAVEL

COMPOSITE SAMPLE DATA:

	Time	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date:				
Method:				
Monitor Readings (Range in ppm):				

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
Volatiles App. IX (VOC 1 + VOC 2)	(5) encore	✓	
App. IX SVOC, SIM, EXP. NC	8 oz w/m glass	✓	
~~EXP. NC~~	~~8 oz w/m glass~~	—	
~~Appx.IX Herb. Pest. PCBs~~	~~8 oz w/m glass~~	—	
TAL Metals plus Sn, Nitrite/Nitrate	8 oz w/m glass	✓	
~~Nitrite/Nitrate~~	~~8 oz w/m glass~~	—	
~~Dioxine/Furans~~	~~4 oz w/m glass~~	—	Triangle Lab
Perchlorate	4 oz w/m glass	✓	APLC Lab

OBSERVATIONS / NOTES:

MAP: 2X VOC FOR DUP

Circle if Applicable:

MS/MSD	Duplicate ID No.:
—	FD 062401 02

Signature(s):

SOIL SAMPLE LOG SHEET

Project Site Name: NSWC Crane, IN
Project No.: CTO 126 job # N3960

Sample ID No.: 0355290002
Sample Location: 035B29
Sampled By: KM & TR & KS
C.O.C. No.: 02349 LAUCKS
02348 Triangle

- [x] Surface Soil
- [ ] Subsurface Soil
- [ ] Sediment
- [ ] Other:
- [ ] QA Sample Type:

Type of Sample:
- [X] Low Concentration
- [ ] High Concentration

GRAB SAMPLE DATA:

	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 6-8-01 Time: 1045 Method: HAND AUGER Monitor Reading (ppm): 0.0	0 - 1.1'	BRN	MOIST, TR ROOTS, SILT WITH SOME F. SAND, TR SANDSTON FRAGS. & LIMESTONE GRAVEL

COMPOSITE SAMPLE DATA:

Date:	Time	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Method:				
Monitor Readings (Range in ppm):				

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
~~Volatiles App. IX (VOC 1 + VOC 2)~~	~~(5) encore~~		
App. IX SVOC, SIM, EXP, NC	8 oz w/m glass	✓	
~~EXP, NC~~	~~8 oz w/m glass~~		
Appx.IX Herb. Pest, PCBs	8 oz w/m glass	✓	
TAL Metals plus Sn, Nitrite/Nitrate	8 oz w/m glass	✓	
~~Nitrite/Nitrate~~	~~8 oz w/m glass~~		
Dioxins/Furans	4 oz w/m glass	✓	Triangle Lab
~~Perchlorate~~	~~4 oz w/m glass~~		APLC Lab

OBSERVATIONS / NOTES:

MONITOR READING (PPM)
BZ 0
BH 0

5 REFUSALS - TD = 1.1'

MAP:

SEE 035530 NOTES

SEE FIG 41 IN WP

Circle if Applicable:

MS/MSD	Duplicate ID No.:
—	—

Signature(s):

SOIL SAMPLE LOG SHEET

Project Site Name: NSWC Crane, IN
Project No.: CTO 126 job # N3960

Sample ID No.: 0355300002
Sample Location: 03SB30
Sampled By: TR & KS
C.O.C. No.: 02349 LAUCKS
02348 Triangle

- [x] Surface Soil
- [ ] Subsurface Soil
- [ ] Sediment
- [ ] Other:
- [ ] QA Sample Type:

Type of Sample:
- [X] Low Concentration
- [ ] High Concentration

GRAB SAMPLE DATA:

	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 6·8·01	KS ~~0-1'~~		MOIST, TR ROOTS, SILT WITH FINE TO MED SAND, SANDSTONE FRAGS, TR LIMESTONE GRAVEL
Time: 1020	0-1.65'	BRN	
Method: HAND AUGER			
Monitor Reading (ppm): 0.0			

COMPOSITE SAMPLE DATA:

	Time	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date:				
Method:				
Monitor Readings (Range in ppm):				

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
~~Volatiles App. IX (VOC 1 + VOC 2)~~	~~(3) encore~~		
App. IX SVOC, SIM, EXP, NC	8 oz w/m glass	✓	
~~EXP, NC~~	~~8 oz w/m glass~~		
Appx.IX Herb, Pest, PCBs	8 oz w/m glass	✓	
TAL Metals plus Sn, Nitrite/Nitrate	8 oz w/m glass	✓	
~~Nitrite/Nitrate~~	~~8 oz w/m glass~~		
Dioxins/Furans	4 oz w/m glass	✓	Triangle Lab
~~Perchlorate~~	~~4 oz w/m glass~~		APLC Lab

OBSERVATIONS / NOTES:

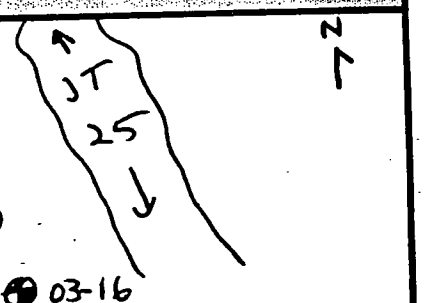
MONITOR READING (PPM)
BZ 0
BH 0

03SB30 → 0

03SB29 → 0

REFUSAL @ 1.65'
2 SBs AUGERED TD = 1.65'
(OFF SET TWICE)

MAP:



SEE FIG. 4-1 IN WP

Circle if Applicable:

MS/MSD	Duplicate ID No.:
—	—

Signature(s): TR-1 [illegible]

SOIL SAMPLE LOG SHEET

Project Site Name: NSWC Crane, IN
Project No.: CTO 126 job # N3960

[X] Surface Soil
[ ] Subsurface Soil
[ ] Sediment
[ ] Other:
[ ] QA Sample Type:

Sample ID No.: 0355310002
Sample Location: 035831
Sampled By: KS - TR
C.O.C. No.: 02349 LAUCKS
02348 TRIANGLE

Type of Sample:
[X] Low Concentration
[ ] High Concentration

GRAB SAMPLE DATA:

	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 6-8-01 Time: 1320 Method: HAND AUGER Monitor Reading (ppm): 0.0	0 - 2'	BRN	MOIST, TR ROOTS, SANDY SILT (FINE SAND) SOME SANDSTONE FRAGS. TR LIMESTONE GRAVEL TR RED (RUST) NODULES

COMPOSITE SAMPLE DATA:

Date:	Time	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Method:				
Monitor Readings (Range in ppm):				

SAMPLE COLLECTION INFORMATION:

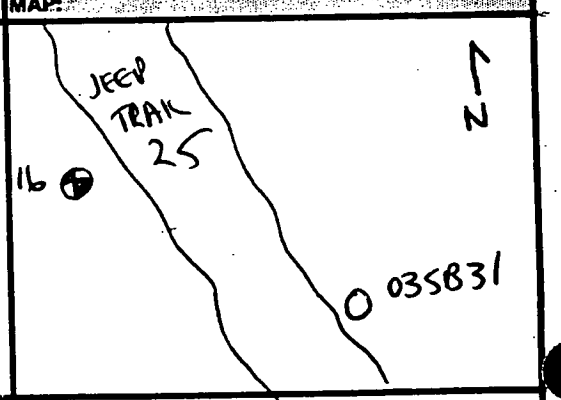
Analysis	Container Requirements	Collected	Other
~~Volatiles App. IX (VOC 1 + VOC 2)~~	~~(5) encore~~		
App. IX SVOC, SIM, EXP, NC	8 oz w/m glass	✓	
~~EXP, NC~~	~~8 oz w/m glass~~		
Appx.IX Herb, Pest, PCBs	8 oz w/m glass	✓	
TAL Metals plus Sn, Nitrite/Nitrate	8 oz w/m glass	✓	
~~Nitrite/Nitrate~~	~~8 oz w/m glass~~		
Dioxins/Furans	4 oz w/m glass	✓	Triangle Lab
~~Perchlorate~~	~~4 oz w/m glass~~		APLC Lab
X VOL FOR DUP			

OBSERVATIONS / NOTES:

MONITORING READING (PPM)
BZ 0
BH 0

SEE FIG 4-1

MAP:



Circle if Applicable:

MS/MSD	Duplicate ID No.:
YES	FD06080101

Signature(s): TR / SL

SOIL SAMPLE LOG SHEET

Project Site Name: NSWC Crane, IN
Project No.: CTO 126 job # N3960

Sample ID No.: 0355320002
Sample Location: 035832
Sampled By: KS - TR
C.O.C. No.: 02349 LAUCKS
02348 TRIANGLE

- [x] Surface Soil
- [ ] Subsurface Soil
- [ ] Sediment
- [ ] Other:
- [ ] QA Sample Type:

Type of Sample:
- [X] Low Concentration
- [ ] High Concentration

GRAB SAMPLE DATA:

	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 6-8-01 Time: 1505 Method: HANDAUGER Monitor Reading (ppm): 00	0 - 2'	BRN	MOIST TR ROOTS, SILT SOME F. SAND, TR SANDSTONE FRAGS

COMPOSITE SAMPLE DATA:

	Time	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date:				
Method:				
Monitor Readings (Range in ppm):				

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
Volatiles ~~App. IX (VOC~~ 1 + VOC 2)	~~(5) encore~~	—	
App. IX SVOC, SIM, EXP, NC	8 oz w/m glass	✓	
~~EXP, NC~~	~~8 oz w/m glass~~	—	
Appx.IX Herb, Pest, PCBs	8 oz w/m glass	✓	
TAL Metals plus Sn, Nitrite/Nitrate	8 oz w/m glass	✓	
~~Nitrite/Nitrate~~	~~8 oz w/m glass~~	—	
Dioxins/Furans	4 oz w/m glass	✓	Triangle Lab
~~Perchlorate~~	~~4 oz w/m glass~~	—	APLC Lab

OBSERVATIONS / NOTES:

MONITOR READING (PPM)
BZ - 0
BH - 0

MAP:

SEE FIG 4-1

Circle if Applicable:

MS/MSD	Duplicate ID No.:
—	—

Signature(s):

SOIL SAMPLE LOG SHEET

Project Site Name: NSWC Crane, IN
Project No.: CTO 126 job # N3960

[X] Surface Soil
[ ] Subsurface Soil
[ ] Sediment
[ ] Other:
[ ] QA Sample Type:

Sample ID No.: 0355330002
Sample Location: 03SB33
Sampled By: KS - TR
C.O.C. No.: 02349 LAUCKS
02348 TRIANGLE

Type of Sample:
[X] Low Concentration
[ ] High Concentration

GRAB SAMPLE DATA:

Date: 6.8.01
Time: 1525
Method: HAND AUGER
Monitor Reading (ppm): 0.0

Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
0 - 1.1'	GRAY/BRN	MOIST, TR ROOTS, LIMESTONE GRAVEL & FINES SOME SILT ROAD BED

COMPOSITE SAMPLE DATA:

Date:	Time	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Method:				
Monitor Readings (Range in ppm):				

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
~~Volatiles App. IX (VOC 1 + VOC 2)~~	~~(5) encore~~	—	
App. IX SVOC, SIM, EXP, NC	8 oz w/m glass	✓	
~~EXP, NC~~	~~8 oz w/m glass~~	—	
Appx.IX Herb, Pest, PCBs	8 oz w/m glass	✓	
TAL Metals plus Sn, Nitrite/Nitrate	8 oz w/m glass	✓	
~~Nitrite/Nitrate~~	~~8 oz w/m glass~~	—	
Dioxins/Furans	4 oz w/m glass	✓	Triangle Lab
~~Perchlorate~~	~~4 oz w/m glass~~	—	APLC Lab

OBSERVATIONS / NOTES:

MONITOR READING (PPM)
BZ - 0
BH - 0

MAP:

ROAD BED, ON EDGE OF JEEP TRAIL 25
GRAVEL MAX 2", ANGULAR

SEE FIG 4-1

Circle if Applicable:

MS/MSD	Duplicate ID No.:
—	—

Signature(s): [illegible]

SOIL SAMPLE LOG SHEET

Project Site Name: NSWC Crane, IN
Project No.: CTO 126 job # N3960

Sample ID No.: 0355740003
Sample Location: 035834
Sampled By: B.B / KS
C.O.C. No.: 02377

[X] Surface Soil
[ ] Subsurface Soil
[ ] Sediment
[ ] Other:
[ ] QA Sample Type:

Type of Sample:
[X] Low Concentration
[ ] High Concentration

GRAB SAMPLE DATA:

	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 6/22/01 Time: 1330 Method: DPT Monitor Reading (ppm): 0.0	0-2'	WHITISH BROWN	SAND & SS-FRAGS W/ SOME SILTY CLAY

COMPOSITE SAMPLE DATA:

	Time	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date:				
Method:				
Monitor Readings (Range in ppm):				

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
~~Volatiles App. IX (VOC 1 + VOC 2)~~	~~(S) encore~~		
App. IX SVOC, SIM, EXP, NC	8 oz w/m glass	✓	
~~EXP, NC~~	~~8 oz w/m glass~~		
~~Appx.IX, Herb, Pest, PCBs~~	~~8 oz w/m glass~~		
TAL Metals plus Sn, Nitrite/Nitrate	8 oz w/m glass	✓	
~~Nitrite/Nitrate~~	~~8 oz w/m glass~~		
~~Dioxins/Furans~~	4 ~~oz w/m~~ glass		~~Triangle Lab~~
~~Perchlorate~~	~~4 oz w/m glass~~		~~APLS Lab~~

OBSERVATIONS / NOTES:

MAP:

Circle if Applicable:

MS/MSD	Duplicate ID No.:

Signature(s): Robert Balkover

SOIL SAMPLE LOG SHEET

Project Site Name: NSWC Crane, IN
Project No.: CTO 126 job # N3960

[] Surface Soil
[X] Subsurface Soil
[] Sediment
[] Other:
[] QA Sample Type:

Sample ID No.: 03SB340206
Sample Location: 03SB34
Sampled By: BB/KS
C.O.C. No.: 02377

Type of Sample:
[X] Low Concentration
[] High Concentration

GRAB SAMPLE DATA:

	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 6/22/01	2-6'	BROWN	SILTY CLAY & SAND W/ SS FRAGS
Time: 1338			
Method: DPT			
Monitor Reading (ppm): 0-2			

COMPOSITE SAMPLE DATA:

	Time	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date:				
Method:				
Monitor Readings (Range in ppm):				

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
~~Volatiles App. IX (VOC 1 + VOC 2)~~	~~(5) encore~~		
App. IX SVOC, SIM, EXP, NC	8 oz w/m glass	✓	
~~EXP, NC~~	~~8 oz w/m glass~~		
~~Appx IX Herb, Pest, PCBs~~	8 oz w/m glass	✓	
TAL Metals plus Sn, Nitrite/Nitrate	8 oz w/m glass		
~~Nitrite/Nitrate~~	~~8 oz w/m glass~~		
~~Dioxins/Furans~~	~~4 oz w/m glass~~		~~Triangle Lab~~
~~Perchlorate~~	~~4 oz w/m glass~~		~~APLG Lab~~

OBSERVATIONS / NOTES:

MAP:

Circle if Applicable:

MS/MSD	Duplicate ID No.:
—	—

Signature(s): Robert Belkove

SOIL SAMPLE LOG SHEET

Project Site Name: NSWC Crane, IN
Project No.: CTO 126 job # N3960

Sample ID No.: 03SB340606
Sample Location: 03SB34
Sampled By: BB/RS
C.O.C. No.: 02377

[ ] Surface Soil
[X] Subsurface Soil
[ ] Sediment
[ ] Other:
[ ] QA Sample Type:

Type of Sample:
[X] Low Concentration
[ ] High Concentration

GRAB SAMPLE DATA:

	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 6/22/01 Time: 1243 Method: DPT Monitor Reading (ppm): 0.0	6-10'	Yellow orange & tan & brown	F-sand & S.S. fines w/ some clay & silt

COMPOSITE SAMPLE DATA:

	Time	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date:				
Method:				
Monitor Readings (Range in ppm):				

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
~~Volatiles App. IX (VOC 1 + VOC 2)~~	~~(5) encore~~		
App. IX SVOC, SIM, EXP, NC	8 oz w/m glass	✓	
~~EXP, NC~~	~~8 oz w/m glass~~		
~~Appx.IX Herb, Pest, PCBs~~	~~8 oz w/m glass~~		
TAL Metals plus Sn, Nitrite/Nitrate	8 oz w/m glass	✓	
~~Nitrite/Nitrate~~	~~8 oz w/m glass~~		
~~Dioxins/Furans~~	~~4 oz w/m glass~~		~~Triangle Lab~~
~~Perchlorate~~	~~4 oz w/m glass~~		~~APL Lab~~

OBSERVATIONS / NOTES:

MAP:

Circle if Applicable:

MS/MSD	Duplicate ID No.:

Signature(s): Robert Balkover

SOIL SAMPLE LOG SHEET

0355350002

Project Site Name: NSWC Crane, IN
Project No.: CTO 126 job # N3960

Sample ID No.: 0355350002
Sample Location: 035SB35
Sampled By: KS - KM
C.O.C. No.: 02381

[X] Surface Soil
[] Subsurface Soil
[] Sediment
[] Other:
[] QA Sample Type:

Type of Sample:
[X] Low Concentration
[] High Concentration

GRAB SAMPLE DATA:

	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 6-23-01 Time: 1000 Method: HAND AUGER Monitor Reading (ppm): 0	0-2	BRN.	MOIST, TR ROOTS SILT, TR SAND, TR CLAY AND SANDSTONE FRAGS.

COMPOSITE SAMPLE DATA:

	Time	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date:				
Method:				
Monitor Readings (Range in ppm):				

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
~~Volatiles~~ App. IX (VOC 1 + VOC 2)	~~(5) encore~~	✓	
App. IX SVOC, SIM, EXP, NC	8 oz w/m glass	✓	
~~EXP, NC~~	~~8 oz w/m~~ glass	—	
~~Appx.IX Herb~~, Pest, PCBs	~~8 oz w/m~~ glass	—	
TAL Metals plus Sn, Nitrite/Nitrate	8 oz w/m glass	✓	
~~Nitrite/Nitrate~~	~~8 oz w/m~~ glass	—	
Dioxins/Furans	~~4 oz w/m~~ glass	—	~~Triangle Lab~~
~~Perchlorate~~	~~4 oz w/m~~ glass	—	~~APLC Lab~~

OBSERVATIONS / NOTES:

MAP:

Circle if Applicable:

MS/MSD ✓

Duplicate ID No.:

Signature(s):

SOIL SAMPLE LOG SHEET

Project Site Name: NSWC Crane, IN
Project No.: CTO 126 job # N3960

Sample ID No.: 035536002
Sample Location: 035836
Sampled By: BB/RJS
C.O.C. No.: 023326

[X] Surface Soil
[] Subsurface Soil
[] Sediment
[] Other:
[] QA Sample Type:

Type of Sample:
[X] Low Concentration
[] High Concentration

GRAB SAMPLE DATA:

	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 6/22/01 Time: 1310 Method: DPT Monitor Reading (ppm): 0.0	0-2'	WHITE & BROWN	SILTY CLAY & SAND W/ SS FRAGS

COMPOSITE SAMPLE DATA:

	Time	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date:				
Method:				
Monitor Readings (Range in ppm):				

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
~~Volatiles App. IX (VOC 1~~ + VOC 2)	~~(5) encore~~		
App. IX SVOC, SIM, EXP, NC	~~8 oz w/m glass~~ 99	✓	
~~EXP, NC~~	~~8 oz w/m glass~~		
~~Appx IX Herb, Pest, PCBs~~	~~8 oz w/m glass~~		
TAL Metals plus Sn, Nitrite/Nitrate	8 oz w/m glass	✓	
~~Nitrite/Nitrate~~	~~8 oz w/m glass~~		
~~Dioxins/Furans~~	~~4 oz w/m glass~~		~~Triangle Lab~~
~~Perchlorate~~	4 oz w/m glass		~~APLC Lab~~

OBSERVATIONS / NOTES:

MAP:

Circle if Applicable:

MS/MSD	Duplicate ID No.:

Signature(s): Robert Belkere

SOIL SAMPLE LOG SHEET

Project Site Name: NSWC Crane, IN
Project No.: CTO 126 job # N3960

[] Surface Soil
[X] Subsurface Soil
[] Sediment
[] Other:
[] QA Sample Type:

Sample ID No.: 03SB36002006
Sample Location: 03SB36
Sampled By: BB / RS
C.O.C. No.: 022376

Type of Sample:
[X] Low Concentration
[] High Concentration

GRAB SAMPLE DATA:

	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 6/22/01 Time: 1317 Method: DPT Monitor Reading (ppm): 0.0	2-6'	Brown	Silty Clay / Clayey Silt, w/ Some Sand & S.S. Frags

COMPOSITE SAMPLE DATA:

	Time	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date:				
Method:				
Monitor Readings (Range in ppm):				

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
~~Volatiles App. IX (VOC 1 + VOC 2)~~	~~(5) encore~~		
App. IX SVOC, SIM, EXP, NC	8 oz w/m glass	✓	
~~EXP NC~~	~~8 oz w/m glass~~		
~~Appx.IX Herb, Pest, PCBs~~	~~8 oz w/m glass~~		
TAL Metals plus Sn, Nitrite/Nitrate	8 oz w/m glass	✓	
~~Nitrite/Nitrate~~	~~8 oz w/m glass~~		
~~Dioxins/Furans~~	~~4 oz w/m glass~~		~~Triangle Lab~~
~~Perchlorate~~	~~4 oz w/m glass~~		~~APLC Lab~~

OBSERVATIONS / NOTES:

MAP:

Circle if Applicable:

MS/MSD	Duplicate ID No.:

Signature(s): Robert Balkovec

SOIL SAMPLE LOG SHEET

Project Site Name: NSWC Crane, IN
Project No.: CTO 126 job # N3960

[] Surface Soil
[X] Subsurface Soil
[] Sediment
[] Other:
[] QA Sample Type:

Sample ID No.: 035B36060
Sample Location: 035B36
Sampled By: BB/RS
C.O.C. No.: 02376

Type of Sample:
[X] Low Concentration
[] High Concentration

GRAB SAMPLE DATA:

	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 6/22/09 Time: 1324 Method: DPT Monitor Reading (ppm): 0.0	60'	BROWN	CLAYEY SILT W/ SAND + S.S. PEBBLES

COMPOSITE SAMPLE DATA:

	Time	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date:				
Method:				
Monitor Readings (Range in ppm):				

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
~~Volatiles App. IX (VOC 1 + VOC 2)~~	~~(3) encore~~		
App. IX SVOC, SIM, EXP, NC	8 oz w/m glass	✓	
~~EXP, NC~~	~~8 oz w/m glass~~		
~~Appx.IX Herb, Pest, PCBs~~	~~8 oz w/m glass~~		
TAL Metals plus Sn, Nitrite/Nitrate	8 oz w/m glass	✓	
~~Nitrite/Nitrate~~	~~8 oz w/m glass~~		
Dioxins/Forans	~~4 oz w/m~~ glass		Triangle Lab
~~Perchlorate~~	~~4 oz w/m glass~~		APLC Lab

OBSERVATIONS / NOTES:

MAP:

Circle if Applicable:

MS/MSD	Duplicate ID No.:
—	—

Signature(s): Robert Balhare

SOIL SAMPLE LOG SHEET

Project Site Name: NSWC Crane, IN
Project No.: CTO 126 job # N3960

Sample ID No.: 035S37 0002
Sample Location: 035B37
Sampled By: RS - RM
C.O.C. No.: 02381

[X] Surface Soil
[ ] Subsurface Soil
[ ] Sediment
[ ] Other:
[ ] QA Sample Type:

Type of Sample:
[X] Low Concentration
[ ] High Concentration

GRAB SAMPLE DATA: TR. ASH? BLACK

	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 6.23.01 Time: 0920 Method: HAND AUGER Monitor Reading (ppm): 0	0 - 2'	LT BRN	MOIST, TR. ROOTS. CLAY, SOME SILT TR F. SAND SANDSTONE FRAGS

COMPOSITE SAMPLE DATA: MORE SAND BTM. FOOT

Date:	Time	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Method:				
Monitor Readings (Range in ppm):				

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
~~Volatiles App.~~ IX (VOC 1 + VOC 2)	(5) encore	—	
App. IX SVOC, SIM, EXP, NC	8 oz w/m glass	✓	
~~EXP, NC~~	8 oz w/m glass	—	
~~Appx.IX~~ Herb, Pest, PCBs	8 oz w/m glass	—	
TAL Metals plus Sn, Nitrite/Nitrate	8 oz w/m glass	✓	
~~Nitrite/Nitrate~~	8 oz w/m glass	—	
~~Dioxins/Furans~~	4 oz w/m glass	—	~~Triangle Lab~~
~~Perchlorate~~	4 oz w/m glass	—	~~ARL~~ Lab
	2X VOL FOR DUP		

OBSERVATIONS / NOTES:

MAP:

Circle if Applicable:

MS/MSD	Duplicate ID No.:
YES	FD062301 02

Signature(s): [illegible]

SOIL SAMPLE LOG SHEET

Project Site Name: NSWC Crane, IN
Project No.: CTO 126 job # N3960

Sample ID No.: 035S38 0002
Sample Location: 035B38
Sampled By: RS - RM
C.O.C. No.: 023391

[X] Surface Soil
[ ] Subsurface Soil
[ ] Sediment
[ ] Other:
[ ] QA Sample Type:

Type of Sample:
[X] Low Concentration
[ ] High Concentration

GRAB SAMPLE DATA:

	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 6-23-01 Time: 0945 Method: HAND AUGER Monitor Reading (ppm): 0	0-2'	BRN	MOIST, TR ROOTS, TR ASH? SILT, TR CLAY, TR SANDSTONE FRAGS.

COMPOSITE SAMPLE DATA:

	Time	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date:				
Method:				
Monitor Readings (Range in ppm):				

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
~~Volatiles~~ App. IX (VOC 1 + VOC 2)	~~(3) encore~~		
App. IX SVOC, SIM, EXP, NC	8 oz w/m glass	✓	
~~EXP, NC~~	~~8 oz w/m~~ glass		
~~Appx. IX Herb~~, Pest, PCBs	~~8 oz w/m~~ glass		
TAL Metals plus Sn, Nitrite/Nitrate	8 oz w/m glass	✓	
~~Nitrite/Nitrate~~	~~8 oz w/m~~ glass		
~~Dioxins/Furans~~	~~4 oz w/m~~ glass		~~Triangle Lab~~
~~Perchlorate~~	~~4 oz w/m~~ glass		~~ARLC Lab~~

OBSERVATIONS / NOTES:

MAP:

Circle if Applicable:

MS/MSD	Duplicate ID No.:
—	—

Signature(s):

SOIL SAMPLE LOG SHEET

Project Site Name: NSWC Crane, IN
Project No.: CTO 126 job # N3960

Sample ID No.: 0385390002
Sample Location: 0385B39
Sampled By: BB/RS
C.O.C. No.: 02376

[X] Surface Soil
[] Subsurface Soil
[] Sediment
[] Other:
[] QA Sample Type:

Type of Sample:
[X] Low Concentration
[] High Concentration

GRAB SAMPLE DATA:

	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 6/22/01 Time: 1250 Method: DPT Monitor Reading (ppm): 0.0	0-2'	WHITE, DK. GRAY, & BROWN	CLAY, SAND, & GRAVEL

COMPOSITE SAMPLE DATA:

Date:	Time	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Method:				
Monitor Readings (Range in ppm):				

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
~~Volatiles App. IX (VOC 1 + VOC 2)~~	~~(5) encore~~		
App. IX SVOC, SIM, EXP. NC	8 oz w/m glass	✓	
~~EXP. NC~~	~~8 oz w/m glass~~		
~~Appx.IX Herb, Pest, PCBs~~	8 oz w/m glass		
TAL Metals plus Sn, Nitrite/Nitrate	8 oz w/m glass	✓	
~~Nitrite/Nitrate~~	~~8 oz w/m glass~~		
~~Dioxins/Furans~~	~~4 oz w/m glass~~		~~Triangle Lab~~
~~Perchlorate~~	~~4 oz w/m glass~~		~~APLC Lab~~

OBSERVATIONS / NOTES:

MAP:

Circle if Applicable:

MS/MSD	Duplicate ID No.:

Signature(s): Robert Balkovec

SOIL SAMPLE LOG SHEET

Project Site Name: NSWC Crane, IN
Project No.: CTO 126 job # N3960

[] Surface Soil
[X] Subsurface Soil
[] Sediment
[] Other:
[] QA Sample Type:

Sample ID No.: 035B3407006
Sample Location: 035B39
Sampled By: RB / K.S
C.O.C. No.: 023766

Type of Sample:
[X] Low Concentration
[] High Concentration

GRAB SAMPLE DATA:

	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 6/22/01 Time: 1300 Method: DPT Monitor Reading (ppm): 0-0	2-6	Yellow OR Brown	Silty Clay, Sand + S.S. Frags

COMPOSITE SAMPLE DATA:

	Time	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date:				
Method:				
Monitor Readings (Range in ppm):				

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
~~Volatiles App. IX (VOC 1 + VOC 2)~~	~~(5) encore~~		
App. IX SVOC, SIM, EXP, NC	8 oz w/m glass	✓	
~~EXP, NO~~	~~8 oz w/m glass~~		
~~Appx.IX Herb, Pest, PCBs~~	~~8 oz w/m glass~~		
TAL Metals plus Sn, Nitrite/Nitrate	8 oz w/m glass	✓	
~~Nitrite/Nitrate~~	8 oz w/m glass		
~~Dioxins/Furans~~	~~4 oz w/m glass~~		Triangle Lab
~~Perchlorate~~	4 oz w/m glass		APLC Lab

OBSERVATIONS / NOTES:

MAP:

Circle if Applicable:

MS/MSD	Duplicate ID No.:

Signature(s): Robert Balkovec

SOIL SAMPLE LOG SHEET

Project Site Name: NSWC Crane, IN
Project No.: CTO 126 job # N3960

[] Surface Soil
[X] Subsurface Soil
[] Sediment
[] Other:
[] QA Sample Type:

Sample ID No.: 03SB39 0610
Sample Location: 03SB39
Sampled By: DB / KS
C.O.C. No.: 023716

Type of Sample:
[X] Low Concentration
[] High Concentration

GRAB SAMPLE DATA:

	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 6/22/01 Time: 1305 Method: DPT Monitor Reading (ppm): 0.0	6-10'	YELLOW OR + BROWN	F-SAND/SS FRAGS

COMPOSITE SAMPLE DATA:

Date:	Time	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Method:				
Monitor Readings (Range in ppm):				

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
~~Volatiles App. IX (VOC 1 + VOC 2)~~	~~(5) encore~~		
App. IX SVOC, SIM, EXP, NC	8 oz w/m glass	✓	
~~EXP, NC~~	~~8 oz w/m glass~~		
~~Appx.IX Herb, Pest, PCBs~~	~~8 oz w/m glass~~		
TAL Metals plus Sn, Nitrite/Nitrate	8 oz w/m glass	✓	
~~Nitrite/Nitrate~~	~~8 oz w/m glass~~		
~~Dioxins/Furans~~	~~4 oz w/m glass~~		~~Triangle Lab~~
~~Perchlorate~~	~~4 oz w/m glass~~		~~APLC Lab~~

OBSERVATIONS / NOTES:

MAP:

Circle if Applicable:

MS/MSD	Duplicate ID No.:

Signature(s): Robert Balkar

SOIL SAMPLE LOG SHEET

Project Site Name: NSWC Crane, IN
Project No.: CTO 126 job # N3960

Sample ID No.: 0355400002
Sample Location: 0355B40
Sampled By: AA/KS
C.O.C. No.: 623740

[X] Surface Soil
[ ] Subsurface Soil
[ ] Sediment
[ ] Other:
[ ] QA Sample Type:

Type of Sample:
[X] Low Concentration
[ ] High Concentration

GRAB SAMPLE DATA:

	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 6/22/01 Time: 1020 Method: DPT Monitor Reading (ppm): 0-0	0-2	WHITE & BROWN	SILTY CLAY, W SAND & S.S. FRAGS

COMPOSITE SAMPLE DATA:

	Time	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date:				
Method:				
Monitor Readings (Range in ppm):				

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
~~Volatiles App. IX (VOC 1 + VOC 2)~~	~~(5) encore~~		
App. IX SVOC, SIM, EXP, NC	8 oz w/m glass	✓	
~~EXP, NC~~	~~8 oz w/m glass~~		
Appx.IX Herb, Pest, PCBs	8 oz w/m glass		
TAL Metals plus Sn, Nitrite/Nitrate	8 oz w/m glass	✓	
~~Nitrite/Nitrate~~	~~8 oz w/m glass~~		
~~Dioxins/Furans~~	4 oz w/m glass		~~Triangle Lab~~
~~Perchlorate~~	4 oz w/m glass		~~APLC Lab~~

OBSERVATIONS / NOTES:

MAP:

Circle if Applicable:

MS/MSD	Duplicate ID No.:

Signature(s): Robert Balkovec

SOIL SAMPLE LOG SHEET

Project Site Name: NSWC Crane, IN
Project No.: CTO 126 job # N3960

[] Surface Soil
[X] Subsurface Soil
[] Sediment
[] Other:
[] QA Sample Type:

Sample ID No.: 035B400706
Sample Location: 035B40
Sampled By: BB / RG
C.O.C. No.: 023276

Type of Sample:
[X] Low Concentration
[] High Concentration

GRAB SAMPLE DATA:

	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 6/22/01 Time: 1025 Method: DPT Monitor Reading (ppm): 0.0	2'-6'	Brown, Dk Gray Yellow OR	CLAY, SAND, + SS FRAGS

COMPOSITE SAMPLE DATA:

Date:	Time	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Method:				
Monitor Readings (Range in ppm):				

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
~~Volatiles App. IX (VOC 1 + VOC 2)~~	~~(5) encore~~		
App. IX SVOC, SIM, EXP, NC	8 oz w/m glass	✓	
~~EXP, NO~~	~~8 oz w/m glass~~		
~~Appx. IX Herb, Pest, PCBs~~	~~8 oz w/m glass~~		
TAL Metals plus Sn, Nitrite/Nitrate	8 oz w/m glass	✓	
~~Nitrite/Nitrate~~	~~8 oz w/m glass~~		
~~Dioxins/Furans~~	~~4 oz w/m glass~~		~~Triangle Lab~~
~~Perchlorate~~	~~4 oz w/m glass~~		~~APLG Lab~~

OBSERVATIONS / NOTES:

MAP:

Circle if Applicable:

MS/MSD	Duplicate ID No.:

Signature(s): Robert Bulkow

SOIL SAMPLE LOG SHEET

Project Site Name: NSWC Crane, IN
Project No.: CTO 126 job # N3960

Sample ID No.: 035B40061D
Sample Location: 035B40
Sampled By: BB/KS
C.O.C. No.: 02376

[ ] Surface Soil
[X] Subsurface Soil
[ ] Sediment
[ ] Other:
[ ] QA Sample Type:

Type of Sample:
[X] Low Concentration
[ ] High Concentration

GRAB SAMPLE DATA:

	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 6/22/01 Time: 1030 Method: DPT Monitor Reading (ppm): 0-2	6-16'	Brown + Yellow	Sand, S.S. Frags, + Clay

COMPOSITE SAMPLE DATA:

	Time	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date:				
Method:				
Monitor Readings (Range in ppm):				

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
~~Volatiles App. IX (VOC 1 + VOC 2)~~	~~(5) encore~~		
App. IX SVOC, SIM, EXP, NC	8 oz w/m glass	✓	
~~EXP, NC~~	~~8 oz w/m glass~~		
~~Appx.IX Herb, Pest, PCBs~~	~~8 oz w/m glass~~		
TAL Metals plus Sn, Nitrite/Nitrate	8 oz w/m glass	✓	
~~Nitrite/Nitrate~~	~~8 oz w/m glass~~		
~~Dioxins/Furans~~	~~4 oz w/m glass~~		~~Triangle Lab~~
~~Perchlorate~~	~~4 oz w/m glass~~		~~APLC Lab~~

OBSERVATIONS / NOTES:

MAP:

Circle If Applicable:

MS/MSD	Duplicate ID No.:
—	

Signature(s): Robert Belkover

SOIL SAMPLE LOG SHEET

Project Site Name: NSWC Crane, IN
Project No.: CTO 126 job # N3960

[X] Surface Soil
[] Subsurface Soil
[] Sediment
[] Other:
[] QA Sample Type:

Sample ID No.: 035S41 0002
Sample Location: 035B41
Sampled By: KS-KM
C.O.C. No.: 02381

Type of Sample:
[X] Low Concentration
[] High Concentration

GRAB SAMPLE DATA:

	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 6-23-01 Time: 1103 Method: HAND AUGER Monitor Reading (ppm): 0	0-2'	BRN	MOIST, TR ROOTS SILT WITH F. SAND, TR CLAY

COMPOSITE SAMPLE DATA:

Date:	Time	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Method:				
Monitor Readings (Range in ppm):				

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
~~Volatiles~~ App. IX (VOC 1 + VOC 2)	~~(5)~~ encore	—	
App. IX SVOC, SIM, EXP, NC	8 oz w/m glass	✓	
~~EXP, NC~~	~~8 oz~~ w/m glass	—	
~~Appx. IX~~ Herb, Pest, PCBs	~~8 oz~~ w/m glass	—	
TAL Metals plus Sn, Nitrite/Nitrate	8 oz w/m glass	✓	
~~Nitrite/Nitrate~~	~~8 oz~~ w/m glass	—	
~~Dioxins/Furans~~	~~4 oz~~ w/m glass	—	~~Triangle Lab~~
~~Perchlorate~~	~~4 oz~~ w/m glass	—	~~APLC Lab~~

OBSERVATIONS / NOTES:

MAP:

Circle if Applicable:

MS/MSD	Duplicate ID No.:
—	—

Signature(s): [illegible]

SOIL SAMPLE LOG SHEET

Project Site Name: NSWC Crane, IN
Project No.: CTO 126 job # N3960

Sample ID No.: 0355420002
Sample Location: 035842
Sampled By: BB / RS
C.O.C. No.: 052376

[X] Surface Soil
[] Subsurface Soil
[] Sediment
[] Other:
[] QA Sample Type:

Type of Sample:
[X] Low Concentration
[] High Concentration

GRAB SAMPLE DATA:

	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 6/22/01 Time: 0955 Method: DPT Monitor Reading (ppm): 0-2	0-2'	WHITE + BROWN	CLAYEY SILT, SAND + GRAVEL

COMPOSITE SAMPLE DATA:

	Time	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date:				
Method:				
Monitor Readings (Range in ppm):				

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
~~Volatiles App. IX (VOC 1 + VOC 2)~~	~~(5) encore~~		
App. IX SVOC, SIM, EXP, NC	8 oz w/m glass	✓	
~~EXP, NC~~	~~8 oz w/m glass~~		
~~Appx.IX Herb, Pest, PCBs~~	~~8 oz w/m glass~~		
TAL Metals plus Sn, Nitrite/Nitrate	8 oz w/m glass	✓	
~~Nitrite/Nitrate~~	~~8 oz w/m glass~~		
~~Dioxins/Furans~~	~~4 oz w/m glass~~		~~Triangle Lab~~
~~Perchlorate~~	~~4 oz w/m glass~~		~~APLC Lab~~

OBSERVATIONS / NOTES:

MAP:

Circle if Applicable:

MS/MSD	Duplicate ID No.:

Signature(s): Robert Bell Reese

SOIL SAMPLE LOG SHEET

Project Site Name: NSWC Crane, IN
Project No.: CTO 126 job # N3960

[] Surface Soil
[X] Subsurface Soil
[] Sediment
[] Other:
[] QA Sample Type:

Sample ID No.: 035B420206
Sample Location: 035B42
Sampled By: BB/RS
C.O.C. No.: 02346

Type of Sample:
[X] Low Concentration
[] High Concentration

GRAB SAMPLE DATA:

	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 6/22/01	2-6'	Brown	CLAY, SAND & SS FRAGS, 75%CT
Time: 1000			
Method: DPT			
Monitor Reading (ppm): 0-0			

COMPOSITE SAMPLE DATA:

	Time	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date:				
Method:				
Monitor Readings (Range in ppm):				

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
~~Volatiles App. IX (VOC 1 + VOC 3)~~	~~(5) encore~~		
App. IX SVOC, SIM, EXP, NC	8 oz w/m glass	✓	
~~EXP, NC~~	~~8 oz w/m glass~~		
~~Appx.IX Herb, Pest, PCBs~~	~~8 oz w/m glass~~		
TAL Metals plus Sn, Nitrite/Nitrate	8 oz w/m glass	✓	
~~Nitrite/Nitrate~~	~~8 oz w/m glass~~		
~~Dioxins/Furans~~	~~4 oz w/m glass~~		~~Triangle Lab~~
~~Perchlorate~~	~~4 oz w/m glass~~		~~APLC Lab~~

OBSERVATIONS / NOTES:

MAP:

Circle If Applicable:

MS/MSD	Duplicate ID No.:
—	—

Signature(s): Robert Bilkerson

SOIL SAMPLE LOG SHEET

Project Site Name: NSWC Crane, IN
Project No.: CTO 126 job # N3960

[] Surface Soil
[X] Subsurface Soil
[] Sediment
[] Other:
[] QA Sample Type:

Sample ID No.: 035B42D610
Sample Location: 035B42
Sampled By: BB / KS.
C.O.C. No.: 023746

Type of Sample:
[X] Low Concentration
[] High Concentration

GRAB SAMPLE DATA:

	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 6/22/01 Time: ~~1005~~ 1010 Method: DPT Monitor Reading (ppm): 0.0	6'-10'	BROWN DK. GRAY	SAND, SS. FRAGS, ~5% SILT + SOME CLAY

COMPOSITE SAMPLE DATA:

	Time	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date:				
Method:				
Monitor Readings (Range in ppm):				

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
~~Volatiles App. IX (VOC 1 + VOC 2)~~	~~(5) encore~~		
App. IX SVOC, SIM, EXP, NC	8 oz w/m glass	✓	
~~EXP, NC~~	~~8 oz w/m glass~~		
~~Appx.IX Herb, Pest, PCBs~~	~~8 oz w/m glass~~		
TAL Metals plus Sn, Nitrite/Nitrate	8 oz w/m glass	✓	
~~Nitrite/Nitrate~~	~~8 oz w/m glass~~		
~~Dioxins/Furans~~	~~4 oz w/m glass~~		~~Triangle Lab~~
~~Perchlorate~~	4 oz w/m glass		~~APLC Lab~~

OBSERVATIONS / NOTES:

MAP:

Circle if Applicable:

MS/MSD	Duplicate ID No.:
—	—

Signature(s): Robert Balhoce

SOIL SAMPLE LOG SHEET

Project Site Name: NSWC Crane, IN
Project No.: CTO 126 job # N3960

[X] Surface Soil
[] Subsurface Soil
[] Sediment
[] Other:
[] QA Sample Type:

Sample ID No.: 0355 43 0002
Sample Location: 035B
Sampled By: KS-KM
C.O.C. No.: 02381

Type of Sample:
[X] Low Concentration
[] High Concentration

GRAB SAMPLE DATA:

	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 6-23-01	KS ~~0-2'~~	BRN	TR. ROOT, MOIST, SILT & SAND, SOME SANDSTONE
Time: 1030	0-1'		
Method: HAND AUGER			
Monitor Reading (ppm): 0			

COMPOSITE SAMPLE DATA: FRAGS + LIMESTONE GRAVEL

	Time	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date:				
Method:				
Monitor Readings (Range in ppm):				

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
~~Volatiles App.~~ IX (VOC 1 + VOC 2)	~~(5) encore~~	—	
App. IX SVOC, SIM, EXP, NC	8 oz w/m glass	✓	
~~EXP, NC~~	~~8 oz w/m~~ glass	—	
~~Appx.IX Herb~~, Pest, PCBs	~~8 oz w/m~~ glass	—	
TAL Metals plus Sn, Nitrite/Nitrate	8 oz w/m glass	✓	
~~Nitrite/Nitrate~~	~~8 oz w/m~~ glass	—	
Dioxins/Furans	~~4 oz w/m~~ glass	—	~~Triangle Lab~~
~~Perchlorate~~	~~4 oz w/m~~ glass	—	~~APLC Lab~~
	2X VOC FOR DUP		

OBSERVATIONS / NOTES:

0-1' REFUSAL @ 3 LOCATIONS

MAP:

Circle if Applicable:

MS/MSD	Duplicate ID No.:
—	FD 062301 03

Signature(s): [illegible]

SOIL SAMPLE LOG SHEET

Project Site Name: NSWC Crane, IN
Project No.: CTO 126 job # N3960

Sample ID No.: 035SW00002
Sample Location: 035B4W
Sampled By: RB/KS
C.O.C. No.: 30400

[X] Surface Soil
[] Subsurface Soil
[] Sediment
[] Other:
[] QA Sample Type:

Type of Sample:
[X] Low Concentration
[] High Concentration

GRAB SAMPLE DATA:

	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 6/22/01 Time: 0930 Method: DPT Monitor Reading (ppm): 0-2	0-2	Brown & White	Clayey Silt, w/ Sand & Gravel

COMPOSITE SAMPLE DATA:

	Time	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date:				
Method:				
Monitor Readings (Range in ppm):				

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
~~Volatiles App. IX (VOC 1 + VOC 2)~~	~~(5) encore~~		
App. IX SVOC, SIM, EXP, NC	8 oz w/m glass	✓	
~~EXP, NC~~	~~8 oz w/m glass~~		
~~Appx.IX Herb, Pest, PCBs~~	~~8 oz w/m glass~~		
TAL Metals plus Sn, Nitrite/Nitrate	8 oz w/m glass	✓	
~~Nitrite/Nitrate~~	~~8 oz w/m glass~~		
~~Dioxins/Furans~~	~~4 oz w/m glass~~		~~Triangle Lab~~
~~Perchlorate~~	4 oz w/m glass		~~APLS Lab~~

OBSERVATIONS / NOTES:

[redacted]

MAP:

Circle if Applicable:

MS/MSD	Duplicate ID No.:
—	—

Signature(s): Robert Balkovec

SOIL SAMPLE LOG SHEET

Project Site Name: NSWC Crane, IN
Project No.: CTO 126 job # N3960

[] Surface Soil
[X] Subsurface Soil
[] Sediment
[] Other:
[] QA Sample Type:

Sample ID No.: 035B440206
Sample Location: 035B44
Sampled By: BB / KS
C.O.C. No.: 00400

Type of Sample:
[X] Low Concentration
[] High Concentration

GRAB SAMPLE DATA:

	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 6/22/01 Time: 0440 Method: DPT Monitor Reading (ppm): 0.0	2-6	BROWN	CLAYEY SILT, SAND SS FRAGS

COMPOSITE SAMPLE DATA:

	Time	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date:				
Method:				
Monitor Readings (Range in ppm):				

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
~~Volatiles App. IX (VOC 1 + VOC 2)~~	~~(5) encore~~		
App. IX SVOC, SIM, EXP, NC	8 oz w/m glass	✓	
~~EXP, NC~~	~~8 oz w/m glass~~		
~~Appx IX Herb, Pest, PCBs~~	~~8 oz w/m glass~~		
TAL Metals plus Sn, Nitrite/Nitrate	8 oz w/m glass	✓	
~~Nitrite/Nitrate~~	~~8 oz w/m glass~~		
~~Dioxins/Furans~~	~~4 oz w/m glass~~		Triangle Lab
~~Perchlorate~~	~~4 oz w/m glass~~		~~APLC lab~~

OBSERVATIONS / NOTES:

MAP:

Circle if Applicable:

MS/MSD	Duplicate ID No.:
—	—

Signature(s): Robert Balkovec

SOIL SAMPLE LOG SHEET

Project Site Name: NSWC Crane, IN
Project No.: CTO 126 job # N3960

Sample ID No.: 03SB440610
Sample Location: 03SB44
Sampled By: BB/RS
C.O.C. No.: 00420

[] Surface Soil
[X] Subsurface Soil
[] Sediment
[] Other:
[] QA Sample Type:

Type of Sample:
[X] Low Concentration
[] High Concentration

GRAB SAMPLE DATA:

	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 6/22/01 Time: 0945 Method: DPT Monitor Reading (ppm): 0-0	6-10'	BROWN RUST	SAND + SS CHUNKS, 7-5247

COMPOSITE SAMPLE DATA:

	Time	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date:				
Method:				
Monitor Readings (Range in ppm):				

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
~~Volatiles App. IX (VOC 1 + VOC 2)~~	~~(5) encore~~		
App. IX SVOC, SIM, EXP, NC	8 oz w/m glass	✓	
~~EXP NC~~	~~8 oz w/m glass~~		
~~Appx.IX Herb Pest PCBs~~	~~8 oz w/m glass~~		
TAL Metals plus Sn, Nitrite/Nitrate	8 oz w/m glass	✓	
~~Nitrite/Nitrate~~	~~8 oz w/m glass~~		
~~Dioxins/Furans~~	~~4 oz w/m glass~~		~~Triangle Lab~~
~~Perchlorate~~	~~4 oz w/m glass~~		~~APCO Lab~~

OBSERVATIONS / NOTES:

MAP:

Circle if Applicable:

MS/MSD	Duplicate ID No.:

Signature(s): Robert Belknap

SOIL SAMPLE LOG SHEET

Project Site Name: NSWC Crane, IN
Project No.: CTO 126 job # N3960

Sample ID No.: 035S45 0002
Sample Location: 035B45
Sampled By: RS - KM
C.O.C. No.: 02381

[X] Surface Soil
[] Subsurface Soil
[] Sediment
[] Other:
[] QA Sample Type:

Type of Sample:
[X] Low Concentration
[] High Concentration

GRAB SAMPLE DATA:

	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 6-23-01 Time: 1050 Method: HAND AUGER Monitor Reading (ppm): 0	0-2'	BRN	MOIST, TR ROOTS, SILT WITH F. SAND TR CLAY

COMPOSITE SAMPLE DATA:

Date:	Time	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Method:				
Monitor Readings (Range in ppm):				

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
~~Volatiles~~ App. IX (VOC 1 + VOC 2)	~~4(5) encore~~	—	
App. IX SVOC, SIM, EXP, NC	8 oz w/m glass	✓	
~~EXP, NC~~	~~8 oz w/m~~ glass	—	
~~Appx.IX~~ Herb, Pest, PCBs	~~8 oz w/m~~ glass	—	
TAL Metals plus Sn, Nitrite/Nitrate	8 oz w/m glass	✓	
~~Nitrite/Nitrate~~	~~8 oz w/m~~ glass	—	
~~Dioxins/Furans~~	~~4 oz w/m~~ glass	—	~~Triangle Lab~~
~~Perchlorate~~	~~4 oz w/m~~ glass	—	~~APLC Lab~~

OBSERVATIONS / NOTES:

MAP:

Circle if Applicable:

MS/MSD	Duplicate ID No.:
—	—

Signature(s): [illegible]

SOIL SAMPLE LOG SHEET

Project Site Name: NSWC Crane, IN
Project No.: CTO 126 job # N3960

Sample ID No.: 035546 0002
Sample Location: 035546
Sampled By: RB / K.M
C.O.C. No.: 080400/02338

[X] Surface Soil
[] Subsurface Soil
[] Sediment
[] Other:
[] QA Sample Type:

Type of Sample:
[X] Low Concentration
[] High Concentration

GRAB SAMPLE DATA:

	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 6/22/01 Time: 0945 Method: DPT Monitor Reading (ppm): 0-2	0-2	Light Brown	SAND, S.S. FRAGS, Some Cinders

COMPOSITE SAMPLE DATA:

	Time	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date:				
Method:				
Monitor Readings (Range in ppm):				

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
Volatiles App. IX (VOC 1 + VOC 2)	(5) encore	✓	
App. IX SVOC, SIM, EXP, NC	8 oz w/m glass	✓	
~~EXP, NC~~	~~8 oz w/m glass~~		
~~Appx.IX Herb, Pest, PCBs~~	~~8 oz w/m glass~~		
TAL Metals ~~plus Sn~~, Nitrite/Nitrate	8 oz w/m glass	✓	
~~Nitrite/Nitrate~~	~~8 oz w/m glass~~		
~~Dioxins/Furans~~	~~4 oz w/m glass~~		~~Triangle Lab~~
Perchlorate	4 oz w/m glass	✓	APLC Lab

OBSERVATIONS / NOTES:

VOC's collected @ 5-2

MAP:

Circle if Applicable:

MS/MSD	Duplicate ID No.:

Signature(s): Robert Bulkwee

SOIL SAMPLE LOG SHEET

Project Site Name: NSWC Crane, IN
Project No.: CTO 126 job # N3960

[] Surface Soil
[X] Subsurface Soil
[] Sediment
[] Other:
[] QA Sample Type:

Sample ID No.: 035B46 0206
Sample Location: 035B46
Sampled By: BB / K.M.
C.O.C. No.: 00400/02378

Type of Sample:
[X] Low Concentration
[] High Concentration

GRAB SAMPLE DATA:

	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 6/22/01 Time: 0853 Method: DPT Monitor Reading (ppm): 0.0	2'-6'	BROWN	CLAYEY SILTY SAND + S.S. FRAGS

COMPOSITE SAMPLE DATA:

	Time	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date:				
Method:				
Monitor Readings (Range in ppm):				

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
Volatiles App. IX (VOC 1 + VOC 2)	(5) encore	✓	
App. IX SVOC, SIM, EXP, NC	8 oz w/m glass	✓	
~~EXP, NC~~	~~8 oz w/m glass~~		
~~Appx.IX Herb, Pest, PCBs~~	~~8 oz w/m glass~~		
TAL Metals plus Sn, Nitrite/Nitrate	8 oz w/m glass	✓	
~~Nitrite/Nitrate~~	~~8 oz w/m glass~~		
~~Dioxins/Furans~~	~~4 oz w/m glass~~		Triangle Lab
Perchlorate	4 oz w/m glass	✓	APLC Lab

OBSERVATIONS / NOTES:

VOC'S TAKEN FROM 2'-4'

MAP:

Circle if Applicable:

MS/MSD	Duplicate ID No.:
—	—

Signature(s): Robert Bulkner

SOIL SAMPLE LOG SHEET

Project Site Name: NSWC Crane, IN
Project No.: CTO 126 job # N3960

Sample ID No.: 035B46060
Sample Location: 035B46
Sampled By: BB / K.M
C.O.C. No.: 00400 / 02378

[ ] Surface Soil
[X] Subsurface Soil
[ ] Sediment
[ ] Other:
[ ] QA Sample Type:

Type of Sample:
[X] Low Concentration
[ ] High Concentration

GRAB SAMPLE DATA:

	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 6/22/01 Time: 0900 Method: DPT Monitor Reading (ppm): 0-0	6-10'	BROWN + YELLOW ORANGE	SAND, SS. FRAGS, + T-SILT

COMPOSITE SAMPLE DATA:

	Time	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date:				
Method:				
Monitor Readings (Range in ppm):				

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
Volatiles App. IX (VOC 1 + VOC 2)	10 ~~(5)~~ encore	✓	
App. IX SVOC, SIM, EXP, NC	2 8 oz w/m glass	✓	
~~EXP, NC~~	~~8 oz w/m glass~~		
~~Appx IX Herb, Pest, PCBs~~	~~8 oz w/m glass~~		
TAL Metals plus Sn, Nitrite/Nitrate	2 8 oz w/m glass	✓	
~~Nitrite/Nitrate~~	~~8 oz w/m glass~~		
~~Dioxine/Furans~~	~~4 oz w/m glass~~	✓	~~Triangle Lab~~
Perchlorate	2 4 oz w/m glass		APLC Lab

OBSERVATIONS / NOTES:

VOC'S TAKEN FROM 6'-8'

MAP:

Circle if Applicable:

MS/MSD	Duplicate ID No.: FD062201

Signature(s): Robert Belknap

SOIL SAMPLE LOG SHEET

Project Site Name: NSWC Crane, IN
Project No.: CTO 126 job # N3960

[X] Surface Soil
[] Subsurface Soil
[] Sediment
[] Other:
[] QA Sample Type:

Sample ID No.: 035547000 2
Sample Location: 035547
Sampled By: BR RM
C.O.C. No.: 00400/00348/00395

Type of Sample:
[X] Low Concentration
[] High Concentration

GRAB SAMPLE DATA:

	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 6/22/01	0-2'	Brown	Clay, Silt, + F-Sand Some Frags of S.S.
Time: 0746			
Method: DPT			
Monitor Reading (ppm): 0.0			

COMPOSITE SAMPLE DATA:

Date:	Time	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Method:				
Monitor Readings (Range in ppm):				

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
Volatiles App. IX (VOC 1 + VOC 2)	(5) encore	✓	
App. IX SVOC, SIM, EXP, NC	8 oz w/m glass	✓	
~~EXP, NC~~	~~8 oz w/m glass~~		
~~Appx.IX Herb, Pest, PCBs~~	~~8 oz w/m glass~~		
TAL Metals plus Sn, Nitrite/Nitrate	8 oz w/m glass	✓	
~~Nitrite/Nitrate~~	~~8 oz w/m glass~~		
Dioxins/Furans	4 oz w/m glass	✓	Triangle Lab
Perchlorate	4 oz w/m glass	✓	APLC Lab

OBSERVATIONS / NOTES:

VOC's collected from (5-2')

MAP:

Circle if Applicable:

MS/MSD	Duplicate ID No.:
—	—

Signature(s): Robert Balkcom

SOIL SAMPLE LOG SHEET

Project Site Name: NSWC Crane, IN
Project No.: CTO 126 job # N3960

Sample ID No.: 03SB470206
Sample Location: 03SB47
Sampled By: BG/RS
C.O.C. No.: 004000/003998

[] Surface Soil
[X] Subsurface Soil
[] Sediment
[] Other:
[] QA Sample Type:

Type of Sample:
[X] Low Concentration
[] High Concentration

GRAB SAMPLE DATA:

	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 6/27/01 Time: 0755 Method: DPT Monitor Reading (ppm): 0.0	2-6'	BROWN	SANDY CLAY SS, FRAGS.

COMPOSITE SAMPLE DATA:

	Time	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date:				
Method:				
Monitor Readings (Range in ppm):				

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
Volatiles App. IX (VOC 1 + VOC 2)	(5) encore	✓	
App. IX SVOC, SIM, EXP, NC	8 oz w/m glass	✓	
~~EXP, NC~~	~~8 oz w/m glass~~		
~~Appx.IX Herb, Pest, PCBs~~	~~8 oz w/m glass~~		
TAL Metals plus Sn, Nitrite/Nitrate	8 oz w/m glass	✓	
~~Nitrite/Nitrate~~	~~8 oz w/m glass~~		
~~Dioxins/Furans~~	~~4 oz w/m glass~~		~~Triangle Lab~~
Perchlorate	4 oz w/m glass	✓	APLC Lab

OBSERVATIONS / NOTES:

VOC'S COLLECTED FROM 4-6'

MAP:

Circle if Applicable:

MS/MSD

Duplicate ID No.:

Signature(s): Robert Balkema

SOIL SAMPLE LOG SHEET

Project Site Name: NSWC Crane, IN
Project No.: CTO 126 job # N3960

[] Surface Soil
[X] Subsurface Soil
[] Sediment
[] Other:
[] QA Sample Type:

Sample ID No.: 035B470640
Sample Location: 035B47
Sampled By: BB/RS
C.O.C. No.: 004100/100398

Type of Sample:
[X] Low Concentration
[] High Concentration

GRAB SAMPLE DATA:

	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 6/22/01	6-10'	Yellow Brown	F-SAND S.S. FAIR, SOME CLAY
Time: 0800			
Method: DPT			
Monitor Reading (ppm): 0.0			

COMPOSITE SAMPLE DATA:

Date:	Time	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Method:				
Monitor Readings (Range in ppm):				

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
Volatiles App. IX (VOC 1 + VOC 2)	(5) encore	✓	
App. IX SVOC, SIM, EXP, NC	8 oz w/m glass	✓	
~~EXP, NC~~	~~8 oz w/m glass~~		
~~Appx. IX Herb, Pest, PCBs~~	~~8 oz w/m glass~~		
TAL Metals plus Sn, Nitrite/Nitrate	8 oz w/m glass	✓	
~~Nitrite/Nitrate~~	~~8 oz w/m glass~~		
~~Dioxins/Furans~~	~~4 oz w/m glass~~		~~Triangle Lab~~
Perchlorate	4 oz w/m glass	✓	APLC Lab

OBSERVATIONS / NOTES:

VOC's From 8-10'

MAP:

Circle if Applicable:

MS/MSD	Duplicate ID No.:

Signature(s): Robert Belhouse

SOIL SAMPLE LOG SHEET

Project Site Name: NSWC Crane, IN
Project No.: CTO 126 job # N3960

Sample ID No.: 035S48 0002
Sample Location: 035S48
Sampled By: DB/HLM
C.O.C. No.: 100400/102378

[X] Surface Soil
[] Subsurface Soil
[] Sediment
[] Other:
[] QA Sample Type:

Type of Sample:
[X] Low Concentration
[] High Concentration

GRAB SAMPLE DATA:

	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 8/28/01 Time: 0812 Method: DPT Monitor Reading (ppm): 0.0	0-2'	WHITE + BROWN	CLAY, SILT, SAND + GRAVEL

COMPOSITE SAMPLE DATA:

	Time	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date:				
Method:				
Monitor Readings (Range in ppm):				

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
Volatiles App. IX (VOC 1 + VOC 2)	(5) encore	✓	
App. IX SVOC, SIM, EXP, NC	8 oz w/m glass	✓	
~~EXP, NC~~	~~8 oz w/m glass~~		
~~Appx IX Herb, Pest, PCBs~~	~~8 oz w/m glass~~		
TAL Metals ~~plus Sn~~, Nitrite/Nitrate + Sn	8 oz w/m glass	✓	
~~Nitrite/Nitrate~~	~~8 oz w/m glass~~		
~~Dioxins/Furans~~	~~4 oz w/m glass~~		~~Triangle Lab~~
Perchlorate	4 oz w/m glass	✓	APLC Lab

OBSERVATIONS / NOTES:

VOC'S COLLECTED FROM 5-2'

MAP:

Circle If Applicable:

MS/MSD	Duplicate ID No.:
—	—

Signature(s): Robert Belkover

SOIL SAMPLE LOG SHEET

Project Site Name: NSWC Crane, IN
Project No.: CTO 126 job # N3960

[] Surface Soil
[X] Subsurface Soil
[] Sediment
[] Other:
[] QA Sample Type:

Sample ID No.: 03SB48 0306
Sample Location: 03SB48
Sampled By: BB/KB
C.O.C. No.: 02400 / 02378

Type of Sample:
[X] Low Concentration
[] High Concentration

GRAB SAMPLE DATA:

	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 6/27/01 Time: 0800 Method: DPT Monitor Reading (ppm): 0-0	2'-6'	BROWN + *BLUE*	SAND (F-M) T-CLAY+SILT

COMPOSITE SAMPLE DATA:

	Time	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date:				
Method:				
Monitor Readings (Range in ppm):				

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
Volatiles App. IX (VOC 1 + VOC 2)	(5) encore	✓	
App. IX SVOC, SIM, EXP, NC	8 oz w/m glass	✓	
~~EXP, NC~~	~~8 oz w/m glass~~		
~~Appx.IX Herb, Pest, PCBs~~	~~8 oz w/m glass~~		
TAL Metals plus Sn, Nitrite/Nitrate	8 oz w/m glass	✓	
Nitrite/Nitrate	8 oz w/m glass		
~~Dioxins/Furans~~	~~4 oz w/m glass~~		~~Triangle Lab~~
Perchlorate	4 oz w/m glass	✓	APLC Lab

OBSERVATIONS / NOTES:

VOC'S COLLECTED FROM 4'-6'

MAP:

Circle if Applicable:

MS/MSD	Duplicate ID No.:
—	—

Signature(s): Robert Balkover

SOIL SAMPLE LOG SHEET

Project Site Name: NSWC Crane, IN
Project No.: CTO 126 job # N3960

[] Surface Soil
[X] Subsurface Soil
[] Sediment
[] Other:
[] QA Sample Type:

Sample ID No.: 035B480640
Sample Location: 035B48
Sampled By: KM/DB
C.O.C. No.: 00400/02378

Type of Sample:
[X] Low Concentration
[] High Concentration

GRAB SAMPLE DATA:

	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 6/22/01 Time: 0828 Method: DPT Monitor Reading (ppm): 0.0	6-10'	BLUE + BROWN	F-M SAND, CLAY

COMPOSITE SAMPLE DATA:

	Time	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date:				
Method:				
Monitor Readings (Range in ppm):				

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
Volatiles App. IX (VOC 1 + VOC 2)	(5) encore	✓	
App. IX SVOC, SIM, EXP, NC	8 oz w/m glass	✓	
~~EXP, NC~~	~~8 oz w/m glass~~		
~~Appx IX Herb, Pest, PCBs~~	~~8 oz w/m glass~~		
TAL Metals plus Sn, Nitrite/Nitrate	8 oz w/m glass	✓	
~~Nitrite/Nitrate~~	~~8 oz w/m glass~~		
~~Dioxins/Furans~~	~~4 oz w/m glass~~		~~Triangle Lab~~
Perchlorate	4 oz w/m glass	✓	APLC Lab

OBSERVATIONS / NOTES:

VOC'S COLLECTED @ 6'-8'

MAP:

Circle if Applicable:

MS/MSD	Duplicate ID No.:
—	—

Signature(s): Robert Belkeve

APPENDIX B-2

Monitoring Well Inspection Sheets

MONITORING WELL INSPECTION SHEET
NSWC Crane

Well ID: 3-07

Time: 1627 Date: 6/05/0 Inspector's Name: T. ROJAHN

Inspection Item	Types of Problems	Status		Observation
		S	U	
Well Tag	Is it in-place, legible		✓	
Well security	Condition protective case, cap, lock		✓	REMOVED to ACCESS to DEW. (NEW LOCK)
Well pad	~~Concrete or~~ gravel ~~& condition~~	✓		
Well seal	Condition of…	✓		
Area Immediately around well pad	Record any evidence of/or standing water in area of well	✓		
Dedicated sampling equipment	Condition of…	—	—	NA
PVC Riser	Condition of riser & survey reference point	✓		No Protective CASING

Comments:

Signature(s) [signature]

Note: S= Satisfactory, U= Unsatisfactory
Check one, if unsatisfactory explain

NSWC Crane
Field Form
Revision: 2
November, 2000

MONITORING WELL INSPECTION SHEET
NSWC Crane

Well ID: 3-10

Time: 1150 Date: 6-06-01 Inspector's Name: T. ROJAIAN

Inspection Item	Types of Problems	Status		Observation
		S	U	
Well Tag	Is it in-place, legible		✓	Painted ID
Well security	Condition protective case, cap, lock	✓		
Well pad	~~Concrete~~ or gravel & condition	✓		
Well seal	Condition of…	✓		
Area Immediately around well pad	Record any evidence of/or standing water in area of well	✓		
Dedicated sampling equipment	Condition of…	—	—	
PVC Riser	Condition of riser & survey reference point	✓		NO PROTECTIVE CASING

Comments:

Signature(s) [illegible]

Note: S= Satisfactory, U= Unsatisfactory
Check one, if unsatisfactory explain

MONITORING WELL INSPECTION SHEET
NSWC Crane

Well ID: 3-11

Time: 1106 Date: 6-06-01 Inspector's Name: T. ROJAHN

Inspection Item	Types of Problems	Status		Observation
		S	U	
Well Tag	Is it in-place, legible		✓	PAINTED ID
Well security	Condition protective case, cap, lock	✓		
Well pad	~~Concrete or~~ gravel & condition	✓		
Well seal	Condition of…	✓		
Area Immediately around well pad	Record any evidence of/or standing water in area of well	✓		
Dedicated sampling equipment	Condition of…	—	—	NA
PVC Riser	Condition of riser & survey reference point	✓		NO PROTECTIVE CASING

Comments:

Signature(s) [signature]

Note: S= Satisfactory, U= Unsatisfactory
Check one, if unsatisfactory explain

NSWC Crane
Field Form
Revision: 2
November, 2000

MONITORING WELL INSPECTION SHEET
NSWC Crane

Well ID: 3-12

Time: 1550 Date: 6-7-01 Inspector's Name: T. ROJAHN

Inspection Item	Types of Problems	Status		Observation
		S	U	
Well Tag	Is it in-place, legible		✓	Painted ID
Well security	Condition protective case, cap, lock	✓		OK
Well pad	Concrete or ~~gravel~~ & condition	✓		SMALL <1' ϕ
Well seal	Condition of…	✓		
Area Immediately around well pad	Record any evidence of/or standing water in area of well	✓		
Dedicated sampling equipment	Condition of…	—	—	
PVC Riser	Condition of riser & survey reference point	✓		No Protective Casing

Comments:

Signature(s) [signature]

Note: S= Satisfactory, U= Unsatisfactory
Check one, if unsatisfactory explain

NSWC Crane
Field Form
Revision 2
November 2000

MONITORING WELL INSPECTION SHEET
NSWC Crane

Well ID: 3-13

Time: 1620 Date: 6-06-01 Inspector's Name: T. ROJAHN

Inspection Item	Types of Problems	Status		Observation
		S	U	
Well Tag	Is it in-place, legible		✓	
Well security	Condition protective case, cap, lock		✓	No J. PLUG; Replace @ END OF DAY. (NEW LOCK & J-PLUG)
Well pad	~~Concrete~~ or gravel & condition	✓		
Well seal	Condition of...	✓		
Area Immediately around well pad	Record any evidence of/or standing water in area of well	✓		
Dedicated sampling equipment	Condition of...	—	—	NA
PVC Riser	Condition of riser & survey reference point	✓		No PROTECTIVE CASING

Comments:

Signature(s) [signature]

Note: S= Satisfactory, U= Unsatisfactory
Check one, if unsatisfactory explain

NSWC Crane
Field Form
Revision: 2
November, 2000

MONITORING WELL INSPECTION SHEET
NSWC Crane

Well ID: 3-14

Time: 1400 Date: 6/05/01 Inspector's Name: T. ROJAHN

Inspection Item	Types of Problems	Status		Observation
		S	U	
Well Tag	Is it in-place, legible		✓	NONE
Well security	Condition protective case, cap, lock	✓		
Well pad	~~Concrete~~ or gravel ~~& condition~~	✓		
Well seal	Condition of...	✓		
Area Immediately around well pad	Record any evidence of/or standing water in area of well	✓		
Dedicated sampling equipment	Condition of...	—	—	NA
PVC Riser	Condition of riser & survey reference point	✓		No Protective casing

Comments:

Signature(s) [illegible]

Note: S= Satisfactory, U= Unsatisfactory
Check one, if unsatisfactory explain

NSWC Crane
Field Form
Revision: 2
November [illegible]0

MONITORING WELL INSPECTION SHEET
NSWC Crane

Well ID: 3-15

Time: 1715 Date: 6/05/01 Inspector's Name: T. ROJAHN

Inspection Item	Types of Problems	Status		Observation
		S	U	
Well Tag	Is it in-place, legible		✓	
Well security	Condition protective case, cap, lock		✓	At time of Development (NEW LOCK)
Well pad	~~Concrete or~~ gravel ~~& condition~~	✓		
Well seal	Condition of…	✓		
Area Immediately around well pad	Record any evidence of/or standing water in area of well	✓		
Dedicated sampling equipment	Condition of…	—	—	NA
PVC Riser	Condition of riser & survey reference point	✓		

Comments:

Signature(s) [signature]

Note: S= Satisfactory, U= Unsatisfactory
Check one, if unsatisfactory explain

NSWC Crane
Field Form
Revision: 2
November, 2000

MONITORING WELL INSPECTION SHEET
NSWC Crane

Well ID: 3-16

Time: 1532 Date: 6-06-01 Inspector's Name: T. ROJAHN

Inspection Item	Types of Problems	Status		Observation
		S	U	
Well Tag	Is it in-place, legible		✓	
Well security	Condition protective case, cap, lock	✓		
Well pad	~~Concrete~~ or gravel & condition	✓		
Well seal	Condition of...	✓		
Area immediately around well pad	Record any evidence of/or standing water in area of well	✓		
Dedicated sampling equipment	Condition of...	–	–	NA
PVC Riser	Condition of riser & survey reference point	✓		

Comments:

Signature(s) [signature]

Note: S= Satisfactory, U= Unsatisfactory
Check one, if unsatisfactory explain

NSWC Crane
Field Form
Revision: 2
November 2000

MONITORING WELL INSPECTION SHEET
NSWC Crane

Well ID: 3-17

Time: 1353

Date: 6-7-01

Inspector's Name: T. ROJAHN

Inspection Item	Types of Problems	Status		Observation
		S	U	
Well Tag	Is it in-place, legible		✓	
Well security	Condition protective case, cap, lock	✓		NEW LOCK
Well pad	Concrete ~~or gravel~~ & condition	✓		SMALL <1' ϕ
Well seal	Condition of...	✓		
Area Immediately around well pad	Record any evidence of/or standing water in area of well	✓		
Dedicated sampling equipment	Condition of...	—	—	NA
PVC Riser	Condition of riser & survey reference point	✓		No Protective CASING

Comments:

Signature(s) [signature]

Note: S= Satisfactory, U= Unsatisfactory
Check one, if unsatisfactory explain

NSWC Crane
Field Form
Revision: 2
November, 2000

MONITORING WELL INSPECTION SHEET
NSWC Crane

Well ID: 3-18

Time: 1250 Date: 6-7-01 Inspector's Name: T. ROJAHN

Inspection Item	Types of Problems	Status		Observation
		S	U	
Well Tag	Is it in-place, legible		✓	ID Painted
Well security	Condition protective case, cap, lock	✓		REPLACED LOCK
Well pad	Concrete ~~or gravel &~~ condition	✓		SMALL <1' ϕ
Well seal	Condition of...	✓		
Area Immediately around well pad	Record any evidence of/or standing water in area of well	✓		
Dedicated sampling equipment	Condition of...	–	–	NA
PVC Riser	Condition of riser & survey reference point	✓		NO PROTECTIVE CASING

Comments:

Signature(s) [signature]

Note: S= Satisfactory, U= Unsatisfactory
Check one, if unsatisfactory explain

NSWC Crane
Field Form
Revision: 2
Novemb[illegible]00

MONITORING WELL INSPECTION SHEET
NSWC Crane

Well ID: 3-20

Time: 1504 Date: 6-7-01 Inspector's Name: T. ROJAHN

Inspection Item	Types of Problems	Status S	Status U	Observation
Well Tag	Is it in-place, legible		✓	
Well security	Condition protective case, cap, lock	✓		
Well pad	Concrete or gravel & condition	✓		SMALL <1' ϕ
Well seal	Condition of...	✓		
Area immediately around well pad	Record any evidence of/or standing water in area of well	✓		
Dedicated sampling equipment	Condition of...	—	—	
PVC Riser	Condition of riser & survey reference point	✓		No Protective CASING

Comments:

Signature(s) [signature]

Note: S= Satisfactory, U= Unsatisfactory
Check one, if unsatisfactory explain

NSWC Crane
Field Form
Revision: 2
November, 2000

MONITORING WELL INSPECTION SHEET
NSWC Crane

Well ID: 3-21

Time: 1230 Date: 6-5-01 Inspector's Name: K. SIMPSON

Inspection Item	Types of Problems	Status		Observation
		S	U	
Well Tag	Is it in-place, legible		✓	NONE
Well security	Condition protective case, cap, lock	✓		
Well pad	~~Concrete~~ or gravel ~~& condition~~	✓		
Well seal	Condition of…	✓		
Area immediately around well pad	Record any evidence of/or standing water in area of well	✓		
Dedicated sampling equipment	Condition of…	—	—	NA
PVC Riser	Condition of riser & survey reference point	✓		

Comments:

Signature(s) K. S. Simpson

Note: S= Satisfactory, U= Unsatisfactory
Check one, if unsatisfactory explain

MONITORING WELL INSPECTION SHEET
NSWC Crane

Well ID: 3-22

Time: 09:43

Date: 6-06-01

Inspector's Name: T. ROJAHN

Inspection Item	Types of Problems	Status		Observation
		S	U	
Well Tag	Is it in-place, legible		✓	
Well security	Condition protective case, cap, lock	✓		
Well pad	~~Concrete or~~ gravel & condition	✓		
Well seal	Condition of…	✓		
Area Immediately around well pad	Record any evidence of/or standing water in area of well	✓		
Dedicated sampling equipment	Condition of…	–	–	NA
PVC Riser	Condition of riser & survey reference point	✓		

Comments:

Signature(s) [signature]

Note: S= Satisfactory, U= Unsatisfactory
Check one, if unsatisfactory explain

NSWC Crane
Field Form
Revision: 2
November, 2000

MONITORING WELL INSPECTION SHEET
NSWC Crane

Well ID: 7-23

Time: 1605 Date: 6-7-01 Inspector's Name: T. Rojahn

Inspection Item	Types of Problems	Status S	Status U	Observation
Well Tag	Is it in-place, legible		✓	Painted ID
Well security	Condition protective case, cap, lock		✓	SEE RISER
Well pad	Concrete or gravel & condition		✓	Concrete broken & cracked Possible heaving (bucket form)
Well seal	Condition of...		✓	Poor (see well pad) Also, brought up part of the south end of 3m. snake - tail still moving - fresh kill
Area Immediately around well pad	Record any evidence of/or standing water in area of well	✓		
Dedicated sampling equipment	Condition of...	—	—	NA
PVC Riser	Condition of riser & survey reference point		✓	Riser loose at ground level Tighten up w/ hammer

Comments: Well repair seal

Signature(s) [signature]

Note: S= Satisfactory, U= Unsatisfactory
Check one, if unsatisfactory explain

NSWC Crane
Field Form
Revision: 2
Novembe[illegible]00

MONITORING WELL INSPECTION SHEET
NSWC Crane

Well ID: 3-24

Time: 0900 Date: 6-07-01 Inspector's Name: T. ROJAHN

Inspection Item	Types of Problems	Status S	Status U	Observation
Well Tag	Is it in-place, legible		✓	
Well security	Condition protective case, cap, lock	✓		REPLACED LOCK & J-PLUG
Well pad	Concrete ~~or gravel~~ & condition	✓		SMALL ROUND PAD (SEAL) 1' ± ϕ
Well seal	Condition of…	✓		
Area immediately around well pad	Record any evidence of/or standing water in area of well	✓		
Dedicated sampling equipment	Condition of…	—	—	NA
PVC Riser	Condition of riser & survey reference point	✓		No Protective Casing

Comments:

Signature(s) [signature]

Note: S= Satisfactory, U= Unsatisfactory
Check one, if unsatisfactory explain

NSWC Crane
Field Form
Revision: 2
November, 2000

MONITORING WELL INSPECTION SHEET
NSWC Crane

Well ID: 3-25

Time: 1000 Date: 6-7-01 Inspector's Name: T. ROJAHN

Inspection Item	Types of Problems	Status		Observation
		S	U	
Well Tag	Is it in-place, legible		✓	
Well security	Condition protective case, cap, lock	✓		REPLACED NEW J-PLUG & LOCK
Well pad	Concrete ~~or gravel &~~ condition	✓		SMALL ROUND PAD (SEAL) 1 ± ϕ
Well seal	Condition of...	✓		
Area Immediately around well pad	Record any evidence of/or standing water in area of well	✓		
Dedicated sampling equipment	Condition of...	—	—	NA
PVC Riser	Condition of riser & survey reference point	✓		No Protective CASING

Comments:

Signature(s) [illegible]

Note: S= Satisfactory, U= Unsatisfactory
Check one, if unsatisfactory explain

NSWC Crane
Field Form
Revision: 2
Novembe[illegible]00

APPENDIX B-3

Monitoring Well Development Records

MONITORING WELL DEVELOPMENT RECORD

Well: 3-07
Site: JEEP TRAIL
Date Installed: NA
Date: 6/05/01
Dev. Method: Surged & Pumped
Pump Type: WHALE Pump

Depth to Bottom (ft.): 28.35
Static Water Level Before (ft.): 11.16
Static Water Level After (ft.): 24.38
Screen Length (ft.): ~10'
One Well Vol: 11.0 L
Casing ID (in.): 2 Inch, PVC

Personnel: K. M & TR
Drilling Co.: NA
Project Name: NSWC Crane
Project Number: 3960

Time	Cumulative Water Volume (Gal.)	Water Level Readings (Ft. below TOC)	Temperature (Degrees C)	pH	Specific Conductance (Units ____)	Turbidity (NTU)	Remarks (odor, color, etc.)
							START SURGE FOR 10 MIN
1600	—	11.16	—	—	—	—	
1615	—	—	13.60	6.58	3.28	+1000	Start DEV. BRN
1618	36 L	13.68	12.40	5.39	2.24	+1000	6 LPM . Lt BRN
1620	—	17.35	12.27	5.09	0.538	450	" Lt BRN
1623	48 L						DRY
1627	—	18.94	—	—	—	—	
1631	—	16.32	—	—	—	—	
1635	48 L	15.62	13.09	5.75	1.936	+1000	6 LPM RESTART BRN
1637	—	21.16	12.01	5.52	0.823	550	Lt BRN
1638	66 L	24.38	—	—	—	—	DRY END DEV.

PID Readings BH 0.9 PPM
BZ 0.0 PPM

YES ✓ NO

MONITORING WELL DEVELOPMENT RECORD

Well: 3-10
Site: JEEP TRAIL
Date Installed: NA
Date: 6-06-01
Dev. Method: Surged & Pumped
Pump Type: WHALE

Depth to Bottom (ft.): 30.30
Static Water Level Before (ft.): 16.44
Static Water Level After (ft.): DRY
Screen Length (ft.): ~10'
One Well Vol: 8.7L
Casing ID (in.): 2 inch, PVC

Personnel: T. ROJAHN
Drilling Co.: NA
Project Name: NSWC Crane
Project Number: 3960

Time	Cumulative Water Volume (Gal.)	Water Level Readings (Ft. below TOC)	Temperature (Degrees C)	pH	Specific Conductance (Units ____)	Turbidity (NTU)	Remarks (odor, color, etc.)
1305	—	30.30	→	→	→	→	SURGE 10 MIN
1321	—	30.30	14.76	2.93	0.693	71100	6LPM BRN
1325	24L	DRY	→	→	→	→	Stop Pump
1335	24L	24.10	→	→	→	→	RECHARGE
1346	24L	22.83	12.92	4.28	0.720	600	RESTART
1348	36L	DRY	→	→	→	→	Stop PUMPING END DEV.
							PID Readings BH 0.6 PPM
							BZ 0.0 PPM

MW location and ID were confirmed using figures, borin[illegible] and 1999 MW Inventory YES ✓ NO____

Note: Well was installed as part of a previous [illegible]d is being redeveloped at this time.

MONITORING WELL DEVELOPMENT RECORD

Well: 3-11
Site: JEEP TRAIL
Date Installed: NA
Date: 6-06-01
Dev. Method: Surged & Pumped
Pump Type: WHALE PUMP

Depth to Bottom (ft.): 23.55
Static Water Level Before (ft.): 8.64
Static Water Level After (ft.): DRY
Screen Length (ft.): ~10'
One Well Vol: 9.3L
Casing ID (in.): 2 Inch, PVC

Personnel: K.M & T.R
Drilling Co.: NA
Project Name: NSWC Crane
Project Number: 3960

Time	Cumulative Water Volume (Gal.)	Water Level Readings (Ft. below TOC)	Temperature (Degrees C)	pH	Specific Conductance (Units ____)	Turbidity (NTU)	Remarks (odor, color, etc.)
1015	–	8.64	–	–	–	–	SURGE 10 MIN
1028	–	–	12.85	6.64	0.515	>1000	6 LPM BRN
1029	6L	15.66	–	–	–	–	"
1031	18L	DRY	12.37	6.33	0.517	>1000	DRY
1034	18L	22.10					RECHARGE
1041	18L	18.66					"
1045	18L	18.12					RESTART
1046	24L	DRY					Stop BRN
1055	24L	19.68					RECHARGE
1100	24L	18.73					Restart
1101	30L	DRY					DRY END DEV. BRN
							PID Readings BH 0 PPM
							BZ 0 PPM

MW location and ID were confirmed using figures, boring logs and 1999 MW Inventory YES ✓ NO____

Note: Well was installed as part of a previous RFI and is being redeveloped at this time.

MONITORING WELL DEVELOPMENT RECORD

Well: 3-12
Site: JEEP TRAIL
Date Installed: NA
Date: 6-7-01
Dev. Method: Surged & Pumped
Pump Type: WHALER

Depth to Bottom (ft.): 29.60
Static Water Level Before (ft.): 14.97
Static Water Level After (ft.): 20.33
Screen Length (ft.): ~10'
One Well Vol: 9.3 L
Casing ID (in.): 2 inch, PVC

Personnel: K.M. & T.R
Drilling Co.: NA
Project Name: NSWC Crane
Project Number: 3960

Time	Cumulative Water Volume (Gal.)	Water Level Readings (Ft. below TOC)	Temperature (Degrees C)	pH	Specific Conductance (Units ____)	Turbidity (NTU)	Remarks (odor, color, etc.)
1518	—	14.97				→	SURGE 10 MIN
1533	—	14.97	12.37	6.16	0.365	<1100	DARK BRN 6LPM
1538	30L	20.13	11.73	5.77	0.358	<1100	BRN "
1543	60L	20.33	11.70	5.42	0.371	<1100	BRN "
							PID Readings BH 0.0 PPM
							BZ 0.0 PPM

MW location and ID were confirmed using figures, boring and 1999 MW inventory YES ✓ NO____

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MONITORING WELL DEVELOPMENT RECORD

Well: 3-13
Site: JEEP TRAIL
Date Installed: NA
Date: 6-06-01
Dev. Method: Surged & Pumped
Pump Type: WHALE

Depth to Bottom (ft.): 29.00
Static Water Level Before (ft.): 9.94
Static Water Level After (ft.): DRY
Screen Length (ft.): ~10'
One Well Vol: 12.3
Casing ID (in.): 2 inch, PVC

Personnel: KM & T.R.
Drilling Co.: NA
Project Name: NSWC Crane
Project Number: 3960

Time	Cumulative Water Volume (Gal.)	Water Level Readings (Ft. below TOC)	Temperature (Degrees C)	pH	Specific Conductance (Units ____)	Turbidity (NTU)	Remarks (odor, color, etc.)
						→	SURGE FOR 10 MIN
1610	—						
						→	Start PURGE Milky Grey
1625	—	9.94	—				
1627	10 L	16.91	14.49	6.72	0.442	>1100	5LPM
						→	Stop to Switch Power
1629	20 L	17.52	—				
						→	Restart
1632	20 L	—					
1634	30 L	18.79	13.15	5.90	0.421	>1100	BRN
						→	DRY
1637	45 L	DRY	—				
						→	RECHARGE
1647	45 L	22.64	—				
						→	RESTART
1652	45 L	22.38	—				
1653	50 L	DRY	13.52	6.51	0.401	>1100	END DEV BRN
	WELL CAP MISSING - PUT ON NEW J-PLUG & LOCK						
							PID Readings BH 0.0 PPM
							BZ 0.0 PPM

MW location and ID were confirmed using figures, boring logs and 1999 MW Inventory YES ✓ NO____

installed as part of a previous RFI and is being redeveloped at this time.

MONITORING WELL DEVELOPMENT RECORD

Well: 3-14
Site: JEEP TRAIL
Date Installed: NA
Date: 6/05/01
Dev. Method: Surged & Pumped
Pump Type: WHALE

Depth to Bottom (ft.): 23.0
Static Water Level Before (ft.): 10.41
Static Water Level After (ft.): 21.5
Screen Length (ft.): ~10'
One Well Vol: 8.1 L
Casing ID (in.): 2 inch, PVC

Personnel: T. ROJAHN & K. SIMPSON
Drilling Co.: NA
Project Name: NSWC Crane
Project Number: 3960

Time	Cumulative Water Volume (Gal.)	Water Level Readings (Ft. below TOC)	Temperature (Degrees C)	pH	Specific Conductance (Units ____)	Turbidity (NTU)	Remarks (odor, color, etc.)
	—	—	—	—	—	—	SURGE FOR ~10 MIN
1340	—	—	—	—	—	—	BRN
1350	—	—	—	—	—	—	BRN 5LPM
1353	—	16.65	1397	6.31	0.463	+1000	BRN
1355	25L	—	1281	6.00	0.541	+1000	DRY @ 21.5'
1356	—	21.5	—	—	—	—	DRY @ 21.5 END DEV.
1405	30L	16.5	—	—	—	—	
							PID Readings BH 0.0 PPM
							BZ 0.0 PPM

MW location and ID were confirmed using figures, borin[illegible] and 1999 MW Inventory YES ✓ NO____

Note: Well was installed as part of a previous [illegible]d is being redeveloped at this time.

MONITORING WELL DEVELOPMENT RECORD

Well: 3-15
Site: JEEP TRAIL
Date Installed: NA
Date: 6/05/01
Dev. Method: Surged & Pumped
Pump Type: WHALE PUMP

Depth to Bottom (ft.): 32.10
Static Water Level Before (ft.): 17.82
Static Water Level After (ft.): 22.81
Screen Length (ft.): ~10'
One Well Vol: 9.3 L
Casing ID (in.): 2 inch, PVC

Personnel: KM & TR
Drilling Co.: NA
Project Name: NSWC Crane
Project Number: 3960

Time	Cumulative Water Volume (Gal.)	Water Level Readings (Ft. below TOC)	Temperature (Degrees C)	pH	Specific Conductance (Units ____)	Turbidity (NTU)	Remarks (odor, color, etc.)
1710	—	17.82	—	—	—	—	Start SURGE
1725	—	1846	12.97	6.79	0.529	+1000	5LPM BRN Start DEV.
1728	15L	2041	12.30	6.41	0.516	+1000	BRN
1731	30L	21.57	12.17	6.21	0.533	+1000	Milky BRN
1734	45L	2222	12.19	6.20	0.558	+1000	BRN
1737	60L	22.81	12.11	6.12	0.577	+1000	BRN END DEV
							PID Readings BH 0.0 PPM
							BZ 0.0 PPM

MW location and ID were confirmed using figures, boring logs and 1999 MW inventory YES ✓ NO____

PFI and is being redeveloped at this time.

MONITORING WELL DEVELOPMENT RECORD

Well: 3-16
Site: JEEP TRAIL
Date Installed: NA
Date: 6-06-01
Dev. Method: Surged & Pumped
Pump Type: WHALE

Depth to Bottom (ft.): 42.55
Static Water Level Before (ft.): 29.25
Static Water Level After (ft.): 36.13
Screen Length (ft.): ~10'
One Well Vol: 8.7 L
Casing ID (in.): 2 inch, PVC

Personnel: T. ROJAHN
Drilling Co.: NA
Project Name: NSWC Crane
Project Number: 3960

Time	Cumulative Water Volume (Gal.)	Water Level Readings (Ft. below TOC)	Temperature (Degrees C)	pH	Specific Conductance (Units ____)	Turbidity (NTU)	Remarks (odor, color, etc.)
						→	SURGE 10 MIN
1445	—					→	START DEV.
1459	—	29.25	—				
1500	5 L	—	14.51	2.23*	0.359	>1100	BRN 5LPM *pH paper ~6.5
1506	35 L	33.44	—	—	—	—	BRN
1508	45 L	33.93	13.15	—	0.334	>1100	BRN
1513	70 L	34.46	12.54	—	0.318	>1100	BRN
1519	100 L	36.13	12.63	—	0.317	>1100	BRN END DEV.
NOTE:							
	WATER LEVEL WELL below bottom of screen						
							PID Readings BH 0.0 PPM
							BZ 0.0 PPM

MW location and ID were confirmed using figures, borin[illegible]s and 1999 MW Inventory YES ✓ NO ____

[illegible] part of a previous [illegible] d is being redeveloped at this time.

MONITORING WELL DEVELOPMENT RECORD

Well: 3-17
Site: JEEP TRAIL
Date Installed: NA
Date: 6-7-01
Dev. Method: Surged & Pumped
Pump Type: WHALEN

Depth to Bottom (ft.): 30.00
Static Water Level Before (ft.): 15.65
Static Water Level After (ft.): DRY
Screen Length (ft.): ~10'
One Well Vol: 9.3L
Casing ID (in.): 2 inch, PVC

Personnel: K.M. & T.R
Drilling Co.: NA
Project Name: NSWC Crane
Project Number: 3960

Time	Cumulative Water Volume (Gal.)	Water Level Readings (Ft. below TOC)	Temperature (Degrees C)	pH	Specific Conductance (Units ____)	Turbidity (NTU)	Remarks (odor, color, etc.)
						→	SURGE 10 MIN
1335	–	15.65					Start DEV 6LPM
1345	–	15.65	13.65	7.32	0.353	71100	
						→	DRY
1350	30L	DRY				→	RECHARGE
1355	30L	23.00				→	"
1400	30L	22.47				→	"
1405	30L	21.80				→	"
1410	30L	18.16					Restart Pump
1415	30L	17.66	12.58	7.51	0.290	667	
						→	DRY END DEV.
1418	48L	DRY					
							PID Readings BH 0.0 PPM
							BZ 0.0 PPM

MW location and ID were confirmed using figures, boring logs and 1999 MW inventory YES ✓ NO ____

[illegible] developed at this time

MONITORING WELL DEVELOPMENT RECORD

Well: 3-18
Site: JEEP TRAIL
Date Installed: NA
Date: 6-7-01
Dev. Method: Surged & Pumped
Pump Type: WHALE

Depth to Bottom (ft.): 30.35
Static Water Level Before (ft.): 17.63
Static Water Level After (ft.): DRY
Screen Length (ft.): ~10'
One Well Vol: 8.1L
Casing ID (in.): 2 inch, PVC

Personnel: K.M. & T.R
Drilling Co.: NA
Project Name: NSWC Crane
Project Number: 3960

Time	Cumulative Water Volume (Gal.)	Water Level Readings (Ft. below TOC)	Temperature (Degrees C)	pH	Specific Conductance (Units ____)	Turbidity (NTU)	Remarks (odor, color, etc.)
							SURGE 10 MIN
1225	–	17.63					
1239	–	17.63	14.16	7.88	0.234	>1100	BRN 6LPM START DEV
1243	24L	DRY					Stopped Pumping (DRY)
1249	24L	25.52					RECHARGE
1254	24L	24.50					"
1259	24L	23.60					"
1304	24L	23.38					"
1306	24L	–	12.21	6.85	0.260	>1100	BRN
1308	36L	DRY					END OF PURGE / DEV

PID Readings BH 0.0 PPM
BZ 0.0 PPM

MW location and ID were confirmed using figures, borin[illegible] and 1999 MW Inventory YES ✓ NO ____

[illegible] being redeveloped at this time.

MONITORING WELL DEVELOPMENT RECORD

Well: 3-20
Site: JEEP TRAIL
Date Installed: NA
Date: 6-07-01
Dev. Method: Surged & Pumped
Pump Type: WHALE

Depth to Bottom (ft.): 29.45
Static Water Level Before (ft.): 17.57
Static Water Level After (ft.): 18.67
Screen Length (ft.): ~10'
One Well Vol: 7.4 L
Casing ID (in.): 2 inch, PVC

Personnel: K.M. & T.R.
Drilling Co.: NA
Project Name: NSWC Crane
Project Number: 3690

Time	Cumulative Water Volume (Gal.)	Water Level Readings (Ft. below TOC)	Temperature (Degrees C)	pH	Specific Conductance (Units ____)	Turbidity (NTU)	Remarks (odor, color, etc.)
						→	START SURGE (10 min)
1436	—	17.57	—				
1451	—	17.57	12.88	7.56	0.283	>1100	BRN 5LPM
1456	25L	18.23	11.91	6.91	0.193	>1100	" "
1501	50L	18.67	11.34	6.04	0.150	>1100	" " END DEV

PID Readings BH 0.0 PPM
BZ 0.0 PPM

MW location and ID were confirmed using figures, boring logs and 1999 MW Inventory YES ✓ NO____

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MONITORING WELL DEVELOPMENT RECORD

Well: 3-21
Site: JEEP TRAIL
Date Installed: NA
Date : 6/05/01
Dev. Method: Surged & Pumped
Pump Type: WHALE

Depth to Bottom (ft.): 30.0
Static Water Level Before (ft.): 18.9
Static Water Level After (ft.): —
Screen Length (ft.): ~10'
One Well Vol: 7L
Casing ID (in.): 2 inch, PVC

Personnel: K. SIMPSON + T. ROJAHN
Drilling Co.: NA
Project Name: NSWC Crane
Project Number: 3960

Time	Cumulative Water Volume (Gal.)	Water Level Readings (Ft. below TOC)	Temperature (Degrees C)	pH	Specific Conductance (Units ____)	Turbidity (NTU)	Remarks (odor, color, etc.)
1230	—	—	—	—	—	—	START SURGE
1240	—	—	—	—	—	—	BRN NO ODOR
1245	—	~~6 gpm~~ FL	12.95	6.20	0.540	—	6LPM
1248	—	18.98	12.04	5.84	0.506	100	SL. Cloudy
1250	60L	18.98	11.90	5.57	0.499	85	" "
1255	90L	19.06	12.14	5.16	0.500	140	SL. Cloudy
1300	120L	23.15	11.98	5.57	0.515	1000	Cloudy
1305	—	—	—	—	—	—	STOP PURGE / END DEV.
							PID Readings BH 0.0 PPM
							BZ 0.0 PPM

MW location and ID were confirmed using figures, borin[illegible] and 1999 MW Inventory YES ✓ NO____

Note: Well was installed as part of a previous [illegible]d is being redeveloped at this time.

MONITORING WELL DEVELOPMENT RECORD

Well: 3-22
Site: JEEP TRAIL
Date Installed: NA
Date: 6-06-01
Dev. Method: Surged & Pumped
Pump Type: WHALE

Depth to Bottom (ft.): 32.0
Static Water Level Before (ft.): 16.22
Static Water Level After (ft.): 30.90
Screen Length (ft.): ~10'
One Well Vol: 10 L
Casing ID (in.): 2 inch, PVC

Personnel: T.R.
Drilling Co.: NA
Project Name: NSWC Crane
Project Number: 3960

Time	Cumulative Water Volume (Gal.)	Water Level Readings (Ft. below TOC)	Temperature (Degrees C)	pH	Specific Conductance (Units ____)	Turbidity (NTU)	Remarks (odor, color, etc.)
0835	—	—	—	—	—	—	SURGE 10 MIN
0855	—	—	—	—	—	—	Start PURGE
0859	24L	22.12	12.08	7.02	0.915	4000+	6LPM BRN
0902	42L	—				→	DRY
0905	42L	24.77	—	—	—	—	RECHARGE
0912	42L	22.38	—	—	—	—	"
0920	42L	22.00	11.79	6.40	0.985	>1,000	Restart DEV. BRN
0926	78L	30.90	—			→	DRY END DEV.

PID Readings BH 0.0 PPM
BZ 0.0 PPM

MW location and ID were confirmed using figures, boring logs and 1999 MW Inventory YES ✓ NO____

...ious PSI and is being redeveloped at this time.

MONITORING WELL DEVELOPMENT RECORD

32.0' ** END OF DEV.

Well: 3-23
Site: JEEP TRAIL
Date Installed: NA
Date: 6-7-01
Dev. Method: Surged & Pumped
Pump Type: WHALE

Depth to Bottom (ft.): 26.20* Start
Static Water Level Before (ft.): 16.04
Static Water Level After (ft.): 20.23
Screen Length (ft.): ~10'
One Well Vol: 6.2L
Casing ID (in.): 2 inch, PVC

Personnel: KM & TR
Drilling Co.: NA
Project Name: NSWC Crane
Project Number: 3960

Time	Cumulative Water Volume (Gal.)	Water Level Readings (Ft. below TOC)	Temperature (Degrees C)	pH	Specific Conductance (Units ____)	Turbidity (NTU)	Remarks (odor, color, etc.)
						→	SURGE 10 MIN
1605	—	16.04	—				
	BACK	END OF	SNAKE CAME UP	DURING	SURGE (Young SNAKE ~8" in length)		
1620	—	16.04	→	HEAVY	SEDIMENT	→	Start DEV. Dark BRN
	Problems pumping stop AND pull up PUMP (organics roots AROUND intake						
						—	INSECT Evidence (Parts))
1627	—	—	—	—	—		
1637	10L	16.34	SET	PUMP	HIGHER IN	WATER Col.	BRN 5LPM
1642	35L	18.15	13.43	6.29	0.398	>1100	BRN "
1647	65L	18.97	12.10	6.10	0.377	>1100	BRN 6LPM
1652	95L	19.53	11.98	5.84	0.370	>1100	BRN "
1653	START	Lowering	pump VERY	slow	to REMOVE	HEAVY	sediment DARK BRN
1720	235L	19.63	Hit Bottom	(AVE FLOW	RATE (A)	5LPM	" "
1722	245L	19.87	12.02	6.36	0.385	527	Lt. TAN
1723	250L	—	—	—	—	334	Cloudy
1727	270L	20.23	12.10	6.44	0.372	201	END OF DEV. CLOUDY
							PID Readings BH 0.0 PPM
							BZ 0.0 PPM
* TD =	26.20 @	start of	SURGE →	SURGE block	WENT	to ~30'	Depth → due to HEAVY sedi.

** @ END OF DEVELOPMENT TD = 32.0'

MW location and ID were confirmed using figures, borin[illegible]s and 1999 MW Inventory YES ✓ NO____

Note: Well was installed as part of a previous [illegible]d is being redeveloped at this time.

MONITORING WELL DEVELOPMENT RECORD

Well: 3-24
Site: JEEP TRAIL
Date Installed: NA
Date: 6-07-01
Dev. Method: Surged & Pumped
Pump Type: WHALE

Depth to Bottom (ft.): 59.80
Static Water Level Before (ft.): 49.38
Static Water Level After (ft.): 50.18
Screen Length (ft.): ~ 10'
One Well Vol: 6.5 L
Casing ID (in.): 2 inch, PVC

Personnel: K.M & TR
Drilling Co.: NA
Project Name: NSWC Crane
Project Number: 3960

Time	Cumulative Water Volume (Gal.)	Water Level Readings (Ft. below TOC)	Temperature (Degrees C)	pH	Specific Conductance (Units ____)	Turbidity (NTU)	Remarks (odor, color, etc.)
							SURGE 10 MIN
0812	—	49.80					1.4 LPM START DEV.
0831	—	49.38					
0836	7 L	49.48	13.10	7.65	0.624	>1100	BRN
0841	14 L	49.61	—	—	—	—	BRN
0846	21 L	49.70	12.72	6.94	0.571	>1100	BRN
0851	28 L	49.83	12.54	6.98	0.549	>1100	BRN
0856	35 L	49.95	12.52	6.82	0.542	>1100	BRN END DEV.
0901	42 L	50.18	12.55	6.82	0.558	>1100	
							PID Readings BH 0.0 PPM
							BZ 0.0 PPM

MW location and ID were confirmed using figures, boring logs and 1999 MW Inventory YES ✓ NO____

...ll ... part of a previous PEI and is being redeveloped at this time.

MONITORING WELL DEVELOPMENT RECORD

Well: 3-25
Site: JEEP TRAIL
Date Installed: NA
Date: 6-7-01
Dev. Method: Surged & Pumped
Pump Type: WHALE

Depth to Bottom (ft.): 43.15
Static Water Level Before (ft.): 32.81
Static Water Level After (ft.): DRY
Screen Length (ft.): ~10'
One Well Vol: 6.5L
Casing ID (in.): 2 Inch, PVC

Personnel: K.M. & T.R
Drilling Co.: NA
Project Name: NSWC Crane
Project Number: 3960

Time	Cumulative Water Volume (Gal.)	Water Level Readings (Ft. below TOC)	Temperature (Degrees C)	pH	Specific Conductance (Units ____)	Turbidity (NTU)	Remarks (odor, color, etc.)
							SURGE 10 MIN
0935	—	32.81					
0949	—	32.67	13.14	8.10	0.172	>1100	BRN 3LPM
0954	15L	—	13.05	7.76	0.093	>1100	BRN
0955	18L	DRY					Stop Pump
1000	18L	RECHARGE					W.L. = 37.58
1005	18L						W.L = 37.15
1010	18L						W.L = 36.83
1015	18L						W.L = 36.38
1016	21L	—	13.88	7.57	0.175	>1100	DRY (END PURGE)
1018	27L	DRY					Stop Pump
							PID Readings BH 0.6 PPM
							BZ 0.0 PPM

MW location and ID were confirmed using figures, bori[illegible]s and 1999 MW Inventory YES ✓ NO ____

[illegible] installed as part of a previous [illegible]d is being redeveloped at this time.

APPENDIX B-4

Ground Water Sample Log Sheets, Low-Flow Purge Data Sheets, and Field Analytical Log Sheets

GROUND WATER SAMPLE LOG FORM

Project Site Name: NSWC CRANE, IN
Project No.: CTO 126 N3960

Sample ID No.: 03GW0701
Sample Location: SWMU-3 03MW07
Sampled By: R. SIMPSON
C.O.C. No.: 02346 LAUCKS
02347 APCL

SAMPLING DATA:

Date: 6-7-01	Color Visual	pH Standard	S.C. mS/cm	Temp. Degrees C	Turbidity NTU	DO mg/l	ORP mV	Odor
Time-Start: 1540 End: 1810								
Method: PERISTALTIC	CLEAR	4.92	0.643	14.3	7.5	0.77	531	NONE

PURGE DATA:

Date: 6-7-01	Total Well Depth (TD): 28.35	End Purge (hrs): 1540
Method: LOW FLOW PERISTALTIC	Static Water Level (WL): 10.55	Total Purge Time (min): 145
Well Casing: 2" PVC	Start Purge (hrs): 1315	Total Vol. Purged (gal): 5.0
One Casing Volume(gal): 2.9		

SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Collected
Volatiles App. IX (VOC 1 + VOC 2)	HCl/4°C	(5) 40 mL Glass Vials	✓
SVOCs App. IX	4°C	(2) 1000 mL Amber Glass	✓
SIM	4°C	(2) 1000 mL Amber Glass	✓
Explosives	4°C	(1) 1000 mL Amber Glass	✓
Nitrocellulose	4°C	(1) 1000 mL Amber Glass	✓
TAL~~ix~~ Total Metals plus Sn	HNO_3/4°C	(1) 1000 mL Polyethylene	✓
~~TAL IX Dissolved Metals plus Sn (if Turb. >10)~~	~~HNO_3/4°C~~	~~(1) 1000 mL Polyethylene~~	~~✓~~ NO
Perchlorate APCL Lab.	4°C	(1) 500 mL Polyethylene	✓
Nitrite/Nitrate (field only)	4°C	(1) 500 mL Polyethylene	✓
		2X VOL COLLECTED FOR DUP	

OBSERVATIONS / NOTES:

PID reading in PVC riser pipe = 0 (ppm)
PID reading in Breathing Zone = 0 (ppm)

PUMP INLET (TUBING) SET IN CENTER OF SCREEN

END WL = 10.70

SAMPLE TIME = 1540

QA Samples Collected:

MS/MSD: —
Duplicate ID No.: YES
FD 06070101

Signature(s): [illegible]

LOW FLOW PURGE DATA SHEET

PROJECT SITE NAME: NSWC Crane, IN
PROJECT NUMBER: N3960 JEEP TRAIL

WELL ID.: 03MW07
DATE: 6.7.01

Time (Hrs.)	Water Level (ft. below TOC)	Pump Rate (mL/Min)	pH (S.U.)	S. Cond. (mS/cm)	Turb. (NTU)	DO (mg/L)	Temp. (Celcius)	ORP (mV)	Comments
		—	—	—	—	—	—	—	START PURGE
1315	10.55								
1320	10.58	190	5.94	1.298	170	3.50	13.6	310	CLEAR, NO ODOR
1330	10.60	160	5.75	1.048	—	2.52	13.3	333	
1340	10.63	130	5.97	0.804	230	2.47	13.5	267	-CLEANED FLOW-THRU
1350	10.64	130	5.41	0.780	110	1.38	13.7	430	CELL
1400	10.64	↓	5.91	0.716	50	1.37	13.7	334	
1410	10.65		5.38	0.696	36	1.13	13.7	450	
1420	10.67		5.48	0.683	23	0.93	13.7	395	
1430	10.68		5.61	0.668	20	0.87	13.9	305	
1440	10.69		5.61	0.665	17	0.88	14.0	294	
1450	10.69		5.46	0.664	13	0.89	14.0	307	
1500	10.69		5.46	0.661	13	0.92	14.1	287	
1510	10.69		5.25	0.665	10	0.90	14.3	461	
1520	10.69		5.07	0.646	8.6	0.77	14.3	498	
1530	10.69		5.00	0.648	8.2	0.79	14.3	517	
1535	10.69		4.93	0.646	7.9	0.74	14.3	525	
1540	10.70	↓	4.92	0.643	7.5	0.77	14.3	531	END PURGE

SIGNATURE: [illegible]

FIELD ANALYTICAL LOG SHEET
GEOCHEMICAL PARAMETERS

Tetra Tech NUS, Inc.

Project Site Name: NSWC Crane
Project No.: CTO 159 job # N3960
Sampled By: K. SIMPSON

Sample ID No.: 03GW07 01
Sample Location: 03MW07
Duplicate: ☐

SAMPLING DATA:

	Color (Visual)	pH (SU)	S.C. (mS/cm)	Temp. (°C)	Turbidity (NTU)	DO (Meter, mg/l)	ORP mV
Date: 6.7.01							
Time: 1540							
Method: Low Flow	CLEAR	4.97	0.143	14.3	7.5	0.77	531

SAMPLE COLLECTION/ANALYSIS INFORMATION:

Nitrite (NO_2-N): Range 0-0.35 mg/L

Equipment: HACH DR-850 Colorimeter
Program No.: 62
Concentration: 0 mg/L

Analysis Time: 0720
6.8.01

Notes: Alternate forms: NO_2 0 $NaNO_2$ 0

Nitrate (NO_3-N): Range 0- 0.50 mg/L

Equipment: HACH DR-850 Colorimeter
Program No.: 55
Concentration: 0.02 mg/L

Analysis Time: 0750
6.8.01

Nitrite Interference Treatment: ☐

If results are over limit use dilution method at step 3, 5ml sample 10ml DI result X3, range upto 1.5mg/L

Notes: Alternate form: NO_3 0.01 mg/L

SIGNATURE: [signature]

DUP

FIELD ANALYTICAL LOG SHEET
GEOCHEMICAL PARAMETERS

Tetra Tech NUS, Inc.

Project Site Name: NSWC Crane
Project No.: CTO 159 job # N3960
Sampled By: R. SIMPSON

Sample ID No.: FD 060701 01
Sample Location: 03MW07
Duplicate: ☒

SAMPLING DATA:

	Color (Visual)	pH (SU)	S.C. (mS/cm)	Temp. (°C)	Turbidity (NTU)	DO (Meter, mg/l)	ORP mV
Date: 6.7.01							
Time: 1540							
Method: Low Flow	CLEAR	4.92	0.643	14.3	7.5	0.77	531

SAMPLE COLLECTION/ANALYSIS INFORMATION:

Nitrite (NO_2-N): Range 0-0.35 mg/L

Equipment: HACH DR-850 Colorimeter
Program No.: 62
Concentration: 0 mg/L

Analysis Time: 0722
6.8.01

Notes: Alternate forms: NO_2 0 $NaNO_2$ 0

Nitrate (NO_3-N): Range 0- 0.50 mg/L

Equipment: HACH DR-850 Colorimeter
Program No.: 55
Concentration: 0.01 mg/L

Analysis Time: 0820
6.8.01

Nitrite Interference Treatment: ☐

If results are over limit use dilution method at step 3, 5ml sample 10ml DI result X3, range upto 1.5mg/L

Notes: Alternate form: NO_3 0.08

SIGNATURE: [signature]

GROUND WATER SAMPLE LOG FORM

Project Site Name: NSWC CRANE, IN
Project No.: CTO 126 N3960

Sample ID No.: 036W1001
Sample Location: SWMU - 3
Sampled By: T. ROJAHN
C.O.C. No.:

SAMPLING DATA:

	Color	pH	S.C.	Temp.	Turbidity	DO	ORP	Odor
Date: 7-11-01	Visual	Standard	mS/cm	Degrees C	NTU	mg/l	mV	
Time-Start: 1050 End: 1344								
Method: SAME	CLEAR	6.23	0.639	15.15	2.2	2.78	492	CLEAR

PURGE DATA:

Date: 7-11-01	Total Well Depth (TD): 30.30	End Purge (hrs): 1045
Method: BLADDER	Static Water Level (WL): 16.47	Total Purge Time (min): 120
Well Casing: 2" PVC	Start Purge (hrs): 0845	Total Vol. Purged (~~gal~~): 8.6 L
One Casing Volume(~~gal~~): L		

SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Collected
Volatiles App. IX (VOC 1 + VOC 2)	HCl/4°C	(5) 40 mL Glass Vials	✓
SVOCs App. IX	4°C	(2) 1000 mL Amber Glass	✓
SIM	4°C	(2) 1000 mL Amber Glass	✓
Explosives	4°C	(1) 1000 mL Amber Glass	✓
Nitrocellulose	4°C	(1) 1000 mL Amber Glass	✓
TAL ~~IX~~ Total Metals plus Sn	HNO_3/4°C	(1) 1000 mL Polyethylene	✓
TAL ~~IX~~ Dissolved Metals plus Sn (if Turb. >10)	HNO_3/4°C	(1) 1000 mL Polyethylene	NO
Perchlorate APCL Lab.	4°C	(1) 500 mL Polyethylene	✓
Nitrite/Nitrate (field only)	4°C	(1) 500 mL Polyethylene	✓

OBSERVATIONS / NOTES:

PID reading in PVC riser pipe = (ppm)

PID reading in Breathing Zone = (ppm)

13.83' x .163 = 2.25 gal = 8.5 L

QA Samples Collected:

MS/MSD	Duplicate ID No.:
—	—

Signature(s): [signature]

LOW FLOW PURGE DATA SHEET

PROJECT SITE NAME: NSWC Crane, IN
PROJECT NUMBER: N3960 JEEP TRAIL

WELL ID.: 3-10
DATE: 7-11-01

Time (Hrs.)	Water Level (Ft.below TOC)	Pump Rate (mL/Min.)	pH (S.U.)	S. Cond. (mS/cm)	Turb. (NTU)	DO (mg/L)	Temp. (Celcius)	ORP (mV)	Comments
0845	16.32*	—	7.95	0.456	—	6.71	1585	300	*w/Pump installed - start
0855	16.95	150	7.04	0.413	60	6.63	14.77	369	1500 Sl. CLOUDY
0905	17.05	70	6.87	0.464	45	5.77	14.83	392	2200 CLEAR
0915	17.17	70	6.79	0.494	25	5.22	14.84	408	2900 "
0925	17.27	75	6.64	0.524	14	4.79	14.68	423	3650 "
0935	17.34	70	6.55	0.556	9.6	4.20	14.60	437	4350 "
0945	17.40	70	6.50	0.573	5.9	3.87	14.70	448	5050 "
0955	17.39	55	6.49	0.607	2.9	3.36	15.29	457	5600 "
1005	17.36	55	6.46	0.643	2.6	2.94	15.48	464	6150 "
1015	17.33	50	6.40	0.660	2.4	2.65	15.54	472	6650 "
1025	17.40	70	6.31	0.650	2.2	2.76	14.94	480	7350 "
1035	17.43	70	6.26	0.641	2.2	2.87	15.00	487	8050 "
1045	17.44	50	6.23	0.639	2.2	2.78	15.15	492	8550 "
1050									Start SAMPLING

SIGNATURE: Terry Rogers

FIELD ANALYTICAL LOG SHEET
GEOCHEMICAL PARAMETERS

Tetra Tech NUS, Inc.

Project Site Name: NSWC Crane
Project No.: CTO 159 job # N3960
Sampled By: T. ROJAHN

Sample ID No.: 036W10 01
Sample Location: 0310
Duplicate: ☐

SAMPLING DATA:

Date: 7.11.01	Color (Visual)	pH (SU)	S.C. (mS/cm)	Temp. (°C)	Turbidity (NTU)	DO (Meter, mg/l)	ORP mV
Time:	CLEAR	6.23	0.639	15.2	2.2	2.78	492
Method: Low Flow							

SAMPLE COLLECTION/ANALYSIS INFORMATION:

Nitrite (NO_2-N): Range 0-0.35 mg/L

Analysis Time: 1659

Equipment: HACH DR-850 Colorimeter

Program No.: 62

Concentration: 0 mg/L

Notes: Alternate forms: NO_2 0 $NaNO_2$ 0 mg/L

Nitrate (NO_3-N): Range 0- 0.50 mg/L

Analysis Time: 1719

Equipment: HACH DR-850 Colorimeter

Program No.: 55

Concentration: >1.65 mg/L

Nitrite Interference Treatment: ☐

1ST RUN > 0.55 mg/L

If results are over limit use dilution method at step 3, 5ml sample 10ml DI result X3, range upto 1.5mg/L

Notes: Alternate form: NO_3 >7.29 mg/L

RAN DILUTED SAMPLE (3X)

→ RESULT X3 = mg/L

>.55 X3 = >1.65 mg/L

SIGNATURE: [signature]

NO3 - 2.43 X3 => 7.29

GROUND WATER SAMPLE LOG FORM

Project Site Name: NSWC CRANE, IN
Project No.: CTO 126 N3960

Sample ID No.: 03GW110 1
Sample Location: SWMU - 3
Sampled By: BBRUNOVE
C.O.C. No.: 02386/02385

SAMPLING DATA:

	Color	pH	S.C.	Temp.	Turbidity	DO	ORP	Odor
Date: ~~[illegible]~~ 6/25/01	Visual	Standard	mS/cm	Degrees C	NTU	mg/l	mV	
Time-Start: 1432 End: 1535								
Method: PERISTALTIC	CLEAR	3.70	0.424	16.4	3.7	5.90	-603.2	NONE

PURGE DATA:

Date: 6/25/01	Total Well Depth (TD): 23.45	End Purge (hrs): 1430
Method: PERISTALTIC	Static Water Level (WL): 9.24	Total Purge Time (min): 75
Well Casing: 2" PVC	Start Purge (hrs): 1315	Total Vol. Purged (gal): 2.3
One Casing Volume(gal): 2.2		

SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Collected
Volatiles App. IX (VOC 1 + VOC 2)	HCl/4°C	(5) 40 mL Glass Vials	✓
SVOCs App. IX	4°C	(2) 1000 mL Amber Glass	✓
SIM	4°C	(2) 1000 mL Amber Glass	✓
Explosives	4°C	(1) 1000 mL Amber Glass	✓
Nitrocellulose	4°C	(1) 1000 mL Amber Glass	✓
TAL ~~+X~~ Total Metals plus Sn	HNO_3/4°C	(1) 1000 mL Polyethylene	✓
TAL ~~+X~~ Dissolved Metals plus Sn (if Turb. >10)	HNO_3/4°C	(1) 1000 mL Polyethylene	—
Perchlorate APCL Lab.	4°C	(1) 500 mL Polyethylene	✓
Nitrite/Nitrate (field only)	4°C	(1) 500 mL Polyethylene	

OBSERVATIONS / NOTES:

PID reading in PVC riser pipe = 0-0 (ppm)
PID reading in Breathing Zone = 0-0 (ppm)

QA Samples Collected:

MS/MSD	Duplicate ID No.:
—	—

Signature(s): Robert Balkovec

LOW FLOW PURGE DATA SHEET

PROJECT SITE NAME: NSWC Crane, IN
PROJECT NUMBER: N3960 JEEP TRAIL

WELL ID.: 03-11
DATE: 6/25/01

Time (Hrs.)	Water Level (Ft. below TOC)	Pump Rate (mL/Min.)	pH (S.U.)	S. Cond. (mS/cm)	Turb. (NTU)	DO (mg/L)	Temp. (Celcius)	ORP mV	Comments: Vol.	Comments
1315	9.74	START							—	CLEAR
1320	9.94	160	6.06	0.545	10	5.84	15.2	+379.8	1.55L	
1325	10.08	150	5.24	0.505	12	5.55	15.2	+462.3	—	
1330	10.17	140	4.92	0.503	11	5.58	15.5	+443.7	2.9L	SLOWING OUT ↑ TEMP
1335	10.26	130	4.51	0.496	11	5.65	15.7	+504.5	—	
1340	10.32	130	4.02	0.478	10	5.79	15.3	+536.7	4.2L	
1345	10.40	120	4.05	0.465	7.8	5.85	15.4	+539.2	—	SLOW DOWN OUT ↑ TEMP
1350	10.47	110	3.84	0.449	6.6	5.92	16.1	+555.0	5.3L	
1355	10.54	110	3.50	0.441	5.4	5.92	15.9	+571.2	—	SLOW DOWN ↓ TEMP
1400	10.60	100	3.45	0.434	3.9	5.84	15.6	+571.8	6.3L	*UNABLE TO PUMP BELOW
1405	10.64	100	3.44	0.435	3.3	5.90	16.0	+578.1	—	100 ml/min w/o.
1410	10.71	100	3.38	0.431	3.1	5.97	16.3	+588.7	7.3L	PUMP SHUTTING OFF.
1415	10.73	100	3.20	0.430	3.7	5.96	16.4	+599.1	—	
1420	10.76	100	3.24	0.420	3.6	5.99	16.3	+600.2	8.3L	
1425	10.79	100	3.28	0.428	3.4	5.96	16.2	+602.1	8.8L	→ 1 vol
1430	10.81	100	3.20	0.429	3.7	5.90	16.4	+603.2		
	→ END SAMPLING									
	SAMPLED @ 1432									
*	UNABLE TO PUMP AT SLOWER THAN 100 ml/min w/o PUMP STOPPING									

8.45 L = 1 vol

SIGNATURE: Robert Balkovec

Tetra Tech NUS, Inc.

FIELD ANALYTICAL LOG SHEET
GEOCHEMICAL PARAMETERS

Project Site Name: NSWC Crane
Project No.: CTO 159 job # N3960
Sampled By: B. BALKOVEC

Sample ID No.: 03(GW)1101
Sample Location: 03-11
Duplicate: ☐

SAMPLING DATA:

Date: 6/25/01	Color (Visual)	pH (SU)	S.C. (mS/cm)	Temp. (°C)	Turbidity (NTU)	DO (Meter, mg/l)	ORP mV
Time: 1432							
Method: Low Flow	CLEAR	3.20	0.424	16.4	3.7	3.40	+603.2

SAMPLE COLLECTION/ANALYSIS INFORMATION:

Nitrite (NO_2-N): Range 0-0.35 mg/L

Equipment: HACH DR-850 Colorimeter
Analysis Time: 1630
Program No.: 62
Concentration: 0 mg/L

Notes: Alternate forms: NO_2 0 $NaNO_2$ 0 mg/L

Nitrate (NO_3-N): Range 0- 0.50 mg/L

Equipment: HACH DR-850 Colorimeter
Analysis Time: 1659
Program No.: 55
Concentration: 0 mg/L

Nitrite Interference Treatment: ☐

If results are over limit use dilution method at step 3, 5ml sample 10ml DI result X3, range upto 1.5mg/L

Notes: Alternate form: NO_3 0.02 mg/L

SIGNATURE: [illegible]

GROUND WATER SAMPLE LOG FORM

Project Site Name: NSWC CRANE, IN
Project No.: CTO 126 N3960

Sample ID No.: 03GW1201
Sample Location: SWMU - 3
Sampled By: B. PALKOVEC
C.O.C. No.: 02379/02383

SAMPLING DATA:

	Color	pH	S.C.	Temp.	Turbidity	DO	ORP	Odor
Date: 6/25/01	Visual	Standard	mS/cm	Degrees C	NTU	mg/l	mV	
Time-Start: 0902 End: 1110								
Method: PERISTALTIC	CLEAR	6.09	0.309	13.2	3.7	4.58	371.2	NONE

PURGE DATA:

Date: 6/25/01	Total Well Depth (TD): 29.40	End Purge (hrs): 0900
Method: PERISTALTIC	Static Water Level (WL): 17.00	Total Purge Time (min): 75
Well Casing: 2" PVC	Start Purge (hrs): 0745	Total Vol. Purged (gal): 2.1
One Casing Volume(gal): 2		

SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Collected
Volatiles App. IX (VOC 1 + VOC 2)	HCl/4°C	(5) 40 mL Glass Vials	10
SVOCs App. IX	4°C	(2) 1000 mL Amber Glass	4
SIM	4°C	(2) 1000 mL Amber Glass	4
Explosives	4°C	(1) 1000 mL Amber Glass	2
Nitrocellulose	4°C	(1) 1000 mL Amber Glass	2
TAL ~~IX~~ Total Metals plus Sn	HNO_3/4°C	(1) 1000 mL Polyethylene	2
~~TAL IX Dissolved Metals plus Sn (if Turb. >10)~~	~~HNO_3/4°C~~	~~(1) 1000 mL Polyethylene~~	
Perchlorate APCL Lab.	4°C	(1) 500 mL Polyethylene	2
Nitrite/Nitrate (field only)	4°C	(1) 500 mL Polyethylene	2
		X VOL FOR DUP	

OBSERVATIONS / NOTES:

PID reading in PVC riser pipe = 0.0 (ppm)
PID reading in Breathing Zone = 0.0 (ppm)

12.4' 1.637

QA Samples Collected:

MS/MSD	Duplicate ID No.:
—	FD0625 0101

Signature(s): Robert Bellkovec

LOW FLOW PURGE DATA SHEET

PROJECT SITE NAME: NSWC Crane, IN
PROJECT NUMBER: N3960 JEEP TRAIL

WELL ID.: 03-12
DATE: 6/25/01

Time (Hrs.)	Water Level (Ft. below TOC)	Pump Rate (mL/Min.)	pH (S.U.)	S. Cond. (mS/cm)	Turb. (NTU)	DO (mg/L)	Temp. (Celcius)	ORP mV	Comments	
									VOL	
0745	17.00	START								CLEAR
0750	17.85	110	6.60	0.302	6.0	6.82	12.9	+330.1		
0755	18.00	110	6.33	0.306	5.8	5.79	12.8	+353.7	1.1	
0800	17.98	100	6.30	0.305	5.4	5.42	12.7	+357.9	—	
0805	17.97	110	6.27	0.305	5.4	5.32	12.8	+361.2	2.3	
0810	18.23	110	6.24	0.304	5.5	5.14	12.7	+362.0	—	
0815	18.28	110	6.24	0.304	4.8	5.06	12.7	+364.3	3.3	
0820	18.32	110	6.22	0.304	5.6	4.99	12.9	+365.5	—	
0825	18.33	110	6.21	0.305	5.4	4.91	12.8	+365.6	4.4	
0830	18.37	100	6.19	0.305	4.2	4.87	12.8	+367.2	—	
0835	18.38	100	6.19	0.306	3.0	4.78	13.0	+368.4	5.4	
0840	18.37	100	6.18	0.307	2.7	4.73	13.0	+369.2	—	
0845	18.36	100	6.13	0.308	4.9	4.71	13.0	+369.4	6.4	
0850	18.34	100	6.14	0.308	4.0	4.66	13.1	+371.3	—	
0855	18.35	100	6.12	0.308	3.8	4.62	13.2	+371.0	7.4	
0900	18.36	100	6.09	0.309	3.7	4.58	13.2	+371.2	7.9L	1 vol
	→ END PURGE SAMPLED @ 0902									

7.9 = 1 vol

SIGNATURE: Robert Baltrere

FIELD ANALYTICAL LOG SHEET
GEOCHEMICAL PARAMETERS

Tetra Tech NUS, Inc.

Project Site Name: NSWC Crane
Project No.: CTO 159 job # N3960
Sampled By: BOB B.

Sample ID No.: 03GW1201
Sample Location: 03-12
Duplicate: ☐

SAMPLING DATA:

	Color (Visual)	pH (SU)	S.C. (mS/cm)	Temp. (°C)	Turbidity (NTU)	DO (Meter, mg/l)	ORP mV
Date: 6·25·01			0.309				
Time: 0902							
Method: Low Flow	Clear	6.09	~~0.309~~	13.2	3.7	4.58	371.2

SAMPLE COLLECTION/ANALYSIS INFORMATION: ~~0.309~~ 125

Nitrite (NO_2-N): Range 0-0.35 mg/L

Analysis Time: 1520

Equipment: HACH DR-850 Colorimeter

Program No.: 62

Concentration: 0.0 mg/L

Notes: Alternate forms: NO_2 0.003 $NaNO_2$ 0.008 mg/L

Nitrate (NO_3-N): Range 0- 0.50 mg/L

Analysis Time: 1539

Equipment: HACH DR-850 Colorimeter

Program No.: 55

Concentration: 0.32 mg/L

Nitrite Interference Treatment: ☑ YES

If results are over limit use dilution method at step 3, 5ml sample 10ml DI result X3, range upto 1.5mg/L

Notes: Alternate form: NO_3 1.40 mg/L

SIGNATURE: [illegible]

DUP

FIELD ANALYTICAL LOG SHEET
GEOCHEMICAL PARAMETERS

Tetra Tech NUS, Inc.

Project Site Name: NSWC Crane
Project No.: CTO 159 job # N3960
Sampled By: BOB B.

Sample ID No.: FD06250101
Sample Location: 03-12
Duplicate: ☑

SAMPLING DATA:

Date: 6.25.01	Color (Visual)	pH (SU)	S.C. (mS/cm)	Temp. (°C)	Turbidity (NTU)	DO (Meter, mg/l)	ORP mV
Time: 0902							
Method: Low Flow	CLEAR	6.09	0.309	13.2	3.7	4.58	371.2

SAMPLE COLLECTION/ANALYSIS INFORMATION:

Nitrite (NO_2-N): Range 0-0.35 mg/L

Equipment: HACH DR-850 Colorimeter
Analysis Time: 1525
Program No.: 62
Concentration: 0.002 mg/L

Notes: Alternate forms: NO_2 0.007 $NaNO_2$ 0.010 mg/L

Nitrate (NO_3-N): Range 0- 0.50 mg/L

Equipment: HACH DR-850 Colorimeter
Analysis Time: 1542
Program No.: 55
Concentration: 0.38 mg/L
Nitrite Interference Treatment: ☑ YES

If results are over limit use dilution method at step 3, 5ml sample 10ml DI result X3, range upto 1.5mg/L

Notes: Alternate form: NO_3 1.66 mg/L

SIGNATURE: [illegible]

GROUND WATER SAMPLE LOG FORM

Project Site Name: NSWC CRANE, IN
Project No.: CTO 126 N3960

Sample ID No.: 0364/1301
Sample Location: SWMU-3 03-13
Sampled By: B. BALKOVICH
C.O.C. No.: 02379/00396

SAMPLING DATA:

	Color	pH	S.C.	Temp.	Turbidity	DO	ORP	Odor
Date: 6/23/01	Visual	Standard	mS/cm	Degrees C	NTU	mg/l	mV	
Time-Start: 1127 End: 1447	CLEAR	6.32	0.345	13.5	4.0	6.51	+149.0	NONE
Method: PERISTALTIC								

PURGE DATA:

Date: 6/23/01	Total Well Depth (TD): 28.95	End Purge (hrs): 1125
Method: PERISTALTIC	Static Water Level (WL): 12.88	Total Purge Time (min): 100
Well Casing: 2" PVC	Start Purge (hrs): 0945	Total Vol. Purged (gal): 3.3
One Casing Volume(gal): 2.6		

SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Collected
Volatiles App. IX (VOC 1 + VOC 2)	HCl/4°C	(5) 40 mL Glass Vials	15
SVOCs App. IX	4°C	(2) 1000 mL Amber Glass	6
SIM	4°C	(2) 1000 mL Amber Glass	6
Explosives	4°C	(1) 1000 mL Amber Glass	3
Nitrocellulose	4°C	(1) 1000 mL Amber Glass	3
TAL ~~IX~~ Total Metals plus Sn	HNO_3/4°C	(1) 1000 mL Polyethylene	3
~~TAL IX Dissolved Metals plus Sn (If Turb. >10)~~	~~HNO_3/4°C~~	~~(1) 1000 mL Polyethylene~~	
Perchlorate APCL Lab.	4°C	(1) 500 mL Polyethylene	3
Nitrite/Nitrate (field only)	4°C	(1) 500 mL Polyethylene	1
	3	X VOL COLLECTED FOR	MS/MSD

OBSERVATIONS / NOTES:

PID reading in PVC riser pipe = 0.0 (ppm)
PID reading in Breathing Zone = 0.0 (ppm)

QA Samples Collected:

MS/MSD YES

Duplicate ID No.:

Signature(s): Robert Bellcrave

LOW FLOW PURGE DATA SHEET

PROJECT SITE NAME: NSWC Crane, IN
PROJECT NUMBER: N3960 JEEP TRAIL

WELL ID.: U3-13
DATE: 6/23/01

Time (Hrs)	Water Level (Ft.below TOC)	Pump Rate (ml/Min)	pH (S.U.)	S. Cond. (mS/cm)	Turb. (NTU)	DO (mg/L)	Temp. (Celcius)	ORP mV	Comments	
0445	12.86	START							BROWN	
0450	14.30	125	6.41	0.495	>999	0.80	13.1	-77.4	VOL.	
0455	14.08	125	7.00	0.492	>999	0.71	13.1	-64.7	1.5 L	
1000	14.09	125	6.82	0.489	>999	.98	13.0	-75.2	~	
1005	14.09	125	6.79	0.487	>999	1.06	12.8	-82.0	2.75 L	
1010	14.09	125	6.69	0.473	500	1.22	12.7	-76.0	~	
1015	14.10	125	6.64	0.461	427	1.83	12.8	-62.0	4 L	
1020	14.10	130	6.64	0.459	440	2.01	12.8	-58.1	~	
1025	14.09	125	6.64	0.457	398	2.12	12.9	-54.5	5.25 L	
1030	14.10	120	6.64	0.452	371	2.31	12.8	-50.1	~	
1035	14.10	125	6.64	0.448	350	2.44	12.8	-41.0	6.5 L	
1040	14.10	130	6.62	0.436	210	3.35	12.8	-17.8	—	
1045	14.10	135	6.61	0.440	60	2.23	12.8	-14.5	7.8 L	HAZY
1050	14.22	135	6.62	0.443	52	2.91	12.8	-23.4	—	
1055	14.37	150	6.66	0.429	45	3.67	12.9	-19.7	9.2 L	
1100	14.90	140	6.59	0.409	21	5.22	13.2	+8.0	—	
1105	15.10	120	6.52	0.402	12	5.57	13.6	+25.1	10.5 L	≥1 VOL
1110	15.17	110	6.40	0.398	9.4	6.00	13.5	+36.6	—	
1115	15.00	100	6.30	0.392	9.6	6.60	13.4	+44.0	11.6 L	
1120	15.10	100	6.31	0.394	9.2	6.40	13.4	+48.1	—	
1125	15.12	100	6.32	0.395	9.0	6.51	13.5	+49.0	12.6 L	
	→ END PURGE									
	SAMPLED @ 1127									

SIGNATURE: Robert Bellhouse

WL ≈ 1 VOL

FIELD ANALYTICAL LOG SHEET
GEOCHEMICAL PARAMETERS

Tetra Tech NUS, Inc.

Project Site Name: NSWC Crane
Project No.: CTO 159 job # N3960
Sampled By: BOB B.

Sample ID No.: 036W1301
Sample Location: 63-13
Duplicate: ☐

SAMPLING DATA:

	Color (Visual)	pH (SU)	S.C. (mS/cm)	Temp. (°C)	Turbidity (NTU)	DO (Meter. mg/l)	ORP mV
Date: 6.23.01							
Time: 1127							
Method: Low Flow	CLEAR	6.32	0.395	13.5	9.0	6.51	49

SAMPLE COLLECTION/ANALYSIS INFORMATION:

Nitrite (NO_2-N): Range 0-0.35 mg/L

Analysis Time: 6.24.01 0705

Equipment: HACH DR-850 Colorimeter

Program No.: 62

Concentration: 0 mg/L

Notes: Alternate forms: NO_2 0 $NaNO_2$ 0

Nitrate (NO_3-N): Range 0- 0.50 mg/L

Analysis Time: 6.24.01 0730

Equipment: HACH DR-850 Colorimeter

Program No.: 55

Concentration: 0.23 mg/L

Nitrite Interference Treatment: ☐

If results are over limit use dilution method at step 3, 5ml sample 10ml DI result X3, range upto 1.5mg/L

Notes: Alternate form: NO_3 1.04 mg/L

SAMPLE HELD @ 4°C OVER NIGHT

SIGNATURE: [signature]

GROUND WATER SAMPLE LOG FORM

Project Site Name: NSWC CRANE, IN
Project No.: CTO 126 N3960

Sample ID No.: 036W14 01
Sample Location: SWMU-3 03-14
Sampled By: KEITH S.
C.O.C. No.: 02386/02385

SAMPLING DATA:

Date: 6-26-01	Color	pH	S.C.	Temp.	Turbidity	DO	ORP	Odor
Time-Start: 1222 End: 1340	Visual	Standard	mS/cm	Degrees C	NTU	mg/l	mV	
Method: LOW FLOW PERISTALIC	CLEAR	6.20	0.67	14.3	0.6	1.52	439	NONE

PURGE DATA:

Date: 6-26-01	Total Well Depth (TD): 23.00	End Purge (hrs): 1220
Method: LOW FLOW, PERISTALIC	Static Water Level (WL): 11.72	Total Purge Time (min): 125
Well Casing: 2" PVC	Start Purge (hrs): 1015	Total Vol. Purged (gal): 3.0
One Casing Volume(gal): 1.8		

SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Collected
Volatiles App. IX (VOC 1 + VOC 2)	HCl/4°C	(5) 40 mL Glass Vials	✓
SVOCs App. IX	4°C	(2) 1000 mL Amber Glass	✓
SIM	4°C	(2) 1000 mL Amber Glass	✓
Explosives	4°C	(1) 1000 mL Amber Glass	✓
Nitrocellulose	4°C	(1) 1000 mL Amber Glass	✓
TAL IX Total Metals plus Sn	HNO_3/4°C	(1) 1000 mL Polyethylene	✓
~~TAL IX Dissolved Metals plus Sn (If Turb. >10)~~	~~HNO_3/4°C~~	~~(1) 1000 mL Polyethylene~~	✓
Perchlorate APCL Lab.	4°C	(1) 500 mL Polyethylene	✓
Nitrite/Nitrate (field only)	4°C	(1) 500 mL Polyethylene	✓

OBSERVATIONS / NOTES:

PID reading in PVC riser pipe = 0 (ppm)
PID reading in Breathing Zone = 0 (ppm)

PUMP INLET (TUBING) SET IN CENTER OF SCREEN

QA Samples Collected:

MS/MSD	Duplicate ID No.:
—	—

Signature(s): [illegible]

LOW FLOW PURGE DATA SHEET

PROJECT SITE NAME: NSWC Crane, IN
PROJECT NUMBER: N3960 JEEP TRAIL

WELL ID.: 03-14
DATE: 6.26.01

Time (Hrs.)	Water Level (Ft. below TOC)	Pump Rate (mL/Min.)	pH (S.U.)	S. Cond. (mS/cm)	Turb. (NTU)	DO (mg/L)	Temp. (Celcius)	ORP mV	Comments
			—	—	—	—	—	—	START PURGE
1015 ~~11.72~~	11.72	100	6.65	0.664	5.6	3.28	13.9	351	CLEAR, NO ODOR
1025	12.01	↓	6.49	0.664	6.0	2.19	14.3	378	
1035	12.29	90	6.48	0.664	8.5	2.06	14.3	387	
1045	12.38		6.46	0.655	4.8	1.87	14.3	399	
1055	12.52		6.45	0.643	2.7	1.78	14.1	409	
1105	12.67		6.48	0.640	2.2	1.71	13.9	417	
1115	12.78		6.50	0.638	1.9	1.66	13.9	420	
1125	12.86		6.53	0.633	2.1	1.60	13.9	424	
1135	12.95	↓	6.49	0.630	2.7	1.57	14.1	422	
1145	12.95	80	6.41	0.628	2.7	1.59	14.3	423	
1155	↓		6.26	0.622	2.8	1.57	14.3	428	
1205			6.21	0.619	1.9	1.56	14.4	434	
1210			6.21	0.617	1.0	1.52	14.4	437	
1215	12.96		6.20	0.617	0.6	1.52	14.3	439	END PURGE
1220	12.96	↓							

77 MIN @ 90 mL/MIN = 1 VOL

SIGNATURE: [illegible]

Tetra Tech NUS, Inc.

FIELD ANALYTICAL LOG SHEET
GEOCHEMICAL PARAMETERS

Project Site Name: NSWC Crane
Project No.: CTO 159 job # N3960
Sampled By: K. SIMPSON

Sample ID No.: 03GW1401
Sample Location: 03-14
Duplicate: ☐

SAMPLING DATA:

	Color (Visual)	pH (SU)	S.C. (mS/cm)	Temp. (°C)	Turbidity (NTU)	DO (Meter, mg/l)	ORP mV
Date: 6.26.01							
Time: 1222							
Method: Low Flow	CLEAR	6.20	0.617	14.3	0.6	1.52	439

SAMPLE COLLECTION/ANALYSIS INFORMATION:

Nitrite (NO_2-N): Range 0-0.35 mg/L

Equipment: HACH DR-850 Colorimeter
Analysis Time: 1540
Program No.: 62
Concentration: 0.001 mg/L

Notes: Alternate forms: NO_2 0.004 $NaNO_2$ 0.006 mg/L

Nitrate (NO_3-N): Range 0- 0.50 mg/L

Equipment: HACH DR-850 Colorimeter
Analysis Time: 1557
Program No.: 55
Concentration: 0.01 mg/L

Nitrite Interference Treatment: ☐

If results are over limit use dilution method at step 3, 5ml sample 10ml DI result X3, range upto 1.5mg/L

Notes: Alternate form: NO_3 0.04 mg/L

SIGNATURE: [signature]

GROUND WATER SAMPLE LOG FORM

Project Site Name: NSWC CRANE, IN
Project No.: CTO 126 N3960

Sample ID No.: 03GW1501
Sample Location: SWMU - 3 03 15
Sampled By: R. SIMPSON
C.O.C. No.:

SAMPLING DATA:

	Color	pH	S.C.	Temp.	Turbidity	DO	ORP	Odor
Date: 7.10.01	Visual	Standard	mS/cm	Degrees C	NTU	mg/l	mV	
Time-Start: 1740 End: 1845								
Method: low flow PERISTALTIC	CLEAR	5.5	0.270	16.3	1.4	7.47	733	NONE

PURGE DATA:

Date: 7.10.01	Total Well Depth (TD): 32.10	End Purge (hrs): 1740
Method: low flow PERISTALTIC	Static Water Level (WL): 17.61	Total Purge Time (min): 92
Well Casing: 2" PVC	Start Purge (hrs): 1608	Total Vol. Purged (gal): 2.7
One Casing Volume(gal): 2.4		

SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Collected
Volatiles App. IX (VOC 1 + VOC 2)	HCl/4°C	(5) 40 mL Glass Vials	✓
SVOCs App. IX	4°C	(2) 1000 mL Amber Glass	✓
SIM	4°C	(2) 1000 mL Amber Glass	✓
Explosives	4°C	(1) 1000 mL Amber Glass	✓
Nitrocellulose	4°C	(1) 1000 mL Amber Glass	✓
TAL ~~Total~~ Total Metals plus Sn	HNO_3/4°C	(1) 1000 mL Polyethylene	✓
~~TAL ~~Dissolved Metals plus Sn (if Turb. >10)~~	~~HNO_3/4°C~~	~~(1) 1000 mL Polyethylene~~	—
Perchlorate APCL Lab.	4°C	(1) 500 mL Polyethylene	✓
Nitrite/Nitrate (field only)	4°C	(1) 500 mL Polyethylene	✓

OBSERVATIONS / NOTES:

PID reading in PVC riser pipe = — (ppm)
PID reading in Breathing Zone = — (ppm)

PUMP INLET (TUBING) SET @ 21' BTOC

QA Samples Collected:

MS/MSD	Duplicate ID No.:
—	—

Signature(s): [illegible]

LOW FLOW PURGE DATA SHEET

PROJECT SITE NAME: NSWC Crane, IN
PROJECT NUMBER: N3960 JEEP TRAIL

WELL ID.: 03-15
DATE: 7.10.01

Time (Hrs.)	Water Level (Ft. below TOC)	Pump Rate (mL/Min.)	pH (S.U.)	S. Cond. (mS/cm)	Turb. (NTU)	DO (mg/l)	Temp. (Celcius)	ORP (mV)	Comments
									START PURGE
1608	17.61	120							
1615	17.76		5.10	0.259	25	6.87	16.0	300	
1620	17.76		3.66?	0.257	18	6.82	16.4	510	
1630	17.77	110	2.34	0.261	12.3	7.28	16.4	603	
1640	17.78		1.81	0.263	9.8	7.42	16.4	639	CHECKED WITH pH PAPER
1650			1.59	0.264	5.4	7.58	16.4	664	READ 5.5 *
1700			5.5*	0.266	4.5	7.64	16.4	690	
1710				0.267	3.1	7.28	16.4	714	
1720				0.269	2.0	7.50	16.3	722	
1730				0.270	2.0	7.59	16.3	729	
1735				0.270	1.8	7.44	16.3	732	
1740				0.270	1.4	7.47	16.3	733	END PURGE

SIGNATURE: [illegible]

FIELD ANALYTICAL LOG SHEET
GEOCHEMICAL PARAMETERS

Tetra Tech NUS, Inc.

Project Site Name: NSWC Crane

Project No.: CTO 159 job # N3960

Sampled By: K. SIMPSON

Sample ID No.: 03GW1501

Sample Location: 03-15

Duplicate: ☐

SAMPLING DATA:

	Color (Visual)	pH (SU)	S.C. (mS/cm)	Temp. (°C)	Turbidity (NTU)	DO (Meter, mg/l)	ORP mV
Date: 7.10.01							
Time: 1740							
Method: Low Flow	CLEAR	5.5	0.270	16.3	1.4	7.47	733

SAMPLE COLLECTION/ANALYSIS INFORMATION:

Nitrite (NO_2-N): Range 0-0.35 mg/L

Analysis Time: 1900

Equipment: HACH DR-850 Colorimeter

Program No.: 62

Concentration: 0 mg/L

Notes: Alternate forms: NO_2 0 $NaNO_2$ 0 mg/L

Nitrate (NO_3-N): Range 0- 0.50 mg/L

Analysis Time: 1718

Equipment: HACH DR-850 Colorimeter

Program No.: 55

Concentration: 0.16 mg/L

Nitrite Interference Treatment: ☐

If results are over limit use dilution method at step 3, 5ml sample 10ml DI result X3, range upto 1.5mg/L

Notes: Alternate form: NO_3 0.70 mg/L

SIGNATURE: [illegible]

GROUND WATER SAMPLE LOG FORM

Project Site Name: NSWC CRANE, IN
Project No.: CTO 126 N3960

Sample ID No.: 03GW1601
Sample Location: SWMU - 3
Sampled By: T. ROJAHN
C.O.C. No.:

SAMPLING DATA:

Date: 7/10/01	Color	pH	S.C.	Temp.	Turbidity	DO	ORP	Odor
Time-Start: 1150 End: 1320	Visual	Standard	mS/cm	Degrees C	NTU	mg/l	mV	
Method: SAME	CLEAR	5.25	0.339	15.94	10	9.75	545	NONE

PURGE DATA:

Date: 7/10/01	Total Well Depth (TD):	42.55	End Purge (hrs): 1140
Method: Bladder Pump	Static Water Level (WL):	29.20	Total Purge Time (min): 100
Well Casing: 2" PVC	Start Purge (hrs):	1000	Total Vol. Purged (gal): 8.4 L
One Casing Volume(gal): 8.2 L			

SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Collected
Volatiles App. IX (VOC 1 + VOC 2)	HCl/4°C	(5) 40 mL Glass Vials	✓
SVOCs App. IX	4°C	(2) 1000 mL Amber Glass	✓
SIM	4°C	(2) 1000 mL Amber Glass	✓
Explosives	4°C	(1) 1000 mL Amber Glass	✓
Nitrocellulose	4°C	(1) 1000 mL Amber Glass	✓
TAL ~~HK~~ Total Metals plus Sn	HNO_3/4°C	(1) 1000 mL Polyethylene	✓
TAL ~~HK~~ Dissolved Metals plus Sn (if Turb. >10)	HNO_3/4°C	(1) 1000 mL Polyethylene	NO
Perchlorate APCL Lab.	4°C	(1) 500 mL Polyethylene	✓
Nitrite/Nitrate (field only)	4°C	(1) 500 mL Polyethylene	✓

OBSERVATIONS / NOTES:

PID reading in PVC riser pipe = (ppm)

PID reading in Breathing Zone = (ppm)

13.35' x .163 = 2.18 gal = 8.2 L

QA Samples Collected:

MS/MSD —

Duplicate ID No.: —

Signature(s): [signature]

LOW FLOW PURGE DATA SHEET

PROJECT SITE NAME: NSWC Crane, IN
PROJECT NUMBER: N3960 JEEP TRAIL

WELL ID.: 3-16
DATE: 7-10-01

Time (Hrs.)	Water Level (Ft. below TOC)	Pump Rate (mL/Min.)	pH (S.U.)	S. Cond. (mS/cm)	Turb. (NTU)	DO (mg/L)	Temp. (Celcius)	ORP mV	Comments
1000	29.15	150	6.55	0.358	123	10.45	15.66	326	Start Purge Sl. Cloudy
1005	29.33	90	6.21	0.354	–	10.45	14.79	366	750ml Clear
1010	29.34	90	6.34	0.351	50	10.15	16.61	401	1200ml Clear
1020	29.37	75	6.21	0.350	36	10.25	16.35	429	1950ml Clear
1030	29.43	85	5.66	0.348	33	10.30	16.83	464	2800ml Clear
1040	29.40	85	5.48	0.347	17	10.01	17.07	488	3650ml Clear
1050	29.41	85	5.39	0.348	17	10.04	16.82	499	4500ml Clear
1100	29.41	85	5.54	0.347	16	9.88	16.81	506	5350ml Clear
1110	29.44	100	5.27	0.344	14	9.85	16.76	514	6350ml Clear
1120	29.44	100	5.28	0.343	11	9.85	16.46	523	7350ml Clear
1130	29.47	100	5.24	0.341	15	9.89	16.36	545	8350ml Clear
1140	29.47	100	5.25	0.339	10	9.75	15.94	545	9350ml Clear
1150									→ Start Sampling

SIGNATURE: [signature]

FIELD ANALYTICAL LOG SHEET
GEOCHEMICAL PARAMETERS

Tetra Tech NUS, Inc.

Project Site Name: NSWC Crane
Project No.: CTO 159 job # N3960
Sampled By: T. ROJAHN

Sample ID No.: 036W1601
Sample Location: 03-16
Duplicate: ☐

SAMPLING DATA:

	Color (Visual)	pH (SU)	S.C. (mS/cm)	Temp. (°C)	Turbidity (NTU)	DO (Meter. mg/l)	ORP mV
Date: 7-10-01							
Time: 1150							
Method: Low Flow	CLEAR	5.25	0.339	15.9	10	9.75	545

SAMPLE COLLECTION/ANALYSIS INFORMATION:

Nitrite (NO_2-N): Range 0-0.35 mg/L

Analysis Time: 1405

Equipment: HACH DR-850 Colorimeter

Program No.: 62

Concentration: 0.007 mg/L

Notes: Alternate forms: NO_2 0.023 $NaNO_2$ 0.034 mg/l

Nitrate (NO_3-N): Range 0- 0.50 mg/L

Analysis Time: 1425

Equipment: HACH DR-850 Colorimeter

1ST RUN >0.55

Program No.: 55

Concentration: 1.29 mg/L

Nitrite Interference Treatment: ☑ YES

0.46 X 3 = ~~0.46~~ 1.29 mg/L

If results are over limit use dilution method at step 3, 5ml sample 10ml DI result X3, range upto 1.5mg/L

Notes: Alternate form: NO_3 2.05 X3 = 6.15 mg/L

RAN DILUTED SAMPLE (3X)

NO_3 = 6.15 mg/L

SIGNATURE: [signature]

GROUND WATER SAMPLE LOG FORM

Project Site Name: NSWC CRANE, IN
Project No.: CTO 126 N3960

Sample ID No.: 036W1701
Sample Location: SWMU - 3
Sampled By: B. Bauknovge
C.O.C. No.: 02374/02383

SAMPLING DATA:

	Color Visual	pH Standard	S.C. mS/cm	Temp. Degrees C	Turbidity NTU	DO mg/l	ORP mV	Odor
Date: 6/24/01								
Time-Start: 0945 End: 1055								
Method: QER25/4/72	CLEAR	3.74	0.334	13.7	3.2	7.22	+521.3	NONE

PURGE DATA:

Date: 6/24/01	Total Well Depth (TD): 29.40	End Purge (hrs): 0945
Method: QER25/4/72	Static Water Level (WL): 15.97	Total Purge Time (min): 73
Well Casing: 2" PVC	Start Purge (hrs): 0832	Total Vol. Purged (gal): 2.4
One Casing Volume(gal): 2.3		

SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Collected
Volatiles App. IX (VOC 1 + VOC 2)	HCl/4°C	(5) 40 mL Glass Vials	✓
SVOCs App. IX	4°C	(2) 1000 mL Amber Glass	✓
SIM	4°C	(2) 1000 mL Amber Glass	✓
Explosives	4°C	(1) 1000 mL Amber Glass	✓
Nitrocellulose	4°C	(1) 1000 mL Amber Glass	✓
TAL-IX Total Metals plus Sn	HNO_3/4°C	(1) 1000 mL Polyethylene	✓
TAL-IX Dissolved Metals plus Sn (if Turb. >10)	HNO_3/4°C	(1) 1000 mL Polyethylene	
Perchlorate APCL Lab.	4°C	(1) 500 mL Polyethylene	✓
Nitrite/Nitrate (field only)	4°C	(1) 500 mL Polyethylene	✓

OBSERVATIONS / NOTES:

PID reading in PVC riser pipe = 0.0 (ppm)

PID reading in Breathing Zone = 0.0 (ppm)

QA Samples Collected:

MS/MSD ____ Duplicate ID No.: ____

Signature(s): Robert Bauknovge

LOW FLOW PURGE DATA SHEET

PROJECT SITE NAME: NSWC Crane, IN
PROJECT NUMBER: N3960 JEEP TRAIL

WELL ID.: 03-17
DATE: 6/24/01

Time (Hrs.)	Water Level (Ft. below TOC)	Pump Rate (mL/Min.)	pH (S.U.)	S. Cond. (mS/cm)	Turb. (NTU)	DO (mg/L)	Temp. (Celcius)	ORP mV	Comments Vol.	
0832	15.97	START	125 ml/min							
0835	16.07	125	7.87	0.370	300	5.29	13.24	+241.7	—	
0840	16.13	125	7.40	0.367	140	3.45	13.3	+288.9	—	
0845	16.18	125	7.08	0.365	70	3.56	13.2	+313.1	1.7L	1.29+.379
0850	16.21	125	6.40	0.363	50	3.55	13.1	+330.8	—	
0855	16.26	120	6.47	0.362	27	3.51	13.6	+342.1	2.9L	
0900	16.30	120	5.43	0.362	21	3.62	13.6	+366.4	—	
0905	16.34	120	5.29	0.360	17	3.86	13.7	+389.3	4.1L	
0910	16.36	120	4.78	0.357	17	4.07	13.7	+429.7	—	
0915	16.37	120	4.20	0.351	15	5.01	13.7	+451.3	5.3L	
0920	16.39	120	4.13	0.340	10	5.51	13.8	+476.0	—	
0925	16.46	120	3.90	0.334	9.4	6.30	13.7	+490.2	6.5L	
0930	16.47	120	3.77	0.334	7.1	7.05	13.7	+502.3	—	
0935	16.47	120	3.75	0.334	5.1	7.16	13.8	+512.3	7.7L	
0940	16.46	120	3.74	0.333	4.8	7.20	13.7	+517.4	—	
0945	16.47	120	3.74	0.334	3.2	7.22	13.7	+521.3	8.4L	1 vol
	END PURGE									
	SAMPLED	0946								

SIGNATURE: Roberto Balkrue

8.7L = 1 vol

PAGE 2 OF 2

FIELD ANALYTICAL LOG SHEET
GEOCHEMICAL PARAMETERS

Tetra Tech NUS, Inc.

Project Site Name: NSWC Crane
Project No.: CTO 159 job # N3960
Sampled By: BOB B.

Sample ID No.: 03GW1701
Sample Location: 03-17
Duplicate: ☐

SAMPLING DATA:

	Color (Visual)	pH (SU)	S.C. (mS/cm)	Temp. (°C)	Turbidity (NTU)	DO (Meter, mg/l)	ORP mV
Date: 6-24-01							
Time: 0948							
Method: Low Flow	CLEAR	3.74	0.334	13.7	3.2	7.22	521

SAMPLE COLLECTION/ANALYSIS INFORMATION:

Nitrite (NO_2-N): Range 0-0.35 mg/L

Analysis Time: 6-25-01 0735

Equipment: HACH DR-850 Colorimeter

Program No.: 62

Concentration: 0.001 mg/L

Notes: Alternate forms: NO_2 0.005 $NaNO_2$ 0.007 mg/L

Nitrate (NO_3-N): Range 0- 0.50 mg/L

Analysis Time: 6-25-01 0800

Equipment: HACH DR-850 Colorimeter

Program No.: 55

Concentration: 0.18 mg/L

Nitrite Interference Treatment: ☑ YES

If results are over limit use dilution method at step 3, 5ml sample 10ml DI result X3, range upto 1.5mg/L

Notes: Alternate form: NO_3 0.79 mg/L

SIGNATURE: [illegible]

GROUND WATER SAMPLE LOG FORM

Project Site Name: NSWC CRANE, IN
Project No.: CTO 126 N3960

Sample ID No.: 036W18-01
Sample Location: SWMU - 3
Sampled By: R. Balkover
C.O.C. No.: 02379/02383

SAMPLING DATA:

Date: 6/24/01	Color	pH	S.C.	Temp.	Turbidity	DO	ORP	Odor
Time-Start: 1317 End: 1435	Visual	Standard	mS/cm	Degrees C	NTU	mg/l	mV	
Method: PERISTALTIC	CLEAR	5.43	0.231	14.8	3.6	6.49	+50.9	NONE

↳ AT START OF SAMPLING & SEE BELOW

PURGE DATA:

Date: 6/24/01	Total Well Depth (TD): 37.55	End Purge (hrs): 1315
Method: PERISTALTIC	Static Water Level (WL): 17.78	Total Purge Time (min): 115
Well Casing: 2" PVC	Start Purge (hrs): 1120	Total Vol. Purged (gal): 3.25
One Casing Volume(gal): 3.2		

SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Collected
Volatiles App. IX (VOC 1 + VOC 2)	HCl/4°C	(5) 40 mL Glass Vials	✓
SVOCs App. IX	4°C	(2) 1000 mL Amber Glass	✓
SIM	4°C	(2) 1000 mL Amber Glass	✓
Explosives	4°C	(1) 1000 mL Amber Glass	✓
Nitrocellulose	4°C	(1) 1000 mL Amber Glass	✓
TAL ~~IX~~ Total Metals plus Sn	HNO_3/4°C	(1) 1000 mL Polyethylene	✓
~~TAL IX Dissolved Metals plus Sn (if Turb. >10)~~	~~HNO_3/4°C~~	~~(1) 1000 mL Polyethylene~~	—
Perchlorate APCL Lab.	4°C	(1) 500 mL Polyethylene	✓
Nitrite/Nitrate (field only)	4°C	(1) 500 mL Polyethylene	✓

OBSERVATIONS / NOTES:

PID reading in PVC riser pipe = 0.0 (ppm)
PID reading in Breathing Zone = 0.0 (ppm)

@ 1351 WHILE SAMPLING, PUMP SHUT OFF. WILL RECHECK PARAMETERS. BEFORE RESUMING SAMPLING @ 1359 PARAMETERS PH = 5.45 COND 0.235 TEMP 14.7
DO = 7.10 ORP + 521.7 TURB 22

* WILL RECHECK TURB BEFORE SAMPLING FOR METALS.
@ 1431 TURB WAS 9.7 NTUS. @

QA Samples Collected:

MS/MSD	Duplicate ID No.:
—	—

Signature(s): Robert Balkover

LOW FLOW PURGE DATA SHEET

PROJECT SITE NAME: NSWC Crane, IN
PROJECT NUMBER: N3960 JEEP TRAIL

WELL ID.: 3-18
DATE: 6/24/01

Time (Hrs.)	Water Level (Ft. below TOC)	Pump Rate (mL/Min.)	pH (S.U.)	S. Cond. (mS/cm)	Turb. (NTU)	DO (mg/L)	Temp. (Celcius)	ORP mV	Comments	
									VOL:	
1120	17.75	START	—							
1125	17.80	120	6.14	0.346	130	6.32	15.0	+269.7	—	
1130	17.85	120	5.59	0.340	115	5.88	14.7	+314.5	≈1.2L	
1135	17.85	115	5.14	0.335	100	5.77	14.6	+364.7	—	
1140	17.86	115	4.76	0.328	100	6.01	14.8	+460.1	≈2.35L	
1145	17.87	115	4.64	0.321	45	6.19	15.0	+483.7	—	
1150	17.90	115	4.54	0.318	40	6.29	15.0	+497.2	3.5L	
1200	17.95	115	4.20	0.296	37	6.42	14.9	+514.3	—	1.3
1205	~~17.95~~ 18.00	115	4.93	0.310	31	6.44	14.7	+519.2	—	
1210	18.00	100	5.03	0.242	32	6.46	15.4	+520.2	≈5.8L	
1215	18.01	100	5.54	0.277	27	6.79	15.6	+513.4	—	
1220	18.01	100	5.60	0.275	26	6.83	15.7	+511.9	6.8L	
1230	18.01	100	5.64	0.266	19	6.84	15.8	+505.3	7.8L	
1240	18.02	100	5.59	0.245	9.9	6.90	15.3	+505.2	8.8L	
1250	18.03	100	5.46	0.234	7.3	7.00	14.7	+505.2	≈9.8L	
1300	18.03	100	5.42	0.228	6.3	7.01	14.9	+507.3	10.8L	
1305	18.04	100	5.46	0.229	5.1	7.03	15.0	+508.2	—	
1310	18.04	100	5.47	0.231	4.4	7.01	14.9	+509.7	11.8L	
1315	18.04	100	5.43	0.231	3.8	6.99	14.8	+510.9	12.3L	2 vol
	→ END PURGE									
	SAMPLED @ 1317									

SIGNATURE: Robert Bulkover

12.1L: 1 vol

Tetra Tech NUS, Inc.

FIELD ANALYTICAL LOG SHEET
GEOCHEMICAL PARAMETERS

Project Site Name: NSWC Crane
Project No.: CTO 159 job # N3960
Sampled By: BOB B

Sample ID No.: 03GW18 01
Sample Location: 03-18
Duplicate: ☐

SAMPLING DATA:

Date: 6-24-01	Color (Visual)	pH (SU)	S.C. (mS/cm)	Temp. (°C)	Turbidity (NTU)	DO (Meter, mg/l)	ORP mV
Time: 1317	CLEAR	5.43	0.231	14.8	3.8	6.99	510.9
Method: Low Flow							

SAMPLE COLLECTION/ANALYSIS INFORMATION:

Nitrite (NO_2-N): Range 0-0.35 mg/L

Analysis Time: 6-25-01 0730

Equipment: HACH DR-850 Colorimeter

Program No.: 62

Concentration: 0.006 mg/L

Notes: Alternate forms: NO_2 0.021 $NaNO_2$ 0.032 mg/L

Nitrate (NO_3-N): Range 0- 0.50 mg/L

Analysis Time: 6-25-01 0810

Equipment: HACH DR-850 Colorimeter

Program No.: 55

Concentration: 0.17 mg/L

Nitrite Interference Treatment: ☑ YES

If results are over limit use dilution method at step 3, 5ml sample 10ml DI result X3, range upto 1.5mg/L

Notes: Alternate form: NO_3 0.77 mg/L

SIGNATURE: [illegible]

GROUND WATER SAMPLE LOG FORM

Project Site Name: NSWC CRANE, IN
Project No.: CTO 126 N3960

Sample ID No.: 03GW2001
Sample Location: SWMU - 3
Sampled By: KM/TR
C.O.C. No.: 02350 LAUCKS
02347 APCL

SAMPLING DATA:

	Color Visual	pH Standard	S.C. mS/cm	Temp. Degrees C	Turbidity NTU	DO mg/l	ORP mV	Odor
Date: 6-9-01								
Time-Start: 1722 End: 1902								
Method: SAME	CLEAR	5.66	0.199	12.63	3.6	8.47	462	NONE

PURGE DATA:

Date: 6-9-01	Total Well Depth (TD): 29.45	End Purge (hrs): 1720
Method: PERistaltic	Static Water Level (WL): 17.84	Total Purge Time (min): 80
Well Casing: 2" PVC	Start Purge (hrs): 1600	Total Vol. Purged (gal): 8 L
One Casing Volume(gal): 7.2 L		

SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Collected
Volatiles App. IX (VOC 1 + VOC 2)	HCl/4°C	(5) 40 mL Glass Vials	✓
SVOCs App. IX	4°C	(2) 1000 mL Amber Glass	✓
SIM	4°C	(2) 1000 mL Amber Glass	✓
Explosives	4°C	(1) 1000 mL Amber Glass	✓
Nitrocellulose	4°C	(1) 1000 mL Amber Glass	✓
TAL ~~IX~~ Total Metals plus Sn	HNO_3/4°C	(1) 1000 mL Polyethylene	✓
TAL ~~IX~~ Dissolved Metals plus Sn (if Turb. >10)	HNO_3/4°C	(1) 1000 mL Polyethylene	No
Perchlorate APCL Lab.	4°C	(1) 500 mL Polyethylene	✓
Nitrite/Nitrate (field only)	4°C	(1) 500 mL Polyethylene	✓

OBSERVATIONS / NOTES:

PID reading in PVC riser pipe = 0.0 (ppm)
PID reading in Breathing Zone = 0.0 (ppm)

SCREEN INT. 14.4 → 23.7
INTAKE ~21.0

29.45 − 17.84 = 11.61 × .163 = 1.89 gal = 7.2 L

QA Samples Collected:

MS/MSD	Duplicate ID No.:

Signature(s):

LOW FLOW PURGE DATA SHEET

PROJECT SITE NAME: NSWC Crane, IN
PROJECT NUMBER: N3960 JEEP TRAIL

WELL ID.: 3-20
DATE: 6-9-01

Time (Hrs.)	Water Level (Ft.below TOC)	Pump Rate (ml/Min.)	pH (S.U.)	S. Cond. (mS/cm)	Turb. (NTU)	DO (mg/L)	Temp. (Celcius)	ORP mV	Comments
1600	17.84								
1610	17.87	100ml	6.51	0.254	29	9.06	12.95	277	1,000ml CLEAR
1620	17.89	100ml	5.92	0.217	31	8.81	12.75	353	2,000ml "
1630	17.92	100ml	5.90	0.184	18	8.66	12.68	385	3,000 ml "
1640	17.96	100ml	5.75	0.172	12	8.54	12.55	414	4,000 ml "
1650	17.99	100ml	5.71	0.164	7	8.52	12.52	430	5,000 ml "
1700	18.02	100ml	5.68	0.157	5.1	8.48	12.52	443	6,000 ml "
1710	18.06	100ml	5.66	0.152	4.1	8.52	12.49	453	7,000 ml "
1715	18.07	100ml	5.64	0.150	3.9	8.48	12.53	457	7,500ml "
1720	18.08	100ml	5.66	0.149	3.6	8.47	12.63	462	8,000ml "
1722									Start SAMPLING

MIN VOL. 7.2 L

7.2 L

SIGNATURE: [signature]

FIELD ANALYTICAL LOG SHEET
GEOCHEMICAL PARAMETERS

Tetra Tech NUS, Inc.

Project Site Name: NSWC Crane
Project No.: CTO 159 job # N3960
Sampled By: TR

Sample ID No.: 03GW2001
Sample Location: 03MW20
Duplicate: ☐

SAMPLING DATA:

	Color (Visual)	pH (SU)	S.C. (mS/cm)	Temp. (°C)	Turbidity (NTU)	DO (Meter. mg/l)	ORP mV
Date: 6.9.01							
Time: 1722							
Method: Low Flow	CLEAR	5.66	0.149	13.6	3.6	8.47	462

SAMPLE COLLECTION/ANALYSIS INFORMATION:

Nitrite (NO_2-N): Range 0-0.35 mg/L

Analysis Time: 1928

Equipment: HACH DR-850 Colorimeter

Program No.: 62

Concentration: 0 mg/L

Notes: Alternate forms: NO_2 0.002 $NaNO_2$ 0.002 mg/L

Nitrate (NO_3-N): Range 0- 0.50 mg/L

Analysis Time: 1950

Equipment: HACH DR-850 Colorimeter

Program No.: 55

Concentration: 0.36 mg/L

Nitrite Interference Treatment: ☐

If results are over limit use dilution method at step 3, 5ml sample 10ml DI result X3, range upto 1.5mg/L

Notes: Alternate form: NO_3 1.58 mg/L

SIGNATURE: [illegible]

GROUND WATER SAMPLE LOG FORM

Project Site Name: NSWC CRANE, IN
Project No.: CTO 126 N3960

Sample ID No.: 03GW2101
Sample Location: SWMU-3 03-21
Sampled By: K. SIMPSON
C.O.C. No.:

SAMPLING DATA:

Date: 7.10.01	Color	pH	S.C.	Temp.	Turbidity	DO	ORP	Odor
Time-Start 1125 End: 1212	Visual	Standard	mS/cm	Degrees C	NTU	mg/l	mV	
Method: low flow, peristaltic	CLEAR	5.48	0.546	15.1	0.4	11.80	530	NONE

PURGE DATA:

Date: 7.10.01	Total Well Depth (TD): 30.0	End Purge (hrs): 1125
Method: low flow, peristaltic	Static Water Level (WL): 18.91	Total Purge Time (min): 55
Well Casing: 2" PVC	Start Purge (hrs): 1030	Total Vol. Purged (gal): 1.9
One Casing Volume(gal): 1.8		

SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Collected
Volatiles App. IX (VOC 1 + VOC 2)	HCl/4°C	(5) 40 mL Glass Vials	—
SVOCs App. IX	4°C	(2) 1000 mL Amber Glass	✓
SIM	4°C	(2) 1000 mL Amber Glass	✓
Explosives	4°C	(1) 1000 mL Amber Glass	✓
Nitrocellulose	4°C	(1) 1000 mL Amber Glass	✓
TAL ~~IX~~ Total Metals plus Sn	HNO_3/4°C	(1) 1000 mL Polyethylene	✓
~~TAL IX Dissolved Metals plus Sn (if Turb. >10)~~	~~HNO_3/4°C~~	~~(1) 1000 mL Polyethylene~~	
Perchlorate APCL Lab.	4°C	(1) 500 mL Polyethylene	—
Nitrite/Nitrate (field only)	4°C	(1) 500 mL Polyethylene	✓

OBSERVATIONS / NOTES:

PID reading in PVC riser pipe = — (ppm)
PID reading in Breathing Zone = — (ppm)

PUMP INLET (TUBING) SET @ 24' BTOC

QA Samples Collected:

MS/MSD	Duplicate ID No.:
—	—

Signature(s): [illegible]

LOW FLOW PURGE DATA SHEET

PROJECT SITE NAME: NSWC Crane, IN
PROJECT NUMBER: N3960 JEEP TRAIL

WELL ID.: 03-21
DATE: 7.10.01

Time (Hrs.)	Water Level (Ft. below TOC)	Pump Rate (mL/Min.)	pH (S.U.)	S. Cond. (mS/cm)	Turb. (NTU)	DO (mg/L)	Temp. (Celcius)	ORP mV	Comments
									START PURGE
1030	18.91	120							CLEAR, NO ODOR
1035			6.50	0.602	7.4	6.55	15.6	245	
1045			5.99	0.588	5.3	9.11	15.8	410	
1055		150	5.76	0.560	3.4	11.09	15.9	473	
1105			5.58	0.549	3.0	12.47	15.2	501	
1115			5.47	0.548	2.1	11.85	15.2	518	
1120			5.45	0.546	1.1	11.86	15.1	528	END PURGE
1125			5.48	0.546	0.4	11.80	15.1	530	

SIGNATURE: [illegible]

FIELD ANALYTICAL LOG SHEET
GEOCHEMICAL PARAMETERS

Tetra Tech NUS, Inc.

Project Site Name: NSWC Crane

Project No.: CTO 159 job # N3960

Sampled By: K. SIMPSON

Sample ID No.: 036W2101

Sample Location: 0321

Duplicate: ☐

SAMPLING DATA:

Date: 7-10-01	Color (Visual)	pH (SU)	S.C. (mS/cm)	Temp. (°C)	Turbidity (NTU)	DO (Meter, mg/l)	ORP mV
Time: 1125							
Method: Low Flow	CLEAR	5.48	2546	15.1	0.4	11.80	530

SAMPLE COLLECTION/ANALYSIS INFORMATION:

Nitrite (NO_2-N): Range 0-0.35 mg/L

Equipment: HACH DR-850 Colorimeter

Analysis Time: 1330

Program No.: 62

Concentration: 0.001 mg/L

Notes: Alternate forms: NO_2 0.003 $NaNO_2$ 0.004 mg/l

Nitrate (NO_3-N): Range 0- 0.50 mg/L

Equipment: HACH DR-850 Colorimeter

Analysis Time: 1345

Program No.: 55

Concentration: 0.32 mg/L

Nitrite Interference Treatment: ☐

If results are over limit use dilution method at step 3, 5ml sample 10ml DI result X3, range upto 1.5mg/L

Notes: Alternate form: NO_3 1.41 mg/l

SIGNATURE: [signature]

GROUND WATER SAMPLE LOG FORM

Project Site Name: NSWC CRANE, IN
Project No.: CTO 126 N3960

Sample ID No.: 03GW2201
Sample Location: SWMU - 3
Sampled By: T. ROJAHN
C.O.C. No.:

SAMPLING DATA:

	Color Visual	pH Standard	S.C. mS/cm	Temp. Degrees C	Turbidity NTU	DO mg/l	ORP mV	Odor
Date: 7/10/01								
Time-Start: 1820 End: 2004								
Method: SAME	CLEAR	5.34	0.874	16.43	9.4	4.31	591	NONE

PURGE DATA:

Date: 7/10/01	Total Well Depth (TD):	32.00	End Purge (hrs): 1815
Method: Bladder Pump	Static Water Level (WL):	16.05	Total Purge Time (min): 170
Well Casing: 2" PVC	Start Purge (hrs):	1535	Total Vol. Purged (~~gal~~): 14.3 L
One Casing Volume(~~gal~~): 9.8 L			

SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Collected
Volatiles App. IX (VOC 1 + VOC 2)	HCl/4°C	(5) 40 mL Glass Vials	✓
SVOCs App. IX	4°C	(2) 1000 mL Amber Glass	✓
SIM	4°C	(2) 1000 mL Amber Glass	✓
Explosives	4°C	(1) 1000 mL Amber Glass	✓
Nitrocellulose	4°C	(1) 1000 mL Amber Glass	✓
TAL ~~IX~~ Total Metals plus Sn	HNO_3/4°C	(1) 1000 mL Polyethylene	✓
TAL ~~IX~~ Dissolved Metals plus Sn (if Turb. >10)	HNO_3/4°C	(1) 1000 mL Polyethylene	NO
Perchlorate APCL Lab.	4°C	(1) 500 mL Polyethylene	✓
Nitrite/Nitrate (field only)	4°C	(1) 500 mL Polyethylene	✓

OBSERVATIONS / NOTES:

PID reading in PVC riser pipe = (ppm)

PID reading in Breathing Zone = (ppm)

15.95' x .163 = 2.6941 = 9.8 L

QA Samples Collected:

MS/MSD — Duplicate ID No.: —

Signature(s): Tuy Rojahn

LOW FLOW PURGE DATA SHEET

PROJECT SITE NAME: NSWC Crane, IN
PROJECT NUMBER: N3960 JEEP TRAIL

WELL ID.: 3-22
DATE: 7-10-01

Time	Water Level	Pump Rate	pH	S. Cond.	Turb.	DO	Temp.	ORP	Comments
[redacted]	[redacted]	[redacted]	[redacted]	(mS/cm)	[redacted]	[redacted]	[redacted]	[redacted]	
1535	16.05	—	4.28	0.983	140	4.34	16.35	414	Start Purge
1545	16.23	120	4.15	0.902	190	4.89	16.30	498	1200 Cloudy
1555	16.30	100	4.66	0.825	150	5.54	17.56	547	2200 Sl. Cloudy
1605	16.37	100	4.52	0.820	132	5.54	16.38	554	3200 " "
1615	16.47	100	4.31	0.816	110	5.56	15.93	560	4200 " "
1625	16.59	110	4.11	0.796	106	5.33	15.68	581	5300 " "
1635	16.65	90	4.43	0.802	100	5.16	16.36	582	6200 " "
1645	16.68	80	4.65	0.811	39	5.16	16.50	586	7000 " "
1655	16.75	85	4.75	0.820	33	4.99	16.36	589	7850 CLEAR
1705	16.77	80	4.86	0.822	23	4.97	16.27	589	8650 "
1715	16.82	80	4.83	0.828	20	4.91	16.13	591	9450 "
1725	16.85	80	4.00	0.833	17	4.77	16.48	592	10250 "
1735	16.88	80	5.07	0.848	17	4.68	16.16	593	11050 "
1745	16.91	80	5.09	0.868	16	4.54	16.26	588	11850 "
1755	16.94	80	5.28	0.867	12	4.50	16.30	586	12650 "
1805	16.97	80	5.32	0.871	12	4.39	16.40	588	13450 "
1815	16.97	80	5.34	0.874	9.4	4.31	16.43	591	14250 "
1820								→	Start Sampling

SIGNATURE: [signature]

FIELD ANALYTICAL LOG SHEET
GEOCHEMICAL PARAMETERS

Tetra Tech NUS, Inc.

Project Site Name: NSWC Crane

Project No.: CTO 159 job # N3960

Sampled By: T. RUJAHN

Sample ID No.: 03GW2201

Sample Location: 03-22

Duplicate: ☐

SAMPLING DATA:

	Color (Visual)	pH (SU)	S.C. (mS/cm)	Temp. (°C)	Turbidity (NTU)	DO (Meter. mg/l)	ORP mV
Date: 7.10.01							
Time: 1820							
Method: Low Flow	CLEAR	5.34	0.84	16.4	9.4	4.31	591

SAMPLE COLLECTION/ANALYSIS INFORMATION:

Nitrite (NO_2-N): Range 0-0.35 mg/L

Analysis Time: 1903

Equipment: HACH DR-850 Colorimeter

Program No.: 62

Concentration: 0.03 mg/L

Notes: Alternate forms: NO_2 0.008 $NaNO_2$ 0.012 mg/L

Nitrate (NO_3-N): Range 0- 0.50 mg/L

Analysis Time: 1945

Equipment: HACH DR-850 Colorimeter

Program No.: 55

Concentration: 0.14 mg/L

Nitrite Interference Treatment: ☐

If results are over limit use dilution method at step 3, 5ml sample 10ml DI result X3, range upto 1.5mg/L

Notes: Alternate form: NO_3 0.63 mg/L

SIGNATURE: [illegible]

GROUND WATER SAMPLE LOG FORM

Project Site Name: NSWC CRANE, IN
Project No.: CTO 126 N3960

Sample ID No.: 03GW2301
Sample Location: SWMU - 3
Sampled By: TC
C.O.C. No.: 02350 LAUCKS
02347 APCL

SAMPLING DATA:

	Color	pH	S.C.	Temp.	Turbidity	DO	ORP	Odor
Date: 6/9/01	Visual	Standard	mS/cm	Degrees C	NTU	mg/l	mV	
Time-Start: 1137 End: 1530								
Method: SAME	CLEAR	4.09#	0.458	13.71	5.8	1.73	544	None

PURGE DATA:

Date: 6-9-01	Total Well Depth (TD): 32.0	End Purge (hrs): 1135
Method: Peristaltic	Static Water Level (WL): 16.95	Total Purge Time (min): 1000
Well Casing: 2" PVC	Start Purge (hrs): 0955	Total Vol. Purged (~~gal~~): 10 L
One Casing Volume(~~gal~~): 9.27L		

SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	MS/MSD	Collected
Volatiles App. IX (VOC 1 + VOC 2)	HCl/4°C	(5) 40 mL Glass Vials	15	✓
SVOCs App. IX	4°C	(2) 1000 mL Amber Glass	6	✓
SIM	4°C	(2) 1000 mL Amber Glass	6	✓
Explosives	4°C	(1) 1000 mL Amber Glass	3	✓
Nitrocellulose	4°C	(1) 1000 mL Amber Glass	3	✓
TAL ~~#~~ Total Metals plus Sn	HNO_3/4°C	(1) 1000 mL Polyethylene	2	✓
TAL ~~#~~ Dissolved Metals plus Sn (if Turb. >10)	HNO_3/4°C	(1) 1000 mL Polyethylene	—	NO
Perchlorate APCL Lab.	4°C	(1) 500 mL Polyethylene	3	✓
Nitrite/Nitrate (field only)	4°C	(1) 500 mL Polyethylene	1	✓

OBSERVATIONS / NOTES:

PID reading in PVC riser pipe = 0.3 (ppm)
PID reading in Breathing Zone = 0.0 (ppm)

SCREEN INT. = 14.9' – 23.3

15.05 X .163 = 2.45 gal = 9.27 L

INTAKE @ 21'

INSTRUMENT drift POSSIBLE W/pH PROBE

QA Samples Collected:

MS/MSD YES

Duplicate ID No.:

Signature(s): [signature]

LOW FLOW PURGE DATA SHEET

PROJECT SITE NAME: NSWC Crane, IN
PROJECT NUMBER: N3960 JEEP TRAIL

WELL ID.: 3-23
DATE: 6-9-01

Time (Hrs)	Water Level (ft below TOC)	Pump Rate (ml/Min)	pH (S.U.)	S. Cond. (mS/cm)	Turb. (NTU)	DO (mg/L)	Temp. (Celcius)	ORP (mV)	Comments
								→	START PURGE
0955	16.95		6.08						
1005	17.00	100ml	~~7.26~~	0.474	24.0	2.34	13.46	301.1	1000ml CLEAR
1015	17.03	100ml	5.65	0.468	22.2	1.85	13.43	354	2000ml "
1025	17.05	100ml	5.05	0.467	19.2	1.77	13.36	415	3000ml "
1035	17.04	100ml	4.90	0.460	13.2	1.74	13.21	439	4000ml "
1045	17.03	100ml	4.67	0.455	10.0	1.84	13.37	474	5000ml "
1055	17.05	100ml	4.49	0.457	8.6	1.76	13.50	495	6000ml "
1105	17.04	100ml	4.82	0.456	7.5	2.01	13.60	450	7000ml "
1115	17.05	100ml	4.07	0.458	6.9	184	14.20	506	8000ml "
1125	17.06	100ml	4.05	0.459	7.1	1.79	13.81	536	9000ml "
1130	17.06	100ml	4.08	0.460	6.8	1.75	13.75	541	9500ml "
1135	17.06	100ml	4.09	0.458	5.8	1.73	13.71	544	10000ML "
								→	Start SAMPLING
1137									

MIN VOL = 9.3

SIGNATURE: [signature]

FIELD ANALYTICAL LOG SHEET
GEOCHEMICAL PARAMETERS

Tetra Tech NUS, Inc.

Project Site Name: NSWC Crane
Project No.: CTO 159 job # N3960
Sampled By: TR

Sample ID No.: 03GW2301
Sample Location: 03MW23
Duplicate: ☐

SAMPLING DATA:

	Color (Visual)	pH (SU)	S.C. (mS/cm)	Temp. (°C)	Turbidity (NTU)	DO (Meter, mg/l)	ORP mV
Date: 6.9.01							
Time: 1137							
Method: Low Flow	clear	4.09	0.458	13.7	5.8	1.73	544

SAMPLE COLLECTION/ANALYSIS INFORMATION:

Nitrite (NO_2-N): Range 0-0.35 mg/L

Analysis Time: 1410

Equipment: HACH DR-850 Colorimeter

Program No.: 62

Concentration: 0 mg/L

Notes: Alternate forms: NO_2 0 $NaNO_2$ 0 mg/L

Nitrate (NO_3-N): Range 0- 0.50 mg/L

Analysis Time: 1425

Equipment: HACH DR-850 Colorimeter

Program No.: 55

Concentration: 0.04 mg/L

Nitrite Interference Treatment: ☐

If results are over limit use dilution method at step 3, 5ml sample 10ml DI result X3, range upto 1.5mg/L

Notes: Alternate form: NO_3 0.17 mg/L

SIGNATURE: [signature]

GROUND WATER SAMPLE LOG FORM

Project Site Name: NSWC CRANE, IN
Project No.: CTO 126 N3960

Sample ID No.: 036W2401
Sample Location: SWMU - 3
Sampled By: BB / B.M
C.O.C. No.: 02358/02385

SAMPLING DATA:

	Color Visual	pH Standard	S.C. mS/cm	Temp. Degrees C	Turbidity NTU	DO mg/l	ORP mV	Odor
Date: 6/26/01								
Time-Start: 1652 End: 1755								
Method: BLADDER PUMP	CLEAR	5.34	0.616	14.0	9.0	10.01	+531.7	NONE

PURGE DATA:

Date: 6/26/01	Total Well Depth (TD): 54.80	End Purge (hrs): 1650
Method: BLADDER PUMP	Static Water Level (WL): 49.34	Total Purge Time (min): 145
Well Casing: 2" PVC	Start Purge (hrs): 1425	Total Vol. Purged (gal): 4.8
One Casing Volume(gal): 1.7		

SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Collected
Volatiles App. IX (VOC 1 + VOC 2)	HCl/4°C	(5) 40 mL Glass Vials	✓
SVOCs App. IX	4°C	(2) 1000 mL Amber Glass	✓
SIM	4°C	(2) 1000 mL Amber Glass	✓
Explosives	4°C	(1) 1000 mL Amber Glass	✓
Nitrocellulose	4°C	(1) 1000 mL Amber Glass	✓
TAL Total Metals plus Sn	HNO_3/4°C	(1) 1000 mL Polyethylene	✓
TAL Dissolved Metals plus Sn (if Turb. >10)	HNO_3/4°C	(1) 1000 mL Polyethylene	—
Perchlorate APCL Lab.	4°C	(1) 500 mL Polyethylene	✓
Nitrite/Nitrate (field only)	4°C	(1) 500 mL Polyethylene	

OBSERVATIONS / NOTES:

PID reading in PVC riser pipe = 0.0 (ppm)
PID reading in Breathing Zone = 0.0 (ppm)

0.46 & 0.63

QA Samples Collected:

MS/MSD	Duplicate ID No.:
—	—

Signature(s): Robert Belkner

LOW FLOW PURGE DATA SHEET

PROJECT SITE NAME: NSWC Crane, IN
PROJECT NUMBER: N3960 JEEP TRAIL

WELL ID.: 03-24
DATE: 6/26/01

Time (Hrs.)	Water Level (Ft. below TOC)	Pump Rate (ml/Min.)	pH (S.U.)	S. Cond. (mS/cm)	Turb. (NTU)	DO (mg/L)	Temp. (Celcius)	ORP mV	VOL	Comments
1425	49.34	START							–	
1430	49.36	100	6.61	0.726	>1100	13.46	15.8	+205.6	–	CLOUDY BROWN
1435	49.40	100	6.16	0.773	>1100	11.38	15.0	+278.1	1L	
1440	49.39	100	6.40	0.745	–	13.51	14.4	+259.0	–	
1445	49.40	100	5.80	0.714	–	12.46	14.6	+406.4	2L	
1450	49.40	100	5.74	0.698	–	12.31	14.6	+427.3	–	
1455	49.40	100	5.70	0.691	–	12.10	14.6	+444.1	3L	CLEANSOUND CELL
1500	49.40	100	6.06	0.668	>1100	13.24	14.6	+352.5	–	
1505	49.39	100	5.57	0.655	>1100	12.30	14.5	+458.1	4L	
1510	49.40	100	5.76	0.641	–	11.75	14.3	+482.6	–	
1515	49.40	100	5.80	0.645	–	11.08	14.4	+491.7	5L	CLEANED OUT CELL
1520	49.40	100	6.10	0.641	–	12.11	14.6	+431.7	–	
1525	49.40	100	6.36	0.637	>1100	12.33	14.8	+373.2	6L	
1530	49.39	100	6.00	0.637	290	11.08	13.6	+483.8	6.5L	1 hrs
1535	49.40	130	6.01	0.617	90	11.10	13.7	+488.7	7.8L	
1540	49.40	130	5.89	0.620	50	10.81	14.1	+511.4	–	
1545	49.40	130	4.60	0.621	29	10.74	14.4	+555.6	10.4L	
1605	49.39	130	4.09	0.619	22	11.21	14.2	+544.7	–	
1615	49.40	130	4.11	0.617	16	10.76	13.8	+587.2	12.0L	2 hrs CLEAN OUT CELL
1625	49.40	130	5.75	0.616	12	9.62	14.0	+439.2	–	
1635	49.39	130	5.58	0.616	10	9.87	13.9	+525.1	15.6L	
1640	49.40	130	5.60	0.615	9.8	9.89	13.8	+530.3	–	
1645	49.40	130	5.61	0.616	9.0	10.01	14.0	+534.7	18.2L	
1650										

→ END PURGE
SAMPLED @ 1652

SIGNATURE: Robert Bellmer

FIELD ANALYTICAL LOG SHEET
GEOCHEMICAL PARAMETERS

Tetra Tech NUS, Inc.

Project Site Name: NSWC Crane
Project No.: CTO 159 Job # N3960
Sampled By: BOB B.

Sample ID No.: 03GW2401
Sample Location: 03-24
Duplicate: ☐

SAMPLING DATA:

	Color (Visual)	pH (SU)	S.C. (mS/cm)	Temp. (°C)	Turbidity (NTU)	DO (Meter. mg/l)	ORP mV
Date: 6-26-01							
Time: 1652							
Method: Low Flow	CLEAN	5.54	0.616	14.0	9.0	10.01	531.7

SAMPLE COLLECTION/ANALYSIS INFORMATION:

Nitrite (NO_2-N): Range 0-0.35 mg/L

Analysis Time: 6-27-01 0710

Equipment: HACH DR-850 Colorimeter

Program No.: 62

Concentration: 0.002 mg/L

Notes: Alternate forms: NO_2 0.006 $NaNO_2$ 0.009 mg/L

Nitrate (NO_3-N): Range 0- 0.50 mg/L

Analysis Time: 6-27-01 0731

Equipment: HACH DR-850 Colorimeter

Program No.: 55

Concentration: 0.37 mg/L

Nitrite Interference Treatment: ☐

If results are over limit use dilution method at step 3, 5ml sample 10ml DI result X3, range upto 1.5mg/L

Notes: Alternate form: NO_3 1.66 mg/L

SIGNATURE: [illegible]

GROUND WATER SAMPLE LOG FORM

Project Site Name: NSWC CRANE, IN
Project No.: CTO 126 N3960

Sample ID No.: 036W2501
Sample Location: SWMU - 3
Sampled By: B.B / KM / RS
C.O.C. No.: 02386 / 02385

SAMPLING DATA:

	Color Visual	pH Standard	S.C. mS/cm	Temp. Degrees C	Turbidity NTU	DO mg/l	ORP mV	Odor
Date: 6/26/01								
Time-Start: 1218 End: 1340								
Method: BLADDER PUMP	HAZE/CLEAR	7.34	0.150	14.0	25	19.32	+440.1	NONE

PURGE DATA:

Date: 6/26/01	Total Well Depth (TD): 43.15	End Purge (hrs): 1210
Method: BLADDER PUMP	Static Water Level (WL): 33.00	Total Purge Time (min): 240
Well Casing: 2" PVC	Start Purge (hrs): 0840	Total Vol. Purged (gal): 6.5
One Casing Volume(gal): 1.65		

SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Collected
Volatiles App. IX (VOC 1 + VOC 2)	HCl/4°C	(5) 40 mL Glass Vials	✓
SVOCs App. IX	4°C	(2) 1000 mL Amber Glass	✓
SIM	4°C	(2) 1000 mL Amber Glass	✓
Explosives	4°C	(1) 1000 mL Amber Glass	✓
Nitrocellulose	4°C	(1) 1000 mL Amber Glass	✓
TAL IX Total Metals plus Sn	HNO_3/4°C	(1) 1000 mL Polyethylene	✓
TAL IX Dissolved Metals plus Sn (if Turb. >10)	HNO_3/4°C	(1) 1000 mL Polyethylene	✓
Perchlorate APCL Lab.	4°C	(1) 500 mL Polyethylene	✓
Nitrite/Nitrate (field only)	4°C	(1) 500 mL Polyethylene	✓

OBSERVATIONS / NOTES:

PID reading in PVC riser pipe = 0.0 (ppm)
PID reading in Breathing Zone = 0.0 (ppm)

QA Samples Collected:

MS/MSD	Duplicate ID No.:
—	—

Signature(s): Robert Balkovec

LOW FLOW PURGE DATA SHEET

PROJECT SITE NAME: NSWC Crane, IN
PROJECT NUMBER: N3960 JEEP TRAIL

WELL ID.: 03-25
DATE: 6/26/01

Time (Hrs.)	Water Level (ft. below TOC)	Pump Rate (ml/Min)	pH (S.U.)	S. Cond. (mS/cm)	Turb. (NTU)	DO (mg/L)	Temp. (Celcius)	ORP (mV)	Comments
0810	33.00	START							
0815	33.19	120	8.03	0.149	120	12.09	13.2	+297.9	
0820	33.40	120	8.00	0.149	650	23.84	13.1	+281.7	* APPLY CLEANING CELL DO PROBE
0825	33.64	120	7.96	0.149	400	23.83	13.0	+304.5	HOT BOTTOM OF CELL.
0830	33.73	110	7.96	0.149	280	22.83	13.0	+322.6	2.4 L
0835	33.81	110	7.99	0.149	300	22.35	13.1	+332.5	—
0840	33.86	110	7.99	0.149	300	22.26	13.1	+337.5	3.5 L
0845	33.88	110	7.99	0.150	300	21.41	13.2	+345.7	—
0850	34.02	110	7.95	0.153	320	21.64	13.2	+353.3	4.6 L
0900	34.05	110	7.91	0.195	320	21.31	13.3	+364.2	[redacted] 5.7 L
0910	34.20	100	7.86	0.155	270	21.23	13.4	+377.3	[redacted] 6.7 L >1 vol 1HA
0920	34.30	100	7.85	0.155	230	21.19	13.4	+379.1	7.7 L CLEANED OUT CELL
0930	34.35	100	7.76	0.152	160	21.53	13.6	+366.4	8.7 L
0940	34.48	100	7.78	0.152	160	20.99	13.4	+396.7	9.7 L
0950	34.44	100	7.78	0.151	160	20.72	13.5	+404.4	10.7 L
1000	34.45	100	7.73	0.151	130	20.38	13.7	+413.9	11.7 L
1010	34.50	100	7.65	0.151	110	20.29	13.7	+425	12.7 L >2 vol 2HA
1020	34.55	100	7.55	0.151	95	20.21	13.8	+435.2	13.7 L
1030	34.58	100	7.49	0.151	85	20.07	13.9	+444.7	14.7 L
1040	34.60	100	7.38	0.152	65	19.64	14.1	+453.2	15.7 L
1050	34.65	100	7.35	0.151	50	19.82	14.0	+460.7	16.7 L
1100	34.67	100	7.28	0.151	40	19.53	14.0	+468.2	17.7 L
1110	34.70	100	7.26	0.152	36	19.61	13.8	+476.1	18.7 L 3HA
1120	34.73	100	7.37	0.152	33	19.48	13.7	+476.5	19.7 L
1130	34.76	100	7.40	0.152	28	19.61	13.7	+479.2	20.7 L
1140	34.80	100	7.50	0.150	28	19.52	13.6	+479.0	21.7 L
1150	34.83	100	7.46	0.150	27	19.40	13.9	+474.4	22.7 L
1200	34.89	100	7.40	0.150	26	19.30	14.0	+484.2	23.7 L
1210		100	7.39	0.150	25	19.32	14.0	+490.1	24.7 L 4HA
	→ END PURGE	1 HOUR MARK		SAMPLED @ 1212					

6.25 L = 1 vol

SIGNATURE: Robert Bultrice

FIELD ANALYTICAL LOG SHEET
GEOCHEMICAL PARAMETERS

Tetra Tech NUS, Inc.

Project Site Name: NSWC Crane
Project No.: CTO 159 job # N3960
Sampled By: B. B. & K. M.

Sample ID No.: 03GW2501
Sample Location: 03-25
Duplicate: ☐

SAMPLING DATA:

	Color (Visual)	pH (SU)	S.C. (mS/cm)	Temp. (°C)	Turbidity (NTU)	DO (Meter. mg/l)	ORP mV
Date: 6.26.01							
Time: 1212							
Method: Low Flow	CLEAR	7.39	0.150	14.0	25	19.32	490.1

SAMPLE COLLECTION/ANALYSIS INFORMATION:

Nitrite (NO_2-N): Range 0-0.35 mg/L

Equipment: HACH DR-850 Colorimeter
Analysis Time: 1543
Program No.: 62
Concentration: 0 mg/L

Notes: Alternate forms: NO_2 0 $NaNO_2$ 0 mg/L

Nitrate (NO_3-N): Range 0- 0.50 mg/L

Equipment: HACH DR-850 Colorimeter
Analysis Time: 1622
Program No.: 55
Concentration: 0.18 mg/L
Nitrite Interference Treatment: ☐

If results are over limit use dilution method at step 3, 5ml sample 10ml DI result X3, range upto 1.5mg/L

Notes: Alternate form: NO_3 0.79 mg/L

SIGNATURE: [signature]

APPENDIX B-5

Surface Water Sample Log Sheets with Field Analytical Log Sheets

APPENDIX B-5.1

Sampling Round 1 (Normal Flow)

SURFACE WATER SAMPLE LOG FORM

Project Site Name: NSWC CRANE, IN
Project No.: CTO 126 Job N3960

Sample ID No.: 035W0101
Sample Location: 035WSD01
Sampled By: TR+KM
C.O.C. No.: 02356 LAUCKS
02355 APCL

[X] Stream
[ ] Spring

SAMPLING DATA:

	Color Visual	pH Standard	S.C. mS/cm	Temp. Degrees C	Turbidity NTU	DO mg/l	ORP mV	Odor
Date: 6/11/01								
Sample Time: 1915								
Depth: 2 in	Clear	7.46	0.193	17.85	0.9	8.09	315.1	None
Method: Direct Fill								

SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Collected
Volatiles App. IX (VOC 1 + VOC 2)	HCl/4°C	(5) 40 mL Glass Vials	✓
SVOCs App. IX	4°C	(2) 1000 mL Amber Glass	✓
App. IX Pest.	4°C	(2) 1000 mL Amber Glass	✓
App. IX Herbicides	4°C	(2) 1000 mL Amber Glass	✓
SIM	4°C	(1) 1000 mL Amber Glass	✓
Explosives	4°C	(1) 1000 mL Amber Glass	✓
Nitrocellulose	4°C	(1) 1000 mL Amber Glass	✓
TAL Total Metals plus Sn	HNO_3/4°C	(1) 1000 mL Polyethylene	✓
TAL Dissolved Metals plus Sn (field filtered)	HNO_3/4°C	(1) 1000 mL Polyethylene	✓
TSS	4°C	(1) 500 mL Polyethylene	✓
Perchlorate APCL Lab	4°C	(1) 500 mL Polyethylene	✓
Nitrite/Nitrate (field only)	4°C	(1) 500 mL Polyethylene	✓

OBSERVATIONS / NOTES:

Estimated Flow Rate (GPM): 2

Comments:

Round: 01

Pool 3 FT By 8 FT x 4 in Deep

QA Samples Collected:

MS/MSD	Duplicate ID No.:
—	—

Signature(s):

FIELD ANALYTICAL LOG SHEET
GEOCHEMICAL PARAMETERS

Tetra Tech NUS, Inc.

Project Site Name: NSWC Crane

Project No.: CTO 159 job # N3960

Sampled By: TR - KM

Sample ID No.: 03SW0101

Sample Location: 03SW/SD01

Duplicate: ☐

SAMPLING DATA:

	Color (Visual)	pH (SU)	S.C. (mS/cm)	Temp. (°C)	Turbidity (NTU)	DO (Meter, mg/l)	ORP mV
Date: 6.11.01							
Time: 1915							
Method: Low Flow	CLEAR	7.46	0.193	17.85	0.9	8.19	315

SAMPLE COLLECTION/ANALYSIS INFORMATION:

Nitrite (NO_2-N): Range 0-0.35 mg/L

Analysis Time: 1956

Equipment: HACH DR-850 Colorimeter

Program No.: 62

Concentration: 0 mg/L

Notes: Alternate forms: NO_2 0 $NaNO_2$ 0

Nitrate (NO_3-N): Range 0- 0.50 mg/L

Analysis Time: 2018

Equipment: HACH DR-850 Colorimeter

Program No.: 55

Concentration: 0.21 mg/L

Nitrite Interference Treatment: ☐

If results are over limit use dilution method at step 3, 5ml sample 10ml DI result X3, range upto 1.5mg/L

Notes: Alternate form: NO_3 0.94 mg/L

SIGNATURE: [signature]

SURFACE WATER SAMPLE LOG FORM

Project Site Name: NSWC CRANE, IN
Project No.: CTO 126 job N3960

[X] Stream
[ ] Spring

Sample ID No.: 03SW0201
Sample Location: 03SWSD02
Sampled By: TR, KM, + KS
C.O.C. No.: 02356 LAUCKS
02358 APCL

SAMPLING DATA:

	Color Visual	pH Standard	S.C. mS/cm	Temp. Degrees C	Turbidity NTU	DO mg/l	ORP mV	Odor
Date: 6/12/01								
Sample Time: 0815								
Depth: 2 in	Clear	7.03	0.174	16.98	1.4	5.33	334.4	NONE
Method: Direct Fill								

SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Collected
Volatiles App. IX (VOC 1 + VOC 2)	HCl/4°C	(5) 40 mL Glass Vials	✓
SVOCs App. IX	4°C	(2) 1000 mL Amber Glass	✓
App. IX Pest.	4°C	(2) 1000 mL Amber Glass	✓
App. IX Herbicides	4°C	(2) 1000 mL Amber Glass	✓
SIM	4°C	(1) 1000 mL Amber Glass	✓
Explosives	4°C	(1) 1000 mL Amber Glass	✓
Nitrocellulose	4°C	(1) 1000 mL Amber Glass	✓
TAL Total Metals plus Sn	HNO_3/4°C	(1) 1000 mL Polyethylene	✓
TAL Dissolved Metals plus Sn (field filtered)	HNO_3/4°C	(1) 1000 mL Polyethylene	✓
TSS	4°C	(1) 500 mL Polyethylene	✓
Perchlorate APCL Lab	4°C	(1) 500 mL Polyethylene	✓
Nitrite/Nitrate (field only)	4°C	(1) 500 mL Polyethylene	✓

OBSERVATIONS / NOTES:

Estimated Flow Rate (GPM): 5 TO 10

Comments:

Round: 01

8 FEET WIDE X 5 IN DEEP.

QA Samples Collected:

MS/MSD: ——

Duplicate ID No.: ——

Signature(s):

FIELD ANALYTICAL LOG SHEET
GEOCHEMICAL PARAMETERS

Tetra Tech NUS, Inc.

Project Site Name: NSWC Crane
Project No.: CTO 159 job # N3960
Sampled By: KS-TR-KM

Sample ID No.: 03SW0201
Sample Location: 03SW/SD02
Duplicate: ☐

SAMPLING DATA:

Date: 6.12.01	Color (Visual)	pH (SU)	S.C. (mS/cm)	Temp. (°C)	Turbidity (NTU)	DO (Meter. mg/l)	ORP mV
Time: 0815							
Method: Low Flow	CLEAR	7.03	0.174	17.0	1.4	5.33	334

SAMPLE COLLECTION/ANALYSIS INFORMATION:

Nitrite (NO_2-N): Range 0-0.35 mg/L

Equipment: HACH DR-850 Colorimeter
Analysis Time: 1125
Program No.: 62
Concentration: 0 mg/L

Notes: Alternate forms: NO_2 0 $NaNO_2$ 0

Nitrate (NO_3-N): Range 0- 0.50 mg/L

Equipment: HACH DR-850 Colorimeter
Analysis Time: 1230
Program No.: 55
Concentration: 0.26 mg/L

Nitrite Interference Treatment: ☐

If results are over limit use dilution method at step 3, 5ml sample 10ml DI result X3, range upto 1.5mg/L

Notes: Alternate form: NO_3 1.14 mg/L

SIGNATURE: [signature]

SURFACE WATER SAMPLE LOG FORM

Project Site Name: NSWC CRANE, IN
Project No.: CTO 126 Job N3960

[X] Stream
[ ] Spring

Sample ID No.: 035W0301
Sample Location: 035WSD03
Sampled By: TR, KM + KS
C.O.C. No.: 02356 LAUCKS
02361 APCL

SAMPLING DATA:

	Color Visual	pH Standard	S.C. mS/cm	Temp. Degrees C	Turbidity NTU	DO mg/l	ORP mV	Odor
Date: 6/12/01 Sample Time: 0915 Depth: 1 IN Method: Direct Fill	clear	7.32	0.140	18.61	0.70	9.44	386.3	NONE

SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Collected
Volatiles App. IX (VOC 1 + VOC 2)	HCl/4°C	(5) 40 mL Glass Vials	✓
SVOCs App. IX	4°C	(2) 1000 mL Amber Glass	✓
App. IX Pest.	4°C	(2) 1000 mL Amber Glass	✓
App. IX Herbicides	4°C	(2) 1000 mL Amber Glass	✓
SIM	4°C	(1) 1000 mL Amber Glass	✓
Explosives	4°C	(1) 1000 mL Amber Glass	✓
Nitrocellulose	4°C	(1) 1000 mL Amber Glass	✓
TAL Total Metals plus Sn	HNO_3/4°C	(1) 1000 mL Polyethylene	✓
TAL Dissolved Metals plus Sn (field filtered)	HNO_3/4°C	(1) 1000 mL Polyethylene	✓
TSS	4°C	(1) 500 mL Polyethylene	✓
Perchlorate APCL Lab	4°C	(1) 500 mL Polyethylene	✓
Nitrite/Nitrate (field only)	4°C	(1) 500 mL Polyethylene	✓

OBSERVATIONS / NOTES:

Estimated Flow Rate (GPM): 3 TO 5

Comments:

Round: 01

6 FEET WIDE X 2 IN DEEP

QA Samples Collected:

MS/MSD	Duplicate ID No.:
—	—

Signature(s): Terry Royal

FIELD ANALYTICAL LOG SHEET
GEOCHEMICAL PARAMETERS

Tetra Tech NUS, Inc.

Project Site Name: NSWC Crane
Project No.: CTO 159 job # N3960
Sampled By: RS - KM - TR

Sample ID No.: 035W0301
Sample Location: 035W/SD03 01
Duplicate: ☐

SAMPLING DATA:

	Color (Visual)	pH (SU)	S.C. (mS/cm)	Temp. (°C)	Turbidity (NTU)	DO (Meter, mg/l)	ORP mV
Date: 6.12.01							
Time: 0915							
Method: Low Flow	CLEAR	7.32	0.140	18.6	0.7	9.44	386

SAMPLE COLLECTION/ANALYSIS INFORMATION:

Nitrite (NO_2-N): Range 0-0.35 mg/L

Analysis Time: 1127

Equipment: HACH DR-850 Colorimeter

Program No.: 62

Concentration: 0.002 mg/L

Notes: Alternate forms: NO_2 0.007 $NaNO_2$ 0.011

Nitrate (NO_3-N): Range 0- 0.50 mg/L

Analysis Time: 1256

Equipment: HACH DR-850 Colorimeter

Program No.: 55

Concentration: 0.32 mg/L

Nitrite Interference Treatment: ☑ YES

If results are over limit use dilution method at step 3, 5ml sample 10ml DI result X3, range upto 1.5mg/L

Notes: Alternate form: NO_3 1.40 mg/L

SIGNATURE: [signature]

SURFACE WATER SAMPLE LOG FORM

Project Site Name: NSWC CRANE, IN
Project No.: CTO 126 job N3960

Sample ID No.: 03SW0601
Sample Location: 03SW06
Sampled By: KMH TR SD
C.O.C. No.: 02356 CANCES
02353 APCL

[X] Stream
[ ] Spring

SAMPLING DATA:

	Color Visual	pH Standard	S.C. mS/cm	Temp. Degrees C	Turbidity NTU	DO mg/l	ORP mV	Odor
Date: 6/11/01								
Sample Time: 1710								
Depth: 5 in.	Clear	8.25	0.312	25.45	8.4	9.06	316.4	NONE
Method: Direct Fill								

SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Collected
Volatiles App. IX (VOC 1 + VOC 2)	HCl/4°C	(5) 40 mL Glass Vials	✓
SVOCs App. IX	4°C	(2) 1000 mL Amber Glass	✓
App. IX Pest.	4°C	(2) 1000 mL Amber Glass	✓
App. IX Herbicides	4°C	(2) 1000 mL Amber Glass	✓
SIM	4°C	(1) 1000 mL Amber Glass	✓
Explosives	4°C	(1) 1000 mL Amber Glass	✓
Nitrocellulose	4°C	(1) 1000 mL Amber Glass	✓
TAL Total Metals plus Sn	HNO_3/4°C	(1) 1000 mL Polyethylene	✓
TAL Dissolved Metals plus Sn (field filtered)	HNO_3/4°C	(1) 1000 mL Polyethylene	✓
TSS	4°C	(1) 500 mL Polyethylene	✓
Perchlorate APCL Lab	4°C	(1) 500 mL Polyethylene	✓
Nitrite/Nitrate (field only)	4°C	(1) 500 mL Polyethylene	✓

OBSERVATIONS / NOTES:

Estimated Flow Rate (GPM): 20

WIDTH: 5 FEET
DEPTH: 5 IN.

Comments:

Round: 01

FLOW COMING OUT OF NORTH CULVERT ONLY

QA Samples Collected:

MS/MSD	Duplicate ID No.:
—	—

Signature(s):

NSWC Crane
Field Form
Revision: 1
May 2001

FIELD ANALYTICAL LOG SHEET
GEOCHEMICAL PARAMETERS

Tetra Tech NUS, Inc.

Project Site Name: NSWC Crane
Project No.: CTO 159 job # N3960
Sampled By: TR - KM

Sample ID No.: 03SW0601
Sample Location: 03SW/SD0601
Duplicate: ☐

SAMPLING DATA:

	Color (Visual)	pH (SU)	S.C. (mS/cm)	Temp. (°C)	Turbidity (NTU)	DO (Meter, mg/l)	ORP mV
Date: 6.11.01							
Time: 1710							
Method: Low Flow	CLEAR	8.25	0.312	25.5	8.4	9.06	316

SAMPLE COLLECTION/ANALYSIS INFORMATION:

Nitrite (NO_2-N): Range 0-0.35 mg/L

Analysis Time: 1956

Equipment: HACH DR-850 Colorimeter
Program No.: 62
Concentration: 0 mg/L

Notes: Alternate forms: NO_2 0 $NaNO_2$ 0

Nitrate (NO_3-N): Range 0- 0.50 mg/L

Analysis Time: 2040

Equipment: HACH DR-850 Colorimeter
Program No.: 55
Concentration: 0.10 mg/L

Nitrite Interference Treatment: ☐

If results are over limit use dilution method at step 3, 5ml sample 10ml DI result X3, range upto 1.5mg/L

Notes: Alternate form: NO_3 0.45 mg/L

SIGNATURE: [signature]

SURFACE WATER SAMPLE LOG FORM

Project Site Name: NSWC CRANE, IN
Project No.: CTO 126 Job N3960

[X] Stream
[ ] Spring

Sample ID No.: 03SW1501
Sample Location: 03SW/SD15
Sampled By: KM/TR
C.O.C. No.: 02351 LAUCKS
02355 APCL

SAMPLING DATA:

	Color Visual	pH Standard	S.C. mS/cm	Temp. Degrees C	Turbidity NTU	DO mg/l	ORP mV	Odor
Date: 6-10-01								
Sample Time: 1325								
Depth: 4"	CLEAR	7.79	0.263	14.96	0.00	*10.92	3 42	None
Method: Direct Fill								

SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Collected
Volatiles App. IX (VOC 1 + VOC 2)	HCl/4°C	(5) 40 mL Glass Vials	✓
SVOCs App. IX	4°C	(2) 1000 mL Amber Glass	✓
App. IX Pest.	4°C	(2) 1000 mL Amber Glass	✓
App. IX Herbicides	4°C	(2) 1000 mL Amber Glass	✓
SIM	4°C	(1) 1000 mL Amber Glass	✓
Explosives	4°C	(1) 1000 mL Amber Glass	✓
Nitrocellulose	4°C	(1) 1000 mL Amber Glass	✓
TAL Total Metals plus Sn	HNO_3/4°C	(1) 1000 mL Polyethylene	✓
TAL Dissolved Metals plus Sn (field filtered)	HNO_3/4°C	(1) 1000 mL Polyethylene	✓
TSS	4°C	(1) 500 mL Polyethylene	✓
Perchlorate APCL Lab	4°C	(1) 500 mL Polyethylene	✓
Nitrite/Nitrate (field only)	4°C	(1) 500 mL Polyethylene	✓

OBSERVATIONS / NOTES:

Estimated Flow Rate (GPM): 30 SEE Comments

STREAM @ SAMPLE LOCATION
WIDE 10
DEEP (MAX) 10"

Comments:

Round: 01

* NEAR BY RIFFLE 30gpm
ABOVE SAMPLE LOCATION
~33'

Flow @ sample location
40sec/Ft.

QA Samples Collected:

MS/MSD	Duplicate ID No.:
—	—

Signature(s): [signature]

FIELD ANALYTICAL LOG SHEET
GEOCHEMICAL PARAMETERS

Tetra Tech NUS, Inc.

Project Site Name: NSWC Crane

Project No.: CTO 159 job # N3960

Sampled By: TR-KM

Sample ID No.: 03SW15

Sample Location: 03SW/SD15

Duplicate: ☐

SAMPLING DATA:

Date: 6.10.01	Color (Visual)	pH (SU)	S.C. (mS/cm)	Temp. (°C)	Turbidity (NTU)	DO (Meter, mg/l)	ORP mV
Time: 1325							
Method: Low Flow	CLEAR	7.79	0.263	15.0	0	10.92	342

SAMPLE COLLECTION/ANALYSIS INFORMATION:

Nitrite (NO_2-N): Range 0-0.35 mg/L

Analysis Time: 1451

Equipment: HACH DR-850 Colorimeter

Program No.: 62

Concentration: 0.003 mg/L

Notes: Alternate forms: NO_2 0.009 $NaNO_2$ 0.014 mg/L

Nitrate (NO_3-N): Range 0- 0.50 mg/L

Analysis Time: 1512

Equipment: HACH DR-850 Colorimeter

Program No.: 55

Concentration: 0.19 mg/L

Nitrite Interference Treatment: ☑ YES

If results are over limit use dilution method at step 3, 5ml sample 10ml DI result X3, range upto 1.5mg/L

Notes: Alternate form: NO_3 0.85 mg/L

SIGNATURE: [signature]

SURFACE WATER SAMPLE LOG FORM

Project Site Name: NSWC CRANE, IN
Project No.: CTO 126 Job N3960

Sample ID No.: 03SW1601
Sample Location: 03SW/SD16
Sampled By: T. R. / K. M
C.O.C. No.: 02351 LAUCKS
02355 APCL

[X] Stream
[ ] Spring

SAMPLING DATA:

	Color Visual	pH Standard	S.C. mS/cm	Temp. Degrees C	Turbidity NTU	DO mg/l	ORP mV	Odor
Date: 6-10-01								
Sample Time: 1255								
Depth: 4"	CLEAR	7.61	0.261	16.01	0.0	7.90	335	NONE
Method: Direct Fill								

SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Collected
Volatiles App. IX (VOC 1 + VOC 2)	HCl/4°C	(5) 40 mL Glass Vials	✓
SVOCs App. IX	4°C	(2) 1000 mL Amber Glass	✓
App. IX Pest.	4°C	(2) 1000 mL Amber Glass	✓
App. IX Herbicides	4°C	(2) 1000 mL Amber Glass	✓
SIM	4°C	(1) 1000 mL Amber Glass	✓
Explosives	4°C	(1) 1000 mL Amber Glass	✓
Nitrocellulose	4°C	(1) 1000 mL Amber Glass	✓
TAL Total Metals plus Sn	HNO_3/4°C	(1) 1000 mL Polyethylene	✓
TAL Dissolved Metals plus Sn (field filtered)	HNO_3/4°C	(1) 1000 mL Polyethylene	✓
TSS	4°C	(1) 500 mL Polyethylene	✓
Perchlorate APCL Lab	4°C	(1) 500 mL Polyethylene	✓
Nitrite/Nitrate (field only)	4°C	(1) 500 mL Polyethylene	✓

OBSERVATIONS / NOTES:

Estimated Flow Rate (GPM): 45 1'/MIN

STREAM @ SAMPLE LOCATION
WIDE 12
DEEP MAX 9"

Comments:

Round: 01 below sample location
NEAR by RIFFEL = ~ 45 gal/MIN
Ft/SEC = 1'/4 SEC

QA Samples Collected:

MS/MSD	Duplicate ID No.:
—	—

Signature(s): Tony Agati

Tetra Tech NUS, Inc.

FIELD ANALYTICAL LOG SHEET
GEOCHEMICAL PARAMETERS

Project Site Name: NSWC Crane
Project No.: CTO 159 job # N3960
Sampled By: TR - KM

Sample ID No.: 03SW16 01
Sample Location: 03SW/SD16 01
Duplicate: ☐

SAMPLING DATA:

Date: 6.10.01	Color (Visual)	pH (SU)	S.C. (mS/cm)	Temp. (°C)	Turbidity (NTU)	DO (Meter, mg/l)	ORP mV
Time: 1255							
Method: Low Flow	CLEAR	7.6	0.261	16.0	0	7.90	335

SAMPLE COLLECTION/ANALYSIS INFORMATION:

Nitrite (NO_2-N): Range 0-0.35 mg/L

Equipment: HACH DR-850 Colorimeter
Analysis Time: 1451
Program No.: 62
Concentration: 0.001 mg/L

Notes: Alternate forms: NO_2 0.005 $NaNO_2$ 0.007 mg/L

Nitrate (NO_3-N): Range 0- 0.50 mg/L

Equipment: HACH DR-850 Colorimeter
Analysis Time: 1537
Program No.: 55
Concentration: 0.14 mg/L
Nitrite Interference Treatment: ☑ YES

If results are over limit use dilution method at step 3, 5ml sample 10ml DI result X3, range upto 1.5mg/L

Notes: Alternate form: NO_3 0.62 mg/L

SIGNATURE: [signature]

SURFACE WATER SAMPLE LOG FORM

Project Site Name: NSWC CRANE, IN
Project No.: CTO 126 Job N3960

Sample ID No.: 03SW17 01
Sample Location: 03 SW/SD17
Sampled By: KS, TR, KM
C.O.C. No.: 02351 LAUCKS
02347 APCL

[X] Stream
[ ] Spring

SAMPLING DATA:

	Color Visual	pH Standard	S.C. mS/cm	Temp. Degrees C	Turbidity NTU	DO mg/l	ORP mV	Odor
Date: 6.10.01								
Sample Time: 1020								
Depth: 2-4"	CLEAR	7.26	0.292	14.5	0.7	9.62	372	NONE
Method: Direct Fill								

SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Collected
Volatiles App. IX (VOC 1 + VOC 2)	HCl/4°C	(5) 40 mL Glass Vials	✓
SVOCs App. IX	4°C	(2) 1000 mL Amber Glass	✓
App. IX Pest.	4°C	(2) 1000 mL Amber Glass	✓
App. IX Herbicides	4°C	(2) 1000 mL Amber Glass	✓
SIM	4°C	(1) 1000 mL Amber Glass	✓
Explosives	4°C	(1) 1000 mL Amber Glass	✓
Nitrocellulose	4°C	(1) 1000 mL Amber Glass	✓
TAL Total Metals plus Sn	HNO_3/4°C	(1) 1000 mL Polyethylene	✓
TAL Dissolved Metals plus Sn (field filtered)	HNO_3/4°C	(1) 1000 mL Polyethylene	✓
TSS	4°C	(1) 500 mL Polyethylene	✓
Perchlorate APCL Lab	4°C	(1) 500 mL Polyethylene	✓
Nitrite/Nitrate (field only)	4°C	(1) 500 mL Polyethylene	✓

OBSERVATIONS / NOTES:

Estimated Flow Rate (GPM): 170

STREAM @ SAMPLE LOCATIONS
10' WIDE
8" DEEP (MAX)

Comments:

Round: 01

FORMER LOCATION (CTO 38 JOB 7651) ACRA

QA Samples Collected:

MS/MSD	Duplicate ID No.:
—	—

Signature(s): [illegible]

FIELD ANALYTICAL LOG SHEET
GEOCHEMICAL PARAMETERS

Tetra Tech NUS, Inc.

Project Site Name: NSWC Crane
Project No.: CTO 159 job # N3960
Sampled By: TK

Sample ID No.: 03SW17 01
Sample Location: 03SW/SD17
Duplicate: ☐

SAMPLING DATA:

Date: 6.10.01	Color	pH	S.C.	Temp.	Turbidity	DO	ORP
Time: 1020	(Visual)	(SU)	(mS/cm)	(°C)	(NTU)	(Meter, mg/l)	mV
Method: Low Flow	CLEAR	7.26	0.292	14.5	0.7	9.62	372

SAMPLE COLLECTION/ANALYSIS INFORMATION:

Nitrite (NO_2-N): Range 0-0.35 mg/L

Equipment: HACH DR-850 Colorimeter
Analysis Time: 1130
Program No.: 62
Concentration: 0.004 mg/L

Notes: Alternate forms: NO_2 0.014 $NaNO_2$ 0.021 mg/L

Nitrate (NO_3-N): Range 0- 0.50 mg/L

Equipment: HACH DR-850 Colorimeter
Analysis Time: 1348
Program No.: 55
Concentration: 0.20 mg/L

Nitrite Interference Treatment: ☑ yes

If results are over limit use dilution method at step 3, 5ml sample 10ml DI result X3, range upto 1.5mg/L

Notes: Alternate form: NO_3 0.88 mg/L

SIGNATURE: [signature]

SURFACE WATER SAMPLE LOG FORM

Project Site Name: NSWC CRANE, IN
Project No.: CTO 126 job N3960

Sample ID No.: 03SW1801
Sample Location: 03SW/SD18
Sampled By: KS, TR, KM
C.O.C. No.: 02351 LAUCKS
02347 APCL

[X] Stream
[ ] Spring

SAMPLING DATA:

	Color Visual	pH Standard	S.C. mS/cm	Temp. Degrees C	Turbidity NTU	DO mg/l	ORP mV	Odor
Date: 6-10-01								
Sample Time: 0945								
Depth: 2-4"	CLEAR	7.32	0.276	14.7	1.6	10.53	39.6	NONE
Method: Direct Fill								

SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Collected
Volatiles App. IX (VOC 1 + VOC 2)	HCl/4°C	(5) 40 mL Glass Vials	—
SVOCs App. IX	4°C	(2) 1000 mL Amber Glass	—
App. IX Pest.	4°C	(2) 1000 mL Amber Glass	✓
App. IX Herbicides	4°C	(2) 1000 mL Amber Glass	✓
SIM	4°C	(1) 1000 mL Amber Glass	✓
Explosives	4°C	(1) 1000 mL Amber Glass	✓
Nitrocellulose	4°C	(1) 1000 mL Amber Glass	✓
TAL Total Metals plus Sn	HNO_3/4°C	(1) 1000 mL Polyethylene	✓
TAL Dissolved Metals plus Sn (field filtered)	HNO_3/4°C	(1) 1000 mL Polyethylene	—
TSS	4°C	(1) 500 mL Polyethylene	✓
Perchlorate APCL Lab	4°C	(1) 500 mL Polyethylene	✓
Nitrite/Nitrate (field only)	4°C	(1) 500 mL Polyethylene	✓

OBSERVATIONS / NOTES:

Estimated Flow Rate (GPM): 180

STREAM @ SAMPLE LOCATION
9' WIDE
18" DEEP (MAX)

Comments:

Round: 01

QA Samples Collected:

MS/MSD	Duplicate ID No.:
—	—

Signature(s): TR / SL

NSWC Crane
Field Form
Revision: 1
May 2001

FIELD ANALYTICAL LOG SHEET
GEOCHEMICAL PARAMETERS

Tetra Tech NUS, Inc.

Project Site Name: NSWC Crane
Project No.: CTO 159 job # N3960
Sampled By: TR

Sample ID No.: 03SW1801
Sample Location: 03SW/SD18
Duplicate: ☐

SAMPLING DATA:

	Color (Visual)	pH (SU)	S.C. (mS/cm)	Temp. (°C)	Turbidity (NTU)	DO (Meter. mg/l)	ORP mV
Date: 6.10.01							
Time: 0945							
Method: Low Flow	CLEAR	7.32	0.276	14.7	1.6	10.53	396

SAMPLE COLLECTION/ANALYSIS INFORMATION:

Nitrite (NO_2-N): Range 0-0.35 mg/L

Analysis Time: 1130

Equipment: HACH DR-850 Colorimeter

Program No.: 62

Concentration: 0.001 mg/L

Notes: Alternate forms: NO_2 0.002 $NaNO_2$ 0.003

Nitrate (NO_3-N): Range 0- 0.50 mg/L

Analysis Time: 1322

Equipment: HACH DR-850 Colorimeter

Program No.: 55

Concentration: 0.15 mg/L

Nitrite Interference Treatment: ☑ yes

If results are over limit use dilution method at step 3, 5ml sample 10ml DI result X3, range upto 1.5mg/L

Notes: Alternate form: NO_3 0.68 mg/L

SIGNATURE: [signature]

SURFACE WATER SAMPLE LOG FORM

Project Site Name: NSWC CRANE, IN
Project No.: CTO 126 job N3960

Sample ID No.: 03SW1901
Sample Location: 03SW/SD19
Sampled By: TR - KM
C.O.C. No.: 02351 LAUCKS
02347 APCL

[X] Stream
[ ] Spring

SAMPLING DATA:

	Color Visual	pH Standard	S.C. mS/cm	Temp. Degrees C	Turbidity NTU	DO mg/l	ORP mV	Odor
Date: 6·10·01								
Sample Time: 0830								
Depth: 2 - 6"	CLEAR	6.62	0.275	14.6	1.3	10.27	394	NONE
Method: Direct Fill								

SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Collected
Volatiles App. IX (VOC 1 + VOC 2)	HCl/4°C	(5) 40 mL Glass Vials	✓
SVOCs App. IX	4°C	(2) 1000 mL Amber Glass	✓
App. IX Pest.	4°C	(2) 1000 mL Amber Glass	✓
App. IX Herbicides	4°C	(2) 1000 mL Amber Glass	✓
SIM	4°C	(1) 1000 mL Amber Glass	✓
Explosives	4°C	(1) 1000 mL Amber Glass	✓
Nitrocellulose	4°C	(1) 1000 mL Amber Glass	✓
TAL Total Metals plus Sn	HNO_3/4°C	(1) 1000 mL Polyethylene	✓
TAL Dissolved Metals plus Sn (field filtered)	HNO_3/4°C	(1) 1000 mL Polyethylene	✓
TSS	4°C	(1) 500 mL Polyethylene	✓
Perchlorate APCL Lab	4°C	(1) 500 mL Polyethylene	✓
Nitrite/Nitrate (field only)	4°C	(1) 500 mL Polyethylene	✓
	COLLECTED X VOC DUP + MS/MSD		

OBSERVATIONS / NOTES:

Estimated Flow Rate (GPM): 200

STREAM @ SAMPLE LOCATION
8' WIDE
16" DEEP (MAX)

Comments:

Round: 01

SAME LOCATION AS FORMER CTO 38 ACRB JOB # 7651

AT BASE BOUNDARY

QA Samples Collected:

MS/MSD	Duplicate ID No.:
YES	FD 061001 01

Signature(s): [illegible]

NSWC Crane
Field Form
Revision: 1
May 2001

FIELD ANALYTICAL LOG SHEET
GEOCHEMICAL PARAMETERS

Tetra Tech NUS, Inc.

Project Site Name: NSWC Crane
Project No.: CTO 159 job # N3960
Sampled By: TR

Sample ID No.: 03SW19 01
Sample Location: 03SW/SD19
Duplicate: ☐

SAMPLING DATA:

	Color (Visual)	pH (SU)	S.C. (mS/cm)	Temp. (°C)	Turbidity (NTU)	DO (Meter, mg/l)	ORP mV
Date: 6.10.01							
Time: 0830							
Method: Low Flow	CLEAR	6.62	0.275	14.6	1.3	10.27	394

SAMPLE COLLECTION/ANALYSIS INFORMATION:

Nitrite (NO_2-N): Range 0-0.35 mg/L

Analysis Time: 1130

Equipment: HACH DR-850 Colorimeter

Program No.: 62

Concentration: 0.002 mg/L

Notes: Alternate forms: NO_2 0.010 $NaNO_2$ 0.0015 mg/L

Nitrate (NO_3-N): Range 0- 0.50 mg/L

Analysis Time: 1235

Equipment: HACH DR-850 Colorimeter

Program No.: 55

Concentration: 0.13 mg/L

Nitrite Interference Treatment: ☑ YES

If results are over limit use dilution method at step 3, 5ml sample 10ml DI result X3, range upto 1.5mg/L

Notes: Alternate form: NO_3 0.59 mg/L

SIGNATURE: [illegible]

DUP OF
035W1901

FIELD ANALYTICAL LOG SHEET
GEOCHEMICAL PARAMETERS

Tetra Tech NUS, Inc.

Project Site Name: NSWC Crane
Project No.: CTO 159 job # N3960
Sampled By: TR

Sample ID No.: FD061001 01
Sample Location: 035W/SD19
Duplicate: ☒

SAMPLING DATA:

	Color (Visual)	pH (SU)	S.C. (mS/cm)	Temp. (°C)	Turbidity (NTU)	DO (Meter, mg/l)	ORP mV
Date: 6.10.01							
Time: 0000							
Method: Low Flow	CLEAR	6.62	0.275	14.6	1.3	10.27	394

SAMPLE COLLECTION/ANALYSIS INFORMATION:

Nitrite (NO_2-N): Range 0-0.35 mg/L

Analysis Time: 1130

Equipment: HACH DR-850 Colorimeter

Program No.: 62

Concentration: 0.004 mg/L

Notes: Alternate forms: NO_2 0.013 $NaNO_2$ 0.019 mg/L

Nitrate (NO_3-N): Range 0- 0.50 mg/L

Analysis Time: 1300

Equipment: HACH DR-850 Colorimeter

Program No.: 55

Concentration: 0.14 mg/L

Nitrite Interference Treatment: ☒ YES

If results are over limit use dilution method at step 3, 5ml sample 10ml DI result X3, range upto 1.5mg/L

Notes: Alternate form: NO_3 0.61 mg/L

SIGNATURE: [illegible]

APPENDIX B-5.2

Sampling Round 2 (High Flow/Storm Event)

SURFACE WATER SAMPLE LOG FORM

HIGH FLOW / STORM CONDITIONS

Project Site Name: NSWC CRANE, IN
Project No.: CTO 126 Job N3960

Sample ID No.: 03SW01/02
Sample Location: 03SW01
Sampled By: KS FW
C.O.C. No.:

[X] Stream
[ ] Spring

LOCATION: 03SW/SD01

SAMPLING DATA:

	Color Visual	pH Standard	S.C. mS/cm	Temp. Degrees C	Turbidity NTU	DO mg/l	ORP mV	Odor
Date: 9-9-01								
Sample Time: 0920								
Depth: 0-6"	LT CLOUDY	7.51	0.135	20.8	22	10.76	206	NONE
Method: Direct Fill								

SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Collected
Volatiles App. IX (VOC 1 + VOC 2)	HCl/4°C	(5) 40 mL Glass Vials	✓
SVOCs App. IX	4°C	(2) 1000 mL Amber Glass	✓
App. IX Pest.	4°C	(2) 1000 mL Amber Glass	✓
App. IX Herbicides	4°C	(2) 1000 mL Amber Glass	✓
SIM	4°C	(1) 1000 mL Amber Glass	✓
Explosives	4°C	(1) 1000 mL Amber Glass	✓
Nitrocellulose	4°C	(1) 1000 mL Amber Glass	✓
TAL Total Metals plus Sn	HNO_3/4°C	(1) 1000 mL Polyethylene	✓
TAL Dissolved Metals plus Sn (field filtered)	HNO_3/4°C	(1) 1000 mL Polyethylene	✓
TSS	4°C	(1) 500 mL Polyethylene	✓
Perchlorate APCL Lab	4°C	(1) 500 mL Polyethylene	✓
Nitrite/Nitrate (field only)	4°C	(1) 500 mL Polyethylene	

OBSERVATIONS / NOTES:

Estimated Flow Rate (GPM): 1

LOW FLOW, WITH PUDDLES

LT. RAIN

Comments:

Round: 02

SEE LOG BOOK # 1340
PG 55

QA Samples Collected:

MS/MSD	Duplicate ID No.:
—	

Signature(s): [illegible]

Tetra Tech NUS, Inc.

FIELD ANALYTICAL LOG SHEET
GEOCHEMICAL PARAMETERS

Project Site Name: NSWC Crane
Project No.: CTO 159 job # N3960
Sampled By: KS / FW

Sample ID No.: 035W0102
Sample Location: 035W/SD01
Duplicate: ☐

SAMPLING DATA:

Date: 9-09-01	Color	pH	S.C.	Temp.	Turbidity	DO	ORP
Time: 0920	(Visual)	(SU)	(mS/cm)	(°C)	(NTU)	(Meter, mg/l)	mV
Method: Low Flow	Lt Cloudy	7.51	0.135	20.8	22	10.76	206

SAMPLE COLLECTION/ANALYSIS INFORMATION:

Nitrite (NO_2-N): Range 0-0.35 mg/L

Equipment: HACH DR-850 Colorimeter
Analysis Time: 0956
Program No.: 62
Concentration: 0.001 mg/L

Notes: Alternate forms: NO_2 0.003 $NaNO_2$ 0.004 mg/L

Nitrate (NO_3-N): Range 0- 0.50 mg/L

Equipment: HACH DR-850 Colorimeter
Analysis Time: 1541
Program No.: 55
Concentration: 0.55 x 3 = > 1.65 mg/L mg/L

Nitrite Interference Treatment: ☑

If results are over limit use dilution method at step 3, 5ml sample 10ml DI result X3, range upto 1.5mg/L ✓

Notes: Alternate form: NO_3 2.43 x 3 = > 7.26 mg/L

SIGNATURE: [signature]

SURFACE WATER SAMPLE LOG FORM

Project Site Name: NSWC CRANE, IN
Project No.: CTO 126 job N3960

Sample ID No.: 03SW02 02
Sample Location: 03SW02
Sampled By: KS FW
C.O.C. No.:

☒ Stream
☐ Spring

LOCATION: 03SW/SD 02

SAMPLING DATA:

	Color Visual	pH Standard	S.C. mS/cm	Temp. Degrees C	Turbidity NTU	DO mg/l	ORP mV	Odor
Date: 9-9-01								
Sample Time: 0940								
Depth: 0 - 8"	LT CLOUDY	6.71	0.095	21.2	31	10.78	248	NONE
Method: Direct Fill								

SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Collected
Volatiles App. IX (VOC 1 + VOC 2)	HCl/4°C	(5) 40 mL Glass Vials	✓
SVOCs App. IX	4°C	(2) 1000 mL Amber Glass	✓
App. IX Pest.	4°C	(2) 1000 mL Amber Glass	✓
App. IX Herbicides	4°C	(2) 1000 mL Amber Glass	✓
SIM	4°C	(1) 1000 mL Amber Glass	✓
Explosives	4°C	(1) 1000 mL Amber Glass	✓
Nitrocellulose	4°C	(1) 1000 mL Amber Glass	✓
TAL Total Metals plus Sn	HNO_3/4°C	(1) 1000 mL Polyethylene	✓
TAL Dissolved Metals plus Sn (field filtered)	HNO_3/4°C	(1) 1000 mL Polyethylene	✓
TSS	4°C	(1) 500 mL Polyethylene	✓
Perchlorate APCL Lab	4°C	(1) 500 mL Polyethylene	✓
Nitrite/Nitrate (field only)	4°C	(1) 500 mL Polyethylene	✓

OBSERVATIONS / NOTES:

Estimated Flow Rate (GPM): <1

LT. RAIN

Comments:

Round: 02

QA Samples Collected:

MS/MSD	Duplicate ID No.:

Signature(s): [illegible]

FIELD ANALYTICAL LOG SHEET
GEOCHEMICAL PARAMETERS

Tetra Tech NUS, Inc.

Project Site Name: NSWC Crane
Project No.: CTO 159 job # N3960
Sampled By: KS / FW

Sample ID No.: 035W0202
Sample Location: 035W/5D02
Duplicate: ☐

SAMPLING DATA:

	Color (Visual)	pH (SU)	S.C. (mS/cm)	Temp. (°C)	Turbidity (NTU)	DO (Meter. mg/l)	ORP mV
Date: 9-9-01							
Time: 0940							
Method: Low Flow	Lt Cloudy	6.71	0.695	21.2	31	10.78	248

SAMPLE COLLECTION/ANALYSIS INFORMATION:

Nitrite (NO_2-N): Range 0-0.35 mg/L

Equipment: HACH DR-850 Colorimeter

Analysis Time: 0957

Program No.: 62

Concentration: 0.002 mg/L

Notes: Alternate forms: NO_2 0.008 $NaNO_2$ 0.011 mg/L

Nitrate (NO_3-N): Range 0- 0.50 mg/L

Equipment: HACH DR-850 Colorimeter

Analysis Time: 1640

Program No.: 55

Concentration: 0.25 x 3 = 0.75 mg/L mg/L

Nitrite Interference Treatment: ☑

If results are over limit use dilution method at step 3, 5ml sample 10ml DI result X3, range upto 1.5mg/L ✓

Notes: Alternate form: NO_3 1.11 x 3 = 3.33 mg/L

SIGNATURE: [signature]

SURFACE WATER SAMPLE LOG FORM

Project Site Name: NSWC CRANE, IN
Project No.: CTO 126 Job N3960

Sample ID No.: 03SW03 02
Sample Location: 03SW03
Sampled By: KS FW
C.O.C. No.:

☑ Stream
☐ Spring

LOCATION: 03SW/SD03

SAMPLING DATA:

	Color Visual	pH Standard	S.C. mS/cm	Temp. Degrees C	Turbidity NTU	DO mg/l	ORP mV	Odor
Date: 9-9-01								
Sample Time: 1020								
Depth: 0 - 4"	CLEAR	5.80	0.100	19.4	17	10.12	288	NONE
Method: Direct Fill								

SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Collected
Volatiles App. IX (VOC 1 + VOC 2)	HCl/4°C	(5) 40 mL Glass Vials	✓
SVOCs App. IX	4°C	(2) 1000 mL Amber Glass	✓
App. IX Pest.	4°C	(2) 1000 mL Amber Glass	✓
App. IX Herbicides	4°C	(2) 1000 mL Amber Glass	✓
SIM	4°C	(1) 1000 mL Amber Glass	✓
Explosives	4°C	(1) 1000 mL Amber Glass	✓
Nitrocellulose	4°C	(1) 1000 mL Amber Glass	✓
TAL Total Metals plus Sn	HNO_3/4°C	(1) 1000 mL Polyethylene	✓
TAL Dissolved Metals plus Sn (field filtered)	HNO_3/4°C	(1) 1000 mL Polyethylene	✓
TSS	4°C	(1) 500 mL Polyethylene	✓
Perchlorate APCL Lab	4°C	(1) 500 mL Polyethylene	✓
Nitrite/Nitrate (field only)	4°C	(1) 500 mL Polyethylene	✓

OBSERVATIONS / NOTES:

Estimated Flow Rate (GPM): <1

LT. RAIN

Comments:

Round: 02

QA Samples Collected:

MS/MSD	Duplicate ID No.:

Signature(s): [illegible]

FIELD ANALYTICAL LOG SHEET
GEOCHEMICAL PARAMETERS

Tetra Tech NUS, Inc.

Project Site Name: NSWC Crane

Project No.: CTO 159 job # N3960

Sampled By: KS / FW

Sample ID No.: 035W 03 02

Sample Location: 035W/SD 03

Duplicate: ☐

SAMPLING DATA:

	Color (Visual)	pH (SU)	S.C. (mS/cm)	Temp. (°C)	Turbidity (NTU)	DO (Meter, mg/l)	ORP mV
Date: 9-9-01							
Time: 1020							
Method: Low Flow	CLEAR	5.80	0.100	19.4	17	10.12	288

SAMPLE COLLECTION/ANALYSIS INFORMATION:

Nitrite (NO_2-N): Range 0-0.35 mg/L

Analysis Time: 1538

Equipment: HACH DR-850 Colorimeter

Program No.: 62

Concentration: 0.004 mg/L

Notes: Alternate forms: NO_2 0.013 $NaNO_2$ 0.020 mg/L

Nitrate (NO_3-N): Range 0- 0.50 mg/L

Analysis Time: 1730

Equipment: HACH DR-850 Colorimeter

Program No.: 55

Concentration: >0.55 x 3 = >1.65 mg/L

Nitrite Interference Treatment: ☑

If results are over limit use dilution method at step 3, 5ml sample 10ml DI result X3, range upto 1.5mg/L

Notes: Alternate form: NO_3 >2.43 x 3 = >7.26 mg/L

SIGNATURE: [signature]

SURFACE WATER SAMPLE LOG FORM

Project Site Name: NSWC CRANE, IN
Project No.: CTO 126 Job N3960

Sample ID No.: 03SW04
Sample Location: 03SW/SD04
Sampled By: KS KM
C.O.C. No.:

[X] Stream
[ ] Spring

SAMPLING DATA:

	Color Visual	pH Standard	S.C. mS/cm	Temp. Degrees C	Turbidity NTU	DO mg/l	ORP mV	Odor
Date: 9-9-01								
Sample Time: 1720								
Depth: —								
Method: Direct Fill								

SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Collected
Volatiles App. IX (VOC 1 + VOC 2)	HCl/4°C	(5) 40 mL Glass Vials	
SVOCs App. IX	4°C	(2) 1000 mL Amber Glass	
App. IX Pest.	4°C	(2) 1000 mL Amber Glass	
App. IX Herbicides	4°C	(2) 1000 mL Amber Glass	
SIM	4°C	(1) 1000 mL Amber Glass	
Explosives	4°C	(1) 1000 mL Amber Glass	
Nitrocellulose	4°C	(1) 1000 mL Amber Glass	
TAL Total Metals plus Sn	HNO_3/4°C	(1) 1000 mL Polyethylene	
TAL Dissolved Metals plus Sn (field filtered)	HNO_3/4°C	(1) 1000 mL Polyethylene	
TSS	4°C	(1) 500 mL Polyethylene	
Perchlorate APCL Lab	4°C	(1) 500 mL Polyethylene	
Nitrite/Nitrate (field only)	4°C	(1) 500 mL Polyethylene	

OBSERVATIONS / NOTES:

Estimated Flow Rate (GPM): 0

DRY

Comments:

Round: 02

NO SAMPLE

DRY

QA Samples Collected:

MS/MSD	Duplicate ID No.:

Signature(s):

SURFACE WATER SAMPLE LOG FORM

Project Site Name: NSWC CRANE, IN
Project No.: CTO 126 job N3960

Sample ID No.: 03 SW 06 02
Sample Location: 03SW06
Sampled By: RS FW
C.O.C. No.:

[X] Stream
[ ] Spring

LOCATION: 03SW/SD06

SAMPLING DATA:

	Color Visual	pH Standard	S.C. mS/cm	Temp. Degrees C	Turbidity NTU	DO mg/l	ORP mV	Odor
Date: 9-9-01 Sample Time: 0845 Depth: 0-4" Method: Direct Fill	LT CLOUDY	8.34	0.366	22.7	75	12.69	203	NONE

SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Collected
Volatiles App. IX (VOC 1 + VOC 2)	HCl/4°C	(5) 40 mL Glass Vials	✓
SVOCs App. IX	4°C	(2) 1000 mL Amber Glass	✓
App. IX Pest.	4°C	(2) 1000 mL Amber Glass	✓
App. IX Herbicides	4°C	(2) 1000 mL Amber Glass	✓
SIM	4°C	(1) 1000 mL Amber Glass	✓
Explosives	4°C	(1) 1000 mL Amber Glass	✓
Nitrocellulose	4°C	(1) 1000 mL Amber Glass	✓
TAL Total Metals plus Sn	HNO_3/4°C	(1) 1000 mL Polyethylene	✓
TAL Dissolved Metals plus Sn (field filtered)	HNO_3/4°C	(1) 1000 mL Polyethylene	✓
TSS	4°C	(1) 500 mL Polyethylene	✓
Perchlorate APCL Lab	4°C	(1) 500 mL Polyethylene	✓
Nitrite/Nitrate (field only)	4°C	(1) 500 mL Polyethylene	✓

OBSERVATIONS / NOTES:

Estimated Flow Rate (GPM): 50

RAIN STOPPED

SG-01 = 2.84

Comments:

Round: 02

QA Samples Collected:

MS/MSD	Duplicate ID No.:
—	YES FD09090102

Signature(s): [illegible]

FIELD ANALYTICAL LOG SHEET
GEOCHEMICAL PARAMETERS

Tetra Tech NUS, Inc.

Project Site Name: NSWC Crane
Project No.: CTO 159 job # N3960
Sampled By: KS/FW

Sample ID No.: 035W0602
Sample Location: 035W/5006
Duplicate: ☑

SAMPLING DATA:

	Color (Visual)	pH (SU)	S.C. (mS/cm)	Temp. (°C)	Turbidity (NTU)	DO (Meter, mg/l)	ORP mV
Date: 9/9/01							
Time: 0845							
Method: Low Flow	Lt Cloudy	8.34	0.366	22.7	75	12.69	203

SAMPLE COLLECTION/ANALYSIS INFORMATION:

Nitrite (NO_2-N): Range 0-0.35 mg/L

Analysis Time: 0805

Equipment: HACH DR-850 Colorimeter

Program No.: 62

Concentration: 0.023 mg/L DUP 0.024 mg/L

Notes: Alternate forms: NO_2 0.079 $NaNO_2$ 0.112 mg/L
DUP 0.077 0.116 mg/L

Nitrate (NO_3-N): Range 0- 0.50 mg/L

Analysis Time: 1122

Equipment: HACH DR-850 Colorimeter

Program No.: 55 x3 = 1.41 mg/L

Concentration: 0.47 mg/L

Nitrite Interference Treatment: ☑

DUP 0.48 x 3 = 1.44 mg/L

If results are over limit use dilution method at step 3, 5ml sample 10ml DI result X3, range upto 1.5mg/L ✓

Notes: Alternate form: NO_3 2.06 x 3 = 6.18 mg/L

DUP 2.12 x 3 = 6.36 mg/L

SIGNATURE: [signature]

SURFACE WATER SAMPLE LOG FORM

Project Site Name: NSWC CRANE, IN
Project No.: CTO 126 Job N3960

Sample ID No.: 03SW08 02
Sample Location: 03SW/SD 08
Sampled By: KS KM
C.O.C. No.:

[X] Stream
[ ] Spring

SAMPLING DATA:

	Color Visual	pH Standard	S.C. mS/cm	Temp. Degrees C	Turbidity NTU	DO mg/l	ORP mV	Odor
Date: 9.9.01								
Sample Time: 1750								
Depth: 0 - 5"	LT CLOUDY	8.31	0.133	21.6	140	13.90	210	NONE
Method: Direct Fill								

SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Collected
Volatiles App. IX (VOC 1 + VOC 2)	HCl/4°C	(5) 40 mL Glass Vials	✓
SVOCs App. IX	4°C	(2) 1000 mL Amber Glass	✓
App. IX Pest.	4°C	(2) 1000 mL Amber Glass	✓
App. IX Herbicides	4°C	(2) 1000 mL Amber Glass	✓
SIM	4°C	(1) 1000 mL Amber Glass	✓
Explosives	4°C	(1) 1000 mL Amber Glass	✓
Nitrocellulose	4°C	(1) 1000 mL Amber Glass	✓
TAL Total Metals plus Sn	HNO_3/4°C	(1) 1000 mL Polyethylene	✓
TAL Dissolved Metals plus Sn (field filtered)	HNO_3/4°C	(1) 1000 mL Polyethylene	✓
TSS	4°C	(1) 500 mL Polyethylene	✓
Perchlorate APCL Lab	4°C	(1) 500 mL Polyethylene	✓
Nitrite/Nitrate (field only)	4°C	(1) 500 mL Polyethylene	✓

OBSERVATIONS / NOTES:

Estimated Flow Rate (GPM): <1

Comments:

Round: 02

SAMPLED ON WEST SIDE OF ROAD, DRY ON EAST SIDE (STAKED SIDE) SEE FIG. 4-2

QA Samples Collected:

MS/MSD	Duplicate ID No.:

Signature(s): [illegible]

FIELD ANALYTICAL LOG SHEET
GEOCHEMICAL PARAMETERS

Tetra Tech NUS, Inc.

Project Site Name: NSWC Crane
Project No.: CTO 159 job # N3960
Sampled By: KS/KM

Sample ID No.: 035W08 02
Sample Location: 035W/SD 08
Duplicate: ☐

SAMPLING DATA:

	Color (Visual)	pH (SU)	S.C. (mS/cm)	Temp. (°C)	Turbidity (NTU)	DO (Meter, mg/l)	ORP mV
Date: 09-09-01							
Time: 1750							
Method: Low Flow	Lt. Cloudy	8.31	0.133	21.6	140	13.9	210

SAMPLE COLLECTION/ANALYSIS INFORMATION:

Nitrite (NO_2-N): Range 0-0.35 mg/L

Equipment: HACH DR-850 Colorimeter
Program No.: 62
Concentration: 0.000 mg/L

Analysis Time: 1752

Notes: Alternate forms: NO_2 0.000 $NaNO_2$ 0.000 mg/L

Nitrate (NO_3-N): Range 0- 0.50 mg/L

Equipment: HACH DR-850 Colorimeter
Program No.: 55
Concentration: 0.20 X3 = 0.60 mg/L

Analysis Time: 1845

Nitrite Interference Treatment: ☐

If results are over limit use dilution method at step 3, 5ml sample 10ml DI result X3, range upto 1.5mg/L ✓

Notes: Alternate form: NO_3 0.90 x 3 = 2.70 mg/L

SIGNATURE: [signature]

SURFACE WATER SAMPLE LOG FORM

Project Site Name: NSWC CRANE, IN
Project No.: CTO 126 Job N3960

Sample ID No.: 03SW09 02
Sample Location: 03 SW09
Sampled By: RS FW
C.O.C. No.:

☒ Stream
☐ Spring

LOCATION: 03SW/SD09

SAMPLING DATA:

	Color Visual	pH Standard	S.C. mS/cm	Temp. Degrees C	Turbidity NTU	DO mg/l	ORP mV	Odor
Date: 9.9.01								
Sample Time: 0815								
Depth: 0 to 4"	LT CLOUDY	8.73	0.118	21.4	100	12.10	150	NONE
Method: Direct Fill								

SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Collected
Volatiles App. IX (VOC 1 + VOC 2)	HCl/4°C	(5) 40 mL Glass Vials	✓
SVOCs App. IX	4°C	(2) 1000 mL Amber Glass	✓
App. IX Pest.	4°C	(2) 1000 mL Amber Glass	✓
App. IX Herbicides	4°C	(2) 1000 mL Amber Glass	✓
SIM	4°C	(1) 1000 mL Amber Glass	✓
Explosives	4°C	(1) 1000 mL Amber Glass	✓
Nitrocellulose	4°C	(1) 1000 mL Amber Glass	✓
TAL Total Metals plus Sn	HNO_3/4°C	(1) 1000 mL Polyethylene	✓
TAL Dissolved Metals plus Sn (field filtered)	HNO_3/4°C	(1) 1000 mL Polyethylene	✓
TSS	4°C	(1) 500 mL Polyethylene	✓
Perchlorate APCL Lab	4°C	(1) 500 mL Polyethylene	✓
Nitrite/Nitrate (field only)	4°C	(1) 500 mL Polyethylene	✓

OBSERVATIONS / NOTES:

Estimated Flow Rate (GPM): 2

DRY STREAM BED, SOME POOLING FROM RAIN

V. LITTLE FLOW

SG02 = 5, 53 DRY

Comments:

Round: 2

SEE LOG BOOK #1340 PG 55

QA Samples Collected:

MS/MSD	Duplicate ID No.:

Signature(s):

NSWC Crane
Field Form
Revision: 1
May 2001

FIELD ANALYTICAL LOG SHEET
GEOCHEMICAL PARAMETERS

Tetra Tech NUS, Inc.

Project Site Name: NSWC Crane
Project No.: CTO 159 job # N3960
Sampled By: KS/FW

Sample ID No.: 03SW/0902
Sample Location: 03SW/SD09
Duplicate: ☐

SAMPLING DATA:

	Color (Visual)	pH (SU)	S.C. (mS/cm)	Temp. (°C)	Turbidity (NTU)	DO (Meter, mg/l)	ORP mV
Date: 9-9-01							
Time: 0815							
Method: Low Flow	Sl Cloudy	8.73	0.118	21.4	100	12.10	150

SAMPLE COLLECTION/ANALYSIS INFORMATION:

Nitrite (NO_2-N): Range 0-0.35 mg/L

Analysis Time: 0801

Equipment: HACH DR-850 Colorimeter

Program No.: 62

Concentration: 0.006 mg/L

Notes: Alternate forms: NO_2 0.021 $NaNO_2$ 0.031 mg/L

Nitrate (NO_3-N): Range 0- 0.50 mg/L

Analysis Time: 0900

Equipment: HACH DR-850 Colorimeter

Program No.: 55

Concentration: 0.46 mg/L

Nitrite Interference Treatment: ☑

If results are over limit use dilution method at step 3, 5ml sample 10ml DI result X3, range upto 1.5mg/L

Notes: Alternate form: NO_3 2.03 mg/L

SIGNATURE: [signature]

SURFACE WATER SAMPLE LOG FORM

Project Site Name: NSWC CRANE, IN
Project No.: CTO 126 job N3960

Sample ID No.: 03SW11 02
Sample Location: 03SW/SD11
Sampled By: KS KM
C.O.C. No.:

[X] Stream
[ ] Spring

SAMPLING DATA:

	Color Visual	pH Standard	S.C. mS/cm	Temp. Degrees C	Turbidity NTU	DO mg/l	ORP mV	Odor
Date: 9.9.01								
Sample Time: 1730								
Depth: 0-6"	LT							
Method: Direct Fill	CLOUDY	8.14	0.197	23.5	190	13.94	270	NONE

SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Collected
Volatiles App. IX (VOC 1 + VOC 2)	HCl/4°C	(5) 40 mL Glass Vials	✓
SVOCs App. IX	4°C	(2) 1000 mL Amber Glass	✓
App. IX Pest.	4°C	(2) 1000 mL Amber Glass	✓
App. IX Herbicides	4°C	(2) 1000 mL Amber Glass	✓
SIM	4°C	(1) 1000 mL Amber Glass	✓
Explosives	4°C	(1) 1000 mL Amber Glass	✓
Nitrocellulose	4°C	(1) 1000 mL Amber Glass	✓
TAL Total Metals plus Sn	HNO_3/4°C	(1) 1000 mL Polyethylene	✓
TAL Dissolved Metals plus Sn (field filtered)	HNO_3/4°C	(1) 1000 mL Polyethylene	✓
TSS	4°C	(1) 500 mL Polyethylene	✓
Perchlorate APCL Lab	4°C	(1) 500 mL Polyethylene	✓
Nitrite/Nitrate (field only)	4°C	(1) 500 mL Polyethylene	

OBSERVATIONS / NOTES:

Estimated Flow Rate (GPM): 300

4' WIDE
6" DEEP
6' IN 6 SEC.

Comments:

Round: 02

QA Samples Collected:

MS/MSD	Duplicate ID No.:
—	

Signature(s): [illegible]

FIELD ANALYTICAL LOG SHEET
GEOCHEMICAL PARAMETERS

Tetra Tech NUS, Inc.

Project Site Name: NSWC Crane
Project No.: CTO 159 job # N3960
Sampled By: KS / KM

Sample ID No.: 035W11 02
Sample Location: 035W15011
Duplicate: ☐

SAMPLING DATA:

	Color (Visual)	pH (SU)	S.C. (mS/cm)	Temp. (°C)	Turbidity (NTU)	DO (Meter. mg/l)	ORP mV
Date: 09-09-01							
Time: 1730							
Method: Low Flow	Cloudy	8.14	0.197	23.5	190	13.94	270

SAMPLE COLLECTION/ANALYSIS INFORMATION:

Nitrite (NO_2-N): Range 0-0.35 mg/L

Equipment: HACH DR-850 Colorimeter

Analysis Time: 1751

Program No.: 62

Concentration: 0.000 mg/L

Notes: Alternate forms: NO_2 0.000 $NaNO_2$ 0.000 mg/L

Nitrate (NO_3-N): Range 0- 0.50 mg/L

Equipment: HACH DR-850 Colorimeter

Analysis Time: 1818

Program No.: 55

Concentration: 0.22 x 3 = 0.66 mg/L

Nitrite Interference Treatment: ☐

If results are over limit use dilution method at step 3, 5ml sample 10ml DI result X3, range upto 1.5mg/L ✓

Notes: Alternate form: NO_3 0.99 x 3 = 2.97 mg/L

SIGNATURE: [signature]

SURFACE WATER SAMPLE LOG FORM

Project Site Name: NSWC CRANE, IN
Project No.: CTO 126 Job N3960

Sample ID No.: 03SW1302
Sample Location: 03SW13
Sampled By: KS KM
C.O.C. No.:

[X] Stream
[ ] Spring

LOCATION: 03SW/SD 13

SAMPLING DATA:

	Color Visual	pH Standard	S.C. mS/cm	Temp. Degrees C	Turbidity NTU	DO mg/l	ORP mV	Odor
Date: 9.9.01								
Sample Time: 1620								
Depth: 0 - 4"	LT CLOUDY	7.81	0.081	22.4	90.	13.41	238	NONE
Method: Direct Fill								

SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Collected
Volatiles App. IX (VOC 1 + VOC 2)	HCl/4°C	(5) 40 mL Glass Vials	—
SVOCs App. IX	4°C	(2) 1000 mL Amber Glass	—
App. IX Pest.	4°C	(2) 1000 mL Amber Glass	—
App. IX Herbicides	4°C	(2) 1000 mL Amber Glass	—
SIM	4°C	(1) 1000 mL Amber Glass	—
Explosives	4°C	(1) 1000 mL Amber Glass	—
Nitrocellulose	4°C	(1) 1000 mL Amber Glass	—
TAL Total Metals plus Sn	HNO_3/4°C	(1) 1000 mL Polyethylene	—
TAL Dissolved Metals plus Sn (field filtered)	HNO_3/4°C	(1) 1000 mL Polyethylene	—
TSS	4°C	(1) 500 mL Polyethylene	—
Perchlorate APCL Lab	4°C	(1) 500 mL Polyethylene	—
Nitrite/Nitrate (field only)	4°C	(1) 500 mL Polyethylene	—

OBSERVATIONS / NOTES:

Estimated Flow Rate (GPM): 3

Comments:

Round: 02

QA Samples Collected:

MS/MSD	Duplicate ID No.:

Signature(s): KS / SL

FIELD ANALYTICAL LOG SHEET
GEOCHEMICAL PARAMETERS

Tetra Tech NUS, Inc.

Project Site Name: NSWC Crane
Project No.: CTO 159 job # N3960
Sampled By: KS/KM

Sample ID No.: 035W1302
Sample Location: 035W/5D13
Duplicate: ☐

SAMPLING DATA:

	Color (Visual)	pH (SU)	S.C. (mS/cm)	Temp. (°C)	Turbidity (NTU)	DO (Meter, mg/l)	ORP mV
Date: 09/09/01							
Time: 1620							
Method: Low Flow	cloudy	7.81	0.081	22.4	90	13.41	238

SAMPLE COLLECTION/ANALYSIS INFORMATION:

Nitrite (NO_2-N): Range 0-0.35 mg/L

Analysis Time: 1749

Equipment: HACH DR-850 Colorimeter

Program No.: 62

Concentration: 0.004 mg/L

Notes: Alternate forms: NO_2 0.015 $NaNO_2$ 0.022 mg/L

Nitrate (NO_3-N): Range 0- 0.50 mg/L

Analysis Time: 1900

Equipment: HACH DR-850 Colorimeter

Program No.: 55

Concentration: 0.15 mg/L

Nitrite Interference Treatment: ☑

If results are over limit use dilution method at step 3, 5ml sample 10ml DI result X3, range upto 1.5mg/L

Notes: Alternate form: NO_3 0.68 mg/L

SIGNATURE: [signature]

SURFACE WATER SAMPLE LOG FORM

Project Site Name: NSWC CRANE, IN
Project No.: CTO 126 Job N3960

Sample ID No.: 03SW1402
Sample Location: 03SW14
Sampled By: KS KM
C.O.C. No.:

[X] Stream
[ ] Spring

LOCATION: 03SW/SD14

SAMPLING DATA: 7.70

Date: 9-9-01	Color Visual	pH Standard	S.C. mS/cm	Temp. Degrees C	Turbidity NTU	DO mg/l	ORP mV	Odor
Sample Time: 1603								
Depth: 0-4"	LT CLOUDY	7.70	0.058	22.7	45	12.61	223	NONE
Method: Direct Fill								

SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Collected
Volatiles App. IX (VOC 1 + VOC 2)	HCl/4°C	(5) 40 mL Glass Vials	✓
SVOCs App. IX	4°C	(2) 1000 mL Amber Glass	✓
App. IX Pest.	4°C	(2) 1000 mL Amber Glass	✓
App. IX Herbicides	4°C	(2) 1000 mL Amber Glass	✓
SIM	4°C	(1) 1000 mL Amber Glass	✓
Explosives	4°C	(1) 1000 mL Amber Glass	✓
Nitrocellulose	4°C	(1) 1000 mL Amber Glass	✓
TAL Total Metals plus Sn	HNO_3/4°C	(1) 1000 mL Polyethylene	✓
TAL Dissolved Metals plus Sn (field filtered)	HNO_3/4°C	(1) 1000 mL Polyethylene	✓
TSS	4°C	(1) 500 mL Polyethylene	✓
Perchlorate APCL Lab	4°C	(1) 500 mL Polyethylene	✓
Nitrite/Nitrate (field only)	4°C	(1) 500 mL Polyethylene	✓

OBSERVATIONS / NOTES:

Estimated Flow Rate (GPM): 3

Comments:

Round: 02

QA Samples Collected:

MS/MSD	Duplicate ID No.:
—	

Signature(s): KS/SL

NSWC Crane
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FIELD ANALYTICAL LOG SHEET
GEOCHEMICAL PARAMETERS

Tetra Tech NUS, Inc.

Project Site Name: NSWC Crane
Project No.: CTO 159 job # N3960
Sampled By: KS / KM

Sample ID No.: 035W1402
Sample Location: 035W/5D14
Duplicate: ☐

SAMPLING DATA:

	Color (Visual)	pH (SU)	S.C. (mS/cm)	Temp. (°C)	Turbidity (NTU)	DO (Meter. mg/l)	ORP mV
Date: 09-09-01							
Time: 1603							
Method: Low Flow	LT C/ [illegible]	7.70	0.458	22.7	45	12.61	223

SAMPLE COLLECTION/ANALYSIS INFORMATION:

Nitrite (NO_2-N): Range 0-0.35 mg/L

Analysis Time: 1542

Equipment: HACH DR-850 Colorimeter

Program No.: 62

Concentration: 0.002 mg/L

Notes: Alternate forms: NO_2 0.008 $NaNO_2$ 0.011 mg/L

Nitrate (NO_3-N): Range 0- 0.50 mg/L

Analysis Time: 1751

Equipment: HACH DR-850 Colorimeter

Program No.: 55

Concentration: 0.30 mg/L

Nitrite Interference Treatment: ☑

If results are over limit use dilution method at step 3, 5ml sample 10ml DI result X3, range upto 1.5mg/L

Notes: Alternate form: NO_3 1.31 mg/L

SIGNATURE: [signature]

SURFACE WATER SAMPLE LOG FORM

Project Site Name: NSWC CRANE, IN
Project No.: CTO 126 Job N3960

[] Stream
[] Spring

Sample ID No.: 03SW1502
Sample Location: 03SW/SD15
Sampled By: KM/TR
C.O.C. No.:

SAMPLING DATA:

	Color Visual	pH Standard	S.C. mS/cm	Temp. Degrees C	Turbidity NTU	DO mg/l	ORP mV	Odor
Date: 9/9/01								
Sample Time: 1030								
Depth: 10"	Clear	7.59	0.378	17.52	1.52	6.25	293.6	NONE
Method: Direct Fill								

SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Collected
Volatiles App. IX (VOC 1 + VOC 2)	HCl/4°C	(5) 40 mL Glass Vials	✓
SVOCs App. IX	4°C	(2) 1000 mL Amber Glass	✓
App. IX Pest.	4°C	(2) 1000 mL Amber Glass	✓
App. IX Herbicides	4°C	(2) 1000 mL Amber Glass	✓
SIM	4°C	(1) 1000 mL Amber Glass	✓
Explosives	4°C	(1) 1000 mL Amber Glass	✓
Nitrocellulose	4°C	(1) 1000 mL Amber Glass	✓
TAL Total Metals plus Sn	HNO_3/4°C	(1) 1000 mL Polyethylene	✓
TAL Dissolved Metals plus Sn (field filtered)	HNO_3/4°C	(1) 1000 mL Polyethylene	✓
TSS	4°C	(1) 500 mL Polyethylene	✓
Perchlorate APCL Lab	4°C	(1) 500 mL Polyethylene	✓
Nitrite/Nitrate (field only)	4°C	(1) 500 mL Polyethylene	✓

OBSERVATIONS / NOTES:

Estimated Flow Rate (GPM): 30

STREAM @ SAMPLE LOCATION

10' Wide
10" Deep (max)

Comments:

Round: 02

QA Samples Collected:

MS/MSD

Duplicate ID No.:

Signature(s):

FIELD ANALYTICAL LOG SHEET
GEOCHEMICAL PARAMETERS

Tetra Tech NUS, Inc.

Project Site Name: NSWC Crane
Project No.: CTO 159 job # N3960
Sampled By: TK/KM

Sample ID No.: 03SW1502
Sample Location: 03SW/SD15
Duplicate: ☐

SAMPLING DATA:

	Color (Visual)	pH (SU)	S.C. (mS/cm)	Temp. (°C)	Turbidity (NTU)	DO (Meter, mg/l)	ORP mV
Date: 09-09-01							
Time: 1030							
Method: Low Flow	CLEAR	7.59	0.378	17.52	1.52	6.25	293.6

SAMPLE COLLECTION/ANALYSIS INFORMATION:

Nitrite (NO_2-N): Range 0-0.35 mg/L

Analysis Time: 1540

Equipment: HACH DR-850 Colorimeter

Program No.: 62

Concentration: 0.002 mg/L

Notes: Alternate forms: NO_2 0.007 $NaNO_2$ 0.011

Nitrate (NO_3-N): Range 0- 0.50 mg/L

Analysis Time: 1717

Equipment: HACH DR-850 Colorimeter

Program No.: 55

Concentration: 0.11 mg/L

Nitrite Interference Treatment: ☑

If results are over limit use dilution method at step 3, 5ml sample 10ml DI result X3, range upto 1.5mg/L

Notes: Alternate form: NO_3 0.50 mg/L

SIGNATURE: [signature]

SURFACE WATER SAMPLE LOG FORM

Project Site Name: NSWC CRANE, IN
Project No.: CTO 126 Job N3960

[X] Stream
[ ] Spring

Sample ID No.: 03SW1602
Sample Location: 03SW/SD16
Sampled By: TR-KM
C.O.C. No.:

SAMPLING DATA:

	Color Visual	pH Standard	S.C. mS/cm	Temp. Degrees C	Turbidity NTU	DO mg/l	ORP mV	Odor
Date: 9/9/01								
Sample Time: 1000								
Depth: 6"								
Method: Direct Fill	Clear	7.31	0.377	21.46	.75	2.39	296.6	NONE

SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Collected
Volatiles App. IX (VOC 1 + VOC 2)	HCl/4°C	(5) 40 mL Glass Vials	✓
SVOCs App. IX	4°C	(2) 1000 mL Amber Glass	✓
App. IX Pest.	4°C	(2) 1000 mL Amber Glass	✓
App. IX Herbicides	4°C	(2) 1000 mL Amber Glass	✓
SIM	4°C	(1) 1000 mL Amber Glass	✓
Explosives	4°C	(1) 1000 mL Amber Glass	✓
Nitrocellulose	4°C	(1) 1000 mL Amber Glass	✓
TAL Total Metals plus Sn	HNO_3/4°C	(1) 1000 mL Polyethylene	✓
TAL Dissolved Metals plus Sn (field filtered)	HNO_3/4°C	(1) 1000 mL Polyethylene	✓
TSS	4°C	(1) 500 mL Polyethylene	✓
Perchlorate APCL Lab	4°C	(1) 500 mL Polyethylene	✓
Nitrite/Nitrate (field only)	4°C	(1) 500 mL Polyethylene	

OBSERVATIONS / NOTES:

Estimated Flow Rate (GPM): 45

STREAM @ SAMPLE LOCATION

12' WIDE
20" DEEP (MAX)

Comments:

Round: 02

QA Samples Collected:

MS/MSD	Duplicate ID No.:

Signature(s):

NSWC Crane
Field Form
Revision: 1
May 2001

FIELD ANALYTICAL LOG SHEET
GEOCHEMICAL PARAMETERS

Tetra Tech NUS, Inc.

Project Site Name: NSWC Crane
Project No.: CTO 159 job # N3960
Sampled By: TR / KM

Sample ID No.: 035W1602
Sample Location: 035W/SD16
Duplicate: ☐

SAMPLING DATA:

	Color (Visual)	pH (SU)	S.C. (mS/cm)	Temp. (°C)	Turbidity (NTU)	DO (Meter. mg/l)	ORP mV
Date: 9-9-01							
Time: 1000							
Method: Low Flow	CLEAR	7.31	0.377	21.46	0.75	2.39	296.6

SAMPLE COLLECTION/ANALYSIS INFORMATION:

Nitrite (NO_2-N): Range 0-0.35 mg/L

Analysis Time: 0958

Equipment: HACH DR-850 Colorimeter

Program No.: 62

Concentration: 0.000 mg/L

Notes: Alternate forms: NO_2 0.000 $NaNO_2$ 0.000 mg/L

Nitrate (NO_3-N): Range 0- 0.50 mg/L

Analysis Time: 1645

Equipment: HACH DR-850 Colorimeter

Program No.: 55

Concentration: 0.13 mg/L

Nitrite Interference Treatment: ☐

If results are over limit use dilution method at step 3, 5ml sample 10ml DI result X3, range upto 1.5mg/L

Notes: Alternate form: NO_3 0.59 mg/L

SIGNATURE: [signature]

SURFACE WATER SAMPLE LOG FORM

Project Site Name: NSWC CRANE, IN
Project No.: CTO 126 job N3960

Sample ID No.: 03SW1702
Sample Location: 03SW1017
Sampled By: KM - TL
C.O.C. No.:

☒ Stream
☐ Spring

SAMPLING DATA:

	Color Visual	pH Standard	S.C. mS/cm	Temp. Degrees C	Turbidity NTU	DO mg/l	ORP mV	Odor
Date: 9/9/01								
Sample Time: 0935								
Depth: 6"								
Method: Direct Fill	CLEAR	7.37	0.427	16.73	2.8	5.68	303.9	NONE

SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Collected
Volatiles App. IX (VOC 1 + VOC 2)	HCl/4°C	(5) 40 mL Glass Vials	✓
SVOCs App. IX	4°C	(2) 1000 mL Amber Glass	✓
App. IX Pest.	4°C	(2) 1000 mL Amber Glass	✓
App. IX Herbicides	4°C	(2) 1000 mL Amber Glass	✓
SIM	4°C	(1) 1000 mL Amber Glass	✓
Explosives	4°C	(1) 1000 mL Amber Glass	✓
Nitrocellulose	4°C	(1) 1000 mL Amber Glass	✓
TAL Total Metals plus Sn	HNO_3/4°C	(1) 1000 mL Polyethylene	✓
TAL Dissolved Metals plus Sn (field filtered)	HNO_3/4°C	(1) 1000 mL Polyethylene	✓
TSS	4°C	(1) 500 mL Polyethylene	✓
Perchlorate APCL Lab	4°C	(1) 500 mL Polyethylene	✓
Nitrite/Nitrate (field only)	4°C	(1) 500 mL Polyethylene	✓

OBSERVATIONS / NOTES:

Estimated Flow Rate (GPM): 180

STREAM @ SAMPLE LOCATION
10' WIDE
10" DEEP (MAX)

Comments:

Round: 02

QA Samples Collected:

MS/MSD: ✓
Duplicate ID No.: ✓

Signature(s):

6.17

NSWC Crane
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Revision: 1
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FIELD ANALYTICAL LOG SHEET
GEOCHEMICAL PARAMETERS

Tetra Tech NUS, Inc.

Project Site Name: NSWC Crane
Project No.: CTO 159 job # N3960
Sampled By: TR / KM

Sample ID No.: 035W1702
Sample Location: 035W/SD17
Duplicate: ☐

SAMPLING DATA:

	Color (Visual)	pH (SU)	S.C. (mS/cm)	Temp. (°C)	Turbidity (NTU)	DO (Meter. mg/l)	ORP mV
Date: 09-09-01							
Time: 0935							
Method: Low Flow	CLEAR	7.37	0.427	16.73	2.8	5.68	303.9

SAMPLE COLLECTION/ANALYSIS INFORMATION:

Nitrite (NO_2-N): Range 0-0.35 mg/L

Analysis Time: 0954

Equipment: HACH DR-850 Colorimeter

Program No.: 62

Concentration: 0.000 mg/L

Notes: Alternate forms: NO_2 0.000 $NaNO_2$ 0.000 mg/L

Nitrate (NO_3-N): Range 0- 0.50 mg/L

Analysis Time: 1613

Equipment: HACH DR-850 Colorimeter

Program No.: 55

Concentration: 0.48 mg/L

Nitrite Interference Treatment: ☐

If results are over limit use dilution method at step 3, 5ml sample 10ml DI result X3, range upto 1.5mg/L

Notes: Alternate form: NO_3 2.11 mg/L

SIGNATURE: [signature]

SURFACE WATER SAMPLE LOG FORM

03SW1802

Project Site Name: NSWC CRANE, IN
Project No.: CTO 126 Job N3960

Sample ID No.: 03SW1802
Sample Location: 03SW1SD18
Sampled By: TR-KM
C.O.C. No.:

[X] Stream
[ ] Spring

SAMPLING DATA:

	Color Visual	pH Standard	S.C. mS/cm	Temp. Degrees C	Turbidity NTU	DO mg/l	ORP mV	Odor
Date: 9/9/01								
Sample Time: 0910								
Depth: 10"-13"								
Method: Direct Fill	Clear	7.28	0.391	20.81	5.1	3.95	303.6	None

SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Collected
Volatiles App. IX (VOC 1 + VOC 2)	HCl/4°C	(5) 40 mL Glass Vials	✓
SVOCs App. IX	4°C	(2) 1000 mL Amber Glass	✓
App. IX Pest.	4°C	(2) 1000 mL Amber Glass	✓
App. IX Herbicides	4°C	(2) 1000 mL Amber Glass	✓
SIM	4°C	(1) 1000 mL Amber Glass	✓
Explosives	4°C	(1) 1000 mL Amber Glass	✓
Nitrocellulose	4°C	(1) 1000 mL Amber Glass	✓
TAL Total Metals plus Sn	HNO_3/4°C	(1) 1000 mL Polyethylene	✓
TAL Dissolved Metals plus Sn (field filtered)	HNO_3/4°C	(1) 1000 mL Polyethylene	✓
TSS	4°C	(1) 500 mL Polyethylene	✓
Perchlorate APCL Lab	4°C	(1) 500 mL Polyethylene	✓
Nitrite/Nitrate (field only)	4°C	(1) 500 mL Polyethylene	✓

OBSERVATIONS / NOTES:

Estimated Flow Rate (GPM): 200

STREAM @ SAMPLE LOCATION

9½' WIDE

20" DEEP (MAX)

Comments:

Round: 02

QA Samples Collected:

MS/MSD: ✓

Duplicate ID No.: ✓

Signature(s):

NSWC Crane
Field Form
Revision: 1
May 2001

FIELD ANALYTICAL LOG SHEET
GEOCHEMICAL PARAMETERS

Tetra Tech NUS, Inc.

Project Site Name: NSWC Crane
Project No.: CTO 159 job # N3960
Sampled By: TR / KM

Sample ID No.: 035W1802
Sample Location: 035W/5018
Duplicate: ☐

SAMPLING DATA:

	Color (Visual)	pH (SU)	S.C. (mS/cm)	Temp. (°C)	Turbidity (NTU)	DO (Meter, mg/l)	ORP mV
Date: 9-9-01							
Time: 0910							
Method: Low Flow	CLEAR	7.28	0.391	20.81	5.1	3.95	303.6

SAMPLE COLLECTION/ANALYSIS INFORMATION:

Nitrite (NO_2-N): Range 0-0.35 mg/L

Analysis Time: 0953

Equipment: HACH DR-850 Colorimeter

Program No.: 62

Concentration: 0.000 mg/L

Notes: Alternate forms: NO_2 0.000 $NaNO_2$ 0.000 mg/L

Nitrate (NO_3-N): Range 0- 0.50 mg/L

Analysis Time: 1136

Equipment: HACH DR-850 Colorimeter

Program No.: 55

Concentration: 0.18 mg/L

Nitrite Interference Treatment: ☐

If results are over limit use dilution method at step 3, 5ml sample 10ml DI result X3, range upto 1.5mg/L

Notes: Alternate form: NO_3 0.80 mg/L

SIGNATURE: [signature]

SURFACE WATER SAMPLE LOG FORM

Project Site Name: NSWC CRANE, IN
Project No.: CTO 126 Job N3960

Sample ID No.: 035W1902
Sample Location: 035W/SD-19
Sampled By: TR-KM
C.O.C. No.:

☒ Stream
☐ Spring

SAMPLING DATA:

	Color Visual	pH Standard	S.C. mS/cm	Temp. Degrees C	Turbidity NTU	DO mg/l	ORP mV	Odor
Date: 9-9-01								
Sample Time: 0830								
Depth: 3"-14"								
Method: Direct Fill	Clear	7.20	0.369	21.35	7.7	3.24	320.7	NONE

SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Collected
Volatiles App. IX (VOC 1 + VOC 2)	HCl/4°C	(5) 40 mL Glass Vials	✓
SVOCs App. IX	4°C	(2) 1000 mL Amber Glass	✓
App. IX Pest.	4°C	(2) 1000 mL Amber Glass	✓
App. IX Herbicides	4°C	(2) 1000 mL Amber Glass	✓
SIM	4°C	(1) 1000 mL Amber Glass	✓
Explosives	4°C	(1) 1000 mL Amber Glass	✓
Nitrocellulose	4°C	(1) 1000 mL Amber Glass	✓
TAL Total Metals plus Sn	HNO_3/4°C	(1) 1000 mL Polyethylene	✓
TAL Dissolved Metals plus Sn (field filtered)	HNO_3/4°C	(1) 1000 mL Polyethylene	✓
TSS	4°C	(1) 500 mL Polyethylene	✓
Perchlorate APCL Lab	4°C	(1) 500 mL Polyethylene	✓
Nitrite/Nitrate (field only)	4°C	(1) 500 mL Polyethylene	✓

OBSERVATIONS / NOTES:

Estimated Flow Rate (GPM): 250+

STREAM @ SAMPLE LOCATION
8' WIDE
20" DEEP (MAX)

Comments:

Round: 02

QA Samples Collected:

MS/MSD	Duplicate ID No.:
YES ✓	FD090901 01 ✓

Signature(s):

FIELD ANALYTICAL LOG SHEET
GEOCHEMICAL PARAMETERS

Tetra Tech NUS, Inc.

Project Site Name: NSWC Crane
Project No.: CTO 159 job # N3960
Sampled By: TR / KM

Sample ID No.: 035W1902
Sample Location: 035W/SD19
Duplicate: ☑

SAMPLING DATA:

	Color (Visual)	pH (SU)	S.C. (mS/cm)	Temp. (°C)	Turbidity (NTU)	DO (Meter, mg/l)	ORP mV
Date: 9-9-01							
Time: 0830							320.7
Method: Low Flow	CLEAR	7.20	0.369	21.35	7.7	3.24	

SAMPLE COLLECTION/ANALYSIS INFORMATION:

Nitrite (NO_2-N): Range 0-0.35 mg/L

Analysis Time: 0809

Equipment: HACH DR-850 Colorimeter

Program No.: 62

Concentration: 0.000 mg/L DUP = 0.000 mg/L

Notes: Alternate forms: NO_2 0.000 $NaNO_2$ 0.000 mg/L
DUP 0.000 0.000 mg/L

Nitrate (NO_3-N): Range 0- 0.50 mg/L

Analysis Time: 0940

Equipment: HACH DR-850 Colorimeter

Program No.: 55

Concentration: 0.02 mg/L DUP
0.01

Nitrite Interference Treatment: ☐

If results are over limit use dilution method at step 3, 5ml sample 10ml DI result X3, range upto 1.5mg/L

Notes: Alternate form: NO_3 0.08 mg/L
DUP 0.06 mg/L

SIGNATURE: [signature]

APPENDIX B-6

Sediment Sample Log Sheets

SEDIMENT SAMPLE LOG SHEET

Project Site Name: NSWC Crane, IN
Project No.: CTO 126 job # N3960

[] Surface Soil
[] Subsurface Soil
[X] Sediment
[] Other:
[] QA Sample Type:

Sample ID No.: 03SD01 0006
Sample Location: 03SD/SD01
Sampled By: KM + KS
C.O.C. No.: 02359 LAUCKS
02358 APCL

Type of Sample:
[X] Low Concentration
[] High Concentration

GRAB SAMPLE DATA: KS

	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: ~~[illegible]~~ 6.11.01	0-6"	TAN	CLAY WITH TRACE SILT + ROCK FRAG, AND ORGANIC, MOIST
Time: 1925			
Method: DS TROWEL			
Monitor Reading (ppm):			

COMPOSITE SAMPLE DATA:

	Time	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date:				
Method:				
Monitor Readings (Range in ppm):				

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
Volatiles App. IX (VOC 1 + VOC 2)	(5) encore	✓	
App. IX SVOC, SIM, EXP, NC	8 oz w/m glass	✓	
Appx.IX Herb, Pest, PCBs, TOC	8 oz w/m glass	✓	—
TAL Metals plus Sn, Nitrite/Nitrate, pH	8 oz w/m glass	✓	
Perchlorate	4 oz w/m glass	✓	APLC Lab

OBSERVATIONS / NOTES:

MAP:

Circle if Applicable:

MS/MSD	Duplicate ID No.:
—	—

Signature(s): [illegible]

SEDIMENT SAMPLE LOG SHEET

Project Site Name: NSWC Crane, IN
Project No.: CTO 126 job # N3960

[] Surface Soil
[] Subsurface Soil
[X] Sediment
[] Other:
[] QA Sample Type:

Sample ID No.: 03SD010612
Sample Location: 03SD-SD01
Sampled By: KS + KM
C.O.C. No.: 02360 LAUCKS
02358 APEL

Type of Sample:
[X] Low Concentration
[] High Concentration

GRAB SAMPLE DATA:

	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 6-11-01 Time: 1935 Method: DS TROWEL Monitor Reading (ppm):	6-12"	GRAY	CLAY WITH TRACE SILT, ROOT FRAG, AND MOIST

COMPOSITE SAMPLE DATA:

Date	Time	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Method:				
Monitor Readings (Range in ppm):				

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
Volatiles App. IX (VOC 1 + VOC 2)	(5) encore	✓	
App. IX SVOC, SIM, EXP, NC	8 oz w/m glass	✓	
Appx.IX Herb, Pest, PCBs, TOC	8 oz w/m glass	✓	
TAL Metals plus Sn, Nitrite/Nitrate, pH	8 oz w/m glass	✓	
Perchlorate	4 oz w/m glass	✓	APLC Lab

OBSERVATIONS / NOTES:

MAP:

Circle if Applicable:

MS/MSD	Duplicate ID No.:

Signature(s): [illegible]

SEDIMENT SAMPLE LOG SHEET

Project Site Name: NSWC Crane, IN
Project No.: CTO 126 job # N3960

[] Surface Soil
[] Subsurface Soil
[X] Sediment
[] Other:
[] QA Sample Type:

Sample ID No.: 03SD020006
Sample Location: 03SD02
Sampled By: TR, KM + KS
C.O.C. No.: 02360 LAUCKS
02358 APCL

Type of Sample:
[X] Low Concentration
[] High Concentration

GRAB SAMPLE DATA:

	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 6/12/01 Time: 0820 Method: D/S Dredge Monitor Reading (ppm): N/A	0-6"	BRN	FINE GRAIN SAND with silt, TRACE ROOTS + FINE GRAVEL MOIST

0820

COMPOSITE SAMPLE DATA:

	Time	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date:				
Method:				
Monitor Readings (Range in ppm):				

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
Volatiles App. IX (VOC 1 + VOC 2)	(5) encore	✓	
App. IX SVOC, SIM, EXP, NC	8 oz w/m glass	✓	
Appx.IX Herb, Pest, PCBs, TOC	8 oz w/m glass	✓	
TAL Metals plus Sn, Nitrite/Nitrate, pH	8 oz w/m glass	✓	
Perchlorate	4 oz w/m glass	✓	APLC Lab

OBSERVATIONS / NOTES:

MAP:

Circle if Applicable:

MS/MSD

Duplicate ID No.:

Signature(s):

SEDIMENT SAMPLE LOG SHEET

Project Site Name: NSWC Crane, IN
Project No.: CTO 126 job # N3960

[] Surface Soil
[] Subsurface Soil
[X] Sediment
[] Other:
[] QA Sample Type:

Sample ID No.: 03SD020612
Sample Location: 03SD/SD02
Sampled By: TRKA + RS
C.O.C. No.: 02360 LAUCKS
02358 APCL

Type of Sample:
[X] Low Concentration
[] High Concentration

GRAB SAMPLE DATA:

	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 6/12/01 Time: 0825 Method: DIS TROWEL Monitor Reading (ppm): N/A	6-12"	BRN	FINE SAND + SILT WITH FINE GRAVEL, TRACE ROOTS, MOIST

COMPOSITE SAMPLE DATA:

Date:	Time	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Method:				
Monitor Readings (Range in ppm):				

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
Volatiles App. IX (VOC 1 + VOC 2)	(5) encore	✓	
App. IX SVOC, SIM, EXP, NC	8 oz w/m glass	✓	
Appx.IX Herb, Pest, PCBs, TOC	8 oz w/m glass	✓	
TAL Metals plus Sn, Nitrite/Nitrate, pH	8 oz w/m glass	✓	
Perchlorate	4 oz w/m glass	✓	APLC Lab

OBSERVATIONS / NOTES:

MAP:

Circle if Applicable:

MS/MSD —

Duplicate ID No.: —

Signature(s):

SEDIMENT SAMPLE LOG SHEET

Project Site Name: NSWC Crane, IN
Project No.: CTO 126 job # N3960

[] Surface Soil
[] Subsurface Soil
[X] Sediment
[] Other:
[] QA Sample Type:

Sample ID No.: 03SD03 0006
Sample Location: 03SD03
Sampled By: TR, KM, + KS
C.O.C. No.: 02360 LAUCKS
02358 APCL

Type of Sample:
[X] Low Concentration
[] High Concentration

GRAB SAMPLE DATA:

	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 6/12/01 Time: 0925 Method: DIS TROWEL Monitor Reading (ppm): N/A	0-6"	BRN	SILT, TRACE FINE SAND, ROCK FRAG, TRACE ROOTS, MOIST

COMPOSITE SAMPLE DATA:

	Time	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date:				
Method:				
Monitor Readings (Range in ppm):				

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
Volatiles App. IX (VOC 1 + VOC 2)	(5) encore	✓	
App. IX SVOC, SIM, EXP, NC	8 oz w/m glass	✓	
Appx.IX Herb, Pest, PCBs, TOC	8 oz w/m glass	✓	
TAL Metals plus Sn, Nitrite/Nitrate, pH	8 oz w/m glass	✓	
Perchlorate	4 oz w/m glass	✓	APLC Lab

OBSERVATIONS / NOTES:

MAP:

Circle if Applicable:

MS/MSD

Duplicate ID No.:

Signature(s):

SEDIMENT SAMPLE LOG SHEET

Project Site Name: NSWC Crane, IN
Project No.: CTO 126 job # N3960

[] Surface Soil
[] Subsurface Soil
[X] Sediment
[] Other:
[] QA Sample Type:

Sample ID No.: 03SD030612
Sample Location: 03SDW SD 03
Sampled By: TR, HM, + KS
C.O.C. No.: 02360 LAUCKS
02358 APCL

Type of Sample:
[X] Low Concentration
[] High Concentration

GRAB SAMPLE DATA:

	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 6/12/01 Time: 0935 Method: DIS TROWEL Monitor Reading (ppm): N/A	6-12"	BRN	Silt, TRACE FINE SAND, ROCK FRAG, TRACE ROOTS, MOIST

COMPOSITE SAMPLE DATA:

Date:	Time	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Method:				
Monitor Readings (Range in ppm):				

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
Volatiles App. IX (VOC 1 + VOC 2)	(5) encore	✓	
App. IX SVOC, SIM, EXP, NC	8 oz w/m glass	✓	
Appx.IX Herb, Pest, PCBs, TOC	8 oz w/m glass	✓	
TAL Metals plus Sn, Nitrite/Nitrate, pH	8 oz w/m glass	✓	
Perchlorate	4 oz w/m glass	✓	APLC Lab

OBSERVATIONS / NOTES:

MAP:

Circle if Applicable:

MS/MSD	Duplicate ID No.:
—	—

Signature(s):

SEDIMENT SAMPLE LOG SHEET

Project Site Name: NSWC Crane, IN
Project No.: CTO 126 job # N3960

[] Surface Soil
[] Subsurface Soil
[X] Sediment
[] Other:
[] QA Sample Type:

Sample ID No.: 03SD 040006
Sample Location: 03SD04
Sampled By: TR, KA, + KS
C.O.C. No.: 02360 LAUCKS
02358 APCL

Type of Sample:
[X] Low Concentration
[] High Concentration

GRAB SAMPLE DATA:

	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 6/12/01 Time: 1022 Method: DIS TROWEL Monitor Reading (ppm): N/A	0-6"	Yellow, Brown Gray Clay	TRACE ROOTS, MOIST, DRY STREAM BED, TRACE FRAG.

COMPOSITE SAMPLE DATA:

	Time	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date:				
Method:				
Monitor Readings (Range in ppm):				

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
Volatiles App. IX (VOC 1 + VOC 2)	(5) encore	✓	
App. IX SVOC, SIM, EXP, NC	8 oz w/m glass	✓	
Appx.IX Herb, Pest, PCBs, TOC	8 oz w/m glass	✓	
TAL Metals plus Sn, Nitrite/Nitrate, pH	8 oz w/m glass	✓	
Perchlorate	4 oz w/m glass	✓	APLC Lab

OBSERVATIONS / NOTES:

MAP:

Circle if Applicable:

MS/MSD	Duplicate ID No.:
—	—

Signature(s): [illegible]

SEDIMENT SAMPLE LOG SHEET

Project Site Name: NSWC Crane, IN
Project No.: CTO 126 job # N3960

[] Surface Soil
[] Subsurface Soil
[X] Sediment
[] Other:
[] QA Sample Type:

Sample ID No.: 03SD04062
Sample Location: 03SD04
Sampled By: TR, KM, + KS
C.O.C. No.: 02360 LAUCKS
02358 APCL

Type of Sample:
[X] Low Concentration
[] High Concentration

GRAB SAMPLE DATA:

	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 6/12/01 Time: 1030 Method: DS TROWEL Monitor Reading (ppm): N/A	6-12"	yellow, BRN, GRAY CLAY	CLAY, TRACE ROOTS, ROCK FRAGS DRY STREAM BED, MOIST,

COMPOSITE SAMPLE DATA:

Date:	Time	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Method:				
Monitor Readings (Range in ppm):				

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
Volatiles App. IX (VOC 1 + VOC 2)	(5) encore	✓	
App. IX SVOC, SIM, EXP, NC	8 oz w/m glass	✓	
Appx.IX Herb, Pest, PCBs, TOC	8 oz w/m glass	✓	
TAL Metals plus Sn, Nitrite/Nitrate, pH	8 oz w/m glass	✓	
Perchlorate	4 oz w/m glass	✓	APLC Lab

OBSERVATIONS / NOTES:

MAP:

Circle if Applicable:

MS/MSD	Duplicate ID No.:
—	—

Signature(s):

SEDIMENT SAMPLE LOG SHEET

Project Site Name: NSWC Crane, IN
Project No.: CTO 126 job # N3960

[] Surface Soil
[] Subsurface Soil
[X] Sediment
[] Other:
[] QA Sample Type:

Sample ID No.: 03SD050006
Sample Location: 03SD06
Sampled By: K.M + TR
C.O.C. No.: 02358 APCL
02359 LAUCKS

Type of Sample:
[X] Low Concentration
[] High Concentration

GRAB SAMPLE DATA:

	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 6/11/01 Time: 1805 Method: D:S Trowel Monitor Reading (ppm): NA	0-6"	Olive BRN-Black (ASH)	CLAYEY Silt w/some sand T. Organics & Rock Frags WET CHARGD Wood

COMPOSITE SAMPLE DATA:

	Time	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date:				
Method:				
Monitor Readings (Range in ppm):				

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
Volatiles App. IX (VOC 1 + VOC 2)	(5) encore	✓	
App. IX SVOC, SIM, EXP, NC	8 oz w/m glass	✓	
Appx.IX Herb, Pest, PCBs, TOC	8 oz w/m glass	✓	
TAL Metals plus Sn, Nitrite/Nitrate, pH	8 oz w/m glass	✓	
Perchlorate	8 oz w/m glass	✓	APLC Lab

OBSERVATIONS / NOTES:

MAP:

Circle if Applicable:

MS/MSD YES

Duplicate ID No.: FD06110103

Signature(s): Terry Lauck

SEDIMENT SAMPLE LOG SHEET

Project Site Name: NSWC Crane, IN
Project No.: CTO 126 job # N3960

[] Surface Soil
[] Subsurface Soil
[X] Sediment
[] Other:
[] QA Sample Type:

Sample ID No.: 03SD050612
Sample Location: 03SD 05
Sampled By: KM + TR
C.O.C. No.: 02359 LAUCKS
02358 APCL

Type of Sample:
[X] Low Concentration
[] High Concentration

GRAB SAMPLE DATA:

	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 6/11/01 Time: 1830 Method: Shovel & Dig Trowel Monitor Reading (ppm): NA	6-12"	Orangish Red - Black (ash)	Fine sand w/ trace silt wet; t. Rock Frags trace organics charcoal

COMPOSITE SAMPLE DATA:

Date	Time	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Method:				
Monitor Readings (Range in ppm):				

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
Volatiles App. IX (VOC 1 + VOC 2)	(5) encore	✓	
App. IX SVOC, SIM, EXP, NC	8 oz w/m glass	✓	
Appx.IX Herb, Pest, PCBs, TOC	8 oz w/m glass	✓	
TAL Metals plus Sn, Nitrite/Nitrate, pH	8 oz w/m glass	✓	
Perchlorate	4 oz w/m glass	✓	APLC Lab

OBSERVATIONS / NOTES:

MAP:

Circle if Applicable:

MS/MSD	Duplicate ID No.:
—	—

Signature(s): Ty Kogel

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SEDIMENT SAMPLE LOG SHEET

Project Site Name: NSWC Crane, IN
Project No.: CTO 126 job # N3960

[] Surface Soil
[] Subsurface Soil
[X] Sediment
[] Other:
[] QA Sample Type:

Sample ID No.: 03SD06006
Sample Location: 03SDWSD06
Sampled By: KM+TR
C.O.C. No.: 02359 LAKKS
02358 APCL

Type of Sample:
[X] Low Concentration
[] High Concentration

GRAB SAMPLE DATA:

	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 6/11/01 Time: 1720 Method: DS Trowel Monitor Reading (ppm): NA	0-6"	BRN	FINE - MED SANDS some silt trace GRAVEL & organics WET

COMPOSITE SAMPLE DATA:

	Time	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date:				
Method:				
Monitor Readings (Range in ppm):				

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
Volatiles App. IX (VOC 1 + VOC 2)	(5) encore	✓	
App. IX SVOC, SIM, EXP, NC	8 oz w/m glass	✓	
Appx.IX Herb, Pest, PCBs, TOC	8 oz w/m glass	✓	
TAL Metals plus Sn, Nitrite/Nitrate, pH	8 oz w/m glass	✓	
Perchlorate	4 oz w/m glass	✓	APLC Lab

OBSERVATIONS / NOTES:

MAP:

Circle if Applicable:

MS/MSD	Duplicate ID No.:
—	—

Signature(s):

SEDIMENT SAMPLE LOG SHEET

Project Site Name: NSWC Crane, IN
Project No.: CTO 126 job # N3960

[] Surface Soil
[] Subsurface Soil
[X] Sediment
[] Other:
[] QA Sample Type:

Sample ID No.: 03SD010612
Sample Location: 03SDWSD06
Sampled By: KM+TR
C.O.C. No.: 02359 LAUKES
02358 APCL

Type of Sample:
[X] Low Concentration
[] High Concentration

GRAB SAMPLE DATA:

	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 6/11/01 Time: 1730 Method: Shovel & Dig Trowel Monitor Reading (ppm): NA	6-12"	BRN	FINE - COARSE SANDS w/ GRAVEL SATURATED

COMPOSITE SAMPLE DATA:

Date	Time	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Method:				
Monitor Readings (Range in ppm):				

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
Volatiles App. IX (VOC 1 + VOC 2)	(5) encore	✓	
App. IX SVOC, SIM, EXP, NC	8 oz w/m glass	✓	
Appx.IX Herb, Pest, PCBs, TOC	8 oz w/m glass	✓	
TAL Metals plus Sn, Nitrite/Nitrate, pH	8 oz w/m glass	✓	
Perchlorate	4 oz w/m glass	✓	APLC Lab

OBSERVATIONS / NOTES:

MAP:

Circle if Applicable:

MS/MSD	Duplicate ID No.:
—	—

Signature(s): [signature]

SEDIMENT SAMPLE LOG SHEET

Project Site Name: NSWC Crane, IN
Project No.: CTO 126 job # N3960

[] Surface Soil
[] Subsurface Soil
[X] Sediment
[] Other:
[] QA Sample Type:

Sample ID No.: 03SD070006
Sample Location: ~~TC-03SW5000~~ 03SD0
Sampled By: TR + KM
C.O.C. No.: 02357 LAUCES
02355 APCL

Type of Sample:
[X] Low Concentration
[] High Concentration

GRAB SAMPLE DATA:

	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 6/11/01 Time: 1520 Method: DIS TROWEL Monitor Reading (ppm): NA	0-6"	BRN	FINE - COARSE SAND W/GRAVEL & SILT T. Organics Moist

COMPOSITE SAMPLE DATA:

	Time	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date:				
Method:				
Monitor Readings (Range in ppm):				

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
Volatiles App. IX (VOC 1 + VOC 2)	(5) encore	✓	
App. IX SVOC, SIM, EXP, NC	8 oz w/m glass	✓	
Appx.IX Herb, Pest, PCBs, TOC	8 oz w/m glass	✓	
TAL Metals plus Sn, Nitrite/Nitrate, pH	8 oz w/m glass	✓	
Perchlorate	4 oz w/m glass	✓	APLC Lab

OBSERVATIONS / NOTES:

DRY STREAM BED

MAP:

Circle if Applicable:

MS/MSD	Duplicate ID No.:
—	—

Signature(s): [signature]

SEDIMENT SAMPLE LOG SHEET

Project Site Name: NSWC Crane, IN
Project No.: CTO 126 job # N3960

[] Surface Soil
[] Subsurface Soil
[X] Sediment
[] Other:
[] QA Sample Type:

Sample ID No.: 03SD070612
Sample Location: ~~0338W3SD09(TC)~~ 03SD07
Sampled By: TR & KM
C.O.C. No.: 02357 LANCKS
02355 APCL

Type of Sample:
[X] Low Concentration
[] High Concentration

GRAB SAMPLE DATA:

	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 6/11/01 Time: 1540 Method: Dis. Trowel & Shovel Monitor Reading (ppm): NA	6-12"	BRN	FINE - COARSE SANDS W/GRAVEL MOIST

COMPOSITE SAMPLE DATA:

Date:	Time	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Method:				
Monitor Readings (Range in ppm):				

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
Volatiles App. IX (VOC 1 + VOC 2)	(5) encore	✓	
App. IX SVOC, SIM, EXP, NC	8 oz w/m glass	✓	
Appx.IX Herb, Pest, PCBs, TOC	8 oz w/m glass	✓	
TAL Metals plus Sn, Nitrite/Nitrate, pH	8 oz w/m glass	✓	
Perchlorate	4 oz w/m glass	✓	APLC Lab

OBSERVATIONS / NOTES:

DRY STREAM BED

MAP:

Circle if Applicable:

MS/MSD	Duplicate ID No.:
—	—

Signature(s):

SEDIMENT SAMPLE LOG SHEET

Project Site Name: NSWC Crane, IN
Project No.: CTO 126 job # N3960

[] Surface Soil
[] Subsurface Soil
[X] Sediment
[] Other:
[] QA Sample Type:

Sample ID No.: 03SD08000L
Sample Location: 03SD08
Sampled By: TR+KM
C.O.C. No.: 02357 LAUCKS
02355 APCL

Type of Sample:
[X] Low Concentration
[] High Concentration

GRAB SAMPLE DATA:

	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 6/11/01 Time: 1445 Method: DIS Tool Monitor Reading (ppm): N/A	0-6"	BROWN	Sandy Silt Trace organic (wood chips) Moist

COMPOSITE SAMPLE DATA:

	Time	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date:				
Method:				
Monitor Readings (Range in ppm):				

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
Volatiles App. IX (VOC 1 + VOC 2)	(5) encore	✓	
App. IX SVOC, SIM, EXP, NC	8 oz w/m glass	✓	
Appx.IX Herb, Pest, PCBs, TOC	8 oz w/m glass	✓	
TAL Metals plus Sn, Nitrite/Nitrate, pH	8 oz w/m glass	✓	
Perchlorate	4 oz w/m glass	✓	APLC Lab

OBSERVATIONS / NOTES:

Dry Drainage Ditch @ intake of culvert

MAP:

Circle if Applicable:

MS/MSD	Duplicate ID No.:
—	—

Signature(s): [signature]

SEDIMENT SAMPLE LOG SHEET

Project Site Name: NSWC Crane, IN
Project No.: CTO 126 job # N3960

[] Surface Soil
[] Subsurface Soil
[X] Sediment
[] Other:
[] QA Sample Type:

Sample ID No.: 03SD 080612
Sample Location: 03SD WSD08
Sampled By: TR+KM
C.O.C. No.: 02357 LAUCKS
02355 APCL

Type of Sample:
[X] Low Concentration
[] High Concentration

GRAB SAMPLE DATA:

	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 6/11/01 Time: 1500 Method: Shovel & D.S. Trowel Monitor Reading (ppm): NA	6" - 12"	BRN	Clayey Silt Moist Trace Organics

COMPOSITE SAMPLE DATA:

	Time	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date:				
Method:				
Monitor Readings (Range in ppm):				

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
Volatiles App. IX (VOC 1 + VOC 2)	(5) encore	✓	
App. IX SVOC, SIM, EXP, NC	8 oz w/m glass	✓	
Appx.IX Herb, Pest, PCBs, TOC	8 oz w/m glass	✓	
TAL Metals plus Sn, Nitrite/Nitrate, pH	8 oz w/m glass	✓	
Perchlorate	4 oz w/m glass	✓	APLC Lab

OBSERVATIONS / NOTES:

Dry Drainage Ditch @ Culvert intake

MAP:

Circle if Applicable:

MS/MSD	Duplicate ID No.:
—	—

Signature(s): [illegible]

SEDIMENT SAMPLE LOG SHEET

Project Site Name: NSWC Crane, IN
Project No.: CTO 126 job # N3960

[] Surface Soil
[] Subsurface Soil
[X] Sediment
[] Other:
[] QA Sample Type:

Sample ID No.: 03SD090006
Sample Location: 03SDWSD09
Sampled By: TR+KA
C.O.C. No.: 02357 LAUCKS
02355 APCL

Type of Sample:
[X] Low Concentration
[] High Concentration

GRAB SAMPLE DATA:

	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 6/11/01 Time: 1403 Method: DisTrowel Monitor Reading (ppm): N/A	0-6"	BRN	Sandy Silt Moist

COMPOSITE SAMPLE DATA:

	Time	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date:				
Method:				
Monitor Readings (Range in ppm):				

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
Volatiles App. IX (VOC 1 + VOC 2)	(5) encore	✓	
App. IX SVOC, SIM, EXP, NC	8 oz w/m glass	✓	
Appx.IX Herb, Pest, PCBs, TOC	8 oz w/m glass	✓	
TAL Metals plus Sn, Nitrite/Nitrate, pH	8 oz w/m glass	✓	
Perchlorate	4 oz w/m glass	✓	APLC Lab

OBSERVATIONS / NOTES:

~~Dry Stream Bed~~ (TR)
Dry Drainage Ditch

MAP:

Circle if Applicable:

MS/MSD	Duplicate ID No.:
—	FD06110102

Signature(s):

SEDIMENT SAMPLE LOG SHEET

Project Site Name: NSWC Crane, IN
Project No.: CTO 126 job # N3960

[] Surface Soil
[] Subsurface Soil
[X] Sediment
[] Other:
[] QA Sample Type:

Sample ID No.: 03SD 090612
Sample Location: 03SD WSD09
Sampled By: TR+KM
C.O.C. No.: 02357 LAUCKS
02355 APCL

Type of Sample:
[X] Low Concentration
[] High Concentration

GRAB SAMPLE DATA:

	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 6/11/01			
Time: 1420			
Method: Shovel & Dis. Trowel	6-12"	Orangish BRN	Clayey Silt Damp
Monitor Reading (ppm): NA			

COMPOSITE SAMPLE DATA:

Date	Time	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Method:				
Monitor Readings (Range in ppm):				

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
Volatiles App. IX (VOC 1 + VOC 2)	(5) encore	✓	
App. IX SVOC, SIM, EXP, NC	8 oz w/m glass	✓	
Appx.IX Herb, Pest, PCBs, TOC	8 oz w/m glass	✓	
TAL Metals plus Sn, Nitrite/Nitrate, pH	8 oz w/m glass	✓	
Perchlorate	4 oz w/m glass	✓	APLC Lab

OBSERVATIONS / NOTES:

Dry Ditch

MAP:

Circle if Applicable:

MS/MSD	Duplicate ID No.:
—	—

Signature(s):

SEDIMENT SAMPLE LOG SHEET

Project Site Name: NSWC Crane, IN
Project No.: CTO 126 job # N3960

[] Surface Soil
[] Subsurface Soil
[X] Sediment
[] Other:
[] QA Sample Type:

Sample ID No.: 03SD 100006
Sample Location: ~~03SD/SD10~~ (TR) 03SD10
Sampled By: TR + KM
C.O.C. No.: 02357 LAUCKS
02355 APCL

Type of Sample:
[X] Low Concentration
[] High Concentration

GRAB SAMPLE DATA:

	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 6/11/01 Time: 1335 Method: Dis. Trowel Monitor Reading (ppm): NA	0-6"	BRN	Fine-Coarse Sands Some Gravel Moist Trace Organics

COMPOSITE SAMPLE DATA:

Date	Time	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Method:				
Monitor Readings (Range in ppm):				

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
Volatiles App. IX (VOC 1 + VOC 2)	(5) encore	✓	
App. IX SVOC, SIM, EXP, NC	8 oz w/m glass	✓	
Appx.IX Herb, Pest, PCBs, TOC	8 oz w/m glass	✓	
TAL Metals plus Sn, Nitrite/Nitrate, pH	8 oz w/m glass	✓	
Perchlorate	4 oz w/m glass	✓	APLC Lab

OBSERVATIONS / NOTES:

Dry stream BED

MAP:

Circle if Applicable:

MS/MSD	Duplicate ID No.:
—	—

Signature(s):

SEDIMENT SAMPLE LOG SHEET

Project Site Name: NSWC Crane, IN
Project No.: CTO 126 job # N3960

[] Surface Soil
[] Subsurface Soil
[X] Sediment
[] Other:
[] QA Sample Type:

Sample ID No.: 03SD 100612
Sample Location: ~~0308~~ SD10 03SD10
Sampled By: TR + KM
C.O.C. No.: 02357 LAUCKS
02355 APCL

Type of Sample:
[X] Low Concentration
[] High Concentration

GRAB SAMPLE DATA:

	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 6/11/01 Time: 1355 Method: Dig Trowel & Shovel Monitor Reading (ppm): NA	6-12"	BRN	Silty Sand moist Trace Gravel & organics

COMPOSITE SAMPLE DATA:

	Time	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date:				
Method:				
Monitor Readings (Range in ppm):				

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
Volatiles App. IX (VOC 1 + VOC 2)	(5) encore	✓	
App. IX SVOC, SIM, EXP, NC	8 oz w/m glass	✓	
Appx.IX Herb, Pest, PCBs, TOC	8 oz w/m glass	✓	
TAL Metals plus Sn, Nitrite/Nitrate, pH	8 oz w/m glass	✓	
Perchlorate	4 oz w/m glass	✓	APLC Lab

OBSERVATIONS / NOTES:

Dry Stream Bed

MAP:

Circle if Applicable:

MS/MSD	Duplicate ID No.:
—	—

Signature(s):

SEDIMENT SAMPLE LOG SHEET

03SD110006
03SWSD11

Page 1 of 1

Project Site Name: NSWC Crane, IN
Project No.: CTO 126 job # N3960

[] Surface Soil
[] Subsurface Soil
[X] Sediment
[] Other:
[] QA Sample Type:

Sample ID No.: 03SD 110006
Sample Location: ~~OK 03SWSD11~~ (FC) 03SD (I)
Sampled By: TR + KM
C.O.C. No.: 02357 LAUCKS
02355 APCL

Type of Sample:
[X] Low Concentration
[] High Concentration

GRAB SAMPLE DATA:

	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 6/11/01 Time: 1305 Method: Dis Trowel Monitor Reading (ppm): NA	0-6"	BRN	Clayey Silt T. Organics & Gravel

COMPOSITE SAMPLE DATA:

	Time	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date:				
Method:				
Monitor Readings (Range in ppm):				

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
Volatiles App. IX (VOC 1 + VOC 2)	(5) encore	✓	
App. IX SVOC, SIM, EXP, NC	8 oz w/m glass	✓	
Appx.IX Herb, Pest, PCBs, TOC	8 oz w/m glass	✓	
TAL Metals plus Sn, Nitrite/Nitrate, pH	8 oz w/m glass	✓	
Perchlorate	4 oz w/m glass	✓	APLC Lab

OBSERVATIONS / NOTES:

Dry Stream Bed

MAP:

Circle if Applicable:

MS/MSD —

Duplicate ID No.: —

Signature(s):

SEDIMENT SAMPLE LOG SHEET

Project Site Name: NSWC Crane, IN
Project No.: CTO 126 job # N3960

[] Surface Soil
[] Subsurface Soil
[X] Sediment
[] Other:
[] QA Sample Type:

Sample ID No.: 03SD110612
Sample Location: 03SD11
Sampled By: TR + KA
C.O.C. No.: 02357 LAUCKS
02355 APCL

Type of Sample:
[X] Low Concentration
[] High Concentration

GRAB SAMPLE DATA:

	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 6/11/01 Time: 1320 Method: Shovel & Dis. Trowel Monitor Reading (ppm): NA	6-12"	BRN	Fine - Coarse Sand w/ Gravel

COMPOSITE SAMPLE DATA:

Date	Time	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Method:				
Monitor Readings (Range in ppm):				

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
Volatiles App. IX (VOC 1 + VOC 2)	(5) encore	✓	
App. IX SVOC, SIM, EXP, NC	8 oz w/m glass	✓	
Appx.IX Herb, Pest, PCBs, TOC	8 oz w/m glass	✓	
TAL Metals plus Sn, Nitrite/Nitrate, pH	8 oz w/m glass	✓	
Perchlorate	4 oz w/m glass	✓	APLC Lab

OBSERVATIONS / NOTES:

Dry Stream BED

MAP:

Circle if Applicable:

MS/MSD

Duplicate ID No.:

Signature(s):

SEDIMENT SAMPLE LOG SHEET

Project Site Name: NSWC Crane, IN
Project No.: CTO 126 job # N3960

[] Surface Soil
[] Subsurface Soil
[X] Sediment
[] Other:
[] QA Sample Type:

Sample ID No.: 03SD120006
Sample Location: ~~03SD12~~ 03SD12
Sampled By: KM/TR
C.O.C. No.: 02354 LAUCKS
02353 APCL

Type of Sample:
[X] Low Concentration
[] High Concentration

GRAB SAMPLE DATA:

	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 6-11-01 Time: 1050 Method: Dis TROWEL Monitor Reading (ppm): NA	0-6"	BRN	FINE - Coarse Sands some silt Moist TRACE Organics & Gravel

COMPOSITE SAMPLE DATA:

	Time	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date:				
Method:				
Monitor Readings (Range in ppm):				

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
Volatiles App. IX (VOC 1 + VOC 2)	(5) encore	✓	
App. IX SVOC, SIM, EXP, NC	8 oz w/m glass	✓	
Appx.IX Herb, Pest, PCBs, TOC	8 oz w/m glass	✓	
TAL Metals plus Sn, Nitrite/Nitrate, pH	8 oz w/m glass	✓	
Perchlorate	4 oz w/m glass	✓	APLC Lab

OBSERVATIONS / NOTES:

Dry Stream BED

MAP:

Circle if Applicable:

MS/MSD ✓

Duplicate ID No.: —

Signature(s): Terry [illegible]

SEDIMENT SAMPLE LOG SHEET

Project Site Name: NSWC Crane, IN
Project No.: CTO 126 job # N3960

[] Surface Soil
[] Subsurface Soil
[X] Sediment
[] Other:
[] QA Sample Type:

Sample ID No.: 03SD120612
Sample Location: ~~03SD12 (TK)~~ 03SD12
Sampled By: KM & TK
C.O.C. No.: 02354 LAUCKS
02353 APCL

Type of Sample:
[X] Low Concentration
[] High Concentration

GRAB SAMPLE DATA:

	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 6-11-01 Time: 1105 Method: SHOVEL & DIS. TROWEL Monitor Reading (ppm): NA	6"-12"	BRN	FINE - COARSE SANDS, SOME SILTY CLAY & GRAVEL MOIST

COMPOSITE SAMPLE DATA:

Date	Time	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Method:				
Monitor Readings (Range in ppm):				

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
Volatiles App. IX (VOC 1 + VOC 2)	(5) encore	✓	
App. IX SVOC, SIM, EXP, NC	8 oz w/m glass	✓	
Appx.IX Herb, Pest, PCBs, TOC	8 oz w/m glass	✓	
TAL Metals plus Sn, Nitrite/Nitrate, pH	8 oz w/m glass	✓	
Perchlorate	4 oz w/m glass	✓	APLC Lab

OBSERVATIONS / NOTES:

Dry Stream BED

MAP:

Circle if Applicable:

MS/MSD	Duplicate ID No.:

Signature(s): [signature]

SEDIMENT SAMPLE LOG SHEET

Project Site Name: NSWC Crane, IN
Project No.: CTO 126 job # N3960

[] Surface Soil
[] Subsurface Soil
[X] Sediment
[] Other:
[] QA Sample Type:

Sample ID No.: 03SD13 0006
Sample Location: 03SD13
Sampled By: TR + KM
C.O.C. No.: 02354 LAUCKS
02353 APCL

Type of Sample:
[X] Low Concentration
[] High Concentration

GRAB SAMPLE DATA:

	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 6/11/01 Time: 1022 Method: Dis. Trowel Monitor Reading (ppm): NA	0-6"	BRN	Silt & Mixed Sands Moist Trace Organics & Gravel

COMPOSITE SAMPLE DATA:

	Time	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date:				
Method:				
Monitor Readings (Range in ppm):				

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
Volatiles App. IX (VOC 1 + VOC 2)	(5) encore	✓	
App. IX SVOC, SIM, EXP, NC	~ 8 oz w/m glass	✓	
Appx.IX Herb, Pest, PCBs, TOC	8 oz w/m glass	✓	
TAL Metals plus Sn, Nitrite/Nitrate, pH	8 oz w/m glass	✓	APLC Lab
Perchlorate	4 oz w/m glass		

OBSERVATIONS / NOTES:

Dry stream Bed

MAP:

Circle if Applicable:

MS/MSD — Duplicate ID No.:

Signature(s): Terry [illegible]

SEDIMENT SAMPLE LOG SHEET

Project Site Name: NSWC Crane, IN
Project No.: CTO 126 job # N3960

[] Surface Soil
[] Subsurface Soil
[X] Sediment
[] Other:
[] QA Sample Type:

Sample ID No.: 03SD B0612
Sample Location: 03SD WSD13
Sampled By: TR+KM
C.O.C. No.: 02354 LAUCKS
02353 APCL

Type of Sample:
[X] Low Concentration
[] High Concentration

GRAB SAMPLE DATA:

	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 6/11/01 Time: 1037 Method: Shovel & Dis Trowel Monitor Reading (ppm): NA	6-12"	BAN	MED & COARSE SAND & GRAVEL (TR) Moist

COMPOSITE SAMPLE DATA:

Date:	Time	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Method:				
Monitor Readings (Range in ppm):				

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
Volatiles App. IX (VOC 1 + VOC 2)	(5) encore	✓	
App. IX SVOC, SIM, EXP, NC	8 oz w/m glass	✓	
Appx.IX Herb, Pest, PCBs, TOC	8 oz w/m glass	✓	
TAL Metals plus Sn, Nitrite/Nitrate, pH	8 oz w/m glass	✓	
Perchlorate	4 oz w/m glass	✓	APLC Lab

OBSERVATIONS / NOTES:

Dry STREAM BED

MAP:

Circle if Applicable:

MS/MSD	Duplicate ID No.:
—	—

Signature(s): [signature]

SEDIMENT SAMPLE LOG SHEET

Project Site Name: NSWC Crane, IN
Project No.: CTO 126 job # N3960

[] Surface Soil
[] Subsurface Soil
[X] Sediment
[] Other:
[] QA Sample Type:

Sample ID No.: 03SD140006
Sample Location: 03SD14
Sampled By: TR + KM
C.O.C. No.: 02352 LAUCKS
02353 APCL

Type of Sample:
[X] Low Concentration
[] High Concentration

GRAB SAMPLE DATA:

	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 6/11/01 Time: 0925 Method: Dis. Trowel Monitor Reading (ppm): NA	0-6"	BRN	Silty Clay Moist Trace Organics

COMPOSITE SAMPLE DATA:

	Time	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date:				
Method:				
Monitor Readings (Range in ppm):				

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
Volatiles App. IX (VOC 1 + VOC 2)	(5) encore	✓	
App. IX SVOC, SIM, EXP, NC	8 oz w/m glass	✓	
Appx.IX Herb, Pest, PCBs, TOC	8 oz w/m glass	✓	
TAL Metals plus Sn, Nitrite/Nitrate, pH	8 oz w/m glass	✓	
Perchlorate	4 oz w/m glass	✓	APLC Lab

OBSERVATIONS / NOTES:

Dry Stream

MAP:

Circle if Applicable:

MS/MSD —

Duplicate ID No.: FD060110101

Signature(s):

SEDIMENT SAMPLE LOG SHEET

Project Site Name: NSWC Crane, IN
Project No.: CTO 126 job # N3960

[] Surface Soil
[] Subsurface Soil
[X] Sediment
[] Other:
[] QA Sample Type:

Sample ID No.: 03SD 140612
Sample Location: 03SD NSD14
Sampled By: TR+KM
C.O.C. No.: 02352 LAUCKS
02353 APCL

Type of Sample:
[X] Low Concentration
[] High Concentration

GRAB SAMPLE DATA:

	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 6/11/01 Time: 0940 Method: Dis Trowel Monitor Reading (ppm): NA	6-12"	Brn	Brown Sandy Silt Trace Organics

COMPOSITE SAMPLE DATA:

Date:	Time	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Method:				
Monitor Readings (Range in ppm):				

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
Volatiles App. IX (VOC 1 + VOC 2)	(5) encore	✓	
App. IX SVOC, SIM, EXP, NC	8 oz w/m glass	✓	
Appx.IX Herb, Pest, PCBs, TOC	8 oz w/m glass	✓	
TAL Metals plus Sn, Nitrite/Nitrate, pH	8 oz w/m glass	✓	
Perchlorate	4 oz w/m glass	✓	APLC Lab

OBSERVATIONS / NOTES:

Dry Stream

MAP:

Circle if Applicable:

MS/MSD	Duplicate ID No.:
—	—

Signature(s):

SEDIMENT SAMPLE LOG SHEET

Project Site Name: NSWC Crane, IN
Project No.: CTO 126 job # N3960

[] Surface Soil
[] Subsurface Soil
[X] Sediment
[] Other:
[] QA Sample Type:

Sample ID No.: 03SD 150006
Sample Location: 03SD/SD15
Sampled By: TR+KM
C.O.C. No.: 02352 LAUCKS
02353 APCL

Type of Sample:
[X] Low Concentration
[] High Concentration

GRAB SAMPLE DATA:

	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 6/11/01 Time: 0855 Method: Trowel (Dis) Monitor Reading (ppm): NA	0-6"	BRN	Coarse sand & Gravel some silt sat.

COMPOSITE SAMPLE DATA:

Date	Time	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Method:				
Monitor Readings (Range in ppm):				

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
Volatiles App. IX (VOC 1 + VOC 2)	(5) encore	✓	
App. IX SVOC, SIM, EXP, NC	8 oz w/m glass	✓	
Appx.IX Herb, Pest, PCBs, TOC	8 oz w/m glass	✓	
TAL Metals plus Sn, Nitrite/Nitrate, pH	8 oz w/m glass	✓	
Perchlorate	4 oz w/m glass	✓	APLC Lab

OBSERVATIONS / NOTES:

MAP:

Circle if Applicable:

MS/MSD

Duplicate ID No.:

Signature(s):

SEDIMENT SAMPLE LOG SHEET

Project Site Name: NSWC Crane, IN
Project No.: CTO 126 job # N3960

[] Surface Soil
[] Subsurface Soil
[X] Sediment
[] Other:
[] QA Sample Type:

Sample ID No.: 03SD 150612
Sample Location: 03SDWSD15
Sampled By: TR+KM
C.O.C. No.: 02352 LAUCKS
02353 APCL

Type of Sample:
[X] Low Concentration
[] High Concentration

GRAB SAMPLE DATA:

	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 6/11/01 Time: 0915 Method: Shovel & Dis Trowel Monitor Reading (ppm): NA	6-12"	BRN	Coarse Sand & Gravel T. Silt Sat

COMPOSITE SAMPLE DATA:

	Time	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date:				
Method:				
Monitor Readings (Range in ppm):				

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
Volatiles App. IX (VOC 1 + VOC 2)	(5) encore	✓	
App. IX SVOC, SIM, EXP, NC	8 oz w/m glass	✓	
Appx.IX Herb, Pest, PCBs, TOC	8 oz w/m glass	✓	
TAL Metals plus Sn, Nitrite/Nitrate, pH	8 oz w/m glass	✓	
Perchlorate	4 oz w/m glass	✓	APLC Lab

OBSERVATIONS / NOTES:

MAP:

Circle if Applicable:

MS/MSD	Duplicate ID No.:
—	—

Signature(s):

SEDIMENT SAMPLE LOG SHEET

Project Site Name: NSWC Crane, IN
Project No.: CTO 126 job # N3960

[] Surface Soil
[] Subsurface Soil
[X] Sediment
[] Other:
[] QA Sample Type:

Sample ID No.: 03SD 160006
Sample Location: 03SD16
Sampled By: TR+KM
C.O.C. No.: 02352 LAUCKS
02353 APCL

Type of Sample:
[X] Low Concentration
[] High Concentration

GRAB SAMPLE DATA:

	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 6/11/01 Time: 0827 Method: Dis. Trowel Monitor Reading (ppm): NA	0-6"	BRN	Silty Sand w / gravel & coarse sand Saturated

COMPOSITE SAMPLE DATA:

	Time	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date:				
Method:				
Monitor Readings (Range in ppm):				

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
Volatiles App. IX (VOC 1 + VOC 2)	(5) encore	✓	
App. IX SVOC, SIM, EXP, NC	8 oz w/m glass	✓	
Appx.IX Herb, Pest, PCBs, TOC	8 oz w/m glass	✓	
TAL Metals plus Sn, Nitrite/Nitrate, pH	8 oz w/m glass	✓	
Perchlorate	4 oz w/m glass	✓	APLC Lab

OBSERVATIONS / NOTES:

MAP:

Circle if Applicable:

MS/MSD —

Duplicate ID No.: —

Signature(s): Terry Lopez

SEDIMENT SAMPLE LOG SHEET

Project Site Name: NSWC Crane, IN
Project No.: CTO 126 job # N3960

[] Surface Soil
[] Subsurface Soil
[X] Sediment
[] Other:
[] QA Sample Type:

Sample ID No.: 03SD160612
Sample Location: 03SDWSD16
Sampled By: TR+KM
C.O.C. No.: 02352 LAUCKS
02353 APCL

Type of Sample:
[X] Low Concentration
[] High Concentration

GRAB SAMPLE DATA:

	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 6/11/01 Time: 0840 Method: Shovel & Distraucl Monitor Reading (ppm): NA	6-12"	BRN	Gravel w/ Silty Sand Sat.

COMPOSITE SAMPLE DATA:

	Time	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date:				
Method:				
Monitor Readings (Range in ppm):				

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
Volatiles App. IX (VOC 1 + VOC 2)	(5) encore	✓	
App. IX SVOC, SIM, EXP, NC	8 oz w/m glass	✓	
Appx.IX Herb, Pest, PCBs, TOC	8 oz w/m glass	✓	
TAL Metals plus Sn, Nitrite/Nitrate, pH	8 oz w/m glass	✓	
Perchlorate	4 oz w/m glass	✓	APLC Lab

OBSERVATIONS / NOTES:

MAP:

Circle if Applicable:

MS/MSD	Duplicate ID No.:
✓	—

Signature(s): [signature]

SEDIMENT SAMPLE LOG SHEET

Project Site Name: NSWC Crane, IN
Project No.: CTO 126 job # N3960

[] Surface Soil
[] Subsurface Soil
[X] Sediment
[] Other:
[] QA Sample Type:

Sample ID No.: 03SD 170006
Sample Location: ~~03SD 170006~~ 03SWSD 17
Sampled By: TR + KM
C.O.C. No.: 02352 LAUCKS
02353 APCL

Type of Sample:
[X] Low Concentration
[] High Concentration

GRAB SAMPLE DATA:

	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 6/11/01 Time: 0748 Method: D.S Trowel Monitor Reading (ppm): NA	0-6"	BRN	Sandy Silt w/ Gravel (Coarse Sand) WET

COMPOSITE SAMPLE DATA:

	Time	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date:				
Method:				
Monitor Readings (Range in ppm):				

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
Volatiles App. IX (VOC 1 + VOC 2)	(5) encore	✓	
App. IX SVOC, SIM, EXP, NC	8 oz w/m glass	✓	
Appx.IX Herb, Pest, PCBs, TOC	8 oz w/m glass	✓	
TAL Metals plus Sn, Nitrite/Nitrate, pH	8 oz w/m glass	✓	
Perchlorate	4 oz w/m glass		APLC Lab

OBSERVATIONS / NOTES:

MAP:

Circle if Applicable:

MS/MSD	Duplicate ID No.:
—	—

Signature(s): [signature]

SEDIMENT SAMPLE LOG SHEET

Project Site Name: NSWC Crane, IN
Project No.: CTO 126 job # N3960

[] Surface Soil
[] Subsurface Soil
[X] Sediment
[] Other:
[] QA Sample Type:

Sample ID No.: 03SD 170612
Sample Location: ~~03SD 170612~~ 03SWSD 17
Sampled By: TR + KM
C.O.C. No.: 02352 LAUCKS
02353 APCL

Type of Sample:
[X] Low Concentration
[] High Concentration

GRAB SAMPLE DATA:

	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 6/11/01 Time: 0800 Method: Shovel & Dis. Trowel Monitor Reading (ppm): NA	6-12"	Grey	Sandy silt w/ Gravel (Coarse Sand) WSD - Sat.

COMPOSITE SAMPLE DATA:

Date	Time	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Method:				
Monitor Readings (Range in ppm):				

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
Volatiles App. IX (VOC 1 + VOC 2)	(5) encore	✓	
App. IX SVOC, SIM, EXP, NC	8 oz w/m glass	✓	
Appx.IX Herb, Pest, PCBs, TOC	8 oz w/m glass	✓	
TAL Metals plus Sn, Nitrite/Nitrate, pH	8 oz w/m glass	✓	
Perchlorate	4 oz w/m glass	✓	APLC Lab

OBSERVATIONS / NOTES:

MAP:

Circle if Applicable:

MS/MSD	Duplicate ID No.:
—	—

Signature(s): Tg Nagel

SEDIMENT SAMPLE LOG SHEET

Project Site Name: NSWC Crane, IN
Project No.: CTO 126 job # N3960

[] Surface Soil
[] Subsurface Soil
[X] Sediment
[] Other:
[] QA Sample Type:

Sample ID No.: 03SD 180006
Sample Location: 03SWSD 18
Sampled By: KM & TK
C.O.C. No.: 02352 LAUCKS
02347 APCL

Type of Sample:
[X] Low Concentration
[] High Concentration

GRAB SAMPLE DATA:

	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 6-10-01 Time: 1510 Method: DS Trowel Monitor Reading (ppm): NA	0-6"	BRN	FINE - MED SAND WET TRACE ORGANICS

COMPOSITE SAMPLE DATA:

	Time	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date:				
Method:				
Monitor Readings (Range in ppm):				

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
Volatiles App. IX (VOC 1 + VOC 2)	(5) encore	✓	
App. IX SVOC, SIM, EXP, NC	8 oz w/m glass	✓	
Appx.IX Herb, Pest, PCBs, TOC	8 oz w/m glass	✓	
TAL Metals plus Sn, Nitrite/Nitrate, pH	8 oz w/m glass	✓	
Perchlorate	4 oz w/m glass		APLC Lab

OBSERVATIONS / NOTES:

MAP:

Circle if Applicable:

MS/MSD	Duplicate ID No.:

Signature(s):

SEDIMENT SAMPLE LOG SHEET

Project Site Name: NSWC Crane, IN
Project No.: CTO 126 job # N3960

[] Surface Soil
[] Subsurface Soil
[X] Sediment
[] Other:
[] QA Sample Type:

Sample ID No.: 03SD180612
Sample Location: 03SDNSD18
Sampled By: KM & TR
C.O.C. No.: 02352 LAUCKS
02347 APCL

Type of Sample:
[X] Low Concentration
[] High Concentration

GRAB SAMPLE DATA:

	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 6-10-01 Time: 1530 Method: Shovel & Dis Trowel Monitor Reading (ppm): NA	6-12"	BRN-GREY	FINE to MED SAND SOME ORGANICS WET-SATURATED

COMPOSITE SAMPLE DATA:

Date:	Time	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Method:				
Monitor Readings (Range in ppm):				

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
Volatiles App. IX (VOC 1 + VOC 2)	(5) encore	✓	
App. IX SVOC, SIM, EXP, NC	8 oz w/m glass	✓	
Appx.IX Herb, Pest, PCBs, TOC	8 oz w/m glass	✓	
TAL Metals plus Sn, Nitrite/Nitrate, pH	8 oz w/m glass	✓	
Perchlorate	4 oz w/m glass	✓	APLC Lab

OBSERVATIONS / NOTES:

MAP:

Circle if Applicable:

MS/MSD	Duplicate ID No.:
—	—

Signature(s): [illegible]

SEDIMENT SAMPLE LOG SHEET

Project Site Name: NSWC Crane, IN
Project No.: CTO 126 job # N3960

[] Surface Soil
[] Subsurface Soil
[X] Sediment
[] Other:
[] QA Sample Type:

Sample ID No.: 03SD190006
Sample Location: 03SD19
Sampled By: TL/K.M.
C.O.C. No.: 02352 LAUCKS
02347 APCL

Type of Sample:
[X] Low Concentration
[] High Concentration

GRAB SAMPLE DATA:

	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 6-10-01 Time: 1403 Method: Dis Trowel Monitor Reading (ppm): NA	0-6"	BRN	Fine & Med Sand & Some silt w/ trace gravel & organics WET

COMPOSITE SAMPLE DATA:

	Time	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date:				
Method:				
Monitor Readings (Range in ppm):				

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
Volatiles App. IX (VOC 1 + VOC 2)	(5) encore	✓	
App. IX SVOC, SIM, EXP, NC	8 oz w/m glass	✓	
Appx.IX Herb, Pest, PCBs, TOC	8 oz w/m glass	✓	
TAL Metals plus Sn, Nitrite/Nitrate, pH	8 oz w/m glass	✓	
Perchlorate	4 oz w/m glass	✓	APLC Lab

OBSERVATIONS / NOTES:

MS/MSD = Extra Containers
7 Encores
1 8oz
1 4oz

MAP:

Circle if Applicable:

MS/MSD YES

Duplicate ID No.: FD06100102

Signature(s): [signature]

SEDIMENT SAMPLE LOG SHEET

Project Site Name: NSWC Crane, IN
Project No.: CTO 126 job # N3960

[] Surface Soil
[] Subsurface Soil
[X] Sediment
[] Other:
[] QA Sample Type:

Sample ID No.: 03SD19 0612
Sample Location: 03SD19
Sampled By: KM & TK
C.O.C. No.: 02352 LAUCKS
02347 APCL

Type of Sample:
[X] Low Concentration
[] High Concentration

GRAB SAMPLE DATA:

	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 6-10-01 Time: 1435 Method: Shovel & Dis. Trowel Monitor Reading (ppm): NA	6"-12"	BKN	Mostly Gravel pea size & smaller w/ trace sand wet-Saturated

COMPOSITE SAMPLE DATA:

Date	Time	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Method:				
Monitor Readings (Range in ppm):				

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
Volatiles App. IX (VOC 1 + VOC 2)	(5) encore	✓	
App. IX SVOC, SIM, EXP, NC	8 oz w/m glass	✓	
Appx.IX Herb, Pest, PCBs, TOC	8 oz w/m glass	✓	
TAL Metals plus Sn, Nitrite/Nitrate, pH	8 oz w/m glass	✓	
Perchlorate	4 oz w/m glass	✓	APLC Lab

OBSERVATIONS / NOTES:

MAP:

Circle if Applicable:

MS/MSD	Duplicate ID No.:

Signature(s):

APPENDIX B-7

Chain-of Custody Records

02346

CHAIN OF CUSTODY RECORD

PROJECT NO.: CTO 159 #: 3960

SITE NAME: NSWC CRANE

SAMPLERS (SIGNATURE): [signature]

STATION NO.	DATE	TIME	COMP	GRAB	STATION LOCATION	NO. OF CONTAINERS	APX IX VOC 8260 + 8015	APX IX SVOC L AMBER	SIM L AMBER	EX PESTICIDES L AMBER	NITROCELLULOSE L AMBER	TAL METALS + SN	DISS. TAL METALS + SN HNO3	APX IX VOCs HNO3	HERB L AMBER	PEST/PCB L AMBER	REMARKS
TB	6/7	1100		✓	TB 060701 01	3	—	—	—	—	—	—	—	3	—		
—	↓	1540		✓	03GW07 01	12	5	2	2	1	1	1	—	—	—		
FD	↓	0000		✓	FD 060701 01	12	5	2	2	1	1	1	—	—	—		
RB	6/8	0800		✓	RB 06080101	13	5	2	2	1	1	1	1	—	—		TUBING - SILICONE TEFFION
RB	↓	1625		✓	RB 060801 02	10	—	2	1	1	1	1	—	—	2	2	PLASTIC TROWEL

RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED BY (SIGNATURE):	RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED BY (SIGNATURE):
[signature]	6-8-01 1850	FED EX			
RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED BY (SIGNATURE):	RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED BY (SIGNATURE):
RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED FOR LABORATORY BY (SIGNATURE):	DATE / TIME:	REMARKS: AB # 8216 5043 8289 TO LAUCKS LAB	

Order No. 70440 (0693)

02349

CHAIN OF CUSTODY RECORD

PROJECT NO.: CTO 159 # 3960

SITE NAME: NSWC CRANE

SAMPLERS (SIGNATURE): [signature]

STATION NO.	DATE	TIME	COMP	GRAB	STATION LOCATION	NO. OF CONTAINERS	SVOC, SIM, EXP, NC	HERB, PEST, PCB	TAL METALS + SN	NITRITE/NITRATE EXP, NC	NITRITE/NITRATE		REMARKS: ALL 8 oz w/m glass
FD	6/8	0900		✓	FD 060801 01	3	1	1	1	—	—		DUP. of 035531 0002
—	↓	1020		✓	035530 0002	3	1	1	1	—	—		
—		1045		✓	035529 0002	3	1	1	1	—	—		
—		1320		✓	035531 0002	3	1	1	1	—	—		RUN ALSO MS/MSD
—		1350		✓	035501 0002	2	—	—	—	1	1		
—		1405		✓	035503 0002	2	—	—	—	1	1		
—		1440		✓	035512 0002	2	—	—	—	1	1		
—		1505		✓	035532 0002	3	1	1	1	—	—		
—	↓	1525		✓	035533 0002	3	1	1	1	—	—		

RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED BY (SIGNATURE):	RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED BY (SIGNATURE):
[signature]	6-8-01 1850	FEDEX			
RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED BY (SIGNATURE):	RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED BY (SIGNATURE):
RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED FOR LABORATORY BY (SIGNATURE):	DATE / TIME:	REMARKS: AB # 8216 5043 8289 TO LAYCKS LAB	

Order No. 70440 (

GW

02350

CHAIN OF CUSTODY RECORD

PROJECT NO.: CTO 159 #3960

SITE NAME: NSWC CRANE

SAMPLERS (SIGNATURE): [signature]

STATION NO.	DATE	TIME	COMP	GRAB	STATION LOCATION	NO. OF CONTAINERS	APX IX VOCs	APX IX VOCs 8260 + 8015	APX IX SVOC	SIM L AMBER	L AMBER EXPLOSIVES	NITROCELLULOSE L AMBER	TAL METALS + HNO3	~~TRACKS~~ SN	REMARKS
TB	6/9	0710		✓	TB060901 01	3	3	—	—	—	—	—	—		
—	↓	1137		✓	03GW23 01	35	—	15	6	6	3	3	2		RUN ALSO MS/MSD
—	↓	1722		✓	03GW20 01	12	—	5	2	2	1	1	1		

RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED BY(SIGNATURE):	RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED BY(SIGNATURE):
[signature]	6/11/01 1600	FEDEX			
RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED BY (SIGNATURE):	RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED BY(SIGNATURE):
RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED FOR LABORATORY BY (SIGNATURE):	DATE / TIME:	REMARKS: AB # 8243 8235 3102 TO CAUCUS LAB	

Order No. 70440 (0693)

SW

02351

CHAIN OF CUSTODY RECORD

PROJECT NO.: CTO 159 #3960

SITE NAME: NSWC CRANE

SAMPLERS (SIGNATURE): [signature]

STATION NO.	DATE	TIME	COMP	GRAB	STATION LOCATION	NO. OF CONTAINERS	APX IX VOCs 8260 + 8015	APX IV SVOC L AMBER	APX IX PEST L AMBER	APX IX HERB L AMBER	SIM L AMBER EXPLOSIVES	L AMBER NITROCELLULOSE	L AMBER TAL METALS + SN	DISS. TAL METALS + SN	TSS	REMARKS
FD	6/10	0000		✓	FD06100101	17	5	2	2	2	1	1	1	1	1	1	DUP OF 03SW1901
—	↓	0830		✓	03SW1901	49	15	6	6	6	3	3	3	2	2	3	RUN ALSO MS/MSD
—		0945		✓	03SW1801	17	5	2	2	2	1	1	1	1	1	1	
—		1020		✓	03SW1701	17	5	2	2	2	1	1	1	1	1	1	
—		1255		✓	03SW1601	17	5	2	2	2	1	1	1	1	1	1	
—		1325		✓	03SW1501	17	5	2	2	2	1	1	1	1	1	1	

RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED BY (SIGNATURE):	RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED BY (SIGNATURE):
[signature]	6.11.01 1600	FEDEX			
RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED BY (SIGNATURE):	RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED BY (SIGNATURE):
RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED FOR LABORATORY BY (SIGNATURE):	DATE / TIME:	REMARKS: AB # 8243 8235 3102 TO LAICKS LAB	

NOTE: FILTERED (DISSOLVED) SAMPLES ID ENDS WITH "F" (FILTERED)

Order No. 70440 F

02352

SD

CHAIN OF CUSTODY RECORD

PROJECT NO.: CTO 159 # 3960

SITE NAME: NSWC CRANE

SAMPLERS (SIGNATURE): [signature]

STATION NO.	DATE	TIME	COMP	GRAB	STATION LOCATION	NO. OF CONTAINERS	APX IX DOC	VOC 1+VOC 2	SVOC SIM EXP	HERB PEST PCB	METALS+SN N/N	TOC	PH		REMARKS
—	6/10	1405		✓	03SD19 0006	16	12	2	1	1					RUN ALSO MS/MSD
—		1435		✓	03SD19 0612	8	5	1	1	1					
—		1510		✓	03SD18 0006	8	5	1	1	1					
—		1530		✓	03SD18 0612	8	5	1	1	1					
FD		0000		✓	FD061001 02	8	5	1	1	1					DUP OF 03SD190006
—	6/11	0745		✓	03SD17 0006	8	5	1	1	1					
—		0800		✓	03SD17 0612	8	5	1	1	1					
—		0827		✓	03SD 160006	8	5	1	1	1					
—		0840		✓	03SD16 0612	8	5	1	1	1					
—		0855		✓	03SD15 0006	8	5	1	1	1					
—		0915		✓	03SD15 0612	8	5	1	1	1					
—		0925		✓	03SD14 0006	8	5	1	1	1					
—		0940		✓	03SD14 0612	8	5	1	1	1					
FD		0000		✓	FD061101 01	8	5	1	1	1					DUP OF 03SD140006

RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED BY (SIGNATURE):	RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED BY (SIGNATURE):
[signature]	6-11-01 1600	FEDEX			
RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED BY (SIGNATURE):	RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED BY (SIGNATURE):
RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED FOR LABORATORY BY (SIGNATURE):	DATE / TIME:	REMARKS: AB # 8243 8255 3102 TO CAUCKS LAB	

Order No. 70440 (0693)

SD

02354

CHAIN OF CUSTODY RECORD

PROJECT NO.: CTO 159 # 3960

SITE NAME: NSWC CRANE

SAMPLERS (SIGNATURE): [signature]

STATION NO.	DATE	TIME	COMP	GRAB	STATION LOCATION	NO. OF CONTAINERS	APXIX VOC	VOC 1 + VOC 2	SVOC SIM	EXP. NG	HERB. PEST.	PCB	METALS + MN	TOC	NH	DH	REMARKS
—	6/11	1022		✓	03SD130006	8	5	1	1	1							
—	↓	1037		✓	03SD130612	8	5	1	1	1							
—	↓	1050		✓	03SD120006	8	5	1	1	1							
—	↓	1105		✓	03SD120612	8	5	1	1	1							

RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED BY (SIGNATURE):	RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED BY (SIGNATURE):
[signature]	6.11.01 1600	FEDEX			
RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED BY (SIGNATURE):	RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED BY (SIGNATURE):
RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED FOR LABORATORY BY (SIGNATURE):	DATE / TIME:	REMARKS: AB # 8243 8235 3102 TO LAUCKS LAB	

Order No. 70440 (C

SD

02357

CHAIN OF CUSTODY RECORD

PROJECT NO.: CTO 159 # 3960

SITE NAME: NSWC CRANE

SAMPLERS (SIGNATURE): [signature] S. Simp

STATION NO.	DATE	TIME	COMP	GRAB	STATION LOCATION	NO. OF CONTAINERS	APX IX	VOC	VOC1+VOC2	SVOC	SIM. EXP.	NC	HERB.	PEST.	PCB	TOC	METALS+SN.	N/N	PH		REMARKS
—	6/11	1305		✓	03SD11 0006	8	5		1		1		1		1						
—		1320		✓	03SD11 0612	8	5		1		1		1		1						
—		1335		✓	03SD10 0006	8	5		1		1		1		1						
—		1355		✓	03SD10 0612	8	5		1		1		1		1						
FD		0000		✓	FD06110102	8	5		1		1		1		1						DUP OF 03SD09 0006
—		1403		✓	03SD09 0006	8	5		1		1		1		1						
—		1420		✓	03SD09 0612	8	5		1		1		1		1						
—		1445		✓	03SD08 0006	8	5		1		1		1		1						
—		1500		✓	03SD08 0612	8	5		1		1		1		1						
—		1520		✓	03SD07 0006	8	5		1		1		1		1						
—		1540		✓	03SD07 0612	8	5		1		1		1		1						
—		~~1305~~		✓	~~03SD11 0006~~	8	5		1		1		1		1					KS	DOUBLE ENTRY SEE ~~SEE #~~ ABOVE
—		~~1320~~		✓	~~03SD11 0612~~	8	5		1		1		1		1					KS	
—		~~1335~~		✓	~~03SD10 0006~~	8	5		1		1		1		1					KS	

RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED BY (SIGNATURE):	RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED BY (SIGNATURE):
[signature]	6.12.91 1630	FEDEX			
RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED BY (SIGNATURE):	RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED BY (SIGNATURE):
RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED FOR LABORATORY BY (SIGNATURE):	DATE / TIME:	REMARKS: AB# 8286 9205 5400 TO LAUCKS LAB	

Order No. 70440 (0693)

SD

CHAIN OF CUSTODY RECORD

02359

PROJECT NO.: CTO159 # 3960

SITE NAME: NSWC CRANE

SAMPLERS (SIGNATURE): [illegible]

STATION NO.	DATE	TIME	COMP	GRAB	STATION LOCATION	NO. OF CONTAINERS	APX IX VOC	VOC1+VOC2	SVOC	EXP SIM.	HERB	DCB	PEST	TOC	METALS+SN	N/N	DH			REMARKS
—	6/11	1355		✓	03SD10 0612	8	5	1		1		1								DOUBLE ENTRY SEE COC # 357 RS
—		1403		✓	~~03 SD09 0006~~	8	5	1		1		1								
—		1420		✓	03 SD09 0612	8	5	1		1		1								
FD		0000		✓	FD06110102	8	5	1		1		1								DUP OF ~~03SD09 0006~~
—		1445		✓	03 SD08 0006	8	5	1		1		1								
—		1500		✓	03 SD08 0612	8	5	1		1		1								
—		1520		✓	03 SD07 0006	8	5	1		1		1								
—		1540		✓	03 SD07 0612	8	5	1		1		1								
—		1720		✓	03 SD 06 0006	8	5	1		1		1								
—		1730		✓	03 SD 06 0612	8	5	1		1		1								
FD		0000		✓	FD06110103	8	5	1		1		1								DUP OF 03SD05 0006
—		1805		✓	03 SD05 0006	16	12	2		1		1								RUN ALSO MS/MSD
—		1830		✓	03 SD05 0612	8	5	1		1		1								
—	↓	1925		✓	03SD01 0006	8	5	1		1		1								

RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED BY (SIGNATURE):	RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED BY (SIGNATURE):
[illegible]	6-12-9 1630	FEDEX			
RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED BY (SIGNATURE):	RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED BY (SIGNATURE):
RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED FOR LABORATORY BY (SIGNATURE):	DATE / TIME:	REMARKS: AB# 82869205 5400 TO LAKLKS LAB	

Order No. 70440 (C

02356

SW

CHAIN OF CUSTODY RECORD

PROJECT NO.: CTO 159 # 3960

SITE NAME: NSWC CRANE

SAMPLERS (SIGNATURE): K-1 S. Simp

STATION NO.	DATE	TIME	COMP	GRAB	STATION LOCATION	NO. OF CONTAINERS	APX IX VOCs	APX IX VOCs 8260+BOIS	APX IV SVOCs SIM L AMBER	EXPLOSIVES L AMBER	NITROCELLULOSE L AMBER	TAL METALS+N	TSS	APX II PESTICIDES	APX IX HERB	TAL DISSOLVED METALS+SN	REMARKS
TB	6/11	1500		✓	TB061101 01	3	3	—									
—	↓	1710		✓	03SW0601	17	—	5	2	1	1	1	1	1	2	2	1
—	↓	1915		✓	03SW0101	17	—	5	2	1	1	1	1	1	2	2	1
—	6/12	0815		✓	03SW0201	17	—	5	2	1	1	1	1	1	2	2	1
—	↓	0915		✓	03SW0301	17	—	5	2	1	1	1	1	1	2	2	1

RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED BY (SIGNATURE):	RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED BY (SIGNATURE):
K-1 S.	6.12.01 1630	FEDEX			
RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED BY (SIGNATURE):	RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED BY (SIGNATURE):
RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED FOR LABORATORY BY (SIGNATURE):	DATE / TIME:	REMARKS: AB# 82869205 5400 TO CAUCUS LAB	

Order No. 70440 (0693)

SD 02360

CHAIN OF CUSTODY RECORD

PROJECT NO.: CT0159 # 3960

SITE NAME: NSWC CRANE

SAMPLERS (SIGNATURE): [illegible]

STATION NO.	DATE	TIME	COMP	GRAB	STATION LOCATION	NO. OF CONTAINERS	APX IX VOC	VOC 1 + VOC 2	SVOC	SIM	EXP	NU	HERB	PEST	PCB	TOC	METALS + SR	N/A	PH		REMARKS
—	6/11	~~1435~~		✓	~~03SD01 0612~~ OK KS	8	5	1		1		1									OK KS
—	6/12	0820		✓	03 SD 02 0006	8	5	1		1		1									
—	↓	0825		✓	03 SD 02 0612	8	5	1		1		1									
—		0925		✓	03 SD 03 0006	8	5	1		1		1									
—		0935		✓	03 SD 03 0612	8	5	1		1		1									
—		1022		✓	03SD 04 0006	8	5	1		1		1									
—	↓	1030		✓	03 SD 04 0612	8	5	1		1		1									

RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED BY (SIGNATURE):	RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED BY (SIGNATURE):
[illegible]	6·12·01 1630	FEDEX			
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RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED FOR LABORATORY BY (SIGNATURE):	DATE / TIME:	REMARKS: AB # 8286 9205 5400 TO LAUCKS	

Order No. 70440 (0

02361

APCL

CHAIN OF CUSTODY RECORD

PROJECT NO.: CTO 159 #3960

SITE NAME: NSWC CRANE

SAMPLERS (SIGNATURE):

STATION NO.	DATE	TIME	COMP	GRAB	STATION LOCATION	NO. OF CONTAINERS	PERCHLORATE WATER							REMARKS
—	6/12	0915		✓	03SW0301	1	1							

RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED BY (SIGNATURE):	RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED BY (SIGNATURE):
	6·13·01 1030	FEDEX			
RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED BY (SIGNATURE):	RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED BY (SIGNATURE):
RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED FOR LABORATORY BY (SIGNATURE):	DATE / TIME:	REMARKS: AB# 8286 9205 5421	

Order No. 70440 (0693)

TRIANGLE LAB
DIOXINS

02348

CHAIN OF CUSTODY RECORD

PROJECT NO.: CTO 159 #3960

SITE NAME: NSWC CRANE

SAMPLERS (SIGNATURE): [signature]

STATION NO.	DATE	TIME	COMP	GRAB	STATION LOCATION	NO. OF CONTAINERS	DIOXINS / FURANS AQ	DIOXINS / FURANS SOIL					REMARKS
FD	6/8	0000		✓	FD 060801 01	1		1					DUP OF 03SS31 0002
—	↓	1625		✓	RB 060801 02	2	2						PLASTIC TROWEL
—		1020		✓	03SS30 0002	1		1					
—		1045		✓	03SS29 0002	1		1					
—		1320		✓	03SS31 0002	2		2					RUN ALSO MS/MSD
—		1505		✓	03SS32 0002	1		1					
—	↓	1525		✓	03SS33 0002	1		1					

RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED BY (SIGNATURE):	RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED BY (SIGNATURE):
[signature]	6/3.01 1030	FED EX			
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RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED FOR LABORATORY BY (SIGNATURE):	DATE / TIME:	REMARKS: AB # 82869205 5410	

Order No. 70440 (D

APCL

02347

CHAIN OF CUSTODY RECORD

PROJECT NO.: CTO 159 #3960

SITE NAME: NSWC CRANE

SAMPLERS (SIGNATURE): [illegible]

STATION NO.	DATE	TIME	COMP	GRAB	STATION LOCATION	NO. OF CONTAINERS	PERCHLORATE WATER	PERCHLORATE SOIL						REMARKS
—	6/7	1540		✓	03GW07 01	1	1							
FD	↓	0000		✓	FD 06070101	1	1							
RB	6/8	0800		✓	RB 06080101	1	1							TUBING - SILICONE + TEFFUN
—	6/9	1137		✓	03GW 23 01	3	3							RUN ALSO MS/MSD
—	↓	1722		✓	03GW 20 01	1	1							
FD	6/10	0000		✓	FD061001 01	1	1							DUP OF 03SW1901
—		0830		✓	03SW1901	KS ~~2~~ 3	~~2~~ 3							RUN ALSO MS/MSD
—		0945		✓	03SW1801	1	1							
—		1020		✓	03SW1701	1	1							
—		1405		✓	03SD19 0006	2		2						RUN ALSO MS/MSD
—		1435		✓	03SD19 0612	1		1						
—		1510		✓	03SD18 0006	1		1						
—		1530		✓	03SD18 0612	1		1						
FD	↓	0000		✓	FD 061001 02	1		1						DUP OF 03SD19 0006

RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED BY (SIGNATURE):	RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED BY (SIGNATURE):
[illegible]	6/30/01 1030	FED EX			
RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED BY (SIGNATURE):	RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED BY (SIGNATURE):
RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED FOR LABORATORY BY (SIGNATURE):	DATE / TIME:	REMARKS: AB # 0286 9205 5421	

Order No. 70440 (0693)

02355

APCL

CHAIN OF CUSTODY RECORD

PROJECT NO.: CTO 159 #3960

SITE NAME: NSWC CRANE

SAMPLERS (SIGNATURE): [signature]

STATION NO.	DATE	TIME	COMP	GRAB	STATION LOCATION	NO. OF CONTAINERS	PERCHLORATE	WATER PERCHLORATE	SOIL					REMARKS
—	6/10	1255		✓	03SW16 01	1	1							
—	↓	1325		✓	03SW15 01	1	1							
	6/11	1305		✓	03 SD 11 0006	1		1						
—		1320		✓	03 SD11 0612	1		1						
—		1335		✓	03 SD 10 0006	1		1						
—		1355		✓	03 SD10 0612	1		1						
FD		0000		✓	FD06110102	1		1						DUP OF 03SD090006
—		1403		✓	03 SD 09 0006	1		1						
—		1420		✓	03 SD 09 0612	1		1						
—		1445		✓	03 SD 08 0006	1		1						
—		1500		✓	03 SD08 0612	1		1						
—		1520		✓	03 SD 07 0006	1		1						
—		1540		✓	03 SD 07 0612	1		1						
—	↓	1915		✓	03 SW01 01	1	1							

RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED BY (SIGNATURE):	RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED BY (SIGNATURE):
[signature]	6-13-01 1030	FEDEX			
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RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED FOR LABORATORY BY (SIGNATURE):	DATE / TIME:	REMARKS: AB # 8286 9205 5421	

Order No. 70440

APCL

02353

CHAIN OF CUSTODY RECORD

PROJECT NO.: CTO 159 #3960

SITE NAME: NSWC CRANE

SAMPLERS (SIGNATURE): [signature]

STATION NO.	DATE	TIME	COMP	GRAB	STATION LOCATION	NO. OF CONTAINERS	PERCHLORATE SOIL	PERCHLORATE WATER						REMARKS
—	6/11	0745		✓	03SD17 0006	1	1							
—		0800		✓	03SD17 0612	1	1							
—		0827		✓	03SD16 0006	1	1							
—		0840		✓	03SD16 0612	1	1							
—		0855		✓	03SD15 0006	1	1							
—		0915		✓	03SD15 0612	1	1							
—		0925		✓	03SD14 0006	1	1							
—		0940		✓	03SD14 0612	1	1							
FD		0000		✓	FD061101 01	1	1							DUP OF 03SD14 0006
—		1022		✓	03SD13 0006	1	1							
—		1037		✓	03SD13 0612	1	1							
—		1050		✓	03SD12 0006	1	1							
—	↓	1105		✓	03SD12 0612	1	1							
—	↓	1710		✓	03SW06 01	1		1						

RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED BY (SIGNATURE):	RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED BY (SIGNATURE):
[signature]	6.13.01 KS 1030 ~~1600~~	FEDEX			
RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED BY (SIGNATURE):	RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED BY (SIGNATURE):
RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED FOR LABORATORY BY (SIGNATURE):	DATE / TIME:	REMARKS: AB# 8286 9205 5421	

SHIPPED 6.13.01 @ 1030

Order No. 70440 (0693)

APCL

02358

CHAIN OF CUSTODY RECORD

PROJECT NO.: CTO159 #3960

SITE NAME: NSWC CRANE

SAMPLERS (SIGNATURE): [signature]

STATION NO.	DATE	TIME	COMP	GRAB	STATION LOCATION	NO. OF CONTAINERS	PERCHLORATE WATER	PERCHLORATE SOIL					REMARKS
—	6/11	1720		✓	03SD060006	1		1					
—	↓	1730		✓	03SD060612	1		1					
FD		0000		✓	FD06110103	1		1					DUP OF 03SD050006
—		1805		✓	03SD050006	1		1*					RUN ALSO MS/MSD
—		1830		✓	03SD050612	1		1					
—		1925		✓	03SD010006	1		1					
—	↓	1935		✓	03SD010612	1		1					
—	6/12	0820		✓	03SD020006	1		1					
—	↓	0825		✓	03SD020612	1		1					
—		0925		✓	03SD030006	1		1*					
—		0935		✓	03SD030612	1		1*					
—		1022		✓	03SD040006	1		1*					
—	↓	1030		✓	03SD040612	1		1*					
—	↓	0815		✓	03SW0201	1	1						

RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED BY (SIGNATURE):	RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED BY (SIGNATURE):
[signature]	6/13/01 1030	FEDEX			
RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED BY (SIGNATURE):	RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED BY (SIGNATURE):
RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED FOR LABORATORY BY (SIGNATURE):	DATE / TIME:	REMARKS: AB # 82869205 5421	

Order No. 70440

* = 8 oz w JAR, ALL OTHERS 4 oz

02362

CHAIN OF CUSTODY RECORD

PROJECT NO.: CTO 159 #3960

SITE NAME: NSWC CRANE

SAMPLERS (SIGNATURE): [signature]

STATION NO.	DATE	TIME	COMP	GRAB	STATION LOCATION	NO. OF CONTAINERS	SVOCs, SIM, EXP	NITRATE & NITRITE						REMARKS
—	6/19	0940		✓	035S02 0002	2	1	1						
—		1000		✓	03 SB02 0206	2	1	1						
—		1010		✓	03 SB02 0610	2	1	1						
—		1020		✓	03 SB06 0002	2	1	1						035S06 0002
—		1120		✓	03 SB06 0206	2	1	1						RUN ALSO MS/MSD
—		1130		✓	03 SB 06 0610	2	1	1						
FD		0000		✓	FD 061901 01	2	1	1						DUP OF 035S060002
—		1308		✓	035S04 0002	2	1	1						
—		1320		✓	03 SB 04 0206	2	1	1						
—		1332		✓	03 SB 04 0610	2	1	1						
FD		0000		✓	FD 061901 02	2	1	1						DUP OF 03SB040610
—		1346		✓	035S 07 0002	2	1	1						
—		1422		✓	03 SB 07 0206	2	1	1						
—	↓	1438		✓	03 SB 07 0610	2	1	1						

RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED BY (SIGNATURE):	RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED BY (SIGNATURE):
[signature]	6/20/01 1630	FEDEX			
RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED BY (SIGNATURE):	RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED BY (SIGNATURE):
RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED FOR LABORATORY BY (SIGNATURE):	DATE / TIME:	REMARKS: AB # 8286 9205 4919	

TO LAYCKS LAB

Order No. 70440 (0693)

02363

CHAIN OF CUSTODY RECORD

PROJECT NO.: CTO 159 # 3960

SITE NAME: NSWC CRANE

SAMPLERS (SIGNATURE):

STATION NO.	DATE	TIME	COMP	GRAB	STATION LOCATION	NO. OF CONTAINERS	SVOC, SIM, EXP.	NITRATE NITRITE						REMARKS
—	6/19	1447		✓	03SS11 0002	2	1	1						
—		1508		✓	03SB11 0206	2	1	1						
—		1600		✓	03SB11 0610	2	1	1						
FD		0000		✓	FD061901 03	2	1	1						DUP OF 03SB08 0206
—		1606		✓	03~~SB~~SS08 0002	2	1	1						
—		1612		✓	03SB08 0206	2	1	1						
—		1630		✓	03SB08 0610	2	1	1						
—		1654		✓	03SS05 0002	2	1	1						
—		1658		✓	03SB05 0206	2	1	1						
—	↓	1715		✓	03SB05 0610	2	1	1						
—	6/20	0831		✓	03SS13 0002	2	1	1						
—		0840		✓	03SB13 0206	2	1	1						
—	↓	0900		✓	03SB13 0610	2	1	1						

RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED BY (SIGNATURE):	RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED BY (SIGNATURE):
	6-20-01 1630	FEDEX			
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RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED FOR LABORATORY BY (SIGNATURE):	DATE / TIME:	REMARKS: AB # 8286 9205 4929	

Order No. 70440

00394

CHAIN OF CUSTODY RECORD

PROJECT NO.: CTO 159 # 3960

SITE NAME: NSWC CRANE

SAMPLERS (SIGNATURE): [illegible]

STATION NO.	DATE	TIME	COMP	GRAB	STATION LOCATION	NO. OF CONTAINERS	APX IX VOC	APX IX VOC + VOC 2	APX IX SVOC	SIM L AMBER	EXPLOSIVES L AMBER	NITROCELLULOSE L AMBER	TAL METALS + CN	NITRATE, NITRITE	REMARKS
TB	6/20	1300		✓	TB 062001 01	3	3	—	—	—	—	—	—	—	
RB	↓	1630		✓	RB 062001 02	13	—	5	2	2	1	1	1	1	DPT CUTTING SLUG

RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED BY (SIGNATURE):	RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED BY (SIGNATURE):
[illegible]	6.21.01 1630	FEDEX			
RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED BY (SIGNATURE):	RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED BY (SIGNATURE):
RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED FOR LABORATORY BY (SIGNATURE):	DATE / TIME:	REMARKS: AB # 8286 9205 4930	

TO LAUCKS LAB

Order No. 70440 (0693)

02364

CHAIN OF CUSTODY RECORD

PROJECT NO.: CTO 159 #3960

SITE NAME: NSWC CRANE

SAMPLERS (SIGNATURE):

STATION NO.	DATE	TIME	COMP	GRAB	STATION LOCATION	NO. OF CONTAINERS	APX IX 500C L AMBER	SIM L AMBER	EXPLOSIVES L AMBER	NITROCELLULOSE L AMBER	NITRATE/NITRITE		REMARKS
RB	6/20	0720		✓	RB062001 01	7	2	2	1	1	1		RUN ON DPT LINER

RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED BY(SIGNATURE):	RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED BY(SIGNATURE):
	6.20.01 1630	FEDEX			
RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED BY (SIGNATURE):	RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED BY(SIGNATURE):
RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED FOR LABORATORY BY (SIGNATURE):	DATE / TIME:	REMARKS: AB# 8286 9205 4929	

TO LAUCKS LAB

Order No. 70440

02366

CHAIN OF CUSTODY RECORD

PROJECT NO.: CTO 159 # 3960

SITE NAME: NSWC CRANE

SAMPLERS (SIGNATURE): [signature]

STATION NO.	DATE	TIME	COMP	GRAB	STATION LOCATION	NO. OF CONTAINERS	SVOC, SIM, EXP	NITRATE NITRITE						REMARKS
—	6/20	0912		✓	03SS15 0002	2	1	1						RUN ALSO MS/MSD
—		0921		✓	03SB15 0206	2	1	1						
—		0950		✓	03SB15 0610	2	1	1						
FD		0000		✓	FD062001 01	2	1	1						DUP OF 03SB150206
—		1010		✓	03SS16 0002	2	1	1						
—		1023		✓	03SB160206	2	1	1						
—		1030		✓	03SB160610	2	1	1						
—		1040		✓	03SS10 0002	2	1	1						
—		1049		✓	03SB10 0206	2	1	1						
—		1120		✓	03SB100610	2	1	1						
FD		0000		✓	FD062001 02	2	1	1						DUP OF 03SB100610

RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED BY (SIGNATURE):	RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED BY (SIGNATURE):
[signature]	6.20.09 1630	FEDEX			
RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED BY (SIGNATURE):	RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED BY (SIGNATURE):
RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED FOR LABORATORY BY (SIGNATURE):	DATE / TIME:	REMARKS: AB# 8286 9205 4929 TO LAUCKS LAB	

Order No. 70440 (0693)

02367

CHAIN OF CUSTODY RECORD

PROJECT NO.: CTO 159 #3960

SITE NAME: NSWC CRANE

SAMPLERS (SIGNATURE): [signature]

STATION NO.	DATE	TIME	COMP	GRAB	STATION LOCATION	NO. OF CONTAINERS	APX. IX VOC	VOC 1 + VOC 2	SVOCs + EXP SIM.	METALS + SN NITRATE NITRITE NC				REMARKS
—	6/20	1350		✓	03 SS 17 0002	7	5	1	1					
—	↓	1423		✓	03 SB 17 0406	7	5	1	1					
—		1431		✓	03 SB 17 1214	7	5	1	1					
—		1452		✓	03 SS 21 0002	7	5	1	1					
—		1530		✓	03 SB 21 1012	7	5	1	1					
—		1540		✓	03 SB 21 1215	7	5	1	1					
—		1600		✓	03 SS 20 0002	7	5	1	1					
—		1625		✓	03 SB 20 0810	7	5	1	1					
—		1635		✓	03 SB 20 1215	7	5	1	1					
FD		0000		✓	FD 062001 03	7	5	1	1					DUP OF 03SB20 0810
—		1655		✓	03 SS 25 0002	7	5	1	1					
—		1707		✓	03 SB 25 0608	7	5	1	1					

RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED BY (SIGNATURE):	RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED BY (SIGNATURE):
[signature]	6-21-01 1630	FEDEX			
RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED BY (SIGNATURE):	RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED BY (SIGNATURE):
RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED FOR LABORATORY BY (SIGNATURE):	DATE / TIME:	REMARKS: AB # 8286 9205 4930 TO LAUCKS LAB	

Order No. 70440 (0

CHAIN OF CUSTODY RECORD

PROJECT NO.: CTO 159 #3960

SITE NAME: NSWC CRANE

SAMPLERS (SIGNATURE): [signature]

STATION NO.	DATE	TIME	COMP	GRAB	STATION LOCATION	NO. OF CONTAINERS	SVOC, SIM, CXP	NITRATE NITRITE	APP IX VOC	METALS + NITRATE SN			REMARKS
—	6/20	1734		✓	03SS14 0002	2	1	1					
—	↓	1745		✓	03SB14 0206	2	1	1					
—	↓	1750		✓	03SB14 0610	2	1	1					
—	6/21	1042		✓	03SS24 0002	7	1	–	5	1			
—	↓	1112		✓	03SB24 0406	7	1	–	5	1			
—	↓	1125		✓	03SB24 1215	15	2	–	12	1			RUN ALSO MS/MSD
FD	↓	0000		✓	FD06210101	7	1	–	5	1			DUP OF 03SB191215
—		1300		✓	03SS22 0002	7	1	–	5	1			
—		1325		✓	03SB22 0204	7	1	–	5	1			
—		1340		✓	03SB22 1215	7	1	–	5	1			
—		1400		✓	03SS19 0002	7	1	–	5	1			
—		1410		✓	03SB19 0204	7	1	–	5	1			
—	↓	1420		✓	03SB19 1215	7	1	–	5	1			

RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED BY (SIGNATURE):	RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED BY (SIGNATURE):
[signature]	6-21-01 1630	FEDEX			
RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED BY (SIGNATURE):	RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED BY (SIGNATURE):
RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED FOR LABORATORY BY (SIGNATURE):	DATE / TIME:	REMARKS: AB# 8286 9205 4936	

Order No. 70440 (0693)

CHAIN OF CUSTODY RECORD WATERS 00399

PROJECT NO.: CTO 159 # 3960

SITE NAME: NSWC CRANE

SAMPLERS (SIGNATURE):

STATION NO.	DATE	TIME	COMP	GRAB	STATION LOCATION	NO. OF CONTAINERS	APX TX VOC	APX HVOC VOC 1+2	APX IX SVOC	SIM L AMBER	L AMBER EXPLOSIVES	NITROCELLULOSE L AMBER	TAL METALS+SN	NITRATE, NITRITE	REMARKS
TB	6/22	0705		✓	TB062201 01	3	3	—	—	—	—	—	—	—	
RB	↓	1415		✓	RB 062201 01	13	—	5	2	2	1	1	1	1	DPT CUTTING STUE

RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED BY(SIGNATURE):	RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED BY(SIGNATURE):
	6.22.01 1630	FEDEX			
RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED BY (SIGNATURE):	RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED BY(SIGNATURE):
RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED FOR LABORATORY BY (SIGNATURE):	DATE / TIME:	REMARKS: AB# 8286 9205 4951	

TO LAUCKS

Order No. 70440

SOILS

02377

CHAIN OF CUSTODY RECORD

PROJECT NO.: CTO 159 #3960

SITE NAME: NSWC CRANE

SAMPLERS (SIGNATURE):

STATION NO.	DATE	TIME	COMP	GRAB	STATION LOCATION	NO. OF CONTAINERS	SVOC	SIM EXP	METALS + SN NITRATE, NITRITE					REMARKS
—	6/22	1330		✓	03 SS 340002	2	1	1						
—	↓	1338		✓	03 SB 340206	2	1	1						
—	↓	1343		✓	03 SB 340610	2	1	1						

RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED BY (SIGNATURE):	RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED BY (SIGNATURE):
	6.22.01 1630	FEDEX			
RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED BY (SIGNATURE):	RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED BY (SIGNATURE):
RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED FOR LABORATORY BY (SIGNATURE):	DATE / TIME:	REMARKS: AB # 8286 9205 4951	

TO LAUCKS LAB

Order No. 70440 (0693)

SOILS

02376

CHAIN OF CUSTODY RECORD

PROJECT NO.: CTO 159 # 3960

SITE NAME: NSWC CRANE

SAMPLERS (SIGNATURE): [signature]

STATION NO.	DATE	TIME	COMP	GRAB	STATION LOCATION	NO. OF CONTAINERS	SVOC SIM EXP	METALS + SM NU	NITRATE NITRITE					REMARKS
—	6/22	0955		✓	03SS42 0002	2	1	1						
—		1000		✓	03SB42 0206	2	1	1						
—		1010		✓	03SB42 0610	2	1	1						
—		1020		✓	03SS40 0002	2	1	1						
—		1025		✓	03SB40 0206	2	1	1						
—		1030		✓	03SB40 0610	2	1	1						
—		1310		✓	03SS36 0002	2	1	1						
—		1317		✓	03SB36 0206	2	1	1						
—		1324		✓	03SB36 0610	2	1	1						
—		1250		—	03~~SB~~ SS39 0002	2	1	1						
—		1300		✓	03SB39 0206	2	1	1						
—	↓	1305		✓	03SB39 0610	2	1	1						

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[signature]	6 22 4 1630	FEDEX			
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RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED FOR LABORATORY BY (SIGNATURE):	DATE / TIME:	REMARKS: AB # 8286 9205 4951	

TO CALCIS CAB

Order No. 70440 (

00400

CHAIN OF CUSTODY RECORD

SOILS

PROJECT NO.:	SITE NAME:
CTO 159 # 3960	NSWC CRANE

SAMPLERS (SIGNATURE):

STATION NO.	DATE	TIME	COMP	GRAB	STATION LOCATION	NO. OF CONTAINERS	APX IX VOC VOC 1 x 2	SVOC EXP SIM. NC	METALS + SN NITRATE, NITRITE				REMARKS
—	6/22	0746		✓	03SS47 0002	7	5	1	1				
—		0755		✓	03SB47 0206	7	5	1	1				
—		0800		✓	03SB47 0610	7	5	1	1				
—		0812		✓	03SS48 0002	7	5	1	1				
—		0820		✓	03SB48 0206	7	5	1	1				
—		0828		✓	03SB48 0610	7	5	1	1				
—		0845		✓	03SS46 0002	7	5	1	1				
—		0853		✓	03SB46 0206	7	5	1	1				
—		0900		✓	03SB46 0610	7	5	1	1				
—		0920		✓	03SS44 0002	~~7~~ 2	~~5~~	1	1				NO VOC
—		0940		✓	03SB44 0206	~~7~~ 2	~~5~~ 5	1	1				
—		0945		✓	03SB44 0610	~~7~~ 2	~~5~~	1	1				
—													
FD	6/22	0000		✓	FD 06220101	7	5	1	1				DUP OF 03SB460610

RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED BY (SIGNATURE):	RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED BY (SIGNATURE):
	6-22-01 1630	FEDEX			
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TO LAUCKS LAB

Order No. 70440 (0693)

APCL

00396

CHAIN OF CUSTODY RECORD

PROJECT NO.: CTO 159 # 3960

SITE NAME: NSWC CRANE

SAMPLERS (SIGNATURE): [signature]

STATION NO.	DATE	TIME	COMP	GRAB	STATION LOCATION	NO. OF CONTAINERS	PERCHLORATE WATER	PERCHLORATE SOIL					REMARKS
RB	6/20	1830		✓	RB 062001 02	1	1	—					APT CUTTING SHOC
—		1358		✓	03 SS 17 0002	1	—	1					
—		1423		✓	03 SB 17 0406	1	—	1					
—		1431		✓	03 SB 17 1214	1	—	1					
—		1452		✓	03 SS 21 0002	1	—	1					
—		1530		✓	03 SB 21 1012	1	—	1					
—		1540		✓	03 SB 21 1215	1	—	1					
—		1600		✓	03 SS 20 0002	1	—	1					
—		1625		✓	03 SB 20 0910	1	—	1					
—		1635		✓	03 SB 20 1215	1	—	1					
FD		0000		✓	FD 062001 03	1	—	1					DUP OF 03SB20 0810
—		1655		✓	03 SS 25 0002	1	—	1					
—	↓	1707		✓	03 SB 25 0608	1	—	1					
—	6/23	1127		✓	03 GW 13 01	3	3						RUN ALSO MS/MSD

RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED BY (SIGNATURE):	RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED BY (SIGNATURE):
[signature]	6.25.01 1130	FEDEX			
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RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED FOR LABORATORY BY (SIGNATURE):	DATE / TIME:	REMARKS: AB# 8286 9205 4973	

Order No. 70440 (0

APCL

00393

CHAIN OF CUSTODY RECORD

PROJECT NO.: CTO 159 # 3960

SITE NAME: NSWC CRANE

SAMPLERS (SIGNATURE):

STATION NO.	DATE	TIME	COMP	GRAB	STATION LOCATION	NO. OF CONTAINERS	PERCHLORATE SOIL							REMARKS
—	6/21	1142		✓	03SS24 0002	1	1							
—	↓	1112		✓	03SB24 0406	1	1							
—	↓	1125		✓	03SB24 1215	2	2							RUN ALSO MS/MSD
FD	↓	0000		✓	FD06210101	1	1							DUP OF 03SB19 1215
—	↓	1300		✓	03SS22 0002	1	1							
—	↓	1325		✓	03SB22 0204	1	1							
—	↓	1340		✓	03SB22 1215	1	1							
—	↓	1400		✓	03SS19 0002	1	1							
—	↓	1410		✓	03SB19 0204	1	1							
—	↓	1420		✓	03SB19 1215	1	1							
—	6/22	0746		✓	03SS47 0002	1	1							
—	↓	0755		✓	03SB47 0206	1	1							
—	↓	0800		✓	03SB47 0610	1	1							
FD	↓	0000		✓	FD06220101	1	1							DUP OF 03SB460610

RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED BY (SIGNATURE):	RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED BY (SIGNATURE):
	6.25.01 1630	FEDEX			
RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED BY (SIGNATURE):	RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED BY (SIGNATURE):
RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED FOR LABORATORY BY (SIGNATURE):	DATE / TIME:	REMARKS: AB # 8286 9205 4973	

Order No. 70440 (0693)

CHAIN OF CUSTODY RECORD

APCL

02378

PROJECT NO.: CTO 159 #3960

SITE NAME: NSW CRANE

SAMPLERS (SIGNATURE): [signature]

STATION NO.	DATE	TIME	COMP	GRAB	STATION LOCATION	NO. OF CONTAINERS	PERCHLORATE SOIL	PERCHLORATE WATER					REMARKS
RB	6/22	1415		✓	RB062201 01	1	—	1					DPT CUTTING SHOE
—	↓	0812		✓	03 SS 48 0002	1	1	—					
—		0820		✓	03 SB 48 0206	1	1	—					
—		0828		✓	03SB48 0610	1	1	—					
—		0845		✓	03SS46 0002	1	1	—					
—		0853		✓	03SB46 0206	1	1	—					
—	↓	0900		✓	03SB46 0610	1	1	—					
SB	6/23	1600		✓	SB 062301 01	1	—	1					DI WATER
SB	↓	1700		✓	SB 06230102	1	—	1					TAP WATER
—	6/24	1140		✓	03 SS 18 0002	1	1	—					
—	↓	1200		✓	03 SB 18 0204	1	1	—					
—		1216		✓	03 SS 23 0002	2	2	—					RUN ALSO MS/MSD
—		1310		✓	03 SB 23 0610	1	1	—					
FD	↓	0000		✓	FD 062401 01	1	1	—					DUP OF 03SB260610

RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED BY (SIGNATURE):	RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED BY (SIGNATURE):
[signature]	6/25/01 1630	FEDEX			
RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED BY (SIGNATURE):	RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED BY (SIGNATURE):
RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED FOR LABORATORY BY (SIGNATURE):	DATE / TIME:	REMARKS: AB# 8286 9205 4973	

Order No. 70440 (f

02381

CHAIN OF CUSTODY RECORD

SOIL

PROJECT NO.: CTO 159 # 3960

SITE NAME: NSWC CRANE

SAMPLERS (SIGNATURE):

STATION NO.	DATE	TIME	COMP	GRAB	STATION LOCATION	NO. OF CONTAINERS	SVOC SIM	EXP N C	METALS SN	NITRATE NITRITE	APX IX VOC	VOC 1 + VOC 2			REMARKS
FD	6/23	0000		✓	FD 062301 01	2	1	–	1						DUP OF 0355090002
FD		0000		✓	FD 062301 02	2	1	1	–						0355370002
FD		0000		✓	FD 062301 03	2	1	1	–						0355430002 (43)
—		0815		✓	0355090002	2	1	–	1						
—		0845		✓	035B090204	2	1	–	1						
—		0920		✓	0355370002	2	1	1	–						RUN ALSO MS/MSD
—		0945		✓	0355380002	2	1	1	–						
—		1000		✓	0355350002	2	1	1	–						
—		1030		✓	0355430002	2	1	1	–						
—		1050		✓	0355450002	2	1	1	–						
—	↓	1103		✓	0355410002	2	1	1	–						
—	6/24	1140		✓	0355180002	7	1	1	–	5					
—	↓	1200		✓	035B180204	7	1	1	–	5					

RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED BY (SIGNATURE):	RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED BY (SIGNATURE):
	6.25.01 1630	FEDEX			
RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED BY (SIGNATURE):	RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED BY (SIGNATURE):
RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED FOR LABORATORY BY (SIGNATURE):	DATE / TIME:	REMARKS: AB # 8296 9205 4962	

TO LAUCKS LAB

Order No. 70440 (0693)

TRIANGLE LAB
DIOXINS

00395

CHAIN OF CUSTODY RECORD

PROJECT NO.: CTO 159 # 3960

SITE NAME: NSWC CRANE

SAMPLERS (SIGNATURE): [signature]

STATION NO.	DATE	TIME	COMP	GRAB	STATION LOCATION	NO. OF CONTAINERS	DIOXINS/FURANS AQ	DIOXINS/FURANS SOIL						REMARKS
RB	6/20	1830		✓	RB062001 02	2	2	–						DPT CUTTING SHOE
—	↓	1350		✓	035517 0002	1	–	1						
—	↓	1600		✓	035520 0002	1	–	1						
—	↓	1655		✓	035525 0002	1	–	1						
—	6/21	1125		✓	035B24 1215	2	–	2						RUN ALSO MS/MSD
—	↓	1420		✓	035B19 1215	1	–	1						
FD	↓	0000		✓	FD06210101	1	–	1						DUP OF 035B19 1215
—	6/22	0746		✓	035547 0002	1	–	1						
RB	↓	1415		✓	RB06220101	1	2	–						DPT CUTTING
SB	6/23	1600		✓	SB062301 01	2	2	–						DI WATER
SB	↓	1700		✓	SB062301 02	2	2	–						TAP WATER
—	6/24	1216		✓	035523 0002	2	–	2						RUN ALSO MS/MSD
—	↓	1340		✓	035526 0002	1	–	1						
RB	↓	1900		✓	RB062401 01	2	2							STAINLESS STEEL MIXING BOWL

RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED BY (SIGNATURE):	RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED BY (SIGNATURE):
[signature]	6-25-01 1630	FEDEX			
RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED BY (SIGNATURE):	RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED BY (SIGNATURE):
RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED FOR LABORATORY BY (SIGNATURE):	DATE / TIME:	REMARKS: AB # 82869205 4984	

Order No. 70440 (D

WATER S

02379

CHAIN OF CUSTODY RECORD

PROJECT NO.: CTO 159 #3960

SITE NAME: NSWC CRANE

SAMPLERS (SIGNATURE): T. S. Smith

STATION NO.	DATE	TIME	COMP	GRAB	STATION LOCATION	NO. OF CONTAINERS	APHIX VOCS	APHIX SVOC L AMBER	SIM L AMBER	EXPLOSIVES L AMBER	NITROCELLULOS L AMBER	TAL METALS + HNO3	NITRATE/NITRITE SM	APHIX VOC TX	REMARKS
TB	6/23	0715		✓	TB 06230101	3	3	—	—	—	—	—	—	—	
RB	↓	1300		✓	RB 06230101	8	—	2	2	1	1	1	1	—	HAND AUGER BUCKET
—	↓	1127		✓	03 GW 13 01	36	—	6	6	3	3	3	—	15	RUN ALSO MS/MSD
SB	↓	1600		✓	SB 06230101	13	—	2	2	1	1	1	1	5	DI WATER
SB	↓	1700		✓	SB 06230102	13	—	2	2	1	1	1	1	5	TAP WATER
RB	6/24	1800		✓	RB 06240101	13	—	2	2	1	1	1	1	5	STAINLESS STEEL MIXING BOWL
—	↓	0940		✓	03 GW 17 01	12 ~~13~~	—	2	2	1	1	1	*	5	
—	↓	1317		✓	03 GW 18 01	12 ~~13~~	—	2	2	1	1	1	*	5	
FD	6/25	0000		✓	FD 06250101	12 ~~13~~	—	2	2	1	1	1	*	5	DUP OF 03GW12 01
—	↓	0902		✓	03GW12 01	13	—	2	2	1	1	1	1	5	

RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED BY (SIGNATURE):	RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED BY (SIGNATURE):
T. S. Smith	6/25/94 1630	FEDEX			
RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED BY (SIGNATURE):	RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED BY (SIGNATURE):
RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED FOR LABORATORY BY (SIGNATURE):	DATE / TIME:	REMARKS: AB #6286 9205 4962	

TO CHICKS LAB

Order No. 70440 (0693)

SOIL

02382

CHAIN OF CUSTODY RECORD

PROJECT NO.: CTO 159 # 3960

SITE NAME: NSWC CRANE

SAMPLERS (SIGNATURE): [signature]

STATION NO.	DATE	TIME	COMP	GRAB	STATION LOCATION	NO. OF CONTAINERS	APX IX POC	VOC 1+VOC 2	SVOC SIM EXP	METALS + SN NC	NITRATE NITRITE			REMARKS
—	6/24	1216		✓	03SS23 0002	14	12	1	1					RUN ALSO MS/MSD
—		1310		✓	03SB23 0610	7	5	1	1					
FD		0000		✓	FD 062401 01	7	5	1	1					DUP OF 03SB0610 (26)
—		1340		✓	03SS26 0002	7	5	1	1					
—		1415		✓	03SB26 0610	7	5	1	1					
—		1455		✓	03SS27 0002	~~7~~ 6	4	1	1					
—		1550		✓	03SB27 0206	~~7~~ 6	4	1	1					
—		1600		✓	03SB27 0607	~~7~~ 6	4	1	1					
—		1620		✓	03SS28 0002	7	5	1	1					
—		1640		✓	03SB28 0204	7	5	1	1					
FD	↓	0000		✓	FD 062401 02	7	5	1	1					DUP OF 03SB280204

RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED BY (SIGNATURE):	RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED BY (SIGNATURE):
[signature]	6.25.01 1630	FEDEX			
RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED BY (SIGNATURE):	RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED BY (SIGNATURE):
RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED FOR LABORATORY BY (SIGNATURE):	DATE / TIME:	REMARKS: AB# 8286 9205 4962	

TO LAUCKS LAB

Order No. 70440 (C

APCL

02383

CHAIN OF CUSTODY RECORD

PROJECT NO.: CTO 159 #3960

SITE NAME: NSWC CRANE

SAMPLERS (SIGNATURE): [signature]

STATION NO.	DATE	TIME	COMP	GRAB	STATION LOCATION	NO. OF CONTAINERS	PERCHLORATE SOIL	PERCHLORATE WATER						REMARKS
—	6/24	1340		✓	03SS260002	1	1							
—		1415		✓	03SB260610	1	1							
		1455		✓	03SS270002	1	1							
		1550		✓	03SB270206	1	1							
		1600		✓	03SB270607	1	1							
		1620		✓	03SS280002	1	1							
		1640		✓	03SB280204	1	1							
	↓	0000		✓	FD062401 02	1	1							DUP OF 03SB280204
RB	6/24	1800		✓	RB062401 01	1	—	1						STAINLESS STEEL MIXING BOWL
—		0948		✓	03GW1701	1	—	1						
—	↓	1317		✓	03GW1801	1	—	1						
FD	6/25	0000		✓	FD06250101	1	—	1						DUP OF 03GW1201
—	↓	0902		✓	03GW1201	1	—	1						

RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED BY (SIGNATURE):	RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED BY (SIGNATURE):
[signature]	6-25-01 1630	FEDEX			
RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED BY (SIGNATURE):	RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED BY (SIGNATURE):
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Order No. 70440 (0693)

APCL

02385

CHAIN OF CUSTODY RECORD

PROJECT NO.: CTO 159 #3960

SITE NAME: NSWC CRANE

SAMPLERS (SIGNATURE): [signature]

STATION NO.	DATE	TIME	COMP	GRAB	STATION LOCATION	NO. OF CONTAINERS	PERCHLORATE							REMARKS
—	6/25	1432		✓	03GW1101	1	1							
—	6/26	1222		✓	03GW1401	1	1							
—	↓	1212		✓	03GW2501	1	1							
—	↓	1652		✓	03GW2401	1	1							

RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED BY (SIGNATURE):	RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED BY (SIGNATURE):
[signature]	6.27.01 1015	FEDEX			
RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED BY (SIGNATURE):	RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED BY (SIGNATURE):
RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED FOR LABORATORY BY (SIGNATURE):	DATE / TIME:	REMARKS: AB # 8286 9205 5009	

Order No. 70440

02386

CHAIN OF CUSTODY RECORD

PROJECT NO.: CTO 159 # 3960

SITE NAME: NSWC CRANE

SAMPLERS (SIGNATURE): [signature]

STATION NO.	DATE	TIME	COMP	GRAB	STATION LOCATION	NO. OF CONTAINERS	APX IX VOC	APX IX VOC VOCL+2	APX IX SVOC L AMBER	SIM L AMBER	EXPLOSIVES L AMBER	NITROCELLULOSE L AMBER	TAL METALS HNO3	TAL METALS + SN DISSOLVED	REMARKS
TB	6/25	1300		✓	TB06250101	3	3	—	—	—	—	—	—	—	
—	↓	1432		✓	03GW1101	12	—	5	2	2	1	1	1	—	
—	6/26	1222		✓	03GW1401	12	—	5	2	2	1	1	1	—	
—	↓	1212		✓	03GW2501	13	—	5	2	2	1	1	1	1	
—	↓	1652		✓	03GW2401	12	—	5	2	2	1	1	1	—	

RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED BY (SIGNATURE):	RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED BY (SIGNATURE):
[signature]	6.27.01 1015	FEDEX			
RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED BY (SIGNATURE):	RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED BY (SIGNATURE):
RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED FOR LABORATORY BY (SIGNATURE):	DATE / TIME:	REMARKS: AB # 8286 9205 5010	

Order No. 70440 (0693)

NOTE DISSOLVED SAMPLE ID ENDS WITH "F" TO CAUCUS LAB

02387

CHAIN OF CUSTODY RECORD

PROJECT NO.: CTO 159 #3960

SITE NAME: NSWC CRANE

SAMPLERS (SIGNATURE): [signature]

STATION NO.	DATE	TIME	COMP	GRAB	STATION LOCATION	NO. OF CONTAINERS	APX IX VOC	APX IX VOC 1+2	APX IX SVOC	SIM L AMBER	EXPLOSIVES L AMBER	NITROCELLULOSE L AMBER	TAL METALS + SN HNO3	REMARKS
TB	7/10	0700		✓	TB 07100101	3	3	—	—	—	—	—	—	
—	↓	1125		✓	03GW2101	12	—	5	2	2	1	1	1	
—		1150		✓	03GW1601	12	—	5	2	2	1	1	1	
—		1740		✓	03GW1501	12	—	5	2	2	1	1	1	
—		1820		✓	03GW2201	12	—	5	2	2	1	1	1	
RB	7/11	0800		✓	RB 07110101	12	—	5	2	2	1	1	1	TEFLON BLADDER
—	↓	1050		✓	03GW1001	12	—	5	2	2	1	1	1	

RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED BY(SIGNATURE):	RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED BY(SIGNATURE):
[signature]	7.11.01 1810	FEDEX			
RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED BY (SIGNATURE):	RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED BY(SIGNATURE):
RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED FOR LABORATORY BY (SIGNATURE):	DATE / TIME:	REMARKS: AB # 8286 9205 3020	

Order No. 70440 /

APCL

02388

CHAIN OF CUSTODY RECORD

PROJECT NO.: CTO 159 #3960

SITE NAME: NSWC CRANE

SAMPLERS (SIGNATURE): [illegible]

STATION NO.	DATE	TIME	COMP	GRAB	STATION LOCATION	NO. OF CONTAINERS	PERCHLORATE							REMARKS
—	7/10	1125		✓	03GW2101	1	1							
—	↓	1150		✓	03GW1601	1	1							
—	↓	1740		✓	03GW1501	1	1							
—	↓	1820		✓	03GW2201	1	1							
RB	7/11	0900		✓	RB07110101	1	1							TEFLON BLADDER
—	↓	1050		✓	03GW1001	1	1							

RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED BY (SIGNATURE):	RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED BY (SIGNATURE):
[illegible]	7-11-01 1810	FEDEX			
RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED BY (SIGNATURE):	RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED BY (SIGNATURE):
RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED FOR LABORATORY BY (SIGNATURE):	DATE / TIME:	REMARKS: AB# 8266 9205 5031	

Order No. 70440 (0693)

ABG/ JEEP TRAIL SWs ROUND 2

TETRA TECH NUS, INC. CHAIN OF CUSTODY | NUMBER | PAGE 1 OF 2

PROJECT NO:	SITE NAME:	PROJECT MANAGER AND PHONE NUMBER	LABORATORY NAME AND CONTACT:
CTO 159 #3960	NSWC CRANE	RALPH BASINSKI	APCL
SAMPLERS (SIGNATURE)		FIELD OPERATIONS LEADER AND PHONE NUMBER: KEITH SIMPSON	ADDRESS
K. S. Simpson		CARRIER/WAYBILL NUMBER: FEDEX 8280 7402 8180	CITY, STATE: CHINO, CA
TR, FW, KM			

STANDARD TAT ☐
RUSH TAT ☐
☐ 24 hr. ☐ 48 hr. ☐ 72 hr. ☐ 7 day ☐ 14 day

CONTAINER TYPE PLASTIC (P) or GLASS (G): P
PRESERVATIVE USED: KC

DATE YEAR 2001	TIME	SAMPLE ID	MATRIX	GRAB (G) COMP (C)	No. OF CONTAINERS	TYPE OF ANALYSIS: PERCHLORATE								COMMENTS
9/9	0815	03 SW 09 02	AQ	G	1	1								
	0830	03 SW 19 02	AQ	G	3	3								RUN ALSO MS/MSD
	0845	03 SW 06 02	AQ	G	1	1								
	0910	03 SW 18 02	AQ	G	1	1								
	0920	03 SW 01 02	AQ	G	1	1								
	0935	03 SW 17 02	AQ	G	1	1								
	0940	03 SW 02 02	AQ	G	1	1								
	1000	03 SW 16 02	AQ	G	1	1								
	1020	03 SW 03 02	AQ	G	1	1								
	1030	03 SW 15 02	AQ	G	1	1								
	1603	03 SW 14 02	AQ	G	1	1								
	0000	FD090901 01	AQ	G	1	1								DUP OF 03SW19 02
	0000	FD090901 02	AQ	G	1	1								03SW06 02

	DATE	TIME		DATE	TIME
1. RELINQUISHED BY: K. S. Simpson	9.10.01	1630	1. RECEIVED BY: FEDEX		
2. RELINQUISHED BY			2. RECEIVED BY		
3. RELINQUISHED BY			3. RECEIVED BY		

COMMENTS:

WHITE (ACCOMPANIES SAMPLE) YELLOW (FIELD (PINK (FILE COPY) 1/99

ABG/JEEP TRAIL SW. ROUND 2

TETRA TECH NUS, INC. CHAIN OF CUSTODY | NUMBER | PAGE 2 OF 2

PROJECT NO: CTO 159 #3960	SITE NAME: NSWC CRANE	PROJECT MANAGER AND PHONE NUMBER: RALPH BASINSKI	LABORATORY NAME AND CONTACT: APCL
SAMPLERS (SIGNATURE): [signature] TR, FW, KM		FIELD OPERATIONS LEADER AND PHONE NUMBER: KEITH SIMPSON	ADDRESS
		CARRIER/WAYBILL NUMBER: FEDEX 8280 7402 8180	CITY, STATE: CHINO, CA

STANDARD TAT ☐
RUSH TAT ☐
☐ 24 hr. ☐ 48 hr. ☐ 72 hr. ☐ 7 day ☐ 14 day

DATE YEAR 2001	TIME	SAMPLE ID	MATRIX	GRAB (G) COMP (C)	No. OF CONTAINERS	TYPE OF ANALYSIS: PERCHLORATE								COMMENTS
		CONTAINER TYPE PLASTIC (P) or GLASS (G)				P								
		PRESERVATIVE USED				NONE								
9/9	1620	03SW1302	AQ	G	1	1								
	1730	03SW1102	AQ	G	1	1								
↓	1750	03SW0802	AQ	G	1	1								

	DATE	TIME		DATE	TIME
1. RELINQUISHED BY [signature]	9.10.01	1630	1. RECEIVED BY FEDEX		
2. RELINQUISHED BY			2. RECEIVED BY		
3. RELINQUISHED BY			3. RECEIVED BY		

COMMENTS

WHITE (ACCOMPANIES SAMPLE) YELLOW (FIELD COPY) PINK (FILE COPY)

3/99 FORM NO. TtNUS-001

ABG / JEEP TRAIL SWs ROUND 2

TETRA TECH NUS, INC. CHAIN OF CUSTODY | NUMBER | PAGE 2 OF 2

PROJECT NO: CTO 159 #3960	SITE NAME: NSWC CRANE	PROJECT MANAGER AND PHONE NUMBER: RALPH BASINSKI	LABORATORY NAME AND CONTACT: LAUCKS LAB
SAMPLERS (SIGNATURE): K. S. Simpson		FIELD OPERATIONS LEADER AND PHONE NUMBER: KEITH SIMPSON	ADDRESS:
FW, TR, KM		CARRIER/WAYBILL NUMBER: FEDEX 8280 7402 8205	CITY, STATE: SEATTLE WA

STANDARD TAT ☐
RUSH TAT ☐
☐ 24 hr. ☐ 48 hr. ☐ 72 hr. ☐ 7 day ☐ 14 day

DATE YEAR 2001	TIME	SAMPLE ID	MATRIX	GRAB (G) COMP (C)	No. OF CONTAINERS	APX IX VOCs 8260 + 8015	APX IX SVOC	APX IX PEST/PCB	APX IX HERB	SIM EXPLOSIVES	NITROCELLULOSE	TAL METALS + SN	DISS. TAL METALS + SN	TSS	COMMENTS
CONTAINER TYPE PLASTIC (P) or GLASS (G)						G	G	G	G	G	G	G	P	P	P
PRESERVATIVE USED						HCL 4°C	4°C	4°C	4°C	4°C	4°C	4°C	HNO3 4°C	HNO3 4°C	4°C
9/9	1603	03SW14 02	AQ	G	17	5	2	2	2	1	1	1	1	1	1
	1620	03SW13 02	AQ	G	17	5	2	2	2	1	1	1	1	1	1
	1730	03SW11 02	AQ	G	17	5	2	2	2	1	1	1	1	1	1
↓	1750	03SW08 02	AQ	G	17	5	2	2	2	1	1	1	1	1	1

1. RELINQUISHED BY: K. S. Simpson	DATE 9.10.01	TIME 1630	1. RECEIVED BY: FEDEX	DATE	TIME
2. RELINQUISHED BY	DATE	TIME	2. RECEIVED BY	DATE	TIME
3. RELINQUISHED BY	DATE	TIME	3. RECEIVED BY	DATE	TIME

COMMENTS: DISSOLVED ID ENDS IN "F" (FILTERED)

DISTRIBUTI WHITE (ACCOMPANIES SAMPLE) YELLOW (FIELD C PINK (FILE COPY) /99

ABG/ JEEP TRAIL SW's ROU. J 2

TETRA TECH NUS, INC.

CHAIN OF CUSTODY | NUMBER

PROJECT NO: CTO 159 #3960

SITE NAME: NSWC CRANE

PROJECT MANAGER AND PHONE NUMBER: RALPH BASINSKI

LABORATORY NAME AND CONTACT: LAUCKS LABS

SAMPLERS (SIGNATURE): [signature]

TR, FW, KM

FIELD OPERATIONS LEADER AND PHONE NUMBER: KEITH SIMPSON

ADDRESS:

CARRIER/WAYBILL NUMBER: FEDEX 8280 7402 8205

CITY, STATE: SEATTLE WA

STANDARD TAT ☐
RUSH TAT ☐
☐ 24 hr. ☐ 48 hr. ☐ 72 hr. ☐ 7 day ☐ 14 day

DATE YEAR 2001	TIME	SAMPLE ID	MATRIX	GRAB (G) COMP (C)	No. OF CONTAINERS	TYPE OF ANALYSIS: APX IX VOCs E260 + 8015	APX IX SVOC	APX IX PEST/PCB	APX IX HERB	SIM	EXPLOSIVES	NITROCELLULOSE	TAL METALS + SN	DISS TAL METALS + SN	TSS	COMMENTS
CONTAINER TYPE PLASTIC (P) or GLASS (G)						G	G	G	G	G	G	G	P	P	P	
PRESERVATIVE USED						HCl	4°C	4°C	4°C	4°C	4°C	4°C	HNO3	HNO3	4°C	
9/9	0700	TB 090901 01	AQ	G	3	3										
	0815	03SW 09 02	AQ	G	17	5	2	2	2	1	1	1	1	1	1	
	0830	03 SW 19 02	AQ	G	49	15	6	6	6	3	3	3	3	3	1	RUN ALSO MS/MSD
	0845	03 SW 06 02	AQ	G	17	5	2	2	2	1	1	1	1	1	1	
	0910	03 SW 18 02	AQ	G	17	5	2	2	2	1	1	1	1	1	1	
	0920	03 SW 01 02	AQ	G	17	5	2	2	2	1	1	1	1	1	1	
	0935	03 SW 17 02	AQ	G	17	5	2	2	2	1	1	1	1	1	1	
	0940	03 SW 02 02	AQ	G	17	5	2	2	2	1	1	1	1	1	1	
	1000	03 SW 16 02	AQ	G	17	5	2	2	2	1	1	1	1	1	1	
	1020	03 SW 03 02	AQ	G	17	5	2	2	2	1	1	1	1	1	1	
	1030	03 SW 15 02	AQ	G	17	5	2	2	2	1	1	1	1	1	1	DUP OF 03SW 19 02
	0000	FD 09090101	AQ	G	17	5	2	2	2	1	1	1	1	1	1	03SW 06 02
	0000	FD 09090102	AQ	G	17	5	2	2	2	1	1	1	1	1	1	

	DATE	TIME		DATE	TIME
1. RELINQUISHED BY [signature]	9.10.01	1630	1. RECEIVED BY FEDEX		
2. RELINQUISHED BY			2. RECEIVED BY		
3. RELINQUISHED BY			3. RECEIVED BY		

COMMENTS: DISSOLVED ID ENDS IN "F" (FILTERED)

WHITE (ACCOMPANIES SAMPLE) YELLOW (FIELD COPY) PINK (FILE COPY)

3/99
FORM NO. TtNUS-001

APPENDIX B-8

Equipment Calibration Logs

EQUIPMENT CALIBRATION LOG

INSTRUMENT NAME/MODEL: YSI 650MDS

SERIAL NUMBER: 01C0844 AL

MANUFACTURER: YSI INC.

PROJECT NAME: NSWC Crane

PROJECT NUMBER: CTO 159 JOB 3960
CTO 158 " 3959

CALIBRATION DATE	INITIAL SETTINGS	STANDARDS USED	PROCEDURE	ADJUSTMENTS MADE	FINAL SETTINGS	SIGNATURE	COMMENTS
6.5.01	✓	SEE RIGHT	AS PER MANU	YES	OK	RES/TR	CAL./CHECK
6.9.01	"	→	"	"	"	RSP	ALL PARAMETERS
							DO 100% SAT. AIR
							7.0 PH LOT 00313 EX 3/2002
							4.0 PH LOT 00223 EX 3/2002
							SP. CON. 1 MS/CM
							LOT 2478 EX 12/2001
							ORP - ZOBELL SOL.
							LOT 001237
							EX 10/2002
							SEE ABOVE FOR pH COMMENTS
6-10-01	"	"	"	"	"	TR	
6-23-01					O.K.	B Belhouse	CHECKED PARAMETERS
6-24-01					O.K.	B Belhouse	CHECKED PARAMETERS
6-25-01	"	"	"	"	O.K.	B Belhouse	" "
6.26.01	"	"	"	"	OK	RSP	" "
7.9.01	"	"	"	"	OK	RSP	CAL/CHECK ALL PARAMETERS
7-13-01	"	pH 7.0 & 4.0	"	"	OK	TRR	Recalibrate pH
7.14.01	"	"	"	"	OK	RSP	CHECKED ALL PARAMETERS
7.15.01	"	"	"	"	OK	RSP	" "
7.16.01	"	"	"	"	OK	RSP	" "
7.24.01	"	SEE R. ABOVE	"	"	OK	RSP	CAL. & CHECKED ALL PARAMETERS
8-07-01	"	"	"	"	OK	TRR	CAL ALL PARAMETERS
8-13-01	"	"	"	"	OK	TRR	CAL pH only
8.22.01	"	ALL →	"	"	OK	RES/TR	CAL ALL PARAMETERS

SOND 600 XL - B-M
S.N. 99K005

Instrument Rented From: US ENVIRONMENTAL

EQUIPMENT CALIBRATION LOG

INSTRUMENT NAME/MODEL : YSI 650 MDS

SERIAL NUMBER: 01A0854 AD

MANUFACTURER : YSI INC

PROJECT NAME : NSWC Crane

PROJECT NUMBER : CTO 159 JOB 3960

CALIBRATION DATE	INITIAL SETTINGS	STANDARDS USED	PROCEDURE	ADJUSTMENTS MADE	FINAL SETTINGS	SIGNATURE	COMMENTS
6-7-01	✓	SEE RIGHT →	AS PER MANUF.	YES	OK	TRSP	CAL./CHECK ALL PARAMETERS DO 100% SAT. AIR 7.0 PH LOT 00313 EX 3/2002 4.0 PH LOT 00223 EX 2/2002 SP. COND. 1 MS/CM LOT 2478 EX 12/2001 ORP - ZOBELL SOL. LOT 001237 EX 10/2001
6-10-01	OK	PH 4 & 10	"	OK	"	TR	SEE ABOVE LOT # ETC
6-11-01	OK	"	"	OK	"	TR	CHECK CALI OK PH, Sp Cn.
6-12-01	OK	"	"	OK	"	TR	" " " " "
7-9-01	"	SEE RIGHT	"	YES	"	TRSP	CAL./CHECK ALL PARAMETERS

SOND 600 XL B-M
SN 99E0049

Instrument Rented From: US ENVIRONMENTAL

EQUIPMENT CALIBRATION LOG

INSTRUMENT NAME/MODEL : YSI 650 MDS

PROJECT NAME : NSWC Crane

SERIAL NUMBER: 01C0844 AC

PROJECT NUMBER : CTO 158 #3959

MANUFACTURER : YSI INC.

CALIBRATION DATE	INITIAL SETTINGS	STANDARDS USED	PROCEDURE	ADJUSTMENTS MADE	FINAL SETTINGS	SIGNATURE	COMMENTS
8.23.01	✓	SEE RIGHT	AS PER MANU	YES	OK	TLS	CHECKED METER
							DO 100% SAT. AIR
							7.0 PH LOT 00313 EX 3/2002
							4.0 PH, LOT 00223 EX 2/2002
							SP. COND. 1MS/CM
							LOT 2478 EX 12/2001
							ORP - ZOBELL SOL.
							LOT 00J1237
							EX 10/2002
9/4/01	✓	SEE Comments	AS PER MANU	"	"	TLS	
9/8/01	✓	pH 7.0 & 4.0	"	"	"	TLS	
9.18.01	✓	SEE RIGHT	"	"	"	TLS	
9.19.01	✓	"	"	"	"	TLS	
9.20.01	✓	"	"	"	"	TLS	

Instrument Rented From: US ENVIRONMENTAL

EQUIPMENT CALIBRATION LOG

INSTRUMENT NAME/MODEL : LaMOTTE 2020

SERIAL NUMBER: 1758 - 1800

MANUFACTURER : LaMOTTE

PROJECT NAME : NSWC Crane

PROJECT NUMBER : CTO 159 JOB 3960

CALIBRATION DATE	INITIAL SETTINGS	STANDARDS USED	PROCEDURE	ADJUSTMENTS MADE	FINAL NTU SETTINGS	SIGNATURE	COMMENTS
6.5.01	OK	0 - 10	AS PER MANU.	NONE	0 - 10	TRR	0 NTU'S + 10 NTU'S
6.6.01	OK	0 & 10	"	"	0 & 10	TRR	" "
6.7.01	OK	0 & 10	"	"	0 & 10	TRR	" "
6.9.01	OK	0 & 10	"	"	0 & 10	TRR	" "
6.10.01	OK	0 & 10	"	"	0 & 10	TRR	" "
6.11.01	OK	0 & 10	"	"	0 & 10	TRR	" "
6.12.01	OK	0 & 10	"	"	0 & 10	KMM	" "
6.18.01	OK	0 & 10	"	"	0 & 10	KMM	" "
6.23.01	OK	0 & 10	"	"	0 & 10	RMB	" "
6.24.01	OK	0 & 10	"	"	0 & 10	RMB	" "
6.25.01	OK	0 & 10	"	"	0 & 10	RMB	" "
6.26.01	OK	0 - 10	"	"	0 - 10	TRR	" "
7.9.01	OK	0 - 10	"	"	0 - 10	TRR	

Instrument Rented From: US ENVIRONMENTAL

EQUIPMENT CALIBRA N LOG

INSTRUMENT NAME/MODEL : TURBID METER 2020

SERIAL NUMBER: 0416 4497

MANUFACTURER : LAMOTTE

PROJECT NAME : NSWC Crane

PROJECT NUMBER : CTO 159 3960
CTO 158 3959

CALIBRATION DATE	INITIAL SETTINGS	STANDARDS USED	PROCEDURE	ADJUSTMENTS MADE	FINAL SETTINGS	SIGNATURE	COMMENTS
6.7.01	0-10	0-10	AS PER MANUF.	NONE	0-10	TKP	
6-18-01	0-10	0-10	" "	"	0-10	KMM	
7.9.01	0-10	0-10	"	"	0-10	TKP	
7-11-01	0-10	0-10	"	"	0-10	TKR	
7-12-01	0-10	0-10	"	"	0-10	TKR	
7-13-01	0-10	0-10	"	"	0-10	TKR	
7-14-01	0-10	0-10	"	"	0-10	TKR	
7.15.01	0-10	0-10	"	"	0-10	TKP	
7.16.01	0-10	0-10	"	"	0-10	TKP	
7.25.01	0-10	0-10	"	"	0-10	TKP	
7-26-01	0-10	0-10	"	"	0-10	TKR	
7-27-01	0-10	0-10	"	"	0-10	TKR	
7-28-01	0-10	0-10	"	"	0-10	TKR	
7-29-01	0-10	0-10	"	"	0-10	TKR	
8-07-01	0-10	0-10	"	"	0-10	TKR	
8-11-01	0-10	0-10	"	"	0-10	TKR	
8.12-01	0-10	0-10	"	"	0-10	TKR	
8-13-01	0-10	0-10	"	"	0-10	TKR	
8.22.01	0-10	0-10	"	"	0-10	KS	
8.23.01	0-10	0-10	"	"	0-10	KS	
8-25-01	0-10	0-10	"	"	0-10	TK	
8-28-01	0-10	0-10	"	"	0-10	TK	
9-4-01	0-10	0-10	"	"	0-10	KM	
9-7-01	0-10	0-10	"	"	0-10	[illegible]	

9

Instrument Rented From: US ENVIRONMENTAL

EQUIPMENT CALIBRATION LOG

INSTRUMENT NAME/MODEL : PE PHOTOVAC, 2020

PROJECT NAME : NSWC Crane

SERIAL NUMBER: ED HF 339

PROJECT NUMBER : 3960 CTO 159

MANUFACTURER : PHOTOVAC

CALIBRATION DATE	INITIAL SETTINGS	STANDARDS USED	PROCEDURE	ADJUSTMENTS MADE	FINAL SETTINGS	SIGNATURE	COMMENTS
6.5.01	—	150/AIR - 100 PPM	AS PER MANU.	NONE	100 PPM	TKS	FILTER CHECKED
6-6-01	—	"	"	"	100 PPM	TKR	OK
6-7-01	—	"	"	"	"	TKR	OK
6-8-01	—	"	"	"	"	TKR	OK
7.9.01	—	100 PPM	"	"	"	TKR	OK

Instrument Rented From: US ENVIRONMENTAL

EQUIPMENT CALIBRA[illegible] LOG

INSTRUMENT NAME/MODEL : PE PHOTOVAC - 2020

SERIAL NUMBER: ED HK 339

MANUFACTURER : PHOTOVAC

PROJECT NAME : NSWC Crane

PROJECT NUMBER : CTO 159 # 3960

CALIBRATION DATE	INITIAL SETTINGS	STANDARDS USED	PROCEDURE	ADJUSTMENTS MADE	FINAL SETTINGS	SIGNATURE	COMMENTS
6.7.01	—	ISO/AIR	AS PER MANUAL	NONE	100 PPM	TJSP	CHECKED FILTER
6.8.01	—	100 PPM	"	"	"	TJSP	OK
6-18-01	—	100 PPM	"	"	100 PPM	[illegible]	OK
6-19-01	—	100 PPM	"	"	100 PPM	RMB	✓
6-20-01	—	100 PPM	"	"	"	RMB	✓
6-21-01	—	100 PPM	"	"	"	RMB	✓
6-22-01	—	100 PPM	"	"	"	RMB	✓
6-23-01	—	100 PPM	"	"	"	RMB	✓
6-24-01	—	100 PPM	"	"	"	RMB	✓
6-25-01	—	100 PPM	"	"	"	RMB	✓
6.26.01	—	100 PPM	"	"	"	TJSP	✓
7.10.01	—	100 PPM	"	"	"	TJSP	✓
7.16.01	—	100 PPM	"	"	"	TJSP	✓
7/24/01	—	100 PPM	"	"	"	[illegible]	✓ cleaned bulb
7/25/01	—	100 PPM	"	"	"	[illegible]	✓
7/26/01	—	100 PPM	"	"	"	[illegible]	✓
7/27/01	—	100 PPM	"	"	"	TLR	✓
7/28/01	—	100 PPM	"	"	"	TLR	✓
7/29/01	—	100 PPM	"	"	"	TLR	✓

Instrument Rented From: US ENVIRONMENTAL

APPENDIX B-9

Monitoring Well Water-Level Measurement Sheets

APPENDIX B-9.1

Round 1 (June 12, 2001)

WATER LEVEL MEASUREMENT SHEET

Project Name: NSWC Crane
Location: Crane, IN
Weather Conditions: SUNNY, HOT, DRY 87°F

Project No.: CTO 126
Personnel: KS KM
Measuring Device:
Remarks:

Well ID	Date	Time	Water Level *	Thickness of Free Product	PID Reading ppm RP	PID Reading ppm BZ	Comments
							IU TRANSDUCER IN WELL
03C09P2	6.12.01	16.32	45.24		0	0	SAIC SAMPLED THIS AM → FORMER COMARCO
03C10		1630	49.89		0.1	0	
03C11		1657	43.97		0	0	
03C12		~~1~~ 1700	41.84		0	0	IU. TRANSDUCER IN WELL
03C15		1625	64.37		0	0	
03C17		1342	137.97		0	0	
03C20		1652	89.36		0	0	
03C26		1618	82.84		0.1	0	
03C27		1604	60.87		0	0	
03C30		1331	223.09		0	0	

* All measurements to the nearest 0.01 foot

Signature(s): [illegible]

WATER LEVEL MEASUREMENT SHEET

Project Name: NSWC Crane
Location: Crane, IN
Weather Conditions: SUNNY, HOT, DRY 87°F

Project No.: CTO 126/159 #3960
Personnel: KS - RM
Measuring Device:
Remarks:

Well ID	Date	Time	Water Level *	Thickness of Free Product	PID Reading ppm RP	PID Reading ppm BZ	Comments
0310	6.12.01	1446	16.63		0	0	
0325		1450	33.00		0.1	0	RISER NEEDS CUT
0324		1452	49.35		0.2	0	" " "
0315		1524	17.98		0	0	
0323		1513	17.50		0.1	0	
0321		1525	18.90		0	0	
0316		1528	29.29		0	0	
03C02P2		1600	37.72		0	0	T.U. TRANSDUCER IN WELL
03C03		1635	87.81		0	0	
03C04		1610	76.00		0	0	
03C07		1613	78.64		0	0	
03C08P2		1646	74.45		0	0	

* All measurements to the nearest 0.01 foot

Signature(s): [illegible]

NSWC Crane
Fl[illegible]
R[illegible]
Odo[illegible]

WATER LEVEL MEASUREMENT SHEET

Project Name: NSWC Crane
Location: Crane, IN
Weather Conditions: SUNNY, HOT, DRY 87°F

Project No.: CTO 126
Personnel: KS - KM
Measuring Device:
Remarks: STAFF GAUGES "NEW"

Well ID	Date	Time	Water Level *	Thickness of Free Product	PID Reading ppm RP	PID Reading ppm BZ	Comments
SG-01	6.12.01	1642	3.02		—	0	
SG-02		1530	5.95		—	0	DRY; TO STREAM BED
SG-03		1442	6.54		—	0	DRY; TO STREAM BED
SG-04		1437	7.40		—	0	DRY; TO STREAM BED
SG-05		1433	6.73		—	0	
SG-06		1430	6.16		—	0	
SG-07		1423	0.65		—	0	

* All measurements to the nearest 0.01 foot

Signature(s): KS KL

WATER LEVEL MEASUREMENT SHEET

Project Name: NSWC Crane
Location: Crane, IN
Weather Conditions: SUNNY HOT, DRY 87 °F

Project No.: CTO 126 / 159 #3960
Personnel: KS - KM
Measuring Device: SLOPE INDICATOR
Remarks:

Well ID	Date	Time	Water Level *	Thickness of Free Product	PID Reading ppm RP	PID Reading ppm BZ	Comments
03B02	6.12.01	1420	6.27		0	0	
03B04		1416	6.97		0	0	
03C25		1402	46.85		0	0	
0318		1504	17.73		0	0	
0313		1503	13.00 KS		0.1	0	(13.01)
0317		1506	16.22		0	0	
0312		1507	16.85		0	0	
0320		1510	18.00		0	0	
0314		1502	11.58		0	0	
0311		1500	9.81		0	0	
0322		1518	16.58		0	0	
0307		1521	11.62		0	0	

* All measurements to the nearest 0.01 foot

Signature(s): [illegible]

NSWC Crane Field Form Re Ode

APPENDIX B-9.2

Round 2 (September 9, 2001)

ABG/JEEP TRAIL

Pg 1 of 4

WATER LEVEL MEASUREMENT SHEET

TOTAL RAIN FALL 9.8 PM → 9.9.01 @ 1820 = 1.25"

Project Name: NSWC Crane
Location: Crane, IN
Weather Conditions: LT. RAIN

Project No.: CTO 126
Personnel: SIMPSON, MARQUIS
Measuring Device: PJ 4
Remarks:

Well ID	Date	Time	Water Level *	Thickness of Free Product	PID Reading ppm RP	PID Reading ppm BZ	Comments
03SG-01	9.9.01	0845	2.84				
03SG-02	↓	0815	5.53				DRY, MEASURED TO STREAM BED
03SG-03	↓	1115	8.83				DRY, MEASURED TO STREAM BED
03SG-04	↓	1035	6.96				" "
03SG-05	↓	1005	6.68				
03SG-06	↓	0940	6.17				
03SG-07	↓	0835	0.93				

* All measurements to the nearest 0.01 foot

Signature(s): [illegible]

NSWC Crane
Field Form
Revision: 1
October 2000

WATER LEVEL MEASUREMENT SHEET

Project Name: NSWC Crane
Location: Crane, IN
Weather Conditions: LT RAIN

Project No.: CTO 126
Personnel: SIMPSON MARQUIS
Measuring Device: SLOPE INDICATOR, SER.#14017
Remarks: RENTED US ENVIR.

Well ID	Date	Time	Water Level *	Thickness of Free Product	PID Reading ppm RP	PID Reading ppm BZ	Comments
03B02	9.9.01	1440	6.58	NA			
03B04		1436	8.00				
03C25		1425	46.81				
03 18		1500	18.15				
03 13		1458	13.53				
03 17		1501	16.98				
03 12		1502	17.53				
03 20		1504	19.00				
03 14		1457	13.58				
03 11		1456	13.04				
03 22		1454	17.41				
03 07		1509	15.02				

* All measurements to the nearest 0.01 foot

Signature(s): [illegible]

WATER LEVEL MEASUREMENT SHEET

Project Name: NSWC Crane
Location: Crane, IN
Weather Conditions: LT RAIN

Project No.: CTO 126
Personnel: SIMPSON - MARQUIS
Measuring Device: PG 4
Remarks:

Well ID	Date	Time	Water Level *	Thickness of Free Product	PID Reading ppm RP	PID Reading ppm BZ	Comments
03 10	9.9.01	1446	17.00	NA			
03 25		1448	33.04				
03 24		1450	49.36				
03 15		1510	18.46				
03 23		1507	19.47				
03 21		1514	19.14				
03 16		1517	29.47				
03C02P2		1520	37.69				I.U. TRANSDUCER INWELL
03C03		1647	87.99				
03C04		1703	76.02				
03C07		1711	78.71				
03C08P2		1530	74.61				

* All measurements to the nearest 0.01 foot

Signature(s): [illegible]

HEAVY RAIN STARTING @ 1545 ENDING @ 1630
STARTING RAIN 1700 ENDING 1755

NSWC Crane
Field Form
Revision: 1
October 2000

WATER LEVEL MEASUREMENT SHEET

Project Name: NSWC Crane
Location: Crane, IN
Weather Conditions: LT RAIN

Project No.: CTO 126
Personnel: SIMPSON, MARQUIS
Measuring Device: Pg 4
Remarks:

Well ID	Date	Time	Water Level *	Thickness of Free Product	PID Reading ppm RP	PID Reading ppm BZ	Comments
03C09P2	9.9.01	1651	45.28	NA			IU TRANDUCER IN WELL
03C10		1653	49.93				
03C11		1528	43.89				
03C12		1525	41.88				I.U. TRANSDUCER IN WELL
03C15		1656	64.44				
03C17		1408	137.67				*USED SAIC 300' METER
03C20		1700	89.43				
03C26		1714	82.57				
03C27		1538	60.91				
03C30		1335	223.14				*

* All measurements to the nearest 0.01 foot

Signature(s): [illegible]

APPENDIX B-9.3

Round 3 (June 12 and 13, 2002)

Tetra Tech NUS, Inc.

GROUNDWATER LEVEL MEASUREMENT SHEET

Project Name: NSWC CRANE
Location: DBG/ABG/OJT
Weather Conditions: Hot & Humid

Project No.: 3960
Personnel: T. LOJOHN
Measuring Device: HERON M-SCOPE
Remarks: Two TEAMS (KS & S.C. on 2nd TEAM)

Well or Staff Gauge ID	Time	Water Level Indicator Reading (feet)*	Elevation of Reference Point (feet) (NGVD29)	Total Well Depth (feet)*	Measured Total Well Depth (feet)*	Date	Comments
02-01	1305	25.76	740.85	32.42		6/12/02	
02-02	1324	45.31	727.67	51.51			
02-03	1438	43.09	722.38	62.66			
02-04	1349	37.77	719.02	47.46			
02-05	1149	56.43	741.28	61.74			
02-06	1307	59.87	744.25	67.47			
02-07	1320	54.37	738.02	61.03			
02-08	1255	48.52	731.80	54.88			
02C09	1515	170.26	740.36	179.53			
02C09P2	—	—	740.66	99.33			DRY @ 96.6' Bottom
02C10	1104	146.56	716.47	154.5			
02C10P2	1107	40.46	716.39	74			
02C10P3	1110	28.77	716.36	2.5			
02C11	1425	149.13	715.31	160.5			
02C11P2	1430	73.55	715.36	82.3			
02C11P3	1428	34.65	715.66	43.8			
02C12	1143	171.22	741.57	184.1			
02C12P2	1148	89.22	741.82	105.7			
02C12P3	1145	23.31	741.83	36.5			
02C13	1130	61.82	725.11	81.8			
02C13P2	1133	39.82	724.78	46.5			
02C13P3	1136	10.23	725.51	22.5			
02C14	1402	149.10	716.40	166.4			
02C14P2	1356	63.60	716.43	86.9			
02C14P3	1405	36.58	716.26	49.6			
02C14P4							→ NOTED MAR
02C15	1418	69.88	715.88	78.8			
02C15P2	1416	33.02	715.77	41.7			PVC Broken inside Casing — dea. F.
02C16	1335	~ 84.90	725.36	91.1			C16 ←
42.67 → 02C16P2	1337	42.67	725.18	56			
02C17	1448	84.53	732.96	98.6			
02C17P2	1451	48.53	732.84	62.2			
02C17P3	1453	DRY	733.38	28.64			DRY
02C18	1459	88.73	737.31	100.8			
02C18P2	1502	52.53	737.24	64.9			
02C18P3	1504	20.98	737.45	20.71			
02C19	1312	87.10	733.35	92.7			
02C19P2	1315	48.62	733.28	58.1			
02C19P3	1318	DRY	733.68	18.6			DRY
02C20	1117	137.47	715.06	147.2			
02C20P2	1120	57.69	714.92	68.5			
02C20P3	1123	17.30	714.78	40.51			

* All measurements are from the top of riser.

Tetra Tech NUS, Inc.

GROUNDWATER LEVEL MEASUREMENT SHEET

Project Name: NSWC CRANE
Location: ABG/OJT/DBG
Weather Conditions: SEE W9 BOOK 1340
Project No.: 3960
Personnel: K. Simpson / S. Conti
Measuring Device: HERON M-SCOPE
Remarks:

Well or Staff Gauge ID	Time	Water Level Indicator Reading (feet)*	Elevation of Reference Point (feet) (NGVD29)	Total Well Depth (feet)*	Measured Total Well Depth (feet)*	Date	Comments
~~03C21~~							reported aband.
~~02C22~~	1501	~~9.66~~ KS	742.99			~~6.12.02~~	~~9.66~~
~~02C22P2~~			742.63				
~~02C22P3~~			742.50			6.12.02	
03C01	1511	114.86	627.28	186.7			
03C01P2	1507	69.90	626.85	104.5			
03C01P3	1508	14.15	626.50	27.1			
03C02	1324	71.28	583.49	132			
03C02P2	1322	37.54	583.15	50.5			
03C03	1412	87.50	600.08	151.5			
03C03P2	1411	41.55	600.20	68.3			
03C04	1351	76.95	624.42	86			
~~03C05~~			581.36	44.5			
03C06	1602	76.76	625.40	99.5			
03C07	1355	78.61	636.47	101.2			
03C08P2	1620	74.48	629.34	102.5			NO A
03C08A	1610	118.47	630.50	183.5			
OK 03C08P3	1616	16.48	630.43	22			A-IS ONTAG
03C09	1424	91.05	603.39	157.5			
A 03C09P2	1423	45.17	603.56	74.5			
03C10	1452	49.85	608.03	78.5			
03C11	1631	43.75	592.36	60			
03C12	1346	41.85	587.20	51.5			
03C13	1405	59.46	617.75	82.7			
03C14	1542	84.92	642.79	117			
03C15	1529	64.37	621.34	101.33			
03C15P3	1528	6.20	621.11	23.1			
03C16	1645	125.17	683.25	158.5			
03C17	1300	137.97	696.15	151		12	
03C18	1524	4.49	625.09	23		12	
03C19	1330	92.13	650.50	123.3		13	
03C19P3	1333	32.74	649.70	44.5		13	
03C20	1545	89.29	646.62	120.5		6.12.02	
03C21	1537	84.96	642.22	120.9			
03C21P2	1538	34.08	642.22	41.1			
03C22	1501	9.66	617.58	17.5			
03C23	1457	5.70	618.61	16			IN DRAINAGE DITCH
03C24	1907	21.50	553.24	29.6			
03C25	1920	46.68	597.03	72.2			
03C26	1400	82.44	640.57	106.5			
03C27	1334	60.78	603.84	73			
03C28			612.96	77.2			

* All measurements are from the top of riser.

03C08

Tetra Tech NUS, Inc.

GROUNDWATER LEVEL MEASUREMENT SHEET

Project Name: NSWC CRANE
Location: DBG/OJT/ABG
Weather Conditions: Hot & Humid

Project No.: 3960
Personnel: T. ROJAHN
Measuring Device: HERON M-SCOPE
Remarks:

Well or Staff Gauge ID	Time	Water Level Indicator Reading (feet)*	Elevation of Reference Point (feet) (NGVD29)	Total Well Depth (feet)*	Measured Total Well Depth (feet)*	Date	Comments
02C21	—	—				6/12/02	reported aband.
02C22	1335	DRY	742.99				DRY @ 188.6
02C22P2	1332	DRY	742.63				DRY @ 82'
02C22P3	1329	58.33	742.50				
03C01			627.28	186.7			
03C01P2			626.85	104.5			
03C01P3			626.50	27.1			
03C02			583.49	132			
03C02P2			583.15	50.5			
03C03			600.08	151.5			
03C03P2			600.20	68.3			
03C04			624.42	86			
03C05	1609	34.75	581.36	44.5		6/12/02	
03C06			625.40	99.5			
03C07			636.47	101.2			
03C08~~P2~~			629.34	102.5			
03C08A			630.50	183.5			
03C08~~P3~~			630.43	22			
03C09			603.39	157.5			
03C09P2			603.56	74.5			
03C10			608.03	78.5			
03C11			592.36	60			
03C12			587.20	51.5			
03C13			617.75	82.7			
03C14			642.79	117			
03C15			621.34	101.33			
03C15P3			621.11	23.1			
03C16			683.25	158.5			
03C17			696.15	151			
03C18			625.09	23			
03C19			650.50	123.3			
03C19P3			649.70	44.5			
03C20			646.62	120.5			
03C21			642.22	120.9			
03C21P2			642.22	41.1			
03C22			617.58	17.5			
03C23			618.61	16			
03C24			553.24	29.6			
03C25			597.03	72.2			
03C26			640.57	106.5			
03C27			603.84	73			
03C28	1620	67.41	612.96	77.2		6/12/02	

* All measurements are from the top of riser.

03C08

Tetra Tech NUS, Inc.

GROUNDWATER LEVEL MEASUREMENT SHEET

Project Name: NSWC CRANE
Location: ABG / OJT / DBG
Weather Conditions: SEE LB 1340

Project No.: 3960
Personnel: K. Simpson & S. Conti
Measuring Device: HERON M-SCOPE
Remarks:

Well or Staff Gauge ID	Time	Water Level Indicator Reading (feet)*	Elevation of Reference Point (feet) (NGVD29)	Total Well Depth (feet)*	Measured Total Well Depth (feet)*	Date	Comments
03C29	1130	242.40	797.37	280.2		6.12.02	
03C30	1138	223.23	778.91	263		12	
03C31	1149	238.06	792.10	267.4		12	
03C32	1307	153.65	711.56	176.5		13	
03C33	1105	234.48	785.03	251		13	METER TAPE COATED W/ IRON FL
03C34	0844	178.56	727.07	190		13	
03C35	0900	174.85 ?	697.00	176		13	BROKEN RISER
03C36	0930	DRY	718.24	181.50	182.40	13	TRIED BOTH METERS ?
03C37	1535	108.47	620.28	117.00		13	
03C38	1020	55.15	572.97	55.50		6.12.02	
03B01	1801	6.96	504.47	15.00			
03B02	1805	6.10	503.96	17.10			
03B03	1808	5.74	504.96	16.00			
03B04	1812	6.92	506.47	17.00			
03B05	1817	7.05	507.05	16.50			
03B06	1822	7.75	509.26	15.50			
03B07	1825	6.60	510.72	11.5	? TROUBLE		READING - WATER COND. ?
03B08	1831	8.45	513.40	13.5			
03B09	1835	9.82	516.04	13			
03B10	1843	50.60	561.96	61			
03-01	1438	45.78	604.67	53.8			
03-02	1520	~~66.~~ 6.68	622.67	13			6.68' TO WATER
03-03	1330	—	584.29	98			ABANDONED
03-04	1342		594.17	67.5			ABANDONED
03-06	1337	—	589.71	49.6			ABANDONED
~~03-07~~			556.08	24.05			
03-09	1518	67.80	624.72	78.1		6.12.02	
~~03-10~~			557.59	24.08			
03-11			553.01	18.01			
03-12			557.84	23.96			
03-13			551.86	24.05			
03-14			552.01	17.6			
03-15			558.91	27.87			
03-16			571.30	35.3			
03-17			553.07	24.56			
03-18	~~1524~~	~~4.49~~	552.72	26.61			
03-19	~~1525~~	~~ABANDONED~~	559.37	32.5			
03-20			554.76	26.59			
03-21			559.71	25			
03-22			558.28	26.97			
03-23			562.09	33.52			
03-24			588.88	54.15			

* All measurements are from the top of riser.

Tetra Tech NUS, Inc.

GROUNDWATER LEVEL MEASUREMENT SHEET

Project Name: NSWC CRANE
Location: ABG/OJT/DBG
Weather Conditions: Hot & Humid

Project No.: 3960
Personnel: T. ROSAHN
Measuring Device: HERON M-SCOPE
Remarks:

Well or Staff Gauge ID	Time	Water Level Indicator Reading (feet)*	Elevation of Reference Point (feet) (NGVD29)	Total Well Depth (feet)*	Measured Total Well Depth (feet)*	Date	Comments
03C29			797.37	280.2			
03C30			778.91	263			
03C31			792.10	267.4			
03C32			711.56	176.5			
03C33			785.03	251			
03C34			727.07	190			
03C35			697.00	176			
03C36			718.24	181.50			
03C37			620.28	117.00			
03C38			572.97	55.50			
03B01			504.47	15.00			
03B02			503.96	17.10			
03B03			504.96	16.00			
03B04			506.47	17.00			
03B05			507.05	16.50			
03B06			509.26	15.50			
03B07			510.72	11.5			
03B08			513.40	13.5			
03B09			516.04	13			
03B10			561.96	61			
03-01			604.67	53.8			
03-02			622.67	13			
03-03			584.29	98			
03-04			594.17	67.5			
03-06			589.71	49.6			
03-07	1641	11.93	556.08	24.05		6/12/02	
03-09			624.72	78.1			
03-10	1714	16.60	557.59	24.08		6/12/02	
03-11	1724	9.77	553.01	18.01			
03-12	1740	16.55	557.84	23.96			
03-13	1732	~~12.95~~	551.86	24.05			12.95'
03-14	1726	11.57	552.01	17.6			
03-15	1647	17.98	558.91	27.87			
03-16	1618	29.14	571.30	35.3			
03-17	1738	16.58	553.07	24.56			
03-18	1735	17.71	552.72	26.61			
03-19	DID	NOT MEASURE	559.37	32.5			(NOT ON MAP) Fig 4-1A
03-20	1746	18.28	554.76	26.59			
03-21	1436	18.92	559.71	25			
03-22	1451	16.58	558.28	26.97			
03-23	1743	18.10	562.09	33.52			
03-24	1505	49.34	588.88	54.15			

* All measurements are from the top of riser.

Tetra Tech NUS, Inc.

GROUNDWATER LEVEL MEASUREMENT SHEET

Project Name: NSWIC CRANE
Location: DBG/OJT/ABG
Weather Conditions: SEE LB # 1340

Project No.: 3960
Personnel: K. Simpson & S. Conti
Measuring Device: HERON M-SCOPE
Remarks:

Well or Staff Gauge ID	Time	Water Level Indicator Reading (feet)*	Elevation of Reference Point (feet) (NGVD29)	Total Well Depth (feet)*	Measured Total Well Depth (feet)*	Date	Comments
[illegible]			573.57	36.42			
03-27	DESTROYED		599.08	30.6		6.13.02	
03-28	1619	11.16	627.49	24.6		12	
03-29	DESTROYED		598.61	48.6		6.13.02	
03-30	1444	50.15	608.60	55.27		6.12.02	MARKED AS 03C19P3
03-31	1332	37.73	582.84			↓	NO CAP
03-32	1330	—	583.54			↓	ABANDONED
03-33	1327	36.67	583.39			12	
03-34	1341		585.06			6.12.02	ABANDONED
03-35	1341	—	586.60			↓	ABANDONED
03-36	1340	—	617.54			↓	A
03-37	1341	—	586.52	43.9		↓	A
03-38	1434	46.25	604.79			↓	
03-39	1432	44.36	603.25			↓	NO CAP
03SG01	1628	2.80				↓	LOW FLOW ≈ 20 GPM
03SG02	1705	6.34 *	DRY, TO GROUND			↓	
03SG03	1716	6.35 *	"	"	"	↓	
03SG04	1719	7.38 *	"	"	"	↓	
03SG05	1723	6.93	FLOW			↓	EST. 50 GPM
03SG06	1750	6.30	FLOW @ SPRING A & A'			↓	
03SG07	1803	1.04	? LOOSE, MAY HAVE CHANGED			↓	

03SG4 DURING STORM 6.13.02 @ 1024 6.31
HIGH FLOW

* All measurements are from the top of riser.

Tetra Tech NUS, Inc.

GROUNDWATER LEVEL MEASUREMENT SHEET

Project Name: NSWC CRANE
Location: OJT/ABG/DBG
Weather Conditions: Hot & Humid

Project No.: 3960
Personnel: T. Rosahal
Measuring Device: Heron M-Scope
Remarks:

Well or Staff Gauge ID	Time	Water Level Indicator Reading (feet)*	Elevation of Reference Point (feet) (NGVD29)	Total Well Depth (feet)*	Measured Total Well Depth (feet)*	Date	Comments
03-25	1600	32.80	573.57	36.42		6/4/02	
03-27			599.08	30.6			
03-28			627.49	24.6			
03-29			598.61	48.6			
03-30			608.60				
03-31			582.84				
03-32			583.54				
03-33			583.39				
03-34			585.06				
03-35			586.60				
03-36			617.54				
03-37			586.52	43.9			
03-38			604.79				
03-39			603.25				
03SG01							
03SG02							
03SG03							
03SG04							
03SG05							
03SG06							
03SG07							

* All measurements are from the top of riser.

APPENDIX B-10

Surface Water Flow Measurement Sheets

Tetra Tech NUS, Inc.

SURFACE WATER FLOW MEASUREMENT SHEET

Project Site Name: NSWC CRANE

Project No.: 3960

Location: SG 01

Date: 6.19.01

Time: 1445

Stream Dimensions:

Width: 3.5

Maximum Depth: 0.1'

Average Depth: 0.1'

Velocity Over 6' +/- : 1 MIN

Stream Diagram:

VIEW NW - UPSTREAM

3 - STEEL PIPES ≈ 48", ONLY ONE WITH FLOW

OBSERVATIONS / NOTES:

WL = 2.97'

EST. FLOW 20 GPM

MAP:

CLOSE TO 035W/SD 06

Signature(s):

Tetra Tech NUS, Inc.

SURFACE WATER FLOW MEASUREMENT SHEET

Project Site Name: NSWC CRANE

Project No.: 3960

Location: SG05

Date: 6-19-01

Time: 1424

Stream Dimensions:

Width: 10'

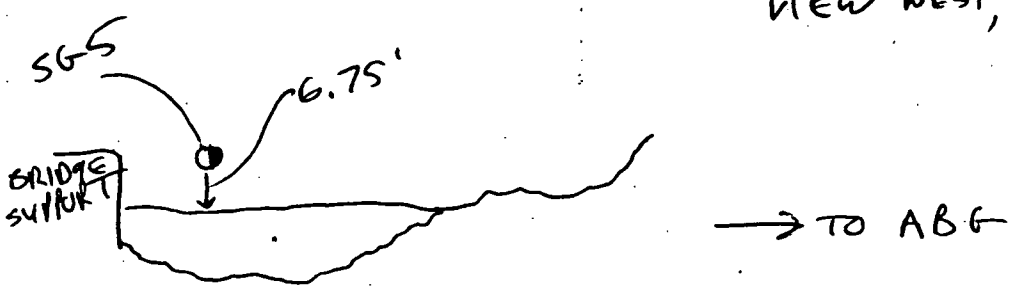
Maximum Depth: 2.0'

Average Depth: 1.0'

Velocity Over 6' +/- : 2+ MIN

Stream Diagram:

VIEW WEST, FROM BRIDGE



OBSERVATIONS / NOTES:

wl = 6.75'

FLOW = 20GPM ± (20)

MAP:

ON BRIDGE, 2ND BRIDGE SOUTH OF ABG

Signature(s):

Tetra Tech NUS, Inc.

SURFACE WATER FLOW MEASUREMENT SHEET

Project Site Name: NSWC CRANE

Project No.: 3960

Location: SG06

Date: 6.19.01

Time: 1408

Stream Dimensions:

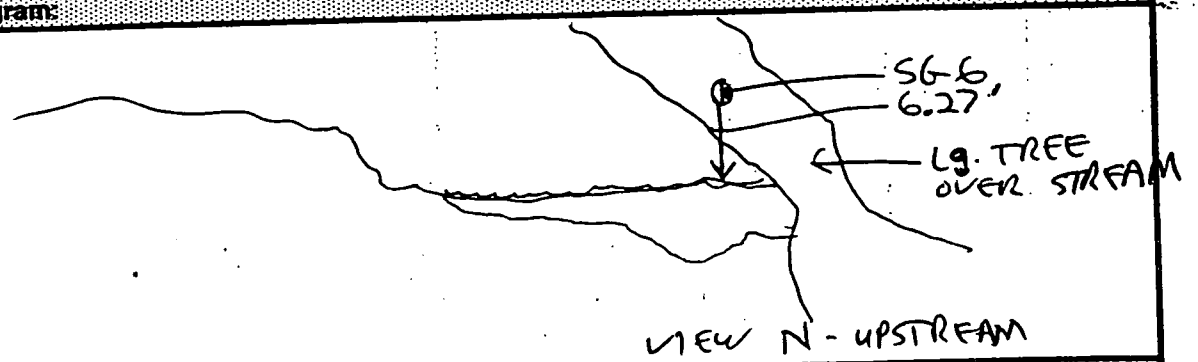
Width: 10'

Maximum Depth: 1.3'

Average Depth: 0.8'

Velocity Over 6' +/- : 2+ MIN.

Stream Diagram:



OBSERVATIONS / NOTES:

6.27' WL

EST. FLOW RATE = 130 GPM

MAP:

CLOSE TO 03SW/SD17

DOWN STREAM OF SPRING A ≈ 70'

Signature(s):

Tetra Tech NUS, Inc.

SURFACE WATER FLOW MEASUREMENT SHEET

Project Site Name: NSWC CRANE

Project No.: 3966

Location: SG07

Date: 6-19-01

Time: 1350

Stream Dimensions:

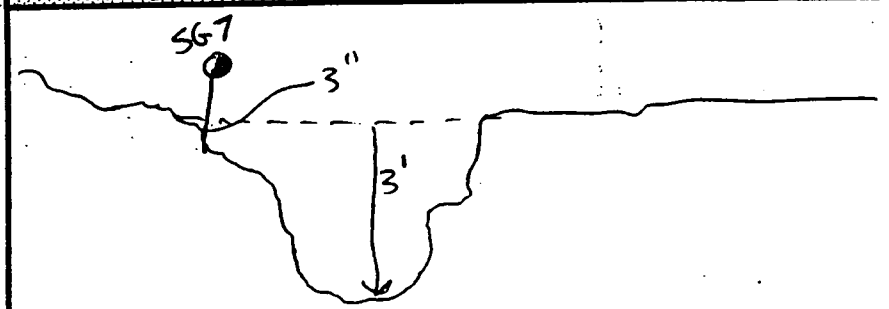
Width: 10'

Maximum Depth: 3.0'

Average Depth: 2.0'

Velocity Over 6' +/- : 2 MIN

Stream Diagram:



VIEW NORTH - UPSTREAM

OBSERVATIONS / NOTES:

EST. FLOW RATE
150 GPM

0.98' = WL

MAP:

CLOSE TO 03SW/SD19

SEE FIG 4-2

Signature(s):

APPENDIX B-11

Hydraulic Conductivity Calculations

ANALYSIS OF LOW-FLOW PURGING TESTS

Hydraulic conductivity values were estimated using the Ogden field method (Kasenow and Pare, 1995) and the Jacob straight-line method (Fetter, 1988). Discharge (Q), drawdown (s), and elapsed time values were derived from the low-flow purge data sheets see Attachment 1.

Ogden Field Method Evaluation

Hand calculation using the Ogden field method (Kasenow and Pare, 1995) was completed for monitoring well 3-07, see Attachment 2. Attachment 2 also includes the Ogden field method explanation and associated cross-reference table providing the correction factors needed for the Ogden field method. The calculation for the remaining fifteen wells were carried out on an Excel spread sheet provided on Attachment 3.

Jacob Straight-line Method Evaluation

Hand calculation using the Jacob straight-line Method was completed for monitoring well 3-07, see Attachment 4. Attachment 4 also includes the drawdown vs. time plots generated from the drawdown data provided in Attachment 1. The calculation for the remaining fifteen wells were carried out on an Excel spread sheet provided on Attachment 5.

ATTACHMENT 1

Well ID: 03MW07
Date: 6/7/2001

Time (Hours)	Distance to Water (Feet)	Pump Rate (mL/Min)	Elasped time (min)	Drawdown (feet)
1315	10.55	---	0	0
1320	10.58	190	5	0.03
1330	10.60	160	15	0.05
1340	10.63	130	25	0.08
1350	10.64	130	35	0.09
1400	10.64	130	45	0.09
1410	10.65	130	55	0.1
1420	10.67	130	65	0.12
1430	10.68	130	75	0.13
1440	10.69	130	85	0.14
1450	10.69	130	95	0.14
1500	10.69	130	105	0.14
1510	10.69	130	115	0.14
1520	10.69	130	125	0.14
1530	10.69	130	135	0.14
1535	10.69	130	145	0.14
1540	10.70	130	155	0.15

Average= 135

Well ID: 3-10
Date: 7/11/2001

Time (Hours)	Distance to Water (Feet)	Pump Rate (mL/Min)	Elasped time (min)	Drawdown (feet)
845	16.32	---	0	0
855	16.95	150	10	0.63
905	17.05	70	20	0.73
915	17.17	70	30	0.85
925	17.27	75	40	0.95
935	17.34	70	50	1.02
945	17.40	70	60	1.08
955	17.39	55	70	1.07
1005	17.36	55	80	1.04
1015	17.33	50	90	1.01
1025	17.40	70	100	1.08
1035	17.43	70	110	1.11
1045	17.44	50	120	1.12
1050	---	---	130	

Average= 70

Well ID: 3-11
Date: 6/25/2001

Time (Hours)	Distance to Water (Feet)	Pump Rate (mL/Min)	Elasped time (min)	Drawdown (feet)
1315	9.74	---	0	0
1320	9.94	160	5	0.20
1325	10.08	150	10	0.34
1330	10.17	140	15	0.43
1335	10.26	130	20	0.52
1340	10.32	130	25	0.58
1345	10.40	120	30	0.66
1350	10.47	110	35	0.73
1355	10.54	110	40	0.80
1400	10.60	100	45	0.86
1405	10.64	100	50	0.90
1410	10.71	100	55	0.97
1415	10.73	100	60	0.99
1420	10.76	100	65	1.02
1425	10.79	100	70	1.05
1430	10.81	100	75	1.07

Average= 117

Well ID:	3-12			
Date:	06/25/01			
Time (Hours)	Distance to Water (Feet)	Pump Rate (mL/Min)	Elasped time (min)	Drawdown (feet)
745	17	---	0	0
750	17.85	110	5	0.85
755	18	110	10	1
800	17.98	100	15	0.98
805	17.97	110	20	0.97
810	18.33	110	25	1.33
815	18.28	110	30	1.28
820	18.32	110	35	1.32
825	18.33	110	40	1.33
830	18.37	100	45	1.37
835	18.38	100	50	1.38
840	18.27	100	55	1.27
845	18.26	100	60	1.26
850	18.24	100	65	1.24
855	18.25	100	70	1.25
900	18.26	100	75	1.26

Average= 107

Well ID:	3-13			
Date:	06/23/01			
Time (Hours)	**Distance to Water (Feet)**	**Pump Rate (mL/Min)**	**Elasped time (min)**	**Drawdown (feet)**
945	12.88	---	0	0
950	14.3	125	5	1.42
955	14.08	125	10	1.2
1000	14.09	125	15	1.21
1005	14.09	125	20	1.21
1010	14.09	125	25	1.21
1015	14.1	125	30	1.22
1020	14.1	130	35	1.22
1025	14.09	125	40	1.21
1030	14.1	120	45	1.22
1035	14.1	125	50	1.22
1040	14.1	130	55	1.22
1045	14.1	135	60	1.22
1050	14.22	135	65	1.34
1055	14.37	150	70	1.49
1100	14.9	140	75	2.02
1105	15.1	120	80	2.22
1110	15.17	110	85	2.29
1115	15	100	90	2.12
1120	15.1	100	95	2.22
1125	15.12	100	100	2.24

Average= 129

Well ID:	3-14			
Date:	06/26/01			
Time (Hours)	**Distance to Water (Feet)**	**Pump Rate (mL/Min)**	**Elasped time (min)**	**Drawdown (feet)**
1015	11.72	100	0	0
1025	12.01	100	10	0.29
1035	12.29	90	20	0.57
1045	12.38	90	30	0.66
1055	12.52	90	40	0.8
1105	12.67	90	50	0.95
1115	12.78	90	60	1.06
1125	12.86	90	70	1.14
1135	12.95	90	80	1.23
1145	12.95	80	90	1.23
1155	12.95	80	100	1.23
1205	12.95	80	110	1.23
1210	12.95	80	115	1.23
1215	12.96	80	120	1.24
1220	12.96	80	125	1.24

Average= 87

Well ID:	3-15			
Date:	07/10/01			
Time (Hours)	**Distance to Water (Feet)**	**Pump Rate (mL/Min)**	**Elasped time (min)**	**Drawdown (feet)**
1608	17.61	120	0	0
1615	17.76	120	7	0.15
1620	17.76	120	12	0.15
1630	17.77	110	22	0.16
1640	17.78	110	32	0.17
1650	17.78	110	42	0.17
1700	17.78	110	52	0.17
1710	17.78	110	62	0.17
1720	17.78	110	72	0.17
1730	17.78	110	82	0.17
1735	17.78	110	87	0.17
1740	17.78	110	92	0.17
	Average=	114		

Well ID:	3-16			
Date:	07/10/01			
Time (Hours)	**Distance to Water (Feet)**	**Pump Rate (mL/Min)**	**Elasped time (min)**	**Drawdown (feet)**
1000	29.15	150	0	0
1005	29.33	90	5	0.18
1010	29.34	90	10	0.19
1020	29.37	75	20	0.22
1030	29.43	85	30	0.28
1040	29.4	85	40	0.25
1050	29.41	85	50	0.26
1100	29.41	85	60	0.26
1110	29.44	100	70	0.29
1120	29.44	100	80	0.29
1130	29.47	100	90	0.32
1140	29.47	100	100	0.32
1150	---	---		
	Average=	95		

Well ID:	3-17			
Date:	06/24/01			
Time (Hours)	Distance to Water (Feet)	Pump Rate (mL/Min)	Elasped time (min)	Drawdown (feet)
832	15.97	---	0	0
835	16.07	125	3	0.1
840	16.13	125	8	0.16
845	16.18	125	13	0.21
850	16.21	125	18	0.24
855	16.26	120	23	0.29
900	16.3	120	28	0.33
905	16.34	120	33	0.37
910	16.36	120	38	0.39
915	16.37	120	43	0.4
920	16.39	120	48	0.42
925	16.46	120	53	0.49
930	16.47	120	58	0.5
935	16.47	120	63	0.5
940	16.46	120	68	0.49
945	16.47	120	73	0.5
	Average=	121		

Well ID: 3-18
Date: 6/24/2001

Time (Hours)	Distance to Water (Feet)	Pump Rate (mL/Min)	Elapsed time	Drawdown (feet)
1120	17.75	---	0	0
1125	17.80	120	5	0.05
1130	17.85	120	10	0.10
1135	17.85	115	15	0.10
1140	17.86	115	20	0.11
1145	17.87	115	25	0.12
1150	17.90	115	30	0.15
1200	17.95	115	40	0.20
1205	18.00	115	45	0.25
1210	18.00	100	50	0.25
1215	18.01	100	55	0.26
1220	18.01	100	60	0.26
1230	18.01	100	70	0.26
1240	18.02	100	80	0.27
1250	18.03	100	90	0.28
1300	18.03	100	100	0.28
1305	18.04	100	105	0.29
1310	18.04	100	110	0.29
1315	18.04	100	115	0.29

Average= 105

Well ID:	3-20			
Date:	06/09/01			
Time (Hours)	**Distance to Water (Feet)**	**Pump Rate (mL/Min)**	**time**	**Drawdown (feet)**
1600	17.84	---	0	0
1610	17.87	100	10	0.03
1620	17.89	100	20	0.05
1630	17.92	100	30	0.08
1640	17.96	100	40	0.12
1650	17.99	100	50	0.15
1700	18.02	100	60	0.18
1710	18.06	100	70	0.22
1715	18.07	100	75	0.23
1720	18.08	100	80	0.24
1722	---	---		
	Average=	100		

Well ID:	3-22			
Date:	07/10/01			
Time (Hours)	**Distance to Water (Feet)**	**Pump Rate (mL/Min)**	**time**	**Drawdown (feet)**
1535	16.05	---	0	0
1545	16.23	120	10	0.18
1555	16.3	100	20	0.25
1605	16.37	100	30	0.32
1615	16.47	100	40	0.42
1625	16.59	110	50	0.54
1635	16.65	90	60	0.6
1645	16.68	80	70	0.63
1655	16.75	85	80	0.7
1705	16.77	80	90	0.72
1715	16.82	80	100	0.77
1725	16.85	80	110	0.8
1735	16.88	80	120	0.83
1745	16.91	80	130	0.86
1755	16.94	80	140	0.89
1805	16.97	80	150	0.92
1815	16.97	80	160	0.92
1820	---	---	170	
	Average=	89		

Well ID:	3-23			
Date:	06/09/01			
Time (Hours)	Distance to Water (Feet)	Pump Rate (mL/Min)	time	Drawdown (feet)
955	16.95	---	0	0
1005	17	100	10	0.05
1015	17.03	100	20	0.08
1025	17.05	100	30	0.1
1035	17.04	100	40	0.09
1045	17.03	100	50	0.08
1055	17.05	100	60	0.1
1105	17.04	100	70	0.09
1115	17.05	100	80	0.1
1125	17.06	100	90	0.11
1130	17.06	100	95	0.11
1135	17.06	100	100	0.11
1137	---	---		

Average= 100

Well ID:	3-24			
Date:	06/26/01			
Time (Hours)	Distance to Water (Feet)	Pump Rate (mL/Min)	Elasped time (min)	Drawdown (feet)
1425	49.34	---	0	
1430	49.36	100	5	0.02
1435	49.4	100	10	0.06
1440	49.39	100	15	0.05
1445	49.4	100	20	0.06
1450	49.4	100	25	0.06
1455	49.4	100	30	0.06
1500	49.4	100	35	0.06
1505	49.39	100	40	0.05
1510	49.4	100	45	0.06
1515	49.4	100	50	0.06
1520	49.4	100	55	0.06
1525	49.4	100	60	0.06
1535	49.39	100	70	0.05
1545	49.4	130	80	0.06
1555	49.4	130	90	0.06
1605	49.4	130	100	0.06
1615	49.39	130	110	0.05
1625	49.4	130	120	0.06
1635	49.4	130	130	0.06
1640	49.39	130	140	0.05
1645	49.4	130	150	0.06
1650	49.4	130	160	0.06

Used 100

Well ID:	3-25			
Date:	06/26/01			
Time (Hours)	**Distance to Water (Feet)**	**Pump Rate (mL/Min)**	**time**	**Drawdown (feet)**
810	33	---	0	0
815	33.19	120	5	0.19
820	33.4	120	10	0.4
825	33.64	120	15	0.64
830	33.73	110	20	0.73
835	33.81	110	25	0.81
840	33.86	110	30	0.86
845	33.88	110	35	0.88
850	34.02	110	40	1.02
900	34.05	110	50	1.05
910	34.2	100	60	1.2
920	34.3	100	70	1.3
930	34.35	100	80	1.35
940	34.48	100	90	1.48
950	34.44	100	100	1.44
1000	34.45	100	110	1.45
1010	34.5	100	120	1.5
1020	34.55	100	130	1.55
1030	34.58	100	140	1.58
1040	34.6	100	150	1.6
1050	34.65	100	160	1.65
1100	34.67	100	170	1.67
1110	34.7	100	180	1.7
1120	34.73	100	190	1.73
1130	34.76	100	200	1.76
1140	34.8	100	210	1.8
1150	34.83	100	220	1.83
1200	34.89	100	230	1.89
1210	---	100	240	
	Average=	104		

ATTACHMENT 2

ATTACHMENT 2

TETRA TECH NUS, INC. **CALCULATION WORKSHEET** PAGE 1 OF

CLIENT NAVY SOUTH DIV	JOB NUMBER 3960 HV0090100
SUBJECT ESTIMATE HYDRAULIC COND. VALUES USING OGDEN FIELD METHODS TO PURGE DATA	
BASED ON OGDEN METHOD FROM M. KASENOW + P. PARE	DRAWING NUMBER
BY FRED RAMSER / CHECKED BY RMB 6/27/02	APPROVED BY / DATE 6-11-02

A. EQ:

1) $uW(u) = \frac{1.87 S s r^2}{114.6 Q t}$ (dimensionless) (1)

2) $T = \frac{1.87 S r^2}{u t} = gpd/ft$

WHERE:
- Q = PUMPING RATE (gpm)
- r = WELL RADIUS (feet) (3")
- s = DRAWDOWN (feet)
- t = PUMPING TIME (DAYS)
- S = STORAGE COEFFICIENT (ASSUME .2)
- u = THEIS CORRECTION FACTOR (FROM TABLE)
- uW(u) = OGDEN CORRECTION FACTOR
- T = TRANSMISSIVITY gpd/ft

3) $K = T/b$

WHERE b = AQUIFER THICKNESS

B. WELL 3-7 (03MW07)

Q = 135 ml/min b = 6'

r = 3" = 3/12 = 0.25'

s = 0.14 feet

t = 105 min = 0.072912 DAYS

S = 0.2 (UNCONFINED SAND, GRAVEL SANDSTONE, CLAY + SILT)

CLIENT NAVY SOUTH DIV.	JOB NUMBER 3960 HV0090100
SUBJECT	
BASED ON OGDEN METHOD	DRAWING NUMBER
BY / CHECKED BY	APPROVED BY / DATE 6-11-02

B. WELL 3-7 (CONTINUED)

$Q = 135\ ml/min \times (2.6416 \times 10^{-4}) = 0.0356616\ gpm$

$t = 105\ min (6.944 \times 10^{-4}) = .072912\ days$

SUB:

(eq 1) $uW(u) = \dfrac{1.87(0.2)(0.14)(0.25)^2}{114.6(.0356616)(.072912)}$

$= \dfrac{0.0032725}{0.297978173}$

$uW(u) = 1.10 \times 10^{-2}$ ∴

$u = 1.95 \times 10^{-3}$ FROM TABLE PAGE A-13

(eq 2) SUB:

$T = \dfrac{1.87(0.2)(0.25)^2}{(1.95 \times 10^{-3})(.072912)}$

$= \dfrac{0.023375}{0.000148}$

$T = 164.4\ gpd/ft$

(eq 3) SUB

$K = \dfrac{164.4}{6}$

$K = 27.4\ gpd/ft^2$

$K = 27.4\ gpd/ft^2 (4.73 \times 10^{-5}) = \underline{1.30 \times 10^{-3}\ cm/sec}$

CLIENT NAVY SOUTH DIV	JOB NUMBER 3960
SUBJECT	
BASED ON OGDEN METHOD	DRAWING NUMBER
BY	CHECKED BY	APPROVED BY	DATE 6-11-02

C. PURGE DATA FROM FOURTEEN WELLS WAS EVALUATED USING THIS METHOD. THE COMPUTATION WAS DONE ON A EXCEL SPREAD SHEET ATTACHED.

ONE

OGDEN'S FIELD METHOD

OGDEN'S METHOD

L. Ogden (1965) developed a simple and relatively accurate method to approximate transmissivity in production or observation wells utilizing a **single drawdown and the Theis solution.** The Theis equations are manipulated and equated to solve for **uW(u)**. **u** is then identified from a table, and transmissivity is calculated utilizing the Theis equation that operates with **u**. The method has seen little use, because a convenient u, uW(u) table was never developed. Your author has completed that task (so have Kruseman and de Ridder, 1990). The table in Appendix A can be used with the following equations:

$$uW(u) = \frac{1.87Ssr^2}{114.6Qt} = \text{dimensionless} \qquad (1)$$

$$T = \frac{1.87Sr^2}{ut} = \text{gpd / ft} \qquad (2)$$

where

Q = the pumping rate in gallons per minute,
r = the observation well distance or pumping well radius in feet,
s = the drawdown in feet,
t = the pumping time in days,
S = the storage coefficient, which is dimensionless,
u = Theis dimensionless correction factor, and
uW(u) = Ogden dimensionless correction factor.

All of the variables can be measured during a pump test, except for the storage coefficient, which must be assumed.

If the radius of the pumping well is considered to be r = 1.00 foot, then equations (1) and (2) can be simplified to the following equations:

$$uW(u) = \frac{(0.01632)Ss}{Qt} \quad \text{and} \tag{3}$$

$$T = \frac{1.87S}{ut} = \text{gpd/ft.} \tag{4}$$

Hurr (1966) also derived equations (1) and (2) using different logic.

Ogden's method is appropriate for specific capacity **(Q/s)** data, but it can also be used as a pump test field equation when the proper storage coefficient is assumed. Theis (1963), Brown (1963) and Lohman (1972) contend that a S_y of .2 is a sufficient assumption for water table aquifers, because .2 is the median value within the unconfined storage range. Patchick (1967) and Hurr (1966) use .1 in their solution methods, and the mean of 18 field values provided by Prickett (1965) supports their choice. Reasonable results can be obtained when using the following general rule:

For gravel and coarse grain sand assume S_y = .2

For medium to fine grain sand assume S_y = .1

Theis (1963) and Brown (1963) favor **.0001** as a valid storage assumption for confined aquifers. Ogden (1965), Patchick (1967), and

u	W(u)	uW(u)	Z(u)
6.5000E-04	6.7600E+00	4.3940E-03	8.9759E-01
6.6000E-04	6.7500E+00	4.4550E-03	8.9743E-01
6.7000E-04	6.7300E+00	4.5091E-03	8.9723E-01
6.8000E-04	6.7200E+00	4.5696E-03	8.9700E-01
6.9000E-04	6.7000E+00	4.6230E-03	8.9675E-01
7.0000E-04	6.6900E+00	4.6830E-03	8.9646E-01
7.1000E-04	6.6700E+00	4.7357E-03	8.9630E-01
7.2000E-04	6.6600E+00	4.7952E-03	8.9611E-01
7.3000E-04	6.6500E+00	4.8545E-03	8.9590E-01
7.4000E-04	6.6300E+00	4.9062E-03	8.9566E-01
7.5000E-04	6.6200E+00	4.9650E-03	8.9539E-01
7.6000E-04	6.6100E+00	5.0236E-03	8.9524E-01
7.7000E-04	6.5900E+00	5.0743E-03	8.9505E-01
7.8000E-04	6.5800E+00	5.1324E-03	8.9485E-01
7.9000E-04	6.5700E+00	5.1903E-03	8.9462E-01
8.0000E-04	6.5500E+00	5.2400E-03	8.9437E-01
8.1000E-04	6.5400E+00	5.2974E-03	8.9422E-01
8.2000E-04	6.5300E+00	5.3546E-03	8.9404E-01
8.3000E-04	6.5200E+00	5.4116E-03	8.9385E-01
8.4000E-04	6.5100E+00	5.4684E-03	8.9363E-01
8.5000E-04	6.4900E+00	5.5165E-03	8.9339E-01
8.6000E-04	6.4800E+00	5.5728E-03	8.9324E-01
8.7000E-04	6.4700E+00	5.6289E-03	8.9307E-01
8.8000E-04	6.4600E+00	5.6848E-03	8.9289E-01
8.9000E-04	6.4500E+00	5.7405E-03	8.9268E-01
9.0000E-04	6.4400E+00	5.7960E-03	8.9245E-01
9.1000E-04	6.4300E+00	5.8513E-03	8.9231E-01
9.2000E-04	6.4100E+00	5.8972E-03	8.9214E-01
9.3000E-04	6.4000E+00	5.9520E-03	8.9196E-01
9.4000E-04	6.3900E+00	6.0066E-03	8.9177E-01
9.5000E-04	6.3800E+00	6.0610E-03	8.9155E-01
9.6000E-04	6.3700E+00	6.1152E-03	8.9141E-01
9.7000E-04	6.3600E+00	6.1692E-03	8.9125E-01
9.8000E-04	6.3500E+00	6.2230E-03	8.9108E-01
9.9000E-04	6.3400E+00	6.2766E-03	8.9089E-01
1.0000E-03	6.3300E+00	6.3300E-03	8.9068E-01
1.1000E-03	6.2400E+00	6.8640E-03	8.8903E-01
1.2000E-03	6.1500E+00	7.3800E-03	8.8748E-01
1.3000E-03	6.0700E+00	7.8910E-03	8.8601E-01
1.4000E-03	6.0000E+00	8.4000E-03	8.8462E-01
1.5000E-03	5.9300E+00	8.8950E-03	8.8330E-01
1.6000E-03	5.8600E+00	9.3760E-03	8.8203E-01
1.7000E-03	5.8000E+00	9.8600E-03	8.8082E-01
1.8000E-03	5.7400E+00	1.0332E-02	8.7965E-01
1.9000E-03	5.6900E+00	1.0811E-02	8.7853E-01
2.0000E-03	5.6400E+00	1.1280E-02	8.7744E-01
2.1000E-03	5.5900E+00	1.1739E-02	8.7639E-01
2.2000E-03	5.5400E+00	1.2188E-02	8.7538E-01
2.3000E-03	5.5000E+00	1.2650E-02	8.7439E-01
2.4000E-03	5.4600E+00	1.3104E-02	8.7343E-01

u	W(u)	uW(u)	Z(u)
2.5000E-03	5.4200E+00	1.3550E-02	8.7250E-01
2.6000E-03	5.3800E+00	1.3988E-02	8.7159E-01
2.7000E-03	5.3400E+00	1.4418E-02	8.7070E-01
2.8000E-03	5.3000E+00	1.4840E-02	8.6984E-01
2.9000E-03	5.2700E+00	1.5283E-02	8.6899E-01
3.0000E-03	5.2300E+00	1.5690E-02	8.6816E-01
3.1000E-03	5.2000E+00	1.6120E-02	8.6735E-01
3.2000E-03	5.1700E+00	1.6544E-02	8.6656E-01
3.3000E-03	5.1400E+00	1.6962E-02	8.6579E-01
3.4000E-03	5.1100E+00	1.7374E-02	8.6502E-01
3.5000E-03	5.0800E+00	1.7780E-02	8.6428E-01
3.6000E-03	5.0500E+00	1.8180E-02	8.6354E-01
3.7000E-03	5.0300E+00	1.8611E-02	8.6282E-01
3.8000E-03	5.0000E+00	1.9000E-02	8.6211E-01
3.9000E-03	4.9700E+00	1.9383E-02	8.6141E-01
4.0000E-03	4.9500E+00	1.9800E-02	8.6073E-01
4.1000E-03	4.9200E+00	2.0172E-02	8.6005E-01
4.2000E-03	4.9000E+00	2.0580E-02	8.5939E-01
4.3000E-03	4.8800E+00	2.0984E-02	8.5873E-01
4.4000E-03	4.8500E+00	2.1340E-02	8.5809E-01
4.5000E-03	4.8300E+00	2.1735E-02	8.5745E-01
4.6000E-03	4.8100E+00	2.2126E-02	8.5682E-01
4.7000E-03	4.7900E+00	2.2513E-02	8.5620E-01
4.8000E-03	4.7700E+00	2.2896E-02	8.5559E-01
4.9000E-03	4.7500E+00	2.3275E-02	8.5499E-01
5.0000E-03	4.7300E+00	2.3650E-02	8.5439E-01
5.1000E-03	4.7100E+00	2.4021E-02	8.5396E-01
5.2000E-03	4.6900E+00	2.4388E-02	8.5345E-01
5.3000E-03	4.6700E+00	2.4751E-02	8.5288E-01
5.4000E-03	4.6500E+00	2.5110E-02	8.5223E-01
5.5000E-03	4.6300E+00	2.5465E-02	8.5152E-01
5.6000E-03	4.6100E+00	2.5816E-02	8.5110E-01
5.7000E-03	4.6000E+00	2.6220E-02	8.5061E-01
5.8000E-03	4.5800E+00	2.6564E-02	8.5007E-01
5.9000E-03	4.5600E+00	2.6904E-02	8.4946E-01
6.0000E-03	4.5400E+00	2.7240E-02	8.4880E-01
6.1000E-03	4.5300E+00	2.7633E-02	8.4839E-01
6.2000E-03	4.5100E+00	2.7962E-02	8.4792E-01
6.3000E-03	4.5000E+00	2.8350E-02	8.4740E-01
6.4000E-03	4.4800E+00	2.8672E-02	8.4684E-01
6.5000E-03	4.4700E+00	2.9055E-02	8.4622E-01
6.6000E-03	4.4500E+00	2.9370E-02	8.4522E-01
6.7000E-03	4.4400E+00	2.9748E-02	8.4537E-01
6.8000E-03	4.4200E+00	3.0056E-02	8.4487E-01
6.9000E-03	4.4100E+00	3.0429E-02	8.4433E-01
7.0000E-03	4.3900E+00	3.0730E-02	8.4375E-01
7.1000E-03	4.3800E+00	3.1098E-02	8.4336E-01
7.2000E-03	4.3600E+00	3.1392E-02	8.4293E-01
7.3000E-03	4.3500E+00	3.1755E-02	8.4245E-01
7.4000E-03	4.3400E+00	3.2116E-02	8.4194E-01

u	W(u)	uW(u)	Z(u)
7.5000E-03	4.3200E+00	3.2400E-02	8.4139E-01
7.6000E-03	4.3100E+00	3.2756E-02	8.4101E-01
7.7000E-03	4.3000E+00	3.3110E-02	8.4059E-01
7.8000E-03	4.2800E+00	3.3384E-02	8.4014E-01
7.9000E-03	4.2700E+00	3.3733E-02	8.3965E-01
8.0000E-03	4.2600E+00	3.4080E-02	8.3912E-01
8.1000E-03	4.2500E+00	3.4425E-02	8.3875E-01
8.2000E-03	4.2300E+00	3.4686E-02	8.3834E-01
8.3000E-03	4.2200E+00	3.5026E-02	8.3791E-01
8.4000E-03	4.2100E+00	3.5364E-02	8.3744E-01
8.5000E-03	4.2000E+00	3.5700E-02	8.3694E-01
8.6000E-03	4.1900E+00	3.6034E-02	8.3657E-01
8.7000E-03	4.1800E+00	3.6366E-02	8.3618E-01
8.8000E-03	4.1600E+00	3.6608E-02	8.3575E-01
8.9000E-03	4.1500E+00	3.6935E-02	8.3530E-01
9.0000E-03	4.1400E+00	3.7260E-02	8.3482E-01
9.1000E-03	4.1300E+00	3.7583E-02	8.3447E-01
9.2000E-03	4.1200E+00	3.7904E-02	8.3408E-01
9.3000E-03	4.1100E+00	3.8223E-02	8.3368E-01
9.4000E-03	4.1000E+00	3.8540E-02	8.3324E-01
9.5000E-03	4.0900E+00	3.8855E-02	8.3278E-01
9.6000E-03	4.0800E+00	3.9168E-02	8.3243E-01
9.7000E-03	4.0700E+00	3.9479E-02	8.3206E-01
9.8000E-03	4.0600E+00	3.9788E-02	8.3166E-01
9.9000E-03	4.0500E+00	4.0095E-02	8.3124E-01
1.0000E-02	4.0400E+00	4.0400E-02	8.3080E-01
1.1000E-02	3.9400E+00	4.3340E-02	8.2700E-01
1.2000E-02	3.8600E+00	4.6320E-02	8.2340E-01
1.3000E-02	3.7800E+00	4.9140E-02	8.1997E-01
1.4000E-02	3.7100E+00	5.1940E-02	8.1668E-01
1.5000E-02	3.6400E+00	5.4600E-02	8.1352E-01
1.6000E-02	3.5700E+00	5.7120E-02	8.1048E-01
1.7000E-02	3.5100E+00	5.9670E-02	8.0754E-01
1.8000E-02	3.4600E+00	6.2280E-02	8.0469E-01
1.9000E-02	3.4100E+00	6.4790E-02	8.0194E-01
2.0000E-02	3.3500E+00	6.7000E-02	7.9925E-01
2.1000E-02	3.3100E+00	6.9510E-02	7.9665E-01
2.2000E-02	3.2600E+00	7.1720E-02	7.9410E-01
2.3000E-02	3.2200E+00	7.4060E-02	7.9162E-01
2.4000E-02	3.1800E+00	7.6320E-02	7.8920E-01
2.5000E-02	3.1400E+00	7.8500E-02	7.8683E-01
2.6000E-02	3.1000E+00	8.0600E-02	7.8451E-01
2.7000E-02	3.0600E+00	8.2620E-02	7.8224E-01
2.8000E-02	3.0300E+00	8.4840E-02	7.8001E-01
2.9000E-02	2.9900E+00	8.6710E-02	7.7782E-01
3.0000E-02	2.9600E+00	8.8800E-02	7.7567E-01
3.1000E-02	2.9300E+00	9.0830E-02	7.7356E-01
3.2000E-02	2.9000E+00	9.2800E-02	7.7149E-01
3.3000E-02	2.8700E+00	9.4710E-02	7.6944E-01
3.4000E-02	2.8400E+00	9.6560E-02	7.6743E-01

u	W(u)	uW(u)	Z(u)
3.5000E-02	2.8100E+00	9.8350E-02	7.6545E-01
3.6000E-02	2.7800E+00	1.0008E-01	7.6350E-01
3.7000E-02	2.7600E+00	1.0212E-01	7.6158E-01
3.8000E-02	2.7300E+00	1.0374E-01	7.5968E-01
3.9000E-02	2.7100E+00	1.0569E-01	7.5781E-01
4.0000E-02	2.6800E+00	1.0720E-01	7.5597E-01
4.1000E-02	2.6600E+00	1.0906E-01	7.5414E-01
4.2000E-02	2.6300E+00	1.1046E-01	7.5234E-01
4.3000E-02	2.6100E+00	1.1223E-01	7.5056E-01
4.4000E-02	2.5900E+00	1.1396E-01	7.4880E-01
4.5000E-02	2.5700E+00	1.1565E-01	7.4707E-01
4.6000E-02	2.5500E+00	1.1730E-01	7.4535E-01
4.7000E-02	2.5300E+00	1.1891E-01	7.4365E-01
4.8000E-02	2.5100E+00	1.2048E-01	7.4197E-01
4.9000E-02	2.4900E+00	1.2201E-01	7.4030E-01
5.0000E-02	2.4700E+00	1.2350E-01	7.3866E-01
5.1000E-02	2.4500E+00	1.2495E-01	7.3733E-01
5.2000E-02	2.4300E+00	1.2636E-01	7.3586E-01
5.3000E-02	2.4100E+00	1.2773E-01	7.3426E-01
5.4000E-02	2.3900E+00	1.2906E-01	7.3252E-01
5.5000E-02	2.3800E+00	1.3090E-01	7.3066E-01
5.6000E-02	2.3600E+00	1.3216E-01	7.2936E-01
5.7000E-02	2.3400E+00	1.3338E-01	7.2795E-01
5.8000E-02	2.3300E+00	1.3514E-01	7.2642E-01
5.9000E-02	2.3100E+00	1.3629E-01	7.2477E-01
6.0000E-02	2.3000E+00	1.3800E-01	7.2302E-01
6.1000E-02	2.2800E+00	1.3908E-01	7.2175E-01
6.2000E-02	2.2600E+00	1.4012E-01	7.2039E-01
6.3000E-02	2.2500E+00	1.4175E-01	7.1892E-01
6.4000E-02	2.2300E+00	1.4272E-01	7.1735E-01
6.5000E-02	2.2200E+00	1.4430E-01	7.1569E-01
6.6000E-02	2.2100E+00	1.4586E-01	7.1445E-01
6.7000E-02	2.1900E+00	1.4673E-01	7.1313E-01
6.8000E-02	2.1800E+00	1.4824E-01	7.1172E-01
6.9000E-02	2.1600E+00	1.4904E-01	7.1022E-01
7.0000E-02	2.1500E+00	1.5050E-01	7.0863E-01
7.1000E-02	2.1400E+00	1.5194E-01	7.0743E-01
7.2000E-02	2.1200E+00	1.5264E-01	7.0615E-01
7.3000E-02	2.1100E+00	1.5403E-01	7.0478E-01
7.4000E-02	2.1000E+00	1.5540E-01	7.0334E-01
7.5000E-02	2.0900E+00	1.5675E-01	7.0182E-01
7.6000E-02	2.0700E+00	1.5732E-01	7.0065E-01
7.7000E-02	2.0600E+00	1.5862E-01	6.9940E-01
7.8000E-02	2.0500E+00	1.5990E-01	6.9808E-01
7.9000E-02	2.0400E+00	1.6116E-01	6.9669E-01
8.0000E-02	2.0300E+00	1.6240E-01	6.9523E-01
8.1000E-02	2.0200E+00	1.6362E-01	6.9408E-01
8.2000E-02	2.0000E+00	1.6400E-01	6.9287E-01
8.3000E-02	1.9930E+00	1.6542E-01	6.9159E-01
8.4000E-02	1.9820E+00	1.6649E-01	6.9025E-01

u	W(u)	uW(u)	Z(u)
8.5000E-02	1.9710E+00	1.6754E-01	6.8884E-01
8.6000E-02	1.9600E+00	1.6856E-01	6.8772E-01
8.7000E-02	1.9500E+00	1.6965E-01	6.8654E-01
8.8000E-02	1.9390E+00	1.7063E-01	6.8529E-01
8.9000E-02	1.9290E+00	1.7168E-01	6.8399E-01
9.0000E-02	1.9190E+00	1.7271E-01	6.8263E-01
9.1000E-02	1.9090E+00	1.7372E-01	6.8153E-01
9.2000E-02	1.8990E+00	1.7471E-01	6.8038E-01
9.3000E-02	1.8890E+00	1.7568E-01	6.7917E-01
9.4000E-02	1.8790E+00	1.7663E-01	6.7791E-01
9.5000E-02	1.8690E+00	1.7756E-01	6.7659E-01
9.6000E-02	1.8600E+00	1.7856E-01	6.7552E-01
9.7000E-02	1.8510E+00	1.7955E-01	6.7439E-01
9.8000E-02	1.8410E+00	1.8042E-01	6.7321E-01
9.9000E-02	1.8320E+00	1.8137E-01	6.7199E-01
1.0000E-01	1.8230E+00	1.8230E-01	6.7071E-01
1.1000E-01	1.7370E+00	1.9107E-01	6.5936E-01
1.2000E-01	1.6600E+00	1.9920E-01	6.4852E-01
1.3000E-01	1.5890E+00	2.0657E-01	6.3811E-01
1.4000E-01	1.5240E+00	2.1336E-01	6.2810E-01
1.5000E-01	1.4640E+00	2.1960E-01	6.1844E-01
1.6000E-01	1.4090E+00	2.2544E-01	6.0910E-01
1.7000E-01	1.3580E+00	2.3086E-01	6.0006E-01
1.8000E-01	1.3100E+00	2.3580E-01	5.9128E-01
1.9000E-01	1.2650E+00	2.4035E-01	5.8276E-01
2.0000E-01	1.2230E+00	2.4460E-01	5.7447E-01
2.1000E-01	1.1830E+00	2.4843E-01	5.6640E-01
2.2000E-01	1.1450E+00	2.5190E-01	5.5853E-01
2.3000E-01	1.1100E+00	2.5530E-01	5.5085E-01
2.4000E-01	1.0760E+00	2.5824E-01	5.4335E-01
2.5000E-01	1.0440E+00	2.6100E-01	5.3603E-01
2.6000E-01	1.0140E+00	2.6364E-01	5.2886E-01
2.7000E-01	9.8500E-01	2.6595E-01	5.2185E-01
2.8000E-01	9.5700E-01	2.6796E-01	5.1499E-01
2.9000E-01	9.3100E-01	2.6999E-01	5.0827E-01
3.0000E-01	9.0600E-01	2.7180E-01	5.0168E-01
3.1000E-01	8.8200E-01	2.7342E-01	4.9522E-01
3.2000E-01	8.5800E-01	2.7456E-01	4.8888E-01
3.3000E-01	8.3600E-01	2.7588E-01	4.8319E-01
3.4000E-01	8.1500E-01	2.7710E-01	4.7622E-01
3.5000E-01	7.9400E-01	2.7790E-01	4.7090E-01
3.6000E-01	7.7400E-01	2.7864E-01	4.6483E-01
3.7000E-01	7.5500E-01	2.7935E-01	4.5933E-01
3.8000E-01	7.3700E-01	2.8006E-01	4.5312E-01
3.9000E-01	7.1900E-01	2.8041E-01	4.4757E-01
4.0000E-01	7.0200E-01	2.8080E-01	4.4278E-01
4.1000E-01	6.8600E-01	2.8126E-01	4.3737E-01
4.2000E-01	6.7000E-01	2.8140E-01	4.3134E-01
4.3000E-01	6.5500E-01	*2.8165E-01	4.2620E-01
4.4000E-01	6.4000E-01	2.8160E-01	4.2049E-01

ATTACHMENT 3

ATTACHMENT 4

ATTACHMENT 4

TETRA TECH NUS, INC. **CALCULATION WORKSHEET**

CLIENT NAVY SOUTH DIV	JOB NUMBER 3960 HV0090100
SUBJECT APPLYING STRAIGHT LINE EVALUATION METHODS TO GW SAMPLING PURGE DATA	
BASED ON JACOB STRAIGHT LINE METHOD	DRAWING NUMBER
BY FURAMSER / CHECKED BY RMB 6/22/02	APPROVED BY / DATE 6-10-02

A. APPLY THE JACOB STRAIGHT LINE METHOD FOR AQUIFER TESTS TO THE PURGE DATA RECORDED DURING WELL SAMPLING TO CALCULATE A HYDRAULIC CONDUCTIVITY VALUE FOR THE FORMATION AROUND THE WELL.

1) EQ: $T = \frac{2.3Q}{4\pi(h_o - h)}$ FROM FETTER, 1988.

WHERE Q = PUMPING RATE (ft^3/min)

$(h_o - h)$ = DRAWDOWN OVER ONE LOG SCALE. (FEET)

T = TRANSMISSIVITY (ft^2/min)

2) EQ

$K = T/b$

WHERE = b = AQUIFER THICKNESS

B. WELL 03MW07 (03-07), FROM PLOT:

$h_o - h = 0.132 - .032 = 0.10$ feet

$Q = 135$ ml/min (AVERAGE OVER PURGE TIME)

SUB:

1) Q = 135 ml/min CONV.

$Q = 135 \frac{ml}{min} \times \frac{1L}{1000ml} \times \frac{1min}{60 sec} = 0.00225$ L/sec

0.00225 L/sec $\times 2.118 = \underline{\underline{0.0047655}}$ ft^3/min

CLIENT NAVY SOUTH DIV		JOB NUMBER 3960	
SUBJECT			
BASED ON		DRAWING NUMBER	
BY	CHECKED BY	APPROVED BY	DATE

CONT WELL 03-07

$Q = 0.0047655 \ ft^3/min$

$h_o - h = 0.10 ft$ (FROM PLOT ATTACHED)

SUB. $T = \frac{2.3(.0047655)}{4\pi(0.10)}$

$= \frac{0.01096065}{1.25666}$

$T = 8.72 \times 10^{-3} \ ft^2/min$

C. $K = T/b$ WHERE $b = 6$ FEET

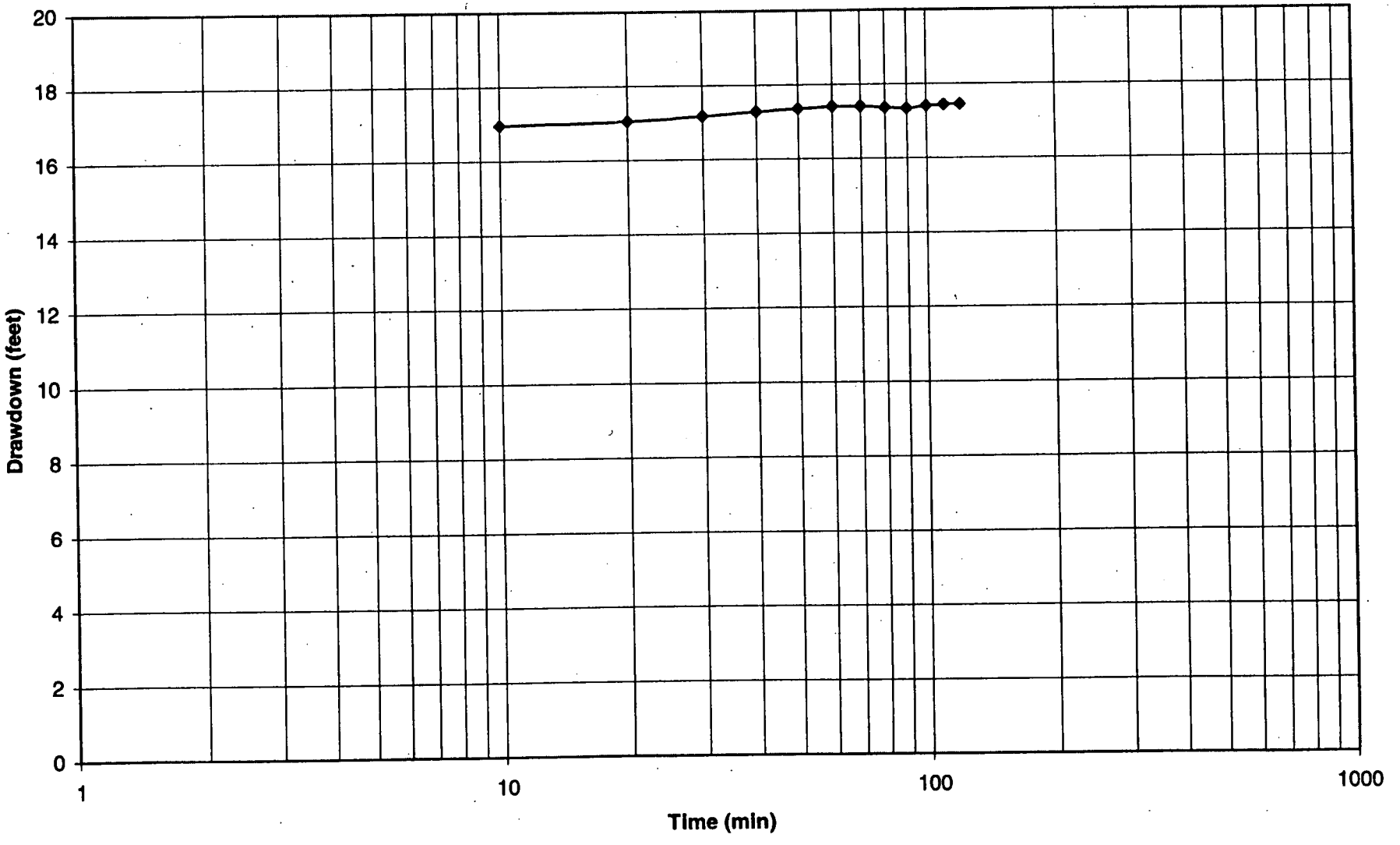
SUB: $\frac{8.72 \times 10^{-3} \ ft^2/min}{6 \ ft}$

$= 1.45 \times 10^{-3} \ ft/min$

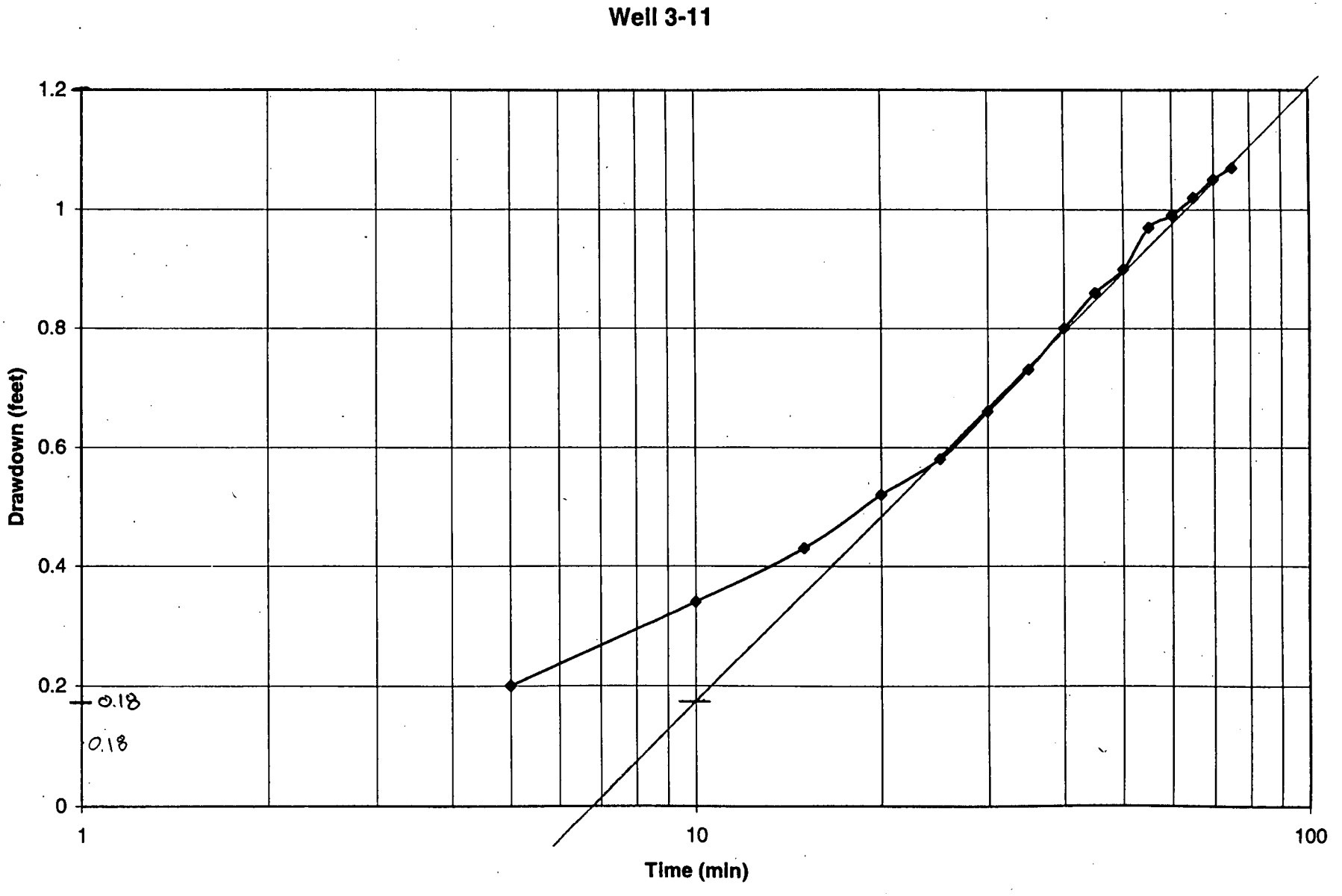
$= 1.45 \times 10^{-3} ft/min \cdot 0.508 \frac{cm/sec}{ft/min} = 7.38 \times 10^{-4} cm/sec$

PURGE DATA FROM WELLS 3-11, 3-14, 3-17, 3-18, 3-20 3-22, AND 3-25 WAS EVALUATED USING EXCEL SPREAD SHEET.

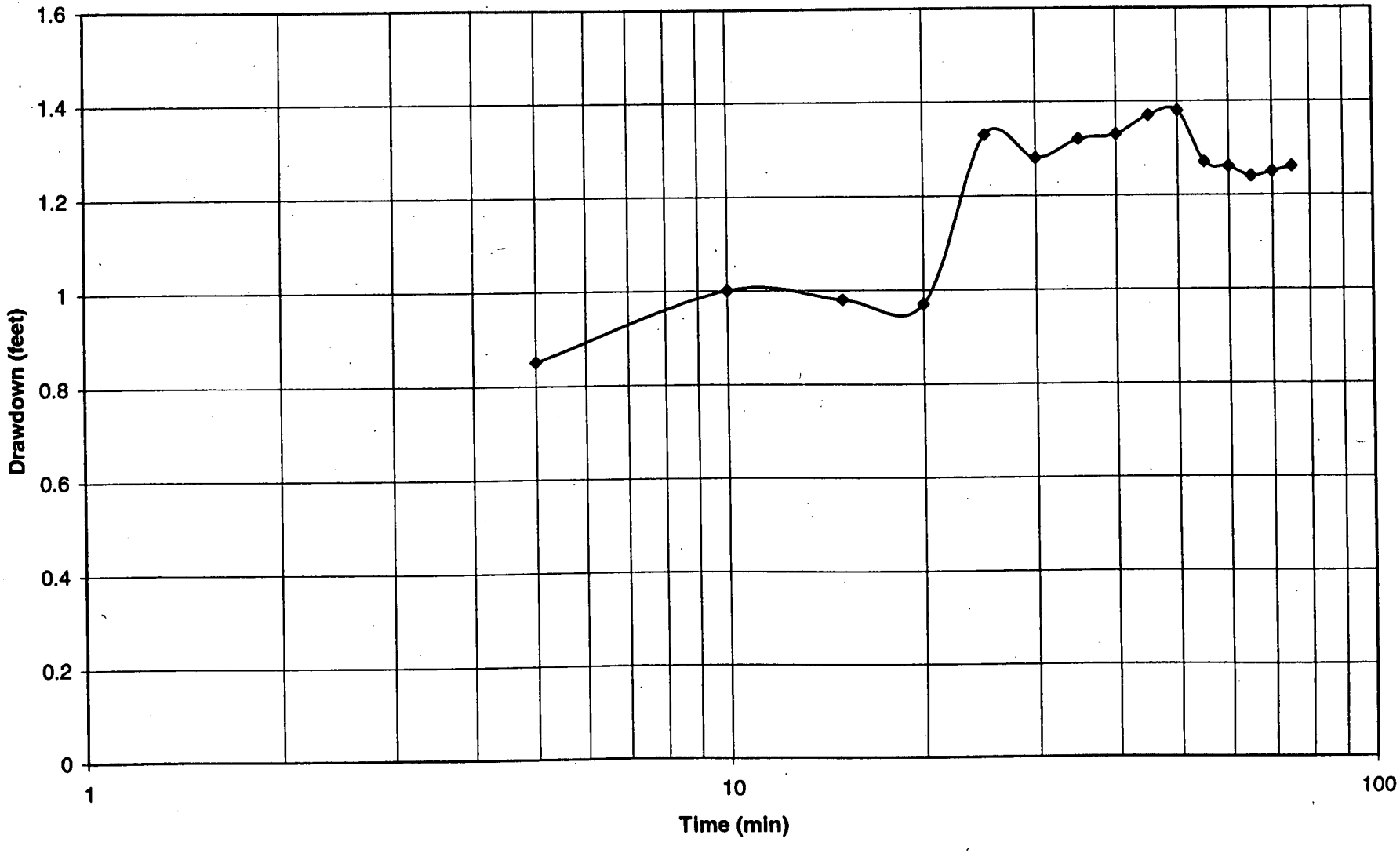
Well 3-10

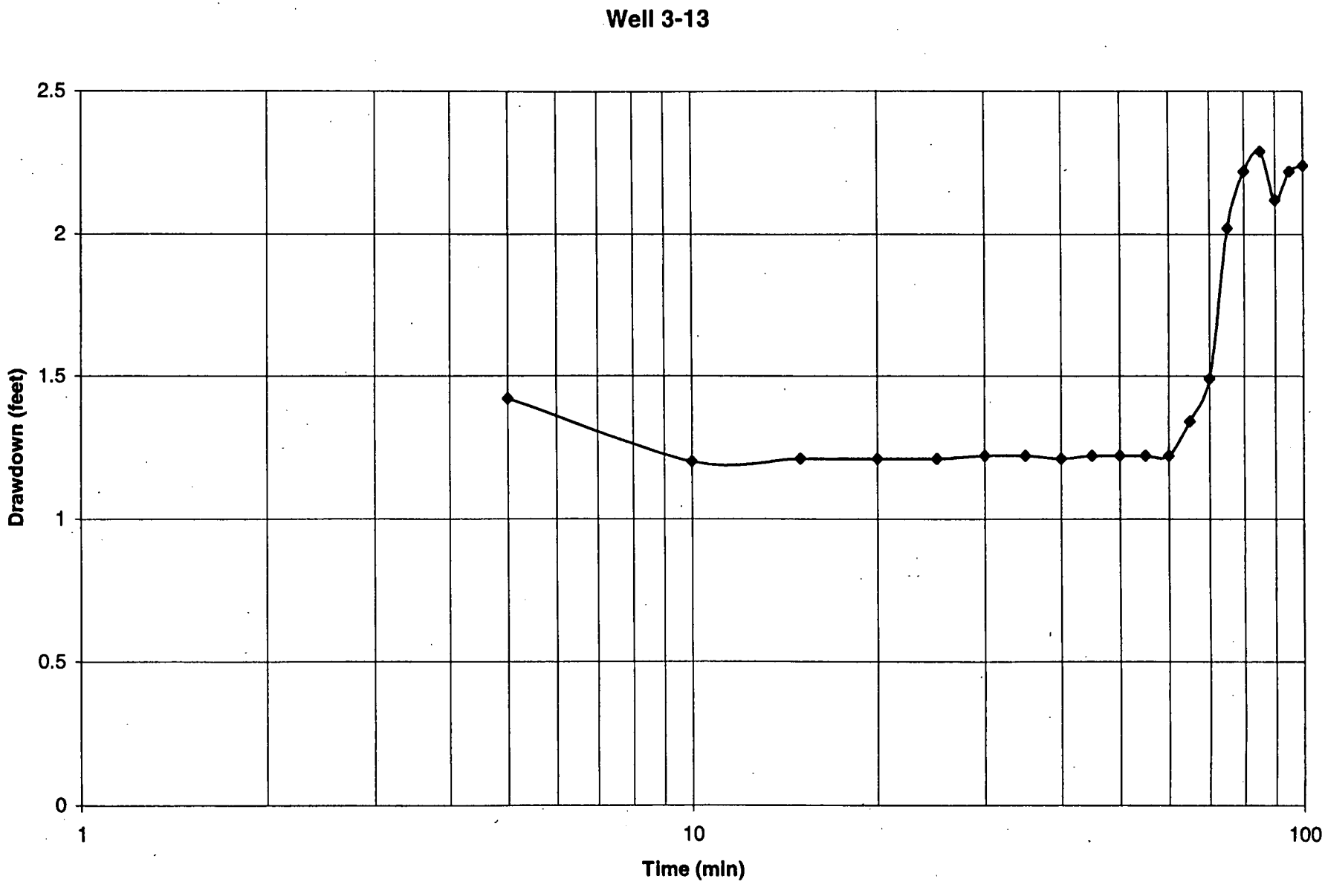


dh = 1.02 ft
Q_{AVE} = 117



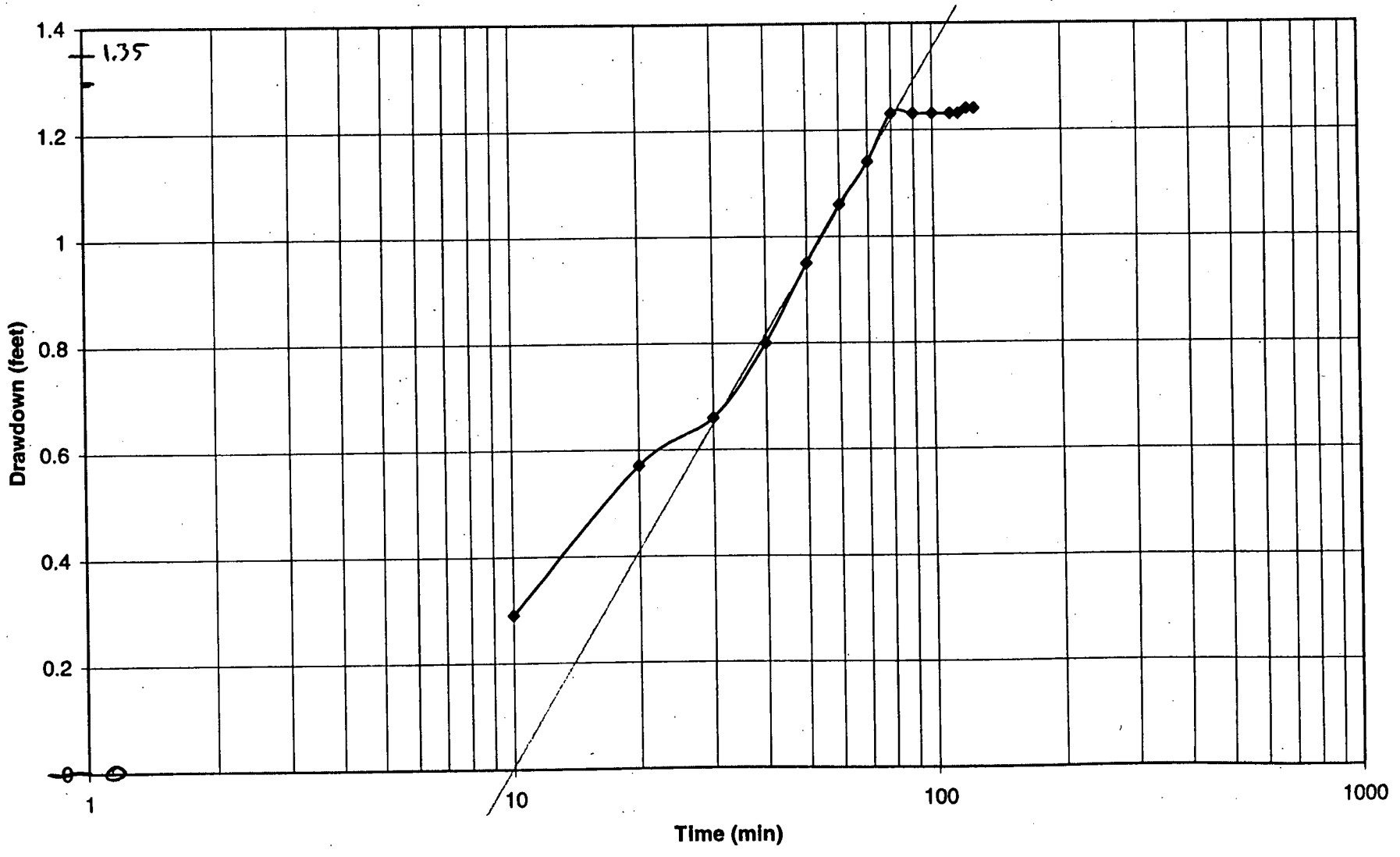
Well 3-12

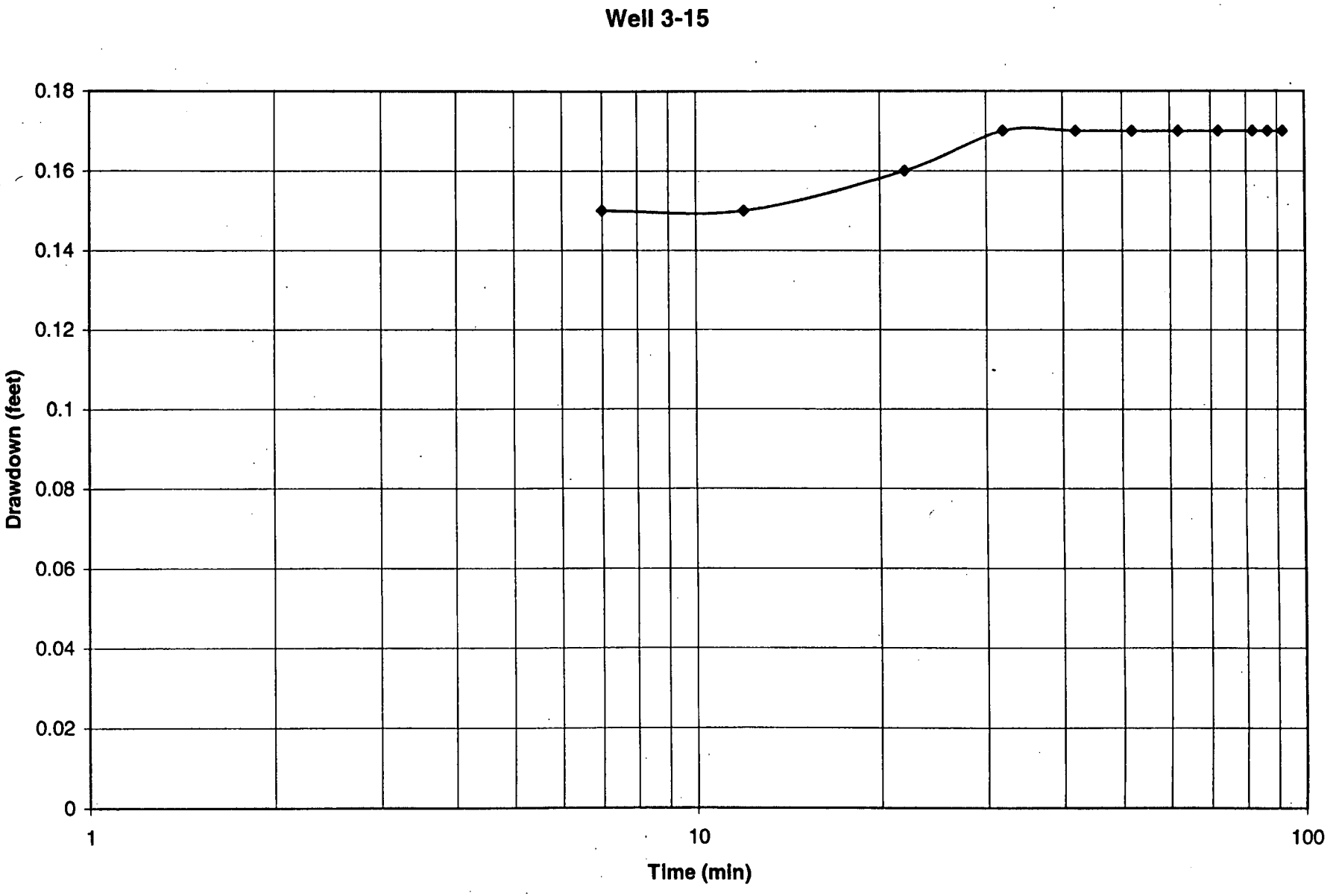


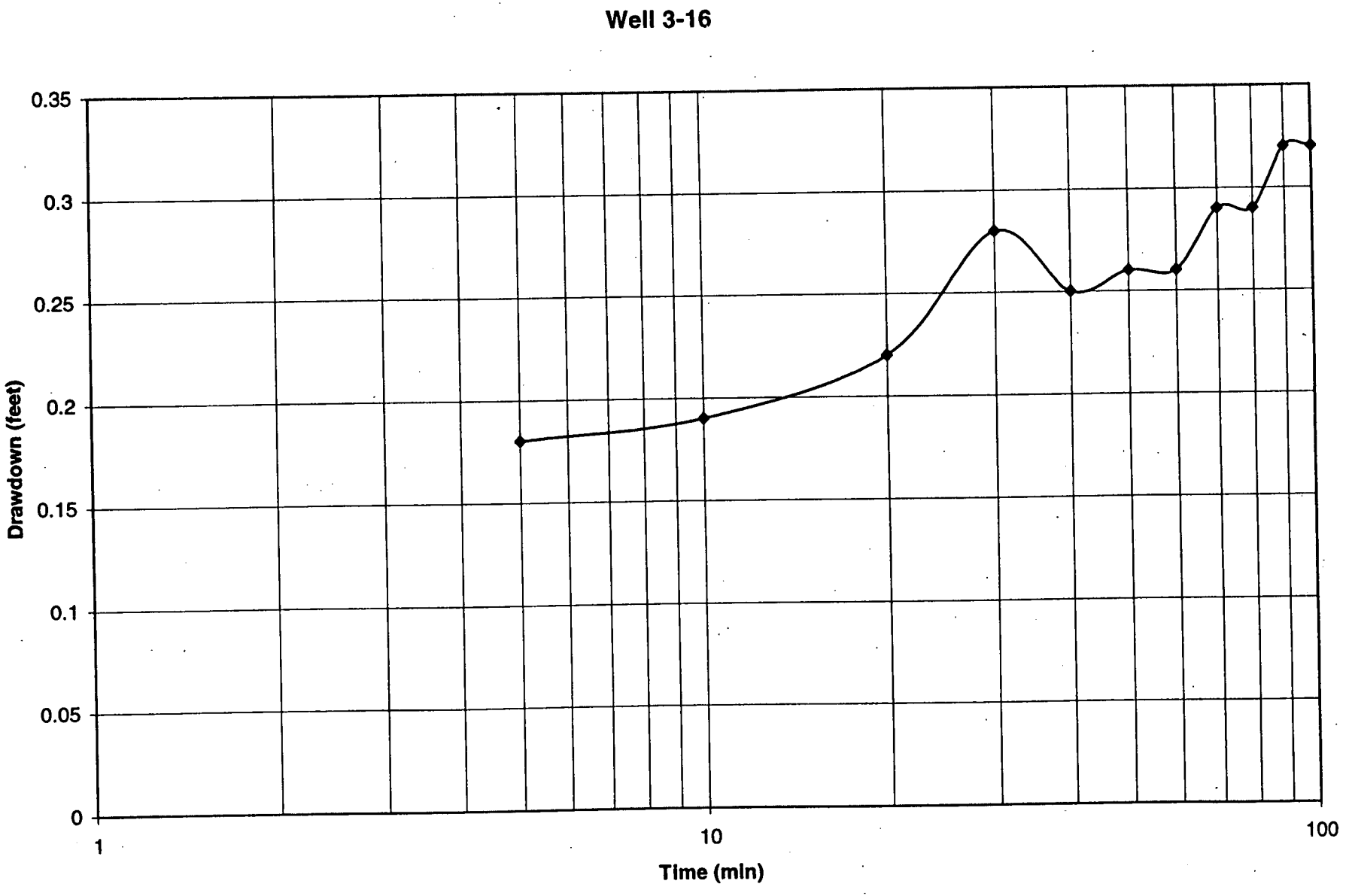

Well 3-13
2.5
2
1.5
1
0.5
0
Drawdown (feet)
1
10
100
Time (min)

Q = 187. mg/min
dh = 1.35

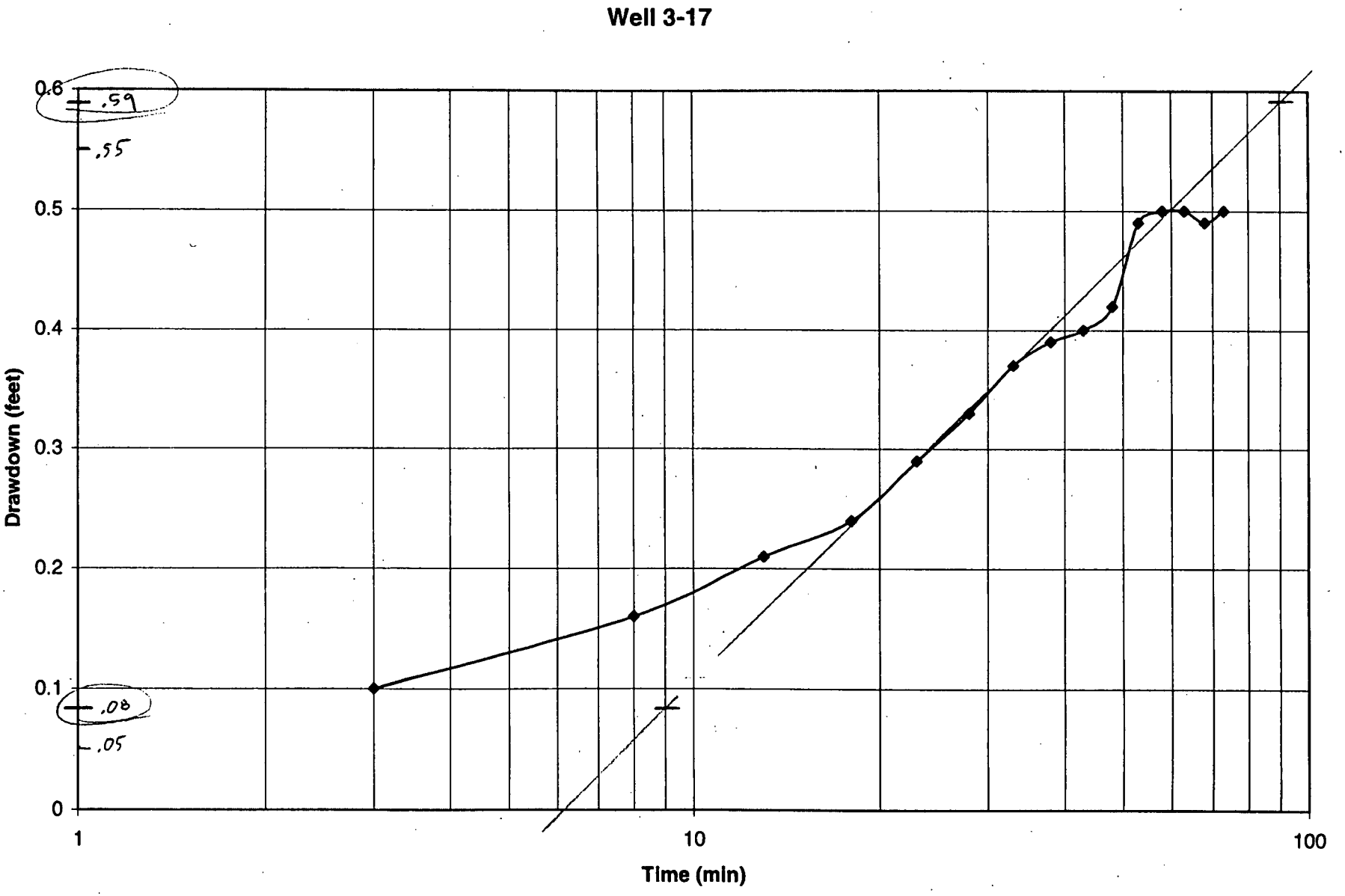
Well 3-14




Well 3-15
0.18
0.16
0.14
0.12
0.1
0.08
0.06
0.04
0.02
0
Drawdown (feet)
1
10
100
Time (min)


Well 3-16
0.35
0.3
0.25
0.2
0.15
0.1
0.05
0
Drawdown (feet)
1
10
100
Time (min)

dh = .51
Q = 121

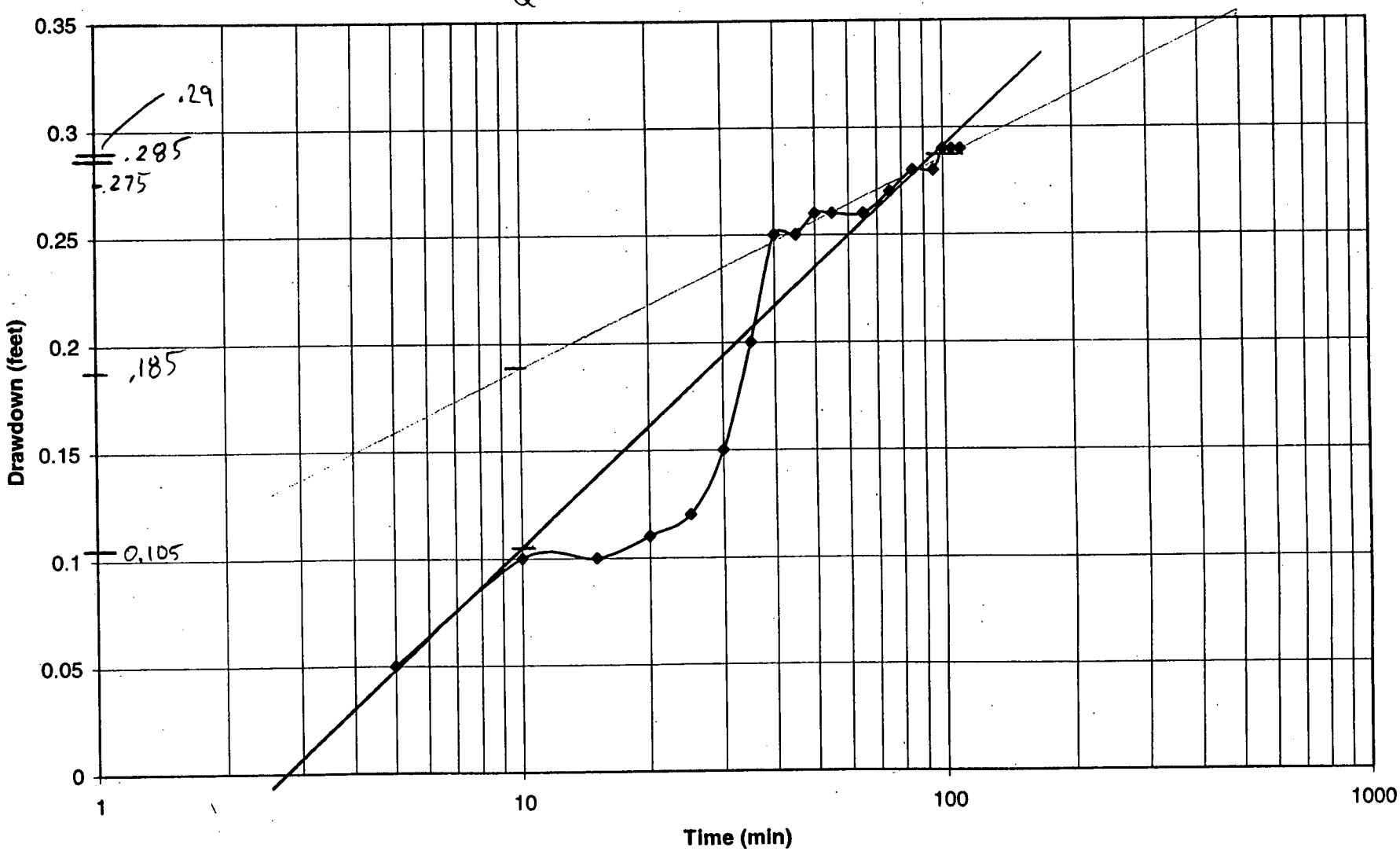

Well 3-17
Drawdown (feet)
Time (min)
0.6
0.5
0.4
0.3
0.2
0.1
0
1
10
100
.59
.55
.08
.05

① Q = 100 dh = 0.1

Q = 105 dh = .185

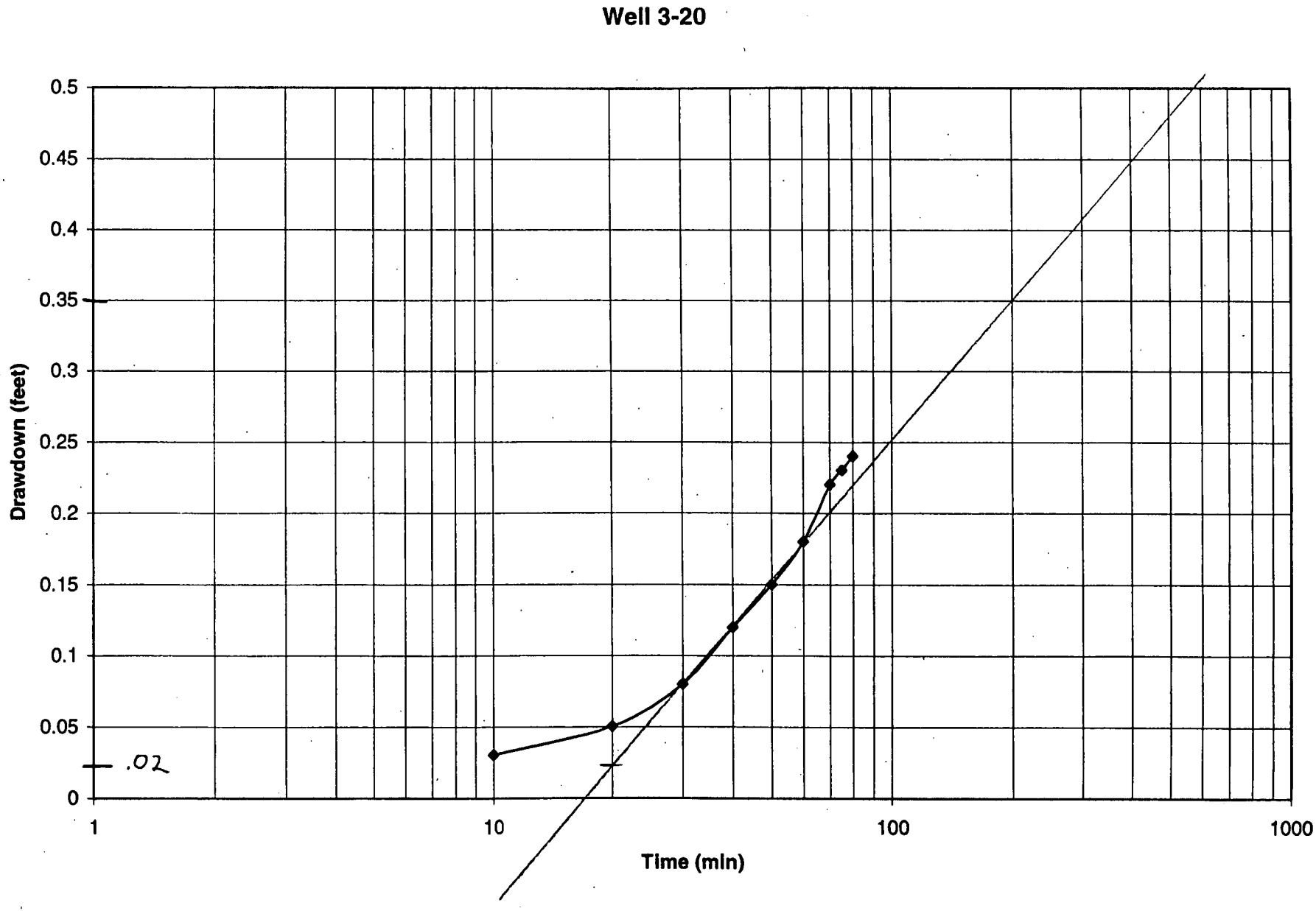
Q = 100

Q ~ 115-120

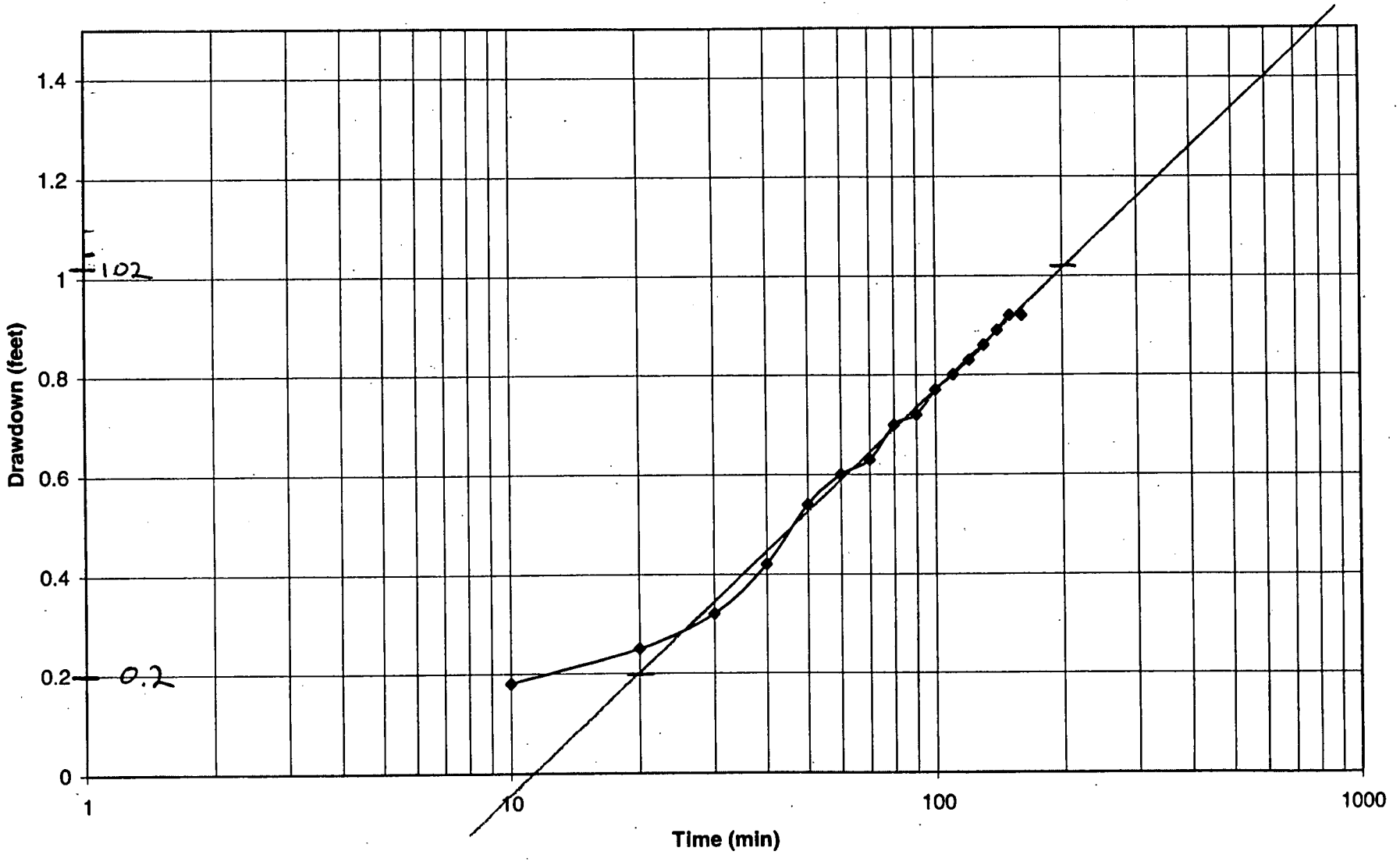


Q = 100

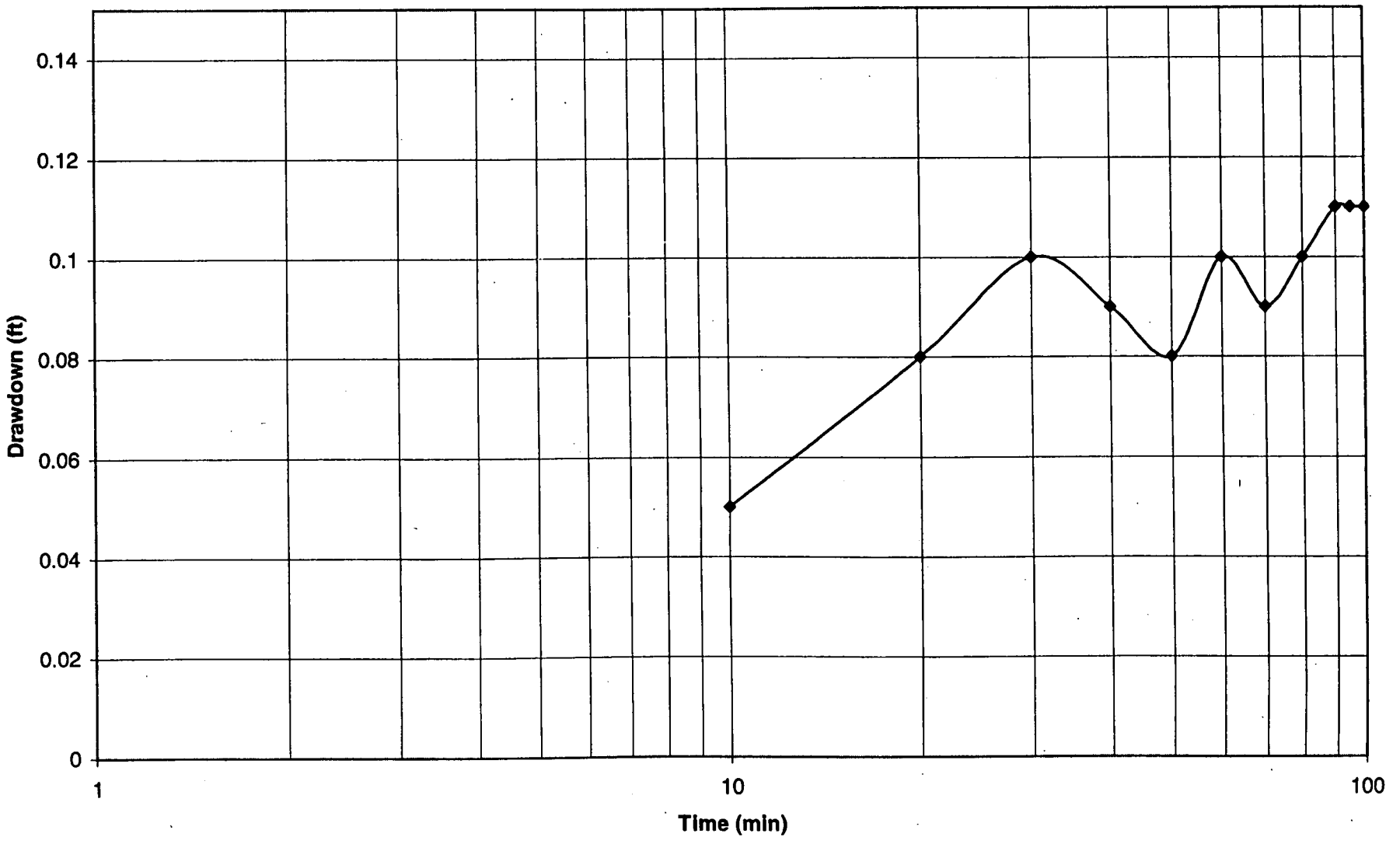
dh = .35 - .02 = .33 ft



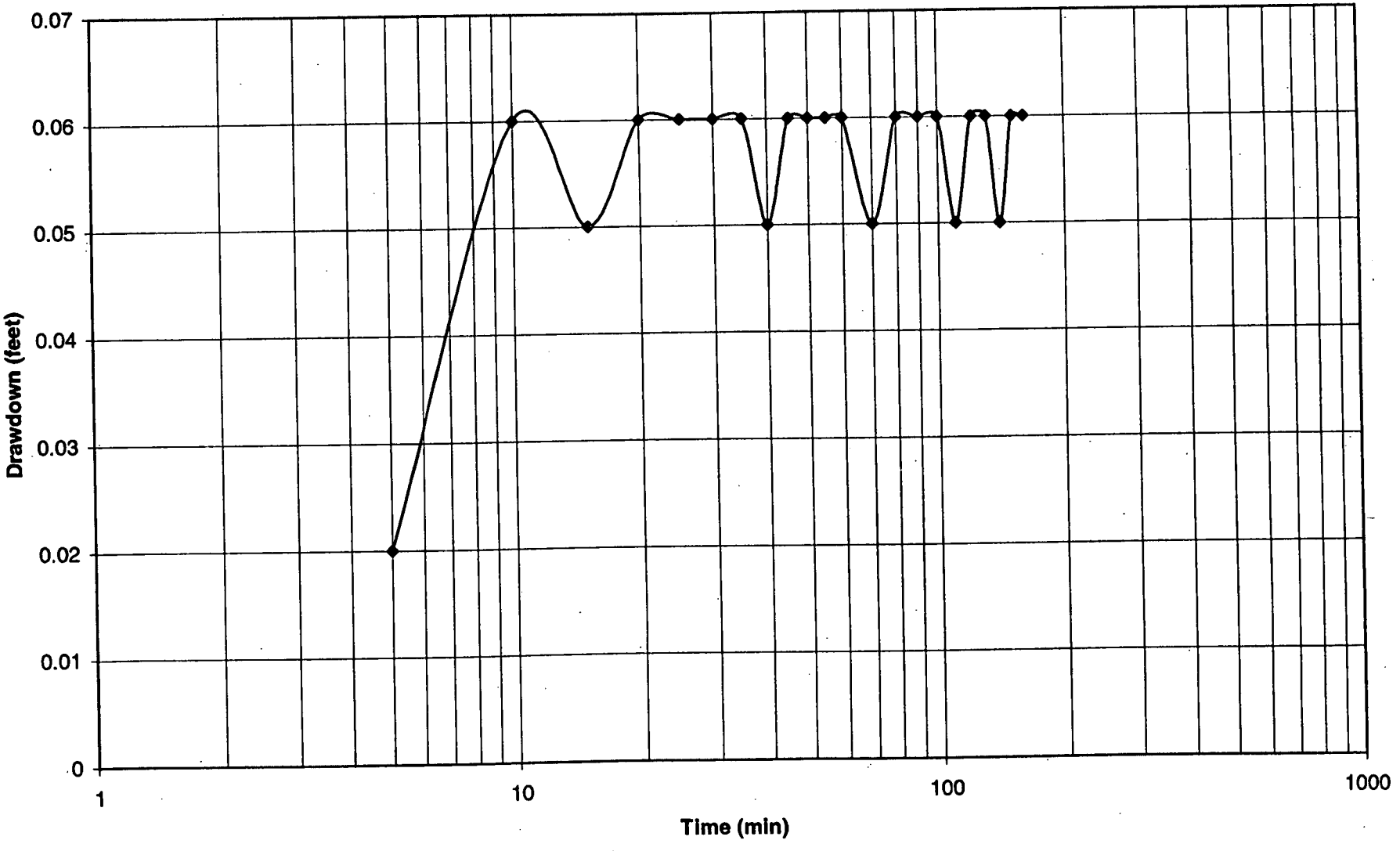
dh = 1.02 - 0.2 = .82
Q = 89 ml/min



Well 3-23

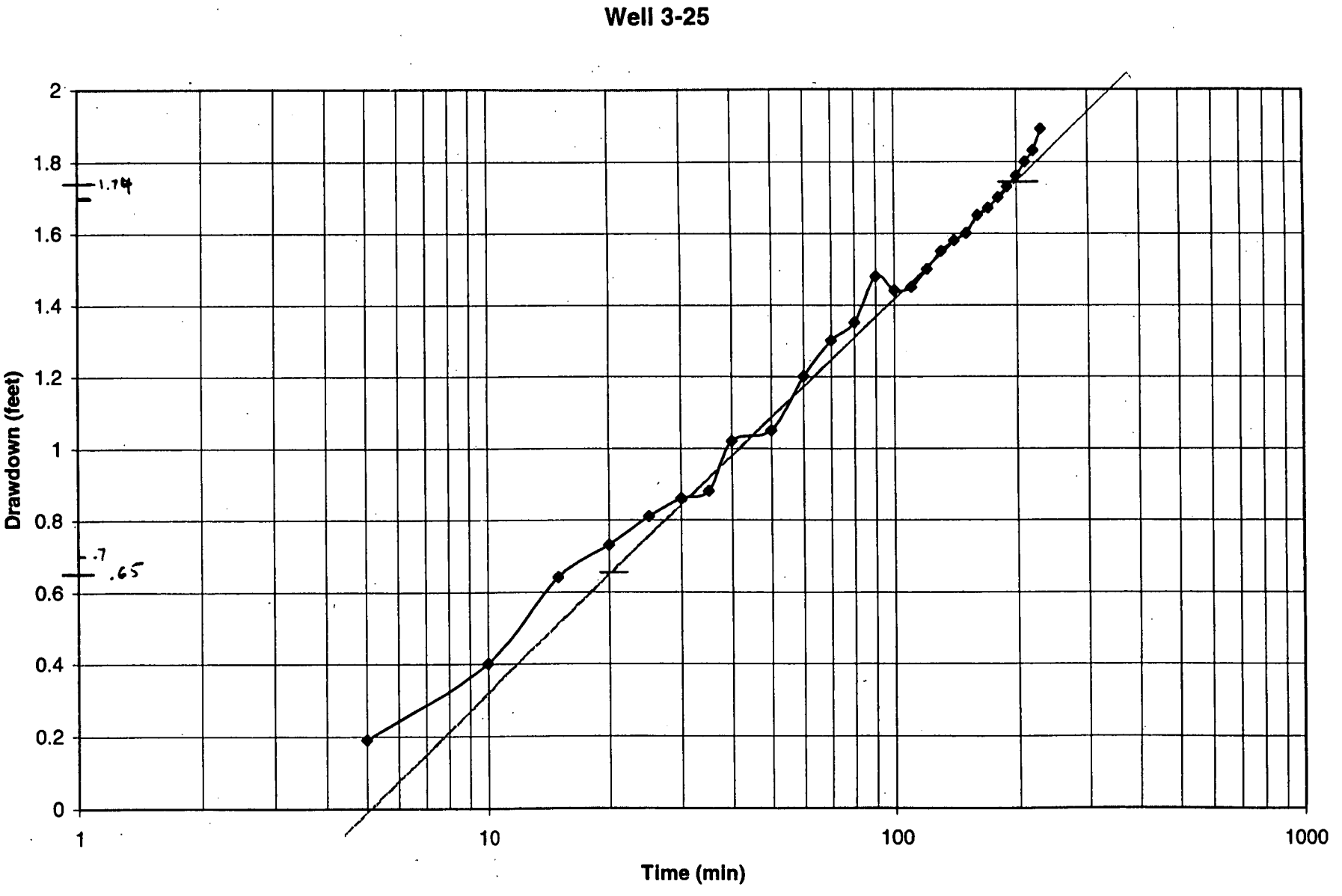


Well 3-24


0.07
0.06
0.05
0.04
0.03
0.02
0.01
0
Drawdown (feet)
1
10
100
1000
Time (min)

dh = 1.74 - 0.65 = 1.09

Q = 104



ATTACHMENT 5

Evaluationcalcs

Well #	Q (ml/min)	Q (ft3/min)	d(ho - h)	Transmissivity T (ft2/min)	Aquifer thickness	Hydrualic Conductivity ft/min	Hydraulic Conductivity cm/sec Straight Line Method	Comments
03-07	135	0.004766	0.100	8.72E-03	6	1.45E-03	7.38E-04	
3-10	na	na	na	na	9.5	na	na	Insufficient data to match straight line
3-11	117	0.00413	1.020	7.41E-04	9	8.23E-05	4.18E-05	
3-12	na	na	na	na	9.4	na	na	Insufficient data to match straight line
3-13	na	na	na	na	2.5	na	na	Insufficient data to match straight line
3-14	87	0.003071	1.350	4.16E-04	8.8	4.73E-05	2.40E-05	
3-15	na	na	na	na	8	na	na	Insufficient data to match straight line
3-16	na	na	na	na	8.8	na	na	Insufficient data to match straight line
3-17	121	0.004271	0.510	1.53E-03	3.2	4.79E-04	2.43E-04	
3-18	105	0.003707	0.185	3.67E-03	10.5	3.49E-04	1.77E-04	
3-20	100	0.00353	0.330	1.96E-03	4	4.89E-04	2.49E-04	
3-21	na	na	na	na	3.1			Insufficient data to match straight line
3-22	89	0.003142	0.820	7.01E-04	8.2	8.55E-05	4.34E-05	
3-23	na	na	na	na	5	na	na	Insufficient data to match straight line
3-24	na	na	na	na	15	na	na	Insufficient data to match straight line
3-25	104	0.003671	1.090	6.16E-04	10	6.16E-05	3.13E-05	

APPENDIX C

FIELD LOG BOOKS

APPENDIX C-1

Master Site Log Book, No. 1330

LOG BOOK #
1330
6.4.01

6.4.01

— DAILY SUMMARY —

ON SITE, T + N4S,
TERRY ROJAHN
KEN MARQUIS
KEITH SIMPSON

NOB/TRAUCL
HEALTH & SAFETY SITE TRAINING

START SHIFT 1 - CTO 126/159
JEEP TRAIL

SCIENTIFIC & ENGINEERING PRODUCTS CHICAGO 60605 MADE IN USA

TITLE NSWC CRANE

PROJECT NO. 3960

BOOK NO. 1330

MONDAY 6.4.01

Work continued from Page WEATHER: CRANE HEAVY RAIN 70°F

0750 KEITH SIMPSON & TERRY ROJAHN @ PGH AIRPORT TO IND. THEN CRANE.

1000 MET KEN MARQUIS @ IND. AIRPORT PICK-UP RENTAL

1330 CARS TO BASE. BLD 3245 UNPACK EQ.

1400 PRE-START MEETING @ 3260

TOM BRENT WILL CHECK ON BASE RADIO FOR T+NUS TO USE ~~while~~ @ CRANE FOR EMERGENCY USE. MEETING ATTENDES ↓

@ BLD 3260

T+NUS ABG-DBG Pre-Start

Name	Code	Phone
TERRY ROJAHN	T+NUS	(412) 921-8857
KENNETH MARQUIS	T+NUS	(770) 364-6964
KEITH SIMPSON	T+NUS	412 921 8131
CLETUS PADGETT	ABG	812-854-1470
Jacquelyn Karty	4052	812-854-3143
KIRBY DIVINE	ESO	812 854 1517
Don Johnson	CAAA	812 854-1481

1430 COMPLETE MEETING RETURN TO 3245 CONTINUE UNPACKING EQ.

1600 KS & KM ON SITE TOUR, TR CAL. EQ. RETURN TO BLD 3245 H&S TRAINING TERRY R. GAVE TRAINING. 1 HR 50 MIN.

1800 ALSO INSPECTED ALL HAND TOOLS AND METERS, ALL IN GOOD WORK ORDER

1850 OFF SITE TO HOME DEPOT / HOTEL

SCIENTIFIC BINDERY PRODUCTIONS CHICAGO 60605 MADE IN USA

Work continued to Page

SIGNATURE K. S. Simpson DATE 6.4.01

DISCLOSED TO AND UNDERSTOOD BY | DATE | WITNESS | DATE

— DAILY SUMMARY —

ON SITE, T + NWS

KEITH SIMPSON
TERRY ROJAHN
KEN MARQUIS

4 MW'S REDEVELOPED

NOTE: RAB MEETING @ NSWC CRANE
LAKEVIEW T & CC - BASINSKI, BRENT
HUNSICKER ETC.

SEE ALSO: FIELD FORMES & LOG BOOK
#2493 & 390F

SCIENTIFIC BINDERY PRODUCTS CHICAGO 60605 MADE IN USA

TUESDAY 6.5.01

Work continued from Page WEATHER: OVERCAST WITH RAIN T'STORM @ 1800

0650 KEN M., TERRY R & KEITH S. @ BLD 3245
LOAD 300± GAL POLY TANK INTO PICK-UP TRUCK
TR WORKING ON CHEMICAL INVENTORY FOR WORK
0720 ROOM. KEN TO SUMM 9 TO START PAINTING
CTO 10 WELLS (SAFETY YELLOW)
KS & TR CAL. YSI, PID & TURB. METER
1120 KS, TR & KM TO LUNCH
KEN CONTINUES PAINTING
KS & TR TO JEEP TRAIL START MW REDEVELOPMENT
COMPLETE 2 WELLS SEE FIELD LOGS & T.R. LOG BOOK #2493
1350 KS TO OFFICERS CLUB TO MEET WITH TOM BRENT
RALPH BASINSKI & BILL GATES FOR TOUR OF POLE
YARD @ BLD 357
1645 RETURN TO BLD 3245 THEN TO JEEP TRAIL
HELP TR & KEN WITH WELL DEVELOPMENT
AND CHECK LOCATIONS FOR STAFF GAUGES
ALONG LITTLE SULPHUR CREEK.
1810 ALL 3 OF US RETURN TO BLD 3245 CHARGE/
DECON EQ. RESTOCK SUVS
1850 DEPART SITE FOR WAL-MART

Work continued to Page

SCIENTIFIC BINDERY PRODUCTIONS CHICAGO 60605 MADE IN USA

SIGNATURE [signature] DATE 6.5.01

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— DAILY SUMMARY —

ON SITE: THUS

TERRY R.
KEN M.
KEITH S.

ALSO ON SITE TOURS WITH TOM BRENT

RALPH B.
MATT C.
TOM J.

LOCATION LAY-OUT

5 MW'S DEVELOPED

COMPLETE PAINTING OF ETO 10 WELS

SCIENTIFIC BINDERY PRODUCTS CHICAGO 60605 MADE IN USA

TITLE NSWC CRANE

PROJECT NO. 3960

BOOK NO. 1330

WED. 6.6.01

Work continued from Page WEATHER: OVERCAST 70-80°F

0650 KS, TR & KM @ BLD 3245 LOAD TRUCKS

0710 KEN TO SWMU 4 & 5 TO COMPLETE PAINTING OF WELLS FOR CTO 10

TR CAL. EQ. TO JEEP TRAIL & WELL DEVELOPMENT

0750 CALLED PGH OFFICE (EDIE) & MADE TRAVEL PLANS FOR NEXT SHIFT.

SANDY ORDERED A MG-220 FOR UXO "CLEARANCE" WE SHOULD HAVE THE METER ON FRIDAY

THE 220 IS A OLDER VERSION OF THE 230/235 BUT WILL WORK FINE FOR THIS JOB/CTO.

0830 KS TO JEEP TRAIL LAY-OUT SB LOCATIONS

0910 KEN @ JEEP TRAIL, LT. RAIN ON/OFF STOPPED PAINTING WELLS SWMU 5 & 9 COMPLETE, HELPING TR WITH DEVELOPMENT

1130 KS, TR & KM TO BLD 3245 DECON EQ. RESTOCK SUVs TO LUNCH

1225 KEN TO SWMU 4 TO COMPLETE MW PAINTING FOR CTO 10, KS & TR TO JEEP TRAIL TR WELL DEVELOPMENT KS LAY-OUT SBs

1500 KEN COMPLETES WELL PAINTING FOR CTO 10 & HELPS TR WITH MW DEVELOPMENT

1705 RETURN TO BLD 3245 DECON EQ. DUMP PURGE WATER INTO NSWC CRANE SANITARY @ BLD 3245 + PAPER WORK

1815 DEPART SITE TO FED EX THEN HOTEL

SCIENTIFIC BINDERY PRODUCTIONS CHICAGO 60605 MADE IN USA

Work continued to Page

SIGNATURE [signature] DATE 6.6.01

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— DAILY SUMMARY —

ON SITE: THOMAS, KEITH S.
KEN M.
TERRY R.

7 MW's DEVELOPED
1 MW SAMPLED + DUP COLLECTED
RAN QA FOR NA PARAMETERS

SEE ALSO FIELD LOG BOOKS 2493 & 3907
+ SAMPLE LOG SHEETS

SCIENTIFIC BINDERY PRODUCTS CHICAGO 60605 MADE IN USA

PROJECT NO. 3960
BOOK NO. 1330

NSWC CRANE

THUR. 6.7.01

Work continued from Page WEATHER: HOT HUMID 70-80°F OVERCAST

0655 KS, KM & TR @ BLD 3245 CAL. EQ. LOAD TRUCKS

0725 KEN & TERRY TO JEEP TRAIL FOR MW DEVELOPMENT
KS RUNNING QA FOR NA PARAMETERS, SEE PG 115
COMPLETE NA QA
PREP. FOR GW SAMPLING
LUNCH @ 1130
KM & TR CONTINUE WITH MW DEVELOPMENT

1230 KS TO JEEP TRAIL TO START MW SAMPLING
STOPPED AT THE ABG BREAK ROOM AND PADGETT SHOWED ME THE OUTDOOR EMERGENCY PHONE. WE ALSO CHECKED IT'S OPPERATION BY CALL SECURITY (854 3300)

1300 SET-UP & PURGE/SAMPLE MW 03-07 ALSO COLLECTED DUP @ THIS WELL FD 060701 01.

1815 COMPLETE SAMPLING LOAD TRUCK TO BLD 3245

1800 TR & KM COMPLETE MW DEVELOPMENT (ALL WELLS REDEVELOPED) RETURN TO 3245 DECON DUMP DEVEL. WATER
PAPER WORK AND CLEAN-UP

1945 DEPART SITE TO HOTEL

Work continued to Page

SIGNATURE [illegible] DATE

DISCLOSED TO AND UNDERSTOOD BY | DATE | WITNESS | DATE

— DAILY SUMMARY —

ON SITE, T+M'S: KEITH S.
TERRY R.
KEN M.

8 SB's SAMPLED (SS) 00-02'

(SEE LOG BOOK 390F) HOLES CLEARED FOR UXO

3 SHIPPED COOLERS TO HUCKS LAB

ALSO SEE LOG BOOKS 2493 & 390F, COCs AND FIELD FORMS

SCIENTIFIC BINDERY PRODUCTS, CHICAGO 50605 MADE IN USA

TITLE NSWC CRANE

PROJECT NO. 3960

BOOK NO. 1330

FRIDAY 6-8-01

Work continued from Page WEATHER:

0655 KS, KM & TR @ BLD 3245 FAX HOURS IN
KEN WORKING ON LIST TO START UXO CLEARANCE
KEITH RUNNING NA FOR MW 03-07
RAN RB ON SILICONE & TEFLON TUBING
RB 06080101 @ 0800
KS & TR PREP FOR SOIL SAMPLING
0940 TO JEEP TRAIL FOR SS SAMPLING @ 03SB30
KEN STARTING UXO CLEARANCE
SAMPLED 03SB29
1115 TO BLD 3245 DECON/RESTOCK SUV LUNCH
1250 RETURN TO JEEP TRAIL & SS SAMPLING
@ 03SB31, 03SB01, 03SB03 & 03SB12
→ COLLECTED DUP + MS/MSD @ THIS LOCATION
MOVE TO 03SB32 THEN 03SB33
1600 KS & TR RETURN TO BLD 3245 PACK SAMPLES,
DECON & PAPER WORK
1625 COLLECTED RB 06080102 @ 1625 PLASTIC TROW
1815 3 COOLERS TO FEDEX, TO WAL-MART
TO HOTEL

SCIENTIFIC BINDERY PRODUCTIONS CHICAGO 60605 MADE IN USA

Work continued to Page

SIGNATURE [signature] DATE 6-8-01

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B 100 P©

MADE IN USA

Work continued from Page

QA CHECKS FOR THE HACH DR/850 COLORIMETER SN 980950003985

RAN INSTRUMENT PERFORMANCE VERIFICATION HACH CAT. # 27639-00 LOT A1096, EXP 8-02

DR/Check™
Absorbance Standard
CERTIFICATE OF ANALYSIS
(DR/800 Series Colorimeters)

	Std No. 1 ABS Lot 19	Std No. 2 ABS Lot 19	Std No. 3 ABS Lot 19
[illegible]	0.629 ± 0.045	1.221 ± 0.045	1.788 ± 0.045
[illegible]	[illegible] ± 0.045	[illegible] ± 0.045	[illegible] ± 0.045
[illegible]	0.614 ± 0.045	1.221 ± 0.045	1.788 ± 0.045
[illegible]	[illegible] ± 0.045	[illegible] ± 0.045	[illegible] ± 0.045

- Certified at 25°C -

SIGNED: Tom Lowe
for and on behalf of the date [illegible]
NOTE: This certificate may be reviewed and offered to a laboratory notebook or other quality record. [illegible]
Kit Lot Number [illegible] Expiry date: [illegible]
27639-07A

WL	STD 1	STD 2	STD 3
520	0.629	1.269	1.838
	+0.001 ✓	+0.003 ✓	+0.004 ✓
610	0.624	1.278	1.852
	-0.001 ✓	+0.015 ✓	+0.024 ✓

NITRATE: RAN A STANDARD SOLUTION OF NITRATE
1.00 mg/L AS N LOT A1131
4.43 mg/L AS NO_3

AT STEP 3 TEST-PROGRAM 55 USED 5 ML OF STANDARD & 10 ML OF DI FOR A TOTAL OF 15 ML RESULT X 3. STANDARD IS 1 & TEST LIMIT = .50 SO USE A DILUTION.

REAGENTS: NITRAVER 6 NITRATE
CAT 21072-49 LOT A0350
NITRIVER 3 NITRATE
CAT 21071-69 LOT A1096

RESULT = 0.35 X 3 = 1.05 mg/L NO3-N ✓

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SCIENTIFIC BINDERY PRODUCTS CHICAGO 53605 MADE IN USA

Work continued from Page QA CHECK ON THE HACH DR/850 (CONTINUED)

NITRITE STANDARD SOLUTION 250 MG/L AS NO_2-N
CAT 23402-49 LOT 1103
DILUTED .1 ML STANDARD TO 100 ML DI
= 0.250 MG/L NO_2-N

RAN PROGRAM 62 NITRITE LR
RESULT = 0.234 MG/L

REAGENT NITRIVER 3 NITRITE
CAT 25120-25 LOT A1075

SCIENTIFIC BINDERY PRODUCTIONS CHICAGO 60605 MADE IN USA

Work continued to Page

SIGNATURE [signature] DATE 6-7-01

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— DAILY SUMMARY —

ON SITE, THINGS;

KEN M.
TERRY R.
KEITH S.

INSTALLED 7 SGs
2 MWs, SAMPLED + MS/MSD
UXO CLEARANCE OF SBs

SEE ALSO LOG BOOK #s 2493 & 3908
COCs & FIELD FORMS

SCIENTIFIC SUPPLY PRODUCTS CHICAGO 97505 MADE IN USA

TITLE NSWC CRANE

SATURDAY 6.9.01

continued from Page WEATHER: SUNNY 70-80°F

KS, TR & KM @ BLD 3245 CAL. EQ. LOAD SUVs
KEN TO JEEP TRAIL CONTINUE UXO CLEARANCE
TR PREP FOR MW SAMPLING
KS TO JEEP TRAIL INSTALL SGs
STAFF GAUGES INSTALLED IN LITTLE SULPHUR CREEK
SG 1 @ ABG, IN CENTER OF ABG, DOWN STREAM SIDE OF LARGE (3 PIPE) STEEL DRAINAGE PIPES UNDER ROAD, CHISEL MARK & WHITE PAINT ON TOP OF PIPE - FLOW ≈ 70 GPM
SG 2 NAIL SET IN TREE (IN CREEK) 100' ± WEST OF MW 03-16 DRY (NO FLOW)
SG 3 NAIL SET IN TREE (IN CREEK) CLOSE TO 03 SW/SD 13 - DRY
SG 4 CHISEL MARK, WITH PAINT, CENTER OF 1ST (NORTH BRIDGE CLOSE TO SPRING-C) BRIDGE ON DOWN STREAM SIDE - DRY
SG 5 SAME AS SG4 ON 2ND, SOUTH, BRIDGE FLOW ≈ 100 GPM
SG 6 NAIL SET IN TREE (IN CREEK) CLOSE TO 03 SW/SD 17 FLOW ≈ 70± GPM
SG 7 5/8" X 4' REBAR POUNDED ≈ 2.5 INTO CREEK BED ≈ 140' FROM NSWC CRANE BOUNDARY REBAR HAS A CAP WITH CHISEL MARK FOR SURVEYING. HIGH FLOW MAY DESTROY? FLOW ≈ 150 GPM

1100 COMPLETE SG HELPED KEN FIND 03SB05
CHECKED ON TR. TO BLD 3245 LUNCH.
RETURN TO JEEP TRAIL PICK-UP NA SAMPLE FROM TR. HELP MARK & TR

1400 RETURN TO BLD 3245 RUN NA ON MW 03-23
PREP FOR SW/SD SAMPLING

1925 KEN & TERRY RETURN FROM JEEP TRAIL
KEN CLEARED FOR UXO ALL LOCATIONS AS FAR AS HE COULD HAND AUGER.

SCIENTIFIC BINDERY PRODUCTIONS CHICAGO 60605 MADE IN USA

Work continued to Page

SIGNATURE K. J. S. Lang DATE 6.9.01

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SCIENTIFIC STANDARD PRODUCTS CHICAGO 60613 MADE IN USA

Work continued from Page

TERRY SAMPLED 2 WELLS 03 MW 20 & 23
UNLOAD TRUCK, SAMPLES TO FRIDGE, CLEAN EQ.
KS RAN NA FROM MW 20
1015 DEPART SITE TO HOTEL

SCIENTIFIC BINDERY PRODUCTIONS CHICAGO 60605 MADE IN USA

Work continued to Page

SIGNATURE [signature] DATE 6.9.01

DISCLOSED TO AND UNDERSTOOD BY | DATE | WITNESS | DATE

DAILY SUMMARY

ON SITE, T FINUS - KEITH S.
TERRY R.
KEN M.

5 SW SAMPLES TAKEN
2 SD SAMPLES TAKEN

SEE ALSO, FIELD FORMS, COCs

SCIENTIFIC BINDER PRODUCTS, CHICAGO 60835 MADE IN USA

TITLE NSWC CRANE

PROJECT NO. 3960

BOOK NO. 1330

BY SUNDAY 6.10.01

Work continued from Page WEATHER: NICE, SUNNY 68-78°F

0650 PICK-UP ICE ON WAY TO CRANE, ON SITE KS, TR & KM PREP FOR SW SAMPLING @ JEEP TRAIL

0750 ALL 3 OF US TO JT FOR SW SAMPLING SAMPLED 03SW19 ALSO COLLECTED MS/MSD & DUP FD06100101. SAMPLED SW18, SAMPLED SW17

1055 LAY-OUT LOCATION SW/SD16 TO BLD 3245 FILTER DISS. METALS RUN NA PARAMETERS

1240 RESTOCK TRUCK. KEN & TERRY TO JEEP TRAIL & CONTINUE SAMPLING. KS RUNNING NA

1410 COMPLETE NA TO JT TO PICK-UP SAMPLES

1440 RETURN TO BLD 3245 STORE SAMPLES RUN NA. COMPLETE NA @ 1555 PREP. BOTTLE

1605 SETS TR & KM RETURN TO BLD 3245 UNLOAD SAMPLES CLEAN EQ. PAPER WORK

1655 DEPART SITE FOR HOME DEPOT THEN HOTEL

SCIENTIFIC BINDERY PRODUCTIONS CHICAGO 60605 MADE IN USA

Work continued to Page

SIGNATURE [signature] DATE 6.10.01

DISCLOSED TO AND UNDERSTOOD BY DATE WITNESS DATE

— DAILY SUMMARY —

ON SITE, TETRUS, KEITH S.,
TERRY R.
KEN M.

(14) SAMPLED 14 SO LOCATION, 2 SAMPLES
AT EACH LOCATION 0-6" & 6-12"

(2) SAMPLED 2 SW LOCATIONS

SHIPPED 11 COOLERS TO CACCIS
LABS, FEDEX

SEE ALSO COC, LOG BOOK #2493
AND FIELD FORMS

SCIENTIFIC BINDERY PRODUCTS CHICAGO 60605 MADE IN USA

TITLE NSWC CRANE

PROJECT NO. 3960

BOOK NO. 1330

MONDAY 6.11.01

Work continued from Page WEATHER: BRIEF RAIN @ 5:00AM THEN CLEAR 68-84

0855 KS, KM & TR @ BUD 3245 PREP. FOR SW/SD @ JEEP TRAIL CAL EQ.

0925 TO JEEP TRAIL KEN & TERRY SAMPLING SW/SD KS LAY-OUT OF SAMPLE LOCATIONS

1025 KS @ BUD 3245 START PREP. FOR SAMPLE SHIPMENT. PACKED 11 COOLERS FOR SHIPMENT VIA FEDEX TO CACKS LABS

1530 CLEAN-UP OFFICE & PAPERWORK

1655 FEDEX PICK-UP TO JT/ABG TO HELP KEN & TERRY WITH SW/SD SAMPLING

1945 RETURN TO BUD 3245 KS, TR & KM UNLOAD TRUCK CLEAN EQ., RUN NA PAPER WORK

2110 DEPART SITE FOR HOTEL

SCIENTIFIC BINDERY PRODUCTIONS CHICAGO 60605 MADE IN USA

Work continued to Page

SIGNATURE K. S. Simp

DATE 6.11.01

DISCLOSED TO AND UNDERSTOOD BY | DATE | WITNESS | DATE

— DAILY SUMMARY —

ON SITE, THINGS: KEN M.
TERRY R.
KEITH S.

2 SW SAMPLED
4 SD LOCATIONS SAMPLED
2X EACH LOCATION
THIS COMPLETES 1 ROUND OF SW
AND ALL SDs

ROUND OF W/C ABG/JT

SHIPPED 7 COOLERS TO CHECKERS LAB

SEE ALSO LOG BOOK # 2493, COC &
SAMPLE LOG SHEETS

SCIENTIFIC & NORDEN PRODUCTS, CHICAGO 60635 MADE IN USA

Work continued from Page WEATHER: HOT HUMID 73-89°F OVERCAST

0700 KS, KM & TR @ BLD 3245 CAL EQ. LOAD TRUCKS PREP FOR SW/SD SAMPLING CALLED FEDEX FOR PICK-UP # 11

0740 TO ABG/JT FOR SAMPLING

1100 @ BLD 3245 ALL SW/SD LOCATIONS SAMPLED CLEAN EQ., PAPER WORK & RUN NA

1140 TO LUNCH

@ BLD 3245 COMPLETE NA

1315 KS & KM TO JT FOR SITE WIDE WLs ABG/JT TR PACKING FOR FEDEX

1710 KS & KM @ BLD 3245 COMPLETE ROUND OF WL & SG. UNLOAD TRUCK CLEAN EQ. PAPER WORK

1820 DEPART SITE

SCIENTIFIC BINDERY PRODUCTIONS CHICAGO 60605 MADE IN USA

Work continued to Page

SIGNATURE [signature] DATE 6.12.01

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DAILY SUMMARY

ON SITE, TETRA TECH KEITH S.
KEN M.
TERRY R

CLEAN-UP & TRAVEL
END OF 1ST SHIFT

PICK-UP DIG PERMIT FOR JT

SHIPPED 2 COOLERS TO APCL
SHIPPED 1 COOLER TO TRIANGLE

SCIENTIFIC BINDERY PRODUCTS CHICAGO 35633 MADE IN USA

WED 6.13.01

Work continued from Page WEATHER: HOT 75-90°F CLEAR

0630 CHECK OUT OF HOTEL TO SITE
KS, TR & KMZ @ BLD 3245 PACK SAMPLES FOR
TRIANGLE LAB & APCL
CLEAN BLD 3245 & SYU PAPER WORK
FAX COC TO LINDA K.

0840 CALLED GREG CHRISTESON OF EFS, DPT OPERATOR
AND OPERATOR WILL MOB TO SITE ON MONDAY
JUNE 18, 01 @ 2:00 EFS 317 896 1116

0900 TR DEPARTS SITE TO FEDEX THEN AIRPORT
KEN TO AIRPORT

0940 KS COMPLETES PAPER PICK-UP DIG PERMIT
TO AIRPORT & HOME

END OF SHIFT

SCIENTIFIC BINDERY PRODUCTIONS CHICAGO 60605 MADE IN USA

Work continued to Page

SIGNATURE [signature] DATE 6.13.01

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— DAILY SUMMARY —

ON SITE, T+ NUS

KEITH SIMPSON
BOB BANIBUEC
KEN MARQUIS

"UXO" MEETING
PREP FOR SBs

START OF SHIFT 2

SCIENTIFIC BINDERY PRODUCTS CHICAGO 60605 MADE IN USA

NSWC CRANE

MONDAY 6.18.01

Work continued from Page WEATHER: CRANE, NICE 84°F SUNNY

MET BOB BALKOVEC @ PGH AIRPORT, TO IN, PICK-UP RENTAL CAR, TO HOTEL BLOOMINGTON, LUNCH, SAM'S CLUB TO BASE & B10 3245

KEITH SIMPSON & BOB B. MEET KEN MARQUIS. KEN & BOB TO ABG/JT RESTAKE LOCATION GASS CUTTING KNOCKED OVER (≈3) ALSO GIVE BOB A QUICK SIGHT TOUR

1430 MEETING/CONFERENCE @ B10 3260
CALL USN MASTER CHIEF JOHN LEEFEURE
TOM BRENT
KEITH SIMPSON
KEN MARQUIS
BOB BALKOVEC
PHONE: RALPH BASINSKI
TOM JOHNSTON
BILL GATES
PHIL BLACKWEN

WE WILL CLEAR THE SBs IN THE BURN PIT 03SB19, 20, 22, 24 & 03SB08 USING A BACK HOE, START DIGGING IN CLEARED AREA & DIG TO HIT REMOVED HIT IF IT'S SCRAP THEN OPT LOCATION, IF IT (HIT) IS UXO WE WILL CALL M.C. JOHN L. AND WE (THINGS) WILL NOT REMOVE. JOHN L. WILL TALK WITH KIRBY DIVINE. KEN WILL MEET JOHN L @ B10 3245 THEN TO ABG FOR TOUR OF BURN PIT.

1515 RETURN TO 3245 CALLED RALPH B & DRILLERS
EFS WILL BE ON SITE 0700 TUESDAY & BACKHOE SHOULD BE HERE @ 1200
PREP FOR SB SAMPLING

1710 DEPART SITE FOR HOTEL

SCIENTIFIC BINDERY PRODUCTIONS CHICAGO 60605 MADE IN USA

Work continued to Page

SIGNATURE [signature] DATE 6.18.01

DISCLOSED TO AND UNDERSTOOD BY DATE WITNESS DATE

— DAILY SUMMARY —

ON SITE, TH NYS; KEITH S.
BOB B.
KEN M.
ADAM CERTAIN

EFS

NAVY EOD MC JOHN LEFEVRE

7 SBs COMPLETED & 3 FDs COLLECTED
03SB02, 04, 05, 06, 07, 08 & 11

MEASURED FLOW @ SGs
REPAIRED PAD @ MW 03-23

SEE ALSO, LOG BOOK #s 2494, 390F
SAMPLE LOG SHEETS & COCs

SUPERIOR BINDERY PRODUCTS CHICAGO 60605 MADE IN USA

NSWC CRANE

PROJECT NO. 3960

BOOK NO. 1330

TUESDAY 6.19.01

Continued from Page WEATHER: NICE 66-84°F CLEAR

KS, BOB B. & KEN M. ON SITE BLD (3245)
PREP FOR WORK @ JT, UXO & SB, CAL. PID
ADAM CERTAIN, DPT OPERATOR FOR EFS ON SITE
H&S TRAINING, EQ. INSPECTION
TO ABG
KEN IS @ JT WITH M.C. LEFEVRE FOR
TOUR OF AREA THAT NEEDS CLEARED WITH
BACK HOE
SET-UP ON 03SB02 THEN 03SB06
TO LUNCH 1205 TO BLD 3245 SAMPLES TO PRIORITY
RESTOCK EFS MAKING PHONE CALLS FOR BACK HOE
RETURN TO JT SET-UP ON 03SB04 03SB07
KS TO SGs FOR FLOW/STREAM MEASUREMENT
COMPLETE WC TO ABG ASK IF FORK LIFT CAN
MOVE A FEW PALLETS FOR ACCESS TO SBs
7 PALLETS MOVED
1540 EFS HAVING TROUBLE WITH PROBE RIG TO
ABG WITH KEN TO MAKE CALLS TO OFFICE
IT'S WORKING BUT SLOW
1640 KS & BB TO 03-23 MIXED 1 BAG OF CEMENT
AND REPAIRED PAD.
1655 CONTINUE WITH DPT/SBs
1730 ALL 4 OF US RETURN TO BLD 3245
STORE SAMPLES CLEAN EQ. RESTOCK TRUCKS
& PAPER WORK
ORDERED 16 CASES OF 8 oz GLASS & 25 COOLERS
1840 DEPART SITE

SCIENTIFIC BINDERY PRODUCTIONS CHICAGO 60605 MADE IN USA

Work continued to Page

SIGNATURE [signature] DATE 6.19.01

DISCLOSED TO AND UNDERSTOOD BY DATE WITNESS DATE

— DAILY SUMMARY —

ON SITE, T# NUS, KEITH S.
BOB B.
KEN M.

EFS, ADAM CERTAIN
RICK HEABER

BACKHOE MOB

9 SBs SAMPLED

SHIPPED 3 COOLERS TO JAUCUS

SEE ALSO LOG BOOK #s 2494 & 3904
FIELD LOGS & COCs

BACKHOE OPERATION AT SITE = 3 HOURS
RICK ON SITE 0750 – 1410

SCIENTIFIC BINDERY PRODUCTS . CHICAGO 60605 MADE IN USA

A - 6-20.01

Continued from Page WEATHER: INSTALLED RAIN GAUGE @ BLD 3245
2" RAIN LAST NIGHT. TODAY LT RAIN = 1000 THEN OVERCAST 70-84°F
KS, KM & BB @ BLD 3245
COLLECTED RB062001 01 @ 0720 ON @
DPT LINER
ADAM C. EFS ON SITE
BACK HOE OPERATOR, RICK HEABERLIN, EFS
ON SITE, H&S TRAINING
BACK HOE ON SITE KS & RICK TO MEET
THEN TRANSPORT TO ABG
BACK HOE @ ABG COMPLETE EQ INSPECTION, TO JT
KS HELPING BOB WITH SB/DPT BACK HOE CLEARING
3 LOCATIONS FOR TRUCK ACCESS.
KEN CLEARING 03SB19, 20, 22 & 24 WITH BACK HOE
TOM BRENT @ JT OVERSEEING UXO CLEARANCE
BURN PIT HAS SCRAP, WOOD, ASH ETC. NOT CLEAN
ALL KEN IS GOING TO CALL PHILL BLACKWELL, THEN
RALPH FOR GUIDANCE.
TO LUNCH THEN BLD 3245
PACKING SAMPLES FOR FEDEX
1355 CONFERENCE CALL; RALPH BASINSKI
TOM JOHNSTON
MATT COCHRAN
PHILL BLACKWELL
KEITH SIMPSON
BILL GATES

TO FOLLOW THE UXO CLEARANCE SOP, ONCE KEN FOUND UXO "MATERIAL" @ 03SB19 WHILE DIGGING WITH THE BACK HOE WE NEED TO HAVE A 2ND UXO TECH. ON SITE. THE NAVY WILL SEND M.C. J. LEEFEURE TO THE JT @ = 0900 THRS., USING THE BACK HOE AND HAND DIGGING KEN & JOHN WILL ATTEMPT TO CLEAR THE BURN PIT AREA, IF NEEDED WE WILL SAMPLE FROM THE BACK HOE BUCKET.

SCIENTIFIC BINDERY PRODUCTIONS CHICAGO 60605 MADE IN USA

Work continued to Page

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DATE 6.20.01
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SCIENTIFIC BINDERY PRODUCTS CHICAGO 60655 MADE IN USA

6.20.01

Continued from Page 135

ASK JOHN LEEFEURE IF THERE WOULD BE ANY CHARGE
FOR HIS TIME AND HE SAID "NO CHARGE".
TO PICK-UP ICE THEN COMPLETE PACKING FOR
FEDEX SAMPLE SHIPMENT, SHIPPED 3 COOLERS TO
TRUCKS.
AS TO FEDEX THEN WAL-MART FOR SUPPLIES

SCIENTIFIC BINDERY PRODUCTIONS CHICAGO 60605 MADE IN USA

Work continued to Page

SIGNATURE [signature] DATE 6.20.01

DISCLOSED TO AND UNDERSTOOD BY DATE WITNESS DATE

— DAILY SUMMARY —

ON SITE: T + NUS = KEITH S.
BOB B.
KEN M.
EFS ADAM C.
RICK H.

TOM BRENT & @ JT 25 0800
WALT WAGGONER THRU 0945
NAVY EOD JOHN LEFEVRE @ JT 25
HELPING KEN WITH UXO CLEARING 0900
TO 1100

3 SBs SAMPLED

SHIPPED 2 COOLERS TO LAUCK LAB

SEE ALSO LOG BOOK # 2494 & 390F,
SAMPLE LOG SHEETS & COCs

SCIENTIFIC BINDERY PRODUCTS.. CHICAGO 60605 MADE IN USA

NSWC CRANE
THUR. 6·21·01

continued from Page WEATHER: 0.5" RAIN OVERNITE SOME LT RAIN 70-84°F

0550 KS, KM & BB @ BLD 3245 PREP. FOR UXO CLEARANCE & SAMPLING @ JT.

0750 TO ABG/JT
KS, BB & KM MET TOM BRENT & WALT WAGGONER @ JT 25 (WALT'S PHONE # 1317) WALT STATED THAT THE BURN AREA RAN FROM JUST SOUTH OF MW 03-16 TO JUST NORTH OF MW 03-22. THE AREA AROUND MW 03-07 WAS A DUMP AREA THERE IS DEBRIS FROM MINE FILLS, CONSTRUCTION SITES ABG @ CT. THE BURN AREA & PIT OUTLINES ON FIG. 4-1 ARE TO SMALL AND THERE WAS NEVER A "TRUE" PIT DUG TO BURN IN.

0845 THE BACK HOE OPERATOR RICK ON SITE, M.C. JOHN LEEFEVRE ON SITE

0955 ADAM C. ON SITE. ALL 3 SBs 03SB19, 22 & 24 LOCATIONS ARE CLEARED FOR UXO
SET-UP TO START DPT @ 03SB24 - MS/MSD COLL @ 12-15'

1155 TO LUNCH

1225 KS TO BLD 3245 START PACKING FOR FEDEX
KEN & BOB TO ABJ/JT
CONFERENCE CALL: KS, TOM BRENT, RALPH B. MATT C. TOM J., BILL G. SEE NOTES FROM RALPH B.
9 ADDITIONAL SBs
6 ADDITIONAL SSs CALL LASTED 1300 → 1445

1500 KEN & BOB WITH EFS @ BLD 3245 DECON, PAPER WORK, PACK SAMPLES

1530 EFS OFF SITE
PREP. WORK/CALLS FOR ADDITIONAL SAMPLES

1820 DEPART SITE

SCIENTIFIC BINDERY PRODUCTIONS CHICAGO 60605 MADE IN USA

Work continued to Page

SIGNATURE [signature] DATE 6·21·01

DISCLOSED TO AND UNDERSTOOD BY DATE WITNESS DATE

— DAILY SUMMARY —

ON SITE, T+NUS, KEN M.
BOB B.
KEITH S.
EFS ADAM C.
RICK H.

9 SB (DPT) SAMPLED, ADDITIONAL WORK

SHIPPED 3 COOLERS TO CHECKS LABS

SEE ALSO LOG BOOK # 2494 & 3980 F
SAMPLE LOGS & COC

SCIENTIFIC BINDERY PRODUCTS CHICAGO 60605 MADE IN USA

NSWC CRANE

FRIDAY 6-22-01

PROJECT NO. 3960

BOOK NO. 1330

Continued from Page WEATHER: 0.30" RAIN OVER LAST 24 HR. CLOUDY 72-84°F

KS, KM & BB @ BLD 3245 PREP FOR DPT SAMPLING @ JT.

ADAM C. ON SITE TO JT.

KS PAPER WORK @ 3245 & PHONE CALLS

TO JT LAY-OUT "NEW" SB LOCATIONS & HELP WITH SAMPLING.

TOM BRENT @ JT 0920 TO 1005 OBSERVING DPT & SAMPLING. 6 SBs COMPLETED 03SB40, 42, 44, 46, 47 & 48

TO BLD 3245 SAMPLES TO FRIDGE, DECON, RESTOCK SUVs TO LUNCH

BACK HOE OFF-SITE TO DECON (DEMOB) @ 1000

@ JT SET-UP @ 03SB39 FOR DPT

COMPLETE 03SB39, 36 & 34

RETURN TO BLD 3245 PAPER WORK, PACK SAMPLES CLEAN EQ & WORK ROOM

ADAM C. EFS OF SITE, ALL DPT WORK COMPLETE PREP FOR SB. WITH HAND AUGER ON SAT.

DEPART SITE TO FEDEX, WALMART THEN HOTEL

AUTOMATIC BINDERY PRODUCTIONS CHICAGO 60605 MADE IN USA

Work continued to Page

SIGNATURE

DATE 6-22-01

DISCLOSED TO AND UNDERSTOOD BY DATE WITNESS DATE

DAILY SUMMARY

ON SITE, TTNUS

BOB B.
KEITH S.
KEN M.

7 SBs SAMPLED (HAND AUGER)

1 MW SAMPLED WITH MS/MSD

SEE ALSO: COCs, LOG BOOK # 2499 & 3905
AND SAMPLE LOG SHEETS

SATURDAY 6.23.01

Work continued from Page WEATHER: NO RAIN LAST 24HRS. 69-87°F

0815 KS, BB & KM ON SITE @ BLD 3245 PREP FOR WORK @ JT KS TO CHECK/REMARK ALL LOCATIONS
0900 KEN & BOB START HAND AUGER LOCATION 03SB09
0930 COMPLETE 03SB09 & REMARK OF SB LOCATIONS
BOB SET-UP & START PURGING @ 03-13
KS & KM START 0-2' SBs 35, 37 & 38
1000 COMPLETE SBs MOVE TO SBs 41, 43 & 45
COMPLETE ALL 6 "NEW" 0-2' SBs
CHECK ON BOB @ 03-13 KS & KM TO BLD 3245
UNLOAD SUVs, DECON & PAPER WORK
1100 COLLECTED RB062301 ON HAND AUGER BUCKET WHILE SAMPLING THE 6 0-2' SBs THIS AM I DUG IN ≈ 8 LOCATIONS BETWEEN THE JEEP TRAIL AND LITTLE SULPHUR CREEK NO FILL/DEBRIS NOTED SOME "TRASH" WAS ON THE SURFACE (PVC, PIPE, CONCRETE WOOD) BUT LITTLE OVER ALL. THERE IS CONCRETE WITH REBAR, SCRAP METAL, WOOD, STONE ON THE WEST SIDE OF THE JT IN THE AREA OF SB 34, 36 & 39 ALSO FLINT COAT & ASH ON GROUND SURFACE AT SB 34 & 36
1135 TO ABG/JT TO CHECK ON BOB THEN DBG TO LAY-OUT LOCATIONS ALL SB LAYED OUT AND ≈ 1/2 THE SW/SD
1650 TO BLD 3245 PAPER WORK AND SOURCE BLANKS ONE ON TAP WATER @ BLD 3245 & ONE ON DI SEE TABLE 4-7 SB062301 01 DI WATER
SB062301 02 TAP WATER
1745 DEPART SITE

SCIENTIFIC BINDERY PRODUCTIONS CHICAGO 60605 MADE IN USA

Work continued to Page

SIGNATURE [signature] DATE 6.23.01

DISCLOSED TO AND UNDERSTOOD BY | DATE | WITNESS | DATE

— DAILY SUMMARY —

ONSITE, TT NUS: BOB G.
KEN M.
KEITH S.

2 MWs SAMPLED

LAY-OUT OF DBG SW/SD LOCATIONS

5 SBs SAMPLED, HAND AUGER LOCATIONS

SEE ALSO, LOG BOOK # 2494 & 3904
FIELD FORMS & COCs

SCIENTIFIC BINDERY PRODUCTS.. CHICAGO 60605 MADE IN USA

SUNDAY 6.24.01

Work continued from Page WEATHER: NO RAIN 68-82°F NICE

0650 PICK-UP ICE TO BLD 3245 KS, BB & KM
BOB PREP FOR GW SAMPLING @ JT
KS & KM TO DBG & LAY OUT SW/SD LOCATIONS
PRIOR TO LEAVING 3245 KS RUNS NA ON 03-13
0750 BOB TO ABG/JT
0810 KS & KM TO DBG
COMPLETE LAY-OUT RETURN TO BLD. 3245
PREP FOR LAST 4 SBs @ JT, HAND AUGER
LOCATIONS
0830 KS & KM TO JT START HAND AUGER
0910 BOB COMPLETES 2 MW & HELPS WITH HAND AUGER
SAMPLES.
1210 COMPLETE 5 HAND AUGER LOCATIONS RETURN TO
BLD 3245 CLEAN EQ., PAPER WORK, SAMPLES TO
FRIDGE
RB 062401 01 ON STAINLESS STEEL MIXING BOWL @ 1800
1900 DEPART SITE

SCIENTIFIC BINDERY PRODUCTIONS CHICAGO 60605 MADE IN USA

Work continued to Page

SIGNATURE [signature] DATE 6 24 01

DISCLOSED TO AND UNDERSTOOD BY | DATE | WITNESS | DATE

— DAILY SUMMARY —

ON SITE, T+ NUS, KEN M.
BOB R.
KEITH S.

2 MWs SAMPLED + 1 DUP

9 COOLERS SHIPPED TO CANCICS
1 COOLERS SHIPPED TO TRI. LABS
1 COOLERS SHIPPED TO APC LABS

FEDEXED RENTED SCHONSTEDT BACK

SEE ALSO, LOG BOOK #S 2494 & 390F,
SAMPLE LOG SHEETS & COC

SCIENTIFIC BINDERY PRODUCTS, CHICAGO 60605 MADE IN USA

TITLE NSWC CRANE

PROJECT NO. 3960

BOOK NO. 1330

MONDAY 6.25.01

Work continued from Page WEATHER: NO RAIN LAST 24 HRS., NICE 66-82°F SUN

0 KS, BB ON SITE BOB PREPS FOR GW SAMPLING
KS RUNNING NA KEN & BOB TO JT FOR GW
SAMPLING
TO SWMU 9 LABELED ALL 5 WELLS WITH PAINT
MARKER THEN TO MGBG TO CHECK FOR TRAILER
LOCATION'S & RECON. LOCATIONS
LUNCH PICK UP ICE TO BLD 3245 PACK SAMPLES
FOR FED EX
COMPLETE PACKING PREP FOR GW SAMPLING
WITH BLADDER PUMP.
BOB RETURNS WITH GW SAMPLE RUN NA
PAPER WORK CLEAN UP
FED EX PICK-UP
BOB & KEITH TO SWMU 4 & 5 MARK IDs ON ALL
NEW "T" WELLS
OFF SITE

PRODUCTIONS CHICAGO 60605 MADE IN USA

Work continued to Page

DATE 6.25.01

READ AND UNDERSTOOD BY | DATE | WITNESS | DATE

DAILY SUMMARY

ON SITE, T + NUS, BOB B.
KEN M.
KEITH S.

3 MWs SAMPLED

SEE ALSO; LOG BOOK #s 2494 & 3904
SAMPLE LOG SHEETS & COCs

SCIENTIFIC BINDERY PRODUCTS CHICAGO 60605 MADE IN USA

SWMC CRANE

PROJECT NO. 3960

BOOK NO. 1330

6.26.01

Continued from Page WEATHER: NO RAIN OVER NIGHT - 69° SOME V. LT. RAIN 69-82°

ON SITE BLD 3245 KS, KM & BB PREP FOR GW SAMPLING @ JT

TO ABG/JT 03-24 & 25 ALL 3 OF US CARRIED EQ. TO WOOD TO SET-UP

KS SET-UP ON 03-14 PURGE & SAMPLE COMPLETE 03GW14 TO BLD 3245 UNLOAD SUV. KS & TOM BRENT TO BUNKER # 1970 TO STORE 2 COOLERS OF ARCHIVED BACKGROUND SOIL SAMPLES FROM & TO 8B. THEN TO DBG TOM CHECKED LAY-OUT OF SBs WE MOVED 02SB01 NW ≈ 10' TO BE SURE SB IS NOT LOCATED ON CAP LINER OTHER LOCATIONS ARE OK. ALSO NO DRIVING ON CAP AND TRY TO HAVE EFS BRING SMALL TRACK DPT RIG AND STAY OF 4" PLASTIC DRAINS COVERED WITH GRAVEL. RETURN TO BLD 3245 RUN NA & PAPER WORK

BOB & KEN RETURN FROM JT UNLOAD SUVs STORE SAMPLES

DEPART SITE

FINDERY PRODUCTIONS CHICAGO 60605 MADE IN USA

Work continued to Page

KEL

DATE 6-26-01

READ AND UNDERSTOOD BY | DATE | WITNESS | DATE

DAILY SUMMARY

ON SITE TFNUS KEITH S.
BOB B.
KEN M.

END OF SHIFT

TRAVEL DAY

SHIPPED 2 COOLERS TO LAUCKS

SHIPPED 1 COOLER TO ~~FAL~~ KS LAB
APCL

SCIENTIFIC BINDERY PRODUCTS.. CHICAGO 60605 MADE IN USA

NSWC CRANE

PROJECT NO. 3960

BOOK NO. 1330

6.27.01

Continued from Page WEATHER: NO RAIN OVER NIGHT 68-75°F

CHECK OUT OF HOTEL TO SITE, KS, BB & KM @

BLD 3245 KS RUN NA FOR 03-24 BOB, KEN

CLEAN-UP UNLOAD SHU PACK SAMPLES

PREP FOR TRAVEL TO HOME

KEN TO AIRPORT

BOB TO FEDEX THEN AIRPORT

KS TO AIRPORT / HOME

END OF SHIFT

DERY PRODUCTIONS CHICAGO 60605 MADE IN USA

Work continued to Page

DATE 6.27.01

ED TO AND UNDERSTOOD BY | DATE | WITNESS | DATE

— DAILY SUMMARY —

ON SITE, T + NUS TERRY ROJAHN
KEITH SIMPSON

TRAVEL PGH TO CRAINE

MONDAY 7.9.01

Work continued from Page WEATHER: CRANE OVERCAST 68-90°F NO RAIN

TRAVEL PGH TO CRANE

0800 KEITH SIMPSON & TERRY ROJAHN @ PGH AIRPORT TO CRANE

1330 @ BLD 3245 PREP FOR GW SAMPLING.
LAB - LAUCKS, & THEY SENT UNPRES TRIP BLANK (NO HCL) TALKED WITH HUGH PRENTICE @ LAUCKS AND THE UNPRES ARE OK TO USE.
CAL. EQ. YSI PID
TALK WITH MATT C. ABOUT WELL LIST FOR WL @ DBG MATT WILL FAX UST 245 WELLS

1640 KS & TR TO ORR/OPR & CHECKED A FEW SURVEYED LOCATIONS FOR MARK FRANCIS THEN PICK-UP ICE FOR SAMPLING TUES. TO MGBG CHECKED AREA TO BE MOWED & RECON FOR TRAILER GEN., PORT O JOHN LOCATIONS

1820 RETURN TO 3245 UNLOAD TRUCK

1845 DEPART SITE TO HOTEL

— DAILY SUMMARY —

ON SITE; T+NUS KEITH S.
TERRY R.

SURVEYORS DAVID MEIER
RICH JENKINS

SURVEYORS H&S TRAINING
SURVEYORS START @ JEEP TRAIL

4 MWs SAMPLED

SEE ALSO: COC, LOG BOOK # 2493,
SAMPLE LOG SHEETS

Work continued from Page WEATHER: NO RAIN HOT 72-91°F

0650 KS & TR ON SITE LOAD SUV FOR GW SAMPLING

0710 SURVEYORS @ BLD 3245 DAVID MEIER & RICH JENKINS, TERRY GAVE SITE H&S TRAINING TR TO MW 16 SET-UP TO PURGE KS SITE TOUR WITH SURVEYORS

1015 KS SET-UP ON MW 03-21 PURGE + SAMPLE

1215 COMPLETE SAMPLING TO BLD 3245 SAMPLES TO 'FRIDGE CALLES RUN NA

1450 TR DECON PUMP, RETURNS TO JEEP TRAIL FOR GW SAMPLING

1525 KS COMPLETES NA TO JEEP TRAIL FOR GW SAMPLING SET-UP PURGE & SAMPLE @ 03-15

1850 KS DEPARTS JEEP TRAIL (03-15 SAMPLED) TO 3245 & RUN NA, SAMPLES TO 'FRIDGE UNLOAD TRUCK

2030 TR RETURNS FROM J.T. UNLOAD SUV

2050 DEPART SITE

7.11.01

— DAILY SUMMARY —

ON SITE; T+ NUS, KEITH S.,
TERRY R.

1 MW SAMPLED
LAST MW FOR #3960
START WORK ON OBG

SHIPPED 4 COOLERS TO LANCKS &
1 TO APC LAB
ROUND OF WLs @ OBG

SEE ALSO, COCs, LOG BOOK #2493,
FIELD FORMS

WED 7.11.01

Work continued from Page WEATHER: NICE 68 – 83°F SUNNY

0655 KS & TR @ BLD 3245 CLEAN/DECON/CAL EQUIP.
TR PREP. FOR GW SAMPLING @ JEEP TRAIL

0800 COLLECTED RB 07110101 ON A TEFLON BLADDER
@ 0800

0855 KS & DENNY WAGGONER TO MGBG, THERE IS
2 7ACRES THAT WE NEED CUT. DENNY WILL
"BRUSH HOG" THE SITE (SEE FIG 4-1) FOR $400.–
IF HE RIPS A TIRE ON ANY METAL ON THE
SITE WE WILL PAY FOR THE REPAIR/REPLACEMENT

1000 KS BACK @ BLD. 3245
PAPER WORK FOR DBG LUNCH TO TR @

1230 JEEP TRAIL TO DBG AND START W/L

1400 TR @ JT TO HELP WITH W/LS

1650 COMPLETE W/L TO BLD 3245 PACK FOR FEDEX
RUN NA EMPTY TRUCKS, PAPER WORK, CLEAN
EQUIPMENT

1820 TO FEDEX THE WAL MART

SIGNATURE [signature] DATE 7.11.01

DISCLOSED TO AND UNDERSTOOD BY DATE WITNESS DATE

APPENDIX C-2

Field Notebooks
No. 2493, 2494, UXO, and 1340

APPENDIX C-2.1

No. 2493 (Sampling)

TITLE N NC CRANE

PROJECT NO. 3960

BOOK 2493

MON 6/4/01

Work continued from Page

TRAVEL & MOB DAY; SITE SPECIFIC TRAINING FOR JEEP TRAIL W/K. Simpson & K. MARQUIS

SCIENTIFIC BINDERY PRODUCTIONS CHICAGO 60605

Work continued to Page

SIGNATURE Tony Rogal

WITNESS

DATE 6/4/01

DATE

TITLE NSWC CRANE

PROJECT N 3960

BOOK 493

TUES 6/5/01

Work continued from Page

WEATHER - Hot & Humid High 78°F

0650 Hrs - ARRIVE @ BLDG 3245
- DEVELOPE CHEMICAL LIST & corresponding MSDSs
- Calibrate LAMOTHE, VSI & PID
- Mix Zorbell Solution For ORP
- PREP FOR WELL DEV.

1130 Hrs - LUNCH

1200 Hrs - Return to BLDG 3245 to pick up TRUCK

1230 Hrs - Start Surging WELL 3-21

DEV.
- PURGE Start = 1240 Hrs
- END PURGE = 1305 Hrs
- PURGED = 120 L

1340 Hrs - Start Surging @ WELL 3-14
Start DEV = 1350
END DEV = 1405
Dry out well 2 times

1435 Hrs - Return to BLDG 3245
DECON PUMP & MEET W/ KM

1530 Hrs - LEFT FIELD OFFICE FOR JEEP TRAIL.

SCIENTIFIC BINDERY PRODUCTIONS CHICAGO 60605

Work continued to Page

SIGNATURE Tony Rogal

WITNESS

DATE 6/5/01

DATE

TITLE NSWC CRANE PROJECT NO. 3960

TUES 6/05/01 (Cont) BOOK 2493

Work continued from Page

1600 Hrs - Start Surging @ 3-07
Start DEV. = 1615 Hrs
END DEV. = 1638 Hrs
DRY OUT 2 X
VOL Purged = 66L

1710 Hrs - Start SURGING @ 3-15
Start DEV. = 1725 Hrs
END DEV = 1737 Hrs
VOL PURGED = 60 L

1800 Hrs - Arrive @ FIELD OFFICE
- PAPERWORK
- Charge EQ
- Put NEW BATTERIES in YSI
- Empty Mobile TANK in back of Pick up Truck
- Decon Pump

1845 Hrs - LEFT BASE OFFICE

SCIENTIFIC BINDERY PRODUCTIONS CHICAGO 60605

Work continued to Page

SIGNATURE Terry Rogers DATE 6/05/01

WITNESS DATE

TITLE NSWC CRANE PROJECT NO. 5960

WED. 6/06/01 BOOK 2493

Work continued from Page - Hot & Humid 82°F High

0700 Hrs - Arrive @ BLDG 3245 (FIELD OFFICE)
PREP to DEV. WELLS
CALI. PID & LAMOTTE

WELL DEVELOPMENT SUMMARY:

WELL ID	Start DEV	END DEV	VOL PURGED	DRY out
3-22	0855	0926	78L	2x
3-11	1028	1101	30L	2x
3-10	1321	1348	36L	2x
3-16	1459	1519	100L	No
3-13	1625	1653	50L	2x

1710 Hrs - LEFT DEEP TRAIL
1727 Hrs - Arrive @ BLDG 3245
- Decon Pump
- RECHARGE EQ
- Empty Mobile TANK
- PAPERWORK

1820 Hrs - LEFT FOR MOTEL

SCIENTIFIC BINDERY PRODUCTIONS CHICAGO 60605

Work continued to Page

SIGNATURE Terry Rogers DATE 6/06/01

WITNESS DATE

TITLE WC CRANE PROJECT NO. 3960

THURS. 6/07/01 BOOK 2493

Work continued from Page WEATHER: Humid 80 High

0700 HRS - ARRIVE @ FIELD OFFICE
- PREP. FOR DEVELOPMENT
CAL. PID & LAMOTTE

WELL DEVELOPMENT SUMMARY

WELL ID	START DEV.	END DEV.	VOL PURGED	DRY OUT
3-24	0831	0901	42L	No
3-25	0949	1018	27L	2X
3-18	1239	1308	36L	2X
3-17	1345	1418	48L	2X
3-20	1451	1501	50L	NO
3-12	1533	1543	60L	NO
* 3-23	1620	1727	270L	NO

* OVER 4' OF SEDIMENT REMOVED

1800 HRS - LEFT JEEP TRAILER
1815 HRS - RETURN TO FIELD OFFICE
- Empty TANK ON PICK UP
- RECHARGE EQ & METER (PID)
- UNLOAD PICK UP
- PAPERWORK

1940 HRS - LEFT FOR Motel

SCIENTIFIC BINDERY PRODUCTIONS CHICAGO 60605 Work continued to Page

SIGNATURE Terry Rogers DATE 6/7/01

WITNESS DATE

TITLE NSWC CRANE PROJECT NO. 3960

FRI. 6/08/01 BOOK 2493

Work continued from Page

WORKED W/ K.S. SEE FIELD Log book
#1330 - Soil Sampling
END

SCIENTIFIC BINDERY PRODUCTIONS CHICAGO 60605 Work continued to Page

SIGNATURE Terry Rogers DATE 6/8/01

WITNESS DATE

TITLE NSWC CRANE **PROJECT NO.** 3960

SAT 6-09-01 **BOOK** 2493

Work continued from Page WEATHER - Mostly Sunny 80's

0700 HRS - ARRIVE @ FIELD OFFICE
PREP. FOR GROUNDWATER SAMPLING

0905 HRS - ARRIVE @ D3-23
SAMPLE ID = 03GW2301
START PURGE = 0955 HRS
END PURGE = 1135 HRS
VOL. PURGED = 10L
START SAMPLE = 1137 HRS
END SAMPLE = 1530 HRS

1540 HRS - ARRIVE @ 03-20
SAMPLE ID = 03GW2001
START PURGE = 1600 HRS
END PURGE = 1720 HRS
VOL. PURGED = 8L
START SAMPLE = 1722 HRS
END SAMPLE = 1902 HRS

1930 HRS - RETURN TO FIELD OFFICE
- UNLOAD EQ.
- CLEAN UP
- PAPERWORK

2015 HRS - LEFT SITE / FIELD OFFICE

SCIENTIFIC BINDERY PRODUCTIONS CHICAGO 60605

Work continued to Page

SIGNATURE Ty Rogel DATE 6/9/01

WITNESS DATE

TITLE NSWC CRANE **PROJECT NO.** 3960

MON 6-11-01 **BOOK** 2493

Work continued from Page WEATHER: Hot & Humid 85°F

0700 HRS - ARRIVE @ SITE (FIELD OFFICE)
- CALI. TURBIDITY METER
- PREP. to SAMPLE SURFACE WATER & SEDIMENTS

SAMPLE SUMMARY SW/SD

SAMPLE ID	SAMPLE TIME	LOCATION	SAMPLE DEPTH SD	SAMPLE DEPTH SW
03SD170006	0745	03SW/SD17	0-6"	—
03SD170612	0800	"	6-12"	—
03SD160006	0827	03SW/SD16	0-6"	—
03SD160612	0840	"	6-12"	—
03SD150006	0855	03SW/SD15	0-6"	—
03SD150612	0915	"	6-12"	—
* 03SD140006	0925	03SW/SD14	0-6"	—
03SD140612	0940	"	6-12"	—
03SD130006	1022	03SW/SD13	0-6"	—
03SD130612	1037	"	6-12"	—
03SD120006	1050	03SD12	0-6"	—
03SD120612	1105	"	6-12"	—
03SD110006	1305	03SW/SD11	0-6"	—
03SD110612	1320	"	0-12"	—
03SD100006	1335	03SD10	0-6"	—
03SD100612	1355	"	0-12"	—
* 03SD090006	1403	03SW/SD09	0-6"	—
03SD090612	1420	"	6-12"	—

SCIENTIFIC BINDERY PRODUCTIONS CHICAGO 60605

Work continued to Page

SIGNATURE Ty Rogel DATE 6/11/01

WITNESS DATE

TITLE ^ WC CRANE PROJECT NO. 3690

MON 06-11-01 Con't BOOK 2493

Work continued from Page

SAMPLE SUMMARY CON'T

SAMPLE ID	SAMPLE TIME	LOCATION	SEDI. DEPTH	SW DEPTH
03SD080006	1445	03SW/SD08	0-6"	—
03SD080612	1500	"	6-12"	—
03SD070006	1520	03SD07	0-6"	—
03SD070612	1540	"	6-12"	—
03SW0601	1710	03SW/SD06	—	2"
03SD060006	1720	"	0-6"	—
03SD060612	1730	"	6-12"	—
*03SD050006	1805	03SD05	0-6"	—
03SD050612	1830	"	6-12"	—
03SW0101	1915	03SW/SD01	—	2"
03SD010006	1925	"	0-6"	—
03SD010612	1935	"	6-12"	—

→ QA/QC

2005 Hrs - Return to Field Office

- Refrigerate Samples and Paperwork

* 03SD140006 Also FD061101 01

* 03SD090006 Also FD061101 02

** 03SD050006 Also FD061101 03 & MSMSD

- Filter Metals
- Clean out Pick up Truck

2100 - Hrs - Left Site for Hotel

SCIENTIFIC BINDERY PRODUCTIONS CHICAGO 60605

Work continued to Page

SIGNATURE

WITNESS

DATE 6/11/01

DATE

TITLE NSWC CRANE PROJECT 3690

TUES. 06-12-01 BOOK 2493

Work continued from Page

Weather: Hot & Humid High 80's

0700 Hrs - Arrive @ Field Office

Prep. to Sample Sedi. & Surface H2O

SAMPLE SUMMARY

SAMPLE ID	SAMPLE TIME	Location	SEDI. Depth	SW DEPTH
03SW0201	0815	03SWSD02	—	2"
03SD020006	0820	"	0-6"	—
03SD020612	0825	"	6-12"	—
03SW0301	0915	03SWSD03	—	1"
03SD030006	0925	"		—
03SD030612	0935	"		—
03SD040006	1022	03SWSD04		—
03SD040612	1030	"		—

1100 Hrs - Return to Field Office

Refrigerate Samples

1130 Hrs - Lunch

1200 Hrs - Gas up Pick up Truck & Purchase Ice

1230 Hrs - Return to Field Trailer

Package Samples for Shipment

Clean EQ & Field Office

1815 Hrs - Left Field Office

SCIENTIFIC BINDERY PRODUCTIONS CHICAGO 60605

Work continued to Page

SIGNATURE

WITNESS

DATE 6/12/01

DATE

TITLE NSWC CRANE PROJECT NO. 3690

TUES 7-10-01 BOOK 2493

Work continued from Page

0700 Hrs - ARRIVE @ FIELD OFFICE
PREP FOR GROUNDWATER SAMPLING

0730 Hrs - SURVEYORS D. MEIER & R. JENKS
ARRIVE @ FIELD OFFICE -
GIVE H&S SITE SPECIFIC TRAINING;
FOR JEEP TRAIL & DBG;
COMPLETE WORK PERMITS; ETC

0930 Hrs - Complete H&S Training
CALIBRATE LaMotte

SAMPLE SUMMARY:

ARRIVE @ 03-16 @
START PURGE - 1000
END PURGE - 1140
VOL PURGED - 9.4L
SAMPLE TIME - 1150
SAMPLE ID - 03GW1601
END SAMPLE - 1203

1220 Hrs - Return to FIELD OFFICE
DECON BLADDER PUMP
SECURE SAMPLE in Frig.

JOLP

Work continued to Page

SIGNATURE Tony Hogel DATE 7/10/01

WITNESS DATE

TITLE NSWC CRANE PROJECT NO. 3690

7-10-01 Con't BOOK 2493

Work continued from Page

ARRIVE @ 03-22 @ 1510 Hrs
START PURGE - 1535 Hrs
END PURGE - 1815 Hrs
VOL PURGED - 14.3 L
SAMPLE TIME - 1820
SAMPLE ID - 03GW2201
END SAMPLING - 2004
FINISH CLEAN UP - 2018

2035 Hrs - Return to FIELD OFFICE
SECURE SAMPLES in Frig.
UNLOAD VEHICLE

2050 Hrs - LEFT NSWC

END

Work continued to Page

SIGNATURE Tony Hogel DATE 7/10/01

WITNESS DATE

TITLE N VC CRANE

PROJECT NO. 3690

BOOK 2493

VED 7/11/01

Work continued from Page

0655 Hrs - Arrive @ Field Office
Decon Bladder Pump
Prep. Vehicel for Sampling
Calibrate LaMotte

0815 Hrs - Arrive @ Jeep Trail 3-1d

Sample ID - 03GW1001
Start Purge - 0845 Hrs
End Purge - 1045 Hrs
Vol Purged - 8.6 L
Start Sample - 1050 Hrs
End Sample - 1344
End Clean up - 1354 Hrs

1400 Hrs - Meet with K.S. to do water levels @ DBG (see LB 1330)

END

SCIENTIFIC BINDERY PRODUCTIONS CHICAGO 60605

Work continued to Page

SIGNATURE

WITNESS

DATE 7/11/01

DATE

TITLE DDG1

PROJECT N 1141

BOOK 493

7/23/01

Work continued from Page

1530-1630 Hrs - H&S Site Specific Training
K. Simpson
K. Henri
A. Certain
T. Roman

Inspect Geoprobe Unit & Issue Work Permits - Drilling & Multi Media.

END

SCIENTIFIC BINDERY PRODUCTIONS CHICAGO 60605

Work continued to Page

SIGNATURE

WITNESS

DATE 7/23/01

DATE

APPENDIX C-2.2

No. 2494 (Geology)

TITLE N[illegible]C CRANE

PROJECT NO. [illegible]

BOOK 2494

Work continued from Page MON. 6/18/01

1300 ARRIVE @ SITE.

1400 HEAD TO ABL.

1700 LEAVE SITE

SCIENTIFIC BINDERY PRODUCTIONS CHICAGO 60605

Work continued to Page

SIGNATURE Robert Balkovec

DATE 6/18/01

WITNESS

DATE

TITLE NSWC CRANE

PROJECT N[illegible]

BOOK 2494

Work continued from Page TUES 6/19/01

AM 70's, SUNNY.
PM 90's, HOT

0655 ARRIVE @ SITE. GEAR UP TO DPT @ ABL.

0800 ADAM C. OF EFS ARRIVES. WE GO OVER & SIGN SAFE WORK PERMITS

0830 CONDUCT RIG INSPECTION. HEAD TO ABL TO BEGIN W/O & DPT WORK

0935 START ON 03SB02

0940 SAMPLED 03SS020002

1000 SAMPLED 03SB020206

1010 SAMPLED 03SB020610

1014 START ON 03SB06

1020 SAMPLED 03SS060002 DUP FD061901

SCIENTIFIC BINDERY PRODUCTIONS CHICAGO 60605

Work continued to Page

SIGNATURE Robert Balkovec

DATE 6/19/01

WITNESS

DATE

TITLE USWC CRANE

PROJECT NO. 3960

BOOK 2494

Work continued from Page TUES

6/19/01

1130 SAMPLED 035B060206

1130 SAMPLED 035B060610

1300 START ON 035B04

1308 SAMPLED 035S040002

1320 SAMPLED 035B040206

1332 SAMPLED 035B040610 DUP FD0619 0102

1339 SET UP ON 035B07

1346 SAMPLED 035S070002

1422 SAMPLED 035B070206

1438 SAMPLED 035B070610

1440 SET UP ON 035B11

1447 SAMPLED 035S110002

1508 SAMPLED 035B110206

SCIENTIFIC BINDERY PRODUCTIONS CHICAGO 60605

Work continued to Page

SIGNATURE Robert Balkovec

DATE 6/19/01

WITNESS

DATE

TITLE USWC CRANE

PROJECT NO. 3960

BOOK 2494

Work continued from Page TUES

6/19/01

1600 SAMPLED 035B110610
SET UP ON 035B08

1606 SAMPLED 035S080002

1612 SAMPLED 035B080206 DUP FD0619 0103

1630 SAMPLED 035B080610

1640 SET-UP ON 035B05

1654 SAMPLED 035S050002

1658 SAMPLED 035B050206

1715 SAMPLED 035B050610
CLEANUP + HEAD BACK TO BASE

1820 LEAVE SITE

SCIENTIFIC BINDERY PRODUCTIONS CHICAGO 60605

Work continued to Page

SIGNATURE Robert Balkovec

DATE 6/19/01

WITNESS

DATE

TITLE N e CRANE PROJECT NO. 3960
BOOK 2494

Work continued from Page WED. 6/20/01

0650 ARRIVE @ SITE

0720 COLLECT RB062001 ON MACRO CORE SLEEVE.

0800 HEAD TO ABG.

0831 SAMPLED 035S130002

0840 SAMPLED 035B130206

0900 SAMPLED 035B130610

0912 SAMPLED 035S150002

0921 SAMPLED 035B150206 DUP FD062001 01

0950 SAMPLED 035B150610

1010 SAMPLED 035S160002

1023 SAMPLED 035B160206

1030 SAMPLED 035B160610

SCIENTIFIC BINDERY PRODUCTIONS CHICAGO 60605

Work continued to Page

SIGNATURE Robert Balkovec DATE 6/20/01

WITNESS DATE

TITLE NSWC CRANE PROJECT N 3960
BOOK 2494

Work continued from Page WED 6/20/01

1040 SAMPLED 035S100002

1044 SAMPLED 035B100206

1120 SAMPLED 035B100610 DUP FD062001 02

1356 SAMPLED 035S170002

1423 SAMPLED 035B170406

1431 SAMPLED 035B171214

1452 SAMPLED 035S210002

1530 SAMPLED 035B210102

1540 SAMPLED 035B211215

1600 SAMPLED 035S200002

1625 SAMPLED 035B200810 DUP FD062001 03

1635 SAMPLED 035B201215

SCIENTIFIC BINDERY PRODUCTIONS CHICAGO 60605

Work continued to Page

SIGNATURE Robert Balkovec DATE 6/20/01

WITNESS DATE

TITLE NSWC CRANE

PROJECT NO. 3960

BOOK 2494

Work continued from Page WED. 6/20/01

1655 SAMPLED 03SS250002

1707 SAMPLED 03SB250608

1734 SAMPLED 03SS140002

1745 SAMPLED 03SB140206

1750 SAMPLED 03SB140610

1815 ARRIVE BACK @ BLDG. 3245

1830 CONTACT RB0620010Z

1900 LEAVE SITE

SCIENTIFIC BINDERY PRODUCTIONS CHICAGO 60605

Work continued to Page

SIGNATURE Robert Balturen

WITNESS

DATE 6/20/01

DATE

TITLE NSWC CRANE

PROJECT NO. 3960

BOOK 2494

Work continued from Page THURS 6/21/01

0650 ARRIVE @ SITE

0800 HEAD TO ABG.

1042 SAMPLED 03SS240002

1112 SAMPLED 03SB240406

1125 SAMPLED 03SB241215 (MS/MSD)

1300 SAMPLED 03SS220002

1325 SAMPLED 03SB220204

1340 SAMPLED 03SB221215

1400 SAMPLED 03SS190002

1410 SAMPLED 03SB190204

1420 SAMPLED 03SB191215 FD0621010C

1430 TAKE SAMPLES BACK TO BLDG. 3245

SCIENTIFIC BINDERY PRODUCTIONS CHICAGO 60605

Work continued to Page

SIGNATURE Robert Balturen

WITNESS

DATE 6/21/01

DATE

TITLE No.

PROJECT NO. 3460

BOOK 2444

Work continued from Page THURS 6/21/01

1820 LEAVE STATE

SCIENTIFIC BINDERY PRODUCTIONS CHICAGO 60605

Work continued to Page

SIGNATURE Robert Balkovec DATE 6/22/01

WITNESS DATE

TITLE NSWC CRANE

PROJECT NO 460

BOOK 2444

Work continued from Page FRI. 6/22/01

0630 ARRIVE @ SITE

0700 HEAD TO DEEP TRAVEL

0730 SET-UP AND 035B47

0746 SAMPLED 035S470002

0755 SAMPLED 035B470206

0800 SAMPLED 035B470660

0812 SAMPLED 035S480002

0820 SAMPLED 035B480206 BLUE STUFF

0828 SAMPLED 035B480660

0845 SAMPLED 035S460002

0853 SAMPLED 035B460206

0900 SAMPLED 035B460660 FD062201

SCIENTIFIC BINDERY PRODUCTIONS CHICAGO 60605

Work continued to Page

SIGNATURE Robert Balkovec DATE 6/22/01

WITNESS DATE

TITLE NSWC CRANE

PROJECT NO. 3460

BOOK 2444

Work continued from Page FR2

6/22/01

0930 SAMPLED 0355440002

0940 SAMPLED 0355440206

0945 SAMPLED 0355440610

0955 SAMPLED 0355420002

1000 SAMPLED 0355420206

1010 SAMPLED 0355420610

1020 SAMPLED 0355400002

1025 SAMPLED 0355400206

1030 SAMPLED 0355400610

1310 SAMPLED 0355360002

1317 SAMPLED 0355360206

1324 SAMPLED 0355360610

SCIENTIFIC BINDERY PRODUCTIONS CHICAGO 60605

Work continued to Page

SIGNATURE Robert Poelkner

DATE 6/22/01

WITNESS

DATE

TITLE NSWC CRANE

PROJECT NO. 3460

BOOK 2444

Work continued from Page FR2

6/22/01

1250 0355340002 SAMPLED

1300 SAMPLED 0355340206

1305 SAMPLED 0355340610

1330 SAMPLED 0355340002

1339 SAMPLED 0355340206

1343 SAMPLED 0355340610

1350 CLEAN-UP & HEAD ON TO BLDG 3245

1730 LEAVE FOR FEDEX & WALMART

SCIENTIFIC BINDERY PRODUCTIONS CHICAGO 60605

Work continued to Page

SIGNATURE Robert Poelkner

DATE 6/22/01

WITNESS

DATE

TITLE N WC CRANE

PROJECT NO. 3960

BOOK 2494

Work continued from Page SAT. 6/23/01

0655 ARRIVE @ SITE. GEAR UP TO CONNESS SOILS @ DT.

0800 BEGIN HAND AUGERING 035B04.

0815 SAMPLED 035S040002 + FD0623001

0820 @ 14" NEED TO OFFSET. HIT NATIVE

0845 COMPLETED 035B040204 TO 3.5'
UNABLE TO AUGER PAST 3.5' OFFSET
MOVE 5 TIMES.

0900 HEAD TO 03-13 TO START GW SAMPLING

0945 START PURGE NEED 20 gal FOR 1 VOL

1125 END PURGE

1127 START SAMPLING 036W1301 / MS/MSD

1147 END SAMPLING CLEAN UP + HEAD TO PROBE 3245

SCIENTIFIC BINDERY PRODUCTIONS CHICAGO 60605

Work continued to Page

SIGNATURE Robert Bellhouse DATE 6/23/01

WITNESS DATE

TITLE N WC CRANE

PROJECT N 3960

BOOK 2494

Work continued from Page SAT. 6/23/01

1600 COMPLETE SB0623001 IN DT

1700 COMPLETE SB0623002 ON TOP H2O

1740 LEAVE SITE

SCIENTIFIC BINDERY PRODUCTIONS CHICAGO 60605

Work continued to Page

SIGNATURE Robert Bellhouse DATE 6/23/01

WITNESS DATE

TITLE NSWC CRANE

PROJECT NO. 3960

BOOK 2444

Work continued from Page Sun

6/24/01

0655 ARRIVE & SITE. LOAD UP W/ GW SAMPLE

0800 ARRIVE @ JT. SETTING UP ON 03-17

0832 START PURGE

0848 BEGIN SAMPLING 03GW1701.

1055 END SAMPLING. CLEAN UP & HEAD T 03-18.

1120 START PURGING 03-18

1317 BEGIN SAMPLING 03GW1801

1435 END SAMPLING. TAKE SAMPLES TO BLDG 3245

1900 LEAVE SITE

SCIENTIFIC BINDERY PRODUCTIONS CHICAGO 60605

Work continued to Page

SIGNATURE Robert Balkovec

DATE 6/24/01

80

TITLE NSWC CRANE

PROJECT NO. 3960

BOOK 2444

Work continued from Page Mon.

6/25/01

0655 ARRIVED & SITE ON LAPTOP, & CHECK H.S.

0705 LOAD VEHICLE FOR GW SAMPLING & SETUP TRAIL.

0715 LEAVE FOR 03-12.

0715 BEGIN PURGING

0900 END PURGE

0902 START SAMPLING 03GW1201 & FD 0625GW01

1110 END SAMPLING. CLEANUP & HEAD TO BLDG 3245.

1130 RE-STOCK, AND PREPARE TO SAMPLE 03-11.

1300 SETUP ON 03-11

1315 START PURGE.

1430 END PURGE. REMOVED 2.3 gal = 1 well.

SCIENTIFIC BINDERY PRODUCTIONS CHICAGO 60605

Work continued to Page

SIGNATURE Robert Balkovec

DATE 6/25/01

TITLE WC CRANE

PROJECT NO. 3460

BOOK 2444

Work continued from Page MON 6/25/01

1432 BEGIN SAMPLING 03GW1101

1535 END SAMPLING CLEAN UP & HEAD BACK TO BLDG 3245

1721 LEAVE SITE

SCIENTIFIC BINDERY PRODUCTIONS CHICAGO 60605

Work continued to Page

SIGNATURE Robert Balkwill DATE 6/25/01

WITNESS DATE

TITLE NSWC CRANE

PROJECT NO. 3460

BOOK 2444

Work continued from Page TUES. 6/26/01

0650 ARRIVE @ SITE. LOAD UP VEHICLES TO GW SAMPLE.

0715 LEAVE FOR JEEP TRAIL

0800 SETUP ON 03-25

0810 BEGIN PURGE

1210 END PURGE

1212 START SAMPLING 03GW2501

1340 END SAMPLING.

1400 SETUP ON 03-24

1425 START PURGE

1650 END PURGE

1652 START SAMPLING 03GW2401

1755 END SAMPLING

SCIENTIFIC BINDERY PRODUCTIONS CHICAGO 60605

Work continued to Page

SIGNATURE Robert Balkwill DATE 6/26/01

WITNESS DATE

TITLE Issue Crane

PROJECT NO. 3460

BOOK 3444

Work continued from Page Thus

6/28/01

1800 HEADPIECE-TO BOOK 3445

1870 LEAVE STATE

SCIENTIFIC BINDERY PRODUCTIONS CHICAGO 60605

Work continued to Page

SIGNATURE Robert Bellhouse

DATE 6/28/01

WITNESS

DATE

TITLE

PROJECT NO.

BOOK

Work continued from Page

SCIENTIFIC BINDERY PRODUCTIONS CHICAGO 60605

Work continued to Page

SIGNATURE

DATE

WITNESS

DATE

APPENDIX C-2.3

UXO

CONTENTS

REFERENCE	DATE

"Rite in the Rain"®
ALL-WEATHER WRITING PAPER

Name KENNETH MARQUIS

Address NSWC CRANE, BLDG 45

Phone

UXO LOG BOOK

Project NSWC CRANE - CTO 10
CTO 126

"Rite in the Rain" - A unique All-Weather Writing paper created to shed water and enhance the written image. It is widely used throughout the world for recording critical field data in all kinds of weather.

Available in a variety of standard and custom printed case-bound field books, loose leaf sheets, spiral and stapled notebooks, multi-copy sets and copier paper.

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(253) 922-5000 • FAX (253) 922-5300
www.RiteintheRain.com

Left Blank

NSWC CRANE

CTO 10 TUES. 6/5/01

①

0700 - LEFT OFFICE TO PESTICIDE CONTROL AREA / R-150 / TANK (09) TO PAINT WELLS

0720 ARRIVED AT WELL # T01, BEGIN CLEAN UP + PAINTING

0905 - #(09) T01 DONE MOVING TO (09) T02

0910 - ARRIVED AT #(09) T02, PAINTED AND SEEDED

1020 - DONE MOVING (09) TO T03

1025 - ARRIVED AT #(09) T03

1100 - DONE, GOING BACK TO OFFICE FOR LUNCH

1155 - ARRIVED AT #(09) T04

1230 - DONE, GOING TO (09) T05

1235 - ARRIVED AT #(09) T05

1320 - ALL PESTICIDE CONTROL AREA (09) WELLS PAINTED HEADING TO OLD BURN PIT (05)

1340 - ARRIVED at (05) WELL # T02

1410 - WELL # (05) T02 DONE MOVING TO WELL # (05) T01

1420 - ARRIVED at (05) WELL # T01

1455 - WELL # (05) T01 DONE PAINTING AND PUT OUT SEED. HEADING BACK TO OFFICE

1515 - ARRIVED AT OFFICE

CTO 126

1530 Left field office for [illegible] mail.

NSWC CRANE

(2)

TUES. 6/5/01

1600 - STARTED SURGING 08-07

SEE TERRY'S NOTE BOOK

1710 - STARTED SURGING 03-15

SEE TERRY'S NOTEBOOK

1800 - DEPART JEEP TRAIL for Field office

1820 - ARRIVED AT Field office, RE GOAL CLEAN UP.

1845 - DEPARTED for LOWE'S

1945 - ARRIVED @ HOTEL, SECURE for DAY

NSWC CRANE

(3)

CTO 10 WED. 6/6/01

0700 - ARRIVED AT Field office, LOADED OUT TRUCK.

0720 - DEPARTED Field office for Old BURN Pit (05) WELL # T03.

0735 - ARRIVED AT (05) WELL # T03.

0835 - 05 WELL # T03 DONE, ALL WELL'S AT Old BURN PIT (05) DONE. HEADING TO McCOMISH GORGE (04).

0840 - ARRIVED AT McCOMISH GORGE (04) STARTED RAIDING, UNABLE TO PRINT.

0855 - RAID STILL FAILING, HEADING TO JEEP TRAIL.

CTO 126

0925 - ARRIVED AT JEEP TRAIL

. PULLED WELL 3-11

SEE TERRY'S NOTEBOOK

1115 - DEPARTED JEEP TRAIL for LUNCH.

CTO 10

1220 - ARRIVED AT McCOMISH GORGE (04) WELL # T01

1310 - (04) WELL # T01 DONE MOVING TO (04) WELL # T03

1350 - (04) WELL # T03 DONE MOVING TO (04) WELL # 02

NSWC CRANE

(4)

WED 6/6/01

1430 - WELL (04) TO2 DONE, ALL WELLS AT McCOMISH GORGE (04) DONE.

CTO 126

1435 - DEPARTING McCOMISH GORGE FOR JEEP TRAIL

1500 - ARRIVED AT JEEP TRAIL

- PURGED 3-16
  SEE TERRY'S NOTEBOOK
- PURGED 3-13
  SEE TERRY'S NOTEBOOK

1700 - DEPARTED JEEP TRAIL FOR FEILD OFFICE

1735 - ARRIVED FEILD OFFICE

1830 - DEPARTED FEILD OFFICE FOR DAY

(5)

THUR 6/7/01

0700 - ARRIVED AT FEILD OFFICE, LOAD TRUCK

0730 DEPART FEILD OFFICE FOR JEEP TRAIL

0745 - ARRIVED AT JEEP TRAIL

- PURGED 03-24
- PURGED 03-25
  SEE TERRY'S NOTEBOOK

1100 LEAVE JEEP TRAIL FOR LUNCH

1155 RETURNED TO JEEP TRAIL

PURGED 03-19
PURGED 03-17
PURGED 03-20
PURGED 03-12
PURGED 03-23

1800 RETURNED TO FEILD OFFICE UNLOAD GEAR

1930 DEPART FOR DAY.

NSWC CRANE

(6) FRI. 6/8/01

0700 - ARRIVED AT FEILD OFFICE, LOAD TRUCK

0800 - TAKE WATER SAMPLE # RPD6080101

0945 - DEPART FEILD OFFICE FOR JEEP TRAIL

1000 - ARRIVED AT JEEP TRAIL, START DOWN HOLE CLEANING.

(1) 035B02 - 0-2 = -01.6 milliGAUSS
2-4 = 02.2 " "
4-6 = 5½ FEET Refusal
6-8 = ≥00.6
8-10 =

1130 - DEPARTED JEEP TRAIL for Feild office

1200 - LUNCH

1230 - ARRIVED BACK AT JEEP TRAIL

1300 - 035B01, 035B03, AND 035B12 ALL CLEAR TO TWO FOOT with TZ SCHONSTEDT.

1325 - 035B14 - 0-2 = 00.5 milliGAUSS
2-4 = -00.3 milliGAUSS
4-6 = 00.6 milliGAUSS
Refusal @ 4 FEET

1410 - 035B16 - 0-2 = 00.1 milliGAUSS
2-4 = -00.4 milliGAUSS
Refusal @ 2 FEET

NSWC CRANE

FRI. 6/8/01 (7)

1435 - 035B13 - 0-2 = -01.6 milliGAUSS
1½-3½ = 00.7 milliGAUSS
Refusal 1½ FEET

1510 - 035B15 - 0-2 = 00.4 milliGAUSS
1-3 = 00.9 milliGAUSS
Refusal @ 1 FOOT

1540 - 035B09 - 0-2 = 00.7 milliGAUSS
2-4 = -00.2 milliGAUSS
3-5 = -00.1 milliGAUSS
Refusal @ 3 FEET

1625 - 035B04 - 0-2 = 00.4 milliGAUSS
2-4 = 00.3 milliGAUSS
Refusal @ 2 FEET

1700 - DEPART JEEP TRAIL for Feild office

1715 - ARRIVED Feild office

1800 DEPART for DAY

NSWC CRANE

8

SAT. 6/9/01

0710 - ARRIVED AT FIELD OFFICE, LOAD TRUCK

0720 - DEPARTED FIELD OFFICE FOR JEEP TRAIL

0735 - ARRIVED AT JEEP TRAIL

035B06 - 0-2 = -00.7 milliGAUSS
2-4 = 00.9 milliGAUSS
REJECTION @ 2 FEET

035B07 - 0-2 = -00.6 milliGAUSS
1-2 = 1.9 milliGAUSS
Rejection @ 1 FOOT

035B11 - 0-2 = -00.2 milliGAUSS
1-3 = 00.9 milliGAUSS
Rejection @ 1 FOOT

*035B08 - NEED TO MOVE OUT TO ROAD ABOUT 4 FEET
0-2 = -00.8 milliGAUSS
1-3 = 1.5 milliGAUSS
Rejection @ 1 FOOT

035B10 - 0-2 = 00.9 milliGAUSS
2-4 = 00.1 milliGAUSS
3-5 00.2 milliGAUSS
Rejection @ 3 FEET

035B17 - 0-2 = 00.9 milliGAUSS
1-3 = 01.3 milliGAUSS
Rejection @ 1 FOOT

NSWC CRANE

9

SAT. 6/9/01

035B05 - 0-2 = 00.7 milliGAUSS
2-4 = 00.9 milliGAUSS
4-6 = 00.0 milliGAUSS
Rejection @ 4 FEET

035B18 - 0-2 = -00.4 milliGAUSS
2-4 = 00.9 milliGAUSS
Rejection @ 2 FEET

*035B18 - 0-2 = 16.9 milliGAUSS
NEED TO MOVE

035B23 - 0-2 = 00.4 milliGAUSS
2-4 = 00.5 milliGAUSS
4-6 = 00.3 milliGAUSS
6-8 = 00.9 milliGAUSS
8-10 = 00.1 milliGAUSS

035B26 - 0-2 = 00.6 milliGAUSS
1-3 = 00.3 milliGAUSS
Rejection @ 1 FOOT

035B25 - 0-2 = 00.3 milliGAUSS
1-3 = 00.5 milliGAUSS
Rejection @ 1 FOOT

035B21 - 0-2 = 1.2 milliGAUSS
1-3 = -1.5 milliGAUSS
Rejection @ 1 FOOT

1630 - HELPED TERRY SAMPLE
03-20 WELL (SEE TERRY'S NOTEBOOK)

NSWC CRANE

(10)

SAT 6/9/01

1920 - ARRIVED BACK AT FEILD OFFICE, UNLOAD TRUCK.

2000 - DEPART FEILD OFFICE FOR DAY.

NSWC CRANE

(11)

SUN 6/10/01

0700 ARRIVED AT FEILD OFFICE, LOAD TRUCK

0730 DEPART FEILD OFFICE FOR RED TRAIL FOR WATER SAMPLING.

*SEE KEITH'S NOTEBOOK

1700 DEPART FOR DAY

NSWC CRANE

TUE 6/19/01

0700 - ARRIVED AT Feild office, Load Trucks.

0800 - Depart Feild office, with NAVY EOD (CRANE) + TOM TO Show them the 5 HOT SPOTS.

0815 ARRIVED @ JEEP TRAIL AND went over Plan for 5 HOT SPOTS

0845 - NAVY EOD AND TOM Depart JEEP Depart

0910 - Keith, Bob + DPT Rig show up AND SET up on 035B02. Cleared to 5½ FEET on 6/8/01. 4-6 - 4.7 milliGauss
6-8 - 1.8 milliGauss
8-10 - 3.7 milliGauss

1015 - moved to 035B06 cleared to 4 FEET. 4-6 - 3.8 milliGauss
6-8 - 3.3 milliGauss
8-10 - 2.5 milliGauss

1140 - DPT Departed for launch

1240 - moved to 035B07 cleared to 4 FEET. 4-6 - 2.3 milliGauss
6-8 - 3.2
8-10 - 3.1

1335 - moved to 035B07 cleared to 3 FEET

2-4 - 2.1 milliGauss
4-6 - 2.3 milliGauss
6-8 - 3.4 milliGauss
8-10 - 3.1 milliGauss

1440 - Moving to 035B11 Cleared to 3 FOOT
2-4 - [illegible] milliGauss
4-6 - [illegible] milliGauss
6-8 - [illegible] milliGauss
8-10 - [illegible] milliGauss

1600 - Moving to [illegible] Cleared to 3 FEET
2-4 - [illegible] milliGauss
4-6 - [illegible] milliGauss
6-8 - [illegible] milliGauss
8-10 - 2.5 milliGauss

1640 - Moving to 035B[illegible] Cleared to 6 FEET
6-8 - [illegible] milliGauss
8-10 - [illegible] milliGauss

1730 - Departed JEEP TRAIL for Feild office

1745 - Arrived at [illegible] Truck + [illegible]

1935 - Depart Feild office [illegible]

(14)

NSWC CRANE

6/20/01

0700 - [illegible] AT Field office, LOAD OUT [illegible]

0745 - [illegible] Field office for JEEP TRAIL

0800 [illegible] AT JEEP TRAIL

0820 - [illegible] PPT ON 03SB13 CLEARED TO 3 FEET

2-4 = 7.9 MilliGauss
4-6 = 8.5 MilliGauss
6-8 = 3.7 MilliGauss
8-10 = 2.5 MilliGauss

0900 MOVED TO 03SB15 CLEARED TO 3 FEET

2-4 = -3.1 milliGauss
4-6 = -4.8 milliGauss
6-8 = 3.4 milliGauss
8-10 = 5.4 milliGauss

[illegible] MOVED TO 03SB16 CLEARED TO 3 FEET

4-6 = 00.4 milliGauss
6-8 = 00.1 milliGauss
8-10 = 0.00 milliGauss

1040 - MOVED TO 03SB10 CLEARED TO 3 FEET

4-6 = 2.3 MilliGauss
6-8 = 2.7 milliGauss
8-10 = 2.1 milliGauss

[illegible] STARTED with BACKHOE ON [illegible]9 -

[illegible] FOUND REBAR, FLASHTUBE, AND [illegible]

NSWC CRANE

(15)

6/20/01

1139 - WENT AND CALL PHIL ABOUT Item FOUND, waiting for Orders FROM RALPH.

1255 - MOVED TO 03SB17 CLEARED TO 3 FEET.

2-4 = 5.1 milliGauss
4-6 = 5.4 milliGauss
6-8 = 4.1 milliGauss
8-10 = 4.7 milliGauss

MOVED TO 03SB21, CLEARED TO 3 FEET

2-4 = 5.0 milliGauss
4-6 = 5.5 milliGauss
6-8 = 5.8 milliGauss
8-10 = 4.0 milliGauss

1550 - MOVED TO 03SB20 -

0-2 = 00.0 milliGauss
2-4 = 2.1 milliGauss
4-6 = 3.8 milliGauss
6-8 = 3.7 milliGauss
8-10 = 3.1 milliGauss

1637 MOVED TO 03SB25, CLEARED TO 3 FEET

2-4 = 00.4 milliGauss
4-6 = 00.6 milliGauss
6-8 = 2.7 milliGauss
8-10 = 4.3 milliGauss

1720 - MOVED TO 03SB14, CLEARED TO 3 FEET

(16)

NSWC CRANE

6-20-01

6-8 = 1.8 Milligauss

8-10 = [illegible] Milligauss

1800 - Depart JEEP TRAIL for Field office

1815 - Arrived at Feild office, unload truck and [illegible] gear

1915 - Depart the Feild office for Day

NSWC CRANE

6-21-01

(17)

0800 - Arrived at Feild office, load out trucks

0745 Departed Feild office for JEEP TRAIL

0820 Arrived at JEEP TRAIL

0900 - Checked 033B21, 033B22 and 033B24 with Backhoe

1035 SET up on 033B24 0-2 = 00.2 milligauss

2-4 = 13.1 milligauss

4-6 = 9.1 milligauss

6-8 = 8.7 milligauss

8-10 10.1 milligauss

1300 MOVED TO 033B22

0-2 = 5.1 milligauss

2-4 = 7.1 milligauss

4-6 = 8.7 milligauss

6-8 = 2.1 milligauss

8-10 = 1.5 milligauss

1400 - MOVED TO 033B[illegible].

0-2 = 24.1 milligauss

2-4 = 15.1 milligauss

4-6 = 28 milligauss

6-8 = 4.1 milligauss

8-10 = 1.7 milligauss

1430 - Depart JEEP TRAIL for Feild office

NSWC CRANE

(18)

6/21/01

1515 - ARRIVED @ FIELD OFFICE, UNLOADED TRUCK, PACKED OUT SAMPLES, CLEANED GOODS, AND MADE LABELS FOR FRI EPT OP.

1830 - DEPARTED FOR DAY.

NSWC CRANE

(19)

6/22/01

0700 ARRIVED @ FIELD OFFICE, LOAD OUT TRUCK

0715 DEPART FOR JEEP TRIAL

0720 ARRIVED AT JEEP TRIAL AND SET UP

0835 - 035847

0-2 00.4 milliGauss
2-4 2.7 milliGauss
4-6 5.1 milliGauss
6-8 5.2 milliGauss
8-10 2.1 milliGauss

0835 - MOVED TO 035848

0-2 = 3.2 milliGauss
2-4 = 1.5 milliGauss
4-6 [illegible] milliGauss
4-8 [illegible] milliGauss
8-10 5.3 milliGauss

0839 - MOVED TO 035846

0-2 = 5.8 milliGauss
2-4 = 5.1 milliGauss
4-6 = 5.5 milliGauss
6-8 = 6.3 milliGauss
8-10 = 5.1 milliGauss

0845 MOVED TO 035844

0-2 = 00.5 milliGauss
2-4 = 9.5 milliGauss
4-6 = 1.6 milliGauss
6-8 = 1.6 milliGauss
8-10 = 1.2 milliGauss

NSWC CRANE

(20)

6/22/01

0950 - MOVED TO 035B42

0-2 = 5.1 milliGauss
2-4 = 10.6 milliGauss
4-6 = 10.5 milliGauss
6-8 = 5.9 milliGauss
8-10 = 3.2 milliGauss

1000 - MOVED TO 035B40

0-2 = 00.6 milliGauss
2-4 = 1.7 milliGauss
4-6 = 2.3 milliGauss
6-8 3.7 milliGauss
8-10 5.5 milliGauss

1240 - MOVED TO 035B39

0-2 = 00.8 milliGauss
2-4 = 1.5 milliGauss
4-6 = 3.0 milliGauss
6-8 = 3.9 milliGauss
8-10 = 4.1 milliGauss

1310 MOVED TO 035B36

0-2 = 00.7 milliGauss
2-4 = 1.6 milliGauss
4-6 = 4.2 milliGauss
6-8 = 2.1 milliGauss
8-10 = 00.5 milliGauss

MOVED TO 035B34

0-2 = 00.4 milliGauss
2-4 = 00.1 milliGauss

NSWC CRANE

(21)

6/22/01

4-6 = 2.1 milliGauss
6-8 = 1.1 milliGauss
8-10 = 00.2 milliGauss

1500 - Depart Dep Trail for Feild office.

1515 - Arrived at Feild office, unload truck and clean gear.

1545 - Depart for Day

NBWC CRANES

(22) 6/23/01

0700 - ARRIVED AT Feild office, load out TRUCKS.
0745 - Depart Feild office for JEEP TRAIL
0800 - ARRIVED AT JEEP TRAIL SET UP ON 035309 CLEARED TO 5 FEET.
0850 RETURN AT 3½ FEET MOVING TO 035537
0915 - 035537 CLEARED TO 2 FOOT
0935 - MOVED TO 035539 CLEARED TO 2 FOOT
0955 MOVED TO 035535 CLEARED TO 2 FOOT
1030 - MOVED TO 035543 CLEARED TO 2 FOOT
1050 MOVED TO 035545 CLEARED TO 2 FOOT
1105 MOVED TO 035541 CLEARED TO 2 FOOT
1125 DEPART JEEP TRAIL for Feild OFFICE
1140 ARRIVED AT Feild office, DECON CRANE, MANEUVER ON ASPHALT.
1155 - Departed Feild office for Dig Brand [illegible] TO MARK OUT LOCATION.
1250 - RETURN TO Feild office

APPENDIX C-2.4

No. 1340 (Surface Water High Flow Sampling on September 9, 2001 and Round 3 Water Levels June 12 and 13, 2002)

9.9.01

— DAILY SUMMARY —

ON SITE, TETRA TECH, FRANK W.
TERRY R.
KEITH S.
KEN M.

BOWSER MORNER; KENT D.
AM ONLY JAMES V.
COMPLETE GROUT @ 01T01 JASON D.
0630 - 0730
OFF - SITE

DEVELOPED "NEW" WELL 01T02
@ MGBG

CTO 126 # N3960
HIGH FLOW (RO 2)
STORM EVENT SAMPLING

RAIN 0.30" OVER NITE
0.45" 0700 → 1300
0.50" 1300 → 1820

TOTAL RAIN FALL = 1.25" OVERNITE TO 1820

HEAVY RAIN ON/OFF THRU OUT THE DAY

ALSO SEE: WL FORMS, FIELD FORMS & COCs

SUNDAY 9.9.01

Work continued from Page WEATHER: HEAVY RAIN 67-80°F 0.30" OVERNITE

0650 KS, FW, TR & KM @ BLD 3245

WORKING ON JEEP TRAIL STORM WATER SAMPLING ALL DAY ROUND 02

TOTAL RAIN FALL 8.8 PM THRU 8.9.01 1820 = 1.25" RAIN GAUGE @ BLD 3245

SAMPLED 035W01, 02, 03, 06 + DUP 02, 09, 15, 16, 17, 18, 19 + DUP & MS/MSD, 08, 11, 13 & 14

035W04 WAS DRY NO FLOW

ALSO TOOK WL READINGS @ THE 7 SG & 34 WELLS

1930 OFF SITE

CTO 126 # N3960

HIGH FLOW SAMPLING (ROUND 02) STORM EVENT

9.10.01

— DAILY SUMMARY —

ON SITE: TETRA TECH: KEITH S.
KEN M.
TERRY R

BOWSER-MORNER: SCOTT WHITBOOK
PICK-UP SUPPLIES, DRUMS, SAND, PVC ETC.
1120 THRU 1230 @ BLD 3245 ONLY

MWs SAMPLED

SHIPPED 20 COOLERS
1 TO ECBC
1 TO APLC
4 TO SWLO
14 TO LAUCKS

SEE ALSO: FIELD FORMS, LOG BOOK 390F,
COC

TITLE NSWC CRANE

PROJECT NO. 3959/3960

BOOK NO. 1340

MONDAY 9.10.01

Work continued from Page WEATHER: COOLER, DRY 55-78°F NICE

0650 KS KM & TR @ BLD 3245 KM TO MGBG
FOR GW SAMPLING
KS & TR WORKING ON NA & PACKING &
PAPER WORK FOR JEEP TRAIL SW SAMPLES
1510 COMPLETE PACKING FOR FEDEX
RUNNING MNA PARAMETERS
1640 KM RETURNED FROM MGBG TWO WELLS
SAMPLED OIMW22 & 24
CLEAN EQ. & WORK AREA
1805 KM TO SAM'S CLUB FOR SUPPLIES
1905 KS & TR COMPLETE MNA FOR JT SWs
1915 DEPART SITE

SCIENTIFIC BINDERY PRODUCTIONS CHICAGO 60605 MADE IN USA

Work continued to Page

SIGNATURE [illegible] DATE 9.10.01

DISCLOSED TO AND UNDERSTOOD BY DATE WITNESS DATE

SUMMARY 06/12/02

- Finished sampling 01T02; Test Kits for MNA Parameters
- Started W.Ls @ OST, ABG & DBG
- SEE NB 1347 for Drilling detailed Info. page 81
  Drilling Crew Demob this date
- K.S. did recon w/ surveyors (Ben Bledsoe Crew Boss)

END

WED. 06/12/02

Work continued from Page

Weather - OVERCAST, Hot & Humid

0700 Hrs - Arrive @ BLDG # 3245

- Arrange for pass for Dozer Pick up w/ T. Breat
- Prep. for GW & NA sampling @ 01T02
- Check in w/ A. Basinski

0900 Hrs - Start sampling @ 01T02
K.S. taking NA parameters

0930 Hrs - End sampling & clean up @ 01T02

1052 Hrs - Arrive @ Dye Burial Ground for water levels

1153 Hrs - Stop WLs Head to Cafe. to meet S.C. & K.S.

1210 Hrs - Arrive @ Cafe.

1300 Hrs - Return to DBG to take W.L.

1340 Hrs - Finish W.L. @ DBG - Head for ABG to meet w/ SC & K.S.

1555 Hrs - Arrive @ ABG check in w/ K.S.
Take water levels @ OJT until 1800 Hrs

1812 Hrs - Arrive @ S.C. & K.S. vehicle - waited until 1840 Hrs to meet with them - then left for BLDG # 3245

1850 Hrs - Arrive @ BLDG # 3245
to wait for SC & K.S.; Paperwork; Decon M-Sc. & Boots - Poison Ivy thick @ Both OJT & DBG.
Decon Pumps - will assemble tomorrow

2010 Hrs - Left BLDG for Gas Sta. & Motel
K.S & S.C. didn't come to BLDG 3245 - Called cell Phone several times No response

END

SIGNATURE

DATE 6/12/02

DISCLOSED TO AND UNDERSTOOD BY DATE WITNESS DATE

Summary 6/13/02

- Finish W.L.s @ OJT (~11 wells)
- Ran NA Nitrate/Nitrite for 01T02
- Dozer from Nations Rent - Escort pickup on & off site
- ~80% of Revegetation Activities completed @ New well sites MGBG
- S.C. worked on CTO 10 sludge test prep 1/2 day SWMUs 5 & 9. (SEE NB #1347 page 83)

END

TITLE NSWC CRANE

PROJECT NO. 3959 / 3960

BOOK NO. 1340

THURS 6/13/02

Work continued from Page

WEATHER : HOT & Humid Low 80°s (Rain 0830 Hrs - 10[illegible] SUNNY AFTER[illegible]

0700 Hrs - ARRIVE ON SITE (BLDG 3245)

- K.S. going through W.L. taken yesterday to SEE WHAT REMAINS (11 wells remain)
- T.R. Assembled bladder pumps (3)
- T.R. RAN Nitrate / Nitrite tests on 01T02
- K.S & S.C. (0810 Hrs) Left to take WLs

0840 Hrs - RECEIVED CALL FROM M. DUNCAN that Nations Rent was @ Crane gate to pick up Dozer

0900 Hrs - Arrive @ Gate to Escort Dozer pick up person

0930 Hrs - Arrive @ MGBG w/ Nations Rent

1015 Hrs - Escort Nations Rent off NSWC CRANE

1025 Hrs - Talk w/ T. JOHNSTON - up date

1100 Hrs - LEFT FOR OJT - FOR Water LEVELS

1200 Hrs - LUNCH

1245 Hrs - Return to OJT FOR WATER LEVELS

1400 Hrs - LEFT OJT FOR MGBG

REVEGETATE Disturbed AREA (01T05)

1630 Hrs - Stop Revegetation to RETURN to BLDG #3245

1655 Hrs - ARRIVE @ BLDG #3245

PAPERWORK & PACKAGE SAMPLES FOR SHIPMENT

CoC # MGBG 061102 on FED. EX. AB # 828074028043

1730 Hrs - LEFT NSWC CRANE FOR FED. EX.

1800 Hrs - Drop of SAMPLES @ FED. EX.

END

SCIENTIFIC BINDERY PRODUCTIONS CHICAGO 60605 · MADE IN USA

Work continued to Page

SIGNATURE

DATE 6/13/02

DISCLOSED TO AND UNDERSTOOD BY DATE WITNESS DATE

SUMMARY 6/16/02

- S.C. FINISH UP SLUG TEST @ SWMUS 5 & 9 & PACKAGE SLUG TEST EQ FOR SHIPPING (SEE NB 1347 p. 89)
- COLLECT RINSATE BLANKS RB061602 & RB061602-E
- K.S. & TK - TAKE PHOTOS @ ABG & OJT HABITAT, SEDI. LOCATIONS W/ LEAD CONT., SEEP, SPRINGS, ETC.

END

TITLE NSWC CRANE

PROJECT NO. 3959 / 3960

BOOK NO. 1340

SUN 6/16/02

Work continued from Page

WEATHER: Partly Cloudy TEMP MID 70°s

0700 Hrs - Arrive @ BLDG 3245

PAPERWORK; CLEAN-UP

NA TESTS RUN ON OITOS Nitrate/Nitrite & SULFATE

DECON Bladder Pumps + NA GLASSWARE

Collect Rinsate BLANK RB061602 & RB061602-F

PREP. FOR TAKING PHOTOS @ OJT

1025 Hrs - LEFT BLDG #3245 FOR OJT

PHOTOS OF ABG

1200 Hrs - LUNCH BREAKE

1245 Hrs - Continue taking PHOTOS - Habitate, SEEPS, springs stream deposition, etc.

1600 Hrs - FINISH PHOTOGRAPHING OJT

Work on MGBG - PAPERWORK, shipping Labels, etc.

1700 Hrs - LEFT NSWC CRANE

END

SCIENTIFIC BINDERY PRODUCTIONS CHICAGO 60605 MADE IN USA

Work continued to Page

SIGNATURE

DATE 6/16/02

DISCLOSED TO AND UNDERSTOOD BY DATE WITNESS DATE

APPENDIX D

SURVEY DATA

SURVEY DATA

SWMU 3 - JEEP TRAIL					
LOCATION	NORTHING NAD 27	EASTING NAD 27	GROUND ELEVATION (ft. msl)	REFERENCE POINT ELEVATION (a) (ft. msl)	TOP OF CASING ELEVATION (b) (ft. msl)
03-01	490748.00000	593688.00000	NA	NA	NA
03-02	489940.00000	593060.00000	NA	NA	NA
03-03	489838.00000	594843.00000	NA	NA	NA
03-04	489791.00000	594610.00000	NA	NA	NA
03-06	489796.00000	594636.00000	NA	NA	NA
03-07	487837.90670	596315.43210	553.73000	NA	556.08000
03-09	489909.00000	593047.00000	NA	NA	NA
03-10	487821.20340	596515.83910	555.01000	NA	557.59000
03-11	487708.67430	596434.58980	550.10000	NA	553.01000
03-12	487765.37640	596231.90650	555.48000	NA	557.84000
03-13	487633.96240	596376.31940	549.21000	NA	551.86000
03-14	487672.85990	596420.54310	549.11000	NA	552.01000
03-15	487874.92370	596346.66440	556.14000	559.11000	558.91000
03-16	488566.76180	595786.61520	568.60000	571.50000	571.30000
03-17	487650.30760	596264.67830	550.21000	NA	553.07000
03-18	487508.17980	596288.22650	550.01000	NA	552.72000
03-19	487585.00000	596117.00000	NA	NA	NA
03-20	487674.47520	596119.27200	551.87000	NA	554.76000
03-21	488039.00250	596246.08770	556.81000	559.86000	559.71000
03-22	487791.08110	596369.15470	555.21000	558.48000	558.28000
03-23	487958.48290	596055.93510	551.87000	NA	562.09000
03-24	488012.65000	596461.96550	586.13000	NA	588.88000
03-25	487901.67500	596498.00710	570.65000	NA	573.57000
03-27	489964.00000	593967.00000	NA	NA	NA
03-28	489705.00000	594006.00000	NA	NA	NA
03-29	489992.00000	593981.00000	NA	NA	NA
03-30	490818.00000	593630.00000	NA	NA	NA
03-31	489788.00000	594804.00000	NA	NA	NA
03-32	489857.00000	594822.00000	NA	NA	NA
03-33	489923.00000	594836.00000	NA	NA	NA
03-34	489844.00000	594662.00000	NA	NA	NA
03-35	489830.00000	594561.00000	NA	NA	NA
03-36	489691.00000	594603.00000	NA	NA	NA
03-37	489890.00000	594618.00000	NA	NA	NA
03-38	490676.00000	593744.00000	NA	NA	NA
03-39	490700.00000	593792.00000	NA	NA	NA
03-MTSPR	496445.00000	594517.00000	NA	NA	NA
03-SPR-A	483805.00000	595456.00000	NA	NA	NA
03-SPR-B	482944.00000	594989.00000	NA	NA	NA
03-SPR-C	486019.00000	596605.00000	NA	NA	NA
03-SPR-D	494858.00000	596456.00000	NA	NA	NA
03-SPR-E	494137.00000	596159.00000	NA	NA	NA
03-SPR-F	494677.00000	596604.00000	NA	NA	NA
03-SPR-G	482423.00000	595723.00000	NA	NA	NA
03B01	482590.00000	595584.00000	NA	NA	NA
03B02	482573.03480	595505.44030	NA	NA	NA
03B03	482578.00000	595406.00000	NA	NA	NA
03B04	482630.94750	595292.56450	NA	NA	NA
03B05	482623.00000	595142.00000	NA	NA	NA
03B06	482666.00000	594960.00000	NA	NA	NA
03B07	482672.00000	594768.00000	NA	NA	NA
03B08	482667.00000	594594.00000	NA	NA	NA
03B09	482657.00000	594417.00000	NA	NA	NA
03B10	482607.00000	594209.00000	NA	NA	NA
03C01	490064.00000	593142.00000	NA	NA	NA
03C01P2	490068.00000	593146.00000	NA	NA	NA
03C01P3	490061.00000	593147.00000	NA	NA	NA
03C02	489931.00000	594793.00000	NA	NA	NA
03C02P2	489931.81580	594798.07890	NA	NA	NA
03C03	490202.94050	594055.52860	NA	NA	NA
03C03P2	490208.00000	594056.00000	NA	NA	NA

SURVEY DATA

SWMU 3 - JEEP TRAIL					
LOCATION	NORTHING NAD 27	EASTING NAD 27	GROUND ELEVATION (ft. msl)	REFERENCE POINT ELEVATION (a) (ft. msl)	TOP OF CASING ELEVATION (b) (ft. msl)
03C04	490260.54860	594783.21570	NA	NA	NA
03C05	489782.00000	595114.00000	NA	NA	NA
03C06	489581.00000	594596.00000	NA	NA	NA
03C07	490422.52400	594370.94550	NA	NA	NA
03C08	489681.00000	594025.00000	NA	NA	NA
03C08A	489680.00000	594051.00000	NA	NA	NA
03C08P2	489701.36530	594013.74890	NA	NA	NA
03C08P3	489685.00000	594047.00000	NA	NA	NA
03C09	490615.00000	593777.00000	NA	NA	NA
03C09P2	490619.56530	593775.83390	NA	NA	NA
03C10	490242.70570	593656.92880	NA	NA	NA
03C11	490024.65440	594440.55470	NA	NA	NA
03C12	489957.36800	594574.22160	NA	NA	NA
03C13	490901.00000	593860.00000	NA	NA	NA
03C14	489932.00000	593575.00000	NA	NA	NA
03C15	489849.53660	593146.29040	NA	NA	NA
03C15P3	489855.00000	593143.00000	NA	NA	NA
03C16	490478.00000	593362.00000	NA	NA	NA
03C17	492763.62770	594371.09260	NA	NA	NA
03C18	489992.00000	592967.00000	NA	NA	NA
03C19	491442.00000	593351.00000	NA	NA	NA
03C19P3	491438.00000	593354.00000	NA	NA	NA
03C20	489880.21250	593773.34040	NA	NA	NA
03C21	489925.00000	593356.00000	NA	NA	NA
03C21P2	489925.00000	593361.00000	NA	NA	NA
03C22	490090.00000	593319.00000	NA	NA	NA
03C23	490259.00000	593462.00000	NA	NA	NA
03C24	485159.00000	592615.00000	NA	NA	NA
03C25	487148.50690	592610.07070	NA	NA	NA
03C26	490695.18360	594134.16210	NA	NA	NA
03C27	489658.33390	594767.36680	NA	NA	NA
03C28	489884.00000	595269.00000	NA	NA	NA
03C29	488529.00000	591095.00000	NA	NA	NA
03C30	488967.44330	592402.75090	NA	NA	NA
03C31	488492.00000	593743.00000	NA	NA	NA
03C32	491056.00000	594471.00000	NA	NA	NA
03C33	486651.00000	594224.00000	NA	NA	NA
03C34	487870.00000	599301.00000	NA	NA	NA
03C35	485347.00000	598082.00000	NA	NA	NA
03C36	485203.00000	599202.00000	NA	NA	NA
03C37	483933.00000	596471.00000	NA	NA	NA
03C38	485309.00000	595951.00000	NA	NA	NA
03SB01	488390.95780	596027.07690	594.56000	NA	NA
03SB02	488347.83550	595945.32000	562.03000	NA	NA
03SB03	488309.20560	596114.28950	594.31000	NA	NA
03SB04	488301.99400	596006.09110	563.33000	NA	NA
03SB05	488298.80240	595896.74500	557.55000	NA	NA
03SB06	488313.85470	595990.17520	560.82000	NA	NA
03SB07	488286.67990	596001.63660	560.21000	NA	NA
03SB08	488260.12700	596028.23610	559.89000	NA	NA
03SB09	488236.21350	596068.48120	565.09000	NA	NA
03SB10	488278.76310	595969.19190	566.24000	NA	NA
03SB11	488258.49900	596010.27260	559.52000	NA	NA
03SB12	488227.78460	596119.29400	582.62000	NA	NA
03SB13	488229.76880	596019.29310	558.86000	NA	NA
03SB14	488226.20600	595979.49490	554.63000	NA	NA
03SB15	488201.87160	596025.54330	558.03000	NA	NA
03SB16	488220.26800	595935.82580	553.73000	NA	NA
03SB17	488192.30510	596055.23710	558.83000	NA	NA
03SB18	488163.44150	596002.68370	556.52000	NA	NA
03SB19	488141.70240	596032.62080	556.49000	NA	NA
03SB20	488100.94120	596091.33630	557.48000	NA	NA
03SB21	488099.18680	596055.22180	556.28000	NA	NA
03SB22	488110.65320	596035.92260	556.00000	NA	NA
03SB23	488099.79920	595990.46230	551.69000	NA	NA
03SB24	488091.63970	596046.57060	556.03000	NA	NA

SURVEY DATA

SWMU 3 - JEEP TRAIL					
LOCATION	NORTHING NAD 27	EASTING NAD 27	GROUND ELEVATION (ft. msl)	REFERENCE POINT ELEVATION (a) (ft. msl)	TOP OF CASING ELEVATION (b) (ft. msl)
03SB25	488056.60250	596213.19410	556.78000	NA	NA
03SB26	488000.62240	596038.54990	551.28000	NA	NA
03SB27	487775.42390	596356.32350	544.98000	NA	NA
03SB28	487762.91100	596388.51150	545.74000	NA	NA
03SB29	488581.89060	595780.59140	568.27000	NA	NA
03SB30	488660.94760	595766.70180	570.19000	NA	NA
03SB31	488531.41450	595823.38670	567.68000	NA	NA
03SB32	487630.28610	596590.55240	553.57000	NA	NA
03SB33	487395.45950	596568.44160	548.30000	NA	NA
03SB34	488501.98350	595807.07610	566.75000	NA	NA
03SB35	488470.99310	595781.61830	558.23000	NA	NA
03SB36	488443.52070	595841.65300	565.02000	NA	NA
03SB37	488431.97580	595893.48960	565.68000	NA	NA
03SB38	488375.82840	595827.17430	556.68000	NA	NA
03SB39	488385.70730	595879.65690	563.40000	NA	NA
03SB40	487994.97240	596231.63660	555.73000	NA	NA
03SB41	487958.83730	596222.15840	550.83000	NA	NA
03SB42	487950.44230	596259.12420	555.63000	NA	NA
03SB43	487951.02450	596295.28840	556.34000	NA	NA
03SB44	487915.75390	596282.65020	555.25000	NA	NA
03SB45	487872.65250	596245.58870	550.55000	NA	NA
03SB46	487852.21660	596297.10340	553.94000	NA	NA
03SB47	487830.70970	596299.69280	553.53000	NA	NA
03SB48	487826.23340	596318.57860	554.14000	NA	NA
03SD05	490462.83120	593975.48060	591.38000	NA	NA
03SD07	489644.29540	594947.82550	572.01000	NA	NA
03SD10	488204.83510	595862.99680	553.10000	NA	NA
03SD12	487630.93960	596404.25360	544.61000	NA	NA
03SG01	490124.27030	594313.10280	NA	NA	NA
03SG02	488570.66670	595726.88160	NA	NA	NA
03SG03	487330.50000	596436.67050	NA	NA	NA
03SG04	485646.57990	596328.41920	NA	NA	NA
03SG05	484740.19910	596109.73530	NA	NA	NA
03SG06	483694.26280	595518.07730	NA	NA	NA
03SG07	482632.15690	595545.25960	NA	NA	NA
03SWSD01	491554.31750	593843.11230	623.38000	NA	NA
03SWSD02	491135.59100	593379.97630	609.15000	NA	NA
03SWSD03	489933.52710	592069.37060	651.69000	NA	NA
03SWSD04	490197.41610	596154.78370	654.19000	NA	NA
03SWSD06	490118.48310	594318.58440	584.01000	NA	NA
03SWSD08	489262.81000	595590.04850	568.46000	NA	NA
03SWSD09	488656.92470	595793.42500	570.15000	NA	NA
03SWSD11	488027.26260	596100.83430	549.59000	NA	NA
03SWSD13	487183.17360	596390.28130	540.27000	NA	NA
03SWSD14	486182.25700	596142.23820	531.49000	NA	NA
03SWSD15	485394.48500	596505.80220	523.08000	NA	NA
03SWSD16	484389.89730	595887.25170	512.89000	NA	NA
03SWSD17	483693.65260	595500.08350	506.99000	NA	NA
03SWSD18	482930.45980	595404.43420	501.25000	NA	NA
03SWSD19	482632.15690	595545.25960	498.44000	NA	NA

Notes:
(a) - Reference Point Elevation taken from well PVC riser.
(b) - Top of Casing Elevation taken from protective steel casing.
NA - Not applicable.

APPENDIX E

SUMMARY OF ANALYTICAL RESULTS

TABLE E-1

SUMMARY OF ANALYTIC RESULTS IN SURFACE SOIL
SWMU 3 - OLD JEEP TRAIL/LITTLE SULPHUR CREEK
NSWC CRANE
CRANE, INDIANA

LOCATION	03SB01	03SB02	03SB03	03SB04	03SB05	03SB06	03SB07	03SB08	03SB09	03SB10	03SB11	03SB12
NSAMPLE	03SS010002	03SS020002	03SS030002	03SS040002	03SS050002	03SS060002	03SS070002	03SS080002	03SS090002	03SS100002	03SS110002	03SS120002
SAMPLE	03SS010002	03SS020002	03SS030002	03SS040002	03SS050002	03SS060002	03SS070002	03SS080002	03SS090002	03SS100002	03SS110002	03SS120002
SACODE	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	ORIG	NORMAL	NORMAL	ORIG	NORMAL	NORMAL	NORMAL
DEPTH RANGE	0 - 2	0 - 2	0 - 2	0 - 2	0 - 2	0 - 2	0 - 2	0 - 2	0 - 2	0 - 2	0 - 2	0 - 2
QC_TYPE	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
STATUS	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
SAMPLE DATE	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
VALIDATED	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
COLLECTION METHOD	GRAB	GRAB	GRAB	GRAB	GRAB	GRAB	GRAB	GRAB	GRAB	GRAB	GRAB	GRAB
Dioxins (NG/KG)												
1,2,3,4,6,7,8,9-OCDD												
1,2,3,4,6,7,8,9-OCDF												
1,2,3,4,6,7,8-HPCDD												
1,2,3,4,6,7,8-HPCDF												
1,2,3,4,7,8,9-HPCDF												
1,2,3,4,7,8-HXCDD												
1,2,3,4,7,8-HXCDF												
1,2,3,6,7,8-HXCDD												
1,2,3,6,7,8-HXCDF												
1,2,3,7,8,9-HXCDD												
1,2,3,7,8,9-HXCDF												
1,2,3,7,8-PECDD												
1,2,3,7,8-PECDF												
2,3,4,6,7,8-HXCDF												
2,3,4,7,8-PECDF												
2,3,7,8-TCDD												
2,3,7,8-TCDF												
TEQ BIRD												
TEQ FISH												
TEQ HUMAN												
TOTAL HPCDD												
TOTAL HPCDF												
TOTAL HXCDD												
TOTAL HXCDF												
TOTAL PECDD												
TOTAL PECDF												
TOTAL TCDD												
TOTAL TCDF												
Volatile Organics (UG/KG)												
1,1,1,2-TETRACHLOROETHANE												
1,1,1-TRICHLOROETHANE												
1,1,2,2-TETRACHLOROETHANE												
1,1,2-TRICHLOROETHANE												
1,1-DICHLOROETHANE												
1,1-DICHLOROETHENE												
1,2,3-TRICHLOROPROPANE												
1,2-DIBROMO-3-CHLOROPROPANE												
1,2-DIBROMOETHANE												
1,2-DICHLOROETHANE												
1,2-DICHLOROPROPANE												
1,4-DIOXANE												
2-BUTANONE												
2-HEXANONE												
3-CHLOROPROPENE												
4-METHYL-2-PENTANONE												
ACETONE												
ACETONITRILE												
ACROLEIN												
ACRYLONITRILE												

TABLE E-1

SUMMARY OF ANALYTIC RESULTS IN SURFACE SOIL
SWMU 3 - OLD JEEP TRAIL/LITTLE SULPHUR CREEK
NSWC CRANE
CRANE, INDIANA

LOCATION	03SB01	03SB02	03SB03	03SB04	03SB05	03SB06	03SB07	03SB08	03SB09	03SB10	03SB11	03SB12
NSAMPLE	03SS010002	03SS020002	03SS030002	03SS040002	03SS050002	03SS060002	03SS070002	03SS080002	03SS090002	03SS100002	03SS110002	03SS120002
SAMPLE	03SS010002	03SS020002	03SS030002	03SS040002	03SS050002	03SS060002	03SS070002	03SS080002	03SS090002	03SS100002	03SS110002	03SS120002
SACODE	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	ORIG	NORMAL	NORMAL	ORIG	NORMAL	NORMAL	NORMAL
DEPTH RANGE	0 - 2	0 - 2	0 - 2	0 - 2	0 - 2	0 - 2	0 - 2	0 - 2	0 - 2	0 - 2	0 - 2	0 - 2
QC_TYPE	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
STATUS	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
SAMPLE DATE	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
VALIDATED	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
COLLECTION METHOD	GRAB	GRAB	GRAB	GRAB	GRAB	GRAB	GRAB	GRAB	GRAB	GRAB	GRAB	GRAB
BENZENE												
BROMODICHLOROMETHANE												
BROMOFORM												
BROMOMETHANE												
CARBON DISULFIDE												
CARBON TETRACHLORIDE												
CHLOROBENZENE												
CHLORODIBROMOMETHANE												
CHLOROETHANE												
CHLOROFORM												
CHLOROMETHANE												
CHLOROPRENE												
CIS-1,2-DICHLOROETHENE												
CIS-1,3-DICHLOROPROPENE												
DIBROMOMETHANE												
DICHLORODIFLUOROMETHANE												
ETHYL METHACRYLATE												
ETHYLBENZENE												
ISOBUTANOL												
METHACRYLONITRILE												
METHYL IODIDE												
METHYL METHACRYLATE												
METHYLENE CHLORIDE												
PROPIONITRILE												
STYRENE												
TETRACHLOROETHENE												
TOLUENE												
TOTAL XYLENES												
TRANS-1,2-DICHLOROETHENE												
TRANS-1,3-DICHLOROPROPENE												
TRANS-1,4-DICHLORO-2-BUTENE												
TRICHLOROETHENE												
TRICHLOROFLUOROMETHANE												
VINYL ACETATE												
VINYL CHLORIDE												
Semivolatile Organics (UG/KG)												
1,2,4,5-TETRACHLOROBENZENE		76 U		72 U	83 U	74 U	74 U	73 U	67 U	78 U	76 U	
1,2,4-TRICHLOROBENZENE		76 U		72 U	83 U	74 U	74 U	73 U	67 U	78 U	76 U	
1,2-DICHLOROBENZENE		76 U		72 U	83 U	74 U	74 U	73 U	67 U	78 U	76 U	
1,3-DICHLOROBENZENE		76 U		72 U	83 U	74 U	74 U	73 U	67 U	78 U	76 U	
1,4-DICHLOROBENZENE		76 U		72 U	83 U	74 U	74 U	73 U	67 U	78 U	76 U	
1,4-NAPHTHOQUINONE		76 U		72 U	83 U	74 U	74 U	73 U	67 U	78 U	76 U	
1,4-PHENYLENEDIAMINE		76 U		72 U	83 UJ	74 U	74 U	73 UJ	67 UJ	78 UJ	76 UJ	
1-NAPHTHYLAMINE		76 U		72 U	83 U	74 U	74 U	73 U	67 U	78 U	76 U	
2,2'-OXYBIS(1-CHLOROPROPANE)		76 UJ		72 UJ	83 UJ	74 UJ	74 UJ	73 UJ	67 UJ	78 UJ	76 UJ	
2,3,4,6-TETRACHLOROPHENOL		76 U		72 U	83 U	74 U	74 U	73 U	67 U	78 U	76 U	
2,4,5-TRICHLOROPHENOL		76 U		72 U	83 U	74 U	74 U	73 U	67 U	78 U	76 U	
2,4,6-TRICHLOROPHENOL		76 U		72 U	83 U	74 U	74 U	73 U	67 U	78 U	76 U	
2,4-DICHLOROPHENOL		76 U		72 U	83 U	74 U	74 U	73 U	67 U	78 U	76 U	
2,4-DIMETHYLPHENOL		76 U		72 U	83 U	74 U	74 U	73 U	67 U	78 U	76 U	

TABLE E-1

SUMMARY OF ANALYTIC RESULTS IN SURFACE SOIL
SWMU 3 - OLD JEEP TRAIL/LITTLE SULPHUR CREEK
NSWC CRANE
CRANE, INDIANA

LOCATION	03SB01	03SB02	03SB03	03SB04	03SB05	03SB06	03SB07	03SB08	03SB09	03SB10	03SB11	03SB12
NSAMPLE	03SS010002	03SS020002	03SS030002	03SS040002	03SS050002	03SS060002	03SS070002	03SS080002	03SS090002	03SS100002	03SS110002	03SS120002
SAMPLE	03SS010002	03SS020002	03SS030002	03SS040002	03SS050002	03SS060002	03SS070002	03SS080002	03SS090002	03SS100002	03SS110002	03SS120002
SACODE	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	ORIG	NORMAL	NORMAL	ORIG	NORMAL	NORMAL	NORMAL
DEPTH RANGE	0 - 2	0 - 2	0 - 2	0 - 2	0 - 2	0 - 2	0 - 2	0 - 2	0 - 2	0 - 2	0 - 2	0 - 2
QC_TYPE	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
STATUS	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
SAMPLE DATE	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
VALIDATED	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
COLLECTION METHOD	GRAB	GRAB	GRAB	GRAB	GRAB	GRAB	GRAB	GRAB	GRAB	GRAB	GRAB	GRAB
2,4-DINITROPHENOL		76 U		72 U	83 U	74 U	74 U	73 U	67 UJ	78 UJ	76 U	
2,6-DICHLOROPHENOL		76 U		72 U	83 U	74 U	74 U	73 U	67 U	78 U	76 U	
2-ACETYLAMINOFLUORENE		76 U		72 U	83 U	74 U	74 U	73 U	67 UJ	78 U	76 U	
2-CHLORONAPHTHALENE		76 U		72 U	83 U	74 U	74 U	73 U	67 U	78 U	76 U	
2-CHLOROPHENOL		76 U		72 U	83 U	74 U	74 U	73 U	67 U	78 U	76 U	
2-METHYLNAPHTHALENE		1.48 U		1.4 U	1.6 U	1.44 U	1.43 U	1.41 U	1.3 U	1.51 U	1.49 U	
2-METHYLPHENOL		76 U		72 U	83 U	74 U	74 U	73 U	67 U	78 U	76 U	
2-NAPHTHYLAMINE		76 U		72 U	83 U	74 U	74 U	73 U	67 U	78 U	76 U	
2-NITROANILINE		76 UJ		72 UJ	83 U	74 UJ	74 UJ	73 U	67 UJ	78 U	76 U	
2-NITROPHENOL		76 U		72 U	83 U	74 U	74 U	73 U	67 U	78 U	76 U	
2-PICOLINE		76 U		72 U	83 U	74 U	74 U	73 U	67 UJ	78 U	76 U	
3&4-METHYLPHENOL		76 U		72 U	83 U	74 U	74 U	73 U	67 U	78 U	76 U	
3,3'-DICHLOROBENZIDINE		76 U		72 U	83 U	74 U	74 U	73 U	67 U	78 U	76 U	
3,3'-DIMETHYLBENZIDINE		76 U		72 U	83 U	74 U	74 U	73 U	67 U	78 U	76 U	
3-METHYLCHOLANTHRENE		76 U		72 U	83 U	74 U	74 U	73 U	67 U	78 UJ	76 U	
3-NITROANILINE		76 U		72 U	83 U	74 U	74 U	73 U	67 U	78 U	76 U	
4,6-DINITRO-2-METHYLPHENOL		76 U		72 U	83 U	74 U	74 U	73 U	67 UJ	78 U	76 U	
4-AMINOBIPHENYL		76 U		72 U	83 U	74 U	74 U	73 U	67 U	78 U	76 U	
4-BROMOPHENYL PHENYL ETHER		76 U		72 U	83 U	74 U	74 U	73 U	67 U	78 U	76 U	
4-CHLORO-3-METHYLPHENOL		76 U		72 U	83 U	74 U	74 U	73 U	67 U	78 U	76 U	
4-CHLOROANILINE		76 U		72 U	83 U	74 U	74 U	73 U	67 U	78 U	76 U	
4-CHLOROPHENYL PHENYL ETHER		76 U		72 U	83 U	74 U	74 U	73 U	67 U	78 U	76 U	
4-NITROANILINE		76 U		72 U	83 U	74 U	74 U	73 U	67 U	78 U	76 U	
4-NITROPHENOL		76 UJ		72 UJ	83 U	74 UJ	74 UJ	73 U	67 UJ	78 UJ	76 U	
4-NITROQUINOLINE-1-OXIDE		76 UR		72 UR	83 UR	74 UR	74 UR	73 UR	67 UR	78 UR	76 UR	
5-NITRO-O-TOLUIDINE		76 U		72 U	83 U	74 U	74 U	73 U	67 U	78 U	76 U	
7,12-DIMETHYLBENZ(A)ANTHRACENE		76 U		72 U	83 U	74 U	74 U	73 U	67 U	78 UJ	76 U	
A,A-DIMETHYLPHENETHYLAMINE		76 UJ		72 UJ	83 U	74 UJ	74 UJ	73 UJ	67 UJ	78 UJ	76 UJ	
ACENAPHTHENE		1.48 U		1.4 U	1.6 U	1.44 U	1.43 U	1.41 U	1.3 U	1.51 U	1.49 U	
ACENAPHTHYLENE		1.48 U		1.4 U	1.6 U	1.44 U	1.43 U	1.41 U	1.3 U	1.51 U	14	
ACETOPHENONE		76 U		72 U	83 UJ	74 U	74 U	73 U	67 U	78 U	76 U	
ANILINE		76 U		72 U	83 U	74 U	74 U	73 U	67 U	78 U	76 U	
ANTHRACENE		1.48 U		1.4 U	1.6 U	1.44 U	1.43 U	1.41 U	1.3 U	1.51 U	12	
ARAMITE		76 U		72 U	83 U	74 U	74 U	73 U	67 UJ	78 U	76 U	
BENZO(A)ANTHRACENE		1.48 U		1.4 U	1.6 U	5.7 U	1.43 U	1.41 U	1.3 U	1.51 U	18	
BENZO(A)PYRENE		1.48 U		1.4 U	1.6 U	1.44 U	1.43 U	1.41 U	1.3 U	1.51 U	28	
BENZO(B)FLUORANTHENE		1.48 U		1.4 U	1.6 U	1.44 U	1.43 U	1.41 U	1.3 U	9	49	
BENZO(G,H,I)PERYLENE		1.48 U		1.4 U	1.6 U	1.44 U	1.43 U	1.41 U	1.3 U	1.51 U	22	
BENZO(K)FLUORANTHENE		1.48 U		1.4 U	1.6 U	1.44 U	1.43 U	1.41 U	1.3 U	1.51 U	1.49 U	
BENZYL ALCOHOL		76 U		72 U	83 U	74 U	74 U	73 U	67 U	78 U	76 U	
BIS(2-CHLOROETHOXY)METHANE		76 U		72 U	83 U	74 U	74 U	73 U	67 U	78 U	76 U	
BIS(2-CHLOROETHYL)ETHER		76 U		72 U	83 U	74 U	74 U	73 U	67 U	78 U	76 U	
BIS(2-ETHYLHEXYL)PHTHALATE		76 U		72 U	83 U	74 U	74 U	73 U	67 U	78 U	76 U	
BUTYL BENZYL PHTHALATE		76 U		72 U	83 U	74 U	74 U	73 U	67 U	78 U	76 U	
CHLOROBENZILATE		76 U		72 U	83 U	74 U	74 U	73 U	67 UJ	78 U	76 U	
CHRYSENE		1.48 U		1.4 U	1.6 U	5.7 U	1.43 U	1.41 U	1.3 U	1.51 U	18	
DI-N-BUTYL PHTHALATE		76 U		72 U	83 U	74 U	74 U	73 U	67 U	120 J	76 U	
DI-N-OCTYL PHTHALATE		76 U		72 U	83 U	74 U	74 U	73 U	67 U	78 UJ	76 U	
DIALLATE		76 U		72 U	83 U	74 U	74 U	73 U	67 UJ	78 U	76 U	
DIBENZO(A,H)ANTHRACENE		1.48 U		1.4 U	1.6 U	1.44 U	1.43 U	1.41 U	1.3 U	1.51 U	1.49 U	

TABLE E-1

SUMMARY OF ANALYTIC RESULTS IN SURFACE SOIL
SWMU 3 - OLD JEEP TRAIL/LITTLE SULPHUR CREEK
NSWC CRANE
CRANE, INDIANA

LOCATION	03SB01	03SB02	03SB03	03SB04	03SB05	03SB06	03SB07	03SB08	03SB09	03SB10	03SB11	03SB12
NSAMPLE	03SS010002	03SS020002	03SS030002	03SS040002	03SS050002	03SS060002	03SS070002	03SS080002	03SS090002	03SS100002	03SS110002	03SS120002
SAMPLE	03SS010002	03SS020002	03SS030002	03SS040002	03SS050002	03SS060002	03SS070002	03SS080002	03SS090002	03SS100002	03SS110002	03SS120002
SACODE	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	ORIG	NORMAL	NORMAL	ORIG	NORMAL	NORMAL	NORMAL
DEPTH RANGE	0 - 2	0 - 2	0 - 2	0 - 2	0 - 2	0 - 2	0 - 2	0 - 2	0 - 2	0 - 2	0 - 2	0 - 2
QC_TYPE	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
STATUS	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
SAMPLE DATE	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
VALIDATED	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
COLLECTION METHOD	GRAB	GRAB	GRAB	GRAB	GRAB	GRAB	GRAB	GRAB	GRAB	GRAB	GRAB	GRAB
DIBENZOFURAN		76 U		72 U	83 U	74 U	74 U	73 U	67 U	78 U	76 U	
DIETHYL PHTHALATE		76 U		72 U	83 U	74 U	74 U	73 U	67 U	78 U	76 U	
DIMETHYL PHTHALATE		76 U		72 U	83 U	74 U	74 U	73 U	67 U	78 U	76 U	
DIPHENYLAMINE		76 U		72 U	83 U	74 U	74 U	73 U	67 U	78 U	76 U	
ETHYL METHANE SULFONATE		76 U		72 U	83 U	74 U	74 U	73 U	67 U	78 U	76 U	
ETHYL PARATHION		76 U		72 U	83 U	74 U	74 U	73 U	67 UJ	78 UJ	76 U	
FLUORANTHENE		1.48 U		1.4 U	1.6 U	1.44 U	1.43 U	1.41 U	1.3 U	1.51 U	14	
FLUORENE		1.48 U		1.4 U	1.6 U	1.44 U	1.43 U	1.41 U	1.3 U	1.51 U	1.49 U	
HEXACHLOROBENZENE		76 U		72 U	83 U	74 U	74 U	73 U	67 U	78 U	76 U	
HEXACHLOROBUTADIENE		76 U		72 U	83 U	74 U	74 U	73 U	67 U	78 U	76 U	
HEXACHLOROCYCLOPENTADIENE		76 U		72 U	83 U	74 U	74 U	73 U	67 UJ	78 U	76 U	
HEXACHLOROETHANE		76 U		72 U	83 U	74 U	74 U	73 U	67 U	78 U	76 U	
HEXACHLOROPROPENE		76 U		72 U	83 U	74 U	74 U	73 U	67 U	78 U	76 U	
INDENO(1,2,3-CD)PYRENE		1.48 U		1.4 U	1.6 U	1.44 U	1.43 U	1.41 U	1.3 U	1.51 U	20	
ISODRIN		76 U		72 U	83 U	74 U	74 U	73 U	67 U	78 U	76 U	
ISOPHORONE		76 U		72 U	83 U	74 U	74 U	73 U	67 U	78 U	76 U	
ISOSAFROLE		76 U		72 U	83 U	74 U	74 U	73 U	67 U	78 U	76 U	
KEPONE		76 UR		72 UR	83 UR	74 UR	74 UR	73 UR	67 UR	78 UR	76 UR	
METHAPYRILENE		76 U		72 U	83 U	74 U	74 U	73 U	67 UJ	78 U	76 U	
METHYL METHANE SULFONATE		76 U		72 U	83 U	74 U	74 U	73 U	67 U	78 U	76 U	
METHYL PARATHION		76 U		72 U	83 U	74 U	74 U	73 U	67 UJ	78 U	76 U	
N-NITROSO-DI-N-BUTYLAMINE		76 U		72 U	83 U	74 U	74 U	73 U	67 UJ	78 U	76 U	
N-NITROSO-DI-N-PROPYLAMINE		76 UJ		72 UJ	83 UJ	74 UJ	74 UJ	73 UJ	67 UJ	78 UJ	76 UJ	
N-NITROSODIETHYLAMINE		76 U		72 U	83 U	74 U	74 U	73 U	67 UJ	78 U	76 U	
N-NITROSODIMETHYLAMINE		76 U		72 U	83 U	74 U	74 U	73 U	67 U	78 U	76 U	
N-NITROSOMETHYLETHYLAMINE		76 U		72 U	83 U	74 U	74 U	73 U	67 UJ	78 U	76 U	
N-NITROSOMORPHOLINE		76 UJ		72 UJ	83 UJ	74 UJ	74 UJ	73 UJ	67 UJ	78 UJ	76 UJ	
N-NITROSOPIPERIDINE		76 UJ		72 UJ	83 UJ	74 UJ	74 UJ	73 UJ	67 UJ	78 UJ	76 UJ	
N-NITROSOPYRROLIDINE		76 U		72 U	83 U	74 U	74 U	73 U	67 UJ	78 U	76 U	
NAPHTHALENE		1.48 U		1.4 U	1.6 U	1.44 U	1.43 U	1.41 U	1.3 U	1.51 U	1.49 U	
O,O,O-TRIETHYL PHOSPHOROTHIOATE		76 U		72 U	83 U	74 U	74 U	73 U	67 U	78 U	76 U	
O-TOLUIDINE		76 U		72 U	83 U	74 U	74 U	73 U	67 U	78 U	76 U	
P-(DIMETHYLAMINO)AZOBENZENE		76 U		72 U	83 U	74 U	74 U	73 U	67 UJ	78 U	76 U	
PENTACHLOROBENZENE		76 U		72 U	83 U	74 U	74 U	73 U	67 U	78 U	76 U	
PENTACHLOROETHANE		76 U		72 U	83 U	74 U	74 U	73 U	67 U	78 U	76 U	
PENTACHLORONITROBENZENE		76 U		72 U	83 U	74 U	74 U	73 U	67 U	78 U	76 U	
PHENACETIN		76 U		72 U	83 U	74 U	74 U	73 U	67 U	78 U	76 U	
PHENANTHRENE		1.48 U		1.4 U	1.6 U	1.44 U	1.43 U	1.41 U	1.3 U	1.51 U	8	
PHENOL		76 U		72 U	83 U	74 U	74 U	73 U	67 U	78 U	76 U	
PRONAMIDE		76 U		72 U	83 U	74 U	74 U	73 U	67 U	78 U	76 U	
PYRENE		1.48 U		1.4 U	1.6 U	5.7 U	1.43 U	1.41 U	1.3 U	1.51 U	19	
PYRIDINE		76 U		72 U	83 U	74 U	74 U	73 U	67 U	78 U	76 U	
SAFROLE		76 U		72 U	83 U	74 U	74 U	73 U	67 U	78 U	76 U	
Energetics (MG/KG)												
1,3,5-TRINITROBENZENE	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U
1,3-DINITROBENZENE	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U
2,4,6-TRINITROTOLUENE	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U
2,4-DINITROTOLUENE	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U
2,6-DINITROTOLUENE	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U
2-AMINO-4,6-DINITROTOLUENE	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U

TABLE E-1

SUMMARY OF ANALYTIC RESULTS IN SURFACE SOIL
SWMU 3 - OLD JEEP TRAIL/LITTLE SULPHUR CREEK
NSWC CRANE
CRANE, INDIANA

LOCATION	03SB01	03SB02	03SB03	03SB04	03SB05	03SB06	03SB07	03SB08	03SB09	03SB10	03SB11	03SB12
NSAMPLE	03SS010002	03SS020002	03SS030002	03SS040002	03SS050002	03SS060002	03SS070002	03SS080002	03SS090002	03SS100002	03SS110002	03SS120002
SAMPLE	03SS010002	03SS020002	03SS030002	03SS040002	03SS050002	03SS060002	03SS070002	03SS080002	03SS090002	03SS100002	03SS110002	03SS120002
SACODE	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	ORIG	NORMAL	NORMAL	ORIG	NORMAL	NORMAL	NORMAL
DEPTH RANGE	0 - 2	0 - 2	0 - 2	0 - 2	0 - 2	0 - 2	0 - 2	0 - 2	0 - 2	0 - 2	0 - 2	0 - 2
QC_TYPE	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
STATUS	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
SAMPLE DATE	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
VALIDATED	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
COLLECTION METHOD	GRAB	GRAB	GRAB	GRAB	GRAB	GRAB	GRAB	GRAB	GRAB	GRAB	GRAB	GRAB
2-NITROTOLUENE	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U
3-NITROTOLUENE	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U
4-AMINO-2,6-DINITROTOLUENE	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U
4-NITROTOLUENE	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U
HMX	0.34	0.28 U	0.44	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U
NITROBENZENE	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U
NITROCELLULOSE	620 U	560 U	630 U	540 U	600 U	550 U	520 U	640 U	540 U	560 U	600 U	590 U
NITROGLYCERIN	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.6 U	2.5 U	2.5 U	2.6 U
PETN	1.6 U	0.025 U	1.6 U	0.025 U	0.25 U	0.025 U	0.025 U	0.025 U	1.3 U	0.25 U	0.025 U	1.5 U
RDX	0.25 U	0.25 U	0.26 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U
TETRYL	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U
Pesticides/PCB's (UG/KG)												
4,4'-DDD												
4,4'-DDE												
4,4'-DDT												
ALDRIN												
ALPHA-BHC												
ALPHA-CHLORDANE												
AROCLOR-1016												
AROCLOR-1221												
AROCLOR-1232												
AROCLOR-1242												
AROCLOR-1248												
AROCLOR-1254												
AROCLOR-1260												
BETA-BHC												
DELTA-BHC												
DIELDRIN												
ENDOSULFAN I												
ENDOSULFAN II												
ENDOSULFAN SULFATE												
ENDRIN												
ENDRIN ALDEHYDE												
ENDRIN KETONE												
GAMMA-BHC (LINDANE)												
GAMMA-CHLORDANE												
HEPTACHLOR												
HEPTACHLOR EPOXIDE												
METHOXYCHLOR												
TOXAPHENE												
Herbicides (UG/KG)												
2,4,5-T												
2,4,5-TP (SILVEX)												
2,4-D												
DINOSEB												
HEXACHLOROPHENE												
PENTACHLOROPHENOL												
Inorganics (MG/KG)												
ALUMINUM												
ANTIMONY												

TABLE E-1

SUMMARY OF ANALYTIC RESULTS IN SURFACE SOIL
SWMU 3 - OLD JEEP TRAIL/LITTLE SULPHUR CREEK
NSWC CRANE
CRANE, INDIANA

LOCATION	03SB01	03SB02	03SB03	03SB04	03SB05	03SB06	03SB07	03SB08	03SB09	03SB10	03SB11	03SB12
NSAMPLE	03SS010002	03SS020002	03SS030002	03SS040002	03SS050002	03SS060002	03SS070002	03SS080002	03SS090002	03SS100002	03SS110002	03SS120002
SAMPLE	03SS010002	03SS020002	03SS030002	03SS040002	03SS050002	03SS060002	03SS070002	03SS080002	03SS090002	03SS100002	03SS110002	03SS120002
SACODE	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	ORIG	NORMAL	NORMAL	ORIG	NORMAL	NORMAL	NORMAL
DEPTH RANGE	0 - 2	0 - 2	0 - 2	0 - 2	0 - 2	0 - 2	0 - 2	0 - 2	0 - 2	0 - 2	0 - 2	0 - 2
QC_TYPE	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
STATUS	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
SAMPLE DATE	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
VALIDATED	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
COLLECTION METHOD	GRAB	GRAB	GRAB	GRAB	GRAB	GRAB	GRAB	GRAB	GRAB	GRAB	GRAB	GRAB
ARSENIC												
BARIUM												
BERYLLIUM												
CADMIUM												
CALCIUM												
CHROMIUM												
COBALT												
COPPER												
IRON												
LEAD												
MAGNESIUM												
MANGANESE												
MERCURY												
NICKEL												
POTASSIUM												
SELENIUM												
SILVER												
SODIUM												
THALLIUM												
TIN												
VANADIUM												
ZINC												
Miscellaneous Parameters (MG/KG)												
NITRATE MG/KG	0.6 U	1.7	1.2	1.9	2.4	3	3.6	2.8	2.2	3.7	1.1 UJ	0.8
NITRITE MG/KG	5.6 J	14 UJ	2.4 UJ	2 UJ	20 UR	11 UJ	5.3 UJ	2 UJ	12 UJ	2.2 UR	31 UJ	2.4 J
NITRITE/NITRATE MG/KG	0.6 U	1.7 J	1.2	1.9 J	2.4 J	3 J	3.6 J	2.8 J	2.2 J	3.7 J	1.1 UJ	0.8
PERCHLORATE	25 UJ	22 UJ	25 UJ	22 UJ	25 UJ	22 UJ	22 UJ	24 J	27 UJ	23 UJ	24 UJ	23 UJ
Miscellaneous Parameters (%)												
PERCENT MOISTURE	19.4	10.6	19.9	7.7	19	9.7	7.6	6.4	25	13.8	16.5	13.9

TABLE E-1

SUMMARY OF ANALYTIC RESULTS IN SURFACE SOIL
SWMU 3 - OLD JEEP TRAIL/LITTLE SULPHUR CREEK
NSWC CRANE
CRANE, INDIANA

LOCATION	03SB13	03SB14	03SB15	03SB16	03SB17	03SB18	03SB19	03SB20	03SB21	03SB22	03SB23	03SB24
NSAMPLE	03SS130002	03SS140002	03SS150002	03SS160002	03SS170002	03SS180002	03SS190002	03SS200002	03SS210002	03SS220002	03SS230002	03SS240002
SAMPLE	03SS130002	03SS140002	03SS150002	03SS160002	03SS170002	03SS180002	03SS190002	03SS200002	03SS210002	03SS220002	03SS230002	03SS240002
SACODE	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
DEPTH RANGE	0 - 2	0 - 2	0 - 2	0 - 2	0 - 2	0 - 2	0 - 2	0 - 2	0 - 2	0 - 2	0 - 2	0 - 2
QC_TYPE	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
STATUS	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
SAMPLE DATE	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
VALIDATED	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
COLLECTION METHOD	GRAB	GRAB	GRAB	GRAB	GRAB	GRAB	GRAB	GRAB	GRAB	GRAB	GRAB	GRAB
Dioxins (NG/KG)												
1,2,3,4,6,7,8,9-OCDD					2350 J			771 J			3400 J	
1,2,3,4,6,7,8,9-OCDF					62.2 J			0.3 UJ			10.3 J	
1,2,3,4,6,7,8-HPCDD					233			12.6			38.2	
1,2,3,4,6,7,8-HPCDF					32.1			0.19 J			11.8	
1,2,3,4,7,8,9-HPCDF					2.1 J			0.2 U			1.3 J	
1,2,3,4,7,8-HXCDD					2.1 J			0.2 U			0.9 J	
1,2,3,4,7,8-HXCDF					2.1 BU			0.08 U			3.9 BJ	
1,2,3,6,7,8-HXCDD					10.1			0.1 U			1.2 J	
1,2,3,6,7,8-HXCDF					2.4 J			0.08 U			1.7 J	
1,2,3,7,8,9-HXCDD					6.5			0.35 J			2.6 J	
1,2,3,7,8,9-HXCDF					0.35 U			0.1 U			0.22 J	
1,2,3,7,8-PECDD					1.3 J			0.1 U			0.67 J	
1,2,3,7,8-PECDF					0.38 U			0.08 U			0.99 J	
2,3,4,6,7,8-HXCDF					2.7 J			0.08 U			2 J	
2,3,4,7,8-PECDF					0.66 J			0.08 U			1.4 J	
2,3,7,8-TCDD					0.43 J			0.19 J			0.31 J	
2,3,7,8-TCDF					0.6 J			0.08 U			0.85 U	
TEQ BIRD					5			0.32			4.1	
TEQ FISH					4.6			0.29			3.5	
TEQ HUMAN					7.4			0.43			3.8	
TOTAL HPCDD					419			31.6			80.2	
TOTAL HPCDF					93.9 U			0.19			19	
TOTAL HXCDD					59.1 U			2.7 U			16.1 U	
TOTAL HXCDF					61.2 U			0.09 U			17.8	
TOTAL PECDD					10.4 U			0.1 U			7.6 U	
TOTAL PECDF					20.9 U			0.08 U			19.5 U	
TOTAL TCDD					1			0.37 U			4.2 U	
TOTAL TCDF					8 U			0.32 U			25.9 U	
Volatile Organics (UG/KG)												
1,1,1,2-TETRACHLOROETHANE					4.7 U	8.7 U	0.96 U	5 U	12 U	5.1 U	1.2 U	4.8 U
1,1,1-TRICHLOROETHANE					4.7 U	8.7 U	0.96 U	5 U	13 J	5.1 U	2 J	4.8 U
1,1,2,2-TETRACHLOROETHANE					4.7 U	8.7 U	0.96 U	5 U	12 U	5.1 U	1.2 UJ	4.8 U
1,1,2-TRICHLOROETHANE					4.7 U	8.7 U	0.96 U	5 U	12 U	5.1 U	1.2 UJ	4.8 U
1,1-DICHLOROETHANE					4.7 U	8.7 U	0.96 U	5 U	12 U	5.1 U	1.2 U	4.8 U
1,1-DICHLOROETHENE					4.7 U	8.7 U	0.96 U	5 U	12 U	5.1 U	1.2 U	4.8 U
1,2,3-TRICHLOROPROPANE					4.7 U	8.7 U	0.96 U	5 U	12 U	5.1 U	1.2 U	4.8 U
1,2-DIBROMO-3-CHLOROPROPANE					4.7 U	8.7 U	0.96 U	5 U	12 U	5.1 U	1.2 U	4.8 U
1,2-DIBROMOETHANE					4.7 U	8.7 U	0.96 U	5 U	12 U	5.1 U	1.2 U	4.8 U
1,2-DICHLOROETHANE					4.7 U	8.7 U	0.96 U	5 U	12 U	5.1 U	1.2 U	4.8 U
1,2-DICHLOROPROPANE					4.7 U	8.7 U	0.96 U	5 U	12 U	5.1 U	1.2 U	4.8 U
1,4-DIOXANE					95 U	195 U	105 U	120 U	110 U	100 U	125 U	100 U
2-BUTANONE					4.7 U	8.7 U	0.96 UJ	5 U	12 U	5.1 U	1.2 U	4.8 U
2-HEXANONE					4.7 U	8.7 U	0.96 UJ	5 U	12 U	5.1 U	1.2 U	4.8 U
3-CHLOROPROPENE					4.7 UJ	8.7 U	0.96 U	5 U	12 U	5.1 UJ	1.2 U	4.8 UJ
4-METHYL-2-PENTANONE					4.7 U	8.7 U	0.96 UJ	5 U	12 U	5.1 U	1.2 U	4.8 U
ACETONE					4.7 U	86 BU	13 U	74 BU	230 BU	48 BU	1.2 UR	4.8 U
ACETONITRILE					38 U	80 U	41 U	48.5 U	43 U	40 U	50 U	39 U
ACROLEIN					4.7 UR	8.7 U	0.96 UJ	5 UR	12 UR	5.1 UR	1.2 U	4.8 UR
ACRYLONITRILE					4.7 UR	8.7 UR	0.96 UR	5 UR	12 UR	5.1 UR	1.2 UR	4.8 UR

TABLE E-1

SUMMARY OF ANALYTIC RESULTS IN SURFACE SOIL
SWMU 3 - OLD JEEP TRAIL/LITTLE SULPHUR CREEK
NSWC CRANE
CRANE, INDIANA

LOCATION	03SB13	03SB14	03SB15	03SB16	03SB17	03SB18	03SB19	03SB20	03SB21	03SB22	03SB23	03SB24
NSAMPLE	03SS130002	03SS140002	03SS150002	03SS160002	03SS170002	03SS180002	03SS190002	03SS200002	03SS210002	03SS220002	03SB230002	03SS240002
SAMPLE	03SS130002	03SS140002	03SS150002	03SS160002	03SS170002	03SS180002	03SS190002	03SS200002	03SS210002	03SS220002	03SS230002	03SS240002
SACODE	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
DEPTH RANGE	0 - 2	0 - 2	0 - 2	0 - 2	0 - 2	0 - 2	0 - 2	0 - 2	0 - 2	0 - 2	0 - 2	0 - 2
QC_TYPE	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
STATUS	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
SAMPLE DATE	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
VALIDATED	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
COLLECTION METHOD	GRAB	GRAB	GRAB	GRAB	GRAB	GRAB	GRAB	GRAB	GRAB	GRAB	GRAB	GRAB
BENZENE					4.7 U	8.7 U	0.96 U	5 U	12 U	5.1 U	1.2 U	4.8 U
BROMODICHLOROMETHANE					4.7 U	8.7 U	0.96 U	5 U	12 U	5.1 U	1.2 U	4.8 U
BROMOFORM					4.7 U	8.7 U	0.96 U	5 U	12 U	5.1 U	1.2 UJ	4.8 U
BROMOMETHANE					4.7 UJ	8.7 U	0.96 UJ	5 U	12 U	5.1 UJ	1.2 U	4.8 UJ
CARBON DISULFIDE					4.7 UJ	8.7 U	0.96 UJ	5 U	12 U	5.1 UJ	1.2 UJ	4.8 UJ
CARBON TETRACHLORIDE					4.7 U	8.7 U	0.96 U	5 U	12 U	5.1 U	1.2 U	4.8 U
CHLOROBENZENE					4.7 U	8.7 U	0.96 U	5 U	12 U	5.1 U	1.2 UJ	4.8 U
CHLORODIBROMOMETHANE					4.7 U	8.7 U	0.96 U	5 U	12 U	5.1 U	1.2 U	4.8 U
CHLOROETHANE					4.7 U	8.7 U	0.96 U	5 U	12 U	5.1 U	1.2 U	4.8 U
CHLOROFORM					4.7 U	8.7 U	0.96 U	5 U	12 U	5.1 U	1.2 U	4.8 U
CHLOROMETHANE					4.7 U	8.7 U	0.96 U	5 U	12 U	5.1 U	1.2 UJ	4.8 U
CHLOROPRENE					4.7 U	8.7 U	0.96 UJ	5 U	12 U	5.1 U	1.2 U	4.8 U
CIS-1,2-DICHLOROETHENE					4.7 U	8.7 U	0.96 U	5 U	12 U	5.1 U	1.2 U	4.8 U
CIS-1,3-DICHLOROPROPENE					4.7 U	8.7 U	0.96 U	5 U	12 U	5.1 U	1.2 UJ	4.8 U
DIBROMOMETHANE					4.7 U	8.7 U	0.96 U	5 U	12 U	5.1 U	1.2 U	4.8 U
DICHLORODIFLUOROMETHANE					4.7 UJ	8.7 U	0.96 UJ	5 U	12 U	5.1 UJ	1.2 U	4.8 UJ
ETHYL METHACRYLATE					4.7 U	8.7 U	0.96 U	5 U	12 U	5.1 U	1.2 U	4.8 U
ETHYLBENZENE					4.7 U	8.7 U	0.96 U	5 U	12 U	5.1 U	1.2 UJ	4.8 U
ISOBUTANOL					38 U	80 U	41 U	48.5 U	43 U	40 U	50 U	39 U
METHACRYLONITRILE					4.7 U	8.7 U	0.96 U	5 U	12 U	5.1 U	1.2 U	4.8 U
METHYL IODIDE					4.7 UJ	8.7 UJ	0.96 UJ	5 UJ	12 UJ	5.1 UJ	1.2 UJ	4.8 UJ
METHYL METHACRYLATE					4.7 U	8.7 U	0.96 U	5 U	12 U	5.1 U	1.2 U	4.8 U
METHYLENE CHLORIDE					12 BU	16 BU	2 BU	33 BU	32 BU	10 BU	6 BU	11 BU
PROPIONITRILE					38 U	80 U	41 U	48.5 U	43 U	40 U	50 U	39 U
STYRENE					4.7 U	8.7 U	0.96 U	5 U	12 U	5.1 U	1.2 UJ	4.8 U
TETRACHLOROETHENE					4.7 U	8.7 U	0.96 U	5 U	12 U	5.1 U	3 J	4.8 U
TOLUENE					4.7 U	8.7 U	0.96 U	5 U	12 U	5.1 U	1.2 UJ	4.8 U
TOTAL XYLENES					4.7 U	8.7 U	0.96 U	5 U	12 U	5.1 U	1.2 UJ	4.8 U
TRANS-1,2-DICHLOROETHENE					4.7 U	8.7 U	0.96 U	5 U	12 U	5.1 U	1.2 U	4.8 U
TRANS-1,3-DICHLOROPROPENE					4.7 U	8.7 U	0.96 U	5 U	12 U	5.1 U	1.2 U	4.8 U
TRANS-1,4-DICHLORO-2-BUTENE					4.7 U	8.7 U	0.96 U	5 U	12 U	5.1 U	1.2 U	4.8 U
TRICHLOROETHENE					4.7 U	8.7 U	0.96 U	5 U	12 U	5.1 U	14 J	4.8 U
TRICHLOROFLUOROMETHANE					4.7 U	8.7 U	0.96 UJ	5 U	12 U	5.1 U	1.2 U	4.8 U
VINYL ACETATE					4.7 UJ	8.7 U	0.96 UJ	5 UJ	12 UJ	5.1 UJ	1.2 U	4.8 UJ
VINYL CHLORIDE					4.7 U	8.7 U	0.96 U	5 U	12 U	5.1 U	1.2 U	4.8 U
Semivolatile Organics (UG/KG)												
1,2,4,5-TETRACHLOROBENZENE	76 U	78 U	76 U	78 U	76 U	82 U	80 U	81 U	80 U	82 U	87 U	77 UJ
1,2,4-TRICHLOROBENZENE	76 U	78 U	76 U	78 U	76 U	82 U	80 U	81 U	80 U	82 U	87 UJ	77 UJ
1,2-DICHLOROBENZENE	76 U	78 U	76 U	78 U	76 U	82 U	80 U	81 U	80 U	82 U	87 U	77 UJ
1,3-DICHLOROBENZENE	76 U	78 U	76 U	78 U	76 U	82 U	80 U	81 U	80 U	82 U	87 U	77 UJ
1,4-DICHLOROBENZENE	76 U	78 U	76 U	78 U	76 U	82 U	80 U	81 U	80 U	82 U	87 U	77 UJ
1,4-NAPHTHOQUINONE	76 U	78 U	76 U	78 U	76 U	82 U	80 U	81 U	80 U	82 U	87 U	77 UJ
1,4-PHENYLENEDIAMINE	76 UJ	78 UJ	76 UJ	78 UJ	76 UR	82 U	80 UJ	81 UR	80 UR	82 UJ	87 U	77 UR
1-NAPHTHYLAMINE	76 U	78 U	76 U	78 U	76 U	82 U	80 U	81 U	80 U	82 U	87 U	77 UJ
2,2'-OXYBIS(1-CHLOROPROPANE)	76 UJ	78 U	76 UJ	78 UJ	76 UJ	82 U	80 U	81 UJ	80 UJ	82 U	87 U	77 UJ
2,3,4,6-TETRACHLOROPHENOL	76 U	78 U	76 U	78 U	76 U	82 U	80 U	81 U	80 UJ	82 U	87 U	77 UJ
2,4,5-TRICHLOROPHENOL	76 U	78 U	76 U	78 U	76 U	82 U	80 U	81 U	80 UJ	82 U	87 U	77 UJ
2,4,6-TRICHLOROPHENOL	76 U	78 U	76 U	78 U	76 U	82 U	80 U	81 U	80 UJ	82 U	87 U	77 UJ
2,4-DICHLOROPHENOL	76 U	78 U	76 U	78 U	76 U	82 U	80 U	81 U	80 UJ	82 U	87 U	77 UJ
2,4-DIMETHYLPHENOL	76 U	78 U	76 UR	78 U	76 U	82 U	80 U	81 U	80 UJ	82 U	87 U	77 UJ

TABLE E-1

SUMMARY OF ANALYTIC RESULTS IN SURFACE SOIL
SWMU 3 - OLD JEEP TRAIL/LITTLE SULPHUR CREEK
NSWC CRANE
CRANE, INDIANA

LOCATION	03SB13	03SB14	03SB15	03SB16	03SB17	03SB18	03SB19	03SB20	03SB21	03SB22	03SB23	03SB24
NSAMPLE	03SS130002	03SS140002	03SS150002	03SS160002	03SS170002	03SS180002	03SS190002	03SS200002	03SS210002	03SS220002	03SS230002	03SS240002
SAMPLE	03SS130002	03SS140002	03SS150002	03SS160002	03SS170002	03SS180002	03SS190002	03SS200002	03SS210002	03SS220002	03SS230002	03SS240002
SACODE	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
DEPTH RANGE	0 - 2	0 - 2	0 - 2	0 - 2	0 - 2	0 - 2	0 - 2	0 - 2	0 - 2	0 - 2	0 - 2	0 - 2
QC_TYPE	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
STATUS	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
SAMPLE DATE	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
VALIDATED	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
COLLECTION METHOD	GRAB	GRAB	GRAB	GRAB	GRAB	GRAB	GRAB	GRAB	GRAB	GRAB	GRAB	GRAB
2,4-DINITROPHENOL	76 UJ	78 UJ	76 U	78 UJ	76 U	82 UJ	80 UJ	81 U	80 UJ	82 U	87 UJ	77 UJ
2,6-DICHLOROPHENOL	76 U	78 U	76 U	78 U	76 U	82 U	80 U	81 U	80 UJ	82 UJ	87 U	77 UJ
2-ACETYLAMINOFLUORENE	76 U	78 U	76 U	78 U	76 U	82 U	80 U	81 U	80 UJ	82 U	87 U	77 UJ
2-CHLORONAPHTHALENE	76 U	78 U	76 UJ	78 UJ	76 U	82 U	80 U	81 U	80 U	82 U	87 UJ	77 UJ
2-CHLOROPHENOL	76 U	78 U	76 U	78 U	76 U	82 U	80 U	81 U	80 UJ	82 U	87 UJ	77 UJ
2-METHYLNAPHTHALENE	55 U	1.5 U	1.51 U	1.51 U	1.5 U	6.4 U	1.5 U	1.5 U	1.5 U	1.6 U	1.7 U	290
2-METHYLPHENOL	76 U	78 U	76 U	78 U	76 U	82 U	80 U	81 U	80 UJ	82 U	87 U	77 UJ
2-NAPHTHYLAMINE	76 U	78 U	76 U	78 U	76 U	82 U	80 U	81 U	80 U	82 U	87 U	77 UJ
2-NITROANILINE	76 U	78 U	76 U	78 U	76 U	82 U	80 U	81 U	80 U	82 U	87 U	77 UJ
2-NITROPHENOL	76 U	78 U	76 U	78 U	76 U	82 U	80 U	81 U	80 UJ	82 U	87 U	77 UJ
2-PICOLINE	76 U	78 U	76 U	78 U	76 U	82 U	80 U	81 U	80 U	82 U	87 U	77 UJ
3&4-METHYLPHENOL	76 U	78 U	76 U	78 U	76 U	82 U	80 U	81 U	80 UJ	82 U	87 U	77 UJ
3,3'-DICHLOROBENZIDINE	76 U	78 U	76 UR	78 UR	76 U	82 U	80 U	81 U	80 U	82 U	87 UJ	77 UJ
3,3'-DIMETHYLBENZIDINE	76 U	78 U	76 U	78 U	76 U	82 U	80 U	81 U	80 U	82 U	87 U	77 UJ
3-METHYLCHOLANTHRENE	76 UJ	78 U	76 U	78 U	76 U	82 U	80 U	81 U	80 U	82 U	87 UJ	77 UJ
3-NITROANILINE	76 U	78 U	76 U	78 U	76 U	82 U	80 U	81 U	80 U	82 U	87 U	77 UJ
4,6-DINITRO-2-METHYLPHENOL	76 U	78 U	76 U	78 U	76 U	82 U	80 U	81 U	80 UJ	82 U	87 U	77 UJ
4-AMINOBIPHENYL	76 U	78 U	76 U	78 U	76 U	82 U	80 U	81 U	80 U	82 U	87 U	77 UJ
4-BROMOPHENYL PHENYL ETHER	76 U	78 U	76 U	78 U	76 U	82 U	80 U	81 U	80 U	82 U	87 UJ	77 UJ
4-CHLORO-3-METHYLPHENOL	76 U	78 U	76 U	78 U	76 U	82 U	80 U	81 U	80 UJ	82 U	87 UJ	77 UJ
4-CHLOROANILINE	76 U	78 U	76 UR	78 U	76 U	82 U	80 U	81 U	80 U	82 U	87 U	77 UJ
4-CHLOROPHENYL PHENYL ETHER	76 U	78 U	76 U	78 U	76 U	82 U	80 U	81 U	80 U	82 U	87 U	77 UJ
4-NITROANILINE	76 U	78 U	76 U	78 U	76 U	82 U	80 U	81 U	80 U	82 U	87 U	77 UJ
4-NITROPHENOL	76 UJ	78 U	76 U	78 U	76 U	82 U	80 UJ	81 U	80 UJ	82 UJ	87 UJ	77 UJ
4-NITROQUINOLINE-1-OXIDE	76 UR	78 UJ	76 UR	78 UR	76 UR	82 U	80 UR	81 UR	80 UR	82 UR	87 U	77 UR
5-NITRO-O-TOLUIDINE	76 U	78 U	76 U	78 U	76 U	82 U	80 U	81 U	80 U	82 U	87 U	77 UJ
7,12-DIMETHYLBENZ(A)ANTHRACENE	76 UJ	78 U	76 U	78 U	76 U	82 U	80 U	81 U	80 U	82 U	87 U	77 UJ
A,A-DIMETHYLPHENETHYLAMINE	76 UJ	78 U	76 UJ	78 UJ	76 U	82 UJ	80 UJ	81 U	80 U	82 UJ	87 UJ	77 UJ
ACENAPHTHENE	55 U	1.5 U	1.51 U	1.51 U	1.5 U	6.4 U	1.5 U	1.5 U	1.5 U	1.6 U	1.7 U	18
ACENAPHTHYLENE	55 U	1.5 U	1.51 U	1.51 U	1.5 U	6.4 U	1.5 U	1.5 U	1.5 U	1.6 U	1.7 U	11
ACETOPHENONE	76 U	78 U	76 U	78 U	76 U	82 U	80 U	81 U	80 U	82 U	87 U	77 UJ
ANILINE	76 U	78 U	76 U	78 U	76 U	82 U	80 U	81 U	80 U	82 U	87 U	77 UJ
ANTHRACENE	55 U	1.5 U	1.51 U	1.51 U	1.5 U	6.4 U	1.5 U	1.5 U	1.5 U	1.6 U	1.7 U	380 U
ARAMITE	76 U	78 U	76 U	78 U	76 U	82 U	80 U	81 U	80 U	82 U	87 U	77 UJ
BENZO(A)ANTHRACENE	55 UJ	1.5 U	1.51 U	1.51 U	1.5 U	37	1.5 U	1.5 U	1.5 U	1.6 U	1.7 U	380 U
BENZO(A)PYRENE	55 UJ	1.6 U	1.51 U	1.51 U	1.5	52	10	1.5 U	1.5 U	1.6 U	1.7 U	54
BENZO(B)FLUORANTHENE	55 UJ	14	12	1.51 U	11	160	24	1.5 U	1.5 U	1.6 U	1.7 U	160
BENZO(G,H,I)PERYLENE	55 UJ	8	1.51 U	1.51 U	15	67	13	1.5 U	1.5 U	1.6 U	1.7 U	30
BENZO(K)FLUORANTHENE	55 UJ	1.5 U	1.51 U	1.51 U	1.5 U	6.4 U	1.5 U	1.5 U	1.5 U	1.6 U	1.7 U	8 U
BENZYL ALCOHOL	76 U	78 U	76 U	78 U	76 U	82 U	80 U	81 U	80 UJ	82 U	87 U	77 UJ
BIS(2-CHLOROETHOXY)METHANE	76 U	78 U	76 U	78 U	76 U	82 U	80 U	81 U	80 U	82 U	87 UJ	77 UJ
BIS(2-CHLOROETHYL)ETHER	76 U	78 U	76 U	78 U	76 U	82 U	80 U	81 U	80 U	82 U	87 U	77 UJ
BIS(2-ETHYLHEXYL)PHTHALATE	170 U	84 J	76 U	78 U	76 U	870	80 U	81 U	80 U	100 J	230 J	210 J
BUTYL BENZYL PHTHALATE	76 U	78 U	76 U	78 U	76 U	82 U	80 U	81 U	80 U	82 U	87 U	77 UJ
CHLOROBENZILATE	76 U	78 U	76 U	78 U	76 U	82 U	80 U	81 U	80 U	82 U	87 U	77 UJ
CHRYSENE	55 UJ	10	1.51 U	8	1.5 U	68	11	1.5 U	1.5 U	1.6 U	1.7 U	380 U
DI-N-BUTYL PHTHALATE	1200	78 U	76 U	150 J	760	4500	140 J	81 U	80 U	82 U	87 U	77 UJ
DI-N-OCTYL PHTHALATE	76 UJ	78 UR	76 U	78 U	76 U	82 U	80 U	81 U	80 U	82 U	87 U	77 UJ
DIALLATE	76 U	78 U	76 U	78 U	76 U	82 U	80 U	81 U	80 U	82 U	87 U	77 UJ
DIBENZO(A,H)ANTHRACENE	55 UJ	1.5 U	1.51 U	1.51 U	1.5 U	6.4 U	1.5 U	1.5 U	1.5 U	1.6 U	1.7 U	8

TABLE E-1

SUMMARY OF ANALYTIC RESULTS IN SURFACE SOIL
SWMU 3 - OLD JEEP TRAIL/LITTLE SULPHUR CREEK
NSWC CRANE
CRANE, INDIANA

LOCATION	03SB13	03SB14	03SB15	03SB16	03SB17	03SB18	03SB19	03SB20	03SB21	03SB22	03SB23	03SB24
NSAMPLE	03SS130002	03SS140002	03SS150002	03SS160002	03SS170002	03SS180002	03SS190002	03SS200002	03SS210002	03SS220002	03SS230002	03SS240002
SAMPLE	03SS130002	03SS140002	03SS150002	03SS160002	03SS170002	03SS180002	03SS190002	03SS200002	03SS210002	03SS220002	03SS230002	03SS240002
SACODE	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
DEPTH RANGE	0 - 2	0 - 2	0 - 2	0 - 2	0 - 2	0 - 2	0 - 2	0 - 2	0 - 2	0 - 2	0 - 2	0 - 2
QC_TYPE	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
STATUS	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
SAMPLE DATE	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
VALIDATED	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
COLLECTION METHOD	GRAB	GRAB	GRAB	GRAB	GRAB	GRAB	GRAB	GRAB	GRAB	GRAB	GRAB	GRAB
DIBENZOFURAN	76 U	78 U	76 U	78 U	76 U	82 U	80 U	81 U	80 U	82 U	87 UJ	77 UJ
DIETHYL PHTHALATE	76 U	78 U	76 U	78 U	76 U	82 U	80 U	81 U	80 U	82 U	87 U	77 UJ
DIMETHYL PHTHALATE	76 U	78 U	76 U	78 U	76 U	82 U	80 U	81 U	80 U	82 U	87 U	77 UJ
DIPHENYLAMINE	76 U	78 U	76 U	78 U	76 U	82 U	80 U	81 U	80 U	82 U	87 UJ	77 UJ
ETHYL METHANE SULFONATE	76 U	78 U	76 U	78 UJ	76 U	82 U	80 U	81 U	80 U	82 U	87 U	77 UJ
ETHYL PARATHION	76 UJ	78 U	76 U	78 U	76 U	82 U	80 UJ	81 U	80 U	82 UJ	87 U	77 UJ
FLUORANTHENE	55 U	1.5 U	10	1.51 U	1.5 U	59	12	1.5 U	1.5 U	1.6 U	1.7 U	250
FLUORENE	55 U	1.5 U	1.51 U	1.51 U	1.5 U	6.4 U	1.5 U	1.5 U	1.5 U	1.6 U	1.7 U	15
HEXACHLOROBENZENE	76 U	78 U	76 U	78 U	76 U	82 U	80 U	81 U	80 U	82 U	87 U	77 UJ
HEXACHLOROBUTADIENE	76 U	78 U	76 U	78 U	76 U	82 U	80 U	81 U	80 U	82 U	87 U	77 UJ
HEXACHLOROCYCLOPENTADIENE	76 U	78 UJ	76 UJ	78 UJ	76 U	82 U	80 U	81 U	80 U	82 U	87 UJ	77 UJ
HEXACHLOROETHANE	76 U	78 U	76 U	78 U	76 U	82 U	80 U	81 U	80 U	82 U	87 U	77 UJ
HEXACHLOROPROPENE	76 U	78 U	76 U	78 U	76 U	82 U	80 U	81 U	80 U	82 U	87 U	77 UJ
INDENO(1,2,3-CD)PYRENE	55 UJ	1.5 U	1.51 U	1.51 U	8	49 J	10	1.5 U	1.5 U	1.6 U	1.7 U	28
ISODRIN	76 U	78 U	76 U	78 U	76 U	82 U	80 U	81 U	80 U	82 U	87 U	77 UJ
ISOPHORONE	76 U	78 U	76 U	78 U	76 U	82 U	80 U	81 U	80 U	82 U	87 U	77 UJ
ISOSAFROLE	76 U	78 U	76 U	78 U	76 U	82 U	80 U	81 U	80 U	82 U	87 U	77 UJ
KEPONE	76 UR	78 UR	76 UR	78 UR	76 UR	82 UR	80 UR	81 UR	80 UR	82 UR	87 UR	77 UR
METHAPYRILENE	76 U	78 U	76 U	78 U	76 UJ	82 U	80 U	81 UJ	80 UJ	82 U	87 U	77 UJ
METHYL METHANE SULFONATE	76 U	78 U	76 U	78 U	76 U	82 U	80 U	81 U	80 U	82 U	87 U	77 UJ
METHYL PARATHION	76 U	78 U	76 U	78 U	76 U	82 UJ	80 U	81 U	80 U	82 U	87 UJ	77 UJ
N-NITROSO-DI-N-BUTYLAMINE	76 U	78 U	76 U	78 U	76 U	82 U	80 U	81 U	80 U	82 U	87 U	77 UJ
N-NITROSO-DI-N-PROPYLAMINE	76 UJ	78 U	76 UJ	78 UJ	76 U	82 U	80 UJ	81 U	80 U	82 UJ	87 U	77 UJ
N-NITROSODIETHYLAMINE	76 U	78 U	76 U	78 U	76 U	82 U	80 U	81 U	80 U	82 U	87 U	77 UJ
N-NITROSODIMETHYLAMINE	76 U	78 UJ	76 U	78 U	76 U	82 U	80 U	81 U	80 U	82 U	87 U	77 UJ
N-NITROSOMETHYLETHYLAMINE	76 U	76 U	76 U	78 U	76 U	82 U	80 U	81 U	80 U	82 U	87 U	77 UJ
N-NITROSOMORPHOLINE	76 UJ	78 U	76 UJ	78 UJ	76 UJ	82 U	80 UJ	81 UJ	80 UJ	82 UJ	87 U	77 UJ
N-NITROSOPIPERIDINE	76 UJ	78 U	76 UJ	78 UJ	76 UJ	82 U	80 UJ	81 UJ	80 UJ	82 UJ	87 U	77 UJ
N-NITROSOPYRROLIDINE	76 U	78 U	76 U	78 U	76 U	82 U	80 U	81 U	80 U	82 U	87 U	77 UJ
NAPHTHALENE	55 U	1.5 U	11	1.51 U	1.5 U	33	1.5 U	1.5 U	1.5 U	1.6 U	1.7 U	130
O,O,O-TRIETHYL PHOSPHOROTHIOATE	76 U	78 U	76 U	78 U	76 U	82 U	80 U	81 U	80 U	82 U	87 U	77 UJ
O-TOLUIDINE	76 U	78 U	76 U	78 U	76 U	82 U	80 U	81 U	80 U	82 U	87 U	77 UJ
P-(DIMETHYLAMINO)AZOBENZENE	76 U	78 U	76 U	78 U	76 U	82 U	80 U	81 U	80 U	82 U	87 U	77 UJ
PENTACHLOROBENZENE	76 U	78 U	76 U	78 U	76 U	82 U	80 U	81 U	80 U	82 U	87 U	77 UJ
PENTACHLOROETHANE	76 U	78 U	76 U	78 U	76 U	82 U	80 U	81 U	80 U	82 U	87 U	77 UJ
PENTACHLORONITROBENZENE	76 U	78 U	76 U	78 U	76 U	82 U	80 U	81 U	80 U	82 U	87 U	77 UJ
PHENACETIN	76 U	78 U	76 U	78 U	76 U	82 U	80 U	81 U	80 U	82 U	87 U	77 UJ
PHENANTHRENE	55 U	1.5 U	14	1.51 U	1.5 U	42	1.5 U	1.5 U	1.5 U	1.6 U	1.7 U	320
PHENOL	76 U	78 U	76 U	78 U	76 U	82 U	80 U	81 U	80 UJ	82 U	87 U	77 UJ
PRONAMIDE	76 U	78 U	76 U	78 U	76 U	82 U	80 U	81 U	80 U	82 U	87 U	77 UJ
PYRENE	55 U	8	14	1.51 U	1.5 UJ	62	12	1.5 U	1.5 U	1.6 UJ	1.7 U	250
PYRIDINE	76 U	78 UJ	76 U	78 U	76 UJ	82 U	80 U	81 UJ	80 UJ	82 U	87 U	77 UJ
SAFROLE	76 U	78 U	76 U	78 U	76 U	82 U	80 U	81 U	80 U	82 U	87 U	77 UJ
Energetics (MG/KG)												
1,3,5-TRINITROBENZENE	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	1.2	0.25 U	0.25 U	0.72	0.25 U	11 J
1,3-DINITROBENZENE	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U
2,4,6-TRINITROTOLUENE	0.25 U	0.25 U	0.25 U	0.39 J	0.25 U	0.25 U	2	0.25 U	0.25 U	510	0.25 U	1700 J
2,4-DINITROTOLUENE	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	1 J
2,6-DINITROTOLUENE	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U
2-AMINO-4,6-DINITROTOLUENE	0.82	0.25 U	0.25 U	0.56	0.25 U	0.72	2.3	0.25 U	0.25 U	1.2	0.25 U	30 J

TABLE E-1

SUMMARY OF ANALYTIC RESULTS IN SURFACE SOIL
SWMU 3 - OLD JEEP TRAIL/LITTLE SULPHUR CREEK
NSWC CRANE
CRANE, INDIANA

LOCATION	03SB13	03SB14	03SB15	03SB16	03SB17	03SB18	03SB19	03SB20	03SB21	03SB22	03SB23	03SB24
NSAMPLE	03SS130002	03SS140002	03SS150002	03SS160002	03SS170002	03SS180002	03SS190002	03SS200002	03SS210002	03SS220002	03SS230002	03SS240002
SAMPLE	03SS130002	03SS140002	03SS150002	03SS160002	03SS170002	03SS180002	03SS190002	03SS200002	03SS210002	03SS220002	03SS230002	03SS240002
SACODE	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
DEPTH RANGE	0 - 2	0 - 2	0 - 2	0 - 2	0 - 2	0 - 2	0 - 2	0 - 2	0 - 2	0 - 2	0 - 2	0 - 2
QC_TYPE	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
STATUS	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
SAMPLE DATE	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
VALIDATED	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
COLLECTION METHOD	GRAB	GRAB	GRAB	GRAB	GRAB	GRAB	GRAB	GRAB	GRAB	GRAB	GRAB	GRAB
2-NITROTOLUENE	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U
3-NITROTOLUENE	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U
4-AMINO-2,6-DINITROTOLUENE	0.63	0.25 U	0.25 U	0.35 J	0.25 U	0.43 J	1.4	0.25 U	0.25 U	2	0.25 U	15 J
4-NITROTOLUENE	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U
HMX	0.34 U	0.25 U	0.25 U	0.25 U	0.25 U	0.72	14	0.25 U	0.36 J	77	0.25 U	1600 J
NITROBENZENE	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U
NITROCELLULOSE	560 U	570 U	550 U	0.25 U	550 U	600 UJ	570 U	600 U	560 U	600 U	590 UJ	540 U
NITROGLYCERIN	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U
PETN	0.25 U	1.5 U	0.25 U	0.25 U	1.5 U	1.6 U	1.5 U	1.6 U	1.5 U	1.6 U	1.7 U	1.5 U
RDX	0.93	0.25 U	0.25 U	0.25 U	0.25 U	1.2	6.2	0.25 U	0.25 U	140	0.25 U	2400 J
TETRYL	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U
Pesticides/PCB's (UG/KG)												
4,4'-DDD												
4,4'-DDE												
4,4'-DDT												
ALDRIN												
ALPHA-BHC												
ALPHA-CHLORDANE												
AROCLOR-1016												
AROCLOR-1221												
AROCLOR-1232												
AROCLOR-1242												
AROCLOR-1248												
AROCLOR-1254												
AROCLOR-1260												
BETA-BHC												
DELTA-BHC												
DIELDRIN												
ENDOSULFAN I												
ENDOSULFAN II												
ENDOSULFAN SULFATE												
ENDRIN												
ENDRIN ALDEHYDE												
ENDRIN KETONE												
GAMMA-BHC (LINDANE)												
GAMMA-CHLORDANE												
HEPTACHLOR												
HEPTACHLOR EPOXIDE												
METHOXYCHLOR												
TOXAPHENE												
Herbicides (UG/KG)												
2,4,5-T												
2,4,5-TP (SILVEX)												
2,4-D												
DINOSEB												
HEXACHLOROPHENE												
PENTACHLOROPHENOL												
Inorganics (MG/KG)												
ALUMINUM					5970 J	9770 J	11900 J	7020 J	6440 J	12800 J	7890 J	14000 J
ANTIMONY					0.19 U	0.42 U	0.69 J	0.23 U	0.48 U	0.74 J	1.5 U	4.4 J

TABLE E-1

SUMMARY OF ANALYTIC RESULTS IN SURFACE SOIL
SWMU 3 - OLD JEEP TRAIL/LITTLE SULPHUR CREEK
NSWC CRANE
CRANE, INDIANA

LOCATION	03SB13	03SB14	03SB15	03SB16	03SB17	03SB18	03SB19	03SB20	03SB21	03SB22	03SB23	03SB24
NSAMPLE	03SS130002	03SS140002	03SS150002	03SS160002	03SS170002	03SS180002	03SS190002	03SS200002	03SS210002	03SS220002	03SS230002	03SS240002
SAMPLE	03SS130002	03SS140002	03SS150002	03SS160002	03SS170002	03SS180002	03SS190002	03SS200002	03SS210002	03SS220002	03SS230002	03SS240002
SACODE	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
DEPTH RANGE	0 - 2	0 - 2	0 - 2	0 - 2	0 - 2	0 - 2	0 - 2	0 - 2	0 - 2	0 - 2	0 - 2	0 - 2
QC_TYPE	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
STATUS	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
SAMPLE DATE	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
VALIDATED	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
COLLECTION METHOD	GRAB	GRAB	GRAB	GRAB	GRAB	GRAB	GRAB	GRAB	GRAB	GRAB	GRAB	GRAB
ARSENIC					9.9 J	2.8 U	3 J	3.3 J	5.9 J	4.5 J	5.3 J	8.5 J
BARIUM					93.1 J	158 J	103 J	120 J	149 J	118 J	420 J	150 J
BERYLLIUM					0.57 J	1.4	0.78 J	0.75 J	0.82 J	0.77 J	0.48	0.33 J
CADMIUM					0.55	1.7	0.84	0.32 U	0.42	0.83	1.1	4.4
CALCIUM					111000 J	73400 J	5150 J	3300 J	1680 J	15400 J	1700 J	54500 J
CHROMIUM					16.4 J	11.8 J	15.5 J	7.7 J	10.8 J	15.6 J	11.2 J	12.2 J
COBALT					12.3 J	10.6	11.7 J	9.6 J	14.6 J	11.6 J	10.6	7.4 J
COPPER					7.3 J	12.8 J	15.1 J	5.4 J	8.7 J	23.1 J	53.7 J	34.5 J
IRON					28600 J	13700 J	20900 J	8280 J	18600 J	19700 J	15500 J	13500 J
LEAD					21.2 J	244 J	14.7 J	11.3 J	16.2 J	27.6 J	54.7 J	10200 J
MAGNESIUM					5820 J	4960 J	2860 J	644 J	556 J	2890 J	1160 J	1740 J
MANGANESE					796 J	322 J	260 J	1090 J	1390 J	788 J	741 J	292 J
MERCURY					0.023 J	0.019 J	0.038	0.025 J	0.031 J	0.046	0.18 J	0.066
NICKEL					17.9 J	32.6 J	20.2 J	8.9 J	14.8 J	17.7 J	12.9 J	14 J
POTASSIUM					333 J	2180 J	632 J	330 J	434 J	700 J	696 J	539 J
SELENIUM					0.18 J	0.3	0.17 U	0.28 J	0.3 J	0.25 J	0.32	0.17 J
SILVER					0.04 U	0.05 U	0.04 U	0.05 U	0.04 U	0.15 U	0.11 U	0.62 J
SODIUM					598 J	89.7 U	48.8 U	430 J	394 J	88.9 U	56.2 U	89.6 U
THALLIUM					0.09	0.08	0.09	0.11	0.11	0.12	0.11	0.07
TIN					0.18 U	0.57 U	0.54 U	0.29 U	0.37 U	0.54 U	1.7 U	1.4 U
VANADIUM					20.5 J	13.9	21.1 J	12.3 J	16.3 J	22.4 J	17.6	13.7 J
ZINC					44.6 J	68.9 J	56.7 J	19.5 J	37.4 J	79.2 J	189 J	211 J
Miscellaneous Parameters (MG/KG)												
NITRATE MG/KG	3.3	1.3	2.3	1.4	3.7 J	4.2	2.1	2.3 J	3.3 J	6.4	2.6	49
NITRITE MG/KG	6 UR	12 UJ	11 UR	11 UR	11 UJ	12 UJ	11 U	4.7 UJ	18 U	11 U	44 UJ	11 U
NITRITE/NITRATE MG/KG	3.3 J	1.3 J	2.3 J	1.4 J	3.7 J	4.2 J	2.1 J	2.3 J	3.3 J	6.4 J	2.6 J	49 J
PERCHLORATE	22 UJ	23 UJ	22 UJ	23 UJ	22 U	20 U	24 U	25 U	23 U	470 J	20 U	210 J
Miscellaneous Parameters (%)												
PERCENT MOISTURE	9.5	12	10.6	12.6	10.2	23.4	16.5	19.2	13.7	21	21.4	15.1

TABLE E-1

SUMMARY OF ANALYTIC RESULTS IN SURFACE SOIL
SWMU 3 - OLD JEEP TRAIL/LITTLE SULPHUR CREEK
NSWC CRANE
CRANE, INDIANA

LOCATION	03SB25	03SB26	03SB27	03SB28	03SB29	03SB30	03SB31	03SB32	03SB33	03SB34	03SB35	03SB36
NSAMPLE	03SS250002	03SS260002	03SS270002	03SS280002	03SS290002	03SS300002	03SS310002	03SS320002	03SS330002	03SS340002	03SS350002	03SS360002
SAMPLE	03SS250002	03SS260002	03SS270002	03SS280002	03SS290002	03SS300002	03SS310002	03SS320002	03SS330002	03SS340002	03SS350002	03SS360002
SACODE	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	ORIG	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
DEPTH RANGE	0 - 2	0 - 2	0 - 2	0 - 2	0 - 1.1	0 - 1.65	0 - 2	0 - 2	0 - 1.1	0 - 2	0 - 2	0 - 2
QC_TYPE	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
STATUS	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
SAMPLE DATE	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
VALIDATED	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
COLLECTION METHOD	GRAB	GRAB	GRAB	GRAB	GRAB	GRAB	GRAB	GRAB	GRAB	GRAB	GRAB	GRAB
Dioxins (NG/KG)												
1,2,3,4,6,7,8,9-OCDD	1120 J	1590 J			705 J	623 J	622 J	209 J	176 J			
1,2,3,4,6,7,8,9-OCDF	0.3 UJ	7.6 J			0.88 BU	0.95 BU	0.67 BU	1.8 BU	0.57 BU			
1,2,3,4,6,7,8-HPCDD	16.1	33.8			13.5 J	10 J	8.2 J	3.8 BJ	3.2 BJ			
1,2,3,4,6,7,8-HPCDF	0.17 U	7.5			0.45 U	0.53 BU	0.26 U	0.71 BU	0.4 BU			
1,2,3,4,7,8,9-HPCDF	0.2 U	0.7 J			0.2 U	0.2 U	0.1 U	0.87 J	0.4 U			
1,2,3,4,7,8-HXCDD	0.18 U	0.87 J			0.24 BU	0.25 U	0.17 BU	0.74 BU	0.3 U			
1,2,3,4,7,8-HXCDF	0.09 U	3.1 BJ			0.2 BU	0.25 BU	0.14 BU	0.55 U	0.23 U			
1,2,3,6,7,8-HXCDD	0.23 U	1.5 J			0.33 J	0.29 U	0.1 U	0.54 J	0.3 U			
1,2,3,6,7,8-HXCDF	0.09 U	1.4 J			0.1 U	0.19 J	0.06 U	0.48 J	0.2 U			
1,2,3,7,8,9-HXCDD	0.44 U	2.5 J			0.41 BU	0.55 BU	0.32 BU	0.76 BU	0.35 U			
1,2,3,7,8,9-HXCDF	0.1 U	0.22 U			0.1 U	0.27 U	0.08 U	0.65 U	0.2 U			
1,2,3,7,8-PECDD	0.1 U	0.67 J			0.1 UJ	0.2 UJ	0.08 UJ	0.45 J	0.2 UJ			
1,2,3,7,8-PECDF	0.07 U	1.1 J			0.09 U	0.1 U	0.06 U	0.2 U	0.2 U			
2,3,4,6,7,8-HXCDF	0.09 U	1.3 J			0.1 U	0.13 U	0.07 U	0.6 J	0.13 U			
2,3,4,7,8-PECDF	0.07 U	1.1 J			0.09 U	0.15 U	0.06 U	0.67 U	0.2 U			
2,3,7,8-TCDD	0.08 U	3.9			0.1 U	0.1 U	0.08 U	0.2 U	0.2 U			
2,3,7,8-TCDF	0.07 U	0.55 J			0.09 U	0.1 U	0.06 U	0.2 U	0.73 J			
TEQ BIRD	0.13	7.5			0.087	0.091	0.07	0.6	0.75			
TEQ FISH	0.13	6.5			0.087	0.091	0.07	0.6	0.057			
TEQ HUMAN	0.27	6.9			0.24	0.18	0.14	0.68	0.12			
TOTAL HPCDD	40.2	68.3			28.5 J	20.8 J	15 J	6.9 U	6.7 J			
TOTAL HPCDF	0.17 U	13.1			0.83 U	1.1 J	0.68 U	1.6 J	0.64 U			
TOTAL HXCDD	3.9 U	17 U			4	3.2 U	1.4 U	2	1.7 U			
TOTAL HXCDF	0.07 U	15.2 U			0.6 U	1.2 U	0.47 U	2.3 U	0.96 U			
TOTAL PECDD	0.27 U	6.5 U			0.1 UJ	0.2 UJ	0.08 UJ	0.45 J	0.2 UJ			
TOTAL PECDF	0.08 U	16.5 U			0.09 U	0.15 U	0.06 U	0.67 U	0.61 U			
TOTAL TCDD	0.18 U	7.5 U			0.1 U	0.1 U	0.08 U	0.2 U	0.2 U			
TOTAL TCDF	0.4 U	16.6 U			0.09 U	0.1 U	0.06 U	0.2 U	1 U			
Volatile Organics (UG/KG)												
1,1,1,2-TETRACHLOROETHANE	0.93 U	1.1 U	1.5 U	10 U								
1,1,1-TRICHLOROETHANE	0.93 U	2 J	1.5 U	19 J								
1,1,2,2-TETRACHLOROETHANE	0.93 U	1.1 U	1.5 U	10 U								
1,1,2-TRICHLOROETHANE	0.93 U	1.1 U	1.5 U	10 U								
1,1-DICHLOROETHANE	0.93 U	1.1 U	1.5 U	10 U								
1,1-DICHLOROETHENE	0.93 U	1.1 U	1.5 U	10 U								
1,2,3-TRICHLOROPROPANE	0.93 U	1.1 U	1.5 U	10 U								
1,2-DIBROMO-3-CHLOROPROPANE	0.93 U	1.1 U	1.5 U	10 U								
1,2-DIBROMOETHANE	0.93 U	1.1 U	1.5 U	10 U								
1,2-DICHLOROETHANE	0.93 U	1.1 U	1.5 U	10 U								
1,2-DICHLOROPROPANE	0.93 U	1.1 U	1.5 U	10 U								
1,4-DIOXANE	90 U	115 U	135 U	115 U								
2-BUTANONE	0.93 U	1.1 U	1.5 U	10 U								
2-HEXANONE	0.93 U	1.1 U	1.5 U	10 U								
3-CHLOROPROPENE	0.93 UJ	1.1 U	1.5 U	10 U								
4-METHYL-2-PENTANONE	0.93 U	1.1 U	1.5 U	10 U								
ACETONE	0.93 U	1.1 UR	1.5 UR	89 BU								
ACETONITRILE	36.5 U	47 U	55 U	45.5 U								
ACROLEIN	0.93 UR	1.1 U	1.5 U	10 U								
ACRYLONITRILE	0.93 UR	1.1 UR	1.5 UR	10 UR								

TABLE E-1

SUMMARY OF ANALYTIC RESULTS IN SURFACE SOIL
SWMU 3 - OLD JEEP TRAIL/LITTLE SULPHUR CREEK
NSWC CRANE
CRANE, INDIANA

LOCATION	03SB25	03SB26	03SB27	03SB28	03SB29	03SB30	03SB31	03SB32	03SB33	03SB34	03SB35	03SB36
NSAMPLE	03SS250002	03SS260002	03SS270002	03SS280002	03SS290002	03SS300002	03SS310002	03SS320002	03SS330002	03SS340002	03SS350002	03SS360002
SAMPLE	03SS250002	03SS260002	03SS270002	03SS280002	03SS290002	03SS300002	03SS310002	03SS320002	03SS330002	03SS340002	03SS350002	03SS360002
SACODE	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	ORIG	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
DEPTH RANGE	0 - 2	0 - 2	0 - 2	0 - 2	0 - 1.1	0 - 1.65	0 - 2	0 - 2	0 - 1.1	0 - 2	0 - 2	0 - 2
QC_TYPE	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
STATUS	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
SAMPLE DATE	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
VALIDATED	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
COLLECTION METHOD	GRAB	GRAB	GRAB	GRAB	GRAB	GRAB	GRAB	GRAB	GRAB	GRAB	GRAB	GRAB
BENZENE	0.93 U	1.1 U	1.5 U	10 U								
BROMODICHLOROMETHANE	0.93 U	1.1 U	1.5 U	10 U								
BROMOFORM	0.93 U	1.1 U	1.5 U	10 U								
BROMOMETHANE	0.93 U	1.1 U	1.5 U	10 U								
CARBON DISULFIDE	0.93 U	1.1 U	1.5 U	10 U								
CARBON TETRACHLORIDE	0.93 U	1.1 U	1.5 U	10 U								
CHLOROBENZENE	0.93 U	1.1 U	1.5 U	10 U								
CHLORODIBROMOMETHANE	0.93 U	1.1 U	1.5 U	10 U								
CHLOROETHANE	0.93 U	1.1 U	1.5 U	10 U								
CHLOROFORM	0.93 U	1.1 U	1.5 U	10 U								
CHLOROMETHANE	0.93 U	1.1 U	1.5 U	10 U								
CHLOROPRENE	0.93 U	1.1 U	1.5 U	10 U								
CIS-1,2-DICHLOROETHENE	0.93 U	1.1 U	1.5 U	10 U								
CIS-1,3-DICHLOROPROPENE	0.93 U	1.1 U	1.5 U	10 U								
DIBROMOMETHANE	0.93 U	1.1 U	1.5 U	10 U								
DICHLORODIFLUOROMETHANE	0.93 U	1.1 U	1.5 U	10 U								
ETHYL METHACRYLATE	0.93 U	1.1 U	1.5 U	10 U								
ETHYLBENZENE	0.93 U	1.1 U	1.5 U	10 U								
ISOBUTANOL	36.5 U	47 U	55 U	45.5 U								
METHACRYLONITRILE	0.93 U	1.1 U	1.5 U	10 U								
METHYL IODIDE	0.93 UJ	1.1 UJ	1.5 UJ	10 UJ								
METHYL METHACRYLATE	0.93 U	1.1 U	1.5 U	10 U								
METHYLENE CHLORIDE	6 BU	3 BU	2 BU	16 BU								
PROPIONITRILE	36.5 U	47 U	55 U	45.5 U								
STYRENE	0.93 U	1.1 U	1.5 U	10 U								
TETRACHLOROETHENE	0.93 U	1 J	1.5 U	10 U								
TOLUENE	0.93 U	1.1 U	1.5 U	10 U								
TOTAL XYLENES	0.93 U	1.1 U	1.5 U	10 U								
TRANS-1,2-DICHLOROETHENE	0.93 U	1.1 U	1.5 U	10 U								
TRANS-1,3-DICHLOROPROPENE	0.93 U	1.1 U	1.5 U	10 U								
TRANS-1,4-DICHLORO-2-BUTENE	0.93 U	1.1 U	1.5 U	10 U								
TRICHLOROETHENE	0.93 U	4	1.5 U	10 U								
TRICHLOROFLUOROMETHANE	0.93 U	1.1 U	1.5 U	10 U								
VINYL ACETATE	0.93 U	1.1 U	1.5 U	10 U								
VINYL CHLORIDE	0.93 U	1.1 U	1.5 U	10 U								
Semivolatile Organics (UG/KG)												
1,2,4,5-TETRACHLOROBENZENE	76 UJ	83 U	91 U	95 U	80 U	78 U	79 U	80 U	74 U	76 U	80 U	77 U
1,2,4-TRICHLOROBENZENE	76 UJ	83 U	91 U	95 U	80 U	78 U	79 U	80 U	74 U	76 U	80 U	77 U
1,2-DICHLOROBENZENE	76 UJ	83 U	91 U	95 U	80 U	78 U	79 U	80 U	74 U	76 U	80 U	77 U
1,3-DICHLOROBENZENE	76 UJ	83 U	91 U	95 U	80 U	78 U	79 U	80 U	74 U	76 U	80 U	77 U
1,4-DICHLOROBENZENE	76 UJ	83 U	91 U	95 U	80 U	78 U	79 U	80 U	74 U	76 U	80 U	77 U
1,4-NAPHTHOQUINONE	76 UJ	83 U	91 U	95 U	80 U	78 U	79 U	80 U	74 U	76 U	80 U	77 U
1,4-PHENYLENEDIAMINE	76 UJ	83 UR	91 UR	95 UR	80 UR	78 UR	79 UR	80 UR	74 UR	210 J	80 U	77 UR
1-NAPHTHYLAMINE	76 UJ	83 U	91 U	95 U	80 U	78 U	79 U	80 U	74 U	76 U	80 U	77 U
2,2'-OXYBIS(1-CHLOROPROPANE)	76 UJ	83 U	91 U	95 U	80 U	78 U	79 U	80 U	74 U	76 U	80 U	77 U
2,3,4,6-TETRACHLOROPHENOL	76 UR	83 U	91 U	95 U	80 U	78 U	79 U	80 U	74 U	76 UJ	80 U	77 U
2,4,5-TRICHLOROPHENOL	76 UJ	83 U	91 U	95 U	80 U	78 U	79 UJ	80 U	74 U	76 UJ	80 U	77 U
2,4,6-TRICHLOROPHENOL	76 UJ	83 U	91 U	95 U	80 U	78 U	79 U	80 U	74 U	76 UJ	80 U	77 U
2,4-DICHLOROPHENOL	76 UJ	83 U	91 U	95 U	80 U	78 U	79 U	80 U	74 UJ	76 UJ	80 U	77 U
2,4-DIMETHYLPHENOL	76 UJ	83 U	91 U	95 U	80 U	78 U	79 UJ	80 U	74 U	76 UJ	80 U	77 U

TABLE E-1

SUMMARY OF ANALYTIC RESULTS IN SURFACE SOIL
SWMU 3 - OLD JEEP TRAIL/LITTLE SULPHUR CREEK
NSWC CRANE
CRANE, INDIANA

LOCATION	03SB25	03SB26	03SB27	03SB28	03SB29	03SB30	03SB31	03SB32	03SB33	03SB34	03SB35	03SB36
NSAMPLE	03SS250002	03SS260002	03SS270002	03SS280002	03SS290002	03SS300002	03SS310002	03SS320002	03SS330002	03SS340002	03SS350002	03SS360002
SAMPLE	03SS250002	03SS260002	03SS270002	03SS280002	03SS290002	03SS300002	03SS310002	03SS320002	03SS330002	03SS340002	03SS350002	03SS360002
SACODE	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	ORIG	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
DEPTH RANGE	0 - 2	0 - 2	0 - 2	0 - 2	0 - 1.1	0 - 1.65	0 - 2	0 - 2	0 - 1.1	0 - 2	0 - 2	0 - 2
QC_TYPE	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
STATUS	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
SAMPLE DATE	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
VALIDATED	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
COLLECTION METHOD	GRAB	GRAB	GRAB	GRAB	GRAB	GRAB	GRAB	GRAB	GRAB	GRAB	GRAB	GRAB
2,4-DINITROPHENOL	76 UJ	83 U	91 U	95 U	80 UJ	78 UJ	79 UJ	80 UJ	74 UJ	76 UJ	80 UJ	77 UJ
2,6-DICHLOROPHENOL	76 UJ	83 U	91 U	95 U	80 U	78 U	79 U	80 U	74 U	76 UJ	80 U	77 U
2-ACETYLAMINOFLUORENE	76 UJ	83 U	91 U	95 U	80 U	78 U	79 U	80 U	74 U	76 U	80 U	77 U
2-CHLORONAPHTHALENE	76 UJ	83 U	91 U	95 U	80 U	78 U	79 UJ	80 U	74 U	76 U	80 U	77 U
2-CHLOROPHENOL	76 UR	83 U	91 U	95 U	80 U	78 U	79 U	80 U	74 U	76 UJ	80 U	77 U
2-METHYLNAPHTHALENE	1.5 U	24	1.8 U	1.8 U	1.6 U	1.5 U	1.5 U	1.5 U	1.4 U	1.3 UJ	1.5 U	1.5 U
2-METHYLPHENOL	76 UR	83 U	91 U	95 U	80 U	78 U	79 U	80 U	74 U	76 UJ	80 U	77 U
2-NAPHTHYLAMINE	76 UJ	83 U	91 U	95 U	80 U	78 U	79 U	80 U	74 U	76 U	80 U	77 U
2-NITROANILINE	76 UJ	83 U	91 U	95 U	80 U	78 U	79 U	80 U	74 U	76 U	80 U	77 U
2-NITROPHENOL	76 UR	83 U	91 U	95 U	80 U	78 U	79 U	80 U	74 U	76 UJ	80 U	77 U
2-PICOLINE	76 UJ	83 U	91 U	95 U	80 UJ	78 UJ	79 UJ	80 UJ	74 UJ	76 U	80 U	77 U
3&4-METHYLPHENOL	76 UR	83 U	91 U	95 U	80 U	78 U	79 U	80 U	74 U	76 UJ	80 U	77 U
3,3'-DICHLOROBENZIDINE	76 UJ	83 U	91 U	95 U	80 U	78 U	79 U	80 U	74 U	76 U	80 U	77 U
3,3'-DIMETHYLBENZIDINE	76 UJ	83 U	91 U	95 U	80 UJ	78 UJ	79 UJ	80 UJ	74 UJ	76 U	80 U	77 U
3-METHYLCHOLANTHRENE	76 UJ	83 U	91 U	95 U	80 U	78 U	79 U	80 U	74 U	76 U	80 U	77 U
3-NITROANILINE	76 UJ	83 U	91 U	95 U	80 U	78 U	79 U	80 U	74 U	76 U	80 U	77 U
4,6-DINITRO-2-METHYLPHENOL	76 UR	83 U	91 U	95 U	80 UJ	78 UJ	79 UJ	80 UJ	74 U	76 UJ	80 U	77 UJ
4-AMINOBIPHENYL	76 UJ	83 U	91 U	95 U	80 U	78 U	79 U	80 U	74 U	76 U	80 U	77 U
4-BROMOPHENYL PHENYL ETHER	76 UJ	83 U	91 U	95 U	80 U	78 U	79 U	80 U	74 U	76 U	80 U	77 U
4-CHLORO-3-METHYLPHENOL	76 UR	83 U	91 U	95 U	80 U	78 U	79 U	80 U	74 U	76 UJ	80 U	77 U
4-CHLOROANILINE	76 UJ	83 U	91 U	95 U	80 U	78 U	79 U	80 U	74 U	76 U	80 U	77 U
4-CHLOROPHENYL PHENYL ETHER	76 UJ	83 U	91 U	95 U	80 U	78 U	79 U	80 U	74 U	76 U	80 U	77 U
4-NITROANILINE	76 UJ	83 U	91 U	95 U	80 U	78 U	79 U	80 U	74 U	76 U	80 U	77 U
4-NITROPHENOL	76 UR	83 U	91 U	95 U	80 U	78 U	79 U	80 U	74 U	76 UJ	80 U	77 UJ
4-NITROQUINOLINE-1-OXIDE	76 UJ	83 U	91 U	95 U	80 UJ	78 UJ	79 UJ	80 UJ	74 UJ	76 U	80 U	77 UR
5-NITRO-O-TOLUIDINE	76 UJ	83 U	91 U	95 U	80 U	78 U	79 U	80 U	74 U	76 U	80 U	77 U
7,12-DIMETHYLBENZ(A)ANTHRACENE	76 UJ	83 U	91 U	95 U	80 U	78 U	79 U	80 U	74 U	76 U	80 U	77 U
A,A-DIMETHYLPHENETHYLAMINE	76 UJ	83 U	91 U	95 U	80 U	78 U	79 U	80 U	74 U	76 U	80 UJ	77 U
ACENAPHTHENE	1.5 U	1.6 U	1.8 U	1.8 U	1.6 U	1.5 U	1.5 U	1.5 U	1.4 U	1.3 UJ	1.5 U	1.5 U
ACENAPHTHYLENE	1.5 U	1.6 U	1.8 U	1.8 U	1.6 U	1.5 U	1.5 U	1.5 U	1.4 U	1.3 UJ	1.5 U	1.5 U
ACETOPHENONE	76 UJ	83 U	91 U	95 U	210 BU	220 BU	200 BU	120 BU	130 BU	76 U	80 U	77 U
ANILINE	76 UJ	83 U	91 U	95 U	80 U	78 U	79 U	80 U	74 U	76 U	80 U	77 U
ANTHRACENE	1.5 U	1.6 U	1.8 U	1.8 U	1.6 U	1.5 U	1.5 U	1.5 U	1.4 U	1.3 UJ	1.5 U	1.5 U
ARAMITE	76 UJ	83 U	91 U	95 U	80 U	78 U	79 U	80 U	74 U	76 U	80 U	77 U
BENZO(A)ANTHRACENE	1.5 U	1.6 U	1.8 U	1.8 U	1.6 U	1.5 U	1.5 U	1.5 U	1.4 U	1.3 UJ	1.5 U	1.5 U
BENZO(A)PYRENE	1.5 U	1.6 U	1.8 U	1.8 U	1.6 U	1.5 U	1.5 U	1.5 U	1.4 U	1.3 UJ	1.5 U	1.5 U
BENZO(B)FLUORANTHENE	1.5 U	20	1.8 U	1.8 U	12	14	11	1.5 U	1.4 U	1.3 UJ	1.5 U	1.5 U
BENZO(G,H,I)PERYLENE	1.5 U	10	1.8 U	1.8 U	1.6 U	1.5 U	1.5 U	1.5 U	1.4 U	1.3 UJ	1.5 U	1.5 U
BENZO(K)FLUORANTHENE	1.5 U	1.6 U	1.8 U	1.8 U	1.6 U	1.5 U	1.5 U	1.5 U	1.4 U	1.3 UJ	1.5 U	1.5 U
BENZYL ALCOHOL	76 UJ	83 U	91 U	95 U	80 U	78 U	79 U	80 U	74 U	76 U	80 U	77 U
BIS(2-CHLOROETHOXY)METHANE	76 UJ	83 U	91 U	95 U	80 U	78 U	79 U	80 U	74 U	76 U	80 U	77 U
BIS(2-CHLOROETHYL)ETHER	76 UJ	83 U	91 U	95 U	80 U	78 U	79 U	80 U	74 U	76 U	80 U	77 U
BIS(2-ETHYLHEXYL)PHTHALATE	76 UJ	83 U	91 U	95 U	80 U	78 U	79 U	80 U	74 U	76 U	80 U	77 U
BUTYL BENZYL PHTHALATE	76 UJ	83 U	91 U	95 U	80 U	78 U	79 U	80 U	74 U	76 U	80 U	77 U
CHLOROBENZILATE	76 UJ	83 U	91 U	95 U	80 U	78 U	79 U	80 U	74 U	76 U	80 U	77 U
CHRYSENE	1.5 U	12	1.8 U	1.8 U	1.6 U	1.5 U	1.5 U	1.5 U	1.4 U	1.3 UJ	1.5 U	1.5 U
DI-N-BUTYL PHTHALATE	76 UJ	980	91 U	110 J	80 U	78 U	79 U	80 U	74 U	76 U	80 U	77 U
DI-N-OCTYL PHTHALATE	270 J	83 U	91 U	95 U	80 U	78 U	79 U	80 U	74 U	76 UR	80 U	77 U
DIALLATE	76 UJ	83 U	91 U	95 U	80 U	78 U	79 U	80 U	74 U	76 U	80 U	77 U
DIBENZO(A,H)ANTHRACENE	1.5 U	1.6 U	1.8 U	1.8 U	1.6 U	1.5 U	1.5 U	1.5 U	1.4 U	1.3 UJ	1.5 U	1.5 U

TABLE E-1

SUMMARY OF ANALYTIC RESULTS IN SURFACE SOIL
SWMU 3 - OLD JEEP TRAIL/LITTLE SULPHUR CREEK
NSWC CRANE
CRANE, INDIANA

LOCATION	03SB25	03SB26	03SB27	03SB28	03SB29	03SB30	03SB31	03SB32	03SB33	03SB34	03SB35	03SB36
NSAMPLE	03SS250002	03SS260002	03SS270002	03SS280002	03SS290002	03SS300002	03SS310002	03SS320002	03SS330002	03SS340002	03SS350002	03SS360002
SAMPLE	03SS250002	03SS260002	03SS270002	03SS280002	03SS290002	03SS300002	03SS310002	03SS320002	03SS330002	03SS340002	03SS350002	03SS360002
SACODE	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	ORIG	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
DEPTH RANGE	0 - 2	0 - 2	0 - 2	0 - 2	0 - 1.1	0 - 1.65	0 - 2	0 - 2	0 - 1.1	0 - 2	0 - 2	0 - 2
QC_TYPE	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
STATUS	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
SAMPLE DATE	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
VALIDATED	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
COLLECTION METHOD	GRAB	GRAB	GRAB	GRAB	GRAB	GRAB	GRAB	GRAB	GRAB	GRAB	GRAB	GRAB
DIBENZOFURAN	76 UJ	83 U	91 U	95 U	80 U	78 U	79 U	80 U	74 U	76 U	80 U	77 U
DIETHYL PHTHALATE	76 UJ	83 U	91 U	95 U	80 U	78 U	79 U	80 U	74 U	76 U	80 U	77 U
DIMETHYL PHTHALATE	76 UJ	83 U	91 U	95 U	80 U	78 U	79 U	80 U	74 U	76 U	80 U	77 U
DIPHENYLAMINE	76 UJ	83 U	91 U	95 U	80 U	78 U	79 U	80 U	74 U	76 U	80 U	77 U
ETHYL METHANE SULFONATE	76 UJ	83 U	91 U	95 U	80 U	78 U	79 U	80 U	74 U	76 U	80 U	77 U
ETHYL PARATHION	76 UJ	83 U	91 U	95 U	80 U	78 U	79 U	80 U	74 U	76 U	80 U	77 U
FLUORANTHENE	1.5 U	15	1.8 U	1.8 U	8	1.5 U	1.5 U	1.5 U	1.4 U	1.3 UJ	1.5 U	1.5 U
FLUORENE	1.5 U	1.6 U	1.8 U	1.8 U	1.6 U	1.5 U	1.5 U	1.5 U	1.4 U	1.3 UJ	1.5 U	1.5 U
HEXACHLOROBENZENE	76 UJ	83 U	91 U	95 U	80 U	78 U	79 U	80 U	74 U	76 U	80 U	77 U
HEXACHLOROBUTADIENE	76 UJ	83 U	91 U	95 U	80 U	78 U	79 U	80 U	74 U	76 U	80 U	77 U
HEXACHLOROCYCLOPENTADIENE	76 UJ	83 U	91 U	95 U	80 U	78 U	79 U	80 U	74 U	76 UJ	80 U	77 UJ
HEXACHLOROETHANE	76 UJ	83 U	91 U	95 U	80 U	78 U	79 U	80 U	74 U	76 U	80 U	77 U
HEXACHLOROPROPENE	76 UJ	83 U	91 U	95 U	80 U	78 U	79 U	80 U	74 U	76 U	80 U	77 U
INDENO(1,2,3-CD)PYRENE	1.5 U	1.6 U	1.8 U	1.8 U	1.6 U	1.5 U	1.5 U	1.5 U	1.4 U	1.3 UJ	1.5 U	1.5 U
ISODRIN	76 UJ	83 U	91 U	95 U	80 U	78 U	79 U	80 U	74 U	76 U	80 U	77 U
ISOPHORONE	76 UJ	83 U	91 U	95 U	80 U	78 U	79 U	80 U	74 U	76 U	80 U	77 U
ISOSAFROLE	76 UJ	83 U	91 U	95 U	80 U	78 U	79 U	80 U	74 U	76 U	80 U	77 U
KEPONE	76 UR	83 UR	91 UR	95 UR	80 UR	78 UR	79 UR	80 UR	74 UR	76 UR	80 UR	77 UR
METHAPYRILENE	76 UJ	83 U	91 U	95 U	80 UJ	78 UJ	79 UJ	80 UJ	74 UJ	76 U	80 U	77 U
METHYL METHANE SULFONATE	76 UJ	83 U	91 U	95 U	80 UJ	78 UJ	79 UJ	80 UJ	74 UJ	76 U	80 U	77 U
METHYL PARATHION	76 UJ	83 U	91 U	95 U	80 UJ	78 UJ	79 UJ	80 UJ	74 UJ	76 U	80 UJ	77 U
N-NITROSO-DI-N-BUTYLAMINE	76 UJ	83 U	91 U	95 U	80 U	78 U	79 U	80 U	74 U	76 U	80 U	77 U
N-NITROSO-DI-N-PROPYLAMINE	76 UJ	83 U	91 U	95 U	80 U	78 U	79 U	80 U	74 U	76 U	80 U	77 U
N-NITROSODIETHYLAMINE	76 UJ	83 U	91 U	95 U	80 U	78 U	79 U	80 U	74 U	76 U	80 U	77 U
N-NITROSODIMETHYLAMINE	76 UJ	83 U	91 U	95 U	80 U	78 U	79 U	80 U	74 U	76 U	80 U	77 U
N-NITROSOMETHYLETHYLAMINE	76 UJ	83 U	91 U	95 U	80 U	78 U	79 U	80 U	74 U	76 U	80 U	77 U
N-NITROSOMORPHOLINE	76 UJ	83 U	91 U	95 U	80 U	78 U	79 U	80 U	74 U	76 U	80 U	77 U
N-NITROSOPIPERIDINE	76 UJ	83 U	91 U	95 U	80 U	78 U	79 U	80 U	74 U	76 U	80 U	77 U
N-NITROSOPYRROLIDINE	76 UJ	83 U	91 U	95 U	80 U	78 U	79 U	80 U	74 U	76 U	80 U	77 UJ
NAPHTHALENE	1.5 U	19	1.8 U	1.8 U	1.6 U	1.5 U	1.5 U	1.5 U	1.4 U	1.3 UJ	1.5 U	1.5 U
O,O,O-TRIETHYL PHOSPHOROTHIOATE	76 UJ	83 U	91 U	95 U	80 U	78 U	79 U	80 U	74 U	76 U	80 U	77 U
O-TOLUIDINE	76 UJ	83 U	91 U	95 U	80 U	78 U	79 U	80 U	74 U	76 U	80 U	77 U
P-(DIMETHYLAMINO)AZOBENZENE	76 UJ	83 U	91 U	95 U	80 U	78 U	79 U	80 U	74 U	76 U	80 U	77 U
PENTACHLOROBENZENE	76 UJ	83 U	91 U	95 U	80 U	78 U	79 U	80 U	74 U	76 U	80 U	77 U
PENTACHLOROETHANE	76 UJ	83 U	91 U	95 U	80 U	78 U	79 U	80 U	74 U	76 U	80 U	77 U
PENTACHLORONITROBENZENE	76 UJ	83 U	91 U	95 U	80 U	78 U	79 U	80 U	74 U	76 U	80 U	77 U
PHENACETIN	76 UJ	83 U	91 U	95 U	80 U	78 U	79 U	80 U	74 U	76 U	80 U	77 U
PHENANTHRENE	1.5 U	15	1.8 U	1.8 U	1.6 U	1.5 U	1.5 U	1.5 U	1.4 U	1.3 UJ	1.5 U	1.5 U
PHENOL	76 UR	83 U	91 U	95 U	80 U	78 U	79 U	80 U	74 U	76 UJ	80 U	77 U
PRONAMIDE	76 UJ	83 U	91 U	95 U	80 U	78 U	79 U	80 U	74 U	76 U	80 U	77 U
PYRENE	1.5 UJ	11	1.8 U	1.8 U	1.6 U	1.5 U	1.5 U	1.5 U	1.4 U	1.3 UJ	1.5 U	1.5 U
PYRIDINE	76 UJ	83 U	91 U	95 U	80 U	78 U	79 U	80 U	74 U	76 U	80 U	77 U
SAFROLE	76 UJ	83 U	91 U	95 U	80 U	78 U	79 U	80 U	74 U	76 U	80 U	77 U
Energetics (MG/KG)												
1,3,5-TRINITROBENZENE	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U
1,3-DINITROBENZENE	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U
2,4,6-TRINITROTOLUENE	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U
2,4-DINITROTOLUENE	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U
2,6-DINITROTOLUENE	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U
2-AMINO-4,6-DINITROTOLUENE	0.25 U	0.77	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U

TABLE E-1

SUMMARY OF ANALYTIC RESULTS IN SURFACE SOIL
SWMU 3 - OLD JEEP TRAIL/LITTLE SULPHUR CREEK
NSWC CRANE
CRANE, INDIANA

LOCATION	03SB25	03SB26	03SB27	03SB28	03SB29	03SB30	03SB31	03SB32	03SB33	03SB34	03SB35	03SB36
NSAMPLE	03SS250002	03SS260002	03SS270002	03SS280002	03SS290002	03SS300002	03SS310002	03SS320002	03SS330002	03SS340002	03SS350002	03SS360002
SAMPLE	03SS250002	03SS260002	03SS270002	03SS280002	03SS290002	03SS300002	03SS310002	03SS320002	03SS330002	03SS340002	03SS350002	03SS360002
SACODE	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	ORIG	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
DEPTH RANGE	0 - 2	0 - 2	0 - 2	0 - 2	0 - 1.1	0 - 1.65	0 - 2	0 - 2	0 - 1.1	0 - 2	0 - 2	0 - 2
QC_TYPE	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
STATUS	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
SAMPLE DATE	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
VALIDATED	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
COLLECTION METHOD	GRAB	GRAB	GRAB	GRAB	GRAB	GRAB	GRAB	GRAB	GRAB	GRAB	GRAB	GRAB
2-NITROTOLUENE	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.28 J	0.25 U	0.25 U	0.25 U
3-NITROTOLUENE	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U
4-AMINO-2,6-DINITROTOLUENE	0.25 U	1	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U
4-NITROTOLUENE	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U
HMX	0.25 U	58	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U
NITROBENZENE	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U
NITROCELLULOSE	570 U	600 UJ	650 UJ	680 UJ	600 U	580 U	590 U	590 U	560 U	560 U	570 UJ	570 U
NITROGLYCERIN	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U
PETN	1.5 U	1.6 U	1.8 U	1.8 U	1.8 U	1.5 U	1.5 U	1.5 U	1.4 U	1.5 U	1.5 U	1.5 U
RDX	0.25 U	4.3	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U
TETRYL	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U
Pesticides/PCB's (UG/KG)												
4,4'-DDD					2 U	2 U	2 U	2 U	1.9 U			
4,4'-DDE					2 U	2 U	2 U	2 U	1.9 U			
4,4'-DDT					2 UJ	2 UJ	2 UJ	2 U	1.9 U			
ALDRIN					1.1 U	1.1 U	1.1 U	1.1 U	1 U			
ALPHA-BHC					1.1 U	1.1 U	1.1 U	1.1 U	1 U			
ALPHA-CHLORDANE					1.1 U	1.1 U	1.1 U	1.1 U	1 U			
AROCLOR-1016					20 U	20 U	20 U	20 U	19 U			
AROCLOR-1221					41 U	40 U	40 U	40 U	38 U			
AROCLOR-1232					20 U	20 U	20 U	20 U	19 U			
AROCLOR-1242					20 U	20 U	20 U	20 U	19 U			
AROCLOR-1248					20 U	20 U	20 U	20 U	19 U			
AROCLOR-1254					20 U	20 U	20 U	20 U	19 U			
AROCLOR-1260					20 U	20 U	20 U	20 U	19 U			
BETA-BHC					1.1 U	1.1 U	1.1 U	1.1 U	1 U			
DELTA-BHC					1.1 U	1.1 U	1.1 U	1.1 U	1 U			
DIELDRIN					2 U	2 U	2 U	2 U	1.9 U			
ENDOSULFAN I					1.1 U	1.1 U	1.1 U	1.1 U	1 U			
ENDOSULFAN II					2 U	2 U	2 U	2 U	1.9 U			
ENDOSULFAN SULFATE					2 U	2 U	2 U	2 U	1.9 U			
ENDRIN					2 UJ	2 UJ	2 UJ	2 U	1.9 U			
ENDRIN ALDEHYDE					2 U	2 U	2 UJ	2 U	1.9 U			
ENDRIN KETONE					2 U	2 U	2 U	2 U	1.9 U			
GAMMA-BHC (LINDANE)					1.1 U	1.1 U	1.1 U	1.1 U	1 U			
GAMMA-CHLORDANE					1.1 U	1.1 U	1.1 U	1.1 U	1 U			
HEPTACHLOR					1.1 U	1.1 U	1.1 U	1.1 U	1 U			
HEPTACHLOR EPOXIDE					1.1 U	1.1 U	1.1 U	1.1 U	1 U			
METHOXYCHLOR					11 U	11 U	11 U	11 U	10 U			
TOXAPHENE					110 U	110 U	110 U	110 U	100 U			
Herbicides (UG/KG)												
2,4,5-T					1.7 U	1.6 U	1.7 U	6.4	1.6 U			
2,4,5-TP (SILVEX)					1.7 U	1.6 U	1.7 U	1.7 U	1.6 U			
2,4-D					7.6 J	6.7	1.7 U	8.3 J	1.6 U			
DINOSEB					11	8 R	1.7 U	2.3 R	1.6 U			
HEXACHLOROPHENE					8 U	7.8 U	7.9 U	8 U	7.4 U			
PENTACHLOROPHENOL					0.41 U	1.1 R	0.4 U	4.8 R	0.38 U			
Inorganics (MG/KG)												
ALUMINUM	6570 J	7060 J	14900 J	10000 J	8300 J	6060 J	8380 J	5970 J	2350 J	7130 J	7670 J	7800 J
ANTIMONY	0.48 U	1.8 J	1.1 U	0.69 U	0.49 J	0.84 J	0.35 U	0.49 U	0.35 U	0.41 U	2.3 J	0.32 U

TABLE E-1

SUMMARY OF ANALYTIC RESULTS IN SURFACE SOIL
SWMU 3 - OLD JEEP TRAIL/LITTLE SULPHUR CREEK
NSWC CRANE
CRANE, INDIANA

LOCATION	03SB25	03SB26	03SB27	03SB28	03SB29	03SB30	03SB31	03SB32	03SB33	03SB34	03SB35	03SB36
NSAMPLE	03SS250002	03SS260002	03SS270002	03SS280002	03SS290002	03SS300002	03SS310002	03SS320002	03SS330002	03SS340002	03SS350002	03SS360002
SAMPLE	03SS250002	03SS260002	03SS270002	03SS280002	03SS290002	03SS300002	03SS310002	03SS320002	03SS330002	03SS340002	03SS350002	03SS360002
SACODE	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	ORIG	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
DEPTH RANGE	0 - 2	0 - 2	0 - 2	0 - 2	0 - 1.1	0 - 1.65	0 - 2	0 - 2	0 - 1.1	0 - 2	0 - 2	0 - 2
QC_TYPE	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
STATUS	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
SAMPLE DATE	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
VALIDATED	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
COLLECTION METHOD	GRAB	GRAB	GRAB	GRAB	GRAB	GRAB	GRAB	GRAB	GRAB	GRAB	GRAB	GRAB
ARSENIC	6.5 J	6.8 J	7.4 J	7.3 J	7.4 J	8 J	6.8 J	5.5 J	28.4 J	5.8 J	6.3 J	5.1
BARIUM	107 J	565 J	187 J	313 J	114 J	105 J	66.2 J	80 J	81.3 J	103 J	178 J	77 J
BERYLLIUM	1	0.65	0.91	0.75	1	1.1	0.62	0.67	0.2 U	1.2	1	0.45
CADMIUM	0.48	1.2	2.4	0.82	1.2	0.46	0.31 U	0.4	0.56	0.5	1.2	0.35
CALCIUM	4240 J	3860 J	3050 J	1750 J	15700 J	26100 J	22600 J	3540 J	244000 J	14400 J	2620 J	18900 J
CHROMIUM	19 J	12.4 J	288 J	52.4 J	18.4 J	22 J	21.2 J	15.3 J	11.9 J	22.6 J	33.5 J	13.2 J
COBALT	18.1 J	13.8	13.6	13.7	17.3 J	17.1 J	12.9 J	12 J	3 J	19.9 J	16.4	14 J
COPPER	9.1 J	46.6 J	63.9 J	41.7 J	10 J	9.3 J	8.2 J	7.9 J	6.7 J	10.2 J	39.8 J	8 J
IRON	26900 J	17100 J	23800 J	28400 J	27800 J	34300 J	22800 J	21100 J	15300 J	51600 J	39600 J	20800 J
LEAD	16 J	66 J	36 J	22.6 J	26.8 J	20.9 J	20.8 J	14.4 J	9.2 J	19.6 J	60.3 J	12.8 J
MAGNESIUM	851 J	948 J	2620 J	1330 J	1790 J	2860 J	2260 J	827 J	15000 J	858 J	789 J	2660 J
MANGANESE	1530 J	1150 J	837 J	1470 J	1170 J	1210 J	853 J	1020 J	321 J	1490 J	1290 J	917 J
MERCURY	0.021 J	0.093 J	0.17 J	0.28 J	0.04	0.03	0.2	0.02	0.02 U	0.023 J	0.12 J	0.027 J
NICKEL	19.2 J	13.6 J	24.1 J	21.5 J	23.2 J	19.4 J	9 J	12.5 J	14.4 J	27.3 J	22 J	10 J
POTASSIUM	409 J	686 J	1890 J	908 J	459 J	414 J	437 J	411 J	395 J	502 J	535 J	628 J
SELENIUM	0.37 J	0.33	0.42	0.3	0.42	0.25	0.18 U	0.29	0.16 U	0.22 J	0.23	0.23
SILVER	0.5 J	0.05 U	0.12 U	0.07 U	0.04 U	0.08 U	0.4 U	0.6 U	0.04 U	0.04 U	0.8 U	0.04 U
SODIUM	126 J	49 U	73 U	69.7 U	23.7 U	21 U	40.7 U	61.6 U	176 U	146 J	25.7 U	183 U
THALLIUM	0.11	0.11	0.21	0.17	0.11	0.11	0.12	0.1	0.05	0.1	0.19	0.1
TIN	0.32 U	1.7 U	2.3 U	0.96 U	0.56 U	0.46 U	0.51 U	0.5 U	0.4 U	0.32 U	1.2 U	0.32 U
VANADIUM	22.2 J	18	29.1	24.4	23	24.2	24	17.8	10.8	21.8 J	28.9	14.3 J
ZINC	36.7 J	191 J	145 J	739 J	55.7 J	48.9 J	27.1 J	29.5 J	48.2 J	49 J	120 J	30.2 J
Miscellaneous Parameters (MG/KG)												
NITRATE MG/KG	20	3.6	2.9	3.2	2.4	1.7	1.3	1.8	13	1.2	4.8	2.4
NITRITE MG/KG	11 UJ	24 UJ	2.7 UJ	14 UJ	2.3 UJ	2.3 UJ	2.3 UJ	2.2 UJ	2.2 UJ	11 UJ	12 UJ	11 UR
NITRITE/NITRATE MG/KG	20 J	3.6 J	2.9 J	3.2 J	2.4	1.7	1.3	1.8	13	1.2 J	4.8 J	2.4 J
PERCHLORATE	23 U	20 U	20 U	20 U	24 UJ	23 UJ	23 UJ	24 UJ	21 UJ	22 UJ	24 UJ	23 UJ
Miscellaneous Parameters (%)												
PERCENT MOISTURE	12.7	20.9	25.6	23.7	16.7	12	12	15.6	6.9	10.7	15.6	13.3

TABLE E-1

SUMMARY OF ANALYTIC RESULTS IN SURFACE SOIL
SWMU 3 - OLD JEEP TRAIL/LITTLE SULPHUR CREEK
NSWC CRANE
CRANE, INDIANA

LOCATION	03SB37	03SB38	03SB39	03SB40	03SB41	03SB42	03SB43	03SB44	03SB45	03SB46	03SB47	03SB48
NSAMPLE	03SS370002	03SS380002	03SS390002	03SS400002	03SS410002	03SS420002	03SS430002	03SS440002	03SS450002	03SS460002	03SS470002	03SS480002
SAMPLE	03SS370002	03SS380002	03SS390002	03SS400002	03SS410002	03SS420002	03SS430002	03SS440002	03SS450002	03SS460002	03SS470002	03SS480002
SACODE	ORIG	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	ORIG	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
DEPTH RANGE	0 - 2	0 - 2	0 - 2	0 - 2	0 - 2	0 - 2	0 - 2	0 - 2	0 - 2	0 - 2	0 - 2	0 - 2
QC_TYPE	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
STATUS	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
SAMPLE DATE	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
VALIDATED	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
COLLECTION METHOD	GRAB	GRAB	GRAB	GRAB	GRAB	GRAB	GRAB	GRAB	GRAB	GRAB	GRAB	GRAB
Dioxins (NG/KG)												
1,2,3,4,6,7,8,9-OCDD											3440 J	
1,2,3,4,6,7,8,9-OCDF											2.1 UJ	
1,2,3,4,6,7,8-HPCDD											26.9	
1,2,3,4,6,7,8-HPCDF											2.1 J	
1,2,3,4,7,8,9-HPCDF											0.2 U	
1,2,3,4,7,8-HXCDD											0.68 J	
1,2,3,4,7,8-HXCDF											0.74 BU	
1,2,3,6,7,8-HXCDD											0.76 U	
1,2,3,6,7,8-HXCDF											0.37 J	
1,2,3,7,8,9-HXCDD											1.8 J	
1,2,3,7,8,9-HXCDF											0.1 U	
1,2,3,7,8-PECDD											0.4 J	
1,2,3,7,8-PECDF											0.37 J	
2,3,4,6,7,8-HXCDF											0.43 J	
2,3,4,7,8-PECDF											0.39 J	
2,3,7,8-TCDD											0.24 J	
2,3,7,8-TCDF											0.78 J	
TEQ BIRD											2.5	
TEQ FISH											1.7	
TEQ HUMAN											1.9	
TOTAL HPCDD											58.3	
TOTAL HPCDF											3.1 U	
TOTAL HXCDD											10.4 U	
TOTAL HXCDF											3.2	
TOTAL PECDD											3.4 U	
TOTAL PECDF											3.9 U	
TOTAL TCDD											0.84 U	
TOTAL TCDF											4.2 U	
Volatile Organics (UG/KG)												
1,1,1,2-TETRACHLOROETHANE										2.1 U	11 U	0.94 U
1,1,1-TRICHLOROETHANE										2.1 U	11 U	0.94 U
1,1,2,2-TETRACHLOROETHANE										2.1 U	11 U	0.94 UJ
1,1,2-TRICHLOROETHANE										2.1 U	11 U	0.94 UJ
1,1-DICHLOROETHANE										2.1 U	11 U	0.94 UJ
1,1-DICHLOROETHENE										2.1 U	11 U	0.94 UJ
1,2,3-TRICHLOROPROPANE										2.1 U	11 U	0.94 U
1,2-DIBROMO-3-CHLOROPROPANE										2.1 U	11 U	0.94 U
1,2-DIBROMOETHANE										2.1 U	11 U	0.94 U
1,2-DICHLOROETHANE										2.1 U	11 U	0.94 U
1,2-DICHLOROPROPANE										2.1 U	11 U	0.94 UJ
1,4-DIOXANE										120 U	90 U	90 U
2-BUTANONE										2.1 U	11 U	0.94 UJ
2-HEXANONE										5 J	11 U	0.94 U
3-CHLOROPROPENE										2.1 U	11 U	0.94 UJ
4-METHYL-2-PENTANONE										4 J	11 U	0.94 U
ACETONE										49 BU	220 BU	0.94 U
ACETONITRILE										48 U	36 U	36.5 U
ACROLEIN										2.1 UR	11 UR	0.94 UR
ACRYLONITRILE										2.1 UR	11 UR	0.94 UR

TABLE E-1

SUMMARY OF ANALYTIC RESULTS IN SURFACE SOIL
SWMU 3 - OLD JEEP TRAIL/LITTLE SULPHUR CREEK
NSWC CRANE
CRANE, INDIANA

LOCATION	03SB37	03SB38	03SB39	03SB40	03SB41	03SB42	03SB43	03SB44	03SB45	03SB46	03SB47	03SB48
NSAMPLE	03SS370002	03SS380002	03SS390002	03SS400002	03SS410002	03SS420002	03SS430002	03SS440002	03SS450002	03SS460002	03SS470002	03SS480002
SAMPLE	03SS370002	03SS380002	03SS390002	03SS400002	03SS410002	03SS420002	03SS430002	03SS440002	03SS450002	03SS460002	03SS470002	03SS480002
SACODE	ORIG	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	ORIG	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
DEPTH RANGE	0 - 2	0 - 2	0 - 2	0 - 2	0 - 2	0 - 2	0 - 2	0 - 2	0 - 2	0 - 2	0 - 2	0 - 2
QC_TYPE	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
STATUS	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
SAMPLE DATE	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
VALIDATED	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
COLLECTION METHOD	GRAB	GRAB	GRAB	GRAB	GRAB	GRAB	GRAB	GRAB	GRAB	GRAB	GRAB	GRAB
BENZENE										2.1 U	11 U	0.94 UJ
BROMODICHLOROMETHANE										2.1 U	11 U	0.94 U
BROMOFORM										2.1 U	11 U	0.94 UJ
BROMOMETHANE										2.1 U	11 U	0.94 U
CARBON DISULFIDE										2.1 U	11 U	0.94 U
CARBON TETRACHLORIDE										2.1 U	11 U	0.94 U
CHLOROBENZENE										2.1 U	11 U	0.94 UJ
CHLORODIBROMOMETHANE										2.1 U	11 U	0.94 UJ
CHLOROETHANE										2.1 U	11 U	0.94 U
CHLOROFORM										2.1 U	11 U	0.94 U
CHLOROMETHANE										2.1 U	11 U	0.94 U
CHLOROPRENE										2.1 U	11 U	0.94 U
CIS-1,2-DICHLOROETHENE										2.1 U	11 U	0.94 UJ
CIS-1,3-DICHLOROPROPENE										2.1 U	11 U	0.94 UJ
DIBROMOMETHANE										2.1 U	11 U	0.94 U
DICHLORODIFLUOROMETHANE										2.1 U	11 U	0.94 U
ETHYL METHACRYLATE										2.1 U	11 U	0.94 U
ETHYLBENZENE										2.1 U	11 U	0.94 UJ
ISOBUTANOL										48 U	36 U	36.5 U
METHACRYLONITRILE										2.1 U	11 U	0.94 U
METHYL IODIDE										2.1 UJ	11 UJ	0.94 UJ
METHYL METHACRYLATE										2.1 U	11 U	0.94 U
METHYLENE CHLORIDE										11 BU	59 BU	5 BU
PROPIONITRILE										48 U	36 U	36.5 U
STYRENE										2.1 U	11 U	0.94 UJ
TETRACHLOROETHENE										2.1 U	11 U	0.94 UJ
TOLUENE										2.1 U	11 U	0.94 UJ
TOTAL XYLENES										2.1 U	82	0.94 UJ
TRANS-1,2-DICHLOROETHENE										2.1 U	11 U	0.94 UJ
TRANS-1,3-DICHLOROPROPENE										2.1 U	11 U	0.94 UJ
TRANS-1,4-DICHLORO-2-BUTENE										2.1 U	11 U	0.94 U
TRICHLOROETHENE										2.1 U	11 U	3 J
TRICHLOROFLUOROMETHANE										2.1 U	11 U	0.94 U
VINYL ACETATE										2.1 UJ	11 UJ	0.94 U
VINYL CHLORIDE										2.1 U	11 U	0.94 U
Semivolatile Organics (UG/KG)												
1,2,4,5-TETRACHLOROBENZENE	79 U	82 U	76 U	77 U	86 U	76 U	98 U	76 U	94 U	74 U	76 U	78 U
1,2,4-TRICHLOROBENZENE	79 UJ	82 U	76 U	77 U	86 U	76 U	98 U	76 U	94 U	74 U	76 U	78 U
1,2-DICHLOROBENZENE	79 U	82 U	76 U	77 U	86 U	76 U	98 U	76 U	94 U	74 U	76 U	78 U
1,3-DICHLOROBENZENE	79 U	82 U	76 U	77 U	86 U	76 U	98 U	76 U	94 U	74 U	76 U	78 U
1,4-DICHLOROBENZENE	79 U	82 U	76 U	77 U	86 U	76 U	98 U	76 U	94 U	74 U	76 U	78 U
1,4-NAPHTHOQUINONE	79 U	82 U	76 U	77 U	86 U	76 U	98 U	76 U	94 U	74 U	76 U	78 U
1,4-PHENYLENEDIAMINE	79 UJ	82 UJ	76 UR	77 UR	86 U	76 UR	98 U	76 UJ	94 U	74 UJ	76 UJ	78 UJ
1-NAPHTHYLAMINE	79 U	82 U	76 U	77 U	86 U	76 U	98 U	76 U	94 U	74 U	76 U	78 U
2,2'-OXYBIS(1-CHLOROPROPANE)	79 UJ	82 UJ	76 U	77 U	86 U	76 U	98 U	76 U	94 U	74 U	76 U	78 U
2,3,4,6-TETRACHLOROPHENOL	79 U	82 U	76 U	77 U	86 U	76 U	98 U	76 U	94 U	74 UJ	76 UJ	78 U
2,4,5-TRICHLOROPHENOL	79 U	82 U	76 U	77 U	86 U	76 U	98 U	76 U	94 U	74 UJ	76 UJ	78 U
2,4,6-TRICHLOROPHENOL	79 U	82 U	76 U	77 U	86 U	76 U	98 U	76 U	94 U	74 UJ	76 UJ	78 U
2,4-DICHLOROPHENOL	79 U	82 U	76 U	77 U	86 U	76 U	98 U	76 U	94 U	74 UJ	76 UJ	78 U
2,4-DIMETHYLPHENOL	79 UJ	82 U	76 U	77 U	86 U	76 U	98 U	76 U	94 U	74 UJ	76 UJ	78 U

TABLE E-1

SUMMARY OF ANALYTIC RESULTS IN SURFACE SOIL
SWMU 3 - OLD JEEP TRAIL/LITTLE SULPHUR CREEK
NSWC CRANE
CRANE, INDIANA

LOCATION	03SB37	03SB38	03SB39	03SB40	03SB41	03SB42	03SB43	03SB44	03SB45	03SB46	03SB47	03SB48
NSAMPLE	03SS370002	03SS380002	03SS390002	03SS400002	03SS410002	03SS420002	03SS430002	03SS440002	03SS450002	03SS460002	03SS470002	03SS480002
SAMPLE	03SS370002	03SS380002	03SS390002	03SS400002	03SS410002	03SS420002	03SS430002	03SS440002	03SS450002	03SS460002	03SS470002	03SS480002
SACODE	ORIG	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	ORIG	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
DEPTH RANGE	0 - 2	0 - 2	0 - 2	0 - 2	0 - 2	0 - 2	0 - 2	0 - 2	0 - 2	0 - 2	0 - 2	0 - 2
QC_TYPE	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
STATUS	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
SAMPLE DATE	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
VALIDATED	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
COLLECTION METHOD	GRAB	GRAB	GRAB	GRAB	GRAB	GRAB	GRAB	GRAB	GRAB	GRAB	GRAB	GRAB
2,4-DINITROPHENOL	79 UJ	82 UJ	76 UJ	77 UJ	86 UJ	76 UJ	98 UJ	76 UJ	94 UJ	74 UJ	76 UJ	78 UJ
2,6-DICHLOROPHENOL	79 U	82 U	76 U	77 U	86 U	76 U	98 U	76 U	94 U	74 UJ	76 UJ	78 U
2-ACETYLAMINOFLUORENE	79 UJ	82 UJ	76 U	77 U	86 U	76 U	98 U	76 U	94 U	74 U	76 U	78 U
2-CHLORONAPHTHALENE	79 UJ	82 U	76 U	77 U	86 U	76 U	98 U	76 U	94 U	74 U	76 U	78 U
2-CHLOROPHENOL	79 U	82 U	76 U	77 U	86 U	76 U	98 U	76 U	94 U	74 UJ	76 UJ	78 U
2-METHYLNAPHTHALENE	1.5 U	1.6 U	1.5 U	1.5 U	1.7 U	1.5 U	1.9 U	1.5 U	1.8 U	1.4 U	1.5 U	1.5 U
2-METHYLPHENOL	79 U	82 U	76 U	77 U	86 U	76 U	98 U	76 U	94 U	74 UJ	76 UJ	78 U
2-NAPHTHYLAMINE	79 U	82 U	76 U	77 U	86 U	76 U	98 U	76 U	94 U	74 U	76 U	78 U
2-NITROANILINE	79 UJ	82 UJ	76 U	77 U	86 U	76 U	98 U	76 U	94 U	74 U	76 U	78 U
2-NITROPHENOL	79 U	82 U	76 U	77 U	86 U	76 U	98 U	76 U	94 U	74 UJ	76 UJ	78 U
2-PICOLINE	79 UJ	82 UJ	76 U	77 U	86 U	76 U	98 U	76 U	94 U	74 U	76 U	78 U
3&4-METHYLPHENOL	79 U	82 U	76 U	77 U	86 U	76 U	98 U	76 U	94 U	74 UJ	76 UJ	78 U
3,3'-DICHLOROBENZIDINE	79 UR	82 U	76 U	77 U	86 U	76 U	98 U	76 U	94 U	74 U	76 U	78 U
3,3'-DIMETHYLBENZIDINE	79 U	82 U	76 U	77 U	86 U	76 U	98 U	76 U	94 U	74 U	76 U	78 U
3-METHYLCHOLANTHRENE	79 U	82 U	76 U	77 U	86 U	76 U	98 U	76 U	94 U	74 U	76 U	78 U
3-NITROANILINE	79 UJ	82 U	76 U	77 U	86 U	76 U	98 U	76 U	94 U	74 U	76 U	78 U
4,6-DINITRO-2-METHYLPHENOL	79 UJ	82 UJ	76 UJ	77 UJ	86 U	76 UJ	98 U	76 U	94 U	74 UJ	76 UJ	78 U
4-AMINOBIPHENYL	79 U	82 U	76 U	77 U	86 U	76 U	98 U	76 U	94 U	74 U	76 U	78 U
4-BROMOPHENYL PHENYL ETHER	79 U	82 U	76 U	77 U	86 U	76 U	98 U	76 U	94 U	74 U	76 U	78 U
4-CHLORO-3-METHYLPHENOL	79 UJ	82 U	76 U	77 U	86 U	76 U	98 U	76 U	94 U	74 UJ	76 UJ	78 U
4-CHLOROANILINE	79 UJ	82 U	76 U	77 U	86 U	76 U	98 U	76 U	94 U	74 U	76 U	78 U
4-CHLOROPHENYL PHENYL ETHER	79 U	82 U	76 U	77 U	86 U	76 U	98 U	76 U	94 U	74 U	76 U	78 U
4-NITROANILINE	79 U	82 U	76 U	77 U	86 U	76 U	98 U	76 U	94 U	74 U	76 U	78 U
4-NITROPHENOL	79 UJ	82 UJ	76 UJ	77 UJ	86 U	76 UJ	98 U	76 U	94 U	74 UJ	76 UJ	78 U
4-NITROQUINOLINE-1-OXIDE	79 UR	77 UR	76 UR	77 UR	86 U	76 UR	98 U	76 UJ	94 U	74 UJ	76 UJ	78 UJ
5-NITRO-O-TOLUIDINE	79 U	82 U	76 U	77 U	86 U	76 U	98 U	76 U	94 U	74 U	76 U	78 U
7,12-DIMETHYLBENZ(A)ANTHRACENE	79 U	82 U	76 U	77 U	86 U	76 U	98 U	76 U	94 U	74 U	76 U	78 U
A,A-DIMETHYLPHENETHYLAMINE	79 UJ	82 U	76 U	77 U	86 UJ	76 U	98 UJ	76 U	94 UJ	74 U	76 U	78 U
ACENAPHTHENE	1.5 U	1.6 U	1.5 U	1.5 U	1.7 U	1.5 U	1.9 U	1.5 U	1.8 U	1.4 U	1.5 U	1.5 U
ACENAPHTHYLENE	1.5 U	1.6 U	1.5 U	1.5 U	1.7 U	1.5 U	1.9 U	1.5 U	1.8 U	1.4 U	1.5 U	1.5 U
ACETOPHENONE	79 U	82 U	76 U	77 U	86 U	76 U	98 U	76 U	94 U	74 U	76 U	78 U
ANILINE	79 U	82 U	76 U	77 U	86 U	76 U	98 U	76 U	94 U	74 U	76 U	78 U
ANTHRACENE	1.5 U	1.6 U	1.5 U	1.5 U	1.7 U	1.5 U	1.9 U	1.5 U	1.8 U	1.4 U	1.5 U	1.5 U
ARAMITE	79 UJ	82 U	76 U	77 U	86 U	76 U	98 U	76 U	94 U	74 U	76 U	78 U
BENZO(A)ANTHRACENE	1.5 U	1.6 U	1.5 U	1.5 U	1.7 U	1.5 U	1.9 U	8	1.8 U	1.4 U	1.5 U	1.5 U
BENZO(A)PYRENE	1.5 U	1.6 U	1.5 U	1.5 U	1.7 U	1.5 U	1.9 U	1.5 U	1.8 U	1.4 U	1.5 U	1.5 U
BENZO(B)FLUORANTHENE	1.5 U	1.6 U	1.5 U	1.5 U	1.7 U	1.5 U	1.9 U	30	1.8 U	1.4 U	1.5 U	1.5 U
BENZO(G,H,I)PERYLENE	1.5 U	1.6 U	1.5 U	1.5 U	1.7 U	1.5 U	1.9 U	1.5 U	1.8 U	1.4 U	1.5 U	1.5 U
BENZO(K)FLUORANTHENE	1.5 U	1.6 U	1.5 U	1.5 U	1.7 U	1.5 U	1.9 U	1.5 U	1.8 U	1.4 U	1.5 U	1.5 U
BENZYL ALCOHOL	79 U	82 U	76 U	77 U	86 U	76 U	98 U	76 U	94 U	74 U	76 U	78 U
BIS(2-CHLOROETHOXY)METHANE	79 U	82 U	76 U	77 U	86 U	76 U	98 U	76 U	94 U	74 U	76 U	78 U
BIS(2-CHLOROETHYL)ETHER	79 U	82 U	76 U	77 U	86 U	76 U	98 U	76 U	94 U	74 U	76 U	78 U
BIS(2-ETHYLHEXYL)PHTHALATE	79 U	82 U	88 J	77 U	390 J	76 U	98 U	76 U	94 U	74 U	76 U	78 U
BUTYL BENZYL PHTHALATE	79 U	82 U	76 U	77 U	86 U	76 U	98 U	76 U	94 U	74 U	76 U	78 U
CHLOROBENZILATE	79 UJ	82 UJ	76 U	77 U	86 U	76 U	98 U	76 U	94 U	74 U	76 U	78 U
CHRYSENE	1.5 U	1.6 U	1.5 U	1.5 U	1.7 U	1.5 U	1.9 U	12	1.8 U	1.4 U	1.5 U	1.5 U
DI-N-BUTYL PHTHALATE	79 U	82 U	76 U	77 U	86 U	76 U	98 U	76 U	510	74 U	76 U	78 U
DI-N-OCTYL PHTHALATE	79 U	82 U	76 U	77 U	86 U	76 U	98 U	76 UR	94 U	74 UR	76 UR	78 UR
DIALLATE	79 UJ	82 UJ	76 U	77 U	86 U	76 U	98 U	76 U	94 U	74 U	76 U	78 U
DIBENZO(A,H)ANTHRACENE	1.5 U	1.6 U	1.5 U	1.5 U	1.7 U	1.5 U	1.9 U	1.5 U	1.8 U	1.4 U	1.5 U	1.5 U

TABLE E-1

SUMMARY OF ANALYTIC RESULTS IN SURFACE SOIL
SWMU 3 - OLD JEEP TRAIL/LITTLE SULPHUR CREEK
NSWC CRANE
CRANE, INDIANA

LOCATION	03SB37	03SB38	03SB39	03SB40	03SB41	03SB42	03SB43	03SB44	03SB45	03SB46	03SB47	03SB48
NSAMPLE	03SS370002	03SS380002	03SS390002	03SS400002	03SS410002	03SS420002	03SS430002	03SS440002	03SS450002	03SS460002	03SS470002	03SS480002
SAMPLE	03SS370002	03SS380002	03SS390002	03SS400002	03SS410002	03SS420002	03SS430002	03SS440002	03SS450002	03SS460002	03SS470002	03SS480002
SACODE	ORIG	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	ORIG	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
DEPTH RANGE	0 - 2	0 - 2	0 - 2	0 - 2	0 - 2	0 - 2	0 - 2	0 - 2	0 - 2	0 - 2	0 - 2	0 - 2
QC_TYPE	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
STATUS	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
SAMPLE DATE	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
VALIDATED	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
COLLECTION METHOD	GRAB	GRAB	GRAB	GRAB	GRAB	GRAB	GRAB	GRAB	GRAB	GRAB	GRAB	GRAB
DIBENZOFURAN	79 U	82 U	76 U	77 U	86 U	76 U	98 U	76 U	94 U	74 U	76 U	78 U
DIETHYL PHTHALATE	79 U	82 U	76 U	77 U	86 U	76 U	98 U	76 U	94 U	74 U	76 U	78 U
DIMETHYL PHTHALATE	79 U	82 U	76 U	77 U	86 U	76 U	98 U	76 U	94 U	74 U	76 U	78 U
DIPHENYLAMINE	79 U	82 U	76 U	77 U	86 U	76 U	98 U	76 U	94 U	74 U	76 U	78 U
ETHYL METHANE SULFONATE	79 U	82 U	76 U	77 U	86 U	76 U	98 U	76 U	94 U	74 U	76 U	78 U
ETHYL PARATHION	79 UJ	82 UJ	76 U	77 U	86 U	76 U	98 U	76 U	94 U	74 U	76 U	78 U
FLUORANTHENE	1.5 U	1.6 U	1.5 U	1.5 U	1.7 U	1.5 U	1.9 U	1.5 U	13	1.4 U	1.5 U	1.5 U
FLUORENE	1.5 U	1.6 U	1.5 U	1.5 U	1.7 U	1.5 U	1.9 U	1.5 U	1.8 U	1.4 U	1.5 U	1.5 U
HEXACHLOROBENZENE	79 U	82 U	76 U	77 U	86 U	76 U	98 U	76 U	94 U	74 U	76 U	78 U
HEXACHLOROBUTADIENE	79 U	82 U	76 U	77 U	86 U	76 U	98 U	76 U	94 U	74 U	76 U	78 U
HEXACHLOROCYCLOPENTADIENE	79 UJ	82 UJ	76 UJ	77 UJ	86 U	76 UJ	98 U	76 UJ	94 U	74 UJ	76 UJ	78 UJ
HEXACHLOROETHANE	79 UJ	82 U	76 U	77 U	86 U	76 U	98 U	76 U	94 U	74 U	76 U	78 U
HEXACHLOROPROPENE	79 U	82 U	76 U	77 U	86 U	76 U	98 U	76 U	94 U	74 U	76 U	78 U
INDENO(1,2,3-CD)PYRENE	1.5 U	1.6 U	1.5 U	1.5 U	1.7 U	1.5 U	1.9 U	1.5 U	1.8 U	1.4 U	1.5 U	1.5 U
ISODRIN	79 U	82 U	76 U	77 U	86 U	76 U	98 U	76 U	94 U	74 U	76 U	78 U
ISOPHORONE	79 U	82 U	76 U	77 U	86 U	76 U	98 U	76 U	94 U	74 U	76 U	78 U
ISOSAFROLE	79 U	82 U	76 U	77 U	86 U	76 U	98 U	76 U	94 U	74 U	76 U	78 U
KEPONE	79 UR	82 UR	76 UR	77 UR	86 UR	76 UR	98 UR	76 UR	94 UR	74 UR	76 UR	78 UR
METHAPYRILENE	79 UJ	82 UJ	76 U	77 U	86 U	76 U	98 U	76 U	94 U	74 U	76 U	78 U
METHYL METHANE SULFONATE	79 U	82 U	76 U	77 U	86 U	76 U	98 U	76 U	94 U	74 U	76 U	78 U
METHYL PARATHION	79 UJ	82 UJ	76 U	77 U	86 UJ	76 U	98 UJ	76 U	94 UJ	74 U	76 U	78 U
N-NITROSO-DI-N-BUTYLAMINE	79 UJ	82 UJ	76 U	77 U	86 U	76 U	98 U	76 U	94 U	74 U	76 U	78 U
N-NITROSO-DI-N-PROPYLAMINE	79 UJ	82 UJ	76 U	77 U	86 U	76 U	98 U	76 U	94 U	74 U	76 U	78 U
N-NITROSODIETHYLAMINE	79 UJ	82 UJ	76 U	77 U	86 U	76 U	98 U	76 U	94 U	74 U	76 U	78 U
N-NITROSODIMETHYLAMINE	79 U	82 U	76 U	77 U	86 U	76 U	98 U	76 UJ	94 U	74 UJ	76 UJ	78 UJ
N-NITROSOMETHYLETHYLAMINE	79 UJ	82 UJ	76 U	77 U	86 U	76 U	98 U	76 U	94 U	74 U	76 U	78 U
N-NITROSOMORPHOLINE	79 UJ	82 UJ	76 U	77 U	86 U	76 U	98 U	76 U	94 U	74 U	76 U	78 U
N-NITROSOPIPERIDINE	79 UJ	82 UJ	76 U	77 U	86 U	76 U	98 U	76 U	94 U	74 U	76 U	78 U
N-NITROSOPYRROLIDINE	79 UJ	82 UJ	76 UJ	77 UJ	86 U	76 UJ	98 U	76 U	94 U	74 U	76 U	78 U
NAPHTHALENE	1.5 U	1.6 U	1.5 U	1.5 U	1.7 U	1.5 U	1.9 U	1.5 U	1.8 U	1.4 U	1.5 U	1.5 U
O,O,O-TRIETHYL PHOSPHOROTHIOATE	79 U	82 U	76 U	77 U	86 U	76 U	98 U	76 U	94 U	74 U	76 U	78 U
O-TOLUIDINE	79 U	82 U	76 U	77 U	86 U	76 U	98 U	76 U	94 U	74 U	76 U	78 U
P-(DIMETHYLAMINO)AZOBENZENE	79 UJ	82 UJ	76 U	77 U	86 U	76 U	98 U	76 U	94 U	74 U	76 U	78 U
PENTACHLOROBENZENE	79 U	82 U	76 U	77 U	86 U	76 U	98 U	76 U	94 U	74 U	76 U	78 U
PENTACHLOROETHANE	79 U	82 U	76 U	77 U	86 U	76 U	98 U	76 U	94 U	74 U	76 U	78 U
PENTACHLORONITROBENZENE	79 U	82 U	76 U	77 U	86 U	76 U	98 U	76 U	94 U	74 U	76 U	78 U
PHENACETIN	79 U	82 U	76 U	77 U	86 U	76 U	98 U	76 U	94 U	74 U	76 U	78 U
PHENANTHRENE	1.5 U	1.6 U	1.5 U	1.5 U	1.7 U	1.5 U	1.9 U	1.5 U	1.8 U	1.4 U	1.5 U	1.5 U
PHENOL	79 U	82 U	76 U	77 U	86 U	76 U	98 U	76 U	94 U	74 UJ	76 UJ	78 U
PRONAMIDE	79 U	82 U	76 U	77 U	86 U	76 U	98 U	76 U	94 U	74 U	76 U	78 U
PYRENE	1.5 U	1.6 U	1.5 U	1.5 U	1.7 U	1.5 U	1.9 U	8	13	1.4 U	1.5 U	1.5 UJ
PYRIDINE	79 U	82 U	76 U	77 U	86 U	76 U	98 U	76 UJ	94 U	74 UJ	76 UJ	78 UJ
SAFROLE	79 U	82 U	76 U	77 U	86 U	76 U	98 U	76 U	94 U	74 U	76 U	78 U
Energetics (MG/KG)												
1,3,5-TRINITROBENZENE	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U
1,3-DINITROBENZENE	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U
2,4,6-TRINITROTOLUENE	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U
2,4-DINITROTOLUENE	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U
2,6-DINITROTOLUENE	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U
2-AMINO-4,6-DINITROTOLUENE	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U

TABLE E-1

SUMMARY OF ANALYTIC RESULTS IN SURFACE SOIL
SWMU 3 - OLD JEEP TRAIL/LITTLE SULPHUR CREEK
NSWC CRANE
CRANE, INDIANA

LOCATION	03SB37	03SB38	03SB39	03SB40	03SB41	03SB42	03SB43	03SB44	03SB45	03SB46	03SB47	03SB48
NSAMPLE	03SS370002	03SS380002	03SS390002	03SS400002	03SS410002	03SS420002	03SS430002	03SS440002	03SS450002	03SS460002	03SS470002	03SS480002
SAMPLE	03SS370002	03SS380002	03SS390002	03SS400002	03SS410002	03SS420002	03SS430002	03SS440002	03SS450002	03SS460002	03SS470002	03SS480002
SACODE	ORIG	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	ORIG	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
DEPTH RANGE	0 - 2	0 - 2	0 - 2	0 - 2	0 - 2	0 - 2	0 - 2	0 - 2	0 - 2	0 - 2	0 - 2	0 - 2
QC_TYPE	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
STATUS	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
SAMPLE DATE	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
VALIDATED	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
COLLECTION METHOD	GRAB	GRAB	GRAB	GRAB	GRAB	GRAB	GRAB	GRAB	GRAB	GRAB	GRAB	GRAB
2-NITROTOLUENE	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U
3-NITROTOLUENE	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U
4-AMINO-2,6-DINITROTOLUENE	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U
4-NITROTOLUENE	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U
HMX	0.25 U	2.1 R	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.61	0.25 U	0.25 U	0.25 U
NITROBENZENE	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U
NITROCELLULOSE	550 U	600 U	560 U	560 U	630 UJ	560 U	690 UJ	550 U	670 UJ	540 U	530 U	550 U
NITROGLYCERIN	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U
PETN	1.5 U	1.8 U	1.5 U	1.5 U	1.7 U	1.5 U	1.9 U	1.5 U	1.8 U	1.4 U	1.5 U	1.5 U
RDX	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U
TETRYL	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U
Pesticides/PCB's (UG/KG)												
4,4'-DDD												
4,4'-DDE												
4,4'-DDT												
ALDRIN												
ALPHA-BHC												
ALPHA-CHLORDANE												
AROCLOR-1016												
AROCLOR-1221												
AROCLOR-1232												
AROCLOR-1242												
AROCLOR-1248												
AROCLOR-1254												
AROCLOR-1260												
BETA-BHC												
DELTA-BHC												
DIELDRIN												
ENDOSULFAN I												
ENDOSULFAN II												
ENDOSULFAN SULFATE												
ENDRIN												
ENDRIN ALDEHYDE												
ENDRIN KETONE												
GAMMA-BHC (LINDANE)												
GAMMA-CHLORDANE												
HEPTACHLOR												
HEPTACHLOR EPOXIDE												
METHOXYCHLOR												
TOXAPHENE												
Herbicides (UG/KG)												
2,4,5-T												
2,4,5-TP (SILVEX)												
2,4-D												
DINOSEB												
HEXACHLOROPHENE												
PENTACHLOROPHENOL												
Inorganics (MG/KG)												
ALUMINUM	9330 J	8160 J	6530 J	6650 J	7270 J	6870 J	8410 J	6260 J	7940 J	5380 J	5700 J	5740 J
ANTIMONY	0.58 U	2.8 U	0.29 U	0.37 U	1.3 U	0.44 U	0.58 U	0.34 U	2 J	0.45 U	0.53 U	0.46 U

TABLE E-1

SUMMARY OF ANALYTIC RESULTS IN SURFACE SOIL
SWMU 3 - OLD JEEP TRAIL/LITTLE SULPHUR CREEK
NSWC CRANE
CRANE, INDIANA

LOCATION	03SB37	03SB38	03SB39	03SB40	03SB41	03SB42	03SB43	03SB44	03SB45	03SB46	03SB47	03SB48
NSAMPLE	03SS370002	03SS380002	03SS390002	03SS400002	03SS410002	03SS420002	03SS430002	03SS440002	03SS450002	03SS460002	03SS470002	03SS480002
SAMPLE	03SS370002	03SS380002	03SS390002	03SS400002	03SS410002	03SS420002	03SS430002	03SS440002	03SS450002	03SS460002	03SS470002	03SS480002
SACODE	ORIG	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	ORIG	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
DEPTH RANGE	0 - 2	0 - 2	0 - 2	0 - 2	0 - 2	0 - 2	0 - 2	0 - 2	0 - 2	0 - 2	0 - 2	0 - 2
QC_TYPE	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
STATUS	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
SAMPLE DATE	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
VALIDATED	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
COLLECTION METHOD	GRAB	GRAB	GRAB	GRAB	GRAB	GRAB	GRAB	GRAB	GRAB	GRAB	GRAB	GRAB
ARSENIC	5.8	4.4	6	5.3	5.6 J	4.6	4.4 U	4.5 J	5.7 J	6.4 J	8.4 J	4.4 J
BARIUM	95.6 J	177 J	132 J	113 J	429 J	118 J	75.7 J	108 J	311 J	72.2 J	112 J	2040 J
BERYLLIUM	0.77	0.58	0.79	0.73	0.52	0.8	0.54	0.62	0.55	1.1	0.91	0.55
CADMIUM	0.32 U	1.6	0.37	0.48	1.3	0.38	0.56	0.59	1.5	0.4	0.78	0.58
CALCIUM	1280 J	2230 J	10100 J	16800 J	2420 J	8790 J	7710 J	76500 J	2860 J	3870 J	1180 J	15400 J
CHROMIUM	10.4 J	8.8 J	11.2 J	13.8 J	10.8 J	11.8 J	12.6 J	11.8 J	10.2 J	28.8 J	19.9 J	23 J
COBALT	15 J	12.1 J	18.9 J	17.1 J	12.6	17.5 J	6.9	13.5 J	11.8	17.2 J	15.2 J	6.7 J
COPPER	10.8 J	54.6 J	8.1 J	9.8 J	62 J	8.9 J	13.7 J	12 J	54.9 J	18 J	23.5 J	14.4 J
IRON	18100 J	14500 J	26900 J	24200 J	15200 J	26800 J	12800 J	20200 J	14300 J	49700 J	30400 J	28800 J
LEAD	15.5 J	85.5 J	16.3 J	15.7 J	83.5 J	14.8 J	20.6 J	61.1 J	63.3 J	17.3 J	16 J	124 J
MAGNESIUM	1460 J	1080 J	1000 J	1110 J	1030 J	1240 J	1850 J	4120 J	935 J	567 J	634 J	1420 J
MANGANESE	379 J	1210 J	1760 J	1490 J	1160 J	1500 J	451 J	1270 J	1020 J	1120 J	1210 J	423 J
MERCURY	0.019 J	0.14 J	0.028 J	0.028 J	0.13 J	0.026 J	0.03 J	0.028 J	0.16 J	0.017 J	0.022 J	0.075 J
NICKEL	13.6 J	13.7 J	17 J	16 J	13.5 J	14.1 J	12.8 J	15.3 J	14.5 J	22.4 J	19 J	25.5 J
POTASSIUM	797 J	514 J	460 J	487 J	626 J	475 J	923 J	640 J	671 J	409 J	398 J	784 J
SELENIUM	0.29	0.27	0.33	0.26	0.35	0.3	0.28	0.26 J	0.34	0.17 J	0.24 J	0.17 J
SILVER	0.05 U	0.72	0.04 U	0.04 U	0.13 U	0.33	0.38 U	0.04 U	0.26 U	0.32 J	0.04 U	0.04 U
SODIUM	108 U	139 U	111 U	237 U	46.8 U	169 U	48.9 U	197 J	51.3 U	102 J	87.1 J	108 J
THALLIUM	0.1	0.09	0.11	0.11	0.1	0.11	0.11	0.09	0.1	0.08	0.09	0.08
TIN	0.35 U	1.7 U	0.17 U	0.22 U	6.5 U	1 U	0.5 U	0.23 U	2.1 U	0.42 U	0.42 U	11 U
VANADIUM	14.5 J	12.7 J	16.3 J	16.3 J	16	16.3 J	16.8	14.4 J	15.4	26.5 J	22.9 J	14.4 J
ZINC	33.7 J	142 J	34.4 J	42 J	230 J	36.2 J	44.8 J	51.2 J	211 J	62.9 J	43.9 J	79.7 J
Miscellaneous Parameters (MG/KG)												
NITRATE MG/KG	1.7	3	1.5	2.1	4.4	1.9	7.9	2.7	4.4	1.5	2.8	2.7
NITRITE MG/KG	22 UJ	28 UJ	2.2 UR	21 UR	21 UJ	11 UR	14 UJ	11 UJ	15 UJ	12 UJ	11 UJ	2.3 UJ
NITRITE/NITRATE MG/KG	1.7 J	3 J	1.5 J	2.1 J	4.4 J	1.9 J	7.9 J	2.7 J	4.4 J	1.5 J	2.8 J	2.7 J
PERCHLORATE	24 UJ	25 UJ	22 UJ	23 UJ	25 UJ	23 UJ	25 UJ	23 UJ	25 UJ	20 U	22 U	20 U
Miscellaneous Parameters (%)												
PERCENT MOISTURE	15.2	19.3	11	13	20.3	11.9	19.7	12.1	19.2	9.9	10.2	18.4

TABLE E-2

SUMMARY OF ANALYTIC RESULTS IN SUBSURFACE SOIL
SWMU 3 - OLD JEEP TRAIL/LITTLE SULPHUR CREEK
NSWC CRANE
CRANE, INDIANA

LOCATION	03SB02	03SB02	03SB04	03SB04	03SB05	03SB05	03SB06	03SB06	03SB07	03SB07	03SB08	03SB08
NSAMPLE	03SB020206	03SB020610	03SB040206	03SB040610	03SB050206	03SB050610	03SB060206	03SB060610	03SB070206	03SB070610	03SB080206	03SB080610
SAMPLE	03SB020206	03SB020610	03SB040206	03SB040610	03SB050206	03SB050610	03SB060206	03SB060610	03SB070206	03SB070610	03SB080206	03SB080610
SACODE	NORMAL	NORMAL	NORMAL	ORIG	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	ORIG	NORMAL
DEPTH RANGE	2 - 6	6 - 10	2 - 6	6 - 10	2 - 6	6 - 10	2 - 6	6 - 10	2 - 6	6 - 10	2 - 6	6 - 10
QC_TYPE	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
STATUS	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
SAMPLE DATE	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
VALIDATED	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
COLLECTION METHOD	GRAB	GRAB	GRAB	GRAB	GRAB	GRAB	GRAB	GRAB	GRAB	GRAB	GRAB	GRAB
Dioxins (NG/KG))												
1,2,3,4,6,7,8,9-OCDD												
1,2,3,4,6,7,8,9-OCDF												
1,2,3,4,6,7,8-HPCDD												
1,2,3,4,6,7,8-HPCDF												
1,2,3,4,7,8,9-HPCDF												
1,2,3,4,7,8-HXCDD												
1,2,3,4,7,8-HXCDF												
1,2,3,6,7,8-HXCDD												
1,2,3,6,7,8-HXCDF												
1,2,3,7,8,9-HXCDD												
1,2,3,7,8,9-HXCDF												
1,2,3,7,8-PECDD												
1,2,3,7,8-PECDF												
2,3,4,6,7,8-HXCDF												
2,3,4,7,8-PECDF												
2,3,7,8-TCDD												
2,3,7,8-TCDF												
TEQ BIRD												
TEQ FISH												
TEQ HUMAN												
TOTAL HPCDD												
TOTAL HPCDF												
TOTAL HXCDD												
TOTAL HXCDF												
TOTAL PECDD												
TOTAL PECDF												
TOTAL TCDD												
TOTAL TCDF												
Volatile Organics (UG/KG))												
1,1,1,2-TETRACHLOROETHANE												
1,1,1-TRICHLOROETHANE												
1,1,2,2-TETRACHLOROETHANE												
1,1,2-TRICHLOROETHANE												
1,1-DICHLOROETHANE												
1,1-DICHLOROETHENE												
1,2,3-TRICHLOROPROPANE												
1,2-DIBROMO-3-CHLOROPROPANE												
1,2-DIBROMOETHANE												
1,2-DICHLOROETHANE												
1,2-DICHLOROPROPANE												
1,4-DIOXANE												
2-BUTANONE												
2-HEXANONE												
3-CHLOROPROPENE												
4-METHYL-2-PENTANONE												
ACETONE												
ACETONITRILE												
ACROLEIN												

TABLE E-2

SUMMARY OF ANALYTIC RESULTS IN SUBSURFACE SOIL
SWMU 3 - OLD JEEP TRAIL/LITTLE SULPHUR CREEK
NSWC CRANE
CRANE, INDIANA

LOCATION	03SB02	03SB02	03SB04	03SB04	03SB05	03SB05	03SB06	03SB06	03SB07	03SB07	03SB08	03SB08
NSAMPLE	03SB020206	03SB020610	03SB040206	03SB040610	03SB050206	03SB050610	03SB060206	03SB060610	03SB070206	03SB070610	03SB080206	03SB080610
SAMPLE	03SB020206	03SB020610	03SB040206	03SB040610	03SB050206	03SB050610	03SB060206	03SB060610	03SB070206	03SB070610	03SB080206	03SB080610
SACODE	NORMAL	NORMAL	NORMAL	ORIG	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	ORIG	NORMAL
DEPTH RANGE	2 - 6	6 - 10	2 - 6	6 - 10	2 - 6	6 - 10	2 - 6	6 - 10	2 - 6	6 - 10	2 - 6	6 - 10
QC_TYPE	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
STATUS	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
SAMPLE DATE	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
VALIDATED	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
COLLECTION METHOD	GRAB	GRAB	GRAB	GRAB	GRAB	GRAB	GRAB	GRAB	GRAB	GRAB	GRAB	GRAB
ACRYLONITRILE												
BENZENE												
BROMODICHLOROMETHANE												
BROMOFORM												
BROMOMETHANE												
CARBON DISULFIDE												
CARBON TETRACHLORIDE												
CHLOROBENZENE												
CHLORODIBROMOMETHANE												
CHLOROETHANE												
CHLOROFORM												
CHLOROMETHANE												
CHLOROPRENE												
CIS-1,2-DICHLOROETHENE												
CIS-1,3-DICHLOROPROPENE												
DIBROMOMETHANE												
DICHLORODIFLUOROMETHANE												
ETHYL METHACRYLATE												
ETHYLBENZENE												
ISOBUTANOL												
METHACRYLONITRILE												
METHYL IODIDE												
METHYL METHACRYLATE												
METHYLENE CHLORIDE												
PROPIONITRILE												
STYRENE												
TETRACHLOROETHENE												
TOLUENE												
TOTAL XYLENES												
TRANS-1,2-DICHLOROETHENE												
TRANS-1,3-DICHLOROPROPENE												
TRANS-1,4-DICHLORO-2-BUTENE												
TRICHLOROETHENE												
TRICHLOROFLUOROMETHANE												
VINYL ACETATE												
VINYL CHLORIDE												
Semivolatile Organics (UG/KG))												
1,2,4,5-TETRACHLOROBENZENE	77 U	74 U	74 U	74 U	82 UJ	74 U	77 U	75 U	76 U	74 U	82 U	77 U
1,2,4-TRICHLOROBENZENE	77 U	74 U	74 U	74 U	82 UJ	74 U	77 U	75 U	76 U	74 U	82 U	77 U
1,2-DICHLOROBENZENE	77 U	74 U	74 U	74 U	82 UJ	74 U	77 U	75 U	76 U	74 U	82 U	77 U
1,3-DICHLOROBENZENE	77 U	74 U	74 U	74 U	82 UJ	74 U	77 U	75 U	76 U	74 U	82 U	77 U
1,4-DICHLOROBENZENE	77 U	74 U	74 U	74 U	82 UJ	74 U	77 U	75 U	76 U	74 U	82 U	77 U
1,4-NAPHTHOQUINONE	77 U	74 U	74 U	74 U	82 UJ	74 U	77 U	75 U	76 U	74 U	82 U	77 U
1,4-PHENYLENEDIAMINE	77 U	74 U	74 U	74 U	82 UJ	74 UJ	77 U	75 U	76 U	74 U	82 UJ	77 UJ
1-NAPHTHYLAMINE	77 U	74 U	74 U	74 U	82 UJ	74 U	77 U	75 U	76 U	74 U	82 U	77 U
2,2'-OXYBIS(1-CHLOROPROPANE)	77 UJ	74 UJ	74 UJ	74 UJ	82 UJ	74 UJ	77 UJ	75 UJ	76 UJ	74 UJ	82 UJ	77 UJ
2,3,4,6-TETRACHLOROPHENOL	77 U	74 U	74 U	74 UJ	82 UJ	74 U	77 U	75 U	76 UJ	74 U	82 U	77 UJ
2,4,5-TRICHLOROPHENOL	77 U	74 U	74 U	74 UJ	82 UJ	74 U	77 U	75 U	76 UJ	74 U	82 U	77 UJ
2,4,6-TRICHLOROPHENOL	77 U	74 U	74 U	74 UJ	82 UJ	74 U	77 U	75 U	76 UJ	74 U	82 U	77 UJ

TABLE E-2

SUMMARY OF ANALYTIC RESULTS IN SUBSURFACE SOIL
SWMU 3 - OLD JEEP TRAIL/LITTLE SULPHUR CREEK
NSWC CRANE
CRANE, INDIANA

LOCATION	03SB02	03SB02	03SB04	03SB04	03SB05	03SB05	03SB06	03SB06	03SB07	03SB07	03SB08	03SB08
NSAMPLE	03SB020206	03SB020610	03SB040206	03SB040610	03SB050206	03SB050610	03SB060206	03SB060610	03SB070206	03SB070610	03SB080206	03SB080610
SAMPLE	03SB020206	03SB020610	03SB040206	03SB040610	03SB050206	03SB050610	03SB060206	03SB060610	03SB070206	03SB070610	03SB080206	03SB080610
SACODE	NORMAL	NORMAL	NORMAL	ORIG	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	ORIG	NORMAL
DEPTH RANGE	2 - 6	6 - 10	2 - 6	6 - 10	2 - 6	6 - 10	2 - 6	6 - 10	2 - 6	6 - 10	2 - 6	6 - 10
QC_TYPE	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
STATUS	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
SAMPLE DATE	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
VALIDATED	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
COLLECTION METHOD	GRAB	GRAB	GRAB	GRAB	GRAB	GRAB	GRAB	GRAB	GRAB	GRAB	GRAB	GRAB
2,4-DICHLOROPHENOL	77 U	74 U	74 U	74 UJ	82 UJ	74 U	77 U	75 U	76 UJ	74 U	82 U	77 UJ
2,4-DIMETHYLPHENOL	77 U	74 U	74 U	74 UJ	82 UJ	74 U	77 UR	75 U	76 UJ	74 U	82 U	77 UJ
2,4-DINITROPHENOL	77 U	74 U	74 U	74 UJ	82 UJ	74 U	77 U	75 U	76 UJ	74 U	82 U	77 UJ
2,6-DICHLOROPHENOL	77 U	74 U	74 U	74 UJ	82 UJ	74 U	77 U	75 U	76 UJ	74 U	82 U	77 U
2-ACETYLAMINOFLUORENE	77 U	74 U	74 U	74 U	82 UJ	74 U	77 U	75 U	76 U	74 U	82 U	77 U
2-CHLORONAPHTHALENE	77 U	74 U	74 U	74 U	82 UJ	74 U	77 UJ	75 U	76 U	74 U	82 U	77 UJ
2-CHLOROPHENOL	77 U	74 U	74 U	74 UJ	82 UJ	74 U	77 U	75 U	76 UJ	74 U	82 U	77 UJ
2-METHYLNAPHTHALENE	1.49 U	1.44 U	1.44 U	1.44 U	1.59 U	1.43 U	1.49 U	1.46 U	1.48 U	1.43 U	1.55 U	1.49 U
2-METHYLPHENOL	77 U	74 U	74 U	74 UJ	82 UJ	74 U	77 UJ	75 U	76 UJ	74 U	82 U	77 U
2-NAPHTHYLAMINE	77 U	74 U	74 U	74 U	82 UJ	74 U	77 U	75 U	76 U	74 U	82 U	77 U
2-NITROANILINE	77 UJ	74 UJ	74 UJ	74 UJ	82 UJ	74 U	77 UJ	75 UJ	76 UJ	74 UJ	82 U	77 U
2-NITROPHENOL	77 U	74 U	74 U	74 UJ	82 UJ	74 U	77 U	75 U	76 U	74 U	82 U	77 UJ
2-PICOLINE	77 U	74 U	74 U	74 U	82 UJ	74 U	77 U	75 U	76 U	74 U	82 U	77 U
3&4-METHYLPHENOL	77 U	74 U	74 U	74 UJ	82 UJ	74 U	77 UJ	75 U	76 UJ	74 U	82 U	77 UJ
3,3'-DICHLOROBENZIDINE	77 U	74 U	74 U	74 U	82 UJ	74 U	77 UR	75 U	76 U	74 U	82 U	77 U
3,3'-DIMETHYLBENZIDINE	77 U	74 U	74 U	74 U	82 UJ	74 U	77 U	75 U	76 U	74 U	82 U	77 U
3-METHYLCHOLANTHRENE	77 U	74 U	74 U	74 U	82 UJ	74 U	77 U	75 U	76 U	74 U	82 U	77 U
3-NITROANILINE	77 U	74 U	74 U	74 U	82 UJ	74 U	77 U	75 U	76 U	74 U	82 U	77 U
4,6-DINITRO-2-METHYLPHENOL	77 U	74 U	74 U	74 UJ	82 UJ	74 U	77 U	75 U	76 UJ	74 U	82 U	77 UJ
4-AMINOBIPHENYL	77 U	74 U	74 U	74 U	82 UJ	74 U	77 U	75 U	76 U	74 U	82 U	77 U
4-BROMOPHENYL PHENYL ETHER	77 U	74 U	74 U	74 U	82 UJ	74 U	77 U	75 U	76 U	74 U	82 U	77 U
4-CHLORO-3-METHYLPHENOL	77 U	74 U	74 U	74 UJ	82 UJ	74 U	77 UJ	75 U	76 UJ	74 U	82 U	77 UJ
4-CHLOROANILINE	77 U	74 U	74 U	74 U	82 UJ	74 U	77 UJ	75 U	76 U	74 U	82 U	77 U
4-CHLOROPHENYL PHENYL ETHER	77 U	74 U	74 U	74 U	82 UJ	74 U	77 U	75 U	76 U	74 U	82 U	77 U
4-NITROANILINE	77 U	74 U	74 U	74 U	82 UJ	74 U	77 U	75 U	76 U	74 U	82 U	77 U
4-NITROPHENOL	77 UJ	74 UJ	74 UJ	74 UJ	82 UJ	74 U	77 UJ	75 UJ	76 UJ	74 UJ	82 U	77 UJ
4-NITROQUINOLINE-1-OXIDE	77 UR	74 UR	74 UR	74 UR	82 UR	74 UR	77 UR	75 UR	76 UR	74 UR	82 UR	77 UR
5-NITRO-O-TOLUIDINE	77 U	74 U	74 U	74 U	82 UJ	74 U	77 U	75 U	76 U	74 U	82 U	77 U
7,12-DIMETHYLBENZ(A)ANTHRACENE	77 U	74 U	74 U	74 U	82 UJ	74 U	77 U	75 U	76 U	74 U	82 U	77 U
A,A-DIMETHYLPHENETHYLAMINE	77 UJ	74 UJ	74 UJ	74 UJ	82 UJ	74 UJ	77 UJ	75 UJ	76 UJ	74 UJ	82 UJ	77 UJ
ACENAPHTHENE	1.49 U	1.44 U	1.44 U	1.44 U	1.59 U	1.43 U	1.49 U	1.46 U	1.48 U	1.43 U	1.55 U	1.49 U
ACENAPHTHYLENE	1.49 U	1.44 U	1.44 U	1.44 U	1.59 U	1.43 U	1.49 U	1.46 U	1.48 U	1.43 U	1.55 U	1.49 U
ACETOPHENONE	77 U	74 U	74 U	74 U	82 UJ	74 U	77 U	75 U	76 U	74 U	82 U	77 U
ANILINE	77 U	74 U	74 U	74 U	82 UJ	74 U	77 U	75 U	76 U	74 U	82 U	77 U
ANTHRACENE	1.49 U	1.44 U	1.44 U	1.44 U	1.59 U	1.43 U	1.49 U	1.46 U	1.48 U	1.43 U	1.55 U	1.49 U
ARAMITE	77 U	74 U	74 U	74 U	82 UJ	74 U	77 U	75 U	76 U	74 U	82 U	77 U
BENZO(A)ANTHRACENE	1.49 U	1.44 U	1.44 U	1.44 U	1.59 U	1.43 U	1.49 U	1.46 U	1.48 U	1.43 U	1.55 U	1.49 U
BENZO(A)PYRENE	1.49 U	1.44 U	1.44 U	1.44 U	1.59 U	1.43 U	1.49 U	1.46 U	1.48 U	1.43 U	1.55 U	1.49 U
BENZO(B)FLUORANTHENE	1.49 U	1.44 U	1.44 U	1.44 U	1.59 U	1.43 U	1.49 U	1.46 U	1.48 U	1.43 U	1.55 U	1.49 U
BENZO(G,H,I)PERYLENE	1.49 U	1.44 U	1.44 U	1.44 U	1.59 U	1.43 U	1.49 U	1.46 U	1.48 U	1.43 U	1.55 U	1.49 U
BENZO(K)FLUORANTHENE	1.49 U	1.44 U	1.44 U	1.44 U	1.59 U	1.43 U	1.49 U	1.46 U	1.48 U	1.43 U	1.55 U	1.49 U
BENZYL ALCOHOL	77 U	74 U	74 U	74 UJ	82 UJ	74 U	77 U	75 U	76 U	74 U	82 U	77 UJ
BIS(2-CHLOROETHOXY)METHANE	77 U	74 U	74 U	74 U	82 UJ	74 U	77 UJ	75 U	76 U	74 U	82 U	77 U
BIS(2-CHLOROETHYL)ETHER	77 U	74 U	74 U	74 U	82 UJ	74 U	77 U	75 U	76 U	74 U	82 U	77 U
BIS(2-ETHYLHEXYL)PHTHALATE	77 U	74 U	74 U	74 U	82 UJ	74 U	77 UR	75 U	76 U	3300 J	82 U	77 U
BUTYL BENZYL PHTHALATE	77 U	74 U	74 U	74 U	82 UJ	74 U	77 UJ	75 U	76 U	74 U	82 U	77 U
CHLOROBENZILATE	77 U	74 U	74 U	74 U	82 UJ	74 U	77 U	75 U	76 U	74 U	82 U	77 U
CHRYSENE	1.49 U	1.44 U	1.44 U	1.44 U	1.59 U	1.43 U	1.49 U	1.46 U	1.48 U	1.43 U	1.55 U	1.49 U
DI-N-BUTYL PHTHALATE	77 U	74 U	74 U	74 U	82 UJ	74 U	77 UR	75 U	76 U	74 U	82 U	77 U

TABLE E-2

SUMMARY OF ANALYTIC RESULTS IN SUBSURFACE SOIL
SWMU 3 - OLD JEEP TRAIL/LITTLE SULPHUR CREEK
NSWC CRANE
CRANE, INDIANA

LOCATION	03SB02	03SB02	03SB04	03SB04	03SB05	03SB05	03SB06	03SB06	03SB07	03SB07	03SB08	03SB08
NSAMPLE	03SB020206	03SB020610	03SB040206	03SB040610	03SB050206	03SB050610	03SB060206	03SB060610	03SB070206	03SB070610	03SB080206	03SB080610
SAMPLE	03SB020206	03SB020610	03SB040206	03SB040610	03SB050206	03SB050610	03SB060206	03SB060610	03SB070206	03SB070610	03SB080206	03SB080610
SACODE	NORMAL	NORMAL	NORMAL	ORIG	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	ORIG	NORMAL
DEPTH RANGE	2 - 6	6 - 10	2 - 6	6 - 10	2 - 6	6 - 10	2 - 6	6 - 10	2 - 6	6 - 10	2 - 6	6 - 10
QC_TYPE	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
STATUS	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
SAMPLE DATE	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
VALIDATED	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
COLLECTION METHOD	GRAB	GRAB	GRAB	GRAB	GRAB	GRAB	GRAB	GRAB	GRAB	GRAB	GRAB	GRAB
DI-N-OCTYL PHTHALATE	77 U	74 U	74 U	74 U	82 UJ	74 U	77 U	75 U	76 U	110 J	82 U	77 U
DIALLATE	77 U	74 U	74 U	74 U	82 UJ	74 U	77 U	75 U	76 U	74 U	82 U	77 U
DIBENZO(A,H)ANTHRACENE	1.49 U	1.44 U	1.44 U	1.44 U	1.59 U	1.43 U	1.49 U	1.46 U	1.48 U	1.43 U	1.55 U	1.49 U
DIBENZOFURAN	77 U	74 U	74 U	74 U	82 UJ	74 U	77 U	75 U	76 U	74 U	82 U	77 U
DIETHYL PHTHALATE	77 U	74 U	74 U	74 U	82 UJ	74 U	77 U	75 U	76 U	74 U	82 U	77 U
DIMETHYL PHTHALATE	77 U	74 U	74 U	74 U	82 UJ	74 U	77 U	75 U	76 U	74 U	82 U	77 U
DIPHENYLAMINE	77 U	74 U	74 U	74 U	82 UJ	74 U	77 U	75 U	76 U	74 U	82 U	77 U
ETHYL METHANE SULFONATE	77 U	74 U	74 U	74 U	82 UJ	74 U	77 U	75 U	76 U	74 U	82 U	77 U
ETHYL PARATHION	77 U	74 U	74 U	74 U	82 UJ	74 U	77 U	75 U	76 U	74 U	82 U	77 U
FLUORANTHENE	1.49 U	1.44 U	1.44 U	1.44 U	1.59 U	1.43 U	1.49 U	1.46 U	1.48 U	1.43 U	1.55 U	1.49 U
FLUORENE	1.49 U	1.44 U	1.44 U	1.44 U	1.59 U	1.43 U	1.49 U	1.46 U	1.48 U	1.43 U	1.55 U	1.49 U
HEXACHLOROBENZENE	77 U	74 U	74 U	74 U	82 UJ	74 U	77 U	75 U	76 U	74 U	82 U	77 U
HEXACHLOROBUTADIENE	77 U	74 U	74 U	74 U	82 UJ	74 U	77 U	75 U	76 U	74 U	82 U	77 U
HEXACHLOROCYCLOPENTADIENE	77 U	74 U	74 U	74 U	82 UJ	74 U	77 UJ	75 U	76 U	74 U	82 U	77 U
HEXACHLOROETHANE	77 U	74 U	74 U	74 U	82 UJ	74 U	77 U	75 U	76 U	74 U	82 U	77 U
HEXACHLOROPROPENE	77 U	74 U	74 U	74 U	82 UJ	74 U	77 U	75 U	76 U	74 U	82 U	77 U
INDENO(1,2,3-CD)PYRENE	1.49 U	1.44 U	1.44 U	1.44 U	1.59 U	1.43 U	1.49 U	1.46 U	1.48 U	1.43 U	1.55 U	1.49 U
ISODRIN	77 U	74 U	74 U	74 U	82 UJ	74 U	77 U	75 U	76 U	74 U	82 U	77 U
ISOPHORONE	77 U	74 U	74 U	74 U	82 UJ	74 U	77 U	75 U	76 U	74 U	82 U	77 U
ISOSAFROLE	77 U	74 U	74 U	74 U	82 UJ	74 U	77 U	75 U	76 U	74 U	82 U	77 U
KEPONE	77 UR	74 UR	74 UR	74 UR	82 UR	74 UR	77 UR	75 UR	76 UR	74 UR	82 UR	77 UR
METHAPYRILENE	77 U	74 U	74 U	74 U	82 UJ	74 U	77 U	75 U	76 U	74 U	82 U	77 U
METHYL METHANE SULFONATE	77 U	74 U	74 U	74 U	82 UJ	74 U	77 U	75 U	76 U	74 U	82 U	77 U
METHYL PARATHION	77 U	74 U	74 U	74 U	82 UJ	74 U	77 U	75 U	76 U	74 U	82 U	77 U
N-NITROSO-DI-N-BUTYLAMINE	77 U	74 U	74 U	74 U	82 UJ	74 U	77 U	75 U	76 U	74 U	82 U	77 U
N-NITROSO-DI-N-PROPYLAMINE	77 UJ	74 UJ	74 UJ	74 UJ	82 UJ	74 UJ	77 UJ	75 UJ	76 UJ	74 UJ	82 UJ	77 UJ
N-NITROSODIETHYLAMINE	77 U	74 U	74 U	74 U	82 UJ	74 U	77 U	75 U	76 U	74 U	82 U	77 U
N-NITROSODIMETHYLAMINE	77 U	74 U	74 U	74 U	82 UJ	74 U	77 U	75 U	76 U	74 U	82 U	77 U
N-NITROSOMETHYLETHYLAMINE	77 U	74 U	74 U	74 U	82 UJ	74 U	77 U	75 U	76 U	74 U	82 U	77 U
N-NITROSOMORPHOLINE	77 UJ	74 UJ	74 UJ	74 UJ	82 UJ	74 UJ	77 UJ	75 UJ	76 UJ	74 UJ	82 UJ	77 UJ
N-NITROSOPIPERIDINE	77 UJ	74 UJ	74 UJ	74 UJ	82 UJ	74 UJ	77 UJ	75 UJ	76 UJ	74 UJ	82 UJ	77 UJ
N-NITROSOPYRROLIDINE	77 U	74 U	74 U	74 U	82 UJ	74 U	77 U	75 U	76 U	74 U	82 U	77 U
NAPHTHALENE	1.49 U	1.44 U	1.44 U	1.44 U	1.59 U	1.43 U	1.49 U	1.46 U	1.48 U	1.43 U	1.55 U	1.49 U
O,O,O-TRIETHYL PHOSPHOROTHIOATE	77 U	74 U	74 U	74 U	82 UJ	74 U	77 U	75 U	76 U	74 U	82 U	77 U
O-TOLUIDINE	77 U	74 U	74 U	74 U	82 UJ	74 U	77 U	75 U	76 U	74 U	82 U	77 U
P-(DIMETHYLAMINO)AZOBENZENE	77 U	74 U	74 U	74 U	82 UJ	74 U	77 U	75 U	76 U	74 U	82 U	77 U
PENTACHLOROBENZENE	77 U	74 U	74 U	74 U	82 UJ	74 U	77 U	75 U	76 U	74 U	82 U	77 U
PENTACHLOROETHANE	77 U	74 U	74 U	74 U	82 UJ	74 U	77 U	75 U	76 U	74 U	82 U	77 U
PENTACHLORONITROBENZENE	77 U	74 U	74 U	74 U	82 UJ	74 U	77 U	75 U	76 U	74 U	82 U	77 U
PHENACETIN	77 U	74 U	74 U	74 U	82 UJ	74 U	77 U	75 U	76 U	74 U	82 U	77 U
PHENANTHRENE	1.49 U	1.44 U	1.44 U	1.44 U	1.59 U	1.43 U	1.49 U	1.46 U	1.48 U	1.43 U	1.55 U	1.49 U
PHENOL	77 U	74 U	74 U	74 U	82 UJ	74 U	77 U	75 U	76 U	74 U	82 U	77 U
PRONAMIDE	77 U	74 U	74 U	74 U	82 UJ	74 U	77 U	75 U	76 U	74 U	82 U	77 U
PYRENE	1.49 U	1.44 U	1.44 U	1.44 U	1.59 U	1.43 U	1.49 U	1.46 U	1.48 U	1.43 U	1.55 U	1.49 U
PYRIDINE	77 U	74 U	74 U	74 U	82 UJ	74 U	77 U	75 U	76 U	74 U	82 U	77 U
SAFROLE	77 U	74 U	74 U	74 U	82 UJ	74 U	77 U	75 U	76 U	74 U	82 U	77 U
Energetics (MG/KG)												
1,3,5-TRINITROBENZENE	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U
1,3-DINITROBENZENE	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U

TABLE E-2

SUMMARY OF ANALYTIC RESULTS IN SUBSURFACE SOIL
SWMU 3 - OLD JEEP TRAIL/LITTLE SULPHUR CREEK
NSWC CRANE
CRANE, INDIANA

LOCATION	03SB02	03SB02	03SB04	03SB04	03SB05	03SB05	03SB06	03SB06	03SB07	03SB07	03SB08	03SB08
NSAMPLE	03SB020206	03SB020610	03SB040206	03SB040610	03SB050206	03SB050610	03SB060206	03SB060610	03SB070206	03SB070610	03SB080206	03SB080610
SAMPLE	03SB020206	03SB020610	03SB040206	03SB040610	03SB050206	03SB050610	03SB060206	03SB060610	03SB070206	03SB070610	03SB080206	03SB080610
SACODE	NORMAL	NORMAL	NORMAL	ORIG	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	ORIG	NORMAL
DEPTH RANGE	2 - 6	6 - 10	2 - 6	6 - 10	2 - 6	6 - 10	2 - 6	6 - 10	2 - 6	6 - 10	2 - 6	6 - 10
QC_TYPE	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
STATUS	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
SAMPLE DATE	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
VALIDATED	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
COLLECTION METHOD	GRAB	GRAB	GRAB	GRAB	GRAB	GRAB	GRAB	GRAB	GRAB	GRAB	GRAB	GRAB
2,4,6-TRINITROTOLUENE	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U
2,4-DINITROTOLUENE	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U
2,6-DINITROTOLUENE	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U
2-AMINO-4,6-DINITROTOLUENE	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U
2-NITROTOLUENE	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U
3-NITROTOLUENE	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U
4-AMINO-2,6-DINITROTOLUENE	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U
4-NITROTOLUENE	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U
HMX	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U
NITROBENZENE	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U
NITROCELLULOSE	560 U	540 U	550 U	550 U	590 U	540 U	570 U	540 U	560 U	510 U	570 U	550 U
NITROGLYCERIN	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U
PETN	0.025 U	0.025 U	0.025 U	0.025 U	0.25 U	0.25 U	0.025 U	0.025 U	0.025 U	0.025 U	0.025 U	0.25 U
RDX	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U
TETRYL	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U
Inorganics (MG/KG)												
ALUMINUM												
ANTIMONY												
ARSENIC												
BARIUM												
BERYLLIUM												
CADMIUM												
CALCIUM												
CHROMIUM												
COBALT												
COPPER												
IRON												
LEAD												
MAGNESIUM												
MANGANESE												
MERCURY												
NICKEL												
POTASSIUM												
SELENIUM												
SILVER												
SODIUM												
THALLIUM												
TIN												
VANADIUM												
ZINC												
Miscellaneous Parameters												
NITRATE (MG/KG)	2.1	2.1	1.9	1.9	2.3	1.9	1.7	2.3	4.3	1.1 UJ	3.3	1.8
NITRITE (MG/KG)	13 UJ	10 UJ	2.2 UJ	2.2 UJ	12 UR	12 UR	2.2 UJ	2.1 UJ	14 UJ	2.9 J	4 UJ	11 UR
NITRITE/NITRATE (MG/KG)	2.1 J	2.1 J	1.9 J	1.9 J	2.3 J	1.9 J	1.7 J	2.3 J	4.3 J	3.3 J	3.3 J	1.8 J
PERCENT MOISTURE (%)	13.6	8.4	9.6	9.5	18.2	8.9	12.6	11.4	11.1	9.4	16.3	12.2
PERCHLORATE (UG/KG)	23 UJ	22 UJ	22 UJ	22 UJ	24 UJ	22 UJ	23 UJ	23 UJ	23 UJ	22 UJ	24 UJ	23 UJ

TABLE E-2

SUMMARY OF ANALYTIC RESULTS IN SUBSURFACE SOIL
SWMU 3 - OLD JEEP TRAIL/LITTLE SULPHUR CREEK
NSWC CRANE
CRANE, INDIANA

LOCATION	03SB09	03SB10	03SB10	03SB11	03SB11	03SB13	03SB13	03SB14	03SB14	03SB15	03SB15	03SB16
NSAMPLE	03SB090204	03SB100206	03SB100610	03SB110206	03SB110610	03SB130206	03SB130610	03SB140206	03SB140610	03SB150206	03SB150610	03SB160206
SAMPLE	03SB090204	03SB100206	03SB100610	03SB110206	03SB110610	03SB130206	03SB130610	03SB140206	03SB140610	03SB150206	03SB150610	03SB160206
SACODE	NORMAL	NORMAL	ORIG	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	ORIG	NORMAL	NORMAL
DEPTH RANGE	2 - 4	2 - 6	6 - 10	2 - 6	6 - 10	2 - 6	6 - 10	2 - 6	6 - 10	2 - 6	6 - 10	2 - 6
QC_TYPE	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
STATUS	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
SAMPLE DATE	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
VALIDATED	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
COLLECTION METHOD	GRAB	GRAB	GRAB	GRAB	GRAB	GRAB	GRAB	GRAB	GRAB	GRAB	GRAB	GRAB
Dioxins (NG/KG))												
1,2,3,4,6,7,8,9-OCDD												
1,2,3,4,6,7,8,9-OCDF												
1,2,3,4,6,7,8-HPCDD												
1,2,3,4,6,7,8-HPCDF												
1,2,3,4,7,8,9-HPCDF												
1,2,3,4,7,8-HXCDD												
1,2,3,4,7,8-HXCDF												
1,2,3,6,7,8-HXCDD												
1,2,3,6,7,8-HXCDF												
1,2,3,7,8,9-HXCDD												
1,2,3,7,8,9-HXCDF												
1,2,3,7,8-PECDD												
1,2,3,7,8-PECDF												
2,3,4,6,7,8-HXCDF												
2,3,4,7,8-PECDF												
2,3,7,8-TCDD												
2,3,7,8-TCDF												
TEQ BIRD												
TEQ FISH												
TEQ HUMAN												
TOTAL HPCDD												
TOTAL HPCDF												
TOTAL HXCDD												
TOTAL HXCDF												
TOTAL PECDD												
TOTAL PECDF												
TOTAL TCDD												
TOTAL TCDF												
Volatile Organics (UG/KG))												
1,1,1,2-TETRACHLOROETHANE												
1,1,1-TRICHLOROETHANE												
1,1,2,2-TETRACHLOROETHANE												
1,1,2-TRICHLOROETHANE												
1,1-DICHLOROETHANE												
1,1-DICHLOROETHENE												
1,2,3-TRICHLOROPROPANE												
1,2-DIBROMO-3-CHLOROPROPANE												
1,2-DIBROMOETHANE												
1,2-DICHLOROETHANE												
1,2-DICHLOROPROPANE												
1,4-DIOXANE												
2-BUTANONE												
2-HEXANONE												
3-CHLOROPROPENE												
4-METHYL-2-PENTANONE												
ACETONE												
ACETONITRILE												
ACROLEIN												

TABLE E-2

SUMMARY OF ANALYTIC RESULTS IN SUBSURFACE SOIL
SWMU 3 - OLD JEEP TRAIL/LITTLE SULPHUR CREEK
NSWC CRANE
CRANE, INDIANA

LOCATION	03SB09	03SB10	03SB10	03SB11	03SB11	03SB13	03SB13	03SB14	03SB14	03SB15	03SB15	03SB16
NSAMPLE	03SB090204	03SB100206	03SB100610	03SB110206	03SB110610	03SB130206	03SB130610	03SB140206	03SB140610	03SB150206	03SB150610	03SB160206
SAMPLE	03SB090204	03SB100206	03SB100610	03SB110206	03SB110610	03SB130206	03SB130610	03SB140206	03SB140610	03SB150206	03SB150610	03SB160206
SACODE	NORMAL	NORMAL	ORIG	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	ORIG	NORMAL	NORMAL
DEPTH RANGE	2 - 4	2 - 6	6 - 10	2 - 6	6 - 10	2 - 6	6 - 10	2 - 6	6 - 10	2 - 6	6 - 10	2 - 6
QC_TYPE	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
STATUS	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
SAMPLE DATE	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
VALIDATED	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
COLLECTION METHOD	GRAB	GRAB	GRAB	GRAB	GRAB	GRAB	GRAB	GRAB	GRAB	GRAB	GRAB	GRAB
ACRYLONITRILE												
BENZENE												
BROMODICHLOROMETHANE												
BROMOFORM												
BROMOMETHANE												
CARBON DISULFIDE												
CARBON TETRACHLORIDE												
CHLOROBENZENE												
CHLORODIBROMOMETHANE												
CHLOROETHANE												
CHLOROFORM												
CHLOROMETHANE												
CHLOROPRENE												
CIS-1,2-DICHLOROETHENE												
CIS-1,3-DICHLOROPROPENE												
DIBROMOMETHANE												
DICHLORODIFLUOROMETHANE												
ETHYL METHACRYLATE												
ETHYLBENZENE												
ISOBUTANOL												
METHACRYLONITRILE												
METHYL IODIDE												
METHYL METHACRYLATE												
METHYLENE CHLORIDE												
PROPIONITRILE												
STYRENE												
TETRACHLOROETHENE												
TOLUENE												
TOTAL XYLENES												
TRANS-1,2-DICHLOROETHENE												
TRANS-1,3-DICHLOROPROPENE												
TRANS-1,4-DICHLORO-2-BUTENE												
TRICHLOROETHENE												
TRICHLOROFLUOROMETHANE												
VINYL ACETATE												
VINYL CHLORIDE												
Semivolatile Organics (UG/KG)												
1,2,4,5-TETRACHLOROBENZENE	67 U	75 U	75 U	74 U	74 U	77 U	78 U	76 UJ	76 U	78 U	77 U	76 U
1,2,4-TRICHLOROBENZENE	67 U	75 U	75 U	74 U	74 U	77 U	78 U	76 UJ	76 U	78 U	77 U	76 U
1,2-DICHLOROBENZENE	67 U	75 U	75 U	74 U	74 U	77 U	78 U	76 UJ	76 U	78 U	77 U	76 U
1,3-DICHLOROBENZENE	67 U	75 U	75 U	74 U	74 U	77 U	78 U	76 UJ	76 U	78 U	77 U	76 U
1,4-DICHLOROBENZENE	67 U	75 U	75 U	74 U	74 U	77 U	78 U	76 UJ	76 U	78 U	77 U	76 U
1,4-NAPHTHOQUINONE	67 U	75 U	75 U	74 U	74 U	77 U	78 U	76 UJ	76 U	78 U	77 U	76 U
1,4-PHENYLENEDIAMINE	67 UJ	75 UJ	75 UJ	74 UJ	74 UJ	77 UJ	78 UJ	76 UJ	76 UJ	78 UJ	77 UJ	76 UJ
1-NAPHTHYLAMINE	67 U	75 U	75 U	74 U	74 U	77 U	78 U	76 UJ	76 U	78 U	77 U	76 U
2,2'-OXYBIS(1-CHLOROPROPANE)	67 UJ	75 UJ	75 UJ	74 UJ	74 UJ	77 UJ	78 UJ	76 UJ	76 UJ	78 UJ	77 UJ	76 UJ
2,3,4,6-TETRACHLOROPHENOL	67 U	75 UJ	75 U	74 U	74 U	77 U	78 UJ	76 UJ	76 UJ	78 UJ	77 U	76 U
2,4,5-TRICHLOROPHENOL	67 U	75 UJ	75 U	74 U	74 U	77 U	78 UJ	76 UJ	76 UJ	78 UJ	77 U	76 U
2,4,6-TRICHLOROPHENOL	67 U	75 UJ	75 U	74 U	74 U	77 U	78 UJ	76 UJ	76 UJ	78 UJ	77 U	76 U

TABLE E-2

SUMMARY OF ANALYTIC RESULTS IN SUBSURFACE SOIL
SWMU 3 - OLD JEEP TRAIL/LITTLE SULPHUR CREEK
NSWC CRANE
CRANE, INDIANA

LOCATION	03SB09	03SB10	03SB10	03SB11	03SB11	03SB13	03SB13	03SB14	03SB14	03SB15	03SB15	03SB16
NSAMPLE	03SB090204	03SB100206	03SB100610	03SB110206	03SB110610	03SB130206	03SB130610	03SB140206	03SB140610	03SB150206	03SB150610	03SB160206
SAMPLE	03SB090204	03SB100206	03SB100610	03SB110206	03SB110610	03SB130206	03SB130610	03SB140206	03SB140610	03SB150206	03SB150610	03SB160206
SACODE	NORMAL	NORMAL	ORIG	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	ORIG	NORMAL	NORMAL
DEPTH RANGE	2 - 4	2 - 6	6 - 10	2 - 6	6 - 10	2 - 6	6 - 10	2 - 6	6 - 10	2 - 6	6 - 10	2 - 6
QC_TYPE	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
STATUS	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
SAMPLE DATE	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
VALIDATED	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
COLLECTION METHOD	GRAB	GRAB	GRAB	GRAB	GRAB	GRAB	GRAB	GRAB	GRAB	GRAB	GRAB	GRAB
2,4-DICHLOROPHENOL	67 U	75 UJ	75 UJ	74 U	74 U	77 U	78 UJ	76 UJ	76 UJ	78 UJ	77 U	76 U
2,4-DIMETHYLPHENOL	67 U	75 UJ	75 U	74 U	74 U	77 U	78 UJ	76 UJ	76 UJ	78 UJ	77 U	76 U
2,4-DINITROPHENOL	67 UJ	75 UJ	75 U	74 U	74 U	77 U	78 UJ	76 UJ	76 UJ	78 UJ	77 U	76 UJ
2,6-DICHLOROPHENOL	67 U	75 UJ	75 U	74 U	74 U	77 U	78 UJ	76 UJ	76 UJ	78 UJ	77 U	76 U
2-ACETYLAMINOFLUORENE	67 UJ	75 U	75 U	74 U	74 U	77 U	78 U	76 UJ	76 U	78 U	77 U	76 U
2-CHLORONAPHTHALENE	67 U	75 U	75 U	74 U	74 U	77 U	78 U	76 UJ	76 U	78 U	77 U	76 U
2-CHLOROPHENOL	67 U	75 UJ	75 U	74 U	74 U	77 U	78 UJ	76 UJ	76 UJ	78 UJ	77 U	76 U
2-METHYLNAPHTHALENE	1.3 U	1.46 U	1.46 U	1.44 U	1.43 U	1.49 U	1.51 U	1.5 U	1.5 UJ	1.51 U	1.49 U	1.48 U
2-METHYLPHENOL	67 U	75 UJ	75 U	74 U	74 U	77 U	78 UJ	76 UJ	76 UJ	78 UJ	77 U	76 U
2-NAPHTHYLAMINE	67 U	75 U	75 U	74 U	74 U	77 U	78 U	76 UJ	76 U	78 U	77 U	76 U
2-NITROANILINE	67 UJ	75 U	75 U	74 U	74 U	77 U	78 UJ	76 UJ	76 U	78 U	77 U	76 U
2-NITROPHENOL	67 U	75 UJ	75 U	74 U	74 U	77 U	78 U	76 UJ	76 UJ	78 UJ	77 U	76 U
2-PICOLINE	67 UJ	75 U	75 U	74 U	74 U	77 U	78 U	76 UJ	76 U	78 U	77 U	76 U
3&4-METHYLPHENOL	67 U	75 UJ	75 U	74 U	74 U	77 U	78 UJ	76 UJ	76 UJ	78 UJ	77 U	76 U
3,3'-DICHLOROBENZIDINE	67 U	75 U	75 U	74 U	74 U	77 U	78 U	76 UJ	76 U	78 U	77 U	76 U
3,3'-DIMETHYLBENZIDINE	67 U	75 U	75 U	74 U	74 U	77 U	78 U	76 UJ	76 U	78 U	77 U	76 U
3-METHYLCHOLANTHRENE	67 U	75 UJ	75 UJ	74 U	74 U	77 U	78 U	76 UJ	76 U	78 U	77 U	76 U
3-NITROANILINE	67 U	75 U	75 U	74 U	74 U	77 U	78 U	76 UJ	76 U	78 U	77 U	76 U
4,6-DINITRO-2-METHYLPHENOL	67 UJ	75 UJ	75 U	74 U	74 U	77 U	78 UJ	76 UJ	76 UJ	78 UJ	77 U	76 U
4-AMINOBIPHENYL	67 U	75 U	75 U	74 U	74 U	77 U	78 U	76 UJ	76 U	78 U	77 U	76 U
4-BROMOPHENYL PHENYL ETHER	67 U	75 U	75 U	74 U	74 U	77 U	78 U	76 UJ	76 U	78 U	77 U	76 U
4-CHLORO-3-METHYLPHENOL	67 U	75 UJ	75 U	74 U	74 U	77 U	78 UJ	76 UJ	76 UJ	78 UJ	77 U	76 U
4-CHLOROANILINE	67 U	75 U	75 U	74 U	74 U	77 U	78 U	76 UJ	76 U	78 U	77 U	76 U
4-CHLOROPHENYL PHENYL ETHER	67 U	75 U	75 U	74 U	74 U	77 U	78 U	76 UJ	76 U	78 U	77 U	76 U
4-NITROANILINE	67 U	75 U	75 U	74 U	74 U	77 U	78 U	76 UJ	76 U	78 U	77 U	76 U
4-NITROPHENOL	67 UJ	75 UJ	75 UJ	74 U	74 U	77 U	78 UJ	76 UJ	76 UJ	78 UJ	77 U	76 UJ
4-NITROQUINOLINE-1-OXIDE	67 UR	75 U	75 U	74 UR	74 UR	77 UR	78 UR	76 UJ	76 UJ	78 UR	77 UR	76 UR
5-NITRO-O-TOLUIDINE	67 U	75 U	75 UJ	74 U	74 U	77 U	78 U	76 UJ	76 U	78 U	77 U	76 U
7,12-DIMETHYLBENZ(A)ANTHRACENE	67 U	75 UJ	75 UJ	74 U	74 U	77 U	78 U	76 UJ	76 U	78 U	77 U	76 U
A,A-DIMETHYLPHENETHYLAMINE	67 UJ	75 UJ	75 U	74 UJ	74 UJ	77 UJ	78 UJ	76 UJ	76 U	78 UJ	77 UJ	76 UJ
ACENAPHTHENE	1.3 U	1.46 U	1.46 U	1.44 U	1.43 U	1.49 U	1.51 U	1.5 U	1.5 UJ	1.51 U	1.49 U	1.48 U
ACENAPHTHYLENE	1.3 U	1.46 U	1.46 U	1.44 U	1.43 U	1.49 U	1.51 U	1.5 U	1.5 UJ	1.51 U	1.49 U	1.48 U
ACETOPHENONE	67 U	75 U	75 U	74 U	74 U	77 U	78 U	76 UJ	76 U	78 U	77 U	76 U
ANILINE	67 U	75 U	75 U	74 U	74 U	77 U	78 U	76 UJ	76 U	78 U	77 U	76 U
ANTHRACENE	1.3 U	1.46 U	1.46 U	1.44 U	1.43 U	1.49 U	1.51 U	1.5 U	1.5 UJ	1.51 U	1.49 U	1.48 U
ARAMITE	67 UJ	75 U	75 U	74 U	74 U	77 U	78 U	76 UJ	76 U	78 U	77 U	76 U
BENZO(A)ANTHRACENE	1.3 U	1.46 U	1.46 U	1.44 U	1.43 U	1.49 U	1.51 U	1.5 U	1.5 UJ	1.51 U	1.49 U	9
BENZO(A)PYRENE	1.3 U	1.46 U	1.46 U	1.44 U	1.43 U	1.49 U	1.51 U	1.5 U	1.5 UJ	1.51 U	1.49 U	11
BENZO(B)FLUORANTHENE	1.3 U	1.46 U	1.46 U	1.44 U	1.43 U	1.49 U	1.51 U	1.5 U	1.5 UJ	1.51 U	1.49 U	14
BENZO(G,H,I)PERYLENE	1.3 U	1.46 U	1.46 U	1.44 U	1.43 U	1.49 U	1.51 U	1.5 U	1.5 UJ	1.51 U	1.49 U	1.48 U
BENZO(K)FLUORANTHENE	1.3 U	1.46 U	1.46 U	1.44 U	1.43 U	1.49 U	1.51 U	1.5 U	1.5 UJ	1.51 U	1.49 U	1.48 U
BENZYL ALCOHOL	67 U	75 U	75 U	74 U	74 U	77 U	78 UJ	76 UJ	76 U	78 U	77 U	76 U
BIS(2-CHLOROETHOXY)METHANE	67 U	75 U	75 U	74 U	74 U	77 U	78 U	76 UJ	76 U	78 U	77 U	76 U
BIS(2-CHLOROETHYL)ETHER	67 U	75 U	75 U	74 U	74 U	77 U	78 U	76 UJ	76 U	78 U	77 U	76 U
BIS(2-ETHYLHEXYL)PHTHALATE	67 U	75 U	75 U	74 U	74 U	77 U	78 U	76 UJ	79 J	87 U	77 U	76 U
BUTYL BENZYL PHTHALATE	67 U	75 U	75 U	74 U	74 U	77 U	78 U	76 UJ	76 U	78 U	77 U	76 U
CHLOROBENZILATE	67 UJ	75 U	75 U	74 U	74 U	77 U	78 U	76 UJ	76 U	78 U	77 U	76 U
CHRYSENE	1.3 U	1.46 U	1.46 U	1.44 U	1.43 U	1.49 U	1.51 U	1.5 U	1.5 UJ	1.51 U	1.49 U	16
DI-N-BUTYL PHTHALATE	67 U	75 U	75 U	74 U	74 U	77 U	78 U	76 UJ	76 U	78 U	77 U	170 J

TABLE E-2

SUMMARY OF ANALYTIC RESULTS IN SUBSURFACE SOIL
SWMU 3 - OLD JEEP TRAIL/LITTLE SULPHUR CREEK
NSWC CRANE
CRANE, INDIANA

LOCATION	03SB09	03SB10	03SB10	03SB11	03SB11	03SB13	03SB13	03SB14	03SB14	03SB15	03SB15	03SB16
NSAMPLE	03SB090204	03SB100206	03SB100610	03SB110206	03SB110610	03SB130206	03SB130610	03SB140206	03SB140610	03SB150206	03SB150610	03SB160206
SAMPLE	03SB090204	03SB100206	03SB100610	03SB110206	03SB110610	03SB130206	03SB130610	03SB140206	03SB140610	03SB150206	03SB150610	03SB160206
SACODE	NORMAL	NORMAL	ORIG	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	ORIG	NORMAL	NORMAL
DEPTH RANGE	2 - 4	2 - 6	6 - 10	2 - 6	6 - 10	2 - 6	6 - 10	2 - 6	6 - 10	2 - 6	6 - 10	2 - 6
QC_TYPE	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
STATUS	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
SAMPLE DATE	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
VALIDATED	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
COLLECTION METHOD	GRAB	GRAB	GRAB	GRAB	GRAB	GRAB	GRAB	GRAB	GRAB	GRAB	GRAB	GRAB
DI-N-OCTYL PHTHALATE	67 U	75 UJ	75 UJ	74 U	74 U	77 U	78 U	76 UR	76 UR	78 U	77 U	76 U
DIALLATE	67 UJ	75 U	75 U	74 U	74 U	77 U	78 U	76 UJ	76 U	78 U	77 U	76 U
DIBENZO(A,H)ANTHRACENE	1.3 U	1.46 U	1.46 U	1.44 U	1.43 U	1.49 U	1.51 U	1.5 U	1.5 UJ	1.51 U	1.49 U	1.48 U
DIBENZOFURAN	67 U	75 U	75 U	74 U	74 U	77 U	78 U	76 UJ	76 U	78 U	77 U	76 U
DIETHYL PHTHALATE	67 U	75 U	75 U	74 U	74 U	77 U	78 U	76 UJ	76 U	78 U	77 U	76 U
DIMETHYL PHTHALATE	67 U	75 U	75 U	74 U	74 U	77 U	78 U	76 UJ	76 U	78 U	77 U	76 U
DIPHENYLAMINE	67 U	75 U	75 U	74 U	74 U	77 U	78 U	76 UJ	76 U	78 U	77 U	76 U
ETHYL METHANE SULFONATE	67 U	75 U	75 U	74 U	74 U	77 U	78 U	76 UJ	76 U	78 U	77 U	76 UJ
ETHYL PARATHION	67 UJ	75 UJ	75 UJ	74 U	74 U	77 U	78 U	76 UJ	76 U	78 U	77 U	76 U
FLUORANTHENE	1.3 U	1.46 U	1.46 U	1.44 U	1.43 U	1.49 U	1.51 U	1.5 U	1.5 UJ	1.51 U	1.49 U	1.48 U
FLUORENE	1.3 U	1.46 U	1.46 U	1.44 U	1.43 U	1.49 U	1.51 U	1.5 U	1.5 UJ	1.51 U	1.49 U	1.48 U
HEXACHLOROBENZENE	67 U	75 U	75 U	74 U	74 U	77 U	78 U	76 UJ	76 U	78 U	77 U	76 U
HEXACHLOROBUTADIENE	67 U	75 U	75 U	74 U	74 U	77 U	78 U	76 UJ	76 UJ	78 U	77 U	76 U
HEXACHLOROCYCLOPENTADIENE	67 UJ	75 U	75 U	74 U	74 U	77 U	78 U	76 UJ	76 U	78 U	77 U	76 U
HEXACHLOROETHANE	67 U	75 U	75 U	74 U	74 U	77 U	78 U	76 UJ	76 U	78 U	77 U	76 U
HEXACHLOROPROPENE	67 U	75 U	75 U	74 U	74 U	77 U	78 U	76 UJ	76 U	78 U	77 U	76 U
INDENO(1,2,3-CD)PYRENE	1.3 U	1.46 U	1.46 U	1.44 U	1.43 U	1.49 U	1.51 U	1.5 U	1.5 UJ	1.51 U	1.49 U	1.48 U
ISODRIN	67 U	75 U	75 U	74 U	74 U	77 U	78 U	76 UJ	76 U	78 U	77 U	76 U
ISOPHORONE	67 U	75 U	75 U	74 U	74 U	77 U	78 U	76 UJ	76 U	78 U	77 U	76 U
ISOSAFROLE	67 U	75 U	75 U	74 U	74 U	77 U	78 U	76 UJ	76 U	78 U	77 U	76 U
KEPONE	67 UR	75 UR	75 UR	74 UR	74 UR	77 UR	78 UR	76 UR	76 UR	78 UR	77 UR	76 UR
METHAPYRILENE	67 UJ	75 U	75 U	74 U	74 U	77 U	78 U	76 UJ	76 U	78 U	77 U	76 U
METHYL METHANE SULFONATE	67 U	75 U	75 U	74 U	74 U	77 U	78 U	76 UJ	76 U	78 U	77 U	76 U
METHYL PARATHION	67 UJ	75 U	75 U	74 U	74 U	77 U	78 U	76 UJ	76 U	78 U	77 U	76 U
N-NITROSO-DI-N-BUTYLAMINE	67 UJ	75 U	75 U	74 U	74 U	77 U	78 U	76 UJ	76 U	78 U	77 U	76 U
N-NITROSO-DI-N-PROPYLAMINE	67 UJ	75 UJ	75 UJ	74 UJ	74 UJ	77 UJ	78 UJ	76 UJ	76 U	78 UJ	77 UJ	76 UJ
N-NITROSODIETHYLAMINE	67 UJ	75 U	75 U	74 U	74 U	77 U	78 U	76 UJ	76 U	78 U	77 U	76 U
N-NITROSODIMETHYLAMINE	67 U	75 U	75 U	74 U	74 U	77 U	78 U	76 UJ	76 UJ	78 U	77 U	76 U
N-NITROSOMETHYLETHYLAMINE	67 UJ	75 U	75 U	74 U	74 U	77 U	78 U	76 UJ	76 U	78 U	77 U	76 U
N-NITROSOMORPHOLINE	67 UJ	75 UJ	75 UJ	74 UJ	74 UJ	77 UJ	78 UJ	76 UJ	76 U	78 UJ	77 UJ	76 UJ
N-NITROSOPIPERIDINE	67 UJ	75 UJ	75 UJ	74 UJ	74 UJ	77 UJ	78 UJ	76 UJ	76 U	78 UJ	77 UJ	76 UJ
N-NITROSOPYRROLIDINE	67 UJ	75 U	75 U	74 U	74 U	77 U	78 U	76 UJ	76 U	78 U	77 U	76 U
NAPHTHALENE	1.3 U	1.46 U	1.46 U	1.44 U	1.43 U	1.49 U	1.51 U	1.5 U	1.5 UJ	1.51 U	1.49 U	1.48 U
O,O,O-TRIETHYL PHOSPHOROTHIOATE	67 U	75 U	75 U	74 U	74 U	77 U	78 U	76 UJ	76 U	78 U	77 U	76 U
O-TOLUIDINE	67 U	75 U	75 U	74 U	74 U	77 U	78 U	76 UJ	76 U	78 U	77 U	76 U
P-(DIMETHYLAMINO)AZOBENZENE	67 UJ	75 U	75 U	74 U	74 U	77 U	78 U	76 UJ	76 U	78 U	77 U	76 U
PENTACHLOROBENZENE	67 U	75 U	75 U	74 U	74 U	77 U	78 U	76 UJ	76 U	78 U	77 U	76 U
PENTACHLOROETHANE	67 U	75 U	75 U	74 U	74 U	77 U	78 U	76 UJ	76 U	78 U	77 U	76 U
PENTACHLORONITROBENZENE	67 U	75 U	75 U	74 U	74 U	77 U	78 U	76 UJ	76 U	78 U	77 U	76 U
PHENACETIN	67 U	75 U	75 U	74 U	74 U	77 U	78 U	76 UJ	76 U	78 U	77 U	76 U
PHENANTHRENE	1.3 U	1.46 U	1.46 U	1.44 U	1.43 U	1.49 U	1.51 U	1.5 U	1.5 UJ	1.51 U	1.49 U	1.48 U
PHENOL	67 U	75 UJ	75 U	74 U	74 U	77 U	78 U	76 UJ	76 UJ	78 UJ	77 U	76 U
PRONAMIDE	67 U	75 U	75 U	74 U	74 U	77 U	78 U	76 UJ	76 U	78 U	77 U	76 U
PYRENE	1.3 U	1.46 U	1.46 U	1.44 U	1.43 U	1.49 U	1.51 U	1.5 U	1.5 UJ	1.51 U	1.49 U	14
PYRIDINE	67 U	75 U	75 U	74 U	74 U	77 U	78 U	76 UJ	76 UJ	78 U	77 U	76 U
SAFROLE	67 U	75 U	75 U	74 U	74 U	77 U	78 U	76 UJ	76 U	78 U	77 U	76 U
Energetics (MG/KG)												
1,3,5-TRINITROBENZENE	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U
1,3-DINITROBENZENE	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U

TABLE E-2

SUMMARY OF ANALYTIC RESULTS IN SUBSURFACE SOIL
SWMU 3 - OLD JEEP TRAIL/LITTLE SULPHUR CREEK
NSWC CRANE
CRANE, INDIANA

LOCATION	03SB09	03SB10	03SB10	03SB11	03SB11	03SB13	03SB13	03SB14	03SB14	03SB15	03SB15	03SB16
NSAMPLE	03SB090204	03SB100206	03SB100610	03SB110206	03SB110610	03SB130206	03SB130610	03SB140206	03SB140610	03SB150206	03SB150610	03SB160206
SAMPLE	03SB090204	03SB100206	03SB100610	03SB110206	03SB110610	03SB130206	03SB130610	03SB140206	03SB140610	03SB150206	03SB150610	03SB160206
SACODE	NORMAL	NORMAL	ORIG	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	ORIG	NORMAL	NORMAL
DEPTH RANGE	2 - 4	2 - 6	6 - 10	2 - 6	6 - 10	2 - 6	6 - 10	2 - 6	6 - 10	2 - 6	6 - 10	2 - 6
QC_TYPE	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
STATUS	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
SAMPLE DATE	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
VALIDATED	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
COLLECTION METHOD	GRAB	GRAB	GRAB	GRAB	GRAB	GRAB	GRAB	GRAB	GRAB	GRAB	GRAB	GRAB
2,4,6-TRINITROTOLUENE	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.97
2,4-DINITROTOLUENE	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U
2,6-DINITROTOLUENE	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U
2-AMINO-4,6-DINITROTOLUENE	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	1.1
2-NITROTOLUENE	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U
3-NITROTOLUENE	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U
4-AMINO-2,6-DINITROTOLUENE	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.55
4-NITROTOLUENE	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U
HMX	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U
NITROBENZENE	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U
NITROCELLULOSE	550 U	540 U	540 U	500 U	550 U	540 U	570 U	560 U	570 U	540 U	570 U	560 U
NITROGLYCERIN	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U
PETN	1.3 U	0.25 U	0.25 U	0.025 U	0.025 U	0.25 U	0.25 U	1.5 U	1.5 U	0.25 U	0.25 U	0.25 U
RDX	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U
TETRYL	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U
Inorganics (MG/KG)												
ALUMINUM												
ANTIMONY												
ARSENIC												
BARIUM												
BERYLLIUM												
CADMIUM												
CALCIUM												
CHROMIUM												
COBALT												
COPPER												
IRON												
LEAD												
MAGNESIUM												
MANGANESE												
MERCURY												
NICKEL												
POTASSIUM												
SELENIUM												
SILVER												
SODIUM												
THALLIUM												
TIN												
VANADIUM												
ZINC												
Miscellaneous Parameters												
NITRATE (MG/KG)	1.2	2.5	2	2.6	1.1 UJ	6.1	2.7	1.8	1.7	6.7	4.5	2
NITRITE (MG/KG)	11 UJ	12 UR	4.3 UR	11 UJ	3.7 J	7.8 UR	2.3 J	10 UJ	35 UJ	11 UR	11 UR	11 UR
NITRITE/NITRATE (MG/KG)	1.2 J	2.5 J	2 J	2.6 J	4.3 J	6.1 J	5 J	1.8 J	1.7 J	6.7 J	4.5 J	2 J
PERCENT MOISTURE (%)	8.9	10.3	10.9	8.9	8.6	12.8	13.8	11.7	11.7	13.7	12.5	9.3
PERCHLORATE (UG/KG)	22 UJ	22 UJ	22 UJ	22 UJ	22 UJ	23 UJ	23 UJ	23 UJ	23 UJ	23 UJ	23 UJ	22 UJ

TABLE E-2

SUMMARY OF ANALYTIC RESULTS IN SUBSURFACE SOIL
SWMU 3 - OLD JEEP TRAIL/LITTLE SULPHUR CREEK
NSWC CRANE
CRANE, INDIANA

LOCATION	03SB16	03SB17	03SB17	03SB18	03SB19	03SB19	03SB20	03SB20	03SB21	03SB21	03SB22	03SB22
NSAMPLE	03SB160610	03SB170406	03SB171214	03SB180204	03SB190204	03SB191215	03SB200810	03SB201215	03SB211012	03SB211215	03SB220204	03SB221215
SAMPLE	03SB160610	03SB170406	03SB171214	03SB180204	03SB190204	03SB191215	03SB200810	03SB201215	03SB211012	03SB211215	03SB220204	03SB221215
SACODE	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	ORIG	ORIG	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
DEPTH RANGE	6 - 10	4 - 6	12 - 14	2 - 4	2 - 4	12 - 15	8 - 10	12 - 15	10 - 12	12 - 15	2 - 4	12 - 15
QC_TYPE	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
STATUS	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
SAMPLE DATE	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
VALIDATED	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
COLLECTION METHOD	GRAB	GRAB	GRAB	GRAB	GRAB	GRAB	GRAB	GRAB	GRAB	GRAB	GRAB	GRAB
Dioxins (NG/KG))												
1,2,3,4,6,7,8,9-OCDD						174 J						
1,2,3,4,6,7,8,9-OCDF						0.2 UJ						
1,2,3,4,6,7,8-HPCDD						1.2 J						
1,2,3,4,6,7,8-HPCDF						0.1 U						
1,2,3,4,7,8,9-HPCDF						0.1 U						
1,2,3,4,7,8-HXCDD						0.1 U						
1,2,3,4,7,8-HXCDF						0.07 U						
1,2,3,6,7,8-HXCDD						0.1 U						
1,2,3,6,7,8-HXCDF						0.07 U						
1,2,3,7,8,9-HXCDD						0.1 U						
1,2,3,7,8,9-HXCDF						0.09 U						
1,2,3,7,8-PECDD						0.07 U						
1,2,3,7,8-PECDF						0.06 U						
2,3,4,6,7,8-HXCDF						0.07 U						
2,3,4,7,8-PECDF						0.06 U						
2,3,7,8-TCDD						0.06 U						
2,3,7,8-TCDF						0.05 U						
TEQ BIRD						0.019						
TEQ FISH						0.019						
TEQ HUMAN						0.029						
TOTAL HPCDD						2.5 U						
TOTAL HPCDF						0.1 U						
TOTAL HXCDD						0.16 U						
TOTAL HXCDF						0.18 BU						
TOTAL PECDD						0.27						
TOTAL PECDF						0.06 U						
TOTAL TCDD						0.12 U						
TOTAL TCDF						0.05 U						
Volatile Organics (UG/KG))												
1,1,1,2-TETRACHLOROETHANE		12 U	9.2 U	9.8 U	4.9 U	0.9 U	1 U	4.8 U	12 U	1 U	12 U	5.4 U
1,1,1-TRICHLOROETHANE		12 U	17 J	9.8 U	4.9 U	0.9 U	1 UJ	4.8 U	12 U	1 U	12 U	5.4 U
1,1,2,2-TETRACHLOROETHANE		12 U	9.2 U	9.8 U	4.9 U	0.9 U	1 U	4.8 U	12 U	1 U	12 U	5.4 U
1,1,2-TRICHLOROETHANE		12 U	9.2 U	9.8 U	4.9 U	0.9 U	1 U	4.8 U	12 U	1 U	12 U	5.4 U
1,1-DICHLOROETHANE		12 U	9.2 U	9.8 U	4.9 U	0.9 U	1 U	4.8 U	12 U	1 U	12 U	5.4 U
1,1-DICHLOROETHENE		12 U	9.2 U	9.8 U	4.9 U	0.9 U	1 U	4.8 U	12 U	1 U	12 U	5.4 U
1,2,3-TRICHLOROPROPANE		12 U	9.2 U	9.8 U	4.9 U	0.9 U	1 U	4.8 U	12 U	1 U	12 U	5.4 U
1,2-DIBROMO-3-CHLOROPROPANE		12 U	9.2 U	9.8 U	4.9 U	0.9 U	1 U	4.8 U	12 U	1 U	12 U	5.4 U
1,2-DIBROMOETHANE		12 U	9.2 U	9.8 U	4.9 U	0.9 U	1 U	4.8 U	12 U	1 U	12 U	5.4 U
1,2-DICHLOROETHANE		12 U	9.2 U	9.8 U	4.9 U	0.9 U	1 U	4.8 U	12 U	1 U	12 U	5.4 U
1,2-DICHLOROPROPANE		12 U	9.2 U	9.8 U	4.9 U	0.9 U	1 U	4.8 U	12 U	1 U	12 U	5.4 U
1,4-DIOXANE		105 U	105 U	105 U	90 UJ	105 U	100 U	100 U	105 U	115 U	90 U	95 U
2-BUTANONE		12 U	9.2 U	9.8 U	4.9 UJ	0.9 UJ	1 U	4.8 U	12 U	1 U	12 U	5.4 U
2-HEXANONE		12 U	10 J	9.8 U	4.9 UJ	0.9 UJ	1 UJ	4.8 U	12 U	1 U	13 J	5.4 U
3-CHLOROPROPENE		12 U	9.2 U	9.8 U	4.9 U	0.9 UJ	1 U	4.8 U	12 U	1 U	12 U	5.4 UJ
4-METHYL-2-PENTANONE		12 U	9.2 U	9.8 U	4.9 UJ	0.9 UJ	1 U	4.8 U	12 U	1 U	12 U	5.4 U
ACETONE		190 BU	150 BU	70 BU	4.9 U	11 U	13 BU	54 BU	110 BU	33 BU	230 BU	5.4 UR
ACETONITRILE		41.5 U	42.5 U	42 U	36.5 UJ	42.5 U	40 U	39.5 U	42 U	45 U	36.5 U	38 U
ACROLEIN		12 UR	9.2 UR	9.8 U	4.9 UR	0.9 UR	1 UR	4.8 UR	12 UR	1 UR	12 UR	5.4 UR

TABLE E-2

SUMMARY OF ANALYTIC RESULTS IN SUBSURFACE SOIL
SWMU 3 - OLD JEEP TRAIL/LITTLE SULPHUR CREEK
NSWC CRANE
CRANE, INDIANA

LOCATION	03SB16	03SB17	03SB17	03SB18	03SB19	03SB19	03SB20	03SB20	03SB21	03SB21	03SB22	03SB22
NSAMPLE	03SB160610	03SB170406	03SB171214	03SB180204	03SB190204	03SB191215	03SB200810	03SB201215	03SB211012	03SB211215	03SB220204	03SB221215
SAMPLE	03SB160610	03SB170406	03SB171214	03SB180204	03SB190204	03SB191215	03SB200810	03SB201215	03SB211012	03SB211215	03SB220204	03SB221215
SACODE	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	ORIG	ORIG	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
DEPTH RANGE	6 - 10	4 - 6	12 - 14	2 - 4	2 - 4	12 - 15	8 - 10	12 - 15	10 - 12	12 - 15	2 - 4	12 - 15
QC_TYPE	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
STATUS	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
SAMPLE DATE	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
VALIDATED	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
COLLECTION METHOD	GRAB	GRAB	GRAB	GRAB	GRAB	GRAB	GRAB	GRAB	GRAB	GRAB	GRAB	GRAB
ACRYLONITRILE		12 UR	9.2 UR	9.8 UR	4.9 UR	0.9 UR	1 UR	4.8 UR	12 UR	1 UR	12 UR	5.4 UR
BENZENE		12 U	9.2 U	9.8 U	4.9 U	0.9 U	1 U	4.8 U	12 U	1 U	12 U	5.4 U
BROMODICHLOROMETHANE		12 U	9.2 U	9.8 U	4.9 U	0.9 U	1 U	4.8 U	12 U	1 U	12 U	5.4 U
BROMOFORM		12 U	9.2 U	9.8 U	4.9 U	0.9 UJ	1 U	4.8 U	12 U	1 U	12 U	5.4 U
BROMOMETHANE		12 U	9.2 U	9.8 U	4.9 UJ	0.9 UJ	1 U	4.8 U	12 U	1 U	12 U	5.4 UJ
CARBON DISULFIDE		12 U	9.2 U	9.8 U	4.9 UJ	0.9 U	1 U	4.8 U	12 U	1 U	12 U	5.4 UJ
CARBON TETRACHLORIDE		12 U	9.2 U	9.8 U	4.9 U	0.9 U	1 U	4.8 U	12 U	1 U	12 U	5.4 U
CHLOROBENZENE		12 U	9.2 U	9.8 U	4.9 U	0.9 U	1 U	4.8 U	12 U	1 U	12 U	5.4 U
CHLORODIBROMOMETHANE		12 U	9.2 U	9.8 U	4.9 U	0.9 U	1 U	4.8 U	12 U	1 U	12 U	5.4 U
CHLOROETHANE		12 U	9.2 U	9.8 U	4.9 U	0.9 U	1 U	4.8 U	12 U	1 U	12 U	5.4 U
CHLOROFORM		12 U	9.2 U	9.8 U	4.9 U	0.9 U	1 U	4.8 U	12 U	1 U	12 U	5.4 U
CHLOROMETHANE		12 U	9.2 U	9.8 U	4.9 U	0.9 U	1 U	4.8 U	12 U	1 U	12 U	5.4 U
CHLOROPRENE		12 U	9.2 U	9.8 U	4.9 U	0.9 UJ	1 U	4.8 U	12 U	1 U	12 U	5.4 U
CIS-1,2-DICHLOROETHENE		12 U	9.2 U	9.8 U	4.9 U	0.9 U	1 U	4.8 U	12 U	1 U	12 U	5.4 U
CIS-1,3-DICHLOROPROPENE		12 U	9.2 U	9.8 U	4.9 U	0.9 U	1 U	4.8 U	12 U	1 U	12 U	5.4 U
DIBROMOMETHANE		12 U	9.2 U	9.8 U	4.9 U	0.9 U	1 U	4.8 U	12 U	1 U	12 U	5.4 U
DICHLORODIFLUOROMETHANE		12 U	9.2 U	9.8 U	4.9 UJ	0.9 UJ	1 U	4.8 U	12 U	1 U	12 U	5.4 UJ
ETHYL METHACRYLATE		12 U	9.2 U	9.8 U	4.9 U	0.9 U	1 U	4.8 U	12 U	1 U	12 U	5.4 U
ETHYLBENZENE		12 U	9.2 U	9.8 U	4.9 U	0.9 U	1 U	4.8 U	12 U	1 U	12 U	5.4 U
ISOBUTANOL		41.5 U	42.5 U	42 U	36.5 UJ	42.5 U	40 U	39.5 U	42 U	45 U	36.5 U	38 U
METHACRYLONITRILE		12 U	9.2 U	9.8 U	4.9 U	0.9 U	1 U	4.8 U	12 U	1 U	12 U	5.4 U
METHYL IODIDE		12 UJ	9.2 UJ	9.8 UJ	4.9 UJ	0.9 UJ	1 UJ	4.8 UJ	12 UJ	1 UJ	12 UJ	5.4 UJ
METHYL METHACRYLATE		12 U	9.2 U	9.8 U	4.9 U	0.9 U	1 U	4.8 U	12 U	1 U	12 U	5.4 U
METHYLENE CHLORIDE		29 BU	23 BU	18 BU	9 BU	2 BU	3 BU	17 BU	64 BU	17 BU	51 BU	11 BU
PROPIONITRILE		41.5 U	42.5 U	42 U	36.5 UJ	42.5 U	40 U	39.5 U	42 U	45 U	36.5 U	38 U
STYRENE		12 U	9.2 U	9.8 U	4.9 U	0.9 U	1 U	4.8 U	12 U	1 U	12 U	5.4 U
TETRACHLOROETHENE		12 U	9.2 U	9.8 U	4.9 U	0.9 U	1 U	4.8 U	12 U	1 U	12 U	5.4 U
TOLUENE		12 U	9.2 U	9.8 U	4.9 U	0.9 U	1 U	4.8 U	12 U	1 U	12 U	5.4 U
TOTAL XYLENES		12 U	9.2 U	9.8 U	4.9 U	0.9 U	1 U	4.8 U	12 U	1 U	12 U	5.4 U
TRANS-1,2-DICHLOROETHENE		12 U	9.2 U	9.8 U	4.9 U	0.9 U	1 U	4.8 U	12 U	1 U	12 U	5.4 U
TRANS-1,3-DICHLOROPROPENE		12 U	9.2 U	9.8 U	4.9 U	0.9 U	1 U	4.8 U	12 U	1 U	12 U	5.4 U
TRANS-1,4-DICHLORO-2-BUTENE		12 U	9.2 U	9.8 U	4.9 U	0.9 UJ	1 U	4.8 U	12 U	1 U	12 U	5.4 U
TRICHLOROETHENE		12 U	9.2 U	9.8 U	4.9 U	0.9 U	1 U	4.8 U	12 U	1 U	12 U	5.4 U
TRICHLOROFLUOROMETHANE		12 U	9.2 U	9.8 U	4.9 U	0.9 UJ	1 U	4.8 U	12 U	5	12 U	5.4 U
VINYL ACETATE		12 UJ	9.2 UJ	9.8 U	4.9 UJ	0.9 UJ	1 UJ	4.8 UJ	12 UJ	1 UJ	12 UJ	5.4 UJ
VINYL CHLORIDE		12 U	9.2 U	9.8 U	4.9 U	0.9 U	1 U	4.8 U	12 U	1 U	12 U	5.4 U
Semivolatile Organics (UG/KG)												
1,2,4,5-TETRACHLOROBENZENE	77 U	80 U	74 U	79 U	73 U	76 U	80 U	77 U	77 U	75 U	80 U	79 U
1,2,4-TRICHLOROBENZENE	77 U	80 U	74 U	79 U	73 U	76 U	80 U	77 U	77 U	75 U	80 U	79 U
1,2-DICHLOROBENZENE	77 U	80 U	74 U	79 U	73 U	76 U	80 U	77 U	77 U	75 U	80 U	79 U
1,3-DICHLOROBENZENE	77 U	80 U	74 U	79 U	73 U	76 U	80 U	77 U	77 U	75 U	80 U	79 U
1,4-DICHLOROBENZENE	77 U	80 U	74 U	79 U	73 U	76 U	80 U	77 U	77 U	75 U	80 U	79 U
1,4-NAPHTHOQUINONE	77 U	80 U	74 U	79 U	73 UR	76 UR	80 UR	77 UR	77 UR	75 UR	80 UR	79 UJ
1,4-PHENYLENEDIAMINE	77 UJ	80 UR	74 UR	79 U	73 U	76 U	80 U	77 U	77 U	75 U	80 U	79 U
1-NAPHTHYLAMINE	77 U	80 U	74 U	79 U	73 UJ	76 UJ	80 UJ	77 UJ	77 UJ	75 UJ	80 UJ	79 U
2,2'-OXYBIS(1-CHLOROPROPANE)	77 UJ	80 UJ	74 UJ	79 U	73 U	76 U	80 U	77 U	77 U	75 U	80 U	79 U
2,3,4,6-TETRACHLOROPHENOL	77 U	80 U	74 U	79 U	73 U	76 U	80 U	77 U	77 U	75 U	80 U	79 U
2,4,5-TRICHLOROPHENOL	77 U	80 U	74 U	79 U	73 U	76 U	80 U	77 U	77 U	75 U	80 U	79 U
2,4,6-TRICHLOROPHENOL	77 U	80 U	74 U	79 U	73 U	76 U	80 U	77 U	77 U	75 U	80 U	79 U

TABLE E-2

SUMMARY OF ANALYTIC RESULTS IN SUBSURFACE SOIL
SWMU 3 - OLD JEEP TRAIL/LITTLE SULPHUR CREEK
NSWC CRANE
CRANE, INDIANA

LOCATION	03SB16	03SB17	03SB17	03SB18	03SB19	03SB19	03SB20	03SB20	03SB21	03SB21	03SB22	03SB22
NSAMPLE	03SB160610	03SB170406	03SB171214	03SB180204	03SB190204	03SB191215	03SB200810	03SB201215	03SB211012	03SB211215	03SB220204	03SB221215
SAMPLE	03SB160610	03SB170406	03SB171214	03SB180204	03SB190204	03SB191215	03SB200810	03SB201215	03SB211012	03SB211215	03SB220204	03SB221215
SACODE	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	ORIG	ORIG	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
DEPTH RANGE	6 - 10	4 - 6	12 - 14	2 - 4	2 - 4	12 - 15	8 - 10	12 - 15	10 - 12	12 - 15	2 - 4	12 - 15
QC_TYPE	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
STATUS	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
SAMPLE DATE	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
VALIDATED	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
COLLECTION METHOD	GRAB	GRAB	GRAB	GRAB	GRAB	GRAB	GRAB	GRAB	GRAB	GRAB	GRAB	GRAB
2,4-DICHLOROPHENOL	77 U	80 U	74 U	79 U	73 U	76 U	80 U	77 U	77 U	75 U	80 U	79 U
2,4-DIMETHYLPHENOL	77 U	80 U	74 U	79 U	73 U	76 U	80 U	77 U	77 U	75 U	80 U	79 U
2,4-DINITROPHENOL	77 UJ	80 U	74 U	79 UJ	73 U	76 U	80 U	77 U	77 U	75 U	80 U	79 UJ
2,6-DICHLOROPHENOL	77 U	80 U	74 U	79 U	73 U	76 U	80 U	77 U	77 U	75 U	80 U	79 U
2-ACETYLAMINOFLUORENE	77 U	80 U	74 U	79 U	73 U	76 U	80 U	77 U	77 U	75 U	80 U	79 U
2-CHLORONAPHTHALENE	77 U	80 U	74 U	79 U	73 U	76 U	80 U	77 U	77 U	75 U	80 U	79 U
2-CHLOROPHENOL	77 U	80 U	74 U	79 U	73 U	76 U	80 U	77 U	77 U	75 U	80 U	79 U
2-METHYLNAPHTHALENE	1.49 U	1.5 U	1.4 U	56 =	5.7 U	1.5 U	1.5 U	1.6 U	1.5 U	1.5 U	140	28
2-METHYLPHENOL	77 U	80 U	74 U	79 U	73 U	76 U	80 U	77 U	77 U	75 U	83 J	79 U
2-NAPHTHYLAMINE	77 U	80 U	74 U	79 U	73 U	76 U	80 U	77 U	77 U	75 U	80 U	79 U
2-NITROANILINE	77 U	80 U	74 U	79 U	73 U	76 U	80 U	77 U	77 U	75 U	80 U	79 U
2-NITROPHENOL	77 U	80 U	74 U	79 U	73 U	76 U	80 U	77 U	77 U	75 U	80 U	79 U
2-PICOLINE	77 U	80 U	74 U	79 U	73 U	76 U	80 U	77 U	77 U	75 U	80 U	79 U
3&4-METHYLPHENOL	77 U	80 U	74 U	79 U	73 U	76 U	80 U	77 U	77 U	75 U	130 J	79 U
3,3'-DICHLOROBENZIDINE	77 U	80 U	74 U	79 U	73 U	76 U	80 U	77 U	77 U	75 U	80 U	79 U
3,3'-DIMETHYLBENZIDINE	77 U	80 U	74 U	79 U	73 U	76 U	80 U	77 U	77 U	75 U	80 U	79 U
3-METHYLCHOLANTHRENE	77 U	80 U	74 U	79 U	73 U	76 U	80 U	77 U	77 U	75 U	80 U	79 U
3-NITROANILINE	77 U	80 U	74 U	79 U	73 U	76 U	80 U	77 U	77 U	75 U	80 U	79 U
4,6-DINITRO-2-METHYLPHENOL	77 U	80 U	74 U	79 U	73 U	76 U	80 U	77 U	77 U	75 U	80 U	79 U
4-AMINOBIPHENYL	77 U	80 U	74 U	79 U	73 U	76 U	80 U	77 U	77 U	75 U	80 U	79 U
4-BROMOPHENYL PHENYL ETHER	77 U	80 U	74 U	79 U	73 U	76 U	80 U	77 U	77 U	75 U	80 U	79 U
4-CHLORO-3-METHYLPHENOL	77 U	80 U	74 U	79 U	73 U	76 U	80 U	77 U	77 U	75 U	80 U	79 U
4-CHLOROANILINE	77 U	80 U	74 U	79 U	73 U	76 U	80 U	77 U	77 U	75 U	80 U	79 U
4-CHLOROPHENYL PHENYL ETHER	77 U	80 U	74 U	79 U	73 U	76 U	80 U	77 U	77 U	75 U	80 U	79 U
4-NITROANILINE	77 U	80 U	74 U	79 U	73 U	76 U	80 U	77 U	77 U	75 U	80 U	79 UJ
4-NITROPHENOL	77 UJ	80 U	74 U	79 U	73 U	76 U	80 UR	77 UR	77 UR	75 UR	80 UR	79 UR
4-NITROQUINOLINE-1-OXIDE	77 UR	80 UR	74 UR	79 U	73 UR	76 UR	80 U	77 U	77 U	75 U	80 U	79 U
5-NITRO-O-TOLUIDINE	77 U	80 U	74 U	79 U	73 U	76 U	80 U	77 U	77 U	75 U	80 U	79 U
7,12-DIMETHYLBENZ(A)ANTHRACENE	77 U	80 U	74 U	79 U	73 U	76 U	80 U	77 U	77 U	75 U	80 U	79 UJ
A,A-DIMETHYLPHENETHYLAMINE	77 UJ	80 U	74 U	79 UJ	73 U	76 U	80 U	77 U	77 U	75 U	80 U	79 U
ACENAPHTHENE	1.49 U	1.5 U	1.4 U	6.1 U	5.7 U	1.5 U	1.5 U	1.5 U	1.5 U	1.5 U	6.3 U	1.5 U
ACENAPHTHYLENE	1.49 U	1.5 U	1.4 U	6.1 U	5.7 U	1.5 U	1.5 U	1.5 U	1.5 U	1.5 U	6.3 U	1.5 U
ACETOPHENONE	77 U	80 U	74 U	79 U	73 U	76 U	80 U	77 U	77 U	75 U	81 J	79 U
ANILINE	77 U	80 U	74 U	79 U	73 U	76 U	80 U	77 U	77 U	75 U	80 U	79 U
ANTHRACENE	1.49 U	1.5 U	1.4 U	6.1 U	5.7 U	1.5 U	1.5 U	1.5 U	1.5 U	1.5 U	6.3 U	1.5 U
ARAMITE	77 U	80 U	74 U	79 U	73 U	76 U	80 U	77 U	77 U	75 U	80 U	79 U
BENZO(A)ANTHRACENE	1.49 U	1.5 U	1.4 U	72	5.7 U	1.5 U	1.5 U	1.5 U	1.5 U	1.5 U	6.3 U	1.5 U
BENZO(A)PYRENE	1.49 U	1.5 U	1.4 U	110	5.7 U	1.5 U	1.5 U	1.5 U	1.5 U	1.5 U	6.3 U	1.5 U
BENZO(B)FLUORANTHENE	1.49 U	1.5 U	1.4 U	290	5.7 U	1.5 U	1.5 U	1.5 U	1.5 U	1.5 U	6.3 U	1.5 U
BENZO(G,H,I)PERYLENE	1.49 U	1.5 U	1.4 U	100	5.7 U	1.5 U	1.5 U	1.5 U	1.5 U	1.5 U	32	1.5 U
BENZO(K)FLUORANTHENE	1.49 U	1.5 U	1.4 U	6.1 U	5.7 U	1.5 U	1.5 U	1.5 U	1.5 U	1.5 U	6.3 U	1.5 U
BENZYL ALCOHOL	77 U	80 U	74 U	79 U	73 U	76 U	80 U	77 U	77 U	75 U	80 U	79 U
BIS(2-CHLOROETHOXY)METHANE	77 U	80 U	74 U	79 U	73 U	76 U	80 U	77 U	77 U	75 U	80 U	79 U
BIS(2-CHLOROETHYL)ETHER	77 U	80 U	74 U	79 U	73 U	76 U	80 U	77 U	77 U	75 U	80 U	79 U
BIS(2-ETHYLHEXYL)PHTHALATE	77 U	80 U	74 U	260 J	91 J	76 UJ	80 U	77 U	77 U	75 U	410	110 J
BUTYL BENZYL PHTHALATE	77 U	80 U	74 U	79 U	73 U	76 U	80 U	77 U	77 U	75 U	80 U	79 U
CHLOROBENZILATE	77 U	80 U	74 U	79 U	73 U	76 U	80 U	77 U	77 U	75 U	80 U	79 U
CHRYSENE	1.49 U	1.5 U	1.4 U	140	5.7 U	1.5 U	1.5 U	1.5 U	1.5 U	1.5 U	6.3 U	1.5 U
DI-N-BUTYL PHTHALATE	77 U	80 U	74 U	2300	320 J	76 U	80 U	77 U	77 U	75 U	100 J	79 U

TABLE E-2

SUMMARY OF ANALYTIC RESULTS IN SUBSURFACE SOIL
SWMU 3 - OLD JEEP TRAIL/LITTLE SULPHUR CREEK
NSWC CRANE
CRANE, INDIANA

LOCATION	03SB16	03SB17	03SB17	03SB18	03SB19	03SB19	03SB20	03SB20	03SB21	03SB21	03SB22	03SB22
NSAMPLE	03SB160610	03SB170406	03SB171214	03SB180204	03SB190204	03SB191215	03SB200810	03SB201215	03SB211012	03SB211215	03SB220204	03SB221215
SAMPLE	03SB160610	03SB170406	03SB171214	03SB180204	03SB190204	03SB191215	03SB200810	03SB201215	03SB211012	03SB211215	03SB220204	03SB221215
SACODE	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	ORIG	ORIG	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
DEPTH RANGE	6 - 10	4 - 6	12 - 14	2 - 4	2 - 4	12 - 15	8 - 10	12 - 15	10 - 12	12 - 15	2 - 4	12 - 15
QC_TYPE	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
STATUS	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
SAMPLE DATE	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
VALIDATED	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
COLLECTION METHOD	GRAB	GRAB	GRAB	GRAB	GRAB	GRAB	GRAB	GRAB	GRAB	GRAB	GRAB	GRAB
DI-N-OCTYL PHTHALATE	77 U	80 U	74 U	79 U	73 U	76 U	80 U	77 U	77 U	75 U	80 U	79 U
DIALLATE	77 U	80 U	74 U	79 U	73 U	76 U	80 U	77 U	77 U	75 U	80 U	79 U
DIBENZO(A,H)ANTHRACENE	1.49 U	1.5 U	1.4 U	6.1 U	5.7 U	1.5 U	1.5 U	1.5 U	1.5 U	1.5 U	6.3 U	1.5 U
DIBENZOFURAN	77 U	80 U	74 U	79 U	73 U	76 U	80 U	77 U	77 U	75 U	80 U	79 U
DIETHYL PHTHALATE	77 U	80 U	74 U	79 U	73 U	76 U	80 U	77 U	77 U	75 U	80 U	79 U
DIMETHYL PHTHALATE	77 U	80 U	74 U	79 U	73 U	76 U	80 U	77 U	77 U	75 U	80 U	79 U
DIPHENYLAMINE	77 U	80 U	74 U	79 U	73 U	76 U	80 U	77 U	77 U	75 U	80 U	79 U
ETHYL METHANE SULFONATE	77 U	80 U	74 U	79 U	73 U	76 U	80 U	77 U	77 U	75 U	80 U	79 U
ETHYL PARATHION	77 UJ	80 U	74 U	79 U	73 U	76 U	80 U	77 U	77 U	75 U	80 U	79 UJ
FLUORANTHENE	1.49 U	1.5 U	1.4 U	100	29	1.5 U	1.5 U	1.5 U	1.5 U	1.5 U	6.3 U	1.5 U
FLUORENE	1.49 U	1.5 U	1.4 U	6.1 U	5.7 U	1.5 U	1.5 U	1.5 U	1.5 U	1.5 U	6.3 U	1.5 U
HEXACHLOROBENZENE	77 U	80 U	74 U	79 U	73 U	76 U	80 U	77 U	77 U	75 U	80 U	79 U
HEXACHLOROBUTADIENE	77 U	80 U	74 U	79 U	73 U	76 U	80 U	77 U	77 U	75 U	80 U	79 U
HEXACHLOROCYCLOPENTADIENE	77 U	80 U	74 U	79 U	73 U	76 U	80 U	77 U	77 U	75 U	80 U	79 U
HEXACHLOROETHANE	77 U	80 U	74 U	79 U	73 U	76 U	80 U	77 U	77 U	75 U	80 U	79 U
HEXACHLOROPROPENE	77 U	80 U	74 U	79 U	73 U	76 U	80 U	77 U	77 U	75 U	80 U	79 U
INDENO(1,2,3-CD)PYRENE	1.49 U	1.5 U	1.4 U	77 J	5.7 U	1.5 U	1.5 U	1.5 U	1.5 U	1.5 U	6.3 U	1.5 U
ISODRIN	77 U	80 U	74 U	79 U	73 U	76 U	80 U	77 U	77 U	75 U	80 U	79 U
ISOPHORONE	77 U	80 U	74 U	79 U	73 U	76 U	80 U	77 U	77 U	75 U	80 U	79 U
ISOSAFROLE	77 U	80 U	74 U	79 U	73 U	76 U	80 U	77 U	77 U	75 U	80 U	79 U
KEPONE	77 UR	80 UR	74 UR	79 UR	73 UR	76 UR	80 UR	77 UR	77 UR	75 UR	80 UR	79 UR
METHAPYRILENE	77 U	80 UJ	74 UJ	79 U	73 UJ	76 UJ	80 UJ	77 UJ	77 UJ	75 UJ	80 UJ	79 U
METHYL METHANE SULFONATE	77 U	80 U	74 U	79 U	73 U	76 U	80 U	77 U	77 U	75 U	80 U	79 U
METHYL PARATHION	77 U	80 U	74 U	79 UJ	73 U	76 U	80 U	77 U	77 U	75 U	80 U	79 U
N-NITROSO-DI-N-BUTYLAMINE	77 U	80 U	74 U	79 U	73 U	76 U	80 U	77 U	77 U	75 U	80 U	79 U
N-NITROSO-DI-N-PROPYLAMINE	77 UJ	80 U	74 U	79 U	73 U	76 U	80 U	77 U	77 U	75 U	80 U	79 UJ
N-NITROSODIETHYLAMINE	77 U	80 U	74 U	79 U	73 U	76 U	80 U	77 U	77 U	75 U	80 U	79 U
N-NITROSODIMETHYLAMINE	77 U	80 U	74 U	79 U	73 U	76 U	80 U	77 U	77 U	75 U	80 U	79 U
N-NITROSOMETHYLETHYLAMINE	77 U	80 U	74 U	79 U	73 U	76 U	80 U	77 U	77 U	75 U	80 U	79 U
N-NITROSOMORPHOLINE	77 UJ	80 UJ	74 UJ	79 U	73 UJ	76 UJ	80 UJ	77 UJ	77 UJ	75 UJ	80 UJ	79 UJ
N-NITROSOPIPERIDINE	77 UJ	80 UJ	74 UJ	79 U	73 UJ	76 UJ	80 UJ	77 UJ	77 UJ	75 UJ	80 UJ	79 UJ
N-NITROSOPYRROLIDINE	77 U	80 U	74 U	79 U	73 U	76 U	80 U	77 U	77 U	75 U	80 U	79 U
NAPHTHALENE	1.49 U	1.5 U	1.4 U	110	5.7 U	1.5 U	1.5 U	1.5 U	1.5 U	1.5 U	180	23
O,O,O-TRIETHYL PHOSPHOROTHIOATE	77 U	80 U	74 U	79 U	73 U	76 U	80 U	77 U	77 U	75 U	80 U	79 U
O-TOLUIDINE	77 U	80 U	74 U	79 U	73 U	76 U	80 U	77 U	77 U	75 U	80 U	79 U
P-(DIMETHYLAMINO)AZOBENZENE	77 U	80 U	74 U	79 U	73 U	76 U	80 U	77 U	77 U	75 U	80 U	79 U
PENTACHLOROBENZENE	77 U	80 U	74 U	79 U	73 U	76 U	80 U	77 U	77 U	75 U	80 U	79 U
PENTACHLOROETHANE	77 U	80 U	74 U	79 U	73 U	76 U	80 U	77 U	77 U	75 U	80 U	79 U
PENTACHLORONITROBENZENE	77 U	80 U	74 U	79 U	73 U	76 U	80 U	77 U	77 U	75 U	80 U	79 U
PHENACETIN	77 U	80 U	74 U	79 U	73 U	76 U	80 U	77 U	77 U	75 U	80 U	79 U
PHENANTHRENE	1.49 U	1.5 U	1.4 U	85	5.7 U	1.5 U	1.5 U	1.5 U	1.5 U	1.5 U	45	1.5 U
PHENOL	77 U	80 U	74 U	79 U	73 U	76 U	80 U	77 U	77 U	75 U	80 U	79 U
PRONAMIDE	77 U	80 U	74 U	79 U	73 U	76 U	80 U	77 U	77 U	75 U	80 U	79 U
PYRENE	1.49 U	1.5 U	1.4 U	150	33 J	1.5 U	1.5 U	1.5 U	1.5 U	1.5 U	43	1.5 U
PYRIDINE	77 U	80 UJ	74 UJ	79 U	73 UJ	76 UJ	80 UJ	77 UJ	77 UJ	75 UJ	80 UJ	79 U
SAFROLE	77 U	80 U	74 U	79 U	73 U	76 U	80 U	77 U	77 U	75 U	80 U	79 U
Energetics (MG/KG)												
1,3,5-TRINITROBENZENE	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U
1,3-DINITROBENZENE	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U

TABLE E-2

SUMMARY OF ANALYTIC RESULTS IN SUBSURFACE SOIL
SWMU 3 - OLD JEEP TRAIL/LITTLE SULPHUR CREEK
NSWC CRANE
CRANE, INDIANA

LOCATION	03SB16	03SB17	03SB17	03SB18	03SB19	03SB19	03SB20	03SB20	03SB21	03SB21	03SB22	03SB22
NSAMPLE	03SB160610	03SB170406	03SB171214	03SB180204	03SB190204	03SB191215	03SB200810	03SB201215	03SB211012	03SB211215	03SB220204	03SB221215
SAMPLE	03SB160610	03SB170406	03SB171214	03SB180204	03SB190204	03SB191215	ORIG	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
SACODE	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	ORIG	8 - 10	12 - 15	10 - 12	12 - 15	2 - 4	12 - 15
DEPTH RANGE	6 - 10	4 - 6	12 - 14	2 - 4	2 - 4	12 - 15	NM	NM	NM	NM	NM	NM
QC_TYPE	NM	NM	NM	NM	NM	NM	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
STATUS	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	- -	- -	- -	- -	- -	- -
SAMPLE DATE	- -	- -	- -	- -	- -	- -	Y	Y	Y	Y	Y	Y
VALIDATED	Y	Y	Y	Y	Y	Y	GRAB	GRAB	GRAB	GRAB	GRAB	GRAB
COLLECTION METHOD	GRAB	GRAB	GRAB	GRAB	GRAB	GRAB						
2,4,6-TRINITROTOLUENE	0.25 U	0.25 U	0.25 U	0.25 U	2.1	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U
2,4-DINITROTOLUENE	0.25 U	0.25 U	0.25 U	0.63 J	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U
2,6-DINITROTOLUENE	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U
2-AMINO-4,6-DINITROTOLUENE	0.25 U	0.25 U	0.25 U	1.7	0.83	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U
2-NITROTOLUENE	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U
3-NITROTOLUENE	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U
4-AMINO-2,6-DINITROTOLUENE	0.25 U	0.25 U	0.25 U	1.1	0.65	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U
4-NITROTOLUENE	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.63 R	3.9
HMX	0.25 U	0.25 U	0.25 U	0.99	5.8	0.63	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U
NITROBENZENE	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U
NITROCELLULOSE	560 U	570 U	500 U	580 UJ	530 U	540 U	550 U	520 U	570 U	540 U	590 U	570 U
NITROGLYCERIN	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U
PETN	0.25 U	1.5 U	1.4 U	1.5 U	1.4 U	1.5 U	1.6 U	1.5 U	1.5 U	1.5 U	1.6 U	1.5 U
RDX	0.25 U	0.25 U	0.25 U	3.9	0.92	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	2.1
TETRYL	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U
Inorganics (MG/KG)												
ALUMINUM		6820 J	2900 J	8640 J	7760 J	3370 J	7020 J	2650 J	1400 J	2290 J	7390 J	3290 J
ANTIMONY		0.25 U	0.37 U	1.4 U	0.38 U	0.27 U	0.22 U	0.19 U	0.08 UJ	0.18 U	4.6 J	0.64 J
ARSENIC		3.8 J	8.1 J	4.5 J	2.4 J	2.8 J	2.5 J	3.1 J	0.53 J	2 J	4.1 J	4.2 J
BARIUM		151 J	38.7 J	95.2 J	100 J	39.3 J	135 J	42.4 J	10.8 J	20.3 J	69.5 J	58.3 J
BERYLLIUM		0.62 J	0.29 J	0.63	0.44 J	0.29 J	0.84 J	0.4 J	0.11 J	0.24 J	0.35	0.38 J
CADMIUM		0.53	0.28 U	3.6	3.1	0.37	0.4	0.28 U	0.28 U	0.29 U	8.8	0.75
CALCIUM		1940 J	1680 J	113000 J	74700 J	3180 J	22800	1990 J	226 J	274 J	57500 J	2300 J
CHROMIUM		9.5 J	10.1 J	21.8 J	6.3 J	19.1 J	6.7 J	8.3 J	3 J	10 J	11.4 J	15.9 J
COBALT		12.1 J	6.2 J	9.9	7 J	5.3 J	9.3 J	3.5 J	3.7 J	3.4 J	9.4 J	5.6 J
COPPER		4.6 J	4.3 J	12.6 J	4.3 J	4.5 J	5.5 J	4.2 J	1.4 J	3.8 J	12.9 J	6.1 J
IRON		11000 J	13900 J	27200 J	7200 J	12800 J	9530 J	11300 J	2620 J	8990 J	10600 J	18200 J
LEAD		12.6 J	7.5 J	1110 J	616 J	45 J	10.5 J	4.5 J	3 J	4.3 J	387 J	26.8 J
MAGNESIUM		534 J	263 J	7670 J	4790 J	563 J	1470 J	462 J	148 J	225 J	2500 J	457 J
MANGANESE		1270 J	378 J	810 J	797 J	400 J	450 J	809 J	130 J	1070 J	817 J	406 J
MERCURY		0.019 J	0.015 UJ	0.026 J	0.023	0.016	0.026 J	0.018 UJ	0.018 UJ	0.018 UJ	0.018 U	0.027
NICKEL		9.2 J	8.7 J	17.3 J	10.6 J	9 J	10.3 J	9.4 J	3 J	5.8 J	9.5 J	9 J
POTASSIUM		316 J	227 J	1250 J	381 J	293 J	370 J	260 J	245 J	261 J	415 J	304 J
SELENIUM		0.27 J	0.22 J	0.17 U	0.16 J	0.16 J	0.17 J	0.16 J	0.16 J	0.17 J	0.17 U	0.17 J
SILVER		0.04 U	0.04 U	0.04 U	0.04 U	0.04 U	0.04 U	0.04 U	0.04 U	0.04 U	0.04 U	0.04 U
SODIUM		39 U	18.8 U	644 J	77.6 U	24.9 U	52.5 U	34.8 U	30.6 U	27.6 U	888 J	41 U
THALLIUM		0.11	0.05	0.08	0.06	0.05	0.1	0.08	0.04 U	0.04 U	0.07	0.06
TIN		0.24 U	0.17 U	0.64 U	0.61 U	0.37 U	0.32 U	0.29 U	0.12 U	0.18 U	7.1 J	0.29 U
VANADIUM		15.7 J	11.3 J	20.9	9.2 J	8.8 J	10.8 J	9.1 J	2.6 J	6 J	10.9 J	10.2 J
ZINC		18.3 J	29.5 J	112 J	70.8 J	21.5 J	24.4 J	13.3 J	7.2 J	14.2 J	122 J	31.1 J
Miscellaneous Parameters												
NITRATE (MG/KG)	2.3	2 J	2 J	3.9	2.4	2.1 J	1.9 J	1.8 J	2.1 J	2.8 J	3.4	2.5
NITRITE (MG/KG)	44 UR	11 UJ	10 UJ	15 UJ	3.3 U	11 U	22 UJ	17 UJ	11 UJ	11 UJ	2.4 U	11 U
NITRITE/NITRATE (MG/KG)	2.3 J	2 J	2 J	3.9 J	2.4 J	2.1	1.9 J	1.8 J	2.1 J	2.8 J	3.4 J	2.5 J
PERCENT MOISTURE (%)	12.5	14.3	17	15	16.5	13.1	15.7	20.5	17.2	10.9	18.2	12.8
PERCHLORATE (UG/KG)	32 J	23 U	24 U	20 U	24 U	23 U	24 U	25 U	24 U	22 U	24 U	23 U

TABLE E-2

SUMMARY OF ANALYTIC RESULTS IN SUBSURFACE SOIL
SWMU 3 - OLD JEEP TRAIL/LITTLE SULPHUR CREEK
NSWC CRANE
CRANE, INDIANA

LOCATION	03SB23	03SB24	03SB24	03SB25	03SB26	03SB27	03SB27	03SB28	03SB34	03SB34	03SB36	03SB36
NSAMPLE	03SB230610	03SB240406	03SB241215	03SB250608	03SB260610	03SB270206	03SB270607	03SB280204	03SB340206	03SB340610	03SB360206	03SB360610
SAMPLE	03SB230610	03SB240406	03SB241215	03SB250608	03SB260610	03SB270206	03SB270607	03SB280204	03SB340206	03SB340610	03SB360206	03SB360610
SACODE	NORMAL	NORMAL	NORMAL	NORMAL	ORIG	NORMAL	NORMAL	ORIG	NORMAL	NORMAL	NORMAL	NORMAL
DEPTH RANGE	6 - 10	4 - 6	12 - 15	6 - 8	6 - 10	2 - 6	6 - 7	2 - 4	2 - 6	6 - 10	2 - 6	6 - 10
QC_TYPE	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
STATUS	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
SAMPLE DATE	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
VALIDATED	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
COLLECTION METHOD	GRAB	GRAB	GRAB	GRAB	GRAB	GRAB	GRAB	GRAB	GRAB	GRAB	GRAB	GRAB
Dioxins (NG/KG))												
1,2,3,4,6,7,8,9-OCDD			970 J									
1,2,3,4,6,7,8,9-OCDF			0.77 BU									
1,2,3,4,6,7,8-HPCDD			7.6									
1,2,3,4,6,7,8-HPCDF			0.35 U									
1,2,3,4,7,8,9-HPCDF			0.2 U									
1,2,3,4,7,8-HXCDD			0.1 U									
1,2,3,4,7,8-HXCDF			0.17 BU									
1,2,3,6,7,8-HXCDD			0.35 J									
1,2,3,6,7,8-HXCDF			0.08 U									
1,2,3,7,8,9-HXCDD			0.44 U									
1,2,3,7,8,9-HXCDF			0.1 U									
1,2,3,7,8-PECDD			0.1 U									
1,2,3,7,8-PECDF			0.07 U									
2,3,4,6,7,8-HXCDF			0.08 U									
2,3,4,7,8-PECDF			0.07 U									
2,3,7,8-TCDD			0.08 U									
2,3,7,8-TCDF			0.07 U									
TEQ BIRD			0.11									
TEQ FISH			0.11									
TEQ HUMAN			0.21									
TOTAL HPCDD			18.4									
TOTAL HPCDF			1.1 U									
TOTAL HXCDD			3.2 U									
TOTAL HXCDF			0.47 U									
TOTAL PECDD			0.14 U									
TOTAL PECDF			0.07 U									
TOTAL TCDD			0.08 U									
TOTAL TCDF			0.4 U									
Volatile Organics (UG/KG))												
1,1,1,2-TETRACHLOROETHANE	1.5 U	10 U	12 U	8.3 U	13 U	1.1 U	8.7 U	1.1 U				
1,1,1-TRICHLOROETHANE	2 J	10 U	12 U	8.3 U	13 U	1 J	21 J	1 J				
1,1,2,2-TETRACHLOROETHANE	1.5 U	10 U	12 U	8.3 U	13 U	1.1 U	8.7 U	1.1 U				
1,1,2-TRICHLOROETHANE	1.5 U	10 U	12 U	8.3 U	13 U	1.1 U	8.7 U	1.1 U				
1,1-DICHLOROETHANE	1.5 U	10 U	12 U	8.3 U	13 U	1.1 U	8.7 U	1.1 U				
1,1-DICHLOROETHENE	1.5 U	10 U	12 U	8.3 U	13 U	1.1 U	8.7 U	1.1 U				
1,2,3-TRICHLOROPROPANE	1.5 U	10 U	12 U	8.3 U	13 U	1.1 U	8.7 U	1.1 U				
1,2-DIBROMO-3-CHLOROPROPANE	1.5 U	10 U	12 U	8.3 U	13 U	1.1 U	8.7 U	1.1 U				
1,2-DIBROMOETHANE	1.5 U	10 U	12 U	8.3 U	13 U	1.1 U	8.7 U	1.1 U				
1,2-DICHLOROETHANE	1.5 U	10 U	12 U	8.3 U	13 U	1.1 U	8.7 U	1.1 U				
1,2-DICHLOROPROPANE	1.5 U	10 U	12 U	8.3 U	13 U	1.1 U	8.7 U	1.1 U				
1,4-DIOXANE	150 U	140 UJ	115 U	100 U	270 U	115 U	100 U	230 U				
2-BUTANONE	1.5 U	10 U	12 U	8.3 U	13 U	1.1 U	8.7 U	1.1 U				
2-HEXANONE	1.5 U	10 U	12 U	12 J	13 U	1.1 U	8.7 U	2 J				
3-CHLOROPROPENE	1.5 U	10 U	12 U	8.3 U	13 U	1.1 U	8.7 U	1.1 U				
4-METHYL-2-PENTANONE	1.5 U	10 U	12 U	10 J	13 U	1.1 U	8.7 U	1.1 U				
ACETONE	16 BU	130 BU	270 BU	160 BU	250 BU	1.1 UR	8.7 UR	18 BU				
ACETONITRILE	60 U	55 UJ	46.5 U	39.5 U	110 U	45.5 U	39.5 U	92 U				
ACROLEIN	1.5 U	10 UR	12 UR	8.3 UR	13 U	1.1 U	8.7 U	1.1 U				

TABLE E-2

SUMMARY OF ANALYTIC RESULTS IN SUBSURFACE SOIL
SWMU 3 - OLD JEEP TRAIL/LITTLE SULPHUR CREEK
NSWC CRANE
CRANE, INDIANA

LOCATION	03SB23	03SB24	03SB24	03SB25	03SB26	03SB27	03SB27	03SB28	03SB34	03SB34	03SB36	03SB36
NSAMPLE	03SB230610	03SB240406	03SB241215	03SB250608	03SB260610	03SB270206	03SB270607	03SB280204	03SB340206	03SB340610	03SB360206	03SB360610
SAMPLE	03SB230610	03SB240406	03SB241215	03SB250608	03SB260610	03SB270206	03SB270607	03SB280204	03SB340206	03SB340610	03SB360206	03SB360610
SACODE	NORMAL	NORMAL	NORMAL	NORMAL	ORIG	NORMAL	NORMAL	ORIG	NORMAL	NORMAL	NORMAL	NORMAL
DEPTH RANGE	6 - 10	4 - 6	12 - 15	6 - 8	6 - 10	2 - 6	6 - 7	2 - 4	2 - 6	6 - 10	2 - 6	6 - 10
QC_TYPE	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
STATUS	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
SAMPLE DATE	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
VALIDATED	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
COLLECTION METHOD	GRAB	GRAB	GRAB	GRAB	GRAB	GRAB	GRAB	GRAB	GRAB	GRAB	GRAB	GRAB
ACRYLONITRILE	1.5 UR	10 UR	12 UR	8.3 UR	13 UR	1.1 UR	8.7 UR	1.1 UR				
BENZENE	1.5 U	10 U	12 U	8.3 U	13 U	1.1 U	8.7 U	1.1 U				
BROMODICHLOROMETHANE	1.5 U	10 U	12 U	8.3 U	13 U	1.1 U	8.7 U	1.1 U				
BROMOFORM	1.5 U	10 U	12 U	8.3 U	13 U	1.1 U	8.7 U	1.1 U				
BROMOMETHANE	1.5 U	10 U	12 U	8.3 U	13 U	1.1 U	8.7 U	1.1 U				
CARBON DISULFIDE	1.5 U	10 U	12 U	8.3 U	13 U	1.1 U	8.7 U	1.1 U				
CARBON TETRACHLORIDE	1.5 U	10 U	12 U	8.3 U	13 U	1.1 U	8.7 U	1.1 U				
CHLOROBENZENE	1.5 U	10 U	12 U	8.3 U	13 U	1.1 U	8.7 U	1.1 U				
CHLORODIBROMOMETHANE	1.5 U	10 U	12 U	8.3 U	13 U	1.1 U	8.7 U	1.1 U				
CHLOROETHANE	1.5 U	10 U	12 U	8.3 U	13 U	1.1 U	8.7 U	1.1 U				
CHLOROFORM	1.5 U	10 U	12 U	8.3 U	13 U	1.1 U	8.7 U	1.1 U				
CHLOROMETHANE	1.5 U	10 U	12 U	8.3 U	13 U	1.1 U	8.7 U	1.1 U				
CHLOROPRENE	1.5 U	10 U	12 U	8.3 U	13 U	1.1 U	8.7 U	1.1 U				
CIS-1,2-DICHLOROETHENE	1.5 U	10 U	12 U	8.3 U	13 U	1.1 U	8.7 U	1.1 U				
CIS-1,3-DICHLOROPROPENE	1.5 U	10 U	12 U	8.3 U	13 U	1.1 U	8.7 U	1.1 U				
DIBROMOMETHANE	1.5 U	10 U	12 U	8.3 U	13 U	1.1 U	8.7 U	1.1 U				
DICHLORODIFLUOROMETHANE	1.5 U	10 U	12 U	8.3 U	13 U	1.1 U	8.7 U	1.1 U				
ETHYL METHACRYLATE	1.5 U	10 U	12 U	8.3 U	13 U	1.1 U	8.7 U	1.1 U				
ETHYLBENZENE	1.5 U	10 U	12 U	8.3 U	13 U	1.1 U	8.7 U	1.1 U				
ISOBUTANOL	60 U	55 UJ	46.5 U	39.5 U	110 U	45.5 U	39.5 U	92 U				
METHACRYLONITRILE	1.5 U	10 U	12 U	8.3 U	13 U	1.1 U	8.7 U	1.1 U				
METHYL IODIDE	1.5 UJ	10 UJ	12 UJ	8.3 UJ	13 UJ	1.1 UJ	8.7 UJ	1.1 UJ				
METHYL METHACRYLATE	1.5 U	10 U	12 U	8.3 U	13 U	1.1 U	8.7 U	1.1 U				
METHYLENE CHLORIDE	3 BU	29 BU	42 BU	29 BU	23 BU	4 BU	12 BU	5 BU				
PROPIONITRILE	60 U	55 UJ	46.5 U	39.5 U	110 U	45.5 U	39.5 U	92 U				
STYRENE	1.5 U	10 U	12 U	8.3 U	13 U	1.1 U	8.7 U	1.1 U				
TETRACHLOROETHENE	1.5 U	10 U	12 U	8.3 U	13 U	1.1 U	8.7 U	1.1 U				
TOLUENE	1.5 U	10 U	12 U	8.3 U	13 U	1.1 U	8.7 U	1.1 U				
TOTAL XYLENES	1.5 U	10 U	12 U	8.3 U	13 U	1.1 U	8.7 U	1.1 U				
TRANS-1,2-DICHLOROETHENE	1.5 U	10 U	12 U	8.3 U	13 U	1.1 U	8.7 U	1.1 U				
TRANS-1,3-DICHLOROPROPENE	1.5 U	10 U	12 U	8.3 U	13 U	1.1 U	8.7 U	1.1 U				
TRANS-1,4-DICHLORO-2-BUTENE	1.5 U	10 U	12 U	8.3 U	13 U	1.1 U	8.7 U	1.1 U				
TRICHLOROETHENE	1.5 U	10 U	12 U	8.3 U	13 U	1.1 U	8.7 U	1 BU				
TRICHLOROFLUOROMETHANE	1.5 U	10 U	12 U	8.3 U	13 U	1.1 U	8.7 U	1.1 U				
VINYL ACETATE	1.5 U	10 UJ	12 UJ	8.3 UJ	13 U	1.1 U	8.7 U	1.1 U				
VINYL CHLORIDE	1.5 U	10 U	12 U	8.3 U	13 U	1.1 U	8.7 U	1.1 U				
Semivolatile Organics (UG/KG))												
1,2,4,5-TETRACHLOROBENZENE	92 U	80 U	81 U	78 UJ	88 U	82 U	81 U	82 U	78 U	76 U	78 U	79 U
1,2,4-TRICHLOROBENZENE	92 U	80 U	81 U	78 UJ	88 U	82 U	81 U	82 U	78 U	76 U	78 U	79 U
1,2-DICHLOROBENZENE	92 U	80 U	81 U	78 UJ	88 U	82 U	81 U	82 U	78 U	76 U	78 U	79 U
1,3-DICHLOROBENZENE	92 U	80 U	81 U	78 UJ	88 U	82 U	81 U	82 U	78 U	76 U	78 U	79 U
1,4-DICHLOROBENZENE	92 U	80 U	81 U	78 UJ	88 U	82 U	81 U	82 U	78 U	76 U	78 U	79 U
1,4-NAPHTHOQUINONE	92 U	80 U	81 U	78 UJ	88 U	82 U	81 U	82 U	78 U	76 U	78 U	79 U
1,4-PHENYLENEDIAMINE	92 U	80 UR	81 UJ	78 UJ	88 UR	82 UR	81 UR	82 UR	78 UJ	78 UJ	78 UR	79 UR
1-NAPHTHYLAMINE	92 U	80 U	81 U	78 UJ	88 U	82 U	81 U	82 U	78 U	76 U	78 U	79 U
2,2'-OXYBIS(1-CHLOROPROPANE)	92 U	80 U	81 U	78 UJ	88 U	82 U	81 U	82 U	78 U	76 U	78 U	79 U
2,3,4,6-TETRACHLOROPHENOL	92 U	80 U	81 U	78 UJ	88 U	82 U	81 U	82 U	78 U	76 U	78 U	79 U
2,4,5-TRICHLOROPHENOL	92 U	80 U	81 U	78 UJ	88 U	82 U	81 U	82 U	78 U	76 U	78 U	79 U
2,4,6-TRICHLOROPHENOL	92 U	80 U	81 U	78 UJ	88 U	82 U	81 U	82 U	78 U	76 U	78 U	79 U

TABLE E-2

SUMMARY OF ANALYTIC RESULTS IN SUBSURFACE SOIL
SWMU 3 - OLD JEEP TRAIL/LITTLE SULPHUR CREEK
NSWC CRANE
CRANE, INDIANA

LOCATION	03SB23	03SB24	03SB24	03SB25	03SB26	03SB27	03SB27	03SB28	03SB34	03SB34	03SB36	03SB36
NSAMPLE	03SB230610	03SB240406	03SB241215	03SB250608	03SB260610	03SB270206	03SB270607	03SB280204	03SB340206	03SB340610	03SB360206	03SB360610
SAMPLE	03SB230610	03SB240406	03SB241215	03SB250608	03SB260610	03SB270206	03SB270607	03SB280204	03SB340206	03SB340610	03SB360206	03SB360610
SACODE	NORMAL	NORMAL	NORMAL	NORMAL	ORIG	NORMAL	NORMAL	ORIG	NORMAL	NORMAL	NORMAL	NORMAL
DEPTH RANGE	6 - 10	4 - 6	12 - 15	6 - 8	6 - 10	2 - 6	6 - 7	2 - 4	2 - 6	6 - 10	2 - 6	6 - 10
QC_TYPE	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
STATUS	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
SAMPLE DATE	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
VALIDATED	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
COLLECTION METHOD	GRAB	GRAB	GRAB	GRAB	GRAB	GRAB	GRAB	GRAB	GRAB	GRAB	GRAB	GRAB
2,4-DICHLOROPHENOL	92 U	80 U	81 U	78 UJ	88 U	82 U	81 U	82 U	78 U	76 U	78 U	79 U
2,4-DIMETHYLPHENOL	92 U	80 U	81 UJ	78 UJ	88 U	82 U	81 U	82 U	78 U	76 U	78 U	79 U
2,4-DINITROPHENOL	92 UJ	80 UJ	81 UJ	78 UJ	88 U	82 U	81 U	82 U	78 UJ	76 UJ	78 UJ	79 UJ
2,6-DICHLOROPHENOL	92 U	80 U	81 U	78 UJ	88 U	82 U	81 U	82 U	78 U	76 U	78 U	79 U
2-ACETYLAMINOFLUORENE	92 U	80 U	81 U	78 UJ	88 U	82 U	81 U	82 U	78 U	76 U	78 U	79 U
2-CHLORONAPHTHALENE	92 U	80 U	81 UJ	78 UJ	88 U	82 U	81 U	82 U	78 U	76 U	78 U	79 U
2-CHLOROPHENOL	92 U	80 U	81 U	78 UJ	88 U	82 U	81 U	82 U	78 U	76 U	78 U	79 U
2-METHYLNAPHTHALENE	1.8 U	260	23	1.5 U	1.7 U	1.6 U	1.6 U	1.6 U	1.5 U	1.5 UJ	1.5 U	1.5 U
2-METHYLPHENOL	92 U	80 U	81 U	78 UJ	88 U	82 U	81 U	82 U	78 U	76 U	78 U	79 U
2-NAPHTHYLAMINE	92 U	80 U	81 U	78 UJ	88 U	82 U	81 U	82 U	78 U	76 U	78 U	79 U
2-NITROANILINE	92 U	80 U	81 U	78 UJ	88 U	82 U	81 U	82 U	78 U	76 U	78 U	79 U
2-NITROPHENOL	92 U	80 U	81 U	78 UJ	88 U	82 U	81 U	82 U	78 U	76 U	78 U	79 U
2-PICOLINE	92 U	80 U	81 U	78 UJ	88 U	82 U	81 U	82 U	78 U	76 U	78 U	79 U
3&4-METHYLPHENOL	92 U	80 U	81 U	78 UJ	88 U	82 U	81 U	82 U	78 U	76 U	78 U	79 U
3,3'-DICHLOROBENZIDINE	92 U	80 U	81 U	78 UJ	88 U	82 U	81 U	82 U	78 U	76 U	78 U	79 U
3,3'-DIMETHYLBENZIDINE	92 U	80 U	81 U	78 UJ	88 U	82 U	81 U	82 U	78 U	76 U	78 U	79 U
3-METHYLCHOLANTHRENE	92 U	80 U	81 U	78 UJ	88 U	82 U	81 U	82 U	78 U	76 U	78 U	79 U
3-NITROANILINE	92 U	80 U	81 U	78 UJ	88 U	82 U	81 U	82 U	78 U	76 U	78 U	79 U
4,6-DINITRO-2-METHYLPHENOL	92 U	80 U	81 U	78 UJ	88 U	82 U	81 U	82 U	78 U	76 U	78 UJ	79 UJ
4-AMINOBIPHENYL	92 U	80 U	81 U	78 UJ	88 U	82 U	81 U	82 U	78 U	76 U	78 U	79 U
4-BROMOPHENYL PHENYL ETHER	92 U	80 U	81 U	78 UJ	88 U	82 U	81 U	82 U	78 U	76 U	78 U	79 U
4-CHLORO-3-METHYLPHENOL	92 U	80 U	81 U	78 UJ	88 U	82 U	81 U	82 U	78 U	76 U	78 U	79 U
4-CHLOROANILINE	92 U	80 U	81 U	78 UJ	88 U	82 U	81 U	82 U	78 U	76 U	78 U	79 U
4-CHLOROPHENYL PHENYL ETHER	92 U	80 U	81 U	78 UJ	88 U	82 U	81 U	82 U	78 U	76 U	78 U	79 U
4-NITROANILINE	92 U	80 U	81 U	78 UJ	88 U	82 U	81 U	82 U	78 U	76 U	78 U	79 U
4-NITROPHENOL	92 U	80 UJ	81 UJ	78 UJ	88 U	82 U	81 U	82 U	78 U	76 U	78 UJ	79 UJ
4-NITROQUINOLINE-1-OXIDE	92 U	80 UR	81 UR	78 UJ	88 U	82 U	81 U	82 U	78 U	76 U	78 UR	79 UR
5-NITRO-O-TOLUIDINE	92 U	80 U	81 U	78 UJ	88 U	82 U	81 U	82 U	78 U	76 U	78 U	79 U
7,12-DIMETHYLBENZ(A)ANTHRACENE	92 U	80 U	81 U	78 UJ	88 U	82 U	81 U	82 U	78 U	76 U	78 U	79 U
A,A-DIMETHYLPHENETHYLAMINE	92 UJ	80 UJ	81 UJ	78 UJ	88 U	82 U	81 U	82 U	78 U	76 U	78 U	79 U
ACENAPHTHENE	1.8 U	15	1.6 U	1.5 U	1.7 U	1.6 U	1.6 U	1.6 U	1.5 U	1.5 UJ	1.5 U	1.5 U
ACENAPHTHYLENE	1.8 U	20	1.6 U	1.5 U	1.7 U	1.6 U	1.6 U	1.6 U	1.5 U	1.5 UJ	1.5 U	1.5 U
ACETOPHENONE	92 U	120 J	81 U	78 UJ	88 U	82 U	81 U	82 U	78 U	76 U	78 U	79 U
ANILINE	92 U	80 U	81 U	78 UJ	88 U	82 U	81 U	82 U	78 U	76 U	78 U	79 U
ANTHRACENE	25	12	1.6 U	1.5 U	23	1.6 U	1.6 U	1.6 U	1.5 U	1.5 UJ	1.5 U	1.5 U
ARAMITE	92 U	80 U	81 U	78 UJ	88 U	82 U	81 U	82 U	78 U	76 U	78 U	79 U
BENZO(A)ANTHRACENE	1.8 U	1.6 U	1.6 U	1.5 U	1.7 U	1.6 U	1.6 U	1.6 U	1.5 U	1.5 UJ	1.5 U	1.5 U
BENZO(A)PYRENE	1.8 U	1.6 U	1.6 U	1.5 U	1.7 U	1.6 U	1.6 U	1.6 U	1.5 U	1.5 UJ	1.5 U	1.5 U
BENZO(B)FLUORANTHENE	1.8 U	1.6 U	1.6 U	1.5 U	1.7 U	1.6 U	1.6 U	1.6 U	1.5 U	1.5 UJ	1.5 U	1.5 U
BENZO(G,H,I)PERYLENE	1.8 U	1.6 U	1.6 U	1.5 U	1.7 U	1.6 U	1.6 U	1.6 U	1.5 U	1.5 UJ	1.5 U	1.5 U
BENZO(K)FLUORANTHENE	1.8 U	1.6 U	1.6 U	1.5 U	1.7 U	1.6 U	1.6 U	1.6 U	1.5 U	1.5 UJ	1.5 U	1.5 U
BENZYL ALCOHOL	92 U	80 U	81 U	78 UJ	88 U	82 U	81 U	82 U	78 U	76 U	78 U	79 U
BIS(2-CHLOROETHOXY)METHANE	92 U	80 U	81 U	78 UJ	88 U	82 U	81 U	82 U	78 U	76 U	78 U	79 U
BIS(2-CHLOROETHYL)ETHER	92 U	80 U	81 U	78 UJ	88 U	82 U	81 U	82 U	78 U	76 U	78 U	79 U
BIS(2-ETHYLHEXYL)PHTHALATE	92 U	80 U	81 U	78 UJ	88 U	82 U	81 U	880	78 U	76 U	78 U	79 U
BUTYL BENZYL PHTHALATE	92 U	80 U	81 U	78 UJ	88 U	82 U	81 U	82 U	78 U	76 U	78 U	79 U
CHLOROBENZILATE	92 U	80 U	81 U	78 UJ	88 U	82 U	81 U	82 U	78 U	76 U	78 U	79 U
CHRYSENE	1.8 U	1.6 U	1.6 U	1.5 U	1.7 U	1.6 U	1.6 U	1.6 U	1.5 U	1.5 UJ	1.5 U	1.5 U
DI-N-BUTYL PHTHALATE	92 U	80 U	81 U	78 UJ	88 U	82 U	81 U	82 U	78 U	76 U	78 U	79 U

TABLE E-2

SUMMARY OF ANALYTIC RESULTS IN SUBSURFACE SOIL
SWMU 3 - OLD JEEP TRAIL/LITTLE SULPHUR CREEK
NSWC CRANE
CRANE, INDIANA

LOCATION	03SB23	03SB24	03SB24	03SB25	03SB26	03SB27	03SB27	03SB28	03SB34	03SB34	03SB36	03SB36
NSAMPLE	03SB230610	03SB240406	03SB241215	03SB250608	03SB260610	03SB270206	03SB270607	03SB280204	03SB340206	03SB340610	03SB360206	03SB360610
SAMPLE	03SB230610	03SB240406	03SB241215	03SB250608	03SB260610	03SB270206	03SB270607	03SB280204	03SB340206	03SB340610	03SB360206	03SB360610
SACODE	NORMAL	NORMAL	NORMAL	NORMAL	ORIG	NORMAL	NORMAL	ORIG	NORMAL	NORMAL	NORMAL	NORMAL
DEPTH RANGE	6 - 10	4 - 6	12 - 15	6 - 8	6 - 10	2 - 6	6 - 7	2 - 4	2 - 6	6 - 10	2 - 6	6 - 10
QC_TYPE	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
STATUS	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
SAMPLE DATE	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
VALIDATED	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
COLLECTION METHOD	GRAB	GRAB	GRAB	GRAB	GRAB	GRAB	GRAB	GRAB	GRAB	GRAB	GRAB	GRAB
DI-N-OCTYL PHTHALATE	92 U	80 U	81 U	78 UR	88 U	82 U	81 U	82 U	78 UR	76 UR	78 U	79 U
DIALLATE	92 U	80 U	81 U	78 UJ	88 U	82 U	81 U	82 U	78 U	76 U	78 U	79 U
DIBENZO(A,H)ANTHRACENE	1.8 U	1.6 U	1.6 U	1.5 U	1.7 U	1.6 U	1.6 U	1.6 U	1.5 U	1.5 UJ	1.5 U	1.5 U
DIBENZOFURAN	92 U	80 U	81 U	78 UJ	88 U	82 U	81 U	82 U	78 U	76 U	78 U	79 U
DIETHYL PHTHALATE	92 U	80 U	81 U	78 UJ	88 U	82 U	81 U	82 U	78 U	76 U	78 U	79 U
DIMETHYL PHTHALATE	92 U	80 U	81 U	78 UJ	88 U	82 U	81 U	82 U	78 U	76 U	78 U	79 U
DIPHENYLAMINE	92 U	80 U	81 U	78 UJ	88 U	82 U	81 U	82 U	78 U	76 U	78 U	79 U
ETHYL METHANE SULFONATE	92 U	80 U	81 U	78 UJ	88 U	82 U	81 U	82 U	78 U	76 U	78 U	79 U
ETHYL PARATHION	92 U	80 UJ	81 UJ	78 UJ	88 U	82 U	81 U	82 U	78 U	76 U	78 U	79 U
FLUORANTHENE	1.8 U	24	1.6 U	1.5 U	1.7 U	1.6 U	1.6 U	1.6 U	1.5 U	1.5 UJ	1.5 U	1.5 U
FLUORENE	1.8 U	19	1.6 U	1.5 U	1.7 U	1.6 U	1.6 U	1.6 U	1.5 U	1.5 UJ	1.5 U	1.5 U
HEXACHLOROBENZENE	92 U	80 U	81 U	78 UJ	88 U	82 U	81 U	82 U	78 U	76 U	78 U	79 U
HEXACHLOROBUTADIENE	92 U	80 U	81 U	78 UJ	88 U	82 U	81 U	82 U	78 U	76 U	78 U	79 U
HEXACHLOROCYCLOPENTADIENE	92 U	80 U	81 U	78 UJ	88 U	82 U	81 U	82 U	78 UJ	76 UJ	78 UJ	79 UJ
HEXACHLOROETHANE	92 U	80 U	81 U	78 UJ	88 U	82 U	81 U	82 U	78 U	76 U	78 U	79 U
HEXACHLOROPROPENE	92 U	80 U	81 U	78 UJ	88 U	82 U	81 U	82 U	78 U	76 U	78 U	79 U
INDENO(1,2,3-CD)PYRENE	1.8 U	1.6 U	1.6 U	1.5 U	1.7 U	1.6 U	1.6 U	1.6 U	1.5 U	1.5 UJ	1.5 U	1.5 U
ISODRIN	92 U	80 U	81 U	78 UJ	88 U	82 U	81 U	82 U	78 U	76 U	78 U	79 U
ISOPHORONE	92 U	80 U	81 U	78 UJ	88 U	82 U	81 U	82 U	78 U	76 U	78 U	79 U
ISOSAFROLE	92 U	80 U	81 U	78 UJ	88 U	82 U	81 U	82 U	78 U	76 U	78 U	79 U
KEPONE	92 UR	80 UR	81 UR	78 UR	88 UR	82 UR	81 UR	82 UR	78 UR	76 UR	78 UR	79 UR
METHAPYRILENE	92 U	80 U	81 U	78 UJ	88 U	82 U	81 U	82 U	78 U	76 U	78 U	79 U
METHYL METHANE SULFONATE	92 U	80 U	81 U	78 UJ	88 U	82 U	81 U	82 U	78 U	76 U	78 U	79 U
METHYL PARATHION	92 UJ	80 U	81 U	78 UJ	88 U	82 U	81 U	82 U	78 U	76 U	78 U	79 U
N-NITROSO-DI-N-BUTYLAMINE	92 U	80 U	81 U	78 UJ	88 U	82 U	81 U	82 U	78 U	76 U	78 U	79 U
N-NITROSO-DI-N-PROPYLAMINE	92 U	80 UJ	81 UJ	78 UJ	88 U	82 U	81 U	82 U	78 U	76 U	78 U	79 U
N-NITROSODIETHYLAMINE	92 U	80 U	81 U	78 UJ	88 U	82 U	81 U	82 U	78 U	76 U	78 U	79 U
N-NITROSODIMETHYLAMINE	92 U	80 U	81 U	78 UJ	88 U	82 U	81 U	82 U	78 U	76 U	78 U	79 U
N-NITROSOMETHYLETHYLAMINE	92 U	80 U	81 U	78 UJ	88 U	82 U	81 U	82 U	78 U	76 U	78 U	79 U
N-NITROSOMORPHOLINE	92 U	80 UJ	81 U	78 UJ	88 U	82 U	81 U	82 U	78 U	76 U	78 U	79 U
N-NITROSOPIPERIDINE	92 U	80 UJ	81 UJ	78 UJ	88 U	82 U	81 U	82 U	78 U	76 U	78 UJ	79 UJ
N-NITROSOPYRROLIDINE	92 U	80 U	81 UJ	78 UJ	88 U	82 U	81 U	82 U	78 U	76 U	78 U	79 U
NAPHTHALENE	1.8 U	270	16	1.5 U	1.7 U	1.6 U	1.6 U	1.6 U	1.5 U	1.5 UJ	1.5 U	1.5 U
O,O,O-TRIETHYL PHOSPHOROTHIOATE	92 U	80 U	81 U	78 UJ	88 U	82 U	81 U	82 U	78 U	76 U	78 U	79 U
O-TOLUIDINE	92 U	80 U	81 U	78 UJ	88 U	82 U	81 U	82 U	78 U	76 U	78 U	79 U
P-(DIMETHYLAMINO)AZOBENZENE	92 U	80 U	81 U	78 UJ	88 U	82 U	81 U	82 U	78 U	76 U	78 U	79 U
PENTACHLOROBENZENE	92 U	80 U	81 U	78 UJ	88 U	82 U	81 U	82 U	78 U	76 U	78 U	79 U
PENTACHLOROETHANE	92 U	80 U	81 U	78 UJ	88 U	82 U	81 U	82 U	78 U	76 U	78 U	79 U
PENTACHLORONITROBENZENE	92 U	80 U	81 U	78 UJ	88 U	82 U	81 U	82 U	78 U	76 U	78 U	79 U
PHENACETIN	92 U	80 U	81 U	78 UJ	88 U	82 U	81 U	82 U	78 U	76 U	78 U	79 U
PHENANTHRENE	1.8 U	67	1.6 U	1.5 U	1.7 U	1.6 U	1.6 U	1.6 U	1.5 U	1.5 UJ	1.5 U	1.5 U
PHENOL	92 U	100 J	81 U	78 UJ	88 U	82 U	81 U	82 U	78 U	76 U	78 U	79 U
PRONAMIDE	92 U	80 U	81 U	78 UJ	88 U	82 U	81 U	82 U	78 U	76 U	78 U	79 U
PYRENE	1.8 U	27	1.6 U	1.5 UJ	1.7 U	1.6 U	1.6 U	1.6 U	1.5 U	1.5 UJ	1.5 U	1.5 U
PYRIDINE	92 U	80 U	81 U	78 UJ	88 U	82 U	81 U	82 U	78 U	76 U	78 U	79 U
SAFROLE	92 U	80 U	81 U	78 UJ	88 U	82 U	81 U	82 U	78 U	76 U	78 U	79 U
Energetics (MG/KG)												
1,3,5-TRINITROBENZENE	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U
1,3-DINITROBENZENE	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U

TABLE E-2

SUMMARY OF ANALYTIC RESULTS IN SUBSURFACE SOIL
SWMU 3 - OLD JEEP TRAIL/LITTLE SULPHUR CREEK
NSWC CRANE
CRANE, INDIANA

LOCATION	03SB23	03SB24	03SB24	03SB25	03SB26	03SB27	03SB27	03SB28	03SB34	03SB34	03SB36	03SB36
NSAMPLE	03SB230610	03SB240406	03SB241215	03SB250608	03SB260610	03SB270206	03SB270607	03SB280204	03SB340206	03SB340610	03SB360206	03SB360610
SAMPLE	03SB230610	03SB240406	03SB241215	03SB250608	03SB260610	03SB270206	03SB270607	03SB280204	03SB340206	03SB340610	03SB360206	03SB360610
SACODE	NORMAL	NORMAL	NORMAL	NORMAL	ORIG	NORMAL	NORMAL	ORIG	NORMAL	NORMAL	NORMAL	NORMAL
DEPTH RANGE	6 - 10	4 - 6	12 - 15	6 - 8	6 - 10	2 - 6	6 - 7	2 - 4	2 - 6	6 - 10	2 - 6	6 - 10
QC_TYPE	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
STATUS	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
SAMPLE DATE	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
VALIDATED	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
COLLECTION METHOD	GRAB	GRAB	GRAB	GRAB	GRAB	GRAB	GRAB	GRAB	GRAB	GRAB	GRAB	GRAB
2,4,6-TRINITROTOLUENE	0.25 U	0.76	1.9	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U
2,4-DINITROTOLUENE	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U
2,6-DINITROTOLUENE	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U
2-AMINO-4,6-DINITROTOLUENE	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U
2-NITROTOLUENE	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U
3-NITROTOLUENE	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U
4-AMINO-2,6-DINITROTOLUENE	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U
4-NITROTOLUENE	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U
HMX	0.25 U	3.4 R	8.8	0.25 U	1.2	0.25 U	0.28 J	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U
NITROBENZENE	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U
NITROCELLULOSE	670 UJ	580 U	590 U	580 U	630 UJ	580 UJ	600 UJ	570 UJ	560 U	550 U	580 U	550 U
NITROGLYCERIN	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 UJ	2.5 UJ	2.5 U	2.5 U
PETN	1.8 U	1.6 U	1.6 U	1.5 U	1.7 U	1.6 U	1.6 U	1.6 U	1.5 UJ	1.5 UJ	1.5 U	1.5 U
RDX	0.25 U	1.4 J	4.4	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U
TETRYL	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U
Inorganics (MG/KG)												
ALUMINUM	8390 J	9880 J	3580 J	7120 J	8580 J	5140 J	11500 J	6140 J	6730 J	6410 J	7100 J	7220 J
ANTIMONY	3.5 U	3.2 J	1.9 J	0.28 U	1.3 U	0.81 U	0.65 U	0.57 U	0.32 U	0.45 U	0.29 U	0.34 U
ARSENIC	4.6 J	7.6 J	12.6 J	4.5 J	6.6 J	8.2 J	6.2 J	7 J	5.7 J	3.7 J	5.4	5.8
BARIUM	933 J	1340 J	60.2 J	77.9 J	989 J	85.4 J	85.4 J	104 J	77.1 J	40.4 J	116 J	106 J
BERYLLIUM	0.62	0.4 J	0.49 J	0.58	0.59	0.75	0.59	0.73	0.43	0.57	0.79	1
CADMIUM	1.2	12.1	0.46	0.35	0.82	0.71	0.48	0.46	0.62	0.33	0.33	0.4
CALCIUM	2240 J	39300 J	1750 J	2180 J	2900 J	1010 J	1280 J	976 J	73500 J	1140 J	4220 J	1860 J
CHROMIUM	11.3 J	34.6 J	10.7 J	9.6 J	12.8 J	18.3 J	18.4 J	13.8 J	8.9 J	20.2 J	11.1 J	24.6 J
COBALT	11.7	14 J	7 J	14.6 J	14.3	12	9.2	13.7	10.9 J	13.9 J	15.5 J	17.2 J
COPPER	19.7 J	244 J	9.2 J	7 J	27.3 J	1230 J	26.3 J	255 J	8.5 J	7.3 J	8.4 J	9.5 J
IRON	13700 J	21000 J	18300 J	18300 J	17300 J	35900 J	22600 J	26200 J	16900 J	44000 J	22500 J	34400 J
LEAD	28.5 J	277 J	23.6 J	12.5 J	34 J	49 J	14.5 J	20.8 J	12.2 J	16 J	13.9 J	18.6 J
MAGNESIUM	1530 J	2540 J	330 J	801 J	1310 J	748 J	1870 J	766 J	2350 J	547 J	952 J	805 J
MANGANESE	684 J	1060 J	1060 J	1420 J	1080 J	1150 J	495 J	1060 J	998 J	908 J	1550 J	1480 J
MERCURY	0.57 J	0.037	0.019 U	0.023 J	0.28 J	0.035 J	0.098 J	0.027 J	0.022 J	0.021 J	0.33 J	0.047 J
NICKEL	13.6 J	1600 J	14.9 J	11.1 J	18.7 J	22.7 J	13.8 J	17.2 J	10.8 J	14.1 J	14.4 J	19.2 J
POTASSIUM	801 J	794 J	317 J	474 J	960 J	836 J	1790 J	707 J	764 J	372 J	481 J	457 J
SELENIUM	0.4	0.17 U	0.38 J	0.17 J	0.31	0.19 U	0.3	0.25	0.41 J	0.16 UJ	0.38	0.35
SILVER	0.92 U	0.48 J	0.04 U	0.04 U	0.05 U	0.09 U	0.04 U	0.05 U	0.04 U	0.04 U	0.05 U	0.04 U
SODIUM	68.8 U	489 J	20.6 U	99.5 J	52.8 U	32.4 U	54.4 U	45 U	223 J	86.8 J	182 U	133 U
THALLIUM	0.21	0.08	0.15	0.1	0.11	0.1	0.17	0.1	0.11	0.09	0.11	0.1
TIN	1.5 U	15.6 J	0.3 U	0.2 U	1.3 U	3.8 U	1.8 U	2.7 U	0.37 U	0.16 U	0.28 U	0.22 U
VANADIUM	18.2	18.4 J	16.5 J	14.7 J	16.9	20.2	23.5	19.4	13.3 J	17 J	15.2 J	22.9 J
ZINC	204 J	1100 J	78 J	27.8 J	217 J	128 J	68.4 J	137 J	30.2 J	30.7 J	34.3 J	44.5 J
Miscellaneous Parameters												
NITRATE (MG/KG)	1.9	1.2	1.1 U	12	2.1	2.2	2.1	2.1	18	14	17	2.8
NITRITE (MG/KG)	25 UJ	2.4 U	16 U	15 J	110 UJ	12 UJ	11 UJ	17 UJ	12 UJ	11 UJ	6.4 J	2.2 UR
NITRITE/NITRATE (MG/KG)	1.9 J	1.2 J	1.1 UJ	27 J	2.1 J	2.2 J	2.1 J	2.1 J	18 J	14 J	23 J	2.8 J
PERCENT MOISTURE (%)	27.1	16.9	27.3	14.7	24.4	19.3	15.2	18.8	16.3	11.1	15.4	15.5
PERCHLORATE (UG/KG)	20 U	24 U	28 U	23 U	20 U	20 U	20 U	20 U	24 UJ	22 UJ	24 UJ	24 UJ

TABLE E-2

SUMMARY OF ANALYTIC RESULTS IN SUBSURFACE SOIL
SWMU 3 - OLD JEEP TRAIL/LITTLE SULPHUR CREEK
NSWC CRANE
CRANE, INDIANA

LOCATION	03SB39	03SB39	03SB40	03SB40	03SB42	03SB42	03SB44	03SB44	03SB46	03SB46	03SB47	03SB47
NSAMPLE	03SB390206	03SB390610	03SB400206	03SB400610	03SB420206	03SB420610	03SB440206	03SB440610	03SB460206	03SB460610	03SB470206	03SB470610
SAMPLE	03SB390206	03SB390610	03SB400206	03SB400610	03SB420206	03SB420610	03SB440206	03SB440610	NORMAL	ORIG	NORMAL	NORMAL
SACODE	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	2 - 6	6 - 10	2 - 6	6 - 10
DEPTH RANGE	2 - 6	6 - 10	2 - 6	6 - 10	2 - 6	6 - 10	2 - 6	6 - 10	NM	NM	NM	NM
QC_TYPE	NM	NM	NM	NM	NM	NM	NM	NM	NORMAL	NORMAL	NORMAL	NORMAL
STATUS	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	- -	- -	- -	- -
SAMPLE DATE	- -	- -	- -	- -	- -	- -	- -	- -	Y	Y	Y	Y
VALIDATED	Y	Y	Y	Y	Y	Y	Y	Y	GRAB	GRAB	GRAB	GRAB
COLLECTION METHOD	GRAB	GRAB	GRAB	GRAB	GRAB	GRAB	GRAB	GRAB				
Dioxins (NG/KG))												
1,2,3,4,6,7,8,9-OCDD												
1,2,3,4,6,7,8,9-OCDF												
1,2,3,4,6,7,8-HPCDD												
1,2,3,4,6,7,8-HPCDF												
1,2,3,4,7,8,9-HPCDF												
1,2,3,4,7,8-HXCDD												
1,2,3,4,7,8-HXCDF												
1,2,3,6,7,8-HXCDD												
1,2,3,6,7,8-HXCDF												
1,2,3,7,8,9-HXCDD												
1,2,3,7,8,9-HXCDF												
1,2,3,7,8-PECDD												
1,2,3,7,8-PECDF												
2,3,4,6,7,8-HXCDF												
2,3,4,7,8-PECDF												
2,3,7,8-TCDD												
2,3,7,8-TCDF												
TEQ BIRD												
TEQ FISH												
TEQ HUMAN												
TOTAL HPCDD												
TOTAL HPCDF												
TOTAL HXCDD												
TOTAL HXCDF												
TOTAL PECDD												
TOTAL PECDF												
TOTAL TCDD												
TOTAL TCDF												
Volatile Organics (UG/KG))												
1,1,1,2-TETRACHLOROETHANE									1 U	0.95 U	1.2 U	1.1 U
1,1,1-TRICHLOROETHANE									1 U	0.95 U	1.2 U	1.1 U
1,1,2,2-TETRACHLOROETHANE									1 U	2 J	1.2 U	1 J
1,1,2-TRICHLOROETHANE									1 U	0.95 U	1.2 U	1.1 U
1,1-DICHLOROETHANE									1 U	0.95 U	1.2 U	1.1 U
1,1-DICHLOROETHENE									1 U	0.95 U	1.2 U	1.1 U
1,2,3-TRICHLOROPROPANE									1 U	0.95 U	1.2 U	1.1 U
1,2-DIBROMO-3-CHLOROPROPANE									1 U	0.95 U	1.2 U	1.1 U
1,2-DIBROMOETHANE									1 U	0.95 U	1.2 U	1.1 U
1,2-DICHLOROETHANE									1 U	0.95 U	1.2 U	1.1 U
1,2-DICHLOROPROPANE									115 U	95 U	110 U	110 U
1,4-DIOXANE									1 U	0.95 U	1.2 U	1.1 U
2-BUTANONE									1 U	0.95 U	1.2 U	1.1 U
2-HEXANONE									1 U	0.95 U	1.2 UJ	1.1 U
3-CHLOROPROPENE									1 U	0.95 U	1.2 U	1.1 U
4-METHYL-2-PENTANONE									26 BU	0.95 U	17 BU	11 BU
ACETONE									45.5 U	38 U	43.5 U	43 U
ACETONITRILE									1 UR	0.95 UR	1.2 UR	1.1 UR
ACROLEIN												

TABLE E-2

SUMMARY OF ANALYTIC RESULTS IN SUBSURFACE SOIL
SWMU 3 - OLD JEEP TRAIL/LITTLE SULPHUR CREEK
NSWC CRANE
CRANE, INDIANA

LOCATION	03SB39	03SB39	03SB40	03SB40	03SB42	03SB42	03SB44	03SB44	03SB46	03SB46	03SB47	03SB47
NSAMPLE	03SB390206	03SB390610	03SB400206	03SB400610	03SB420206	03SB420610	03SB440206	03SB440610	03SB460206	03SB460610	03SB470206	03SB470610
SAMPLE	03SB390206	03SB390610	03SB400206	03SB400610	03SB420206	03SB420610	03SB440206	03SB440610	03SB460206	03SB460610	03SB470206	03SB470610
SACODE	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	ORIG	NORMAL	NORMAL
DEPTH RANGE	2 - 6	6 - 10	2 - 6	6 - 10	2 - 6	6 - 10	2 - 6	6 - 10	2 - 6	6 - 10	2 - 6	6 - 10
QC_TYPE	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
STATUS	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
SAMPLE DATE	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
VALIDATED	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
COLLECTION METHOD	GRAB	GRAB	GRAB	GRAB	GRAB	GRAB	GRAB	GRAB	GRAB	GRAB	GRAB	GRAB
ACRYLONITRILE									1 UR	0.95 UR	1.2 UR	1.1 UR
BENZENE									1 U	0.95 U	1.2 U	1.1 U
BROMODICHLOROMETHANE									1 U	0.95 U	1.2 U	1.1 U
BROMOFORM									1 U	0.95 U	1.2 U	1.1 U
BROMOMETHANE									1 U	0.95 U	1.2 U	1.1 U
CARBON DISULFIDE									1 U	0.95 U	1.2 U	1.1 U
CARBON TETRACHLORIDE									1 U	0.95 U	1.2 U	1.1 U
CHLOROBENZENE									1 U	0.95 U	1.2 U	1.1 U
CHLORODIBROMOMETHANE									1 U	0.95 U	1.2 U	1.1 U
CHLOROETHANE									1 U	0.95 U	1.2 U	1.1 U
CHLOROFORM									1 U	0.95 U	1.2 U	1.1 U
CHLOROMETHANE									1 U	0.95 U	1.2 U	1.1 U
CHLOROPRENE									1 U	0.95 U	1.2 U	1.1 U
CIS-1,2-DICHLOROETHENE									1 U	0.95 U	1.2 U	1 J
CIS-1,3-DICHLOROPROPENE									1 U	0.95 U	1.2 U	1.1 U
DIBROMOMETHANE									1 U	0.95 U	1.2 U	1.1 U
DICHLORODIFLUOROMETHANE									1 U	0.95 U	1.2 U	1.1 U
ETHYL METHACRYLATE									1 U	0.95 U	1.2 U	1.1 U
ETHYLBENZENE									1 U	0.95 U	1.2 U	1.1 U
ISOBUTANOL									45.5 U	38 U	43.5 U	43 U
METHACRYLONITRILE									1 U	0.95 U	1.2 U	1.1 U
METHYL IODIDE									1 UJ	0.95 UJ	1.2 UJ	1.1 UJ
METHYL METHACRYLATE									1 U	0.95 U	1.2 U	1.1 U
METHYLENE CHLORIDE									8 BU	4 BU	8 BU	4 BU
PROPIONITRILE									45.5 U	38 U	43.5 U	43 U
STYRENE									1 U	0.95 U	1.2 U	1.1 U
TETRACHLOROETHENE									1 U	0.95 U	1.2 U	1.1 U
TOLUENE									1 U	0.95 U	1.2 U	1.1 U
TOTAL XYLENES									1 U	0.95 U	1.2 U	1.1 U
TRANS-1,2-DICHLOROETHENE									1 U	0.95 U	1.2 U	1.1 U
TRANS-1,3-DICHLOROPROPENE									1 U	0.95 U	1.2 U	1.1 U
TRANS-1,4-DICHLORO-2-BUTENE									1 U	0.95 U	1.2 U	1.1 U
TRICHLOROETHENE									10 J	8 J	18 J	15 J
TRICHLOROFLUOROMETHANE									1 J	0.95 U	1.2 U	1.1 U
VINYL ACETATE									1 U	0.95 U	1.2 U	1.1 U
VINYL CHLORIDE									1 U	0.95 U	1.2 U	1.1 U
Semivolatile Organics (UG/KG))												
1,2,4,5-TETRACHLOROBENZENE	79 U	75 UJ	78 U	76 U	79 U	76 U	78 U	73 U	80 U	74 U	76 U	75 U
1,2,4-TRICHLOROBENZENE	79 U	75 UJ	78 U	76 U	79 U	76 U	78 U	73 U	80 U	74 U	76 U	75 U
1,2-DICHLOROBENZENE	79 U	75 UJ	78 U	76 U	79 U	76 U	78 U	73 U	80 U	74 U	76 U	75 U
1,3-DICHLOROBENZENE	79 U	75 UJ	78 U	76 U	79 U	76 U	78 U	73 U	80 U	74 U	76 U	75 U
1,4-DICHLOROBENZENE	79 U	75 UJ	78 U	76 U	79 U	76 U	78 U	73 U	80 U	74 U	76 U	75 U
1,4-NAPHTHOQUINONE	79 U	75 UJ	78 U	76 U	79 U	76 U	78 U	73 U	80 U	74 U	76 U	75 U
1,4-PHENYLENEDIAMINE	79 UR	75 UR	78 UR	76 UR	79 UR	76 UR	78 UJ	73 UJ	80 UJ	74 UJ	76 UJ	75 UJ
1-NAPHTHYLAMINE	79 U	75 UJ	78 U	76 U	79 U	76 U	78 U	73 U	80 U	74 U	76 U	75 U
2,2'-OXYBIS(1-CHLOROPROPANE)	79 U	75 UJ	78 U	76 U	79 U	76 U	78 U	73 U	80 U	74 U	76 U	75 U
2,3,4,6-TETRACHLOROPHENOL	79 U	75 UJ	78 U	76 U	79 U	76 U	78 U	73 U	80 U	74 U	76 UJ	75 U
2,4,5-TRICHLOROPHENOL	79 U	75 UJ	78 U	76 U	79 U	76 U	78 U	73 U	80 U	74 U	76 UJ	75 U
2,4,6-TRICHLOROPHENOL	79 U	75 UJ	78 U	76 U	79 U	76 U	78 U	73 U	80 U	74 U	76 UJ	75 U

TABLE E-2

SUMMARY OF ANALYTIC RESULTS IN SUBSURFACE SOIL
SWMU 3 - OLD JEEP TRAIL/LITTLE SULPHUR CREEK
NSWC CRANE
CRANE, INDIANA

LOCATION	03SB39	03SB39	03SB40	03SB40	03SB42	03SB42	03SB44	03SB44	03SB46	03SB46	03SB47	03SB47
NSAMPLE	03SB390206	03SB390610	03SB400206	03SB400610	03SB420206	03SB420610	03SB440206	03SB440610	03SB460206	03SB460610	03SB470206	03SB470610
SAMPLE	03SB390206	03SB390610	03SB400206	03SB400610	03SB420206	03SB420610	03SB440206	03SB440610	03SB460206	03SB460610	03SB470206	03SB470610
SACODE	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	ORIG	NORMAL	NORMAL
DEPTH RANGE	2 - 6	6 - 10	2 - 6	6 - 10	2 - 6	6 - 10	2 - 6	6 - 10	2 - 6	6 - 10	2 - 6	6 - 10
QC_TYPE	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
STATUS	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
SAMPLE DATE	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
VALIDATED	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
COLLECTION METHOD	GRAB	GRAB	GRAB	GRAB	GRAB	GRAB	GRAB	GRAB	GRAB	GRAB	GRAB	GRAB
2,4-DICHLOROPHENOL	79 U	75 UJ	78 U	76 U	79 U	76 U	78 U	73 U	80 U	74 U	76 UJ	75 U
2,4-DIMETHYLPHENOL	79 U	75 UJ	78 U	76 U	79 U	76 U	78 U	73 U	80 U	74 U	76 UR	75 U
2,4-DINITROPHENOL	79 UJ	75 UJ	78 UJ	76 UJ	79 UJ	76 UJ	78 UJ	73 UJ	80 UJ	74 UJ	76 UJ	75 UJ
2,6-DICHLOROPHENOL	79 U	75 UJ	78 U	76 U	79 U	76 U	78 U	73 U	80 U	74 U	76 UJ	75 U
2-ACETYLAMINOFLUORENE	79 U	75 UJ	78 U	76 U	79 U	76 U	78 U	73 U	80 U	74 U	76 U	75 U
2-CHLORONAPHTHALENE	79 U	75 UJ	78 U	76 U	79 U	76 U	78 U	73 U	80 U	74 U	76 UJ	75 U
2-CHLOROPHENOL	79 U	75 UJ	78 U	76 U	79 U	76 U	78 U	73 U	80 U	74 U	76 UJ	75 U
2-METHYLNAPHTHALENE	1.5 U	1.4 U	1.5 U	1.5 U	1.5 U	1.5 U	1.5 U	1.4 U	1.5 U	1.4 UJ	1.5 UJ	1.5 UJ
2-METHYLPHENOL	79 U	75 UJ	78 U	76 U	79 U	76 U	78 U	73 U	80 U	74 U	76 UJ	75 U
2-NAPHTHYLAMINE	79 U	75 UJ	78 U	76 U	79 U	76 U	78 U	73 U	80 U	74 U	76 U	75 U
2-NITROANILINE	79 U	75 UJ	78 U	76 U	79 U	76 U	78 U	73 U	80 U	74 U	76 U	75 U
2-NITROPHENOL	79 U	75 UJ	78 U	76 U	79 U	76 U	78 U	73 U	80 U	74 U	76 UJ	75 U
2-PICOLINE	79 U	75 UJ	78 U	76 U	79 U	76 U	78 U	73 U	80 U	74 U	76 U	75 U
3&4-METHYLPHENOL	79 U	75 UJ	78 U	76 U	79 U	76 U	78 U	73 U	80 U	74 U	76 UJ	75 U
3,3'-DICHLOROBENZIDINE	79 U	75 UJ	78 U	76 U	79 U	76 U	78 U	73 U	80 U	74 U	76 UR	75 U
3,3'-DIMETHYLBENZIDINE	79 U	75 UJ	78 U	76 U	79 U	76 U	78 U	73 U	80 U	74 U	76 U	75 U
3-METHYLCHOLANTHRENE	79 U	75 UJ	78 U	76 U	79 U	76 U	78 U	73 U	80 U	74 U	76 U	75 U
3-NITROANILINE	79 U	75 UJ	78 U	76 U	79 U	76 U	78 U	73 U	80 U	74 U	76 UJ	75 U
4,6-DINITRO-2-METHYLPHENOL	79 UJ	75 UJ	78 UJ	76 UJ	79 UJ	76 UJ	78 U	73 U	80 U	74 U	76 UJ	75 U
4-AMINOBIPHENYL	79 U	75 UJ	78 U	76 U	79 U	76 U	78 U	73 U	80 U	74 U	76 U	75 U
4-BROMOPHENYL PHENYL ETHER	79 U	75 UJ	78 U	76 U	79 U	76 U	78 U	73 U	80 U	74 U	76 U	75 U
4-CHLORO-3-METHYLPHENOL	79 U	75 UJ	78 U	76 U	79 U	76 U	78 U	73 U	80 U	74 U	76 UJ	75 U
4-CHLOROANILINE	79 U	75 UJ	78 U	76 U	79 U	76 U	78 U	73 U	80 U	74 U	76 UJ	75 U
4-CHLOROPHENYL PHENYL ETHER	79 U	75 UJ	78 U	76 U	79 U	76 U	78 U	73 U	80 U	74 U	76 U	75 U
4-NITROANILINE	79 U	75 UJ	78 U	76 U	79 U	76 U	78 U	73 U	80 U	74 U	76 U	75 U
4-NITROPHENOL	79 UJ	75 UJ	78 UJ	76 UJ	79 UJ	76 UJ	78 U	73 U	80 U	74 U	76 UJ	75 U
4-NITROQUINOLINE-1-OXIDE	79 UR	75 UR	78 UR	76 UR	79 UR	76 UR	78 UJ	73 U	80 UJ	74 UJ	76 UJ	75 UJ
5-NITRO-O-TOLUIDINE	79 U	75 UJ	78 U	76 U	79 U	76 U	78 U	73 U	80 U	74 U	76 U	75 U
7,12-DIMETHYLBENZ(A)ANTHRACENE	79 U	75 UJ	78 U	76 U	79 U	76 U	78 U	73 U	80 U	74 U	76 U	75 U
A,A-DIMETHYLPHENETHYLAMINE	79 U	75 UJ	78 U	76 U	79 U	76 U	78 U	73 U	80 U	74 U	76 U	75 U
ACENAPHTHENE	1.5 U	1.4 U	1.5 U	1.5 U	1.5 U	1.5 U	1.5 U	1.4 U	1.5 U	1.4 UJ	1.5 UJ	1.5 UJ
ACENAPHTHYLENE	1.5 U	1.4 U	1.5 U	1.5 U	1.5 U	1.5 U	1.5 U	1.4 U	1.5 U	1.4 UJ	1.5 UJ	1.5 UJ
ACETOPHENONE	79 U	75 UJ	78 U	76 U	79 U	76 U	78 U	73 U	80 U	74 U	76 U	75 U
ANILINE	79 U	75 UJ	78 U	76 U	79 U	76 U	78 U	73 U	80 U	74 U	76 U	75 U
ANTHRACENE	1.5 U	1.4 U	1.5 U	1.5 U	1.5 U	1.5 U	1.5 U	1.4 U	1.5 U	1.4 UJ	1.5 UJ	1.5 UJ
ARAMITE	79 U	75 UJ	78 U	76 U	79 U	76 U	78 U	73 U	80 U	74 U	76 U	75 U
BENZO(A)ANTHRACENE	1.5 U	1.4 U	1.5 U	1.5 U	1.5 U	1.5 U	1.5 U	1.4 U	1.5 U	1.4 UJ	1.5 UJ	1.5 UJ
BENZO(A)PYRENE	1.5 U	1.4 U	1.5 U	1.5 U	1.5 U	1.5 U	1.5 U	1.4 U	1.5 U	1.4 UJ	1.5 UJ	1.5 UJ
BENZO(B)FLUORANTHENE	1.5 U	1.4 U	1.5 U	1.5 U	1.5 U	1.5 U	1.5 U	1.4 U	1.5 U	1.4 UJ	1.5 UJ	1.5 UJ
BENZO(G,H,I)PERYLENE	1.5 U	1.4 U	1.5 U	1.5 U	1.5 U	1.5 U	1.5 U	1.4 U	1.5 U	1.4 UJ	1.5 UJ	1.5 UJ
BENZO(K)FLUORANTHENE	1.5 U	1.4 U	1.5 U	1.5 U	1.5 U	1.5 U	1.5 U	1.4 U	1.5 U	1.4 UJ	1.5 UJ	1.5 UJ
BENZYL ALCOHOL	79 U	75 UJ	78 U	76 U	79 U	76 U	78 U	73 U	80 U	74 U	76 U	75 U
BIS(2-CHLOROETHOXY)METHANE	79 U	75 UJ	78 U	76 U	79 U	76 U	78 U	73 U	80 U	74 U	76 UJ	75 U
BIS(2-CHLOROETHYL)ETHER	79 U	75 UJ	78 U	76 U	79 U	76 U	78 U	73 U	80 U	74 U	76 U	75 U
BIS(2-ETHYLHEXYL)PHTHALATE	79 U	75 UJ	78 U	76 U	79 U	76 U	78 U	73 U	80 U	74 U	76 UJ	75 U
BUTYL BENZYL PHTHALATE	79 U	75 UJ	78 U	76 U	79 U	76 U	78 U	73 U	80 U	74 U	76 U	75 U
CHLOROBENZILATE	79 U	75 UJ	78 U	76 U	79 U	76 U	78 U	73 U	80 U	74 U	76 U	75 U
CHRYSENE	1.5 U	1.4 U	1.5 U	1.5 U	1.5 U	1.5 U	1.5 U	1.4 U	1.5 U	1.4 UJ	1.5 UJ	1.5 UJ
DI-N-BUTYL PHTHALATE	79 U	75 UJ	78 U	76 U	79 U	76 U	78 U	73 U	80 U	74 U	76 U	75 U

TABLE E-2

SUMMARY OF ANALYTIC RESULTS IN SUBSURFACE SOIL
SWMU 3 - OLD JEEP TRAIL/LITTLE SULPHUR CREEK
NSWC CRANE
CRANE, INDIANA

LOCATION	03SB39	03SB39	03SB40	03SB40	03SB42	03SB42	03SB44	03SB44	03SB46	03SB46	03SB47	03SB47
NSAMPLE	03SB390206	03SB390610	03SB400206	03SB400610	03SB420206	03SB420610	03SB440206	03SB440610	03SB460206	03SB460610	03SB470206	03SB470610
SAMPLE	03SB390206	03SB390610	03SB400206	03SB400610	03SB420206	03SB420610	03SB440206	03SB440610	03SB460206	03SB460610	03SB470206	03SB470610
SACODE	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	ORIG	NORMAL	NORMAL
DEPTH RANGE	2 - 6	6 - 10	2 - 6	6 - 10	2 - 6	6 - 10	2 - 6	6 - 10	2 - 6	6 - 10	2 - 6	6 - 10
QC_TYPE	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
STATUS	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
SAMPLE DATE	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
VALIDATED	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
COLLECTION METHOD	GRAB	GRAB	GRAB	GRAB	GRAB	GRAB	GRAB	GRAB	GRAB	GRAB	GRAB	GRAB
DI-N-OCTYL PHTHALATE	79 U	75 UJ	78 U	76 U	79 U	76 U	78 UR	73 UR	80 UR	74 UR	76 UR	75 UR
DIALLATE	79 U	75 UJ	78 U	76 U	79 U	76 U	78 U	73 U	80 U	74 U	76 U	75 U
DIBENZO(A,H)ANTHRACENE	1.5 U	1.4 U	1.5 U	1.5 U	1.5 U	1.5 U	1.5 U	1.4 U	1.5 U	1.4 UJ	1.5 UJ	1.5 UJ
DIBENZOFURAN	79 U	75 UJ	78 U	76 U	79 U	76 U	78 U	73 U	80 U	74 U	76 U	75 U
DIETHYL PHTHALATE	79 U	75 UJ	78 U	76 U	79 U	76 U	78 U	73 U	80 U	74 U	76 U	75 U
DIMETHYL PHTHALATE	79 U	75 UJ	78 U	76 U	79 U	76 U	78 U	73 U	80 U	74 U	76 U	75 U
DIPHENYLAMINE	79 U	75 UJ	78 U	76 U	79 U	76 U	78 U	73 U	80 U	74 U	76 U	75 U
ETHYL METHANE SULFONATE	79 U	75 UJ	78 U	76 U	79 U	76 U	78 U	73 U	80 U	74 U	76 U	75 U
ETHYL PARATHION	79 U	75 UJ	78 U	76 U	79 U	76 U	78 U	73 U	80 U	74 U	76 U	75 U
FLUORANTHENE	1.5 U	1.4 U	1.5 U	1.5 U	1.5 U	1.5 U	1.5 U	1.4 U	1.5 U	1.4 UJ	1.5 UJ	1.5 UJ
FLUORENE	1.5 U	1.4 U	1.5 U	1.5 U	1.5 U	1.5 U	1.5 U	1.4 U	1.5 U	1.4 UJ	1.5 UJ	1.5 UJ
HEXACHLOROBENZENE	79 U	75 UJ	78 U	76 U	79 U	76 U	78 U	73 U	80 U	74 U	76 U	75 U
HEXACHLOROBUTADIENE	79 U	75 UJ	78 U	76 U	79 U	76 U	78 U	73 U	80 U	74 U	76 U	75 U
HEXACHLOROCYCLOPENTADIENE	79 UJ	75 UJ	78 UJ	76 UJ	79 UJ	76 UJ	78 UJ	73 UJ	80 UJ	74 UJ	76 UR	75 UJ
HEXACHLOROETHANE	79 U	75 UJ	78 U	76 U	79 U	76 U	78 U	73 U	80 U	74 U	76 U	75 U
HEXACHLOROPROPENE	79 U	75 UJ	78 U	76 U	79 U	76 U	78 U	73 U	80 U	74 U	76 U	75 U
INDENO(1,2,3-CD)PYRENE	1.5 U	1.4 U	1.5 U	1.5 U	1.5 U	1.5 U	1.5 U	1.4 U	1.5 U	1.4 UJ	1.5 UJ	1.5 UJ
ISODRIN	79 U	75 UJ	78 U	76 U	79 U	76 U	78 U	73 U	80 U	74 U	76 U	75 U
ISOPHORONE	79 U	75 UJ	78 U	76 U	79 U	76 U	78 U	73 U	80 U	74 U	76 U	75 U
ISOSAFROLE	79 U	75 UJ	78 U	76 U	79 U	76 U	78 U	73 U	80 U	74 U	76 U	75 U
KEPONE	79 UR	75 UR	78 UR	76 UR	79 UR	76 UR	78 UR	73 UR	80 UR	74 UR	76 UR	75 UR
METHAPYRILENE	79 U	75 UJ	78 U	76 U	79 U	76 U	78 U	73 U	80 U	74 U	76 U	75 U
METHYL METHANE SULFONATE	79 U	75 UJ	78 U	76 U	79 U	76 U	78 U	73 U	80 U	74 U	76 U	75 U
METHYL PARATHION	79 U	75 UJ	78 U	76 U	79 U	76 U	78 U	73 U	80 U	74 U	76 U	75 U
N-NITROSO-DI-N-BUTYLAMINE	79 U	75 UJ	78 U	76 U	79 U	76 U	78 U	73 U	80 U	74 U	76 U	75 U
N-NITROSO-DI-N-PROPYLAMINE	79 U	75 UJ	78 U	76 U	79 U	76 U	78 U	73 U	80 U	74 U	76 UJ	75 U
N-NITROSODIETHYLAMINE	79 U	75 UJ	78 U	76 U	79 U	76 U	78 U	73 U	80 U	74 U	76 U	75 U
N-NITROSODIMETHYLAMINE	79 U	75 UJ	78 U	76 U	79 U	76 U	78 UJ	73 U	80 UJ	74 UJ	76 UJ	75 UJ
N-NITROSOMETHYLETHYLAMINE	79 U	75 UJ	78 U	76 U	79 U	76 U	78 U	73 U	80 U	74 U	76 U	75 U
N-NITROSOMORPHOLINE	79 U	75 UJ	78 U	76 U	79 U	76 U	78 U	73 U	80 U	74 U	76 U	75 U
N-NITROSOPIPERIDINE	79 U	75 UJ	78 U	76 U	79 U	76 U	78 U	73 U	80 U	74 U	76 U	75 U
N-NITROSOPYRROLIDINE	79 UJ	75 UJ	78 UJ	76 UJ	79 UJ	76 UJ	78 U	73 U	80 U	74 U	76 U	75 U
NAPHTHALENE	8	1.4 U	1.5 U	1.5 U	1.5 U	1.5 U	1.5 U	1.4 U	1.5 U	1.4 UJ	1.5 UJ	1.5 UJ
O,O,O-TRIETHYL PHOSPHOROTHIOATE	79 U	75 UJ	78 U	76 U	79 U	76 U	78 U	73 U	80 U	74 U	76 U	75 U
O-TOLUIDINE	79 U	75 UJ	78 U	76 U	79 U	76 U	78 U	73 U	80 U	74 U	76 U	75 U
P-(DIMETHYLAMINO)AZOBENZENE	79 U	75 UJ	78 U	76 U	79 U	76 U	78 U	73 U	80 U	74 U	76 U	75 U
PENTACHLOROBENZENE	79 U	75 UJ	78 U	76 U	79 U	76 U	78 U	73 U	80 U	74 U	76 U	75 U
PENTACHLOROETHANE	79 U	75 UJ	78 U	76 U	79 U	76 U	78 U	73 U	80 U	74 U	76 U	75 U
PENTACHLORONITROBENZENE	79 U	75 UJ	78 U	76 U	79 U	76 U	78 U	73 U	80 U	74 U	76 U	75 U
PHENACETIN	79 U	75 UJ	78 U	76 U	79 U	76 U	78 U	73 U	80 U	74 U	76 U	75 U
PHENANTHRENE	1.5 U	1.4 U	1.5 U	1.5 U	1.5 U	1.5 U	1.5 U	1.4 U	1.5 U	1.4 UJ	1.5 UJ	1.5 UJ
PHENOL	79 U	75 UJ	78 U	76 U	79 U	76 U	78 U	73 U	80 U	74 U	76 UJ	75 U
PRONAMIDE	79 U	75 UJ	78 U	76 U	79 U	76 U	78 U	73 U	80 U	74 U	76 U	75 U
PYRENE	1.5 U	1.4 U	1.5 U	1.5 U	1.5 U	1.5 U	1.5 U	1.4 U	1.5 U	1.4 UJ	1.5 UJ	1.5 UJ
PYRIDINE	79 U	75 UJ	78 U	76 U	79 U	76 U	78 UJ	73 U	80 UJ	74 UJ	76 UJ	75 UJ
SAFROLE	79 U	75 UJ	78 U	76 U	79 U	76 U	78 U	73 U	80 U	74 U	76 U	75 U
Energetics (MG/KG)												
1,3,5-TRINITROBENZENE	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U
1,3-DINITROBENZENE	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U

TABLE E-2

SUMMARY OF ANALYTIC RESULTS IN SUBSURFACE SOIL
SWMU 3 - OLD JEEP TRAIL/LITTLE SULPHUR CREEK
NSWC CRANE
CRANE, INDIANA

LOCATION	03SB39	03SB39	03SB40	03SB40	03SB42	03SB42	03SB44	03SB44	03SB46	03SB46	03SB47	03SB47
NSAMPLE	03SB390206	03SB390610	03SB400206	03SB400610	03SB420206	03SB420610	03SB440206	03SB440610	03SB460206	03SB460610	03SB470206	03SB470610
SAMPLE	03SB390206	03SB390610	03SB400206	03SB400610	03SB420206	03SB420610	03SB440206	03SB440610	03SB460206	03SB460610	03SB470206	03SB470610
SACODE	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	ORIG	NORMAL	NORMAL
DEPTH RANGE	2 - 6	6 - 10	2 - 6	6 - 10	2 - 6	6 - 10	2 - 6	6 - 10	2 - 6	6 - 10	2 - 6	6 - 10
QC_TYPE	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
STATUS	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
SAMPLE DATE	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
VALIDATED	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
COLLECTION METHOD	GRAB	GRAB	GRAB	GRAB	GRAB	GRAB	GRAB	GRAB	GRAB	GRAB	GRAB	GRAB
2,4,6-TRINITROTOLUENE	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U
2,4-DINITROTOLUENE	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U
2,6-DINITROTOLUENE	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U
2-AMINO-4,6-DINITROTOLUENE	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.42 J	0.25 U
2-NITROTOLUENE	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U
3-NITROTOLUENE	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U
4-AMINO-2,6-DINITROTOLUENE	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U
4-NITROTOLUENE	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U
HMX	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U
NITROBENZENE	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U
NITROCELLULOSE	590 U	530 U	580 U	510 U	580 U	560 U	560 U	510 U	560 U	530 U	540 U	530 U
NITROGLYCERIN	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U
PETN	1.5 U	1.4 U	1.5 U	1.5 U	1.5 U	1.5 U	1.5 U	1.4 U	1.5 U	1.4 U	1.5 U	1.5 U
RDX	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U
TETRYL	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U
Inorganics (MG/KG)												
ALUMINUM	7030 J	6960 J	6080 J	5780 J	7210 J	5600 J	7100 J	5380 J	6360 J	4540 J	5680 J	4090 J
ANTIMONY	0.27 U	0.75 U	0.28 U	0.39 U	0.28 U	0.51 U	0.37 U	1.3 J	0.23 U	0.5 U	0.62 U	0.4 U
ARSENIC	4.9	5.5	4.1	6.2	4.4	2.6	7.4 J	11.2 J	4.9 J	8.2 J	6.7 J	5.4 J
BARIUM	95.1 J	81.2 J	139 J	94.5 J	153 J	107 J	119 J	83.1 J	138 J	72.3 J	77.9 J	87.8 J
BERYLLIUM	0.64	0.96	0.75	0.73	0.78	0.87	1.4	0.87	0.87	0.74	0.96	0.53
CADMIUM	0.3 U	0.35	0.35	0.35	0.36	0.41	0.49	0.37	0.83	0.7	0.41	0.32
CALCIUM	2070 J	1660 J	4260 J	6890 J	1950 J	2880 J	10300 J	7790 J	1390 J	2960 J	1090 J	467 J
CHROMIUM	10.2 J	21.2 J	9.9 J	21.8 J	8.5 J	18.6 J	27.5 J	20.4 J	12.1 J	20 J	24.1 J	19.4 J
COBALT	13.7 J	18.2 J	14.6 J	16.7 J	14.9 J	19.7 J	21.2 J	20.1 J	15.4 J	17.3 J	15 J	12.1 J
COPPER	9.2 J	8.5 J	16.4 J	8.6 J	10.2 J	6.9 J	10.3 J	9.3 J	7.6 J	9 J	92.6 J	9.6 J
IRON	16900 J	36900 J	17300 J	43800 J	16700 J	26500 J	44400 J	56400 J	16400 J	42000 J	40300 J	42700 J
LEAD	15 J	16.7 J	12.6 J	16.2 J	13.5 J	15 J	20 J	18.5 J	13.3 J	17.1 J	34 J	13.6 J
MAGNESIUM	989 J	668 J	747 J	799 J	828 J	685 J	835 J	760 J	770 J	428 J	528 J	464 J
MANGANESE	879 J	1370 J	1440 J	1390 J	1680 J	1680 J	1730 J	1450 J	1790 J	1310 J	1320 J	799 J
MERCURY	0.035 J	0.21 J	0.027 J	0.022 J	0.027 J	0.023 J	0.027 J	0.02 J	0.026 J	0.019 J	0.018 J	0.018 J
NICKEL	12 J	16.8 J	15.5 J	15.9 J	15.9 J	20.3 J	23.7 J	19.9 J	18 J	17.9 J	171 J	19.2 J
POTASSIUM	464 J	392 J	448 J	403 J	403 J	386 J	413 J	365 J	395 J	327 J	380 J	383 J
SELENIUM	0.38	0.21	0.32	0.22	0.39	0.2	0.27 J	0.22 J	0.43 J	0.17 UJ	0.23 J	0.17 UJ
SILVER	0.04 U	0.04 U	0.04 U	0.04 U	0.11	0.05	0.04 U	0.04 U	0.06 U	0.04 U	0.51 J	0.13 U
SODIUM	101 U	103 U	130 U	109 U	116 U	163 U	113 J	117 J	144 J	121 J	80.6 J	141 J
THALLIUM	0.09	0.09	0.09	0.08	0.12	0.1	0.11	0.08	0.11	0.08	0.11	0.06
TIN	0.25 U	0.33 U	0.25 U	0.16 U	0.42 U	0.2 U	0.18 U	0.15 U	0.26 U	0.16 U	0.82 U	0.07 U
VANADIUM	15 J	20.9 J	13 J	23.6 J	14.1 J	19.8 J	28.3 J	27.8 J	16.8 J	22.3 J	24.9 J	17.7 J
ZINC	33.2 J	37.2 J	32.5 J	37.2 J	37.9 J	31.7 J	41.4 J	43.9 J	26 J	51.6 J	74.5 J	40.7 J
Miscellaneous Parameters												
NITRATE (MG/KG)	38	14	1.9	1.7	1.7	1.9	2.4	2.1	1.2	1.5	1.8	1.5
NITRITE (MG/KG)	11 UR	2.3 J	11 UR	11 UR	2.2 UR	2.2 UR	2.7 UJ	2.2 UJ	2.2 UJ	2 UJ	11 UJ	11 UJ
NITRITE/NITRATE (MG/KG)	38 J	16 J	1.9 J	1.7 J	1.7 J	1.9 J	2.4 J	2.1 J	1.2 J	1.5 J	1.6 J	1.5 J
PERCENT MOISTURE (%)	14.9	9.4	14	11.8	15.7	10	14.1	9.1	17.9	8.6	11.6	11.3
PERCHLORATE (UG/KG)	43 J	22 UJ	23 UJ	23 UJ	24 UJ	22 UJ	23 UJ	22 UJ	20 U	20 U	23 U	23 U

TABLE E-2

SUMMARY OF ANALYTIC RESULTS IN SUBSURFACE SOIL
SWMU 3 - OLD JEEP TRAIL/LITTLE SULPHUR CREEK
NSWC CRANE
CRANE, INDIANA

LOCATION	03SB48	03SB48
NSAMPLE	03SB480206	03SB480610
SAMPLE	03SB480206	03SB480610
SACODE	NORMAL	NORMAL
DEPTH RANGE	2 - 6	6 - 10
QC_TYPE	NM	NM
STATUS	NORMAL	NORMAL
SAMPLE DATE	- -	- -
VALIDATED	Y	Y
COLLECTION METHOD	GRAB	GRAB
Dioxins (NG/KG))		
1,2,3,4,6,7,8,9-OCDD		
1,2,3,4,6,7,8,9-OCDF		
1,2,3,4,6,7,8-HPCDD		
1,2,3,4,6,7,8-HPCDF		
1,2,3,4,7,8,9-HPCDF		
1,2,3,4,7,8-HXCDD		
1,2,3,4,7,8-HXCDF		
1,2,3,6,7,8-HXCDD		
1,2,3,6,7,8-HXCDF		
1,2,3,7,8,9-HXCDD		
1,2,3,7,8,9-HXCDF		
1,2,3,7,8-PECDD		
1,2,3,7,8-PECDF		
2,3,4,6,7,8-HXCDF		
2,3,4,7,8-PECDF		
2,3,7,8-TCDD		
2,3,7,8-TCDF		
TEQ BIRD		
TEQ FISH		
TEQ HUMAN		
TOTAL HPCDD		
TOTAL HPCDF		
TOTAL HXCDD		
TOTAL HXCDF		
TOTAL PECDD		
TOTAL PECDF		
TOTAL TCDD		
TOTAL TCDF		
Volatile Organics (UG/KG))		
1,1,1,2-TETRACHLOROETHANE	1.3 U	12 U
1,1,1-TRICHLOROETHANE	1.3 U	12 U
1,1,2,2-TETRACHLOROETHANE	1.3 U	12 U
1,1,2-TRICHLOROETHANE	1.3 U	12 U
1,1-DICHLOROETHANE	1.3 U	12 U
1,1-DICHLOROETHENE	1.3 U	12 U
1,2,3-TRICHLOROPROPANE	1.3 U	12 U
1,2-DIBROMO-3-CHLOROPROPANE	1.3 U	12 U
1,2-DIBROMOETHANE	1.3 U	12 U
1,2-DICHLOROETHANE	1.3 U	12 U
1,2-DICHLOROPROPANE	1.3 U	12 U
1,4-DIOXANE	120 U	95 U
2-BUTANONE	1.3 U	12 U
2-HEXANONE	1.3 U	12 U
3-CHLOROPROPENE	1.3 U	12 U
4-METHYL-2-PENTANONE	1.3 U	12 U
ACETONE	12 BU	12 U
ACETONITRILE	48 U	39 U
ACROLEIN	1.3 UR	12 UR

TABLE E-2

SUMMARY OF ANALYTIC RESULTS IN SUBSURFACE SOIL
SWMU 3 - OLD JEEP TRAIL/LITTLE SULPHUR CREEK
NSWC CRANE
CRANE, INDIANA

LOCATION	03SB48	03SB48
NSAMPLE	03SB480206	03SB480610
SAMPLE	03SB480206	03SB480610
SACODE	NORMAL	NORMAL
DEPTH RANGE	2 - 6	6 - 10
QC_TYPE	NM	NM
STATUS	NORMAL	NORMAL
SAMPLE DATE	- -	- -
VALIDATED	Y	Y
COLLECTION METHOD	GRAB	GRAB
ACRYLONITRILE	1.3 UR	12 UR
BENZENE	1.3 U	12 U
BROMODICHLOROMETHANE	1.3 U	12 U
BROMOFORM	1.3 U	12 U
BROMOMETHANE	1.3 U	12 U
CARBON DISULFIDE	1.3 U	12 U
CARBON TETRACHLORIDE	1.3 U	12 U
CHLOROBENZENE	1.3 U	12 U
CHLORODIBROMOMETHANE	1.3 U	12 U
CHLOROETHANE	1.3 U	12 U
CHLOROFORM	1.3 U	12 U
CHLOROMETHANE	1.3 U	12 U
CHLOROPRENE	1.3 U	12 U
CIS-1,2-DICHLOROETHENE	8	18 J
CIS-1,3-DICHLOROPROPENE	1.3 U	12 U
DIBROMOMETHANE	1.3 U	12 U
DICHLORODIFLUOROMETHANE	1.3 U	12 U
ETHYL METHACRYLATE	1.3 U	12 U
ETHYLBENZENE	1.3 U	12 U
ISOBUTANOL	48 U	39 U
METHACRYLONITRILE	1.3 U	12 U
METHYL IODIDE	1.3 UJ	12 UJ
METHYL METHACRYLATE	1.3 U	12 U
METHYLENE CHLORIDE	4 BU	58 BU
PROPIONITRILE	48 U	39 U
STYRENE	1.3 U	12 U
TETRACHLOROETHENE	1.3 U	12 U
TOLUENE	1.3 U	12 U
TOTAL XYLENES	1.3 U	12 U
TRANS-1,2-DICHLOROETHENE	1.3 U	12 U
TRANS-1,3-DICHLOROPROPENE	1.3 U	12 U
TRANS-1,4-DICHLORO-2-BUTENE	1.3 U	12 U
TRICHLOROETHENE	20 J	33 J
TRICHLOROFLUOROMETHANE	1.3 U	12 U
VINYL ACETATE	1.3 U	12 UJ
VINYL CHLORIDE	1.3 U	12 U
Semivolatile Organics (UG/KG))		
1,2,4,5-TETRACHLOROBENZENE	74 U	78 U
1,2,4-TRICHLOROBENZENE	74 U	78 U
1,2-DICHLOROBENZENE	74 U	78 U
1,3-DICHLOROBENZENE	74 U	78 U
1,4-DICHLOROBENZENE	74 U	78 U
1,4-NAPHTHOQUINONE	74 U	78 U
1,4-PHENYLENEDIAMINE	74 UJ	78 UJ
1-NAPHTHYLAMINE	74 U	78 U
2,2'-OXYBIS(1-CHLOROPROPANE)	74 U	78 U
2,3,4,6-TETRACHLOROPHENOL	74 U	78 U
2,4,5-TRICHLOROPHENOL	74 U	78 U
2,4,6-TRICHLOROPHENOL	74 U	78 U

TABLE E-2

SUMMARY OF ANALYTIC RESULTS IN SUBSURFACE SOIL
SWMU 3 - OLD JEEP TRAIL/LITTLE SULPHUR CREEK
NSWC CRANE
CRANE, INDIANA

LOCATION	03SB48	03SB48
NSAMPLE	03SB480206	03SB480610
SAMPLE	03SB480206	03SB480610
SACODE	NORMAL	NORMAL
DEPTH RANGE	2 - 6	6 - 10
QC_TYPE	NM	NM
STATUS	NORMAL	NORMAL
SAMPLE DATE	- -	- -
VALIDATED	Y	Y
COLLECTION METHOD	GRAB	GRAB
2,4-DICHLOROPHENOL	74 U	78 U
2,4-DIMETHYLPHENOL	74 U	78 U
2,4-DINITROPHENOL	74 UJ	78 UJ
2,6-DICHLOROPHENOL	74 U	78 U
2-ACETYLAMINOFLUORENE	74 U	78 U
2-CHLORONAPHTHALENE	74 U	78 U
2-CHLOROPHENOL	74 U	78 U
2-METHYLNAPHTHALENE	1.4 UJ	1.5 UJ
2-METHYLPHENOL	74 U	78 U
2-NAPHTHYLAMINE	74 U	78 U
2-NITROANILINE	74 U	78 U
2-NITROPHENOL	74 U	78 U
2-PICOLINE	74 U	78 U
3&4-METHYLPHENOL	74 U	78 U
3,3'-DICHLOROBENZIDINE	74 U	78 U
3,3'-DIMETHYLBENZIDINE	74 U	78 U
3-METHYLCHOLANTHRENE	74 U	78 U
3-NITROANILINE	74 U	78 U
4,6-DINITRO-2-METHYLPHENOL	74 U	78 U
4-AMINOBIPHENYL	74 U	78 U
4-BROMOPHENYL PHENYL ETHER	74 U	78 U
4-CHLORO-3-METHYLPHENOL	74 U	78 U
4-CHLOROANILINE	74 U	78 U
4-CHLOROPHENYL PHENYL ETHER	74 U	78 U
4-NITROANILINE	74 U	78 U
4-NITROPHENOL	74 U	78 U
4-NITROQUINOLINE-1-OXIDE	74 UJ	78 UJ
5-NITRO-O-TOLUIDINE	74 U	78 U
7,12-DIMETHYLBENZ(A)ANTHRACENE	74 U	78 U
A,A-DIMETHYLPHENETHYLAMINE	74 U	78 U
ACENAPHTHENE	1.4 UJ	1.5 UJ
ACENAPHTHYLENE	1.4 UJ	1.5 UJ
ACETOPHENONE	74 U	78 U
ANILINE	74 U	78 U
ANTHRACENE	1.4 UJ	1.5 UJ
ARAMITE	74 U	78 U
BENZO(A)ANTHRACENE	1.4 UJ	1.5 UJ
BENZO(A)PYRENE	1.4 UJ	1.5 UJ
BENZO(B)FLUORANTHENE	1.4 UJ	1.5 UJ
BENZO(G,H,I)PERYLENE	1.4 UJ	1.5 UJ
BENZO(K)FLUORANTHENE	1.4 UJ	1.5 UJ
BENZYL ALCOHOL	74 U	78 U
BIS(2-CHLOROETHOXY)METHANE	74 U	78 U
BIS(2-CHLOROETHYL)ETHER	74 U	78 U
BIS(2-ETHYLHEXYL)PHTHALATE	74 U	78 U
BUTYL BENZYL PHTHALATE	74 U	78 U
CHLOROBENZILATE	74 U	78 U
CHRYSENE	1.4 UJ	1.5 UJ
DI-N-BUTYL PHTHALATE	2700	890

TABLE E-2

SUMMARY OF ANALYTIC RESULTS IN SUBSURFACE SOIL
SWMU 3 - OLD JEEP TRAIL/LITTLE SULPHUR CREEK
NSWC CRANE
CRANE, INDIANA

LOCATION	03SB48	03SB48
NSAMPLE	03SB480206	03SB480610
SAMPLE	03SB480206	03SB480610
SACODE	NORMAL	NORMAL
DEPTH RANGE	2 - 6	6 - 10
QC_TYPE	NM	NM
STATUS	NORMAL	NORMAL
SAMPLE DATE	- -	- -
VALIDATED	Y	Y
COLLECTION METHOD	GRAB	GRAB
DI-N-OCTYL PHTHALATE	74 UR	78 UR
DIALLATE	74 U	78 U
DIBENZO(A,H)ANTHRACENE	1.4 UJ	1.5 UJ
DIBENZOFURAN	74 U	78 U
DIETHYL PHTHALATE	74 U	78 U
DIMETHYL PHTHALATE	74 U	78 U
DIPHENYLAMINE	74 U	78 U
ETHYL METHANE SULFONATE	74 U	78 U
ETHYL PARATHION	74 U	78 U
FLUORANTHENE	1.4 UJ	1.5 UJ
FLUORENE	1.4 UJ	1.5 UJ
HEXACHLOROBENZENE	74 U	78 U
HEXACHLOROBUTADIENE	74 U	78 U
HEXACHLOROCYCLOPENTADIENE	74 UJ	78 UJ
HEXACHLOROETHANE	74 U	78 U
HEXACHLOROPROPENE	74 U	78 U
INDENO(1,2,3-CD)PYRENE	1.4 UJ	1.5 UJ
ISODRIN	74 U	78 U
ISOPHORONE	74 U	78 U
ISOSAFROLE	74 U	78 U
KEPONE	74 UR	78 UR
METHAPYRILENE	74 U	78 U
METHYL METHANE SULFONATE	74 U	78 U
METHYL PARATHION	74 U	78 U
N-NITROSO-DI-N-BUTYLAMINE	74 U	78 U
N-NITROSO-DI-N-PROPYLAMINE	74 U	78 U
N-NITROSODIETHYLAMINE	74 U	78 U
N-NITROSODIMETHYLAMINE	74 UJ	78 UJ
N-NITROSOMETHYLETHYLAMINE	74 U	78 U
N-NITROSOMORPHOLINE	74 U	78 U
N-NITROSOPIPERIDINE	74 U	78 U
N-NITROSOPYRROLIDINE	74 U	78 U
NAPHTHALENE	1.4 UJ	1.5 UJ
O,O,O-TRIETHYL PHOSPHOROTHIOATE	74 U	78 U
O-TOLUIDINE	74 U	78 U
P-(DIMETHYLAMINO)AZOBENZENE	74 U	78 U
PENTACHLOROBENZENE	74 U	78 U
PENTACHLOROETHANE	74 U	78 U
PENTACHLORONITROBENZENE	74 U	78 U
PHENACETIN	74 U	78 U
PHENANTHRENE	1.4 UJ	1.5 UJ
PHENOL	74 U	78 U
PRONAMIDE	74 U	78 U
PYRENE	1.4 UJ	1.5 UJ
PYRIDINE	74 UJ	78 UJ
SAFROLE	74 U	78 U
Energetics (MG/KG)		
1,3,5-TRINITROBENZENE	0.25 U	0.25 U
1,3-DINITROBENZENE	0.25 U	0.25 U

TABLE E-2

SUMMARY OF ANALYTIC RESULTS IN SUBSURFACE SOIL
SWMU 3 - OLD JEEP TRAIL/LITTLE SULPHUR CREEK
NSWC CRANE
CRANE, INDIANA

LOCATION	03SB48	03SB48
NSAMPLE	03SB480206	03SB480610
SAMPLE	03SB480206	03SB480610
SACODE	NORMAL	NORMAL
DEPTH RANGE	2 - 6	6 - 10
QC_TYPE	NM	NM
STATUS	NORMAL	NORMAL
SAMPLE DATE	- -	- -
VALIDATED	Y	Y
COLLECTION METHOD	GRAB	GRAB
2,4,6-TRINITROTOLUENE	0.25 U	0.25 U
2,4-DINITROTOLUENE	0.25 U	0.25 U
2,6-DINITROTOLUENE	0.25 U	0.25 U
2-AMINO-4,6-DINITROTOLUENE	0.25 U	0.25 U
2-NITROTOLUENE	0.25 U	0.25 U
3-NITROTOLUENE	0.25 U	0.25 U
4-AMINO-2,6-DINITROTOLUENE	0.25 U	0.25 U
4-NITROTOLUENE	0.25 U	0.25 U
HMX	0.25 U	0.25 U
NITROBENZENE	0.25 U	0.25 U
NITROCELLULOSE	540 U	580 U
NITROGLYCERIN	2.5 U	2.5 U
PETN	1.4 U	1.5 U
RDX	0.25 U	0.25 U
TETRYL	0.25 U	0.25 U
Inorganics (MG/KG)		
ALUMINUM	391 J	4250 J
ANTIMONY	30 J	12.4 J
ARSENIC	3.7 J	4.6 J
BARIUM	614 J	822 J
BERYLLIUM	0.26	0.58
CADMIUM	0.63	0.86
CALCIUM	869 J	3430 J
CHROMIUM	32.7 J	32.3 J
COBALT	740 J	487 J
COPPER	22500 J	9580 J
IRON	50900 J	49800 J
LEAD	3590 J	3410 J
MAGNESIUM	199 J	710 J
MANGANESE	1200 J	1440 J
MERCURY	0.025 J	0.025 J
NICKEL	79100 J	48300 J
POTASSIUM	273 J	505 J
SELENIUM	0.16 UJ	0.17 UJ
SILVER	33.9 J	16.6 J
SODIUM	140 J	220 J
THALLIUM	0.04 U	0.04 U
TIN	1830 J	507 J
VANADIUM	4.5 J	19.7 J
ZINC	253 J	157 J
Miscellaneous Parameters		
NITRATE (MG/KG)	1 UJ	1.1
NITRITE (MG/KG)	2 UJ	2.3 UJ
NITRITE/NITRATE (MG/KG)	1 UJ	2.8 J
PERCENT MOISTURE (%)	10.7	13.5
PERCHLORATE (UG/KG)	20 U	20 U

TABLE E-3

SUMMARY OF ANALYTIC RESULTS FOR GROUND WATER
SWMU 3 - OLD JEEP TRAIL/LITTLE SULPHUR CREEK
NSWC CRANE
CRANE, INDIANA

LOCATION	03-07	03-10	03-11	03-12	03-13	03-14	03-15	03-17	03-18	03-20	03-21	03-22	03-23	03-24
NSAMPLE	03GW0701	03GW1001	03GW1101	03GW1201	03GW1301	03GW1401	03GW1501	03GW1701	03GW1801	03GW2001	03GW2101	03GW2201	03GW2301	03GW2401
SAMPLE	03GW0701	03GW1001	03GW1101	03GW1201	03GW1301	03GW1401	03GW1501	03GW1701	03GW1801	03GW2001	03GW2101	03GW2201	03GW2301	03GW2401
MATRIX	GW	GW	GW	GW	GW	GW	GW	GW	GW	GW	GW	GW	GW	GW
SACODE	ORIG	NORMAL	NORMAL	ORIG	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
QC_TYPE	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
STATUS	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
SAMPLE DATE	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
VALIDATED	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
COLLECTION METHOD	GRAB	GRAB	GRAB	GRAB	GRAB	GRAB	GRAB	GRAB	GRAB	GRAB	GRAB	GRAB	GRAB	GRAB
Volatile Organics (UG/L)														
1,1,1,2-TETRACHLOROETHANE	0.3 U	0.3 U	0.3 U	0.3 U	0.3 U	0.3 U	0.3 U	0.3 U	0.3 U	0.3 U	0.3 U	0.3 U	0.3 U	0.3 U
1,1,1-TRICHLOROETHANE	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
1,1,2,2-TETRACHLOROETHANE	530	0.3 U	0.3 U	0.3 U	0.3 U	0.3 U	100	0.3 U	0.3 U	0.3 U	0.3 U	5	0.3 U	3.9 J
1,1,2-TRICHLOROETHANE	12	0.3 U	0.3 U	0.3 U	0.3 U	0.3 U	2.3	0.3 U	0.3 U	0.3 U	0.3 U	0.3 U	0.3 U	0.5 J
1,1-DICHLOROETHANE	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
1,1-DICHLOROETHENE	1.1 J	0.3 U	0.3 U	0.3 U	0.3 U	0.3 U	0.3 U	0.3 U	0.3 U	0.3 U	0.3 U	0.3 U	0.3 U	0.3 U
1,2,3-TRICHLOROPROPANE	0.3 U	0.3 U	0.3 U	0.3 U	0.3 U	0.3 U	0.3 U	0.3 U	0.3 U	0.3 U	0.3 U	0.3 U	0.3 U	0.3 U
1,2-DIBROMO-3-CHLOROPROPANE	0.3 U	0.3 U	0.3 UJ	0.3 UJ	0.3 UJ	0.3 UJ	0.3 U	0.3 UJ	0.3 UJ	0.3 U	0.3 U	0.3 U	0.3 U	0.3 UJ
1,2-DIBROMOETHANE	0.3 U	0.3 UJ	0.3 U	0.3 U	0.3 U	0.3 U	0.3 UJ	0.3 U	0.3 U	0.3 U	0.3 UJ	0.3 UJ	0.3 U	0.3 U
1,2-DICHLOROETHANE	0.3 U	0.3 U	0.3 U	0.3 U	0.3 U	0.3 U	0.3 U	0.3 U	0.3 U	0.3 U	0.3 U	0.3 U	0.3 U	0.3 U
1,2-DICHLOROPROPANE	0.3 U	0.3 U	0.3 U	0.3 U	0.3 U	0.3 U	0.3 U	0.3 U	0.3 U	0.3 U	0.3 U	0.3 U	0.3 U	0.3 U
1,4-DIOXANE	44 U	44 U	44 U	44 U	44 U	44 U	44 U	44 U	44 U	44 U	44 U	44 U	44 U	44 U
2-BUTANONE	0.5 UJ	0.5 UJ	0.5 UJ	0.5 UJ	0.5 UJ	0.5 UJ	0.5 UJ	0.5 UJ	0.5 UJ	0.5 U	0.5 UJ	0.5 UJ	0.5 U	0.5 UJ
2-HEXANONE	0.5 U	0.5 U	0.5 UJ	0.5 UJ	0.5 UJ	0.5 UJ	0.5 U	0.5 UJ	0.5 UJ	0.5 U	0.5 U	0.5 U	0.5 U	0.5 UJ
3-CHLOROPROPENE	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
4-METHYL-2-PENTANONE	0.5 U	0.5 U	0.5 U	0.5 UJ	0.5 UJ	0.5 U	0.5 U	0.5 UJ	0.5 UJ	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
ACETONE	0.8 BU	0.5 BU	0.4 BU	0.5 UJ	0.5 UJ	0.5 UJ	0.5 UJ	0.5 UJ	0.5 UJ	0.5 UJ	0.5 UJ	0.5 UJ	0.8 U	0.5 UJ
ACETONITRILE	3.7 U	3.7 U	3.7 U	3.7 U	3.7 U	3.7 U	3.7 U	3.7 U	3.7 U	3.7 U	3.7 U	3.7 U	3.7 U	3.7 U
ACROLEIN	0.5 UR	0.5 UR	0.5 UR	0.5 UR	0.5 UR	0.5 UR	0.5 UR	0.5 UR	0.5 UR	0.5 UR	0.5 UR	0.5 UR	0.5 UR	0.5 UR
ACRYLONITRILE	0.5 U	0.5 UJ	0.5 UJ	0.5 UJ	0.5 UJ	0.5 UJ	0.5 UJ	0.5 UJ	0.5 UJ	0.5 U	0.5 UJ	0.5 UJ	0.5 U	0.5 UJ
BENZENE	0.3 U	0.3 U	0.3 U	0.3 U	0.3 U	0.3 U	0.3 U	0.3 U	0.3 U	0.3 U	0.3 U	0.3 U	0.3 U	0.3 U
BROMODICHLOROMETHANE	0.3 U	0.3 U	0.3 U	0.3 U	0.3 U	0.3 U	0.3 U	0.3 U	0.3 U	0.3 U	0.3 U	0.3 U	0.3 U	0.3 U
BROMOFORM	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
BROMOMETHANE	0.5 U	0.5 U	0.5 UJ	0.5 UJ	0.5 UJ	0.5 UJ	0.4 J	0.5 UJ	0.5 UJ	0.6	0.5 U	0.5 U	0.5	0.5 UJ
CARBON DISULFIDE	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
CARBON TETRACHLORIDE	0.3 U	0.3 UJ	0.3 U	0.3 U	0.3 U	0.3 U	0.3 UJ	0.3 U	0.3 U	0.3 U	0.3 UJ	0.3 UJ	0.3 U	0.3 U
CHLOROBENZENE	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
CHLORODIBROMOMETHANE	0.3 U	0.3 U	0.3 U	0.3 U	0.3 U	0.3 U	0.3 U	0.3 U	0.3 U	0.3 U	0.3 U	0.3 U	0.3 U	0.3 U
CHLOROETHANE	0.5 U	0.5 UJ	0.5 U	0.5 U	0.5 U	0.5 U	0.5 UJ	0.5 U	0.5 U	0.5 U	0.5 UJ	0.5 UJ	0.5 U	0.5 U
CHLOROFORM	0.3 UJ	0.3 U	0.3 U	0.3 U	0.3 U	0.3 U	0.3 U	0.3 U	0.3 U	0.3 U	0.3 U	0.3 U	0.3 U	0.3 U
CHLOROMETHANE	0.5 UJ	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
CHLOROPRENE	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
CIS-1,2-DICHLOROETHENE	160	0.5 U	0.5 U	0.3 J	0.5 U	0.5 U	7.9	0.5 U	0.5 U	0.5 U	0.5 U	0.8	0.5 U	7.7
CIS-1,3-DICHLOROPROPENE	0.3 U	0.3 UJ	0.3 U	0.3 U	0.3 U	0.3 U	0.3 UJ	0.3 U	0.3 U	0.3 U	0.3 UJ	0.3 UJ	0.3 U	0.3 U
DIBROMOMETHANE	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
DICHLORODIFLUOROMETHANE	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
ETHYL METHACRYLATE	0.5 U	0.5 U	0.5 J	0.5 U	0.5 U	0.5 UJ	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 UJ
ETHYLBENZENE	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
ISOBUTANOL	6.3 U	6.3 U	6.3 U	6.3 U	6.3 U	6.3 U	6.3 U	6.3 U	6.3 U	6.3 U	6.3 U	6.3 U	6.3 U	6.3 U
METHACRYLONITRILE	0.5 U	0.5 U	0.5 UJ	0.5 UJ	0.5 UJ	0.5 UJ	0.5 U	0.5 UJ	0.5 UJ	0.5 U	0.5 U	0.5 U	0.5 U	0.5 UJ
METHYL IODIDE	0.5 UJ	0.5 UR	0.5 U	0.5 U	0.5 U	0.5 U	0.5 UR	0.5 U	0.5 U	0.5 UJ	0.5 UR	0.5 UR	0.5 UJ	0.5 U
METHYL METHACRYLATE	0.5 U	0.5 UJ	0.5 U	0.5 U	0.5 U	0.5 U	0.5 UJ	0.5 U	0.5 U	0.5 U	0.5 UJ	0.5 UJ	0.5 U	0.5 U
METHYLENE CHLORIDE	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
PROPIONITRILE	4.6 U	4.6 U	4.6 U	4.6 U	4.6 U	4.6 U	4.6 U	4.6 U	4.6 U	4.6 U	4.6 U	4.6 U	4.6 U	4.6 U
STYRENE	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
TETRACHLOROETHENE	5.7	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.3 J	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
TOLUENE	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
TOTAL XYLENES	0.5 U	0.5 U	0.5 U	0.5 U	0.5 UJ	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
TRANS-1,2-DICHLOROETHENE	37	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	1.9	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	1.2 J

TABLE E-3

SUMMARY OF ANALYTIC RESULTS FOR GROUND WATER
SWMU 3 - OLD JEEP TRAIL/LITTLE SULPHUR CREEK
NSWC CRANE
CRANE, INDIANA

LOCATION	03-07	03-10	03-11	03-12	03-13	03-14	03-15	03-17	03-18	03-20	03-21	03-22	03-23	03-24
NSAMPLE	03GW0701	03GW1001	03GW1101	03GW1201	03GW1301	03GW1401	03GW1501	03GW1701	03GW1801	03GW2001	03GW2101	03GW2201	03GW2301	03GW2401
SAMPLE	03GW0701	03GW1001	03GW1101	03GW1201	03GW1301	03GW1401	03GW1501	03GW1701	03GW1801	03GW2001	03GW2101	03GW2201	03GW2301	03GW2401
MATRIX	GW	GW	GW	GW	GW	GW	GW	GW	GW	GW	GW	GW	GW	GW
SACODE	ORIG	NORMAL	NORMAL	ORIG	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
QC_TYPE	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
STATUS	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
SAMPLE DATE	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
VALIDATED	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
COLLECTION METHOD	GRAB	GRAB	GRAB	GRAB	GRAB	GRAB	GRAB	GRAB	GRAB	GRAB	GRAB	GRAB	GRAB	GRAB
TRANS-1,3-DICHLOROPROPENE	0.3 U	0.3 UJ	0.3 U	0.3 U	0.3 U	0.3 U	0.3 UJ	0.3 U	0.3 U	0.3 U	0.3 UJ	0.3 UJ	0.3 U	0.3 U
TRANS-1,4-DICHLORO-2-BUTENE	0.5 U	0.5 UJ	0.5 U	0.5 U	0.5 U	0.5 U	0.5 UJ	0.5 U	0.5 U	0.5 U	0.5 UJ	0.5 UJ	0.5 U	0.5 U
TRICHLOROETHENE	640	0.9 U	0.5 U	3.7 J	0.5 U	0.5 U	57 J	0.5 U	0.5 U	0.3 J	1.6 U	6 J	0.5 U	23 J
TRICHLOROFLUOROMETHANE	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
VINYL ACETATE	0.5 UJ	0.5 UJ	0.5 U	0.5 UJ	0.5 UJ	0.5 U	0.5 UJ	0.5 UJ	0.5 UJ	0.5 U	0.5 UJ	0.5 UJ	0.5 U	0.5 U
VINYL CHLORIDE	3.9	0.3 U	0.3 U	0.3 U	0.3 U	0.3 U	0.3 U	0.3 U	0.3 U	0.3 U	0.3 U	0.3 U	0.3 U	0.3 U
Semivolatile Organics (UG/L)														
1,2,4,5-TETRACHLOROBENZENE	1 U	1 U	1 U	0.97 U	0.98 U	1 U	0.94 U	1 U	1.1 U	1.1 U	1 U	0.94 U	0.94 U	0.95 U
1,2,4-TRICHLOROBENZENE	1 U	1 U	1 U	0.97 U	0.98 UJ	1 U	0.94 U	1 U	1.1 U	1.1 U	1 U	0.94 U	0.94 U	0.95 U
1,2-DICHLOROBENZENE	1 U	1 U	1 U	0.97 U	0.98 UJ	1 U	0.94 U	1 U	1.1 U	1.1 U	1 U	0.94 U	0.94 U	0.95 U
1,3-DICHLOROBENZENE	1 U	1 U	1 U	0.97 U	0.98 UJ	1 U	0.94 U	1 U	1.1 U	1.1 U	1 U	0.94 U	0.94 U	0.95 U
1,4-DICHLOROBENZENE	1 U	1 U	1 U	0.97 U	0.98 UJ	1 U	0.94 U	1 U	1.1 U	1.1 U	1 U	0.94 U	0.94 U	0.95 U
1,4-NAPHTHOQUINONE	1 U	1 U	1 U	0.97 U	0.98 U	1 U	0.94 U	1 U	1.1 U	1.1 U	1 U	0.94 U	0.94 U	0.95 U
1,4-PHENYLENEDIAMINE	1 UR	1 UR	1 UR	0.97 UR	0.98 UR	1 UR	0.94 UR	1 UR	1.1 UR	1.1 UR	1 UR	0.94 UR	0.94 UR	0.95 UR
1-NAPHTHYLAMINE	1 U	1 U	1 U	0.97 U	0.98 U	1 U	0.94 U	1 U	1.1 U	1.1 U	1 U	0.94 U	0.94 U	0.95 U
2,2'-OXYBIS(1-CHLOROPROPANE)	1 U	1 U	1 UJ	0.97 UJ	0.98 UJ	1 UJ	0.94 U	1 UJ	1.1 UJ	1.1 U	1 U	0.94 U	0.94 U	0.95 UJ
2,3,4,6-TETRACHLOROPHENOL	1 U	1 U	1 U	0.97 U	0.98 U	1 U	0.94 U	1 U	1.1 U	1.1 U	1 U	0.94 U	0.94 U	0.95 U
2,4,5-TRICHLOROPHENOL	1 U	1 U	1 U	0.97 U	0.98 U	1 U	0.94 U	1 U	1.1 U	1.1 U	1 U	0.94 U	0.94 U	0.95 U
2,4,6-TRICHLOROPHENOL	1 U	1 U	1 U	0.97 U	0.98 U	1 U	0.94 U	1 U	1.1 U	1.1 U	1 U	0.94 U	0.94 U	0.95 U
2,4-DICHLOROPHENOL	1 U	1 U	1 U	0.97 U	0.98 U	1 U	0.94 U	1 U	1.1 U	1.1 U	1 U	0.94 U	0.94 U	0.95 U
2,4-DIMETHYLPHENOL	1 U	1 U	1 U	0.97 U	0.98 U	1 U	0.94 U	1 U	1.1 U	1.1 U	1 U	0.94 U	0.94 U	0.95 U
2,4-DINITROPHENOL	1 UJ	1 U	1 U	0.97 U	0.98 U	1 U	0.94 U	1 U	1.1 U	1.1 UJ	1 U	0.94 U	0.94 UJ	0.95 U
2,6-DICHLOROPHENOL	1 U	1 U	1 U	0.97 U	0.98 U	1 U	0.94 U	1 U	1.1 U	1.1 U	1 U	0.94 U	0.94 U	0.95 U
2-ACETYLAMINOFLUORENE	1 U	1 U	1 U	0.97 U	0.98 U	1 U	0.94 U	1 U	1.1 U	1.1 U	1 U	0.94 U	0.94 U	0.95 U
2-CHLORONAPHTHALENE	1 U	1 U	1 U	0.97 U	0.98 UJ	1 U	0.94 U	1 U	1.1 U	1.1 U	1 U	0.94 U	0.94 U	0.95 U
2-CHLOROPHENOL	1 U	1 U	1 U	0.97 U	0.98 U	1 U	0.94 U	1 U	1.1 U	1.1 U	1 U	0.94 U	0.94 U	0.95 U
2-METHYLNAPHTHALENE	0.021 U	0.02 U	0.021 U	0.02 U	0.019 U	0.02 U	0.019 U	0.02 U	0.021 U	0.019 U	0.019 U	0.019 U	0.019 U	0.019 U
2-METHYLPHENOL	1 U	1 U	1 U	0.97 U	0.98 U	1 U	0.94 U	1 U	1.1 U	1.1 U	1 U	0.94 U	0.94 U	0.95 U
2-NAPHTHYLAMINE	1 U	1 U	1 U	0.97 U	0.98 U	1 U	0.94 U	1 U	1.1 U	1.1 U	1 U	0.94 U	0.94 U	0.95 U
2-NITROANILINE	1 U	1 U	1 U	0.97 U	0.98 U	1 U	0.94 U	1 U	1.1 U	1.1 U	1 U	0.94 U	0.94 U	0.95 U
2-NITROPHENOL	1 U	1 U	1 U	0.97 U	0.98 U	1 U	0.94 U	1 U	1.1 U	1.1 U	1 U	0.94 U	0.94 U	0.95 U
2-PICOLINE	1 U	1 U	1 U	0.97 U	0.98 U	1 U	0.94 U	1 U	1.1 U	1.1 U	1 U	0.94 U	0.94 U	0.95 U
3&4-METHYLPHENOL	1 U	1 U	1 U	0.97 U	0.98 U	1 U	0.94 U	1 U	1.1 U	1.1 U	1 U	0.94 U	0.94 U	0.95 U
3,3'-DICHLOROBENZIDINE	1 U	1 U	1 U	0.97 U	0.98 UJ	1 U	0.94 U	1 U	1.1 U	1.1 U	1 U	0.94 U	0.94 U	0.95 U
3,3'-DIMETHYLBENZIDINE	1 UJ	1 U	1 U	0.97 U	0.98 U	1 U	0.94 U	1 U	1.1 U	1.1 UJ	1 U	0.94 U	0.94 UJ	0.95 U
3-METHYLCHOLANTHRENE	1 U	1 U	1 U	0.97 U	0.98 U	1 U	0.94 U	1 U	1.1 U	1.1 U	1 U	0.94 U	0.94 U	0.95 U
3-NITROANILINE	1 U	1 U	1 U	0.97 U	0.98 UJ	1 U	0.94 U	1 U	1.1 U	1.1 U	1 U	0.94 U	0.94 U	0.95 U
4,6-DINITRO-2-METHYLPHENOL	1 UJ	1 U	1 U	0.97 U	0.98 U	1 U	0.94 U	1 U	1.1 U	1.1 UJ	1 U	0.94 U	0.94 UJ	0.95 U
4-AMINOBIPHENYL	1 U	1 U	1 U	0.97 U	0.98 U	1 U	0.94 U	1 U	1.1 U	1.1 U	1 U	0.94 U	0.94 U	0.95 U
4-BROMOPHENYL PHENYL ETHER	1 U	1 U	1 U	0.97 U	0.98 U	1 U	0.94 U	1 U	1.1 U	1.1 U	1 U	0.94 U	0.94 U	0.95 U
4-CHLORO-3-METHYLPHENOL	1 U	1 U	1 U	0.97 U	0.98 U	1 U	0.94 U	1 U	1.1 U	1.1 U	1 U	0.94 U	0.94 U	0.95 U
4-CHLOROANILINE	1 U	1 U	1 U	0.97 U	0.98 U	1 U	0.94 U	1 U	1.1 U	1.1 U	1 U	0.94 U	0.94 U	0.95 U
4-CHLOROPHENYL PHENYL ETHER	1 U	1 U	1 U	0.97 U	0.98 U	1 U	0.94 U	1 U	1.1 U	1.1 U	1 U	0.94 U	0.94 U	0.95 U
4-NITROANILINE	1 U	1 U	1 U	0.97 U	0.98 UJ	1 U	0.94 U	1 U	1.1 U	1.1 U	1 U	0.94 U	0.94 U	0.95 U
4-NITROPHENOL	1 UJ	1 UJ	1 U	0.97 U	0.98 U	1 U	0.94 UJ	1 U	1.1 U	1.1 UJ	1 UJ	0.94 UJ	0.94 UJ	0.95 U
4-NITROQUINOLINE-1-OXIDE	1 UJ	1 UR	1 UR	0.97 UR	0.98 UR	1 UR	0.94 UR	1 UR	1.1 UR	1.1 U	1 UR	0.94 UR	0.94 U	0.95 UR
5-NITRO-O-TOLUIDINE	1 U	1 U	1 U	0.97 U	0.98 U	1 U	0.94 U	1 U	1.1 U	1.1 U	1 U	0.94 U	0.94 U	0.95 U
7,12-DIMETHYLBENZ(A)ANTHRACENE	1 U	1 U	1 U	0.97 U	0.98 U	1 U	0.94 U	1 U	1.1 U	1.1 U	1 U	0.94 U	0.94 U	0.95 U
A,A-DIMETHYLPHENETHYLAMINE	1 U	1 UJ	1 U	0.97 U	0.98 U	1 U	0.94 UJ	1 U	1.1 U	1.1 U	1 UJ	0.94 UJ	0.94 U	0.95 U
ACENAPHTHENE	0.021 U	0.02 U	0.021 U	0.02 U	0.019 U	0.02 U	0.019 U	0.02 U	0.021 U	0.019 U	0.019 U	0.019 U	0.019 U	0.019 U

TABLE E-3

SUMMARY OF ANALYTIC RESULTS FOR GROUND WATER
SWMU 3 - OLD JEEP TRAIL/LITTLE SULPHUR CREEK
NSWC CRANE
CRANE, INDIANA

LOCATION	03-07	03-10	03-11	03-12	03-13	03-14	03-15	03-17	03-18	03-20	03-21	03-22	03-23	03-24
NSAMPLE	03GW0701	03GW1001	03GW1101	03GW1201	03GW1301	03GW1401	03GW1501	03GW1701	03GW1801	03GW2001	03GW2101	03GW2201	03GW2301	03GW2401
SAMPLE	03GW0701	03GW1001	03GW1101	03GW1201	03GW1301	03GW1401	03GW1501	03GW1701	03GW1801	03GW2001	03GW2101	03GW2201	03GW2301	03GW2401
MATRIX	GW	GW	GW	GW	GW	GW	GW	GW	GW	GW	GW	GW	GW	GW
SACODE	ORIG	NORMAL	NORMAL	ORIG	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
QC_TYPE	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
STATUS	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
SAMPLE DATE	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
VALIDATED	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
COLLECTION METHOD	GRAB	GRAB	GRAB	GRAB	GRAB	GRAB	GRAB	GRAB	GRAB	GRAB	GRAB	GRAB	GRAB	GRAB
ACENAPHTHYLENE	0.021 U	0.02 U	0.021 U	0.02 U	0.019 U	0.02 U	0.019 U	0.02 U	0.021 U	0.019 U	0.019 U	0.019 U	0.019 U	0.019 U
ACETOPHENONE	1 U	1 U	1 U	0.97 U	0.98 U	1 U	0.94 U	1 U	1.1 U	1.1 U	1 U	0.94 U	0.94 U	0.95 U
ANILINE	1 U	1 U	1 U	0.97 U	0.98 U	1 U	0.94 U	1 U	1.1 U	1.1 U	1 U	0.94 U	0.94 U	0.95 U
ANTHRACENE	0.021 U	0.02 U	0.021 U	0.02 U	0.019 U	0.02 U	0.019 U	0.02 U	0.021 U	0.019 U	0.019 U	0.019 U	0.019 U	0.019 U
ARAMITE	1 U	1 U	1 U	0.97 U	0.98 U	1 U	0.94 U	1 U	1.1 U	1.1 U	1 U	0.94 U	0.94 U	0.95 U
BENZO(A)ANTHRACENE	0.021 U	0.02 U	0.021 U	0.02 U	0.019 U	0.02 U	0.019 U	0.02 U	0.021 U	0.019 U	0.019 U	0.019 U	0.019 U	0.019 U
BENZO(A)PYRENE	0.021 U	0.02 U	0.021 U	0.02 U	0.019 U	0.02 U	0.019 U	0.02 U	0.021 U	0.019 U	0.019 U	0.019 U	0.019 U	0.019 U
BENZO(B)FLUORANTHENE	0.021 U	0.02 U	0.021 U	0.02 U	0.019 U	0.02 U	0.019 U	0.02 U	0.021 U	0.019 U	0.019 U	0.019 U	0.019 U	0.019 U
BENZO(G,H,I)PERYLENE	0.021 U	0.02 U	0.021 U	0.02 U	0.019 U	0.02 U	0.019 U	0.02 U	0.021 U	0.019 U	0.019 U	0.019 U	0.019 U	0.019 U
BENZO(K)FLUORANTHENE	0.021 U	0.02 U	0.021 U	0.02 U	0.019 U	0.02 U	0.019 U	0.02 U	0.021 U	0.019 U	0.019 U	0.019 U	0.019 U	0.019 U
BENZYL ALCOHOL	1 U	1 U	1 U	0.97 U	0.98 U	1 U	0.94 U	1 U	1.1 U	1.1 U	1 U	0.94 U	0.94 U	0.95 U
BIS(2-CHLOROETHOXY)METHANE	1 U	1 U	1 U	0.97 U	0.98 UJ	1 U	0.94 U	1 U	1.1 U	1.1 U	1 U	0.94 U	0.94 U	0.95 U
BIS(2-CHLOROETHYL)ETHER	1 U	1 U	1 U	0.97 U	0.98 U	1 U	0.94 U	1 U	1.1 U	1.1 U	1 U	0.94 U	0.94 U	0.95 U
BIS(2-ETHYLHEXYL)PHTHALATE	1 U	1 U	1 U	0.97 U	0.98 U	1 U	0.94 U	1 U	1.1 U	1.1 U	1 U	0.94 U	2 J	0.95 U
BUTYL BENZYL PHTHALATE	1 U	1 U	1 U	0.97 U	0.98 U	1 U	0.94 U	1 U	1.1 U	1.1 U	1 U	0.94 U	0.94 U	0.95 U
CHLOROBENZILATE	1 U	1 U	1 U	0.97 U	0.98 U	1 U	0.94 U	1 U	1.1 U	1.1 U	1 U	0.94 U	0.94 U	0.95 U
CHRYSENE	0.021 U	0.02 U	0.021 U	0.02 U	0.019 U	0.02 U	0.019 U	0.02 U	0.021 U	0.019 U	0.019 U	0.019 U	0.019 U	0.019 U
DI-N-BUTYL PHTHALATE	1 U	1 U	1 U	0.97 U	0.98 U	1 U	0.94 U	1 U	1.1 U	1.1 U	1 U	0.94 U	0.94 U	0.95 U
DI-N-OCTYL PHTHALATE	1 U	1 U	1 U	0.97 U	0.98 U	1 U	0.94 U	1 U	1.1 U	1.1 U	1 U	0.94 U	0.94 U	0.95 U
DIALLATE	1 U	1 U	1 U	0.97 U	0.98 U	1 U	0.94 U	1 U	1.1 U	1.1 U	1 U	0.94 U	0.94 U	0.95 U
DIBENZO(A,H)ANTHRACENE	0.021 U	0.02 U	0.021 U	0.02 U	0.019 U	0.02 U	0.019 U	0.02 U	0.021 U	0.019 U	0.019 U	0.019 U	0.019 U	0.019 U
DIBENZOFURAN	1 U	1 U	1 U	0.97 U	0.98 U	1 U	0.94 U	1 U	1.1 U	1.1 U	1 U	0.94 U	0.94 U	0.95 U
DIETHYL PHTHALATE	1 U	1 U	1 U	0.97 U	0.98 U	1 U	0.94 U	1 U	1.1 U	1.1 U	1 U	0.94 U	0.94 U	0.95 U
DIMETHYL PHTHALATE	1 U	1 U	1 U	0.97 U	0.98 U	1 U	0.94 U	1 U	1.1 U	1.1 U	1 U	0.94 U	0.94 U	0.95 U
DIPHENYLAMINE	1 U	1 U	1 U	0.97 U	0.98 U	1 U	0.94 U	1 U	1.1 U	1.1 U	1 U	0.94 U	0.94 U	0.95 U
ETHYL METHANE SULFONATE	1 U	1 U	1 U	0.97 U	0.98 U	1 U	0.94 U	1 U	1.1 U	1.1 U	1 U	0.94 U	0.94 U	0.95 U
ETHYL PARATHION	1 U	1 U	1 U	0.97 U	0.98 U	1 U	0.94 U	1 U	1.1 U	1.1 U	1 U	0.94 U	0.94 U	0.95 U
FLUORANTHENE	0.021 U	0.02 U	0.021 U	0.02 U	0.019 U	0.02 U	0.019 U	0.02 U	0.021 U	0.019 U	0.019 U	0.019 U	0.019 U	0.019 U
FLUORENE	0.021 U	0.02 U	0.021 U	0.02 U	0.019 U	0.02 U	0.019 U	0.02 U	0.021 U	0.019 U	0.019 U	0.019 U	0.019 U	0.019 U
HEXACHLOROBENZENE	1 U	1 U	1 U	0.97 U	0.98 U	1 U	0.94 U	1 U	1.1 U	1.1 U	1 U	0.94 U	0.94 U	0.95 U
HEXACHLOROBUTADIENE	1 U	1 U	1 U	0.97 U	0.98 U	1 U	0.94 U	1 U	1.1 U	1.1 U	1 U	0.94 U	0.94 U	0.95 U
HEXACHLOROCYCLOPENTADIENE	1 U	1 UJ	1 U	0.97 U	0.98 UR	1 U	0.94 UJ	1 U	1.1 U	1.1 U	1 UJ	0.94 UJ	0.94 U	0.95 U
HEXACHLOROETHANE	1 U	1 U	1 U	0.97 U	0.98 UJ	1 U	0.94 U	1 U	1.1 U	1.1 U	1 U	0.94 U	0.94 U	0.95 U
HEXACHLOROPROPENE	1 U	1 U	1 U	0.97 U	0.98 U	1 U	0.94 U	1 U	1.1 U	1.1 U	1 U	0.94 U	0.94 U	0.95 U
INDENO(1,2,3-CD)PYRENE	0.021 U	0.02 U	0.021 U	0.02 U	0.019 U	0.02 U	0.019 U	0.02 U	0.021 U	0.019 U	0.019 U	0.019 U	0.019 U	0.019 U
ISODRIN	1 U	1 U	1 U	0.97 U	0.98 U	1 U	0.94 U	1 U	1.1 U	1.1 U	1 U	0.94 U	0.94 U	0.95 U
ISOPHORONE	1 U	1 U	1 U	0.97 U	0.98 U	1 U	0.94 U	1 U	1.1 U	1.1 U	1 U	0.94 U	0.94 U	0.95 U
ISOSAFROLE	1 U	1 U	1 U	0.97 U	0.98 U	1 U	0.94 U	1 U	1.1 U	1.1 U	1 U	0.94 U	0.94 U	0.95 U
KEPONE	1 UR	1 UR	1 UR	0.97 UR	0.98 UR	1 UR	0.94 UR	1 UR	1.1 UR	1.1 UR	1 UR	0.94 UR	0.94 UR	0.95 UR
METHAPYRILENE	1 U	1 U	1 U	0.97 U	0.98 U	1 U	0.94 U	1 U	1.1 U	1.1 U	1 U	0.94 U	0.94 U	0.95 U
METHYL METHANE SULFONATE	1 U	1 U	1 U	0.97 U	0.98 U	1 U	0.94 U	1 U	1.1 U	1.1 U	1 U	0.94 U	0.94 U	0.95 U
METHYL PARATHION	1 UJ	1 U	1 U	0.97 U	0.98 U	1 U	0.94 U	1 U	1.1 U	1.1 UJ	1 U	0.94 U	0.94 UJ	0.95 U
N-NITROSO-DI-N-BUTYLAMINE	1 U	1 U	1 U	0.97 U	0.98 U	1 U	0.94 U	1 U	1.1 U	1.1 U	1 U	0.94 U	0.94 U	0.95 U
N-NITROSO-DI-N-PROPYLAMINE	1 U	1 U	1 U	0.97 U	0.98 U	1 U	0.94 U	1 U	1.1 U	1.1 U	1 U	0.94 U	0.94 U	0.95 U
N-NITROSODIETHYLAMINE	1 U	1 U	1 U	0.97 U	0.98 U	1 U	0.94 U	1 U	1.1 U	1.1 U	1 U	0.94 U	0.94 U	0.95 U
N-NITROSODIMETHYLAMINE	1 U	1 U	1 UJ	0.97 UJ	0.98 UJ	1 UJ	0.94 U	1 UJ	1.1 UJ	1.1 U	1 U	0.94 U	0.94 U	0.95 UJ
N-NITROSOMETHYLETHYLAMINE	1 U	1 U	1 U	0.97 U	0.98 U	1 U	0.94 U	1 U	1.1 U	1.1 U	1 U	0.94 U	0.94 U	0.95 U
N-NITROSOMORPHOLINE	1 U	1 U	1 UJ	0.97 UJ	0.98 UJ	1 UJ	0.94 U	1 UJ	1.1 UJ	1.1 U	1 U	0.94 U	0.94 U	0.95 UJ
N-NITROSOPIPERIDINE	1 U	1 U	1 UJ	0.97 UJ	0.98 UJ	1 UJ	0.94 U	1 UJ	1.1 UJ	1.1 U	1 U	0.94 U	0.94 U	0.95 U
N-NITROSOPYRROLIDINE	1 U	1 U	1 U	0.97 U	0.98 U	1 U	0.94 U	1 U	1.1 U	1.1 U	1 U	0.94 U	0.94 U	0.95 U

TABLE E-3

SUMMARY OF ANALYTIC RESULTS FOR GROUND WATER
SWMU 3 - OLD JEEP TRAIL/LITTLE SULPHUR CREEK
NSWC CRANE
CRANE, INDIANA

LOCATION	03-07	03-10	03-11	03-12	03-13	03-14	03-15	03-17	03-18	03-20	03-21	03-22	03-23	03-24
NSAMPLE	03GW0701	03GW1001	03GW1101	03GW1201	03GW1301	03GW1401	03GW1501	03GW1701	03GW1801	03GW2001	03GW2101	03GW2201	03GW2301	03GW2401
SAMPLE	03GW0701	03GW1001	03GW1101	03GW1201	03GW1301	03GW1401	03GW1501	03GW1701	03GW1801	03GW2001	03GW2101	03GW2201	03GW2301	03GW2401
MATRIX	GW	GW	GW	GW	GW	GW	GW	GW	GW	GW	GW	GW	GW	GW
SACODE	ORIG	NORMAL	NORMAL	ORIG	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
QC_TYPE	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
STATUS	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
SAMPLE DATE	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
VALIDATED	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
COLLECTION METHOD	GRAB	GRAB	GRAB	GRAB	GRAB	GRAB	GRAB	GRAB	GRAB	GRAB	GRAB	GRAB	GRAB	GRAB
NAPHTHALENE	0.02 U	0.02 U	0.02 U	0.019 U	0.02 U	0.02 U	0.019 U	0.02 U	0.021 U	0.021 U	0.02 U	0.019 U	0.019 U	0.019 U
O,O,O-TRIETHYL PHOSPHOROTHIOATE	1 U	1 U	1 U	0.97 U	0.98 U	1 U	0.94 U	1 U	1.1 U	1.1 U	1 U	0.94 U	0.94 U	0.95 U
O-TOLUIDINE	1 U	1 U	1 U	0.97 U	0.98 U	1 U	0.94 U	1 U	1.1 U	1.1 U	1 U	0.94 U	0.94 U	0.95 U
P-(DIMETHYLAMINO)AZOBENZENE	1 U	1 U	1 U	0.97 U	0.98 U	1 U	0.94 U	1 U	1.1 U	1.1 U	1 U	0.94 U	0.94 U	0.95 U
PENTACHLOROBENZENE	1 U	1 U	1 U	0.97 U	0.98 U	1 U	0.94 U	1 U	1.1 U	1.1 U	1 U	0.94 U	0.94 U	0.95 U
PENTACHLOROETHANE	1 U	1 U	1 U	0.97 U	0.98 U	1 U	0.94 U	1 U	1.1 U	1.1 U	1 U	0.94 U	0.94 U	0.95 U
PENTACHLORONITROBENZENE	1 U	1 U	1 U	0.97 U	0.98 U	1 U	0.94 U	1 U	1.1 U	1.1 U	1 U	0.94 U	0.94 U	0.95 U
PHENACETIN	1 U	1 U	1 U	0.97 U	0.98 U	1 U	0.94 U	1 U	1.1 U	1.1 U	1 U	0.94 U	0.94 U	0.95 U
PHENANTHRENE	0.021 U	0.02 U	0.021 U	0.02 U	0.019 U	0.02 U	0.019 U	0.02 U	0.021 U	0.019 U	0.019 U	0.019 U	0.019 U	0.019 U
PHENOL	1 U	1 U	1 U	0.97 U	0.98 U	1 U	0.94 U	1 U	1.1 U	1.1 U	1 U	0.94 U	0.94 U	0.95 U
PRONAMIDE	1 U	1 U	1 U	0.97 U	0.98 U	1 U	0.94 U	1 U	1.1 U	1.1 U	1 U	0.94 U	0.94 U	0.95 U
PYRENE	0.021 U	0.02 U	0.021 U	0.02 U	0.019 U	0.02 U	0.019 U	0.02 U	0.021 U	0.019 U	0.019 U	0.019 U	0.019 U	0.019 U
PYRIDINE	1 U	1 U	1 U	0.97 U	0.98 U	1 U	0.94 U	1 U	1.1 U	1.1 U	1 U	0.94 U	0.94 U	0.95 U
SAFROLE	1 U	1 U	1 U	0.97 U	0.98 U	1 U	0.94 U	1 U	1.1 U	1.1 U	1 U	0.94 U	0.94 U	0.95 U
Energetics (UG/L)														
1,3,5-TRINITROBENZENE	0.35 U	0.35 U	0.35 U	0.35 U	0.35 U	0.35 U	0.35 U	0.35 U	0.35 U	0.35 U	0.81	0.35 U	0.35 U	0.35 U
1,3-DINITROBENZENE	0.35 U	0.35 U	0.35 U	0.35 U	0.35 U	0.35 U	0.35 U	0.35 U	0.35 U	0.35 U	0.35 U	0.35 U	0.35 U	0.35 U
2,4,6-TRINITROTOLUENE	0.35 U	0.35 U	0.35 U	0.35 U	0.35 U	0.35 U	0.35 U	0.35 U	0.35 U	0.35 U	17	0.35 U	0.35 U	0.35 U
2,4-DINITROTOLUENE	0.35 U	0.35 U	0.35 U	0.35 U	0.35 U	0.35 U	0.35 U	0.35 U	0.35 U	0.35 U	0.35 U	0.35 U	0.35 U	0.35 U
2,6-DINITROTOLUENE	0.35 U	0.35 U	0.35 U	0.35 U	0.35 U	0.35 U	0.35 U	0.35 U	0.35 U	0.35 U	0.35 U	0.35 U	0.35 U	0.35 U
2-AMINO-4,6-DINITROTOLUENE	0.35 U	0.12 U	0.35 U	1	0.47 R	0.55 J	0.12 U	0.35 U	0.35 U	0.35 U	2.6	0.12 U	0.35 U	0.35 U
2-NITROTOLUENE	0.35 U	0.35 U	0.35 U	0.35 U	0.35 U	0.35 U	0.35 U	0.35 U	0.35 U	0.35 U	0.35 U	0.35 U	0.35 U	0.35 U
3-NITROTOLUENE	0.35 U	0.35 U	0.35 U	0.35 U	0.35 U	0.35 U	0.35 U	0.35 U	0.35 U	0.35 U	0.35 U	0.35 U	0.35 U	0.35 U
4-AMINO-2,6-DINITROTOLUENE	0.35 U	0.35 U	0.35 U	1.5	0.77 J	0.82 J	0.35 U	0.35 U	0.35 U	0.35 U	10	0.35 U	0.62 J	0.35 U
4-NITROTOLUENE	0.35 U	0.35 U	0.35 U	0.35 U	0.35 U	0.35 U	0.35 U	0.35 U	0.35 U	0.35 U	0.35 U	0.35 U	0.35 U	0.35 U
HMX	0.35 U	0.35 U	0.35 U	68	37	26	1.3	8.6	3.5	0.35 U	170 J	0.35 U	26	0.35 U
NITROBENZENE	0.64 R	0.35 U	0.35 U	0.35 U	0.35 U	0.35 U	0.35 U	0.35 U	0.35 U	0.35 U	0.35 U	0.35 U	0.35 U	0.35 U
NITROCELLULOSE	750 U	1000 U	1000 U	1000 U	1000 U	1000 U	1000 U	1000 U	1000 U	750 U	1000 U	1000 U	750 U	1000 U
NITROGLYCERIN	3.5 U	3.5 UJ	3.5 U	3.5 U	3.5 U	3.5 U	3.5 U	3.5 U	3.5 U	3.5 U	3.5 U	3.5 UJ	3.5 U	3.5 U
PETN	0.16 U	0.16 U	0.16 U	0.16 U	0.16 U	0.16 U	0.16 U	0.16 U	0.16 U	0.16 U	0.16 U	0.16 U	0.16 U	0.16 U
RDX	1.5 J	14	0.35 U	35	16	11	4.8	4.2	3.8	0.35 U	280 J	18	12	7.2
TETRYL	0.35 U	0.35 U	0.35 U	0.35 U	0.35 U	0.35 U	0.35 U	0.35 U	0.35 U	0.35 U	0.35 U	0.35 U	0.35 U	0.35 U
Total Metals (UG/L)														
ALUMINUM	7.5	7.5 U	228	63.6	340	13 U	21.2 U	26.5	218	46.8	4 U	29.5 U	11.4	78.8
ANTIMONY	0.1 U	0.1 U	0.5 U	0.5 U	0.5 U	0.5 U	0.12	0.5 U	0.5 U	0.1 U	0.1	0.1 U	0.1 U	0.5 U
ARSENIC	0.2 U	0.21	1 U	1 U	1 U	1 U	0.2 U	1 U	1 U	0.2 U	0.24	0.3	0.2 U	1 U
BARIUM	153 J	71.3 J	88.6 J	46.2 J	66.8 J	96.5 J	88.5 J	26.2 J	58.6 J	44.8 J	275 J	173 J	58.3 J	50.9 J
BERYLLIUM	0.1 U	0.1 U	0.5 U	0.5 U	0.5 U	0.5 U	0.1 U	0.5 U	0.5 U	0.1 U	0.1 U	0.1 U	0.1 U	0.5 U
CADMIUM	0.7 U	0.7 U	3.5 U	3.5 U	3.5 U	3.5 U	0.7 U	3.5 U	12	0.7 U	0.7 U	0.7 U	0.7 U	3.5 U
CALCIUM	75700 J	117000 J	73400 J	42300 J	69400 J	91500 J	33500 J	50600 J	27800 J	13400 J	88400 J	149000 J	57100 J	76500 J
CHROMIUM	0.47 U	0.24	1.3 J	90.8 J	1 J	3.6 J	0.7	0.7 J	1 J	0.41 U	0.29	0.82	0.34 U	1.2 J
COBALT	0.46	0.12 U	0.5 U	2.2	1.6	0.5 U	0.1 U	0.5 U	0.5 U	0.1 U	0.1 U	0.16	0.12	0.5
COPPER	2.4 J	0.61 U	3 J	1.4 J	0.95 J	1.1 J	0.63 U	3 J	1.2 J	0.19 U	0.65 U	0.87 U	0.42 U	0.5 U
IRON	238 J	230 J	722 J	1210 J	1650 J	430 J	126 J	408 J	564 J	103 J	196 J	358 J	207 J	374 J
LEAD	0.17	0.1 U	0.85	0.5 U	0.95	0.5 U	0.13 U	0.5 U	0.85	0.1 U	0.1 U	0.3 U	0.1 U	0.5 U
MAGNESIUM	24200 J	18000 J	6210	7820	7290	11500	12600 J	3850	3880	2340 J	17400 J	33400 J	9770 J	22600
MANGANESE	255 J	0.54 U	31.5 J	38.3 J	445 J	2.1 J	2.5 J	4 J	18 J	3.7 J	0.55 U	8.8 J	16 J	20 J
MERCURY	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
NICKEL	3.6 J	2.1 J	3.2 J	91.2 J	8.3 J	4.6 J	3 J	2 J	1.9 J	1.7 J	1.8 J	3.6 J	2.2 J	2.4 J
POTASSIUM	9440 J	2100 J	2670 J	2680 J	1840 J	3400 J	3780 J	1240 J	1640 J	1140 J	3340 J	8310 J	1610 J	1390 J

TABLE E-3

SUMMARY OF ANALYTIC RESULTS FOR GROUND WATER
SWMU 3 - OLD JEEP TRAIL/LITTLE SULPHUR CREEK
NSWC CRANE
CRANE, INDIANA

LOCATION	03-07	03-10	03-11	03-12	03-13	03-14	03-15	03-17	03-18	03-20	03-21	03-22	03-23	03-24
NSAMPLE	03GW0701	03GW1001	03GW1101	03GW1201	03GW1301	03GW1401	03GW1501	03GW1701	03GW1801	03GW2001	03GW2101	03GW2201	03GW2301	03GW2401
SAMPLE	03GW0701	03GW1001	03GW1101	03GW1201	03GW1301	03GW1401	03GW1501	03GW1701	03GW1801	03GW2001	03GW2101	03GW2201	03GW2301	03GW2401
MATRIX	GW	GW	GW	GW	GW	GW	GW	GW	GW	GW	GW	GW	GW	GW
SACODE	ORIG	NORMAL	NORMAL	ORIG	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
QC_TYPE	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
STATUS	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
SAMPLE DATE	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
VALIDATED	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
COLLECTION METHOD	GRAB	GRAB	GRAB	GRAB	GRAB	GRAB	GRAB	GRAB	GRAB	GRAB	GRAB	GRAB	GRAB	GRAB
SELENIUM	0.4 U	0.41 J	2 U	2 U	2 U	2 U	0.71 J	2 U	2 U	0.4 U	0.57 J	0.79 J	0.4 U	2 U
SILVER	0.18 U	0.1 U	0.5 U	0.5 U	0.5 U	0.5 U	0.1 U	0.5 U	0.5 U	0.23 U	0.1 U	0.1 U	0.1 U	0.5 U
SODIUM	952 J	3530 J	1080 J	3140 J	4980 J	2350 J	1700 J	1900 J	1610 J	1290 J	1560 J	2570 J	4070 J	8930 J
THALLIUM	0.1 U	0.1 UJ	0.5 U	0.5 U	0.5 U	0.5 U	0.1 UJ	0.5 U	0.5 U	0.1 U	0.1 UJ	0.1 UJ	0.1 U	0.5 U
TIN	4.8 U	5 U	2 U	4.6 U	2 U	4.8 U	4.3 U	7 U	2.9 U	5.2 U	6.1 U	2.8 U	5.4 U	4.7 U
VANADIUM	0.1 U	0.37 U	0.7	0.6	1	0.5 U	0.45 U	0.5 U	0.65	0.1 U	0.78 U	0.53 U	0.1 U	0.5 U
ZINC	6.5 J	0.5 U	5.4	2.5 U	3.2	4.3	2.7 U	3.8	6	1.4 U	12.2 J	20.4 J	2 U	5.7
Dissolved Metals (UG/L)														
ALUMINUM														
ANTIMONY														
ARSENIC														
BARIUM														
BERYLLIUM														
CADMIUM														
CALCIUM														
CHROMIUM														
COBALT														
COPPER														
IRON														
LEAD														
MAGNESIUM														
MANGANESE														
MERCURY														
NICKEL														
POTASSIUM														
SELENIUM														
SILVER														
SODIUM														
THALLIUM														
TIN														
VANADIUM														
ZINC														
Miscellaneous Parameters (UG/L)														
PERCHLORATE	4 U	4 U	4 U	4 U	4 U	4 U	4 U	4 U	4 U	4 U	4 U	4 U	4 U	4 U
Field Parameters														
DISSOLVED OXYGEN (MG/L)	0.77	2.78	5.9	4.58	6.51	1.52	7.47	7.22	6.99	8.47	11.8	4.31	1.73	10.01
NITRATE (MG/L)	0.02	1.65 >	0	0.32	0.23	0.01	0.16	0.18	0.17	0.36	0.32	0.14	0.04	0.37
NITRITE (MG/L)	0	0	0	0	0	0.001	0	0.001	0.008	0	0.001	0.03	0	0.002
OXIDATION REDUCTION POTENTIAL (MV)	531	492	603.2	371.2	49	439	733	521	510.9	462	530	591	544	531.7
PH (S.U.)	4.92	6.23	3.2	6.09	6.32	6.2	5.5	3.74	5.43	5.68	5.48	5.34	4.09	5.54
SPECIFIC CONDUCTANCE (MS/CM)	0.643	0.639	0.424	0.309	0.395	0.617	0.27	0.334	0.231	0.149	0.546	0.874	0.468	0.616
TEMPERATURE (C)	14.3	15.15	16.4	13.2	13.5	14.3	16.3	13.7	14.8	12.6	15.1	16.4	13.7	14
TURBIDITY (NTU)	7.5	2.2	3.7	3.7	9	0.6	1.4	3.2	3.6	3.6	0.4	9.4	5.8	9

TABLE E-3

SUMMARY OF ANALYTIC RESULTS FOR GROUND WATER
SWMU 3 - OLD JEEP TRAIL/LITTLE SULPHUR CREEK
NSWC CRANE
CRANE, INDIANA

LOCATION	03-25	03-25	03-16
NSAMPLE	03GW2501	03GW2501-F	03GW1601
SAMPLE	03GW2501	03GW2501-F	03GW1601
MATRIX	GW	GW	BACKGROUND
SACODE	NORMAL	NORMAL	NORMAL
QC_TYPE	NM	NM	NM
STATUS	NORMAL	NORMAL	NORMAL
SAMPLE DATE	- -	- -	- -
VALIDATED	Y	Y	Y
COLLECTION METHOD	GRAB	GRAB	GRAB
Volatile Organics (UG/L)			
1,1,1,2-TETRACHLOROETHANE	0.3 U		0.3 U
1,1,1-TRICHLOROETHANE	0.5 U		0.5 U
1,1,2,2-TETRACHLOROETHANE	0.3 U		0.3 U
1,1,2-TRICHLOROETHANE	0.3 U		0.3 U
1,1-DICHLOROETHANE	0.5 U		0.5 U
1,1-DICHLOROETHENE	0.3 U		0.3 U
1,2,3-TRICHLOROPROPANE	0.3 U		0.3 U
1,2-DIBROMO-3-CHLOROPROPANE	0.3 UJ		0.3 U
1,2-DIBROMOETHANE	0.3 U		0.3 UJ
1,2-DICHLOROETHANE	0.3 U		0.3 U
1,2-DICHLOROPROPANE	0.3 U		0.3 U
1,4-DIOXANE	44 U		44 U
2-BUTANONE	0.5 UJ		0.5 UJ
2-HEXANONE	0.5 UJ		0.5 U
3-CHLOROPROPENE	0.5 U		0.5 U
4-METHYL-2-PENTANONE	0.5 U		0.5 U
ACETONE	0.5 UJ		0.5 UJ
ACETONITRILE	3.7 U		3.7 U
ACROLEIN	0.5 UR		0.5 UR
ACRYLONITRILE	0.5 UJ		0.5 UJ
BENZENE	0.3 U		0.3 U
BROMODICHLOROMETHANE	0.3 U		0.3 U
BROMOFORM	0.5 U		0.5 U
BROMOMETHANE	0.3 J		0.5 U
CARBON DISULFIDE	0.5 U		0.5 U
CARBON TETRACHLORIDE	0.3 U		0.3 UJ
CHLOROBENZENE	0.5 U		0.5 U
CHLORODIBROMOMETHANE	0.3 U		0.3 U
CHLOROETHANE	0.5 U		0.5 UJ
CHLOROFORM	0.3 U		0.3 U
CHLOROMETHANE	0.5 U		0.5 U
CHLOROPRENE	0.5 U		0.5 U
CIS-1,2-DICHLOROETHENE	0.5 U		0.5 U
CIS-1,3-DICHLOROPROPENE	0.3 U		0.3 UJ
DIBROMOMETHANE	0.5 U		0.5 U
DICHLORODIFLUOROMETHANE	0.5 U		0.5 U
ETHYL METHACRYLATE	0.5 UJ		0.5 U
ETHYLBENZENE	0.5 U		0.5 U
ISOBUTANOL	6.3 U		6.3 U
METHACRYLONITRILE	0.5 UJ		0.5 U
METHYL IODIDE	0.5 U		0.5 UR
METHYL METHACRYLATE	0.5 U		0.5 UJ
METHYLENE CHLORIDE	0.5 U		0.5 U
PROPIONITRILE	4.6 U		4.6 U
STYRENE	0.5 U		0.5 U
TETRACHLOROETHENE	0.5 U		0.5 U
TOLUENE	0.5 U		0.5 U
TOTAL XYLENES	0.5 U		0.5 U
TRANS-1,2-DICHLOROETHENE	0.5 U		0.5 U

TABLE E-3

SUMMARY OF ANALYTIC RESULTS FOR GROUND WATER
SWMU 3 - OLD JEEP TRAIL/LITTLE SULPHUR CREEK
NSWC CRANE
CRANE, INDIANA

LOCATION	03-25	03-25	03-16
NSAMPLE	03GW2501	03GW2501-F	03GW1601
SAMPLE	03GW2501	03GW2501-F	03GW1601
MATRIX	GW	GW	BACKGROUND
SACODE	NORMAL	NORMAL	NORMAL
QC_TYPE	NM	NM	NM
STATUS	NORMAL	NORMAL	NORMAL
SAMPLE DATE	- -	- -	- -
VALIDATED	Y	Y	Y
COLLECTION METHOD	GRAB	GRAB	GRAB
TRANS-1,3-DICHLOROPROPENE	0.3 U		0.3 UJ
TRANS-1,4-DICHLORO-2-BUTENE	0.5 U		0.5 UJ
TRICHLOROETHENE	0.5 U		0.5 U
TRICHLOROFLUOROMETHANE	0.5 U		0.5 U
VINYL ACETATE	0.5 U		0.5 UJ
VINYL CHLORIDE	0.3 U		0.3 U
Semivolatile Organics (UG/L)			
1,2,4,5-TETRACHLOROBENZENE	0.98 U		1 UJ
1,2,4-TRICHLOROBENZENE	0.98 U		1 UJ
1,2-DICHLOROBENZENE	0.98 U		1 UJ
1,3-DICHLOROBENZENE	0.98 U		1 UJ
1,4-DICHLOROBENZENE	0.98 U		1 UJ
1,4-NAPHTHOQUINONE	0.98 U		1 UJ
1,4-PHENYLENEDIAMINE	0.98 UR		1 UR
1-NAPHTHYLAMINE	0.98 U		1 UJ
2,2'-OXYBIS(1-CHLOROPROPANE)	0.98 UJ		1 UJ
2,3,4,6-TETRACHLOROPHENOL	0.98 U		1 UJ
2,4,5-TRICHLOROPHENOL	0.98 U		1 UJ
2,4,6-TRICHLOROPHENOL	0.98 U		1 UJ
2,4-DICHLOROPHENOL	0.98 U		1 UJ
2,4-DIMETHYLPHENOL	0.98 U		1 UJ
2,4-DINITROPHENOL	0.98 U		1 UJ
2,6-DICHLOROPHENOL	0.98 U		1 UJ
2-ACETYLAMINOFLUORENE	0.98 U		1 UJ
2-CHLORONAPHTHALENE	0.98 U		1 UJ
2-CHLOROPHENOL	0.98 U		1 UJ
2-METHYLNAPHTHALENE	0.02 U		0.019 U
2-METHYLPHENOL	0.98 U		1 UJ
2-NAPHTHYLAMINE	0.98 U		1 UJ
2-NITROANILINE	0.98 U		1 UJ
2-NITROPHENOL	0.98 U		1 UJ
2-PICOLINE	0.98 U		1 UJ
3&4-METHYLPHENOL	0.98 U		1 UJ
3,3'-DICHLOROBENZIDINE	0.98 U		1 UJ
3,3'-DIMETHYLBENZIDINE	0.98 U		1 UJ
3-METHYLCHOLANTHRENE	0.98 U		1 UJ
3-NITROANILINE	0.98 U		1 UJ
4,6-DINITRO-2-METHYLPHENOL	0.98 U		1 UJ
4-AMINOBIPHENYL	0.98 U		1 UJ
4-BROMOPHENYL PHENYL ETHER	0.98 U		1 UJ
4-CHLORO-3-METHYLPHENOL	0.98 U		1 UJ
4-CHLOROANILINE	0.98 U		1 UJ
4-CHLOROPHENYL PHENYL ETHER	0.98 U		1 UJ
4-NITROANILINE	0.98 U		1 UJ
4-NITROPHENOL	0.98 U		1 UJ
4-NITROQUINOLINE-1-OXIDE	0.98 UR		1 UR
5-NITRO-O-TOLUIDINE	0.98 U		1 UJ
7,12-DIMETHYLBENZ(A)ANTHRACENE	0.98 U		1 UJ
A,A-DIMETHYLPHENETHYLAMINE	0.98 U		1 UJ
ACENAPHTHENE	0.02 U		0.019 U

TABLE E-3

SUMMARY OF ANALYTIC RESULTS FOR GROUND WATER
SWMU 3 - OLD JEEP TRAIL/LITTLE SULPHUR CREEK
NSWC CRANE
CRANE, INDIANA

LOCATION	03-25	03-25	03-16
NSAMPLE	03GW2501	03GW2501-F	03GW1601
SAMPLE	03GW2501	03GW2501-F	03GW1601
MATRIX	GW	GW	BACKGROUND
SACODE	NORMAL	NORMAL	NORMAL
QC_TYPE	NM	NM	NM
STATUS	NORMAL	NORMAL	NORMAL
SAMPLE DATE	- -	- -	- -
VALIDATED	Y	Y	Y
COLLECTION METHOD	GRAB	GRAB	GRAB
ACENAPHTHYLENE	0.02 U		0.019 U
ACETOPHENONE	0.98 U		1 UJ
ANILINE	0.98 U		1 UJ
ANTHRACENE	0.02 U		0.019 U
ARAMITE	0.98 U		1 UJ
BENZO(A)ANTHRACENE	0.02 U		0.019 U
BENZO(A)PYRENE	0.02 U		0.019 U
BENZO(B)FLUORANTHENE	0.02 U		0.019 U
BENZO(G,H,I)PERYLENE	0.02 U		0.019 U
BENZO(K)FLUORANTHENE	0.02 U		0.019 U
BENZYL ALCOHOL	0.98 U		1 UJ
BIS(2-CHLOROETHOXY)METHANE	0.98 U		1 UJ
BIS(2-CHLOROETHYL)ETHER	0.98 U		1 UJ
BIS(2-ETHYLHEXYL)PHTHALATE	0.98 U		1 UJ
BUTYL BENZYL PHTHALATE	0.98 U		1 UJ
CHLOROBENZILATE	0.98 U		1 UJ
CHRYSENE	0.02 U		0.019 U
DI-N-BUTYL PHTHALATE	0.98 U		1 UJ
DI-N-OCTYL PHTHALATE	0.98 U		1 UJ
DIALLATE	0.98 U		1 UJ
DIBENZO(A,H)ANTHRACENE	0.02 U		0.019 U
DIBENZOFURAN	0.98 U		1 UJ
DIETHYL PHTHALATE	0.98 U		1 UJ
DIMETHYL PHTHALATE	0.98 U		1 UJ
DIPHENYLAMINE	0.98 U		1 UJ
ETHYL METHANE SULFONATE	0.98 U		1 UJ
ETHYL PARATHION	0.98 U		1 UJ
FLUORANTHENE	0.02 U		0.019 U
FLUORENE	0.02 U		0.019 U
HEXACHLOROBENZENE	0.98 U		1 UJ
HEXACHLOROBUTADIENE	0.98 U		1 UJ
HEXACHLOROCYCLOPENTADIENE	0.98 U		1 UJ
HEXACHLOROETHANE	0.98 U		1 UJ
HEXACHLOROPROPENE	0.98 U		1 UJ
INDENO(1,2,3-CD)PYRENE	0.02 U		0.019 U
ISODRIN	0.98 U		1 UJ
ISOPHORONE	0.98 U		1 UJ
ISOSAFROLE	0.98 U		1 UJ
KEPONE	0.98 UR		1 UR
METHAPYRILENE	0.98 U		1 UJ
METHYL METHANE SULFONATE	0.98 U		1 UJ
METHYL PARATHION	0.98 U		1 UJ
N-NITROSO-DI-N-BUTYLAMINE	0.98 U		1 UJ
N-NITROSO-DI-N-PROPYLAMINE	0.98 U		1 UJ
N-NITROSODIETHYLAMINE	0.98 U		1 UJ
N-NITROSODIMETHYLAMINE	0.98 UJ		1 UJ
N-NITROSOMETHYLETHYLAMINE	0.98 U		1 UJ
N-NITROSOMORPHOLINE	0.98 UJ		1 UJ
N-NITROSOPIPERIDINE	0.98 UJ		1 UJ
N-NITROSOPYRROLIDINE	0.98 U		1 UJ

TABLE E-3

SUMMARY OF ANALYTIC RESULTS FOR GROUND WATER
SWMU 3 - OLD JEEP TRAIL/LITTLE SULPHUR CREEK
NSWC CRANE
CRANE, INDIANA

LOCATION	03-25	03-25	03-16
NSAMPLE	03GW2501	03GW2501-F	03GW1601
SAMPLE	03GW2501	03GW2501-F	03GW1601
MATRIX	GW	GW	BACKGROUND
SACODE	NORMAL	NORMAL	NORMAL
QC_TYPE	NM	NM	NM
STATUS	NORMAL	NORMAL	NORMAL
SAMPLE DATE	- -	- -	- -
VALIDATED	Y	Y	Y
COLLECTION METHOD	GRAB	GRAB	GRAB
NAPHTHALENE	0.02 U		0.02 U
O,O,O-TRIETHYL PHOSPHOROTHIOATE	0.98 U		1 UJ
O-TOLUIDINE	0.98 U		1 UJ
P-(DIMETHYLAMINO)AZOBENZENE	0.98 U		1 UJ
PENTACHLOROBENZENE	0.98 U		1 UJ
PENTACHLOROETHANE	0.98 U		1 UJ
PENTACHLORONITROBENZENE	0.98 U		1 UJ
PHENACETIN	0.98 U		1 UJ
PHENANTHRENE	0.02 U		0.019 U
PHENOL	0.98 U		1 UJ
PRONAMIDE	0.98 U		1 UJ
PYRENE	0.02 U		0.019 U
PYRIDINE	0.98 U		1 UJ
SAFROLE	0.98 U		1 UJ
Energetics (UG/L)			
1,3,5-TRINITROBENZENE	0.35 U		0.35 U
1,3-DINITROBENZENE	0.35 U		0.35 U
2,4,6-TRINITROTOLUENE	0.35 U		0.35 U
2,4-DINITROTOLUENE	0.35 U		0.35 U
2,6-DINITROTOLUENE	0.35 U		0.35 U
2-AMINO-4,6-DINITROTOLUENE	0.35 U		0.12 U
2-NITROTOLUENE	0.35 U		0.35 U
3-NITROTOLUENE	0.35 U		0.35 U
4-AMINO-2,6-DINITROTOLUENE	0.35 U		0.35 U
4-NITROTOLUENE	0.35 U		0.35 U
HMX	0.35 U		1.3
NITROBENZENE	0.35 U		0.35 U
NITROCELLULOSE	1000 U		1000 U
NITROGLYCERIN	3.5 U		3.5 U
PETN	0.18 U		0.18 U
RDX	0.35 U		24
TETRYL	0.35 U		0.35 U
Total Metals (UG/L)			
ALUMINUM	372		32.6 J
ANTIMONY	0.5 U		0.39
ARSENIC	1 U		0.44
BARIUM	19.4 J		43 J
BERYLLIUM	0.5 U		0.1 U
CADMIUM	3.5 U		0.7 U
CALCIUM	25400 J		50900 J
CHROMIUM	3 J		1
COBALT	0.5 U		0.1 U
COPPER	0.5 U		0.37 U
IRON	768 J		193 J
LEAD	0.8		0.21 U
MAGNESIUM	1230		4650 J
MANGANESE	27 J		8.7 J
MERCURY	0.1 U		0.1 U
NICKEL	1.3 J		1.2 J
POTASSIUM	923 J		1140 J

TABLE E-3

SUMMARY OF ANALYTIC RESULTS FOR GROUND WATER
SWMU 3 - OLD JEEP TRAIL/LITTLE SULPHUR CREEK
NSWC CRANE
CRANE, INDIANA

LOCATION	03-25	03-25	03-16
NSAMPLE	03GW2501	03GW2501-F	03GW1601
SAMPLE	03GW2501	03GW2501-F	03GW1601
MATRIX	GW	GW	BACKGROUND
SACODE	NORMAL	NORMAL	NORMAL
QC_TYPE	NM	NM	NM
STATUS	NORMAL	NORMAL	NORMAL
SAMPLE DATE	- -	- -	- -
VALIDATED	Y	Y	Y
COLLECTION METHOD	GRAB	GRAB	GRAB
SELENIUM	2 U		0.4 U
SILVER	0.5 U		0.14 U
SODIUM	2310 J		4750 J
THALLIUM	0.5		0.1 UJ
TIN	0.85 U		3.6 U
VANADIUM	1.2		0.85 U
ZINC	4.4		0.5 U
Dissolved Metals (UG/L)			
ALUMINUM		23.7	
ANTIMONY		0.5 U	
ARSENIC		1 U	
BARIUM		18.1 J	
BERYLLIUM		0.5 U	
CADMIUM		3.5 U	
CALCIUM		24400 J	
CHROMIUM		2.8 J	
COBALT		0.5 U	
COPPER		0.95 J	
IRON		98.8 J	
LEAD		0.5 U	
MAGNESIUM		1190	
MANGANESE		1 J	
MERCURY		4.7	
NICKEL		0.85 J	
POTASSIUM		950 J	
SELENIUM		2 U	
SILVER		0.5 U	
SODIUM		2460 J	
THALLIUM		0.5 U	
TIN		4.9 J	
VANADIUM		0.5 U	
ZINC		2.5 U	
Miscellaneous Parameters (UG/L)			
PERCHLORATE	4 U		4 U
Field Parameters			
DISSOLVED OXYGEN (MG/L)	19.32		9.75
NITRATE (MG/L)	0.18		1.29
NITRITE (MG/L)	0		0.007
OXIDATION REDUCTION POTENTIAL (MV)	490.1		545
PH (S.U.)	7.39		5.25
SPECIFIC CONDUCTANCE (MS/CM)	0.15		0.339
TEMPERATURE (C)	14		15.94
TURBIDITY (NTU)	25		10

. ABLE E-4

SUMMARY OF ANALYTIC RESULTS IN SHALLOW SEDIMENT
SWMU 3 - OLD JEEP TRAIL/LITLE SULPHUR CREEK
NSWC CRANE
CRANE, INDIANA

LOCATION	03SD05	03SWSD06	03SD07	03SWSD08	03SWSD09	03SD10	03SWSD11	03SD12	03SWSD13	03SWSD14	03SWSD15	03SWSD16
NSAMPLE	03SD050006	03SD060006	03SD070006	03SD080006	03SD090006	03SD100006	03SD110006	03SD120006	03SD130006	03SD140006	03SD150006	03SD160006
SAMPLE	03SD050006	03SD060006	03SD070006	03SD080006	03SD090006	03SD100006	03SD110006	03SD120006	03SD130006	03SD140006	03SD150006	03SD160006
MATRIX	SD	SD	SD	SD	SD	SD	SD	SD	SD	SD	SD	SD
SACODE	ORIG	NORMAL	NORMAL	NORMAL	ORIG	NORMAL	NORMAL	NORMAL	NORMAL	ORIG	NORMAL	NORMAL
DEPTH RANGE	0 - 0.5	0 - 0.5	0 - 0.5	0 - 0.5	0 - 0.5	0 - 1	0 - 0.5	0 - 0.5	0 - 0.5	0 - 0.5	0 - 0.5	0 - 0.5
QC_TYPE	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
STATUS	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
SAMPLE DATE	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
VALIDATED	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
COLLECTION METHOD	GRAB	GRAB	GRAB	GRAB	GRAB	GRAB	GRAB	GRAB	GRAB	GRAB	GRAB	GRAB
Volatile Organics (UG/KG)												
1,1,1,2-TETRACHLOROETHANE	6.4 U	1.2 U	5.9 U	7.2 U	7.7 U	2.6 U	13 U	1.1 U	1 U	3.2 U	1.6 U	1.2 U
1,1,1-TRICHLOROETHANE	6.4 U	1.2 U	5.9 U	7.2 U	7.7 U	2.6 U	13 U	1.1 U	1 U	3.2 U	1.6 U	1.2 U
1,1,2,2-TETRACHLOROETHANE	6.4 U	1.2 U	5.9 U	7.2 U	7.7 U	2.6 U	13 U	1.1 U	1 U	3.2 U	1.6 U	1.2 U
1,1,2-TRICHLOROETHANE	6.4 U	1.2 U	5.9 U	7.2 U	7.7 U	2.6 U	13 U	1.1 U	1 U	3.2 U	1.6 U	1.2 U
1,1-DICHLOROETHANE	6.4 U	1.2 U	5.9 U	7.2 U	7.7 U	2.6 U	13 U	1.1 U	1 U	3.2 U	1.6 U	1.2 U
1,1-DICHLOROETHENE	6.4 U	1.2 U	5.9 U	7.2 U	7.7 U	2.6 U	13 U	1.1 U	1 U	3.2 U	1.6 U	1.2 U
1,2,3-TRICHLOROPROPANE	6.4 U	1.2 U	5.9 U	7.2 U	7.7 U	2.6 U	13 U	1.1 U	1 U	3.2 U	1.6 U	1.2 U
1,2-DIBROMO-3-CHLOROPROPANE	6.4 U	1.2 U	5.9 U	7.2 U	7.7 U	2.6 U	13 U	1.1 U	1 U	3.2 U	1.6 U	1.2 U
1,2-DIBROMOETHANE	6.4 U	1.2 U	5.9 U	7.2 U	7.7 U	2.6 U	13 U	1.1 U	1 U	3.2 U	1.6 U	1.2 U
1,2-DICHLOROETHANE	6.4 U	1.2 U	5.9 U	7.2 U	7.7 U	2.6 U	13 U	1.1 U	1 U	3.2 U	1.6 U	1.2 U
1,2-DICHLOROPROPANE	6.4 U	1.2 U	5.9 U	7.2 U	7.7 U	2.6 U	13 U	1.1 U	1 U	3.2 U	1.6 U	1.2 U
1,4-DIOXANE	115 U	110 U	85 U	145 U	140 U	115 U	135 U	90 U	115 U	130 U	145 U	130 U
2-BUTANONE	6.4 UJ	1.2 UJ	5.9 UJ	7.2 UJ	7.7 UJ	2.6 U	13 UJ	1.1 U	1 U	3.2 UJ	1.6 U	1.2 U
2-HEXANONE	6.4 UJ	1.2 UJ	5.9 UJ	7.2 UJ	7.7 UJ	2.6 UJ	13 UJ	1.1 U	1 U	3.2 U	1.6 U	1.2 U
3-CHLOROPROPENE	6.4 U	1.2 U	5.9 U	7.2 U	7.7 U	2.6 U	13 U	1.1 U	1 U	3.2 UJ	1.6 U	1.2 U
4-METHYL-2-PENTANONE	6.4 UJ	1.2 U	5.9 U	7.2 U	7.7 U	2.6 U	13 UJ	1.1 U	1 U	45 BU	6 U	1.2 U
ACETONE	160 J	36 J	69 U	240 U	7.7 UJ	35 BU	130 U	1.1 U	1 U	50 U	60 U	50 U
ACETONITRILE	45.5 U	43.5 U	33.5 U	60 U	55 U	46 U	55 U	36.5 U	46.5 U	3.2 UR	1.6 UR	1.2 UR
ACROLEIN	6.4 UR	1.2 UR	5.9 UR	7.2 UR	7.7 UR	2.6 UR	13 UR	1.1 UR	1 UR	3.2 UR	1.6 UR	1.2 UR
ACRYLONITRILE	6.4 UR	1.2 UR	5.9 UR	7.2 UR	7.7 UR	2.6 UR	13 UR	1.1 UR	1 UR	3.2 UR	1.6 UR	1.2 UR
BENZENE	6.4 U	1.2 U	5.9 U	7.2 U	7.7 U	2.6 U	13 U	1.1 U	1 U	3.2 U	1.6 U	1.2 U
BROMODICHLOROMETHANE	6.4 U	1.2 U	5.9 U	7.2 U	7.7 U	2.6 U	13 U	1.1 U	1 U	3.2 U	1.6 U	1.2 U
BROMOFORM	6.4 U	1.2 U	5.9 U	7.2 U	7.7 U	2.6 U	13 U	1.1 U	1 U	3.2 U	1.6 U	1.2 U
BROMOMETHANE	6.4 UJ	1.2 UJ	5.9 UJ	7.2 UJ	7.7 UJ	2.6 UJ	13 UJ	1.1 UJ	1 UJ	3.2 UJ	1.6 UJ	1.2 UJ
CARBON DISULFIDE	6.4 UJ	1.4 J	5.9 UJ	7.2 UJ	7.7 UJ	2.6 UJ	13 UJ	1.1 UJ	1 UJ	3.2 UJ	1.6 UJ	1.2 UJ
CARBON TETRACHLORIDE	6.4 U	1.2 U	5.9 U	7.2 U	7.7 U	2.6 U	13 U	1.1 U	1 U	3.2 U	1.6 U	1.2 U
CHLOROBENZENE	6.4 U	1.2 U	5.9 U	7.2 U	7.7 U	2.6 U	13 U	1.1 U	1 U	3.2 U	1.6 U	1.2 U
CHLORODIBROMOMETHANE	6.4 U	1.2 U	5.9 U	7.2 U	7.7 U	2.6 U	13 U	1.1 U	1 U	3.2 U	1.6 U	1.2 U
CHLOROETHANE	6.4 U	1.2 U	5.9 U	7.2 U	7.7 U	2.6 U	13 U	1.1 UJ	1 UJ	3.2 U	1.6 UJ	1.2 UJ
CHLOROFORM	6.4 U	1.2 U	5.9 U	7.2 U	7.7 U	2.6 U	13 U	1.1 U	1 U	3.2 U	1.6 U	1.2 U
CHLOROMETHANE	6.4 U	1.2 U	5.9 U	7.2 U	7.7 U	2.6 U	13 U	1.1 U	1 U	3.2 U	1.6 U	1.2 U
CHLOROPRENE	6.4 UJ	1.2 U	5.9 U	7.2 U	7.7 U	2.6 U	13 UJ	1.1 U	1 U	3.2 U	1.6 U	1.2 U
CIS-1,2-DICHLOROETHENE	6.4 U	1.2 U	5.9 U	7.2 U	7.7 U	2.6 U	13 U	1.1 U	1 U	3.2 U	1.6 U	1.2 U
CIS-1,3-DICHLOROPROPENE	6.4 U	1.2 U	5.9 U	7.2 U	7.7 U	2.6 U	13 U	1.1 U	1 U	3.2 U	1.6 U	1.2 U
DIBROMOMETHANE	6.4 U	1.2 U	5.9 U	7.2 U	7.7 U	2.6 U	13 U	1.1 U	1 U	3.2 U	1.6 U	1.2 U
DICHLORODIFLUOROMETHANE	6.4 UJ	1.2 UJ	5.9 UJ	7.2 UJ	7.7 UJ	2.6 UJ	13 UJ	1.1 UJ	1 UJ	3.2 UJ	1.6 UJ	1.2 UJ
ETHYL METHACRYLATE	6.4 U	1.2 U	5.9 U	7.2 U	7.7 U	2.6 U	13 U	1.1 U	1 U	3.2 U	1.6 U	1.2 U
ETHYLBENZENE	6.4 U	1.2 U	5.9 U	7.2 U	7.7 U	2.6 U	13 U	1.1 U	1 U	3.2 U	1.6 U	1.2 U
ISOBUTANOL	45.5 U	43.5 U	33.5 U	60 U	55 U	46 U	55 U	36.5 U	46.5 U	50 U	60 U	50 U
METHACRYLONITRILE	6.4 U	1.2 U	5.9 U	7.2 U	7.7 U	2.6 U	13 U	1.1 U	1 U	3.2 U	1.6 U	1.2 U
METHYL IODIDE	6.4 UJ	1.2 UJ	5.9 UJ	7.2 UJ	7.7 UJ	2.6 UJ	13 UJ	1.1 UJ	1 UJ	3.2 UJ	1.6 UJ	1.2 UJ
METHYL METHACRYLATE	6.4 U	1.2 U	5.9 U	7.2 U	7.7 U	2.6 U	13 U	1.1 U	1 U	3.2 U	1.6 U	1.2 U
METHYLENE CHLORIDE	12 BU	2 U	8 U	11 U	10 U	5 BU	22 BU	1.1 U	1 BU	21 BU	3 U	2 U
PROPIONITRILE	45.5 U	43.5 U	33.5 U	60 U	55 U	46 U	55 U	36.5 U	46.5 U	50 U	60 U	50 U
STYRENE	6.4 U	1.2 U	5.9 U	7.2 U	7.7 U	2.6 U	13 U	1.1 U	1 U	3.2 U	1.6 U	1.2 U
TETRACHLOROETHENE	6.4 U	1.2 U	5.9 U	7.2 U	7.7 U	2.6 U	13 U	1.1 U	1 U	3.2 U	1.6 U	1.2 U

TABLE E-4

SUMMARY OF ANALYTIC RESULTS IN SHALLOW SEDIMENT
SWMU 3 - OLD JEEP TRAIL/LITLE SULPHUR CREEK
NSWC CRANE
CRANE, INDIANA

LOCATION	03SD05	03SWSD06	03SD07	03SWSD08	03SWSD09	03SD10	03SWSD11	03SD12	03SWSD13	03SWSD14	03SWSD15	03SWSD16
NSAMPLE	03SD050006	03SD060006	03SD070006	03SD080006	03SD090006	03SD100006	03SD110006	03SD120006	03SD130006	03SD140006	03SD150006	03SD160006
SAMPLE	03SD050006	03SD060006	03SD070006	03SD080006	03SD090006	03SD100006	03SD110006	03SD120006	03SD130006	03SD140006	03SD150006	03SD160006
MATRIX	SD	SD	SD	SD	SD	SD	SD	SD	SD	SD	SD	SD
SACODE	ORIG	NORMAL	NORMAL	NORMAL	ORIG	NORMAL	NORMAL	NORMAL	NORMAL	ORIG	NORMAL	NORMAL
DEPTH RANGE	0 - 0.5	0 - 0.5	0 - 0.5	0 - 0.5	0 - 0.5	0 - 1	0 - 0.5	0 - 0.5	0 - 0.5	0 - 0.5	0 - 0.5	0 - 0.5
QC_TYPE	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
STATUS	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
SAMPLE DATE	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
VALIDATED	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
COLLECTION METHOD	GRAB	GRAB	GRAB	GRAB	GRAB	GRAB	GRAB	GRAB	GRAB	GRAB	GRAB	GRAB
TOLUENE	6.4 U	1.2 U	5.9 U	7.2 U	7.7 U	2.6 U	13 U	1.1 U	1 U	3.2 U	1.6 U	1.2 U
TOTAL XYLENES	6.4 U	1.2 U	5.9 U	7.2 U	7.7 U	2.6 U	13 U	1.1 U	1 U	3.2 U	1.6 U	1.2 U
TRANS-1,2-DICHLOROETHENE	6.4 U	1.2 U	5.9 U	7.2 U	7.7 U	2.6 U	13 U	1.1 U	1 U	3.2 U	1.6 U	1.2 U
TRANS-1,3-DICHLOROPROPENE	6.4 U	1.2 U	5.9 U	7.2 U	7.7 U	2.6 U	13 U	1.1 U	1 U	3.2 U	1.6 U	1.2 U
TRANS-1,4-DICHLORO-2-BUTENE	6.4 UJ	1.2 U	5.9 U	7.2 U	7.7 U	2.6 U	13 UJ	1.1 UJ	1 UJ	3.2 U	1.6 UJ	1.2 UJ
TRICHLOROETHENE	6.4 U	1.2 U	5.9 U	7.2 U	7.7 U	2.6 U	13 U	1.1 U	1 U	3.2 U	1.6 U	1.2 U
TRICHLOROFLUOROMETHANE	6.4 UJ	1.2 U	5.9 U	7.2 U	7.7 U	2.6 U	13 UJ	1.1 U	1 U	3.2 U	1.6 U	1.2 U
VINYL ACETATE	6.4 UJ	1.2 UJ	5.9 UJ	7.2 UJ	7.7 UJ	2.6 U	13 UJ	1.1 UJ	1 UJ	3.2 U	1.6 U	1.2 UJ
VINYL CHLORIDE	6.4 U	1.2 U	5.9 U	7.2 U	7.7 U	2.6 U	13 U	1.1 U	1 U	3.2 U	1.6 U	1.2 U
Semivolatile Organics (UG/KG)												
1,2,4,5-TETRACHLOROBENZENE	85 U	83 U	79 U	96 U	93 U	74 U	88 U	75 U	77 U	86 U	110 U	84 U
1,2,4-TRICHLOROBENZENE	85 U	83 U	79 U	96 U	93 U	74 U	88 U	75 U	77 U	86 U	110 U	84 U
1,2-DICHLOROBENZENE	85 U	83 U	79 U	96 U	93 U	74 U	88 U	75 U	77 U	86 U	110 U	84 U
1,3-DICHLOROBENZENE	85 U	83 U	79 U	96 U	93 U	74 U	88 U	75 U	77 U	86 U	110 U	84 U
1,4-DICHLOROBENZENE	85 U	83 U	79 U	96 U	93 U	74 U	88 U	75 U	77 U	86 U	110 U	84 U
1,4-NAPHTHOQUINONE	85 U	83 U	79 U	96 U	93 U	74 U	88 U	75 U	77 U	86 U	110 U	84 U
1,4-PHENYLENEDIAMINE	85 UR	83 UR	79 UR	96 UR	93 UR	74 UR	88 UR	75 UR	77 UR	86 UR	110 UR	84 UR
1-NAPHTHYLAMINE	85 U	83 U	79 U	96 U	93 U	74 U	88 U	75 U	77 U	86 UJ	110 U	84 U
2,2'-OXYBIS(1-CHLOROPROPANE)	85 U	83 U	79 UJ	96 UJ	93 UJ	74 UJ	88 UJ	75 U	77 U	86 UJ	110 U	84 U
2,3,4,6-TETRACHLOROPHENOL	85 U	83 U	79 U	96 U	93 U	74 U	88 U	75 UJ	77 U	86 UJ	110 U	84 U
2,4,5-TRICHLOROPHENOL	85 U	83 U	79 U	96 U	93 U	74 U	88 U	75 UJ	77 U	86 U	110 U	84 U
2,4,6-TRICHLOROPHENOL	85 U	83 U	79 U	96 U	93 U	74 U	88 U	75 UJ	77 U	86 U	110 U	84 U
2,4-DICHLOROPHENOL	85 U	83 U	79 U	96 U	93 U	74 U	88 U	75 UJ	77 U	86 U	110 U	84 U
2,4-DIMETHYLPHENOL	85 U	83 U	79 U	96 U	93 U	74 U	88 UJ	75 UJ	77 U	86 U	110 U	84 U
2,4-DINITROPHENOL	85 UJ	83 UJ	79 UJ	96 UJ	93 UJ	74 UJ	88 UJ	75 UJ	77 UJ	86 UJ	110 UJ	84 UJ
2,6-DICHLOROPHENOL	85 U	83 U	79 U	96 U	93 U	74 U	88 U	75 UJ	77 U	86 U	110 U	84 U
2-ACETYLAMINOFLUORENE	85 U	83 U	79 U	96 U	93 U	74 U	88 U	75 U	77 U	86 U	110 U	84 U
2-CHLORONAPHTHALENE	85 U	83 U	79 U	96 U	93 U	74 U	88 U	75 U	77 U	86 U	110 U	84 U
2-CHLOROPHENOL	85 UJ	83 U	79 U	96 U	93 U	74 U	88 U	75 UJ	77 U	86 U	110 U	84 U
2-METHYLNAPHTHALENE	1.7 U	1.6 U	1.5 U	1.9 U	1.8 U	1.4 U	1.7 U	1.5 U	1.5 U	1.7 U	2.1 U	1.6 U
2-METHYLPHENOL	85 U	83 U	79 U	96 U	93 U	74 U	88 U	75 UJ	77 U	86 U	110 U	84 U
2-NAPHTHYLAMINE	85 U	83 U	79 U	96 U	93 U	74 U	88 U	75 U	77 U	86 U	110 U	84 U
2-NITROANILINE	85 U	83 U	79 U	96 U	93 U	74 U	88 U	75 U	77 U	86 U	110 U	84 U
2-NITROPHENOL	85 U	83 U	79 U	96 U	93 U	74 U	88 U	75 UJ	77 UJ	86 U	110 U	84 UJ
2-PICOLINE	85 U	83 U	79 U	96 U	93 U	74 U	88 U	75 U	77 U	86 U	110 UJ	84 U
3&4-METHYLPHENOL	85 U	83 U	79 U	96 U	93 U	74 U	88 U	75 UJ	77 U	86 U	110 U	84 U
3,3'-DICHLOROBENZIDINE	85 U	83 U	79 U	96 U	93 U	74 U	88 UR	75 U	77 U	86 U	110 U	84 U
3,3'-DIMETHYLBENZIDINE	85 UJ	83 UJ	79 UJ	96 UJ	93 UJ	74 UJ	88 UJ	75 UJ	77 UJ	86 UJ	110 UJ	84 UJ
3-METHYLCHOLANTHRENE	85 U	83 U	79 U	96 U	93 U	74 U	88 U	75 U	77 U	86 U	110 U	84 U
3-NITROANILINE	85 UJ	83 U	79 U	96 U	93 U	74 U	88 UJ	75 U	77 U	86 U	110 U	84 U
4,6-DINITRO-2-METHYLPHENOL	85 UJ	83 UJ	79 UJ	96 UJ	93 UJ	74 UJ	88 UJ	75 UJ	77 UJ	86 UJ	110 UJ	84 UJ
4-AMINOBIPHENYL	85 U	83 U	79 U	96 U	93 U	74 U	88 U	75 U	77 U	86 U	110 U	84 U
4-BROMOPHENYL PHENYL ETHER	85 U	83 U	79 U	96 U	93 U	74 U	88 U	75 U	77 U	86 U	110 U	84 U
4-CHLORO-3-METHYLPHENOL	85 UJ	83 U	79 U	96 U	93 U	74 U	88 U	75 UJ	77 U	86 U	110 U	84 U
4-CHLOROANILINE	85 U	83 U	79 U	96 U	93 U	74 U	88 UJ	75 U	77 U	86 U	110 U	84 U
4-CHLOROPHENYL PHENYL ETHER	85 U	83 U	79 U	96 U	93 U	74 U	88 U	75 U	77 U	86 U	110 U	84 U
4-NITROANILINE	85 UJ	83 U	79 U	96 U	93 U	74 U	88 UJ	75 U	77 U	86 U	110 U	84 U

TABLE E-4

SUMMARY OF ANALYTIC RESULTS IN SHALLOW SEDIMENT
SWMU 3 - OLD JEEP TRAIL/LITLE SULPHUR CREEK
NSWC CRANE
CRANE, INDIANA

LOCATION	03SD05	03SWSD06	03SD07	03SWSD08	03SWSD09	03SD10	03SWSD11	03SD12	03SWSD13	03SWSD14	03SWSD15	03SWSD16
NSAMPLE	03SD050006	03SD060006	03SD070006	03SD080006	03SD090006	03SD100006	03SD110006	03SD120006	03SD130006	03SD140006	03SD150006	03SD160006
SAMPLE	03SD050006	03SD060006	03SD070006	03SD080006	03SD090006	03SD100006	03SD110006	03SD120006	03SD130006	03SD140006	03SD150006	03SD160006
MATRIX	SD	SD	SD	SD	SD	SD	SD	SD	SD	SD	SD	SD
SACODE	ORIG	NORMAL	NORMAL	NORMAL	ORIG	NORMAL	NORMAL	NORMAL	NORMAL	ORIG	NORMAL	NORMAL
DEPTH RANGE	0 - 0.5	0 - 0.5	0 - 0.5	0 - 0.5	0 - 0.5	0 - 1	0 - 0.5	0 - 0.5	0 - 0.5	0 - 0.5	0 - 0.5	0 - 0.5
QC_TYPE	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
STATUS	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
SAMPLE DATE	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
VALIDATED	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
COLLECTION METHOD	GRAB	GRAB	GRAB	GRAB	GRAB	GRAB	GRAB	GRAB	GRAB	GRAB	GRAB	GRAB
4-NITROPHENOL	85 U	83 U	79 U	96 U	93 U	74 U	88 U	75 UJ	77 U	86 U	110 U	84 U
4-NITROQUINOLINE-1-OXIDE	85 U	83 U	79 UJ	96 UJ	93 UJ	74 UJ	88 UJ	75 UJ	77 UJ	86 UJ	110 UJ	84 UJ
5-NITRO-O-TOLUIDINE	85 U	83 U	79 U	96 U	93 U	74 U	88 U	75 U	77 U	86 U	110 U	84 U
7,12-DIMETHYLBENZ(A)ANTHRACENE	85 U	83 U	79 U	96 U	93 U	74 U	88 U	75 U	77 U	86 U	110 U	84 U
A,A-DIMETHYLPHENETHYLAMINE	85 U	83 U	79 U	96 U	93 U	74 U	88 U	75 U	77 U	86 U	110 U	84 U
ACENAPHTHENE	1.7 U	1.6 U	1.5 U	1.9 U	1.8 U	1.4 U	1.7 U	1.5 U	1.5 U	1.7 U	2.1 U	1.6 U
ACENAPHTHYLENE	1.7 U	1.6 U	1.5 U	1.9 U	1.8 U	1.4 U	1.7 U	1.5 U	1.5 U	1.7 U	2.1 U	1.6 U
ACETOPHENONE	85 U	83 U	79 U	96 U	93 U	74 U	88 U	75 U	77 U	86 U	110 U	84 U
ANILINE	85 U	83 U	79 U	96 U	93 U	74 U	88 U	75 U	77 U	86 U	110 U	84 U
ANTHRACENE	1.7 U	1.6 U	1.5 U	1.9 U	1.8 U	1.4 U	1.7 U	1.5 U	1.5 U	1.7 U	2.1 U	1.6 U
ARAMITE	85 U	83 U	79 U	96 U	93 U	74 U	88 U	75 U	77 UJ	86 U	110 U	84 UJ
BENZO(A)ANTHRACENE	1.7 U	1.6 U	1.5 U	1.9 U	1.8 U	1.4 U	1.7 U	1.5 U	1.5 U	26 U	2.1 U	1.6 U
BENZO(A)PYRENE	1.7 U	1.6 U	1.5 U	1.9 U	1.8 U	1.4 U	1.7 U	1.5 U	1.5 U	1.7 U	2.1 U	1.6 U
BENZO(B)FLUORANTHENE	1.7 U	1.6 U	1.5 U	1.9 U	1.8 U	1.4 U	1.7 U	1.5 U	1.5 U	1.7 U	2.1 U	1.6 U
BENZO(G,H,I)PERYLENE	1.7 U	1.6 U	1.5 U	1.9 U	1.8 U	1.4 U	1.7 U	1.5 U	1.5 U	1.7 U	2.1 U	1.6 U
BENZO(K)FLUORANTHENE	1.7 U	1.6 U	1.5 U	1.9 U	1.8 U	1.4 U	1.7 U	1.5 U	1.5 U	1.7 U	2.1 U	1.6 U
BENZYL ALCOHOL	85 U	83 U	79 U	96 U	93 U	74 U	88 U	75 UJ	77 U	86 U	110 U	84 U
BIS(2-CHLOROETHOXY)METHANE	85 U	83 U	79 U	96 U	93 U	74 U	88 U	75 U	77 U	86 U	110 U	84 U
BIS(2-CHLOROETHYL)ETHER	85 U	83 U	79 U	96 U	93 U	74 U	88 U	75 U	77 U	86 U	110 U	84 U
BIS(2-ETHYLHEXYL)PHTHALATE	85 U	83 U	79 U	96 U	110 BU	74 U	260 BU	75 U	77 U	86 U	110 U	84 U
BUTYL BENZYL PHTHALATE	85 U	83 U	79 U	96 U	93 U	74 U	88 U	75 U	77 U	86 U	110 U	84 U
CHLOROBENZILATE	85 U	83 U	79 U	96 U	93 U	74 U	88 U	75 U	77 U	86 U	110 U	84 U
CHRYSENE	1.7 U	1.6 U	1.5 U	1.9 U	1.8 U	1.4 U	1.7 U	1.5 U	1.5 U	26 U	2.1 U	1.6 U
DI-N-BUTYL PHTHALATE	85 U	490 BU	79 U	96 U	93 U	77 J	590	75 U	77 U	86 U	110 U	240 BU
DI-N-OCTYL PHTHALATE	85 U	83 U	79 U	96 U	93 U	74 U	88 U	75 U	77 U	86 U	110 U	84 U
DIALLATE	85 U	83 U	79 U	96 U	93 U	74 U	88 U	75 U	77 U	86 U	110 U	84 U
DIBENZO(A,H)ANTHRACENE	1.7 U	1.6 U	1.5 U	1.9 U	1.8 U	1.4 U	1.7 U	1.5 U	1.5 U	1.7 U	2.1 U	1.6 U
DIBENZOFURAN	85 U	83 U	79 U	96 U	93 U	74 U	88 U	75 U	77 U	86 U	110 U	84 U
DIETHYL PHTHALATE	85 U	83 U	79 U	96 U	93 U	74 U	88 U	75 U	77 U	86 U	110 U	84 U
DIMETHYL PHTHALATE	85 U	83 U	79 U	96 U	93 U	74 U	88 U	75 U	77 U	86 U	110 U	84 U
DIPHENYLAMINE	85 U	83 U	96 J	96 U	93 U	74 U	88 U	100 J	77 U	86 U	420 J	84 U
ETHYL METHANE SULFONATE	85 U	83 U	79 U	96 U	93 U	74 U	88 U	75 U	77 U	86 U	110 U	84 U
ETHYL PARATHION	85 U	83 U	79 U	96 U	93 U	74 U	88 U	75 U	77 U	86 U	110 U	84 U
FLUORANTHENE	1.7 U	1.6 U	1.5 U	1.9 U	1.8 U	1.4 U	11	1.5 U	1.5 U	12 J	2.1 U	1.6 U
FLUORENE	1.7 U	1.6 U	1.5 U	1.9 U	1.8 U	1.4 U	1.7 U	1.5 U	1.5 U	1.7 U	2.1 U	1.6 U
HEXACHLOROBENZENE	85 U	83 U	79 U	96 U	93 U	74 U	88 U	75 U	77 U	86 U	110 U	84 U
HEXACHLOROBUTADIENE	85 U	83 U	79 U	96 U	93 U	74 U	88 U	75 U	77 U	86 U	110 U	84 U
HEXACHLOROCYCLOPENTADIENE	85 U	83 U	79 U	96 U	93 U	74 U	88 U	75 U	77 U	86 U	110 U	84 U
HEXACHLOROETHANE	85 U	83 U	79 U	96 U	93 U	74 U	88 U	75 U	77 U	86 U	110 U	84 U
HEXACHLOROPROPENE	85 U	83 U	79 U	96 U	93 U	74 U	88 U	75 U	77 U	86 U	110 U	84 U
INDENO(1,2,3-CD)PYRENE	1.7 U	1.6 U	1.5 U	1.9 U	1.8 U	1.4 U	1.7 U	1.5 U	1.5 U	1.7 U	2.1 U	1.6 U
ISODRIN	85 U	83 U	79 U	96 U	93 U	74 U	88 U	75 U	77 U	86 U	110 U	84 U
ISOPHORONE	85 U	83 U	79 U	96 U	93 U	74 U	88 U	75 U	77 U	86 U	110 U	84 U
ISOSAFROLE	85 U	83 U	79 U	96 U	93 U	74 U	88 U	75 U	77 U	86 U	110 U	84 U
KEPONE	85 UR	83 UR	79 UR	96 UR	93 UR	74 UR	88 UR	75 UR	77 UR	86 UR	110 UR	84 UR
METHAPYRILENE	85 U	83 U	79 UJ	96 UJ	93 UJ	74 UJ	88 UJ	75 UJ	77 U	86 UJ	110 UJ	84 U
METHYL METHANE SULFONATE	85 U	83 U	79 U	96 U	93 U	74 U	88 U	75 UJ	77 U	86 UJ	110 UJ	84 U

TABLE E-4

SUMMARY OF ANALYTIC RESULTS IN SHALLOW SEDIMENT
SWMU 3 - OLD JEEP TRAIL/LITLE SULPHUR CREEK
NSWC CRANE
CRANE, INDIANA

LOCATION	03SD05	03SWSD06	03SD07	03SWSD08	03SWSD09	03SD10	03SWSD11	03SD12	03SWSD13	03SWSD14	03SWSD15	03SWSD16
NSAMPLE	03SD050006	03SD060006	03SD070006	03SD080006	03SD090006	03SD100006	03SD110006	03SD120006	03SD130006	03SD140006	03SD150006	03SD160006
SAMPLE	03SD050006	03SD060006	03SD070006	03SD080006	03SD090006	03SD100006	03SD110006	03SD120006	03SD130006	03SD140006	03SD150006	03SD160006
MATRIX	SD	SD	SD	SD	SD	SD	SD	SD	SD	SD	SD	SD
SACODE	ORIG	NORMAL	NORMAL	NORMAL	ORIG	NORMAL	NORMAL	NORMAL	NORMAL	ORIG	NORMAL	NORMAL
DEPTH RANGE	0 - 0.5	0 - 0.5	0 - 0.5	0 - 0.5	0 - 0.5	0 - 1	0 - 0.5	0 - 0.5	0 - 0.5	0 - 0.5	0 - 0.5	0 - 0.5
QC_TYPE	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
STATUS	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
SAMPLE DATE	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
VALIDATED	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
COLLECTION METHOD	GRAB	GRAB	GRAB	GRAB	GRAB	GRAB	GRAB	GRAB	GRAB	GRAB	GRAB	GRAB
METHYL PARATHION	85 U	83 U	79 UJ	96 UJ	93 UJ	74 UJ	88 UJ	75 UJ	77 UJ	86 UJ	110 UJ	84 UJ
N-NITROSO-DI-N-BUTYLAMINE	85 U	83 U	79 U	96 U	93 U	74 U	88 U	75 U	77 U	86 U	110 U	84 U
N-NITROSO-DI-N-PROPYLAMINE	85 U	83 U	79 U	96 U	93 U	74 U	88 U	75 U	77 U	86 U	110 U	84 U
N-NITROSODIETHYLAMINE	85 U	83 U	79 U	96 U	93 U	74 U	88 U	75 U	77 U	86 U	110 U	84 U
N-NITROSODIMETHYLAMINE	85 U	83 U	79 U	96 U	93 U	74 U	88 U	75 U	77 U	86 U	110 U	84 U
N-NITROSOMETHYLETHYLAMINE	85 U	83 U	79 U	96 U	93 U	74 U	88 U	75 U	77 U	86 U	110 U	84 U
N-NITROSOMORPHOLINE	85 U	83 U	79 U	96 U	93 U	74 U	88 U	75 U	77 U	86 U	110 U	84 U
N-NITROSOPIPERIDINE	85 U	83 U	79 U	96 U	93 U	74 U	88 U	75 U	77 U	86 U	110 U	84 U
N-NITROSOPYRROLIDINE	85 U	83 U	79 U	96 U	93 U	74 U	88 U	75 U	77 U	86 U	110 U	84 U
NAPHTHALENE	1.7 U	1.6 U	1.5 U	1.9 U	1.8 U	1.4 U	1.7 U	1.5 U	1.5 U	1.7 U	2.1 U	1.6 U
O,O,O-TRIETHYL PHOSPHOROTHIOATE	85 U	83 U	79 U	96 U	93 U	74 U	88 U	75 U	77 U	86 U	110 U	84 U
O-TOLUIDINE	85 U	83 U	79 U	96 U	93 U	74 U	88 U	75 U	77 U	86 U	110 U	84 U
P-(DIMETHYLAMINO)AZOBENZENE	85 U	83 U	79 U	96 U	93 U	74 U	88 U	75 U	77 U	86 U	110 U	84 U
PENTACHLOROBENZENE	85 U	83 U	79 U	96 U	93 U	74 U	88 U	75 U	77 U	86 U	110 U	84 U
PENTACHLOROETHANE	85 U	83 U	79 U	96 U	93 U	74 U	88 U	75 U	77 U	86 U	110 U	84 U
PENTACHLORONITROBENZENE	85 U	83 U	79 U	96 U	93 U	74 U	88 U	75 U	77 U	86 U	110 U	84 U
PHENACETIN	85 U	83 U	79 U	96 U	93 U	74 U	88 U	75 U	77 U	86 U	110 U	84 U
PHENANTHRENE	1.7 U	1.6 U	1.5 U	1.9 U	1.8 U	1.4 U	1.7 U	1.5 U	1.5 U	14 J	2.1 U	1.6 U
PHENOL	85 U	83 U	79 U	96 U	93 U	74 U	88 U	75 UJ	77 U	86 U	110 U	84 U
PRONAMIDE	85 U	83 U	79 U	96 U	93 U	74 U	88 U	75 U	77 U	86 U	110 U	84 U
PYRENE	1.7 U	1.6 U	1.5 U	1.9 U	1.8 U	1.4 U	11	1.5 U	1.5 U	26 U	2.1 U	1.6 U
PYRIDINE	85 U	83 U	79 U	96 U	93 U	74 U	88 U	75 U	77 U	86 U	110 U	84 U
SAFROLE	85 U	83 U	79 U	96 U	93 U	74 U	88 U	75 U	77 U	86 U	110 U	84 U
Energetics (MG/KG)												
1,3,5-TRINITROBENZENE	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U
1,3-DINITROBENZENE	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U
2,4,6-TRINITROTOLUENE	0.25 U	0.25 U	0.55	0.25 U	0.25 U	0.29 J	0.69	0.25 U	0.62	0.25 U	0.25 U	0.25 U
2,4-DINITROTOLUENE	0.25 U	1.1	0.33 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U
2,6-DINITROTOLUENE	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U
2-AMINO-4,6-DINITROTOLUENE	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.37 J	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U
2-NITROTOLUENE	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U
3-NITROTOLUENE	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U
4-AMINO-2,6-DINITROTOLUENE	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.6 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U
4-NITROTOLUENE	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U
HMX	0.25 U	0.25 U	6.1	0.25 U	0.25 U	0.25 U	130	0.25 U	1.1	0.25 U	0.25 U	0.25 U
NITROBENZENE	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U
NITROCELLULOSE	610 U	560 U	590 U	720 U	690 U	550 U	650 U	560 U	570 U	650 U	830 U	630 U
NITROGLYCERIN	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U
PETN	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	1.5 U	1.5 U	1.7 U	2.1 U	1.6 U
RDX	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U
TETRYL	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U
Pesticides/PCB's (UG/KG)												
4,4'-DDD	2.2 UJ	2.1 UJ	2 UJ	2.4 UJ	2.4 UJ	1.9 UJ	2.2 UJ	1.9 U	1.9 U	2.2 U	2.8 U	2.1 U
4,4'-DDE	2.2 U	2.1 U	2 U	2.4 U	2.4 U	1.9 U	2.2 U	1.9 U	1.9 U	2.2 U	2.8 U	2.1 U
4,4'-DDT	2.2 UJ	2.1 UJ	2 U	2.4 U	2.4 U	1.9 U	2.2 U	1.9 U	1.9 U	2.2 U	2.8 U	2.1 U
ALDRIN	1.1 U	1.1 U	1.1 U	1.3 U	1.3 U	1 U	1.2 U	1 U	1 U	1.2 U	1.5 U	1.1 U
ALPHA-BHC	1.1 U	1.1 U	1.1 U	1.3 U	1.3 U	1 U	1.2 U	1 U	1 U	1.2 U	1.5 U	1.1 U

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SWMU 3 - OLD JEEP TRAIL/LITLE SULPHUR CREEK
NSWC CRANE
CRANE, INDIANA

LOCATION	03SD05	03SWSD06	03SD07	03SWSD08	03SWSD09	03SD10	03SWSD11	03SD12	03SWSD13	03SWSD14	03SWSD15	03SWSD16
NSAMPLE	03SD050006	03SD060006	03SD070006	03SD080006	03SD090006	03SD100006	03SD110006	03SD120006	03SD130006	03SD140006	03SD150006	03SD160006
SAMPLE	03SD050006	03SD060006	03SD070006	03SD080006	03SD090006	03SD100006	03SD110006	03SD120006	03SD130006	03SD140006	03SD150006	03SD160006
MATRIX	SD	SD	SD	SD	SD	SD	SD	SD	SD	SD	SD	SD
SACODE	ORIG	NORMAL	NORMAL	NORMAL	ORIG	NORMAL	NORMAL	NORMAL	NORMAL	ORIG	NORMAL	NORMAL
DEPTH RANGE	0 - 0.5	0 - 0.5	0 - 0.5	0 - 0.5	0 - 0.5	0 - 1	0 - 0.5	0 - 0.5	0 - 0.5	0 - 0.5	0 - 0.5	0 - 0.5
QC_TYPE	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
STATUS	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
SAMPLE DATE	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
VALIDATED	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
COLLECTION METHOD	GRAB	GRAB	GRAB	GRAB	GRAB	GRAB	GRAB	GRAB	GRAB	GRAB	GRAB	GRAB
ALPHA-CHLORDANE	1.1 U	1.1 U	1.1 U	1.3 U	1.3 U	1 U	1.2 U	1 U	1 U	1.2 U	1.5 U	1.1 U
AROCLOR-1016	22 U	21 U	20 U	24 U	24 U	19 U	22 U	19 U	19 U	22 U	28 U	21 U
AROCLOR-1221	43 U	42 U	40 U	49 U	47 U	38 U	44 U	38 U	39 U	44 U	56 U	43 U
AROCLOR-1232	22 U	21 U	20 U	24 U	24 U	19 U	22 U	19 U	19 U	22 U	28 U	21 U
AROCLOR-1242	22 U	21 U	20 U	24 U	24 U	19 U	22 U	19 U	19 U	22 U	28 U	21 U
AROCLOR-1248	22 U	21 U	20 U	24 U	24 U	19 U	22 U	19 U	19 U	22 U	28 U	21 U
AROCLOR-1254	22 U	21 U	20 U	24 U	24 U	19 U	22 U	19 U	19 U	22 U	28 U	21 U
AROCLOR-1260	22 U	21 U	20 U	24 U	24 U	19 U	22 U	19 U	19 U	22 U	28 U	21 U
BETA-BHC	1.1 U	1.1 U	1.1 U	1.3 U	1.3 U	1 U	1.2 U	1 U	1 U	1.2 U	1.5 U	1.1 U
DELTA-BHC	1.1 U	1.1 U	1.1 U	1.3 U	1.3 U	1 U	1.2 U	1 U	1 U	1.2 U	1.5 U	1.1 U
DIELDRIN	2.2 UJ	2.1 UJ	2 UJ	2.4 UJ	2.4 UJ	1.9 UJ	2.2 UJ	1.9 U	1.9 U	2.2 U	2.8 U	2.1 U
ENDOSULFAN I	1.1 U	1.1 U	1.1 U	1.3 U	1.3 U	1 U	1.2 U	1 U	1 U	1.2 U	1.5 U	1.1 U
ENDOSULFAN II	2.2 U	2.1 U	2 U	2.4 U	2.4 U	1.9 U	2.2 U	1.9 U	1.9 U	2.2 U	2.8 U	2.1 U
ENDOSULFAN SULFATE	2.2 U	2.1 U	2 U	2.4 U	2.4 U	1.9 U	2.2 U	1.9 U	1.9 U	2.2 U	2.8 U	2.1 U
ENDRIN	2.2 UJ	2.1 UJ	2 UJ	2.4 UJ	2.4 UJ	1.9 UJ	2.2 UJ	1.9 U	1.9 U	2.2 U	2.8 U	2.1 U
ENDRIN ALDEHYDE	2.2 U	2.1 U	2 U	2.4 U	2.4 U	1.9 U	2.2 U	1.9 U	1.9 U	2.2 U	2.8 U	2.1 U
ENDRIN KETONE	2.2 U	2.1 U	2 U	2.4 U	2.4 U	1.9 U	2.2 U	1.9 UJ	1.9 UJ	2.2 UJ	2.8 UJ	2.1 UJ
GAMMA-BHC (LINDANE)	1.1 U	1.1 U	1.1 U	1.3 U	1.3 U	1 U	1.2 U	1 U	1 U	1.2 U	1.5 U	1.1 U
GAMMA-CHLORDANE	1.1 U	1.1 U	1.1 U	1.3 U	1.3 U	1 U	1.2 U	1 U	1 U	1.2 U	1.5 U	1.1 U
HEPTACHLOR	1.1 U	1.1 U	1.1 U	1.3 U	1.3 U	1 U	1.2 U	1 U	1 U	1.2 U	1.5 U	1.1 U
HEPTACHLOR EPOXIDE	1.1 U	1.1 U	1.1 U	1.3 U	1.3 U	1 U	1.2 U	1 U	1 U	1.2 U	1.5 U	1.1 U
METHOXYCHLOR	11 U	11 U	11 U	13 U	13 U	10 U	12 U	10 U	10 U	12 U	15 U	11 U
TOXAPHENE	110 U	110 U	110 U	130 U	130 U	100 U	120 U	100 U	100 U	120 U	150 U	110 U
Herbicides (UG/KG)												
2,4,5-T	1.8 UJ	2.7 J	1.6 U	2 U	1.9 U	1.6 U	1.8 U	3.5	1.6 U	2.8 J	2.3 U	1.8 U
2,4,5-TP (SILVEX)	4.3 J	2.6 J	1.6 U	2 U	1.9 U	1.6 U	1.8 U	2.4 J	1.6 U	2.3 R	2.5 J	1.8 U
2,4-D	1.8 U	1.7 U	14 J	20 J	9.7 R	7.4 R	12 J	8.3 J	8.4 J	4.9 J	10 R	5.6 J
DINOSEB	1.8 UJ	1.7 U	1.6 U	8.2 J	11 R	1.6 U	4.2 J	1.6 U	1.6 U	3.1 J	2.3 U	1.8 U
HEXACHLOROPHENE	8.5 U	8.3 U	7.9 U	3.5 J	9.3 U	7.4 U	8.8 UJ	7.5 U	7.7 U	8.6 U	11 U	8.4 U
PENTACHLOROPHENOL	0.43 UJ	0.42 U	0.75 R	1.6 R	0.47 U	0.38 U	0.44 U	3.7 R	0.39 U	0.44 U	1.4 R	0.43 U
Inorganics (MG/KG)												
ALUMINUM	21500 J	8780 J	9870	6250	6780	16400	17900	8740 J	11100 J	6770 J	23200 J	8950 J
ANTIMONY	3.5 J	1.9 J	1.1 J	0.38 U	0.45 U	2.1 U	3.3 J	2 J	2.5 J	0.87 U	7.6 J	1.6 J
ARSENIC	6.7	6.9	19.1	4.7	4.4	10	6	13.4	9.8	4.3	22	10.7
BARIUM	853 J	189 J	194 J	91.6 J	104 J	342 J	500 J	353 J	326 J	139 J	334 J	165 J
BERYLLIUM	0.64	0.69	1.4	0.59	0.73	1.6	0.61	1.1	0.94	0.43	1.7	1.3
CADMIUM	1.8 J	0.62 J	1.2 J	0.42 J	0.59 J	1.3 J	3.5 J	1.4	1.4	1.1	1.7	1.1
CALCIUM	12900	27800	4600 J	2480 J	37500 J	5870 J	3440 J	3730 J	4720 J	3380 J	3280 J	3190 J
CHROMIUM	23.1 J	18.6 J	29.9 J	8.4 J	11.4 J	40.7 J	13 J	35.6 J	25.5 J	8.8 J	40.8 J	38.6 J
COBALT	11.4	13.4	19.7	12.2	11.1	27.3	12.3	18.7 J	19.5 J	7.9 J	31.2 J	23.4 J
COPPER	78 J	27.4 J	51.3	8.1	8.6	60.1	115	71.9	91.9	29	198	43.7
IRON	16500 J	21700 J	50300 J	12900 J	13300 J	61200 J	15100 J	53900 J	40800 J	13300 J	68600 J	62100 J
LEAD	204 J	653 J	215	13.3	14.6	93.2	257	184 J	139 J	43 J	118 J	87 J
MAGNESIUM	4300 J	5540 J	1360 J	1020 J	14700 J	1450 J	1450 J	1310 J	1190 J	1270 J	1490 J	520 J
MANGANESE	930 J	912 J	1420 J	887 J	814 J	1470 J	1560 J	1650 J	1700 J	444 J	2780 J	1610 J
MERCURY	0.1	0.02	0.04 J	0.03 J	0.03 J	0.1 J	0.18 J	0.06	0.08	0.14	0.31	0.03
NICKEL	16.5	23.7	33.1 J	14.6 J	14.9 J	36.3 J	16.5 J	25.8 J	25.6 J	11.7 J	33.8 J	31.1 J

TABLE E-4

SUMMARY OF ANALYTIC RESULTS IN SHALLOW SEDIMENT
SWMU 3 - OLD JEEP TRAIL/LITLE SULPHUR CREEK
NSWC CRANE
CRANE, INDIANA

LOCATION	03SD05	03SWSD06	03SD07	03SWSD08	03SWSD09	03SD10	03SWSD11	03SD12	03SWSD13	03SWSD14	03SWSD15	03SWSD16
NSAMPLE	03SD050006	03SD060006	03SD070006	03SD080006	03SD090006	03SD100006	03SD110006	03SD120006	03SD130006	03SD140006	03SD150006	03SD160006
SAMPLE	03SD050006	03SD060006	03SD070006	03SD080006	03SD090006	03SD100006	03SD110006	03SD120006	03SD130006	03SD140006	03SD150006	03SD160006
MATRIX	SD	SD	SD	SD	SD	SD	SD	SD	SD	SD	SD	SD
SACODE	ORIG	NORMAL	NORMAL	NORMAL	ORIG	NORMAL	NORMAL	NORMAL	NORMAL	ORIG	NORMAL	NORMAL
DEPTH RANGE	0 - 0.5	0 - 0.5	0 - 0.5	0 - 0.5	0 - 0.5	0 - 1	0 - 0.5	0 - 0.5	0 - 0.5	0 - 0.5	0 - 0.5	0 - 0.5
QC_TYPE	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
STATUS	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
SAMPLE DATE	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
VALIDATED	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
COLLECTION METHOD	GRAB	GRAB	GRAB	GRAB	GRAB	GRAB	GRAB	GRAB	GRAB	GRAB	GRAB	GRAB
POTASSIUM	813 J	1260 J	463 J	478 J	567 J	426 J	529 J	338 J	373 J	657 J	453 J	294 J
SELENIUM	0.18 U	0.18 U	0.49 U	0.8 U	0.69 U	0.34 U	0.19 U	0.16 U	0.16 U	0.2	0.26	0.18 U
SILVER	0.09 U	0.04 U	0.04 U	0.05 U	0.05 U	0.11 U	0.71 J	0.05 U	0.46 J	0.12 U	0.06 U	0.05 U
SODIUM	94.7 J	138 J	3.4 U	4.1 U	55.5 U	3.4 U	3.7 U	17.5 U	15.1 U	22.7 U	31.9 U	10 U
THALLIUM	0.07	0.11	0.08	0.09	0.08	0.07	0.09	0.07	0.08	0.08	0.12	0.1
TIN	4.5 U	2.1 U	1.3 U	0.35 U	0.41 U	1.3 U	4.4 J	13.8 J	3.4 U	1.2 U	3.2 U	2.2 U
VANADIUM	15.8	19.5	26	14.5	15	37.9	15.4	31 J	26 J	12.3 J	44.1 J	35.8 J
ZINC	206 J	100 J	194 J	27.5 J	36.9 J	192 J	308 J	260 J	229 J	114 J	270 J	385 J
Miscellaneous Parameters												
NITRATE (MG/KG)	4	3.4	3.7	8.4	4.7	1.1 UJ	4.1	2.8	3.7	3.4	4.7	3.6
NITRITE (MG/KG)	12 UJ	2.3 UJ	2.2 UR	13 UR	5.2 UR	3.4 J	12 UR	3 UJ	3.8 UJ	17 UJ	3.3 UJ	2.4 UJ
NITRITE/NITRATE (MG/KG)	4	3.4	3.7	8.4	4.7	3.8	4.1	2.8	3.7	3.4	4.7	3.6
PERCENT MOISTURE (%)	21.1	22.5	9.5	34.9	22.1	7.4	21.8	13.4	11.5	22.1	28.1	15.6
PERCHLORATE (UG/KG)	25 U	26 U	22 U	31 U	26 U	22 U	26 U	23 U	23 U	26 U	28 U	24 U
PH (S.U.)	7.9 J	7.6 J	8.1 J	7 J	7.7 J	8 J	7.8 J	8 J	7.9 J	7.7 J	7.7 J	7.4 J
TOTAL ORGANIC CARBON (MG/KG)	8000 J	1000 U	8999.9	28000	26000	6200	13000	4800	7300	6700	10000	5600

TABLE E-4

SUMMARY OF ANALYTIC RESULTS IN SHALLOW SEDIMENT
SWMU 3 - OLD JEEP TRAIL/LITLE SULPHUR CREEK
NSWC CRANE
CRANE, INDIANA

LOCATION	03SWSD17	03SWSD18	03SWSD19	03SWSD01	03SWSD02	03SWSD03	03SWSD04
NSAMPLE	03SD170006	03SD180006	03SD190006	03SD010006	03SD020006	03SD030006	03SD040006
SAMPLE	03SD170006	03SD180006	03SD190006	03SD010006	03SD020006	03SD030006	03SD040006
MATRIX	SD	SD	SD	BACKGROUND	BACKGROUND	BACKGROUND	BACKGROUND
SACODE	NORMAL	NORMAL	ORIG	NORMAL	NORMAL	NORMAL	NORMAL
DEPTH RANGE	0 - 0.5	0 - 0.5	0 - 0.5	0 - 0.5	0 - 0.5	0 - 0.5	0 - 0.5
QC_TYPE	NM	NM	NM	NM	NM	NM	NM
STATUS	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
SAMPLE DATE	- -	- -	- -	- -	- -	- -	- -
VALIDATED	Y	Y	Y	Y	Y	Y	Y
COLLECTION METHOD	GRAB	GRAB	GRAB	GRAB	GRAB	GRAB	GRAB
Volatile Organics (UG/KG)							
1,1,1,2-TETRACHLOROETHANE	3.7 U	1.2 U	1.1 U	2.8 U	12 U	3.2 U	12 U
1,1,1-TRICHLOROETHANE	3.7 U	2 J	1.1 U	2.8 U	12 U	3.2 U	12 U
1,1,2,2-TETRACHLOROETHANE	3.7 U	1.2 U	1.1 U	2.8 U	12 U	3.2 U	12 U
1,1,2-TRICHLOROETHANE	3.7 U	1.2 U	1.1 U	2.8 U	12 U	3.2 U	12 U
1,1-DICHLOROETHANE	3.7 U	1.2 U	1.1 U	2.8 U	12 U	3.2 U	12 U
1,1-DICHLOROETHENE	3.7 U	1.2 U	1.1 U	2.8 U	12 U	3.2 U	12 U
1,2,3-TRICHLOROPROPANE	3.7 U	1.2 U	1.1 U	2.8 U	12 U	3.2 U	12 U
1,2-DIBROMO-3-CHLOROPROPANE	3.7 U	1.2 U	1.1 U	2.8 U	12 U	3.2 U	12 U
1,2-DIBROMOETHANE	3.7 U	1.2 U	1.1 U	2.8 U	12 U	3.2 U	12 U
1,2-DICHLOROETHANE	3.7 U	1.2 U	1.1 U	2.8 U	12 U	3.2 U	12 U
1,2-DICHLOROPROPANE	3.7 U	1.2 U	1.1 U	2.8 U	12 U	3.2 U	12 U
1,4-DIOXANE	125 U	120 U	135 U	145 U	110 U	110 U	110 U
2-BUTANONE	18 J	1.2 U	1.1 U	2.8 UJ	12 UJ	3.2 UJ	12 UJ
2-HEXANONE	3.7 UJ	1.2 U	1.1 U	2.8 UJ	12 UJ	3.2 U	12 UJ
3-CHLOROPROPENE	3.7 U	1.2 U	1.1 U	2.8 U	12 U	3.2 U	12 U
4-METHYL-2-PENTANONE	3.7 U	1.2 UJ	2 J	2.8 U	12 UJ	3.2 U	12 UJ
ACETONE	95 BU	1.2 U	10 U	110 J	250 U	3.2 UJ	12 UJ
ACETONITRILE	50 U	48 U	55 U	55 U	43.5 U	44.5 U	44 U
ACROLEIN	3.7 UR	1.2 UR	1.1 UR	2.8 UR	12 UR	3.2 UR	12 UR
ACRYLONITRILE	3.7 UR	1.2 UR	1.1 UR	2.8 UR	12 UR	3.2 UR	12 UR
BENZENE	3.7 U	1.2 U	1.1 U	2.8 U	12 U	3.2 U	12 U
BROMODICHLOROMETHANE	3.7 U	1.2 U	1.1 U	2.8 U	12 U	3.2 U	12 U
BROMOFORM	3.7 U	1.2 U	1.1 U	2.8 U	12 U	3.2 U	12 U
BROMOMETHANE	3.7 U	1.2 UJ	1.1 UJ	2.8 UJ	12 UJ	3.2 UJ	12 UJ
CARBON DISULFIDE	3.7 UJ	2 J	1 UJ	2.8 UJ	12 UJ	3.2 UJ	12 UJ
CARBON TETRACHLORIDE	3.7 U	1.2 U	1.1 U	2.8 U	12 U	3.2 U	12 U
CHLOROBENZENE	3.7 U	1.2 U	1.1 U	2.8 U	12 U	3.2 U	12 U
CHLORODIBROMOMETHANE	3.7 U	1.2 U	1.1 U	2.8 U	12 U	3.2 U	12 U
CHLOROETHANE	3.7 U	1.2 U	1.1 U	2.8 U	12 U	3.2 U	12 U
CHLOROFORM	3.7 U	1.2 U	1.1 U	2.8 U	12 U	3.2 U	12 U
CHLOROMETHANE	3.7 U	1.2 U	1.1 U	2.8 U	12 U	3.2 U	12 U
CHLOROPRENE	3.7 U	1.2 U	1.1 U	2.8 U	12 UJ	3.2 U	12 UJ
CIS-1,2-DICHLOROETHENE	3.7 U	1.2 U	1.1 U	2.8 U	12 U	3.2 U	12 U
CIS-1,3-DICHLOROPROPENE	3.7 U	1.2 U	1.1 U	2.8 U	12 U	3.2 U	12 U
DIBROMOMETHANE	3.7 U	1.2 U	1.1 U	2.8 U	12 U	3.2 U	12 U
DICHLORODIFLUOROMETHANE	3.7 UJ	1.2 UJ	1.1 UJ	2.8 UJ	12 UJ	3.2 UJ	12 UJ
ETHYL METHACRYLATE	3.7 U	1.2 U	1.1 U	2.8 U	12 U	3.2 U	12 U
ETHYLBENZENE	3.7 U	1.2 U	1.1 U	2.8 U	12 U	3.2 U	12 U
ISOBUTANOL	50 U	48 U	55 U	55 U	43.5 U	44.5 U	44 U
METHACRYLONITRILE	3.7 U	1.2 U	1.1 U	2.8 U	12 U	3.2 U	12 U
METHYL IODIDE	3.7 UJ	1.2 UJ	1.1 UJ	2.8 UJ	12 UJ	3.2 UJ	12 UJ
METHYL METHACRYLATE	3.7 U	1.2 U	1.1 U	2.8 U	12 U	3.2 U	12 U
METHYLENE CHLORIDE	29 BU	4 BU	6 BU	7 U	21 BU	8 BU	27 BU
PROPIONITRILE	50 U	48 U	55 U	55 U	43.5 U	44.5 U	44 U
STYRENE	3.7 U	1.2 U	1.1 U	2.8 U	12 U	3.2 U	12 U
TETRACHLOROETHENE	3.7 U	1.2 U	1.1 U	2.8 U	12 U	3.2 U	12 U

TABLE E-4

SUMMARY OF ANALYTIC RESULTS IN SHALLOW SEDIMENT
SWMU 3 - OLD JEEP TRAIL/LITLE SULPHUR CREEK
NSWC CRANE
CRANE, INDIANA

LOCATION	03SWSD17	03SWSD18	03SWSD19	03SWSD01	03SWSD02	03SWSD03	03SWSD04
NSAMPLE	03SD170006	03SD180006	03SD190006	03SD010006	03SD020006	03SD030006	03SD040006
SAMPLE	03SD170006	03SD180006	03SD190006	03SD010006	03SD020006	03SD030006	03SD040006
MATRIX	SD	SD	SD	BACKGROUND	BACKGROUND	BACKGROUND	BACKGROUND
SACODE	NORMAL	NORMAL	ORIG	NORMAL	NORMAL	NORMAL	NORMAL
DEPTH RANGE	0 - 0.5	0 - 0.5	0 - 0.5	0 - 0.5	0 - 0.5	0 - 0.5	0 - 0.5
QC_TYPE	NM	NM	NM	NM	NM	NM	NM
STATUS	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
SAMPLE DATE	- -	- -	- -	- -	- -	- -	- -
VALIDATED	Y	Y	Y	Y	Y	Y	Y
COLLECTION METHOD	GRAB	GRAB	GRAB	GRAB	GRAB	GRAB	GRAB
TOLUENE	3.7 U	1.2 U	1.1 U	2.8 U	12 U	3.2 U	12 U
TOTAL XYLENES	3.7 U	1.2 U	1.1 U	2.8 U	12 U	3.2 U	12 U
TRANS-1,2-DICHLOROETHENE	3.7 U	1.2 U	1.1 U	2.8 U	12 U	3.2 U	12 U
TRANS-1,3-DICHLOROPROPENE	3.7 U	1.2 U	1.1 U	2.8 U	12 U	3.2 U	12 U
TRANS-1,4-DICHLORO-2-BUTENE	3.7 U	1.2 U	1.1 U	2.8 U	12 UJ	3.2 U	12 UJ
TRICHLOROETHENE	3.7 U	1.2 U	1.1 U	2.8 U	12 U	3.2 U	12 U
TRICHLOROFLUOROMETHANE	3.7 U	1.2 U	1.1 U	2.8 U	12 UJ	3.2 U	12 UJ
VINYL ACETATE	3.7 U	1.2 U	1.1 U	2.8 UJ	12 UJ	3.2 U	12 UJ
VINYL CHLORIDE	3.7 U	1.2 U	1.1 U	2.8 U	12 U	3.2 U	12 U
Semivolatile Organics (UG/KG)							
1,2,4,5-TETRACHLOROBENZENE	88 U	86 U	85 U	92 U	82 UJ	85 U	84 U
1,2,4-TRICHLOROBENZENE	88 U	86 U	85 U	92 U	82 UJ	85 U	84 U
1,2-DICHLOROBENZENE	88 U	86 U	85 U	92 U	82 UJ	85 U	84 U
1,3-DICHLOROBENZENE	88 U	86 U	85 U	92 U	82 UJ	85 U	84 U
1,4-DICHLOROBENZENE	88 U	86 U	85 U	92 U	82 UJ	85 U	84 U
1,4-NAPHTHOQUINONE	88 U	86 U	85 U	92 U	82 UJ	85 U	84 U
1,4-PHENYLENEDIAMINE	88 UR	86 UR	85 UR	92 UR	82 UR	85 UR	84 U
1-NAPHTHYLAMINE	88 U	86 U	85 U	92 U	82 UJ	85 U	84 U
2,2'-OXYBIS(1-CHLOROPROPANE)	88 U	86 U	85 U	92 U	82 UJ	85 UJ	84 U
2,3,4,6-TETRACHLOROPHENOL	88 U	86 U	85 U	92 U	82 UJ	85 U	84 U
2,4,5-TRICHLOROPHENOL	88 U	86 U	85 U	92 U	82 UJ	85 U	84 U
2,4,6-TRICHLOROPHENOL	88 UJ	86 UJ	85 UJ	92 U	82 UJ	85 U	84 U
2,4-DICHLOROPHENOL	88 U	86 U	85 U	92 U	82 UJ	85 U	84 U
2,4-DIMETHYLPHENOL	88 U	86 U	85 U	92 U	82 UJ	85 U	84 U
2,4-DINITROPHENOL	88 UJ	86 UJ	85 UJ	92 UJ	82 UR	85 UJ	84 U
2,6-DICHLOROPHENOL	88 U	86 U	85 U	92 U	82 UJ	85 U	84 U
2-ACETYLAMINOFLUORENE	88 U	86 U	85 U	92 U	82 UJ	85 U	84 U
2-CHLORONAPHTHALENE	88 U	86 U	85 U	92 U	82 UJ	85 U	84 U
2-CHLOROPHENOL	88 U	86 U	85 U	92 U	82 UJ	85 U	84 U
2-METHYLNAPHTHALENE	1.7 U	1.7 U	1.6 U	1.8 U	1.6 U	1.6 U	1.6 U
2-METHYLPHENOL	88 U	86 U	85 U	92 U	82 UJ	85 U	84 U
2-NAPHTHYLAMINE	88 U	86 U	85 U	92 U	82 UJ	85 U	84 U
2-NITROANILINE	88 U	86 U	85 U	92 U	82 UJ	85 U	84 U
2-NITROPHENOL	88 U	86 U	85 U	92 U	82 UJ	85 U	84 U
2-PICOLINE	88 U	86 U	85 U	92 U	82 UJ	85 U	84 U
3&4-METHYLPHENOL	88 U	86 U	85 U	92 U	82 UJ	85 U	84 U
3,3'-DICHLOROBENZIDINE	88 U	86 U	85 U	92 U	82 UR	85 U	84 U
3,3'-DIMETHYLBENZIDINE	88 UJ	86 UJ	85 UJ	92 UJ	82 UJ	85 UJ	84 U
3-METHYLCHOLANTHRENE	88 U	86 U	85 U	92 U	82 UJ	85 U	84 U
3-NITROANILINE	88 U	86 U	85 U	92 U	82 UJ	85 U	84 U
4,6-DINITRO-2-METHYLPHENOL	88 UJ	86 UJ	85 UJ	92 UJ	82 UJ	85 UJ	84 U
4-AMINOBIPHENYL	88 U	86 U	85 U	92 U	82 UJ	85 U	84 U
4-BROMOPHENYL PHENYL ETHER	88 U	86 U	85 U	92 U	82 UJ	85 U	84 U
4-CHLORO-3-METHYLPHENOL	88 U	86 U	85 U	92 U	82 UJ	85 U	84 U
4-CHLOROANILINE	88 U	86 U	85 U	92 U	82 UR	85 U	84 U
4-CHLOROPHENYL PHENYL ETHER	88 U	86 U	85 U	92 U	82 UJ	85 U	84 U
4-NITROANILINE	88 U	86 U	85 U	92 U	82 UJ	85 U	84 U

TABLE E-4

SUMMARY OF ANALYTIC RESULTS IN SHALLOW SEDIMENT
SWMU 3 - OLD JEEP TRAIL/LITLE SULPHUR CREEK
NSWC CRANE
CRANE, INDIANA

LOCATION	03SWSD17	03SWSD18	03SWSD19	03SWSD01	03SWSD02	03SWSD03	03SWSD04
NSAMPLE	03SD170006	03SD180006	03SD190006	03SD010006	03SD020006	03SD030006	03SD040006
SAMPLE	03SD170006	03SD180006	03SD190006	03SD010006	03SD020006	03SD030006	03SD040006
MATRIX	SD	SD	SD	BACKGROUND	BACKGROUND	BACKGROUND	BACKGROUND
SACODE	NORMAL	NORMAL	ORIG	NORMAL	NORMAL	NORMAL	NORMAL
DEPTH RANGE	0 - 0.5	0 - 0.5	0 - 0.5	0 - 0.5	0 - 0.5	0 - 0.5	0 - 0.5
QC_TYPE	NM	NM	NM	NM	NM	NM	NM
STATUS	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
SAMPLE DATE	- -	- -	- -	- -	- -	- -	- -
VALIDATED	Y	Y	Y	Y	Y	Y	Y
COLLECTION METHOD	GRAB	GRAB	GRAB	GRAB	GRAB	GRAB	GRAB
4-NITROPHENOL	88 UJ	86 UJ	85 UJ	92 U	82 UJ	85 U	84 U
4-NITROQUINOLINE-1-OXIDE	88 UJ	86 UJ	85 UJ	92 U	82 UJ	85 UJ	84 UR
5-NITRO-O-TOLUIDINE	88 U	86 U	85 U	92 U	82 UJ	85 U	84 U
7,12-DIMETHYLBENZ(A)ANTHRACENE	88 U	86 U	85 U	92 U	82 UJ	85 U	84 U
A,A-DIMETHYLPHENETHYLAMINE	88 U	86 U	85 U	92 U	82 UJ	85 U	84 U
ACENAPHTHENE	1.7 U	25	1.6 U	1.8 U	1.6 U	1.6 U	1.6 U
ACENAPHTHYLENE	1.7 U	1.7 U	1.6 U	1.8 U	1.6 U	1.6 U	1.6 U
ACETOPHENONE	88 U	86 U	85 U	92 U	82 UJ	85 U	84 U
ANILINE	88 U	86 U	85 U	92 U	82 UJ	85 U	84 U
ANTHRACENE	1.7 U	1.7 U	1.6 U	1.8 U	1.6 U	1.6 U	1.6 U
ARAMITE	88 U	86 U	85 U	92 U	82 UJ	85 U	84 U
BENZO(A)ANTHRACENE	1.7 U	1.7 U	1.6 U	1.8 U	1.6 U	1.6 U	1.6 U
BENZO(A)PYRENE	1.7 U	1.7 U	1.6 U	1.8 U	1.6 U	1.6 U	1.6 U
BENZO(B)FLUORANTHENE	1.7 U	1.7 U	1.6 U	1.8 U	1.6 U	1.6 U	1.6 U
BENZO(G,H,I)PERYLENE	1.7 U	1.7 U	1.6 U	1.8 U	1.6 U	1.6 U	1.6 U
BENZO(K)FLUORANTHENE	1.7 U	1.7 U	1.6 U	1.8 U	1.6 U	1.6 U	1.6 U
BENZYL ALCOHOL	88 U	86 U	85 U	92 U	82 UJ	85 U	84 U
BIS(2-CHLOROETHOXY)METHANE	88 U	86 U	85 U	92 U	82 UJ	85 U	84 U
BIS(2-CHLOROETHYL)ETHER	88 U	86 U	85 U	92 U	82 UJ	85 U	84 U
BIS(2-ETHYLHEXYL)PHTHALATE	88 U	150 BU	180 BU	92 U	110 BU	85 U	84 U
BUTYL BENZYL PHTHALATE	88 U	86 U	85 U	92 U	82 UJ	85 U	84 U
CHLOROBENZILATE	88 U	86 U	85 U	92 U	82 UJ	85 U	84 U
CHRYSENE	1.7 U	1.7 U	1.6 U	1.8 U	1.6 U	1.6 U	1.6 U
DI-N-BUTYL PHTHALATE	190 BU	86 U	85 U	92 U	82 UJ	85 U	84 U
DI-N-OCTYL PHTHALATE	88 U	86 U	85 UJ	92 U	82 UJ	85 U	84 U
DIALLATE	88 U	86 U	85 U	92 U	82 UJ	85 U	84 U
DIBENZO(A,H)ANTHRACENE	1.7 U	1.7 U	1.6 U	1.8 U	1.6 U	1.6 U	1.6 U
DIBENZOFURAN	88 U	86 U	85 U	92 U	82 UJ	85 U	84 U
DIETHYL PHTHALATE	88 U	86 U	85 U	92 U	82 UJ	85 U	84 U
DIMETHYL PHTHALATE	88 U	86 U	85 U	92 U	82 UJ	85 U	84 U
DIPHENYLAMINE	88 U	86 U	85 U	92 U	82 UJ	85 U	84 U
ETHYL METHANE SULFONATE	88 UJ	86 UJ	85 UJ	92 U	82 UJ	85 U	84 U
ETHYL PARATHION	88 U	86 U	85 U	92 U	82 UJ	85 U	84 U
FLUORANTHENE	1.7 U	1.7 U	1.6 U	1.8 U	1.6 U	1.6 U	1.6 U
FLUORENE	1.7 U	1.7 U	1.6 U	1.8 U	1.6 U	1.6 U	1.6 U
HEXACHLOROBENZENE	88 U	86 U	85 U	92 U	82 UJ	85 U	84 U
HEXACHLOROBUTADIENE	88 U	86 U	85 U	92 U	82 UJ	85 U	84 U
HEXACHLOROCYCLOPENTADIENE	88 U	86 U	85 U	92 U	82 UJ	85 U	84 U
HEXACHLOROETHANE	88 U	86 U	85 U	92 U	82 UJ	85 U	84 U
HEXACHLOROPROPENE	88 U	86 U	85 U	92 U	82 UJ	85 U	84 U
INDENO(1,2,3-CD)PYRENE	1.7 U	1.7 U	1.6 U	1.8 U	1.6 U	1.6 U	1.6 U
ISODRIN	88 U	86 U	85 U	92 U	82 UJ	85 U	84 U
ISOPHORONE	88 U	86 U	85 U	92 U	82 UJ	85 U	84 U
ISOSAFROLE	88 U	86 U	85 U	92 U	82 UJ	85 U	84 U
KEPONE	88 UR	86 UR	85 UR	92 UR	82 UR	85 UR	84 UR
METHAPYRILENE	88 U	86 U	85 U	92 U	82 UJ	85 UJ	84 U
METHYL METHANE SULFONATE	88 UJ	86 UJ	85 UJ	92 U	82 UJ	85 U	84 U

TABLE E-4

SUMMARY OF ANALYTIC RESULTS IN SHALLOW SEDIMENT
SWMU 3 - OLD JEEP TRAIL/LITLE SULPHUR CREEK
NSWC CRANE
CRANE, INDIANA

LOCATION	03SWSD17	03SWSD18	03SWSD19	03SWSD01	03SWSD02	03SWSD03	03SWSD04
NSAMPLE	03SD170006	03SD180006	03SD190006	03SD010006	03SD020006	03SD030006	03SD040006
SAMPLE	03SD170006	03SD180006	03SD190006	03SD010006	03SD020006	03SD030006	03SD040006
MATRIX	SD	SD	SD	BACKGROUND	BACKGROUND	BACKGROUND	BACKGROUND
SACODE	NORMAL	NORMAL	ORIG	NORMAL	NORMAL	NORMAL	NORMAL
DEPTH RANGE	0 - 0.5	0 - 0.5	0 - 0.5	0 - 0.5	0 - 0.5	0 - 0.5	0 - 0.5
QC_TYPE	NM	NM	NM	NM	NM	NM	NM
STATUS	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
SAMPLE DATE	- -	- -	- -	- -	- -	- -	- -
VALIDATED	Y	Y	Y	Y	Y	Y	Y
COLLECTION METHOD	GRAB	GRAB	GRAB	GRAB	GRAB	GRAB	GRAB
METHYL PARATHION	88 U	86 U	85 U	92 U	82 UJ	85 UJ	84 U
N-NITROSO-DI-N-BUTYLAMINE	88 U	86 U	85 U	92 U	82 UJ	85 U	84 U
N-NITROSO-DI-N-PROPYLAMINE	88 U	86 U	85 U	92 U	82 UJ	85 U	84 U
N-NITROSODIETHYLAMINE	88 UJ	86 U	85 U	92 U	82 UJ	85 U	84 U
N-NITROSODIMETHYLAMINE	88 U	86 U	85 UJ	92 U	82 UJ	85 U	84 U
N-NITROSOMETHYLETHYLAMINE	88 U	86 UJ	85 U	92 U	82 UJ	85 U	84 U
N-NITROSOMORPHOLINE	88 U	86 U	85 U	92 U	82 UJ	85 U	84 UJ
N-NITROSOPIPERIDINE	88 U	86 U	85 U	92 U	82 UJ	85 U	84 U
N-NITROSOPYRROLIDINE	88 U	86 U	85 U	92 U	82 UJ	85 U	84 U
NAPHTHALENE	1.7 U	1.7 U	1.6 U	1.8 U	1.6 U	1.6 U	1.6 U
O,O,O-TRIETHYL PHOSPHOROTHIOATE	88 U	86 U	85 U	92 U	82 UJ	85 U	84 U
O-TOLUIDINE	88 U	86 U	85 U	92 U	82 UJ	85 U	84 U
P-(DIMETHYLAMINO)AZOBENZENE	88 U	86 U	85 U	92 U	82 UJ	85 U	84 U
PENTACHLOROBENZENE	88 U	86 U	85 U	92 U	82 UJ	85 U	84 U
PENTACHLOROETHANE	88 U	86 U	85 U	92 U	82 UJ	85 U	84 U
PENTACHLORONITROBENZENE	88 UJ	86 UJ	85 UJ	92 U	82 UJ	85 U	84 U
PHENACETIN	88 U	86 U	85 U	92 U	82 UJ	85 U	84 U
PHENANTHRENE	1.7 U	1.7 U	1.6 U	1.8 U	1.6 U	1.6 U	1.6 U
PHENOL	88 U	86 U	85 U	92 U	82 UJ	85 U	84 U
PRONAMIDE	88 U	86 U	85 U	92 U	82 UJ	85 U	84 U
PYRENE	1.7 U	1.7 U	1.6 U	1.8 U	1.6 U	1.6 U	1.6 U
PYRIDINE	88 UJ	86 UJ	85 UJ	92 U	82 UJ	85 U	84 U
SAFROLE	88 U	86 U	85 U	92 U	82 UJ	85 U	84 U
Energetics (MG/KG)							
1,3,5-TRINITROBENZENE	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U
1,3-DINITROBENZENE	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U
2,4,6-TRINITROTOLUENE	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U
2,4-DINITROTOLUENE	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U
2,6-DINITROTOLUENE	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U
2-AMINO-4,6-DINITROTOLUENE	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U
2-NITROTOLUENE	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U
3-NITROTOLUENE	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U
4-AMINO-2,6-DINITROTOLUENE	0.25 U	0.25 U	0.26 U	0.25 U	0.25 U	0.25 U	0.25 U
4-NITROTOLUENE	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U
HMX	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U
NITROBENZENE	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U
NITROCELLULOSE	660 U	600 U	630 U	670 U	610 U	630 U	630 U
NITROGLYCERIN	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U
PETN	1.7 U	1.7 U	1.6 U	0.25 U	0.25 U	0.25 U	0.25 U
RDX	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U
TETRYL	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U
Pesticides/PCB's (UG/KG)							
4,4'-DDD	2.2 U	2.2 U	2.1 U	2.3 UJ	2.1 UJ	2.2 UJ	2.1 UJ
4,4'-DDE	2.2 U	2.2 U	2.1 U	2.3 U	2.1 U	2.2 U	2.1 U
4,4'-DDT	2.2 U	2.2 U	2.1 U	2.3 UJ	2.1 U	2.2 UJ	2.1 UJ
ALDRIN	0.97 R	1.2 U	1.1 U	1.2 U	1.1 U	1.1 U	1.1 U
ALPHA-BHC	1.2 U	1.2 U	1.1 U	1.2 U	1.1 U	1.1 UJ	1.1 UJ

TABLE E-4

SUMMARY OF ANALYTIC RESULTS IN SHALLOW SEDIMENT
SWMU 3 - OLD JEEP TRAIL/LITLE SULPHUR CREEK
NSWC CRANE
CRANE, INDIANA

LOCATION	03SWSD17	03SWSD18	03SWSD19	03SWSD01	03SWSD02	03SWSD03	03SWSD04
NSAMPLE	03SD170006	03SD180006	03SD190006	03SD010006	03SD020006	03SD030006	03SD040006
SAMPLE	03SD170006	03SD180006	03SD190006	03SD010006	03SD020006	03SD030006	03SD040006
MATRIX	SD	SD	SD	BACKGROUND	BACKGROUND	BACKGROUND	BACKGROUND
SACODE	NORMAL	NORMAL	ORIG	NORMAL	NORMAL	NORMAL	NORMAL
DEPTH RANGE	0 - 0.5	0 - 0.5	0 - 0.5	0 - 0.5	0 - 0.5	0 - 0.5	0 - 0.5
QC_TYPE	NM	NM	NM	NM	NM	NM	NM
STATUS	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
SAMPLE DATE	- -	- -	- -	- -	- -	- -	- -
VALIDATED	Y	Y	Y	Y	Y	Y	Y
COLLECTION METHOD	GRAB	GRAB	GRAB	GRAB	GRAB	GRAB	GRAB
ALPHA-CHLORDANE	1.2 U	1.2 U	1.1 U	1.2 U	1.1 U	1.1 U	1.1 U
AROCLOR-1016	22 U	22 U	21 U	23 U	21 U	22 U	21 U
AROCLOR-1221	45 U	44 U	43 U	47 U	41 U	43 U	43 U
AROCLOR-1232	22 U	22 U	21 U	23 U	21 U	22 U	21 U
AROCLOR-1242	22 U	22 U	21 U	23 U	21 U	22 U	21 U
AROCLOR-1248	22 U	22 U	21 U	23 U	21 U	22 U	21 U
AROCLOR-1254	22 U	22 U	21 U	23 U	21 U	22 U	21 U
AROCLOR-1260	22 U	22 U	21 U	23 U	21 U	22 U	21 U
BETA-BHC	1.2 U	1.2 U	1.1 U	1.2 U	1.1 U	1.1 U	1.1 U
DELTA-BHC	1.2 U	1.2 U	1.1 U	1.2 U	1.1 U	1.1 U	1.1 U
DIELDRIN	2.2 U	2.2 U	2.1 U	2.3 UJ	2.1 UJ	2.2 UJ	2.1 UJ
ENDOSULFAN I	1.2 U	1.2 U	1.1 U	1.2 UJ	1.1 U	1.1 UJ	1.1 UJ
ENDOSULFAN II	2.2 U	2.2 U	2.1 U	2.3 U	2.1 U	2.2 U	2.1 U
ENDOSULFAN SULFATE	2.2 U	2.2 U	2.1 U	2.3 U	2.1 U	2.2 U	2.1 U
ENDRIN	2.2 U	2.2 U	2.1 U	2.3 UJ	2.1 UJ	2.2 UJ	2.1 UJ
ENDRIN ALDEHYDE	2.2 U	2.2 U	2.1 U	2.3 U	2.1 U	2.2 U	2.1 U
ENDRIN KETONE	2.2 UJ	2.2 U	2.1 U	2.3 U	2.1 U	2.2 U	2.1 U
GAMMA-BHC (LINDANE)	1.2 U	1.2 U	1.1 U	1.2 UJ	1.1 U	1.1 UJ	1.1 UJ
GAMMA-CHLORDANE	1.2 U	1.2 U	1.1 U	1.2 U	1.1 U	1.1 U	1.1 U
HEPTACHLOR	1.2 U	1.2 U	1.1 U	1.2 UJ	1.1 U	1.1 UJ	1.1 UJ
HEPTACHLOR EPOXIDE	1.2 U	1.2 U	1.1 U	1.2 U	1.1 U	1.1 U	1.1 U
METHOXYCHLOR	12 U	17 J	11 U	12 U	11 U	11 UJ	11 UJ
TOXAPHENE	120 U	120 U	110 U	120 U	110 U	110 U	110 U
Herbicides (UG/KG)							
2,4,5-T	1.8 U	1.8 U	4.8 J	1.9 UJ	1.7 U	1.8 U	1.7 U
2,4,5-TP (SILVEX)	1.8 U	4.5 J	1.8 U	1.9 UJ	1.7 U	1.8 U	1.7 U
2,4-D	5.1 R	1.8 U	4.4 R	10 J	23 J	10 J	4.4 R
DINOSEB	1.8 U	1.8 U	1.8 UJ	1.9 UJ	8.1 J	1.8 U	1.7 U
HEXACHLOROPHENE	8.8 U	8.6 U	8.5 U	9.2 UJ	2.1 J	8.5 U	1.7 J
PENTACHLOROPHENOL	0.45 U	0.44 U	0.43 U	2.3 J	5	1.4 J	0.43 U
Inorganics (MG/KG)							
ALUMINUM	4590 J	10900 J	6190 J	9570 J	6650	5480	9720
ANTIMONY	0.66 U	1.2 U	1.1 U	0.49 U	0.65 U	0.68 U	0.43 U
ARSENIC	4.9	11.6	8.6	5.6	42.4	7.9	12.9
BARIUM	124 J	166 J	114 J	57.8 J	65.8 J	45.4 J	37.3 J
BERYLLIUM	0.48	1.1	0.09	0.95	1.7	0.68	1.5
CADMIUM	0.37	0.87	0.67	0.79 J	0.54 J	0.32 J	0.31 U
CALCIUM	833 J	915 J	941 J	1940	464 J	277 J	959 J
CHROMIUM	9.5 J	27.6 J	25.3 J	27.1 J	42.1 J	15.1 J	18.3 J
COBALT	9.4 J	17.9 J	16 J	11.9	29.6	16	19.4
COPPER	9.2	29.6	19.7	7.7 J	12	8.7	25.3
IRON	14600 J	40900 J	37300 J	33500 J	52400 J	20200 J	42900 J
LEAD	20.1 J	53.5 J	33.8 J	13 J	32.9	20.2	23.6
MAGNESIUM	489 J	602 J	502 J	2320 J	511 J	628 J	2440 J
MANGANESE	653 J	1340 J	1040 J	342 J	1680 J	952 J	384 J
MERCURY	0.02	0.04	0.03	0.03	0.02	0.05	0.07
NICKEL	10.3 J	21.5 J	19.6 J	27.6	37.1 J	13.9 J	70.7 J

TABLE E-4

SUMMARY OF ANALYTIC RESULTS IN SHALLOW SEDIMENT
SWMU 3 - OLD JEEP TRAIL/LITLE SULPHUR CREEK
NSWC CRANE
CRANE, INDIANA

LOCATION	03SWSD17	03SWSD18	03SWSD19	03SWSD01	03SWSD02	03SWSD03	03SWSD04
NSAMPLE	03SD170006	03SD180006	03SD190006	03SD010006	03SD020006	03SD030006	03SD040006
SAMPLE	03SD170006	03SD180006	03SD190006	03SD010006	03SD020006	03SD030006	03SD040006
MATRIX	SD	SD	SD	BACKGROUND	BACKGROUND	BACKGROUND	BACKGROUND
SACODE	NORMAL	NORMAL	ORIG	NORMAL	NORMAL	NORMAL	NORMAL
DEPTH RANGE	0 - 0.5	0 - 0.5	0 - 0.5	0 - 0.5	0 - 0.5	0 - 0.5	0 - 0.5
QC_TYPE	NM	NM	NM	NM	NM	NM	NM
STATUS	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
SAMPLE DATE	- -	- -	- -	- -	- -	- -	- -
VALIDATED	Y	Y	Y	Y	Y	Y	Y
COLLECTION METHOD	GRAB	GRAB	GRAB	GRAB	GRAB	GRAB	GRAB
POTASSIUM	342 J	323 J	307 J	2230 J	330 J	369 J	1140 J
SELENIUM	0.23	0.19 U	0.18 U	0.22 U	0.6 U	0.64 U	0.61 U
SILVER	0.06 U	0.15 U	0.5 J	0.05 U	0.04 U	0.05 U	0.04
SODIUM	12.2 U	16 U	11.4 U	84.1 J	3.5 U	7.2 U	13.5 U
THALLIUM	0.06	0.08	0.07	0.11	0.11	0.09	0.08
TIN	1.1 U	3 U	1.1 U	0.56 U	0.28 U	0.31 U	0.44 U
VANADIUM	12.2 J	27.8 J	23.2 J	19.1	34.5	18.8	16.6
ZINC	41.1 J	133 J	91.1 J	33.1 J	62.4 J	36.2 J	176 J
Miscellaneous Parameters							
NITRATE (MG/KG)	1.3 U	3.8	2.2	4.4	3.4	3.8	2.9
NITRITE (MG/KG)	3.5 J	2.5 UJ	2.5 UJ	27 UJ	2.3 UR	2.5 UR	160 UR
NITRITE/NITRATE (MG/KG)	3.9	3.8 J	2.2 J	4.4	3.4	3.8	2.9
PERCENT MOISTURE (%)	22.4	25.9	21.9	18	18.4	18	19.3
PERCHLORATE (UG/KG)	26 U	27 U	28 U	24 U	25 U	24 U	25 U
PH (S.U.)	7.5 J	7.2 J	7.6 J	6.6 J	5.7 J	5.3 J	6 J
TOTAL ORGANIC CARBON (MG/KG)	7100	6700	4600	3300 J	7200	10000	7900

TABLE E-5

SUMMARY OF ANALYTIC RESULTS IN DEEP SEDIMENT
SWMU 3 - OLD JEEP TRAIL/LITTLE SULPHUR CREEK
NSWC CRANE
CRANE, INDIANA

LOCATION	03SD05	03SWSD06	03SD07	03SWSD08	03SWSD09	03SD10	03SWSD11	03SD12	03SWSD13	03SWSD14	03SWSD15	03SWSD16
NSAMPLE	03SD050612	03SD060612	03SD070612	03SD080612	03SD090612	03SD100612	03SD110612	03SD120612	03SD130612	03SD140612	03SD150612	03SD160612
SAMPLE	03SD050612	03SD060612	03SD070612	03SD080612	03SD090612	03SD100612	03SD110612	03SD120612	03SD130612	03SD140612	03SD150612	03SD160612
MATRIX	SD	SD	SD	SD	SD	SD	SD	SD	SD	SD	SD	SD
SACODE	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
DEPTH RANGE	0.5 - 1	0.5 - 1	0.5 - 1	0.5 - 1	0.5 - 1	0.5 - 1	0.5 - 1	0.5 - 1	0.5 - 1	0.5 - 1	0.5 - 1	0.5 - 1
QC_TYPE	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
STATUS	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
SAMPLE DATE	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
VALIDATED	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
COLLECTION METHOD	GRAB	GRAB	GRAB	GRAB	GRAB	GRAB	GRAB	GRAB	GRAB	GRAB	GRAB	GRAB
Volatile Organics (UG/KG)												
1,1,1,2-TETRACHLOROETHANE	2.8 U	1.1 U	0.96 U	4.3 U	1 U	2.7 U	3 U	2.7 U	1.2 U	3.3 U	1.3 U	1.2 U
1,1,1-TRICHLOROETHANE	2.8 U	1.1 U	2 J	4.3 U	1 J	2.7 U	3 U	2.7 U	2 J	3.3 U	1.3 U	2 J
1,1,2,2-TETRACHLOROETHANE	2.8 U	1.1 U	0.96 U	4.3 U	1 U	2.7 U	3 U	2.7 U	1.2 U	3.3 U	1.3 U	1.2 U
1,1,2-TRICHLOROETHANE	2.8 U	1.1 U	0.96 U	4.3 U	1 U	2.7 U	3 U	2.7 U	1.2 U	3.3 U	1.3 U	1.2 U
1,1-DICHLOROETHANE	2.8 U	1.1 U	0.96 U	4.3 U	1 U	2.7 U	3 U	2.7 U	1.2 U	3.3 U	1.3 U	1.2 U
1,1-DICHLOROETHENE	2.8 U	1.1 U	0.96 U	4.3 U	1 U	2.7 U	3 U	2.7 U	1.2 U	3.3 U	1.3 U	1.2 U
1,2,3-TRICHLOROPROPANE	2.8 U	1.1 U	0.96 U	4.3 U	1 U	2.7 U	3 U	2.7 U	1.2 U	3.3 U	1.3 U	1.2 U
1,2-DIBROMO-3-CHLOROPROPANE	2.8 U	1.1 U	0.96 U	4.3 U	1 U	2.7 U	3 U	2.7 U	1.2 U	3.3 U	1.3 U	1.2 U
1,2-DIBROMOETHANE	2.8 U	1.1 U	0.96 U	4.3 U	1 U	2.7 U	3 U	2.7 U	1.2 U	3.3 U	1.3 U	1.2 U
1,2-DICHLOROETHANE	2.8 U	1.1 U	0.96 U	4.3 U	1 U	2.7 U	3 U	2.7 U	1.2 U	3.3 U	1.3 U	1.2 U
1,2-DICHLOROPROPANE	2.8 U	1.1 U	0.96 U	4.3 U	1 U	2.7 U	3 U	2.7 U	1.2 U	3.3 U	1.3 U	1.2 U
1,4-DIOXANE	125 U	100 U	115 U	170 U	120 U	110 U	100 U	115 U	115 U	150 U	125 U	120 U
2-BUTANONE	15 J	1.1 UJ	0.96 UJ	4.3 U	1 UJ	2.7 U	3 U	2.7 UJ	1.2 U	3.3 UJ	1.3 U	1.2 U
2-HEXANONE	2.8 UJ	1.1 UJ	0.96 UJ	4.3 UJ	1 UJ	2.7 UJ	3 UJ	2.7 UJ	1.2 U	3.3 UJ	1.3 U	1.2 U
3-CHLOROPROPENE	2.8 U	1.1 U	0.96 U	4.3 U	1 U	2.7 U	3 U	2.7 U	1.2 U	3.3 U	1.3 U	1.2 U
4-METHYL-2-PENTANONE	2.8 U	1.1 U	0.96 UJ	4.3 U	1 UJ	2.7 U	3 U	2.7 UJ	1.2 U	3.3 UJ	1.3 U	1.2 UJ
ACETONE	86 J	29 J	45 BJ	4.3 UJ	14 BU	39 BU	38 BU	2.7 U	6 U	72 BU	1.3 U	1.2 U
ACETONITRILE	50 U	40.5 U	45.5 U	65 U	48.5 U	44 U	39 U	46.5 U	45 U	60 U	50 U	48.5 U
ACROLEIN	2.8 UR	1.1 UR	0.96 UR	4.3 UR	1 UR	2.7 UR	3 UR	2.7 UR	1.2 UR	3.3 UR	1.3 UR	1.2 UR
ACRYLONITRILE	2.8 UR	1.1 UR	0.96 UR	4.3 UR	1 UR	2.7 UR	3 UR	2.7 UR	1.2 UR	3.3 UR	1.3 UR	1.2 UR
BENZENE	2.8 U	1.1 U	0.96 U	4.3 U	1 U	2.7 U	3 U	2.7 U	1.2 U	3.3 U	1.3 U	1.2 U
BROMODICHLOROMETHANE	2.8 U	1.1 U	0.96 U	4.3 U	1 U	2.7 U	3 U	2.7 U	1.2 U	3.3 U	1.3 U	1.2 U
BROMOFORM	2.8 U	1.1 U	0.96 U	4.3 U	1 U	2.7 U	3 U	2.7 U	1.2 U	3.3 U	1.3 U	1.2 U
BROMOMETHANE	2.8 U	1.1 UJ	0.96 U	4.3 UJ	1 UJ	2.7 UJ	3 UJ	2.7 U	1.2 UJ	3.3 U	1.3 UJ	1.2 UJ
CARBON DISULFIDE	2.8 U	1.1 J	0.96 UJ	4.3 UJ	1 UJ	2.7 UJ	3 UJ	2.7 UJ	1.2 UJ	3.3 UJ	1.3 UJ	1 J
CARBON TETRACHLORIDE	2.8 U	1.1 U	0.96 U	4.3 U	1 U	2.7 U	3 U	2.7 U	1.2 U	3.3 U	1.3 U	1.2 U
CHLOROBENZENE	2.8 U	1.1 U	0.96 U	4.3 U	1 U	2.7 U	3 U	2.7 U	1.2 U	3.3 U	1.3 U	1.2 U
CHLORODIBROMOMETHANE	2.8 U	1.1 U	0.96 U	4.3 U	1 U	2.7 U	3 U	2.7 U	1.2 U	3.3 U	1.3 U	1.2 U
CHLOROETHANE	2.8 U	1.1 U	0.96 U	4.3 U	1 U	2.7 U	3 U	2.7 U	1.2 UJ	3.3 U	1.3 UJ	1.2 U
CHLOROFORM	2.8 U	1.1 U	0.96 U	4.3 U	1 U	2.7 U	3 U	2.7 U	1.2 U	3.3 U	1.3 U	1.2 U
CHLOROMETHANE	2.8 U	1.1 U	0.96 U	4.3 U	1 U	2.7 U	3 U	2.7 U	1.2 U	3.3 U	1.3 U	1.2 U
CHLOROPRENE	2.8 U	1.1 U	0.96 U	4.3 U	1 U	2.7 U	3 U	2.7 U	1.2 U	3.3 U	1.3 U	1.2 U
CIS-1,2-DICHLOROETHENE	2.8 U	1.1 U	0.96 U	4.3 U	1 U	2.7 U	3 U	2.7 U	1.2 U	3.3 U	1.3 U	1.2 U
CIS-1,3-DICHLOROPROPENE	2.8 U	1.1 U	0.96 U	4.3 U	1 UJ	2.7 U	3 U	2.7 U	1.2 U	3.3 U	1.3 U	1.2 U
DIBROMOMETHANE	2.8 U	1.1 U	0.96 U	4.3 U	1 U	2.7 U	3 U	2.7 U	1.2 U	3.3 U	1.3 U	1.2 U
DICHLORODIFLUOROMETHANE	2.8 UJ	1.1 UJ	0.96 UJ	4.3 UJ	1 UJ	2.7 UJ	3 UJ	2.7 UJ	1.2 UJ	3.3 UJ	1.3 UJ	1.2 UJ
ETHYL METHACRYLATE	2.8 U	1.1 U	0.96 U	4.3 U	1 U	2.7 U	3 U	2.7 U	1.2 U	3.3 U	1.3 U	1.2 U
ETHYLBENZENE	2.8 U	1.1 U	0.96 U	4.3 U	1 U	2.7 U	3 U	2.7 U	1.2 U	3.3 U	1.3 U	1.2 U
ISOBUTANOL	50 U	40.5 U	45.5 U	65 U	48.5 U	44 U	39 U	46.5 U	45 U	60 U	50 U	48.5 U
METHACRYLONITRILE	2.8 U	1.1 U	0.96 U	4.3 U	1 U	2.7 U	3 U	2.7 U	1.2 U	3.3 U	1.3 U	1.2 U
METHYL IODIDE	2.8 UJ	1.1 UJ	0.96 UJ	4.3 UJ	1 UJ	2.7 UJ	3 UJ	2.7 UJ	1.2 UJ	3.3 UJ	1.3 UJ	1.2 UJ
METHYL METHACRYLATE	2.8 U	1.1 U	0.96 U	4.3 U	1 U	2.7 U	3 U	2.7 U	1.2 U	3.3 U	1.3 U	1.2 U
METHYLENE CHLORIDE	4.7 U	1.8 U	4 BU	7 BU	5 BU	4 BU	5 BU	14 BU	2 U	9 BU	3 U	3 BU
PROPIONITRILE	50 U	40.5 U	45.5 U	65 U	48.5 U	44 U	39 U	46.5 U	45 U	60 U	50 U	48.5 U
STYRENE	2.8 U	1.1 U	0.96 U	4.3 U	1 U	2.7 U	3 U	2.7 U	1.2 U	3.3 U	1.3 U	1.2 U
TETRACHLOROETHENE	2.8 U	1.1 U	0.96 U	4.3 U	1 UJ	2.7 U	3 U	2.7 U	1.2 U	3.3 U	1.3 U	1.2 U
TOLUENE	2.8 U	1.1 U	0.96 U	4.3 U	1 U	2.7 U	3 U	2.7 U	1.2 U	3.3 U	1.3 U	1.2 U
TOTAL XYLENES	2.8 U	1.1 U	0.96 U	4.3 U	1 U	2.7 U	3 U	2.7 U	1.2 U	3.3 U	1.3 U	1.2 U

TABLE E-5

SUMMARY OF ANALYTIC RESULTS IN DEEP SEDIMENT
SWMU 3 - OLD JEEP TRAIL/LITTLE SULPHUR CREEK
NSWC CRANE
CRANE, INDIANA

LOCATION	03SD05	03SWSD06	03SD07	03SWSD08	03SWSD09	03SD10	03SWSD11	03SD12	03SWSD13	03SWSD14	03SWSD15	03SWSD16
NSAMPLE	03SD050612	03SD060612	03SD070612	03SD080612	03SD090612	03SD100612	03SD110612	03SD120612	03SD130612	03SD140612	03SD150612	03SD160612
SAMPLE	03SD050612	03SD060612	03SD070612	03SD080612	03SD090612	03SD100612	03SD110612	03SD120612	03SD130612	03SD140612	03SD150612	03SD160612
MATRIX	SD	SD	SD	SD	SD	SD	SD	SD	SD	SD	SD	SD
SACODE	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
DEPTH RANGE	0.5 - 1	0.5 - 1	0.5 - 1	0.5 - 1	0.5 - 1	0.5 - 1	0.5 - 1	0.5 - 1	0.5 - 1	0.5 - 1	0.5 - 1	0.5 - 1
QC_TYPE	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
STATUS	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
SAMPLE DATE	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
VALIDATED	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
COLLECTION METHOD	GRAB	GRAB	GRAB	GRAB	GRAB	GRAB	GRAB	GRAB	GRAB	GRAB	GRAB	GRAB
TRANS-1,2-DICHLOROETHENE	2.8 U	1.1 U	0.96 U	4.3 U	1 U	2.7 U	3 U	2.7 U	1.2 U	3.3 U	1.3 U	1.2 U
TRANS-1,3-DICHLOROPROPENE	2.8 U	1.1 U	0.96 U	4.3 U	1 U	2.7 U	3 U	2.7 U	1.2 U	3.3 U	1.3 U	1.2 U
TRANS-1,4-DICHLORO-2-BUTENE	2.8 U	1.1 U	0.96 U	4.3 U	1 U	2.7 U	3 U	2.7 U	1.2 UJ	3.3 U	1.3 UJ	1.2 U
TRICHLOROETHENE	2.8 U	1.1 U	0.96 U	4.3 U	1 U	2.7 U	3 U	2.7 U	1.2 U	3.3 U	1.3 U	1.2 U
TRICHLOROFLUOROMETHANE	2.8 U	1.1 U	0.96 U	4.3 U	2 J	2.7 U	3 U	2.7 U	1.2 U	3.3 U	1.3 U	1.2 U
VINYL ACETATE	2.8 UJ	1.1 UJ	0.96 UJ	4.3 U	1 UJ	2.7 U	3 U	2.7 U	1.2 UJ	3.3 U	1.3 U	1.2 U
VINYL CHLORIDE	2.8 U	1.1 U	0.96 U	4.3 U	1 U	2.7 U	3 U	2.7 U	1.2 U	3.3 U	1.3 U	1.2 U
Semivolatile Organics (UG/KG)												
1,2,4,5-TETRACHLOROBENZENE	98 U	80 U	73 U	110 U	78 U	80 U	76 U	81 U	74 U	89 U	89 U	83 U
1,2,4-TRICHLOROBENZENE	98 U	80 U	73 U	110 U	78 U	80 U	76 U	81 U	74 U	89 U	89 U	83 U
1,2-DICHLOROBENZENE	98 U	80 U	73 U	110 U	78 U	80 U	76 U	81 U	74 U	89 U	89 U	83 U
1,3-DICHLOROBENZENE	98 U	80 U	73 U	110 U	78 U	80 U	76 U	81 U	74 U	89 U	89 U	83 U
1,4-DICHLOROBENZENE	98 U	80 U	73 U	110 U	78 U	80 U	76 U	81 U	74 U	89 U	89 U	83 U
1,4-NAPHTHOQUINONE	98 U	80 U	73 U	110 U	78 U	80 U	76 U	81 U	74 U	89 U	89 U	83 U
1,4-PHENYLENEDIAMINE	98 UR	80 UR	73 UR	110 UR	78 UR	80 UR	76 UR	81 UR	74 UR	89 UR	89 UR	83 UR
1-NAPHTHYLAMINE	98 U	80 U	73 U	110 U	78 U	80 U	76 U	81 U	74 UJ	89 U	89 U	83 U
2,2'-OXYBIS(1-CHLOROPROPANE)	98 U	80 U	73 UJ	110 UJ	78 UJ	80 UJ	76 UJ	81 U	74 UJ	89 U	89 U	83 U
2,3,4,6-TETRACHLOROPHENOL	98 U	80 U	73 U	110 U	78 U	80 U	76 U	81 U	74 UJ	89 U	89 U	83 U
2,4,5-TRICHLOROPHENOL	98 U	80 U	73 U	110 U	78 U	80 U	76 U	81 U	74 U	89 U	89 U	83 U
2,4,6-TRICHLOROPHENOL	98 U	80 U	73 U	110 U	78 U	80 U	76 U	81 U	74 U	89 U	89 U	83 U
2,4-DICHLOROPHENOL	98 U	80 U	73 U	110 U	78 U	80 U	76 U	81 U	74 U	89 U	89 U	83 U
2,4-DIMETHYLPHENOL	98 U	80 U	73 U	110 U	78 U	80 U	76 U	81 U	74 U	89 U	89 U	83 U
2,4-DINITROPHENOL	98 UJ	80 UJ	73 UJ	110 UJ	78 UJ	80 UJ	76 UJ	81 UJ	74 UJ	89 UJ	89 UJ	83 UJ
2,6-DICHLOROPHENOL	98 U	80 U	73 U	110 U	78 U	80 U	76 U	81 U	74 U	89 U	89 U	83 U
2-ACETYLAMINOFLUORENE	98 U	80 U	73 U	110 U	78 U	80 U	76 U	81 U	74 U	89 U	89 U	83 U
2-CHLORONAPHTHALENE	98 U	80 U	73 U	110 U	78 U	80 U	76 U	81 U	74 U	89 U	89 U	83 U
2-CHLOROPHENOL	98 U	80 U	73 U	110 U	78 U	80 U	76 U	81 U	74 U	89 U	89 U	83 U
2-METHYLNAPHTHALENE	1.9 U	1.5 U	1.4 U	2.1 U	1.5 U	1.6 U	1.5 U	1.6 U	1.4 U	1.7 U	1.7 U	1.6 U
2-METHYLPHENOL	98 U	80 U	73 U	110 U	78 U	80 U	76 U	81 U	74 U	89 U	89 U	83 U
2-NAPHTHYLAMINE	98 U	80 U	73 U	110 U	78 U	80 U	76 U	81 U	74 U	89 U	89 U	83 U
2-NITROANILINE	98 U	80 U	73 U	110 U	78 U	80 U	76 U	81 U	74 U	89 U	89 U	83 U
2-NITROPHENOL	98 U	80 U	73 U	110 U	78 U	80 U	76 U	81 U	74 U	89 U	89 UJ	83 U
2-PICOLINE	98 U	80 U	73 U	110 U	78 U	80 U	76 U	81 U	74 U	89 UJ	89 U	83 UJ
3&4-METHYLPHENOL	98 U	80 U	73 U	110 U	78 U	80 U	76 U	81 U	74 U	89 U	89 U	83 U
3,3'-DICHLOROBENZIDINE	98 U	80 U	73 U	110 U	78 U	80 U	76 U	81 U	74 U	89 U	89 U	83 U
3,3'-DIMETHYLBENZIDINE	98 UJ	80 UJ	73 UJ	110 UJ	78 UJ	80 UJ	76 UJ	81 UJ	74 UJ	89 UJ	89 UJ	83 UJ
3-METHYLCHOLANTHRENE	98 U	80 U	73 U	110 U	78 U	80 U	76 U	81 U	74 U	89 U	89 U	83 U
3-NITROANILINE	98 U	80 U	73 U	110 U	78 U	80 U	76 U	81 U	74 U	89 U	89 U	83 U
4,6-DINITRO-2-METHYLPHENOL	98 UJ	80 UJ	73 UJ	110 UJ	78 UJ	80 UJ	76 UJ	81 UJ	74 UJ	89 UJ	89 UJ	83 UJ
4-AMINOBIPHENYL	98 U	80 U	73 U	110 U	78 U	80 U	76 U	81 U	74 U	89 U	89 U	83 U
4-BROMOPHENYL PHENYL ETHER	98 U	80 U	73 U	110 U	78 U	80 U	76 U	81 U	74 U	89 U	89 U	83 U
4-CHLORO-3-METHYLPHENOL	98 U	80 U	73 U	110 U	78 U	80 U	76 U	81 U	74 U	89 U	89 U	83 U
4-CHLOROANILINE	98 U	80 U	73 U	110 U	78 U	80 U	76 U	81 U	74 U	89 U	89 U	83 U
4-CHLOROPHENYL PHENYL ETHER	98 U	80 U	73 U	110 U	78 U	80 U	76 U	81 U	74 U	89 U	89 U	83 U
4-NITROANILINE	98 U	80 U	73 U	110 U	78 U	80 U	76 U	81 U	74 U	89 U	89 U	83 U
4-NITROPHENOL	98 U	80 U	73 U	110 U	78 U	80 U	76 U	81 U	74 U	89 U	89 U	83 U
4-NITROQUINOLINE-1-OXIDE	98 U	80 U	73 UJ	110 UJ	78 UJ	80 UJ	76 UJ	81 UJ	74 UJ	89 UJ	89 UJ	83 UJ
5-NITRO-O-TOLUIDINE	98 U	80 U	73 U	110 U	78 U	80 U	76 U	81 U	74 U	89 U	89 U	83 U
7,12-DIMETHYLBENZ(A)ANTHRACENE	98 U	80 U	73 U	110 U	78 U	80 U	76 U	81 U	74 U	89 U	89 U	83 U

TABLE E-5

SUMMARY OF ANALYTIC RESULTS IN DEEP SEDIMENT
SWMU 3 - OLD JEEP TRAIL/LITTLE SULPHUR CREEK
NSWC CRANE
CRANE, INDIANA

LOCATION	03SD05	03SWSD06	03SD07	03SWSD08	03SWSD09	03SD10	03SWSD11	03SD12	03SWSD13	03SWSD14	03SWSD15	03SWSD16
NSAMPLE	03SD050612	03SD060612	03SD070612	03SD080612	03SD090612	03SD100612	03SD110612	03SD120612	03SD130612	03SD140612	03SD150612	03SD160612
SAMPLE	03SD050612	03SD060612	03SD070612	03SD080612	03SD090612	03SD100612	03SD110612	03SD120612	03SD130612	03SD140612	03SD150612	03SD160612
MATRIX	SD	SD	SD	SD	SD	SD	SD	SD	SD	SD	SD	SD
SACODE	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
DEPTH RANGE	0.5 - 1	0.5 - 1	0.5 - 1	0.5 - 1	0.5 - 1	0.5 - 1	0.5 - 1	0.5 - 1	0.5 - 1	0.5 - 1	0.5 - 1	0.5 - 1
QC_TYPE	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
STATUS	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
SAMPLE DATE	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
VALIDATED	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
COLLECTION METHOD	GRAB	GRAB	GRAB	GRAB	GRAB	GRAB	GRAB	GRAB	GRAB	GRAB	GRAB	GRAB
A,A-DIMETHYLPHENETHYLAMINE	98 U	80 U	73 U	110 U	78 U	80 U	76 U	81 U	74 U	89 U	89 U	83 U
ACENAPHTHENE	1.9 U	1.5 U	1.4 U	2.1 U	1.5 U	1.6 U	1.5 U	1.6 U	1.4 U	1.7 U	1.7 U	1.6 U
ACENAPHTHYLENE	1.9 U	1.5 U	1.4 U	2.1 U	1.5 U	1.6 U	1.5 U	1.6 U	1.4 U	1.7 U	1.7 U	1.6 U
ACETOPHENONE	98 U	80 U	73 U	110 U	78 U	80 U	76 U	81 U	74 U	89 U	89 U	83 U
ANILINE	98 U	80 U	73 U	110 U	78 U	80 U	76 U	81 U	74 U	89 U	89 U	83 U
ANTHRACENE	1.9 U	1.5 U	1.4 U	2.1 U	1.5 U	1.6 U	1.5 U	1.6 U	1.4 U	1.7 U	1.7 U	1.6 U
ARAMITE	98 U	80 U	73 U	110 U	78 U	80 U	76 U	81 U	74 U	89 U	89 UJ	83 U
BENZO(A)ANTHRACENE	1.9 U	1.6 U	1.4 U	2.1 U	1.5 U	1.6 U	1.5 U	1.6 U	1.4 U	1.7 U	1.7 U	11
BENZO(A)PYRENE	1.9 U	1.5 U	1.4 U	2.1 U	1.5 U	1.6 U	1.5 U	1.6 U	1.4 U	1.7 U	1.7 U	1.6 U
BENZO(B)FLUORANTHENE	1.9 U	1.5 U	1.4 U	2.1 U	1.5 U	1.6 U	1.5 U	1.6 U	1.4 U	1.7 U	1.7 U	15
BENZO(G,H,I)PERYLENE	1.9 U	1.5 U	1.4 U	2.1 U	1.5 U	1.6 U	1.5 U	1.6 U	1.4 U	1.7 U	1.7 U	1.6 U
BENZO(K)FLUORANTHENE	1.9 U	1.5 U	1.4 U	2.1 U	1.5 U	1.6 U	1.5 U	1.6 U	1.4 U	1.7 U	1.7 U	1.6 U
BENZYL ALCOHOL	98 U	80 U	73 U	110 U	78 U	80 U	76 U	81 U	74 U	89 U	89 U	83 U
BIS(2-CHLOROETHOXY)METHANE	98 U	80 U	73 U	110 U	78 U	80 U	76 U	81 U	74 U	89 U	89 U	83 U
BIS(2-CHLOROETHYL)ETHER	98 U	80 U	73 U	110 U	78 U	80 U	76 U	81 U	74 U	89 U	89 U	83 U
BIS(2-ETHYLHEXYL)PHTHALATE	98 U	80 U	73 U	120 BU	78 U	80 U	76 U	81 U	74 U	89 U	89 U	150 BU
BUTYL BENZYL PHTHALATE	98 U	80 U	73 U	110 U	78 U	80 U	76 U	81 U	74 U	89 U	89 U	83 U
CHLOROBENZILATE	98 U	80 U	73 U	110 U	78 U	80 U	76 U	81 U	74 U	89 U	89 U	83 U
CHRYSENE	1.9 U	1.5 U	1.4 U	2.1 U	1.5 U	1.6 U	1.5 U	1.6 U	1.4 U	1.7 U	1.7 U	10
DI-N-BUTYL PHTHALATE	98 U	330 BU	73 U	110 U	78 U	110 J	880	81 U	74 U	89 U	89 U	83 U
DI-N-OCTYL PHTHALATE	98 U	80 U	73 U	110 U	78 U	80 U	76 U	81 U	74 U	89 U	89 U	83 U
DIALLATE	98 U	80 U	73 U	110 U	78 U	80 U	76 U	81 U	74 U	89 U	89 U	83 U
DIBENZO(A,H)ANTHRACENE	1.9 U	1.6 U	1.4 U	2.1 U	1.5 U	1.6 U	1.5 U	1.6 U	1.4 U	1.7 U	1.7 U	1.6 U
DIBENZOFURAN	98 U	80 U	73 U	110 U	78 U	80 U	76 U	81 U	74 U	89 U	89 U	83 U
DIETHYL PHTHALATE	98 U	80 U	73 U	110 U	78 U	80 U	76 U	81 U	74 U	89 U	89 U	83 U
DIMETHYL PHTHALATE	98 U	80 U	73 U	110 U	78 U	80 U	76 U	81 U	74 U	89 U	89 U	83 U
DIPHENYLAMINE	98 U	80 U	73 U	110 U	78 U	80 U	76 U	81 U	74 U	89 U	89 U	83 U
ETHYL METHANE SULFONATE	98 U	80 U	73 U	110 U	78 U	80 U	76 U	81 U	74 U	89 U	89 U	83 U
ETHYL PARATHION	98 U	80 U	73 U	110 U	78 U	80 U	76 U	81 U	74 U	89 U	89 U	83 U
FLUORANTHENE	1.9 U	1.5 U	1.4 U	2.1 U	1.5 U	1.6 U	1.5 U	1.6 U	1.4 U	1.7 U	1.7 U	27
FLUORENE	1.9 U	1.5 U	1.4 U	2.1 U	1.5 U	1.6 U	1.5 U	1.6 U	1.4 U	1.7 U	1.7 U	1.6 U
HEXACHLOROBENZENE	98 U	80 U	73 U	110 U	78 U	80 U	76 U	81 U	74 U	89 U	89 U	83 U
HEXACHLOROBUTADIENE	98 U	80 U	73 U	110 U	78 U	80 U	76 U	81 U	74 U	89 U	89 U	83 U
HEXACHLOROCYCLOPENTADIENE	98 U	80 U	73 U	110 U	78 U	80 U	76 U	81 U	74 U	89 U	89 U	83 U
HEXACHLOROETHANE	98 U	80 U	73 U	110 U	78 U	80 U	76 U	81 U	74 U	89 U	89 U	83 U
HEXACHLOROPROPENE	98 U	80 U	73 U	110 U	78 U	80 U	76 U	81 U	74 U	89 U	89 U	83 U
INDENO(1,2,3-CD)PYRENE	1.9 U	1.5 U	1.4 U	2.1 U	1.5 U	1.6 U	1.5 U	1.6 U	1.4 U	1.7 U	1.7 U	1.6 U
ISODRIN	98 U	80 U	73 U	110 U	78 U	80 U	76 U	81 U	74 U	89 U	89 U	83 U
ISOPHORONE	98 U	80 U	73 U	110 U	78 U	80 U	76 U	81 U	74 U	89 U	89 U	83 U
ISOSAFROLE	98 U	80 U	73 U	110 U	78 U	80 U	76 U	81 U	74 U	89 U	89 U	83 U
KEPONE	98 UR	80 UR	73 UR	110 UR	78 UR	80 UR	76 UR	81 U	74 UR	89 UR	89 UR	83 UR
METHAPYRILENE	98 U	80 U	73 UJ	110 UJ	78 UJ	80 UJ	76 UJ	81 UR	74 UJ	89 UJ	89 U	83 UJ
METHYL METHANE SULFONATE	98 U	80 U	73 U	110 U	78 U	80 U	76 U	81 UJ	74 UJ	89 UJ	89 U	83 UJ
METHYL PARATHION	98 U	80 U	73 UJ	110 UJ	78 UJ	80 UJ	76 UJ	81 UJ	74 UJ	89 UJ	89 UJ	83 UJ
N-NITROSO-DI-N-BUTYLAMINE	98 U	80 U	73 U	110 U	78 U	80 U	76 U	81 U	74 U	89 U	89 U	83 U
N-NITROSO-DI-N-PROPYLAMINE	98 U	80 U	73 U	110 U	78 U	80 U	76 U	81 UJ	74 U	89 U	89 U	83 U
N-NITROSODIETHYLAMINE	98 U	80 U	73 U	110 U	78 U	80 U	76 U	81 U	74 U	89 U	89 U	83 U
N-NITROSODIMETHYLAMINE	98 U	80 U	73 U	110 U	78 U	80 U	76 U	81 U	74 U	89 U	89 U	83 U
N-NITROSOMETHYLETHYLAMINE	98 U	80 U	73 U	110 U	78 U	80 U	76 U	81 U	74 U	89 U	89 U	83 U

TABLE E-5

SUMMARY OF ANALYTIC RESULTS IN DEEP SEDIMENT
SWMU 3 - OLD JEEP TRAIL/LITTLE SULPHUR CREEK
NSWC CRANE
CRANE, INDIANA

LOCATION	03SD05	03SWSD06	03SD07	03SWSD08	03SWSD09	03SD10	03SWSD11	03SD12	03SWSD13	03SWSD14	03SWSD15	03SWSD16
NSAMPLE	03SD050612	03SD060612	03SD070612	03SD080612	03SD090612	03SD100612	03SD110612	03SD120612	03SD130612	03SD140612	03SD150612	03SD160612
SAMPLE	03SD050612	03SD060612	03SD070612	03SD080612	03SD090612	03SD100612	03SD110612	03SD120612	03SD130612	03SD140612	03SD150612	03SD160612
MATRIX	SD	SD	SD	SD	SD	SD	SD	SD	SD	SD	SD	SD
SACODE	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
DEPTH RANGE	0.5 - 1	0.5 - 1	0.5 - 1	0.5 - 1	0.5 - 1	0.5 - 1	0.5 - 1	0.5 - 1	0.5 - 1	0.5 - 1	0.5 - 1	0.5 - 1
QC_TYPE	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
STATUS	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
SAMPLE DATE	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
VALIDATED	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
COLLECTION METHOD	GRAB	GRAB	GRAB	GRAB	GRAB	GRAB	GRAB	GRAB	GRAB	GRAB	GRAB	GRAB
N-NITROSOMORPHOLINE	98 U	80 U	73 U	110 U	78 U	80 U	76 U	81 U	74 U	89 U	89 U	83 U
N-NITROSOPIPERIDINE	98 U	80 U	73 U	110 U	78 U	80 U	76 U	81 U	74 U	89 U	89 U	83 U
N-NITROSOPYRROLIDINE	98 U	80 U	73 U	110 U	78 U	80 U	76 U	81 U	74 U	89 U	89 U	83 U
NAPHTHALENE	1.9 U	1.5 U	1.4 U	2.1 U	1.5 U	1.6 U	1.5 U	1.6 U	1.4 U	1.7 U	1.7 U	1.6 U
O,O,O-TRIETHYL PHOSPHOROTHIOATE	98 U	80 U	73 U	110 U	78 U	80 U	76 U	81 U	74 U	89 U	89 U	83 U
O-TOLUIDINE	98 U	80 U	73 U	110 U	78 U	80 U	76 U	81 U	74 U	89 U	89 U	83 U
P-(DIMETHYLAMINO)AZOBENZENE	98 U	80 U	73 U	110 U	78 U	80 U	76 U	81 U	74 U	89 U	89 U	83 U
PENTACHLOROBENZENE	98 U	80 U	73 U	110 U	78 U	80 U	76 U	81 U	74 U	89 U	89 U	83 U
PENTACHLOROETHANE	98 U	80 U	73 U	110 U	78 U	80 U	76 U	81 U	74 U	89 U	89 U	83 U
PENTACHLORONITROBENZENE	98 U	80 U	73 U	110 U	78 U	80 U	76 U	81 U	74 U	89 U	89 U	83 U
PHENACETIN	98 U	80 U	73 U	110 U	78 U	80 U	76 U	81 U	74 U	89 U	89 U	83 U
PHENANTHRENE	1.9 U	1.5 U	1.4 U	2.1 U	1.5 U	1.6 U	1.5 U	1.6 U	1.4 U	1.7 U	1.7 U	23
PHENOL	98 U	80 U	73 U	110 U	78 U	80 U	76 U	81 U	74 U	89 U	89 U	83 U
PRONAMIDE	98 U	80 U	73 U	110 U	78 U	80 U	76 U	81 U	74 U	89 U	89 U	83 U
PYRENE	1.9 U	1.5 U	1.4 U	2.1 U	1.5 U	1.6 U	1.5 U	1.6 U	1.4 U	1.7 U	1.7 U	19
PYRIDINE	98 U	80 U	73 U	110 U	78 U	80 U	76 U	81 U	74 U	89 U	89 U	83 U
SAFROLE	98 U	80 U	73 U	110 U	78 U	80 U	76 U	81 U	74 U	89 U	89 U	83 U
Energetics (MG/KG)												
1,3,5-TRINITROBENZENE	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U
1,3-DINITROBENZENE	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U
2,4,6-TRINITROTOLUENE	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.68	1.1	2.2	0.34999 J	0.5	0.25 U	0.25 U
2,4-DINITROTOLUENE	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U
2,6-DINITROTOLUENE	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U
2-AMINO-4,6-DINITROTOLUENE	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.73	0.35 J	0.25 U	0.25 U	0.25 U	0.25 U
2-NITROTOLUENE	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U
3-NITROTOLUENE	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U
4-AMINO-2,6-DINITROTOLUENE	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	1 U	0.4 J	0.25 U	0.25 U	0.25 U	0.25 U
4-NITROTOLUENE	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U
HMX	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.48 J	19	0.68	0.37 J	0.25 U	0.25 U	0.25 U
NITROBENZENE	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U
NITROCELLULOSE	720 U	590 U	560 U	820 U	580 U	600 U	570 U	600 U	550 U	670 U	660 U	620 U
NITROGLYCERIN	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U
PETN	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	1.6 U	1.4 U	1.7 U	1.7 U	1.6 U
RDX	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.45 J	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U
TETRYL	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U
Pesticides/PCB's (UG/KG)												
4,4'-DDD	2.5 UJ	2 UJ	1.9 UJ	2.8 UJ	2 UJ	2 UJ	1.9 UJ	2.1 U	1.9 U	2.3 U	2.3 U	2.1 U
4,4'-DDE	2.5 U	2 U	1.9 U	2.8 U	2 U	2 U	1.9 U	2.1 U	1.9 U	2.3 U	2.3 U	2.1 U
4,4'-DDT	2.5 UJ	2 UJ	1.9 U	2.8 U	2 U	2 U	1.9 U	2.1 U	1.9 U	2.3 U	2.3 U	2.1 U
ALDRIN	1.3 U	1.1 U	0.98 U	1.5 U	1.1 U	1.1 U	1 U	1.1 U	1 U	1.2 U	1.2 U	1.1 U
ALPHA-BHC	1.3 U	1.1 U	0.98 U	1.5 U	1.1 U	1.1 U	1 U	1.1 U	1 U	1.2 U	1.2 U	1.1 U
ALPHA-CHLORDANE	1.3 U	1.1 U	0.98 U	1.5 U	1.1 U	1.1 U	1 U	1.1 U	1 U	1.2 U	1.2 U	1.1 U
AROCLOR-1016	25 U	20 U	19 U	28 U	20 U	20 U	19 U	21 U	19 U	23 U	23 U	21 U
AROCLOR-1221	50 U	40 U	37 U	56 U	40 U	41 U	39 U	41 U	38 U	45 U	45 U	42 U
AROCLOR-1232	25 U	20 U	19 U	28 U	20 U	20 U	19 U	21 U	19 U	23 U	23 U	21 U
AROCLOR-1242	25 U	20 U	19 U	28 U	20 U	20 U	19 U	21 U	19 U	23 U	23 U	21 U
AROCLOR-1248	25 U	20 U	19 U	28 U	20 U	20 U	19 U	21 U	19 U	23 U	23 U	21 U
AROCLOR-1254	25 U	20 U	19 U	28 U	20 U	20 U	19 U	21 U	19 U	23 U	23 U	21 U
AROCLOR-1260	25 U	20 U	19 U	28 U	20 U	20 U	19 U	21 U	19 U	23 U	23 U	21 U

TABLE E-5

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SWMU 3 - OLD JEEP TRAIL/LITTLE SULPHUR CREEK
NSWC CRANE
CRANE, INDIANA

LOCATION	03SD05	03SWSD06	03SD07	03SWSD08	03SWSD09	03SD10	03SWSD11	03SD12	03SWSD13	03SWSD14	03SWSD15	03SWSD16
NSAMPLE	03SD050612	03SD060612	03SD070612	03SD080612	03SD090612	03SD100612	03SD110612	03SD120612	03SD130612	03SD140612	03SD150612	03SD160612
SAMPLE	03SD050612	03SD060612	03SD070612	03SD080612	03SD090612	03SD100612	03SD110612	03SD120612	03SD130612	03SD140612	03SD150612	03SD160612
MATRIX	SD	SD	SD	SD	SD	SD	SD	SD	SD	SD	SD	SD
SACODE	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
DEPTH RANGE	0.5 - 1	0.5 - 1	0.5 - 1	0.5 - 1	0.5 - 1	0.5 - 1	0.5 - 1	0.5 - 1	0.5 - 1	0.5 - 1	0.5 - 1	0.5 - 1
QC_TYPE	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
STATUS	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
SAMPLE DATE	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
VALIDATED	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
COLLECTION METHOD	GRAB	GRAB	GRAB	GRAB	GRAB	GRAB	GRAB	GRAB	GRAB	GRAB	GRAB	GRAB
BETA-BHC	1.3 U	1.1 U	0.98 U	1.5 U	1.1 U	1.1 U	1 U	1.1 U	1 U	1.2 U	1.2 U	1.1 U
DELTA-BHC	1.3 U	1.1 U	0.98 U	1.5 U	1.1 U	1.1 U	1 U	1.1 U	1 U	1.2 U	1.2 U	1.1 U
DIELDRIN	2.5 UJ	2 UJ	1.9 UJ	2.8 UJ	2 UJ	2 UJ	1.9 UJ	2.1 U	1.9 U	2.3 U	2.3 U	2.1 U
ENDOSULFAN I	1.3 UJ	1.1 U	0.98 U	1.5 U	1.1 U	1.1 U	1 U	1.1 U	1 U	1.2 U	1.2 U	1.1 U
ENDOSULFAN II	2.5 U	2 U	1.9 U	2.8 U	2 U	2 U	1.9 U	2.1 U	1.9 U	2.3 U	2.3 U	2.1 U
ENDOSULFAN SULFATE	2.5 U	2 U	1.9 U	2.8 U	2 U	2 U	1.9 U	2.1 U	1.9 U	2.3 U	2.3 U	2.1 U
ENDRIN	2.5 UJ	2 UJ	1.9 UJ	2.8 UJ	2 UJ	2.4 R	1.9 UJ	2.1 U	1.9 U	2.3 U	2.3 U	2.1 U
ENDRIN ALDEHYDE	2.5 U	2 U	1.9 U	2.8 U	2 U	2 U	1.9 U	2.1 U	1.9 U	2.3 U	2.3 U	2.1 U
ENDRIN KETONE	2.5 U	2 U	1.9 U	2.8 U	2 U	2 U	1.9 U	2.1 UJ	1.9 UJ	2.3 UJ	2.3 UJ	2.1 UJ
GAMMA-BHC (LINDANE)	1.3 UJ	1.1 U	0.98 U	1.5 U	1.1 U	1.1 U	1 U	1.1 U	1 U	1.2 U	1.2 U	1.1 U
GAMMA-CHLORDANE	1.3 U	1.1 U	0.98 U	1.5 U	1.1 U	1.1 U	1.1 R	1.1 U	1 U	1.2 U	1.2 U	1.1 U
HEPTACHLOR	1.3 UJ	1.1 U	0.98 U	1.5 U	1.1 U	1.1 U	1 U	1.1 U	1 U	1.2 U	1.2 U	1.1 U
HEPTACHLOR EPOXIDE	1.3 U	1.1 U	0.98 U	1.5 U	1.1 U	1.1 U	1 U	1.1 U	1 U	1.2 U	1.2 U	1.1 U
METHOXYCHLOR	13 U	11 U	9.8 U	15 U	11 U	11 U	10 U	11 U	10 U	12 U	12 U	11 U
TOXAPHENE	130 U	110 U	98 U	150 U	110 U	110 U	100 U	110 U	100 U	120 U	120 U	110 U
Herbicides (UG/KG)												
2,4,5-T	2.1 U	1.7 U	1.5 U	2.3 U	1.6 U	1.7 U	4.5	4	3.6	1.9 U	1.9 U	2.5 J
2,4,5-TP (SILVEX)	2.1 U	2.9 J	1.5 U	2.3 U	1.6 U	1.7 U	1.6 U	1.7 U	1.6 U	1.9 U	1.9 U	2.3 J
2,4-D	28 J	1.7 U	1.6 U	7.8 R	1.6 U	14 J	1.6 U	8.8	5 R	4.2 R	1.9 U	7.2
DINOSEB	2.1 U	1.7 U	1.5 U	2.3 U	1.6 U	1.7 U	1.6 U	1.7 U	1.6 U	3.5 J	1.9 U	1.7 U
HEXACHLOROPHENE	9.8 U	8 U	7.3 U	7.6 J	7.8 U	2.8 J	7.6 U	8.1 U	7.4 U	8.9 U	8.9 U	8.3 U
PENTACHLOROPHENOL	3.7 J	0.4 U	0.37 U	3.3 R	0.4 U	0.41 U	0.39 U	0.82 R	0.38 U	1.9 R	0.86 R	0.42 U
Inorganics (MG/KG)												
ALUMINUM	8140 J	5790 J	3150	7420	11000	21000	58900	17200 J	8720 J	6680 J	15500 J	12900 J
ANTIMONY	1.1 J	1.2 J	0.85 J	0.6 U	0.36 U	4.1 J	6.7 J	2.3 J	1.6 J	1.1 U	3.4 J	1.3 U
ARSENIC	5.4	7.1	4.1	5.9	3.5	9.5	14	16	10.2	4.7	17.5	13.2
BARIUM	152 J	138 J	47.5 J	105 J	55.8 J	419 J	981 J	744 J	180 J	196 J	353 J	126 J
BERYLLIUM	0.67	1	0.72	0.65	0.44	0.87	1.5	1.4	1	0.43	1.5	1.1
CADMIUM	0.63 J	1 J	0.39 J	0.55 J	0.31 U	1.8 J	2.9 J	4	2.5	1.1	2	0.96
CALCIUM	2250	32300	701 J	2800 J	1410 J	2970 J	10900 J	2090 J	3130 J	1890 J	2770 J	1150 J
CHROMIUM	13.9 J	28.3 J	16.3 J	10.9 J	9.2 J	26.2 J	48.9 J	40.7 J	41.9 J	8 J	48.7 J	30.2 J
COBALT	12.3	14.8	7.9	11.9	15.9	15.4	19.9	14.6 J	19.2 J	9 J	29.1 J	20.5 J
COPPER	16.2 J	12.5 J	9.5	8.8	7.9	148	273	89.3	49.7	41.9	105	33.3
IRON	18500 J	87700 J	33700 J	15400 J	15500 J	39600 J	70800 J	51300 J	82500 J	12500 J	74600 J	50400 J
LEAD	34.6 J	181 J	26.5	15.8	11.8	149	445	122 J	98.3 J	59.3 J	159 J	53.9 J
MAGNESIUM	1760 J	4980 J	414 J	1220 J	945 J	1390 J	3010 J	768 J	655 J	813 J	1040 J	671 J
MANGANESE	423 J	1070 J	423 J	1020 J	1080 J	1350 J	2050 J	1020 J	1530 J	316 J	2320 J	1390 J
MERCURY	0.07	0.02	0.05 J	0.03 J	0.03 J	0.12 J	0.08 J	0.13	0.03	0.13	0.05	0.04
NICKEL	17.9	26.2	15.2 J	13.9 J	10.1 J	21.9 J	36.1 J	23.7 J	21.6 J	12.6 J	35.7 J	25.7 J
POTASSIUM	802 J	421 J	236 J	523 J	773 J	509 J	476 J	513 J	341 J	455 J	350 J	361 J
SELENIUM	0.22 U	0.17 U	0.28 U	0.78 U	0.45 U	0.17 U	0.16 U	0.18 U	0.36	0.2 U	0.19 U	0.19 U
SILVER	0.28 U	0.04 U	0.04 U	0.06 U	0.04 U	0.16 U	0.43 J	0.1 U	0.23 J	0.26 J	0.1 U	0.05 U
SODIUM	48.5 U	88.5 J	5.5 U	5 U	3.5 U	3.4 U	11.3 U	18.5 U	12.3 U	18.5 U	19.8 U	10.5 U
THALLIUM	0.11	0.07	0.05	0.1	0.12	0.07	0.08	0.07	0.08	0.06	0.12	0.08
TIN	1.1 U	2.7 U	1.5 J	0.42 U	0.39 U	4.1 J	1.7 J	2.4 U	0.79 U	3.4 U	3.8 U	0.96 U
VANADIUM	17.5	38.9	10.2	18.5	17	21.2	47.1	30.8 J	31.9 J	10.6 J	43.5 J	30 J
ZINC	55.6 J	111 J	54.6 J	31.5 J	21.4 J	412 J	1120 J	421 J	185 J	133 J	319 J	136 J
Miscellaneous Parameters												
NITRATE (MG/KG)	3	1.6	3.1	5.9	2.6	4.8	3.4	6.5	1.1 U	3.8	3.5	3.6

TABLE E-5

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SWMU 3 - OLD JEEP TRAIL/LITTLE SULPHUR CREEK
NSWC CRANE
CRANE, INDIANA

LOCATION	03SD05	03SWSD06	03SD07	03SWSD08	03SWSD09	03SD10	03SWSD11	03SD12	03SWSD13	03SWSD14	03SWSD15	03SWSD16
NSAMPLE	03SD050612	03SD060612	03SD070612	03SD080612	03SD090612	03SD100612	03SD110612	03SD120612	03SD130612	03SD140612	03SD150612	03SD160612
SAMPLE	03SD050612	03SD060612	03SD070612	03SD080612	03SD090612	03SD100612	03SD110612	03SD120612	03SD130612	03SD140612	03SD150612	03SD160612
MATRIX	SD	SD	SD	SD	SD	SD	SD	SD	SD	SD	SD	SD
SACODE	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
DEPTH RANGE	0.5 - 1	0.5 - 1	0.5 - 1	0.5 - 1	0.5 - 1	0.5 - 1	0.5 - 1	0.5 - 1	0.5 - 1	0.5 - 1	0.5 - 1	0.5 - 1
QC_TYPE	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
STATUS	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
SAMPLE DATE	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
VALIDATED	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
COLLECTION METHOD	GRAB	GRAB	GRAB	GRAB	GRAB	GRAB	GRAB	GRAB	GRAB	GRAB	GRAB	GRAB
NITRITE (MG/KG)	14 UJ	2.6 J	2 UR	3 UR	22 UR	2.3 UR	2.3 UR	12 UJ	2.7 J	52 UJ	2.4 UJ	4 UJ
NITRITE/NITRATE (MG/KG)	3	4.2	3.1	5.9	2.6	4.8	3.4	6.5	3.3	3.8	3.5	3.6
PERCENT MOISTURE (%)	21.5	22	8.2	24	13.5	17.6	17.8	25.7	24.2	25.6	28.9	26.7
PERCHLORATE (UG/KG)	25 U	26 U	22 U	26 U	23 U	24 U	24 U	27 U	26 U	27 U	28 U	27 U
PH (S.U.)	7.5 J	7.7 J	7.6 J	6.8 J	7.5 J	7.7 J	8 J	7.5 J	7.9 J	7.2 J	7.8 J	7.4 J
TOTAL ORGANIC CARBON (MG/KG)	6900 J	2300 J	3199.9	34000	3600	18000	9100	14000	4100	11000	5700	6000

TABLE E-5

SUMMARY OF ANALYTIC RESULTS IN DEEP SEDIMENT
SWMU 3 - OLD JEEP TRAIL/LITTLE SULPHUR CREEK
NSWC CRANE
CRANE, INDIANA

LOCATION	03SWSD17	03SWSD18	03SWSD19	03SWSD01	03SWSD02	03SWSD03	03SWSD04
NSAMPLE	03SD170612	03SD180612	03SD190612	03SD010612	03SD020612	03SD030612	03SD040612
SAMPLE	03SD170612	03SD180612	03SD190612	03SD010612	03SD020612	03SD030612	03SD040612
MATRIX	SD	SD	SD	BACKGROUND	BACKGROUND	BACKGROUND	BACKGROUND
SACODE	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
DEPTH RANGE	0.5 - 1	0.5 - 1	0.5 - 1	0.5 - 1	0.5 - 1	0.5 - 1	0.5 - 1
QC_TYPE	NM	NM	NM	NM	NM	NM	NM
STATUS	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
SAMPLE DATE	- -	- -	- -	- -	- -	- -	- -
VALIDATED	Y	Y	Y	Y	Y	Y	Y
COLLECTION METHOD	GRAB	GRAB	GRAB	GRAB	GRAB	GRAB	GRAB
Volatile Organics (UG/KG)							
1,1,1,2-TETRACHLOROETHANE	1.2 U	1.3 U	1.1 U	1.2 U	2.7 U	10 U	3.6 U
1,1,1-TRICHLOROETHANE	1.2 U	1.3 U	4	2 J	2.7 U	10 U	3.6 U
1,1,2,2-TETRACHLOROETHANE	1.2 U	1.3 U	1.1 U	1.2 U	2.7 U	10 U	3.6 U
1,1,2-TRICHLOROETHANE	1.2 U	1.3 U	1.1 U	1.2 U	2.7 U	10 U	3.6 U
1,1-DICHLOROETHANE	1.2 U	1.3 U	1.1 U	1.2 U	2.7 U	10 U	3.6 U
1,1-DICHLOROETHENE	1.2 U	1.3 U	1.1 U	1.2 U	2.7 U	10 U	3.6 U
1,2,3-TRICHLOROPROPANE	1.2 U	1.3 U	1.1 U	1.2 U	2.7 U	10 U	3.6 U
1,2-DIBROMO-3-CHLOROPROPANE	1.2 U	1.3 U	1.1 U	1.2 U	2.7 U	10 U	3.6 U
1,2-DIBROMOETHANE	1.2 U	1.3 U	1.1 U	1.2 U	2.7 U	10 U	3.6 U
1,2-DICHLOROETHANE	1.2 U	1.3 U	1.1 U	1.2 U	2.7 U	10 U	3.6 U
1,2-DICHLOROPROPANE	1.2 U	1.3 U	1.1 U	1.2 U	2.7 U	10 U	3.6 U
1,4-DIOXANE	140 U	140 U	110 U	120 U	105 U	110 U	100 U
2-BUTANONE	10	60	1.1 U	1.2 UJ	2.7 U	10 UJ	3.6 U
2-HEXANONE	1.2 U	1.3 U	1.1 U	1.2 UJ	2.7 UJ	10 UJ	3.6 UJ
3-CHLOROPROPENE	1.2 U	1.3 U	1.1 U	1.2 U	2.7 U	10 U	3.6 U
4-METHYL-2-PENTANONE	1.2 U	1.3 U	1.1 UJ	1.2 UJ	2.7 U	10 UJ	3.6 U
ACETONE	28 U	220 J	1.1 U	12 U	2.7 UJ	320 U	3.6 UJ
ACETONITRILE	55 U	55 U	44.5 U	49 U	41.5 U	44.5 U	39.5 U
ACROLEIN	1.2 UR	1.3 UR	1.1 UR	1.2 UR	2.7 UR	10 UR	3.6 UR
ACRYLONITRILE	1.2 UR	1.3 UR	1.1 UR	1.2 UR	2.7 UR	10 UR	3.6 UR
BENZENE	1.2 U	1.3 U	1.1 U	1.2 U	2.7 U	10 U	3.6 U
BROMODICHLOROMETHANE	1.2 U	1.3 U	1.1 U	1.2 U	2.7 U	10 U	3.6 U
BROMOFORM	1.2 U	1.3 U	1.1 U	1.2 U	2.7 U	10 U	3.6 U
BROMOMETHANE	1.2 UJ	1.3 UJ	1.1 UJ	1.2 U	2.7 U	10 U	3.6 UJ
CARBON DISULFIDE	1.2 UJ	5 UJ	1 J	1.2 UJ	2.7 UJ	10 UJ	3.6 UJ
CARBON TETRACHLORIDE	1.2 U	1.3 U	1.1 U	1.2 U	2.7 UJ	10 UJ	3.6 U
CHLOROBENZENE	1.2 U	1.3 U	1.1 U	1.2 U	2.7 U	10 U	3.6 U
CHLORODIBROMOMETHANE	1.2 U	1.3 U	1.1 U	1.2 U	2.7 U	10 U	3.6 U
CHLOROETHANE	1.2 UJ	1.3 UJ	1.1 U	1.2 U	2.7 U	10 U	3.6 U
CHLOROFORM	1.2 U	1.3 U	1.1 U	1.2 U	2.7 U	10 U	3.6 U
CHLOROMETHANE	1.2 U	1.3 U	1.1 U	1.2 U	2.7 U	10 U	3.6 U
CHLOROPRENE	1.2 U	1.3 U	1.1 U	1.2 U	2.7 U	10 UJ	3.6 U
CIS-1,2-DICHLOROETHENE	1.2 U	1.3 U	1.1 U	1.2 U	2.7 U	10 U	3.6 U
CIS-1,3-DICHLOROPROPENE	1.2 U	1.3 U	1.1 U	1.2 U	2.7 U	10 U	3.6 U
DIBROMOMETHANE	1.2 U	1.3 U	1.1 U	1.2 U	2.7 U	10 U	3.6 U
DICHLORODIFLUOROMETHANE	1.2 UJ	1.3 UJ	1.1 UJ	1.2 UJ	2.7 UJ	10 UJ	3.6 UJ
ETHYL METHACRYLATE	1.2 U	1.3 U	1.1 U	1.2 U	2.7 U	10 U	3.6 U
ETHYLBENZENE	1.2 U	1.3 U	1.1 U	1.2 U	2.7 U	10 U	3.6 U
ISOBUTANOL	55 U	55 U	44.5 U	49 U	41.5 U	44.5 U	39.5 U
METHACRYLONITRILE	1.2 U	1.3 U	1.1 U	1.2 U	2.7 U	10 U	3.6 U
METHYL IODIDE	1.2 UJ	1.3 UJ	1.1 UJ	1.2 UJ	2.7 UJ	10 UJ	3.6 UJ
METHYL METHACRYLATE	1.2 U	1.3 U	1.1 U	1.2 U	2.7 U	10 U	3.6 U
METHYLENE CHLORIDE	2 U	3 U	3 BU	6 U	5 BU	21 BU	7 BU
PROPIONITRILE	55 U	55 U	44.5 U	49 U	41.5 U	44.5 U	39.5 U
STYRENE	1.2 U	1.3 U	1.1 U	1.2 U	2.7 U	10 U	3.6 U
TETRACHLOROETHENE	1.2 U	1.3 U	1.1 U	1.2 U	2.7 U	10 U	3.6 U
TOLUENE	1.2 U	54	1.1 U	1.2 U	2.7 U	10 U	3.6 U
TOTAL XYLENES	1.2 U	1.3 U	1.1 U	1.2 U	2.7 U	10 U	3.6 U

TABLE E-5

SUMMARY OF ANALYTIC RESULTS IN DEEP SEDIMENT
SWMU 3 - OLD JEEP TRAIL/LITTLE SULPHUR CREEK
NSWC CRANE
CRANE, INDIANA

LOCATION	03SWSD17	03SWSD18	03SWSD19	03SWSD01	03SWSD02	03SWSD03	03SWSD04
NSAMPLE	03SD170612	03SD180612	03SD190612	03SD010612	03SD020612	03SD030612	03SD040612
SAMPLE	03SD170612	03SD180612	03SD190612	03SD010612	03SD020612	03SD030612	03SD040612
MATRIX	SD	SD	SD	BACKGROUND	BACKGROUND	BACKGROUND	BACKGROUND
SACODE	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
DEPTH RANGE	0.5 - 1	0.5 - 1	0.5 - 1	0.5 - 1	0.5 - 1	0.5 - 1	0.5 - 1
QC_TYPE	NM	NM	NM	NM	NM	NM	NM
STATUS	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
SAMPLE DATE	- -	- -	- -	- -	- -	- -	- -
VALIDATED	Y	Y	Y	Y	Y	Y	Y
COLLECTION METHOD	GRAB	GRAB	GRAB	GRAB	GRAB	GRAB	GRAB
TRANS-1,2-DICHLOROETHENE	1.2 U	1.3 U	1.1 U	1.2 U	2.7 U	10 U	3.6 U
TRANS-1,3-DICHLOROPROPENE	1.2 U	1.3 U	1.1 U	1.2 U	2.7 U	10 U	3.6 U
TRANS-1,4-DICHLORO-2-BUTENE	1.2 UJ	1.3 UJ	1.1 U	1.2 U	2.7 U	10 UJ	3.6 U
TRICHLOROETHENE	1.2 U	1.3 U	1.1 U	1.2 U	2.7 U	10 U	3.6 U
TRICHLOROFLUOROMETHANE	1.2 U	1.3 U	1.1 U	2 J	2.7 U	10 UJ	3.6 U
VINYL ACETATE	1.2 UJ	1.3 UJ	1.1 U	1.2 UJ	2.7 U	10 UJ	3.6 U
VINYL CHLORIDE	1.2 U	1.3 U	1.1 U	1.2 U	2.7 U	10 U	3.6 U
Semivolatile Organics (UG/KG)							
1,2,4,5-TETRACHLOROBENZENE	94 U	95 U	83 U	85 U	80 U	83 U	81 U
1,2,4-TRICHLOROBENZENE	94 U	95 U	83 U	85 U	80 U	83 U	81 U
1,2-DICHLOROBENZENE	94 U	95 U	83 U	85 U	80 U	83 U	81 U
1,3-DICHLOROBENZENE	94 U	95 U	83 U	85 U	80 U	83 U	81 U
1,4-DICHLOROBENZENE	94 U	95 U	83 U	85 U	80 U	83 U	81 U
1,4-NAPHTHOQUINONE	94 U	95 U	83 U	85 U	80 U	83 U	81 U
1,4-PHENYLENEDIAMINE	94 UR	95 UR	83 UR	85 UR	80 UR	83 UR	81 UR
1-NAPHTHYLAMINE	94 U	95 U	83 U	85 U	80 U	83 U	81 U
2,2'-OXYBIS(1-CHLOROPROPANE)	94 U	95 U	83 U	85 UJ	80 UJ	83 UJ	81 U
2,3,4,6-TETRACHLOROPHENOL	94 U	95 U	83 U	85 U	80 U	83 U	81 U
2,4,5-TRICHLOROPHENOL	94 U	95 U	83 U	85 U	80 U	83 U	81 U
2,4,6-TRICHLOROPHENOL	94 UJ	95 UJ	83 U	85 U	80 U	83 U	81 U
2,4-DICHLOROPHENOL	94 U	95 U	83 U	85 U	80 U	83 U	81 U
2,4-DIMETHYLPHENOL	94 U	95 U	83 U	85 U	80 U	83 U	81 U
2,4-DINITROPHENOL	94 UJ	95 UJ	83 UJ	85 UJ	80 UJ	83 UJ	81 UJ
2,6-DICHLOROPHENOL	94 U	95 U	83 U	85 U	80 U	83 U	81 U
2-ACETYLAMINOFLUORENE	94 U	95 U	83 U	85 U	80 U	83 U	81 U
2-CHLORONAPHTHALENE	94 U	95 U	83 U	85 U	80 U	83 U	81 U
2-CHLOROPHENOL	94 U	95 U	83 U	85 U	80 U	83 U	81 U
2-METHYLNAPHTHALENE	1.8 U	1.9 U	1.6 U	1.7 U	1.6 U	1.6 U	1.6 U
2-METHYLPHENOL	94 U	95 U	83 U	85 U	80 U	83 U	81 U
2-NAPHTHYLAMINE	94 U	95 U	83 U	85 U	80 U	83 U	81 U
2-NITROANILINE	94 U	95 U	83 U	85 U	80 U	83 U	81 U
2-NITROPHENOL	94 U	95 U	83 U	85 U	80 U	83 U	81 U
2-PICOLINE	94 U	95 U	83 U	85 U	80 U	83 U	81 U
3&4-METHYLPHENOL	94 U	95 U	83 U	85 U	80 U	83 U	81 U
3,3'-DICHLOROBENZIDINE	94 U	95 U	83 U	85 U	80 U	83 UJ	81 U
3,3'-DIMETHYLBENZIDINE	94 UJ	95 UJ	83 UJ	85 UJ	80 UJ	83 U	81 UJ
3-METHYLCHOLANTHRENE	94 U	95 U	83 U	85 U	80 U	83 U	81 U
3-NITROANILINE	94 U	95 U	83 U	85 U	80 U	83 UJ	81 U
4,6-DINITRO-2-METHYLPHENOL	94 UJ	95 UJ	83 UJ	85 UJ	80 UJ	83 U	81 UJ
4-AMINOBIPHENYL	94 U	95 U	83 U	85 U	80 U	83 U	81 U
4-BROMOPHENYL PHENYL ETHER	94 U	95 U	83 U	85 U	80 U	83 U	81 U
4-CHLORO-3-METHYLPHENOL	94 U	95 U	83 U	85 U	80 U	83 U	81 U
4-CHLOROANILINE	94 U	95 U	83 U	85 U	80 U	83 U	81 U
4-CHLOROPHENYL PHENYL ETHER	94 U	95 U	83 U	85 U	80 U	83 U	81 U
4-NITROANILINE	94 U	95 U	83 U	85 U	80 U	83 U	81 U
4-NITROPHENOL	94 UJ	95 UJ	83 UJ	85 U	80 U	83 U	81 UJ
4-NITROQUINOLINE-1-OXIDE	94 UJ	95 UJ	83 UJ	85 UJ	80 UJ	83 UJ	81 UR
5-NITRO-O-TOLUIDINE	94 U	95 U	83 U	85 U	80 U	83 U	81 U
7,12-DIMETHYLBENZ(A)ANTHRACENE	94 U	95 U	83 U	85 U	80 U	83 U	81 U

TABLE E-5

SUMMARY OF ANALYTIC RESULTS IN DEEP SEDIMENT
SWMU 3 - OLD JEEP TRAIL/LITTLE SULPHUR CREEK
NSWC CRANE
CRANE, INDIANA

LOCATION	03SWSD17	03SWSD18	03SWSD19	03SWSD01	03SWSD02	03SWSD03	03SWSD04
NSAMPLE	03SD170612	03SD180612	03SD190612	03SD010612	03SD020612	03SD030612	03SD040612
SAMPLE	03SD170612	03SD180612	03SD190612	03SD010612	03SD020612	03SD030612	03SD040612
MATRIX	SD	SD	SD	BACKGROUND	BACKGROUND	BACKGROUND	BACKGROUND
SACODE	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
DEPTH RANGE	0.5 - 1	0.5 - 1	0.5 - 1	0.5 - 1	0.5 - 1	0.5 - 1	0.5 - 1
QC_TYPE	NM	NM	NM	NM	NM	NM	NM
STATUS	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
SAMPLE DATE	- -	- -	- -	- -	- -	- -	- -
VALIDATED	Y	Y	Y	Y	Y	Y	Y
COLLECTION METHOD	GRAB	GRAB	GRAB	GRAB	GRAB	GRAB	GRAB
A,A-DIMETHYLPHENETHYLAMINE	94 U	95 U	83 U	85 U	80 U	83 U	81 U
ACENAPHTHENE	1.8 U	1.9 U	1.6 U	1.7 U	1.6 U	1.6 U	1.6 U
ACENAPHTHYLENE	1.8 U	1.9 U	1.6 U	1.7 U	1.6 U	1.6 U	1.6 U
ACETOPHENONE	94 U	95 U	83 U	85 U	80 U	83 U	81 U
ANILINE	94 U	95 U	83 U	85 U	80 U	83 U	81 U
ANTHRACENE	1.8 U	1.9 U	1.6 U	1.7 U	1.6 U	1.6 U	1.6 U
ARAMITE	94 U	95 U	83 UJ	85 U	80 U	83 U	81 U
BENZO(A)ANTHRACENE	1.8 U	1.9 U	1.6 U	1.7 U	1.6 U	1.6 U	81 U
BENZO(A)PYRENE	1.8 U	1.9 U	1.6 U	1.7 U	1.6 U	1.6 U	1.6 U
BENZO(B)FLUORANTHENE	1.8 U	11	1.6 U	1.7 U	1.6 U	1.6 U	1.6 U
BENZO(G,H,I)PERYLENE	1.8 U	1.9 U	1.6 U	1.7 U	1.6 U	1.6 U	1.6 U
BENZO(K)FLUORANTHENE	1.8 U	1.9 U	1.6 U	1.7 U	1.6 U	1.6 U	1.6 U
BENZYL ALCOHOL	94 U	95 U	83 U	85 U	80 U	83 U	81 U
BIS(2-CHLOROETHOXY)METHANE	94 U	95 U	83 U	85 U	80 U	83 U	81 U
BIS(2-CHLOROETHYL)ETHER	94 U	95 U	83 U	85 U	80 U	83 U	81 U
BIS(2-ETHYLHEXYL)PHTHALATE	94 U	95 U	83 U	85 U	80 U	83 U	81 U
BUTYL BENZYL PHTHALATE	94 U	95 U	83 U	85 U	80 U	83 U	81 U
CHLOROBENZILATE	94 U	95 U	83 U	85 U	80 U	83 U	81 U
CHRYSENE	1.8 U	1.9 U	1.6 U	1.7 U	1.6 U	1.6 U	81 U
DI-N-BUTYL PHTHALATE	94 U	95 U	180 BU	85 U	80 U	83 U	81 U
DI-N-OCTYL PHTHALATE	94 U	95 U	83 U	85 U	80 U	83 U	81 U
DIALLATE	94 U	95 U	83 U	85 U	80 U	83 U	81 U
DIBENZO(A,H)ANTHRACENE	1.8 U	1.9 U	1.6 U	1.7 U	1.6 U	1.6 U	1.6 U
DIBENZOFURAN	94 U	95 U	83 U	85 U	80 U	83 U	81 U
DIETHYL PHTHALATE	94 U	95 U	83 U	85 U	80 U	83 U	81 U
DIMETHYL PHTHALATE	94 U	95 U	83 U	85 U	80 U	83 U	81 U
DIPHENYLAMINE	94 U	95 U	83 U	85 U	80 U	83 U	81 U
ETHYL METHANE SULFONATE	94 UJ	95 UJ	83 U	85 U	80 U	83 U	81 U
ETHYL PARATHION	94 U	95 U	83 U	85 U	80 U	83 U	81 U
FLUORANTHENE	1.8 U	1.9 U	1.6 U	1.7 U	1.6 U	1.6 U	1.6 U
FLUORENE	1.8 U	1.9 U	1.6 U	1.7 U	1.6 U	1.6 U	1.6 U
HEXACHLOROBENZENE	94 U	95 U	83 U	85 U	80 U	83 U	81 U
HEXACHLOROBUTADIENE	94 U	95 U	83 U	85 U	80 U	83 U	81 U
HEXACHLOROCYCLOPENTADIENE	94 U	95 U	83 U	85 U	80 U	83 U	81 U
HEXACHLOROETHANE	94 U	95 U	83 U	85 U	80 U	83 U	81 U
HEXACHLOROPROPENE	94 U	95 U	83 U	85 U	80 U	83 U	81 U
INDENO(1,2,3-CD)PYRENE	1.8 U	1.9 U	1.6 U	1.7 U	1.6 U	1.6 U	1.6 U
ISODRIN	94 U	95 U	83 U	85 U	80 U	83 U	81 U
ISOPHORONE	94 U	95 U	83 U	85 U	80 U	83 U	81 U
ISOSAFROLE	94 U	95 U	83 U	85 U	80 U	83 U	81 U
KEPONE	94 UR	95 UR	83 UR	85 UR	80 UR	83 UR	81 UR
METHAPYRILENE	94 U	95 U	83 U	85 UJ	80 UJ	83 UJ	81 U
METHYL METHANE SULFONATE	94 UJ	95 UJ	83 U	85 U	80 U	83 U	81 U
METHYL PARATHION	94 U	95 U	83 UJ	85 UJ	80 UJ	83 UJ	81 U
N-NITROSO-DI-N-BUTYLAMINE	94 U	95 U	83 U	85 U	80 U	83 U	81 U
N-NITROSO-DI-N-PROPYLAMINE	94 U	95 U	83 U	85 U	80 U	83 U	81 U
N-NITROSODIETHYLAMINE	94 U	95 U	83 U	85 U	80 U	83 U	81 U
N-NITROSODIMETHYLAMINE	94 UJ	95 U	83 UJ	85 U	80 U	83 U	81 U
N-NITROSOMETHYLETHYLAMINE	94 U	95 UJ	83 U	85 U	80 U	83 U	81 U

TABLE E-5

SUMMARY OF ANALYTIC RESULTS IN DEEP SEDIMENT
SWMU 3 - OLD JEEP TRAIL/LITTLE SULPHUR CREEK
NSWC CRANE
CRANE, INDIANA

LOCATION	03SWSD17	03SWSD18	03SWSD19	03SWSD01	03SWSD02	03SWSD03	03SWSD04
NSAMPLE	03SD170612	03SD180612	03SD190612	03SD010612	03SD020612	03SD030612	03SD040612
SAMPLE	03SD170612	03SD180612	03SD190612	03SD010612	03SD020612	03SD030612	03SD040612
MATRIX	SD	SD	SD	BACKGROUND	BACKGROUND	BACKGROUND	BACKGROUND
SACODE	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
DEPTH RANGE	0.5 - 1	0.5 - 1	0.5 - 1	0.5 - 1	0.5 - 1	0.5 - 1	0.5 - 1
QC_TYPE	NM	NM	NM	NM	NM	NM	NM
STATUS	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
SAMPLE DATE	- -	- -	- -	- -	- -	- -	- -
VALIDATED	Y	Y	Y	Y	Y	Y	Y
COLLECTION METHOD	GRAB	GRAB	GRAB	GRAB	GRAB	GRAB	GRAB
N-NITROSOMORPHOLINE	94 U	95 U	83 U	85 U	80 U	83 U	81 U
N-NITROSOPIPERIDINE	94 U	95 U	83 U	85 U	80 U	83 U	81 U
N-NITROSOPYRROLIDINE	94 U	95 U	83 U	85 U	80 U	83 U	81 U
NAPHTHALENE	1.8 U	1.9 U	1.6 U	1.7 U	1.6 U	1.6 U	1.6 U
O,O,O-TRIETHYL PHOSPHOROTHIOATE	94 U	95 U	83 U	85 U	80 U	83 U	81 U
O-TOLUIDINE	94 U	95 U	83 U	85 U	80 U	83 U	81 U
P-(DIMETHYLAMINO)AZOBENZENE	94 U	95 U	83 U	85 U	80 U	83 U	81 U
PENTACHLOROBENZENE	94 U	95 U	83 U	85 U	80 U	83 U	81 U
PENTACHLOROETHANE	94 U	95 U	83 U	85 U	80 U	83 U	81 U
PENTACHLORONITROBENZENE	94 UJ	95 UJ	83 UJ	85 U	80 U	83 U	81 U
PHENACETIN	94 U	95 U	83 U	85 U	80 U	83 U	81 U
PHENANTHRENE	1.8 U	1.9 U	1.6 U	1.7 U	1.6 U	1.6 U	1.6 U
PHENOL	94 U	95 U	83 U	85 U	80 U	83 U	81 U
PRONAMIDE	94 U	95 U	83 U	85 U	80 U	83 U	81 U
PYRENE	1.8 U	1.9 U	1.6 U	1.7 U	1.6 U	1.6 U	81 U
PYRIDINE	94 UJ	95 UJ	83 UJ	85 U	80 U	83 U	81 U
SAFROLE	94 U	95 U	83 U	85 U	80 U	83 U	81 U
Energetics (MG/KG)							
1,3,5-TRINITROBENZENE	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U
1,3-DINITROBENZENE	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U
2,4,6-TRINITROTOLUENE	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U
2,4-DINITROTOLUENE	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U
2,6-DINITROTOLUENE	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U
2-AMINO-4,6-DINITROTOLUENE	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U
2-NITROTOLUENE	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U
3-NITROTOLUENE	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U
4-AMINO-2,6-DINITROTOLUENE	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U
4-NITROTOLUENE	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U
HMX	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U
NITROBENZENE	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U
NITROCELLULOSE	700 U	710 U	620 U	640 U	600 U	620 U	600 U
NITROGLYCERIN	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U
PETN	1.8 U	1.9 U	1.6 U	0.25 U	0.25 U	0.25 U	0.25 U
RDX	0.25 U	0.44999 J	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U
TETRYL	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U
Pesticides/PCB's (UG/KG)							
4,4'-DDD	2.4 U	2.4 U	2.1 U	2.2 UJ	2 U	2.1 UJ	2.1 UJ
4,4'-DDE	2.4 U	2.4 U	2.1 U	2.2 U	2 U	2.1 U	2.1 U
4,4'-DDT	2.4 U	2.4 U	2.1 U	2.2 U	2 U	2.1 UJ	2.1 UJ
ALDRIN	1.3 U	1.3 U	1.1 U	1.1 U	1.1 U	1.1 U	1.1 U
ALPHA-BHC	1.3 U	1.3 U	1.1 U	1.1 U	1.1 U	1.1 UJ	1.1 UJ
ALPHA-CHLORDANE	1.3 U	1.3 U	1.1 U	1.1 U	1.1 U	1.1 U	1.1 U
AROCLOR-1016	24 U	24 U	21 U	22 U	20 U	21 U	21 U
AROCLOR-1221	48 U	48 U	42 U	43 U	41 U	42 U	41 U
AROCLOR-1232	24 U	24 U	21 U	22 U	20 U	21 U	21 U
AROCLOR-1242	24 U	24 U	21 U	22 U	20 U	21 U	21 U
AROCLOR-1248	24 U	24 U	21 U	22 U	20 U	21 U	21 U
AROCLOR-1254	24 U	24 U	21 U	22 U	20 U	21 U	21 U
AROCLOR-1260	24 U	24 U	21 U	22 U	20 UJ	21 U	21 U

TABLE E-5

SUMMARY OF ANALYTIC RESULTS IN DEEP SEDIMENT
SWMU 3 - OLD JEEP TRAIL/LITTLE SULPHUR CREEK
NSWC CRANE
CRANE, INDIANA

LOCATION	03SWSD17	03SWSD18	03SWSD19	03SWSD01	03SWSD02	03SWSD03	03SWSD04
NSAMPLE	03SD170612	03SD180612	03SD190612	03SD010612	03SD020612	03SD030612	03SD040612
SAMPLE	03SD170612	03SD180612	03SD190612	03SD010612	03SD020612	03SD030612	03SD040612
MATRIX	SD	SD	SD	BACKGROUND	BACKGROUND	BACKGROUND	BACKGROUND
SACODE	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
DEPTH RANGE	0.5 - 1	0.5 - 1	0.5 - 1	0.5 - 1	0.5 - 1	0.5 - 1	0.5 - 1
QC_TYPE	NM	NM	NM	NM	NM	NM	NM
STATUS	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
SAMPLE DATE	- -	- -	- -	- -	- -	- -	- -
VALIDATED	Y	Y	Y	Y	Y	Y	Y
COLLECTION METHOD	GRAB	GRAB	GRAB	GRAB	GRAB	GRAB	GRAB
BETA-BHC	1.3 U	1.3 U	1.1 U	1.1 U	1.1 U	1.1 U	1.1 U
DELTA-BHC	1.3 U	1.3 U	1.1 U	1.1 U	1.1 U	1.1 U	1.1 U
DIELDRIN	2.4 U	2.4 U	2.1 U	2.2 UJ	2 UJ	2.1 UJ	2.1 UJ
ENDOSULFAN I	1.3 U	1.3 U	1.1 U	1.1 U	1.1 U	1.1 UJ	1.1 UJ
ENDOSULFAN II	2.4 U	2.4 U	2.1 U	2.2 U	2 UJ	2.1 U	2.1 U
ENDOSULFAN SULFATE	2.4 U	2.4 U	2.1 U	2.2 U	2 U	2.1 U	2.1 U
ENDRIN	2.4 U	2.4 U	2.1 U	2.2 UJ	2 U	2.1 UJ	2.1 UJ
ENDRIN ALDEHYDE	2.4 U	2.4 U	2.1 U	2.2 U	2 U	2.1 U	2.1 U
ENDRIN KETONE	2.4 UJ	2.4 UJ	2.1 U	2.2 U	2 UJ	2.1 U	2.1 U
GAMMA-BHC (LINDANE)	1.3 U	1.3 U	1.1 U	1.1 U	1.1 U	1.1 UJ	1.1 UJ
GAMMA-CHLORDANE	1.3 U	1.3 U	1.1 U	1.1 U	1.1 U	1.1 U	1.1 U
HEPTACHLOR	1.3 U	1.3 U	1.1 U	1.1 U	1.1 UJ	1.1 UJ	1.1 UJ
HEPTACHLOR EPOXIDE	1.3 U	1.3 U	1.1 U	1.1 U	1.1 U	1.1 U	1.1 U
METHOXYCHLOR	13 U	13 U	11 U	11 U	11 UJ	11 UJ	11 UJ
TOXAPHENE	130 U	130 U	110 U	110 U	110 U	110 U	110 U
Herbicides (UG/KG)							
2,4,5-T	2 U	2 U	3.1 J	1.8 U	1.7 U	3.3 J	3.9
2,4,5-TP (SILVEX)	2 U	2 U	1.7 U	1.8 U	2.4 J	1.7 U	1.7 U
2,4-D	6.9 J	2 U	1.7 U	1.8 U	1.7 U	9.3 R	7.8 J
DINOSEB	3.5 J	2 U	1.7 U	1.8 U	7.5 J	1.7 U	1.7 U
HEXACHLOROPHENE	9.4 U	9.5 U	8.3 U	8.5 U	2.6 J	8.3 U	8.1 U
PENTACHLOROPHENOL	0.48 U	2.1	0.42 U	0.43 U	4.4 J	1.7 J	0.41 U
Inorganics (MG/KG)							
ALUMINUM	4650 J	12500 J	5250 J	9960	5910	7820	8950
ANTIMONY	0.62 U	1.3 U	1.3 U	0.13 U	0.79 J	1 J	0.45 U
ARSENIC	6.5	16.1	6.7	0.29	9.5	9.4	9.6
BARIUM	57.3 J	228 J	112 J	129 J	45.1 J	65 J	54.2 J
BERYLLIUM	0.65	1.3	1.3	1.2	1.1	1.5	1.2
CADMIUM	0.47	1.6	0.56999	0.56 J	0.38 J	0.48 J	0.33 U
CALCIUM	2140 J	1030 J	676 J	2860 J	424 J	391 J	643 J
CHROMIUM	20.9 J	37.9 J	43.9 J	10.8 J	24.1 J	53.7 J	16.4 J
COBALT	11.2 J	19.8 J	25.2 J	20	15.2	31	19.4
COPPER	9.5	52.8	20.1	8.3	11.8	12.1	17.8
IRON	23200 J	51400 J	64400 J	9070 J	38700 J	62800 J	40200 J
LEAD	16.5 J	61.1 J	37 J	3.6	20.1	26.4	20.2
MAGNESIUM	444 J	552 J	368 J	3350 J	602 J	815 J	1790 J
MANGANESE	328 J	1140 J	1190 J	221 J	764 J	1870 J	518 J
MERCURY	0.03 U	0.03	0.01999 U	0.02 UJ	0.03	0.03	0.02 U
NICKEL	13.5 J	26.7 J	28.1 J	48.6 J	16.4 J	31.2 J	30.1 J
POTASSIUM	344 J	320 J	269 J	3220 J	349 J	392 J	837 J
SELENIUM	0.2 U	0.2 U	0.18 U	0.36 U	0.75 U	0.53 U	0.63 U
SILVER	0.05 U	0.07 U	0.28 J	0.04 U	0.04 U	0.05 U	0.05 U
SODIUM	12.7 U	14 U	4.4 U	38.6 U	3.4 U	3.7 U	3.8 U
THALLIUM	0.07	0.07	0.07999	0.08	0.08 U	0.1	0.1
TIN	1 U	1.4 U	0.46 U	0.48 U	0.3 U	0.33 U	0.35 U
VANADIUM	17.8 J	32.6 J	32.4 J	3.4	27.9	38.2	21.6
ZINC	50.1 J	186 J	113 J	21.6 J	36.3 J	58 J	80.9 J
Miscellaneous Parameters							
NITRATE (MG/KG)	3.2	3.3	2.7	3.1	2.6	2.8	2.8

TABLE E-5

SUMMARY OF ANALYTIC RESULTS IN DEEP SEDIMENT
SWMU 3 - OLD JEEP TRAIL/LITTLE SULPHUR CREEK
NSWC CRANE
CRANE, INDIANA

LOCATION	03SWSD17	03SWSD18	03SWSD19	03SWSD01	03SWSD02	03SWSD03	03SWSD04
NSAMPLE	03SD170612	03SD180612	03SD190612	03SD010612	03SD020612	03SD030612	03SD040612
SAMPLE	03SD170612	03SD180612	03SD190612	03SD010612	03SD020612	03SD030612	03SD040612
MATRIX	SD	SD	SD	BACKGROUND	BACKGROUND	BACKGROUND	BACKGROUND
SACODE	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
DEPTH RANGE	0.5 - 1	0.5 - 1	0.5 - 1	0.5 - 1	0.5 - 1	0.5 - 1	0.5 - 1
QC_TYPE	NM	NM	NM	NM	NM	NM	NM
STATUS	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
SAMPLE DATE	- -	- -	- -	- -	- -	- -	- -
VALIDATED	Y	Y	Y	Y	Y	Y	Y
COLLECTION METHOD	GRAB	GRAB	GRAB	GRAB	GRAB	GRAB	GRAB
NITRITE (MG/KG)	4.7 UJ	2.6 UJ	2.3 UJ	24 UR	16 UR	20 UR	23 UR
NITRITE/NITRATE (MG/KG)	3.2	3.3 J	2.7 J	3.1	2.6	2.8	2.8
PERCENT MOISTURE (%)	27.2	38.8	14.1	17.3	16.7	13.4	16.3
PERCHLORATE (UG/KG)	27 U	33 U	23 U	24 U	24 U	23 U	24 U
PH (S.U.)	7.5 J	7.2 J	7.5 J	7 J	5.3 J	5 J	6 J
TOTAL ORGANIC CARBON (MG/KG)	9500	11000	2600	2800	7099.9	5000	4499.9

TABLE E-6

SUMMARY OF ANALYTIC RESULTS IN LOW FLOW SURFACE WATER
SWMU 3 - OLD JEEP TRAIL/LITTLE SULPHUR CREEK
NSWC CRANE
CRANE, INDIANA

LOCATION	03SWSD06	03SWSD06	03SWSD15	03SWSD15	03SWSD16	03SWSD16	03SWSD17	03SWSD17	03SWSD18	03SWSD18	03SWSD19	03SWSD19
NSAMPLE	03SW0601	03SW0601-F	03SW1501	03SW1501-F	03SW1601	03SW1601-F	03SW1701	03SW1701-F	03SW1801	03SW1801-F	03SW1901	03SW1901-F
SAMPLE	03SW0601	03SW0601-F	03SW1501	03SW1501-F	03SW1601	03SW1601-F	03SW1701	03SW1701-F	03SW1801	03SW1801-F	03SW1901	03SW1901-F
MATRIX	SW	SW	SW	SW	SW	SW	SW	SW	SW	SW	SW	SW
SACODE	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	ORIG	ORIG
QC_TYPE	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
STATUS	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
SAMPLE DATE	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
VALIDATED	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
COLLECTION METHOD	GRAB	GRAB	GRAB	GRAB	GRAB	GRAB	GRAB	GRAB	GRAB	GRAB	GRAB	GRAB
Volatile Organics (UG/L)												
1,1,1,2-TETRACHLOROETHANE	0.3 UJ		0.3 U		0.3 U		0.3 U		0.3 U		0.3 U	
1,1,1-TRICHLOROETHANE	0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U	
1,1,2,2-TETRACHLOROETHANE	0.3 U		0.3 U		0.3 U		0.3 U		0.3 U		0.3 U	
1,1,2-TRICHLOROETHANE	0.3 U		0.3 U		0.3 U		0.3 U		0.3 U		0.3 U	
1,1-DICHLOROETHANE	0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U	
1,1-DICHLOROETHENE	0.3 U		0.3 U		0.3 U		0.3 U		0.3 U		0.3 U	
1,2,3-TRICHLOROPROPANE	0.3 U		0.3 U		0.3 U		0.3 U		0.3 U		0.3 U	
1,2-DIBROMO-3-CHLOROPROPANE	0.3 U		0.3 U		0.3 U		0.3 U		0.3 U		0.3 U	
1,2-DIBROMOETHANE	0.3 U		0.3 U		0.3 U		0.3 U		0.3 U		0.3 U	
1,2-DICHLOROETHANE	0.3 U		0.3 U		0.3 U		0.3 U		0.3 U		0.3 U	
1,2-DICHLOROPROPANE	0.3 U		0.3 U		0.3 U		0.3 U		0.3 U		0.3 U	
1,4-DIOXANE	44 U		44 U		44 U		44 U		44 U		44 U	
2-BUTANONE	0.6 UR		0.5 U		0.5 U		0.6 J		0.5 UJ		0.5 UJ	
2-HEXANONE	0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U	
3-CHLOROPROPENE	0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U	
4-METHYL-2-PENTANONE	0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U	
ACETONE	0.5 UR		0.5 UJ		0.5 UJ		1.8 U		0.5 UJ		0.5 UJ	
ACETONITRILE	3.7 U		3.7 U		3.7 U		3.7 U		3.7 U		3.7 U	
ACROLEIN	0.5 UR		0.5 UR		0.5 UR		0.5 UR		0.5 UR		0.5 UR	
ACRYLONITRILE	0.5 UR		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U	
BENZENE	0.3 U		0.3 U		0.3 U		0.3 U		0.3 U		0.3 U	
BROMODICHLOROMETHANE	0.3 U		0.3 U		0.3 U		0.3 U		0.3 U		0.3 U	
BROMOFORM	0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U	
BROMOMETHANE	0.5 U		0.8		1		1.6		0.5 U		0.5 U	
CARBON DISULFIDE	0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U	
CARBON TETRACHLORIDE	0.3 U		0.3 U		0.3 U		0.3 U		0.3 U		0.3 U	
CHLOROBENZENE	0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U	
CHLORODIBROMOMETHANE	0.3 U		0.3 U		0.3 U		0.3 U		0.3 U		0.3 U	
CHLOROETHANE	0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U	
CHLOROFORM	0.3 U		0.3 U		0.3 U		0.3 U		0.3 U		0.3 U	
CHLOROMETHANE	0.5 U		0.5 U		0.5 U		0.5 U		0.5 UJ		0.5 UJ	
CHLOROPRENE	0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U	
CIS-1,2-DICHLOROETHENE	0.5 UR		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U	
CIS-1,3-DICHLOROPROPENE	0.3 U		0.3 U		0.3 U		0.3 U		0.3 U		0.3 U	
DIBROMOMETHANE	0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U	
DICHLORODIFLUOROMETHANE	0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U	
ETHYL METHACRYLATE	0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U	
ETHYLBENZENE	0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U	
ISOBUTANOL	6.3 U		6.3 U		6.3 U		6.3 U		6.3 U		6.3 U	
METHACRYLONITRILE	0.5 UR		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U	
METHYL IODIDE	0.5 UJ		0.5 UJ		0.5 UJ		0.5 UJ		0.5 UJ		0.5 UJ	
METHYL METHACRYLATE	0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U	
METHYLENE CHLORIDE	0.5 UJ		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U	
PROPIONITRILE	4.6 U		4.6 U		4.6 U		4.6 U		4.6 U		4.6 U	
STYRENE	0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U	
TETRACHLOROETHENE	0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U	
TOLUENE	0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U	
TOTAL XYLENES	0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U	

TABLE E-6

SUMMARY OF ANALYTIC RESULTS IN LOW FLOW SURFACE WATER
SWMU 3 - OLD JEEP TRAIL/LITTLE SULPHUR CREEK
NSWC CRANE
CRANE, INDIANA

LOCATION	03SWSD06	03SWSD06	03SWSD15	03SWSD15	03SWSD16	03SWSD16	03SWSD17	03SWSD17	03SWSD18	03SWSD18	03SWSD19	03SWSD19
NSAMPLE	03SW0601	03SW0601-F	03SW1501	03SW1501-F	03SW1601	03SW1601-F	03SW1701	03SW1701-F	03SW1801	03SW1801-F	03SW1901	03SW1901-F
SAMPLE	03SW0601	03SW0601-F	03SW1501	03SW1501-F	03SW1601	03SW1601-F	03SW1701	03SW1701-F	03SW1801	03SW1801-F	03SW1901	03SW1901-F
MATRIX	SW	SW	SW	SW	SW	SW	SW	SW	SW	SW	SW	SW
SACODE	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	ORIG	ORIG
QC_TYPE	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
STATUS	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
SAMPLE DATE	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
VALIDATED	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
COLLECTION METHOD	GRAB	GRAB	GRAB	GRAB	GRAB	GRAB	GRAB	GRAB	GRAB	GRAB	GRAB	GRAB
TRANS-1,2-DICHLOROETHENE	0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U	
TRANS-1,3-DICHLOROPROPENE	0.3 U		0.3 U		0.3 U		0.3 U		0.3 U		0.3 U	
TRANS-1,4-DICHLORO-2-BUTENE	0.5 UJ		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U	
TRICHLOROETHENE	0.5 U		0.5 U		0.5 U		0.4 J		0.5 U		0.5 U	
TRICHLOROFLUOROMETHANE	0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U	
VINYL ACETATE	0.5 UJ		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U	
VINYL CHLORIDE	0.3 U		0.3 U		0.3 U		0.3 U		0.3 UJ		0.3 UJ	
Semivolatile Organics (UG/L)												
1,2,4,5-TETRACHLOROBENZENE	0.98 U		0.95 U		1 U		0.98 U		0.98 U		0.94 U	
1,2,4-TRICHLOROBENZENE	0.98 U		0.95 U		1 U		0.98 U		0.98 U		0.94 UJ	
1,2-DICHLOROBENZENE	0.98 U		0.95 U		1 U		0.98 U		0.98 U		0.94 UJ	
1,3-DICHLOROBENZENE	0.98 U		0.95 U		1 U		0.98 U		0.98 U		0.94 UJ	
1,4-DICHLOROBENZENE	0.98 U		0.95 U		1 U		0.98 U		0.98 U		0.94 U	
1,4-NAPHTHOQUINONE	0.98 U		0.95 U		1 U		0.98 U		0.98 U		0.94 U	
1,4-PHENYLENEDIAMINE	0.98 UR		0.95 UR		1 UR		0.98 UR		0.98 UR		0.94 UR	
1-NAPHTHYLAMINE	0.98 U		0.95 U		1 U		0.98 U		0.98 U		0.94 U	
2,2'-OXYBIS(1-CHLOROPROPANE)	0.98 U		0.95 U		1 U		0.98 U		0.98 U		0.94 U	
2,3,4,6-TETRACHLOROPHENOL	0.98 U		0.95 U		1 U		0.98 U		0.98 U		0.94 U	
2,4,5-TRICHLOROPHENOL	0.98 U		0.95 U		1 U		0.98 U		0.98 U		0.94 U	
2,4,6-TRICHLOROPHENOL	0.98 U		0.95 U		1 U		0.98 U		0.98 U		0.94 U	
2,4-DICHLOROPHENOL	0.98 U		0.95 U		1 U		0.98 U		0.98 U		0.94 U	
2,4-DIMETHYLPHENOL	0.98 U		0.95 U		1 U		0.98 U		0.98 U		0.94 U	
2,4-DINITROPHENOL	0.98 UJ		0.95 UJ		1 UJ		0.98 UJ		0.98 UJ		0.94 UJ	
2,6-DICHLOROPHENOL	0.98 U		0.95 U		1 U		0.98 U		0.98 U		0.94 U	
2-ACETYLAMINOFLUORENE	0.98 U		0.95 U		1 U		0.98 U		0.98 U		0.94 U	
2-CHLORONAPHTHALENE	0.98 U		0.95 U		1 U		0.98 U		0.98 U		0.94 UJ	
2-CHLOROPHENOL	0.98 U		0.95 U		1 U		0.98 U		0.98 U		0.94 U	
2-METHYLNAPHTHALENE	0.02 U		0.019 U		0.019 U		0.021 U		0.019 U		0.019 U	
2-METHYLPHENOL	0.98 U		0.95 U		1 U		0.98 U		0.98 U		0.94 U	
2-NAPHTHYLAMINE	0.98 U		0.95 U		1 U		0.98 U		0.98 U		0.94 U	
2-NITROANILINE	0.98 U		0.95 U		1 U		0.98 U		0.98 U		0.94 U	
2-NITROPHENOL	0.98 U		0.95 U		1 U		0.98 U		0.98 U		0.94 U	
2-PICOLINE	0.98 U		0.95 U		1 U		0.98 U		0.98 U		0.94 U	
3&4-METHYLPHENOL	0.98 U		0.95 U		1 U		0.98 U		0.98 U		0.94 U	
3,3'-DICHLOROBENZIDINE	0.98 U		0.95 U		1 UJ		0.98 U		0.98 U		0.94 U	
3,3'-DIMETHYLBENZIDINE	0.98 UJ		0.95 UJ		1 U		0.98 UJ		0.98 UJ		0.94 UJ	
3-METHYLCHOLANTHRENE	0.98 U		0.95 U		1 U		0.98 U		0.98 U		0.94 U	
3-NITROANILINE	0.98 U		0.95 U		1 U		0.98 U		0.98 U		0.94 U	
4,6-DINITRO-2-METHYLPHENOL	0.98 UJ		0.95 UJ		1 UJ		0.98 UJ		0.98 UJ		0.94 UJ	
4-AMINOBIPHENYL	0.98 U		0.95 U		1 U		0.98 U		0.98 U		0.94 U	
4-BROMOPHENYL PHENYL ETHER	0.98 U		0.95 U		1 U		0.98 U		0.98 U		0.94 U	
4-CHLORO-3-METHYLPHENOL	0.98 U		0.95 U		1 U		0.98 U		0.98 U		0.94 U	
4-CHLOROANILINE	0.98 U		0.95 U		1 U		0.98 U		0.98 U		0.94 U	
4-CHLOROPHENYL PHENYL ETHER	0.98 U		0.95 U		1 U		0.98 U		0.98 U		0.94 U	
4-NITROANILINE	0.98 U		0.95 U		1 U		0.98 U		0.98 U		0.94 U	
4-NITROPHENOL	0.98 UJ		0.95 UJ		1 UJ		0.98 UJ		0.98 U		0.94 UJ	
4-NITROQUINOLINE-1-OXIDE	0.98 U		0.95 U		1 U		0.98 U		0.98 U		0.94 U	
5-NITRO-O-TOLUIDINE	0.98 U		0.95 U		1 U		0.98 U		0.98 U		0.94 U	
7,12-DIMETHYLBENZ(A)ANTHRACENE	0.98 U		0.95 U		1 U		0.98 U		0.98 U		0.94 U	

TABLE E-6

SUMMARY OF ANALYTIC RESULTS IN LOW FLOW SURFACE WATER
SWMU 3 - OLD JEEP TRAIL/LITTLE SULPHUR CREEK
NSWC CRANE
CRANE, INDIANA

LOCATION	03SWSD06	03SWSD06	03SWSD15	03SWSD15	03SWSD16	03SWSD16	03SWSD17	03SWSD17	03SWSD18	03SWSD18	03SWSD19	03SWSD19
NSAMPLE	03SW0601	03SW0601-F	03SW1501	03SW1501-F	03SW1601	03SW1601-F	03SW1701	03SW1701-F	03SW1801	03SW1801-F	03SW1901	03SW1901-F
SAMPLE	03SW0601	03SW0601-F	03SW1501	03SW1501-F	03SW1601	03SW1601-F	03SW1701	03SW1701-F	03SW1801	03SW1801-F	03SW1901	03SW1901-F
MATRIX	SW	SW	SW	SW	SW	SW	SW	SW	SW	SW	SW	SW
SACODE	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	ORIG	ORIG
QC_TYPE	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
STATUS	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
SAMPLE DATE	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
VALIDATED	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
COLLECTION METHOD	GRAB	GRAB	GRAB	GRAB	GRAB	GRAB	GRAB	GRAB	GRAB	GRAB	GRAB	GRAB
A,A-DIMETHYLPHENETHYLAMINE	0.98 U		0.95 U		1 U		0.98 U		0.98 U		0.94 U	
ACENAPHTHENE	0.02 U		0.019 U		0.019 U		0.021 U		0.019 U		0.019 U	
ACENAPHTHYLENE	0.02 U		0.019 U		0.019 U		0.021 U		0.019 U		0.019 U	
ACETOPHENONE	0.98 U		0.95 U		1 U		0.98 U		0.98 U		0.94 U	
ANILINE	0.98 U		0.95 U		1 U		0.98 U		0.98 U		0.94 U	
ANTHRACENE	0.02 U		0.019 U		0.019 U		0.021 U		0.019 U		0.019 U	
ARAMITE	0.98 U		0.95 U		1 U		0.98 U		0.98 U		0.94 U	
BENZO(A)ANTHRACENE	0.02 U		0.019 U		0.019 U		0.021 U		0.019 U		0.019 U	
BENZO(A)PYRENE	0.02 U		0.019 U		0.019 U		0.021 U		0.019 U		0.019 U	
BENZO(B)FLUORANTHENE	0.02 U		0.019 U		0.019 U		0.021 U		0.019 U		0.019 U	
BENZO(G,H,I)PERYLENE	0.02 U		0.019 U		0.019 U		0.021 U		0.019 U		0.019 U	
BENZO(K)FLUORANTHENE	0.02 U		0.019 U		0.019 U		0.021 U		0.019 U		0.019 U	
BENZYL ALCOHOL	0.98 U		0.95 U		1 U		0.98 U		0.98 U		0.94 U	
BIS(2-CHLOROETHOXY)METHANE	0.98 U		0.95 U		1 U		0.98 U		0.98 U		0.94 U	
BIS(2-CHLOROETHYL)ETHER	0.98 U		0.95 U		1 U		0.98 U		0.98 U		0.94 U	
BIS(2-ETHYLHEXYL)PHTHALATE	0.98 U		0.95 U		1 U		0.98 U		0.98 U		0.94 U	
BUTYL BENZYL PHTHALATE	0.98 U		0.95 U		1 U		0.98 U		0.98 U		0.94 U	
CHLOROBENZILATE	0.98 U		0.95 U		1 U		0.98 U		0.98 U		0.94 U	
CHRYSENE	0.02 U		0.019 U		0.019 U		0.021 U		0.019 U		0.019 U	
DI-N-BUTYL PHTHALATE	0.98 U		0.95 U		1 U		0.98 U		0.98 U		0.94 U	
DI-N-OCTYL PHTHALATE	0.98 U		0.95 U		1 U		0.98 U		0.98 U		0.94 U	
DIALLATE	0.98 U		0.95 U		1 U		0.98 U		0.98 U		0.94 U	
DIBENZO(A,H)ANTHRACENE	0.02 U		0.019 U		0.019 U		0.021 U		0.019 U		0.019 U	
DIBENZOFURAN	0.98 U		0.95 U		1 U		0.98 U		0.98 U		0.94 U	
DIETHYL PHTHALATE	0.98 U		0.95 U		1 U		0.98 U		0.98 U		0.94 U	
DIMETHYL PHTHALATE	0.98 U		0.95 U		1 U		0.98 U		0.98 U		0.94 U	
DIPHENYLAMINE	0.98 U		0.95 U		1 U		0.98 U		0.98 U		0.94 U	
ETHYL METHANE SULFONATE	0.98 U		0.95 U		1 U		0.98 U		0.98 U		0.94 U	
ETHYL PARATHION	0.98 U		0.95 U		1 U		0.98 U		0.98 U		0.94 U	
FLUORANTHENE	0.02 U		0.019 U		0.019 U		0.021 U		0.019 U		0.019 U	
FLUORENE	0.02 U		0.019 U		0.019 U		0.021 U		0.019 U		0.019 U	
HEXACHLOROBENZENE	0.98 U		0.95 U		1 U		0.98 U		0.98 U		0.94 U	
HEXACHLOROBUTADIENE	0.98 U		0.95 U		1 U		0.98 U		0.98 U		0.94 U	
HEXACHLOROCYCLOPENTADIENE	0.98 U		0.95 U		1 U		0.98 U		0.98 U		0.94 U	
HEXACHLOROETHANE	0.98 U		0.95 U		1 U		0.98 U		0.98 U		0.94 U	
HEXACHLOROPROPENE	0.98 U		0.95 U		1 U		0.98 U		0.98 U		0.94 U	
INDENO(1,2,3-CD)PYRENE	0.02 U		0.019 U		0.019 U		0.021 U		0.019 U		0.019 U	
ISODRIN	0.98 U		0.95 U		1 U		0.98 U		0.98 U		0.94 U	
ISOPHORONE	0.98 U		0.95 U		1 U		0.98 U		0.98 U		0.94 U	
ISOSAFROLE	0.98 U		0.95 U		1 U		0.98 U		0.98 U		0.94 U	
KEPONE	0.98 UR		0.95 UR		1 UR		0.98 UR		0.98 UR		0.94 UR	
METHAPYRILENE	0.98 U		0.95 U		1 U		0.98 U		0.98 U		0.94 U	
METHYL METHANE SULFONATE	0.98 U		0.95 U		1 U		0.98 U		0.98 U		0.94 U	
METHYL PARATHION	0.98 UJ		0.95 UJ		1 UJ		0.98 UJ		0.98 U		0.94 U	
N-NITROSO-DI-N-BUTYLAMINE	0.98 U		0.95 U		1 U		0.98 U		0.98 U		0.94 U	
N-NITROSO-DI-N-PROPYLAMINE	0.98 U		0.95 U		1 U		0.98 U		0.98 U		0.94 U	
N-NITROSODIETHYLAMINE	0.98 U		0.95 U		1 U		0.98 U		0.98 U		0.94 U	
N-NITROSODIMETHYLAMINE	0.98 U		0.95 U		1 U		0.98 U		0.98 U		0.94 U	
N-NITROSOMETHYLETHYLAMINE	0.98 U		0.95 U		1 U		0.98 U		0.98 U		0.94 U	

TABLE E-6

SUMMARY OF ANALYTIC RESULTS IN LOW FLOW SURFACE WATER
SWMU 3 - OLD JEEP TRAIL/LITTLE SULPHUR CREEK
NSWC CRANE
CRANE, INDIANA

LOCATION	03SWSD06	03SWSD06	03SWSD15	03SWSD15	03SWSD16	03SWSD16	03SWSD17	03SWSD17	03SWSD18	03SWSD18	03SWSD19	03SWSD19
NSAMPLE	03SW0601	03SW0601-F	03SW1501	03SW1501-F	03SW1601	03SW1601-F	03SW1701	03SW1701-F	03SW1801	03SW1801-F	03SW1901	03SW1901-F
SAMPLE	03SW0601	03SW0601-F	03SW1501	03SW1501-F	03SW1601	03SW1601-F	03SW1701	03SW1701-F	03SW1801	03SW1801-F	03SW1901	03SW1901-F
MATRIX	SW	SW	SW	SW	SW	SW	SW	SW	SW	SW	SW	SW
SACODE	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	ORIG	ORIG
QC_TYPE	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
STATUS	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
SAMPLE DATE	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
VALIDATED	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
COLLECTION METHOD	GRAB	GRAB	GRAB	GRAB	GRAB	GRAB	GRAB	GRAB	GRAB	GRAB	GRAB	GRAB
N-NITROSOMORPHOLINE	0.98 U		0.95 U		1 U		0.98 U		0.98 U		0.94 U	
N-NITROSOPIPERIDINE	0.98 U		0.95 U		1 U		0.98 U		0.98 U		0.94 U	
N-NITROSOPYRROLIDINE	0.98 U		0.95 U		1 U		0.98 U		0.98 U		0.94 U	
NAPHTHALENE	0.02 U		0.019 U		0.02 U		0.02 U		0.02 U		0.019 U	
O,O,O-TRIETHYL PHOSPHOROTHIOATE	0.98 U		0.95 U		1 U		0.98 U		0.98 U		0.94 U	
O-TOLUIDINE	0.98 U		0.95 U		1 U		0.98 U		0.98 U		0.94 U	
P-(DIMETHYLAMINO)AZOBENZENE	0.98 U		0.95 U		1 U		0.98 U		0.98 U		0.94 U	
PENTACHLOROBENZENE	0.98 U		0.95 U		1 U		0.98 U		0.98 U		0.94 U	
PENTACHLOROETHANE	0.98 U		0.95 U		1 U		0.98 U		0.98 U		0.94 U	
PENTACHLORONITROBENZENE	0.98 U		0.95 U		1 U		0.98 U		0.98 U		0.94 U	
PHENACETIN	0.98 U		0.95 U		1 U		0.98 U		0.98 U		0.94 U	
PHENANTHRENE	0.02 U		0.019 U		0.019 U		0.021 U		0.019 U		0.019 U	
PHENOL	0.98 U		0.95 U		1 U		0.98 U		0.98 U		0.94 U	
PRONAMIDE	0.98 U		0.95 U		1 U		0.98 U		0.98 U		0.94 U	
PYRENE	0.02 U		0.019 U		0.019 U		0.021 U		0.019 U		0.019 U	
PYRIDINE	0.98 U		0.95 U		1 U		0.98 U		0.98 U		0.94 U	
SAFROLE	0.98 U		0.95 U		1 U		0.98 U		0.98 U		0.94 U	
Energetics (UG/L)												
1,3,5-TRINITROBENZENE	0.35 U		0.35 U		0.35 U		0.35 U		0.35 U		0.35 UJ	
1,3-DINITROBENZENE	0.35 U		0.35 U		0.35 U		0.35 U		0.35 U		0.35 UJ	
2,4,6-TRINITROTOLUENE	0.35 U		0.35 U		0.35 U		0.68		0.35 U		0.35 U	
2,4-DINITROTOLUENE	0.35 U		0.35 U		0.35 U		0.35 U		0.35 U		0.35 UJ	
2,6-DINITROTOLUENE	0.35 U		0.35 U		0.35 U		0.35 U		0.35 U		0.35 UJ	
2-AMINO-4,6-DINITROTOLUENE	0.75 J		0.35 U		0.35 U		0.37 J		0.35 U		0.35 U	
2-NITROTOLUENE	0.35 U		0.35 U		0.35 U		0.35 U		0.35 U		0.35 UJ	
3-NITROTOLUENE	0.35 U		0.35 U		0.35 U		0.35 U		0.35 U		0.35 UJ	
4-AMINO-2,6-DINITROTOLUENE	1.7		0.35 U		0.35 U		0.83		0.68 J		0.64 J	
4-NITROTOLUENE	0.35 U		0.35 U		0.35 U		0.35 U		0.35 U		0.35 UJ	
HMX	12		3.1		3.1 J		7.2 J		7.2		6.5 J	
NITROBENZENE	0.35 U		0.35 U		0.35 U		0.35 U		0.35 U		0.35 U	
NITROCELLULOSE	750 U		750 U		750 U		750 U		750 U		750 U	
NITROGLYCERIN	3.5 U		3.5 U		3.5 U		3.5 U		3.5 U		3.5 U	
PETN	0.16 U		0.16 U		0.16 U		0.16 U		0.16 U		0.16 U	
RDX	4.4		2.4 J		2.3		11		9.5		7.7 J	
TETRYL	0.35 U		0.35 U		0.35 U		0.35 U		0.35 U		0.35 U	
Pesticides/PCB's (UG/L)												
4,4'-DDD	0.025 U		0.024 U		0.025 U		0.025 U		0.025 U		0.024 U	
4,4'-DDE	0.025 U		0.024 U		0.025 U		0.025 U		0.025 U		0.024 U	
4,4'-DDT	0.025 U		0.024 U		0.025 U		0.025 U		0.025 U		0.024 U	
ALDRIN	0.005 U		0.0048 U		0.0049 U		0.0049 U		0.0049 U		0.0047 U	
ALPHA-BHC	0.005 U		0.0048 U		0.0049 U		0.0049 U		0.0049 U		0.0047 U	
ALPHA-CHLORDANE	0.016 U		0.014 U		0.015 U		0.015 U		0.015 U		0.014 U	
AROCLOR-1016	0.25 U		0.24 U		0.25 U		0.25 U		0.25 U		0.24 U	
AROCLOR-1221	0.25 U		0.24 U		0.25 U		0.25 U		0.25 U		0.24 U	
AROCLOR-1232	0.25 U		0.24 U		0.25 U		0.25 U		0.25 U		0.24 U	
AROCLOR-1242	0.25 U		0.24 U		0.25 U		0.25 U		0.25 U		0.24 U	
AROCLOR-1248	0.25 U		0.24 U		0.25 U		0.25 U		0.25 U		0.24 U	
AROCLOR-1254	0.25 U		0.24 U		0.25 U		0.25 U		0.25 U		0.24 U	
AROCLOR-1260	0.25 U		0.24 U		0.25 U		0.25 U		0.25 U		0.24 U	

TABLE E-6

SUMMARY OF ANALYTIC RESULTS IN LOW FLOW SURFACE WATER
SWMU 3 - OLD JEEP TRAIL/LITTLE SULPHUR CREEK
NSWC CRANE
CRANE, INDIANA

LOCATION	03SWSD06	03SWSD06	03SWSD15	03SWSD15	03SWSD16	03SWSD16	03SWSD17	03SWSD17	03SWSD18	03SWSD18	03SWSD19	03SWSD19
NSAMPLE	03SW0601	03SW0601-F	03SW1501	03SW1501-F	03SW1601	03SW1601-F	03SW1701	03SW1701-F	03SW1801	03SW1801-F	03SW1901	03SW1901-F
SAMPLE	03SW0601	03SW0601-F	03SW1501	03SW1501-F	03SW1601	03SW1601-F	03SW1701	03SW1701-F	03SW1801	03SW1801-F	03SW1901	03SW1901-F
MATRIX	SW	SW	SW	SW	SW	SW	SW	SW	SW	SW	SW	SW
SACODE	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	ORIG	ORIG
QC_TYPE	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
STATUS	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
SAMPLE DATE	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
VALIDATED	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
COLLECTION METHOD	GRAB	GRAB	GRAB	GRAB	GRAB	GRAB	GRAB	GRAB	GRAB	GRAB	GRAB	GRAB
BETA-BHC	0.015 U		0.014 U		0.015 U		0.015 U		0.015 U		0.014 U	
DELTA-BHC	0.025 U		0.024 U		0.025 U		0.025 U		0.025 U		0.024 U	
DIELDRIN	0.01 U		0.0095 U		0.0098 U		0.0098 U		0.0098 U		0.0094 U	
ENDOSULFAN I	0.025 U		0.024 U		0.025 U		0.025 U		0.025 U		0.024 U	
ENDOSULFAN II	0.025 U		0.024 U		0.025 U		0.025 U		0.025 U		0.024 U	
ENDOSULFAN SULFATE	0.05 U		0.048 U		0.049 U		0.049 U		0.049 U		0.047 U	
ENDRIN	0.03 U		0.029 U		0.029 U		0.029 U		0.029 U		0.028 U	
ENDRIN ALDEHYDE	0.05 U		0.048 U		0.049 U		0.049 U		0.049 U		0.047 U	
ENDRIN KETONE	0.03 U		0.029 U		0.029 U		0.029 U		0.029 U		0.028 U	
GAMMA-BHC (LINDANE)	0.025 U		0.024 U		0.025 U		0.025 U		0.025 U		0.024 U	
GAMMA-CHLORDANE	0.015 U		0.014 U		0.015 U		0.015 U		0.015 U		0.014 U	
HEPTACHLOR	0.015 U		0.014 U		0.015 U		0.015 U		0.015 U		0.014 U	
HEPTACHLOR EPOXIDE	0.005 U		0.0048 U		0.0049 U		0.0049 U		0.0049 U		0.0047 U	
METHOXYCHLOR	0.059 U		0.057 U		0.059 U		0.059 U		0.059 U		0.057 U	
TOXAPHENE	1.5 U		1.4 U		1.5 U		1.5 U		1.5 U		1.4 U	
Herbicides (UG/L)												
2,4,5-T	0.064 J		0.04 U		0.04 U		0.042 R		0.04 U		0.04 U	
2,4,5-TP (SILVEX)	0.04 U		0.04 U		0.04 U		0.04 U		0.04 U		0.04 U	
2,4-D	0.04 U		0.04 U		0.045 R		0.04 U		0.04 U		0.049 R	
DINOSEB	0.04 U		0.04 U		0.04 U		0.04 U		0.04 U		0.04 U	
HEXACHLOROPHENE	0.01 U		0.01 U		0.01 U		0.01 U		0.01 U		0.01 U	
PENTACHLOROPHENOL	0.01 U		0.01 U		0.01 U		0.01 U		0.01 U		0.01 U	
Total Metals (UG/L)												
ALUMINUM	213 J		86.7		24		73.7		46		29.9	
ANTIMONY	0.48 U		0.1 U		0.12 U		0.22 U		0.22 U		0.17 U	
ARSENIC	0.56		0.23		0.23		0.29		0.3		0.26	
BARIUM	120 J		81.6		83.1		96.1		98.3		97.5	
BERYLLIUM	0.1 U		0.1 U		0.1 U		0.1 U		0.1 U		0.1 U	
CADMIUM	0.7 U		0.7 U		0.7 U		0.7 U		0.7 U		0.7 U	
CALCIUM	31600		26400 J		27400 J		27300 J		27800 J		31000 J	
CHROMIUM	0.6 J		0.47 U		0.33 U		0.49 U		0.4 U		0.33 U	
COBALT	0.31		0.13		0.1 U		0.18		0.15		0.12	
COPPER	2.5		0.75		2.2		1.5		1.3		1.1	
IRON	373		203 J		114 J		221 J		179 J		150 J	
LEAD	20		0.26		0.21		0.83		0.38		0.2	
MAGNESIUM	10300 J		6830 J		6290 J		8120 J		7920 J		7560 J	
MANGANESE	29.5		7.4 J		10.2 J		21.3 J		16.7 J		34.8 J	
MERCURY	0.1 UJ		0.1 U		0.1 U		0.1 U		0.1 U		0.1 U	
NICKEL	1.9 J		1.2		1		1.4		1		1.1	
POTASSIUM	5100		1170 J		1300 J		2150 J		2150 J		2000 J	
SELENIUM	0.4 U		0.4 U		0.4 U		0.4 U		0.4 U		0.4 U	
SILVER	0.1 U		0.1 U		0.1 U		0.13 U		0.4 U		0.1 U	
SODIUM	5850		4290		3730		4700		4520		4440	
THALLIUM	0.1 U		0.1 U		0.1 U		0.1 U		0.1 U		0.1 U	
TIN	2.6 U		2.8 J		4.9 J		3.8 J		4.2 J		4.9 J	
VANADIUM	0.54		0.16		0.1 U		0.15		0.12		0.1 U	
ZINC	6.3 U		2.1		2.5		3.4		3.1		1.8	
Dissolved Metals (UG/L)												
ALUMINUM		19.3 U		10.6		2.6 U		2.6 U		2.6 U		5.6

TABLE E-6

SUMMARY OF ANALYTIC RESULTS IN LOW FLOW SURFACE WATER
SWMU 3 - OLD JEEP TRAIL/LITTLE SULPHUR CREEK
NSWC CRANE
CRANE, INDIANA

LOCATION	03SWSD06	03SWSD06	03SWSD15	03SWSD15	03SWSD16	03SWSD16	03SWSD17	03SWSD17	03SWSD18	03SWSD18	03SWSD19	03SWSD19
NSAMPLE	03SW0601	03SW0601-F	03SW1501	03SW1501-F	03SW1601	03SW1601-F	03SW1701	03SW1701-F	03SW1801	03SW1801-F	03SW1901	03SW1901-F
SAMPLE	03SW0601	03SW0601-F	03SW1501	03SW1501-F	03SW1601	03SW1601-F	03SW1701	03SW1701-F	03SW1801	03SW1801-F	03SW1901	03SW1901-F
MATRIX	SW	SW	SW	SW	SW	SW	SW	SW	SW	SW	SW	SW
SACODE	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	ORIG	ORIG
QC_TYPE	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
STATUS	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
SAMPLE DATE	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
VALIDATED	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
COLLECTION METHOD	GRAB	GRAB	GRAB	GRAB	GRAB	GRAB	GRAB	GRAB	GRAB	GRAB	GRAB	GRAB
ANTIMONY		1.2 J		0.2 U		0.14 U		0.36 U		0.32 U		0.2 U
ARSENIC		0.42		0.2 U		0.23		0.26		0.21		0.24
BARIUM		114 J		63.1		81.7		105		97.7		98.3
BERYLLIUM		0.1 U		0.1 U		0.1 U		0.1 U		0.1 U		0.1 U
CADMIUM		0.7 U		0.7 U		0.7 U		0.7 U		0.7 U		0.7 U
CALCIUM		31200		27100 J		27100 J		29200 J		26900 J		26900 J
CHROMIUM		0.19 U		0.43 U		0.37 U		0.53 J		0.38 U		0.37 U
COBALT		0.19		0.11		0.73		0.11		0.13		0.13
COPPER		1.5		0.54		1.2		1.4		1.2		1
IRON		154 J		105		107		108		98.6		97.8
LEAD		1.1		0.1 U		0.1 U		0.1 U		0.1 U		0.1 U
MAGNESIUM		10400 J		6770 J		6000 J		7810 J		7880 J		7330 J
MANGANESE		10.2		3.4 J		4.6 J		12.2 J		12.1 J		35.6 J
MERCURY		0.1 UJ		0.1 U		0.1 U		0.1 U		0.1 U		0.1 U
NICKEL		1.2 J		1.1		1.2		1.4		1.2		1.1
POTASSIUM		5010		1150 J		1250 J		2080 J		2090 J		1930 J
SELENIUM		0.52 J		0.4 U		0.4 U		0.4 U		0.4 U		0.4 U
SILVER		0.1 U		0.1 U		0.1 U		0.1 U		0.11 U		0.1 U
SODIUM		6020		4200		3540		4410		4480		4210
THALLIUM		0.1 U		0.1 U		0.1 U		0.1 U		0.1 U		0.1 U
TIN		4.4 U		4.6 J		4.9 J		5.6 J		5.4 J		5 J
VANADIUM		0.18		0.1 U		0.1 U		0.1 U		0.1 U		0.1 U
ZINC		0.5 UJ		1.5		1.6		2.8		2.3		2.8
Miscellaneous Parameters												
PERCHLORATE (UG/L)	4 U		4 U		4 U		4 U		4 U		4 U	
TOTAL SUSPENDED SOLIDS (MG/L)	20 J		2 U		2 U		9		2 U		2 U	
Field Parameters												
DISSOLVED OXYGEN (MG/L)	9.06		10.92		7.9		9.62		10.53		10.27	
NITRATE (MG/L)	0.1		0.19		0.14		0.2		0.15		0.13	
NITRITE (MG/L)	0		0.003		0.001		0.004		0.001		0.002	
OXIDATION REDUCTION POTENTIAL (MV)	316.4		342		335		372		396		394	
PH (S.U.)	8.25		7.79		7.81		7.26		7.32		8.62	
SPECIFIC CONDUCTANCE (MS/CM)	0.312		0.263		0.261		0.292		0.276		0.275	
TEMPERATURE (C)	25.45		15		16.01		14.5		14.7		14.6	
TURBIDITY (NTU)	8.4		0		0		0.7		1.6		1.3	

TABLE E-6

SUMMARY OF ANALYTIC RESULTS IN LOW FLOW SURFACE WATER
SWMU 3 - OLD JEEP TRAIL/LITTLE SULPHUR CREEK
NSWC CRANE
CRANE, INDIANA

LOCATION	03SWSD01	03SWSD01	03SWSD02	03SWSD02	03SWSD03	03SWSD03
NSAMPLE	03SW0101	03SW0101-F	03SW0201	03SW0201-F	03SW0301	03SW0301-F
SAMPLE	03SW0101	03SW0101-F	03SW0201	03SW0201-F	03SW0301	03SW0301-F
MATRIX	BACKGROUND	BACKGROUND	BACKGROUND	BACKGROUND	BACKGROUND	BACKGROUND
SACODE	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
QC_TYPE	NM	NM	NM	NM	NM	NM
STATUS	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
SAMPLE DATE	- -	- -	- -	- -	- -	- -
VALIDATED	Y	Y	Y	Y	Y	Y
COLLECTION METHOD	GRAB	GRAB	GRAB	GRAB	GRAB	GRAB
Volatile Organics (UG/L)						
1,1,1,2-TETRACHLOROETHANE	0.3 UJ		0.3 UJ		0.3 UJ	
1,1,1-TRICHLOROETHANE	0.5 U		0.5 U		0.5 U	
1,1,2,2-TETRACHLOROETHANE	0.3 U		0.3 U		0.3 U	
1,1,2-TRICHLOROETHANE	0.3 U		0.3 U		0.3 U	
1,1-DICHLOROETHANE	0.5 U		0.5 U		0.5 U	
1,1-DICHLOROETHENE	0.3 U		0.3 U		0.3 U	
1,2,3-TRICHLOROPROPANE	0.3 U		0.3 U		0.3 U	
1,2-DIBROMO-3-CHLOROPROPANE	0.3 U		0.3 U		0.3 U	
1,2-DIBROMOETHANE	0.3 U		0.3 U		0.3 U	
1,2-DICHLOROETHANE	0.3 U		0.3 U		0.3 U	
1,2-DICHLOROPROPANE	0.3 U		0.3 U		0.3 U	
1,4-DIOXANE	44 U		44 U		44 U	
2-BUTANONE	0.5 UR		0.5 UR		0.5 UR	
2-HEXANONE	0.5 U		0.5 U		0.5 U	
3-CHLOROPROPENE	0.5 U		0.5 U		0.5 U	
4-METHYL-2-PENTANONE	0.5 U		0.5 U		0.5 U	
ACETONE	0.5 UR		0.5 UR		0.5 UR	
ACETONITRILE	3.7 U		3.7 U		3.7 U	
ACROLEIN	0.5 UR		0.5 UR		0.5 UR	
ACRYLONITRILE	0.5 UR		0.5 UR		0.5 UR	
BENZENE	0.3 U		0.3 U		0.3 U	
BROMODICHLOROMETHANE	0.3 U		0.3 U		0.3 U	
BROMOFORM	0.5 U		0.5 U		0.5 U	
BROMOMETHANE	0.5 U		0.5 U		0.5 U	
CARBON DISULFIDE	0.5 U		0.5 U		0.5 U	
CARBON TETRACHLORIDE	0.3 U		0.3 U		0.3 U	
CHLOROBENZENE	0.5 U		0.5 U		0.5 U	
CHLORODIBROMOMETHANE	0.3 U		0.3 U		0.3 U	
CHLOROETHANE	0.5 U		0.5 U		0.5 U	
CHLOROFORM	0.3 U		0.3 U		0.3 U	
CHLOROMETHANE	0.5 U		0.5 U		0.5 U	
CHLOROPRENE	0.5 U		0.5 U		0.5 U	
CIS-1,2-DICHLOROETHENE	0.5 UR		0.5 UR		0.5 UR	
CIS-1,3-DICHLOROPROPENE	0.3 U		0.3 U		0.3 U	
DIBROMOMETHANE	0.5 U		0.5 U		0.5 U	
DICHLORODIFLUOROMETHANE	0.5 U		0.5 U		0.5 U	
ETHYL METHACRYLATE	0.5 U		0.5 U		0.5 U	
ETHYLBENZENE	0.5 U		0.5 U		0.5 U	
ISOBUTANOL	6.3 U		6.3 U		6.3 U	
METHACRYLONITRILE	0.5 UR		0.5 UR		0.5 UR	
METHYL IODIDE	0.5 UJ		0.5 UJ		0.5 UJ	
METHYL METHACRYLATE	0.5 U		0.5 U		0.5 U	
METHYLENE CHLORIDE	0.5 UJ		0.5 UJ		0.5 UJ	
PROPIONITRILE	4.8 U		4.8 U		4.8 U	
STYRENE	0.5 U		0.5 U		0.5 U	
TETRACHLOROETHENE	0.5 U		0.5 U		0.5 U	
TOLUENE	0.5 U		0.5 U		0.5 U	
TOTAL XYLENES	0.5 U		0.5 U		0.5 U	

TABLE E-6

SUMMARY OF ANALYTIC RESULTS IN LOW FLOW SURFACE WATER
SWMU 3 - OLD JEEP TRAIL/LITTLE SULPHUR CREEK
NSWC CRANE
CRANE, INDIANA

LOCATION	03SWSD01	03SWSD01	03SWSD02	03SWSD02	03SWSD03	03SWSD03
NSAMPLE	03SW0101	03SW0101-F	03SW0201	03SW0201-F	03SW0301	03SW0301-F
SAMPLE	03SW0101	03SW0101-F	03SW0201	03SW0201-F	03SW0301	03SW0301-F
MATRIX	BACKGROUND	BACKGROUND	BACKGROUND	BACKGROUND	BACKGROUND	BACKGROUND
SACODE	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
QC_TYPE	NM	NM	NM	NM	NM	NM
STATUS	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
SAMPLE DATE	- -	- -	- -	- -	- -	- -
VALIDATED	Y	Y	Y	Y	Y	Y
COLLECTION METHOD	GRAB	GRAB	GRAB	GRAB	GRAB	GRAB
TRANS-1,2-DICHLOROETHENE	0.5 U		0.5 U		0.5 U	
TRANS-1,3-DICHLOROPROPENE	0.3 U		0.3 U		0.3 U	
TRANS-1,4-DICHLORO-2-BUTENE	0.5 UJ		0.5 UJ		0.5 UJ	
TRICHLOROETHENE	0.5 U		0.5 U		0.5 U	
TRICHLOROFLUOROMETHANE	0.5 U		0.5 U		0.5 U	
VINYL ACETATE	0.5 UJ		0.5 UJ		0.5 UJ	
VINYL CHLORIDE	0.3 U		0.3 U		0.3 U	
Semivolatile Organics (UG/L)						
1,2,4,5-TETRACHLOROBENZENE	1 U		0.96 U		0.94 U	
1,2,4-TRICHLOROBENZENE	1 U		0.96 U		0.94 U	
1,2-DICHLOROBENZENE	1 U		0.96 U		0.94 U	
1,3-DICHLOROBENZENE	1 U		0.96 U		0.94 U	
1,4-DICHLOROBENZENE	1 U		0.96 U		0.94 U	
1,4-NAPHTHOQUINONE	1 U		0.96 U		0.94 U	
1,4-PHENYLENEDIAMINE	1 UR		0.96 UR		0.94 UR	
1-NAPHTHYLAMINE	1 U		0.96 U		0.94 U	
2,2'-OXYBIS(1-CHLOROPROPANE)	1 U		0.96 U		0.94 U	
2,3,4,6-TETRACHLOROPHENOL	1 U		0.96 U		0.94 U	
2,4,5-TRICHLOROPHENOL	1 U		0.96 U		0.94 U	
2,4,6-TRICHLOROPHENOL	1 U		0.96 U		0.94 U	
2,4-DICHLOROPHENOL	1 U		0.96 U		0.94 U	
2,4-DIMETHYLPHENOL	1 U		0.96 U		0.94 U	
2,4-DINITROPHENOL	1 UJ		0.96 UJ		0.94 UJ	
2,6-DICHLOROPHENOL	1 U		0.96 U		0.94 U	
2-ACETYLAMINOFLUORENE	1 U		0.96 U		0.94 U	
2-CHLORONAPHTHALENE	1 U		0.96 U		0.94 U	
2-CHLOROPHENOL	1 U		0.96 U		0.94 U	
2-METHYLNAPHTHALENE	0.02 U		0.02 U		0.02 U	
2-METHYLPHENOL	1 U		0.96 U		0.94 U	
2-NAPHTHYLAMINE	1 U		0.96 U		0.94 U	
2-NITROANILINE	1 U		0.96 U		0.94 U	
2-NITROPHENOL	1 U		0.96 U		0.94 U	
2-PICOLINE	1 U		0.96 U		0.94 U	
3&4-METHYLPHENOL	1 U		0.96 U		0.94 U	
3,3'-DICHLOROBENZIDINE	1 U		0.96 U		0.94 U	
3,3'-DIMETHYLBENZIDINE	1 UJ		0.96 UJ		0.94 UJ	
3-METHYLCHOLANTHRENE	1 U		0.96 U		0.94 U	
3-NITROANILINE	1 U		0.96 U		0.94 U	
4,6-DINITRO-2-METHYLPHENOL	1 UJ		0.96 UJ		0.94 UJ	
4-AMINOBIPHENYL	1 U		0.96 U		0.94 U	
4-BROMOPHENYL PHENYL ETHER	1 U		0.96 U		0.94 U	
4-CHLORO-3-METHYLPHENOL	1 U		0.96 U		0.94 U	
4-CHLOROANILINE	1 U		0.96 U		0.94 U	
4-CHLOROPHENYL PHENYL ETHER	1 U		0.96 U		0.94 U	
4-NITROANILINE	1 U		0.96 U		0.94 U	
4-NITROPHENOL	1 U		0.96 U		0.94 U	
4-NITROQUINOLINE-1-OXIDE	1 U		0.96 U		0.94 U	
5-NITRO-O-TOLUIDINE	1 U		0.96 U		0.94 U	
7,12-DIMETHYLBENZ(A)ANTHRACENE	1 U		0.96 U		0.94 U	

TABLE E-6

SUMMARY OF ANALYTIC RESULTS IN LOW FLOW SURFACE WATER
SWMU 3 - OLD JEEP TRAIL/LITTLE SULPHUR CREEK
NSWC CRANE
CRANE, INDIANA

LOCATION	03SWSD01	03SWSD01	03SWSD02	03SWSD02	03SWSD03	03SWSD03
NSAMPLE	03SW0101	03SW0101-F	03SW0201	03SW0201-F	03SW0301	03SW0301-F
SAMPLE	03SW0101	03SW0101-F	03SW0201	03SW0201-F	03SW0301	03SW0301-F
MATRIX	BACKGROUND	BACKGROUND	BACKGROUND	BACKGROUND	BACKGROUND	BACKGROUND
SACODE	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
QC_TYPE	NM	NM	NM	NM	NM	NM
STATUS	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
SAMPLE DATE	- -	- -	- -	- -	- -	- -
VALIDATED	Y	Y	Y	Y	Y	Y
COLLECTION METHOD	GRAB	GRAB	GRAB	GRAB	GRAB	GRAB
A,A-DIMETHYLPHENETHYLAMINE	1 U		0.96 U		0.94 U	
ACENAPHTHENE	0.02 U		0.02 U		0.02 U	
ACENAPHTHYLENE	0.02 U		0.02 U		0.02 U	
ACETOPHENONE	1 U		0.96 U		0.94 U	
ANILINE	1 U		0.96 U		0.94 U	
ANTHRACENE	0.02 U		0.02 U		0.02 U	
ARAMITE	1 U		0.96 U		0.94 U	
BENZO(A)ANTHRACENE	0.02 U		0.02 U		0.02 U	
BENZO(A)PYRENE	0.02 U		0.02 U		0.02 U	
BENZO(B)FLUORANTHENE	0.02 U		0.02 U		0.02 U	
BENZO(G,H,I)PERYLENE	0.02 U		0.02 U		0.02 U	
BENZO(K)FLUORANTHENE	0.02 U		0.02 U		0.02 U	
BENZYL ALCOHOL	1 U		0.96 U		0.94 U	
BIS(2-CHLOROETHOXY)METHANE	1 U		0.96 U		0.94 U	
BIS(2-CHLOROETHYL)ETHER	1 U		0.96 U		0.94 U	
BIS(2-ETHYLHEXYL)PHTHALATE	1 U		0.96 U		0.94 U	
BUTYL BENZYL PHTHALATE	1 U		0.96 U		0.94 U	
CHLOROBENZILATE	1 U		0.96 U		0.94 U	
CHRYSENE	0.02 U		0.02 U		0.02 U	
DI-N-BUTYL PHTHALATE	1 U		0.96 U		0.94 U	
DI-N-OCTYL PHTHALATE	1 U		0.96 U		0.94 U	
DIALLATE	1 U		0.96 U		0.94 U	
DIBENZO(A,H)ANTHRACENE	0.02 U		0.02 U		0.02 U	
DIBENZOFURAN	1 U		0.96 U		0.94 U	
DIETHYL PHTHALATE	1 U		0.96 U		0.94 U	
DIMETHYL PHTHALATE	1 U		0.96 U		0.94 U	
DIPHENYLAMINE	1 U		0.96 U		0.94 U	
ETHYL METHANE SULFONATE	1 U		0.96 U		0.94 U	
ETHYL PARATHION	1 U		0.96 U		0.94 U	
FLUORANTHENE	0.02 U		0.02 U		0.02 U	
FLUORENE	0.02 U		0.02 U		0.02 U	
HEXACHLOROBENZENE	1 U		0.96 U		0.94 U	
HEXACHLOROBUTADIENE	1 U		0.96 U		0.94 U	
HEXACHLOROCYCLOPENTADIENE	1 U		0.96 U		0.94 U	
HEXACHLOROETHANE	1 U		0.96 U		0.94 U	
HEXACHLOROPROPENE	1 U		0.96 U		0.94 U	
INDENO(1,2,3-CD)PYRENE	0.02 U		0.02 U		0.02 U	
ISODRIN	1 U		0.96 U		0.94 U	
ISOPHORONE	1 U		0.96 U		0.94 U	
ISOSAFROLE	1 U		0.96 U		0.94 U	
KEPONE	1 UR		0.96 UR		0.94 UR	
METHAPYRILENE	1 U		0.96 U		0.94 U	
METHYL METHANE SULFONATE	1 U		0.96 U		0.94 U	
METHYL PARATHION	1 U		0.96 U		0.94 U	
N-NITROSO-DI-N-BUTYLAMINE	1 U		0.96 U		0.94 U	
N-NITROSO-DI-N-PROPYLAMINE	1 U		0.96 U		0.94 U	
N-NITROSODIETHYLAMINE	1 U		0.96 U		0.94 U	
N-NITROSODIMETHYLAMINE	1 U		0.96 U		0.94 U	
N-NITROSOMETHYLETHYLAMINE	1 U		0.96 U		0.94 U	

TABLE E-8

SUMMARY OF ANALYTIC RESULTS IN LOW FLOW SURFACE WATER
SWMU 3 - OLD JEEP TRAIL/LITTLE SULPHUR CREEK
NSWC CRANE
CRANE, INDIANA

LOCATION	03SWSD01	03SWSD01	03SWSD02	03SWSD02	03SWSD03	03SWSD03
NSAMPLE	03SW0101	03SW0101-F	03SW0201	03SW0201-F	03SW0301	03SW0301-F
SAMPLE	03SW0101	03SW0101-F	03SW0201	03SW0201-F	03SW0301	03SW0301-F
MATRIX	BACKGROUND	BACKGROUND	BACKGROUND	BACKGROUND	BACKGROUND	BACKGROUND
SACODE	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
QC_TYPE	NM	NM	NM	NM	NM	NM
STATUS	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
SAMPLE DATE	- -	- -	- -	- -	- -	- -
VALIDATED	Y	Y	Y	Y	Y	Y
COLLECTION METHOD	GRAB	GRAB	GRAB	GRAB	GRAB	GRAB
N-NITROSOMORPHOLINE	1 U		0.98 U		0.94 U	
N-NITROSOPIPERIDINE	1 U		0.98 U		0.94 U	
N-NITROSOPYRROLIDINE	1 U		0.98 U		0.94 U	
NAPHTHALENE	0.02 U		0.019 U		0.02 U	
O,O,O-TRIETHYL PHOSPHOROTHIOATE	1 U		0.98 U		0.94 U	
O-TOLUIDINE	1 U		0.98 U		0.94 U	
P-(DIMETHYLAMINO)AZOBENZENE	1 U		0.98 U		0.94 U	
PENTACHLOROBENZENE	1 U		0.98 U		0.94 U	
PENTACHLOROETHANE	1 U		0.98 U		0.94 U	
PENTACHLORONITROBENZENE	1 U		0.98 U		0.94 U	
PHENACETIN	1 U		0.98 U		0.94 U	
PHENANTHRENE	0.02 U		0.02 U		0.02 U	
PHENOL	1 U		0.98 U		0.94 U	
PRONAMIDE	1 U		0.98 U		0.94 U	
PYRENE	0.02 U		0.02 U		0.02 U	
PYRIDINE	1 U		0.98 U		0.94 U	
SAFROLE	1 U		0.98 U		0.94 U	
Energetics (UG/L)						
1,3,5-TRINITROBENZENE	0.35 U		0.35 U		0.35 U	
1,3-DINITROBENZENE	0.35 U		0.35 U		0.35 U	
2,4,6-TRINITROTOLUENE	0.35 U		0.35 U		0.35 U	
2,4-DINITROTOLUENE	0.35 U		0.35 U		0.35 U	
2,6-DINITROTOLUENE	0.35 U		0.35 U		0.35 U	
2-AMINO-4,6-DINITROTOLUENE	0.35 U		0.35 U		0.35 U	
2-NITROTOLUENE	0.35 U		0.35 U		0.35 U	
3-NITROTOLUENE	0.35 U		0.35 U		0.35 U	
4-AMINO-2,6-DINITROTOLUENE	0.35 U		0.35 U		0.35 U	
4-NITROTOLUENE	0.35 U		0.35 U		0.35 U	
HMX	0.35 U		0.35 U		0.35 U	
NITROBENZENE	0.35 U		0.35 U		0.35 U	
NITROCELLULOSE	750 U		750 U		750 U	
NITROGLYCERIN	3.5 U		3.5 U		3.5 U	
PETN	0.35 U		0.16 U		0.16 U	
RDX	0.35 U		0.35 U		0.35 U	
TETRYL	0.35 U		0.35 U		0.35 U	
Pesticides/PCB's (UG/L)						
4,4'-DDD	0.028 U		0.024 U		0.024 U	
4,4'-DDE	0.028 U		0.024 U		0.024 U	
4,4'-DDT	0.028 U		0.024 U		0.024 U	
ALDRIN	0.006 U		0.005 U		0.005 U	
ALPHA-BHC	0.006 U		0.005 U		0.005 U	
ALPHA-CHLORDANE	0.017 U		0.015 U		0.014 U	
AROCLOR-1016	0.28 U		0.24 U		0.24 U	
AROCLOR-1221	0.28 U		0.24 U		0.24 U	
AROCLOR-1232	0.28 U		0.24 U		0.24 U	
AROCLOR-1242	0.28 U		0.24 U		0.24 U	
AROCLOR-1248	0.28 U		0.24 U		0.24 U	
AROCLOR-1254	0.28 U		0.24 U		0.24 U	
AROCLOR-1260	0.28 U		0.24 U		0.24 U	

TABLE E-6

SUMMARY OF ANALYTIC RESULTS IN LOW FLOW SURFACE WATER
SWMU 3 - OLD JEEP TRAIL/LITTLE SULPHUR CREEK
NSWC CRANE
CRANE, INDIANA

LOCATION	03SWSD01	03SWSD01	03SWSD02	03SWSD02	03SWSD03	03SWSD03
NSAMPLE	03SW0101	03SW0101-F	03SW0201	03SW0201-F	03SW0301	03SW0301-F
SAMPLE	03SW0101	03SW0101-F	03SW0201	03SW0201-F	03SW0301	03SW0301-F
MATRIX	BACKGROUND	BACKGROUND	BACKGROUND	BACKGROUND	BACKGROUND	BACKGROUND
SACODE	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
QC_TYPE	NM	NM	NM	NM	NM	NM
STATUS	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
SAMPLE DATE	- -	- -	- -	- -	- -	- -
VALIDATED	Y	Y	Y	Y	Y	Y
COLLECTION METHOD	GRAB	GRAB	GRAB	GRAB	GRAB	GRAB
BETA-BHC	0.017 U		0.015 U		0.014 U	
DELTA-BHC	0.028 U		0.024 U		0.024 U	
DIELDRIN	0.011 U		0.01 U		0.009 U	
ENDOSULFAN I	0.028 U		0.024 U		0.024 U	
ENDOSULFAN II	0.028 U		0.024 U		0.024 U	
ENDOSULFAN SULFATE	0.056 U		0.049 U		0.047 U	
ENDRIN	0.033 U		0.029 U		0.028 U	
ENDRIN ALDEHYDE	0.056 U		0.049 U		0.047 U	
ENDRIN KETONE	0.033 U		0.029 U		0.028 U	
GAMMA-BHC (LINDANE)	0.028 U		0.024 U		0.024 U	
GAMMA-CHLORDANE	0.017 U		0.015 U		0.014 U	
HEPTACHLOR	0.017 U		0.015 U		0.014 U	
HEPTACHLOR EPOXIDE	0.006 U		0.005 U		0.005 U	
METHOXYCHLOR	0.067 U		0.058 U		0.057 U	
TOXAPHENE	1.7 U		1.5 U		1.4 U	
Herbicides (UG/L)						
2,4,5-T	0.04 U		0.04 U		0.04 U	
2,4,5-TP (SILVEX)	0.04 U		0.04 U		0.04 U	
2,4-D	0.04 U		0.04 U		0.04 U	
DINOSEB	0.04 U		0.04 U		0.04 U	
HEXACHLOROPHENE	0.01 U		0.01 U		0.01 U	
PENTACHLOROPHENOL	0.01 U		0.01 U		0.01 U	
Total Metals (UG/L)						
ALUMINUM	221 J		53.9 J		368 J	
ANTIMONY	0.1 U		0.1 U		0.1 U	
ARSENIC	0.24		0.2 U		0.3	
BARIUM	63 J		76 J		73.9 J	
BERYLLIUM	0.1 U		0.1 U		0.13	
CADMIUM	0.7 U		0.7 U		0.7 U	
CALCIUM	12700		10800		7620	
CHROMIUM	0.24 U		0.1 U		0.38 U	
COBALT	0.3		0.17		1	
COPPER	0.78		0.41		1.4	
IRON	451		148		543	
LEAD	0.43		0.14		0.88	
MAGNESIUM	6280 J		7160 J		5870 J	
MANGANESE	25.8		48.2		141	
MERCURY	0.1 UJ		0.1 U		0.1 U	
NICKEL	1.2 J		3.7 J		5.3 J	
POTASSIUM	1160		1230		1360	
SELENIUM	0.4 U		0.4 U		0.4 U	
SILVER	0.13 U		0.1 U		0.1 U	
SODIUM	9080		5320		4070	
THALLIUM	0.1 U		0.1 U		0.1 U	
TIN	2.5 U		4.3 U		1.4 U	
VANADIUM	0.41		0.1 U		0.58	
ZINC	0.81 U		2.9 U		9.7 U	
Dissolved Metals (UG/L)						
ALUMINUM		18.8 U		23.8 U		18.2 U

TABLE E-6

SUMMARY OF ANALYTIC RESULTS IN LOW FLOW SURFACE WATER
SWMU 3 - OLD JEEP TRAIL/LITTLE SULPHUR CREEK
NSWC CRANE
CRANE, INDIANA

LOCATION	03SWSD01	03SWSD01	03SWSD02	03SWSD02	03SWSD03	03SWSD03
NSAMPLE	03SW0101	03SW0101-F	03SW0201	03SW0201-F	03SW0301	03SW0301-F
SAMPLE	03SW0101	03SW0101-F	03SW0201	03SW0201-F	03SW0301	03SW0301-F
MATRIX	BACKGROUND	BACKGROUND	BACKGROUND	BACKGROUND	BACKGROUND	BACKGROUND
SACODE	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
QC_TYPE	NM	NM	NM	NM	NM	NM
STATUS	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
SAMPLE DATE	- -	- -	- -	- -	- -	- -
VALIDATED	Y	Y	Y	Y	Y	Y
COLLECTION METHOD	GRAB	GRAB	GRAB	GRAB	GRAB	GRAB
ANTIMONY		1.6 J		0.1 U		0.11 U
ARSENIC		0.2 U		0.2 U		0.2 U
BARIUM		58.2 J		72.8 J		60.9 J
BERYLLIUM		0.1 U		0.1 U		0.1 U
CADMIUM		5.8		0.7 U		0.7 U
CALCIUM		12100		10400		7380
CHROMIUM		0.1 U		0.1 U		0.1 U
COBALT		0.1 U		0.14		0.51
COPPER		0.44		0.79		0.62
IRON		45.7 J		31.5 J		43.2 J
LEAD		0.1 U		0.1 U		0.13
MAGNESIUM		5970 J		6970 J		5790 J
MANGANESE		2.4		45.6		135
MERCURY		0.1 UJ		0.1 U		0.1 U
NICKEL		0.8 J		3.4 J		3.2 J
POTASSIUM		1100		1180		1320
SELENIUM		0.4 U		0.4 U		0.4 U
SILVER		0.1 U		0.1 U		0.1 U
SODIUM		9180		5190		4140
THALLIUM		0.1 U		0.1 U		0.1 U
TIN		5.5 U		4.8 U		4.8 U
VANADIUM		0.1 U		0.1 U		0.1 U
ZINC		1.6 U		2.8 U		1.9 U
Miscellaneous Parameters						
PERCHLORATE (UG/L)	4 U		4 U		4 U	
TOTAL SUSPENDED SOLIDS (MG/L)	78 J		2 J		31 J	
Field Parameters						
DISSOLVED OXYGEN (MG/L)	8.19		5.33		9.44	
NITRATE (MG/L)	0.21		0.26		0.32	
NITRITE (MG/L)	0		0		0.002	
OXIDATION REDUCTION POTENTIAL (MV)	315.1		334.4		386	
PH (S.U.)	7.46		7.03		7.32	
SPECIFIC CONDUCTANCE (MS/CM)	0.193		0.174		0.14	
TEMPERATURE (C)	17.85		16.98		18.6	
TURBIDITY (NTU)	0.9		1.4		0.7	

TABLE E-7

SUMMARY OF ANALYTIC RESULTS IN HIGH FLOW SURFACE WATER
SWMU 3 - OLD JEEP TRAIL/LITTLE SULPHUR CREEK
NSWC CRANE
CRANE, INDIANA

LOCATION	03SWSD06	03SWSD06	03SWSD08	03SWSD08	03SWSD09	03SWSD09	03SWSD11	03SWSD11	03SWSD13	03SWSD13	03SWSD14	03SWSD14
NSAMPLE	03SW0602	03SW0602-F	03SW0802	03SW0802-F	03SW0902	03SW0902-F	03SW1102	03SW1102-F	03SW1302	03SW1302-F	03SW1402	03SW1402-F
SAMPLE	03SW0602	03SW0602-F	03SW0802	03SW0802-F	03SW0902	03SW0902-F	03SW1102	03SW1102-F	03SW1302	03SW1302-F	03SW1402	03SW1402-F
MATRIX	SW	SW	SW	SW	SW	SW	SW	SW	SW	SW	SW	SW
SACODE	ORIG	ORIG	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
QC_TYPE	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
STATUS	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
SAMPLE DATE	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
VALIDATED	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
COLLECTION METHOD	GRAB	GRAB	GRAB	GRAB	GRAB	GRAB	GRAB	GRAB	GRAB	GRAB	GRAB	GRAB
Energetics (UG/L)												
1,1,1,2-TETRACHLOROETHANE	0.3 U		0.3 U		0.3 U		0.3 U		0.3 U		0.3 U	
1,1,1-TRICHLOROETHANE	0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U	
1,1,2,2-TETRACHLOROETHANE	0.3 U		0.3 U		0.3 U		0.3 U		0.3 U		0.3 U	
1,1,2-TRICHLOROETHANE	0.3 U		0.3 U		0.3 U		0.3 U		0.3 U		0.3 U	
1,1-DICHLOROETHANE	0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U	
1,1-DICHLOROETHENE	0.3 U		0.3 U		0.3 U		0.3 U		0.3 U		0.3 U	
1,2,3-TRICHLOROPROPANE	0.3 U		0.3 U		0.3 U		0.3 U		0.3 U		0.3 U	
1,2-DIBROMO-3-CHLOROPROPANE	0.3 U		0.3 U		0.3 U		0.3 U		0.3 U		0.3 U	
1,2-DIBROMOETHANE	0.3 U		0.3 U		0.3 U		0.3 U		0.3 U		0.3 U	
1,2-DICHLOROETHANE	0.3 U		0.3 U		0.3 U		0.3 U		0.3 U		0.3 U	
1,2-DICHLOROPROPANE	0.3 U		0.3 U		0.3 U		0.3 U		0.3 U		0.3 U	
1,4-DIOXANE	44 U		44 U		44 U		44 U		44 U		44 U	
2-BUTANONE	0.5 UR		0.5 UR		0.5 UR		0.5 UR		0.5 UR		0.5 UR	
2-HEXANONE	0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U	
3-CHLOROPROPENE	0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U	
4-METHYL-2-PENTANONE	0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U	
ACETONE	0.5 UR		23 U		64 BJ		0.5 UR		26 U		0.5 UR	
ACETONITRILE	3.7 U		3.7 U		3.7 U		3.7 U		3.7 U		3.7 U	
ACROLEIN	0.5 UR		0.5 UR		0.5 UR		0.5 UR		0.5 UR		0.5 UR	
ACRYLONITRILE	0.5 UR		0.5 UR		0.5 UR		0.5 UR		0.5 UR		0.5 UR	
BENZENE	0.3 U		0.3 U		0.3 U		0.3 U		0.3 U		0.3 U	
BROMODICHLOROMETHANE	0.3 U		0.3 U		0.3 U		0.3 U		0.3 U		0.3 U	
BROMOFORM	0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U	
BROMOMETHANE	0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U	
CARBON DISULFIDE	0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U	
CARBON TETRACHLORIDE	0.3 U		0.3 U		0.3 U		0.3 U		0.3 U		0.3 U	
CHLOROBENZENE	0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U	
CHLORODIBROMOMETHANE	0.3 U		0.3 U		0.3 U		0.3 U		0.3 U		0.3 U	
CHLOROETHANE	0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U	
CHLOROFORM	0.3 U		0.3 U		0.3 U		0.3 U		0.3 U		0.3 U	
CHLOROMETHANE	0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U	
CHLOROPRENE	0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U	
CIS-1,2-DICHLOROETHENE	0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U	
CIS-1,3-DICHLOROPROPENE	0.3 U		0.3 U		0.3 U		0.3 U		0.3 U		0.3 U	
DIBROMOMETHANE	0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U	
DICHLORODIFLUOROMETHANE	0.5 UJ		0.5 UJ		0.5 UJ		0.5 UJ		0.5 UJ		0.5 UJ	
ETHYL METHACRYLATE	0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U	
ETHYLBENZENE	0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U	
ISOBUTANOL	6.3 U		6.3 U		6.3 U		6.3 U		6.3 U		6.3 U	
METHACRYLONITRILE	0.5 UR		0.5 UR		0.5 UR		0.5 UR		0.5 UR		0.5 UR	
METHYL IODIDE	0.5 UJ		0.5 UJ		0.5 UJ		0.5 UJ		0.5 UJ		0.5 UJ	
METHYL METHACRYLATE	0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U	
METHYLENE CHLORIDE	0.5 U		9.5 J		13 BJ		0.5 U		5.3 U		0.5 U	
PROPIONITRILE	4.6 U		4.6 U		4.6 U		4.6 U		4.6 U		4.6 U	
STYRENE	0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U	
TETRACHLOROETHENE	0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U	

TABLE E-7

SUMMARY OF ANALYTIC RESULTS IN HIGH FLOW SURFACE WATER
SWMU 3 - OLD JEEP TRAIL/LITTLE SULPHUR CREEK
NSWC CRANE
CRANE, INDIANA

LOCATION	03SWSD06	03SWSD06	03SWSD08	03SWSD08	03SWSD09	03SWSD09	03SWSD11	03SWSD11	03SWSD13	03SWSD13	03SWSD14	03SWSD14
NSAMPLE	03SW0602	03SW0602-F	03SW0802	03SW0802-F	03SW0902	03SW0902-F	03SW1102	03SW1102-F	03SW1302	03SW1302-F	03SW1402	03SW1402-F
SAMPLE	03SW0602	03SW0602-F	03SW0802	03SW0802-F	03SW0902	03SW0902-F	03SW1102	03SW1102-F	03SW1302	03SW1302-F	03SW1402	03SW1402-F
MATRIX	SW	SW	SW	SW	SW	SW	SW	SW	SW	SW	SW	SW
SACODE	ORIG	ORIG	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
QC_TYPE	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
STATUS	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
SAMPLE DATE	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
VALIDATED	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
COLLECTION METHOD	GRAB	GRAB	GRAB	GRAB	GRAB	GRAB	GRAB	GRAB	GRAB	GRAB	GRAB	GRAB
TOLUENE	0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U	
TOTAL XYLENES	0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U	
TRANS-1,2-DICHLOROETHENE	0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U	
TRANS-1,3-DICHLOROPROPENE	0.3 U		0.3 U		0.3 U		0.3 U		0.3 U		0.3 U	
TRANS-1,4-DICHLORO-2-BUTENE	0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U	
TRICHLOROETHENE	0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U	
TRICHLOROFLUOROMETHANE	0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U	
VINYL ACETATE	0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U	
VINYL CHLORIDE	0.3 U		0.3 U		0.3 U		0.3 U		0.3 U		0.3 U	
Energetics (UG/L)												
1,2,4,5-TETRACHLOROBENZENE	1 U		1 U		1 U		0.96 U		0.94 U		0.96 U	
1,2,4-TRICHLOROBENZENE	1 U		1 U		1 U		0.96 U		0.94 U		0.96 U	
1,2-DICHLOROBENZENE	1 U		1 U		1 U		0.96 U		0.94 U		0.96 U	
1,3-DICHLOROBENZENE	1 U		1 U		1 U		0.96 U		0.94 U		0.96 U	
1,4-DICHLOROBENZENE	1 U		1 U		1 U		0.96 U		0.94 U		0.96 U	
1,4-NAPHTHOQUINONE	1 U		1 U		1 U		0.96 U		0.94 U		0.96 U	
1,4-PHENYLENEDIAMINE	1 UJ		1 UJ		1 UJ		0.96 UJ		0.94 UJ		0.96 UJ	
1-NAPHTHYLAMINE	1 U		1 U		1 U		0.96 U		0.94 U		0.96 U	
2,2'-OXYBIS(1-CHLOROPROPANE)	1 U		1 U		1 U		0.96 U		0.94 U		0.96 U	
2,3,4,6-TETRACHLOROPHENOL	1 U		1 U		1 U		0.96 U		0.94 U		0.96 U	
2,4,5-TRICHLOROPHENOL	1 U		1 U		1 U		0.96 U		0.94 U		0.96 U	
2,4,6-TRICHLOROPHENOL	1 U		1 U		1 U		0.96 U		0.94 U		0.96 U	
2,4-DICHLOROPHENOL	1 U		1 U		1 U		0.96 U		0.94 U		0.96 U	
2,4-DIMETHYLPHENOL	1 U		1 U		1 U		0.96 U		0.94 U		0.96 U	
2,4-DINITROPHENOL	1 U		1 U		1 U		0.96 U		0.94 U		0.96 U	
2,6-DICHLOROPHENOL	1 U		1 U		1 U		0.96 U		0.94 U		0.96 U	
2-ACETYLAMINOFLUORENE	1 U		1 U		1 U		0.96 U		0.94 U		0.96 U	
2-CHLORONAPHTHALENE	1 U		1 U		1 U		0.96 U		0.94 U		0.96 U	
2-CHLOROPHENOL	1 U		1 U		1 U		0.96 U		0.94 U		0.96 U	
2-METHYLNAPHTHALENE	0.02 UJ		0.019 UJ		0.02 UJ		0.019 UJ		0.019 UJ		0.019 UJ	
2-METHYLPHENOL	1 U		1 U		1 U		0.96 U		0.94 U		0.96 U	
2-NAPHTHYLAMINE	1 U		1 U		1 U		0.96 U		0.94 U		0.96 U	
2-NITROANILINE	1 U		1 U		1 U		0.96 U		0.94 U		0.96 U	
2-NITROPHENOL	1 U		1 U		1 U		0.96 U		0.94 U		0.96 U	
2-PICOLINE	1 U		1 U		1 U		0.96 U		0.94 U		0.96 U	
3&4-METHYLPHENOL	1 U		1 U		1 U		0.96 U		0.94 U		0.96 U	
3,3'-DICHLOROBENZIDINE	1 U		1 U		1 U		0.96 U		0.94 U		0.96 U	
3,3'-DIMETHYLBENZIDINE	1 U		1 U		1 U		0.96 U		0.94 U		0.96 U	
3-METHYLCHOLANTHRENE	1 U		1 U		1 U		0.96 U		0.94 U		0.96 U	
3-NITROANILINE	1 U		1 U		1 U		0.96 U		0.94 U		0.96 U	
4,6-DINITRO-2-METHYLPHENOL	1 U		1 U		1 U		0.96 U		0.94 U		0.96 U	
4-AMINOBIPHENYL	1 U		1 U		1 U		0.96 U		0.94 U		0.96 U	
4-BROMOPHENYL PHENYL ETHER	1 U		1 U		1 U		0.96 U		0.94 U		0.96 U	
4-CHLORO-3-METHYLPHENOL	1 U		1 U		1 U		0.96 U		0.94 U		0.96 U	
4-CHLOROANILINE	1 U		1 U		1 U		0.96 U		0.94 U		0.96 U	
4-CHLOROPHENYL PHENYL ETHER	1 U		1 U		1 U		0.96 U		0.94 U		0.96 U	
4-NITROANILINE	1 U		1 U		1 U		0.96 U		0.94 U		0.96 U	

TABLE E-7

SUMMARY OF ANALYTIC RESULTS IN HIGH FLOW SURFACE WATER
SWMU 3 - OLD JEEP TRAIL/LITTLE SULPHUR CREEK
NSWC CRANE
CRANE, INDIANA

LOCATION	03SWSD06	03SWSD06	03SWSD08	03SWSD08	03SWSD09	03SWSD09	03SWSD11	03SWSD11	03SWSD13	03SWSD13	03SWSD14	03SWSD14
NSAMPLE	03SW0602	03SW0602-F	03SW0802	03SW0802-F	03SW0902	03SW0902-F	03SW1102	03SW1102-F	03SW1302	03SW1302-F	03SW1402	03SW1402-F
SAMPLE	03SW0602	03SW0602-F	03SW0802	03SW0802-F	03SW0902	03SW0902-F	03SW1102	03SW1102-F	03SW1302	03SW1302-F	03SW1402	03SW1402-F
MATRIX	SW	SW	SW	SW	SW	SW	SW	SW	SW	SW	SW	SW
SACODE	ORIG	ORIG	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
QC_TYPE	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
STATUS	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
SAMPLE DATE	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
VALIDATED	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
COLLECTION METHOD	GRAB	GRAB	GRAB	GRAB	GRAB	GRAB	GRAB	GRAB	GRAB	GRAB	GRAB	GRAB
4-NITROPHENOL	1 UJ		1 UJ		1 UJ		0.96 UJ		0.94 UJ		0.96 UJ	
4-NITROQUINOLINE-1-OXIDE	1 UR		1 UR		1 UR		0.96 UR		0.94 UR		0.96 UR	
5-NITRO-O-TOLUIDINE	1 U		1 U		1 U		0.96 U		0.94 U		0.96 U	
7,12-DIMETHYLBENZ(A)ANTHRACENE	1 U		1 U		1 U		0.96 U		0.94 U		0.96 U	
A,A-DIMETHYLPHENETHYLAMINE	1 U		1 U		1 U		0.96 U		0.94 U		0.96 U	
ACENAPHTHENE	0.02 U		0.019 U		0.02 U		0.019 U		0.019 U		0.019 U	
ACENAPHTHYLENE	0.02 U		0.019 U		0.22		0.019 U		0.019 U		0.019 U	
ACETOPHENONE	1 U		1 U		1 U		0.96 U		0.94 U		0.96 U	
ANILINE	1 U		1 U		1 U		0.96 U		0.94 U		0.96 U	
ANTHRACENE	0.02 U		0.019 U		0.02 U		0.019 U		0.019 U		0.019 U	
ARAMITE	1 U		1 U		1 U		0.96 U		0.94 U		0.96 U	
BENZO(A)ANTHRACENE	0.02 UJ		0.019 UJ		0.02 UJ		0.019 UJ		0.019 UJ		0.019 UJ	
BENZO(A)PYRENE	0.02 U		0.019 U		0.02 U		0.019 U		0.019 U		0.019 U	
BENZO(B)FLUORANTHENE	0.02 U		0.019 U		0.02 U		0.019 U		0.019 U		0.019 U	
BENZO(G,H,I)PERYLENE	0.02 UJ		0.019 UJ		0.02 UJ		0.019 UJ		0.019 UJ		0.019 UJ	
BENZO(K)FLUORANTHENE	0.02 U		0.019 U		0.02 U		0.019 U		0.019 U		0.019 U	
BENZYL ALCOHOL	1 U		1 U		1 U		0.96 U		0.94 U		0.96 U	
BIS(2-CHLOROETHOXY)METHANE	1 U		1 U		1 U		0.96 U		0.94 U		0.96 U	
BIS(2-CHLOROETHYL)ETHER	1 U		1 U		1 U		0.96 U		0.94 U		0.96 U	
BIS(2-ETHYLHEXYL)PHTHALATE	1 U		1 U		4		0.96 U		0.94 U		6	
BUTYL BENZYL PHTHALATE	1 U		1 U		1 U		0.96 U		0.94 U		0.96 U	
CHLOROBENZILATE	1 U		1 U		1 U		0.96 U		0.94 U		0.96 U	
CHRYSENE	0.02 U		0.019 U		0.02 U		0.019 U		0.019 U		0.019 U	
DI-N-BUTYL PHTHALATE	1 U		1 U		1 U		0.96 U		0.94 U		0.96 U	
DI-N-OCTYL PHTHALATE	1 U		1 U		1 U		0.96 U		0.94 U		0.96 U	
DIALLATE	1 U		1 U		1 U		0.96 U		0.94 U		0.96 U	
DIBENZO(A,H)ANTHRACENE	0.02 U		0.019 U		0.02 U		0.019 U		0.019 U		0.019 U	
DIBENZOFURAN	1 U		1 U		1 U		0.96 U		0.94 U		0.96 U	
DIETHYL PHTHALATE	1 U		1 U		1 U		0.96 U		0.94 U		0.96 U	
DIMETHYL PHTHALATE	1 U		1 U		1 U		0.96 U		0.94 U		0.96 U	
DIPHENYLAMINE	1 U		1 U		1 U		0.96 U		0.94 U		0.96 U	
ETHYL METHANE SULFONATE	1 U		1 U		1 U		0.96 U		0.94 U		0.96 U	
ETHYL PARATHION	1 U		1 U		1 U		0.96 U		0.94 U		0.96 U	
FLUORANTHENE	0.02 U		0.019 U		0.02 U		0.019 U		0.019 U		0.019 U	
FLUORENE	0.02 U		0.019 U		0.02 U		0.019 U		0.019 U		0.019 U	
HEXACHLOROBENZENE	1 U		1 U		1 U		0.96 U		0.94 U		0.96 U	
HEXACHLOROBUTADIENE	1 U		1 U		1 U		0.96 U		0.94 U		0.96 U	
HEXACHLOROCYCLOPENTADIENE	1 UJ		1 UJ		1 UJ		0.96 UJ		0.94 UJ		0.96 UJ	
HEXACHLOROETHANE	1 U		1 U		1 U		0.96 U		0.94 U		0.96 U	
HEXACHLOROPROPENE	1 U		1 U		1 U		0.96 U		0.94 U		0.96 U	
INDENO(1,2,3-CD)PYRENE	0.02 U		0.019 U		0.02 U		0.019 U		0.019 U		0.019 U	
ISODRIN	1 U		1 U		1 U		0.96 U		0.94 U		0.96 U	
ISOPHORONE	1 U		1 U		1 U		0.96 U		0.94 U		0.96 U	
ISOSAFROLE	1 U		1 U		1 U		0.96 U		0.94 U		0.96 U	
KEPONE	1 UR		1 UR		1 UR		0.96 UR		0.94 UR		0.96 UR	
METHAPYRILENE	1 U		1 U		1 U		0.96 U		0.94 U		0.96 U	
METHYL METHANE SULFONATE	1 U		1 U		1 U		0.96 U		0.94 U		0.96 U	

TABLE E-7

SUMMARY OF ANALYTIC RESULTS IN HIGH FLOW SURFACE WATER
SWMU 3 - OLD JEEP TRAIL/LITTLE SULPHUR CREEK
NSWC CRANE
CRANE, INDIANA

LOCATION	03SWSD06	03SWSD06	03SWSD08	03SWSD08	03SWSD09	03SWSD09	03SWSD11	03SWSD11	03SWSD13	03SWSD13	03SWSD14	03SWSD14
NSAMPLE	03SW0602	03SW0602-F	03SW0802	03SW0802-F	03SW0902	03SW0902-F	03SW1102	03SW1102-F	03SW1302	03SW1302-F	03SW1402	03SW1402-F
SAMPLE	03SW0602	03SW0602-F	03SW0802	03SW0802-F	03SW0902	03SW0902-F	03SW1102	03SW1102-F	03SW1302	03SW1302-F	03SW1402	03SW1402-F
MATRIX	SW	SW	SW	SW	SW	SW	SW	SW	SW	SW	SW	SW
SACODE	ORIG	ORIG	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
QC_TYPE	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
STATUS	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
SAMPLE DATE	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
VALIDATED	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
COLLECTION METHOD	GRAB	GRAB	GRAB	GRAB	GRAB	GRAB	GRAB	GRAB	GRAB	GRAB	GRAB	GRAB
METHYL PARATHION	1 U		1 U		1 U		0.96 U		0.94 U		0.96 U	
N-NITROSO-DI-N-BUTYLAMINE	1 U		1 U		1 U		0.96 U		0.94 U		0.96 U	
N-NITROSO-DI-N-PROPYLAMINE	1 U		1 U		1 U		0.96 U		0.94 U		0.96 U	
N-NITROSODIETHYLAMINE	1 U		1 U		1 U		0.96 U		0.94 U		0.96 U	
N-NITROSODIMETHYLAMINE	1 U		1 U		1 U		0.96 U		0.94 U		0.96 U	
N-NITROSOMETHYLETHYLAMINE	1 U		1 U		1 U		0.96 U		0.94 U		0.96 U	
N-NITROSOMORPHOLINE	1 U		1 U		1 U		0.96 U		0.94 U		0.96 U	
N-NITROSOPIPERIDINE	1 U		1 U		1 U		0.96 U		0.94 U		0.96 U	
N-NITROSOPYRROLIDINE	1 U		1 U		1 U		0.96 U		0.94 U		0.96 U	
NAPHTHALENE	0.021 U		0.02 U		0.02 U		0.019 U		0.019 U		0.019 U	
O,O,O-TRIETHYL PHOSPHOROTHIOATE	1 U		1 U		1 U		0.96 U		0.94 U		0.96 U	
O-TOLUIDINE	1 U		1 U		1 U		0.96 U		0.94 U		0.96 U	
P-(DIMETHYLAMINO)AZOBENZENE	1 U		1 U		1 U		0.96 U		0.94 U		0.96 U	
PENTACHLOROBENZENE	1 U		1 U		1 U		0.96 U		0.94 U		0.96 U	
PENTACHLOROETHANE	1 U		1 U		1 U		0.96 U		0.94 U		0.96 U	
PENTACHLORONITROBENZENE	1 U		1 U		1 U		0.96 U		0.94 U		0.96 U	
PHENACETIN	1 U		1 U		1 U		0.96 U		0.94 U		0.96 U	
PHENANTHRENE	0.02 U		0.019 U		0.02 U		0.019 U		0.019 U		0.019 U	
PHENOL	1 U		1 U		1 U		0.96 U		0.94 U		0.96 U	
PRONAMIDE	1 U		1 U		1 U		0.96 U		0.94 U		0.96 U	
PYRENE	0.02 UJ		0.019 UJ		0.02 UJ		0.019 UJ		0.019 UJ		0.019 UJ	
PYRIDINE	1 U		1 U		1 U		0.96 U		0.94 U		0.96 U	
SAFROLE	1 U		1 U		1 U		0.96 U		0.94 U		0.96 U	
Energetics (UG/L)												
1,3,5-TRINITROBENZENE	0.35 U		0.35 U		0.35 U		0.35 U		0.35 U		0.35 U	
1,3-DINITROBENZENE	0.35 U		0.35 U		0.35 U		0.35 U		0.35 U		0.35 U	
2,4,6-TRINITROTOLUENE	0.35 UJ		0.35 U		0.35 UJ		0.35 UJ		0.35 UJ		0.35 UJ	
2,4-DINITROTOLUENE	0.35 UJ		0.35 U		0.35 UJ		0.35 UJ		0.35 UJ		0.35 UJ	
2,6-DINITROTOLUENE	0.35 U		0.35 U		0.35 U		0.35 UJ		0.35 UJ		0.35 UJ	
2-AMINO-4,6-DINITROTOLUENE	0.35 U		0.35 U		0.35 U		0.35 U		0.35 U		0.35 U	
2-NITROTOLUENE	0.35 U		0.35 U		0.35 U		0.35 U		0.35 U		0.35 U	
3-NITROTOLUENE	0.35 U		0.35 U		0.35 U		0.35 U		0.35 U		0.35 U	
4-AMINO-2,6-DINITROTOLUENE	1.4 J		0.35 U		0.35 U		0.35 U		0.35 U		0.35 U	
4-NITROTOLUENE	0.35 U		0.35 U		0.35 U		0.35 U		0.35 U		0.35 U	
HMX	16		0.35 U		90		14		20		11	
NITROBENZENE	0.35 U		0.35 U		0.35 U		0.35 U		0.35 U		0.35 U	
NITROCELLULOSE	1000 U		1000 U		1000 U		1000 U		1000 U		1000 U	
NITROGLYCERIN	3.5 U		3.5 U		3.5 U		3.5 U		3.5 U		3.5 U	
PETN	0.16 U		0.16 U		0.16 U		0.16 U		0.16 U		0.16 U	
RDX	8.3		0.35 U		1.5 J		4.8		0.94		0.35 U	
TETRYL	0.35 U		0.35 U		0.35 U		0.35 U		0.35 U		0.35 U	
Pesticides/PCB's (UG/L)												
4,4'-DDD	0.025 U		0.025 UJ		0.024 U		0.024 UJ		0.024 UJ		0.024 UJ	
4,4'-DDE	0.025 U		0.025 U		0.024 U		0.024 U		0.024 U		0.024 U	
4,4'-DDT	0.025 U		0.025 U		0.024 U		0.024 U		0.024 U		0.024 U	
ALDRIN	0.005 U		0.0051 U		0.0049 U		0.0048 U		0.0049 U		0.0048 U	
ALPHA-BHC	0.005 U		0.0051 U		0.0049 U		0.0048 U		0.0049 U		0.0048 U	

TABLE E-7

SUMMARY OF ANALYTIC RESULTS IN HIGH FLOW SURFACE WATER
SWMU 3 - OLD JEEP TRAIL/LITTLE SULPHUR CREEK
NSWC CRANE
CRANE, INDIANA

LOCATION	03SWSD06	03SWSD06	03SWSD08	03SWSD08	03SWSD09	03SWSD09	03SWSD11	03SWSD11	03SWSD13	03SWSD13	03SWSD14	03SWSD14
NSAMPLE	03SW0602	03SW0602-F	03SW0802	03SW0802-F	03SW0902	03SW0902-F	03SW1102	03SW1102-F	03SW1302	03SW1302-F	03SW1402	03SW1402-F
SAMPLE	03SW0602	03SW0602-F	03SW0802	03SW0802-F	03SW0902	03SW0902-F	03SW1102	03SW1102-F	03SW1302	03SW1302-F	03SW1402	03SW1402-F
MATRIX	SW	SW	SW	SW	SW	SW	SW	SW	SW	SW	SW	SW
SACODE	ORIG	ORIG	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
QC_TYPE	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
STATUS	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
SAMPLE DATE	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
VALIDATED	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
COLLECTION METHOD	GRAB	GRAB	GRAB	GRAB	GRAB	GRAB	GRAB	GRAB	GRAB	GRAB	GRAB	GRAB
ALPHA-CHLORDANE	0.015 U		0.015 U		0.015 U		0.014 U		0.015 U		0.014 U	
AROCLOR-1016	0.25 U		0.25 U		0.24 U		0.24 U		0.24 U		0.24 U	
AROCLOR-1221	0.25 U		0.25 U		0.24 U		0.24 U		0.24 U		0.24 U	
AROCLOR-1232	0.25 U		0.25 U		0.24 U		0.24 U		0.24 U		0.24 U	
AROCLOR-1242	0.25 U		0.25 U		0.24 U		0.24 U		0.24 U		0.24 U	
AROCLOR-1248	0.25 U		0.25 U		0.24 U		0.24 U		0.24 U		0.24 U	
AROCLOR-1254	0.25 U		0.25 U		0.24 U		0.24 U		0.24 U		0.24 U	
AROCLOR-1260	0.25 U		0.25 U		0.24 U		0.24 U		0.24 U		0.24 U	
BETA-BHC	0.015 U		0.015 U		0.015 U		0.014 U		0.015 U		0.014 U	
DELTA-BHC	0.025 U		0.025 U		0.024 U		0.024 U		0.024 U		0.024 U	
DIELDRIN	0.0099 U		0.01 U		0.0097 U		0.0096 U		0.0097 U		0.0096 U	
ENDOSULFAN I	0.025 U		0.025 U		0.024 U		0.024 U		0.024 U		0.024 U	
ENDOSULFAN II	0.025 U		0.025 U		0.024 U		0.024 U		0.024 U		0.024 U	
ENDOSULFAN SULFATE	0.05 U		0.051 U		0.049 U		0.048 U		0.049 U		0.048 U	
ENDRIN	0.03 U		0.03 U		0.029 U		0.029 U		0.029 U		0.029 U	
ENDRIN ALDEHYDE	0.05 U		0.051 U		0.049 U		0.048 U		0.049 U		0.048 U	
ENDRIN KETONE	0.05 U		0.051 U		0.049 U		0.048 U		0.049 U		0.048 U	
GAMMA-BHC (LINDANE)	0.025 U		0.025 U		0.024 U		0.024 U		0.024 U		0.024 U	
GAMMA-CHLORDANE	0.015 U		0.015 U		0.015 U		0.014 U		0.015 U		0.014 U	
HEPTACHLOR	0.015 U		0.015 U		0.015 U		0.014 U		0.015 U		0.014 U	
HEPTACHLOR EPOXIDE	0.005 U		0.0051 U		0.0049 U		0.0048 U		0.0049 U		0.0048 U	
METHOXYCHLOR	0.059 U		0.061 U		0.058 U		0.058 U		0.058 U		0.058 U	
TOXAPHENE	1.5 U		1.5 U		1.5 U		1.4 U		1.5 U		1.4 U	
Herbicides (UG/L)												
2,4,5-T	0.04 U		0.04 U		0.63 J		0.32 J		0.23 J		0.34 R	
2,4,5-TP (SILVEX)	0.04 U		0.04 U		0.04 U		0.04 U		0.04 U		0.04 U	
2,4-D	0.04 UJ		0.04 UJ		0.36 J		0.04 UJ		0.28 J		0.04 UJ	
DINOSEB	0.04 U		0.04 U		0.04 U		0.04 U		0.04 U		0.04 U	
HEXACHLOROPHENE	0.01 U		0.01 U		0.01 U		0.01 U		0.01 U		0.01 U	
PENTACHLOROPHENOL	0.084 R		0.01 U		0.041 R		0.71 J		0.01 U		0.021 R	
Total Metals (UG/L)												
ALUMINUM	824		1490		1580		2010		1830		746	
ANTIMONY	3 J		0.14 U		0.96 U		2 J		0.36 U		0.32 U	
ARSENIC	1.9		1.3		1.8		2.5		1.6		0.84	
BARIUM	124 J		58.7 J		126 J		103 J		78.1 J		45.6 J	
BERYLLIUM	0.1 U		0.12		0.13		0.12		0.13		0.1 U	
CADMIUM	0.83		0.7 U		0.7 U		0.98		0.7 U		1.4	
CALCIUM	44700		34400		21400		28100		9580		6890	
CHROMIUM	2.7 J		2.2 J		3.2 J		4.5 J		2.4 J		1.5 J	
COBALT	0.83		1.3		1.9		1.5		1.3		0.74	
COPPER	13.9		4		17.5		18.4		13.3		6.1	
IRON	1080 J		2470 J		2470 J		2550 J		2510 J		1130 J	
LEAD	111		3.9		50.3		285		12.7		7.9	
MAGNESIUM	14300		5000 U		6460		8270		5000 U		5000 U	
MANGANESE	66.9		117		175		106		98.5		60.1	
MERCURY	0.08 U		0.08 U		0.08 U		0.08 U		0.08 U		0.08 U	
NICKEL	3.1		3.4		5.3		4.2		3.7		1.9	

TABLE E-7

SUMMARY OF ANALYTIC RESULTS IN HIGH FLOW SURFACE WATER
SWMU 3 - OLD JEEP TRAIL/LITTLE SULPHUR CREEK
NSWC CRANE
CRANE, INDIANA

LOCATION	03SWSD06	03SWSD06	03SWSD08	03SWSD08	03SWSD09	03SWSD09	03SWSD11	03SWSD11	03SWSD13	03SWSD13	03SWSD14	03SWSD14
NSAMPLE	03SW0602	03SW0602-F	03SW0802	03SW0802-F	03SW0902	03SW0902-F	03SW1102	03SW1102-F	03SW1302	03SW1302-F	03SW1402	03SW1402-F
SAMPLE	03SW0602	03SW0602-F	03SW0802	03SW0802-F	03SW0902	03SW0902-F	03SW1102	03SW1102-F	03SW1302	03SW1302-F	03SW1402	03SW1402-F
MATRIX	SW	SW	SW	SW	SW	SW	SW	SW	SW	SW	SW	SW
SACODE	ORIG	ORIG	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
QC_TYPE	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
STATUS	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
SAMPLE DATE	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
VALIDATED	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
COLLECTION METHOD	GRAB	GRAB	GRAB	GRAB	GRAB	GRAB	GRAB	GRAB	GRAB	GRAB	GRAB	GRAB
POTASSIUM	21600 J		5000 U		8360 J		13700 J		5300 J		5000 U	
SELENIUM	0.62		0.4 U		0.4 U		0.52		0.4 U		0.4 U	
SILVER	0.47 U		0.1 U		0.1 U		0.1 U		0.1 U		0.1 U	
SODIUM	6210		5000 U		5000 U		8070		5000 U		5000 U	
THALLIUM	0.1 U		0.1 U		0.1 U		0.1 U		0.1 U		0.1 U	
TIN	3.8 J		0.22 U		0.9 U		0.2 U		0.1 U		0.36 U	
VANADIUM	2		3.8		3.3		3.9		3.5		1.7	
ZINC	78.7		38.7		49.6		111		34.5		17.9	
Dissolved Metals (UG/L)												
ALUMINUM		200 U		289		260		267		332		264
ANTIMONY		2.4 J		0.18 U		1 J		1.9 J		0.54 U		0.57 U
ARSENIC		0.81		0.32		0.68		1		0.67		0.41
BARIUM		106 J		40.4 J		85.8 J		75.7 J		51.8 J		37.7 J
BERYLLIUM		0.1 U		0.1 U		0.1 U		0.1 U		0.1 U		0.1 U
CADMIUM		0.7 U		0.7 U		0.7 U		0.7 U		0.7 U		0.7 U
CALCIUM		36200		21100		18800		15700		9520		7550
CHROMIUM		1.1 J		0.56 J		1.4 J		1.3 J		0.8 J		0.7 J
COBALT		0.33		0.19		0.33		0.34		0.24		0.19
COPPER		5.3		1.8		7.6		6.4		7.3		3.1
IRON		100 U		100 U		109		100 U		171		100 U
LEAD		9.4 J		0.22 J		4.4 J		22.6 J		1.1 J		0.76 J
MAGNESIUM		14000		5000 U		6000		7490		5000 U		5000 U
MANGANESE		17.4		15 U		21.3		15 U		15 U		15 U
MERCURY		0.08 U		0.08 U		0.08 U		0.08 U		0.08 U		0.08 U
NICKEL		1.7		1.2		2.4		1.1		1.5		0.88
POTASSIUM		22900		5000 U		9370		13600		5220		5000 U
SELENIUM		0.51		0.4 U		0.4 U		0.4 U		0.4 U		0.4 U
SILVER		0.15 U		0.1 U		0.1 U		0.1 U		0.1 U		0.1 U
SODIUM		9390		5000 U		5000 U		8420		5000 U		5000 U
THALLIUM		0.1 U		0.1 U		0.1 U		0.1 U		0.1 U		0.1 U
TIN		7.3 J		4.3 J		4.3 J		4.4 J		3.5 J		4.7 J
VANADIUM		0.38		0.41		0.52		0.61		0.59		0.39
ZINC		4.7		10.1		6.6		15.7		6.9		4.6
Miscellaneous Parameters												
PERCHLORATE (UG/L)	4 U		4 U		4 U		4 U		4 U		4 U	
TOTAL SUSPENDED SOLIDS (MG/L)	34 J		91		87		100		59		19	
Field Parameters												
DISSOLVED OXYGEN (MG/L)	12.69		13.9		12.1		13.94		13.41		12.61	
NITRATE (MG/L)	1.44		0.6		0.46		0.66		0.15		0.3	
NITRITE (MG/L)	0.023		0		0.006		0		0.004		0.002	
OXIDATION REDUCTION POTENTIAL (MV)	203		210		150		270		238		223	
PH (S.U.)	8.34		8.31		8.73		8.14		7.81		7.7	
SPECIFIC CONDUCTANCE (MS/CM)	0.366		0.133		0.118		0.197		0.081		0.058	
TEMPERATURE (C)	22.7		21.6		21.4		23.5		22.4		22.7	
TURBIDITY (NTU)	75		140		100		190		90		45	

TABLE E-7

SUMMARY OF ANALYTIC RESULTS IN HIGH FLOW SURFACE WATER
SWMU 3 - OLD JEEP TRAIL/LITTLE SULPHUR CREEK
NSWC CRANE
CRANE, INDIANA

LOCATION	03SWSD15	03SWSD15	03SWSD16	03SWSD16	03SWSD17	03SWSD17	03SWSD18	03SWSD18	03SWSD19	03SWSD19	03SWSD01	03SWSD01
NSAMPLE	03SW1502	03SW1502-F	03SW1602	03SW1602-F	03SW1702	03SW1702-F	03SW1802	03SW1802-F	03SW1902	03SW1902-F	03SW0102	03SW0102-F
SAMPLE	03SW1502	03SW1502-F	03SW1602	03SW1602-F	03SW1702	03SW1702-F	03SW1802	03SW1802-F	03SW1902	03SW1902-F	03SW0102	03SW0102-F
MATRIX	SW	SW	SW	SW	SW	SW	SW	SW	SW	SW	BACKGROUND	BACKGROUND
SACODE	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	ORIG	ORIG	NORMAL	NORMAL
QC_TYPE	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
STATUS	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
SAMPLE DATE	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
VALIDATED	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
COLLECTION METHOD	GRAB	GRAB	GRAB	GRAB	GRAB	GRAB	GRAB	GRAB	GRAB	GRAB	GRAB	GRAB
Energetics (UG/L)												
1,1,1,2-TETRACHLOROETHANE	0.3 U		0.3 U		0.3 U		0.3 U		0.3 U		0.3 U	
1,1,1-TRICHLOROETHANE	0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U	
1,1,2,2-TETRACHLOROETHANE	0.3 U		0.3 U		0.3 U		0.3 U		0.3 U		0.3 U	
1,1,2-TRICHLOROETHANE	0.3 U		0.3 U		0.3 U		0.3 U		0.3 U		0.3 U	
1,1-DICHLOROETHANE	0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U	
1,1-DICHLOROETHENE	0.3 U		0.3 U		0.3 U		0.3 U		0.3 U		0.3 U	
1,2,3-TRICHLOROPROPANE	0.3 U		0.3 U		0.3 U		0.3 U		0.3 U		0.3 U	
1,2-DIBROMO-3-CHLOROPROPANE	0.3 U		0.3 U		0.3 U		0.3 U		0.3 U		0.3 U	
1,2-DIBROMOETHANE	0.3 U		0.3 U		0.3 U		0.3 U		0.3 U		0.3 U	
1,2-DICHLOROETHANE	0.3 U		0.3 U		0.3 U		0.3 U		0.3 U		0.3 U	
1,2-DICHLOROPROPANE	0.3 U		0.3 U		0.3 U		0.3 U		0.3 U		0.3 U	
1,4-DIOXANE	44 U		44 U		44 U		44 U		44 U		44 U	
2-BUTANONE	0.5 UR		0.5 UR		0.5 UR		0.5 UR		0.5 UR		0.5 UR	
2-HEXANONE	0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U	
3-CHLOROPROPENE	0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U	
4-METHYL-2-PENTANONE	0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U	
ACETONE	0.5 UR		0.5 UR		0.5 UR		0.5 UR		0.5 UR		0.5 UR	
ACETONITRILE	3.7 U		3.7 U		3.7 U		3.7 U		3.7 U		3.7 U	
ACROLEIN	0.5 UR		0.5 UR		0.5 UR		0.5 UR		0.5 UR		0.5 UR	
ACRYLONITRILE	0.5 UR		0.5 UR		0.5 UR		0.5 UR		0.5 UR		0.5 UR	
BENZENE	0.3 U		0.3 U		0.3 U		0.3 U		0.3 U		0.3 U	
BROMODICHLOROMETHANE	0.3 U		0.3 U		0.3 U		0.3 U		0.3 U		0.3 U	
BROMOFORM	0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U	
BROMOMETHANE	0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U	
CARBON DISULFIDE	0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U	
CARBON TETRACHLORIDE	0.3 U		0.3 U		0.3 U		0.3 U		0.3 U		0.3 U	
CHLOROBENZENE	0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U	
CHLORODIBROMOMETHANE	0.3 U		0.3 U		0.3 U		0.3 U		0.3 U		0.3 U	
CHLOROETHANE	0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U	
CHLOROFORM	0.3 U		0.3 U		0.3 U		0.3 U		0.3 U		0.3 U	
CHLOROMETHANE	0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U	
CHLOROPRENE	0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U	
CIS-1,2-DICHLOROETHENE	0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U	
CIS-1,3-DICHLOROPROPENE	0.3 U		0.3 U		0.3 U		0.3 U		0.3 U		0.3 U	
DIBROMOMETHANE	0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U	
DICHLORODIFLUOROMETHANE	0.5 UJ		0.5 UJ		0.5 UJ		0.5 UJ		0.5 UJ		0.5 UJ	
ETHYL METHACRYLATE	0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U	
ETHYLBENZENE	0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U	
ISOBUTANOL	6.3 U		6.3 U		6.3 U		6.3 U		6.3 U		6.3 U	
METHACRYLONITRILE	0.5 UR		0.5 UR		0.5 UR		0.5 UR		0.5 UR		0.5 UR	
METHYL IODIDE	0.5 UJ		0.5 UJ		0.5 UJ		0.5 UJ		0.5 UJ		0.5 UJ	
METHYL METHACRYLATE	0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U	
METHYLENE CHLORIDE	0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U	
PROPIONITRILE	4.6 U		4.6 U		4.6 U		4.6 U		4.6 U		4.6 U	
STYRENE	0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U	
TETRACHLOROETHENE	0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U	

TABLE E-7

SUMMARY OF ANALYTIC RESULTS IN HIGH FLOW SURFACE WATER
SWMU 3 - OLD JEEP TRAIL/LITTLE SULPHUR CREEK
NSWC CRANE
CRANE, INDIANA

LOCATION	03SWSD15	03SWSD15	03SWSD16	03SWSD16	03SWSD17	03SWSD17	03SWSD18	03SWSD18	03SWSD19	03SWSD19	03SWSD01	03SWSD01
NSAMPLE	03SW1502	03SW1502-F	03SW1602	03SW1602-F	03SW1702	03SW1702-F	03SW1802	03SW1802-F	03SW1902	03SW1902-F	03SW0102	03SW0102-F
SAMPLE	03SW1502	03SW1502-F	03SW1602	03SW1602-F	03SW1702	03SW1702-F	03SW1802	03SW1802-F	03SW1902	03SW1902-F	03SW0102	03SW0102-F
MATRIX	SW	SW	SW	SW	SW	SW	SW	SW	SW	SW	BACKGROUND	BACKGROUND
SACODE	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	ORIG	ORIG	NORMAL	NORMAL
QC_TYPE	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
STATUS	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
SAMPLE DATE	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
VALIDATED	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
COLLECTION METHOD	GRAB	GRAB	GRAB	GRAB	GRAB	GRAB	GRAB	GRAB	GRAB	GRAB	GRAB	GRAB
TOLUENE	0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U	
TOTAL XYLENES	0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U	
TRANS-1,2-DICHLOROETHENE	0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U	
TRANS-1,3-DICHLOROPROPENE	0.3 U		0.3 U		0.3 U		0.3 U		0.3 U		0.3 U	
TRANS-1,4-DICHLORO-2-BUTENE	0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U	
TRICHLOROETHENE	0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U	
TRICHLOROFLUOROMETHANE	0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U	
VINYL ACETATE	0.5 U		0.5 U		0.5 U		0.5 U		0.5 U		0.5 U	
VINYL CHLORIDE	0.3 U		0.3 U		0.3 U		0.3 U		0.3 U		0.3 U	
Energetics (UG/L)												
1,2,4,5-TETRACHLOROBENZENE	0.98 U		0.98 U		0.99 U		0.99 U		0.99 U		1 U	
1,2,4-TRICHLOROBENZENE	0.98 U		0.98 U		0.99 U		0.99 U		0.99 UJ		1 U	
1,2-DICHLOROBENZENE	0.98 U		0.98 U		0.99 U		0.99 U		0.99 UJ		1 U	
1,3-DICHLOROBENZENE	0.98 U		0.98 U		0.99 U		0.99 U		0.99 UJ		1 U	
1,4-DICHLOROBENZENE	0.98 U		0.98 U		0.99 U		0.99 U		0.99 UJ		1 U	
1,4-NAPHTHOQUINONE	0.98 U		0.98 U		0.99 U		0.99 U		0.99 U		1 U	
1,4-PHENYLENEDIAMINE	0.98 UJ		0.98 UJ		0.99 UJ		0.99 UJ		0.99 UJ		1 UJ	
1-NAPHTHYLAMINE	0.98 U		0.98 U		0.99 U		0.99 U		0.99 U		1 U	
2,2'-OXYBIS(1-CHLOROPROPANE)	0.98 U		0.98 U		0.99 U		0.99 U		0.99 U		1 U	
2,3,4,6-TETRACHLOROPHENOL	0.98 U		0.98 U		0.99 U		0.99 U		0.99 U		1 U	
2,4,5-TRICHLOROPHENOL	0.98 U		0.98 U		0.99 U		0.99 U		0.99 U		1 U	
2,4,6-TRICHLOROPHENOL	0.98 U		0.98 U		0.99 U		0.99 U		0.99 U		1 U	
2,4-DICHLOROPHENOL	0.98 U		0.98 U		0.99 U		0.99 U		0.99 U		1 U	
2,4-DIMETHYLPHENOL	0.98 U		0.98 U		0.99 U		0.99 U		0.99 U		1 U	
2,4-DINITROPHENOL	0.98 U		0.98 U		0.99 U		0.99 U		0.99 U		1 U	
2,6-DICHLOROPHENOL	0.98 U		0.98 U		0.99 U		0.99 U		0.99 U		1 U	
2-ACETYLAMINOFLUORENE	0.98 U		0.98 U		0.99 U		0.99 U		0.99 U		1 U	
2-CHLORONAPHTHALENE	0.98 U		0.98 U		0.99 U		0.99 U		0.99 UJ		1 U	
2-CHLOROPHENOL	0.98 U		0.98 U		0.99 U		0.99 U		0.99 U		1 U	
2-METHYLNAPHTHALENE	0.02 UJ		0.02 UJ		0.02 UJ		0.02 UJ		0.02 UJ		0.02 UJ	
2-METHYLPHENOL	0.98 U		0.98 U		0.99 U		0.99 U		0.99 U		1 U	
2-NAPHTHYLAMINE	0.98 U		0.98 U		0.99 U		0.99 U		0.99 U		1 U	
2-NITROANILINE	0.98 U		0.98 U		0.99 U		0.99 U		0.99 U		1 U	
2-NITROPHENOL	0.98 U		0.98 U		0.99 U		0.99 U		0.99 U		1 U	
2-PICOLINE	0.98 U		0.98 U		0.99 U		0.99 U		0.99 U		1 U	
3&4-METHYLPHENOL	0.98 U		0.98 U		0.99 U		0.99 U		0.99 U		1 U	
3,3'-DICHLOROBENZIDINE	0.98 U		0.98 U		0.99 U		0.99 U		0.99 U		1 U	
3,3'-DIMETHYLBENZIDINE	0.98 U		0.98 U		0.99 U		0.99 U		0.99 U		1 U	
3-METHYLCHOLANTHRENE	0.98 U		0.98 U		0.99 U		0.99 U		0.99 U		1 U	
3-NITROANILINE	0.98 U		0.98 U		0.99 U		0.99 U		0.99 U		1 U	
4,6-DINITRO-2-METHYLPHENOL	0.98 U		0.98 U		0.99 U		0.99 U		0.99 U		1 U	
4-AMINOBIPHENYL	0.98 U		0.98 U		0.99 U		0.99 U		0.99 U		1 U	
4-BROMOPHENYL PHENYL ETHER	0.98 U		0.98 U		0.99 U		0.99 U		0.99 U		1 U	
4-CHLORO-3-METHYLPHENOL	0.98 U		0.98 U		0.99 U		0.99 U		0.99 U		1 U	
4-CHLOROANILINE	0.98 U		0.98 U		0.99 U		0.99 U		0.99 U		1 U	
4-CHLOROPHENYL PHENYL ETHER	0.98 U		0.98 U		0.99 U		0.99 U		0.99 U		1 U	
4-NITROANILINE	0.98 U		0.98 U		0.99 U		0.99 U		0.99 U		1 U	

TABLE E-7

SUMMARY OF ANALYTIC RESULTS IN HIGH FLOW SURFACE WATER
SWMU 3 - OLD JEEP TRAIL/LITTLE SULPHUR CREEK
NSWC CRANE
CRANE, INDIANA

LOCATION	03SWSD15	03SWSD15	03SWSD16	03SWSD16	03SWSD17	03SWSD17	03SWSD18	03SWSD18	03SWSD19	03SWSD19	03SWSD01	03SWSD01
NSAMPLE	03SW1502	03SW1502-F	03SW1602	03SW1602-F	03SW1702	03SW1702-F	03SW1802	03SW1802-F	03SW1902	03SW1902-F	03SW0102	03SW0102-F
SAMPLE	03SW1502	03SW1502-F	03SW1602	03SW1602-F	03SW1702	03SW1702-F	03SW1802	03SW1802-F	03SW1902	03SW1902-F	03SW0102	03SW0102-F
MATRIX	SW	SW	SW	SW	SW	SW	SW	SW	SW	SW	BACKGROUND	BACKGROUND
SACODE	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	ORIG	ORIG	NORMAL	NORMAL
QC_TYPE	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
STATUS	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
SAMPLE DATE	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
VALIDATED	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
COLLECTION METHOD	GRAB	GRAB	GRAB	GRAB	GRAB	GRAB	GRAB	GRAB	GRAB	GRAB	GRAB	GRAB
4-NITROPHENOL	0.98 UJ		0.98 UJ		0.99 UJ		0.99 UJ		0.99 UJ		1 UJ	
4-NITROQUINOLINE-1-OXIDE	0.98 UR		0.98 UR		0.99 UR		0.99 UR		0.99 UR		1 UR	
5-NITRO-O-TOLUIDINE	0.98 U		0.98 U		0.99 U		0.99 U		0.99 U		1 U	
7,12-DIMETHYLBENZ(A)ANTHRACENE	0.98 U		0.98 U		0.99 U		0.99 U		0.99 U		1 U	
A,A-DIMETHYLPHENETHYLAMINE	0.98 U		0.98 U		0.99 U		0.99 U		0.99 U		1 U	
ACENAPHTHENE	0.02 U		0.02 U		0.02 U		0.02 U		0.02 U		0.02 U	
ACENAPHTHYLENE	0.02 U		0.02 U		0.02 U		0.02 U		0.02 U		0.02 U	
ACETOPHENONE	0.98 U		0.98 U		0.99 U		0.99 U		0.99 U		1 U	
ANILINE	0.98 U		0.98 U		0.99 U		0.99 U		0.99 U		1 U	
ANTHRACENE	0.02 U		0.02 U		0.02 U		0.02 U		0.02 U		0.02 U	
ARAMITE	0.98 U		0.98 U		0.99 U		0.99 U		0.99 U		1 U	
BENZO(A)ANTHRACENE	0.02 UJ		0.02 UJ		0.02 UJ		0.02 UJ		0.02 UJ		0.02 UJ	
BENZO(A)PYRENE	0.02 U		0.02 U		0.02 U		0.02 U		0.02 U		0.02 U	
BENZO(B)FLUORANTHENE	0.02 U		0.02 U		0.02 U		0.02 U		0.02 U		0.02 U	
BENZO(G,H,I)PERYLENE	0.02 UJ		0.02 UJ		0.02 UJ		0.02 UJ		0.02 UJ		0.02 UJ	
BENZO(K)FLUORANTHENE	0.02 U		0.02 U		0.02 U		0.02 U		0.02 U		0.02 U	
BENZYL ALCOHOL	0.98 U		0.98 U		0.99 U		0.99 U		0.99 U		1 U	
BIS(2-CHLOROETHOXY)METHANE	0.98 U		0.98 U		0.99 U		0.99 U		0.99 UJ		1 U	
BIS(2-CHLOROETHYL)ETHER	0.98 U		0.98 U		0.99 U		0.99 U		0.99 U		1 U	
BIS(2-ETHYLHEXYL)PHTHALATE	0.98 U		0.98 U		0.99 U		0.99 U		0.99 U		1 U	
BUTYL BENZYL PHTHALATE	0.98 U		0.98 U		0.99 U		0.99 U		0.99 U		1 U	
CHLOROBENZILATE	0.98 U		0.98 U		0.99 U		0.99 U		0.99 U		1 U	
CHRYSENE	0.02 U		0.02 U		0.02 U		0.02 U		0.02 U		0.02 U	
DI-N-BUTYL PHTHALATE	0.98 U		0.98 U		0.99 U		0.99 U		0.99 U		1 U	
DI-N-OCTYL PHTHALATE	0.98 U		0.98 U		0.99 U		0.99 U		0.99 U		1 U	
DIALLATE	0.98 U		0.98 U		0.99 U		0.99 U		0.99 U		1 U	
DIBENZO(A,H)ANTHRACENE	0.02 U		0.02 U		0.02 U		0.02 U		0.02 U		0.02 U	
DIBENZOFURAN	0.98 U		0.98 U		0.99 U		0.99 U		0.99 U		1 U	
DIETHYL PHTHALATE	0.98 U		0.98 U		0.99 U		0.99 U		0.99 U		1 U	
DIMETHYL PHTHALATE	0.98 U		0.98 U		0.99 U		0.99 U		0.99 U		1 U	
DIPHENYLAMINE	0.98 U		0.98 U		0.99 U		0.99 U		0.99 U		1 U	
ETHYL METHANE SULFONATE	0.98 U		0.98 U		0.99 U		0.99 U		0.99 U		1 U	
ETHYL PARATHION	0.98 U		0.98 U		0.99 U		0.99 U		0.99 U		1 U	
FLUORANTHENE	0.02 U		0.02 U		0.02 U		0.02 U		0.02 U		0.02 U	
FLUORENE	0.02 U		0.02 U		0.02 U		0.02 U		0.02 U		0.02 U	
HEXACHLOROBENZENE	0.98 U		0.98 U		0.99 U		0.99 U		0.99 U		1 U	
HEXACHLOROBUTADIENE	0.98 U		0.98 U		0.99 U		0.99 U		0.99 U		1 U	
HEXACHLOROCYCLOPENTADIENE	0.98 UJ		0.98 UJ		0.99 UJ		0.99 UJ		0.99 UR		1 UJ	
HEXACHLOROETHANE	0.98 U		0.98 U		0.99 U		0.99 U		0.99 UJ		1 U	
HEXACHLOROPROPENE	0.98 U		0.98 U		0.99 U		0.99 U		0.99 U		1 U	
INDENO(1,2,3-CD)PYRENE	0.02 U		0.02 U		0.02 U		0.02 U		0.02 U		0.02 U	
ISODRIN	0.98 U		0.98 U		0.99 U		0.99 U		0.99 U		1 U	
ISOPHORONE	0.98 U		0.98 U		0.99 U		0.99 U		0.99 U		1 U	
ISOSAFROLE	0.98 U		0.98 U		0.99 U		0.99 U		0.99 U		1 U	
KEPONE	0.98 UR		0.98 UR		0.99 UR		0.99 UR		0.99 UR		1 UR	
METHAPYRILENE	0.98 U		0.98 U		0.99 U		0.99 U		0.99 U		1 U	
METHYL METHANE SULFONATE	0.98 U		0.98 U		0.99 U		0.99 U		0.99 U		1 U	

TABLE E-7

SUMMARY OF ANALYTIC RESULTS IN HIGH FLOW SURFACE WATER
SWMU 3 - OLD JEEP TRAIL/LITTLE SULPHUR CREEK
NSWC CRANE
CRANE, INDIANA

LOCATION	03SWSD15	03SWSD15	03SWSD16	03SWSD16	03SWSD17	03SWSD17	03SWSD18	03SWSD18	03SWSD19	03SWSD19	03SWSD01	03SWSD01
NSAMPLE	03SW1502	03SW1502-F	03SW1602	03SW1602-F	03SW1702	03SW1702-F	03SW1802	03SW1802-F	03SW1902	03SW1902-F	03SW0102	03SW0102-F
SAMPLE	03SW1502	03SW1502-F	03SW1602	03SW1602-F	03SW1702	03SW1702-F	03SW1802	03SW1802-F	03SW1902	03SW1902-F	03SW0102	03SW0102-F
MATRIX	SW	SW	SW	SW	SW	SW	SW	SW	SW	SW	BACKGROUND	BACKGROUND
SACODE	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	ORIG	ORIG	NORMAL	NORMAL
QC_TYPE	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
STATUS	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
SAMPLE DATE	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
VALIDATED	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
COLLECTION METHOD	GRAB	GRAB	GRAB	GRAB	GRAB	GRAB	GRAB	GRAB	GRAB	GRAB	GRAB	GRAB
METHYL PARATHION	0.98 U		0.98 U		0.99 U		0.99 U		0.99 U		1 U	
N-NITROSO-DI-N-BUTYLAMINE	0.98 U		0.98 U		0.99 U		0.99 U		0.99 U		1 U	
N-NITROSO-DI-N-PROPYLAMINE	0.98 U		0.98 U		0.99 U		0.99 U		0.99 U		1 U	
N-NITROSODIETHYLAMINE	0.98 U		0.98 U		0.99 U		0.99 U		0.99 U		1 U	
N-NITROSODIMETHYLAMINE	0.98 U		0.98 U		0.99 U		0.99 U		0.99 U		1 U	
N-NITROSOMETHYLETHYLAMINE	0.98 U		0.98 U		0.99 U		0.99 U		0.99 U		1 U	
N-NITROSOMORPHOLINE	0.98 U		0.98 U		0.99 U		0.99 U		0.99 U		1 U	
N-NITROSOPIPERIDINE	0.98 U		0.98 U		0.99 U		0.99 U		0.99 U		1 U	
N-NITROSOPYRROLIDINE	0.98 U		0.98 U		0.99 U		0.99 U		0.99 U		1 U	
NAPHTHALENE	0.02 U		0.02 U		0.02 U		0.02 U		0.02 U		0.02 U	
O,O,O-TRIETHYL PHOSPHOROTHIOATE	0.98 U		0.98 U		0.99 U		0.99 U		0.99 U		1 U	
O-TOLUIDINE	0.98 U		0.98 U		0.99 U		0.99 U		0.99 U		1 U	
P-(DIMETHYLAMINO)AZOBENZENE	0.98 U		0.98 U		0.99 U		0.99 U		0.99 U		1 U	
PENTACHLOROBENZENE	0.98 U		0.98 U		0.99 U		0.99 U		0.99 U		1 U	
PENTACHLOROETHANE	0.98 U		0.98 U		0.99 U		0.99 U		0.99 U		1 U	
PENTACHLORONITROBENZENE	0.98 U		0.98 U		0.99 U		0.99 U		0.99 U		1 U	
PHENACETIN	0.98 U		0.98 U		0.99 U		0.99 U		0.99 U		1 U	
PHENANTHRENE	0.02 U		0.02 U		0.02 U		0.02 U		0.02 U		0.02 U	
PHENOL	0.98 U		0.98 U		0.99 U		0.99 U		0.99 U		1 U	
PRONAMIDE	0.98 U		0.98 U		0.99 U		0.99 U		0.99 U		1 U	
PYRENE	0.02 UJ		0.02 UJ		0.02 UJ		0.02 UJ		0.02 UJ		0.02 UJ	
PYRIDINE	0.98 U		0.98 U		0.99 U		0.99 U		0.99 U		1 U	
SAFROLE	0.98 U		0.98 U		0.99 U		0.99 U		0.99 U		1 U	
Energetics (UG/L)												
1,3,5-TRINITROBENZENE	0.35 U		0.35 U		0.35 U		0.35 U		0.35 U		0.35 U	
1,3-DINITROBENZENE	0.35 U		0.35 U		0.35 U		0.35 U		0.35 U		0.35 U	
2,4,6-TRINITROTOLUENE	0.35 UJ		0.35 UJ		0.35 UJ		0.35 U		0.35 UJ		0.35 U	
2,4-DINITROTOLUENE	0.35 UJ		0.35 UJ		0.35 UJ		0.35 UJ		0.35 UJ		0.35 U	
2,6-DINITROTOLUENE	0.35 UJ		0.35 UJ		0.35 UJ		0.35 UJ		0.35 U		0.35 U	
2-AMINO-4,6-DINITROTOLUENE	0.35 U		0.35 U		1.5 J		0.35 U		0.35 U		0.35 U	
2-NITROTOLUENE	0.35 U		0.35 U		0.35 U		0.35 U		0.35 U		0.35 U	
3-NITROTOLUENE	0.35 U		0.35 U		0.35 U		0.35 U		0.35 U		0.35 U	
4-AMINO-2,6-DINITROTOLUENE	0.35 U		0.35 U		2.9		0.35 U		0.35 U		0.35 U	
4-NITROTOLUENE	0.35 U		0.35 U		0.35 U		0.35 U		0.35 U		0.35 U	
HMX	1.1 J		1.5		17		10		4.7		0.35 U	
NITROBENZENE	0.35 U		0.35 U		0.35 U		0.35 U		0.35 U		0.35 U	
NITROCELLULOSE	3200		1000 U		1000 U		1000 U		1000 U		1000 U	
NITROGLYCERIN	3.5 U		3.5 U		3.5 U		3.5 U		3.5 U		3.5 U	
PETN	0.16 U		0.16 U		0.16 U		0.16 U		0.16 U		0.16 U	
RDX	0.84		0.62		63		39 J		10		0.35 U	
TETRYL	0.35 U		0.35 U		0.35 U		0.35 U		0.35 U		0.35 U	
Pesticides/PCB's (UG/L)												
4,4'-DDD	0.025 UJ		0.025 UJ		0.025 UJ		0.025 UJ		0.024 U		0.026 UJ	
4,4'-DDE	0.025 U		0.025 U		0.025 U		0.025 U		0.024 U		0.026 U	
4,4'-DDT	0.025 U		0.025 U		0.025 U		0.025 U		0.024 U		0.026 U	
ALDRIN	0.0049 U		0.005 U		0.005 U		0.0051 U		0.0049 UJ		0.0051 U	
ALPHA-BHC	0.0049 U		0.005 U		0.005 U		0.0051 U		0.0049 U		0.0051 U	

TABLE E-7

SUMMARY OF ANALYTIC RESULTS IN HIGH FLOW SURFACE WATER
SWMU 3 - OLD JEEP TRAIL/LITTLE SULPHUR CREEK
NSWC CRANE
CRANE, INDIANA

LOCATION	03SWSD15	03SWSD15	03SWSD16	03SWSD16	03SWSD17	03SWSD17	03SWSD18	03SWSD18	03SWSD19	03SWSD19	03SWSD01	03SWSD01
NSAMPLE	03SW1502	03SW1502-F	03SW1602	03SW1602-F	03SW1702	03SW1702-F	03SW1802	03SW1802-F	03SW1902	03SW1902-F	03SW0102	03SW0102-F
SAMPLE	03SW1502	03SW1502-F	03SW1602	03SW1602-F	03SW1702	03SW1702-F	03SW1802	03SW1802-F	03SW1902	03SW1902-F	03SW0102	03SW0102-F
MATRIX	SW	SW	SW	SW	SW	SW	SW	SW	SW	SW	BACKGROUND	BACKGROUND
SACODE	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	ORIG	ORIG	NORMAL	NORMAL
QC_TYPE	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
STATUS	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
SAMPLE DATE	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
VALIDATED	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
COLLECTION METHOD	GRAB	GRAB	GRAB	GRAB	GRAB	GRAB	GRAB	GRAB	GRAB	GRAB	GRAB	GRAB
ALPHA-CHLORDANE	0.015 U		0.015 U		0.015 U		0.015 U		0.015 U		0.015 U	
AROCLOR-1016	0.25 U		0.25 U		0.25 U		0.25 U		0.24 U		0.26 U	
AROCLOR-1221	0.25 U		0.25 U		0.25 U		0.25 U		0.24 U		0.26 U	
AROCLOR-1232	0.25 U		0.25 U		0.25 U		0.25 U		0.24 U		0.26 U	
AROCLOR-1242	0.25 U		0.25 U		0.25 U		0.25 U		0.24 U		0.26 U	
AROCLOR-1248	0.25 U		0.25 U		0.25 U		0.25 U		0.24 U		0.26 U	
AROCLOR-1254	0.25 U		0.25 U		0.25 U		0.25 U		0.24 U		0.26 U	
AROCLOR-1260	0.25 U		0.25 U		0.25 U		0.25 U		0.24 U		0.26 U	
BETA-BHC	0.015 U		0.015 U		0.015 U		0.015 U		0.015 U		0.015 U	
DELTA-BHC	0.025 U		0.025 U		0.025 U		0.025 U		0.024 U		0.026 U	
DIELDRIN	0.0098 U		0.0099 U		0.01 U		0.01 U		0.0097 U		0.01 U	
ENDOSULFAN I	0.025 U		0.025 U		0.025 U		0.025 U		0.024 U		0.026 U	
ENDOSULFAN II	0.025 U		0.025 U		0.025 U		0.025 U		0.024 U		0.026 U	
ENDOSULFAN SULFATE	0.049 U		0.05 U		0.05 U		0.051 U		0.049 UJ		0.051 U	
ENDRIN	0.029 U		0.03 U		0.03 U		0.03 U		0.029 U		0.031 U	
ENDRIN ALDEHYDE	0.049 U		0.05 U		0.05 U		0.051 U		0.049 U		0.051 U	
ENDRIN KETONE	0.049 U		0.05 U		0.05 U		0.051 U		0.049 U		0.051 U	
GAMMA-BHC (LINDANE)	0.025 U		0.025 U		0.025 U		0.025 U		0.024 U		0.026 U	
GAMMA-CHLORDANE	0.015 U		0.015 U		0.015 U		0.015 U		0.015 U		0.015 U	
HEPTACHLOR	0.015 U		0.015 U		0.015 U		0.015 U		0.015 U		0.015 U	
HEPTACHLOR EPOXIDE	0.0049 U		0.005 U		0.005 U		0.0051 U		0.0049 U		0.0051 U	
METHOXYCHLOR	0.059 U		0.059 U		0.06 U		0.061 U		0.058 U		0.061 U	
TOXAPHENE	1.5 U		1.5 U		1.5 U		1.5 U		1.5 U		1.5 U	
Herbicides (UG/L)												
2,4,5-T	0.04 U		0.04 U		0.04 U		0.04 U		0.04 U		0.04 U	
2,4,5-TP (SILVEX)	0.04 U		0.04 U		0.04 U		0.04 U		0.04 U		0.04 U	
2,4-D	0.04 UJ		0.04 UJ		0.04 UJ		0.04 UJ		0.04 UJ		0.04 UJ	
DINOSEB	0.04 U		0.04 U		0.04 U		0.04 U		0.04 U		0.04 U	
HEXACHLOROPHENE	0.01 U		0.01 U		0.01 U		0.01 U		0.01 U		0.01 U	
PENTACHLOROPHENOL	0.01 U		0.01 U		0.01 U		0.01 U		0.01 U		0.01 U	
Total Metals (UG/L)												
ALUMINUM	200 U		200 U		200 U		200 U		211		1400	
ANTIMONY	0.1 U		0.2 U		0.21 U		0.27 U		0.1 U		0.023 U	
ARSENIC	0.29		0.32		0.4		0.43		0.68		0.67	
BARIUM	74.3 J		132 J		131 J		156 J		145 J		56.7 J	
BERYLLIUM	0.1 U		0.1 U		0.1 U		0.1 U		0.1 U		0.15	
CADMIUM	0.7 U		0.7 U		0.7 U		0.7 U		0.7 U		0.7 U	
CALCIUM	51300		51900		58900		50200		44800		11800	
CHROMIUM	0.71 J		0.46 U		0.75 J		0.47 U		0.67 J		1.8 J	
COBALT	0.12		0.15		0.15		0.23		0.58		0.63	
COPPER	0.98		1.4		0.94		1.3		1.5		2	
IRON	137 J		115 J		100 U		195 J		623 J		1580 J	
LEAD	0.25		0.26		0.4		0.59		1		1.1	
MAGNESIUM	11500		9300		12400		11200		9770		5140	
MANGANESE	15 U		46.9		33.1		56.4		201		42.8	
MERCURY	0.08 U		0.08 U		0.08 U		0.08 U		0.08 U		0.08 U	
NICKEL	1.7		1.5		1.9		1.8		2		3	

TABLE E-7

SUMMARY OF ANALYTIC RESULTS IN HIGH FLOW SURFACE WATER
SWMU 3 - OLD JEEP TRAIL/LITTLE SULPHUR CREEK
NSWC CRANE
CRANE, INDIANA

LOCATION	03SWSD15	03SWSD15	03SWSD16	03SWSD16	03SWSD17	03SWSD17	03SWSD18	03SWSD18	03SWSD19	03SWSD19	03SWSD01	03SWSD01
NSAMPLE	03SW1502	03SW1502-F	03SW1602	03SW1602-F	03SW1702	03SW1702-F	03SW1802	03SW1802-F	03SW1902	03SW1902-F	03SW0102	03SW0102-F
SAMPLE	03SW1502	03SW1502-F	03SW1602	03SW1602-F	03SW1702	03SW1702-F	03SW1802	03SW1802-F	03SW1902	03SW1902-F	03SW0102	03SW0102-F
MATRIX	SW	SW	SW	SW	SW	SW	SW	SW	SW	SW	BACKGROUND	BACKGROUND
SACODE	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	ORIG	ORIG	NORMAL	NORMAL
QC_TYPE	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
STATUS	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
SAMPLE DATE	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
VALIDATED	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
COLLECTION METHOD	GRAB	GRAB	GRAB	GRAB	GRAB	GRAB	GRAB	GRAB	GRAB	GRAB	GRAB	GRAB
POTASSIUM	5000 U		5000 U		5000 U		5000 U		5000 U		5000 U	
SELENIUM	0.4 U		0.4 U		0.43		0.4 U		0.4 U		0.4 U	
SILVER	0.1 U		0.1 U		0.1 U		0.1 U		0.1 U		0.1 U	
SODIUM	8000		5000 U		6150		5880		5090		5000 U	
THALLIUM	0.1 U		0.1 U		0.1 U		0.1 U		0.1 U		0.1 U	
TIN	4.4 J		4.7 J		4.7 J		4.6 J		3 J		0.1 U	
VANADIUM	0.22		0.27		0.29		0.35		0.69		2.2	
ZINC	2.8		2.5		2.8		2.5		9.6		5.7	
Dissolved Metals (UG/L)												
ALUMINUM		200 U		200 U		200 U		200 U		200 U		235
ANTIMONY		0.13 U		0.24 U		0.29 U		0.32 U		0.15 U		0.14 U
ARSENIC		0.25		0.32		0.39		0.33		0.4		0.23
BARIUM		80 J		136 J		141 J		147 J		138 J		47.1 J
BERYLLIUM		0.1 U		0.1 U		0.1 U		0.1 U		0.1 U		0.1 U
CADMIUM		0.7 U		1.2		0.7 U		0.7 U		0.7 U		0.7 U
CALCIUM		55300		52100		61200		52200		43100		12500
CHROMIUM		0.7 J		0.41 U		0.75 J		0.51 J		0.36 U		0.49 U
COBALT		0.11		0.19		0.14		0.15		0.72		0.18
COPPER		0.94		1		1.5		0.84		0.95		1.1
IRON		100 U		100 U		100 U		100 U		100 U		100 U
LEAD		0.14 J		0.1 U		0.12 J		0.1 U		0.2 J		0.2 J
MAGNESIUM		11600		9480		13200		11300		9630		5100
MANGANESE		15 U		36.9		28.5		29.3		100		15 U
MERCURY		0.08 U		0.08 U		0.08 U		0.08 U		0.08 U		0.08 U
NICKEL		1.6		1.6		1.9		1.6		1.6		1.3
POTASSIUM		5000 U		5000 U		5000 U		5000 U		5000 U		5000 U
SELENIUM		0.4 U		0.4 U		0.43		0.4 U		0.4 U		0.4 U
SILVER		0.1 U		0.1 U		0.1 U		0.1 U		0.1 U		0.1 U
SODIUM		7960		7660		9830		8790		5000		7010
THALLIUM		0.1 U		0.1 U		0.1 U		0.1 U		0.1 U		0.1 U
TIN		5 J		5.2 J		5.3 J		5.8 J		5.4 J		3.5 J
VANADIUM		0.18		0.21		0.22		0.18		0.23		0.26
ZINC		6.9		2.8		5.3		2.2		21.7		2.9
Miscellaneous Parameters												
PERCHLORATE (UG/L)	4 U		4 U		4 U		4 U		4 U		4 U	
TOTAL SUSPENDED SOLIDS (MG/L)	2 U		2		2 U		2 U		7		28	
Field Parameters												
DISSOLVED OXYGEN (MG/L)	6.25		2.39		5.68		3.95		3.24		10.76	
NITRATE (MG/L)	0.11		0.13				0.18		0.02		1.65 >	
NITRITE (MG/L)	0.002		0				0		0		0.001	
OXIDATION REDUCTION POTENTIAL (MV)	293.6		296.6		303.9		303.6		320.7		206	
PH (S.U.)	7.59		7.31		7.37		7.28		7.2		7.51	
SPECIFIC CONDUCTANCE (MS/CM)	0.378		0.377		0.427		0.391		0.369		0.135	
TEMPERATURE (C)	17.52		21.46		16.73		20.81		21.35		20.8	
TURBIDITY (NTU)	1.52		0.75		2.8		5.1		7.7		22	

TABLE E-7

SUMMARY OF ANALYTIC RESULTS IN HIGH FLOW SURFACE WATER
SWMU 3 - OLD JEEP TRAIL/LITTLE SULPHUR CREEK
NSWC CRANE
CRANE, INDIANA

LOCATION	03SWSD02	03SWSD02	03SWSD03	03SWSD03
NSAMPLE	03SW0202	03SW0202-F	03SW0302	03SW0302-F
SAMPLE	03SW0202	03SW0202-F	03SW0302	03SW0302-F
MATRIX	BACKGROUND	BACKGROUND	BACKGROUND	BACKGROUND
SACODE	NORMAL	NORMAL	NORMAL	NORMAL
QC_TYPE	NM	NM	NM	NM
STATUS	NORMAL	NORMAL	NORMAL	NORMAL
SAMPLE DATE	- -	- -	- -	- -
VALIDATED	Y	Y	Y	Y
COLLECTION METHOD	GRAB	GRAB	GRAB	GRAB
Energetics (UG/L)				
1,1,1,2-TETRACHLOROETHANE	0.3 U		0.3 U	
1,1,1-TRICHLOROETHANE	0.5 U		0.5 U	
1,1,2,2-TETRACHLOROETHANE	0.3 U		0.3 U	
1,1,2-TRICHLOROETHANE	0.3 U		0.3 U	
1,1-DICHLOROETHANE	0.5 U		0.5 U	
1,1-DICHLOROETHENE	0.3 U		0.3 U	
1,2,3-TRICHLOROPROPANE	0.3 U		0.3 U	
1,2-DIBROMO-3-CHLOROPROPANE	0.3 U		0.3 U	
1,2-DIBROMOETHANE	0.3 U		0.3 U	
1,2-DICHLOROETHANE	0.3 U		0.3 U	
1,2-DICHLOROPROPANE	0.3 U		0.3 U	
1,4-DIOXANE	44 U		44 U	
2-BUTANONE	0.5 UR		0.5 UR	
2-HEXANONE	0.5 U		0.5 U	
3-CHLOROPROPENE	0.5 U		0.5 U	
4-METHYL-2-PENTANONE	0.5 U		0.5 U	
ACETONE	0.5 UR		0.5 UR	
ACETONITRILE	3.7 U		3.7 U	
ACROLEIN	0.5 UR		0.5 UR	
ACRYLONITRILE	0.5 UR		0.5 UR	
BENZENE	0.3 U		0.3 U	
BROMODICHLOROMETHANE	0.3 U		0.3 U	
BROMOFORM	0.5 U		0.5 U	
BROMOMETHANE	0.5 U		0.5 U	
CARBON DISULFIDE	0.5 U		0.5 U	
CARBON TETRACHLORIDE	0.3 U		0.3 U	
CHLOROBENZENE	0.5 U		0.5 U	
CHLORODIBROMOMETHANE	0.3 U		0.3 U	
CHLOROETHANE	0.5 U		0.6 U	
CHLOROFORM	0.3 U		0.3 U	
CHLOROMETHANE	0.5 U		0.5 U	
CHLOROPRENE	0.5 U		0.5 U	
CIS-1,2-DICHLOROETHENE	0.5 U		0.5 U	
CIS-1,3-DICHLOROPROPENE	0.3 U		0.3 U	
DIBROMOMETHANE	0.5 U		0.5 U	
DICHLORODIFLUOROMETHANE	0.5 UJ		0.5 UJ	
ETHYL METHACRYLATE	0.5 U		0.5 U	
ETHYLBENZENE	0.5 U		0.5 U	
ISOBUTANOL	6.3 U		6.3 U	
METHACRYLONITRILE	0.5 UR		0.5 UR	
METHYL IODIDE	0.5 UJ		0.5 UJ	
METHYL METHACRYLATE	0.5 U		0.5 U	
METHYLENE CHLORIDE	0.5 U		0.5 U	
PROPIONITRILE	4.6 U		4.6 U	
STYRENE	0.5 U		0.5 U	
TETRACHLOROETHENE	0.5 U		0.5 U	

TABLE E-7

SUMMARY OF ANALYTIC RESULTS IN HIGH FLOW SURFACE WATER
SWMU 3 - OLD JEEP TRAIL/LITTLE SULPHUR CREEK
NSWC CRANE
CRANE, INDIANA

LOCATION	03SWSD02	03SWSD02	03SWSD03	03SWSD03
NSAMPLE	03SW0202	03SW0202-F	03SW0302	03SW0302-F
SAMPLE	03SW0202	03SW0202-F	03SW0302	03SW0302-F
MATRIX	BACKGROUND	BACKGROUND	BACKGROUND	BACKGROUND
SACODE	NORMAL	NORMAL	NORMAL	NORMAL
QC_TYPE	NM	NM	NM	NM
STATUS	NORMAL	NORMAL	NORMAL	NORMAL
SAMPLE DATE	- -	- -	- -	- -
VALIDATED	Y	Y	Y	Y
COLLECTION METHOD	GRAB	GRAB	GRAB	GRAB
TOLUENE	0.5 U		0.5 U	
TOTAL XYLENES	0.5 U		0.5 U	
TRANS-1,2-DICHLOROETHENE	0.5 U		0.5 U	
TRANS-1,3-DICHLOROPROPENE	0.3 U		0.3 U	
TRANS-1,4-DICHLORO-2-BUTENE	0.5 U		0.5 U	
TRICHLOROETHENE	0.5 U		0.5 U	
TRICHLOROFLUOROMETHANE	0.5 U		0.5 U	
VINYL ACETATE	0.5 U		0.5 U	
VINYL CHLORIDE	0.3 U		0.3 U	
Energetics (UG/L)				
1,2,4,5-TETRACHLOROBENZENE	0.97 U		1 U	
1,2,4-TRICHLOROBENZENE	0.97 U		1 U	
1,2-DICHLOROBENZENE	0.97 U		1 U	
1,3-DICHLOROBENZENE	0.97 U		1 U	
1,4-DICHLOROBENZENE	0.97 U		1 U	
1,4-NAPHTHOQUINONE	0.97 U		1 U	
1,4-PHENYLENEDIAMINE	0.97 UJ		1 UJ	
1-NAPHTHYLAMINE	0.97 U		1 U	
2,2'-OXYBIS(1-CHLOROPROPANE)	0.97 U		1 U	
2,3,4,6-TETRACHLOROPHENOL	0.97 U		1 U	
2,4,5-TRICHLOROPHENOL	0.97 U		1 U	
2,4,6-TRICHLOROPHENOL	0.97 U		1 U	
2,4-DICHLOROPHENOL	0.97 U		1 U	
2,4-DIMETHYLPHENOL	0.97 U		1 U	
2,4-DINITROPHENOL	0.97 U		1 U	
2,6-DICHLOROPHENOL	0.97 U		1 U	
2-ACETYLAMINOFLUORENE	0.97 U		1 U	
2-CHLORONAPHTHALENE	0.97 U		1 U	
2-CHLOROPHENOL	0.97 U		1 U	
2-METHYLNAPHTHALENE	0.02 UJ		0.021 UJ	
2-METHYLPHENOL	0.97 U		1 U	
2-NAPHTHYLAMINE	0.97 U		1 U	
2-NITROANILINE	0.97 U		1 U	
2-NITROPHENOL	0.97 U		1 U	
2-PICOLINE	0.97 U		1 U	
3&4-METHYLPHENOL	0.97 U		1 U	
3,3'-DICHLOROBENZIDINE	0.97 U		1 U	
3,3'-DIMETHYLBENZIDINE	0.97 U		1 U	
3-METHYLCHOLANTHRENE	0.97 U		1 U	
3-NITROANILINE	0.97 U		1 U	
4,6-DINITRO-2-METHYLPHENOL	0.97 U		1 U	
4-AMINOBIPHENYL	0.97 U		1 U	
4-BROMOPHENYL PHENYL ETHER	0.97 U		1 U	
4-CHLORO-3-METHYLPHENOL	0.97 U		1 U	
4-CHLOROANILINE	0.97 U		1 U	
4-CHLOROPHENYL PHENYL ETHER	0.97 U		1 U	
4-NITROANILINE	0.97 U		1 U	

TABLE E-7

SUMMARY OF ANALYTIC RESULTS IN HIGH FLOW SURFACE WATER
SWMU 3 - OLD JEEP TRAIL/LITTLE SULPHUR CREEK
NSWC CRANE
CRANE, INDIANA

LOCATION	03SWSD02	03SWSD02	03SWSD03	03SWSD03
NSAMPLE	03SW0202	03SW0202-F	03SW0302	03SW0302-F
SAMPLE	03SW0202	03SW0202-F	03SW0302	03SW0302-F
MATRIX	BACKGROUND	BACKGROUND	BACKGROUND	BACKGROUND
SACODE	NORMAL	NORMAL	NORMAL	NORMAL
QC_TYPE	NM	NM	NM	NM
STATUS	NORMAL	NORMAL	NORMAL	NORMAL
SAMPLE DATE	- -	- -	- -	- -
VALIDATED	Y	Y	Y	Y
COLLECTION METHOD	GRAB	GRAB	GRAB	GRAB
4-NITROPHENOL	0.97 UJ		1 UJ	
4-NITROQUINOLINE-1-OXIDE	0.97 UR		1 UR	
5-NITRO-O-TOLUIDINE	0.97 U		1 U	
7,12-DIMETHYLBENZ(A)ANTHRACENE	0.97 U		1 U	
A,A-DIMETHYLPHENETHYLAMINE	0.97 U		1 U	
ACENAPHTHENE	0.02 U		0.021 U	
ACENAPHTHYLENE	0.02 U		0.021 U	
ACETOPHENONE	0.97 U		1 U	
ANILINE	0.97 U		1 U	
ANTHRACENE	0.02 U		0.021 U	
ARAMITE	0.97 U		1 U	
BENZO(A)ANTHRACENE	0.02 UJ		0.021 UJ	
BENZO(A)PYRENE	0.02 U		0.021 U	
BENZO(B)FLUORANTHENE	0.02 U		0.021 U	
BENZO(G,H,I)PERYLENE	0.02 UJ		0.021 UJ	
BENZO(K)FLUORANTHENE	0.02 U		0.021 U	
BENZYL ALCOHOL	0.97 U		1 U	
BIS(2-CHLOROETHOXY)METHANE	0.97 U		1 U	
BIS(2-CHLOROETHYL)ETHER	0.97 U		1 U	
BIS(2-ETHYLHEXYL)PHTHALATE	0.97 U		1 U	
BUTYL BENZYL PHTHALATE	0.97 U		1 U	
CHLOROBENZILATE	0.97 U		1 U	
CHRYSENE	0.02 U		0.021 U	
DI-N-BUTYL PHTHALATE	0.97 U		1 U	
DI-N-OCTYL PHTHALATE	0.97 U		1 U	
DIALLATE	0.97 U		1 U	
DIBENZO(A,H)ANTHRACENE	0.02 U		0.021 U	
DIBENZOFURAN	0.97 U		1 U	
DIETHYL PHTHALATE	0.97 U		1 U	
DIMETHYL PHTHALATE	0.97 U		1 U	
DIPHENYLAMINE	0.97 U		1 U	
ETHYL METHANE SULFONATE	0.97 U		1 U	
ETHYL PARATHION	0.97 U		1 U	
FLUORANTHENE	0.02 U		0.021 U	
FLUORENE	0.02 U		0.021 U	
HEXACHLOROBENZENE	0.97 U		1 U	
HEXACHLOROBUTADIENE	0.97 U		1 U	
HEXACHLOROCYCLOPENTADIENE	0.97 UJ		1 UJ	
HEXACHLOROETHANE	0.97 U		1 U	
HEXACHLOROPROPENE	0.97 U		1 U	
INDENO(1,2,3-CD)PYRENE	0.02 U		0.021 U	
ISODRIN	0.97 U		1 U	
ISOPHORONE	0.97 U		1 U	
ISOSAFROLE	0.97 U		1 U	
KEPONE	0.97 UR		1 UR	
METHAPYRILENE	0.97 U		1 U	
METHYL METHANE SULFONATE	0.97 U		1 U	

TABLE E-7

SUMMARY OF ANALYTIC RESULTS IN HIGH FLOW SURFACE WATER
SWMU 3 - OLD JEEP TRAIL/LITTLE SULPHUR CREEK
NSWC CRANE
CRANE, INDIANA

LOCATION	03SWSD02	03SWSD02	03SWSD03	03SWSD03
NSAMPLE	03SW0202	03SW0202-F	03SW0302	03SW0302-F
SAMPLE	03SW0202	03SW0202-F	03SW0302	03SW0302-F
MATRIX	BACKGROUND	BACKGROUND	BACKGROUND	BACKGROUND
SACODE	NORMAL	NORMAL	NORMAL	NORMAL
QC_TYPE	NM	NM	NM	NM
STATUS	NORMAL	NORMAL	NORMAL	NORMAL
SAMPLE DATE	- -	- -	- -	- -
VALIDATED	Y	Y	Y	Y
COLLECTION METHOD	GRAB	GRAB	GRAB	GRAB
METHYL PARATHION	0.97 U		1 U	
N-NITROSO-DI-N-BUTYLAMINE	0.97 U		1 U	
N-NITROSO-DI-N-PROPYLAMINE	0.97 U		1 U	
N-NITROSODIETHYLAMINE	0.97 U		1 U	
N-NITROSODIMETHYLAMINE	0.97 U		1 U	
N-NITROSOMETHYLETHYLAMINE	0.97 U		1 U	
N-NITROSOMORPHOLINE	0.97 U		1 U	
N-NITROSOPIPERIDINE	0.97 U		1 U	
N-NITROSOPYRROLIDINE	0.97 U		1 U	
NAPHTHALENE	0.019 U		0.02 U	
O,O,O-TRIETHYL PHOSPHOROTHIOATE	0.97 U		1 U	
O-TOLUIDINE	0.97 U		1 U	
P-(DIMETHYLAMINO)AZOBENZENE	0.97 U		1 U	
PENTACHLOROBENZENE	0.97 U		1 U	
PENTACHLOROETHANE	0.97 U		1 U	
PENTACHLORONITROBENZENE	0.97 U		1 U	
PHENACETIN	0.97 U		1 U	
PHENANTHRENE	0.02 U		0.021 U	
PHENOL	0.97 U		1 U	
PRONAMIDE	0.97 U		1 U	
PYRENE	0.02 UJ		0.021 UJ	
PYRIDINE	0.97 U		1 U	
SAFROLE	0.97 U		1 U	
Energetics (UG/L)				
1,3,5-TRINITROBENZENE	0.35 U		0.35 U	
1,3-DINITROBENZENE	0.35 U		0.35 U	
2,4,6-TRINITROTOLUENE	0.35 U		0.35 UJ	
2,4-DINITROTOLUENE	0.35 U		0.35 UJ	
2,6-DINITROTOLUENE	0.35 U		0.35 UJ	
2-AMINO-4,6-DINITROTOLUENE	0.35 U		0.35 U	
2-NITROTOLUENE	0.35 U		0.35 U	
3-NITROTOLUENE	0.35 U		0.35 U	
4-AMINO-2,6-DINITROTOLUENE	0.35 U		0.35 U	
4-NITROTOLUENE	0.35 U		0.35 U	
HMX	0.35 U		0.35 U	
NITROBENZENE	0.35 U		0.35 U	
NITROCELLULOSE	1000 U		1000 U	
NITROGLYCERIN	3.5 U		3.5 U	
PETN	0.16 U		0.16 U	
RDX	0.35 U		0.35 U	
TETRYL	0.35 U		0.35 U	
Pesticides/PCB's (UG/L)				
4,4'-DDD	0.024 UJ		0.027 UJ	
4,4'-DDE	0.024 U		0.027 U	
4,4'-DDT	0.024 U		0.027 U	
ALDRIN	0.0049 U		0.0053 U	
ALPHA-BHC	0.0049 U		0.0053 U	

TABLE E-7

SUMMARY OF ANALYTIC RESULTS IN HIGH FLOW SURFACE WATER
SWMU 3 - OLD JEEP TRAIL/LITTLE SULPHUR CREEK
NSWC CRANE
CRANE, INDIANA

LOCATION	03SWSD02	03SWSD02	03SWSD03	03SWSD03
NSAMPLE	03SW0202	03SW0202-F	03SW0302	03SW0302-F
SAMPLE	03SW0202	03SW0202-F	03SW0302	03SW0302-F
MATRIX	BACKGROUND	BACKGROUND	BACKGROUND	BACKGROUND
SACODE	NORMAL	NORMAL	NORMAL	NORMAL
QC_TYPE	NM	NM	NM	NM
STATUS	NORMAL	NORMAL	NORMAL	NORMAL
SAMPLE DATE	- -	- -	- -	- -
VALIDATED	Y	Y	Y	Y
COLLECTION METHOD	GRAB	GRAB	GRAB	GRAB
ALPHA-CHLORDANE	0.015 U		0.016 U	
AROCLOR-1016	0.24 U		0.27 U	
AROCLOR-1221	0.24 U		0.27 U	
AROCLOR-1232	0.24 U		0.27 U	
AROCLOR-1242	0.24 U		0.27 U	
AROCLOR-1248	0.24 U		0.27 U	
AROCLOR-1254	0.24 U		0.27 U	
AROCLOR-1260	0.24 U		0.27 U	
BETA-BHC	0.015 U		0.016 U	
DELTA-BHC	0.024 U		0.027 U	
DIELDRIN	0.0097 U		0.011 U	
ENDOSULFAN I	0.024 U		0.027 U	
ENDOSULFAN II	0.024 U		0.027 U	
ENDOSULFAN SULFATE	0.049 U		0.053 U	
ENDRIN	0.029 U		0.032 U	
ENDRIN ALDEHYDE	0.049 U		0.053 U	
ENDRIN KETONE	0.049 U		0.053 U	
GAMMA-BHC (LINDANE)	0.024 U		0.027 U	
GAMMA-CHLORDANE	0.015 U		0.016 U	
HEPTACHLOR	0.015 U		0.016 U	
HEPTACHLOR EPOXIDE	0.0049 U		0.0053 U	
METHOXYCHLOR	0.058 U		0.064 U	
TOXAPHENE	1.5 U		1.6 U	
Herbicides (UG/L)				
2,4,5-T	0.04 U		0.04 U	
2,4,5-TP (SILVEX)	0.04 U		0.04 U	
2,4-D	0.04 UJ		0.04 UJ	
DINOSEB	0.04 U		0.04 U	
HEXACHLOROPHENE	0.01 U		0.01 U	
PENTACHLOROPHENOL	0.01 U		0.023 R	
Total Metals (UG/L)				
ALUMINUM	958		569	
ANTIMONY	0.1 U		0.1 U	
ARSENIC	0.74		0.4	
BARIUM	55.7 J		78.7 J	
BERYLLIUM	0.1 U		0.48	
CADMIUM	0.07 U		0.7 U	
CALCIUM	6450		5000 U	
CHROMIUM	1.2 J		0.8 J	
COBALT	0.62		0.85	
COPPER	1.8		2.3	
IRON	1270 J		577 J	
LEAD	1.2		0.91	
MAGNESIUM	5000 U		5500	
MANGANESE	80.6		72.8	
MERCURY	0.08 U		0.08 U	
NICKEL	4		19	

TABLE E-7

SUMMARY OF ANALYTIC RESULTS IN HIGH FLOW SURFACE WATER
SWMU 3 - OLD JEEP TRAIL/LITTLE SULPHUR CREEK
NSWC CRANE
CRANE, INDIANA

LOCATION	03SWSD02	03SWSD02	03SWSD03	03SWSD03
NSAMPLE	03SW0202	03SW0202-F	03SW0302	03SW0302-F
SAMPLE	03SW0202	03SW0202-F	03SW0302	03SW0302-F
MATRIX	BACKGROUND	BACKGROUND	BACKGROUND	BACKGROUND
SACODE	NORMAL	NORMAL	NORMAL	NORMAL
QC_TYPE	NM	NM	NM	NM
STATUS	NORMAL	NORMAL	NORMAL	NORMAL
SAMPLE DATE	- -	- -	- -	- -
VALIDATED	Y	Y	Y	Y
COLLECTION METHOD	GRAB	GRAB	GRAB	GRAB
POTASSIUM	5000 U		5000 U	
SELENIUM	0.4 U		0.4 U	
SILVER	0.1 U		0.1 U	
SODIUM	5000 U		5000 U	
THALLIUM	0.1 U		0.1 U	
TIN	0.22 U		0.93 U	
VANADIUM	1.9		0.67	
ZINC	8.9		25.2	
Dissolved Metals (UG/L)				
ALUMINUM		200 U		312
ANTIMONY		0.11 U		0.13 U
ARSENIC		0.24		0.2 U
BARIUM		47 J		76.5 J
BERYLLIUM		0.1 U		0.37
CADMIUM		2.3		0.7 U
CALCIUM		6310		5130
CHROMIUM		0.44 U		0.45 U
COBALT		0.23		0.24
COPPER		0.8		1.9
IRON		125		100 U
LEAD		0.21 J		0.3 J
MAGNESIUM		5000 U		5430
MANGANESE		37.6		36.3
MERCURY		0.08 U		0.08 U
NICKEL		3		17.9
POTASSIUM		5000 U		5000 U
SELENIUM		0.4 U		0.4 U
SILVER		0.1 U		0.1 U
SODIUM		5000 U		5000 U
THALLIUM		0.1 U		0.1 U
TIN		3.8 J		4.9 J
VANADIUM		0.25		0.1 U
ZINC		5.5		25.2
Miscellaneous Parameters				
PERCHLORATE (UG/L)	4 U		4 U	
TOTAL SUSPENDED SOLIDS (MG/L)	18		19	
Field Parameters				
DISSOLVED OXYGEN (MG/L)	10.78		10.12	
NITRATE (MG/L)	0.75		1.65 >	
NITRITE (MG/L)	0.002		0.004	
OXIDATION REDUCTION POTENTIAL (MV)	248		288	
PH (S.U.)	6.71		5.8	
SPECIFIC CONDUCTANCE (MS/CM)	0.095		0.1	
TEMPERATURE (C)	21.2		19.4	
TURBIDITY (NTU)	31		17	

APPENDIX F

SUMMARY OF BACKGROUND COMPARISONS

TABLE F-1

SUMMARY OF BACKGROUND COMPARISONS FOR SOIL GROUP 3
SWMU 3 - OLD JEEP TRAIL/LITTLE SULPHUR CREEK
NSWC CRANE
CRANE, INDIANA

PARAMETER	SITE RANK	BACK RANK	U	Z	p-level	Z adjusted	p-level	SITE N	BACK N	SITE ABOVE BACKGROUND?
ALUMINUM	631.5	496.5	104	-3.1152	0.0018	-3.1154	0.0018	32	15	NO
ANTIMONY	753.0	375.0	225	-0.3423	0.7321	-0.3424	0.7320	32	15	NO
ARSENIC	762.5	365.5	235	-0.1255	0.9001	-0.1256	0.9001	32	15	NO
BARIUM	**905.0**	**223.0**	**103**	**3.1266**	**0.0018**	**3.1272**	**0.0018**	**32**	**15**	**YES**
BERYLLIUM	**956.5**	**171.5**	**52**	**4.3019**	**0.0000**	**4.3038**	**0.0000**	**32**	**15**	**YES**
CADMIUM	**860.5**	**267.5**	**148**	**2.1110**	**0.0348**	**2.1122**	**0.0347**	**32**	**15**	**YES**
CALCIUM	**981.0**	**147.0**	**27**	**4.8610**	**0.0000**	**4.8612**	**0.0000**	**32**	**15**	**YES**
CHROMIUM	782.0	346.0	226	0.3195	0.7493	0.3196	0.7493	32	15	NO
COBALT	805.0	323.0	203	0.8444	0.3984	0.8446	0.3984	32	15	NO
COPPER	**904.0**	**224.0**	**104**	**3.1038**	**0.0019**	**3.1046**	**0.0019**	**32**	**15**	**YES**
IRON	**884.0**	**244.0**	**124**	**2.6473**	**0.0081**	**2.6476**	**0.0081**	**32**	**15**	**YES**
LEAD	**912.5**	**215.5**	**96**	**3.2977**	**0.0010**	**3.2980**	**0.0010**	**32**	**15**	**YES**
MAGNESIUM	812.5	315.5	196	1.0156	0.3098	1.0157	0.3098	32	15	NO
MANGANESE	752.0	376.0	224	-0.3651	0.7150	-0.3652	0.7150	32	15	NO
MERCURY	785.5	342.5	223	0.3994	0.6896	0.4011	0.6883	32	15	NO
NICKEL	**876.5**	**251.5**	**132**	**2.4762**	**0.0133**	**2.4766**	**0.0133**	**32**	**15**	**YES**
POTASSIUM	639.0	489.0	111	-2.9440	0.0032	-2.9442	0.0032	32	15	NO
SELENIUM	567.5	560.5	40	-4.5758	0.0000	-4.5788	0.0000	32	15	NO
SILVER	717.0	411.0	189	-1.1639	0.2445	-1.1772	0.2391	32	15	NO
SODIUM	**991.0**	**137.0**	**17**	**5.0893**	**0.0000**	**5.0894**	**0.0000**	**32**	**15**	**YES**
THALLIUM	565.0	563.0	37	-4.6328	0.0000	-4.6748	0.0000	32	15	NO
TIN	702.0	426.0	174	-1.5062	0.1320	-1.5070	0.1318	32	15	NO
VANADIUM	635.0	493.0	107	-3.0353	0.0024	-3.0363	0.0024	32	15	NO
ZINC	**893.5**	**234.5**	**115**	**2.8641**	**0.0042**	**2.8643**	**0.0042**	**32**	**15**	**YES**

TABLE F-2

SUMMARY OF BACKGROUND COMPARISONS FOR SOIL GROUP 6
SWMU 3 - OLD JEEP TRAIL/LITTLE SULPHUR CREEK
NSWC CRANE
CRANE, INDIANA

PARAMETER	SITE RANK	BACK RANK	U	Z	p-level	Z adjusted	p-level	SITE N	BACK N	SITE ABOVE BACKGROUND?
ALUMINUM	628.0	233.0	33	-2.9797	0.0029	-2.9797	0.0029	34	7	NO
ANTIMONY	692.0	169.0	97	-0.7623	0.4459	-0.7624	0.4459	34	7	NO
ARSENIC	740.0	121.0	93	0.9008	0.3677	0.9013	0.3674	34	7	NO
BARIUM	**785.0**	**76.0**	**48**	**2.4600**	**0.0139**	**2.4602**	**0.0139**	**34**	**7**	**YES**
BERYLLIUM	**813.0**	**48.0**	**20**	**3.4301**	**0.0006**	**3.4315**	**0.0006**	**34**	**7**	**YES**
CADMIUM	757.5	103.5	76	1.5072	0.1318	1.5084	0.1315	34	7	NO
CALCIUM	**817.0**	**44.0**	**16**	**3.5687**	**0.0004**	**3.5687**	**0.0004**	**34**	**7**	**YES**
CHROMIUM	695.0	166.0	100	-0.6583	0.5103	-0.6583	0.5103	34	7	NO
COBALT	**807.0**	**54.0**	**26**	**3.2223**	**0.0013**	**3.2230**	**0.0013**	**34**	**7**	**YES**
COPPER	726.0	135.0	107	0.4158	0.6776	0.4159	0.6775	34	7	NO
IRON	749.0	112.0	84	1.2127	0.2253	1.2132	0.2251	34	7	NO
LEAD	**804.5**	**56.5**	**29**	**3.1356**	**0.0017**	**3.1362**	**0.0017**	**34**	**7**	**YES**
MAGNESIUM	659.0	202.0	64	-1.9056	0.0567	-1.9056	0.0567	34	7	NO
MANGANESE	**830.0**	**31.0**	**3**	**4.0192**	**0.0001**	**4.0204**	**0.0001**	**34**	**7**	**YES**
MERCURY	722.5	138.5	111	0.2945	0.7684	0.2955	0.7676	34	7	NO
NICKEL	**763.5**	**97.5**	**70**	**1.7151**	**0.0863**	**1.7153**	**0.0863**	**34**	**7**	**YES**
POTASSIUM	642.5	218.5	48	-2.4773	0.0132	-2.4775	0.0132	34	7	NO
SELENIUM	681.5	179.5	87	-1.1261	0.2601	-1.1293	0.2588	34	7	NO
SILVER	652.0	209.0	57	-2.1482	0.0317	-2.3413	0.0192	34	7	NO
SODIUM	**778.0**	**83.0**	**55**	**2.2175**	**0.0266**	**2.2175**	**0.0266**	**34**	**7**	**YES**
THALLIUM	670.5	190.5	76	-1.5072	0.1318	-1.5150	0.1298	34	7	NO
TIN	671.5	189.5	77	-1.4725	0.1409	-1.4736	0.1406	34	7	NO
VANADIUM	646.0	215.0	51	-2.3561	0.0185	-2.3564	0.0185	34	7	NO
ZINC	**793.0**	**68.0**	**40**	**2.7372**	**0.0062**	**2.7373**	**0.0062**	**34**	**7**	**YES**

TABLE F-3

SUMMARY OF BACKGROUND COMPARISONS FOR SOIL GROUP 7
SWMU 3 - OLD JEEP TRAIL/LITTLE SULPHUR CREEK
NSWC CRANE
CRANE, INDIANA
PAGE 1 OF 1

PARAMETER	SITE RANK	BACK RANK	U	Z	p-level	Z adjusted	p-level	SITE N	BACK N	SITE ABOVE BACKGROUND?
ALUMINUM	6.0	30.0	0	-2.2361	0.0254	-2.2361	0.0254	3	5	NO
ANTIMONY	6.0	30.0	0	-2.2361	0.0254	-2.2361	0.0254	3	5	NO
ARSENIC	8.0	28.0	2	-1.6398	0.1011	-1.6398	0.1011	3	5	NO
BARIUM	**20.0**	**16.0**	**1**	**1.9379**	**0.0526**	**1.9379**	**0.0526**	**3**	**5**	**YES**
BERYLLIUM	**21.0**	**15.0**	**0**	**2.2361**	**0.0254**	**2.2361**	**0.0254**	**3**	**5**	**YES**
CADMIUM	11.0	25.0	5	-0.7454	0.4561	-0.7454	0.4561	3	5	NO
CALCIUM	19.0	17.0	2	1.6398	0.1011	1.6398	0.1011	3	5	NO
CHROMIUM	14.0	22.0	7	0.1491	0.8815	0.1491	0.8815	3	5	NO
COBALT	**21.0**	**15.0**	**0**	**2.2361**	**0.0254**	**2.2495**	**0.0245**	**3**	**5**	**YES**
COPPER	9.0	27.0	3	-1.3416	0.1797	-1.3416	0.1797	3	5	NO
IRON	16.0	20.0	5	0.7454	0.4561	0.7498	0.4534	3	5	NO
LEAD	18.0	18.0	3	1.3416	0.1797	1.3416	0.1797	3	5	NO
MAGNESIUM	6.0	30.0	0	-2.2361	0.0254	-2.2361	0.0254	3	5	NO
MANGANESE	**21.0**	**15.0**	**0**	**2.2361**	**0.0254**	**2.2361**	**0.0254**	**3**	**5**	**YES**
MERCURY	12.0	24.0	6	-0.4472	0.6547	-0.4499	0.6528	3	5	NO
NICKEL	**20.0**	**16.0**	**1**	**1.9379**	**0.0526**	**1.9379**	**0.0526**	**3**	**5**	**YES**
POTASSIUM	6.0	30.0	0	-2.2361	0.0254	-2.2361	0.0254	3	5	NO
SELENIUM	18.5	17.5	3	1.4907	0.1360	1.4997	0.1337	3	5	NO
SILVER	6.0	30.0	0	-2.2361	0.0254	-2.5820	0.0098	3	5	NO
SODIUM	**21.0**	**15.0**	**0**	**2.2361**	**0.0254**	**2.2361**	**0.0254**	**3**	**5**	**YES**
THALLIUM	8.5	27.5	3	-1.4907	0.1360	-1.5470	0.1219	3	5	NO
TIN	6.0	30.0	0	-2.2361	0.0254	-2.2361	0.0254	3	5	NO
VANADIUM	7.0	29.0	1	-1.9379	0.0526	-1.9379	0.0526	3	5	NO
ZINC	12.0	24.0	6	-0.4472	0.6547	-0.4472	0.6547	3	5	NO

TABLE F-4

SUMMARY OF BACKGROUND COMPARISONS FOR GROUND WATER
SWMU 3 - OLD JEEP TRAIL/LITTLE SULPHUR CREEK
NSWC CRANE
CRANE, INDIANA

PARAMETER	SITE RANK	BACK RANK	U	Z	p-level	Z adjusted	p-level	SITE N	BACK N	SITE ABOVE BACKGROUND?
ALUMINUM	142.0	11.0	8	1.0435	0.2967	1.0435	0.2967	15	2	NO
ANTIMONY	135.0	18.0	15	0.0000	1.0000	0.0000	1.0000	15	2	NO
ARSENIC	143.0	10.0	7	1.1926	0.2330	1.2678	0.2049	15	2	NO
BARIUM	**148.0**	**5.0**	**2**	**1.9379**	**0.0526**	**1.9379**	**0.0526**	**15**	**2**	**YES**
BERYLLIUM	146.5	6.5	4	1.7143	0.0865	1.9238	0.0544	15	2	NO
CADMIUM	**146.5**	**6.5**	**4**	**1.7143**	**0.0865**	**1.8835**	**0.0596**	**15**	**2**	**YES**
CALCIUM	144.0	9.0	6	1.3416	0.1797	1.3416	0.1797	15	2	NO
CHROMIUM	141.0	12.0	9	0.8944	0.3711	0.8972	0.3696	15	2	NO
COBALT	**148.5**	**4.5**	**2**	**2.0125**	**0.0442**	**2.0505**	**0.0403**	**15**	**2**	**YES**
COPPER	**149.0**	**4.0**	**1**	**2.0870**	**0.0369**	**2.0896**	**0.0367**	**15**	**2**	**YES**
IRON	**148.0**	**5.0**	**2**	**1.9379**	**0.0526**	**1.9379**	**0.0526**	**15**	**2**	**YES**
LEAD	145.0	8.0	5	1.4907	0.1360	1.5103	0.1310	15	2	NO
MAGNESIUM	146.0	7.0	4	1.6398	0.1011	1.6398	0.1011	15	2	NO
MANGANESE	144.0	9.0	6	1.3416	0.1797	1.3416	0.1797	15	2	NO
MERCURY	142.5	10.5	8	1.1180	0.2636	2.7386	0.0062	15	2	NO
NICKEL	**150.0**	**3.0**	**0**	**2.2361**	**0.0254**	**2.2374**	**0.0253**	**15**	**2**	**YES**
POTASSIUM	**148.5**	**4.5**	**2**	**2.0125**	**0.0442**	**2.0137**	**0.0441**	**15**	**2**	**YES**
SELENIUM	**148.5**	**4.5**	**2**	**2.0125**	**0.0442**	**2.1395**	**0.0324**	**15**	**2**	**YES**
SILVER	145.0	8.0	5	1.4907	0.1360	1.5959	0.1105	15	2	NO
SODIUM	137.0	16.0	13	0.2981	0.7656	0.2981	0.7656	15	2	NO
THALLIUM	146.5	6.5	4	1.7143	0.0865	1.8835	0.0596	15	2	NO
TIN	145.0	8.0	5	1.4907	0.1360	1.4925	0.1356	15	2	NO
VANADIUM	141.0	12.0	9	0.8944	0.3711	0.8988	0.3687	15	2	NO
ZINC	**149.5**	**3.5**	**1**	**2.1615**	**0.0307**	**2.1629**	**0.0306**	**15**	**2**	**YES**

TABLE F-5

SUMMARY OF BACKGROUND COMPARISONS FOR SHALLOW SEDIMENT
SWMU 3 - OLD JEEP TRAIL/LITTLE SULPHUR CREEK
NSWC CRANE
CRANE, INDIANA

PARAMETER	SITE RANK	BACK RANK	U	Z	p-level	Z adjusted	p-level	SITE N	BACK N	SITE ABOVE BACKGROUND?
ALUMINUM	160.0	30.0	20	1.0000	0.3173	1.0000	0.3173	15	4	NO
ANTIMONY	**172.0**	**18.0**	**8**	**2.2000**	**0.0278**	**2.2000**	**0.0278**	**15**	**4**	**YES**
ARSENIC	142.0	48.0	22	-0.8000	0.4237	-0.8000	0.4237	15	4	NO
BARIUM	**180.0**	**10.0**	**0**	**3.0000**	**0.0027**	**3.0000**	**0.0027**	**15**	**4**	**YES**
BERYLLIUM	137.5	52.5	18	-1.2500	0.2113	-1.2511	0.2109	15	4	NO
CADMIUM	**173.0**	**17.0**	**7**	**2.3000**	**0.0215**	**2.3020**	**0.0213**	**15**	**4**	**YES**
CALCIUM	**174.0**	**16.0**	**6**	**2.4000**	**0.0164**	**2.4000**	**0.0164**	**15**	**4**	**YES**
CHROMIUM	146.0	44.0	26	-0.4000	0.6892	-0.4000	0.6892	15	4	NO
COBALT	144.5	45.5	25	-0.5500	0.5823	-0.5502	0.5822	15	4	NO
COPPER	**171.0**	**19.0**	**9**	**2.1000**	**0.0357**	**2.1000**	**0.0357**	**15**	**4**	**YES**
IRON	146.0	44.0	26	-0.4000	0.6892	-0.4002	0.6890	15	4	NO
LEAD	**171.0**	**19.0**	**9**	**2.1000**	**0.0357**	**2.1000**	**0.0357**	**15**	**4**	**YES**
MAGNESIUM	150.0	40.0	30	0.0000	1.0000	0.0000	1.0000	15	4	NO
MANGANESE	161.0	29.0	19	1.1000	0.2713	1.1000	0.2713	15	4	NO
MERCURY	158.0	32.0	22	0.8000	0.4237	0.8093	0.4184	15	4	NO
NICKEL	137.0	53.0	17	-1.3000	0.1936	-1.3006	0.1934	15	4	NO
POTASSIUM	143.0	47.0	23	-0.7000	0.4839	-0.7000	0.4839	15	4	NO
SELENIUM	133.0	57.0	13	-1.7000	0.0891	-1.7090	0.0875	15	4	NO
SILVER	163.0	27.0	17	1.3000	0.1936	1.3234	0.1857	15	4	NO
SODIUM	154.0	36.0	26	0.4000	0.6892	0.4002	0.6890	15	4	NO
THALLIUM	134.5	55.5	15	-1.5500	0.1212	-1.5873	0.1124	15	4	NO
TIN	**176.0**	**14.0**	**4**	**2.6000**	**0.0093**	**2.6023**	**0.0093**	**15**	**4**	**YES**
VANADIUM	150.0	40.0	30	0.0000	1.0000	0.0000	1.0000	15	4	NO
ZINC	**168.0**	**22.0**	**12**	**1.8000**	**0.0719**	**1.8000**	**0.0719**	**15**	**4**	**YES**

TABLE F-6

SUMMARY OF BACKGROUND COMPARISONS FOR DEEP SEDIMENT
SWMU 3 - OLD JEEP TRAIL/LITTLE SULPHUR CREEK
NSWC CRANE
CRANE, INDIANA

PARAMETER	SITE RANK	BACK RANK	U	Z	p-level	Z adjusted	p-level	SITE N	BACK N	SITE ABOVE BACKGROUND?
ALUMINUM	154.0	36.0	26	0.4000	0.6892	0.4000	0.6892	15	4	NO
ANTIMONY	164.0	26.0	16	1.4000	0.1615	1.4025	0.1608	15	4	NO
ARSENIC	154.5	35.5	26	0.4500	0.6527	0.4502	0.6526	15	4	NO
BARIUM	**170.0**	**20.0**	**10**	**2.0000**	**0.0455**	**2.0000**	**0.0455**	**15**	**4**	**YES**
BERYLLIUM	136.5	53.5	17	-1.3500	0.1770	-1.3554	0.1753	15	4	NO
CADMIUM	**171.0**	**19.0**	**9**	**2.1000**	**0.0357**	**2.1000**	**0.0357**	**15**	**4**	**YES**
CALCIUM	**169.0**	**21.0**	**11**	**1.9000**	**0.0574**	**1.9000**	**0.0574**	**15**	**4**	**YES**
CHROMIUM	152.0	38.0	28	0.2000	0.8415	0.2000	0.8415	15	4	NO
COBALT	136.0	54.0	16	-1.4000	0.1615	-1.4000	0.1615	15	4	NO
COPPER	165.0	25.0	15	1.5000	0.1336	1.5007	0.1335	15	4	NO
IRON	156.0	34.0	24	0.6000	0.5485	0.6000	0.5485	15	4	NO
LEAD	**171.0**	**19.0**	**9**	**2.1000**	**0.0357**	**2.1000**	**0.0357**	**15**	**4**	**YES**
MAGNESIUM	141.0	49.0	21	-0.9000	0.3681	-0.9000	0.3681	15	4	NO
MANGANESE	159.0	31.0	21	0.9000	0.3681	0.9008	0.3677	15	4	NO
MERCURY	**168.0**	**22.0**	**12**	**1.8000**	**0.0719**	**1.8308**	**0.0671**	**15**	**4**	**YES**
NICKEL	134.0	56.0	14	-1.6000	0.1096	-1.6000	0.1096	15	4	NO
POTASSIUM	138.0	52.0	18	-1.2000	0.2301	-1.2000	0.2301	15	4	NO
SELENIUM	128.0	62.0	8	-2.2000	0.0278	-2.2068	0.0273	15	4	NO
SILVER	**169.0**	**21.0**	**11**	**1.9000**	**0.0574**	**1.9264**	**0.0541**	**15**	**4**	**YES**
SODIUM	162.5	27.5	18	1.2500	0.2113	1.2511	0.2109	15	4	NO
THALLIUM	147.5	42.5	28	-0.2500	0.8026	-0.2539	0.7996	15	4	NO
TIN	**177.0**	**13.0**	**3**	**2.7000**	**0.0069**	**2.7012**	**0.0069**	**15**	**4**	**YES**
VANADIUM	154.0	36.0	26	0.4000	0.6892	0.4000	0.6892	15	4	NO
ZINC	**167.0**	**23.0**	**13**	**1.7000**	**0.0891**	**1.7000**	**0.0891**	**15**	**4**	**YES**

TABLE F-7

SUMMARY OF BACKGROUND COMPARISONS FOR LOW FLOW SURFACE WATER
SWMU 3 - OLD JEEP TRAIL/LITTLE SULPHUR CREEK
NSWC CRANE
CRANE, INDIANA

PARAMETER	SITE RANK	BACK RANK	U	Z	p-level	Z adjusted	p-level	SITE N	BACK N	SITE ABOVE BACKGROUND?
Total Metals (UG/L)										
ALUMINUM	24.0	21.0	3	-1.5492	0.1213	-1.5492	0.1213	6	3	NO
ANTIMONY	**37.5**	**7.5**	**2**	**1.9365**	**0.0528**	**2.0319**	**0.0422**	**6**	**3**	**YES**
ARSENIC	32.5	12.5	7	0.6455	0.5186	0.6509	0.5151	6	3	NO
BARIUM	36.0	9.0	3	1.5492	0.1213	1.5492	0.1213	6	3	NO
BERYLLIUM	27.0	18.0	6	-0.7746	0.4386	-1.4142	0.1573	6	3	NO
CADMIUM	30.0	15.0	9	0.0000	1.0000	--	--	6	3	NO
CALCIUM	**39.0**	**6.0**	**0**	**2.3238**	**0.0201**	**2.3238**	**0.0201**	**6**	**3**	**YES**
CHROMIUM	**37.0**	**8.0**	**2**	**1.8074**	**0.0707**	**1.8150**	**0.0695**	**6**	**3**	**YES**
COBALT	23.0	22.0	2	-1.8074	0.0707	-1.8074	0.0707	6	3	NO
COPPER	35.0	10.0	4	1.2910	0.1967	1.2910	0.1967	6	3	NO
IRON	26.0	19.0	5	-1.0328	0.3017	-1.0328	0.3017	6	3	NO
LEAD	30.0	15.0	9	0.0000	1.0000	0.0000	1.0000	6	3	NO
MAGNESIUM	**37.0**	**8.0**	**2**	**1.8074**	**0.0707**	**1.8074**	**0.0707**	**6**	**3**	**YES**
MANGANESE	23.0	22.0	2	-1.8074	0.0707	-1.8074	0.0707	6	3	NO
MERCURY	30.0	15.0	9	0.0000	1.0000	--	--	6	3	NO
NICKEL	23.5	21.5	3	-1.6783	0.0933	-1.6925	0.0906	6	3	NO
POTASSIUM	36.0	9.0	3	1.5492	0.1213	1.5557	0.1198	6	3	NO
SELENIUM	30.0	15.0	9	0.0000	1.0000	--	--	6	3	NO
SILVER	30.5	14.5	9	0.1291	0.8973	0.1543	0.8774	6	3	NO
SODIUM	27.0	18.0	6	-0.7746	0.4386	-0.7746	0.4386	6	3	NO
THALLIUM	30.0	15.0	9	0.0000	1.0000	--	--	6	3	NO
TIN	**38.0**	**7.0**	**1**	**2.0656**	**0.0389**	**2.0743**	**0.0381**	**6**	**3**	**YES**
VANADIUM	27.0	18.0	6	-0.7746	0.4386	-0.7878	0.4308	6	3	NO
ZINC	33.0	12.0	6	0.7746	0.4386	0.7746	0.4386	6	3	NO
Dissolved Metals (UG/L)										
ALUMINUM, FILTERED	25.0	20.0	4	-1.2910	0.1967	-1.3131	0.1892	6	3	NO
ANTIMONY, FILTERED	33.0	12.0	6	0.7746	0.4386	0.7778	0.4367	6	3	NO
ARSENIC, FILTERED	**37.5**	**7.5**	**2**	**1.9365**	**0.0528**	**2.0226**	**0.0431**	**6**	**3**	**YES**
BARIUM, FILTERED	**38.0**	**7.0**	**1**	**2.0656**	**0.0389**	**2.0656**	**0.0389**	**6**	**3**	**YES**
BERYLLIUM, FILTERED	30.0	15.0	9	0.0000	1.0000	--	--	6	3	NO
CADMIUM, FILTERED	27.0	18.0	6	-0.7746	0.4386	-1.4142	0.1573	6	3	NO
CALCIUM, FILTERED	**39.0**	**6.0**	**0**	**2.3238**	**0.0201**	**2.3434**	**0.0191**	**6**	**3**	**YES**
CHROMIUM, FILTERED	**39.0**	**6.0**	**0**	**2.3238**	**0.0201**	**2.3738**	**0.0176**	**6**	**3**	**YES**
COBALT, FILTERED	30.0	15.0	9	0.0000	1.0000	0.0000	1.0000	6	3	NO
COPPER, FILTERED	**37.0**	**8.0**	**2**	**1.8074**	**0.0707**	**1.8150**	**0.0695**	**6**	**3**	**YES**
IRON, FILTERED	**39.0**	**6.0**	**0**	**2.3238**	**0.0201**	**2.3238**	**0.0201**	**6**	**3**	**YES**

TABLE F-7

SUMMARY OF BACKGROUND COMPARISONS FOR LOW FLOW SURFACE WATER
SWMU 3 - OLD JEEP TRAIL/LITTLE SULPHUR CREEK
NSWC CRANE
CRANE, INDIANA

PARAMETER	SITE RANK	BACK RANK	U	Z	p-level	Z adjusted	p-level	SITE N	BACK N	SITE ABOVE BACKGROUND?
LEAD, FILTERED	29.0	16.0	8	-0.2582	0.7963	-0.3536	0.7237	6	3	NO
MAGNESIUM, FILTERED	**37.0**	**8.0**	**2**	**1.8074**	**0.0707**	**1.8074**	**0.0707**	**6**	**3**	**YES**
MANGANESE, FILTERED	27.0	18.0	6	-0.7746	0.4386	-0.7746	0.4386	6	3	NO
MERCURY, FILTERED	30.0	15.0	9	0.0000	1.0000	--	--	6	3	NO
NICKEL, FILTERED	27.0	18.0	6	-0.7746	0.4386	-0.7913	0.4288	6	3	NO
POTASSIUM, FILTERED	36.0	9.0	3	1.5492	0.1213	1.5492	0.1213	6	3	NO
SELENIUM, FILTERED	31.5	13.5	8	0.3873	0.6985	0.7071	0.4795	6	3	NO
SILVER, FILTERED	31.5	13.5	8	0.3873	0.6985	0.7071	0.4795	6	3	NO
SODIUM, FILTERED	27.0	18.0	6	-0.7746	0.4386	-0.7746	0.4386	6	3	NO
THALLIUM, FILTERED	30.0	15.0	9	0.0000	1.0000	--	--	6	3	NO
TIN, FILTERED	36.0	9.0	3	1.5492	0.1213	1.5557	0.1198	6	3	NO
VANADIUM, FILTERED	31.5	13.5	8	0.3873	0.6985	0.7071	0.4795	6	3	NO
ZINC, FILTERED	36.0	9.0	3	1.5492	0.1213	1.5492	0.1213	6	3	NO

TABLE F-8

SUMMARY OF BACKGROUND COMPARISONS FOR HIGH FLOW SURFACE WATER
SWMU 3 - OLD JEEP TRAIL/LITTLE SULPHUR CREEK
NSWC CRANE
CRANE, INDIANA

PARAMETER	SITE RANK	BACK RANK	U	Z	p-level	Z adjusted	p-level	SITE N	BACK N	SITE ABOVE BACKGROUND?
Total Metals (UG/L)										
ALUMINUM	80.0	25.0	14	-0.3892	0.6971	-0.3936	0.6939	11	3	NO
ANTIMONY	**97.0**	**8.0**	**2**	**2.2576**	**0.0240**	**2.2829**	**0.0224**	**11**	**3**	**YES**
ARSENIC	87.5	17.5	12	0.7785	0.4363	0.7794	0.4358	11	3	NO
BARIUM	93.0	12.0	6	1.6348	0.1021	1.6348	0.1021	11	3	NO
BERYLLIUM	73.5	31.5	8	-1.4013	0.1611	-1.5561	0.1197	11	3	NO
CADMIUM	**91.0**	**14.0**	**8**	**1.3234**	**0.1857**	**1.6577**	**0.0974**	**11**	**3**	**YES**
CALCIUM	**97.0**	**8.0**	**2**	**2.2576**	**0.0240**	**2.2576**	**0.0240**	**11**	**3**	**YES**
CHROMIUM	83.0	22.0	16	0.0779	0.9379	0.0779	0.9379	11	3	NO
COBALT	82.0	23.0	16	-0.0779	0.9379	-0.0780	0.9378	11	3	NO
COPPER	84.0	21.0	15	0.2336	0.8153	0.2336	0.8153	11	3	NO
IRON	81.0	24.0	15	-0.2336	0.8153	-0.2338	0.8151	11	3	NO
LEAD	85.0	20.0	14	0.3892	0.6971	0.3892	0.6971	11	3	NO
MAGNESIUM	91.5	13.5	8	1.4013	0.1611	1.4170	0.1565	11	3	NO
MANGANESE	85.0	20.0	14	0.3892	0.6971	0.3892	0.6971	11	3	NO
MERCURY	82.5	22.5	17	0.0000	1.0000	--	--	11	3	NO
NICKEL	73.0	32.0	7	-1.4792	0.1391	-1.4808	0.1387	11	3	NO
POTASSIUM	88.5	16.5	11	0.9342	0.3502	1.1702	0.2419	11	3	NO
SELENIUM	87.0	18.0	12	0.7006	0.4835	0.9749	0.3296	11	3	NO
SILVER	84.0	21.0	15	0.2336	0.8153	0.5222	0.6015	11	3	NO
SODIUM	91.5	13.5	8	1.4013	0.1611	1.5518	0.1207	11	3	NO
THALLIUM	82.5	22.5	17	0.0000	1.0000	--	--	11	3	NO
TIN	91.0	14.0	8	1.3234	0.1857	1.3278	0.1842	11	3	NO
VANADIUM	82.0	23.0	16	-0.0779	0.9379	-0.0779	0.9379	11	3	NO
ZINC	85.0	20.0	14	0.3892	0.6971	0.3901	0.6965	11	3	NO
Dissolved Metals (UG/L)										
ALUMINUM, FILTERED	80.0	25.0	14	-0.3892	0.6971	-0.4157	0.6777	11	3	NO
ANTIMONY, FILTERED	**97.5**	**7.5**	**2**	**2.3355**	**0.0195**	**2.3381**	**0.0194**	**11**	**3**	**YES**
ARSENIC, FILTERED	**99.0**	**6.0**	**0**	**2.5690**	**0.0102**	**2.5719**	**0.0101**	**11**	**3**	**YES**
BARIUM, FILTERED	91.0	14.0	8	1.3234	0.1857	1.3234	0.1857	11	3	NO
BERYLLIUM, FILTERED	77.0	28.0	11	-0.8563	0.3918	-1.9149	0.0555	11	3	NO
CADMIUM, FILTERED	78.0	27.0	12	-0.7006	0.4835	-1.1496	0.2503	11	3	NO
CALCIUM, FILTERED	**97.0**	**8.0**	**2**	**2.2576**	**0.0240**	**2.2576**	**0.0240**	**11**	**3**	**YES**
CHROMIUM, FILTERED	93.0	12.0	6	1.6348	0.1021	1.6366	0.1017	11	3	NO

TABLE F-8

SUMMARY OF BACKGROUND COMPARISONS FOR HIGH FLOW SURFACE WATER
SWMU 3 - OLD JEEP TRAIL/LITTLE SULPHUR CREEK
NSWC CRANE
CRANE, INDIANA

PARAMETER	SITE RANK	BACK RANK	U	Z	p-level	Z adjusted	p-level	SITE N	BACK N	SITE ABOVE BACKGROUND?
COBALT, FILTERED	83.5	21.5	16	0.1557	0.8763	0.1567	0.8755	11	3	NO
COPPER, FILTERED	89.0	16.0	10	1.0120	0.3115	1.0120	0.3115	11	3	NO
IRON, FILTERED	80.0	25.0	14	-0.3892	0.6971	-0.5416	0.5881	11	3	NO
LEAD, FILTERED	83.5	21.5	16	0.1557	0.8763	0.1560	0.8760	11	3	NO
MAGNESIUM, FILTERED	91.5	13.5	8	1.4013	0.1611	1.4170	0.1565	11	3	NO
MANGANESE, FILTERED	77.5	27.5	12	-0.7785	0.4363	-0.8103	0.4178	11	3	NO
MERCURY, FILTERED	82.5	22.5	17	0.0000	1.0000	--	--	11	3	NO
NICKEL, FILTERED	74.0	31.0	8	-1.3235	0.1857	-1.3382	0.1808	11	3	NO
POTASSIUM, FILTERED	88.5	16.5	11	0.9342	0.3502	1.1702	0.2419	11	3	NO
SELENIUM, FILTERED	85.5	19.5	14	0.4671	0.6404	0.7664	0.4434	11	3	NO
SILVER, FILTERED	84.0	21.0	15	0.2336	0.8153	0.5222	0.6015	11	3	NO
SODIUM, FILTERED	90.0	15.0	9	1.1677	0.2429	1.2154	0.2242	11	3	NO
THALLIUM, FILTERED	82.5	22.5	17	0.0000	1.0000	--	--	11	3	NO
TIN, FILTERED	92.5	12.5	7	1.5570	0.1195	1.5604	0.1187	11	3	NO
VANADIUM, FILTERED	89.0	16.0	10	1.0120	0.3115	1.0132	0.3110	11	3	NO
ZINC, FILTERED	81.0	24.0	15	-0.2336	0.8153	-0.2338	0.8151	11	3	NO

TABLE F-9
STATISTICAL SUMMARY OF ANALYTICAL RESULTS
COMPLETE BACKGROUND SOIL SAMPLE DATA SET
NAVAL SURFACE WARFARE CENTER
CRANE, INDIANA

Metal (mg/kg)	Frequency of Detection	Frequency of Exceedance (2)	Minimum Detection	Maximum Detection	Average of All Results	Average of Positive Detections	Location of Maximum	Distribution of Data	95% Upper Tolerance Limit	Soil Risk Based Target Level (1)
ALUMINUM	67/67	0/67	5,020	17,400	11,290	11,100	BG1SBP0801	NORMAL	17,400	75,000
ANTIMONY	8/67	8/67	0.49	11.3	0.86	4.36	BG1SBP0505	LOGNORMAL	2.88	0.1423
ARSENIC	67/67	67/67	1.1	10.2	5.28	5.20	BG3SBM0701	NORMAL	9.60	0.38
BARIUM	67/67	67/67	24.8	155	69.7	68.8	BG1SBL0101	LOGNORMAL	147	1.04
BERYLLIUM	14/67	14/67	0.3	0.82	0.36	0.47	BG2SBG0401-MAX	LOGNORMAL	0.85	0.10
CADMIUM	34/67	28/67	0.05	3.6	0.36	0.62	BG3SBM0201	LOGNORMAL	2.05	0.18095
CALCIUM	66/67	0/67	53.6	35,300	997	1,010	BG3SBM0601	LOGNORMAL	3,350	NA
CHROMIUM	67/67	67/67	7.7	30.6	16.4	16.1	BG3SBM0604	LOGNORMAL	29.1	0.4
COBALT	67/67	67/67	1.8	27.1	8.70	8.62	BG3SBM0701	LOGNORMAL	21.7	0.14033
COPPER	67/67	67/67	3.5	23.8	10.2	10.0	BG1SBP0305	LOGNORMAL	21.4	0.3132
IRON	67/67	17/67	7,140	40,800	18,100	17,800	BG1SBP0305	LOGNORMAL	34,500	22,000
LEAD	67/67	67/67	6.4	21.5	11.9	11.7	BG1SBA0101	LOGNORMAL	19.7	0.45053
LITHIUM	66/66	0/66	7.8	46.6	16.1	15.7	BG1SBP0305	LOGNORMAL	29.4	1,500
MAGNESIUM	67/67	0/67	496	2,870	1,410	1,390	BG1SBP0204	LOGNORMAL	3,060	NA
MANGANESE	67/67	0/67	23.2	3,040	599	590	BG3SBM0701	LOGNORMAL	3,270	3,100
MERCURY	17/67	17/67	0.04	0.14	0.033	0.062	BG1SBP0103	LOGNORMAL	0.072	0.0079
NICKEL	67/67	63/67	4.6	23.7	11.9	11.7	BG1SBP0305	NORMAL	18.7	7
POTASSIUM	67/67	0/67	280	1,650	856	833	BG1SBA280304	NORMAL	1,370	NA
SELENIUM	15/67	15/67	0.28	0.88	0.33	0.53	BG1SBP0206	LOGNORMAL	0.83	0.02765
SILVER	48/67	0/67	0.04	0.11	0.049	0.055	BG1SBP0401	LOGNORMAL	0.10	2
SODIUM	32/67	0/67	3.7	205	33.0	56.2	BG1SBP0406-MAX	LOGNORMAL	232	NA
STRONTIUM	66/66	0/67	4.2	63.2	12.3	12.1	BG3SBM0601	LOGNORMAL	25.3	45,000
THALLIUM	66/67	66/67	0.05	0.31	0.18	0.18	BG1SBL0101	NORMAL	0.29	0.04
TIN	0/67	0/67	NA	NA	0.32 (3)	NA	NA	NA	NA	7.62
THORIUM	66/66	0/66	4.1	11.7	7.24	7.11	BG1SBP0305	LOGNORMAL	10.9	NA
VANADIUM	67/67	67/67	14.1	48.5	26.5	26.2	BG1SBP0206	LOGNORMAL	45.8	1.59
ZINC	50/67	50/67	9.4	60.2	28.1	32.0	BG3SBM0701	NORMAL	54.0	6.62

Notes:
NA - Not available
Concentrations which exceed soil risk-based target levels (SRBTLs) are bolded.
1 - Value is based on human health and ecological risk-based criteria as presented in Appendix E, Table E-1 of the NSWC Crane Base-Wide Background Soil Investigation report, dated January, 2001. It is important to note that this information is updated by the appropriate regulatory agencies on a periodic basis.
2 - Exceedances are defined as detected values above the SRBTL.
3 - This value is the average of all detected and non-detected values. Non-detected values were represented by using one half the detection limit. This value was used for statistical analysis when no detections were encountered.

TABLE F-10
STATISTICAL SUMMARY OF ANALYTICAL RESULTS
SOIL GROUP 3 - ALLUVIAL, MISSISSIPPIAN, AND PENNSYLVANIAN SURFACE SOIL
NAVAL SURFACE WARFARE CENTER
CRANE, INDIANA

Metal (mg/kg)	Frequency of Detection	Frequency of Exceedance (2)	Minimum Detection	Maximum Detection	Average of All Results	Average of Positive Detections	Location of Maximum	Distribution of Data	95% Upper Tolerance Limit	Soil Risk Based Target Level (1)
ALUMINUM	15/15	0/15	6,770	17,400	10,238	10,238	BG1SBP0801	LOGNORMAL	19,900	75,000
ANTIMONY	2/15	2/15	1.4	5.6	0.83	3.50	BG3SBM0401	LOGNORMAL	6.9	0.1423
ARSENIC	15/15	15/15	2.4	10.2	6.11	6.11	BG3SBM0701	NORMAL	11.83	0.38
BARIUM	15/15	15/15	46.1	153	89.0	89.0	BG3SBM0601	LOGNORMAL	211	1.04
BERYLLIUM	1/15	1/15	0.49	0.49	0.40	0.49	BG3SBA0101-MAX	LOGNORMAL	0.93	0.10
CADMIUM	10/15	9/15	0.1	3.6	0.63	0.88	BG3SBM0201	LOGNORMAL	6.05	0.18095
CALCIUM	14/15	0/15	115	35,300	2,730	2,920	BG3SBM0601	LOGNORMAL	55,200	NA
CHROMIUM	15/15	15/15	8.5	21.7	14.6	14.6	BG1SBA0101	LOGNORMAL	28.7	0.4
COBALT	15/15	15/15	6	27.1	12.9	12.9	BG3SBM0701	LOGNORMAL	32.4	0.14033
COPPER	15/15	15/15	5.4	17.1	8.85	8.85	BG1SBP0801	LOGNORMAL	17.6	0.3132
IRON	15/15	2/15	10,700	36,200	16,800	16,800	BG1SBA0101	LOGNORMAL	37,400	22,000
LEAD	15/15	15/15	9.4	21.5	15.0	15.0	BG1SBA0101	LOGNORMAL	27.0	0.45053
LITHIUM	14/14	0/14	9.1	29.9	14.8	14.8	BG1SBP0901	LOGNORMAL	30.0	1,500
MAGNESIUM	15/15	0/15	620	2,250	1,200	1,200	BG1SBP0801	LOGNORMAL	2,800	NA
MANGANESE	15/15	0/15	268	3,040	1,140	1,140	BG3SBM0701	LOGNORMAL	5,700	3,100
MERCURY	7/15	7/15	0.04	0.07	0.037	0.051	BG1SBP0601-MAX	NORMAL	0.077	0.0079
NICKEL	15/15	15/15	9.2	20	13.4	13.4	BG1SBA0101	LOGNORMAL	22.1	7
POTASSIUM	15/15	0/15	418	1,490	847	847	BG1SBP0801	LOGNORMAL	1,970	NA
SELENIUM	5/15	5/15	0.51	0.64	0.48	0.58	BG1SBP0901	NORMAL	0.81	0.02765
SILVER	15/15	0/15	0.05	0.11	0.065	0.065	BG1SBP0401	LOGNORMAL	0.130	2
SODIUM	6/15	0/15	9.4	23.7	8.11	15.6	BG3SBM0601	NORMAL	28	NA
STRONTIUM	14/14	0/14	7.4	63.2	14.3	14.3	BG3SBM0601	LOGNORMAL	46.4	45,000
THALLIUM	15/15	15/15	0.1	0.27	0.19	0.19	BG1SBP0601-MAX	NORMAL	0.31	0.04
TIN	0/15	0/15	NA	NA	0.36 (3)	NA	NA	NA	NA	7.62
THORIUM	14/14	0/14	5.3	8.5	6.86	6.86	BG1SBP0801	LOGNORMAL	10.2	NA
VANADIUM	15/15	15/15	17.1	40	25.4	25.4	BG1SBP0801	LOGNORMAL	51.2	1.59
ZINC	14/15	14/15	24.4	60.2	37.0	38.6	BG3SBM0701	NORMAL	65.6	6.62

Notes:
NA - Not available
Concentrations which exceed soil risk-based target levels (SRBTLs) are bolded.
1 - Value is based on human health and ecological risk-based criteria as presented in Appendix E, Table E-1 of the NSWC Crane Base-Wide Background Soil Investigation report, dated January, 2001. It is important to note that this information is updated by the appropriate regulatory agencies on a periodic basis.
2 - Exceedances are defined as detected values above the SRBTL.
3 - This value is the average of all detected and non-detected values. Non-detected values were represented by using one half the detection limit. This value was used for statistical analysis when no detections were encountered.

TABLE F-11
STATISTICAL SUMMARY OF ANALYTICAL RESULTS
SOIL GROUP 6 - MISSISSIPPIAN SUBSURFACE CLAY AND SAND
NAVAL SURFACE WARFARE CENTER
CRANE, INDIANA

Metal (mg/kg)	Frequency of Detection	Frequency of Exceedance (2)	Minimum Detection	Maximum Detection	Average of All Results	Average of Positive Detections	Location of Maximum	Distribution of Data	95% Upper Tolerance Limit	Soil Risk Based Target Level (1)
ALUMINUM	7/7	0/7	5,020	17,000	10,600	10,600	BG3SBM0206	NORMAL	24,000	75,000
ANTIMONY	3/7	3/7	1.2	2.9	0.88	1.77	BG3SBM0404	LOGNORMAL	27.6	0.1423
ARSENIC	7/7	7/7	2	6.3	4.21	4.21	BG3SBM1003	NORMAL	10.5	0.38
BARIUM	7/7	7/7	27	87.9	53.2	53.2	BG3SBM0206	NORMAL	123	1.04
BERYLLIUM	0/7	0/7	NA	NA	0.24 (3)	NA	NA	NA	NA	0.10
CADMIUM	7/7	6/7	0.06	2.8	0.65	0.65	BG3SBM0803-MAX	LOGNORMAL	17.5	0.18095
CALCIUM	7/7	0/7	92.6	1260	404	404	BG3SBM0206	LOGNORMAL	5,270	NA
CHROMIUM	7/7	7/7	10.9	25.1	16.4	16.4	BG3SBM0206	LOGNORMAL	39.4	0.4
COBALT	7/7	7/7	3.3	8.2	5.10	5.10	BG3SBM0206	LOGNORMAL	13.6	0.14033
COPPER	7/7	7/7	3.5	12.9	9.06	9.06	BG3SBM0504, BG3SBM1003	LOGNORMAL	49.6	0.3132
IRON	7/7	1/7	8,850	26,400	15,900	15,900	BG3SBM0206	LOGNORMAL	57,200	22,000
LEAD	7/7	7/7	6.4	12.1	9.04	9.04	BG3SBM1003	LOGNORMAL	19.0	0.45053
LITHIUM	7/7	0/7	7.8	30.6	15.9	15.9	BG3SBM0206	LOGNORMAL	64.2	1,500
MAGNESIUM	7/7	0/7	496	2,070	1,520	1,520	BG3SBM0206	NORMAL	3,500	NA
MANGANESE	7/7	0/7	35.3	266	150	150	BG3SBM0406, BG3SBM1003	LOGNORMAL	1,420	3,100
MERCURY	0/7	0/7	NA	NA	0.023 (3)	NA	NA	NA	NA	0.0079
NICKEL	7/7	6/7	4.6	14.7	10.5	10.5	BG3SBM0206	NORMAL	21.1	7
POTASSIUM	7/7	0/7	280	1270	862	862	BG3SBM0206	NORMAL	1,900	NA
SELENIUM	0/7	0/7	NA	NA	0.27 (3)	NA	NA	NA	NA	0.02765
SILVER	5/7	0/7	0.05	0.05	0.044	0.050	5 LOCATIONS	LOGNORMAL	0.12	2
SODIUM	3/7	0/7	7.8	182	47.7	103	BG3SBM0206	LOGNORMAL	5,460	NA
STRONTIUM	7/7	0/7	4.2	25.7	12.4	12.4	BG3SBM0206	LOGNORMAL	86.6	45,000
THALLIUM	7/7	7/7	0.05	0.21	0.13	0.13	BG3SBM1003	NORMAL	0.34	0.04
TIN	0/7	0/7	NA	NA	0.34 (3)	NA	NA	NA	NA	7.62
THORIUM	7/7	0/7	4.1	10	6.79	6.79	BG3SBM0206	LOGNORMAL	17.7	NA
VANADIUM	7/7	7/7	14.1	33	24.2	24.2	BG3SBM0206	NORMAL	50.3	1.59
ZINC	7/7	7/7	9.4	36.2	21.4	21.4	BG3SBM1003	LOGNORMAL	105	6.62

Notes:
NA - Not available
Concentrations which exceed soil risk-based target levels (SRBTLs) are bolded.
1 - Value is based on human health and ecological risk-based criteria as presented in Appendix E, Table E-1 of the NSWC Crane Base-Wide Background Soil Investigation report, dated January, 2001. It is important to note that this information is updated by the appropriate regulatory agencies on a periodic basis.
2 - Exceedances are defined as detected values above the SRBTL.
3 - This value is the average of all detected and non-detected values. Non-detected values were represented by using one half the detection limit. This value was used for statistical analysis when no detections were encountered.

TABLE F-12
STATISTICAL SUMMARY OF ANALYTICAL RESULTS
SOIL GROUP 7 - MISSISSIPPIAN SUBSURFACE SILT
NAVAL SURFACE WARFARE CENTER
CRANE, INDIANA

Metal (mg/kg)	Frequency of Detection	Frequency of Exceedance (2)	Minimum Detection	Maximum Detection	Average of All Results	Average of Positive Detections	Location of Maximum	Distribution of Data	95% Upper Tolerance Limit	Soil Risk Based Target Level (1)
ALUMINUM	5/5	0/5	10,100	15,600	12,700	12,700	BG3SBM0203	LOGNORMAL	26,200	75,000
ANTIMONY	0/5	0/5	NA	NA	0.34 (3)	NA	NA	NA	NA	0.1423
ARSENIC	5/5	5/5	6.5	9	7.72	7.72	BG3SBM0203	NORMAL	12.4	0.38
BARIUM	5/5	5/5	41.8	116	67.3	67.3	BG3SBM0604	LOGNORMAL	303	1.04
BERYLLIUM	0/5	0/5	NA	NA	0.31 (3)	NA	NA	NA	NA	0.10
CADMIUM	5/5	5/5	0.25	2.1	0.97	0.97	BG3SBM0704	LOGNORMAL	19.6	0.18095
CALCIUM	5/5	0/5	131	5320	1,240	1,240	BG3SBM0604	LOGNORMAL	222,000	NA
CHROMIUM	5/5	5/5	17.2	30.6	21.7	21.7	BG3SBM0604	LOGNORMAL	54.9	0.4
COBALT	5/5	5/5	6.4	11.8	7.66	7.66	BG3SBM0604	LOGNORMAL	22.2	0.14033
COPPER	5/5	5/5	7.5	19.7	14.3	14.3	BG3SBM0904	NORMAL	35.7	0.3132
IRON	5/5	3/5	20,100	25,400	22,200	22,200	BG3SBM0203	LOGNORMAL	32,100	22,000
LEAD	5/5	5/5	10.9	15.4	13.5	13.5	BG3SBM0604	NORMAL	21.0	0.45053
LITHIUM	5/5	0/5	14.8	20.8	17.9	17.9	BG3SBM0203	LOGNORMAL	34.5	1,500
MAGNESIUM	5/5	0/5	1,210	2,590	1,950	1,950	BG3SBM0203	LOGNORMAL	7,770	NA
MANGANESE	5/5	0/5	192	1410	500	500	BG3SBM0604	LOGNORMAL	9,500	3,100
MERCURY	3/5	3/5	0.05	0.06	0.043	0.057	BG3SBM0203, BG3SBM0305	NORMAL	0.12	0.0079
NICKEL	5/5	5/5	9.8	17.3	13.5	13.5	BG3SBM0604	NORMAL	25.4	7
POTASSIUM	5/5	0/5	851	1330	1,100	1,100	BG3SBM0604	NORMAL	1,880	NA
SELENIUM	0/5	0/5	NA	NA	0.25 (3)	NA	NA	NA	NA	0.02765
SILVER	5/5	0/5	0.05	0.05	0.050	0.050	5 LOCATIONS	LOGNORMAL	0.05	2
SODIUM	3/5	0/5	9.1	22.9	17.4	18.0	BG3SBM0305	NORMAL	53	NA
STRONTIUM	5/5	0/5	8.5	16.3	14.3	14.3	BG3SBM0203	NORMAL	28.2	45,000
THALLIUM	5/5	5/5	0.1	0.21	0.18	0.18	BG3SBM0203, BG3SBM0704, BG3SBM0904	NORMAL	0.39	0.04
TIN	0/5	0/5	NA	NA	0.34 (3)	NA	NA	NA	NA	7.62
THORIUM	5/5	0/5	6.9	9.4	8.28	8.28	BG3SBM0203	NORMAL	12.4	NA
VANADIUM	5/5	5/5	26.1	37.7	31.8	31.8	BG3SBM0203	NORMAL	50.7	1.59
ZINC	5/5	5/5	28.5	47.7	38.0	38.0	BG3SBM0203	LOGNORMAL	98	6.62

Notes:
NA - Not available
Concentrations which exceed soil risk-based target levels (SRBTLs) are bolded.
1 - Value is based on human health and ecological risk-based criteria as presented in Appendix E, Table E-1 of the NSWC Crane Base-Wide Background Soil Investigation report, dated January, 2001. It is important to note that this information is updated by the appropriate regulatory agencies on a periodic basis.
2 - Exceedances are defined as detected values above the SRBTL.
3 - This value is the average of all detected and non-detected values. Non-detected values were represented by using one half the detection limit. This value was used for statistical analysis when no detections were encountered.

TABLE F-13
SWMUs 04, 05, 09, AND 10 SOIL GROUPS
NAVAL SURFACE WARFARE CENTER CRANE
CRANE, INDIANA

location	nsample	matrix	soil_group	dep_evironment	grain_size
04SB09	04SB090810	SO	2	LOESS/GLACIAL	ALL
04SB10	04SB100608	SO	2	LOESS/GLACIAL	ALL
04SB11	04SB110810	SO	2	LOESS/GLACIAL	ALL
10SB10	10SB100608	SO	8	PENNSYLVANIAN	CLAY AND SILT
05SB02	05SB020406	SO	8	PENNSYLVANIAN	CLAY AND SILT
05SB03	05SB030507	SO	8	PENNSYLVANIAN	CLAY AND SILT
05SB04	05SB040204	SO	8	PENNSYLVANIAN	CLAY AND SILT
05SB05	05SB050608	SO	8	PENNSYLVANIAN	CLAY AND SILT
05SB06	05SB060608	SO	8	PENNSYLVANIAN	CLAY AND SILT
05SB07	05SB070608	SO	8	PENNSYLVANIAN	CLAY AND SILT
09SB01	09SB010810	SO	8	PENNSYLVANIAN	CLAY AND SILT
09SB02	09SB020608	SO	8	PENNSYLVANIAN	CLAY AND SILT
09SB02	09SB020608-D	SO	8	PENNSYLVANIAN	CLAY AND SILT
09SB03	09SB030406	SO	8	PENNSYLVANIAN	CLAY AND SILT
09SB05	09SB050406	SO	8	PENNSYLVANIAN	CLAY AND SILT
09SB06	09SB060810	SO	8	PENNSYLVANIAN	CLAY AND SILT
09SB08	09SB080406	SO	8	PENNSYLVANIAN	CLAY AND SILT
09SB10	09SB100204	SO	8	PENNSYLVANIAN	CLAY AND SILT
09SB11	09SB110406	SO	8	PENNSYLVANIAN	CLAY AND SILT
10SB01	10SB010810	SO	8	PENNSYLVANIAN	CLAY AND SILT
10SB01	10SB010810-D	SO	8	PENNSYLVANIAN	CLAY AND SILT
10SB02	10SB020709	SO	8	PENNSYLVANIAN	CLAY AND SILT
10SB03	10SB030810	SO	8	PENNSYLVANIAN	CLAY AND SILT
10SB03	10SB030810-REM	SO	8	PENNSYLVANIAN	CLAY AND SILT
10SB04	10SB040305	SO	8	PENNSYLVANIAN	CLAY AND SILT
10SB05	10SB050406	SO	8	PENNSYLVANIAN	CLAY AND SILT
10SB06	10SB060507	SO	8	PENNSYLVANIAN	CLAY AND SILT
10SB07	10SB070406	SO	8	PENNSYLVANIAN	CLAY AND SILT
10SB08	10SB080406	SO	8	PENNSYLVANIAN	CLAY AND SILT
04SB01	04SB010002	SO	3	ALL BUT LOESS/GLACIAL	NA
04SB01	04SB010102	SO	3	ALL BUT LOESS/GLACIAL	NA
04SB02	04SB020002	SO	3	ALL BUT LOESS/GLACIAL	NA
04SB02	04SB020102	SO	3	ALL BUT LOESS/GLACIAL	NA
04SB03	04SB030002	SO	3	ALL BUT LOESS/GLACIAL	NA
04SB03	04SB030102	SO	3	ALL BUT LOESS/GLACIAL	NA
04SB04	04SB040002	SO	3	ALL BUT LOESS/GLACIAL	NA
04SB04	04SB040102	SO	3	ALL BUT LOESS/GLACIAL	NA
04SB05	04SB050002	SO	3	ALL BUT LOESS/GLACIAL	NA
04SB05	04SB050102	SO	3	ALL BUT LOESS/GLACIAL	NA
04SB06	04SB060002	SO	3	ALL BUT LOESS/GLACIAL	NA
04SB06	04SB060102	SO	3	ALL BUT LOESS/GLACIAL	NA
04SB07	04SB070002	SO	3	ALL BUT LOESS/GLACIAL	NA
04SB07	04SB070002-D	SO	3	ALL BUT LOESS/GLACIAL	NA
04SB07	04SB070102	SO	3	ALL BUT LOESS/GLACIAL	NA
04SB07	04SB070102-D	SO	3	ALL BUT LOESS/GLACIAL	NA
04SB08	04SB080002	SO	3	ALL BUT LOESS/GLACIAL	NA
04SB08	04SB080102	SO	3	ALL BUT LOESS/GLACIAL	NA
04SB09	04SB090002	SO	1	LOESS/GLACIAL	NA
04SB09	04SB090102	SO	1	LOESS/GLACIAL	NA
04SB10	04SB100002	SO	1	LOESS/GLACIAL	NA
04SB10	04SB100102	SO	1	LOESS/GLACIAL	NA
04SB11	04SB110002	SO	1	LOESS/GLACIAL	NA
04SB11	04SB110102	SO	1	LOESS/GLACIAL	NA
04SB12	04SB120002	SO	3	ALL BUT LOESS/GLACIAL	NA
04SB12	04SB120002-D	SO	3	ALL BUT LOESS/GLACIAL	NA
04SB12	04SB120102	SO	3	ALL BUT LOESS/GLACIAL	NA
04SB12	04SB120102-D	SO	3	ALL BUT LOESS/GLACIAL	NA
04SS01	04SS010002	SS	3	ALL BUT LOESS/GLACIAL	NA
04SS01	04SS010102	SS	3	ALL BUT LOESS/GLACIAL	NA
04SS02	04SS020002	SS	1	LOESS/GLACIAL	NA
04SS02	04SS020002-D	SS	1	LOESS/GLACIAL	NA

TABLE F-13
SWMUs 04, 05, 09, AND 10 SOIL GROUPS
NAVAL SURFACE WARFARE CENTER CRANE
CRANE, INDIANA

location	nsample	matrix	soil_group	dep_evironment	grain_size
04SS02	04SS020102	SS	1	LOESS/GLACIAL	NA
04SS02	04SS020102-D	SS	1	LOESS/GLACIAL	NA
05SB01	05SB010002	SO	3	ALL BUT LOESS/GLACIAL	NA
05SB01	05SB010102	SO	3	ALL BUT LOESS/GLACIAL	NA
05SB02	05SB020002	SO	3	ALL BUT LOESS/GLACIAL	NA
05SB02	05SB020102	SO	3	ALL BUT LOESS/GLACIAL	NA
05SB03	05SB030002	SO	3	ALL BUT LOESS/GLACIAL	NA
05SB03	05SB030002-D	SO	3	ALL BUT LOESS/GLACIAL	NA
05SB03	05SB030102	SO	3	ALL BUT LOESS/GLACIAL	NA
05SB03	05SB030102-D	SO	3	ALL BUT LOESS/GLACIAL	NA
05SB04	05SB040002	SO	3	ALL BUT LOESS/GLACIAL	NA
05SB04	05SB040102	SO	3	ALL BUT LOESS/GLACIAL	NA
05SB05	05SB050002	SO	3	ALL BUT LOESS/GLACIAL	NA
05SB05	05SB050102	SO	3	ALL BUT LOESS/GLACIAL	NA
05SB06	05SB060002	SO	3	ALL BUT LOESS/GLACIAL	NA
05SB06	05SB060102	SO	3	ALL BUT LOESS/GLACIAL	NA
05SB07	05SB070002	SO	3	ALL BUT LOESS/GLACIAL	NA
05SB07	05SB070002-D	SO	3	ALL BUT LOESS/GLACIAL	NA
05SB07	05SB070102	SO	3	ALL BUT LOESS/GLACIAL	NA
05SB07	05SB070102-D	SO	3	ALL BUT LOESS/GLACIAL	NA
05SB08	05SB080002	SO	3	ALL BUT LOESS/GLACIAL	NA
05SB08	05SB080102	SO	3	ALL BUT LOESS/GLACIAL	NA
09SB01	09SB010002	SO	3	ALL BUT LOESS/GLACIAL	NA
09SB01	09SB010102	SO	3	ALL BUT LOESS/GLACIAL	NA
09SB02	09SB020002	SO	3	ALL BUT LOESS/GLACIAL	NA
09SB02	09SB020102	SO	3	ALL BUT LOESS/GLACIAL	NA
09SB03	09SB030002	SO	3	ALL BUT LOESS/GLACIAL	NA
09SB03	09SB030002-D	SO	3	ALL BUT LOESS/GLACIAL	NA
09SB03	09SB030102	SO	3	ALL BUT LOESS/GLACIAL	NA
09SB03	09SB030102-D	SO	3	ALL BUT LOESS/GLACIAL	NA
09SB04	09SB040002	SO	3	ALL BUT LOESS/GLACIAL	NA
09SB04	09SB040002-D	SO	3	ALL BUT LOESS/GLACIAL	NA
09SB04	09SB040102	SO	3	ALL BUT LOESS/GLACIAL	NA
09SB04	09SB040102-D	SO	3	ALL BUT LOESS/GLACIAL	NA
09SB05	09SB050002	SO	3	ALL BUT LOESS/GLACIAL	NA
09SB05	09SB050102	SO	3	ALL BUT LOESS/GLACIAL	NA
09SB06	09SB060002	SO	3	ALL BUT LOESS/GLACIAL	NA
09SB06	09SB060102	SO	3	ALL BUT LOESS/GLACIAL	NA
09SB07	09SB070002	SO	3	ALL BUT LOESS/GLACIAL	NA
09SB07	09SB070102	SO	3	ALL BUT LOESS/GLACIAL	NA
09SB08	09SB080002	SO	3	ALL BUT LOESS/GLACIAL	NA
09SB08	09SB080102	SO	3	ALL BUT LOESS/GLACIAL	NA
09SB09	09SB090002	SO	3	ALL BUT LOESS/GLACIAL	NA
09SB09	09SB090102	SO	3	ALL BUT LOESS/GLACIAL	NA
09SB10	09SB100002	SO	3	ALL BUT LOESS/GLACIAL	NA
09SB10	09SB100102	SO	3	ALL BUT LOESS/GLACIAL	NA
09SB11	09SB110002	SO	3	ALL BUT LOESS/GLACIAL	NA
09SB11	09SB110102	SO	3	ALL BUT LOESS/GLACIAL	NA
10SB01	10SB010002	SO	3	ALL BUT LOESS/GLACIAL	NA
10SB02	10SB020002	SO	3	ALL BUT LOESS/GLACIAL	NA
10SB03	10SB030002	SO	3	ALL BUT LOESS/GLACIAL	NA
10SB03	10SB030002-D	SO	3	ALL BUT LOESS/GLACIAL	NA
10SB03	10SB030002-REM	SO	3	ALL BUT LOESS/GLACIAL	NA
10SB04	10SB040002	SO	3	ALL BUT LOESS/GLACIAL	NA
10SB05	10SB050002	SO	3	ALL BUT LOESS/GLACIAL	NA
10SB06	10SB060002	SO	3	ALL BUT LOESS/GLACIAL	NA
10SB07	10SB070002	SO	3	ALL BUT LOESS/GLACIAL	NA
10SB08	10SB080002	SO	3	ALL BUT LOESS/GLACIAL	NA
10SB09	10SB090002	SO	3	ALL BUT LOESS/GLACIAL	NA
10SB10	10SB100002	SO	3	ALL BUT LOESS/GLACIAL	NA
04SB01	04SB010204	SO	9	PENNSYLVANIAN	SAND

TABLE F-13
SWMUs 04, 05, 09, AND 10 SOIL GROUPS
NAVAL SURFACE WARFARE CENTER CRANE
CRANE, INDIANA

location	nsample	matrix	soil_group	dep_evironment	grain_size
04SB02	04SB020608	SO	9	PENNSYLVANIAN	SAND
04SB03	04SB030406	SO	9	PENNSYLVANIAN	SAND
04SB04	04SB040608	SO	9	PENNSYLVANIAN	SAND
04SB05	04SB050204	SO	9	PENNSYLVANIAN	SAND
04SB06	04SB060709	SO	9	PENNSYLVANIAN	SAND
04SB07	04SB070507	SO	9	PENNSYLVANIAN	SAND
04SB08	04SB080810	SO	9	PENNSYLVANIAN	SAND
04SB12	04SB120810	SO	9	PENNSYLVANIAN	SAND
05SB01	05SB010810	SO	9	PENNSYLVANIAN	SAND
09SB04	09SB040406	SO	9	PENNSYLVANIAN	SAND
09SB07	09SB070709	SO	9	PENNSYLVANIAN	SAND
09SB09	09SB090810	SO	9	PENNSYLVANIAN	SAND
10SB09	10SB090204	SO	9	PENNSYLVANIAN	SAND

APPENDIX G

SUPPORTING INFORMATION FOR HEALTH RISK ASSESSMENT

APPENDIX G.1

SAMPLE CALCULATIONS

CLIENT: NSWC CRANE, INDIANA		JOB NUMBER: 3960
SUBJECT: CALCULATION OF INTAKE/RISK FROM DERMAL CONTACT WITH SURFACE WATER ADULT RESIDENT		
BASED ON: USEPA, DEC. 1989, 2001		
BY: R. JUPIN	CHECKED BY: T. Jackson	DATE: 06/25/02

Where:

Kp	=	permeability coefficient from water (cm/hr)
Cgw	=	concentration of chemical in groundwater (mg/L)
tevent	=	duration of event (hr/event)
CF	=	conversion factor (0.001 L/cm^3)
t*	=	time it takes to reach steady-state (hr/event)
τ	=	lag time (hr/event)
B	=	Bunge Model Constant (dimensionless)

EXAMPLE CALCULATION OF DAevent

ASSUMPTIONS:

Cgw	=	0.063	mg/L	Chemical: RDX
Kp	=	3.45E-04	cm/hr	
tevent	=	4	hr/event	
CF	=	0.001	L/cm^3	
t*	=	4.43	hr/event	
τ	=	1.85	hr/event	
B	=	0.002		

tevent < t*, therefore,

$$DAevent = (2 \times 3.45E\text{-}04\ cm/hr)\ (0.063\ mg/L)\ (0.001\ L/cm3) \times \sqrt{\frac{6 \times 1.85\ hr/event \times 4\ hr/event}{\pi}}$$

DAevent = 1.63E-07 mg/cm^2-event

RISK CALCULATIONS

ASSUMPTIONS:

A	=	9070	cm^2/day
EV	=	1	event/day
ED	=	24	years
EF	=	52	days/year
BW	=	70	kg
ATc	=	25550	days
ATnc	=	8760	days
CSFd	=	1.1E-01	(mg/kg/day)$^{-1}$
RfDd	=	3.0E-03	(mg/kg/day)

CLIENT: NSWC CRANE, INDIANA		JOB NUMBER: 3960
SUBJECT: CALCULATION OF INTAKE/RISK FROM DERMAL CONTACT WITH SURFACE WATER ADULT RESIDENT		
BASED ON: USEPA, DEC. 1989, 2001		
BY: R. JUPIN	CHECKED BY: Jackson	DATE: 06/25/02

EXAMPLE CARCINOGENIC CALCULATION

$$DADc = \frac{1.63E\text{-}07 \text{ mg/cm2-event} \times 1 \text{ event/day} \times 24 \text{ years} \times 52 \text{ days/year} \times 9070 \text{ cm2/day}}{70 \text{ kg} \times 25550 \text{ days}}$$

DADc = 1.03E-06 mg/kg/day

DADc = 1.03E-06 mg/kg/day x 1.10E-01 (mg/kg/day)-1 = Incremental Lifetime Cancer Risk

ICLR = 1.14E-07

EXAMPLE NONCARCINOGENIC CALCULATION

$$DADnc = \frac{1.63E\text{-}07 \text{ mg/cm2-event} \times 1 \text{ event/day} \times 24 \text{ years} \times 52 \text{ days/year} \times 9070 \text{ cm2/day}}{70 \text{ kg} \times 8760 \text{ days}}$$

DADnc = 3.02E-06 mg/kg/day

HQ = 3.02E-06 mg/kg/day / 3.00E-03 (mg/kg/day) = Hazard Quotient

HQ = 1.01E-03

CALCULATION WORKSHEET

CLIENT: NSWC CRANE, INDIANA		JOB NUMBER: 3960
SUBJECT: CALCULATION OF INTAKE/RISK FROM INCIDENTAL INGESTION OF SOIL FUTURE ON-SITE CHILD RESIDENT		
BASED ON: USEPA, DEC. 1989		
BY: R. JUPIN	CHECKED BY:	DATE: 06/25/02

PURPOSE: To estimate intake, carcinogenic and noncarcinogenic risks from incidental ingestion of surface soil soil at the Old Jeep Trail.

EQUATION:

$$IEX = \frac{CS \times IR \times EF \times ED \times FI \times CF}{BW \times AT}$$

Where:

IEX	=	estimated exposure intake (mg/kg/day)
Cs	=	exposure point concentration in soil/sediment (mg/kg)
IR	=	incidental soil ingestion rate (mg/day)
EF	=	exposure frequency (days/year)
ED	=	exposure duration (years)
FI	=	fraction ingested from contaminated source (unitless)
CF	=	conversion factor (1.0E-6 kg/mg)
BW	=	body weight (kg)
AT	=	averaging time (days)
CSFo	=	oral carcinogenic slope factor ($(mg/kg/day)^{-1}$)
RfDo	=	oral noncarcinogenic reference dose (mg/kg/day)

RISKS:

ICLR (Carcinogens) = Intake (mg/kg/day) x CSFo $(mg/kg/day)^{-1}$

HQ (Noncarcinogens) = Intake (mg/kg/day) / RFDo (mg/kg/day)

ASSUMPTIONS:

Cs	=	3.41	mg/kg	Chemical: RDX
IR	=	200	mg/day	
EF	=	350	days/year	
ED	=	6	years	
FI	=	1		
CF	=	1.0E-06	kg/mg	
BW	=	15	kg	
ATc	=	25550	days	
ATnc	=	2190	days	
CSFo	=	1.1E-01	$(mg/kg/day)^{-1}$	
RfDo	=	3.0E-03	(mg/kg/day)	

CLIENT: NSWC CRANE, INDIANA		JOB NUMBER: 3960
SUBJECT: CALCULATION OF INTAKE/RISK FROM INCIDENTAL INGESTION OF SOIL FUTURE ON-SITE CHILD RESIDENT		
BASED ON: USEPA, DEC. 1989		
BY: R. JUPIN	CHECKED BY: T. Jackson	DATE: 06/25/02

EXAMPLE CARCINOGENIC CALCULATION

$$IEXc = \frac{3.41 \text{ mg/kg} \times 200 \text{ mg/day} \times 350 \text{ days/year} \times 6 \text{ years} \times 1.0E\text{-}06 \text{ kg/mg}}{15 \text{ kg} \times 25550 \text{ days}}$$

IEXc = 3.74E-06 mg/kg/day

ICLR = 3.74E-06 mg/kg/day x 1.10E-01 (mg/kg/day)-1 = Incremental Lifetime Cancer Risk

ICLR = 4.11E-07

EXAMPLE NONCARCINOGENIC CALCULATION

$$IEXnc = \frac{3.41 \text{ mg/kg} \times 200 \text{ mg/day} \times 350 \text{ days/year} \times 6 \text{ years} \times 1.0E\text{-}06 \text{ kg/mg}}{15 \text{ kg} \times 2190 \text{ days}}$$

IEXnc = 4.36E-05 mg/kg/day

HQ = 4.36E-05 mg/kg/day / 3.00E-03 (mg/kg/day) = Hazard Quotient

HQ = 1.45E-02

CALCULATION WORKSHEET

CLIENT: NCWS CRANE, INDIANA		JOB NUMBER: 3960
SUBJECT: CALCULATION OF INTAKE/RISK FROM DERMAL CONTACT WITH SOIL FUTURE ON-SITE CHILD RESIDENT		
BASED ON: USEPA, DEC. 2001		
BY: R. JUPIN	CHECKED BY: J. Jupin	DATE: 06/25/02

PURPOSE: To estimate intake, carcinogenic and noncarcinogenic risks from dermal contact with surface soil soil at the Old Jeep Trail.

EQUATION:

$$DEX = \frac{Cs \times CF \times SA \times AF \times ABS \times EF \times ED}{BW \times AT}$$

Where:

DEX	=	estimated exposure intake (mg/kg/day)
Cs	=	exposure point concentration in soil/sediment (mg/kg)
CF	=	conversion factor (1.0E-6 kg/mg)
SA	=	skin surface available for contact (cm^2/day)
ABS	=	absorption factor (unitless)
AF	=	adherence factor (mg/cm^2)
EF	=	exposure frequency (days/year)
ED	=	exposure duration (years)
BW	=	body weight (kg)
AT	=	averaging time (days)
CSFd	=	dermal carcinogenic slope factor ($(mg/kg/day)^{-1}$)
RfDd	=	dermal noncarcinogenic reference dose (mg/kg/day)

RISKS:

ICLR (Carcinogens) = Intake (mg/kg/day) x CSFd $(mg/kg/day)^{-1}$

HQ (Noncarcinogens) = Intake (mg/kg/day) / RFDd (mg/kg/day)

ASSUMPTIONS:

Cs	=	3.41	mg/kg	Chemical: RDX
CF	=	1.0E-06	kg/mg	
SA	=	2800	cm^2/day	
AF	=	0.2	mg/cm^2	
ABS	=	0.1		
EF	=	350	days/year	
ED	=	6	years	
BW	=	15	kg	
ATc	=	25550	days	
ATnc	=	2190	days	
CSFd	=	1.1E-01	$(mg/kg/day)^{-1}$	
RfDd	=	3.0E-03	(mg/kg/day)	

CLIENT: NSWC CRANE, INDIANA		JOB NUMBER: 3960
SUBJECT: CALCULATION OF INTAKE/RISK FROM INGESTION OF GROUND WATER ADULT RESIDENT		
BASED ON: USEPA, DEC. 1989		
BY: R. JUPIN	CHECKED BY: J. Jason	DATE: 06/25/02

PURPOSE: To estimate intake, carcinogenic and noncarcinogenic risks from ingestion of ground water by an adult resident.

EQUATION:

$$IEX = \frac{Cgw \times CF \times IF \times EF \times ED}{BW \times AT}$$

Where:

IEX	=	estimated exposure intake (mg/kg/day)
Cgw	=	exposure point concentration in groundwater (ug/L)
CF	=	conversion factor (1.0E-3 mg/ug)
IR	=	ingestion rate (L/day)
EF	=	exposure frequency (days/year)
ED	=	exposure duration (years)
BW	=	body weight (kg)
AT	=	averaging time (days)
CSFo	=	oral carcinogenic slope factor ($(mg/kg/day)^{-1}$)
RfDo	=	oral noncarcinogenic reference dose (mg/kg/day)

RISKS:

ICLR (Carcinogens) = Intake (mg/kg/day) x CSFo $(mg/kg/day)^{-1}$

HQ (Noncarcinogens) = Intake (mg/kg/day) / RFDo (mg/kg/day)

ASSUMPTIONS:

Cgw	=	0.4	ug/L	Chemical: Vinyl Chloride
IR	=	2	L/day	
CF	=	1.0E-03	mg/ug	
EF	=	350	days/year	
ED	=	24	years	
BW	=	70	kg	
ATc	=	25550	days	
ATnc	=	8760	days	
CSFo	=	7.2E-01	$(mg/kg/day)^{-1}$	
RfDo	=	3.0E-03	(mg/kg/day)	

CLIENT: NCWS CRANE, INDIANA		JOB NUMBER: 3960
SUBJECT: CALCULATION OF INTAKE/RISK FROM DERMAL CONTACT WITH SOIL FUTURE ON-SITE CHILD RESIDENT		
BASED ON: USEPA, DEC. 2001		
BY: R. JUPIN	CHECKED BY:	DATE: 06/25/02

EXAMPLE CARCINOGENIC CALCULATION

$$DEXc = \frac{3.41\ mg/kg \times 1.0E\text{-}06\ kg/mg \times 2800\ cm2/day \times 0.2\ mg/cm2 \times 0.1 \times 350\ days/year \times 6\ years}{15\ kg \times 25550\ days}$$

DEXc = 1.05E-06 mg/kg/day

ICLR = 1.05E-06 mg/kg/day x 1.10E-01 (mg/kg/day)-1 = Incremental Lifetime Cancer Risk

ICLR = 1.15E-07

EXAMPLE NONCARCINOGENIC CALCULATION

$$DEXnc = \frac{3.41\ mg/kg \times 1.0E\text{-}06\ kg/mg \times 2800\ cm2/day \times 0.2\ mg/cm2 \times 0.1 \times 350\ days/year \times 6\ years}{15\ kg \times 2190\ days}$$

DEXnc = 1.22E-05 mg/kg/day

HQ = 1.22E-05 mg/kg/day / 3.00E-03 (mg/kg/day) = Hazard Quotient

HQ = 4.07E-03

CLIENT: NSWC CRANE, INDIANA		JOB NUMBER: 3960
SUBJECT: CALCULATION OF INTAKE/RISK FROM INGESTION OF GROUND WATER ADULT RESIDENT		
BASED ON: USEPA, DEC. 1989		
BY: R. JUPIN	CHECKED BY: T. Jupin	DATE: 06/25/02

EXAMPLE CARCINOGENIC CALCULATION

$$IEXc = \frac{0.4\ ug/L \times 0.001\ mg/ug \times 2\ L/day \times 350\ days/year \times 24\ years}{70\ kg \times 25550\ days}$$

IEXc = 3.76E-06 mg/kg/day

ICLR = 3.76E-06 mg/kg/day x 7.20E-01 (mg/kg/day)-1 = Incremental Lifetime Cancer Risk

ICLR = 2.71E-06

EXAMPLE NONCARCINOGENIC CALCULATION

$$IEXnc = \frac{0.4\ ug/L \times 0.001\ mg/ug \times 2\ L/day \times 350\ days/year \times 24\ years}{70\ kg \times 8760\ days}$$

IEXnc = 1.10E-05 mg/kg/day

$$HQ = \frac{1.10E\text{-}05\ mg/kg/day}{3.00E\text{-}03\ (mg/kg/day)} = \text{Hazard Quotient}$$

HQ = 3.65E-03

CLIENT: NSWC CRANE, INDIANA		JOB NUMBER: 3960
SUBJECT: CALCULATION OF INTAKE/RISK FROM DERMAL CONTACT WITH GROUND WATER ADULT RESIDENT		
BASED ON: USEPA, DEC. 1989, 2001		
BY: R. JUPIN	CHECKED BY:	DATE: 06/25/02

PURPOSE: To estimate intake, carcinogenic and noncarcinogenic risks from dermal contact with ground water by an adult resident.

EQUATION:

$$DAD = \frac{DAevent \times EV \times ED \times EF \times A}{BW \times AT}$$

Where:

DAD	=	dermally absorbed dose (mg/kg/day)
DAevent	=	absorbed does per event (mg/cm^2/event)
EV	=	event frequency (events/day)
EF	=	exposure frequency (days/year)
ED	=	exposure duration (years)
A	=	skin surface available for contact (cm^2)
BW	=	body weight (kg)
AT	=	averaging time (days)
CSFo	=	oral carcinogenic slope factor ((mg/kg/day)$^{-1}$)
RfDo	=	oral noncarcinogenic reference dose (mg/kg/day)

RISKS:

ICLR (Carcinogens) = DAD (mg/kg/day) x CSFd (mg/kg/day)$^{-1}$
HQ (Noncarcinogens) = DAD (mg/kg/day) / RFDd (mg/kg/day)

EQUATIONS for DAevent:

For Inorganics:

$$DA_{event} = (K_p)(C_{gw})(t_{event})$$

For Organics:

$$\text{If } t_{event} < t^*, \text{ then : } DA_{event} = (2K_p)(C_{gw})(CF)\left(\sqrt{\frac{6\tau t_{event}}{\pi}}\right)$$

$$\text{If } t_{event} > t^*, \text{ then : } DA_{event} = (K_p)(C_{gw})(CF)\left(\frac{t_{event}}{1+B} + 2\tau\left(\frac{1+3B}{(1+B)}\right)\right)$$

CLIENT: NSWC CRANE, INDIANA		JOB NUMBER: 3960
SUBJECT: CALCULATION OF INTAKE/RISK FROM DERMAL CONTACT WITH GROUND WATER ADULT RESIDENT		
BASED ON: USEPA, DEC. 1989, 2001		
BY: R. JUPIN	CHECKED BY:	DATE: 06/25/02

Where:

Kp	=	permeability coefficient from water (cm/hr)
Cgw	=	concentration of chemical in groundwater (mg/L)
tevent	=	duration of event (hr/event)
CF	=	conversion factor (0.001 L/cm^3)
t*	=	time it takes to reach steady-state (hr/event)
τ	=	lag time (hr/event)
B	=	Bunge Model Constant (dimensionless)

EXAMPLE CALCULATION OF DAevent

ASSUMPTIONS:

Cgw	=	0.0004	mg/L	Chemical: Vinyl Chloride
Kp	=	5.60E-03	cm/hr	
tevent	=	0.25	hr/event	
CF	=	0.001	L/cm^3	
t*	=	0.57	hr/event	
τ	=	0.24	hr/event	
B	=	0.017		

tevent < t*, therefore,

$$DAevent = (2 \times 0.0056\ cm/hr)\ (0.0004\ mg/L)\ (0.001\ L/cm3) \times \sqrt{\frac{6 \times 0.24\ hr/event \times 0.25\ hr/event}{\pi}}$$

DAevent = 1.52E-09 mg/cm^2-event

RISK CALCULATIONS

ASSUMPTIONS:

A	=	18000	cm^2/day
EV	=	1	event/day
ED	=	24	years
EF	=	350	days/year
BW	=	70	kg
ATc	=	25550	days
ATnc	=	8760	days
CSFd	=	7.2E-01	(mg/kg/day)$^{-1}$
RfDd	=	3.0E-03	(mg/kg/day)

CLIENT: NSWC CRANE, INDIANA		JOB NUMBER: 3960
SUBJECT: CALCULATION OF INTAKE/RISK FROM DERMAL CONTACT WITH GROUND WATER ADULT RESIDENT		
BASED ON: USEPA, DEC. 1989, 2001		
BY: R. JUPIN	CHECKED BY:	DATE: 06/25/02

EXAMPLE CARCINOGENIC CALCULATION

$$DADc = \frac{1.52E\text{-}09 \text{ mg/cm2-event} \times 1 \text{ event/day} \times 24 \text{ years} \times 350 \text{ days/year} \times 18000 \text{ cm2/day}}{70 \text{ kg} \times 25550 \text{ days}}$$

DADc = 1.28E-07 mg/kg/day

DADc = 1.28E-07 mg/kg/day x 7.20E-01 (mg/kg/day)-1 = Incremental Lifetime Cancer Risk

ICLR = 9.23E-08

EXAMPLE NONCARCINOGENIC CALCULATION

$$DADnc = \frac{1.52E\text{-}09 \text{ mg/cm2-event} \times 1 \text{ event/day} \times 24 \text{ years} \times 350 \text{ days/year} \times 18000 \text{ cm2/day}}{70 \text{ kg} \times 8760 \text{ days}}$$

DADnc = 3.74E-07 mg/kg/day

HQ = 3.74E-07 mg/kg/day / 3.00E-03 (mg/kg/day) = Hazard Quotient

HQ = 1.25E-04

CLIENT: NSWC CRANE, INDIANA		JOB NUMBER: 3960
SUBJECT: CALCULATION OF INTAKE/RISK FROM INHALATION OF VOLATILES WHILE SHOWERING BY AN ADULT RESIDENT		
BASED ON: EPA, 1989 AND FOSTER AND CHROSTOWSKI, 1987		
BY: R. JUPIN	CHECKED BY:	DATE: 06/25/02

PURPOSE: To estimate intake, carcinogenic and noncarcinogenic risks from inhalation of volatiles while showering by an adult resident.

EQUATIONS:

$$\text{Intake} = \frac{S \times IRsh \times K \times EF \times ED}{BW \times AT \times Ra \times CF}$$

Where:

$$K = Ds + \frac{\exp(-Ra \times Dt) - \exp[Ra \times (Ds - Dt)]}{Ra}$$

$S = Cwd \times FR/SV$ $\quad$ $Cwd = Cw \times [1-\exp(-Kal \times ts/60d)]$

$Kal = Kl \times [(T1 \times Us)/(Ts \times U1)^{-0.5}$ $\quad$ $Kl = 1/[1/k1 + RT/(H \times kg)]$

$k1 = 20\ cm/hr \times (44/MW)^{0.5}$ $\quad$ $kg = 3000\ cm/hr \times (18/MW)^{0.5}$

RISKS:

ICLR (Carcinogens) = Intake (mg/kg/day) x CSFi $(mg/kg/day)^{-1}$
HQ (Noncarcinogens) = Intake (mg/kg/day) / RFDi (mg/kg/day)

Where:

Intake	=	estimated exposure intake (mg/kg/day)
S	=	volatile chemical generation rate (mg/m3-min - shower)
IRsh	=	inhalation rate (m3/hr)
EF	=	exposure frequency (showers/year)
ED	=	exposure duration (years)
BW	=	body weight (kg)
AT	=	averaging time (days)
Ra	=	air exchange rate (1/min)
Ds	=	shower duration (min)
Dt	=	total time in bathroom (min)
FR	=	shower water flow rate (L/min)
SV	=	shower room air volume (m3)
ts	=	shower droplet drop time (sec)
d	=	shower droplet diameter (mm)
MW	=	molecular weight of compound (g/mole)
H	=	Henry's Law constant (atm-m3/mole)
T1	=	calibration water temperature (K)
Ts	=	shower water temperature (K)
U1	=	water viscosity at T1 (cp)
Us	=	water viscosity at Ts (cp)
CSFi	=	inhalation carcinogenic slope factor ($(mg/kg/day)^{-1}$)
RfDi	=	inhalation noncarcinogenic reference dose (mg/kg/day)

CALCULATION WORKSHEET

CLIENT: NSWC CRANE, INDIANA		JOB NUMBER: 3960
SUBJECT: CALCULATION OF INTAKE/RISK FROM INHALATION OF VOLATILES WHILE SHOWERING BY AN ADULT RESIDENT		
BASED ON: EPA, 1989 AND FOSTER AND CHROSTOWSKI, 1987		
BY: R. JUPIN	CHECKED BY: T. Jackson	DATE: 06/25/02

ASSUMPTIONS: Chemical: Vinyl Chloride

IRsh	=	0.6	m3/hr
EF	=	350	showers/year
ED	=	24	years
BW	=	70	kg
ATc	=	25550	days
Atn	=	8760	days
Ra	=	0.0167	1/min
CF	=	60	min/hr
Ds	=	15	min
Dt	=	20	min
FR	=	10	L/min
SV	=	12	m3
Cw	=	0.0004	mg/L
ts	=	2	sec
d	=	1	mm
MW	=	62.5	g/mole
H	=	2.71E-02	atm-m3/mole
RT	=	2.40E-02	atm-m3/mole
T1	=	293	K
Ts	=	320	K
U1	=	0.982	centipoise
Us	=	0.616	centipoise
CSFi	=	1.50E-02	(mg/kg/day)-1
RfDi	=	2.86E-02	(mg/kg/day)

EXAMPLE CALCULATION:

k1 = 20 cm/hr x (44 g/mole / 62.5 g/mole)^0.5

k1 = **16.78 cm/hr**

kg = 3000 cm/hr x (18 g/mole / 62.5 g/mole)^0.5

kg = **1609.97 cm/hr**

Kl = 1/[1/16.8 cm/hr + 2.40E-02 atm-m3/mole/(2.71E-02 atm-m3/mole x 1610.0 cm/hr)]

Kl = **1.66E+01 cm/hr**

CLIENT: NSWC CRANE, INDIANA		JOB NUMBER: 3960
SUBJECT: CALCULATION OF INTAKE/RISK FROM INHALATION OF VOLATILES WHILE SHOWERING BY AN ADULT RESIDENT		
BASED ON: EPA, 1989 AND FOSTER AND CHROSTOWSKI, 1987		
BY: R. JUPIN	CHECKED BY: T. Jackson	DATE: 06/25/02

Kal = 1.66E+01 cm/hr x [(293 K x 0.616 centipoise)/(320 K x 0.982 centipoise)]^-0.5

Kal = **21.9 cm/hr**

Cwd = 0.0004 mg/L x [1 - exp((-21.9 cm/hr x 2 sec)/(60 x 1 mm))]

Cwd = **2.07E-04 mg/L**

S = 2.07E-04 mg/L x 10 L/min / 12 m3

S = **1.73E-04 mg/m3-min-shower**

$$K = 15\text{ min} + \frac{\exp(-0.0167\text{ 1/min} \times 20\text{ min}) - \exp[0.0167\text{ 1/min} \times (15\text{ min} - 20\text{ min})]}{0.0167\text{ 1/min}}$$

K = **2.79 min**

CARCINOGENIC INTAKE:

$$\text{Intake} = \frac{1.73\text{E-04 mg/m3-min-shower} \times 0.6\text{ m3/hr} \times 2.79\text{ min} \times 350\text{ showers/year} \times 24\text{ years}}{70\text{ kg} \times 25550\text{ days} \times 0.0167\text{ 1/min} \times 60\text{ min/hr}}$$

intake = **1.36E-06 mg/kg-day**

Risk = 0.015 (mg/kg/day)-1 x 1.36E-06 mg/kg-day

Risk = **2.04E-08**

NONCARCINOGENIC INTAKE:

$$\text{Intake} = \frac{1.73\text{E-04 mg/m3-min-shower} \times 0.6\text{ m3/hr} \times 2.79\text{ min} \times 350\text{ showers/year} \times 24\text{ years}}{70\text{ kg} \times 8760\text{ days} \times 0.0167\text{ 1/min} \times 60\text{ min/hr}}$$

intake = **3.96E-06 mg/kg-day**

HQ = 3.96E-06 mg/kg-day / 2.86E-02 (mg/kg/day)

HQ = **1.39E-04**

CALCULATION WORKSHEET

CLIENT: NSWC CRANE, INDIANA		**JOB NUMBER:** 3960
SUBJECT: VOLATILIZATION OF COPC FROM GROUNDWATER CONSTRUCTION WORKER		
BASED ON: ASTM E50.04		
BY: R. JUPIN	**CHECKED BY:**	**DATE:** 06/25/02

PURPOSE: Estimate ambient air concentration resulting from volatization of COPCs from groundwater.

EQUATION:

$$Cair = Cw \times VF$$

and

$$VF_{gw,amb} = \frac{1}{\left(1 + \frac{DF_{amb} \cdot L_{gw}}{D_{eff,ws}}\right) \cdot \frac{1}{H'}} \cdot 10^3 \frac{L}{m^3}$$

Where:

Cair	=	chemical concentration in air (mg/m^3)
Cw	=	chemical concentration in groundwater (mg/L)
VF	=	volatilization factor (L/m^3)
H'	=	Henry's Law Constant (cm^3-H_2O/cm^3-air)
DF	=	dispersion factor for ambient air (cm/sec)
Lgw	=	depth to groundwater (hv + hcap)
hv	=	thickness of vadose zone (cm)
hcap	=	thickness of capillary fringe (cm)
Deff,ws	=	effctive diffsuion coefficient between groundwater and surface soil (cm^2/sec)

Input Variables

Cw	=	0.0004	mg/L	Chemical: Vinyl Chloride
hv	=	0	cm	
hcap	=	0.1	cm	
Lgw	=	0.1	cm	
H'	=	1.11E+00	cm^3-H_2O/cm^3-air	

DF is calculated from:

$$DF_{amb} = \frac{U_{air} \cdot W \cdot d_{air}}{A}$$

CLIENT: NSWC CRANE, INDIANA		JOB NUMBER: 3960
SUBJECT: VOLATILIZATION OF COPC FROM GROUNDWATER CONSTRUCTION WORKER		
BASED ON: ASTM E50.04		
BY: R. JUPIN	CHECKED BY:	DATE: 06/25/02

Where:

Uair	=	wind speed in mixing zone (cm/sec)
W	=	width of source parallel to groundwater flow direction (cm)
dair	=	mixing zone height (cm)
A	=	source-zone area (cm^2)

Input Variables

Uair	=	370	cm/sec
W	=	4500	cm
dair	=	200	cm
A	=	20250000	cm2

$$DFamb = \frac{370\ cm/sec \times 4500\ cm \times 200\ cm}{20250000\ cm2}$$

DFamb = 16.4 cm/sec

Deff,ws is calculated from:

$$D_{eff,ws} = \frac{L_{gw}}{\left(h_v / D_{eff,vad}\right) + \left(h_{cap} / D_{eff,cap}\right)}$$

since hv = 0 then the above equation reduces to Deff,ws = Deffs,cap

Deff,cap is calculated from:

$$D_{eff,cap} = D_{air} \cdot \frac{\theta_{acap}^{3.33}}{\theta_T^2} + D_{wat} \cdot \left(\frac{\theta_{wcap}^{3.33}}{H' \cdot \theta_T^2} \right)$$

where:

Dair	=	diffusion coefficient in air (cm^2/sec)
Dwat	=	diffusion coefficient in water (cm^2/sec)
θacap	=	volumetric air content in capillary fringe (cm^3-air/cm^3-soil)
θwcap	=	volumetric water content in capillary fringe (cm^3-H_2O/cm^3-soil)
θT	=	Total soil porosity (cm^3/cm^3-soil)

CLIENT: NSWC CRANE, INDIANA		JOB NUMBER: 3960
SUBJECT: VOLATILIZATION OF COPC FROM GROUNDWATER CONSTRUCTION WORKER		
BASED ON: ASTM E50.04		
BY: R. JUPIN	CHECKED BY:	DATE: 06/25/02

Input Variables

Chemical: Vinyl Chloride

Dair = 1.06E-01 cm^2/sec

Dwat = 1.23E-05 cm^2/sec

θacap = 0.038 cm^3-air/cm^3-soil

θwcap = 0.342 cm^3-H_2O/cm^3-soil

θT = 0.38 cm^3/cm^3-soil

$$Deff,cap = 1.06E\text{-}01\ cm2/sec \times \frac{(0.038\ cm3\text{-}air/cm3\text{-}soil)^{3.33}}{(0.38\ cm3/cm3\text{-}soil)^2}$$

$$+ 1.23E\text{-}05\ cm2/sec \times \frac{(0.342)^{3.33}}{1.11E+00\ cm3\text{-}H2O/cm3\text{-}air \times (0.38\ cm3/cm3\text{-}soil)^2}$$

Deff,cap = 1.58E-05 cm^2/sec

$$VF = \frac{1}{\left[1 + \frac{1.64E+01 cm/sec \times 0.1\ cm}{1.58E\text{-}05\ cm2/sec}\right] \times \frac{1}{1.11E+00}} \times 1000\ L/m3$$

VF = 1.07E-02 L/m^3

Cair = 0.0004 mg/L x 1.07E-02 L/m3

Cair = 4.28E-06 mg/m^3

CLIENT: NSWC CRANE, INDIANA		JOB NUMBER: 3960
SUBJECT: CALCULATION OF INTAKE/RISK FROM INCIDENTAL INGESTION OF SEDIMENT ADOLESCENT TRESPASSER		
BASED ON: USEPA, DEC. 1989		
BY: R. JUPIN	CHECKED BY:	DATE: 06/25/02

PURPOSE: To estimate intake, carcinogenic and noncarcinogenic risks from incidental ingestion of sediment by an adolescent trespasser.

EQUATION:

$$IEX = \frac{Cs \times IR \times EF \times ED \times FI \times CF}{BW \times AT}$$

Where:

IEX	=	estimated exposure intake (mg/kg/day)
Cs	=	exposure point concentration in soil/sediment (mg/kg)
IR	=	incidental soil ingestion rate (mg/day)
EF	=	exposure frequency (days/year)
ED	=	exposure duration (years)
FI	=	fraction ingested from contaminated source (unitless)
CF	=	conversion factor (1.0E-6 kg/mg)
BW	=	body weight (kg)
AT	=	averaging time (days)
CSFo	=	oral carcinogenic slope factor ($(mg/kg/day)^{-1}$)
RfDo	=	oral noncarcinogenic reference dose (mg/kg/day)

RISKS:

ICLR (Carcinogens) = Intake (mg/kg/day) x CSFo $(mg/kg/day)^{-1}$
HQ (Noncarcinogens) = Intake (mg/kg/day) / RFDo (mg/kg/day)

ASSUMPTIONS:

Cs	=	0.178	mg/kg	Chemical: 2-Amino-4,6-Dinitrotoluene
IR	=	100	mg/day	
EF	=	26	days/year	
ED	=	11	years	
FI	=	1		
CF	=	1.0E-06	kg/mg	
BW	=	43	kg	
ATc	=	25550	days	
ATnc	=	4015	days	
CSFo	=	NA	$(mg/kg/day)^{-1}$	
RfDo	=	6.0E-05	(mg/kg/day)	

CALCULATION WORKSHEET

CLIENT: NSWC CRANE, INDIANA		**JOB NUMBER:** 3960
SUBJECT: CALCULATION OF INTAKE/RISK FROM INCIDENTAL INGESTION OF SEDIMENT ADOLESCENT TRESPASSER		
BASED ON: USEPA, DEC. 1989		
BY: R. JUPIN	**CHECKED BY:**	**DATE:** 06/25/02

EXAMPLE CARCINOGENIC CALCULATION

$$IEXc = \frac{0.178 \text{ mg/kg} \times 100 \text{ mg/day} \times 26 \text{ days/year} \times 11 \text{ years} \times 1.0E\text{-}06 \text{ kg/mg}}{43 \text{ kg} \times 25550 \text{ days}}$$

IEXc = 4.63E-09 mg/kg/day

ICLR = 4.63E-09 mg/kg/day x NA (mg/kg/day)-1 = Incremental Lifetime Cancer Risk

ICLR = Not applicable, no CSF is available for 2-Amino-4,6-Dinitrotoluene.

EXAMPLE NONCARCINOGENIC CALCULATION

$$IEXnc = \frac{0.178 \text{ mg/kg} \times 100 \text{ mg/day} \times 26 \text{ days/year} \times 11 \text{ years} \times 1.0E\text{-}06 \text{ kg/mg}}{43 \text{ kg} \times 4015 \text{ days}}$$

IEXnc = 2.95E-08 mg/kg/day

$$HQ = \frac{2.95E\text{-}08 \text{ mg/kg/day}}{6.00E\text{-}05 \text{ (mg/kg/day)}} = \text{Hazard Quotient}$$

HQ = 4.91E-04

CLIENT: NCWS CRANE, INDIANA		JOB NUMBER: 3960
SUBJECT: CALCULATION OF INTAKE/RISK FROM DERMAL CONTACT WITH SEDIMENT ADOLESCENT TRESPASSER		
BASED ON: USEPA, DEC. 2001		
BY: R. JUPIN	CHECKED BY:	DATE: 06/25/02

PURPOSE: To estimate intake, carcinogenic and noncarcinogenic risks from dermal contact with sediment by an adolescent trespasser.

EQUATION:

$$DEX = \frac{CS \times CF \times SA \times AF \times ABS \times EF \times ED}{BW \times AT}$$

Where:

DEX	=	estimated exposure intake (mg/kg/day)
Cs	=	exposure point concentration in soil/sediment (mg/kg)
CF	=	conversion factor (1.0E-6 kg/mg)
SA	=	skin surface available for contact (cm^2/day)
ABS	=	absorption factor (unitless)
AF	=	adherence factor (mg/cm^2)
EF	=	exposure frequency (days/year)
ED	=	exposure duration (years)
BW	=	body weight (kg)
AT	=	averaging time (days)
CSFd	=	dermal carcinogenic slope factor ((mg/kg/day)$^{-1}$)
RfDd	=	dermal noncarcinogenic reference dose (mg/kg/day)

RISKS:

ICLR (Carcinogens) = Intake (mg/kg/day) x CSFd (mg/kg/day)$^{-1}$
HQ (Noncarcinogens) = Intake (mg/kg/day) / RFDd (mg/kg/day)

ASSUMPTIONS:

Cs	=	0.178	mg/kg	Chemical: 2-Amino-4,6-Dinitrotoluene
CF	=	1.0E-06	kg/mg	
SA	=	3280	cm^2/day	
AF	=	0.2	mg/cm^2	
ABS	=	0.1		
EF	=	26	days/year	
ED	=	11	years	
BW	=	43	kg	
ATc	=	25550	days	
ATnc	=	4015	days	
CSFd	=	NA	(mg/kg/day)$^{-1}$	
RfDd	=	6.0E-05	(mg/kg/day)	

CALCULATION WORKSHEET

CLIENT: NCWS CRANE, INDIANA		**JOB NUMBER:** 3960
SUBJECT: CALCULATION OF INTAKE/RISK FROM DERMAL CONTACT WITH SEDIMENT ADOLESCENT TRESPASSER		
BASED ON: USEPA, DEC. 2001		
BY: R. JUPIN	**CHECKED BY:** J. Jackson	**DATE:** 06/25/02

EXAMPLE CARCINOGENIC CALCULATION

$$DEXc = \frac{0.178 \text{ mg/kg} \times 1.0E\text{-}06 \text{ kg/mg} \times 3280 \text{ cm2/day} \times 0.2 \text{ mg/cm2} \times 0.1 \times 26 \text{ days/year} \times 11 \text{ years}}{43 \text{ kg} \times 25550 \text{ days}}$$

DEXc = 3.04E-09 mg/kg/day

ICLR = 3.04E-09 mg/kg/day x NA (mg/kg/day)-1 = Incremental Lifetime Cancer Risk

ICLR = Not applicable, no CSF is available for 2-Amino-4,6-Dinitrotoluene.

EXAMPLE NONCARCINOGENIC CALCULATION

$$DEXnc = \frac{0.178 \text{ mg/kg} \times 1.0E\text{-}06 \text{ kg/mg} \times 3280 \text{ cm2/day} \times 0.2 \text{ mg/cm2} \times 0.1 \times 26 \text{ days/year} \times 11 \text{ years}}{43 \text{ kg} \times 4015 \text{ days}}$$

DEXnc = 1.93E-08 mg/kg/day

HQ = 1.93E-08 mg/kg/day / 6.00E-05 (mg/kg/day) = Hazard Quotient

HQ = 3.22E-04

CLIENT: NSWC CRANE, INDIANA		JOB NUMBER: 3960
SUBJECT: CALCULATION OF INTAKE/RISK FROM INCIDENTAL INGESTION OF SURFACE WATER ADULT RECREATIONAL USER		
BASED ON: USEPA, DEC. 1989		
BY: R. JUPIN	CHECKED BY:	DATE: 06/25/02

PURPOSE: To estimate intake, carcinogenic and noncarcinogenic risks from incidental ingestion of surface water by an adult recreational user.

EQUATION:

$$IEX = \frac{Csw \times CF \times CRsw \times ET \times EF \times ED}{BW \times AT}$$

Where:

IEX	=	estimated exposure intake (mg/kg/day)
Csw	=	exposure point concentration in surface water (ug/L)
CF	=	conversion factor (1.0E-3 mg/ug)
CRsw	=	contact rate (L/hour)
ET	=	exposure time (hours/day)
EF	=	exposure frequency (days/year)
ED	=	exposure duration (years)
BW	=	body weight (kg)
AT	=	averaging time (days)
CSFo	=	oral carcinogenic slope factor ($(mg/kg/day)^{-1}$)
RfDo	=	oral noncarcinogenic reference dose (mg/kg/day)

RISKS:

ICLR (Carcinogens) = Intake (mg/kg/day) x CSFo $(mg/kg/day)^{-1}$

HQ (Noncarcinogens) = Intake (mg/kg/day) / RFDo (mg/kg/day)

ASSUMPTIONS:

Csw	=	63	ug/L	Chemical: RDX
CRsw	=	0.01	L/hr	
CF	=	1.0E-03	mg/ug	
ET	=	4	hours	
EF	=	52	days/year	
ED	=	24	years	
BW	=	70	kg	
ATc	=	25550	days	
ATnc	=	8760	days	
CSFo	=	1.1E-01	$(mg/kg/day)^{-1}$	
RfDo	=	3.0E-03	(mg/kg/day)	

CALCULATION WORKSHEET

CLIENT: NSWC CRANE, INDIANA	**JOB NUMBER:** 3960
SUBJECT: CALCULATION OF INTAKE/RISK FROM INCIDENTAL INGESTION OF SURFACE WATER ADULT RECREATIONAL USER	
BASED ON: USEPA, DEC. 1989	
BY: R. JUPIN	**CHECKED BY:** J. Jackson / **DATE:** 06/25/02

EXAMPLE CARCINOGENIC CALCULATION

$$IEXc = \frac{63\ ug/L \times 1.0E\text{-}03\ mg/ug \times 0.01\ L/hr \times 4\ hours \times 52\ days/year \times 24\ years}{70\ kg \times 25550\ days}$$

IEXc = 1.76E-06 mg/kg/day

ICLR = 1.76E-06 mg/kg/day x 1.10E-01 (mg/kg/day)-1 = Incremental Lifetime Cancer Risk

ICLR = 1.93E-07

EXAMPLE NONCARCINOGENIC CALCULATION

$$IEXnc = \frac{63\ ug/L \times 1.0E\text{-}03\ mg/ug \times 0.01\ L/hr \times 4\ hours \times 52\ days/year \times 24\ years}{70\ kg \times 8760\ days}$$

IEXnc = 5.13E-06 mg/kg/day

$$HQ = \frac{5.13E\text{-}06\ mg/kg/day}{3.00E\text{-}03\ (mg/kg/day)} = \text{Hazard Quotient}$$

HQ = 1.71E-03

CLIENT: NSWC CRANE, INDIANA		JOB NUMBER: 3960
SUBJECT: CALCULATION OF INTAKE/RISK FROM DERMAL CONTACT WITH SURFACE WATER ADULT RESIDENT		
BASED ON: USEPA, DEC. 1989, 2001		
BY: R. JUPIN	CHECKED BY:	DATE: 06/25/02

PURPOSE: To estimate intake, carcinogenic and noncarcinogenic risks from dermal contact with surface water by an adult recreational user.

EQUATION:

$$DAD = \frac{DAevent \times EV \times ED \times EF \times A}{BW \times AT}$$

Where:

DAD	=	dermally absorbed dose (mg/kg/day)
DAevent	=	absorbed does per event (mg/cm^2/event)
EV	=	event frequency (events/day)
EF	=	exposure frequency (days/year)
ED	=	exposure duration (years)
A	=	skin surface available for contact (cm^2)
BW	=	body weight (kg)
AT	=	averaging time (days)
CSFo	=	oral carcinogenic slope factor ((mg/kg/day)$^{-1}$)
RfDo	=	oral noncarcinogenic reference dose (mg/kg/day)

RISKS:

ICLR (Carcinogens) = DAD (mg/kg/day) x CSFd (mg/kg/day)$^{-1}$
HQ (Noncarcinogens) = DAD (mg/kg/day) / RFDd (mg/kg/day)

EQUATIONS for DAevent:

For Inorganics:

$$DA_{event} = (K_p)(C_{gw})(t_{event})$$

For Organics:

$$\text{If } t_{event} < t^*, \text{ then : } DA_{event} = (2K_p)(C_{gw})(CF)\left(\sqrt{\frac{6\,\tau\, t_{event}}{\pi}}\right)$$

$$\text{If } t_{event} > t^*, \text{ then : } DA_{event} = (K_p)(C_{gw})(CF)\left(\frac{t_{event}}{1+B} + 2\tau\left(\frac{1+3B}{(1+B)}\right)\right)$$

APPENDIX G.2

TOXICOLOGICAL PROFILES

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1.0 ACETONE

1.1 Noncancer Toxicity

Studies of workers exposed to acetone revealed irritation of the ocular and respiratory tract mucosa, and, at high concentrations, central nervous system (CNS) effects. Rats exposed by inhalation to high concentrations exhibited narcosis and slight decreases in organ and body weight, compared with controls, but no clinical pathological or histopathological evidence of organ damage. Inhalation reference concentration (RfC) values were not located for acetone. Oral toxicity data are limited to a comprehensive 90-day gavage study in rats, in which 100 mg/kg/day was a no observed effect level (NOEL) and 500 mg/kg/day was the lowest observed adverse effect level (LOAEL) associated with increased liver and kidney weight and tubular nephropathy. A verified reference dose RfD for chronic oral exposure of 0.1 mg/kg/day was derived by applying an uncertainty factor of 1000 to the NOEL of 100 mg/kg/day. The U.S. EPA presented a provisional subchronic oral RfD of 1 mg/kg/day, based on the same NOEL and an uncertainty factor of 100. The target organs for inhalation exposure to acetone are the CNS and the respiratory and ocular mucosa. Target organs for oral exposure are the liver and kidney.

1.2 Carcinogenicity

No data was located on the carcinogenicity of acetone.

2.0 ALUMINUM

Aluminum is a silver-white flexible metal with a vast number of uses. It is poorly absorbed and efficiently eliminated; however, when absorption does occur, aluminum is distributed mainly in bone, liver, testes, kidneys, and brain.

2.1 Noncancer Toxicity

Aluminum may be involved in Alzheimer's disease (dialysis dementia) and in Amyotrophic Lateral Sclerosis and Parkinsonism-Dementia Syndromes of Guam (Guam ALS-PD complex). Aluminum content of brain, muscle, and bone increases in Alzheimer's patients. Neurofibrillary tangles (NFTs) are found in patients suffering from aluminum encephalopathy and Alzheimer's disease. Symptoms of "dialysis dementia" include speech disorders, dementia, convulsions, and myoclonus. People of Guam and Rota have an unusually high

incidence of neurodegenerative diseases. The volcanic soil in the region of Guam where the high incidence of ALS-PD occurs contains high levels of aluminum and manganese. Neurological effects have also been observed in rats orally exposed to aluminum compounds.

The respiratory system appears to be the primary target following inhalation exposure to aluminum. Alveolar proteinosis has been observed in guinea pigs, rats, and hamsters exposed to aluminum powders. No decrease in reproductive capacity, hormonal abnormalities, or testicular histopathology was observed in male rats exposed to aluminum in drinking water for 90 days. However, male rats exposed to aluminum (as aluminum chloride) via gavage for 6 months exhibited decreased spermatozoa counts and sperm motility, and testicular histological and histochemical changes.

Subchronic and chronic reference doses and reference concentrations have not been derived for aluminum. However, the U.S. EPA's National Center for Environmental Assessment (NCEA) has developed a provisional oral RfD of 1.0 mg/kg/day and an inhalation reference dose of 0.001 mg/kg/day.

2.2 Carcinogenicity

The U.S. EPA has not evaluated aluminum or aluminum compounds for carcinogenicity, and a weight-of-evidence classification is currently not assigned.

3.0 AMINODINITROTOLUENES

Little information regarding the toxicology of aminodinitrotoluenes (2-amino-2,6-dtrinitrotoluene and 4-amino-2,6-dtrinitrotoluene) is available in the literature. These compounds are degradation products of 2,4,6-TNT and other nitrogen-containing explosives and are expected to exhibit toxicological effects similar to these compounds. The U.S. EPA has derived an oral RfD of 0.00006 mg/kg/day for the aminodinitrotoluenes and the target organ is considered to be the liver.

4.0 ANTIMONY

4.1 Pharmacokinetics

Ingested antimony is absorbed slowly and incompletely from the gastrointestinal (GI) tract. Within a few days of acute exposure, highest tissue concentrations are found in the liver, kidney, and thyroid. Organs of storage include skin, bones, and teeth. Highest concentrations in deceased smelter workers (inhalation exposure) occurred in the lungs and skeleton. Excretion is largely via the urine or feces, although some is incorporated into the hair.

4.2 Noncancer Toxicity

Acute intoxication from ingestion of large doses of antimony induces GI disturbances, dehydration, and cardiac effects in humans. Chronic effects from occupational exposure include irritation of the respiratory

tract, pneumoconiosis, pustular eruptions of the skin called "antimony spots," allergic contact dermatitis, and cardiac effects, including abnormalities of the electrocardiograph (ECG) and myocardial changes. Cardiac effects were also observed in rats and rabbits exposed by inhalation for six weeks and in animals (dogs, and possibly other species) treated by intravenous injection.

Chronic oral exposure studies in laboratory animals include two briefly reported lifetime drinking water studies in rates and mice. The only dose tested, 5 ppm potassium antimony tartrate, resulted in reduced longevity in both species and in reduced mean heart weight in rats. The U.S. EPA verified an RfD of 0.0004 mg/kg/day for chronic oral exposure to antimony from the LOAEL of 5 ppm potassium antimony tartrate (0.35 mg/antimony/kg body weight-day) in the lifetime study in rats. An uncertainty factor of 1000 was applied; factors of 10 each for inter- and intraspecies variation were used to estimate an NOAEL from an LOAEL. The heart is considered a likely target organ for chronic oral exposure of humans.

4.3 Carcinogenicity

Data were not located regarding the carcinogenicity of antimony to humans. Antimony fed to rats did not produce an excess of tumors, but a high frequency of lung tumors was observed in rats exposed by inhalation to antimony trioxide for one year. Antimony is classified as U.S. EPA cancer weight-of-evidence Group D (not classifiable as a carcinogenicity to humans).

5.0 BARIUM

5.1 Noncancer Toxicity

The soluble salts of barium, an alkaline earth metal, are toxic in mammalian systems. They are absorbed rapidly from the gastrointestinal tract and are deposited in the muscles, lungs, and bone. Barium is excreted primarily in the feces. At low doses, barium acts as a muscle stimulant and at higher doses affects the nervous system eventually leading to paralysis. Acute and subchronic oral doses of barium cause vomiting and diarrhea, followed by decreased heart rate and elevated blood pressure. Higher doses result in cardiac irregularities, weakness, tremors, anxiety, and dyspnea. Subchronic and chronic oral or inhalation exposure primarily affects the cardiovascular system resulting in elevated blood pressure. Human data were used by the U.S. EPA to calculate a chronic and subchronic oral reference dose (RfD) of 0.07 mg/kg/day. Subchronic and chronic inhalation exposure of human populations to barium-containing dust can result in a benign pneumoconiosis called "baritosis." This condition is often accompanied by an elevated blood pressure but does not result in a change in pulmonary function. However, Reproductive and developmental effects and increased fetal mortality in rats were also observed after inhalation exposures. An inhalation reference concentration (RfC) of 0.005 mg/m^3 for

subchronic and 0.0005 mg/m^3 for chronic exposure was calculated by the U.S. EPA based on the NOAEL for developmental effects which have not been substantiated in humans.

5.2 Carcinogenicity

Barium has not been evaluated by the U.S. EPA for evidence of human carcinogenic potential.

6.0 BENZO(A)PYRENE (BaP)

6.1 Pharmacokinetics

Benzo(a)pyrene was readily absorbed across the GI and respiratory epithelia. Benzo(a)pyrene was distributed widely in the tissues of treated rats and mice, but primarily to tissues high in fat, such as adipose tissue and mammary gland.

Studies of the metabolism of benzo(a)pyrene provide information relevant to other PAHs because of the structural similarities of all members of the class. Metabolism involves microsomal mixed function oxidase hydroxylation of one or more of the phenyl rings with the formation of phenols and dihydrodiols, probably via formation of arene oxide intermediates. The dihydrodiols may be further oxidized to diol epoxides, which, for certain members of the class, are known to be the ultimate carcinogens. Conjugation with glutathione or glucuronic acid, and reduction to tetrahydrotetrols are important detoxification pathways.

Excretion of benzo(a)pyrene residue was reported to be rapid, although quantitative data were not located. Excretion occurred mainly via the feces, probably largely due to biliary secretion. The U.S. EPA concluded that accumulation in the body tissues of PAHs from chronic low level exposure would be unlikely.

6.2 Noncancer Toxicity

The oral RfD and inhalation RfC are not available at this time.

6.3 Carcinogenicity

The PAHs are ubiquitous, being released to the environment from anthropogenic as well as from natural sources. Benzo(a)pyrene is the most extensively studied member of the class, inducing tumors in multiple tissues of virtually all laboratory species tested by all routes of exposure. Although epidemiology studies suggested that complex mixtures that contain PAHs (coal tar, soots, coke oven emissions, cigarette smoke) are carcinogenic to humans, the carcinogenicity cannot be attributed to PAHs alone because of the presence of other potentially carcinogenic substances in these mixtures. In addition, recent investigations

showed that the PAH fraction of roofing tar, cigarette smoke, and coke oven emissions accounted for only 0.1 to 8 percent of the total mutagenic activity of the unfractionated complex mixture in Salmonella. Aromatic amines, nitrogen heterocyclic compounds, highly oxygenated quinones, diones, and nitrooxygenated compounds, none of which would be expected to arise from in vivo metabolism of PAHs, probably accounted for the majority of the mutagenicity of coke oven emissions and cigarette smoke. Coal tar, which contains a mixture of many PAHs, has a long history of use in the clinical treatment of a variety of skin disorders in humans.

Because of the lack of human cancer data, assignment of individual PAHs to U.S. EPA cancer weight-of-evidence groups was based largely on the results of animal studies with large doses of purified compound. Frequently, unnatural routes of exposure, including implants of the test chemical in beeswax and trioctanoin in the lungs of female Osborne-Mendel rats, intratracheal instillation, and subcutaneous or intraperitoneal injection, were used. Benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, dibenzo(a,h)anthracene, and indeno(1,2,3-cd)pyrene were classified in Group B2 (probable human carcinogens).

The U.S. EPA verified a slope factor for oral exposure to benzo(a)pyrene of 7.3 per mg/kg/day, based on several dietary studies in mice and rats. Neither verified nor provisional quantitative risk estimates were available for the other PAHs in Group B2. The U.S. EPA promulgated an ambient water quality criterion for "total carcinogenic PAHs," based on an oral slope factor derived from a study with benzo(a)pyrene, as being sufficiently protective for the class. Largely because of this precedent, the quantitative risk estimates for benzo(a)pyrene were adopted for the other carcinogenic PAHs when quantitative estimates were needed. The U.S. EPA has calculated an inhalation slope factor for benzo(a)pyrene of 3.1 per mg/kg/day.

Human data specifically linking benzo(a)pyrene to a carcinogenic effect are lacking. There are, however, multiple animal studies in many species demonstrating benzo(a)pyrene to be carcinogenic following administration by numerous routes. In addition, benzo(a)pyrene has produced positive results in numerous genotoxicity assays.

The data for animal carcinogenicity was sufficient. The animal data consist of dietary, gavage, inhalation, intratracheal instillation, dermal and subcutaneous studies in numerous strains of at least four species of rodents and several primates. Repeated benzo(a)pyrene administration has been associated with increased incidences of total tumors and of tumors at the site of exposure. The tumor types in mice from oral diet studies include forestomach, squamous cell papillomas and carcinomas.

Benzo(a)pyrene has been shown to cause genotoxic effects in a broad range of prokaryotic and mammalian cell assay systems.

7.0 BENZO(B)FLUORANTHENE

7.1 Noncancer Toxicity

Little information is available on benzo(b)fluoranthene. However, based on the similarities of chemical structures, most properties should be similar to benzo(a)pyrene.

7.2 Carcinogenicity

The U.S. EPA has classified benzo(b)fluoranthene in cancer weight-of-evidence Group B2 (Probable Human Carcinogen, sufficient evidence of carcinogenicity in animals with inadequate or lack of evidence in humans) based on lung tumors in mice. The currently used Oral Slope Factor (CSF) for benzo(b)fluoranthene is 0.73 per (mg/kg)/day which is extrapolated from the CSF for Benzo(a)pyrene (BaP), i.e., 0.1 x 7.3 (BaP) = 0.73 per (mg/kg)/day).

8.0 BIS(2-ETHYLHEXYL)PHTHALATE (DI[2-ETHYLHEXYL]PHTHALATE)

8.1 Noncancer Toxicity

The acute oral toxicity of bis(2-ethylhexyl)phthalate is very low; oral $LD_{50/30}$ (lethal dose to 50 percent of population within 30 days without medical testament) values in rats and mice were 33,800 and 26,300 mg/kg, respectively. Repeated high-dose oral exposures were associated with decreased growth, altered organ weights, testicular degeneration, and developmental effects. The U.S. EPA presented a verified chronic oral RfD of 0.02 mg/kg/day based on an LOAEL for increased relative liver weight in guinea pings and an uncertainty factor of 1000. The principal target organs for the toxicity of bis(2-ethylhexyl)phthalate are the liver and testis.

8.2 Carcinogenicity

The U.S. EPA classifies bis(2-ethylhexyl)phthalate in cancer weight-of evidence Group B2 (probable human carcinogen), based on inadequate human cancer date (one limited occupational study) and sufficient cancer data in laboratory animals. An oral slope factor of 0.014 per mg/kg/day was based on the increased incidence of liver tumors in a dietary study in male mice. An inhalation slope factor of 0.014 per mg/kg/day was presented by U.S. EPA.

9.0 CADMIUM

9.1 Pharmacokinetics

Estimates of cadmium uptake by the respiratory tract range from 10 to 50 percent; uptake is greatest for fumes and small particles and least for large dust particles. GI absorption of ingested cadmium is ordinarily 5 to 8 percent, but may reach 20 percent in cases of serious dietary ion deficiency. Highest tissue levels are normally found in the kidneys followed by the liver, although levels in the liver may exceed those in the kidneys of persons suffering from cadmium-induced renal dysfunction. The half-life of cadmium in the kidneys and liver may be as long as 10-30 years. Fecal and urinary excretion of cadmium are approximately equivalent to normal humans exposed to small amounts. Urinary excretion increases markedly in humans with cadmium-induced renal disease.

9.2 Noncancer Toxicity

Acute inhalation exposure to fumes or particles of cadmium induces respiratory symptoms, general weakness, and, in severe cases, respiratory insufficiency, shock, and death. Acute oral exposure induces GI disturbances. Chronic inhalation exposure induces pulmonary emphysema, and chronic exposure by either route consistently produces renal tubular disease in humans and laboratory animals. Proteinuria is a reliable early indicator of cadmium-induced kidney disease. The combination of pulmonary emphysema and renal tubular disease, if severe, may result in early mortality. Painful osteomalacia and osteoporosis may arise from altered metabolism of bone minerals secondary to renal damage. The combination of renal and skeletal damage is called itai-itai disease in Japan. Cadmium exposure has been associated with liver damage, but the liver appears to be less sensitive than the kidney. The kidney is the primary target organ of cadmium toxicity. The U.S. EPA derived chronic oral RfD values of 0.0005 mg/kg/day for cadmium ingested in water and 0.001 mg/kg/day for cadmium ingested in food, based on a toxicokinetic model that predicted NOAELs from renal cortical concentration of cadmium. The different RfD values reflect assumed differences in GI absorption of cadmium from water (5 percent) and food (2.5 percent). The U.S. EPA currently employs an inhalation reference dose of 0.000057 mg/kg/day for cadmium.

9.3 Carcinogenicity

Carcinogenicity data in humans consist of several occupational studies that associate cadmium exposure with lung cancer, but concomitant exposure to other carcinogenic chemicals and smoking were not adequately controlled. Other occupational studies reported significantly increased risk of prostatic cancer, but this effect was not observed in the largest occupational study of workers exposed to high levels. The animal data consist of an inhalation study in rats that showed a significant increase in lung tumors, and

several parenteral injection studies that produced injection site tumors. No evidence of carcinogenicity, however, was observed in seven oral studies in rats and mice. The U.S. EPA classifies cadmium a cancer weight-of-evidence Group B1 substance for inhalation exposure on the basis of limited evidence of carcinogenicity in humans and sufficient evidence in animals. The data were insufficient to classify cadmium as carcinogenic to humans exposed by the oral route. An inhalation unit risk of 0.0018 mg/m^3, equivalent to 6.3 per mg/kg/day, was derived from an occupational exposure study assuming an inhalation rate of 20 m^3/day and a body weight of 70 kg for humans.

10.0 CHROMIUM

10.1 Noncancer Toxicity

In nature, chromium (III) predominates over chromium (VI). Little chromium (VI) exists in biological materials, except shortly after exposure, because reduction to chromium (III) occurs rapidly. Chromium (III) is considered a nutritionally essential trace element and is considerably less toxic than chromium (VI). No effects were observed in rats consuming 5% chromium (III)/kg/day in the diet for over two years. The No-Observed-Effect-Level (NOEL) of 5% Cr_2O_3 was the basis for a verified chronic oral RfD of 1.5 mg/kg/day. The same NOEL and an uncertainty factor of 1000 were the basis for a provisional subchronic oral RfD of 1 mg/kg/day.

Acute oral exposure of humans to high doses of chromium (VI) induced neurological effects, GI hemorrhage and fluid loss, and kidney and liver effects. Parenteral dosing of animals with chromium (VI) is selectively toxic to the kidney tubules. An NOAEL of 2.4 mg chromium (VI) /kg/day in a one-year drinking water study in rats and an uncertainty factor of 500 was the basis of a verified RfD of 0.003 mg/kg/day for chronic oral exposure.

Occupational (inhalation and dermal) exposure to chromium (III) compounds induced dermatitis. Similar exposure to chromium (VI) induced ulcerative and allergic contact dermatitis; irritation of the upper respiratory tract including ulceration of the mucosa and perforation of the nasal septum, and possibly kidney effects. An inhalation RfC values has not been determined for chromium (III), however, U.S. EPA has established an inhalation RfD of 0.00003 mg/kg/day for chromium (VI).

A target organ was not identified for chromium (III). The kidney appears to be the principal target organ for repeated oral dosing with chromium (VI). Additional target organs for dermal and inhalation exposure include the skin and respiratory tract.

10.2 Carcinogenicity

Data were not located regarding the carcinogenicity of chromium (III). The U.S. EPA classifies chromium (VI) in cancer weight-of-evidence Group A (human carcinogen), based on the consistent observation of increased risk of lung cancer in occupational studies of workers in chromate production or the chrome pigment industry. Parenteral dosing of animals with chromium (VI) compounds consistently induced injection-site tumors. There is no evidence that oral exposure to chromium (VI) induces cancer. An inhalation unit risk of 0.012 per mg/m^3, equivalent to 42 per mg/kg/day, assuming humans inhale 20 m^3/day and weigh 70 kg, was based on increased risk of lung cancer deaths in chromate production workers.

11.0 COBALT

Everyone is exposed to low levels of cobalt in air, water, and food. Exposure to higher levels of cobalt occurs in the workplace. Cobalt has both beneficial and harmful effects on health. At low levels, it is part of Vitamin B12, which is essential for good health; at high levels, it may harm the lungs. This chemical has been found in at least 336 of 1,416 National Priorities List sites identified by the Environmental Protection Agency.

11.1 Noncarcinogenic Toxicity

Cobalt has both beneficial and harmful effects on human health. Cobalt is beneficial because it is part of Vitamin B12. Cobalt has also been used as a treatment for anemia, because it causes red blood cells to be produced. Exposure to high levels of cobalt can harm your health. Effects on the lungs, including asthma, pneumonia, and wheezing, have been found in workers who breathed high levels of cobalt in the air. In the 1960s, some breweries added cobalt to beer to stabilize the foam. Some people who drank large quantities of the beer experienced nausea, vomiting, and serious effects on the heart. However, effects on the heart were not seen in people with anemia or pregnant women treated with cobalt. Animal studies have found problems with the development of the fetus in animals exposed to high concentrations of cobalt during pregnancy. However, cobalt is also essential for the growth and development of certain animals. The reference dose (RfD) for chronic oral exposures to cobalt is 0.02 mg/kg/day.

11.2 Carcinogenicity

The International Agency for Research on Cancer has determined that cobalt is a possible carcinogen to humans. Studies in animals have shown that cobalt causes cancer when placed directly into the muscle or under the skin. Cobalt did not cause cancer in animals that were exposed to it in the air, in food, or in drinking water. Studies on people are inconclusive regarding cobalt and cancer

12.0 COPPER

Copper occurs naturally in elemental form and as a component of many minerals. Because of its high electrical and thermal conductivity, it is widely used in the manufacture of electrical equipment. Common copper salts, such as the sulfate, carbonate, cyanide, oxide, and sulfide are used as fungicides, as components of ceramics and pyrotechnics, for electroplating, and for numerous other industrial applications. Copper can be absorbed by the oral, inhalation, and dermal routes of exposure. It is an essential nutrient that is normally present in a wide variety of tissues.

12.1 Noncancer Toxicity

In humans, ingestion of gram quantities of copper salts may cause gastrointestinal, hepatic, and renal effects with symptoms such as severe abdominal pain, vomiting, diarrhea, hemolysis, hepatic necrosis, hematuria, proteinuria, hypotension, tachycardia, convulsions, coma, and death. Gastrointestinal disturbances and liver toxicity have also resulted from long-term exposure to drinking water containing 2.2-7.8 mg Cu/L. The chronic toxicity of copper has been characterized in patients with Wilson's disease, a genetic disorder causing copper accumulation in tissues. The clinical manifestations of Wilson's disease include cirrhosis of the liver, hemolytic anemia, neurologic abnormalities, and corneal opacities. In animal studies, oral exposure to copper caused hepatic and renal accumulation of copper, liver and kidney necrosis at doses of >=100 mg/kg/day; and hematological effects at doses of 40 mg/kg/day.

Acute inhalation exposure to copper dust or fumes at concentrations of 0.075-0.12 mg Cu/m^3 may cause metal fume fever with symptoms such as cough, chills and muscle ache. Among the reported effects in workers exposed to copper dust are gastrointestinal disturbances, headache, vertigo, drowsiness. Vineyard workers chronically exposed to Bordeaux mixture (copper sulfate and lime) exhibit degenerative changes of the lungs and liver. Dermal exposure to copper may cause contact dermatitis in some individuals.

The oral reference dose (RfD) for elemental copper of 0.04 has been developed by USEPA National Center for Environmental Assessment (NCEA). The U.S. EPA established an action level of 1300 ug/L for drinking water. Data were insufficient to derive a Reference concentration (RfC) for copper.

12.2 Carcinogenicity

No suitable bioassays or epidemiological studies are available to assess the carcinogenicity of copper. Therefore, U.S. EPA has placed copper in weight-of-evidence group D, not classifiable as to human carcinogenicity.

13.0 1,1-DICHLOROETHENE

1,1-Dichloroethylene (CAS No. 75-35-4), also known as 1,1-dichloroethene and vinylidine chloride, is a colorless liquid that is used primarily in the production of polyvinylidine chloride (PVC) copolymers and as an intermediate for synthesis of organic chemicals. The major application for PVC copolymers is the production of flexible films for food packaging such as Saran® wrap. 1,1-Dichloroethene does not occur naturally but is found in the environment due to releases associated with its production and transport and with the production of its polymers. Because of its high volatility, releases to the atmosphere are the greatest source of ambient 1,1-dichloroethene. Smaller amounts are released to surface waters and soils. Loss of 1,1-dichloroethene from water and soils is primarily due to volatilization. In the atmosphere, reaction with photochemically generated hydroxyl radicals is expected to be the predominant removal mechanism. Human exposure to 1,1-dichloroethene is potentially highest in workplace settings and in the vicinity of hazardous waste sites where the compound may contaminate environmental media.

13.1 Noncancer Toxicity

The primary effect of acute exposure to high concentrations (approximately 4000 ppm) of 1,1-dichloroethene vapor in humans is central nervous system (CNS) depression which may progress to unconsciousness. Occupational exposure has been reported to cause liver dysfunction in workers . 1,1-Dichloroethene is irritating when applied to the skin and prolonged contact can cause first degree burns. Direct contact with the eyes may cause conjunctivitis and transient corneal injury. In experimental animals, the liver and kidneys are target organs for the toxic effects of 1,1-dichloroethene. Subchronic oral exposure for 90 days to 1,1-dichloroethylene in drinking water produced slight hepatotoxic effects at 200 ppm and chronic oral exposure to drinking water for 2 years produced hepatocellular changes in males at >=100 ppm and in females at >=50 ppm. Gavage administration of 10 mg/kg/day, 5 days/week for 2 years produced chronic inflammation of the kidney in male and female rats and liver necrosis in male and female mice. Exposure by inhalation to 55 ppm 1,1-dichloroethene, 6 hours/day, 5 days/week for up to 1 year produced fatty liver changes in rats and focal degeneration and necrosis in mice. In a three-generation study, no treatment-related effects on reproduction or neonatal development were seen in male and female Sprague-Dawley rats administered up to 200 ppm of 1,1-dichloroethene in the drinking water. However, inhalation exposure during gestation produced increased resorptions and minor skeletal alterations in rodents at concentrations that caused maternal toxicity. These effects were reported in rats and mice at >=15 ppm and in rats and rabbits at >=80 ppm and >=160 ppm, respectively. An oral Reference Dose (RfD) of 0.009 mg/kg/day was derived for chronic exposure and subchronic exposure to 1,1-dichloroethylene, based on liver lesions seen in rats in a 2-year drinking water study. The oral RfD is currently under review and may be subject to change. An inhalation Reference Concentration (RfC) for 1,1-dichloroethene is under review.

13.2 Carcinogenicity

An epidemiology study using a small cohort found no association between the occurrence of cancer or cancer mortality and exposure to 1,1-dichloroethene. Oral carcinogenicity bioassays (drinking water or gavage exposures) with experimental animals gave generally negative results. In one inhalation study, statistically significant increases in renal adenocarcinomas were noted in male Swiss mice exposed to 25 ppm for 12 months. Also observed were statistically significant increases in mammary gland carcinomas in females and lung tumors in both sexes. Results of other inhalation studies with rats, mice, and hamsters have been negative. Based on U.S. EPA guidelines, 1,1-dichloroethene was assigned to weight-of-evidence group C, possible human carcinogen. For oral exposure, the slope factor is 0.6 $(mg/kg/day)^{-1}$ and the unit risk is 0.0000175 $(ug/L)^{-1}$. The inhalation slope factor is 0.175 $(mg/kg/day)^{-1}$.

14.0 Cis-1,2-Dichloroethene (Cis-1,2-Dichloroethylene)

14.1 Noncancer Toxicity

Repeated oral exposure of rats to cis-1,2-dichloroethene was associated with signs of anemia (decreased hematocrit and hemoglobin). Inhalation exposure to isomeric mixtures of 1,2-dichloroethene induced narcosis, and mixed isomers of 1,2-dichloroethene were used as an anesthetic gas. The U.S. EPA presented a provisional chronic oral RfD of 0.01 mg/kg/day based on an NOAEL for signs of anemia in rats and an uncertainty factor of 3000. A provisional subchronic oral RfD of 0.1 mg/kg/day was derived from the same NOAEL and an uncertainty factor of 300. Target organs appear to be the erythrocyte for oral exposure.

14.2 Carcinogenicity

The U.S. EPA classifies cis-1,2-dichloroethene as a cancer weight-of-evidence Group D compound (not classifiable as to carcinogenicity to humans), based on an absence of human or animal cancer data. Quantitative estimates of cancer risk are not derived for Group D chemicals.

15.0 TRANS-1,2-DICHLOROETHENE (TRNAS-1,2,-DICHLOROETHYLENE)

15.1 Noncancer Toxicity

The oral $LD_{50/30}$ for trans-1,2-dichloroethene in rats was 1275 mg/kg; death was preceded by CNS and respiratory depression. Histopathologic examination revealed lesions in the lungs and heart. Prolonged oral administration induced clinicopathologic evidence of mild liver damage. An NOAEL for this effect in a

90-day drinking water study in mice and an uncertainty factor of 1000 was the basis for a verified chronic oral RfD of 0.02 mg/kg/day. A provisional subchronic oral RfD of 0.2 mg/kg/day was derived from the same NOAEL and an uncertainty factor of 100. The liver appears to be the principal target of oral exposure.

15.2 Carcinogenicity

Data regarding the carcinogenicity of trans-1,2-dichloroethene were not located.

16.0 DIOXINS/FURANS

16.1 Noncancer Toxicity

The most noted health effect in people exposed to large amounts of 2,3,7,8-TCDD is chloracne. Chloracne is a severe skin disease with acne-like lesions that occur mainly on the face and upper body. Changes in blood and urine that may indicate liver damage also are seen in people. Exposure to high concentrations of CDDs may induce long-term alterations in glucose metabolism and subtle changes in hormona llevels.

Exposure to lower levels can cause a variety of effects in animals, such as weight loss, liver damage, and disruption of the endocrine system. In many species of animals, 2,3,7,8-TCDD weakens the immune system and causes a decrease in the system's ability to fight bacteria and viruses. In other animal studies, exposure to 2,3,7,8-TCDD has caused reproductive damage and birth defects. Some animal species exposed to CDDs during pregnancy had miscarriages and the offspring of animals exposed to 2,3,7,8-TCDD during pregnancy often had severe birth defects including skeletal deformities, kidney defects, and weakened immune responses.

16.2 Carcinogenicity

Several studies suggest that exposure to 2,3,7,8-TCDD increases the risk of several types of cancer in people. Animal studies have also shown an increased risk of cancer from exposure to 2,3,7,8-TCDD. The U.S. EPA and the World Health Organization (WHO) has determined that 2,3,7,8-TCDD is a human carcinogen.

17.0 HMX (OCTAHYDRO-1,3,5,7-TETRANITRO-1,3,5,7-TETRAZOCINE)

17.1 Noncancer Toxicity

The oral RfD for HMX (0.05 mg/kg-day) is based on the NOAEL from a subchronic 13-week toxicity study of Fischer rats. HMX was incorporated into the daily diet of 20 Rats for 13 weeks. All HMX-treated animals exhibited significant dose-related reductions in mean body weight gain with concomitant reductions in food consumption in the early part of the study. By week 5, only animals in the two highest dose groups continued to have significantly depressed weight gains until study termination. Histopathological examination revealed a significant incidence of toxic liver changes occurring almost exclusively in males at the highest dose levels and some changes at lower doses. The following changes were observed in clinical pathology parameters in the high-dose animals (clinical pathology was not conducted in the lower doses). Hemoglobin and hematocrit were decreased. Red blood cell counts were also significantly decreased in high-dose females at week 12 when compared with controls. There was a significant increase in serum alkaline phosphatase (AP) in high-dose males at 12 weeks and a marginal increase in high-dose females when compared with controls. There were several organ weight changes in dosed animals. Based on the results of this study, a NOAEL of 50 mg/kg/day for males and 115 mg/kg/day for females can be estimated, together with a LOAEL of 150 mg/kg/day for toxic liver effects in males and 270 mg/kg/day for toxic renal effects in females.

17.2 Carcinogenicity

HMX is classified by the U.S. EPA as a Class D carcinogen (not classifiable as to human carcinogenicity)

18.0 IRON

18.1 Noncancer Toxicity

Iron is potentially toxic in all forms and by all routes of exposure. Inorganic iron is a poison by the intraperitoneal route. The inhalation of large amounts of iron dust may result in iron pneumoconiosis or arc welders lung. Chronic exposure to excess levels of iron (>50-100 mg Iron/day) can result in pathological deposition of iron in tissues. The target organs are the pancreas and liver.

Iron compounds are of varying toxicity. Iron oxides are a potential risk in all industrial settings. In general, ferrous compounds are more toxic than ferric compounds. Acute exposure to excessive levels of ferrous compounds can cause liver and kidney damage, altered respiratory rates and convulsions. An oral RfD of 0.3 mg/kg/day has been published for iron by the U.S. EPA based on based on allowable intakes rather than adverse effect levels. No inhalation RfD has been established for iron.

18.2 Carcinogenicity

Some iron compounds are suspected human carcinogens. Iron dust is an experimental neoplastigen and an increased incidence of lung cancer has been associated with exposure to iron dust. Iron oxide is an experimental tumorigen and a suspected human carcinogen. U.S. EPA has not published oral or inhalation slope factors for iron.

19.0 Lead

19.1 Pharmacokinetics

Studies in humans indicate that an average of 10 percent of ingested lead is absorbed, but estimates as high as 40 percent were obtained in some individuals. Nutritional factors have a profound effect on GI absorption efficiency. Children absorb ingested lead more efficiently than adults; absorption efficiencies up to 53 percent were recorded for children three months to eight years of age. Similar results were obtained for laboratory animals; absorption efficiencies of 5 to 10 percent were obtained for adults and 50 percent were obtained for young animals. The deposition rate of inhaled lead averages approximately 30 to 50 percent, depending on particle size, with as much as 60 percent deposition of very small particles near highways. All lead deposited in the lungs is eventually absorbed.

Approximately 95 percent of the lead in the blood is located in the erythrocytes. Lead in the plasma exchanges with several body compartments, including the internal organs, bone, and several excretory pathways. In humans, lead concentrations in bone increase with age. About 90 percent of the body burden of lead is located in the skeleton. Neonatal blood concentrations are about 85 percent of maternal concentrations. Excretion of absorbed lead is principally through the urine, although GI secretion, biliary excretion, and loss through hair, nails, and sweat are also significant.

19.2 Noncancer Toxicity

The noncancer toxicity of lead to humans has been well characterized through decades of medical observation and scientific research. The principal effects of acute oral exposure are colic with diffuse paroxysmal abdominal pain (probably due to vagal irritation), anemia, and, in severe cases, acute encephalopathy, particularly in children. The primary effects of long-term exposure are neurological and hematological. Limited occupational data indicate that long-term exposure to lead may induce kidney damage. The principal target organs of lead toxicity are the erythrocyte and the nervous system. Some of the effects on the blood, particularly changes in levels of certain blood enzymes, and subtle neurobehavioral changes in children, appear to occur at levels so low as to be considered nonthreshold effects.

The U.S. EPA has not determined an inhalation RfC for lead.

The U.S. EPA determined that it is inappropriate to derive an RfD for oral exposure to lead for several reasons. First, the use of an RfD assumes that a threshold for toxicity exists, below which adverse effects are not expected to occur; however, the most sensitive effects of lead exposure, impaired neurobehavioral development in children and altered blood enzyme levels associated with anemia, may occur at blood lead concentrations so low as to be considered practically nonthreshold in nature. Second, RfD values are specific for the route of exposure for which they are derived. Lead, however, is ubiquitous, so that exposure occurs from virtually all media and by all pathways simultaneously, making it practically impossible to quantify the contribution to blood lead from any one route of exposure. Finally, the dose-response relationships common to many toxicants, and upon which derivation of an RfD is based, do not hold true for lead. This is because the fate of lead within the body depends, in part, on the amount and rate of previous exposures, the age of the recipient, and the rate of exposure. There is, however, a reasonably good correlation between blood lead concentration and effect. Therefore, blood lead concentration is the appropriate parameter on which to base the regulation of lead.

Because of the absence of published dose-response parameters for lead, the exposure and potential risks associated with lead are addressed through the use of the USEPA IEUBK Model for the child (0-7 years). Adult exposure to lead in soil is addressed by an evaluation of the relationship between the site soil lead concentration and the blood lead concentration in the developing fetuses of adult women presented in the Technical Review Workgroup Lead Model for Adult Exposure. These models are designed to estimate blood lead levels based on either default or site-specific input values.

The U.S. EPA IEUBK lead model is an iterated set of equations that estimate blood lead concentration in children aged 0 to 7 years. The biokinetic part of the model describes the movement of lead between the plasma and several body compartments and estimates the resultant blood lead concentration. The rate of the movement of lead between the plasma and each compartment is a function of the transition or residence time (i.e., the mean time for lead to leave the plasma and enter a given compartment, or the mean residence time for lead in that compartment). Compartments modeled include the erythrocytes, liver, kidneys, all the other soft tissue of the body, cortical bone, and trabecular bone. Excretory pathways and their rates are also modeled. These include the mean time for excretion from the plasma to the urine, from the liver to the bile, and from the other soft tissues to the hair, skin, sweat, etc. The model permits the user to adjust the transition and residence times.

U.S. EPA guidance established a soil cleanup level for lead of 400 parts per million (ppm) to be applied at Superfund sites. This range is considered by U.S. EPA to be protective for direct contact with lead-

contaminated soils in residential settings. The guidance adopts recommendations of the Centers for Disease Control and is to be followed when current or predicted land use is residential.

19.3 Carcinogenicity

U.S. EPA has classified lead in cancer weight-of-evidence Group B2 (probable human carcinogen), based on inadequate evidence of cancer in humans and sufficient animal evidence. The human data consist of several epidemiologic occupational studies that yielded confusing results. All of the studies lacked quantitative exposure data and failed to control for smoking and concomitant exposure to other possibly carcinogenic metals. Rat and mouse bioassays showed statistically significant increases in renal tumors following dietary and subcutaneous exposure to several soluble lead salts. Various lead compounds were observed to induce chromosomal alterations in vivo and in vitro, sister chromatid exchange in exposed workers, and cell transformation in Syrian hamster embryo cells; to enhance simian adenovirus induction; and to alter molecular processes that regulate gene expression. U.S. EPA declined to estimate risk for oral exposure to lead because many factors (e.g., age, general health, nutritional status, existing body burden and duration of exposure) influence the bioavailability of ingested lead, introducing a great deal of uncertainty into any estimate of risk.

20.0 MANGANESE

20.1 Noncancer Toxicity

Manganese is nutritionally required in humans for normal growth and health. Humans exposed to approximately 0.8 mg manganese/kg/day in drinking water exhibited lethargy, mental disturbances (1/16 committed suicide), and other neurologic effects. The elderly appeared to be more sensitive than children. Oral treatment of laboratory rodents induced biochemical changes in the brain, but rodents did not exhibit the neurological signs exhibited by humans. Occupational exposure to high concentrations in air induced a generally typical spectrum of neurological effects and an increased incidence of pneumonia.

U.S. EPA has established an oral RfD of 0.02 mg/kg/day for manganese based on drinking water and an oral RfD of 0.14 mg/kg/day based on food. The U.S. EPA presented a verified chronic inhalation RfC based on a LOAEL for impairment of neurobehavioral function in occupationally exposed humans. The inhalation RfC is equivalent to 0.000014 mg/kg/day, assuming humans inhale 20 m^3 of air/day and weigh 70 kg. The CNS and respiratory tract are target organs of inhalation exposure to manganese.

20.2 Carcinogenicity

The U.S. EPA classifies manganese in cancer weight-of-evidence Group D (not classifiable as to carcinogenicity to humans). Quantitative cancer risk estimates are not derived from Group D chemicals.

21.0 MERCURY

Mercury is a naturally occurring element existing in multiple forms and in various oxidation states. It is used in a wide variety of products and processes. In the environment, mercury may undergo transformations among its various forms and among its oxidation states. Exposure to mercury may occur in both occupational and environmental settings, the latter primarily involving dietary exposure.

21.1 Noncancer Toxicity

Absorption, distribution, metabolism, and excretion of mercury is dependent upon its form and oxidation state. Organic forms of mercury are more readily absorbed than are inorganic forms. Ingestion of mercury metal is usually without effect. Ingestion of inorganic salts may cause severe gastrointestinal irritation, renal failure, and death with acute lethal doses in humans ranging from 1 to 4 g. Mercuric (divalent) salts are usually more toxic than are mercurous (monovalent) salts. Mercury is also known to induce hypersensitivity reactions such as contact dermatitis and acrodynia (pink disease). Inhalation of mercury vapor may cause irritation of the respiratory tract, renal disorders, central nervous system effects characterized by neurobehavioral changes, peripheral nervous system toxicity, renal toxicity (immunologic glomerular disease), and death. Toxicity resulting from subchronic and chronic exposure to mercury and mercury compounds usually involves the kidneys and/or nervous system, the specific target and effect being dependent on the form of mercury. Organic mercury, especially methyl mercury, rapidly enters the central nervous system resulting in behavioral and neuromotor disorders. The developing central nervous system is especially sensitive to this effect, as documented by the epidemiologic studies in Japan and Iraq where ingestion of methyl mercury-contaminated food resulted in severe toxicity and death in adults and severe central nervous system effects in infants. Blood mercury levels of <10 µg/dL and 300 µg/dL corresponded to mild effects and death, respectively. Teratogenic effects due to organic or inorganic mercury exposure do not appear to be well documented for humans or animals, although some evidence exists for mercury-induced menstrual cycle disturbances and spontaneous abortions. A subchronic and chronic oral RfD of 0.0001 mg/kg/day for methyl mercury is based on a benchmark dose of 1.1 µg/kg/day relative to neurologic developmental abnormalities in human infants. A subchronic and chronic oral RfD of 0.0003 mg/kg/day for mercuric chloride is based on immunologic glomerulonephritis. A subchronic and chronic inhalation RfC of 0.0003 mg Hg/m^3 for inorganic mercury is based on neurological disorders (increased frequency of intention tremors) following long-term occupational exposure to mercury vapor. An inhalation RfC for methyl mercury has not been determined.

21.2 Carcinogenicity

No data were available regarding the carcinogenicity of mercury in humans or animals. U.S. EPA has placed inorganic mercury in weight-of-evidence classification D, not classifiable as to human carcinogenicity. Weight-of-evidence classifications of C (possible human carcinogen) have been assigned to mercuric chloride and methyl mercury by U.S. EPA based upon limited evidence of carcinogenicity in rodents. No slope factors have been calculated.

22.0 METHYLENE CHLORIDE

Methylene chloride (CH2Cl2, CAS No. 75-09-2), also known as dichloromethane is a colorless volatile liquid with a penetrating ether-like odor. In industry, methylene chloride is widely used as a solvent in paint removers, degreasing agents, and aerosol propellants; as a polyurethane foam-blowing agent; and as a process solvent in the pharmaceutical industry. The compound is also used as an extraction solvent for spice oleoresins, hops, and caffeine.

22.1 Noncancer Toxicity

Methylene chloride is readily absorbed from the lungs, the gastrointestinal tract, and to some extent through the skin. Metabolism of methylene chloride produces CO2 and CO, which readily binds with blood hemoglobin to form carboxyhemoglobin (CO-Hb). The primary adverse health effects associated with methylene chloride exposure are central nervous system (CNS) depression and mild liver effects. Neurological symptoms described in individuals occupationally exposed to methylene chloride included headaches, dizziness, nausea, memory loss, paresthesia, tingling hands and feet, and loss of consciousness. Major effects following acute inhalation exposure include fatigue, irritability, analgesia, narcosis, and death. CNS effects have also been demonstrated in animals following acute exposure to methylene chloride. Impaired liver function has been associated with occupational exposure to methylene chloride. Liver effects have also been documented in a number of inhalation studies with laboratory animals. Subchronic exposure of rats, mice, dogs, and monkeys caused mild hepatic effects such as cytoplasmic vacuolization and fatty changes. Hepatocellular foci, fatty changes, and necrosis were reported following chronic inhalation exposure of rats and mice. Chronic oral exposure to methylene chloride via drinking water resulted in histopathological alterations of the liver in rats and mice. In addition, inhalation exposure of rats caused nonspecific degenerative and regenerative changes in the kidneys. A subchronic and chronic oral reference dose (RfD) of 0.06 mg/kg/day and reference air concentration (RfC) of 3.0 mg/m^3 for methylene chloride has been calculated by U.S. EPA.

22.2 Carcinogenicity

Studies of workers exposed to methylene chloride have not recorded a significant increase in cancer cases above the number of cases expected for nonexposed workers. However, long-term inhalation studies with rats and mice demonstrated that methylene chloride causes cancer in laboratory animals. Mice exposed via inhalation to high concentrations of methylene chloride (2000 or 4000 ppm) exhibited a significant increase of malignant liver and lung tumors compared with nonexposed controls. Rats of both sexes exposed to concentrations of methylene chloride ranging from 500 to 4000 ppm showed increases of benign mammary tumors. An inhalation study with rats and hamsters revealed sarcomas of the salivary gland in male rats, but not in female rats or hamsters. Liver tumors observed in rats and mice that ingested methylene chloride in drinking water for 2 years provided suggestive evidence of carcinogenicity. Based on inadequate evidence of carcinogenicity in humans and on sufficient evidence in animals, U.S. EPA has placed methylene chloride in weight-of-evidence group B2, probable human carcinogen. A slope factor and unit risk of 0.0075 $(mg/kg/day)^{-1}$ and 0.00000021 $(ug/L)^{-1}$, respectively, were derived for oral exposure to methylene chloride. The inhalation slope factor is 0.00165 $(mg/kg/day)^{-1}$.

23.0 NICKEL AND NICKEL COMPOUNDS

23.1 Noncancer Toxicity

Nickel is a naturally occurring element that may exist in various mineral forms. It is used in a wide variety of applications including metallurgical processes and electrical components, such as batteries. Some evidence suggests that nickel may be an essential trace element for mammals. The absorption of nickel is dependent on its physicochemical form, with watersoluble forms being more readily absorbed. The metabolism of nickel involves conversion to various Chemical forms and binding to various ligands. Nickel is excreted in the urine and feces with relative amounts for each route being dependent on the route of exposure and chemical form. Most nickel enters the body via food and water consumption, although inhalation exposure in occupational settings is a primary route for nickel-induced toxicity. In large doses (>0.5 g), some forms of nickel may be acutely toxic to humans when taken orally. Oral LD50 values for rats range from 67 mg nickel/kg (nickel sulfate hexahydrate) to >9000 mg nickel/kg (nickel powder). Toxic effects of oral exposure to nickel usually involve the kidneys with some evidence from animal studies showing a possible developmental/reproductive toxicity effect.

Inhalation exposure to some nickel compounds will cause toxic effects in the respiratory tract and immune system. Inhalation LC50 values for animals range from 0.97 mg nickel/m^3 for rats (6-hour exposure) to 15 mg nickel/m^3 for guinea pigs (time not specified). Acute inhalation exposure of humans to nickel may produce headache, nausea,respiratory disorders, and death. Asthmatic conditions have also been

documented for inhalation exposure to nickel. Soluble nickel compounds tend to be more toxic than insoluble compounds. In addition, nickel carbonyl is known to be extremely toxic to humans upon acute inhalation exposure. Data on nickel-induced reproductive/developmental effects in humans following inhalation exposure are equivocal. No clinical evidence of developmental or reproductive toxicity were reported for women working in a nickel refinery, possible reproductive and developmental effects in humans of occupational exposure to nickel (0.13-0.2 mg nickel/m^3)have been reported. Furthermore, sensitivity reactions to nickel are well documented and usually involve contact dermatitis reactions resulting from contact with nickel-containing items such as cooking utensils, jewelry, coins, etc.

A chronic and subchronic oral reference dose (RfD) of 0.02 mg/kg/day for soluble nickel salts is based on changes in organ and body weights of rats receiving dietary nickel sulfate hexahydrate (5 mg/kg/day) for 2 years. A no-observed-adverse-effect level (NOAEL) and lowest-observed-adverse-effects level (LOAEL) of 5 mg/kg/day and 50 mg/kg/day, respectively, were reported in the key study. An uncertainty factor of 300 reflects interspecies extrapolation uncertainty, protection of sensitive populations, and a modifying factor of 3 for a database deficient in reproductive/developmental studies. An inhalation reference concentration (RfC) for soluble nickel salts is under review by the RfD/RfC Work Group and currently is not available.

23.2 Carcinogenicity

The primary target organs for nickel-induced systemic toxicity are the lungs and upper respiratory tract for inhalation exposure and the kidneys for oral exposure. Other target organs include the cardiovascular system, immune system, and the blood.

Epidemiologic studies have shown that occupational inhalation exposure to nickel dust (primarily nickel subsulfate) at refineries has resulted in increased incidences of pulmonary and nasal cancer. Inhalation studies using rats have also shown nickel subsulfate or nickel carbonyl to be carcinogenic. Based on these data, the U.S. EPA has classified nickel subsulfate and nickel refinery dust in weight-of-evidence group A, human carcinogen. Carcinogenicity slope factors of 1.7 and 0.84 $(mg/kg/day)^{-1}$ have been calculated for nickel subsulfide and nickel refinery dust, respectively

24.0 PENTACHLOROPHENOL

Pentachlorophenol, a man-made organic biocide, is often contaminated with other toxic organic chemicals such as chlorinated phenols, dioxins, and dibenzofurans. Pentachlorophenol is readily absorbed following oral or inhalation exposure and is widely and rapidly distributed throughout the body.

Human and animal studies have provided evidence indicating that pentachlorophenol is metabolized to various conjugated metabolites. Both the parent compound and the conjugates are excreted in the urine.

24.1 Noncancer Toxicity

Assessing the potential toxicity of technical (commercial) grade pentachlorophenol is complicated by the presence of the toxic impurities that are usually present, and the effects resulting from occupational exposure are often difficult to attribute to a specific route of exposure. The effects in humans following acute oral exposure include increased heart and respiratory rates, elevated temperature, increased basal metabolic rate, and death (29 and 401 mg/kg). Human fatalities and toxic effects including tachycardia, jaundice, and other hematologic alterations have been reported for acute and subchronic occupational (e.g., sawmill workers, herbicide sprayers) inhalation exposures to pentachlorophenol. Upper respiratory tract inflammation and bronchitis were reported for sawmill workers chronically exposed to pentachlorophenol. However, dose-terms for these exposures were not available, and concurrent exposures to other chemicals make definitive assessments impossible.

Data regarding the dermal exposure of humans to pentachlorophenol are anecdotal or equivocal, lack dose terms, and are compromised by concurrent exposures to other chemicals including the known contaminants in technical-grade pentachlorophenol. Acute exposure to 0.4% pentachlorophenol produced localized irritation, and subchronic exposures have caused chloracne and possibly renal damage. Dermal lesions have been reported for humans chronically exposed to pentachlorophenol-treated wood. There currently are no definitive data regarding reproductive toxicity in humans exposed to pentachlorophenol. Acute oral exposure of animals to pentachlorophenol affects the liver, kidneys, cardiovascular system, and the peripheral and central nervous system. Oral LD50 values for laboratory animals range from 27 to 230 mg/kg. Definitive data regarding the effects of subchronic or chronic oral exposure of humans to pentachlorophenol are not available. However, subchronic exposure (1 to 8 months) of rats to pentachlorophenol at doses ranging from 5 to 40 mg/kg/day has produced cardiovascular, hematotoxic, renal, hepatic, and immunologic responses. Evidence of reproductive/developmental toxicity (increased resorptions, embryolethality, embryotoxicity, and teratogenicity) have also been observed in rats given pentachlorophenol during gestation. Because the most significant acute toxic effect of pentachlorophenol is elevated metabolism, a specific target organ or tissue is difficult to identify. However, for subchronic and chronic exposures, toxicity data indicate that the liver, kidney, and cardiovascular system are targets for some of the toxic effects of pentachlorophenol.

Both the chronic and subchronic RfDs for pentachlorophenol are 0.03 mg/kg/day based on a NOAEL of 3 mg/kg/day and a LOAEL of 10 mg/kg/day for histopathologic findings in the liver and kidneys of rats given pentachlorophenol in the diet for 2 years. The RfC for pentachlorophenol is under review.

24.2 Carcinogenicity

Based upon increased incidences of hepatocellular adenomas and carcinomas and malignant pheochromocytomas in mice, pentachlorophenol is classified by the U.S. EPA as a probable human carcinogen (Weight of Evidence Category B2) and has an oral slope factor of 0.12 $(mg/kg/day)^{-1}$ and an oral unit risk of 0.000003 $(g/L)^{-1}$. The potential carcinogenicity of pentachlorophenol following inhalation exposure has not been evaluated.

25.0 RDX (ROYAL DEMOLITION EXPLOSIVE; HEXAHYDRO-1,3,5-TRINITRO-1,3,5-TRIAZINE)

25.1 Pharmacokinetics

Although RDX is not readily absorbed through the skin, oral exposure studies indicate that RDX is rapidly absorbed. According to observed ingestion and inhalation exposures, evidence exists that this man-made compound is absorbed in the GI tract and may be absorbed in the lungs. However, GI absorption of RDX is regarded as poor.

Limited studies are available concerning the distribution, metabolites, and excretion of RDX. RDX is metabolized by the liver and excreted in the urine. According to one study, RDX was detected in the urine 48 hours after oral exposure and in the feces 96 hours after exposure.

25.2 Noncancer Toxicity

RDX has been found to cause nausea, irritability, convulsions, unconsciousness, and amnesia in humans following oral and inhalation occupational exposure. The U.S. EPA derived a chronic oral RfD of 0.003 mg/kg/day for RDX from a NOEL of 0.3 mg/kg/day and an uncertainty factor of 100 (for extrapolation of animal doses to humans and uncertainty in the threshold for sensitive humans). This value is based on a 2-year rat feeding study performed by the U.S. DOD where notable critical effects were inflammation of the prostate and increased pigment in the spleen of male rats. Several chronic effects were observed for rats exposed to high doses of RDX. They included increased mortality, hepatoxicity, increased incidences of cataracts in female rats, and behavioral hypersensitivity and renal toxicity in male rats. At a dose of 8 mg/kg/day, increased kidney weights were noted for both male and female rats. Embryonic and maternal toxicity was observed in rats exposed to RDX in developmental toxicity studies.

25.3 Carcinogenicity

The U.S. EPA has classified RDX in the cancer weight-of-evidence Group C (possible human carcinogen). Although no epidemiological studies have been conducted on humans, data does exists which indicates that RDX is carcinogenic in animals. Hepatocellular adenomas and carcinomas were observed in female rats exposed to RDX in their diet. A drinking water unit risk of 0.0000031 per µg/L and an slope factor of 0.11 kg/day/mg was developed based on a U.S. DOD study. It should be noted that this slope factor may not be applicable at water concentrations exceeding 3,000 mg/L.

26.0 1,1,2,2-TETRACHLOROETHANE

26.1 Noncancer Toxicity

Chronic oral exposure of laboratory animals to 1,1,2,2-tetrachloroethane was associated with liver and kidney effects. U.S. EPA presents an oral RfD of 0.06 mg/kg/day. Acute occupational exposure to high levels was associated with CNS effects; prolonged exposure to more moderate levels was associated with GI disturbances and liver damage. Inhalation exposure studies in animals confirm that 1,1,2,2-tetrachloroethane is highly hepatotoxic. An inhalation RfC value was not located. The target organs for 1,1,2,2-tetrachloroethane are the liver, kidney, and the CNS.

26.2 Carcinogenicity

Oral treatment with 1,1,2,2-tetrachloroethane induced a highly significant dose-related increase in hepatocellular carcinomas in rats. Occupational data regarding carcinogenicity in humans are inadequate. The U.S. EPA classifies 1,1,2,2-tetrachloroethane as a cancer weight-of-evidence Group C compound (possible human carcinogen), based on liver tumors in mice, and derived an oral slope factor of 0.2 per mg/kg/day (U.S. EPA 2002). The same data serve as the basis for an inhalation unit risk of 0.000058 per ug/m^3, which is equivalent to 0.2 per mg/kg/day (U.S. EPA 2002), assuming humans inhale 20 m^3 of air/day and weigh 70 kg.

27.0 TETRACHLOROETHENE (PCE)

Tetrachloroethene (CAS No. 127-18-4) is a halogenated aliphatic hydrocarbon with a vapor pressure of 17.8 mm Hg at 25C. The chemical is used primarily as a solvent in industry and, less frequently, in commercial dry-cleaning operations.

27.1 Noncancer Toxicity

Occupational exposure to tetrachloroethene occurs via inhalation, resulting in systemic effects, and

via dermal contact, resulting in local effects. Exposure to the general population can occur through contaminated air, food and water .The respiratory tract is the primary route of entry for tetrachloroethene. The chemical is rapidly absorbed by this route and reaches an equilibrium in the blood within 3 hours after the initiation of exposure. Tetrachloroethene is also significantly absorbed by the gastrointestinal (g.i.) tract, but not through the skin. The chemical accumulates in tissues with high lipid content, where the half-life is estimated to be 55 hours, and has been identified in perirenal fat, brain, liver, placentofetal tissue, and amniotic fluid.

The main targets of tetrachloroethene toxicity are the liver and kidney by both oral and inhalation exposure, and the central nervous system by inhalation exposure. Acute exposure to high concentrations of the chemical (estimated to be greater than 1,500 ppm for a 30-minute exposure) may be fatal to humans. Chronic exposure causes respiratory tract irritation, headache, nausea, sleeplessness, abdominal pains, constipation, cirrhosis of the liver, hepatitis, and nephritis in humans; and microscopic changes in renal tubular cells, squamous metaplasia of the nasal epithelium, necrosis of the liver, and congestion of the lungs in animals. Some epidemiology studies have found an association between inhalation exposure to tetrachloroethene and an increased risk for spontaneous abortion, idiopathic infertility, and sperm abnormalities among dry-cleaning workers, but others have not found similar effects. The adverse effects in humans are supported in part by the results of animal studies in which tetrachloroethene induced fetotoxicity (but did not cause malformations) in the offspring of treated dams.

Reference doses (RfDs) for subchronic and chronic oral exposure to tetrachloroethene are 0.1 mg/kg/day and 0.01 mg/kg/day, respectively. These values are based on hepatotoxicity observed in mice given 100 mg tetrachloroethene/kg body weight for 6 weeks and a no-observed-adverse effect level (NOAEL) of 20 mg/kg. EPA-NCEA has developed an inhalation RfD of 0.14 mg/kg-day for PCE.

27.2 Carcinogenicity

Epidemiology studies of dry cleaning and laundry workers have demonstrated excesses in mortality due to various types of cancer, including liver cancer, but the data are regarded as inconclusive because of various confounding factors. The tenuous finding of an excess of liver tumors in humans is strengthened by the results of carcinogenicity bioassays in which tetrachloroethene, administered either orally or by inhalation, induced hepatocellular tumors in mice. The chemical also induced mononuclear cell leukemia and renal tubular cell tumors in rats. Tetrachloroethene was negative for tumor initiation in a dermal study and for tumor induction in a pulmonary tumor assay. Although U.S. EPA's Science Advisory Board recommended a weight-of-evidence classification of C-B2 continuum (C = possible human carcinogen; B2 = probable human carcinogen), the agency has not adopted a current position on the weight-of-evidence classification. In an earlier evaluation, tetrachloroethene was assigned to weight-of-evidence Group B2, probable human carcinogen, based on sufficient evidence from oral and inhalation studies for

carcinogenicity in animals and no or inadequate evidence for carcinogenicity to humans. The unit risk and slope factor values for tetrachloroethene have been withdrawn from IRIS and HEAST. Upper bound risk estimates provided by EPA-NCEA are as follows: for oral exposure, the slope factor is 0.052 $(mg/kg/day)^{-1}$; for inhalation exposure, the slope factor is 0.01 $(mg/kg/day)^{-1}$.

28.0 THALLIUM

28.1 Noncancer Toxicity

Thallium is highly toxic; acute ingestion by humans or laboratory animals induced gastroenteritis, neurological dysfunction, and renal and liver damage. Chronic ingestion of more moderate doses characteristically caused alopecia. Thallium was used medicinally to induce alopecia in cases of ringworm of the scalp, sometimes with disastrous results. In industrial (inhalation, oral, dermal) exposure, neurologic signs preceded alopecia, suggesting that the nervous system is more sensitive than the hair follicle. The U.S. EPA presented verified chronic oral RfD values for several thallium compounds (thallium acetate, thallium acetate, thallium carbonate, thallium chloride, thallium nitrate, thallium sulfate, and thallic oxide) based on increased incidence of alopecia and increased serum levels of liver enzymes indicative of hepatocellular damage in rats treated with thallium sulfate for 90 days. Risks from exposure to thallium are evaluated using the chronic oral RfD for thallium, 0.00007 mg/kg/day, listed in the U.S. EPA Region 3 RBC tables.

28.2 Carcinogenicity

No information was located regarding the carcinogenicity of thallium.

29.0 1,1,2-TRICHLOROETHANE

29.1 Noncancer Toxicity

1,1,2-Trichloroethane was not mutagenic when tested using the Ames assay. No information was found concerning the reproductive toxicity or teratogenicity of 1,1,2-trichloroethane. No chronic studies were found on the toxicity of 1,1,2-trichloroethane but single doses as low as 400 mg/kg caused liver and kidney damage in dogs. The oral LD_{50} value for 1,1,2-trichloroethane in rats is 835 mg/kg (Clement, 1985). A drinking water 90-day study in mice had a NOAEL of 3.9 mg/kg/day with clinical chemistry alterations. A subchronic RfD of 0.04 mg/kg/day with an uncertainty factory of 100 was interpolated to a chronic oral RfD 0.004 mg/kg/day. No inhalation RfD was reported for 1,1,2-trichloroethane.

29.2 Carcinogenicity

1,1,2-Trichloroethane induced heptacellular carcinomas and pheochromocytoma of the adrenal gland in male and female mice but did not produce a significant increase in tumor incidence in male or female rats (NCI 1976). A 78 week oral gavage study in mice produced liver carcinomas and U.S. EPA presented and oral slope factor of 0.057 per mg/kg/day. The route-to-route extrapolation presents an inhalation slope factor of 0.056 per mg/kg/day.

30.0 TRICHLOROETHENE

Trichloroethene (TCE) is an industrial solvent used primarily in metal degreasing and cleaning operations. TCE can be absorbed through the lungs, mucous membranes, gastrointestinal tract, and the skin.

30.1 Pharmacokinetics

TCE is extensively metabolized in humans to trichloroacetic acid and trichloroethanol, as well as to several minor metabolites, with most of the absorbed dose excreted in urine.

30.2 Noncancer Toxicity

Human and animal data indicate that exposure to TCE can result in toxic effects on a number of organs and systems, including the liver, kidney, blood, skin, immune system, reproductive system, nervous system, and cardiovascular system. In humans, acute inhalation exposure to TCE causes central nervous system symptoms such as headache, dizziness, nausea, and unconsciousness. Among the reported effects from occupational exposure studies are fatigue, light-headedness, sleepiness, vision distortion, abnormal reflexes, tremors, ataxia, nystagmus, increased respiration, as well as neurobehavioral or psychological changes. Cardiovascular effects include tachycardia, extrasystoles, EKG abnormalities, and precordial pain. The use of TCE as an anesthetic has been associated with cardiac arrhythmias. Cases of severe liver and kidney damage, including necrosis, have been reported in humans following acute exposure to TCE, but these effects generally are not associated with long-term occupational exposures. In animals, TCE has produced liver enlargement with hepatic biochemical and/or histological changes and kidney enlargement, renal tubular alterations and/or toxic nephropathy. Also observed in animals were hematological effects and immunosuppression. Inhalation studies with rats indicate that TCE is a developmental toxicant causing skeletal ossification anomalies and other effects consistent with delayed maturation. TCE may cause dermatitis and dermographism.

Reference Doses (RfDs) and Reference Concentrations (RfCs) for subchronic and chronic oral and inhalation exposure to TCE are presently under review by U.S. EPA. However, EPA-NCEA has published an oral RfD of 0.0003 mg/kg-day for TCE.

30.3 Carcinogenicity

Epidemiologic studies have been inadequate to determine if a correlation exists between exposure to TCE and increased cancer risk. Chronic oral exposure to TCE increased the incidences of hepatocellular carcinomas in mice and renal adenocarcinomas and leukemia in rats. Chronic inhalation exposure induced lung and liver tumors in mice and testicular Leydig cell tumors in rats. Although U.S. EPA's Science Advisory Board recommended a weight-of-evidence classification of C-B2 continuum (C = possible human carcinogen; B2 = probable human carcinogen), the agency has not adopted a current position on the weight-of-evidence classification. In an earlier evaluation, TCE was assigned to weight-of-evidence Group B2, probable human carcinogen, based on tumorigenic responses in rats and mice for both oral and inhalation exposure and on inadequate data in humans. Carcinogen slope factors are 0.4 $(mg/kg/day)^{-1}$ and 0.4 $(mg/kg/day)^{-1}$ for oral and inhalation exposure, respectively.

31.0 2,4,6-TRINITROTOLUENE

2,4,6-Trinitrotoluene (TNT) is used as a high explosive in military armaments and as a chemical intermediate in the manufacture of dyestuffs and photographic chemicals. TNT is likely to enter the environment in wastewater effluents from production facilities and from leachates at waste disposal sites. Mobility in soil may be limited by strong adsorption to soil particles.

31.1 Noncancer Toxicity

TNT is absorbed through the gastrointestinal tract, skin, and lungs; is distributed primarily to the liver, kidneys, lungs, and fat; and is excreted mainly in the urine and bile. In animals, signs of acute toxicity to TNT include ataxia, tremors, and mild convulsions. Splenic hemosiderosis, leukopenia, thrombocytosis, slight hepatomegaly, and increase in kidney weight occurred in mice fed a dietary level equivalent to 700 mg TNT/kg/day for 28 days. The primary target organs for TNT toxicity in experimental animals following subchronic and chronic oral exposures are (1) liver (hepatocytomegaly and cirrhosis), (2) blood (hemolytic anemia with secondary alterations in the spleen), and (3) testes (degeneration of the germinal epithelium lining the seminiferous tubules. Chronic oral toxicity studies on rats have also demonstrated TNT-induced anemia and hepatotoxicity, as well as adverse effects on the kidney.

The reference dose (RfD) for chronic oral exposures, 0.0005 mg/kg/day, is based on a LOAEL of 0.5 mg/kg/day for liver effects in dogs. An inhalation reference concentration (RfC) for TNT has not been derived.

31.2 Carcinogenicity

No epidemiological evidence is available showing an association between chronic TNT exposure and tumorigenicity in humans. In animal carcinogenicity studies, a significant increase in urinary bladder papillomas and carcinomas was seen in female rats dosed with 50 mg TNT/kg/day for 24 months. This study was used by U.S. EPA to calculate a slope factor of 0.03 $(mg/kg/day)^{-1}$. TNT is classified in weight-of-evidence Group C, possible human carcinogen.

32.0 VINYL CHLORIDE

Vinyl chloride (CAS Reg. No. 75-01-4), a colorless gas, is a halogenated aliphatic hydrocarbon with the empirical formula of C2H3Cl. It is used primarily as an intermediate in the manufacture of polyvinyl chloride (PVC); limited quantities are used as a refrigerant and as an intermediate in the production of chlorinated compounds.

32.1 Noncancer Toxicity

Vinyl chloride is rapidly absorbed from the gastrointestinal tract and lungs. Metabolism of vinyl chloride occurs primarily in the liver via oxidation by hepatic microsomal enzymes to polar compounds which can be conjugated with glutathione and/or cysteine. These covalently bound metabolites are then excreted in the urine. In humans and animals, vinyl chloride is a CNS depressant, inducing narcosis and anesthesia at high concentrations. Nonneoplastic toxic effects observed in workers exposed by inhalation to vinyl chloride include hepatotoxicity, acroosteolysis and scleroderma, and Raynaud's syndrome, a vascular disorder of the extremities. Also reported were abnormalities of CNS function, high blood pressure, and occasional pulmonary effects. The evidence for potential developmental effects in humans (increased fetal loss and birth defects) is equivocal. Occupational exposure to vinyl chloride has been associated with reduced sexual function in both sexes and gynecological effects in women. For the oral route of exposure, the primary target organ of vinyl chloride toxicity in animals is the liver. Chronic oral administration of 1.7-14.1 mg/kg/day of vinyl chloride induced dose-related increases in nonneoplastic lesions of the liver of rats. In addition to the CNS, target organs for inhalation exposure include the liver, kidneys, lungs, spleen, and testes. Subchronic inhalation studies with rodents documented hepatic effects at concentrations as low as 50 ppm and degenerative changes of the liver and kidneys at >= 500 ppm. Exposure to higher concentrations caused proliferative changes in the lungs of mice, extensive liver and

kidney damage in rats and guinea pigs, cerebral and cerebellar nephrosis in rats, and degeneration of the spleen in guinea pigs. Subchronic exposure of rats to 100 ppm vinyl chloride produced significantly decreased testes weights and testicular regeneration. Evidence of developmental toxicity was seen in rats exposed to vinyl chloride during the first trimester of gestation. The U.S. EPA has derived an oral reference dose (RfD) of 0.003 mg/kg/day and an inhalation reference concentration (RfC) of 0.1 mg/m^3 for vinyl chloride.

32.2 Carcinogenicity

The carcinogenicity of vinyl chloride in humans has been demonstrated in a number of epidemiological studies and case reports, many of which associated occupational exposure to vinyl chloride to the development of angiosarcomas of the liver. In addition to liver cancer, exposure to vinyl chloride also has been linked to an increased risk of lung, brain, hematopoietic, and digestive tract cancers. Vinyl chloride has been shown to be carcinogenic in numerous animal studies. Inhalation exposure to vinyl chloride induced an increased incidence of liver angiosarcomas; kidney nephroblastomas; and lung, brain, and forestomach tumors in rodents. Oral administration of vinyl chloride induced liver, lung, and kidney tumors in rodents. Angiosarcomas observed in offspring of rats exposed by inhalation during gestation indicates that vinyl chloride has the potential to initiate cancer in utero. U.S. EPA has classified vinyl chloride as a Group A chemical, human carcinogen. Oral slope factors of 0.72 $(mg/kg/day)^{-1}$ and 1.5 $(mg/kg/day)^{-1}$ have been derived for continuous lifetime exposure during adulthood and exposure from birth, respectively. Inhalation unit risks corresponding to inhalation slope factors of 0.016 $(mg/kg/day)^{-1}$ and 0.031 $(mg/kg/day)^{-1}$ have been derived for adulthood and exposure from birth, respectively

33.0 ZINC

33.1 Pharmacokinetics

Zinc is a nutritionally required trace element. Estimates of the efficiency of GI absorption of zinc in animals range from <10 to 90 percent. Estimates in normal humans range from approximately 20 to 77 percent. The net absorption of zinc appears to be homeostatically controlled, but it is unclear whether GI absorption, intestinal secretion, or both are regulated. Distribution of absorbed zinc is primarily to the liver, with subsequent redistribution to bone, muscle, and kidney. Highest tissue concentrations are found in the prostate. Excretion appears to be principally through the feces, in part from biliary secretion, but the relative importance of fecal and urinary excretion is species-dependent. The half-life of zinc absorbed from the GI tracts of humans in normal zinc homeostasis is approximately 162 to 500 days.

33.2 Noncancer Toxicity

Humans exposed to high concentrations of aerosols of zinc compounds may experience severe pulmonary damage and death. The usual occupational exposure is to freshly formed fumes of zinc, which can induce a reversible syndrome known as metal fume fever. Orally, zinc exhibits a low order of acute toxicity. Animals dosed with 100 times dietary requirement showed no evidence of toxicity. In humans, acute poisoning from foods or beverages prepared in galvanized containers is characterized by GI upset. Chronic oral toxicity in animals is associated with poor growth, GI inflammation, arthritis, lameness, and a microcytic, hypochromic anemia, possibly secondary to copper deficiency. The U.S. EPA calculated an RfD of 0.3 mg/kg/day for chronic oral exposure to zinc, based on anemia in humans.

33.3 Carcinogenicity

The U.S. EPA classifies zinc in cancer weight-of-evidence Group D (not classifiable as to carcinogenicity to humans) based on inadequate evidence for carcinogenicity in humans and animals. The human data consist largely of occupational exposure studies not designed to detect a carcinogenic response, and of reports that prostatic zinc concentrations were lower in cancerous than in noncancerous tissue. The animal data consist of several dietary, drinking water, and zinc injection studies, none of which provided convincing data for a carcinogenic response.

SOURCES

The information contained in the Toxicological Profiles has been extracted from the following sources:

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CTO163
SDG DL365
Revision

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ANALYTICAL REPORT

REVISED

PROJECT NO. CTO 0163 N3986

NAS-DALLAS
SDG #: DL365

Amy Thomson

Tetra Tech NUS, Inc.

SEVERN TRENT LABORATORIES, INC.

Denise Pohl
Denise Pohl
Project Manager

August 17, 2001

TETRA TECH NUS, INC.

Lab Name: Severn Trent Laboratories, Inc. SDG Number: DL365

Matrix: (soil/water) WQ Lab Sample ID: A1F260201 001
Method: SW846 8260B
Volatile Organics, GC/MS (8260B)

Sample WT/Vol: 5 / mL
Work Order: EFH1F1AA
Dilution factor: 1
Moisture %:

Date Received: 06/26/01
Date Extracted: 06/30/01
Date Analyzed: 06/30/01

QC Batch: 1183337

Client Sample Id: TB062201-01

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/kg) ug/L	Q
74-87-3	Chloromethane	10	U
74-83-9	Bromomethane	10	U
75-01-4	Vinyl chloride	10	U
75-00-3	Chloroethane	10	U
75-09-2	Methylene chloride	5.0	U
67-64-1	Acetone	4.0	J B
75-15-0	Carbon disulfide	5.0	U
75-35-4	1,1-Dichloroethene	5.0	U
75-34-3	1,1-Dichloroethane	5.0	U
67-66-3	Chloroform	5.0	U
107-06-2	1,2-Dichloroethane	5.0	U
78-93-3	2-Butanone	20	U
71-55-6	1,1,1-Trichloroethane	5.0	U
56-23-5	Carbon tetrachloride	5.0	U
75-27-4	Bromodichloromethane	5.0	U
78-87-5	1,2-Dichloropropane	5.0	U
10061-01-5	cis-1,3-Dichloropropene	5.0	U
79-01-6	Trichloroethene	5.0	U
124-48-1	Dibromochloromethane	5.0	U
79-00-5	1,1,2-Trichloroethane	5.0	U
71-43-2	Benzene	5.0	U
10061-02-6	trans-1,3-Dichloropropene	5.0	U
75-25-2	Bromoform	5.0	U
108-10-1	4-Methyl-2-pentanone	20	U
591-78-6	2-Hexanone	20	U
127-18-4	Tetrachloroethene	5.0	U
79-34-5	1,1,2,2-Tetrachloroethane	5.0	U
108-88-3	Toluene	5.0	U

FORM I

STL North Canton

TETRA TECH NUS, INC.

Lab Name:Severn Trent Laboratories, Inc. SDG Number:DL365

Matrix: (soil/water) WQ Lab Sample ID:A1F260201 001
Method: SW846 8260B
Volatile Organics, GC/MS (8260B)

Sample WT/Vol: 5 / mL
Work Order: EFH1F1AA
Dilution factor: 1
Moisture %:

Date Received: 06/26/01
Date Extracted:06/30/01
Date Analyzed: 06/30/01

QC Batch: 1183337

Client Sample Id: TB062201-01

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/kg) ug/L	Q
108-90-7	Chlorobenzene	5.0	U
100-41-4	Ethylbenzene	5.0	U
100-42-5	Styrene	5.0	U
1330-20-7	Xylenes (total)	5.0	U
156-59-2	cis-1,2-Dichloroethene	2.5	U
156-60-5	trans-1,2-Dichloroethene	2.5	U

FORM I

TETRA TECH NUS, INC.

Lab Name:Severn Trent Laboratories, Inc. SDG Number:DL365

Matrix: (soil/water) WG Lab Sample ID:A1F260201 002
Method: SW846 8260B
Volatile Organics, GC/MS (8260B)

Sample WT/Vol: 5 / mL Date Received: 06/26/01
Work Order: EFH1Q1AA Date Extracted:07/01/01
Dilution factor: 1 Date Analyzed: 07/01/01
Moisture %:

QC Batch: 1183408

Client Sample Id: 508MWF46-2

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/kg) ug/L	Q
74-87-3	Chloromethane	10	U
74-83-9	Bromomethane	10	U
75-01-4	Vinyl chloride	10	U
75-00-3	Chloroethane	10	U
75-09-2	Methylene chloride	5.0	U
67-64-1	Acetone	3.1	J B
75-15-0	Carbon disulfide	5.0	U
75-35-4	1,1-Dichloroethene	5.0	U
75-34-3	1,1-Dichloroethane	5.0	U
67-66-3	Chloroform	5.0	U
107-06-2	1,2-Dichloroethane	5.0	U
78-93-3	2-Butanone	20	U
71-55-6	1,1,1-Trichloroethane	5.0	U
56-23-5	Carbon tetrachloride	5.0	U
75-27-4	Bromodichloromethane	5.0	U
540-59-0	1,2-Dichloroethene (total)	5.0	U
78-87-5	1,2-Dichloropropane	5.0	U
10061-01-5	cis-1,3-Dichloropropene	5.0	U
79-01-6	Trichloroethene	5.0	U
124-48-1	Dibromochloromethane	5.0	U
79-00-5	1,1,2-Trichloroethane	5.0	U
71-43-2	Benzene	5.0	U
10061-02-6	trans-1,3-Dichloropropene	5.0	U
75-25-2	Bromoform	5.0	U
108-10-1	4-Methyl-2-pentanone	20	U
591-78-6	2-Hexanone	20	U
127-18-4	Tetrachloroethene	5.0	U
79-34-5	1,1,2,2-Tetrachloroethane	5.0	U

TETRA TECH NUS, INC.

Lab Name: Severn Trent Laboratories, Inc.

SDG Number: DL365

Matrix: (soil/water) WG

Lab Sample ID: A1F260201 002

Method: SW846 8260B
Volatile Organics, GC/MS (8260B)

Sample WT/Vol: 5 / mL
Work Order: EFH1Q1AA
Dilution factor: 1
Moisture %:

Date Received: 06/26/01
Date Extracted: 07/01/01
Date Analyzed: 07/01/01

QC Batch: 1183408

Client Sample Id: 508MWF46-2

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/kg) ug/L	Q
108-88-3	Toluene	5.0	U
108-90-7	Chlorobenzene	5.0	U
100-41-4	Ethylbenzene	5.0	U
100-42-5	Styrene	5.0	U
1330-20-7	Xylenes (total)	5.0	U
110-54-3	n-Hexane	5.0	U
156-59-2	cis-1,2-Dichloroethene	2.5	U
156-60-5	trans-1,2-Dichloroethene	2.5	U

FORM I

TETRA TECH NUS, INC.

Lab Name: Severn Trent Laboratories, Inc.

SDG Number: DL365

Lab Sample ID: A1F260201 003

Matrix: (soil/water) WG
Method: SW846 8260B
Volatile Organics, GC/MS (8260B)

Sample WT/Vol: 5 / mL
Work Order: EFH131AA
Dilution factor: 1
Moisture %:

Date Received: 06/26/01
Date Extracted: 06/30/01
Date Analyzed: 06/30/01

QC Batch: 1183337

Client Sample Id: 508MWF26-3

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/kg) ug/L	Q
74-87-3	Chloromethane	10	U
74-83-9	Bromomethane	10	U
75-01-4	Vinyl chloride	10	U
75-00-3	Chloroethane	10	U
75-09-2	Methylene chloride	1.3	J B
67-64-1	Acetone	7.7	J B
75-15-0	Carbon disulfide	5.0	U
75-35-4	1,1-Dichloroethene	5.0	U
75-34-3	1,1-Dichloroethane	5.0	U
67-66-3	Chloroform	5.0	U
107-06-2	1,2-Dichloroethane	5.0	U
78-93-3	2-Butanone	20	U
71-55-6	1,1,1-Trichloroethane	5.0	U
56-23-5	Carbon tetrachloride	5.0	U
75-27-4	Bromodichloromethane	5.0	U
78-87-5	1,2-Dichloropropane	5.0	U
10061-01-5	cis-1,3-Dichloropropene	5.0	U
79-01-6	Trichloroethene	5.0	U
124-48-1	Dibromochloromethane	5.0	U
79-00-5	1,1,2-Trichloroethane	5.0	U
71-43-2	Benzene	5.0	U
10061-02-6	trans-1,3-Dichloropropene	5.0	U
75-25-2	Bromoform	5.0	U
108-10-1	4-Methyl-2-pentanone	20	U
591-78-6	2-Hexanone	20	U
127-18-4	Tetrachloroethene	5.0	U
79-34-5	1,1,2,2-Tetrachloroethane	5.0	U
108-88-3	Toluene	5.0	U

FORM I

TETRA TECH NUS, INC.

Lab Name: Severn Trent Laboratories, Inc. SDG Number: DL365

Matrix: (soil/water) WG Lab Sample ID: A1F260201 003
Method: SW846 8260B
Volatile Organics, GC/MS (8260B)

Sample WT/Vol: 5 / mL
Work Order: EFH131AA
Dilution factor: 1
Moisture %:

Date Received: 06/26/01
Date Extracted: 06/30/01
Date Analyzed: 06/30/01

QC Batch: 1183337

Client Sample Id: 508MWF26-3

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/kg) ug/L	Q
108-90-7	Chlorobenzene	5.0	U
100-41-4	Ethylbenzene	5.0	U
100-42-5	Styrene	5.0	U
1330-20-7	Xylenes (total)	5.0	U
156-59-2	cis-1,2-Dichloroethene	2.5	U
156-60-5	trans-1,2-Dichloroethene	2.5	U

FORM I

RAGS Part D Table 9

Summary Of Receptor Risks And Hazards For COPCs

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SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs

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9-25	On-Site Adult Resident - 1 Acre Exposure Unit - Reasonable Maximum Exposures
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9-27	On-Site Adult Resident - 6 Acre Exposure Unit - Reasonable Maximum Exposures
9-28	On-Site Adult Resident - 6 Acre Exposure Unit - Central Tendency Exposures
9-29	On-Site Lifelong Resident - 1 Acre Exposure Unit - Reasonable Maximum Exposures
9-30	On-Site Lifelong Resident - 1 Acre Exposure Unit - Central Tendency Exposures
9-31	On-Site Lifelong Resident - 6 Acre Exposure Unit - Reasonable Maximum Exposures
9-32	On-Site Lifelong Resident - 6 Acre Exposure Unit - Central Tendency Exposures

TABLE 9.1
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
REASONABLE MAXIMUM EXPOSURE
NSWC CRANE, INDIANA

Scenario Timeframe: Current/Future
Receptor Population: Trespassers
Receptor Age: Adolescent

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk			
				Ingestion	Inhalation	Dermal	Exposure Routes Total
Surface Soil	Surface Soil	SWMU 3 - Old Jeep Trail	2,3,7,8-TCDD Equivalents	3E-08	--	6E-09	3E-08
			2,4,6-Trinitrotoluene	2E-09	--	1E-09	3E-09
			2-Amino-4,6-Dinitrotoluene	--	--	--	--
			4-Amino-2,6-Dinitrotoluene	--	--	--	--
			HMX	--	--	--	--
			RDX	1E-08	--	6E-09	2E-08
			Barium	--	--	--	--
			Cadmium	--	--	--	--
			Chromium	--	--	--	--
			Iron	--	--	--	--
			Lead	--	--	--	--
			(Total)	4E-08	--	1E-08	5E-08
Surface Water	Surface Water	SWMU 3 - Little Sulphur Creek	Acetone	--	--	--	--
			Bromomethane	--	--	--	--
			Methylene Chloride	1E-09	--	3E-10	2E-09
			Bis(2-ethylhexyl)phthalate	1E-09	--	7E-09	8E-09
			Pentachlorophenol	4E-10	--	2E-08	2E-08
			2-Amino-4,6-Dinitrotoluene	--	--	--	--
			4-Amino-2,6-Dinitrotoluene	--	--	--	--
			RDX	4E-07	--	2E-08	4E-07
			Antimony	--	--	--	--
			Lead	--	--	--	--
			Nitrate	--	--	--	--
			(Total)	4E-07	--	4E-08	4E-07
Sediment	Sediment	SWMU 3 - Little Sulphur Creek	2-Amino-4,6-Dinitrotoluene	--	--	--	--
			Aluminum	--	--	--	--
			Antimony	--	--	--	--
			Barium	--	--	--	--
			Cadmium	--	--	--	--
			Lead	--	--	--	--
			(Total)	--	--	--	--

Chemical	Non-Carcinogenic Hazard Quotient				
	Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes Total
2,3,7,8-TCDD Equivalents	NA	--	--	--	--
2,4,6-Trinitrotoluene	Liver	0.0009	--	0.0006	0.001
2-Amino-4,6-Dinitrotoluene	Liver	0.001	--	0.0008	0.002
4-Amino-2,6-Dinitrotoluene	Liver	0.001	--	0.0007	0.002
HMX	Liver	0.00002	--	0.00001	0.00003
RDX	Prostate	0.0002	--	0.0001	0.0003
Barium	Kidney	0.0006	--	--	0.0006
Cadmium	Kidney	0.0004	--	0.00005	0.0004
Chromium	None Reported	0.000003	--	--	0.000003
Iron	Blood, GS	0.01	--	--	0.01
Lead	NA	--	--	--	--
(Total)		0.02	--	0.002	0.02
Acetone	Liver, Kidney	0.0002	--	0.000008	0.0002
Bromomethane	GS	0.0001	--	0.00003	0.0002
Methylene Chloride	Liver	0.00002	--	0.000005	0.00002
Bis(2-ethylhexyl)phthalate	Liver	0.00002	--	0.0002	0.0002
Pentachlorophenol	Liver, Kidney	0.0000007	--	0.00004	0.00004
2-Amino-4,6-Dinitrotoluene	Liver	0.002	--	0.0001	0.002
4-Amino-2,6-Dinitrotoluene	Liver	0.006	--	0.0004	0.006
RDX	Prostate	0.007	--	0.0003	0.007
Antimony	Blood	0.0006	--	0.0003	0.0009
Lead	NA	--	--	--	--
Nitrate	Blood	0.0000001	--	9E-09	0.0000001
(Total)		0.02	--	0.001	0.02
2-Amino-4,6-Dinitrotoluene	Liver	0.0005	--	0.0003	0.0008
Aluminum	Immune, Nails	0.002	--	--	0.002
Antimony	Blood	0.001	--	--	0.001
Barium	Kidney	0.0008	--	--	0.0008
Cadmium	Kidney	0.0006	--	0.00008	0.0007
Lead	NA	--	--	--	--
(Total)		0.006	--	0.0004	0.006

Total Risk Across Soil	5E-08
Total Risk Across Surface Water	4E-07
Total Risk Across Sediment	--
Total Risk Across All Media and All Exposure Routes	5E-07

Total Hazard Index Across All Media and All Exposure Routes	0.04

Total Blood HI	0.02
Total GS HI	0.01
Total Kidney HI	0.003
Total Liver HI	0.01
Total Nails HI	0.002
Total Prostate HI	0.008
Total Immune HI	0.002
Total None Reported HI	0.000003

TABLE 9.2
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
CENTRAL TENDENCY EXPOSURES
NSWC CRANE, INDIANA

Scenario Timeframe: Current/Future
Receptor Population: Trespassers
Receptor Age: Adolescent

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk				Chemical	Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total		Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes Total
Surface Soil	Surface Soil	SWMU 3 - Old Jeep Trail	2,3,7,8-TCDD Equivalents	7E-09	--	5E-10	8E-09	2,3,7,8-TCDD Equivalents	NA	--	--	--	--
			2,4,6-Trinitrotoluene	5E-10	--	1E-10	6E-10	2,4,6-Trinitrotoluene	Liver	0.0002	--	0.00005	0.0003
			2-Amino-4,6-Dinitrotoluene	--	--	--	--	2-Amino-4,6-Dinitrotoluene	Liver	0.0003	--	0.00007	0.0004
			4-Amino-2,6-Dinitrotoluene	--	--	--	--	4-Amino-2,6-Dinitrotoluene	Liver	0.0003	--	0.00006	0.0003
			HMX	--	--	--	--	HMX	Liver	0.000004	--	0.0000010	0.000005
			RDX	2E-09	--	6E-10	3E-09	RDX	Prostate	0.00005	--	0.00001	0.00006
			Barium	--	--	--	--	Barium	Kidney	0.0001	--	--	0.0001
			Cadmium	--	--	--	--	Cadmium	Kidney	0.00010	--	0.000005	0.0001
			Chromium	--	--	--	--	Chromium	None Reported	0.0000007	--	--	0.0000007
			Iron	--	--	--	--	Iron	Blood, GS	0.004	--	--	0.004
			Lead	--	--	--	--	Lead	NA	--	--	--	--
			(Total)	1E-08	--	1E-09	1E-08	(Total)		0.005	--	0.0002	0.005
Surface Water	Surface Water	SWMU 3 - Little Sulphur Creek	Acetone	--	--	--	--	Acetone	Liver, Kidney	0.00005	--	0.000002	0.00006
			Bromomethane	--	--	--	--	Bromomethane	GS	0.00003	--	0.000007	0.00004
			Methylene Chloride	3E-10	--	9E-11	4E-10	Methylene Chloride	Liver	0.000004	--	0.000001	0.000006
			Bis(2-ethylhexyl)phthalate	2E-10	--	2E-09	3E-09	Bis(2-ethylhexyl)phthalate	Liver	0.000006	--	0.00006	0.00006
			Pentachlorophenol	9E-11	--	7E-09	7E-09	Pentachlorophenol	Liver, Kidney	0.0000002	--	0.00001	0.00001
			2-Amino-4,6-Dinitrotoluene	--	--	--	--	2-Amino-4,6-Dinitrotoluene	Liver	0.0005	--	0.00005	0.0006
			4-Amino-2,6-Dinitrotoluene	--	--	--	--	4-Amino-2,6-Dinitrotoluene	Liver	0.001	--	0.0001	0.002
			RDX	9E-08	--	5E-09	1E-07	RDX	Prostate	0.002	--	0.00010	0.002
			Antimony	--	--	--	--	Antimony	Blood	0.0002	--	0.00007	0.0002
			Lead	--	--	--	--	Lead	NA	--	--	--	--
			Nitrate	--	--	--	--	Nitrate	Blood	0.00000003	--	2E-09	0.00000003
			(Total)	9E-08	--	1E-08	1E-07	(Total)		0.004	--	0.0004	0.004
Sediment	Sediment	SWMU 3 - Little Sulphur Creek	2-Amino-4,6-Dinitrotoluene	--	--	--	--	2-Amino-4,6-Dinitrotoluene	Liver	0.0001	--	0.00003	0.0002
			Aluminum	--	--	--	--	Aluminum	Immune, Nails	0.0006	--	--	0.0006
			Antimony	--	--	--	--	Antimony	Blood	0.0003	--	--	0.0003
			Barium	--	--	--	--	Barium	Kidney	0.0002	--	--	0.0002
			Cadmium	--	--	--	--	Cadmium	Kidney	0.0001	--	0.000007	0.0002
			Lead	--	--	--	--	Lead	NA	--	--	--	--
			(Total)	--	--	--	--	(Total)		0.001	--	0.00004	0.001

Total Risk Across Soil	1E-08
Total Risk Across Surface Water	1E-07
Total Risk Across Sediment	--
Total Risk Across All Media and All Exposure Routes	1E-07

Total Hazard Index Across All Media and All Exposure Routes	0.01
Total Blood HI	0.004
Total GS HI	0.004
Total Kidney HI	0.0007
Total Liver HI	0.003
Total Nails HI	0.0006
Total Prostate HI	0.002
Total Immune HI	0.0006
Total None Reported HI	0.0000007

TABLE 9.3
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
REASONABLE MAXIMUM EXPOSURE
NSWC CRANE, INDIANA

Scenario Timeframe: Current/Future
Receptor Population: Off-Site Resident
Receptor Age: Child

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk			
				Ingestion	Inhalation	Dermal	Exposure Routes Tota
Surface Water	Surface Water	SWMU 3 - Little Sulphur Creek	4-Amino-2,6-Dinitrotoluene	- -	- -	- -	- -
			RDX	9E-06	- -	3E-08	9E-06
			(Total)	9E-06	- -	3E-08	9E-06
			Total Risk Across Groundwater				9E-06
			Total Risk Across All Media and All Exposure Routes				9E-06

Chemical	Non-Carcinogenic Hazard Quotient				
	Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes Tota
4-Amino-2,6-Dinitrotoluene	Liver	0.9	- -	0.004	0.9
RDX	Prostate	0.3	- -	0.0009	0.3
(Total)		1	--	0.005	1
Total Hazard Index Across All Media and All Exposure Routes					1

Total Liver HI	0.9
Total Prostate HI	0.3

TABLE 9.4
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
CENTRAL TENDENCY EXPOSURES
NSWC CRANE, INDIANA

Scenario Timeframe: Current/Future
Receptor Population: Off-Site Resident
Receptor Age: Child

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk				Chemical	Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Tota		Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes Tota
Surface Water	Surface Water	SWMU 3 - Little Sulphur Creek	4-Amino-2,6-Dinitrotoluene	- -	- -	- -	- -	4-Amino-2,6-Dinitrotoluene	Liver	0.3	- -	0.002	0.3
			RDX	9E-07	- -	5E-09	9E-07	RDX	Prostate	0.09	- -	0.0005	0.09
			(Total)	9E-07	- -	5E-09	9E-07	(Total)		0.3	--	0.003	0.4
						Total Risk Across Groundwater	9E-07					Total Hazard Index Across All Media and All Exposure Routes	0.4
						Total Risk Across All Media and All Exposure Routes	9E-07						

Total Liver HI	0.3
Total Prostate HI	0.09

TABLE 9.5
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
REASONABLE MAXIMUM EXPOSURE
NSWC CRANE, INDIANA

Scenario Timeframe: Current/Future
Receptor Population: Off-Site Resident
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk			
				Ingestion	Inhalation	Dermal	Exposure Routes Tota
Surface Water	Surface Water	SWMU 3 - Little Sulphur Creek	4-Amino-2,6-Dinitrotoluene	--	--	--	--
			RDX	1E-05	--	6E-08	1E-05
			(Total)	1E-05	--	6E-08	1E-05
			Total Risk Across Groundwater				1E-05
			Total Risk Across All Media and All Exposure Routes				1E-05

Chemical	Non-Carcinogenic Hazard Quotient				
	Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes Tota
4-Amino-2,6-Dinitrotoluene	Liver	0.2	--	0.002	0.2
RDX	Prostate	0.09	--	0.0005	0.09
(Total)		0.3	--	0.003	0.3
Total Hazard Index Across All Media and All Exposure Routes					0.3

Total Liver HI	0.2
Total Prostate HI	0.09

TABLE 9.6
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
CENTRAL TENDENCY EXPOSURES
NSWC CRANE, INDIANA

Scenario Timeframe: Current/Future
Receptor Population: Off-Site Resident
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk				Chemical	Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total		Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes Total
Surface Water	Surface Water	SWMU 3 - Little Sulphur Creek	4-Amino-2,6-Dinitrotoluene	--	--	--	--	4-Amino-2,6-Dinitrotoluene	Liver	0.1	--	0.001	0.1
			RDX	1E-06	--	1E-08	1E-06	RDX	Prostate	0.04	--	0.0003	0.04
			(Total)	1E-06	--	1E-08	1E-06	(Total)		0.2	--	0.002	0.2
						Total Risk Across Groundwater	1E-06					Total Hazard Index Across All Media and All Exposure Routes	0.2
						Total Risk Across All Media and All Exposure Routes	1E-06						

Total Liver HI	0.1
Total Prostate HI	0.04

TABLE 9.7
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
REASONABLE MAXIMUM EXPOSURE
NSWC CRANE, INDIANA

Scenario Timeframe: Current/Future
Receptor Population: Off-Site Resident
Receptor Age: Lifelong (Child and Adult)

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk				Chemical	Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Tota		Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes Tota
Surface Water	Surface Water	SWMU 3 - Little Sulphur Creek	4-Amino-2,6-Dinitrotoluene	--	--	--	--	4-Amino-2,6-Dinitrotoluene	Liver				
			RDX	2E-05	--	9E-08	2E-05	RDX	Prostate				
			(Total)	2E-05	--	9E-08	2E-05	(Total)					
			Total Risk Across Groundwater				2E-05	Total Hazard Index Across All Media and All Exposure Routes					
			Total Risk Across All Media and All Exposure Routes				2E-05						

TABLE 9.8
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
CENTRAL TENDENCY EXPOSURES
NSWC CRANE, INDIANA

Scenario Timeframe: Current/Future
Receptor Population: Off-Site Resident
Receptor Age: Lifelong (Child and Adult)

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk				Chemical	Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Tota		Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes Tota
Surface Water	Surface Water	SWMU 3 - Little Sulphur Creek	4-Amino-2,6-Dinitrotoluene	--	--	--	--	4-Amino-2,6-Dinitrotoluene	Liver				
			RDX	2E-06	--	1E-08	2E-06	RDX	Prostate				
			(Total)	2E-06	--	1E-08	2E-06	(Total)					
						Total Risk Across Groundwater	2E-06					Total Hazard Index Across All Media and All Exposure Routes	
						Total Risk Across All Media and All Exposure Routes	2E-06						

TABLE 9.9
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
REASONABLE MAXIMUM EXPOSURE
NSWC CRANE, INDIANA

Scenario Timeframe: Future
Receptor Population: Construction Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk			
				Ingestion	Inhalation	Dermal	Exposure Routes Total
Surface/Subsurface Soil	Surface/Subsurface Soil	SWMU 3 - Old Jeep Trail	2,3,7,8-TCDD Equivalents	4E-08	--	3E-09	5E-08
			2,4,6-Trinitrotoluene	3E-09	--	7E-10	4E-09
			2-Amino-4,6-Dinitrotoluene	--	--	--	--
			4-Amino-2,6-Dinitrotoluene	--	--	--	--
			HMX	--	--	--	--
			RDX	2E-08	--	3E-09	2E-08
			Barium	--	--	--	--
			Cadmium	--	--	--	--
			Chromium	--	--	--	--
			Iron	--	--	--	--
			Lead	--	--	--	--
			(Total)	6E-08	--	7E-09	7E-08
Ground Water	Ground Water	SWMU 3 - Shallow Ground Water	1,1,2,2-Tetrachloroethane	--	4E-09	6E-08	7E-08
			1,1,2-Trichloroethane	--	3E-11	4E-10	4E-10
			1,1-Dichloroethene	--	1E-10	1E-09	1E-09
			cis-1,2-Dichloroethene	--	--	--	--
			Tetrachloroethene	--	1E-11	1E-09	1E-09
			trans-1,2-Dichloroethene	--	--	--	--
			Trichloroethene	--	3E-08	2E-07	2E-07
			Vinyl Chloride	--	3E-11	1E-09	1E-09
			2,4,6-Trinitrotoluene	--	--	6E-11	6E-11
			2-Amino-4,6-Dinitrotoluene	--	--	--	--
			4-Amino-2,6-Dinitrotoluene	--	--	--	--
			RDX	--	--	2E-09	2E-09
			Barium	--	--	--	--
			Cadmium	--	--	--	--
			Iron	--	--	--	--
			Nickel	--	--	--	--
			Nitrate	--	--	--	--
			(Total)	--	3E-08	3E-07	3E-07

Chemical	Non-Carcinogenic Hazard Quotient				
	Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes Total
2,3,7,8-TCDD Equivalents	NA	--	--	--	--
2,4,6-Trinitrotoluene	Liver	0.01	--	0.003	0.02
2-Amino-4,6-Dinitrotoluene	Liver	0.02	--	0.004	0.02
4-Amino-2,6-Dinitrotoluene	Liver	0.02	--	0.004	0.02
HMX	Liver	0.0003	--	0.00006	0.0003
RDX	Prostate	0.003	--	0.0007	0.004
Barium	Kidney	0.01	--	--	0.01
Cadmium	Kidney	0.007	--	0.0003	0.007
Chromium	None Reported	0.00005	--	--	0.00005
Iron	Blood, GS	0.3	--	--	0.3
Lead	NA	--	--	--	--
(Total)		0.3	--	0.01	0.3
1,1,2,2-Tetrachloroethane	Liver	--	--	0.0004	0.0004
1,1,2-Trichloroethane	Blood	--	--	0.0001	0.0001
1,1-Dichloroethene	Liver	--	--	0.00001	0.00001
cis-1,2-Dichloroethene	Blood	--	--	0.0008	0.0008
Tetrachloroethene	Liver	--	0.0000007	0.0001	0.0001
trans-1,2-Dichloroethene	Blood	--	--	0.00006	0.00006
Trichloroethene	Liver	--	0.0005	0.1	0.1
Vinyl Chloride	Liver	--	0.000004	0.00004	0.00004
2,4,6-Trinitrotoluene	Liver	--	--	0.0003	0.0003
2-Amino-4,6-Dinitrotoluene	Liver	--	--	0.0004	0.0004
4-Amino-2,6-Dinitrotoluene	Liver	--	--	0.0010	0.0010
RDX	Prostate	--	--	0.0003	0.0003
Barium	Kidney	--	--	0.0007	0.0007
Cadmium	Kidney	--	--	0.003	0.003
Iron	Blood, GS	--	--	0.00007	0.00007
Nickel	Body Weight	--	--	0.00009	0.00009
Nitrate	Blood	--	--	0.000007	0.000007
(Total)		--	0.0005	0.1	0.1

Total Risk Across Soil	7E-08
Total Risk Across Groundwater	3E-07
Total Risk Across All Media and All Exposure Routes	4E-07

Total Hazard Index Across All Media and All Exposure Routes	0.5
Total Blood HI	0.3
Total Body Weight HI	0.00009
Total GS HI	0.3
Total Kidney HI	0.02
Total Liver HI	0.2
Total None Reported HI	0.00005
Total Prostate HI	0.004

TABLE 9.10
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
CENTRAL TENDENCY EXPOSURES
NSWC CRANE, INDIANA

Scenario Timeframe: Future
Receptor Population: Construction Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk				Chemical	Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total		Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes Total
Surface/Subsurface Soil	Surface/Subsurface Soil	SWMU 3 - Old Jeep Trail	2,3,7,8-TCDD Equivalents	2E-08	--	9E-10	2E-08	2,3,7,8-TCDD Equivalents	NA	--	--	--	--
			2,4,6-Trinitrotoluene	2E-09	--	2E-10	2E-09	2,4,6-Trinitrotoluene	Liver	0.007	--	0.001	0.008
			2-Amino-4,6-Dinitrotoluene	--	--	--	--	2-Amino-4,6-Dinitrotoluene	Liver	0.01	--	0.001	0.01
			4-Amino-2,6-Dinitrotoluene	--	--	--	--	4-Amino-2,6-Dinitrotoluene	Liver	0.009	--	0.001	0.010
			HMX	--	--	--	--	HMX	Liver	0.0001	--	0.00002	0.0002
			RDX	8E-09	--	1E-09	9E-09	RDX	Prostate	0.002	--	0.0002	0.002
			Barium	--	--	--	--	Barium	Kidney	0.005	--	--	0.005
			Cadmium	--	--	--	--	Cadmium	Kidney	0.003	--	0.00009	0.003
			Chromium	--	--	--	--	Chromium	None Reported	0.00002	--	--	0.00002
			Iron	--	--	--	--	Iron	Blood, GS	0.1	--	--	0.1
			Lead	--	--	--	--	Lead	NA	--	--	--	--
			(Total)	3E-08	--	2E-09	3E-08	(Total)		0.2	--	0.004	0.2
Ground Water	Ground Water	SWMU 3 - Shallow Ground Water	1,1,2,2-Tetrachloroethane	--	3E-09	5E-08	6E-08	1,1,2,2-Tetrachloroethane	Liver	--	--	0.0003	0.0003
			1,1,2-Trichloroethane	--	2E-11	3E-10	3E-10	1,1,2-Trichloroethane	Blood	--	--	0.00009	0.00009
			1,1-Dichloroethene	--	1E-10	9E-10	1E-09	1,1-Dichloroethene	Liver	--	--	0.00001	0.00001
			cis-1,2-Dichloroethene	--	--	--	--	cis-1,2-Dichloroethene	Blood	--	--	0.0006	0.0006
			Tetrachloroethene	--	1E-11	1E-09	1E-09	Tetrachloroethene	Liver	--	0.0000005	0.0001	0.0001
			trans-1,2-Dichloroethene	--	--	--	--	trans-1,2-Dichloroethene	Blood	--	--	0.00005	0.00005
			Trichloroethene	--	2E-08	2E-07	2E-07	Trichloroethene	Liver	--	0.0004	0.10	0.10
			Vinyl Chloride	--	2E-11	9E-10	9E-10	Vinyl Chloride	Liver	--	0.000003	0.00003	0.00003
			2,4,6-Trinitrotoluene	--	--	5E-11	5E-11	2,4,6-Trinitrotoluene	Liver	--	--	0.0002	0.0002
			2-Amino-4,6-Dinitrotoluene	--	--	--	--	2-Amino-4,6-Dinitrotoluene	Liver	--	--	0.0003	0.0003
			4-Amino-2,6-Dinitrotoluene	--	--	--	--	4-Amino-2,6-Dinitrotoluene	Liver	--	--	0.0008	0.0008
			RDX	--	--	1E-09	1E-09	RDX	Prostate	--	--	0.0003	0.0003
			Barium	--	--	--	--	Barium	Kidney	--	--	0.0005	0.0005
			Cadmium	--	--	--	--	Cadmium	Kidney	--	--	0.002	0.002
			Iron	--	--	--	--	Iron	Blood, GS	--	--	0.00005	0.00005
			Nickel	--	--	--	--	Nickel	Body Weight	--	--	0.00006	0.00006
			Nitrate	--	--	--	--	Nitrate	Blood	--	--	0.000005	0.000005
			(Total)	--	3E-08	2E-07	3E-07	(Total)		--	0.0004	0.1	0.1

Total Risk Across Soil	3E-08
Total Risk Across Groundwater	3E-07
Total Risk Across All Media and All Exposure Routes	3E-07
Total Hazard Index Across All Media and All Exposure Routes	0.3
Total Blood HI	0.1
Total Body Weight HI	0.00006
Total GS HI	0.1
Total Kidney HI	0.01
Total Liver HI	0.1
Total None Reported HI	0.00002
Total Prostate HI	0.002

TABLE 9 11
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
REASONABLE MAXIMUM EXPOSURE
NSWC CRANE, INDIANA

Scenario Timeframe Future
Receptor Population Maintenance Worker
Receptor Age Adult

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk				Chemical	Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total		Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes Total
Surface Soil	Surface Soil	SWMU 3 - Old Jeep Trail	2,3,7,8-TCDD Equivalents	4E-08	--	7E-09	4E-08	2,3,7,8-TCDD Equivalents	NA	--	--	--	--
			2,4,6-Trinitrotoluene	3E-09	--	2E-09	4E-09	2,4,6-Trinitrotoluene	Liver	0 0005	--	0 0003	0 0008
			2-Amino-4,6-Dinitrotoluene	--	--	--	--	2-Amino-4,6-Dinitrotoluene	Liver	0 0007	--	0 0004	0 001
			4-Amino-2,6-Dinitrotoluene	--	--	--	--	4-Amino-2,6-Dinitrotoluene	Liver	0 0006	--	0 0004	0.0009
			HMX	--	--	--	--	HMX	Liver	0 000009	--	0 000006	0 00001
			RDX	1E-08	--	8E-09	2E-08	RDX	Prostate	0 0001	--	0 00007	0.0002
			Barium	--	--	--	--	Barium	Kidney	0 0003	--	--	0 0003
			Cadmium	--	--	--	--	Cadmium	Kidney	0 0002	--	0 00003	0 0003
			Chromium	--	--	--	--	Chromium	None Reported	0 000002	--	--	0 000002
			Iron	--	--	--	--	Iron	Blood, GS	0 008	--	--	0 008
			Lead	--	--	--	--	Lead	NA	--	--	--	--
			(Total)	5E-08	--	2E-08	7E-08	(Total)		0 01	--	0 001	0 01
Surface Water	Surface Water	SWMU 3 - Little Sulphur Creek	Acetone	--	--	--	--	Acetone	Liver, Kidney	--	--	0 000003	0 000003
			Bromomethane	--	--	--	--	Bromomethane	GS	--	--	0 000009	0 000009
			Methylene Chloride	--	--	2E-10	2E-10	Methylene Chloride	Liver	--	--	0 000002	0 000002
			Bis(2-ethylhexyl)phthalate	--	--	7E-09	7E-09	Bis(2-ethylhexyl)phthalate	Liver	--	--	0 00007	0 00007
			Pentachlorophenol	--	--	2E-08	2E-08	Pentachlorophenol	Liver, Kidney	--	--	0 00002	0 00002
			2-Amino-4,6-Dinitrotoluene	--	--	--	--	2-Amino-4,6-Dinitrotoluene	Liver	--	--	0 00006	0.00006
			4-Amino-2,6-Dinitrotoluene	--	--	--	--	4-Amino-2,6-Dinitrotoluene	Liver	--	--	0.0002	0 0002
			RDX	--	--	1E-08	1E-08	RDX	Prostate	--	--	0 0001	0 0001
			Antimony	--	--	--	--	Antimony	Blood	--	--	0 00008	0 00008
			Lead	--	--	--	--	Lead	NA	--	--	--	--
			Nitrate	--	--	--	--	Nitrate	Blood	--	--	2E-09	2E-09
			(Total)	--	--	4E-08	4E-08	(Total)		--	--	0 0005	0 0005
Sediment	Sediment	SWMU 3 - Little Sulphur Creek	2-Amino-4,6-Dinitrotoluene	--	--	--	--	2-Amino-4,6-Dinitrotoluene	Liver	0.0003	--	0 0002	0.0005
			Aluminum	--	--	--	--	Aluminum	Immune, Nails	0 001	--	--	0 001
			Antimony	--	--	--	--	Antimony	Blood	0 0007	--	--	0 0007
			Barium	--	--	--	--	Barium	Kidney	0 0005	--	--	0 0005
			Cadmium	--	--	--	--	Cadmium	Kidney	0 0003	--	0 00004	0 0004
			Lead	--	--	--	--	Lead	NA	--	--	--	--
			(Total)	--	--	--	--	(Total)		0 003	--	0 0002	0.003

Total Risk Across Soil	7E-08
Total Risk Across Surface Water	4E-08
Total Risk Across Sediment	--
Total Risk Across All Media and All Exposure Routes	1E-07

Total Hazard Index Across All Media and All Exposure Routes	0.02
Total Blood HI	0 009
Total GS HI	0 008
Total Immune HI	0 001
Total Kidney HI	0 001
Total Liver HI	0.004
Total None Reported HI	0.000002
Total Prostate HI	0 0003
Total Nails HI	0 001

TABLE 9 12
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
CENTRAL TENDENCY EXPOSURES
NSWC CRANE, INDIANA

Scenario Timeframe Future
Receptor Population Maintenance Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk				Chemical	Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total		Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes Total
Surface Soil	Surface Soil	SWMU 3 - Old Jeep Trail	2,3,7,8-TCDD Equivalents	3E-09	--	1E-10	3E-09	2,3,7,8-TCDD Equivalents	NA	--	--	--	--
			2,4,6-Trinitrotoluene	2E-10	--	3E-11	3E-10	2,4,6-Trinitrotoluene	Liver	0 0001	--	0 00002	0 0001
			2-Amino-4,6-Dinitrotoluene	--	--	--	--	2-Amino-4,6-Dinitrotoluene	Liver	0 0002	--	0 00002	0 0002
			4-Amino-2,6-Dinitrotoluene	--	--	--	--	4-Amino-2,6-Dinitrotoluene	Liver	0 0001	--	0.00002	0 0002
			HMX	--	--	--	--	HMX	Liver	0.000002	--	0 0000003	0.000003
			RDX	1E-09	--	1E-10	1E-09	RDX	Prostate	0 00003	--	0.000004	0 00003
			Barium	--	--	--	--	Barium	Kidney	0 00008	--	--	0 00008
			Cadmium	--	--	--	--	Cadmium	Kidney	0 00006	--	0 000001	0.00006
			Chromium	--	--	--	--	Chromium	None Reported	0 0000004	--	--	0 0000004
			Iron	--	--	--	--	Iron	Blood, GS	0 002	--	--	0 002
			Lead	--	--	--	--	Lead	NA	--	--	--	--
			(Total)	5E-09	--	3E-10	5E-09	(Total)		0 003	--	0 00006	0.003
Surface Water	Surface Water	SWMU 3 - Little Sulphur Creek	Acetone	--	--	--	--	Acetone	Liver, Kidney	--	--	0 000001	0 000001
			Bromomethane	--	--	--	--	Bromomethane	GS	--	--	0 000004	0 000004
			Methylene Chloride	--	--	4E-11	4E-11	Methylene Chloride	Liver	--	--	0 0000006	0.0000006
			Bis(2-ethylhexyl)phthalate	--	--	1E-09	1E-09	Bis(2-ethylhexyl)phthalate	Liver	--	--	0 00003	0 00003
			Pentachlorophenol	--	--	3E-09	3E-09	Pentachlorophenol	Liver, Kidney	--	--	0.000007	0.000007
			2-Amino-4,6-Dinitrotoluene	--	--	--	--	2-Amino-4,6-Dinitrotoluene	Liver	--	--	0 00002	0.00002
			4-Amino-2,6-Dinitrotoluene	--	--	--	--	4-Amino-2,6-Dinitrotoluene	Liver	--	--	0 00007	0.00007
			RDX	--	--	2E-09	2E-09	RDX	Prostate	--	--	0 00005	0 00005
			Antimony	--	--	--	--	Antimony	Blood	--	--	0 00003	0 00003
			Lead	--	--	--	--	Lead	NA	--	--	--	--
			Nitrate	--	--	--	--	Nitrate	Blood	--	--	9E-10	9E-10
			(Total)	--	--	6E-09	6E-09	(Total)		--	--	0 0002	0.0002
Sediment	Sediment	SWMU 3 - Little Sulphur Creek	2-Amino-4,6-Dinitrotoluene	--	--	--	--	2-Amino-4,6-Dinitrotoluene	Liver	0.00007	--	0 000009	0.00008
			Aluminum	--	--	--	--	Aluminum	Immune, Nails	0 0004	--	--	0 0004
			Antimony	--	--	--	--	Antimony	Blood	0 0002	--	--	0 0002
			Barium	--	--	--	--	Barium	Kidney	0.0001	--	--	0 0001
			Cadmium	--	--	--	--	Cadmium	Kidney	0 00008	--	0 000002	0 00009
			Lead	--	--	--	--	Lead	NA	--	--	--	--
			(Total)	--	--	--	--	(Total)		0 0008	--	0 00001	0.0008

Total Risk Across Soil	5E-09
Total Risk Across Surface Water	6E-09
Total Risk Across Sediment	--
Total Risk Across All Media and All Exposure Routes	1E-08

Total Hazard Index Across All Media and All Exposure Routes	0.004
Total Blood HI	0.002
Total GS HI	0.002
Total Immune HI	0.0004
Total Kidney HI	0.0004
Total Liver HI	0 0007
Total None Reported HI	0.0000004
Total Prostate HI	0.00008
Total Nails HI	0 0004

TABLE 9 13
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
REASONABLE MAXIMUM EXPOSURE
NSWC CRANE, INDIANA

Scenario Timeframe Future
Receptor Population Occupational Workers
Receptor Age Adult

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk				Chemical	Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total		Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes Total
Surface Soil	Surface Soil	SWMU 3 - Old Jeep Trail	2,3,7,8-TCDD Equivalents	4E-07	--	8E-08	5E-07	2,3,7,8-TCDD Equivalents	NA	--	--	--	--
			2,4,6-Trinitrotoluene	3E-08	--	2E-08	5E-08	2,4,6-Trinitrotoluene	Liver	0 005	--	0.003	0.009
			2-Amino-4,6-Dinitrotoluene	--	--	--	--	2-Amino-4,6-Dinitrotoluene	Liver	0 007	--	0 005	0.01
			4-Amino-2,6-Dinitrotoluene	--	--	--	--	4-Amino-2,6-Dinitrotoluene	Liver	0 006	--	0.004	0 010
			HMX	--	--	--	--	HMX	Liver	0 00009	--	0 00006	0.0002
			RDX	1E-07	--	9E-08	2E-07	RDX	Prostate	0 001	--	0 0007	0 002
			Barium	--	--	--	--	Barium	Kidney	0 004	--	--	0 004
			Cadmium	--	--	--	--	Cadmium	Kidney	0 002	--	0 0003	0.003
			Chromium	--	--	--	--	Chromium	None Reported	0 00002	--	--	0 00002
			Iron	--	--	--	--	Iron	Blood, GS	0 09	--	--	0 09
			Lead	--	--	--	--	Lead	NA	--	--	--	--
			(Total)	5E-07	--	2E-07	7E-07	(Total)		0 1	--	0 01	0 1
Ground Water	Ground Water	SWMU 3 - Shallow Ground Water	1,1,2,2-Tetrachloroethane	3E-05	--	9E-07	3E-05	1,1,2,2-Tetrachloroethane	Liver	0 007	--	0.0002	0 007
			1,1,2-Trichloroethane	2E-07	--	5E-09	2E-07	1,1,2-Trichloroethane	Blood	0 003	--	0 00006	0 003
			1,1-Dichloroethene	4E-07	--	1E-08	5E-07	1,1-Dichloroethene	Liver	0 0002	--	0 000008	0 0002
			cis-1,2-Dichloroethene	--	--	--	--	cis-1,2-Dichloroethene	Blood	0 01	--	0.0004	0.01
			Tetrachloroethene	1E-07	--	2E-08	1E-07	Tetrachloroethene	Liver	0.0006	--	0 00009	0.0007
			trans-1,2-Dichloroethene	--	--	--	--	trans-1,2-Dichloroethene	Blood	0 001	--	0 00003	0 001
			Trichloroethene	7E-05	--	3E-06	7E-05	Trichloroethene	Liver	2	--	0 06	2
			Vinyl Chloride	1E-06	--	1E-08	1E-06	Vinyl Chloride	Liver	0 001	--	0.00002	0.001
			2,4,6-Trinitrotoluene	1E-07	--	8E-10	1E-07	2,4,6-Trinitrotoluene	Liver	0 03	--	0 0002	0.03
			2-Amino-4,6-Dinitrotoluene	--	--	--	--	2-Amino-4,6-Dinitrotoluene	Liver	0.07	--	0 0002	0.07
			4-Amino-2,6-Dinitrotoluene	--	--	--	--	4-Amino-2,6-Dinitrotoluene	Liver	0 2	--	0.0006	0.2
			RDX	1E-05	--	2E-08	1E-05	RDX	Prostate	0 09	--	0 0002	0 09
			Barium	--	--	--	--	Barium	Kidney	0 01	--	0.0001	0.01
			Cadmium	--	--	--	--	Cadmium	Kidney	0 03	--	0.0006	0.04
			Iron	--	--	--	--	Iron	Blood, GS	0 02	--	0 00001	0 02
			Nickel	--	--	--	--	Nickel	Body Weight	0 004	--	0.00002	0.004
			Nitrate	--	--	--	--	Nitrate	Blood	0 002	--	0 000001	0 002
			(Total)	1E-04	--	4E-06	1E-04	(Total)		2	--	0.07	2

Total Risk Across Soil	7E-07
Total Risk Across Groundwater	1E-04
Total Risk Across All Media and All Exposure Routes	1E-04

Total Hazard Index Across All Media and All Exposure Routes	2

Total Blood HI	0 1
Total Body Weight HI	0 004
Total GS HI	0 1
Total Kidney HI	0 05
Total Liver HI	2
Total None Reported HI	0 00002
Total Prostate HI	0 09

TABLE 9 14
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
CENTRAL TENDENCY EXPOSURES
NSWC CRANE, INDIANA

Scenario Timeframe Future
Receptor Population: Occupational Workers
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk				Chemical	Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total		Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes Total
Surface Soil	Surface Soil	SWMU 3 - Old Jeep Trail	2,3,7,8-TCDD Equivalents	6E-08	--	2E-09	6E-08	2,3,7,8-TCDD Equivalents	NA	--	--	--	--
			2,4,6-Trinitrotoluene	4E-09	--	6E-10	5E-09	2,4,6-Trinitrotoluene	Liver	0 002	--	0 0003	0 003
			2-Amino-4,6-Dinitrotoluene	--	--	--	--	2-Amino-4,6-Dinitrotoluene	Liver	0 003	--	0 0004	0 004
			4-Amino-2,6-Dinitrotoluene	--	--	--	--	4-Amino-2,6-Dinitrotoluene	Liver	0 003	--	0.0003	0 003
			HMX	--	--	--	--	HMX	Liver	0 00004	--	0.000005	0.00005
			RDX	2E-08	--	3E-09	2E-08	RDX	Prostate	0 0005	--	0 00006	0.0006
			Barium	--	--	--	--	Barium	Kidney	0 002	--	--	0 002
			Cadmium	--	--	--	--	Cadmium	Kidney	0 001	--	0 00003	0 001
			Chromium	--	--	--	--	Chromium	None Reported	0 000008	--	--	0.000008
			Iron	--	--	--	--	Iron	Blood, GS	0 04	--	--	0.04
			Lead	--	--	--	--	Lead	NA	--	--	--	--
			(Total)	9E-08	--	6E-09	9E-08	(Total)		0 05	--	0 001	0 05
Ground Water	Ground Water	SWMU 3 - Shallow Ground Water	1,1,2,2-Tetrachloroethane	9E-06	--	2E-07	1E-05	1,1,2,2-Tetrachloroethane	Liver	0 006	--	0 0002	0 006
			1,1,2-Trichloroethane	7E-08	--	1E-09	7E-08	1,1,2-Trichloroethane	Blood	0 002	--	0 00004	0 002
			1,1-Dichloroethene	1E-07	--	4E-09	1E-07	1,1-Dichloroethene	Liver	0.0002	--	0.000005	0 0002
			cis-1,2-Dichloroethene	--	--	--	--	cis-1,2-Dichloroethene	Blood	0 010	--	0.0003	0.010
			Tetrachloroethene	4E-08	--	4E-09	4E-08	Tetrachloroethene	Liver	0 0005	--	0.00006	0 0006
			trans-1,2-Dichloroethene	--	--	--	--	trans-1,2-Dichloroethene	Blood	0 001	--	0 00002	0 001
			Trichloroethene	2E-05	--	7E-07	2E-05	Trichloroethene	Liver	1	--	0.05	1
			Vinyl Chloride	3E-07	--	3E-09	3E-07	Vinyl Chloride	Liver	0 001	--	0.00001	0 001
			2,4,6-Trinitrotoluene	4E-08	--	2E-10	4E-08	2,4,6-Trinitrotoluene	Liver	0 02	--	0 0001	0 02
			2-Amino-4,6-Dinitrotoluene	--	--	--	--	2-Amino-4,6-Dinitrotoluene	Liver	0 06	--	0.0002	0.06
			4-Amino-2,6-Dinitrotoluene	--	--	--	--	4-Amino-2,6-Dinitrotoluene	Liver	0 1	--	0 0004	0.1
			RDX	3E-06	--	6E-09	3E-06	RDX	Prostate	0 08	--	0.0001	0 08
			Barium	--	--	--	--	Barium	Kidney	0 01	--	0 00008	0 01
			Cadmium	--	--	--	--	Cadmium	Kidney	0 03	--	0.0003	0 03
			Iron	--	--	--	--	Iron	Blood, GS	0 01	--	0 000008	0 01
			Nickel	--	--	--	--	Nickel	Body Weight	0 004	--	0.00001	0 004
			Nitrate	--	--	--	--	Nitrate	Blood	0 002	--	0 0000009	0 002
			(Total)	3E-05	--	1E-06	4E-05	(Total)		2	--	0 05	2

Total Risk Across Soil	9E-08
Total Risk Across Groundwater	4E-05
Total Risk Across All Media and All Exposure Routes	4E-05

Total Hazard Index Across All Media and All Exposure Routes	2

Total Blood HI	0.07
Total Body Weight HI	0.004
Total GS HI	0 05
Total Kidney HI	0 04
Total Liver HI	2
Total None Reported HI	0 000008
Total Prostate HI	0 08

TABLE 9 15
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
REASONABLE MAXIMUM EXPOSURE
NSWC CRANE, INDIANA

Scenario Timeframe Future
Receptor Population Recreational Users
Receptor Age Child

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk				Chemical	Non Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total		Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes Total
Surface Soil	Surface Soil	SWMU 3 - Old Jeep Trail	2,3 7 8-TCDD Equivalents	9E-08	-	2E-08	1E-07	2 3 7 8-TCDD Equivalents	NA	-			--
			2 4,6-Trinitrotoluene	6E-09	-	4E-09	1E-08	2 4,6-Trinitrotoluene	Liver	0 005		0 003	0 008
			2 Amino-4 6 Dinitrotoluene	-	--	-	-	2 Amino 4 6 Dinitrotoluene	Liver	0 007		0 005	0 01
			4 Amino 2 6 Dinitrotoluene	-			--	4 Amino 2 6 Dinitrotoluene	Liver	0 006		0 004	0 010
			HMX	-	--	-		HMX	Liver	0 00009		0 00006	0 0002
			RDX	3E-08	--	2E 08	5E-08	RDX	Prostate	0 001		0 0007	0 002
			Barium	--	-	--	--	Barium	Kidney	0 003			0 003
			Cadmium	--	--	-	--	Cadmium	Kidney	0 002		0 0003	0 003
			Chromium		--	--	-	Chromium	None Reported	0 00002			0 00002
			Iron	--	-	-	-	Iron	Blood, GS	0 09			0 09
			Lead	-	--	--	-	Lead	NA		-		-
			(Total)	1E-07	-	4E-08	2E-07	(Total)		0 1		0 01	0 1
Ground Water	Ground Water	SWMU 3 - Shallow Ground Water	1,1 2,2 Tetrachloroethane	7E 06		2E 07	7E-06	1 1 2 2 Tetrachloroethane	Liver	0 007		0 0002	0 007
			1,1 2-Trichloroethane	5E 08	--	1E-09	5E-08	1 1 2 Trichloroethane	Blood	0 003		0 00006	0 003
			1,1 Dichloroethene	1E-07	-	3E-09	1E 07	1,1 Dichloroethene	Liver	0 0002		0 000007	0 0002
			cis-1,2 Dichloroethene		--	--	-	cis 1 2-Dichloroethene	Blood	0 01		0 0004	0 01
			Tetrachloroethene	3E-08	--	4E 09	3E-08	Tetrachloroethene	Liver	0 0006		0 00009	0 0007
			trans 1,2-Dichloroethene	-	-	-	-	trans 1,2-Dichloroethene	Blood	0 001		0 00003	0 001
			Trichloroethene	2E-05		6E-07	2E-05	Trichloroethene	Liver	2		0 06	2
			Vinyl Chloride	2E-07	--	3E-09	2E-07	Vinyl Chloride	Liver	0 001	-	0 00002	0 001
			2 4,6-Trinitrotoluene	3E-08		2E-10	3E-08	2,4 6-Trinitrotoluene	Liver	0 02		0 0002	0 02
			2 Amino-4,6-Dinitrotoluene	--	--	--	--	2-Amino-4,6 Dinitrotoluene	Liver	0 06	-	0 0002	0 07
			4-Amino 2,6 Dinitrotoluene	--	--	--	--	4-Amino-2,6-Dinitrotoluene	Liver	0 2	-	0 0006	0 2
			RDX	2E-06		5E-09	2E-06	RDX	Prostate	0 09	-	0 0002	0 09
			Barium		-	-	--	Barium	Kidney	0 01	-	0 0001	0 01
			Cadmium	--	--	--	--	Cadmium	Kidney	0 03		0 0006	0 03
			Iron	-	--	--	-	Iron	Blood, GS	0 02		0 00001	0 02
			Nickel	--	--	--	-	Nickel	Body Weight	0 004	-	0 00002	0 004
			Nitrate	--	--	--	--	Nitrate	Blood	0 002		0 000001	0 002
			(Total)	3E-05	-	9E-07	3E-05	(Total)		2	--	0 07	2
Surface Water	Surface Water	SWMU 3 Little Sulphur Creek	Acetone	--	-	-	--	Acetone	Liver Kidney	0 001		0 00005	0 001
			Bromomethane	--		--	--	Bromomethane	GS	0 0007	-	0 0002	0 0009
			Methylene Chloride	4E-09	--	1E-09	5E-09	Methylene Chloride	Liver	0 0001	--	0 00003	0 0001
			Bis(2-ethylhexyl)phthalate	3E-09	--	2E-08	3E-08	Bis(2-ethylhexyl)phthalate	Liver	0 0001	--	0 0010	0 001
			Pentachlorophenol	1E-09	--	7E-08	7E-08	Pentachlorophenol	Liver Kidney	0 000004		0 0002	0 0002
			2-Amino-4 6 Dinitrotoluene	-	--	--	--	2-Amino-4 6-Dinitrotoluene	Liver	0 01		0 0009	0 01
			4-Amino 2,6 Dinitrotoluene	--	-	--	--	4-Amino-2,6-Dinitrotoluene	Liver	0 03	--	0 002	0 04
			RDX	1E-06	--	5E-08	1E-06	RDX	Prostate	0 04	-	0 002	0 04
			Antimony	--	--	--	--	Antimony	Blood	0 004	--	0 002	0 005
			Lead	--		--	--	Lead	NA	--	-	-	--
			Nitrate	--	--	--	--	Nitrate	Blood	0 0000007	--	0 00000005	0 0000008
			(Total)	1E-06	--	1E-07	1E-06	(Total)		0 09	--	0 008	0 1
Sediment	Sediment	SWMU 3 - Little Sulphur Creek	2-Amino-4 6-Dinitrotoluene	-	-	--	--	2-Amino-4,6-Dinitrotoluene	Liver	0 003	--	0 002	0 005
			Aluminum	-	--	--	-	Aluminum	Immune, Nalls	0 01	-		0 01
			Antimony	--	--	--	--	Antimony	Blood	0 007	-		0 007
			Barium	--	--	--	--	Barium	Kidney	0 005	-		0 005
			Cadmium	--	-	--	--	Cadmium	Kidney	0 003	--	0 0004	0 004
			Lead	--	--	--	--	Lead	NA	--	--	--	--
			(Total)	-	--	--	--	(Total)		0 03	--	0 002	0 03

Total Risk Across Soil	2E-07
Total Risk Across Groundwater	3E-05
Total Risk Across Surface Water	1E-06
Total Risk Across Sediment	--
Total Risk Across All Media and All Exposure Routes	3E-05

Total Hazard Index Across All Media and All Exposure Routes	2

Total Blood HI	0 1
Total Body Weight HI	0 004
Total GS HI	0 1
Total Immune HI	0 01
Total Kidney HI	0 06
Total Liver HI	2
Total None Reported HI	0 00002
Total Prostate HI	0 1
Total Nalls HI	0 01

TABLE 9 16
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
CENTRAL TENDENCY EXPOSURES
NSWC CRANE, INDIANA

Scenario Timeframe Future
Receptor Population. Recreational Users
Receptor Age Child

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk				Chemical	Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Tota		Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes Tota
Surface Soil	Surface Soil	SWMU 3 Old Jeep Trail	2,3,7,8-TCDD Equivalents	8E-09	--	6E 10	6E-09	2 3 7,8 TCDD Equivalents	NA	-		-	--
			2 4,6-Trinitrotoluene	5E-10	--	1E 10	7E-10	2,4,6-Trinitrotoluene	Liver	0 001		0 0003	0 002
			2 Amino-4 6-Dinitrotoluene	--	--	--	--	2-Amino-4 6 Dinitrotoluene	Liver	0 002	-	0 0005	0 002
			4-Amino-2,6-Dinitrotoluene	-	--	--		4-Amino 2,6 Dinitrotoluene	Liver	0 001		0 0004	0 002
			HMX	--	--	--	--	HMX	Liver	0 00002		0 000006	0 00003
			RDX	3E-09	--	7E 10	3E-09	RDX	Prostate	0 0003		0 00007	0 0003
			Barium	-	-	--	-	Barium	Kidney	0 0009			0 0009
			Cadmium	--	-	--	-	Cadmium	Kidney	0 0006		0 00003	0 0006
			Chromium	-	--	-		Chromium	None Reported	0 000004			0 000004
			Iron	--	--	--	--	Iron	Blood, GS	0 02			0 02
			Lead	--	--	--	--	Lead	NA	-	-	-	--
			(Total)	1E-08	--	1E-09	1E-08	(Total)		0 03		0 001	0 03
Ground Water	Ground Water	SWMU 3 - Shallow Ground Water	1 1,2,2-Tetrachloroethane	1E-06	-	3E-08	1E 06	1 1 2 2-Tetrachloroethane	Liver	0 003		0 00008	0 003
			1,1,2-Trichloroethane	9E-09	--	2E 10	9E-09	1,1 2-Trichloroethane	Blood	0 001		0 00002	0 001
			1,1-Dichloroethene	2E-08	--	5E 10	2E-08	1,1-Dichloroethene	Liver	0 0001		0 000003	0 0001
			cis-1,2 Dichloroethene	--	--	--	--	cis-1,2-Dichloroethene	Blood	0 005	-	0 0002	0 006
			Tetrachloroethene	4E-09	-	5E 10	5E-09	Tetrachloroethene	Liver	0 0003		0 00003	0 0003
			trans-1,2-Dichloroethene	--	-	-	--	trans-1,2-Dichloroethene	Blood	0 0007		0 00001	0 0007
			Trichloroethene	3E 06	-	9E-08	3E-06	Trichloroethene	Liver	0 8	-	0 03	0 8
			Vinyl Chloride	4E-06	-	4E-10	4E-06	Vinyl Chloride	Liver	0,0006		0 000006	0 0006
			2,4,6-Trinitrotoluene	5E-09	--	3E-11	5E-09	2 4,6-Trinitrotoluene	Liver	0 01		0 00006	0 01
			2-Amino-4,6-Dinitrotoluene	--	--	--	--	2-Amino-4 6-Dinitrotoluene	Liver	0 03		0 00009	0 03
			4-Amino 2 6-Dinitrotoluene	--	--	--	--	4-Amino 2 6-Dinitrotoluene	Liver	0 06		0 0002	0 06
			RDX	4E-07	-	7E 10	4E-07	RDX	Prostate	0 04		0 00008	0 04
			Barium	--	--	-	--	Barium	Kidney	0 006		0 00005	0 006
			Cadmium	-	--	-	--	Cadmium	Kidney	0 02		0 0002	0 02
			Iron	--	-	--	--	Iron	Blood, GS	0 008	-	0 000004	0 008
			Nickel	-		-	-	Nickel	Body Weight	0 002	-	0 000006	0 002
			Nitrate		--	--	-	Nitrate	Blood	0 0009	--	0 0000005	0 0009
			(Total)	4E-06	--	1E-07	4E-06	(Total)		1	--	0 03	1
Surface Water	Surface Water	SWMU 3 Little Sulphur Creek	Acetone	--	--	--	--	Acetone	Liver, Kidney	0 0003		0 00001	0 0003
			Bromomethane	--	--	--	-	Bromomethane	GS	0 0002	-	0 00005	0 0002
			Methylene Chloride	3E 10	-	1E 10	4E 10	Methylene Chloride	Liver	0 00003		0 000008	0 00003
			Bis(2-ethylhexyl)phthalate	3E 10	-	3E-09	3E-09	Bis(2-ethylhexyl)phthalate	Liver	0 00003	--	0 0003	0 0004
			Pentachlorophenol	1E 10		8E-09	8E-09	Pentachlorophenol	Liver, Kidney	0 0000009	-	0 00008	0 00008
			2 Amino 4 6 Dinitrotoluene	-	-	--	-	2-Amino-4,6-Dinitrotoluene	Liver	0 003	--	0 0003	0 003
			4-Amino 2 6-Dinitrotoluene	--	-	-	--	4 Amino 2 6-Dinitrotoluene	Liver	0 008	-	0 0008	0 009
			RDX	9E-08	-	6E-09	1E-07	RDX	Prostate	0 010		0 0006	0 01
			Antimony	-	--	--	--	Antimony	Blood	0 0009		0 0004	0 001
			Lead		--	--	-	Lead	NA	-		--	--
			Nitrate	--	--	--	--	Nitrate	Blood	0 0000002		0 00000001	0 0000002
			(Total)	9E-08	--	2E-08	1E-07	(Total)		0 02	--	0 003	0 03
Sediment	Sediment	SWMU 3 - Little Sulphur Creek	2 Amino-4 6 Dinitrotoluene	--	-	--	--	2 Amino-4,6-Dinitrotoluene	Liver	0 0007	--	0 0002	0 0009
			Aluminum	-	--	--	--	Aluminum	Immune, Nails	0 004	--	-	0 004
			Antimony	-	--	--	-	Antimony	Blood	0 002		-	0 002
			Barium	-		--	--	Barium	Kidney	0 001	-	--	0 001
			Cadmium	-	--	-	-	Cadmium	Kidney	0 0008		0 00004	0 0009
			Lead	--	--	--	--	Lead	NA	--	--	--	--
			(Total)	--	--	--	--	(Total)		0 008	-	0 0002	0 008

Total Risk Across Soil	1E-08
Total Risk Across Groundwater	4E-06
Total Risk Across Surface Water	1E-07
Total Risk Across Sediment	--
Total Risk Across All Media and All Exposure Routes	5E-06

Total Hazard Index Across All Media and All Exposure Routes	1

Total Blood HI	0 04
Total Body Weight HI	0 002
Total GS HI	0 03
Total Immune HI	0 004
Total Kidney HI	0 03
Total Liver HI	1
Total None Reported HI	0 000004
Total Prostate HI	0 05
Total Nails HI	0 004

TABLE 9 17
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
REASONABLE MAXIMUM EXPOSURE
NSWC CRANE, INDIANA

Scenario Timeframe Future
Receptor Population Recreational Users
Receptor Age Adult

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk				Chemical	Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total		Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes Total
Surface Soil	Surface Soil	SWMU 3 - Old Jeep Trail	2 3 7,8 TCDD Equivalents	4E 08	--	1E-08	5E 08	2 3 7,8 TCDD Equivalents	NA	--			--
			2,4 6-Trinitrotoluene	3E-09	--	3E-09	6E-09	2 4 6 Trinitrotoluene	Liver	0 0005		0 0007	0 001
			2-Amino-4 6 Dinitrotoluene	--	--	--	-	2 Amino-4 6 Dinitrotoluene	Liver	0 0007	-	0 0009	0 002
			4-Amino 2 6 Dinitrotoluene	--	-	--	-	4-Amino 2 6 Dinitrotoluene	Liver	0 0006		0 0008	0 001
			HMX	--	--	--	--	HMX	Liver	0 000010	-	0 00001	0 00002
			RDX	1E-08	-	2E-08	3E-08	RDX	Prostate	0 0001	-	0 0001	0 0003
			Barium	-	--	--	-	Barium	Kidney	0 0004			0 0004
			Cadmium	--	-	--	--	Cadmium	Kidney	0 0002		0 00006	0 0003
			Chromium	--	-	--	--	Chromium	None Reported	0 000002		-	0 000002
			Iron	--	--	--	--	Iron	Blood, GS	0 009			0 009
			Lead	--	--	--	--	Lead	NA	--	-	-	--
			(Total)	5E-08	--	3E-08	9E-08	(Total)		0 01	-	0 003	0 01
Ground Water	Ground Water	SWMU 3 - Shallow Ground Water	1,1,2,2-Tetrachloroethane	6E-06	--	5E-07	6E-06	1,1,2 2-Tetrachloroethane	Liver	0 001		0 0001	0,002
			1,1,2-Trichloroethane	4E-08	-	3E-09	5E-08	1 1,2-Trichloroethane	Blood	0 0006	-	0 00004	0 0006
			1,1-Dichloroethene	9E-08	-	8E-09	1E-07	1,1-Dichloroethene	Liver	0 00005		0 000004	0 00005
			cis-1,2-Dichloroethene	--	--	--	--	cis-1,2-Dichloroethene	Blood	0 002		0 0002	0 003
			Tetrachloroethene	2E-08	--	9E-09	3E-08	Tetrachloroethene	Liver	0 0001	--	0 00005	0 0002
			trans-1,2-Dichloroethene	--	--	--	--	trans-1 2-Dichloroethane	Blood	0 0003	-	0 00002	0 0003
			Trichloroethene	1E-05	-	2E-06	2E-05	Trichloroethene	Liver	0 3		0 04	0 4
			Vinyl Chloride	2E-07	--	7E-09	2E-07	Vinyl Chloride	Liver	0 0003		0 000009	0 0003
			2,4,6-Trinitrotoluene	3E-08	--	5E-10	3E-08	2,4 6-Trinitrotoluene	Liver	0 005	-	0 00009	0 005
			2-Amino-4,6-Dinitrotoluene	-	--	--	--	2 Amino-4 6-Dinitrotoluene	Liver	0 01		0 0001	0 01
			4-Amino-2,6 Dinitrotoluene	--	--	--	--	4-Amino 2,6-Dinitrotoluene	Liver	0 03	-	0 0003	0 04
			RDX	2E-06	-	1E-08	2E-06	RDX	Prostate	0 02	--	0 0001	0 02
			Barium	--	--	--	--	Barium	Kidney	0 003	--	0 00008	0 003
			Cadmium	--	--	--	--	Cadmium	Kidney	0 007	-	0 0003	0 008
			Iron	--	-	--	-	Iron	Blood, GS	0 003	-	0 000008	0 003
			Nickel	-	--	--	--	Nickel	Body Weight	0 0009	-	0 00001	0 0009
			Nitrate	--	--	--	--	Nitrate	Blood	0 0004	-	0 0000009	0 0004
			(Total)	2E-05	--	2E-06	2E-05	(Total)		0 4	--	0 04	0 5
Surface Water	Surface Water	SWMU 3 Little Sulphur Creek	Acetone	--	--	--	-	Acetone	Liver, Kidney	0 00005	--	0 00003	0 00008
			Bromomethane	-	-	--	--	Bromomethane	GS	0 00003		0 00009	0 0001
			Methylene Chloride	7E 10	--	2E-09	3E-09	Methylene Chloride	Liver	0 000004	-	0 00002	0 00002
			Bis(2-ethylhexyl)phthalate	5E-10	-	5E-08	5E-08.	Bis(2-ethylhexyl)phthalate	Liver	0 000006	--	0 0006	0 0006
			Pentachlorophenol	2E-10	-	2E-07	2E-07	Pentachlorophenol	Liver Kidney	0 0000002	--	0 0001	0 0001
			2 Amino-4,6 Dinitrotoluene	--	-	--	--	2 Amino-4 6-Dinitrotoluene	Liver	0 0005		0 0005	0 001
			4-Amino-2,6 Dinitrotoluene	--	-	--	--	4-Amino-2 6-Dinitrotoluene	Liver	0 001		0 001	0 003
			RDX	2E-07		1E-07	3E-07	RDX	Prostate	0 002		0 001	0 003
			Antimony	-	--	--	-	Antimony	Blood	0 0002	-	0 0010	0 001
			Lead	--		--	--	Lead	NA	--	-	-	--
			Nitrate	--	--	--	--	Nitrate	Blood	0 00000003	--	0 00000003	0 00000006
			(Total)	2E-07	--	3E-07	5E-07	(Total)		0 004	-	0 005	0 009
Sediment	Sediment	SWMU 3 Little Sulphur Creek	2-Amino-4 6 Dinitrotoluene	-	--	--	--	2 Amino-4,6-Dinitrotoluene	Liver	0 0003		0 0004	0 0007
			Aluminum	-	-	--	--	Aluminum	Immune, Nails	0 002	-		0 002
			Antimony	--	-	--	--	Antimony	Blood	0 0007	-		0 0007
			Barium	--		--	--	Barium	Kidney	0 0005	--	-	0 0005
			Cadmium	--	--	--	-	Cadmium	Kidney	0 0004		0 00009	0 0005
			Lead	-	--	--	--	Lead	NA	--	--	-	--
			(Total)	--	--	--	--	(Total)		0 003	--	0 0005	0 004

Total Risk Across Soil	9E-08
Total Risk Across Groundwater	2E-05
Total Risk Across Surface Water	5E-07
Total Risk Across Sediment	--
Total Risk Across All Media and All Exposure Routes	2E-05

Total Hazard Index Across All Media and All Exposure Routes	0 5

Total Blood HI	0 02
Total Body Weight HI	0 0009
Total GS HI	0 01
Total Immune HI	0 002
Total Kidney HI	0 01
Total Liver HI	0 4
Total None Reported HI	0 000002
Total Prostate HI	0 02
Total Nails HI	0 002

TABLE 9 18
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
CENTRAL TENDENCY EXPOSURES
NSWC CRANE, INDIANA

Scenario Timeframe Future
Receptor Population. Recreational Users
Receptor Age Adult

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk				Chemical	Non Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total		Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes Total
Surface Soil	Surface Soil	SWMU 3 Old Jeep Trail	2 3 7 8 TCDD Equivalents	3E 09	-	3E-10	3E-09	2 3 7 8 TCDD Equivalents	NA	-			--
			2,4,6-Trinitrotoluene	2E-10	--	7E-11	3E 10	2,4 6 Trinitrotoluene	Liver	0 0001		0 00005	0 0002
			2 Amino 4,6-Dinitrotoluene	--		--	-	2 Amino 4,6 Dinitrotoluene	Liver	0 0002		0 00007	0 0003
			4-Amino 2 6 Dinitrotoluene	-	-	--	--	4 Amino 2 6 Dinitrotoluene	Liver	0 0002		0 00006	0 0002
			HMX	--	-	-	--	HMX	Liver	0 000002		0 0000009	0 000003
			RDX	1E 09	-	3E 10	1E-09	RDX	Prostate	0 00003		0 00001	0 00004
			Barium	--	--	--	--	Barium	Kidney	0 00009		-	0 00009
			Cadmium	--	--	--	--	Cadmium	Kidney	0 00006		0 000004	0 00006
			Chromium	--		--	--	Chromium	None Reported	0 0000004			0 0000004
			Iron	--	--	--	--	Iron	Blood, GS	0 002		-	0 002
			Lead	--	--	--	--	Lead	NA	--	--	-	--
			(Total)	4E-09	--	7E-10	5E-09	(Total)		0 003	-	0 0002	0 003
Ground Water	Ground Water	SWMU 3 - Shallow Ground Water	1,1,2,2-Tetrachloroethane	9E-07	--	6E-08	9E-07	1 1,2 2 Tetrachloroethane	Liver	0 0007		0 00005	0 0008
			1,1,2-Trichloroethane	6E-09	--	3E-10	7E-09	1,1,2-Trichloroethane	Blood	0 0003		0 00001	0 0003
			1,1-Dichloroethene	1E-08	--	9E-10	1E 08	1,1-Dichloroethene	Liver	0 00002	-	0 000002	0,00003
			cis-1,2 Dichloroethene	--	--	-	--	cis 1,2-Dichloroethene	Blood	0 001	-	0 00009	0 001
			Tetrachloroethene	3E-09	--	1E-09	4E-09	Tetrachloroethene	Liver	0 00006		0 00002	0 00008
			trans-1,2 Dichloroethene	--	--	--	--	trans-1,2 Dichloroethene	Blood	0 0001	-	0 000007	0 0002
			Trichloroethene	2E-06	-	2E-07	2E-06	Trichloroethene	Liver	0 2	-	0 02	0.2
			Vinyl Chloride	3E-06	--	6E-10	3E-08	Vinyl Chloride	Liver	0 0001		0 000004	0 0001
			2,4,6-Trinitrotoluene	4E-09	--	5E-11	4E-09	2,4,6-Trinitrotoluene	Liver	0 003		0 00004	0 003
			2 Amino-4,6-Dinitrotoluene	--	--	--	--	2 Amino-4,6-Dinitrotoluene	Liver	0 007		0 00005	0 007
			4-Amino 2 6-Dinitrotoluene	--	--	--	--	4-Amino-2,6 Dinitrotoluene	Liver	0 02	-	0 0001	0 02
			RDX	3E-07	--	1E-09	3E-07	RDX	Prostate	0 009		0 00004	0 009
			Barium	--	--	-	--	Barium	Kidney	0 001	-	0 00003	0 001
			Cadmium	--	-	--	--	Cadmium	Kidney	0 004	-	0 0001	0 004
			Iron	--	-	--	--	Iron	Blood, GS	0 002	--	0 000003	0 002
			Nickel	--	--	-	-	Nickel	Body Weight	0 0005	-	0 000003	0 0005
			Nitrate	--	--	--	--	Nitrate	Blood	0 0002	--	0 0000003	0 0002
			(Total)	3E-06	--	2E-07	3E-06	(Total)		0 2	--	0 02	0 2
Surface Water	Surface Water	SWMU 3 Little Sulphur Creek	Acetone	--	-	-	-	Acetone	Liver, Kidney	0 00001	-	0 000008	0 00002
			Bromomethane	--	--	--	--	Bromomethane	GS	0 000008	--	0 00003	0 00003
			Methylene Chloride	5E 11	-	2E 10	3E 10	Methylene Chloride	Liver	0 000001	-	0 000005	0 000008
			Bis(2-ethylhexyl)phthalate	4E-11	--	6E-09	6E-09	Bis(2-ethylhexyl)phthalate	Liver	0 000001	-	0 0002	0 0002
			Pentachlorophenol	1E-11	--	2E-08	2E-08	Pentachlorophenol	Liver, Kidney	0 00000004	-	0 00005	0 00005
			2 Amino-4 6-Dinitrotoluene	--	--	--	--	2-Amino-4,6-Dinitrotoluene	Liver	0 0001	-	0 0002	0 0003
			4-Amino-2,6-Dinitrotoluene	--	--	--	--	4-Amino-2,6-Dinitrotoluene	Liver	0 0004	--	0 0005	0 0008
			RDX	1E-08	--	1E-06	3E-06	RDX	Prostate	0 0004	-	0 0004	0 0008
			Antimony	--	--	--	--	Antimony	Blood	0 00004	-	0 0002	0 0003
			Lead	--	--	--	--	Lead	NA	-	--	--	--
			Nitrate	--	--	--	--	Nitrate	Blood	8E-09	--	7E-09	0 00000002
			(Total)	1E-08	--	3E-06	5E-06	(Total)		0 0010	--	0 002	0 003
Sediment	Sediment	SWMU 3 - Little Sulphur Creek	2 Amino-4 6 Dinitrotoluene	--	--	--	--	2 Amino-4,6-Dinitrotoluene	Liver	0 00008	--	0 00003	0 0001
			Aluminum	--	--	--	--	Aluminum	Immune, Nails	0 0004		--	0 0004
			Antimony	--	--	--	--	Antimony	Blood	0 0002	--	--	0 0002
			Barium		--	--	-	Barium	Kidney	0 0001	--	--	0 0001
			Cadmium	-	-	--	--	Cadmium	Kidney	0 00009	-	0 000007	0 00010
			Lead	--	--	--	--	Lead	NA	--	--	--	--
			(Total)	--	--	--	--	(Total)		0 0009	--	0 00003	0 0009

Total Risk Across Soil	5E-09
Total Risk Across Groundwater	3E-06
Total Risk Across Surface Water	5E-08
Total Risk Across Sediment	--
Total Risk Across All Media and All Exposure Routes	4E-06

Total Hazard Index Across All Media and All Exposure Routes	0 2

Total Blood HI	0 008
Total Body Weight HI	0 0005
Total GS HI	0 004
Total Immune HI	0 0004
Total Kidney HI	0 005
Total Liver HI	0 2
Total None Reported HI	0 0000004
Total Prostate HI	0 01
Total Nails HI	0 0004

TABLE 9 19
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
REASONABLE MAXIMUM EXPOSURE
NSWC CRANE INDIANA

Scenario Timeframe Future
Receptor Population Recreational Users
Receptor Age Lifelong (Child and Adult)

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk				Chemical	Non Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total		Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes Total
Surface Soil	Surface Soil	SWMU 3 - Old Jeep Trail	2 3,7,8-TCDD Equivalents	1E-07	--	3E-08	2E-07	2 3,7 8 TCDD Equivalents	NA				
			2,4,6-Trinitrotoluene	9E-09	--	8E-09	2E-08	2,4 6 Trinitrotoluene	Liver				
			2-Amino-4,6-Dinitrotoluene	--	--	--	--	2-Amino-4 6-Dinitrotoluene	Liver				
			4-Amino 2,6-Dinitrotoluene	-	--	--	--	4-Amino-2,6-Dinitrotoluene	Liver				
			HMX	--	--	--	--	HMX	Liver				
			RDX	4E-08	--	4E-08	8E-08	RDX	Prostate				
			Barium	--	-	--	--	Barium	Kidney				
			Cadmium	--	--	--	--	Cadmium	Kidney				
			Chromium	--	-	--	--	Chromium	None Reported				
			Iron	--	--	--	--	Iron	Blood, GS				
			Lead	--	--	--	--	Lead	NA				
			(Total)	2E-07	--	8E-08	3E-07	(Total)					
Ground Water	Ground Water	SWMU 3 Shallow Ground Water	1,1,2,2-Tetrachloroethane	1E-05	--	7E-07	1E-05	1,1,2,2-Tetrachloroethane	Liver				
			1,1,2-Trichloroethane	1E-07	--	4E-09	1E-07	1,1 2-Trichloroethane	Blood				
			1,1-Dichloroethene	2E-07	--	1E-08	2E 07	1,1-Dichloroethene	Liver				
			cis-1,2-Dichloroethene	--	---	--	--	cis-1,2-Dichloroethene	Blood				
			Tetrachloroethene	5E-08	--	1E-08	6E-08	Tetrachloroethene	Liver				
			trans-1,2-Dichloroethene	--	-	--	--	trans-1,2-Dichloroethene	Blood				
			Trichloroethene	3E-05	--	2E-06	3E-05	Trichloroethene	Liver				
			Vinyl Chloride	4E-07	--	1E-08	4E-07	Vinyl Chloride	Liver				
			2,4,6-Trinitrotoluene	6E-08	--	7E-10	6E-08	2,4,6-Trinitrotoluene	Liver				
			2 Amino-4 6 Dinitrotoluene	--	--	--	--	2 Amino-4,6-Dinitrotoluene	Liver				
			4-Amino-2 6 Dinitrotoluene	--	--	--	--	4-Amino 2,6-Dinitrotoluene	Liver				
			RDX	5E-06	--	2E-08	5E-06	RDX	Prostate				
			Barium	--	--	--	--	Barium	Kidney				
			Cadmium	-	--	--	--	Cadmium	Kidney				
			Iron	--	--	--	--	Iron	Blood, GS				
			Nickel	--	--	--	--	Nickel	Body Weight				
			Nitrate	--	--	--	--	Nitrate	Blood				
			(Total)	5E-05	--	3E-06	5E-05	(Total)					
Surface Water	Surface Water	SWMU 3 Little Sulphur Creek	Acetone	--	--	--	--	Acetone	Liver, Kidney				
			Bromomethane	--	--	--	--	Bromomethane	GS				
			Methylene Chloride	5E-09	--	4E-09	8E-09	Methylene Chloride	Liver				
			Bis(2-ethylhexyl)phthalate	4E-09	--	8E-08	8E-08	Bis(2-ethylhexyl)phthalate	Liver				
			Pentachlorophenol	1E-09	--	2E-07	2E-07	Pentachlorophenol	Liver, Kidney				
			2 Amino-4 6 Dinitrotoluene	--	-	--	--	2 Amino-4,6-Dinitrotoluene	Liver				
			4 Amino-2,6 Dinitrotoluene	--	--	--	--	4-Amino-2,6-Dinitrotoluene	Liver				
			RDX	1E-06	--	2E-07	1E-06	RDX	Prostate				
			Antimony	--	--	--	--	Antimony	Blood				
			Lead	-	--	--	--	Lead	NA				
			Nitrate	--	--	--	--	Nitrate	Blood				
			(Total)	1E-06	--	5E-07	2E-06	(Total)					
Sediment	Sediment	SWMU 3 Little Sulphur Creek	2-Amino 4 6 Dinitrotoluene		--	--	-	2-Amino-4,6-Dinitrotoluene	Liver				
			Aluminum	--		--	--	Aluminum	Immune, Nails				
			Antimony	--	--	--	-	Antimony	Blood				
			Barium		-	--	-	Barium	Kidney				
			Cadmium	-	-	-	-	Cadmium	Kidney				
			Lead	--	--	--	--	Lead	NA				
			(Total)	--	-	--	--	(Total)					

Total Risk Across Soil	3E-07
Total Risk Across Groundwater	5E-05
Total Risk Across Surface Water	2E-06
Total Risk Across Sediment	--
Total Risk Across All Media and All Exposure Routes	5E-05

Total Hazard Index Across All Media and All Exposure Routes

TABLE 9 20
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
CENTRAL TENDENCY EXPOSURES
NSWC CRANE INDIANA

Scenario Timeframe Future
Receptor Population Recreational Users
Receptor Age Lifelong (Child and Adult)

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk				Chemical	Non Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Tota		Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes Total
Surface Soil	Surface Soil	SWMU 3 Old Jeep Trail	2 3,7 8 TCDD Equivalents	1E-08	--	9E-10	1E-08	2 3 7 8 TCDD Equivalents	NA				
			2,4 6-Trinitrotoluene	7E-10	--	2E 10	9E-10	2,4 6-Trinitrotoluene	Liver				
			2 Amino-4,6 Dinitrotoluene	--	--	--	--	2-Amino 4 6 Dinitrotoluene	Liver				
			4 Amino-2 6 Dinitrotoluene	--	--	--	--	4-Amino 2,6 Dinitrotoluene	Liver				
			HMX	--	--	--	--	HMX	Liver				
			RDX	3E-09	-	1E-09	5E-09	RDX	Prostate				
			Barium	--	--	--	--	Barium	Kidney				
			Cadmium	--	--	--	--	Cadmium	Kidney				
			Chromium	--	--	-	-	Chromium	None Reported				
			Iron	--	--	--	-	Iron	Blood, GS				
			Lead	--	--	--	--	Lead	NA				
			(Total)	1E-08	--	2E-09	2E-08	(Total)					
Ground Water	Ground Water	SWMU 3 Shallow Ground Water	1,1 2 2 Tetrachloroethane	2E-06	--	9E-08	2E-06	1,1,2,2 Tetrachloroethane	Liver				
			1,1 2-Trichloroethane	1E-08	--	5E 10	2E-08	1,1,2 Trichloroethane	Blood				
			1,1-Dichloroethene	3E-08	--	1E-09	3E-08	1,1-Dichloroethene	Liver				
			cis-1,2 Dichloroethene	--	-	--	--	cis-1,2-Dichloroethene	Blood				
			Tetrachloroethene	8E-09	--	2E-09	9E-09	Tetrachloroethene	Liver				
			trans-1,2-Dichloroethene	--	-	-	--	trans-1,2-Dichloroethene	Blood				
			Trichloroethene	5E-06	--	3E-07	5E-06	Trichloroethene	Liver				
			Vinyl Chloride	7E-08	-	1E-09	7E-08	Vinyl Chloride	Liver				
			2,4,6-Trinitrotoluene	9E-09	--	8E-11	9E-09	2,4,6-Trinitrotoluene	Liver				
			2-Amino 4,6 Dinitrotoluene	--	--	-	--	2-Amino-4,6-Dinitrotoluene	Liver				
			4-Amino 2 6 Dinitrotoluene	--	--	--	--	4-Amino 2,6-Dinitrotoluene	Liver				
			RDX	7E-07	--	2E-09	7E-07	RDX	Prostate				
			Barium	--	--	--	--	Barium	Kidney				
			Cadmium	--	--	--	--	Cadmium	Kidney				
			Iron	--	--	--	--	Iron	Blood, GS				
			Nickel	--	--	-	-	Nickel	Body Weight				
			Nitrate	--	--	--	--	Nitrate	Blood				
			(Total)	8E-06	-	4E-07	8E-06	(Total)					
Surface Water	Surface Water	SWMU 3 Little Sulphur Creek	Acetone	--	-	--	--	Acetone	Liver, Kidney				
			Bromomethane	-	--	--	--	Bromomethane	GS				
			Methylene Chloride	4E-10	--	3E 10	7E 10	Methylene Chloride	Liver				
			Bis(2-ethylhexyl)phthalate	3E-10	--	8E-09	9E-09	Bis(2-ethylhexyl)phthalate	Liver				
			Pentachlorophenol	1E-10	-	2E-08	2E-08	Pentachlorophenol	Liver, Kidney				
			2 Amino-4 6 Dinitrotoluene	--	--	--	--	2-Amino-4,6-Dinitrotoluene	Liver				
			4 Amino-2,6 Dinitrotoluene	--	--	--	--	4-Amino-2,6-Dinitrotoluene	Liver				
			RDX	1E-07	--	2E-08	1E-07	RDX	Prostate				
			Antimony	--	--	--	--	Antimony	Blood				
			Lead	--	--	-	--	Lead	NA				
			Nitrate	--	--	--	--	Nitrate	Blood				
			(Total)	1E-07	--	5E-08	2E-07	(Total)					
Sediment	Sediment	SWMU 3 - Little Sulphur Creek	2 Amino 4 6 Dinitrotoluene	--	-	--	--	2 Amino-4,6-Dinitrotoluene	Liver				
			Aluminum	--	-	--	--	Aluminum	Immune, Nails				
			Antimony	--		--	--	Antimony	Blood				
			Barium	--	-	--	--	Barium	Kidney				
			Cadmium	--	-	--		Cadmium	Kidney				
			Lead	--	--	--	--	Lead	NA				
			(Total)	--	--	--	--	(Total)					

Total Risk Across Soil	2E-08
Total Risk Across Groundwater	8E-06
Total Risk Across Surface Water	2E-07
Total Risk Across Sediment	--
Total Risk Across All Media and All Exposure Routes	8E-06

Total Hazard Index Across All Media and All Exposure Routes

TABLE 9 21
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
REASONABLE MAXIMUM EXPOSURE
NSWC CRANE, INDIANA

Scenario Timeframe Future
Receptor Population, On-Site Resident
Receptor Age Child

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk				Chemical	Non Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Tota		Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes Tota
Surface Soil	Surface Soil	SWMU 3 1 Acre Exposure Unit	2,3,7,8-TCDD Equivalents	1E-06	- -	1E-07	1E-06	2,3,7,8-TCDD Equivalents	NA	- -	-	- -	--
			2,4,6-Trinitrotoluene	2E-05	- -	5E-06	2E-05	2,4,6-Trinitrotoluene	Liver	15		4	19
			2-Amino-4,6-Dinitrotoluene	- -	- -	- -	- -	2-Amino-4,6-Dinitrotoluene	Liver	0 5	--	0.1	0 6
			4-Amino-2,6-Dinitrotoluene	- -	- -	- -	- -	4-Amino 2,6-Dinitrotoluene	Liver	0 3	-	0 09	0 4
			HMX	- -	- -	- -	- -	HMX	Liver	0 07	-	0 02	0.10
			RDX	6E-05	- -	2E 05	8E-05	RDX	Prostate	2		0 6	2 8
			Barium	- -	- -	- -	- -	Barium	Kidney	0 04		--	0 04
			Cadmium	- -	- -	- -	- -	Cadmium	Kidney	0.1	-	0 006	0.1
			Chromium	- -	-	- -	- -	Chromium	None Reported	0 0001		--	0 0001
			Iron	- -	- -	- -	- -	Iron	Blood, GS	0 9		--	0.9
			Lead	- -	- -	- -	- -	Lead	NA	- -	--	- -	--
			(Total)	8E-05	- -	2E-05	1E-04	(Total)		19		5	24
Ground Water	Ground Water	SWMU 3 - Shallow Ground Water	1,1,2,2-Tetrachloroethane	7E 05	1E-05	3E-06	9E 05	1,1,2,2-Tetrachloroethane	Liver	0 07	-	0 003	0 07
			1,1,2-Trichloroethane	5E-07	2E-07	2E-08	7E-07	1,1,2-Trichloroethane	Blood	0 03		0 0006	0 03
			1,1-Dichloroethene	1E-06	1E-07	5E 08	1E-06	1,1-Dichloroethene	Liver	0.002	-	0.0001	0.002
			cis-1,2-Dichloroethene	- -	- -	- -	- -	cis-1,2-Dichloroethene	Blood	0 1	-	0 005	0 1
			Tetrachloroethene	3E-07	2E 08	5E-08	3E-07	Tetrachloroethene	Liver	0 006	0 0001	0.001	0 007
			trans-1,2-Dichloroethene	- -	- -	- -	- -	trans-1,2-Dichloroethene	Blood	0 01		0.0004	0.01
			Trichloroethene	2E-04	6E-05	9E-06	2E-04	Trichloroethene	Liver	16	0 2	0.8	17
			Vinyl Chloride	2E-06	2E-08	4E-08	2E-06	Vinyl Chloride	Liver	0.01	0 0006	0.0002	0.01
			2,4,6-Trinitrotoluene	3E-07	- -	3E-09	3E-07	2,4,6-Trinitrotoluene	Liver	0 2	-	0 002	0 3
			2-Amino-4,6-Dinitrotoluene	- -	- -	- -	- -	2-Amino-4,6-Dinitrotoluene	Liver	0 7		0 003	0 7
			4-Amino-2,6-Dinitrotoluene	- -	- -	- -	- -	4-Amino-2,6-Dinitrotoluene	Liver	1 6	-	0 007	1 7
			RDX	2E 05	- -	7E-08	2E-05	RDX	Prostate	0 9	-	0.002	0 9
			Barium	- -	- -	- -	- -	Barium	Kidney	0 1	-	0.002	0 1
			Cadmium	- -	- -	- -	- -	Cadmium	Kidney	0 3	-	0 008	0 3
			Iron	- -	- -	- -	- -	Iron	Blood, GS	0.2	-	0 0002	0.2
			Nickel	- -	- -	- -	- -	Nickel	Body Weight	0 04	-	0 0002	0 04
			Nitrate	- -	- -	- -	- -	Nitrate	Blood	0 02	- -	0 00002	0.02
			(Total)	3E-04	7E-05	1E-05	3E-04	(Total)		20	0 2	0 9	21
Surface Water	Surface Water	SWMU 3 - Little Sulphur Creek	Bromomethane	- -	- -	- -	- -	Bromomethane	GS	0 1	0 04	0.001	0.2
			2-Amino-4,6 Dinitrotoluene	- -	- -	- -	-	2-Amino-4,6-Dinitrotoluene	Liver	2		0 01	2
			4 Amino-2,6-Dinitrotoluene	- -	- -	- -	- -	4 Amino-2,6-Dinitrotoluene	Liver	5	- -	0 02	5
			RDX	6E-05	- -	2E-07	6E-05	RDX	Prostate	2	- -	0.006	2
			(Total)	6E-05	- -	2E-07	6E-05	(Total)		9	0 0	0 04	9
Sediment	Sediment	SWMU 3 - Little Sulphur Creek	2-Amino-4,6-Dinitrotoluene	- -	- -	- -	- -	2 Amino-4,6-Dinitrotoluene	Liver	0.003	-	0 002	0.004
			Aluminum	- -	- -	- -	- -	Aluminum	Immune, Nails	0.01	-	--	0.01
			Antimony	- -	- -	- -	- -	Antimony	Blood	0 007	-	--	0.007
			Barium	- -	- -	-	- -	Barium	Kidney	0 005	-	--	0 005
			Cadmium	- -	- -	- -	- -	Cadmium	Kidney	0 003	-	0 0004	0 004
			Lead	- -	- -	- -	- -	Lead	NA	- -	-	- -	--
			(Total)	- -	- -	- -	- -	(Total)		0 03	-	0 002	0.03

Total Risk Across Soil	1E-04
Total Risk Across Groundwater	3E-04
Total Risk Across SWMU 3 - Little Sulphur Creek	6E-05
Total Risk Across Sediment	- -
Total Risk Across All Media and All Exposure Routes	5E-04

Total Hazard Index Across All Media and All Exposure Routes	54

Total Blood HI	1
Total Body Weight HI	0 04
Total GS HI	1
Total Kidney HI	0 6
Total Liver HI	47
Total None Reported HI	0 0001
Total Prostate HI	6
Total Nails HI	0 01

TABLE 9 22
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
CENTRAL TENDENCY EXPOSURES
NSWC CRANE, INDIANA

Scenario Timeframe Future
Receptor Population, On-Site Resident
Receptor Age Child

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk				Chemical	Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total		Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes Total
Surface Soil	Surface Soil	SWMU 3 - 1 Acre Exposure Unit	2,3,7,8-TCDD Equivalents	1E-07	--	5E-09	1E-07	2,3,7,8-TCDD Equivalents	NA	--	-	--	--
			2,4,6-Trinitrotoluene	2E-06	--	2E-07	2E-06	2,4,6-Trinitrotoluene	Liver	5	-	0.6	6
			2-Amino-4,6-Dinitrotoluene	--	--	--	--	2-Amino-4,6-Dinitrotoluene	Liver	0 2	--	0 02	0 2
			4-Amino-2,6-Dinitrotoluene	--	--	--	--	4-Amino-2,6 Dinitrotoluene	Liver	0 1	--	0.01	0.1
			HMX	--	--	--	--	HMX	Liver	0 02	-	0.003	0 03
			RDX	7E-06	--	8E-07	8E-06	RDX	Prostate	0 7	--	0 08	0.8
			Barium	--	--	--	--	Barium	Kidney	0 01	--	--	0 01
			Cadmium	--	--	--	--	Cadmium	Kidney	0 04	--	0 0008	0 04
			Chromium	--	--	--	--	Chromium	None Reported	0 00004	-	--	0 00004
			Iron	--	--	--	--	Iron	Blood, GS	0 3		--	0 3
			Lead	--	--	--	--	Lead	NA	--	--	--	--
			(Total)	9E-06	--	1E-06	1E-05	(Total)		6	--	0.7	7
Ground Water	Ground Water	SWMU 3 - Shallow Ground Water	1,1,2,2-Tetrachloroethane	7E-06	2E-06	5E 07	9E-06	1,1,2,2-Tetrachloroethane	Liver	0 02	--	0 002	0 02
			1,1,2-Trichloroethane	5E-08	2E-08	3E-09	7E-08	1,1,2-Trichloroethane	Blood	0.008	-	0.0004	0.008
			1,1-Dichloroethene	1E-07	2E-08	8E-09	1E-07	1,1 Dichloroethene	Liver	0 0007	--	0 00005	0 0007
			cis-1,2-Dichloroethene	--	--	--	--	cis-1,2-Dichloroethene	Blood	0 03	--	0.003	0 03
			Tetrachloroethene	3E-08	2E-09	9E-09	4E-08	Tetrachloroethene	Liver	0 002	0 00005	0 0006	0 002
			trans-1,2-Dichloroethene	--	--	--	--	trans-1,2-Dichloroethene	Blood	0 004	-	0 0002	0 004
			Trichloroethene	2E-05	7E-06	2E-06	2E-05	Trichloroethene	Liver	5	0 06	0.5	5
			Vinyl Chloride	2E-07	3E-09	7E-09	2E-07	Vinyl Chloride	Liver	0 004	0 0002	0.0001	0.004
			2,4,6-Trinitrotoluene	3E-08	--	5E-10	3E-08	2,4,6-Trinitrotoluene	Liver	0 07	--	0 001	0 07
			2-Amino-4,6-Dinitrotoluene	--	--	--	--	2-Amino-4,6-Dinitrotoluene	Liver	0 2	-	0 002	0 2
			4-Amino-2,6-Dinitrotoluene	--	--	--	--	4-Amino-2,6-Dinitrotoluene	Liver	0 5	-	0 004	0 5
			RDX	2E-06	--	1E-08	2E-06	RDX	Prostate	0.3		0 001	0.3
			Barium	--	--	--	--	Barium	Kidney	0 04	--	0.0008	0.04
			Cadmium	--	--	--	--	Cadmium	Kidney	0 1	-	0 003	0.1
			Iron	--	--	--	--	Iron	Blood, GS	0 05	-	0 00008	0 05
			Nickel	--	--	--	--	Nickel	Body Weight	0 01		0 0001	0 01
			Nitrate	--	--	--	--	Nitrate	Blood	0 005	-	0 000009	0 005
			(Total)	3E-05	9E-06	2E-06	4E-05	(Total)		6	0 06	0 5	6
Surface Water	Surface Water	SWMU 3 - Little Sulphur Creek	Bromomethane	--	--	--	--	Bromomethane	GS	0.03	0 02	0.0006	0.05
			2-Amino-4,6-Dinitrotoluene	--	--	--	--	2 Amino-4,6 Dinitrotoluene	Liver	0.7	--	0 006	0.7
			4-Amino-2,6-Dinitrotoluene	--	--	--	--	4-Amino-2,6-Dinitrotoluene	Liver	1	-	0 01	1
			RDX	6E-06	--	3E-08	6E-06	RDX	Prostate	0.6	--	0 003	0.6
			(Total)	6E-06	--	3E-08	6E-06	(Total)		3	0 02	0.02	3
Sediment	Sediment	SWMU 3 - Little Sulphur Creek	2-Amino-4,6-Dinitrotoluene	--	--	--	--	2-Amino-4,6-Dinitrotoluene	Liver	0 0007	--	0.0002	0 0009
			Aluminum	--	--	--	--	Aluminum	Immune, Nails	0 004	--	--	0 004
			Antimony	--	--	--	--	Antimony	Blood	0 002	-	--	0 002
			Barium	--	--	--	--	Barium	Kidney	0 001	-	--	0.001
			Cadmium	--	--	--	--	Cadmium	Kidney	0 0008		0 00004	0 0009
			Lead	--	--	--	--	Lead	NA	--	--	--	--
			(Total)	--	--	--	--	(Total)		0 008	--	0 0002	0 008

Total Risk Across Soil	1E-05
Total Risk Across Groundwater	4E-05
Total Risk Across SWMU 3 Little Sulphur Creek	6E-06
Total Risk Across Sediment	--
Total Risk Across All Media and All Exposure Routes	5E-05

Total Hazard Index Across All Media and All Exposure Routes	16

Total Blood HI	0.4
Total Body Weight HI	0 01
Total GS HI	0 4
Total Kidney HI	0.2
Total Liver HI	14
Total None Reported HI	0 00004
Total Prostate HI	2
Total Nails HI	0 004

TABLE 9 23
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
REASONABLE MAXIMUM EXPOSURE
NSWC CRANE, INDIANA

Scenario Timeframe Future
Receptor Population On-Site Resident
Receptor Age Child

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk				Chemical	Non Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total		Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes Total
Surface Soil	Surface Soil	SWMU 3 - 6 Acre Exposure Unit	2,3,7,8-TCDD Equivalents	1E 08	--	1E-07	1E-06	2,3,7,8-TCDD Equivalents	NA			--	--
			2,4,6-Trinitrotoluene	9E 08	--	2E-08	1E-07	2,4,6-Trinitrotoluene	Liver	0 07		0 02	0 09
			2-Amino-4,6 Dinitrotoluene	--	--	--	--	2 Amino-4,6-Dinitrotoluene	Liver	0 09	-	0 03	0 1
			4-Amino 2,6-Dinitrotoluene	--	--	--	--	4 Amino-2,6-Dinitrotoluene	Liver	0 08	--	0 02	0.10
			HMX	--	--	--	--	HMX	Liver	0 001	-	0 0003	0 002
			RDX	4E-07	--	1E-07	5E 07	RDX	Prostate	0 01	-	0 004	0 02
			Barium	--	--	--	--	Barium	Kidney	0 05		--	0 05
			Cadmium	--	--	--	--	Cadmium	Kidney	0 03		0 002	0 03
			Chromium	--	--	--	--	Chromium	None Reported	0 0002		--	0.0002
			Iron	--	--	--	--	Iron	Blood, GS	1	-	--	1
			Lead	--	--	--	--	Lead	NA	--	-	--	--
			(Total)	2E-06	--	2E-07	2E-06	(Total)		1	-	0.07	2
Ground Water	Ground Water	SWMU 3 - Shallow Ground Water	1,1,2,2-Tetrachloroethane	7E-05	1E-05	3E-06	9E-05	1,1,2,2-Tetrachloroethane	Liver	0 07	-	0 003	0 07
			1,1,2-Trichloroethane	5E-07	2E-07	2E-08	7E-07	1,1,2-Trichloroethane	Blood	0 03	-	0.0008	0 03
			1,1-Dichloroethene	1E-06	1E-07	5E-08	1E-06	1,1-Dichloroethene	Liver	0.002	--	0.00010	0 002
			cis-1,2-Dichloroethene	--	--	--	--	cis-1,2-Dichloroethene	Blood	0 1	--	0 005	0.1
			Tetrachloroethene	3E-07	2E-08	5E-08	3E-07	Tetrachloroethene	Liver	0 006	0 0001	0.001	0.007
			trans-1,2-Dichloroethene	--	--	--	--	trans-1,2-Dichloroethene	Blood	0.01	--	0.0004	0,01
			Trichloroethene	2E-04	6E-05	9E-06	2E-04	Trichloroethene	Liver	16	0.2	0.8	17
			Vinyl Chloride	2E-06	2E-08	4E-08	2E-06	Vinyl Chloride	Liver	0.01	0 0006	0.0002	0.01
			2,4,6-Trinitrotoluene	3E-07	--	3E-09	3E-07	2,4,6-Trinitrotoluene	Liver	0 2	-	0 002	0 3
			2-Amino-4,6 Dinitrotoluene	--	--	--	--	2-Amino-4,6-Dinitrotoluene	Liver	0.7	-	0 003	0 7
			4-Amino-2,6-Dinitrotoluene	--	--	--	--	4-Amino-2,6-Dinitrotoluene	Liver	2	-	0 007	2
			RDX	2E-05	--	7E-08	2E-05	RDX	Prostate	0 9		0 002	0 9
			Barium	--	--	--	--	Barium	Kidney	0 1	-	0 002	0 1
			Cadmium	--	--	--	--	Cadmium	Kidney	0 3		0.008	0 3
			Iron	--	--	--	--	Iron	Blood, GS	0 2	-	0 0002	0 2
			Nickel	--	--	-	--	Nickel	Body Weight	0 04	--	0 0002	0 04
			Nitrate	--	--	--	--	Nitrate	Blood	0 02	--	0 00002	0 02
			(Total)	3E-04	7E-05	1E-05	3E-04	(Total)		20	0 2	0.9	21
Surface Water	Surface Water	SWMU 3 - Little Sulphur Creek	Bromomethane	--	--	--	--	Bromomethane	GS	0 1	0 04	0 001	0.2
			2-Amino-4,6-Dinitrotoluene	--	--	--	--	2 Amino-4,6-Dinitrotoluene	Liver	2		0 01	2
			4-Amino 2,6-Dinitrotoluene	--	--	--	--	4-Amino-2,6-Dinitrotoluene	Liver	5		0.02	5
			RDX	6E-05	--	2E-07	6E-05	RDX	Prostate	2	-	0 006	2
			(Total)	6E-05	--	2E-07	6E-05	(Total)		9	0 0	0.04	9
Sediment	Sediment	SWMU 3 - Little Sulphur Creek	2-Amino-4,6-Dinitrotoluene	--	--	--	-	2-Amino-4,6-Dinitrotoluene	Liver	0 003		0 002	0 004
			Aluminum	--	--	--	--	Aluminum	Immune, Nails	0 01	-	--	0 01
			Antimony	--	--	--	-	Antimony	Blood	0 007		--	0 007
			Barium	--	--	--	--	Barium	Kidney	0 005		--	0 005
			Cadmium	--	--	--	-	Cadmium	Kidney	0 003		0 0004	0 004
			Lead	--	--	--	--	Lead	NA	--	--	--	--
			(Total)	--	--	--	--	(Total)		0 03	-	0 002	0 03

Total Risk Across Soil	2E-06
Total Risk Across Groundwater	3E-04
Total Risk Across SWMU 3 - Little Sulphur Creek	6E-05
Total Risk Across Sediment	--
Total Risk Across All Media and All Exposure Routes	4E-04

Total Hazard Index Across All Media and All Exposure Routes	32
Total Blood HI	1
Total Body Weight HI	0 04
Total GS HI	1.5
Total Kidney HI	0 8
Total Liver HI	27
Total None Reported HI	0 0002
Total Prostate HI	3
Total Nails HI	0.01

TABLE 9 24
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
CENTRAL TENDENCY EXPOSURES
NSWC CRANE, INDIANA

Scenario Timeframe: Future
Receptor Population: On-Site Resident
Receptor Age: Child

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk				Chemical	Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total		Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes Total
Surface Soil	Surface Soil	SWMU 3 - 6-Acre Exposure Unit	2,3,7,8-TCDD Equivalents	1E-07	--	5E-09	1E-07	2,3,7,8-TCDD Equivalents	NA	--	-	--	--
			2,4,6-Trinitrotoluene	1E-08	--	1E-09	1E-08	2,4,6 Trinitrotoluene	Liver	0 02	-	0 003	0.02
			2-Amino-4,6-Dinitrotoluene	--	-	--	--	2-Amino-4,6-Dinitrotoluene	Liver	0 03	-	0.003	0 03
			4-Amino-2,6-Dinitrotoluene	--	--	--	--	4-Amino-2 6-Dinitrotoluene	Liver	0 03		0.003	0 03
			HMX	--	--	--	--	HMX	Liver	0 0004		0 00005	0 0005
			RDX	5E-08	--	5E-09	5E-08	RDX	Prostate	0 005		0 0005	0 005
			Barium	--	--	--	--	Barium	Kidney	0 02	--	--	0 02
			Cadmium	--	--	--	--	Cadmium	Kidney	0 01	-	0 0002	0 01
			Chromium	--	--	--	--	Chromium	None Reported	0 00008	-	--	0 00008
			Iron	--	--	--	--	Iron	Blood, GS	0 4	-	--	0.4
			Lead	--	--	--	--	Lead	NA	--	--	--	--
			(Total)	2E-07	--	1E-08	2E-07	(Total)		0 5	--	0 010	0 5
Ground Water	Ground Water	SWMU 3 - Shallow Ground Water	1,1,2,2-Tetrachloroethane	7E-06	2E-08	5E-07	9E-06	1,1,2,2-Tetrachloroethane	Liver	0 02	--	0.002	0.02
			1,1,2-Trichloroethane	5E-08	2E-08	3E-09	7E-08	1,1,2-Trichloroethane	Blood	0 008	--	0 0004	0 008
			1,1-Dichloroethene	1E-07	2E-08	8E-09	1E-07	1,1-Dichloroethene	Liver	0.0007	--	0.00005	0.0007
			cis-1,2-Dichloroethene	--	--	--	--	cis-1,2-Dichloroethene	Blood	0.03	--	0.003	0.03
			Tetrachloroethene	3E-08	2E-09	9E-09	4E-08	Tetrachloroethene	Liver	0 002	0 00005	0 0008	0 002
			trans-1,2-Dichloroethene	--	--	--	--	trans-1,2-Dichloroethene	Blood	0 004	-	0 0002	0 004
			Trichloroethene	2E-05	7E-06	2E-06	2E-05	Trichloroethene	Liver	5	0 06	0.5	5
			Vinyl Chloride	2E-07	3E-09	7E-09	2E-07	Vinyl Chloride	Liver	0.004	0 0002	0.0001	0.004
			2,4,6-Trinitrotoluene	3E-08	--	5E-10	3E-08	2,4,6-Trinitrotoluene	Liver	0 07	--	0 001	0 07
			2-Amino-4,6-Dinitrotoluene	--	--	--	--	2-Amino-4,6-Dinitrotoluene	Liver	0 2	--	0 002	0 2
			4-Amino-2,6-Dinitrotoluene	--	--	--	--	4-Amino-2,6-Dinitrotoluene	Liver	0 5	-	0 004	0 5
			RDX	2E-06	--	1E-08	2E-06	RDX	Prostate	0 3		0.001	0.3
			Barium	--	--	--	--	Barium	Kidney	0 04		0.0008	0 04
			Cadmium	--	--	--	--	Cadmium	Kidney	0 1	--	0 003	0.1
			Iron	--	--	--	--	Iron	Blood, GS	0 05	-	0 00008	0 05
			Nickel	--	--	--	--	Nickel	Body Weight	0 01	--	0.0001	0.01
			Nitrate	--	--	--	--	Nitrate	Blood	0 005	--	0 000009	0.005
			(Total)	3E-05	9E-06	2E-06	4E-05	(Total)		6	0 06	0.5	6
Surface Water	Surface Water	SWMU 3 - Little Sulphur Creek	Bromomethane	--	--	--	--	Bromomethane	GS	0 03	0 02	0 0006	0 05
			2 Amino-4,6-Dinitrotoluene	--	--	--	--	2-Amino-4,6-Dinitrotoluene	Liver	0 7	--	0.006	0 7
			4 Amino-2,6-Dinitrotoluene	--	--	--	--	4-Amino-2,6-Dinitrotoluene	Liver	1	--	0.01	1
			RDX	6E-06	--	3E-08	6E-06	RDX	Prostate	0.6	--	0 003	0 6
			(Total)	6E-06	--	3E-08	6E-06	(Total)		3	0 02	0 02	3
Sediment	Sediment	SWMU 3 - Little Sulphur Creek	2 Amino-4,6 Dinitrotoluene	--	--	--	--	2-Amino-4,6-Dinitrotoluene	Liver	0 0007	-	0 0002	0 0009
			Aluminum	--	--	--	--	Aluminum	Immune, Nails	0 004	-	--	0 004
			Antimony	--	--	--	--	Antimony	Blood	0.002	-	--	0 002
			Barium	--	--	--	--	Barium	Kidney	0.001	-	--	0.001
			Cadmium	--	--	--	--	Cadmium	Kidney	0 0008	-	0 00004	0 0009
			Lead	--	--	--	--	Lead	NA	--	--	--	--
			(Total)	--	--	--	--	(Total)		0.008	--	0.0002	0 008

Total Risk Across Soil	2E-07
Total Risk Across Groundwater	4E-05
Total Risk Across SWMU 3 - Little Sulphur Creek	6E-06
Total Risk Across Sediment	--
Total Risk Across All Media and All Exposure Routes	4E-05

Total Hazard Index Across All Media and All Exposure Routes	10
Total Blood HI	0 5
Total Body Weight HI	0.01
Total GS HI	0 5
Total Kidney HI	0.2
Total Liver HI	8
Total None Reported HI	0 00008
Total Prostate HI	0.9
Total Nails HI	0.004

TABLE 9 25
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
REASONABLE MAXIMUM EXPOSURE
NSWC CRANE, INDIANA

Scenario Timeframe Future
Receptor Population On Site Resident
Receptor Age Adult

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk				Chemical	Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total		Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes Total
Surface Soil	Surface Soil	SWMU 3 - 1 Acre Exposure Unit	2,3,7 8-TCDD Equivalents	5E-07	--	6E-08	6E-07	2,3 7,8-TCDD Equivalents	NA		-	--	--
			2,4,6-Trinitrotoluene	8E-06	--	3E-06	1E-05	2 4,6-Trinitrotoluene	Liver	2		0 6	2
			2-Amino-4,6-Dinitrotoluene	--	--	--	--	2-Amino 4,6-Dinitrotoluene	Liver	0 05		0 02	0 08
			4-Amino-2,6-Dinitrotoluene	--	--	--	--	4-Amino-2 6 Dinitrotoluene	Liver	0 03		0 01	0 05
			HMX	--	--	--	--	HMX	Liver	0 008		0 003	0 01
			RDX	3E-05	--	1E 05	4E-05	RDX	Prostate	0 2		0.10	0.3
			Barium	--	--	--	--	Barium	Kidney	0 005		--	0 005
			Cadmium	--	--	--	--	Cadmium	Kidney	0 01	--	0 0010	0.01
			Chromium	--	--	--	-	Chromium	None Reported	0 00001		--	0 00001
			Iron	--	--	--	--	Iron	Blood, GS	0 10	-	--	0 10
			Lead	--	--	--	--	Lead	NA	--	--	--	--
			(Total)	4E-05	--	1E-05	5E-05	(Total)		2	-	0.8	3
Ground Water	Ground Water	SWMU 3 - Shallow Ground Water	1,1,2,2-Tetrachloroethane	8E-05	1E-05	7E-06	1E-04	1,1,2,2-Tetrachloroethane	Liver	0 02		0.002	0 02
			1,1,2-Trichloroethane	6E-07	1E-07	4E-08	8E-07	1,1,2-Trichloroethane	Blood	0 008		0.0005	0 008
			1,1-Dichloroethene	1E-06	1E-07	1E-07	1E-06	1,1-Dichloroethene	Liver	0 0006	-	0.00006	0 0007
			cis-1,2-Dichloroethene	--	--	--	--	cis-1,2-Dichloroethene	Blood	0 03	--	0.003	0 03
			Tetrachloroethene	3E-07	1E-08	1E-07	4E-07	Tetrachloroethene	Liver	0 002	0 00003	0.0007	0 002
			trans-1,2-Dichloroethene	--	--	--	--	trans-1,2-Dichloroethene	Blood	0 004		0 0002	0 004
			Trichloroethene	2E-04	5E-05	2E-05	3E-04	Trichloroethene	Liver	4	0 04	0 5	5
			Vinyl Chloride	3E-06	2E 08	9E-08	3E-06	Vinyl Chloride	Liver	0 004	0 0001	0.0001	0.004
			2,4,6-Trinitrotoluene	4E-07	--	6E-09	4E-07	2,4,6-Trinitrotoluene	Liver	0 07		0 001	0.07
			2-Amino-4,6-Dinitrotoluene	--	--	--	--	2-Amino-4,6-Dinitrotoluene	Liver	0 2		0 002	0 2
			4-Amino-2,6-Dinitrotoluene	--	--	--	--	4-Amino-2,6 Dinitrotoluene	Liver	0 5	--	0 004	0 5
			RDX	3E-05	--	2E 07	3E 05	RDX	Prostate	0.2	-	0 001	0.2
			Barium	--	--	--	--	Barium	Kidney	0 03	-	0 001	0.04
			Cadmium	--	--	--	--	Cadmium	Kidney	0 10	-	0.004	0.1
			Iron	--	--	--	--	Iron	Blood, GS	0 05	-	0 0001	0 05
			Nickel	--	--	--	--	Nickel	Body Weight	0 01		0.0001	0 01
			Nitrate	--	--	--	--	Nitrate	Blood	0 005	-	0 00001	0 005
			(Total)	3E-04	6E-05	3E-05	4E-04	(Total)		6	0 04	0.5	6
Surface Water	Surface Water	SWMU 3 - Little Sulphur Creek	Bromomethane	--	--	--	--	Bromomethane	GS	0.03	0 01	0 0007	0.04
			2-Amino-4,6-Dinitrotoluene	-	--	--	--	2 Amino-4,6-Dinitrotoluene	Liver	0,7	--	0 006	0.7
			4-Amino-2,6-Dinitrotoluene	--	--	--	--	4-Amino-2,6-Dinitrotoluene	Liver	1		0 01	1
			RDX	7E-05	--	4E-07	7E-05	RDX	Prostate	0 6	--	0 003	0 6
			(Total)	7E-05	--	4E-07	7E 05	(Total)		3	0 0	0 02	3
Sediment	Sediment	SWMU 3 - Little Sulphur Creek	2-Amino-4,6-Dinitrotoluene	--	--	--	--	2-Amino-4,6-Dinitrotoluene	Liver	0 0003	-	0 0002	0 0005
			Aluminum	--	--	--	--	Aluminum	Immune, Nails	0 002	--	--	0 002
			Antimony	--	--	--	--	Antimony	Blood	0 0007		--	0 0007
			Barium	--	--	--	--	Barium	Kidney	0 0005		--	0 0005
			Cadmium	--	--	-	--	Cadmium	Kidney	0 0004		0 00006	0 0004
			Lead	--	--	--	--	Lead	NA	--	-	--	--
			(Total)	--	--	--	--	(Total)		0 003	-	0 0003	0 004

Total Risk Across Soil	5E-05
Total Risk Across Groundwater	4E-04
Total Risk Across SWMU 3 - Little Sulphur Creek	7E-05
Total Risk Across Sediment	--
Total Risk Across All Media and All Exposure Routes	5E-04

Total Hazard Index Across All Media and All Exposure Routes	12
Total Blood HI	0.2
Total Body Weight HI	0 01
Total GS HI	0 2
Total Kidney HI	0 2
Total Liver HI	10
Total None Reported HI	0 00001
Total Prostate HI	1
Total Nails HI	0 002

TABLE 9 26
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
CENTRAL TENDENCY EXPOSURES
NSWC CRANE, INDIANA

Scenario Timeframe: Future
Receptor Population: On-Site Resident
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk				Chemical	Non Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total		Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes Total
Surface Soil	Surface Soil	SWMU 3 - 1 Acre Exposure Unit	2,3,7,8-TCDD Equivalents	5E-08	--	2E-09	5E-08	2,3,7,8-TCDD Equivalents	NA	--	-	--	--
			2,4,6-Trinitrotoluene	8E-07	--	9E-08	9E-07	2,4,6-Trinitrotoluene	Liver	0 5		0 06	0 6
			2-Amino-4,6-Dinitrotoluene	--	--	--	--	2-Amino-4,6-Dinitrotoluene	Liver	0 02	-	0 002	0 02
			4-Amino-2,6-Dinitrotoluene	--	--	--	--	4-Amino-2,6-Dinitrotoluene	Liver	0 01	--	0 001	0 01
			HMX	--	--	--	--	HMX	Liver	0 003		0 0003	0,003
			RDX	3E-06	--	3E-07	3E-06	RDX	Prostate	0 08	-	0 009	0 09
			Barium	--	--	--	--	Barium	Kidney	0 002	-	--	0 002
			Cadmium	--	--	--	--	Cadmium	Kidney	0 004	-	0 00009	0.004
			Chromium	--	--	--	--	Chromium	None Reported	0 000004	-	--	0 000004
			Iron	--	--	--	--	Iron	Blood, GS	0 03	-	--	0 03
			Lead	--	--	--	--	Lead	NA	--	--	--	--
			(Total)	3E-06	--	4E-07	4E-06	(Total)		0 68	--	0.073	0 76
Ground Water	Ground Water	SWMU 3 - Shallow Ground Water	1,1,2,2-Tetrachloroethane	1E-05	1E 06	1E-06	1E-05	1,1,2,2-Tetrachloroethane	Liver	0 009	--	0 0009	0.01
			1,1,2-Trichloroethane	8E-08	1E-08	6E-09	1E-07	1,1,2-Trichloroethane	Blood	0 004	-	0 0003	0.004
			1,1-Dichloroethene	2E-07	1E 08	2E-08	2E-07	1,1-Dichloroethene	Liver	0 0003	--	0.00003	0.0003
			cis-1,2-Dichloroethene	--	--	--	--	cis-1,2-Dichloroethene	Blood	0 01	-	0 002	0.02
			Tetrachloroethene	4E-08	2E-09	2E 08	6E-08	Tetrachloroethene	Liver	0 0008	0 00001	0 0004	0 001
			trans-1,2-Dichloroethene	--	--	--	--	trans-1,2-Dichloroethene	Blood	0 002	--	0 0001	0 002
			Trichloroethene	3E-05	5E-06	3E-06	3E-05	Trichloroethene	Liver	2	0 01	0 3	2
			Vinyl Chloride	4E-07	2E-09	1E-08	4E-07	Vinyl Chloride	Liver	0 002	0 00005	0.00007	0 002
			2,4,6-Trinitrotoluene	5E-08	--	1E-09	5E-08	2,4,6-Trinitrotoluene	Liver	0 03	--	0 0007	0 03
			2-Amino-4,6-Dinitrotoluene	--	--	--	--	2-Amino-4,6-Dinitrotoluene	Liver	0.09	--	0.0009	0.09
			4-Amino-2,6-Dinitrotoluene	--	--	--	--	4-Amino-2,6-Dinitrotoluene	Liver	0 2	-	0.002	0 2
			RDX	4E-06	--	3E-08	4E-06	RDX	Prostate	0 1	--	0.0008	0 1
			Barium	--	--	--	--	Barium	Kidney	0 02		0 0005	0 02
			Cadmium	--	--	--	--	Cadmium	Kidney	0 05	--	0 002	0 05
			Iron	--	--	--	--	Iron	Blood, GS	0 02	--	0 00005	0.02
			Nickel	--	--	--	--	Nickel	Body Weight	0 006	--	0.00006	0 006
			Nitrate	--	--	--	--	Nitrate	Blood	0 002	--	0 000005	0 002
			(Total)	4E-05	7E-06	4E-06	5E-05	(Total)		3	0 01	0.3	3
Surface Water	Surface Water	SWMU 3 - Little Sulphur Creek	Bromomethane	--	--	--	--	Bromomethane	GS	0 01	0 003	0.0004	0 02
			2-Amino-4,6-Dinitrotoluene	--	--	--	--	2-Amino-4,6-Dinitrotoluene	Liver	0 3	--	0 003	0 3
			4-Amino-2,6-Dinitrotoluene	--	--	--	--	4-Amino-2,6-Dinitrotoluene	Liver	0 6	--	0 007	0 6
			RDX	9E-06	--	6E-08	9E-06	RDX	Prostate	0 3	--	0.002	0 3
			(Total)	9E-06	--	6E-08	9E-06	(Total)		1	0 003	0.01	1
Sediment	Sediment	SWMU 3 - Little Sulphur Creek	2-Amino-4,6 Dinitrotoluene	--	--	--	--	2-Amino-4,6-Dinitrotoluene	Liver	0 00008	-	0 00002	0.00009
			Aluminum	--	--	-	--	Aluminum	Immune, Nails	0 0004	-	--	0 0004
			Antimony	--	--	--	--	Antimony	Blood	0 0002		--	0 0002
			Barium	--	-	-	--	Barium	Kidney	0 0001		--	0 0001
			Cadmium	--	--	-		Cadmium	Kidney	0 00009		0 000004	0 00009
			Lead	--	--	--	--	Lead	NA	--	-	--	--
			(Total)	--	--	--	--	(Total)		0.0009	-	0.00002	0 0009

Total Risk Across Soil	4E-06
Total Risk Across Groundwater	5E-05
Total Risk Across SWMU 3 - Little Sulphur Creek	9E-06
Total Risk Across Sediment	--
Total Risk Across All Media and All Exposure Routes	6E-05

Total Hazard Index Across All Media and All Exposure Routes	5

Total Blood HI	0 08
Total Body Weight HI	0 006
Total GS HI	0 07
Total Kidney HI	0 07
Total Liver HI	4
Total None Reported HI	0 000004
Total Prostate HI	0.5
Total Nails HI	0 0004

TABLE 9 27
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
REASONABLE MAXIMUM EXPOSURE
NSWC CRANE, INDIANA

Scenario Timeframe: Future
Receptor Population: On-Site Resident
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk				Chemical	Non Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total		Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes Total
Surface Soil	Surface Soil	SWMU 3 - 6-Acre Exposure Unit	2,3,7,8-TCDD Equivalents	5E-07	--	6E-08	6E-07	2,3,7,8 TCDD Equivalents	NA	-	-	--	--
			2,4,6-Trinitrotoluene	4E-08	--	1E-08	5E-08	2,4,6-Trinitrotoluene	Liver	0.007	-	0.003	0.01
			2-Amino-4,6-Dinitrotoluene	--	--	--	--	2-Amino-4,6-Dinitrotoluene	Liver	0.010	-	0.004	0.01
			4-Amino-2,6-Dinitrotoluene	--	--	--	--	4-Amino-2,6-Dinitrotoluene	Liver	0.008		0.003	0.01
			HMX	--	--	--	--	HMX	Liver	0.0001	--	0.00005	0.0002
			RDX	2E-07	--	7E-08	2E-07	RDX	Prostate	0.002	-	0.0006	0.002
			Barium	--	--	--	--	Barium	Kidney	0.005	-	--	0.005
			Cadmium	--	--	--	--	Cadmium	Kidney	0.003		0.0003	0.004
			Chromium	--	--	--	--	Chromium	None Reported	0.00002		--	0.00002
			Iron	--	--	--	--	Iron	Blood, GS	0.1	-	--	0.1
			Lead	--	--	--	--	Lead	NA	--	-	--	--
			(Total)	7E-07	--	1E-07	9E-07	(Total)		0.2	--	0.01	0.2
Ground Water	Ground Water	SWMU 3 - Shallow Ground Water	1,1,2,2-Tetrachloroethane	8E-05	1E-05	7E-06	1E-04	1,1,2,2-Tetrachloroethane	Liver	0.02		0.002	0.02
			1,1,2-Trichloroethane	6E-07	1E-07	4E-08	8E-07	1,1,2-Trichloroethane	Blood	0.008		0.0005	0.008
			1,1-Dichloroethene	1E-06	1E-07	1E-07	1E-06	1,1-Dichloroethene	Liver	0.0006		0.00006	0.0007
			cis-1,2-Dichloroethene	--	--	--	--	cis-1,2-Dichloroethene	Blood	0.03	--	0.003	0.03
			Tetrachloroethene	3E-07	1E-08	1E-07	4E-07	Tetrachloroethene	Liver	0.002	0.00003	0.0007	0.002
			trans-1,2-Dichloroethene	--	--	--	--	trans-1,2-Dichloroethene	Blood	0.004		0.0002	0.004
			Trichloroethene	2E-04	5E-05	2E-05	3E-04	Trichloroethene	Liver	4	0.04	0.5	5
			Vinyl Chloride	3E-06	2E-08	9E-08	3E-06	Vinyl Chloride	Liver	0.004	0.0001	0.0001	0.004
			2,4,6-Trinitrotoluene	4E-07	--	6E-09	4E-07	2,4,6-Trinitrotoluene	Liver	0.07	-	0.001	0.07
			2-Amino-4,6-Dinitrotoluene	--	--	--	--	2-Amino-4,6-Dinitrotoluene	Liver	0.2		0.002	0.2
			4-Amino-2,6-Dinitrotoluene	--	--	--	--	4-Amino-2,6-Dinitrotoluene	Liver	0.5		0.004	0.5
			RDX	3E-05	--	2E-07	3E-05	RDX	Prostate	0.2	-	0.001	0.2
			Barium	--	--	--	--	Barium	Kidney	0.03	--	0.001	0.04
			Cadmium	--	--	--	--	Cadmium	Kidney	0.10	-	0.004	0.1
			Iron	--	--	--	--	Iron	Blood, GS	0.05	-	0.0001	0.05
			Nickel	--	--	--	--	Nickel	Body Weight	0.01		0.0001	0.01
			Nitrate	--	--	--	--	Nitrate	Blood	0.005	--	0.00001	0.005
			(Total)	3E-04	6E-05	3E-05	4E-04	(Total)		6	0.04	0.5	6
Surface Water	Surface Water	SWMU 3 - Little Sulphur Creek	Bromomethane	--	--	--	--	Bromomethane	GS	0.03	0.01	0.0007	0.04
			2-Amino-4,6-Dinitrotoluene	--	--	--	--	2-Amino-4,6-Dinitrotoluene	Liver	0.7	--	0.006	0.7
			4-Amino-2,6-Dinitrotoluene	--	--	--	--	4-Amino-2,6-Dinitrotoluene	Liver	1	-	0.01	1
			RDX	7E-05	--	4E-07	7E-05	RDX	Prostate	0.6	-	0.003	0.6
			(Total)	7E-05	--	4E-07	7E-05	(Total)		3	0.01	0.02	3
Sediment	Sediment	SWMU 3 - Little Sulphur Creek	2-Amino-4,6-Dinitrotoluene	--	--	--	--	2-Amino-4,6-Dinitrotoluene	Liver	0.0003	-	0.0002	0.0005
			Aluminum	--	--	--	--	Aluminum	Immune, Nails	0.002	-	--	0.002
			Antimony	--	-	--	--	Antimony	Blood	0.0007		--	0.0007
			Barium	--	--	--	--	Barium	Kidney	0.0005		--	0.0005
			Cadmium	--	--	--	--	Cadmium	Kidney	0.0004		0.00006	0.0004
			Lead	--	--	--	--	Lead	NA	--	-	--	--
			(Total)	--	--	--	--	(Total)		0.003	--	0.0003	0.004

Total Risk Across Soil	9E-07
Total Risk Across Groundwater	4E-04
Total Risk Across SWMU 3 - Little Sulphur Creek	7E-05
Total Risk Across Sediment	--
Total Risk Across All Media and All Exposure Routes	5E-04

Total Hazard Index Across All Media and All Exposure Routes	9
Total Blood HI	0.2
Total Body Weight HI	0.01
Total GS HI	0.2
Total Kidney HI	0.1
Total Liver HI	6
Total None Reported HI	0.00002
Total Prostate HI	0.6
Total Nails HI	0.002

TABLE 9 28
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
CENTRAL TENDENCY EXPOSURES
NSWC CRANE, INDIANA

Scenario Timeframe. Future
Receptor Population On-Site Resident
Receptor Age Adult

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk				Chemical	Non Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Tota		Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes Tota
Surface Soil	Surface Soil	SWMU 3 - 6-Acre Exposure Unit	2,3,7,8-TCDD Equivalents	5E-08	--	2E-09	5E-08	2,3,7,8-TCDD Equivalents	NA	-		--	--
			2,4,6-Trinitrotoluene	4E-09	--	4E-10	4E-09	2,4,6-Trinitrotoluene	Liver	0 002	-	0 0003	0 003
			2-Amino-4,6-Dinitrotoluene	--	--	--	--	2-Amino-4,6-Dinitrotoluene	Liver	0 003	-	0 0004	0 004
			4-Amino-2,6-Dinitrotoluene	--	--	--	--	4-Amino-2,6 Dinitrotoluene	Liver	0 003	-	0,0003	0 003
			HMX	--	--	--	--	HMX	Liver	0.00004		0 000005	0 00005
			RDX	2E-08	--	2E-09	2E-08	RDX	Prostate	0 0005	--	0 00006	0 0006
			Barium	--	--	--	--	Barium	Kidney	0 002		--	0 002
			Cadmium	--	--	--	--	Cadmium	Kidney	0 001	-	0 00002	0 001
			Chromium	--	--	--	--	Chromium	None Reported	0 000008	-	--	0 000008
			Iron	--	--	--	--	Iron	Blood, GS	0 04	-	--	0 04
			Lead	--	--	--	--	Lead	NA	--	--	--	--
			(Total)	7E-08	--	4E 09	8E-08	(Total)		0 05	--	0.001	0 05
Ground Water	Ground Water	SWMU 3 - Shallow Ground Water	1,1,2,2-Tetrachloroethane	1E-05	1E-06	1E-06	1E-05	1,1,2,2-Tetrachloroethane	Liver	0 009	--	0.0009	0.01
			1,1,2-Trichloroethane	8E-08	1E-08	6E-09	1E-07	1,1,2-Trichloroethane	Blood	0 004	--	0.0003	0 004
			1,1-Dichloroethene	2E-07	1E-08	2E-08	2E-07	1,1-Dichloroethene	Liver	0 0003	--	0 00003	0.0003
			cis-1,2-Dichloroethene	--	--	--	--	cis-1,2-Dichloroethene	Blood	0.01	--	0 002	0 02
			Tetrachloroethene	4E-08	2E-09	2E-08	6E-08	Tetrachloroethene	Liver	0 0008	0 00001	0 0004	0 001
			trans-1,2-Dichloroethene	--	--	--	--	trans-1,2-Dichloroethene	Blood	0 002	--	0 0001	0 002
			Trichloroethene	3E-05	5E-06	3E 06	3E-05	Trichloroethene	Liver	2	0 01	0.3	2
			Vinyl Chloride	4E-07	2E-09	1E-08	4E-07	Vinyl Chloride	Liver	0 002	0 00005	0.00007	0.002
			2,4,6-Trinitrotoluene	5E-08	--	1E-09	5E-08	2,4,6-Trinitrotoluene	Liver	0 03	-	0 0007	0 03
			2-Amino-4,6-Dinitrotoluene	--	--	--	--	2-Amino-4,6-Dinitrotoluene	Liver	0 09	--	0.0009	0 09
			4-Amino-2,6-Dinitrotoluene	--	--	--	--	4-Amino-2,6-Dinitrotoluene	Liver	0 2		0.002	0.2
			RDX	4E-06	--	3E-08	4E-06	RDX	Prostate	0 1	-	0 0008	0.1
			Barium	--	--	--	--	Barium	Kidney	0 02		0 0005	0 02
			Cadmium	--	--	--	--	Cadmium	Kidney	0 05	--	0.002	0.05
			Iron	--	--	--	--	Iron	Blood, GS	0 02	-	0.00005	0.02
			Nickel	--	--	--	--	Nickel	Body Weight	0 006	-	0 00006	0 006
			Nitrate	--	--	--	--	Nitrate	Blood	0 002	--	0 000005	0 002
			(Total)	4E-05	7E-06	4E-06	5E-05	(Total)		3	0 01	0.3	3
Surface Water	Surface Water	SWMU 3 - Little Sulphur Creek	Bromomethane	--	--	--	--	Bromomethane	GS	0 01	0 003	0.0004	0 02
			2 Amino-4,6-Dinitrotoluene	--	--	--	--	2-Amino-4,6-Dinitrotoluene	Liver	0 3		0.003	0 3
			4 Amino-2,6 Dinitrotoluene	--	--	--	--	4-Amino-2,6-Dinitrotoluene	Liver	0 6		0 007	0 6
			RDX	9E-06	--	6E 08	9E-06	RDX	Prostate	0 3	-	0.002	0.3
			(Total)	9E-06	--	6E-08	9E-06	(Total)		1	0 003	0 01	1
Sediment	Sediment	SWMU 3 - Little Sulphur Creek	2-Amino-4 6 Dinitrotoluene	--	--	--	--	2-Amino-4,6-Dinitrotoluene	Liver	0 00008		0.00002	0 00009
			Aluminum	--	--	--	--	Aluminum	Immune, Nails	0 0004	--	--	0 0004
			Antimony	--	--	--	--	Antimony	Blood	0 0002	-	--	0 0002
			Barium	--	--	--	--	Barium	Kidney	0.0001		--	0.0001
			Cadmium	--	--	--	--	Cadmium	Kidney	0 00009	-	0 000004	0 00009
			Lead	--	--	--	--	Lead	NA	--	-	--	--
			(Total)	--	--	--	--	(Total)		0 0009	-	0 00002	0.0009

Total Risk Across Soil	8E-08
Total Risk Across Groundwater	5E-05
Total Risk Across SWMU 3 - Little Sulphur Creek	9E-06
Total Risk Across Sediment	--
Total Risk Across All Media and All Exposure Routes	6E-05

Total Hazard Index Across All Media and All Exposure Routes	4

Total Blood HI	0.09
Total Body Weight HI	0 006
Total GS HI	0 08
Total Kidney HI	0 07
Total Liver HI	4
Total None Reported HI	0 000008
Total Prostate HI	0.4
Total Nails HI	0.0004

TABLE 9 29
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
REASONABLE MAXIMUM EXPOSURE
NSWC CRANE, INDIANA

Scenario Timeframe Future
Receptor Population On-Site Resident
Receptor Age· Lifelong (Child and Adult)

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk				Chemical	Non Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Tota		Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes Tota
Surface Soil	Surface Soil	SWMU 3 1 Acre Exposure Unit	2,3,7,8-TCDD Equivalents	2E-06	- -	2E-07	2E-06	2,3,7,8-TCDD Equivalents	NA				
			2,4,6-Trinitrotoluene	3E-05	- -	9E-06	4E-05	2,4,6-Trinitrotoluene	Liver				
			2-Amino-4,6-Dinitrotoluene	- -	- -	- -	- -	2-Amino-4,6-Dinitrotoluene	Liver				
			4-Amino-2,6-Dinitrotoluene	- -	- -	- -	- -	4-Amino-2,6-Dinitrotoluene	Liver				
			HMX	- -	- -	- -	- -	HMX	Liver				
			RDX	9E-05	- -	3E-05	1E 04	RDX	Prostate				
			Barium	- -	- -	-	- -	Barium	Kidney				
			Cadmium	- -	- -	- -	- -	Cadmium	Kidney				
			Chromium	- -	- -	- -	- -	Chromium	None Reported				
			Iron	- -	- -	- -	- -	Iron	Blood, GS				
			Lead	- -	- -	- -	- -	Lead	NA				
			(Total)	1E-04	- -	4E-05	2E-04	(Total)					
Ground Water	Ground Water	SWMU 3 - Shallow Ground Water	1,1,2,2-Tetrachloroethane	2E-04	3E-05	1E-05	2E-04	1,1,2,2-Tetrachloroethane	Liver				
			1,1,2-Trichloroethane	1E 06	3E-07	5E-08	1E-06	1,1,2-Trichloroethane	Blood				
			1,1-Dichloroethene	2E-06	2E-07	2E-07	3E-06	1,1-Dichloroethene	Liver				
			cis-1,2-Dichloroethene	- -	- -	- -	- -	cis-1,2-Dichloroethene	Blood				
			Tetrachloroethene	6E-07	3E-08	2E-07	8E-07	Tetrachloroethene	Liver				
			trans-1,2 Dichloroethene	- -	- -	- -	- -	trans-1,2-Dichloroethene	Blood				
			Trichloroethene	3E-04	1E-04	3E-05	5E-04	Trichloroethene	Liver				
			Vinyl Chloride	5E-06	4E-08	1E-07	5E-06	Vinyl Chloride	Liver				
			2,4,6-Trinitrotoluene	7E-07	- -	9E-09	7E-07	2,4,6-Trinitrotoluene	Liver				
			2-Amino-4,6-Dinitrotoluene	- -	- -	- -	- -	2-Amino-4,6-Dinitrotoluene	Liver				
			4-Amino-2,6-Dinitrotoluene	- -	- -	- -	- -	4-Amino-2,6-Dinitrotoluene	Liver				
			RDX	5E-05	- -	2E-07	5E-05	RDX	Prostate				
			Barium	- -	- -	- -	- -	Barium	Kidney				
			Cadmium	- -	- -	- -	- -	Cadmium	Kidney				
			Iron	- -	- -	- -	- -	Iron	Blood, GS				
			Nickel	- -	- -	- -	- -	Nickel	Body Weight				
			Nitrate	- -	- -	- -	- -	Nitrate	Blood				
			(Total)	6E-04	1E-04	4E-05	7E-04	(Total)					
Surface Water	Surface Water	SWMU 3 - Little Sulphur Creek	Bromomethane	- -	- -	- -	- -	Bromomethane	GS				
			2-Amino-4,6-Dinitrotoluene	- -	- -	- -	- -	2 Amino-4,6 Dinitrotoluene	Liver				
			4 Amino-2,6 Dinitrotoluene	- -	- -	- -	- -	4-Amino-2,6-Dinitrotoluene	Liver				
			RDX	1E-04	- -	5E-07	1E-04	RDX	Prostate				
			(Total)	1E-04	- -	5E-07	1E-04	(Total)					
Sediment	Sediment	SWMU 3 - Little Sulphur Creek	2-Amino-4,6-Dinitrotoluene	- -	- -	- -	- -	2-Amino-4,6 Dinitrotoluene	Liver				
			Aluminum	- -	- -	- -	- -	Aluminum	Immune, Nails				
			Antimony	- -	- -	- -	- -	Antimony	Blood				
			Barium	- -	- -	- -	- -	Barium	Kidney				
			Cadmium	- -	- -	- -	- -	Cadmium	Kidney				
			Lead	- -	- -	- -	- -	Lead	NA				
			(Total)	- -	- -	- -	- -	(Total)					

Total Risk Across Soil	2E-04
Total Risk Across Groundwater	7E-04
Total Risk Across SWMU 3 - Little Sulphur Creek	1E-04
Total Risk Across Sediment	- -
Total Risk Across All Media and All Exposure Routes	1E-03

Total Hazard Index Across All Media and All Exposure Routes

TABLE 9 30
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
CENTRAL TENDENCY EXPOSURES
NSWC CRANE, INDIANA

Scenario Timeframe: Future
Receptor Population: On-Site Resident
Receptor Age: Lifelong (Child and Adult)

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk				Chemical	Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total		Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes Total
Surface Soil	Surface Soil	SWMU 3 - 1 Acre Exposure Unit	2,3,7,8-TCDD Equivalents	2E-07	--	6E-09	2E-07	2,3,7,8-TCDD Equivalents	NA				
			2,4,6-Trinitrotoluene	3E 06	--	3E-07	3E-06	2,4,6-Trinitrotoluene	Liver				
			2-Amino-4,6-Dinitrotoluene	--	--	--	--	2-Amino-4,6 Dinitrotoluene	Liver				
			4-Amino-2,6-Dinitrotoluene	--	--	--	--	4-Amino-2,6-Dinitrotoluene	Liver				
			HMX	--	--	--	--	HMX	Liver				
			RDX	1E-05	--	1E-06	1E-05	RDX	Prostate				
			Barium	--	--	--	-	Barium	Kidney				
			Cadmium	--	--	--	--	Cadmium	Kidney				
			Chromium	-	--	--	--	Chromium	None Reported				
			Iron	-	--	--	-	Iron	Blood, GS				
			Lead	--	--	--	--	Lead	NA				
			(Total)	1E-05	--	1E-06	1E-05	(Total)					
Ground Water	Ground Water	SWMU 3 - Shallow Ground Water	1,1,2,2-Tetrachloroethane	2E-05	3E-06	2E-06	2E-05	1,1,2,2-Tetrachloroethane	Liver				
			1,1,2-Trichloroethane	1E-07	3E-08	9E-09	2E-07	1,1,2-Trichloroethane	Blood				
			1,1-Dichloroethene	3E-07	3E-08	3E-08	3E 07	1,1-Dichloroethene	Liver				
			cis-1,2-Dichloroethene	--	--	--	--	cis-1,2-Dichloroethene	Blood				
			Tetrachloroethene	7E-08	4E-09	3E-08	1E-07	Tetrachloroethene	Liver				
			trans-1,2-Dichloroethene	--	--	--	--	trans-1,2-Dichloroethene	Blood				
			Trichloroethene	4E-05	1E-05	5E-06	6E-05	Trichloroethene	Liver				
			Vinyl Chloride	6E-07	5E-09	2E-08	6E-07	Vinyl Chloride	Liver				
			2,4,6-Trinitrotoluene	8E-08	--	1E-09	8E-08	2,4,6-Trinitrotoluene	Liver				
			2-Amino-4,6-Dinitrotoluene	--	--	--	--	2-Amino-4,6-Dinitrotoluene	Liver				
			4-Amino-2,6-Dinitrotoluene	--	--	--	--	4-Amino-2,6-Dinitrotoluene	Liver				
			RDX	6E-06	--	4E-08	6E-06	RDX	Prostate				
			Barium	--	--	--	--	Barium	Kidney				
			Cadmium	--	--	--	--	Cadmium	Kidney				
			Iron	--	--	--	--	Iron	Blood, GS				
			Nickel	--	--	--	--	Nickel	Body Weight				
			Nitrate	--	--	--	--	Nitrate	Blood				
			(Total)	7E-05	2E-05	7E-06	9E-05	(Total)					
Surface Water	Surface Water	SWMU 3 - Little Sulphur Creek	Bromomethane	--	--	--	--	Bromomethane	GS				
			2-Amino-4,6-Dinitrotoluene	--	--	--	--	2 Amino-4,6 Dinitrotoluene	Liver				
			4-Amino-2,6-Dinitrotoluene	--	--	--	--	4-Amino-2,6-Dinitrotoluene	Liver				
			RDX	1E-05	--	9E-08	1E-05	RDX	Prostate				
			(Total)	1E-05	--	9E-08	1E-05	(Total)					
Sediment	Sediment	SWMU 3 - Little Sulphur Creek	2-Amino-4,6-Dinitrotoluene	--	--	--	--	2-Amino-4,6-Dinitrotoluene	Liver				
			Aluminum	--	--	--	--	Aluminum	Immune, Nails				
			Antimony	--	--	--	--	Antimony	Blood				
			Barium	--	--	--	--	Barium	Kidney				
			Cadmium	--	--	--	--	Cadmium	Kidney				
			Lead	--	--	--	--	Lead	NA				
			(Total)	--	--	--	--	(Total)					

Total Risk Across Soil	1E-05
Total Risk Across Groundwater	9E-05
Total Risk Across SWMU 3 - Little Sulphur Creek	1E-05
Total Risk Across Sediment	--
Total Risk Across All Media and All Exposure Routes	1E-04

Total Hazard Index Across All Media and All Exposure Routes

TABLE 9 31
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
REASONABLE MAXIMUM EXPOSURE
NSWC CRANE, INDIANA

Scenario Timeframe Future
Receptor Population On Site Resident
Receptor Age Lifelong (Child and Adult)

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk				Chemical	Non Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total		Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes Total
Surface Soil	Surface Soil	SWMU 3 - 6-Acre Exposure Unit	2,3,7,8-TCDD Equivalents	2E-06	--	2E-07	2E-06	2,3,7,8-TCDD Equivalents	NA				
			2,4,6-Trinitrotoluene	1E-07	--	4E-08	2E-07	2,4,6-Trinitrotoluene	Liver				
			2-Amino-4,6-Dinitrotoluene	--	--	--	--	2-Amino 4,6 Dinitrotoluene	Liver				
			4-Amino-2,6-Dinitrotoluene	--	--	--	--	4-Amino-2,6-Dinitrotoluene	Liver				
			HMX	--	--	--	--	HMX	Liver				
			RDX	6E-07	--	2E-07	8E-07	RDX	Prostate				
			Barium	--	--	--	--	Barium	Kidney				
			Cadmium	--	--	--	-	Cadmium	Kidney				
			Chromium	--	--	--	--	Chromium	None Reported				
			Iron	--	--	--	--	Iron	Blood, GS				
			Lead	--	--	--	--	Lead	NA				
			(Total)	2E-06	--	4E-07	3E-06	(Total)					
Ground Water	Ground Water	SWMU 3 - Shallow Ground Water	1,1,2,2-Tetrachloroethane	2E-04	3E-05	1E-05	2E 04	1,1,2,2-Tetrachloroethane	Liver				
			1,1,2-Trichloroethane	1E-06	3E-07	5E-08	1E-06	1,1,2-Trichloroethane	Blood				
			1,1-Dichloroethene	2E-06	2E-07	2E-07	3E-06	1,1-Dichloroethene	Liver				
			cis-1,2-Dichloroethene	--	--	--	--	cis-1,2-Dichloroethene	Blood				
			Tetrachloroethene	6E-07	3E-08	2E-07	8E-07	Tetrachloroethene	Liver				
			trans-1,2-Dichloroethene	--	--	--	--	trans-1,2-Dichloroethene	Blood				
			Trichloroethene	3E-04	1E-04	3E-05	5E-04	Trichloroethene	Liver				
			Vinyl Chloride	5E-06	4E-08	1E-07	5E-06	Vinyl Chloride	Liver				
			2,4,6-Trinitrotoluene	7E-07	--	9E-09	7E-07	2,4,6-Trinitrotoluene	Liver				
			2-Amino-4,6-Dinitrotoluene	--	--	--	--	2-Amino-4,6-Dinitrotoluene	Liver				
			4-Amino-2,6-Dinitrotoluene	--	--	--	--	4-Amino-2,6-Dinitrotoluene	Liver				
			RDX	5E-05	--	2E-07	5E 05	RDX	Prostate				
			Barium	--	--	--	--	Barium	Kidney				
			Cadmium	--	--	--	--	Cadmium	Kidney				
			Iron	--	--	--	--	Iron	Blood, GS				
			Nickel	--	--	--	--	Nickel	Body Weight				
			Nitrate	--	--	--	--	Nitrate	Blood				
			(Total)	6E-04	1E-04	4E-05	7E-04	(Total)					
Surface Water	Surface Water	SWMU 3 Little Sulphur Creek	Bromomethane	--	--	--	--	Bromomethane	GS				
			2-Amino-4,6 Dinitrotoluene	--	--	--	--	2-Amino-4,6-Dinitrotoluene	Liver				
			4-Amino-2,6 Dinitrotoluene	--	--	--	--	4-Amino-2,6-Dinitrotoluene	Liver				
			RDX	1E-04	--	5E-07	1E 04	RDX	Prostate				
			(Total)	1E-04	--	5E-07	1E-04	(Total)					
Sediment	Sediment	SWMU 3 Little Sulphur Creek	2-Amino-4,6-Dinitrotoluene	--	--	--	--	2-Amino-4,6-Dinitrotoluene	Liver				
			Aluminum	--	--	--	--	Aluminum	Immune, Nails				
			Antimony	--	--	--	--	Antimony	Blood				
			Barium	--	--	--	--	Barium	Kidney				
			Cadmium	--	--	--	--	Cadmium	Kidney				
			Lead	--	--	--	--	Lead	NA				
			(Total)	--	--	--	--	(Total)					

Total Risk Across Soil	3E-06
Total Risk Across Groundwater	7E-04
Total Risk Across SWMU 3 - Little Sulphur Creek	1E-04
Total Risk Across Sediment	--
Total Risk Across All Media and All Exposure Routes	9E-04

Total Hazard Index Across All Media and All Exposure Routes

TABLE 9 32
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
CENTRAL TENDENCY EXPOSURES
NSWC CRANE, INDIANA

Scenario Timeframe Future
Receptor Population On-Site Resident
Receptor Age Lifelong (Child and Adult)

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk				Chemical	Non Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Tota		Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes Tota
Surface Soil	Surface Soil	SWMU 3 - 6-Acre Exposure Unit	2,3,7,8-TCDD Equivalents	2E-07	--	6E-09	2E-07	2,3,7,8-TCDD Equivalents	NA				
			2,4,6-Trinitrotoluene	1E 08	--	1E-09	1E-08	2,4,6-Trinitrotoluene	Liver				
			2-Amino-4,6 Dinitrotoluene	--	--	--	--	2-Amino-4,6-Dinitrotoluene	Liver				
			4-Amino-2,6 Dinitrotoluene	--	--	--	--	4-Amino-2,6-Dinitrotoluene	Liver				
			HMX	--	--	--	--	HMX	Liver				
			RDX	6E-08	--	7E-09	7E-08	RDX	Prostate				
			Barium	--	--	--	--	Barium	Kidney				
			Cadmium	--	--	--	--	Cadmium	Kidney				
			Chromium	--	--	--	--	Chromium	None Reported				
			Iron	--	-	--	--	Iron	Blood, GS				
			Lead	--	--	--	--	Lead	NA				
			(Total)	3E-07	--	1E-08	3E-07	(Total)					
Ground Water	Ground Water	SWMU 3 - Shallow Ground Water	1,1,2,2 Tetrachloroethane	2E-05	3E-06	2E-06	2E-05	1,1,2,2-Tetrachloroethane	Liver				
			1,1,2-Trichloroethane	1E-07	3E-08	9E-09	2E-07	1,1,2-Trichloroethane	Blood				
			1,1-Dichloroethene	3E-07	3E-08	3E-08	3E-07	1,1-Dichloroethene	Liver				
			cis-1,2-Dichloroethene	--	--	--	--	cis-1,2-Dichloroethene	Blood				
			Tetrachloroethene	7E 08	4E-09	3E-08	1E-07	Tetrachloroethene	Liver				
			trans-1,2-Dichloroethene	--	--	--	--	trans-1,2-Dichloroethene	Blood				
			Trichloroethene	4E-05	1E-05	5E-06	6E-05	Trichloroethene	Liver				
			Vinyl Chloride	6E-07	5E 09	2E 08	6E-07	Vinyl Chloride	Liver				
			2,4,6-Trinitrotoluene	8E 08	--	1E-09	8E-08	2,4,6-Trinitrotoluene	Liver				
			2-Amino-4,6 Dinitrotoluene	--	--	--	--	2-Amino-4,6-Dinitrotoluene	Liver				
			4-Amino-2,6 Dinitrotoluene	--	--	--	--	4-Amino 2,6-Dinitrotoluene	Liver				
			RDX	6E-06	--	4E 08	6E-06	RDX	Prostate				
			Barium	--	--	--	--	Barium	Kidney				
			Cadmium	--	--	--	--	Cadmium	Kidney				
			Iron	--	--	--	--	Iron	Blood, GS				
			Nickel	--	--	--	--	Nickel	Body Weight				
			Nitrate	--	--	--	--	Nitrate	Blood				
			(Total)	7E-05	2E-05	7E-06	9E-05	(Total)					
Surface Water	Surface Water	SWMU 3 Little Sulphur Creek	Bromomethane	--	--	--	--	Bromomethane	GS				
			2-Amino-4,6-Dinitrotoluene	--	--	--	--	2-Amino-4,6-Dinitrotoluene	Liver				
			4-Amino-2,6-Dinitrotoluene	--	--	--	--	4-Amino-2,6-Dinitrotoluene	Liver				
			RDX	1E-05	--	9E-08	1E-05	RDX	Prostate				
			(Total)	1E-05	--	9E-08	1E-05	(Total)					
Sediment	Sediment	SWMU 3 - Little Sulphur Creek	2-Amino-4,6-Dinitrotoluene	--	--	--	--	2-Amino-4,6-Dinitrotoluene	Liver				
			Aluminum	--	--	--	--	Aluminum	Immune, Nails				
			Antimony	--	--	--	--	Antimony	Blood				
			Barium	--	--	--	--	Barium	Kidney				
			Cadmium	--	--	--	--	Cadmium	Kidney				
			Lead	--	--	--	--	Lead	NA				
			(Total)	--	--	--	--	(Total)					

Total Risk Across Soil	3E-07
Total Risk Across Groundwater	9E-05
Total Risk Across SWMU 3 - Little Sulphur Creek	1E-05
Total Risk Across Sediment	--
Total Risk Across All Media and All Exposure Routes	1E-04

Total Hazard Index Across All Media and All Exposure Routes

RAGS Part D Table 10

Risks Assessment Summaries

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10-4	Off-Site Child Residents - Central Tendency Exposures
10-5	Off-Site Adult Residents - Reasonable Maximum Exposures
10-6	Off-Site Adult Residents - Central Tendency Exposures
10-7	Off-Site Lifelong Residents - Reasonable Maximum Exposures
10-8	Off-Site Lifelong Residents - Central Tendency Exposures
10-9	Construction Workers - Reasonable Maximum Exposures
10-10	Construction Workers - Central Tendency Exposures
10-11	Maintenance Workers - Reasonable Maximum Exposures
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10-15	Child Recreational Users - Reasonable Maximum Exposures
10-16	Child Recreational Users - Central Tendency Exposures
10-17	Adult Recreational Users - Reasonable Maximum Exposures
10-18	Adult Recreational Users - Central Tendency Exposures
10-19	Lifelong Recreational Users - Reasonable Maximum Exposures
10-20	Lifelong Recreational Users - Central Tendency Exposures
10-21	On-Site Child Resident - 1-Acre Surface Soil Exposure Unit - Reasonable Maximum Exposures
10-22	On-Site Child Resident - 1-Acre Surface Soil Exposure Unit - Central Tendency Exposures
10-23	On-Site Child Resident - 6-Acre Surface Soil Exposure Unit - Reasonable Maximum Exposures
10-24	On-Site Child Resident - 6-Acre Surface Soil Exposure Unit - Central Tendency Exposures
10-25	On-Site Adult Resident - 1 Acre Exposure Unit - Reasonable Maximum Exposures
10-26	On-Site Adult Resident - 1 Acre Exposure Unit - Central Tendency Exposures
10-27	On-Site Adult Resident - 6 Acre Exposure Unit - Reasonable Maximum Exposures
10-28	On-Site Adult Resident - 6 Acre Exposure Unit - Central Tendency Exposures
10-29	On-Site Lifelong Resident - 1 Acre Exposure Unit - Reasonable Maximum Exposures
10-30	On-Site Lifelong Resident - 1 Acre Exposure Unit - Central Tendency Exposures
10-31	On-Site Lifelong Resident - 6 Acre Exposure Unit - Reasonable Maximum Exposures
10-32	On-Site Lifelong Resident - 6 Acre Exposure Unit - Central Tendency Exposures

TABLE 10 1
RISK ASSESSMENT SUMMARY
REASONABLE MAXIMUM EXPOSURE
NSWC CRANE, INDIANA

Scenario Timeframe Current/Future
Receptor Population Trespassers
Receptor Age: Adolescent

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk				Chemical	Non Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Tota		Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes Tota
Surface Soil	Surface Soil	SWMU 3 - Old Jeep Trail	All Cancer Risks Less than 1E-06						All Hazard Quotients less than 1				
Surface Water	Surface Water	SWMU 3 - Little Sulphur Creek	All Cancer Risks Less than 1E-06						All Hazard Quotients less than 1				
Sediment	Sediment	SWMU 3 - Little Sulphur Creek	All Cancer Risks Less than 1E-06						All Hazard Quotients less than 1				

TABLE 10 2
RISK ASSESSMENT SUMMARY
CENTRAL TENDENCY EXPOSURES
NSWC CRANE, INDIANA

Scenario Timeframe Current/Future
Receptor Population: Trespassers
Receptor Age: Adolescent

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk				Chemical	Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Tota		Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes Tota
Surface Soil	Surface Soil	SWMU 3 - Old Jeep Trail	All Cancer Risks Less than 1E-06						All Hazard Quotients less than 1				
Surface Water	Surface Water	SWMU 3 - Little Sulphur Creek	All Cancer Risks Less than 1E-06						All Hazard Quotients less than 1				
Sediment	Sediment	SWMU 3 - Little Sulphur Creek	All Cancer Risks Less than 1E-06						All Hazard Quotients less than 1				

TABLE 10 3
RISK ASSESSMENT SUMMARY
REASONABLE MAXIMUM EXPOSURE
NSWC CRANE, INDIANA

Scenario Timeframe	Current/Future
Receptor Population	Off-Site Resident
Receptor Age	Child

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk				Chemical	Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Tota		Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes Tota
Surface Water	Surface Water	SWMU 3 - Little Sulphur Creek	RDX	9E-06	- -	3E-08	9E-06	RDX	Prostate	0 3	- -	0 0009	0 3
			(Total)	9E-06	- -	3E-08	9E-06	(Total)		0 3	--	0 0009	0.3
						Total Risk Across Groundwater	9E-06					Total Hazard Index Across All Media and All Exposure Routes	0.3
						Total Risk Across All Media and All Exposure Routes	9E-06						
												Total Prostate HI	0.3

TABLE 10 4
RISK ASSESSMENT SUMMARY
CENTRAL TENDENCY EXPOSURES
NSWC CRANE, INDIANA

Scenario Timeframe: Current/Future
Receptor Population: Off-Site Resident
Receptor Age: Child

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk				Chemical	Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total		Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes Total
Surface Water	Surface Water	SWMU 3 - Little Sulphur Creek	All Cancer Risks Less than 1E-06						All Hazard Quotients less than 1				

TABLE 10 5
RISK ASSESSMENT SUMMARY
REASONABLE MAXIMUM EXPOSURE
NSWC CRANE, INDIANA

Scenario Timeframe	Current/Future
Receptor Population	Off-Site Resident
Receptor Age	Adult

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk				Chemical	Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Tota		Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes Tota
Surface Water	Surface Water	SWMU 3 - Little Sulphur Creek	RDX	1E-05	- -	6E-08	1E-05	RDX	Prostate	0 09	- -	0 0005	0 09
			(Total)	1E-05	- -	6E-08	1E-05	(Total)		0 09	--	0 0005	0 09
						Total Risk Across Groundwater	1E-05					Total Hazard Index Across All Media and All Exposure Routes	0.09
						Total Risk Across All Media and All Exposure Routes	1E-05						
												Total Prostate HI	0 09

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Risks Assessment Summaries

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10-6	Off-Site Adult Residents - Central Tendency Exposures
10-7	Off-Site Lifelong Residents - Reasonable Maximum Exposures
10-8	Off-Site Lifelong Residents - Central Tendency Exposures
10-9	Construction Workers - Reasonable Maximum Exposures
10-10	Construction Workers - Central Tendency Exposures
10-11	Maintenance Workers - Reasonable Maximum Exposures
10-12	Maintenance Workers - Central Tendency Exposures
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10-14	Occupational Workers - Central Tendency Exposures
10-15	Child Recreational Users - Reasonable Maximum Exposures
10-16	Child Recreational Users - Central Tendency Exposures
10-17	Adult Recreational Users - Reasonable Maximum Exposures
10-18	Adult Recreational Users - Central Tendency Exposures
10-19	Lifelong Recreational Users - Reasonable Maximum Exposures
10-20	Lifelong Recreational Users - Central Tendency Exposures
10-21	On-Site Child Resident - 1-Acre Surface Soil Exposure Unit - Reasonable Maximum Exposures
10-22	On-Site Child Resident - 1-Acre Surface Soil Exposure Unit - Central Tendency Exposures
10-23	On-Site Child Resident - 6-Acre Surface Soil Exposure Unit - Reasonable Maximum Exposures
10-24	On-Site Child Resident - 6-Acre Surface Soil Exposure Unit - Central Tendency Exposures
10-25	On-Site Adult Resident - 1 Acre Exposure Unit - Reasonable Maximum Exposures
10-26	On-Site Adult Resident - 1 Acre Exposure Unit - Central Tendency Exposures
10-27	On-Site Adult Resident - 6 Acre Exposure Unit - Reasonable Maximum Exposures
10-28	On-Site Adult Resident - 6 Acre Exposure Unit - Central Tendency Exposures
10-29	On-Site Lifelong Resident - 1 Acre Exposure Unit - Reasonable Maximum Exposures
10-30	On-Site Lifelong Resident - 1 Acre Exposure Unit - Central Tendency Exposures
10-31	On-Site Lifelong Resident - 6 Acre Exposure Unit - Reasonable Maximum Exposures
10-32	On-Site Lifelong Resident - 6 Acre Exposure Unit - Central Tendency Exposures

TABLE 10.1
RISK ASSESSMENT SUMMARY
REASONABLE MAXIMUM EXPOSURE
NSWC CRANE, INDIANA

Scenario Timeframe: Current/Future
Receptor Population: Trespassers
Receptor Age: Adolescent

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk				Chemical	Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Tota		Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes Tota
Surface Soil	Surface Soil	SWMU 3 - Old Jeep Trail	All Cancer Risks Less than 1E-06						All Hazard Quotients less than 1				
Surface Water	Surface Water	SWMU 3 - Little Sulphur Creek	All Cancer Risks Less than 1E-06						All Hazard Quotients less than 1				
Sediment	Sediment	SWMU 3 - Little Sulphur Creek	All Cancer Risks Less than 1E-06						All Hazard Quotients less than 1				

TABLE 10.2
RISK ASSESSMENT SUMMARY
CENTRAL TENDENCY EXPOSURES
NSWC CRANE, INDIANA

Scenario Timeframe: Current/Future
Receptor Population: Trespassers
Receptor Age: Adolescent

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk				Chemical	Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Tota		Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes Tota
Surface Soil	Surface Soil	SWMU 3 - Old Jeep Trail	All Cancer Risks Less than 1E-06						All Hazard Quotients less than 1				
Surface Water	Surface Water	SWMU 3 - Little Sulphur Creek	All Cancer Risks Less than 1E-06						All Hazard Quotients less than 1				
Sediment	Sediment	SWMU 3 - Little Sulphur Creek	All Cancer Risks Less than 1E-06						All Hazard Quotients less than 1				

TABLE 10.3
RISK ASSESSMENT SUMMARY
REASONABLE MAXIMUM EXPOSURE
NSWC CRANE, INDIANA

Scenario Timeframe: Current/Future
Receptor Population: Off-Site Resident
Receptor Age: Child

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk			
				Ingestion	Inhalation	Dermal	Exposure Routes Total
Surface Water	Surface Water	SWMU 3 - Little Sulphur Creek	RDX	9E-06	--	3E-08	9E-06
			(Total)	9E-06	--	3E-08	9E-06
						Total Risk Across Groundwater	9E-06
						Total Risk Across All Media and All Exposure Routes	9E-06

Chemical	Non-Carcinogenic Hazard Quotient				
	Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes Total
RDX	Prostate	0.3	--	0.0009	0.3
(Total)		0.3	--	0.0009	0.3
				Total Hazard Index Across All Media and All Exposure Routes	0.3
				Total Prostate HI	0.3

TABLE 10.4
RISK ASSESSMENT SUMMARY
CENTRAL TENDENCY EXPOSURES
NSWC CRANE, INDIANA

Scenario Timeframe: Current/Future
Receptor Population: Off-Site Resident
Receptor Age: Child

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk				Chemical	Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total		Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes Total
Surface Water	Surface Water	SWMU 3 - Little Sulphur Creek	All Cancer Risks Less than 1E-06						All Hazard Quotients less than 1				

TABLE 10.5
RISK ASSESSMENT SUMMARY
REASONABLE MAXIMUM EXPOSURE
NSWC CRANE, INDIANA

Scenario Timeframe: Current/Future
Receptor Population: Off-Site Resident
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk			
				Ingestion	Inhalation	Dermal	Exposure Routes Tota
Surface Water	Surface Water	SWMU 3 - Little Sulphur Creek	RDX	1E-05	- -	6E-08	1E-05
			(Total)	1E-05	- -	6E-08	1E-05
			Total Risk Across Groundwater				1E-05
			Total Risk Across All Media and All Exposure Routes				1E-05

Chemical	Non-Carcinogenic Hazard Quotient				
	Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes Tota
RDX	Prostate	0.09	- -	0.0005	0.09
(Total)		0.09	--	0.0005	0.09
Total Hazard Index Across All Media and All Exposure Routes					0.09
Total Prostate HI					0.09

TABLE 10.6
RISK ASSESSMENT SUMMARY
CENTRAL TENDENCY EXPOSURES
NSWC CRANE, INDIANA

Scenario Timeframe: Current/Future
Receptor Population: Off-Site Resident
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk				Chemical	Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Tota		Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes Tota
Surface Water	Surface Water	SWMU 3 - Little Sulphur Creek	RDX	1E-06	- -	1E-08	1E-06	RDX	Prostate	0.04	- -	0.0003	0.04
			(Total)	1E-06	- -	1E-08	1E-06	(Total)		0.04	--	0.0003	0.04
						Total Risk Across Groundwater	1E-06					Total Hazard Index Across All Media and All Exposure Routes	0.04
						Total Risk Across All Media and All Exposure Routes	1E-06						
												Total Prostate HI	0.04

TABLE 10.7
RISK ASSESSMENT SUMMARY
REASONABLE MAXIMUM EXPOSURE
NSWC CRANE, INDIANA

Scenario Timeframe: Current/Future
Receptor Population: Off-Site Resident
Receptor Age: Lifelong (Child and Adult)

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk				Chemical	Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Tota		Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes Tota
Surface Water	Surface Water	SWMU 3 - Little Sulphur Creek	4-Amino-2,6-Dinitrotoluene	--	--	--	--						
			RDX	2E-05	--	9E-08	2E-05						
			(Total)	2E-05	--	9E-08	2E-05						
			Total Risk Across Groundwater				2E-05						
			Total Risk Across All Media and All Exposure Routes				2E-05						

TABLE 10.8
RISK ASSESSMENT SUMMARY
CENTRAL TENDENCY EXPOSURES
NSWC CRANE, INDIANA

Scenario Timeframe: Current/Future
Receptor Population: Off-Site Resident
Receptor Age: Lifelong (Child and Adult)

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk				Chemical	Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Tota		Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes Tota
Surface Water	Surface Water	SWMU 3 - Little Sulphur Creek	4-Amino-2,6-Dinitrotoluene	--	--	--	--						
			RDX	2E-06	--	1E-08	2E-06						
			(Total)	2E-06	--	1E-08	2E-06						
			Total Risk Across Groundwater				2E-06						
			Total Risk Across All Media and All Exposure Routes				2E-06						

TABLE 10.9
RISK ASSESSMENT SUMMARY
REASONABLE MAXIMUM EXPOSURE
NSWC CRANE, INDIANA

Scenario Timeframe: Future
Receptor Population: Construction Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk				Chemical	Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Tota		Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes Tota
Surface/Subsurface Soil	Surface/Subsurface Soil	SWMU 3 - Old Jeep Trail	All Cancer Risks Less than 1E-06						All Hazard Quotients less than 1				
Ground Water	Ground Water	SWMU 3 - Shallow Ground Water	All Cancer Risks Less than 1E-06						All Hazard Quotients less than 1				

TABLE 10.10
RISK ASSESSMENT SUMMARY
CENTRAL TENDENCY EXPOSURES
NSWC CRANE, INDIANA

Scenario Timeframe: Future
Receptor Population: Construction Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk				Chemical	Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total		Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes Total
Surface/Subsurface Soil	Surface/Subsurface Soil	SWMU 3 - Old Jeep Trail	All Cancer Risks Less than 1E-06						All Hazard Quotients less than 1				
Ground Water	Ground Water	SWMU 3 - Shallow Ground Water	All Cancer Risks Less than 1E-06						All Hazard Quotients less than 1				

TABLE 10.11
RISK ASSESSMENT SUMMARY
REASONABLE MAXIMUM EXPOSURE
NSWC CRANE, INDIANA

Scenario Timeframe: Future
Receptor Population: Maintenance Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk				Chemical	Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Tota		Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes Tota
Surface Soil	Surface Soil	SWMU 3 - Old Jeep Trail	All Cancer Risks Less than 1E-06						All Hazard Quotients less than 1				
Surface Water	Surface Water	SWMU 3 - Little Sulphur Creek	All Cancer Risks Less than 1E-06						All Hazard Quotients less than 1				
Sediment	Sediment	SWMU 3 - Little Sulphur Creek	All Cancer Risks Less than 1E-06						All Hazard Quotients less than 1				

TABLE 10.12
RISK ASSESSMENT SUMMARY
CENTRAL TENDENCY EXPOSURES
NSWC CRANE, INDIANA

Scenario Timeframe: Future
Receptor Population: Maintenance Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk				Chemical	Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Tota		Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes Tota
Surface Soil	Surface Soil	SWMU 3 - Old Jeep Trail	All Cancer Risks Less than 1E-06						All Hazard Quotients less than 1				
Surface Water	Surface Water	SWMU 3 - Little Sulphur Creek	All Cancer Risks Less than 1E-06						All Hazard Quotients less than 1				
Sediment	Sediment	SWMU 3 - Little Sulphur Creek	All Cancer Risks Less than 1E-06						All Hazard Quotients less than 1				

TABLE 10.13
RISK ASSESSMENT SUMMARY
REASONABLE MAXIMUM EXPOSURE
NSWC CRANE, INDIANA

Scenario Timeframe: Future
Receptor Population: Occupational Workers
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk				Chemical	Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total		Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes Total
Surface Soil	Surface Soil	SWMU 3 - Old Jeep Trail	All Cancer Risks Less than 1E-06						All Hazard Quotients less than 1				
Ground Water	Ground Water	SWMU 3 - Shallow Ground Water	1,1,2,2-Tetrachloroethane	3E-05	- -	9E-07	3E-05	1,1,2,2-Tetrachloroethane	Liver	0.007	--	0.0002	0.007
			Trichloroethene	7E-05	- -	3E-06	7E-05	Trichloroethene	Liver	2	--	0.06	2
			Vinyl Chloride	1E-06	- -	1E-08	1E-06	Vinyl Chloride	Liver	0.001	--	0.00002	0.001
			RDX	1E-05	- -	2E-08	1E-05	RDX	Prostate	0.09	--	0.0002	0.09
			(Total)	1E-04	- -	4E-06	1E-04	(Total)		2	--	0.06	2
			Total Risk Across Groundwater				1E-04	Total Hazard Index Across All Media and All Exposure Routes					2

Total Liver HI	2
Total Prostate HI	0.09

TABLE 10.14
RISK ASSESSMENT SUMMARY
CENTRAL TENDENCY EXPOSURES
NSWC CRANE, INDIANA

Scenario Timeframe: Future
Receptor Population: Occupational Workers
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk				Chemical	Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total		Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes Total
Surface Soil	Surface Soil	SWMU 3 - Old Jeep Trail	All Cancer Risks Less than 1E-06						All Hazard Quotients less than 1				
Ground Water	Ground Water	SWMU 3 - Shallow Ground Water	1,1,2,2-Tetrachloroethane	9E-06	- -	2E-07	1E-05	1,1,2,2-Tetrachloroethane	Liver	0.006	--	0.0002	0.006
			Trichloroethene	2E-05	- -	7E-07	2E-05	Trichloroethene	Liver	1	--	0.05	1
			RDX	3E-06	- -	6E-09	3E-06	RDX	Prostate	0.08	--	0.0001	0.08
			(Total)	3E-05	- -	1E-06	4E-05	(Total)		1	--	0.05	2
			Total Risk Across Groundwater				4E-05	Total Hazard Index Across All Media and All Exposure Routes					2

Total Liver HI	1
Total Prostate HI	0.08

TABLE 10.15
RISK ASSESSMENT SUMMARY
REASONABLE MAXIMUM EXPOSURE
NSWC CRANE, INDIANA

Scenario Timeframe: Future
Receptor Population: Recreational Users
Receptor Age: Child

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk				Chemical	Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total		Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes Total
Surface Soil	Surface Soil	SWMU 3 - Old Jeep Trail	All Cancer Risks Less than 1E-06						All Hazard Quotients less than 1				
Ground Water	Ground Water	SWMU 3 - Shallow Ground Water	1,1,2,2-Tetrachloroethane	7E-06	--	2E-07	7E-06	1,1,2,2-Tetrachloroethane	Liver	0.007	--	0.0002	0.007
			Trichloroethene	2E-05	--	6E-07	2E-05	Trichloroethene	Liver	2	--	0.06	2
			RDX	2E-06	--	5E-09	2E-06	RDX	Prostate	0.09	--	0.0002	0.09
			(Total)	3E-05	--	9E-07	3E-05	(Total)		2	--	0.06	2
Surface Water	Surface Water	SWMU 3 - Little Sulphur Creek	RDX	1E-06	--	5E-08	1E-06	RDX	Prostate	0.04	--	0.002	0.04
			(Total)	1E-06	--	5E-08	1E-06	(Total)		0.04	--	0.002	0.04
Sediment	Sediment	SWMU 3 - Little Sulphur Creek	All Cancer Risks Less than 1E-06						All Hazard Quotients less than 1				

Total Risk Across Groundwater: 3E-05
Total Risk Across Surface Water: 1E-06

Total Hazard Index Across All Media and All Exposure Routes: 2

Total Liver HI: 2
Total Prostate HI: 0.1

TABLE 10.16
RISK ASSESSMENT SUMMARY
CENTRAL TENDENCY EXPOSURES
NSWC CRANE, INDIANA

Scenario Timeframe: Future
Receptor Population: Recreational Users
Receptor Age: Child

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk				Chemical	Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total		Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes Total
Surface Soil	Surface Soil	SWMU 3 - Old Jeep Trail	All Cancer Risks Less than 1E-06						All Hazard Quotients less than 1				
Ground Water	Ground Water	SWMU 3 - Shallow Ground Water	1,1,2,2-Tetrachloroethane	1E-06	- -	3E-08	1E-06	1,1,2,2-Tetrachloroethane	Liver	0.003	--	0.00008	0.003
			Trichloroethene	3E-06	- -	9E-08	3E-06	Trichloroethene	Liver	0.8	--	0.03	0.8
			(Total)	4E-06	- -	1E-07	4E-06	(Total)		0.8	--	0.03	0.8
Surface Water	Surface Water	SWMU 3 - Little Sulphur Creek	All Cancer Risks Less than 1E-06						All Hazard Quotients less than 1				
Sediment	Sediment	SWMU 3 - Little Sulphur Creek	All Cancer Risks Less than 1E-06						All Hazard Quotients less than 1				
			Total Risk Across Groundwater				4E-06	Total Hazard Index Across All Media and All Exposure Routes					0.8

Total Liver HI 0.8

TABLE 10.17
RISK ASSESSMENT SUMMARY
REASONABLE MAXIMUM EXPOSURE
NSWC CRANE, INDIANA

Scenario Timeframe: Future
Receptor Population: Recreational Users
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk				Chemical	Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Tota		Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes Tote
Surface Soil	Surface Soil	SWMU 3 - Old Jeep Trail	All Cancer Risks Less than 1E-06						All Hazard Quotients less than 1				
Ground Water	Ground Water	SWMU 3 - Shallow Ground Water	1,1,2,2-Tetrachloroethane	6E-06	- -	5E-07	6E-06	1,1,2,2-Tetrachloroethane	Liver	0.001	--	0.0001	0.002
			Trichloroethene	1E-05	- -	2E-06	2E-05	Trichloroethene	Liver	0.3	--	0.04	0.4
			RDX	2E-06	- -	1E-08	2E-06	RDX	Prostate	0.02	--	0.0001	0.02
			(Total)	2E-05	- -	2E-06	2E-05	(Total)		0.4	--	0.04	0.4
Surface Water	Surface Water	SWMU 3 - Little Sulphur Creek	All Cancer Risks Less than 1E-06						All Hazard Quotients less than 1				
Sediment	Sediment	SWMU 3 - Little Sulphur Creek	All Cancer Risks Less than 1E-06						All Hazard Quotients less than 1				
			Total Risk Across Groundwater				2E-05	Total Hazard Index Across All Media and All Exposure Routes					0.4

Total Liver HI	0.4
Total Prostate HI	0.02

TABLE 10.18
RISK ASSESSMENT SUMMARY
CENTRAL TENDENCY EXPOSURES
NSWC CRANE, INDIANA

Scenario Timeframe: Future
Receptor Population: Recreational Users
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk				Chemical	Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Tota		Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes Tota
Surface Soil	Surface Soil	SWMU 3 - Old Jeep Trail	All Cancer Risks Less than 1E-06						All Hazard Quotients less than 1				
Ground Water	Ground Water	SWMU 3 - Shallow Ground Water	Trichloroethene	2E-06	- -	2E-07	2E-06	Trichloroethene	Liver	0.2	--	0.02	0.2
			(Total)	2E-06	- -	2E-07	2E-06	(Total)		0.2	--	0.02	0.2
Surface Water	Surface Water	SWMU 3 - Little Sulphur Creek	All Cancer Risks Less than 1E-06						All Hazard Quotients less than 1				
Sediment	Sediment	SWMU 3 - Little Sulphur Creek	All Cancer Risks Less than 1E-06						All Hazard Quotients less than 1				
			Total Risk Across Groundwater				2E-06	Total Hazard Index Across All Media and All Exposure Routes					0.2

Total Liver HI 0.2

TABLE 10.19
RISK ASSESSMENT SUMMARY
REASONABLE MAXIMUM EXPOSURE
NSWC CRANE, INDIANA

Scenario Timeframe: Future
Receptor Population: Recreational Users
Receptor Age: Lifelong (Child and Adult)

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk				Chemical	Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Tota		Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes Tota
Surface Soil	Surface Soil	SWMU 3 - Old Jeep Trail	All Cancer Risks Less than 1E-06										
			(Total)	- -	- -	- -	- -						
Ground Water	Ground Water	SWMU 3 - Shallow Ground Water	1,1,2,2-Tetrachloroethane	1E-05	- -	7E-07	1E-05						
			Trichloroethene	3E-05	- -	2E-06	3E-05						
			RDX	5E-06	- -	2E-08	5E-06						
			(Total)	5E-05	- -	3E-06	5E-05						
Surface Water	Surface Water	SWMU 3 - Little Sulphur Creek	RDX	1E-06	- -	2E-07	1E-06						
			(Total)	1E-06	- -	2E-07	1E-06						
Sediment	Sediment	SWMU 3 - Little Sulphur Creek	All Cancer Risks Less than 1E-06										

Total Risk Across Groundwater	5E-05
Total Risk Across Surface Water	1E-06

TABLE 10.20
RISK ASSESSMENT SUMMARY
CENTRAL TENDENCY EXPOSURES
NSWC CRANE, INDIANA

Scenario Timeframe: Future
Receptor Population: Recreational Users
Receptor Age: Lifelong (Child and Adult)

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk				Chemical	Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Tota		Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes Tota
Surface Soil	Surface Soil	SWMU 3 - Old Jeep Trail	All Cancer Risks Less than 1E-06										
Ground Water	Ground Water	SWMU 3 - Shallow Ground Water	1,1,2,2-Tetrachloroethane	2E-06	- -	9E-08	2E-06						
			Trichloroethene	5E-06	- -	3E-07	5E-06						
			(Total)	7E-06	- -	4E-07	7E-06						
Surface Water	Surface Water	SWMU 3 - Little Sulphur Creek	All Cancer Risks Less than 1E-06										
Sediment	Sediment	SWMU 3 - Little Sulphur Creek	All Cancer Risks Less than 1E-06										
			Total Risk Across Groundwater				7E-06						

TABLE 10.21
RISK ASSESSMENT SUMMARY
REASONABLE MAXIMUM EXPOSURE
NSWC CRANE, INDIANA

Scenario Timeframe: Future
Receptor Population: On-Site Resident
Receptor Age: Child

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk			
				Ingestion	Inhalation	Dermal	Exposure Routes Tota
Surface Soil	Surface Soil	SWMU 3 - 1 Acre Exposure Uni	2,3,7,8-TCDD Equivalents	1E-06	- -	1E-07	1E-06
			(Total)	1E-06	- -	1E-07	1E-06
Ground Water	Ground Water	SWMU 3 - Shallow Ground Wat	1,1,2,2-Tetrachloroethane	7E-05	1E-05	3E-06	9E-05
			1,1-Dichloroethene	1E-06	1E-07	5E-08	1E-06
			Trichloroethene	2E-04	6E-05	9E-06	2E-04
			Vinyl Chloride	2E-06	2E-08	4E-08	2E-06
			4-Amino-2,6-Dinitrotoluene	- -	- -	- -	- -
			RDX	2E-05	- -	7E-08	2E-05
			(Total)	3E-04	7E-05	1E-05	3E-04
Surface Water	Surface Water	SWMU 3 - Little Sulphur Creek	2-Amino-4,6-Dinitrotoluene	- -	- -	- -	- -
			4-Amino-2,6-Dinitrotoluene	- -	- -	- -	- -
			RDX	6E-05	- -	2E-07	6E-05
			(Total)	6E-05	- -	2E-07	6E-05
Sediment	Sediment	SWMU 3 - Little Sulphur Creek	All Cancer Risks Less than 1E-06				

Chemical	Non-Carcinogenic Hazard Quotient				
	Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes Tota
2,3,7,8-TCDD Equivalents	NA	- -	- -	- -	- -
(Total)		- -	- -	- -	- -
1,1,2,2-Tetrachloroethane	Liver	0.07	- -	0.003	0.07
1,1-Dichloroethene	Liver	0.002	- -	0.00010	0.002
Trichloroethene	Liver	16	0.2	0.8	17
Vinyl Chloride	Liver	0.01	0.0006	0.0002	0.01
4-Amino-2,6-Dinitrotoluene	Liver	2	- -	0.007	2
RDX	Prostate	0.9	- -	0.002	0.9
(Total)		18	0.2	0.9	19
2-Amino-4,6-Dinitrotoluene	Liver	2	- -	0.01	2
4-Amino-2,6-Dinitrotoluene	Liver	5	- -	0.02	5
RDX	Prostate	2	- -	0.006	2
(Total)		9	0.0	0.04	9
		All Hazard Quotients less than 1			

Total Risk Across Soil	1E-06
Total Risk Across Groundwater	3E-04
Total Risk Across SWMU 3 - Little Sulphur Creek	6E-05
Total Risk Across All Media and All Exposure Routes	4E-04

Total Hazard Index Across All Media and All Exposure Routes	28
Total Liver HI	25
Total Prostate HI	2.9

TABLE 10.22
RISK ASSESSMENT SUMMARY
CENTRAL TENDENCY EXPOSURES
NSWC CRANE, INDIANA

Scenario Timeframe: Future
Receptor Population: On-Site Resident
Receptor Age: Child

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk				Chemical	Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total		Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes Total
Surface Soil	Surface Soil	SWMU 3 - 1 Acre Exposure Unit	All Cancer Risks Less than 1E-06						All Hazard Quotients less than 1				
Ground Water	Ground Water	SWMU 3 - Shallow Ground Wat	1,1,2,2-Tetrachloroethane	7E-06	2E-06	5E-07	9E-06	1,1,2,2-Tetrachloroethane	Liver	0.02	- -	0.002	0.02
			Trichloroethene	2E-05	7E-06	2E-06	2E-05	Trichloroethene	Liver	5	0.06	0.5	5
			RDX	2E-06	- -	1E-08	2E-06	RDX	Prostate	0.3	- -	0.001	0.3
			(Total)	3E-05	9E-06	2E-06	4E-05	(Total)		5	0.06	0.5	5
Surface Water	Surface Water	SWMU 3 - Little Sulphur Creek	4-Amino-2,6-Dinitrotoluene	- -	- -	- -	- -	4-Amino-2,6-Dinitrotoluene	Liver	1	- -	0.01	1
			RDX	6E-06	- -	3E-08	6E-06	RDX	Prostate	0.6	- -	0.003	0.6
			(Total)	6E-06	- -	3E-08	6E-06	(Total)		2	--	0.01	2
Sediment	Sediment	SWMU 3 - Little Sulphur Creek	All Cancer Risks Less than 1E-06						All Hazard Quotients less than 1				

Total Risk Across Groundwater	4E-05
Total Risk Across SWMU 3 - Little Sulphur Creek	6E-06
Total Risk Across All Media and All Exposure Routes	4E-05

Total Hazard Index Across All Media and All Exposure Routes	7
Total Liver HI	7
Total Prostate HI	0.9

TABLE 10.23
RISK ASSESSMENT SUMMARY
REASONABLE MAXIMUM EXPOSURE
NSWC CRANE, INDIANA

Scenario Timeframe: Future
Receptor Population: On-Site Resident
Receptor Age: Child

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk				Chemical	Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Tota		Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes Tota
Surface Soil	Surface Soil	SWMU 3 - 6-Acre Exposure Unit	2,3,7,8-TCDD Equivalents	1E-06	- -	1E-07	1E-06	2,3,7,8-TCDD Equivalents	NA	- -	--	- -	--
			Iron	- -	- -	- -	- -	Iron	Blood, GS	1	--	--	1
			(Total)	1E-06	- -	1E-07	1E-06	(Total)		1	--	--	1
Ground Water	Ground Water	SWMU 3 - Shallow Ground Water	1,1,2,2-Tetrachloroethane	7E-05	1E-05	3E-06	9E-05	1,1,2,2-Tetrachloroethane	Liver	0.07	- -	0.003	0.07
			1,1-Dichloroethene	1E-06	1E-07	5E-08	1E-06	1,1-Dichloroethene	Liver	0.002	- -	0.00010	0.002
			Trichloroethene	2E-04	6E-05	9E-06	2E-04	Trichloroethene	Liver	16	0.2	0.8	17
			Vinyl Chloride	2E-06	2E-08	4E-08	2E-06	Vinyl Chloride	Liver	0.01	0.0006	0.0002	0.01
			4-Amino-2,6-Dinitrotoluene	- -	- -	- -	- -	4-Amino-2,6-Dinitrotoluene	Liver	2	- -	0.007	2
			RDX	2E-05	- -	7E-08	2E-05	RDX	Prostate	0.9	- -	0.002	0.9
			(Total)	3E-04	7E-05	1E-05	3E-04	(Total)		18	0.2	0.9	19
Surface Water	Surface Water	SWMU 3 - Little Sulphur Creek	2-Amino-4,6-Dinitrotoluene	- -	- -	- -	- -	2-Amino-4,6-Dinitrotoluene	Liver	2	- -	0.01	2
			4-Amino-2,6-Dinitrotoluene	- -	- -	- -	- -	4-Amino-2,6-Dinitrotoluene	Liver	5	- -	0.02	5
			RDX	6E-05	- -	2E-07	6E-05	RDX	Prostate	2	- -	0.006	2
			(Total)	6E-05	- -	2E-07	6E-05	(Total)		9	0.0	0.04	9
Sediment	Sediment	SWMU 3 - Little Sulphur Creek	All Cancer Risks Less than 1E-06						All Hazard Quotients less than 1				

Total Risk Across Soil	1E-06
Total Risk Across Groundwater	3E-04
Total Risk Across SWMU 3 - Little Sulphur Creek	6E-05
Total Risk Across All Media and All Exposure Routes	4E-04

Total Hazard Index Across All Media and All Exposure Routes	29

Total Blood HI	1
Total GS HI	1
Total Liver HI	25
Total Prostate HI	3

TABLE 10.24
RISK ASSESSMENT SUMMARY
CENTRAL TENDENCY EXPOSURES
NSWC CRANE, INDIANA

Scenario Timeframe: Future
Receptor Population: On-Site Resident
Receptor Age: Child

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk				Chemical	Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total		Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes Total
Surface Soil	Surface Soil	SWMU 3 - 6-Acre Exposure Unit	All Cancer Risks Less than 1E-06						All Hazard Quotients less than 1				
Ground Water	Ground Water	SWMU 3 - Shallow Ground Water	1,1,2,2-Tetrachloroethane	7E-06	2E-06	5E-07	9E-06	1,1,2,2-Tetrachloroethane	Liver	0.02	- -	0.002	0.02
			Trichloroethene	2E-05	7E-06	2E-06	2E-05	Trichloroethene	Liver	5	0.06	0.5	5
			RDX	2E-06	- -	1E-08	2E-06	RDX	Prostate	0.3	- -	0.001	0.3
			(Total)	3E-05	9E-06	2E-06	4E-05	(Total)		5	0.06	0.5	5
Surface Water	Surface Water	SWMU 3 - Little Sulphur Creek	4-Amino-2,6-Dinitrotoluene	- -	- -	- -	- -	4-Amino-2,6-Dinitrotoluene	Liver	1	- -	0.01	1
			RDX	6E-06	- -	3E-08	6E-06	RDX	Prostate	0.6	- -	0.003	0.6
			(Total)	6E-06	- -	3E-08	6E-06	(Total)		2	--	0.01	2
Sediment	Sediment	SWMU 3 - Little Sulphur Creek	All Cancer Risks Less than 1E-06						All Hazard Quotients less than 1				

Total Risk Across Groundwater	4E-05
Total Risk Across SWMU 3 - Little Sulphur Creek	6E-06
Total Risk Across All Media and All Exposure Routes	4E-05

Total Hazard Index Across All Media and All Exposure Routes	7
Total Liver HI	7
Total Prostate HI	0.9

TABLE 10.25
RISK ASSESSMENT SUMMARY
REASONABLE MAXIMUM EXPOSURE
NSWC CRANE, INDIANA

Scenario Timeframe: Future
Receptor Population: On-Site Resident
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk				Chemical	Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Tota		Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes Tota
Surface Soil	Surface Soil	SWMU 3 - 1 Acre Exposure Uni	All Cancer Risks Less than 1E-06						All Hazard Quotients less than 1				
Ground Water	Ground Water	SWMU 3 - Shallow Ground Wat	1,1,2,2-Tetrachloroethane	8E-05	1E-05	7E-06	1E-04	1,1,2,2-Tetrachloroethane	Liver	0.02	- -	0.002	0.02
			1,1-Dichloroethene	1E-06	1E-07	1E-07	1E-06	1,1-Dichloroethene	Liver	0.0006	- -	0.00006	0.0007
			Trichloroethene	2E-04	5E-05	2E-05	3E-04	Trichloroethene	Liver	4	0.04	0.5	5
			Vinyl Chloride	3E-06	2E-08	9E-08	3E-06	Vinyl Chloride	Liver	0.004	0.0001	0.0001	0.004
			RDX	3E-05	- -	2E-07	3E-05	RDX	Prostate	0.2	- -	0.001	0.2
			(Total)	3E-04	6E-05	3E-05	4E-04	(Total)		5	0.04	0.5	5
Surface Water	Surface Water	SWMU 3 - Little Sulphur Creek	4-Amino-2,6-Dinitrotoluene	- -	- -	- -	- -	4-Amino-2,6-Dinitrotoluene	Liver	1	- -	0.01	1
			RDX	7E-05	- -	4E-07	7E-05	RDX	Prostate	0.6	- -	0.003	0.6
			(Total)	7E-05	- -	4E-07	7E-05	(Total)		2	--	0.02	2
Sediment	Sediment	SWMU 3 - Little Sulphur Creek	All Cancer Risks Less than 1E-06						All Hazard Quotients less than 1				

Total Risk Across Groundwater	4E-04
Total Risk Across SWMU 3 - Little Sulphur Creek	7E-05
Total Risk Across All Media and All Exposure Routes	5E-04

Total Hazard Index Across All Media and All Exposure Routes	7
Total Liver HI	6
Total Prostate HI	0.8

TABLE 10.26
RISK ASSESSMENT SUMMARY
CENTRAL TENDENCY EXPOSURES
NSWC CRANE, INDIANA

Scenario Timeframe: Future
Receptor Population: On-Site Resident
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk				Chemical	Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total		Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes Total
Surface Soil	Surface Soil	SWMU 3 - 1 Acre Exposure Unit	All Cancer Risks Less than 1E-06						All Hazard Quotients less than 1				
Ground Water	Ground Water	SWMU 3 - Shallow Ground Water	1,1,2,2-Tetrachloroethane	1E-05	1E-06	1E-06	1E-05	1,1,2,2-Tetrachloroethane	Liver	0.009	- -	0.0009	0.01
			Trichloroethene	3E-05	5E-06	3E-06	3E-05	Trichloroethene	Liver	2	0.01	0.3	2
			RDX	4E-06	- -	3E-08	4E-06	RDX	Prostate	0.1	- -	0.0008	0.1
			(Total)	4E-05	7E-06	4E-06	5E-05	(Total)		2	0.01	0.3	2
Surface Water	Surface Water	SWMU 3 - Little Sulphur Creek	RDX	9E-06	- -	6E-08	9E-06	RDX	Prostate	0.3	- -	0.002	0.3
			(Total)	9E-06	- -	6E-08	9E-06	(Total)		0.3	--	0.002	0.3
Sediment	Sediment	SWMU 3 - Little Sulphur Creek	All Cancer Risks Less than 1E-06						All Hazard Quotients less than 1				

Total Risk Across Groundwater	5E-05
Total Risk Across SWMU 3 - Little Sulphur Creek	9E-06
Total Risk Across All Media and All Exposure Routes	6.0E-05

Total Hazard Index Across All Media and All Exposure Routes	3
Total Liver HI	2
Total Prostate HI	0.4

TABLE 10.27
RISK ASSESSMENT SUMMARY
REASONABLE MAXIMUM EXPOSURE
NSWC CRANE, INDIANA

Scenario Timeframe: Future
Receptor Population: On-Site Resident
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk				Chemical	Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total		Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes Total
Surface Soil	Surface Soil	SWMU 3 - 6-Acre Exposure Unit	All Cancer Risks Less than 1E-06						All Hazard Quotients less than 1				
Ground Water	Ground Water	SWMU 3 - Shallow Ground Water	1,1,2,2-Tetrachloroethane	8E-05	1E-05	7E-06	1E-04	1,1,2,2-Tetrachloroethane	Liver	0.02	- -	0.002	0.02
			1,1-Dichloroethene	1E-06	1E-07	1E-07	1E-06	1,1-Dichloroethene	Liver	0.0006	- -	0.00006	0.0007
			Trichloroethene	2E-04	5E-05	2E-05	3E-04	Trichloroethene	Liver	4	0.04	0.5	5
			Vinyl Chloride	3E-06	2E-08	9E-08	3E-06	Vinyl Chloride	Liver	0.004	0.0001	0.0001	0.004
			RDX	3E-05	- -	2E-07	3E-05	RDX	Prostate	0.2	- -	0.001	0.2
			(Total)	3E-04	6E-05	3E-05	4E-04	(Total)		5	0.04	0.5	5
Surface Water	Surface Water	SWMU 3 - Little Sulphur Creek	4-Amino-2,6-Dinitrotoluene	- -	- -	- -	- -	4-Amino-2,6-Dinitrotoluene	Liver	1	- -	0.01	1
			RDX	7E-05	- -	4E-07	7E-05	RDX	Prostate	0.6	- -	0.003	0.6
			(Total)	7E-05	- -	4E-07	7E-05	(Total)		2	--	0.02	2
Sediment	Sediment	SWMU 3 - Little Sulphur Creek	All Cancer Risks Less than 1E-06						All Hazard Quotients less than 1				

Total Risk Across Groundwater	4E-04
Total Risk Across SWMU 3 - Little Sulphur Creek	7E-05
Total Risk Across All Media and All Exposure Routes	5E-04

Total Hazard Index Across All Media and All Exposure Routes	7
Total Liver HI	6
Total Prostate HI	0.8

TABLE 10.28
RISK ASSESSMENT SUMMARY
CENTRAL TENDENCY EXPOSURES
NSWC CRANE, INDIANA

Scenario Timeframe: Future
Receptor Population: On-Site Resident
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk				Chemical	Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total		Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes Total
Surface Soil	Surface Soil	SWMU 3 - 6-Acre Exposure Unit	All Cancer Risks Less than 1E-06						All Hazard Quotients less than 1				
Ground Water	Ground Water	SWMU 3 - Shallow Ground Water	1,1,2,2-Tetrachloroethane	1E-05	1E-06	1E-06	1E-05	1,1,2,2-Tetrachloroethane	Liver	0.009	- -	0.0009	0.01
			Trichloroethene	3E-05	5E-06	3E-06	3E-05	Trichloroethene	Liver	2	0.01	0.3	2
			RDX	4E-06	- -	3E-08	4E-06	RDX	Prostate	0.1	- -	0.0008	0.1
			(Total)	4E-05	7E-06	4E-06	5E-05	(Total)		2	0.01	0.3	2
Surface Water	Surface Water	SWMU 3 - Little Sulphur Creek	RDX	9E-06	- -	6E-08	9E-06	RDX	Prostate	0.3	- -	0.002	0.3
			(Total)	9E-06	- -	6E-08	9E-06	(Total)		0.3	--	0.002	0.3
Sediment	Sediment	SWMU 3 - Little Sulphur Creek	All Cancer Risks Less than 1E-06						All Hazard Quotients less than 1				

Total Risk Across Groundwater	5E-05
Total Risk Across SWMU 3 - Little Sulphur Creek	9E-06
Total Risk Across All Media and All Exposure Routes	6.0E-05

Total Hazard Index Across All Media and All Exposure Routes	3
Total Liver HI	2
Total Prostate HI	0.4

TABLE 10.29
RISK ASSESSMENT SUMMARY
REASONABLE MAXIMUM EXPOSURE
NSWC CRANE, INDIANA

Scenario Timeframe: Future
Receptor Population: On-Site Resident
Receptor Age: Lifelong (Child and Adult)

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk				Chemical	Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total		Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes Total
Surface Soil	Surface Soil	SWMU 3 - 1 Acre Exposure Unit	2,3,7,8-TCDD Equivalents	2E-06	- -	2E-07	2E-06						
			(Total)	2E-06	- -	2E-07	2E-06						
Ground Water	Ground Water	SWMU 3 - Shallow Ground Water	1,1,2,2-Tetrachloroethane	2E-04	3E-05	1E-05	2E-04						
			1,1,2-Trichloroethane	1E-06	3E-07	5E-08	1E-06						
			1,1-Dichloroethene	2E-06	2E-07	2E-07	3E-06						
			Trichloroethene	3E-04	1E-04	3E-05	5E-04						
			Vinyl Chloride	5E-06	4E-08	1E-07	5E-06						
			RDX	5E-05	- -	2E-07	5E-05						
			(Total)	6E-04	1E-04	4E-05	7E-04						
Surface Water	Surface Water	SWMU 3 - Little Sulphur Creek	RDX	1E-04	- -	5E-07	1E-04						
			(Total)	1E-04	- -	5E-07	1E-04						
Sediment	Sediment	SWMU 3 - Little Sulphur Creek	All Cancer Risks Less than 1E-06										

Total Risk Across Soil	2E-06
Total Risk Across Groundwater	7E-04
Total Risk Across SWMU 3 - Little Sulphur Creek	1E-04
Total Risk Across All Media and All Exposure Routes	9E-04

TABLE 10.30
RISK ASSESSMENT SUMMARY
CENTRAL TENDENCY EXPOSURES
NSWC CRANE, INDIANA

Scenario Timeframe: Future
Receptor Population: On-Site Resident
Receptor Age: Lifelong (Child and Adult)

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk				Chemical	Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total		Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes Total
Surface Soil	Surface Soil	SWMU 3 - 1 Acre Exposure Unit	All Cancer Risks Less than 1E-06										
Ground Water	Ground Water	SWMU 3 - Shallow Ground Water	1,1,2,2-Tetrachloroethane	2E-05	3E-06	2E-06	2E-05						
			Trichloroethene	4E-05	1E-05	5E-06	6E-05						
			RDX	6E-06	- -	4E-08	6E-06						
			(Total)	6E-05	2E-05	6E-06	9E-05						
Surface Water	Surface Water	SWMU 3 - Little Sulphur Creek	RDX	1E-05	- -	9E-08	1E-05						
			(Total)	1E-05	- -	9E-08	1E-05						
Sediment	Sediment	SWMU 3 - Little Sulphur Creek	All Cancer Risks Less than 1E-06										

Total Risk Across Groundwater	9E-05
Total Risk Across SWMU 3 - Little Sulphur Creek	1E-05
Total Risk Across All Media and All Exposure Routes	1E-04

TABLE 10.31
RISK ASSESSMENT SUMMARY
REASONABLE MAXIMUM EXPOSURE
NSWC CRANE, INDIANA

Scenario Timeframe: Future
Receptor Population: On-Site Resident
Receptor Age: Lifelong (Child and Adult)

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk				Chemical	Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Tota		Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes Tota
Surface Soil	Surface Soil	SWMU 3 - 6-Acre Exposure Unit	2,3,7,8-TCDD Equivalents	2E-06	- -	2E-07	2E-06						
			(Total)	2E-06	- -	2E-07	2E-06						
Ground Water	Ground Water	SWMU 3 - Shallow Ground Water	1,1,2,2-Tetrachloroethane	2E-04	3E-05	1E-05	2E-04						
			1,1,2-Trichloroethane	1E-06	3E-07	5E-08	1E-06						
			1,1-Dichloroethene	2E-06	2E-07	2E-07	3E-06						
			Trichloroethene	3E-04	1E-04	3E-05	5E-04						
			Vinyl Chloride	5E-06	4E-08	1E-07	5E-06						
			RDX	5E-05	- -	2E-07	5E-05						
			(Total)	6E-04	1E-04	4E-05	7E-04						
Surface Water	Surface Water	SWMU 3 - Little Sulphur Creek	RDX	1E-04	- -	5E-07	1E-04						
			(Total)	1E-04	- -	5E-07	1E-04						
Sediment	Sediment	SWMU 3 - Little Sulphur Creek	All Cancer Risks Less than 1E-06										

Total Risk Across Soil	2E-06
Total Risk Across Groundwater	7E-04
Total Risk Across SWMU 3 - Little Sulphur Creek	1E-04
Total Risk Across All Media and All Exposure Routes	9E-04

TABLE 10.32
RISK ASSESSMENT SUMMARY
CENTRAL TENDENCY EXPOSURES
NSWC CRANE, INDIANA

Scenario Timeframe: Future
Receptor Population: On-Site Resident
Receptor Age: Lifelong (Child and Adult)

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk				Chemical	Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Tota		Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes Tota
Surface Soil	Surface Soil	SWMU 3 - 6-Acre Exposure Unit	All Cancer Risks Less than 1E-06										
Ground Water	Ground Water	SWMU 3 - Shallow Ground Water	1,1,2,2-Tetrachloroethane	2E-05	3E-06	2E-06	2E-05						
			Trichloroethene	4E-05	1E-05	5E-06	6E-05						
			RDX	6E-08	- -	4E-08	6E-06						
			(Total)	6E-05	2E-05	6E-06	9E-05						
Surface Water	Surface Water	SWMU 3 - Little Sulphur Creek	RDX	1E-05	- -	9E-08	1E-05						
			(Total)	1E-05	- -	9E-08	1E-05						
Sediment	Sediment	SWMU 3 - Little Sulphur Creek	All Cancer Risks Less than 1E-06										

Total Risk Across Groundwater	9E-05
Total Risk Across SWMU 3 - Little Sulphur Creek	1E-05
Total Risk Across All Media and All Exposure Routes	1E-04

APPENDIX G.3

RAGS-PART D TABLES

RAGS Part D Table 1

Selection of Exposure Pathways

TABLE 1
SELECTION OF EXPOSURE PATHWAYS
SWMU 3 - OLD JEEP TRAIL/LITTLE SULPHUR CREEK (OJT/LSC)
NSWC CRANE
CRANE, INDIANA

Scenario Timeframe	Medium	Exposure Medium	Exposure Point	Receptor Population	Receptor Age	Exposure Route	On-Site/ Off-Site	Type of Analysis	Rationale for Selection or Exclusion of Exposure Pathway
Current/Future	Surface Soil	Surface Soil	Old Jeep Trail	Trespassers	Adolescents	Ingestion	On-Site	Quant	Although access to the base is controlled, once inside the base, access to the OJT/LSC is not limited by any physical restraint. Adolescent trespassers may be exposed to surface soil while at the site.
						Dermal	On-Site	Quant	
				Residents	Child	Ingestion	Off-Site	None	Off-base residents are not exposed to on-site surface soil.
						Dermal	Off-Site	None	
					Adult	Ingestion	Off-Site	None	Off-base residents are not exposed to on-site surface soil.
						Dermal	Off-Site	None	
		Air	Old Jeep Trail	Trespassers	Adolescents	Inhalation	On-Site	None	Although access to the base is controlled, once inside the base, access to the OJT/LSC is not limited by any physical restraint. No COPCs were identified in soil for the inhalation pathway, therefore this pathway is not evaluated.
				Residents	Child	Inhalation	Off-Site	None	Off-base residents are not exposed to on-site surface soil. In addition, no COPCs were identified in soil for the inhalation pathway, therefore this pathway is not evaluated.
					Adult	Inhalation	Off-Site	None	Off-base residents are not exposed to on-site surface soil. In addition, no COPCs were identified in soil for the inhalation pathway, therefore this pathway is not evaluated.
	Subsurface Soil	Subsurface Soil	Old Jeep Trail	Trespassers	Adolescents	Ingestion	On-Site	None	Trespassers are not exposed to subsurface soil.
						Dermal	On-Site	None	
				Residents	Child	Ingestion	Off-Site	None	Off-base residents are not exposed to on-site subsurface soil.
						Dermal	Off-Site	None	
					Adult	Ingestion	Off-Site	None	Off-base residents are not exposed to on-site subsurface soil.
						Dermal	Off-Site	None	
		Air	Old Jeep Trail	Trespassers	Adolescents	Inhalation	On-Site	None	Trespassers are not exposed to subsurface soil. In addition, no COPCs were identified in soil for the inhalation pathway, therefore this pathway is not evaluated.
				Residents	Child	Inhalation	Off-Site	None	Off-base residents are not exposed to on-site subsurface soil. In addition, no COPCs were identified in soil for the inhalation pathway, therefore this pathway is not evaluated.
					Adult	Inhalation	Off-Site	None	Off-base residents are not exposed to on-site subsurface soil. In addition, no COPCs were identified in soil for the inhalation pathway, therefore this pathway is not evaluated.
	Ground Water	Ground Water	Shallow Aquifer	Trespassers	Adolescents	Ingestion	On-Site	None	Adolescent trespassers are not expected to be exposed to ground water.
						Dermal	On-Site	None	
				Residents	Child	Ingestion	Off-Site	None	Off-base residents are not exposed to ground water from the OJT/LSC.
						Dermal	Off-Site	None	
					Adult	Ingestion	Off-Site	None	Off-base residents are not exposed to ground water from the OJT/LSC.
						Dermal	Off-Site	None	
		Air	Shallow Aquifer	Trespassers	Adolescents	Inhalation	On-Site	None	Adolescent trespassers are not expected to be exposed to ground water.
				Residents	Child	Inhalation	Off-Site	Quant	Off-base residents are not exposed to ground water from the OJT/LSC.
					Adult	Inhalation	Off-Site	Quant	Off-base residents are not exposed to ground water from the OJT/LSC.
	Surface Water	Surface Water	Little Sulphur Creek	Trespassers	Adolescents	Ingestion	On-Site	Quant	Although access to the base is controlled, once inside the base, access to the OJT/LSC is not limited by any physical restraint. Adolescent trespassers may be exposed to surface water while at the site.
						Dermal	On-Site	Quant	

TABLE 1
SELECTION OF EXPOSURE PATHWAYS
SWMU 3 - OLD JEEP TRAIL/LITTLE SULPHUR CREEK (OJT/LSC)
NSWC CRANE
CRANE, INDIANA

Scenario Timeframe	Medium	Exposure Medium	Exposure Point	Receptor Population	Receptor Age	Exposure Route	On-Site/ Off-Site	Type of Analysis	Rationale for Selection or Exclusion of Exposure Pathway
Current/Future (continued)	Surface Water	Surface Water	Little Sulphur Creek	Residents	Child	Ingestion Dermal	Off-Site Off-Site	Quant Quant	Off-base residents may also use surface water as a drinking water source.
					Adult	Ingestion Dermal	Off-Site Off-Site	Quant Quant	Off-base residents may also use surface water as a drinking water source.
	Sediment	Sediment	Little Sulphur Creek	Trespassers	Adolescents	Ingestion Dermal	On-Site On-Site	Quant Quant	Although access to the base is controlled, once inside the base, access to the OJT/LSC is not limited by any physical restraint. Adolescent trespassers may be exposed to sediment while at the site.
				Residents	Child	Ingestion Dermal	Off-Site Off-Site	Qual Qual	Off-base residents may be exposed to sediment. Although such exposure are expected to be less tha those experienced by future on-site residents.
					Adult	Ingestion Dermal	Off-Site Off-Site	Qual Qual	Off-base residents may be exposed to sediment. Although such exposure are expected to be less tha those experienced by future on-site residents.
Future	Surface Soil	Surface Soil	Old Jeep Trail	Construction Workers	Adult	Ingestion Dermal	On-Site On-Site	Quant Quant	Construction workers may have contact with surface soil during excavation activities.
				Maintenance Worker	Adult	Ingestion Dermal	On-Site On-Site	Quant Quant	Maintenance workers may contact surface soil during normal work activities.
				Occupational Worker	Adult	Ingestion Dermal	On-Site On-Site	Quant Quant	Occupational workers may contact surface soil during normal work activities.
				Recreational Users	Child	Ingestion Dermal	On-Site On-Site	Quant Quant	This scenario is evaluated on the assumption that the Facility would close and be turned into a state park in the future.
					Adult	Ingestion Dermal	On-Site On-Site	Quant Quant	This scenario is evaluated on the assumption that the Facility would close and be turned into a state park in the future.
				Residents	Child	Ingestion Dermal	On-Site On-Site	Quant Quant	Although a future residential scenario is considered unlikely at the site this scenario is included to aid in future risk management decisions.
					Adult	Ingestion Dermal	On-Site On-Site	Quant Quant	Although a future residential scenario is considered unlikely at the site this scenario is included to aid in future risk management decisions.
		Air	Old Jeep Trail	Construction Workers	Adult	Inhalation	On-Site	None	Construction workers may be exposed to fugitive dust and volatile emissions during construction activities. No COPCs were identified in soil for the inhalation pathway, therefore this pathway is not evaluated.
				Maintenance Worker	Adult	Inhalation	On-Site	None	Maintenance workers may be exposed to fugitive dust and volatile emissions during work activities. No COPCs were identified in soil for the inhalation pathway, therefore this pathway is not evaluated.
				Occupational Worker	Adult	Inhalation	On-Site	None	Occupational workers may be exposed to fugitive dust and volatile emissions during work activities. No COPCs were identified in soil for the inhalation pathway, therefore this pathway is not evaluated.
				Recreational Users	Child	Inhalation	On-Site	None	This scenario is evaluated on the assumption that the Facility would close and be turned into a state park in the future. No COPCs were identified in soil for the inhalation pathway, therefore this pathway is not evaluated.
					Adult	Inhalation	On-Site	None	This scenario is evaluated on the assumption that the Facility would close and be turned into a state park in the future. No COPCs were identified in soil for the inhalation pathway, therefore this pathway is not evaluated.
				Residents	Child	Inhalation	On-Site	None	Although a future residential scenario is considered unlikely at the site, this scenario is included to aid in future risk management decisions. No COPCs were identified in soil for the inhalation pathway, therefore this pathway is not evaluated.

TABLE 1
SELECTION OF EXPOSURE PATHWAYS
SWMU 3 - OLD JEEP TRAIL/LITTLE SULPHUR CREEK (OJT/LSC)
NSWC CRANE
CRANE, INDIANA

Scenario Timeframe	Medium	Exposure Medium	Exposure Point	Receptor Population	Receptor Age	Exposure Route	On-Site/ Off-Site	Type of Analysis	Rationale for Selection or Exclusion of Exposure Pathway
Future (continued)	Surface Soil	Air	Old Jeep Trail		Adult	Inhalation	On-Site	None	Although a future residential scenario is considered unlikely at the site, this scenario is included to aid in future risk management decisions. No COPCs were identified in soil for the inhalation pathway, therefore this pathway is not evaluated.
	Subsurface Soil	Subsurface Soil	Old Jeep Trail	Construction Workers	Adult	Ingestion	On-Site	Quant	Construction workers may have contact with subsurface soil during excavation activities.
						Dermal	On-Site	Quant	
				Maintenance Worker	Adult	Ingestion	On-Site	None	Maintenance workers are not expected to be exposed to subsurface soil.
						Dermal	On-Site	None	
				Occupational Worker	Adult	Ingestion	On-Site	None	Occupational workers are not expected to be exposed to subsurface soil.
						Dermal	On-Site	None	
				Recreational Users	Child	Ingestion	On-Site	None	Recreational users are not expected to be exposed to subsurface soil.
						Dermal	On-Site	None	
					Adult	Ingestion	On-Site	None	Recreational users are not expected to be exposed to subsurface soil.
						Dermal	On-Site	None	
				Residents	Child	Ingestion	On-Site	None	Future residents are not expected to be exposed to subsurface soil.
						Dermal	On-Site	None	
					Adult	Ingestion	On-Site	None	Future residents are not expected to be exposed to subsurface soil.
						Dermal	On-Site	None	
		Air	Old Jeep Trail	Construction Workers	Adult	Inhalation	On-Site	None	Construction workers may be exposed to fugitive dust and volatile emissions during construction activities. No COPCs were identified in soil for the inhalation pathway, therefore this pathway is not evaluated.
				Maintenance Worker	Adult	Inhalation	On-Site	None	Maintenance workers are not expected to be exposed to subsurface soil. In addition, no COPCs were identified in soil for the inhalation pathway.
				Occupational Worker	Adult	Inhalation	On-Site	None	Occupational workers are not expected to be exposed to subsurface soil. In addition, no COPCs were identified in soil for the inhalation pathway.
				Recreational Users	Child	Inhalation	On-Site	None	Recreational workers are not expected to be exposed to subsurface soil. In addition, no COPCs were identified in soil for the inhalation pathway.
					Adult	Inhalation	On-Site	None	Recreational workers are not expected to be exposed to subsurface soil. In addition, no COPCs were identified in soil for the inhalation pathway.
				Residents	Child	Inhalation	On-Site	None	Future residents are not expected to be exposed to subsurface soil. In addition, no COPCs were identified in soil for the inhalation pathway.
					Adult	Inhalation	On-Site	None	Future residents are not expected to be exposed to subsurface soil. In addition, no COPCs were identified in soil for the inhalation pathway.
	Ground Water	Ground Water	Shallow Ground Water	Construction Workers	Adult	Ingestion	On-Site	None	Construction workers are not expected to ingest groundwater.
						Dermal	On-Site	Quant	Construction workers may have dermal contact with ground water during excavation activities.
				Maintenance Workers	Adult	Ingestion	On-Site	None	Maintenance workers are not expected to have contact with ground water.
						Dermal	On-Site	None	
				Occupational Worker	Adult	Ingestion	On-Site	Quant	Occupational workers may be exposed to ground water if ground water was used as a potable water source.
						Dermal	On-Site	Quant	
				Recreational Users	Child	Ingestion	On-Site	Quant	Recreational users may be exposed to ground water if ground water was used as a potable water source.
						Dermal	On-Site	Quant	
					Adult	Ingestion	On-Site	Quant	Recreational users may be exposed to ground water if ground water was used as a potable water source.
						Dermal	On-Site	Quant	

TABLE 1
SELECTION OF EXPOSURE PATHWAYS
SWMU 3 - OLD JEEP TRAIL/LITTLE SULPHUR CREEK (OJT/LSC)
NSWC CRANE
CRANE, INDIANA

Scenario Timeframe	Medium	Exposure Medium	Exposure Point	Receptor Population	Receptor Age	Exposure Route	On-Site/ Off-Site	Type of Analysis	Rationale for Selection or Exclusion of Exposure Pathway
Future (continued)	Ground Water	Ground Water	Shallow Ground Water	Residents	Child	Ingestion Dermal	On-Site On-Site	Quant Quant	Although a future residential scenario is considered unlikely at the site, this scenario is included to aid in future risk management decisions.
					Adult	Ingestion Dermal	On-Site On-Site	Quant Quant	Although a future residential scenario is considered unlikely at the site, this scenario is included to aid in future risk management decisions.
		Air	Shallow Ground Water	Construction Workers	Adult	Inhalation	On-Site	Quant	Construction workers may be exposed to COPCs that have volatilized from ground water during excavation activities.
				Maintenance Workers	Adult	Inhalation	On-Site	None	Maintenance workers are not expected to be exposed to COPCs that have volatilized from ground water.
				Occupational Worker	Adult	Inhalation	On-Site	None	Occupational workers are not expected to be exposed to COPCs that have volatilized from ground water.
				Recreational Users	Child	Inhalation	On-Site	None	Recreational users are not expected to be exposed to COPCs that have volatilized from ground water.
					Adult	Inhalation	On-Site	None	Recreational users are not expected to be exposed to COPCs that have volatilized from ground water.
				Residents	Child	Inhalation	On-Site	Quant	Although a future residential scenario is considered unlikely at the site, this scenario is included to aid in future risk management decisions.
					Adult	Inhalation	On-Site	Quant	Although a future residential scenario is considered unlikely at the site, this scenario is included to aid in future risk management decisions.
	Surface Water	Surface Water	Little Sulphur Creek	Construction Workers	Adult	Ingestion Dermal	On-Site On-Site	None None	Construction workers are not expected to be exposed to surface water.
				Maintenance Workers	Adult	Ingestion Dermal	On-Site On-Site	None Quant	Maintenance workers are not expected to ingest surface water. Maintenance workers may have dermal contact with surface water.
				Occupational Worker	Adult	Ingestion Dermal	On-Site On-Site	None None	Occupational workers are not expected to be exposed to surface water.
				Recreational Users	Child	Ingestion Dermal	On-Site On-Site	Quant Quant	This scenario is evaluated on the assumption that the Facility would close and be turned into a state park in the future.
					Adult	Ingestion Dermal	On-Site On-Site	Quant Quant	This scenario is evaluated on the assumption that the Facility would close and be turned into a state park in the future.
				Residents	Child	Ingestion Dermal	On-Site On-Site	Quant Quant	Although a future residential scenario is considered unlikely at the site, this scenario is included to aid in future risk management decisions.
					Adult	Ingestion Dermal	On-Site On-Site	Quant Quant	Although a future residential scenario is considered unlikely at the site, this scenario is included to aid in future risk management decisions.
	Sediment	Sediment	Little Sulphur Creek	Construction Workers	Adult	Ingestion Dermal	On-Site On-Site	None None	Construction workers are not expected to be exposed to sediment.
				Maintenance Workers	Adult	Ingestion Dermal	On-Site On-Site	Quant Quant	Maintenance workers may contact sediment.
				Occupational Worker	Adult	Ingestion Dermal	On-Site On-Site	None None	Occupational workers are not expected to be exposed to sediment.
				Recreational Users	Child	Ingestion Dermal	On-Site On-Site	Quant Quant	This scenario is evaluated on the assumption that the Facility would close and be turned into a state park in the future.
					Adult	Ingestion Dermal	On-Site On-Site	Quant Quant	This scenario is evaluated on the assumption that the Facility would close and be turned into a state park in the future.

TABLE 1
SELECTION OF EXPOSURE PATHWAYS
SWMU 3 - OLD JEEP TRAIL/LITTLE SULPHUR CREEK (OJT/LSC)
NSWC CRANE
CRANE, INDIANA

Scenario Timeframe	Medium	Exposure Medium	Exposure Point	Receptor Population	Receptor Age	Exposure Route	On-Site/ Off-Site	Type of Analysis	Rationale for Selection or Exclusion of Exposure Pathway
Future (continued)	Sediment	Sediment	Little Sulphur Creek	Residents	Child	Ingestion	On-Site	Quant	Although a future residential scenario is considered unlikely at the site, this scenario is included to aid in future risk management decisions.
						Dermal	On-Site	Quant	
					Adult	Ingestion	On-Site	Quant	Although a future residential scenario is considered unlikely at the site, this scenario is included to aid in future risk management decisions.
						Dermal	On-Site	Quant	

Notes:
Quant - Quantitative.
Qual - Qualitative.

RAGS Part D Table 2

Occurrence, Distribution And Selection Of Chemicals Of Potential Concern

LIST OF TABLES
RAGS PART D TABLE 2
OCCURRENCE, DISTRIBUTION AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN

Table No.

2-1	Direct Contact With Surface Soil
2-2	Migration From Surface Soil
2-3	Direct Contact With Subsurface Soil
2-4	Migration From Subsurface Soil
2-5	Direct Contact With Ground Water
2-6	Direct Contact With Surface Water - Low Flow Conditions
2-7	Direct Contact With Surface Water - High Flow Conditions
2-8	Direct Contact With Shallow Sediments
2-9	Direct Contact With Deep Sediments

TABLE 2.1

OCCURRENCE, DISTRIBUTION AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN - DIRECT CONTACT WITH SURFACE SOIL
NSWC CRANE
CRANE, INDIANA

Scenario Timeframe: Current/Future
Medium: Surface Soil
Exposure Medium: Surface Soil (0 to 2 feet)
Exposure Point: SWMU 3 - Old Jeep Trail / Little Sulphur Creek

CAS Number	Chemical	Minimum Concentration (1)	Minimum Qualifier	Maximum Concentration (1)	Maximum Qualifier	Units	Location of Maximum Concentration	Detection Frequency	Range of Nondetects(2)	Concentration Used for Screening(3)	Site Above Background? (4)	U.S. EPA Region 9 PRG-Residential (5)	Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag	Rationale for Contaminant Deletion or Selection(6)
	Dioxins															
3268-87-9	1,2,3,4,6,7,8,9-OCDD	176	J	3440	J	ng/kg	03SS470002	11/11	NA	3440	NA	39000 C	NA	NA	No	BSL
39001-02-0	1,2,3,4,6,7,8,9-OCDF	7.6	J	62.2	J	ng/kg	03SS170002	3/11	0.3 - 2.1	62.2	NA	39000 C	NA	NA	No	BSL
35822-46-9	1,2,3,4,6,7,8-HPCDD	3.2		233		ng/kg	03SS170002	11/11	NA	233	NA	390 C	NA	NA	No	BSL
67562-39-4	1,2,3,4,6,7,8-HPCDF	0.19	J	32.1		ng/kg	03SS170002	5/11	0.17 - 0.71	32.1	NA	390 C	NA	NA	No	BSL
55673-89-7	1,2,3,4,7,8,9-HPCDF	0.7	J	2.1	J	ng/kg	03SS170002	4/11	0.1 - 0.4	2.1	NA	390 C	NA	NA	No	BSL
39227-28-6	1,2,3,4,7,8-HXCDD	0.58	J	2.1	J	ng/kg	03SS170002	4/11	0.17 - 0.74	2.1	NA	39 C	NA	NA	No	BSL
70648-26-9	1,2,3,4,7,8-HXCDF	3.1		3.9		ng/kg	03SS170002	2/11	0.08 - 2.1	3.9	NA	39 C	NA	NA	No	BSL
57653-85-7	1,2,3,6,7,8-HXCDD	0.33	J	10.1		ng/kg	03SS170002	5/11	0.1 - 0.76	10.1	NA	39 C	NA	NA	No	BSL
57117-44-9	1,2,3,6,7,8-HXCDF	0.19	J	2.4	J	ng/kg	03SS170002	6/11	0.06 - 0.2	2.4	NA	39 C	NA	NA	No	BSL
19408-74-3	1,2,3,7,8,9-HXCDD	0.35	J	6.5		ng/kg	03SS170002	5/11	0.32 - 0.76	6.5	NA	39 C	NA	NA	No	BSL
72918-21-9	1,2,3,7,8,9-HXCDF	0.22	J	0.22	J	ng/kg	03SS230002	1/11	0.08 - 0.65	0.22	NA	39 C	NA	NA	No	BSL
40321-76-4	1,2,3,7,8-PECDD	0.4	J	1.3	J	ng/kg	03SS170002	5/11	0.08 - 0.2	1.3	NA	3.9 C	NA	NA	No	BSL
57117-41-6	1,2,3,7,8-PECDF	0.37	J	1.1	J	ng/kg	03SS260002	3/11	0.06 - 0.38	1.1	NA	78 C	NA	NA	No	BSL
60851-34-5	2,3,4,6,7,8-HXCDF	0.43	J	2.7	J	ng/kg	03SS170002	5/11	0.07 - 0.13	2.7	NA	39 C	NA	NA	No	BSL
57117-31-4	2,3,4,7,8-PECDF	0.39	J	1.4	J	ng/kg	03SS230002	4/11	0.06 - 0.67	1.4	NA	7.8 C	NA	NA	No	BSL
1746-01-6	2,3,7,8-TCDD	0.19	J	3.9		ng/kg	03SS260002	5/11	0.08 - 0.2	3.9	NA	3.9 C	NA	NA	No	BSL
51207-31-9	2,3,7,8-TCDF	0.5	J	0.78	J	ng/kg	03SS470002	4/11	0.06 - 0.85	0.78	NA	39 C	NA	NA	No	BSL
3268-87-9	**2,3,7,8-TCDD Equivalents**	0.12		7.4		ng/kg	03SS170002	11/11	NA	7.4	NA	**3.9 C**	NA	NA	**Yes**	ASL
37871-00-4	**TOTAL HPCDD**	6.7	J	419		ng/kg	03SS170002	10/11	6.9	419	NA	**390 C**	NA	NA	**Yes**	ASL
38998-75-3	TOTAL HPCDF	0.19		19		ng/kg	03SS230002	5/11	0.17 - 93.9	19	NA	39 C	NA	NA	No	BSL
34465-46-8	TOTAL HXCDD	2		4		ng/kg	03SS290002	2/11	1.4 - 59.1	4	NA	39 C	NA	NA	No	BSL
55684-94-1	TOTAL HXCDF	3.2		17.8		ng/kg	03SS230002	2/11	0.07 - 61.2	17.8	NA	39 C	NA	NA	No	BSL
36088-22-9	TOTAL PECDD	0.45	J	0.45	J	ng/kg	03SS320002	1/11	0.08 - 10.4	0.45	NA	3.9 C	NA	NA	No	BSL
41903-57-5	TOTAL TCDD	1		1		ng/kg	03SS170002	1/11	0.08 - 7.5	1	NA	3.9 C	NA	NA	No	BSL
	Volatile Organic Compounds															
71-55-6	1,1,1-TRICHLOROETHANE	2	J	19	J	ug/kg	03SS280002	4/15	0.93 - 11	19	NA	63000 N	1800000	IDEM	No	BSL
591-78-6	2-HEXANONE	5	J	5	J	ug/kg	03SS460002	1/15	0.93 - 12	5	NA	310000 (7) N	NA	NA	No	BSL
108-10-1	4-METHYL-2-PENTANONE	4	J	4	J	ug/kg	03SS460002	1/15	0.93 - 12	4	NA	79000 N	1000000	IDEM	No	BSL
127-18-4	TETRACHLOROETHENE	1	J	3	J	ug/kg	03SS230002	2/15	0.93 - 12	3	NA	5700 C	48000	IDEM	No	BSL
1330-20-7	TOTAL XYLENES	82		82		ug/kg	03SS470002	1/15	0.93 - 12	82	NA	210000 sat	4800000	IDEM	No	BSL
79-01-6	TRICHLOROETHENE	3	J	14	J	ug/kg	03SS230002	3/15	0.93 - 12	14	NA	2800 C	45000	IDEM	No	BSL
	Semivolatile Organic Compounds															
106-50-3	1,4-PHENYLENEDIAMINE	210	J	210	J	ug/kg	03SS340002	1/29	67 - 98	210	NA	1200000 N	NA	NA	No	BSL
91-57-6	2-METHYLNAPHTHALENE	24		290		ug/kg	03SS240002	2/45	1.3 - 55	290	NA	5600 (8) N	NA	NA	No	BSL
83-32-9	ACENAPHTHENE	18		18		ug/kg	03SS240002	1/45	1.3 - 55	18	NA	370000 N	9500000	IDEM	No	BSL
208-96-8	ACENAPHTHYLENE	11		14		ug/kg	03SS110002	2/45	1.3 - 55	14	NA	370000 (9) N	9500000 (9)	IDEM	No	BSL
120-12-7	ANTHRACENE	12		12		ug/kg	03SS110002	1/45	1.3 - 380	12	NA	2200000 N	47000000	IDEM	No	BSL
56-55-3	BENZO(A)ANTHRACENE	8		37		ug/kg	03SS180002	3/45	1.3 - 380	37	NA	620 C	5000	IDEM	No	BSL
50-32-8	BENZO(A)PYRENE	1.5		54		ug/kg	03SS240002	5/45	1.3 - 55	54	NA	62 C	500	IDEM	No	BSL
205-99-2	BENZO(B)FLUORANTHENE	9		160		ug/kg	03SS180002, 03SS240002	13/45	1.3 - 55	160	NA	620 C	5000	IDEM	No	BSL
191-24-2	BENZO(G,H,I)PERYLENE	8		67		ug/kg	03SS180002	7/45	1.3 - 55	67	NA	230000 (10) N	5500000 (10)	IDEM	No	BSL
117-81-7	BIS(2-ETHYLHEXYL)PHTHALATE	84	J	870		ug/kg	03SS180002	7/45	67 - 170	870	NA	35000 C	300000	IDEM	No	BSL
218-01-9	CHRYSENE	8		68		ug/kg	03SS180002	7/45	1.3 - 380	68	NA	62000 C	500000	IDEM	No	BSL
84-74-2	DI-N-BUTYL PHTHALATE	110	J	4500		ug/kg	03SS180002	9/45	67 - 98	4500	NA	610000 N	18000000	IDEM	No	BSL
117-84-0	DI-N-OCTYL PHTHALATE	270	J	270	J	ug/kg	03SS250002	1/39	67 - 98	270	NA	120000 N	3700000	IDEM	No	BSL
53-70-3	DIBENZO(A,H)ANTHRACENE	8		8		ug/kg	03SS240002	1/45	1.3 - 55	8	NA	62 C	500	IDEM	No	BSL
206-44-0	FLUORANTHENE	8		250		ug/kg	03SS240002	8/45	1.3 - 55	250	NA	230000 N	6300000	IDEM	No	BSL
86-73-7	FLUORENE	15		15		ug/kg	03SS240002	1/45	1.3 - 55	15	NA	260000 N	6300000	IDEM	No	BSL
193-39-5	INDENO(1,2,3-CD)PYRENE	8		49	J	ug/kg	03SS180002	5/45	1.3 - 55	49	NA	620 C	5000	IDEM	No	BSL

TABLE 2.1

OCCURRENCE, DISTRIBUTION AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN - DIRECT CONTACT WITH SURFACE SOIL
NSWC CRANE
CRANE, INDIANA

Scenario Timeframe: Current/Future
Medium: Surface Soil
Exposure Medium: Surface Soil (0 to 2 feet)
Exposure Point: SWMU 3 - Old Jeep Trail / Little Sulphur Creek

CAS Number	Chemical	Minimum Concentration (1)	Minimum Qualifier	Maximum Concentration (1)	Maximum Qualifier	Units	Location of Maximum Concentration	Detection Frequency	Range of Nondetects(2)	Concentration Used for Screening(3)	Site Above Background? (4)	U.S. EPA Region 9 PRG-Residential (5)	Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag	Rationale for Contaminant Deletion or Selection(6)
91-20-3	NAPHTHALENE	11		130		ug/kg	03SS240002	4/45	1.3 - 55	130	NA	5600 N	3200000	IDEM	No	BSL
85-01-8	PHENANTHRENE	8		320		ug/kg	03SS240002	5/45	1.3 - 55	320	NA	230000 (10) N	5500000 (10)	IDEM	No	BSL
129-00-0	PYRENE	8		250		ug/kg	03SS240002	9/45	1.3 - 55	250	NA	230000 N	5500000	IDEM	No	BSL
	Energetics															
99-35-4	1,3,5-TRINITROBENZENE	0.72		11	J	mg/kg	03SS240002	3/48	0.25	11	NA	180 N	NA	NA	No	BSL
118-96-7	**2,4,6-TRINITROTOLUENE**	0.39	J	1700	J	mg/kg	03SS240002	4/48	0.25	1700	NA	**16 C**	NA	NA	**Yes**	ASL
121-14-2	2,4-DINITROTOLUENE	1	J	1	J	mg/kg	03SS240002	1/48	0.25	1	NA	12 N	NA	NA	No	BSL
35572-78-2	**2-AMINO-4,6-DINITROTOLUENE**	0.56		30	J	mg/kg	03SS240002	7/48	0.25	30	NA	**0.47 (7) N**	NA	NA	**Yes**	ASL
88-72-2	2-NITROTOLUENE	0.28	J	0.28	J	mg/kg	03SS330002	1/48	0.25	0.28	NA	37 N	NA	NA	No	BSL
19406-51-0	**4-AMINO-2,6-DINITROTOLUENE**	0.35	J	15	J	mg/kg	03SS240002	7/48	0.25	15	NA	**0.47 (7) N**	NA	NA	**Yes**	ASL
2691-41-0	**HMX**	0.34		1600	J	mg/kg	03SS240002	9/47	0.25 - 0.34	1600	NA	**310 N**	NA	NA	**Yes**	ASL
121-82-4	**RDX**	0.93		2400	J	mg/kg	03SS240002	6/48	0.25	2400	NA	**4.4 C**	NA	NA	**Yes**	ASL
	Herbicides															
93-76-5	2,4,5-T	6.4		6.4		ug/kg	03SS320002	1/5	1.6 - 1.7	6.4	NA	61000 N	NA	NA	No	BSL
94-75-7	2,4-D	6.7		8.3	J	ug/kg	03SS320002	3/5	1.6 - 1.7	8.3	NA	69000 N	NA	NA	No	BSL
88-85-7	DINOSEB	11		11		ug/kg	03SS290002	1/3	1.6 - 1.7	11	NA	6100 N	NA	NA	No	BSL
	Inorganics															
7429-90-5	ALUMINUM	2350	J	14900	J	mg/kg	03SS270002	32/32	NA	14900	No	**7600 N**	NA	NA	No	BKG
7440-36-0	ANTIMONY	0.49	J	4.4	J	mg/kg	03SS240002	8/32	0.19 - 2.8	4.4	No	**3.1 N**	140	IDEM	No	BKG
7440-38-2	ARSENIC	3	J	28.4	J	mg/kg	03SS330002	30/32	2.8 - 4.4	28.4	No	**0.39 C**	**3.9**	IDEM	No	BKG
7440-39-3	**BARIUM**	66.2	J	2040	J	mg/kg	03SS480002	32/32	NA	2040	Yes	**540 N**	23000	IDEM	**Yes**	ASL
7440-41-7	BERYLLIUM	0.33	J	1.4		mg/kg	03SS180002	31/32	0.2	1.4	Yes	15 N	680	IDEM	No	BSL
7440-43-9	**CADMIUM**	0.35		4.4		mg/kg	03SS240002	29/32	0.31 - 0.32	4.4	Yes	**3.7 N**	12	IDEM	**Yes**	ASL
7440-70-2	CALCIUM	1180	J	244000	J	mg/kg	03SS330002	32/32	NA	244000	Yes	NA	NA	NA	No	NUT
7440-47-3	**CHROMIUM**	7.7	J	288	J	mg/kg	03SS270002	32/32	NA	288	Yes	**30 (11) C**	430	IDEM	**Yes**	ASL
7440-48-4	COBALT	3	J	19.9	J	mg/kg	03SS340002	32/32	NA	19.9	No	470 N	NA	NA	No	BSL, BKG
7440-50-8	COPPER	5.4	J	63.9	J	mg/kg	03SS270002	32/32	NA	63.9	Yes	290 N	13000	IDEM	No	BSL
7439-89-6	**IRON**	8280	J	51600	J	mg/kg	03SS340002	32/32	NA	51600	Yes	**2300 N**	NA	NA	**Yes**	ASL
7439-92-1	**LEAD**	9.2	J	10200	J	mg/kg	03SS240002	32/32	NA	10200	Yes	**400**	**400**	IDEM	**Yes**	ASL
7439-95-4	MAGNESIUM	556	J	15000	J	mg/kg	03SS330002	32/32	NA	15000	No	NA	NA	NA	No	NUT, BKG
7439-96-5	MANGANESE	260	J	1760	J	mg/kg	03SS390002	32/32	NA	1760	No	180 N	NA	NA	No	BSL, BKG
7439-97-6	MERCURY	0.017	J	0.26	J	mg/kg	03SS280002	31/32	0.02	0.26	Yes	2.3 N	55	IDEM	No	BSL
7440-02-0	NICKEL	8.9	J	32.6	J	mg/kg	03SS180002	32/32	NA	32.6	Yes	160 N	6900	IDEM	No	BSL
7440-09-7	POTASSIUM	330	J	2180	J	mg/kg	03SS180002	32/32	NA	2180	No	NA	NA	NA	No	NUT, BKG
7782-49-2	SELENIUM	0.17	J	0.42		mg/kg	03SS270002, 03SS290002	29/32	0.16 - 0.18	0.42	No	39 N	1700	IDEM	No	BSL, BKG
7440-22-4	SILVER	0.32	J	0.72		mg/kg	03SS380002	5/32	0.04 - 0.8	0.72	Yes	39 N	1700	IDEM	No	BSL
7440-23-5	SODIUM	87.1	J	598	J	mg/kg	03SS170002	9/32	21 - 237	598	Yes	NA	NA	NA	No	NUT
7440-28-0	THALLIUM	0.05		0.21		mg/kg	03SS270002	32/32	NA	0.21	No	0.52 N	31	IDEM	No	BSL, BKG
7440-62-2	VANADIUM	10.8		29.1		mg/kg	03SS270002	32/32	NA	29.1	No	55 N	NA	NA	No	BSL, BKG
7440-66-6	ZINC	19.5	J	739	J	mg/kg	03SS280002	32/32	NA	739	Yes	2300 N	100000	IDEM	No	BSL
	Miscellaneous Parameters															
14797-55-8	NITRATE	0.8		49		mg/kg	03SS240002	46/48	0.6 - 1.1	49	NA	13000 (7) N	NA	NA	No	BSL
14797-65-0	NITRITE	2.4	J	5.6	J	mg/kg	03SS010002	2/39	2 - 44	5.6	NA	780 (7) N	NA	NA	No	BSL
TTNUS029	NITRITE/NITRATE	0.8		49	J	mg/kg	03SS240002	46/48	0.6 - 1.1	49	NA	NA	NA	NA	No	NTX
TTNUS288	PERCENT MOISTURE	6.4		25.6			03SS270002	48/48	NA	25.6	NA	NA	NA	NA	No	NTX
14797-73-0	PERCHLORATE	24	J	470	J	ug/kg	03SS220002	3/48	20 - 27	470	NA	NA	NA	NA	No	NTX

TABLE 2.1

OCCURRENCE, DISTRIBUTION AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN - DIRECT CONTACT WITH SURFACE SOIL
NSWC CRANE
CRANE, INDIANA

Scenario Timeframe: Current/Future
Medium: Surface Soil
Exposure Medium: Surface Soil (0 to 2 feet)
Exposure Point: SWMU 3 - Old Jeep Trail / Little Sulphur Creek

CAS Number	Chemical	Minimum Concentration (1)	Minimum Qualifier	Maximum Concentration (1)	Maximum Qualifier	Units	Location of Maximum Concentration	Detection Frequency	Range of Nondetects(2)	Concentration Used for Screening(3)	Site Above Background? (4)	U.S. EPA Region 9 PRG-Residential (5)	Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag	Rationale for Contaminant Deletion or Selection(6)

Notes:
(1) - Only the original of duplicate samples was considered for COPC selection. The duplicate was used for quality control purposes only.
(2) - Values presented are sample-specific quantitation limits.
(3) - The maximum detected concentration is used for screening purposes.
(4) - To determine whether metal concentrations were within background levels, soil concentrations were compared to Base-wide background data presented in the Basewide Background Soil Investigation Report (TINUS, Inc., January 2001) by means of the Wilcoxon Rank Sum Test. If the Wilcoxon Test determined that a constituent concentration was not significantly different from background, that chemical was not selected as a COPC.
(5) - U.S. EPA Region 9 Preliminary Remediation Goals Table, November 1, 2000. (PRGs for noncarcinogens are divided by 10.)
(6) - Rationale Codes
Selection Reason: Above Screening Levels (ASL)
No Toxicity Information (NTX)
Deletion Reason: Essential Nutrient (NUT)
Below Screening Level (BSL)
Below Background Value (BKG)
(7) - No U.S. EPA Region 9 PRG available, value is from U.S. EPA Region 3 Risk-Based Concentration table, September 25, 2001.
(8) - Value is for naphthalene.
(9) - Value is for acenaphthene.
(10) - Value is for pyrene.
(11) - Value is for hexavalent chromium.
Shaded cells indicate that the specified criterion has been exceeded or that the chemical has been selected as a COPC.

Definitions:
NA = Not Applicable.
SQL = Sample Quantitation Limit.
COPC = Chemical of Potential Concern.
ARAR/TBC = Applicable or Relevant and Appropriate Requirement/To Be Considered.
J = Estimated Value.
C = Carcinogenic.
N = Noncarcinogenic.
IDEM = Indiana Department of Environmental Management, Risk Integrated System of Closure (RISC) residential levels for direct contact with soil (IDEM, July 2001).
sat = Soil saturation limit.

ASSOCIATED SAMPLES:

03SS010002	03SS170002	03SS330002
03SS020002	03SS180002	03SS340002
03SS030002	03SS190002	03SS350002
03SS040002	03SS200002	03SS360002
03SS050002	03SS210002	03SS370002
03SS060002	03SS220002	03SS380002
03SS070002	03SS230002	03SS390002
03SS080002	03SS240002	03SS400002
03SS090002	03SS250002	03SS410002
03SS100002	03SS260002	03SS420002
03SS110002	03SS270002	03SS430002
03SS120002	03SS280002	03SS440002
03SS130002	03SS290002	03SS450002
03SS140002	03SS300002	03SS460002
03SS150002	03SS310002	03SS470002
03SS160002	03SS320002	03SS480002

TABLE 2.2

OCCURRENCE, DISTRIBUTION AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN - MIGRATION FROM SURFACE SOIL
NSWC CRANE
CRANE, INDIANA

Scenario Timeframe: Current/Future
Medium: Surface Soil
Exposure Medium: Surface Soil (0 to 2 feet)
Exposure Point: SWMU 3 - Old Jeep Trail / Little Sulphur Creek

CAS Number	Chemical	Minimum Concentration (1)	Minimum Qualifier	Maximum Concentration (1)	Maximum Qualifier	Units	Location of Maximum Concentration	Detection Frequency	Range of Nondetects(2)	Concentration Used for Screening(3)	Site Above Background? (4)	U.S. EPA Generic SSL for Soil to Air (5)	U.S. EPA Generic SSL for Migration to Groundwater (5)	IDEM SSL for Migration to Groundwater (6)	COPC Flag	Rationale for Contaminant Deletion or Selection(7)
	Dioxins															
3268-87-9	1,2,3,4,6,7,8,9-OCDD	176	J	3440	J	ng/kg	03SS470002	11/11	NA	3440	NA	4.30E+11	2.87E+03	NA	Yes	ASL
39001-02-0	1,2,3,4,6,7,8,9-OCDF	7.6	J	62.2	J	ng/kg	03SS170002	3/11	0.3 - 2.1	62.2	NA	4.30E+11	2.87E+03	NA	No	BSL
35822-46-9	1,2,3,4,6,7,8-HPCDD	3.2		233		ng/kg	03SS170002	11/11	NA	233	NA	4.30E+09	2.87E+01	NA	Yes	ASL
67562-39-4	1,2,3,4,6,7,8-HPCDF	0.19	J	32.1		ng/kg	03SS170002	5/11	0.17 - 0.71	32.1	NA	4.30E+09	2.87E+01	NA	Yes	ASL
55673-89-7	1,2,3,4,7,8,9-HPCDF	0.7	J	2.1	J	ng/kg	03SS170002	4/11	0.1 - 0.4	2.1	NA	4.30E+09	2.87E+01	NA	No	BSL
39227-28-6	1,2,3,4,7,8-HXCDD	0.58	J	2.1	J	ng/kg	03SS170002	4/11	0.17 - 0.74	2.1	NA	4.30E+08	2.87E+00	NA	No	BSL
70648-26-9	1,2,3,4,7,8-HXCDF	3.1		3.9		ng/kg	03SS170002	2/11	0.08 - 2.1	3.9	NA	4.30E+08	2.87E+00	NA	Yes	ASL
57653-85-7	1,2,3,6,7,8-HXCDD	0.33	J	10.1		ng/kg	03SS170002	5/11	0.1 - 0.76	10.1	NA	4.30E+08	2.87E+00	NA	Yes	ASL
57117-44-9	1,2,3,6,7,8-HXCDF	0.19	J	2.4	J	ng/kg	03SS170002	6/11	0.06 - 0.2	2.4	NA	4.30E+08	2.87E+00	NA	No	BSL
19408-74-3	1,2,3,7,8,9-HXCDD	0.35	J	6.5		ng/kg	03SS170002	5/11	0.32 - 0.76	6.5	NA	4.30E+08	2.87E+00	NA	Yes	ASL
72918-21-9	1,2,3,7,8,9-HXCDF	0.22	J	0.22	J	ng/kg	03SS230002	1/11	0.08 - 0.65	0.22	NA	4.30E+08	2.87E+00	NA	No	BSL
40321-76-4	1,2,3,7,8-PECDD	0.4	J	1.3	J	ng/kg	03SS170002	5/11	0.08 - 0.2	1.3	NA	4.30E+07	2.87E-01	NA	Yes	ASL
57117-41-6	1,2,3,7,8-PECDF	0.37	J	1.1	J	ng/kg	03SS260002	3/11	0.06 - 0.38	1.1	NA	8.60E+08	5.74E+00	NA	No	BSL
60851-34-5	2,3,4,6,7,8-HXCDF	0.43	J	2.7	J	ng/kg	03SS170002	5/11	0.07 - 0.13	2.7	NA	4.30E+08	2.87E+00	NA	No	BSL
57117-31-4	2,3,4,7,8-PECDF	0.39	J	1.4	J	ng/kg	03SS230002	4/11	0.06 - 0.67	1.4	NA	8.60E+07	5.74E-01	NA	Yes	ASL
1746-01-6	2,3,7,8-TCDD	0.19	J	3.9		ng/kg	03SS260002	5/11	0.08 - 0.2	3.9	NA	4.30E+07	2.87E-01	NA	Yes	ASL
51207-31-9	2,3,7,8-TCDF	0.5	J	0.78	J	ng/kg	03SS470002	4/11	0.06 - 0.85	0.78	NA	4.30E+08	2.87E+00	NA	No	BSL
3268-87-9	2,3,7,8-TCDD Equivalents	0.12		7.4		ng/kg	03SS170002	11/11	NA	7.4	NA	4.30E+07	2.87E-01	NA	Yes	ASL
37871-00-4	TOTAL HPCDD	6.7	J	419		ng/kg	03SS170002	10/11	6.9	419	NA	4.30E+09	2.87E+01	NA	Yes	ASL
38998-75-3	TOTAL HPCDF	0.19		19		ng/kg	03SS230002	5/11	0.17 - 93.9	19	NA	4.30E+09	2.87E+03	NA	No	BSL
34465-46-8	TOTAL HXCDD	2		4		ng/kg	03SS290002	2/11	1.4 - 59.1	4	NA	4.30E+08	2.87E+00	NA	Yes	ASL
55684-94-1	TOTAL HXCDF	3.2		17.8		ng/kg	03SS230002	2/11	0.07 - 61.2	17.8	NA	4.30E+08	2.87E+00	NA	Yes	ASL
36088-22-9	TOTAL PECDD	0.45	J	0.45	J	ng/kg	03SS320002	1/11	0.08 - 10.4	0.45	NA	4.30E+07	2.87E-01	NA	Yes	ASL
41903-57-5	TOTAL TCDD	1		1		ng/kg	03SS170002	1/11	0.08 - 7.5	1	NA	4.30E+07	2.87E-01	NA	Yes	ASL
	Volatile Organic Compounds															
71-55-6	1,1,1-TRICHLOROETHANE	2	J	19	J	ug/kg	03SS280002	4/15	0.93 - 11	19	NA	1200000	100	1900	No	BSL
591-78-6	2-HEXANONE	5	J	5	J	ug/kg	03SS460002	1/15	0.93 - 12	5	NA	NA	NA	NA	No	NTX
108-10-1	4-METHYL-2-PENTANONE	4	J	4	J	ug/kg	03SS460002	1/15	0.93 - 12	4	NA	NA	NA	NA	No	NTX
127-18-4	TETRACHLOROETHENE	1	J	3	J	ug/kg	03SS230002	2/15	0.93 - 12	3	NA	11000	3	58	No	BSL
1330-20-7	TOTAL XYLENES	82		82		ug/kg	03SS470002	1/15	0.93 - 12	82	NA	410000	9000	190000	No	BSL
79-01-6	TRICHLOROETHENE	3	J	14	J	ug/kg	03SS230002	3/15	0.93 - 12	14	NA	5000	3	57	Yes	ASL
	Semivolatile Organic Compounds															
106-50-3	1,4-PHENYLENEDIAMINE	210	J	210	J	ug/kg	03SS340002	1/29	67 - 98	210	NA	NA	NA	NA	No	NTX
91-57-6	2-METHYLNAPHTHALENE	24		290		ug/kg	03SS240002	2/45	1.3 - 55	290	NA	NA	NA	NA	No	NTX
83-32-9	ACENAPHTHENE	18		18		ug/kg	03SS240002	1/45	1.3 - 55	18	NA	NA	NA	130000	No	BSL
208-96-8	ACENAPHTHYLENE	11		14		ug/kg	03SS110002	2/45	1.3 - 55	14	NA	NA	NA	NA	No	NTX
120-12-7	ANTHRACENE	12		12		ug/kg	03SS110002	1/45	1.3 - 380	12	NA	NA	590000	51000	No	BSL
56-55-3	BENZO(A)ANTHRACENE	8		37		ug/kg	03SS180002	3/45	1.3 - 380	37	NA	NA	80	19000	No	BSL
50-32-8	BENZO(A)PYRENE	1.5		54		ug/kg	03SS240002	5/45	1.3 - 55	54	NA	NA	400	8200	No	BSL
205-99-2	BENZO(B)FLUORANTHENE	9		160		ug/kg	03SS180002, 03SS240002	13/45	1.3 - 55	160	NA	NA	200	57000	No	BSL
191-24-2	BENZO(G,H,I)PERYLENE	8		67		ug/kg	03SS180002	7/45	1.3 - 55	67	NA	NA	NA	NA	No	NTX
117-81-7	BIS(2-ETHYLHEXYL)PHTHALATE	84	J	870		ug/kg	03SS180002	7/45	67 - 170	870	NA	31000000	180000	3600000	No	BSL
218-01-9	CHRYSENE	8		68		ug/kg	03SS180002	7/45	1.3 - 380	68	NA	NA	8000	25000	No	BSL
84-74-2	DI-N-BUTYL PHTHALATE	110	J	4500		ug/kg	03SS180002	9/45	67 - 98	4500	NA	2300000	270000	500000	No	BSL
117-84-0	DI-N-OCTYL PHTHALATE	270	J	270	J	ug/kg	03SS250002	1/39	67 - 98	270	NA	10000000	10000000	6700000	No	BSL
53-70-3	DIBENZO(A,H)ANTHRACENE	8		8		ug/kg	03SS240002	1/45	1.3 - 55	8	NA	NA	80	18000	No	BSL
206-44-0	FLUORANTHENE	8		250		ug/kg	03SS240002	8/45	1.3 - 55	250	NA	NA	210000	880000	No	BSL
86-73-7	FLUORENE	15		15		ug/kg	03SS240002	1/45	1.3 - 55	15	NA	NA	28000	170000	No	BSL
193-39-5	INDENO(1,2,3-CD)PYRENE	8		49	J	ug/kg	03SS180002	5/45	1.3 - 55	49	NA	NA	700	3100	No	BSL
91-20-3	NAPHTHALENE	11		130		ug/kg	03SS240002	4/45	1.3 - 55	130	NA	NA	4000	700	No	BSL
85-01-8	PHENANTHRENE	8		320		ug/kg	03SS240002	5/45	1.3 - 55	320	NA	NA	NA	NA	No	NTX
129-00-0	PYRENE	8		250		ug/kg	03SS240002	9/45	1.3 - 55	250	NA	NA	210000	570000	No	BSL

TABLE 2.2

OCCURRENCE, DISTRIBUTION AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN - MIGRATION FROM SURFACE SOIL
NSWC CRANE
CRANE, INDIANA

Scenario Timeframe: Current/Future
Medium: Surface Soil
Exposure Medium: Surface Soil (0 to 2 feet)
Exposure Point: SWMU 3 - Old Jeep Trail / Little Sulphur Creek

CAS Number	Chemical	Minimum Concentration (1)	Minimum Qualifier	Maximum Concentration (1)	Maximum Qualifier	Units	Location of Maximum Concentration	Detection Frequency	Range of Nondetects(2)	Concentration Used for Screening(3)	Site Above Background? (4)	U.S. EPA Generic SSL for Soil to Air (5)	U.S. EPA Generic SSL for Migration to Groundwater (5)	IDEM SSL for Migration to Groundwater (6)	COPC Flag	Rationale for Contaminant Deletion or Selection(7)
	Energetics															
99-35-4	1,3,5-TRINITROBENZENE	0.72		11	J	mg/kg	03SS240002	3/48	0.25	11	NA	NA	NA	NA	No	NTX
118-96-7	2,4,6-TRINITROTOLUENE	0.39	J	1700	J	mg/kg	03SS240002	4/48	0.25	1700	NA	NA	NA	NA	No	NTX
121-14-2	2,4-DINITROTOLUENE	1	J	1	J	mg/kg	03SS240002	1/48	0.25	1	NA	NA	0.00004	NA	Yes	ASL
35572-78-2	2-AMINO-4,6-DINITROTOLUENE	0.56		30	J	mg/kg	03SS240002	7/48	0.25	30	NA	NA	NA	NA	No	NTX
88-72-2	2-NITROTOLUENE	0.28	J	0.28	J	mg/kg	03SS330002	1/48	0.25	0.28	NA	NA	NA	NA	No	NTX
19406-51-0	4-AMINO-2,6-DINITROTOLUENE	0.35	J	15	J	mg/kg	03SS240002	7/48	0.25	15	NA	NA	NA	NA	No	NTX
2691-41-0	HMX	0.34		1600	J	mg/kg	03SS240002	9/47	0.25 - 0.34	1600	NA	NA	NA	NA	No	NTX
121-82-4	RDX	0.93		2400	J	mg/kg	03SS240002	6/48	0.25	2400	NA	NA	NA	NA	No	NTX
	Herbicides															
93-76-5	2,4,5-T	6.4		6.4		ug/kg	03SS320002	1/5	1.6 - 1.7	6.4	NA	NA	NA	NA	No	NTX
94-75-7	2,4-D	6.7		8.3	J	ug/kg	03SS320002	3/5	1.6 - 1.7	8.3	NA	NA	NA	NA	No	NTX
88-85-7	DINOSEB	11		11		ug/kg	03SS290002	1/3	1.6 - 1.7	11	NA	NA	NA	NA	No	NTX
	Inorganics															
7429-90-5	ALUMINUM	2350	J	14900	J	mg/kg	03SS270002	32/32	NA	14900	No	NA	NA	NA	No	BKG
7440-36-0	ANTIMONY	0.49	J	4.4	J	mg/kg	03SS240002	8/32	0.19 - 2.8	4.4	No	NA	3	5.4	No	BKG
7440-38-2	ARSENIC	3	J	28.4	J	mg/kg	03SS330002	30/32	2.8 - 4.4	28.4	No	750	1	29	No	BKG
7440-39-3	BARIUM	66.2	J	2040	J	mg/kg	03SS480002	32/32	NA	2040	Yes	690000	82	1600	Yes	ASL
7440-41-7	BERYLLIUM	0.33	J	1.4		mg/kg	03SS180002	31/32	0.2	1.4	Yes	1300	3	63	No	BSL
7440-43-9	CADMIUM	0.35		4.4		mg/kg	03SS240002	29/32	0.31 - 0.32	4.4	Yes	1800	0.4	7.5	Yes	ASL
7440-70-2	CALCIUM	1180	J	244000	J	mg/kg	03SS330002	32/32	NA	244000	Yes	NA	NA	NA	No	NTX
7440-47-3	CHROMIUM	7.7	J	288	J	mg/kg	03SS270002	32/32	NA	288	Yes	270 (9)	2 (9)	38 (9)	Yes	ASL
7440-48-4	COBALT	3	J	19.9	J	mg/kg	03SS340002	32/32	NA	19.9	No	NA	NA	NA	No	BKG
7440-50-8	COPPER	5.4	J	63.9	J	mg/kg	03SS270002	32/32	NA	63.9	Yes	NA	NA	580	No	BSL
7439-89-6	IRON	8280	J	51600	J	mg/kg	03SS340002	32/32	NA	51600	Yes	NA	NA	NA	No	NTX
7439-92-1	LEAD	9.2	J	10200	J	mg/kg	03SS240002	32/32	NA	10200	Yes	NA	NA	81	Yes	ASL
7439-95-4	MAGNESIUM	556	J	15000	J	mg/kg	03SS330002	32/32	NA	15000	No	NA	NA	NA	No	NUT, BKG
7439-96-5	MANGANESE	260	J	1760	J	mg/kg	03SS390002	32/32	NA	1760	No	NA	NA	NA	No	BKG
7439-97-6	MERCURY	0.017	J	0.26	J	mg/kg	03SS280002	31/32	0.02	0.26	Yes	10	0.1	2.1	Yes	ASL
7440-02-0	NICKEL	8.9	J	32.6	J	mg/kg	03SS180002	32/32	NA	32.6	Yes	13000	7	950	Yes	ASL
7440-09-7	POTASSIUM	330	J	2180	J	mg/kg	03SS180002	32/32	NA	2180	No	NA	NA	NA	No	NUT, BKG
7782-49-2	SELENIUM	0.17	J	0.42		mg/kg	03SS270002, 03SS290002	29/32	0.16 - 0.18	0.42	No	NA	0.3	5.2	No	BKG
7440-22-4	SILVER	0.32	J	0.72		mg/kg	03SS380002	5/32	0.04 - 0.8	0.72	Yes	NA	2	31	No	BSL
7440-23-5	SODIUM	87.1	J	598	J	mg/kg	03SS170002	9/32	21 - 237	598	Yes	NA	NA	NA	No	NUT
7440-28-0	THALLIUM	0.05		0.21		mg/kg	03SS270002	32/32	NA	0.21	No	NA	0.04	2.8	No	BKG
7440-62-2	VANADIUM	10.8		29.1		mg/kg	03SS270002	32/32	NA	29.1	No	NA	300	NA	No	BSL, BKG
7440-66-6	ZINC	19.5	J	739	J	mg/kg	03SS280002	32/32	NA	739	Yes	NA	620	14000	Yes	ASL
	Miscellaneous Parameters															
14797-55-8	NITRATE	0.8		49		mg/kg	03SS240002	46/48	0.6 - 1.1	49	NA	NA	NA	NA	No	NTX
14797-65-0	NITRITE	2.4	J	5.6	J	mg/kg	03SS010002	2/39	2 - 44	5.6	NA	NA	NA	NA	No	NTX
TTNUS029	NITRITE/NITRATE	0.8		49	J	mg/kg	03SS240002	46/48	0.6 - 1.1	49	NA	NA	NA	NA	No	NTX
TTNUS288	PERCENT MOISTURE	6.4		25.6			03SS270002	48/48	NA	25.6	NA	NA	NA	NA	No	NTX
14797-73-0	PERCHLORATE	24	J	470	J	ug/kg	03SS220002	3/48	20 - 27	470	NA	NA	NA	NA	No	NTX

TABLE 2.2

OCCURRENCE, DISTRIBUTION AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN - MIGRATION FROM SURFACE SOIL
NSWC CRANE
CRANE, INDIANA

Scenario Timeframe: Current/Future
Medium: Surface Soil
Exposure Medium: Surface Soil (0 to 2 feet)
Exposure Point: SWMU 3 - Old Jeep Trail / Little Sulphur Creek

CAS Number	Chemical	Minimum Concentration (1)	Minimum Qualifier	Maximum Concentration (1)	Maximum Qualifier	Units	Location of Maximum Concentration	Detection Frequency	Range of Nondetects(2)	Concentration Used for Screening(3)	Site Above Background? (4)	U.S. EPA Generic SSL for Soil to Air (5)	U.S. EPA Generic SSL for Migration to Groundwater (5)	IDEM SSL for Migration to Groundwater (6)	COPC Flag	Rationale for Contaminant Deletion or Selection(7)

Notes:
(1) - Only the original of duplicate samples was considered for COPC selection. The duplicate was used for quality control purposes only.
(2) - Values presented are sample-specific quantitation limits.
(3) - The maximum detected concentration is used for screening purposes.
(4) - To determine whether metal concentrations were within background levels, soil concentrations were compared to Base-wide background data presented in the Basewide Background Soil Investigation Report (TtNUS, Inc., January 2001) by means of the Wilcoxon Rank Sum Test. If the Wilcoxon Test determined that a constituent concentration was not significantly different from background, that chemical was not selected as a COPC.
(5) - Soil Screening Guidance: Technical Background Document. (U.S. EPA, May 1996). The migration to groundwater value represents a dilution and attenuation factor (DAF) of 1.
ition from soil to groundwater (IDEM, July 2001).
(7) - Rationale Codes
Selection Reason: Above Screening Levels (ASL)
No Toxicity Information (NTX)
Deletion Reason: Essential Nutrient (NUT)
Below Screening Level (BSL)
Below Background Value (BKG)
(8) - Value is for hexavalent chromium.
Shaded cells indicate that the specified criterion has been exceeded or that the chemical has been selected as a COPC.

Definitions:
NA = Not Applicable
SQL = Sample Quantitation Limit
COPC = Chemical of Potential Concern
ARAR/TBC = Applicable or Relevant and Appropriate Requirement/To Be Considered
J = Estimated Value
IDEM = Indiana Department of Environmental Management, Risk Integrated System of Closure (RISC) residential levels for migration from soil to ground water (IDEM, July 2001).

ASSOCIATED SAMPLES:

03SS010002	03SS170002	03SS330002
03SS020002	03SS180002	03SS340002
03SS030002	03SS190002	03SS350002
03SS040002	03SS200002	03SS360002
03SS050002	03SS210002	03SS370002
03SS060002	03SS220002	03SS380002
03SS070002	03SS230002	03SS390002
03SS080002	03SS240002	03SS400002
03SS090002	03SS250002	03SS410002
03SS100002	03SS260002	03SS420002
03SS110002	03SS270002	03SS430002
03SS120002	03SS280002	03SS440002
03SS130002	03SS290002	03SS450002
03SS140002	03SS300002	03SS460002
03SS150002	03SS310002	03SS470002
03SS160002	03SS320002	03SS480002

TABLE 2.3

OCCURRENCE, DISTRIBUTION AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN - DIRECT CONTACT WITH SUBSURFACE SOIL
NSWC CRANE
CRANE, INDIANA

Scenario Timeframe: Current/Future
Medium: Subsurface Soil
Exposure Medium: Subsurface Soil (Greater than 2 feet)
Exposure Point: SWMU 3 - Old Jeep Trail / Little Sulphur Creek

CAS Number	Chemical	Minimum Concentration (1)	Minimum Qualifier	Maximum Concentration (1)	Maximum Qualifier	Units	Location of Maximum Concentration	Detection Frequency	Range of Nondetects(2)	Concentration Used for Screening(3)	Site Above Background? (4)	U.S. EPA Region 9 PRG-Residential (5)	Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag	Rationale for Contaminant Deletion or Selection(6)
	Dioxins/Furans															
3268-87-9	1,2,3,4,6,7,8,9-OCDD	174	J	970	J	ng/kg	03SB241215	2/2	NA	970	NA	39000 C	NA	NA	No	BSL
35822-46-9	1,2,3,4,6,7,8-HPCDD	1.2	J	7.6		ng/kg	03SB241215	2/2	NA	7.6	NA	390 C	NA	NA	No	BSL
57653-85-7	1,2,3,6,7,8-HXCDD	0.35	J	0.35	J	ng/kg	03SB241215	1/2	0.1	0.35	NA	39 C	NA	NA	No	BSL
3268-87-9	2,3,7,8-TCDD Equivalents	0.029		0.21		ng/kg	03SB241215	2/2	NA	0.21	NA	3.9 C	NA	NA	No	BSL
37871-00-4	TOTAL HPCDD	18.4		18.4		ng/kg	03SB241215	1/2	2.5	18.4	NA	39 C	NA	NA	No	BSL
36088-22-9	TOTAL PECDD	0.27		0.27		ng/kg	03SB191215	1/2	0.14	0.27	NA	3.9 C	NA	NA	No	BSL
	Volatile Organic Compounds															
71-55-6	1,1,1-TRICHLOROETHANE	1	J	21	J	ug/kg	03SB270607	5/25	0.9 - 13	21	NA	63000 N	1800000	IDEM	No	BSL
79-34-5	1,1,2,2-TETRACHLOROETHANE	1	J	2	J	ug/kg	03SB460610	2/25	0.9 - 13	2	NA	380 C	5000	IDEM	No	BSL
591-78-6	2-HEXANONE	2	J	13	J	ug/kg	03SB220204	4/25	0.9 - 13	13	NA	310000 (7) N	NA	NA	No	BSL
108-10-1	4-METHYL-2-PENTANONE	10	J	10	J	ug/kg	03SB250608	1/25	0.9 - 13	10	NA	79000 N	1000000	IDEM	No	BSL
156-59-2	CIS-1,2-DICHLOROETHENE	1	J	18	J	ug/kg	03SB480610	3/25	0.9 - 13	18	NA	4300 N	110000	IDEM	No	BSL
79-01-6	TRICHLOROETHENE	6	J	33	J	ug/kg	03SB480610	6/25	0.9 - 13	33	NA	2800 C	45000	IDEM	No	BSL
75-69-4	TRICHLOROFLUOROMETHANE	1	J	5		ug/kg	03SB211215	2/25	0.9 - 13	5	NA	39000 N	NA	NA	No	BSL
	Semivolatile Organic Compounds															
91-57-6	2-METHYLNAPHTHALENE	23		260		ug/kg	03SB240406	5/62	1.3 - 5.7	260	NA	5600 (8) N	NA	NA	No	BSL
95-48-7	2-METHYLPHENOL	83	J	83	J	ug/kg	03SB220204	1/62	67 - 92	83	NA	310000 N	7500000	IDEM	No	BSL
	3&4-METHYLPHENOL	130	J	130	J	ug/kg	03SB220204	1/62	67 - 92	130	NA	310000 (9) N	910000 (9)	NA	No	BSL
83-32-9	ACENAPHTHENE	15		15		ug/kg	03SB240406	1/62	1.3 - 6.3	15	NA	370000 N	9500000	IDEM	No	BSL
208-96-8	ACENAPHTHYLENE	20		20		ug/kg	03SB240406	1/62	1.3 - 6.3	20	NA	370000 (10) N	9500000 (10)	IDEM	No	BSL
98-86-2	**ACETOPHENONE**	81	J	120	J	ug/kg	03SB240406	2/62	67 - 92	120	NA	**49 N**	NA	NA	**Yes**	ASL
120-12-7	ANTHRACENE	12		25		ug/kg	03SB230610	3/62	1.3 - 6.3	25	NA	2200000 N	47000000	IDEM	No	BSL
56-55-3	BENZO(A)ANTHRACENE	9		72		ug/kg	03SB180204	2/62	1.3 - 6.3	72	NA	620 C	5000	IDEM	No	BSL
50-32-8	**BENZO(A)PYRENE**	11		110		ug/kg	03SB180204	2/62	1.3 - 6.3	110	NA	**62 C**	500	IDEM	**Yes**	ASL
205-99-2	BENZO(B)FLUORANTHENE	14		290		ug/kg	03SB180204	2/62	1.3 - 6.3	290	NA	620 C	5000	IDEM	No	BSL
191-24-2	BENZO(G,H,I)PERYLENE	100		100		ug/kg	03SB180204	1/62	1.3 - 6.3	100	NA	230000 (11) N	5500000 (11)	IDEM	No	BSL
207-08-9	BENZO(K)FLUORANTHENE	32		32		ug/kg	03SB220204	1/62	1.3 - 6.1	32	NA	6200 C	50000	IDEM	No	BSL
117-81-7	BIS(2-ETHYLHEXYL)PHTHALATE	79	J	3300	J	ug/kg	03SB070610	7/61	67 - 92	3300	NA	35000 C	300000	IDEM	No	BSL
218-01-9	CHRYSENE	16		140		ug/kg	03SB180204	2/62	1.3 - 6.3	140	NA	62000 C	500000	IDEM	No	BSL
84-74-2	DI-N-BUTYL PHTHALATE	100	J	2700		ug/kg	03SB480206	6/61	67 - 92	2700	NA	610000 N	18000000	IDEM	No	BSL
117-84-0	DI-N-OCTYL PHTHALATE	110	J	110	J	ug/kg	03SB070610	1/49	67 - 92	110	NA	120000 N	3700000	IDEM	No	BSL
206-44-0	FLUORANTHENE	24		100		ug/kg	03SB180204	3/62	1.3 - 6.3	100	NA	230000 N	6300000	IDEM	No	BSL
86-73-7	FLUORENE	19		19		ug/kg	03SB240406	1/62	1.3 - 6.3	19	NA	260000 N	6300000	IDEM	No	BSL
193-39-5	INDENO(1,2,3-CD)PYRENE	77	J	77	J	ug/kg	03SB180204	1/62	1.3 - 6.3	77	NA	620 C	5000	IDEM	No	BSL
91-20-3	NAPHTHALENE	8		270		ug/kg	03SB240406	6/62	1.3 - 5.7	270	NA	5600 N	3200000	IDEM	No	BSL
85-01-8	PHENANTHRENE	45		85		ug/kg	03SB180204	3/62	1.3 - 5.7	85	NA	230000 (11) N	5500000 (11)	IDEM	No	BSL
108-95-2	PHENOL	100	J	100	J	ug/kg	03SB240406	1/62	67 - 92	100	NA	3700000 N	88000000	IDEM	No	BSL
129-00-0	PYRENE	14		150		ug/kg	03SB180204	5/62	1.3 - 1.8	150	NA	230000 N	5500000	IDEM	No	BSL
	Energetics															
118-96-7	2,4,6-TRINITROTOLUENE	0.76		2.1		mg/kg	03SB190204	4/62	0.25	2.1	NA	16 C	NA	NA	No	BSL
121-14-2	2,4-DINITROTOLUENE	0.63	J	0.63	J	mg/kg	03SB180204	1/62	0.25	0.63	NA	12 N	NA	NA	No	BSL
35572-78-2	**2-AMINO-4,6-DINITROTOLUENE**	0.42	J	1.7		mg/kg	03SB180204	4/62	0.25	1.7	NA	**0.47 (7) N**	NA	NA	**Yes**	ASL
19406-51-0	**4-AMINO-2,6-DINITROTOLUENE**	0.55		1.1		mg/kg	03SB180204	3/62	0.25	1.1	NA	**0.47 (7) N**	NA	NA	**Yes**	ASL
2691-41-0	HMX	0.28	J	8.8		mg/kg	03SB241215	7/60	0.25	8.8	NA	310 N	NA	NA	No	BSL
121-82-4	**RDX**	0.92		4.4		mg/kg	03SB241215	5/62	0.25	4.4	NA	**4.4 C**	NA	NA	**Yes**	ASL
	Inorganics															
7429-90-5	ALUMINUM	391	J	11500	J	mg/kg	03SB270607	37/37	NA	11500	No	**7600 N**	NA	NA	No	BKG
7440-36-0	ANTIMONY	0.64	J	30	J	mg/kg	03SB480206	7/37	0.08 - 3.5	30	No	**3.1 N**	140	IDEM	No	BKG
7440-38-2	ARSENIC	0.53	J	12.6	J	mg/kg	03SB241215	37/37	NA	12.6	No	**0.39 C**	**3.9**	IDEM	No	BKG
7440-39-3	**BARIUM**	10.8	J	1340	J	mg/kg	03SB240406	37/37	NA	1340	Yes	**540 N**	23000	IDEM	**Yes**	ASL
7440-41-7	BERYLLIUM	0.11	J	1.4		mg/kg	03SB440206	37/37	NA	1.4	Yes	15 N	680	IDEM	No	BSL

TABLE 2.3

OCCURRENCE, DISTRIBUTION AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN - DIRECT CONTACT WITH SUBSURFACE SOIL
NSWC CRANE
CRANE, INDIANA

Scenario Timeframe: Current/Future
Medium: Subsurface Soil
Exposure Medium: Subsurface Soil (Greater than 2 feet)
Exposure Point: SWMU 3 - Old Jeep Trail / Little Sulphur Creek

CAS Number	Chemical	Minimum Concentration (1)	Minimum Qualifier	Maximum Concentration (1)	Maximum Qualifier	Units	Location of Maximum Concentration	Detection Frequency	Range of Nondetects(2)	Concentration Used for Screening(3)	Site Above Background? (4)	U.S. EPA Region 9 PRG-Residential (5)	Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag	Rationale for Contaminant Deletion or Selection(6)
7440-43-9	CADMIUM	0.32		12.1		mg/kg	03SB240406	32/37	0.28 - 0.3	12.1	Yes	3.7 N	12	IDEM	Yes	ASL
7440-70-2	CALCIUM	226	J	113000	J	mg/kg	03SB180204	37/37	NA	113000	Yes	NA	NA	NA	No	NUT
7440-47-3	CHROMIUM	3	J	34.5	J	mg/kg	03SB240406	37/37	NA	34.5	No	30 (12) C	430 (12)	IDEM	No	BKG
7440-48-4	COBALT	3.4	J	740	J	mg/kg	03SB480206	37/37	NA	740	Yes	470 N	NA	NA	Yes	ASL
7440-50-8	COPPER	1.4	J	22500	J	mg/kg	03SB480206	37/37	NA	22500	Yes	290 N	13000	IDEM	Yes	ASL
7439-89-6	IRON	2620	J	56400	J	mg/kg	03SB440610	37/37	NA	56400	Yes	2300 N	NA	NA	Yes	ASL
7439-92-1	LEAD	3	J	3590	J	mg/kg	03SB480206	37/37	NA	3590	Yes	400	400	IDEM	Yes	ASL
7439-95-4	MAGNESIUM	146	J	7670	J	mg/kg	03SB180204	37/37	NA	7670	No	NA	NA	NA	No	NUT, BKG
7439-96-5	MANGANESE	130	J	1790	J	mg/kg	03SB460206	37/37	NA	1790	Yes	180 N	NA	NA	Yes	ASL
7439-97-6	MERCURY	0.016		0.57	J	mg/kg	03SB230610	31/37	0.015 - 0.019	0.57	No	2.3 N	55	IDEM	No	BSL, BKG
7440-02-0	NICKEL	3	J	79100	J	mg/kg	03SB480206	37/37	NA	79100	Yes	160 N	6900	IDEM	Yes	ASL
7440-09-7	POTASSIUM	227	J	1790	J	mg/kg	03SB270607	37/37	NA	1790	No	NA	NA	NA	No	NUT, BKG
7782-49-2	SELENIUM	0.16	J	0.43	J	mg/kg	03SB460206	28/37	0.16 - 0.19	0.43	No	39 N	1700	IDEM	No	BSL, BKG
7440-22-4	SILVER	0.05		33.9	J	mg/kg	03SB480206	6/37	0.04 - 0.92	33.9	Yes	39 N	1700	IDEM	No	BSL
7440-23-5	SODIUM	80.6	J	668	J	mg/kg	03SB220204	14/37	18.8 - 182	668	Yes	NA	NA	NA	No	NUT
7440-28-0	THALLIUM	0.05		0.21		mg/kg	03SB230610	33/37	0.04	0.21	No	0.52 N	31	IDEM	No	BSL, BKG
7440-31-5	TIN	7.1	J	1630	J	mg/kg	03SB480206	4/37	0.07 - 3.8	1630	Yes	4700 N	NA	NA	No	BSL
7440-62-2	VANADIUM	2.6	J	28.3	J	mg/kg	03SB440206	37/37	NA	28.3	No	55 N	NA	NA	No	BSL, BKG
7440-66-6	ZINC	7.2	J	1100	J	mg/kg	03SB240406	37/37	NA	1100	Yes	2300 N	100000	IDEM	No	BSL
	Miscellaneous Parameters															
14797-55-8	NITRATE	1.1		38		mg/kg	03SB390206	58/62	1 - 1.1	38	NA	13000 (7) N	NA	NA	No	BSL
14797-65-0	NITRITE	2.3	J	15	J	mg/kg	03SB250608	6/46	2 - 110	15	NA	780 (7) N	NA	NA	No	BSL
	NITRITE/NITRATE	1.2	J	38	J	mg/kg	03SB390206	60/62	1 - 1.1	38	NA	NA	NA	NA	No	NTX
	PERCENT MOISTURE	8.4		27.3			03SB241215	62/62	NA	27.3	NA	NA	NA	NA	No	NTX
14797-73-0	PERCHLORATE	32	J	43	J	ug/kg	03SB390206	2/62	20 - 28	43	NA	NA	NA	NA	No	NTX

Notes:
(1) - Only the original of duplicate samples was considered for COPC selection. The duplicate was used for quality control purposes only.
(2) - Values presented are sample-specific quantitation limits.
(3) - The maximum detected concentration is used for screening purposes.
(4) - To determine whether metal concentrations were within background levels, soil concentrations were compared to Base-wide background data presented in the Basewide Background Soil Investigation Report (TtNUS, Inc., January 2001) by means of the Wilcoxon Rank Sum Test. If the Wilcoxon Test determined that a constituent concentration was not significantly different from background, that chemical was not selected as a COPC.
(5) - U.S. EPA Region 9 Preliminary Remediation Goals Table, November 1, 2000. (PRGs for noncarcinogens are divided by 10.)
(6) - Rationale Codes
Selection Reason: Above Screening Levels (ASL)
No Toxicity Information (NTX)
Deletion Reason: Essential Nutrient (NUT)
Below Screening Level (BSL)
Below Background Value (BKG)
(7) - No U.S. EPA Region 9 PRG available, value is from U.S. EPA Region 3 Risk-Based Concentration table, April 2, 2002.
(8) - Value is for naphthalene.
(9) - Value is for 4-methylphenol.
(10) - Value is for acenaphthene.
(11) - Value is for pyrene.
(12) - Value is for hexavalent chromium.
Shaded cells indicate that the specified criterion has been exceeded or that the chemical has been selected as a COPC.

Definitions:
NA = Not Applicable.
SQL = Sample Quantitation Limit.
COPC = Chemical of Potential Concern.
ARAR/TBC = Applicable or Relevant and Appropriate Requirement/To Be Considered.
J = Estimated Value.
C = Carcinogenic.
N = Noncarcinogenic.
IDEM = Indiana Department of Environmental Management, Risk Integrated System of Closure (RISC) residential levels for direct contact with soil (IDEM, July 2001).

TABLE 2.3

OCCURRENCE, DISTRIBUTION AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN - DIRECT CONTACT WITH SUBSURFACE SOIL
NSWC CRANE
CRANE, INDIANA

Scenario Timeframe: Current/Future
Medium: Subsurface Soil
Exposure Medium: Subsurface Soil (Greater than 2 feet)
Exposure Point: SWMU 3 - Old Jeep Trail / Little Sulphur Creek

CAS Number	Chemical	Minimum Concentration (1)	Minimum Qualifier	Maximum Concentration (1)	Maximum Qualifier	Units	Location of Maximum Concentration	Detection Frequency	Range of Nondetects(2)	Concentration Used for Screening(3)	Site Above Background? (4)	U.S. EPA Region 9 PRG-Residential (5)	Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag	Rationale for Contaminant Deletion or Selection(6)
	ASSOCIATED SAMPLES:															
	03SB020206	03SB110610	03SB211012	03SB390206												
	03SB020610	03SB130206	03SB211215	03SB390610												
	03SB040206	03SB130610	03SB220204	03SB400206												
	03SB040610	03SB140206	03SB221215	03SB400610												
	03SB050206	03SB140610	03SB230610	03SB420206												
	03SB050610	03SB150206	03SB240406	03SB420610												
	03SB060206	03SB150610	03SB241215	03SB440206												
	03SB060610	03SB160206	03SB250608	03SB440610												
	03SB070206	03SB160610	03SB260610	03SB460206												
	03SB070610	03SB170406	03SB270206	03SB460610												
	03SB080206	03SB171214	03SB270607	03SB470206												
	03SB080610	03SB180204	03SB280204	03SB470610												
	03SB090204	03SB190204	03SB340206	03SB480206												
	03SB100206	03SB191215	03SB340610	03SB480610												
	03SB100610	03SB200810	03SB360206													
	03SB110206	03SB201215	03SB360610													

TABLE 2.4

OCCURRENCE, DISTRIBUTION AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN - MIGRATION FROM SUBSURFACE SOIL
NSWC CRANE
CRANE, INDIANA

Scenario Timeframe: Current/Future
Medium: Subsurface Soil
Exposure Medium: Subsurface Soil (Greater than 2 feet)
Exposure Point: SWMU 3 - Old Jeep Trail / Little Sulphur Creek

CAS Number	Chemical	Minimum Concentration (1)	Minimum Qualifier	Maximum Concentration (1)	Maximum Qualifier	Units	Location of Maximum Concentration	Detection Frequency	Range of Nondetects(2)	Concentration Used for Screening(3)	Site Above Background? (4)	U.S. EPA Generic SSL for Soil to Air (5)	U.S. EPA Generic SSL for Migration to Groundwater (5)	IDEM SSL for Migration to Groundwater (6)	COPC Flag	Rationale for Contaminant Deletion or Selection(7)
	Dioxins/Furans															
3268-87-9	1,2,3,4,6,7,8,9-OCDD	174	J	970	J	ng/kg	03SB241215	2/2	NA	970	NA	4.30E+05	2.87E-03	NA	Yes	ASL
35822-46-9	1,2,3,4,6,7,8-HPCDD	1.2	J	7.6		ng/kg	03SB241215	2/2	NA	7.6	NA	4.30E+03	2.87E-05	NA	Yes	ASL
57653-85-7	1,2,3,6,7,8-HXCDD	0.35	J	0.35	J	ng/kg	03SB241215	1/2	0.1	0.35	NA	4.30E+08	2.87E+00	NA	No	BSL
3268-87-9	2,3,7,8-TCDD Equivalents	0.029		0.21		ng/kg	03SB241215	2/2	NA	0.21	NA	4.30E+05	2.87E-03	NA	Yes	ASL
37871-00-4	TOTAL HPCDD	18.4		18.4		ng/kg	03SB241215	1/2	2.5	18.4	NA	4.30E+09	2.87E+01	NA	No	BSL
36088-22-9	TOTAL PECDD	0.27		0.27		ng/kg	03SB191215	1/2	0.14	0.27	NA	4.30E+07	2.87E-01	NA	No	BSL
	Volatile Organic Compounds															
71-55-6	1,1,1-TRICHLOROETHANE	1	J	21	J	ug/kg	03SB270607	5/25	0.9 - 13	21	NA	1200000	100	1900	No	BSL
79-34-5	1,1,2,2-TETRACHLOROETHANE	1	J	2	J	ug/kg	03SB460610	2/25	0.9 - 13	2	NA	600	0.2	7	Yes	ASL
591-78-6	2-HEXANONE	2	J	13	J	ug/kg	03SB220204	4/25	0.9 - 13	13	NA	NA	NA	NA	No	NTX
108-10-1	4-METHYL-2-PENTANONE	10	J	10	J	ug/kg	03SB250608	1/25	0.9 - 13	10	NA	NA	NA	NA	No	NTX
156-59-2	CIS-1,2-DICHLOROETHENE	1	J	18	J	ug/kg	03SB480610	3/25	0.9 - 13	18	NA	1200000	20	400	No	BSL
79-01-6	TRICHLOROETHENE	6	J	33	J	ug/kg	03SB480610	6/25	0.9 - 13	33	NA	5000	3	57	Yes	ASL
75-69-4	TRICHLOROFLUOROMETHANE	1	J	5		ug/kg	03SB211215	2/25	0.9 - 13	5	NA	NA	NA	NA	No	NTX
	Semivolatile Organic Compounds															
91-57-6	2-METHYLNAPHTHALENE	23		260		ug/kg	03SB240406	5/62	1.3 - 5.7	260	NA	NA	NA	NA	No	NTX
95-48-7	2-METHYLPHENOL	83	J	83	J	ug/kg	03SB220204	1/62	67 - 92	83	NA	NA	800	14000	No	BSL
	3&4-METHYLPHENOL	130	J	130	J	ug/kg	03SB220204	1/62	67 - 92	130	NA	NA	NA	1100 (8)	No	BSL
83-32-9	ACENAPHTHENE	15		15		ug/kg	03SB240406	1/62	1.3 - 6.3	15	NA	NA	NA	130000	No	BSL
208-96-8	ACENAPHTHYLENE	20		20		ug/kg	03SB240406	1/62	1.3 - 6.3	20	NA	NA	NA	NA	No	NTX
98-86-2	ACETOPHENONE	81	J	120	J	ug/kg	03SB240406	2/62	67 - 92	120	NA	NA	NA	NA	No	NTX
120-12-7	ANTHRACENE	12		25		ug/kg	03SB230610	3/62	1.3 - 6.3	25	NA	NA	590000	51000	No	BSL
56-55-3	BENZO(A)ANTHRACENE	9		72		ug/kg	03SB180204	2/62	1.3 - 6.3	72	NA	NA	80	19000	No	BSL
50-32-8	BENZO(A)PYRENE	11		110		ug/kg	03SB180204	2/62	1.3 - 6.3	110	NA	NA	400	8200	No	BSL
205-99-2	BENZO(B)FLUORANTHENE	14		290		ug/kg	03SB180204	2/62	1.3 - 6.3	290	NA	NA	200	57000	Yes	ASL
191-24-2	BENZO(G,H,I)PERYLENE	100		100		ug/kg	03SB180204	1/62	1.3 - 6.3	100	NA	NA	NA	NA	No	NTX
207-08-9	BENZO(K)FLUORANTHENE	32		32		ug/kg	03SB220204	1/62	1.3 - 6.1	32	NA	NA	2000	39000	No	BSL
117-81-7	BIS(2-ETHYLHEXYL)PHTHALATE	79	J	3300	J	ug/kg	03SB070610	7/61	67 - 92	3300	NA	31000000	180000	3600000	No	BSL
218-01-9	CHRYSENE	16		140		ug/kg	03SB180204	2/62	1.3 - 6.3	140	NA	NA	8000	25000	No	BSL
84-74-2	DI-N-BUTYL PHTHALATE	100	J	2700		ug/kg	03SB480206	6/61	67 - 92	2700	NA	2300000	270000	500000	No	BSL
117-84-0	DI-N-OCTYL PHTHALATE	110	J	110	J	ug/kg	03SB070610	1/49	67 - 92	110	NA	10000000	10000000	6700000	No	BSL
206-44-0	FLUORANTHENE	24		100		ug/kg	03SB180204	3/62	1.3 - 6.3	100	NA	NA	210000	880000	No	BSL
86-73-7	FLUORENE	19		19		ug/kg	03SB240406	1/62	1.3 - 6.3	19	NA	NA	28000	170000	No	BSL
193-39-5	INDENO(1,2,3-CD)PYRENE	77	J	77	J	ug/kg	03SB180204	1/62	1.3 - 6.3	77	NA	NA	700	3100	No	BSL
91-20-3	NAPHTHALENE	8		270		ug/kg	03SB240406	6/62	1.3 - 5.7	270	NA	NA	4000	700	No	BSL
85-01-8	PHENANTHRENE	45		85		ug/kg	03SB180204	3/62	1.3 - 5.7	85	NA	NA	NA	NA	No	NTX
108-95-2	PHENOL	100	J	100	J	ug/kg	03SB240406	1/62	67 - 92	100	NA	NA	5000	110000	No	BSL
129-00-0	PYRENE	14		150		ug/kg	03SB180204	5/62	1.3 - 1.8	150	NA	NA	210000	570000	No	BSL
	Energetics															
118-96-7	2,4,6-TRINITROTOLUENE	0.76		2.1		mg/kg	03SB190204	4/62	0.25	2.1	NA	NA	NA	NA	No	NTX
121-14-2	2,4-DINITROTOLUENE	0.63	J	0.63	J	mg/kg	03SB180204	1/62	0.25	0.63	NA	NA	0.00004	NA	Yes	ASL
35572-78-2	2-AMINO-4,6-DINITROTOLUENE	0.42	J	1.7		mg/kg	03SB180204	4/62	0.25	1.7	NA	NA	NA	NA	No	NTX
19406-51-0	4-AMINO-2,6-DINITROTOLUENE	0.55		1.1		mg/kg	03SB180204	3/62	0.25	1.1	NA	NA	NA	NA	No	NTX
2691-41-0	HMX	0.28	J	8.8		mg/kg	03SB241215	7/60	0.25	8.8	NA	NA	NA	NA	No	NTX
121-82-4	RDX	0.92		4.4		mg/kg	03SB241215	5/62	0.25	4.4	NA	NA	NA	NA	No	NTX
	Inorganics															
7429-90-5	ALUMINUM	391	J	11500	J	mg/kg	03SB270607	37/37	NA	11500	No	NA	NA	NA	No	BKG
7440-36-0	ANTIMONY	0.64	J	30	J	mg/kg	03SB480206	7/37	0.08 - 3.5	30	No	NA	3	5.4	No	BKG
7440-38-2	ARSENIC	0.53	J	12.6	J	mg/kg	03SB241215	37/37	NA	12.6	No	750	1	29	No	BKG
7440-39-3	BARIUM	10.8	J	1340	J	mg/kg	03SB240406	37/37	NA	1340	Yes	690000	82	1600	Yes	ASL
7440-41-7	BERYLLIUM	0.11	J	1.4		mg/kg	03SB440206	37/37	NA	1.4	Yes	1300	3	63	No	BSL

TABLE 2.4

OCCURRENCE, DISTRIBUTION AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN - MIGRATION FROM SUBSURFACE SOIL
NSWC CRANE
CRANE, INDIANA

Scenario Timeframe: Current/Future
Medium: Subsurface Soil
Exposure Medium: Subsurface Soil (Greater than 2 feet)
Exposure Point: SWMU 3 - Old Jeep Trail / Little Sulphur Creek

CAS Number	Chemical	Minimum Concentration (1)	Minimum Qualifier	Maximum Concentration (1)	Maximum Qualifier	Units	Location of Maximum Concentration	Detection Frequency	Range of Nondetects(2)	Concentration Used for Screening(3)	Site Above Background? (4)	U.S. EPA Generic SSL for Soil to Air (5)	U.S. EPA Generic SSL for Migration to Groundwater (5)	IDEM SSL for Migration to Groundwater (6)	COPC Flag	Rationale for Contaminant Deletion or Selection(7)
7440-43-9	CADMIUM	0.32		12.1		mg/kg	03SB240406	32/37	0.28 - 0.3	12.1	Yes	1800	0.4	7.5	Yes	ASL
7440-70-2	CALCIUM	226	J	113000	J	mg/kg	03SB180204	37/37	NA	113000	Yes	NA	NA	NA	No	NUT
7440-47-3	CHROMIUM	3	J	34.5	J	mg/kg	03SB240406	37/37	NA	34.5	No	270 (9)	2 (9)	38 (9)	No	BKG
7440-48-4	COBALT	3.4	J	740	J	mg/kg	03SB480206	37/37	NA	740	Yes	NA	NA	NA	No	NTX
7440-50-8	COPPER	1.4	J	22500	J	mg/kg	03SB480206	37/37	NA	22500	Yes	NA	NA	580	Yes	ASL
7439-89-6	IRON	2620	J	56400	J	mg/kg	03SB440610	37/37	NA	56400	Yes	NA	NA	NA	No	NTX
7439-92-1	LEAD	3	J	3590	J	mg/kg	03SB480206	37/37	NA	3590	Yes	NA	NA	81	Yes	ASL
7439-95-4	MAGNESIUM	146	J	7670	J	mg/kg	03SB180204	37/37	NA	7670	No	NA	NA	NA	No	NUT, BKG
7439-96-5	MANGANESE	130	J	1790	J	mg/kg	03SB460206	37/37	NA	1790	Yes	NA	NA	NA	No	NTX
7439-97-6	MERCURY	0.016		0.57	J	mg/kg	03SB230610	31/37	0.015 - 0.019	0.57	No	10	0.1	2.1	No	BKG
7440-02-0	NICKEL	3	J	79100	J	mg/kg	03SB480206	37/37	NA	79100	Yes	13000	7	950	Yes	ASL
7440-09-7	POTASSIUM	227	J	1790	J	mg/kg	03SB270607	37/37	NA	1790	No	NA	NA	NA	No	NUT, BKG
7782-49-2	SELENIUM	0.16	J	0.43	J	mg/kg	03SB460206	28/37	0.16 - 0.19	0.43	No	NA	0.3	5.2	No	BKG
7440-22-4	SILVER	0.05		33.9	J	mg/kg	03SB480206	6/37	0.04 - 0.92	33.9	Yes	NA	2	31	Yes	ASL
7440-23-5	SODIUM	80.6	J	668	J	mg/kg	03SB220204	14/37	18.8 - 182	668	Yes	NA	NA	NA	No	NTX
7440-28-0	THALLIUM	0.05		0.21		mg/kg	03SB230610	33/37	0.04	0.21	No	NA	0.04	2.8	No	BKG
7440-31-5	TIN	7.1	J	1630	J	mg/kg	03SB480206	4/37	0.07 - 3.8	1630	Yes	NA	NA	NA	No	NTX
7440-62-2	VANADIUM	2.6	J	28.3	J	mg/kg	03SB440206	37/37	NA	28.3	No	NA	300	NA	No	BKG
7440-66-6	ZINC	7.2	J	1100	J	mg/kg	03SB240406	37/37	NA	1100	Yes	NA	620	14000	Yes	ASL
	Miscellaneous Parameters															
14797-55-8	NITRATE	1.1		38		mg/kg	03SB390206	58/62	1 - 1.1	38	NA	NA	NA	NA	No	NTX
14797-65-0	NITRITE	2.3	J	15	J	mg/kg	03SB250608	6/46	2 - 110	15	NA	NA	NA	NA	No	NTX
	NITRITE/NITRATE	1.2	J	38	J	mg/kg	03SB390206	60/62	1 - 1.1	38	NA	NA	NA	NA	No	NTX
	PERCENT MOISTURE	8.4		27.3			03SB241215	62/62	NA	27.3	NA	NA	NA	NA	No	NTX
14797-73-0	PERCHLORATE	32	J	43	J	ug/kg	03SB390206	2/62	20 - 28	43	NA	NA	NA	NA	No	NTX

Notes:
(1) - Only the original of duplicate samples was considered for COPC selection. The duplicate was used for quality control purposes only.
(2) - Values presented are sample-specific quantitation limits.
(3) - The maximum detected concentration is used for screening purposes.
(4) - To determine whether metal concentrations were within background levels, soil concentrations were compared to Base-wide background data presented in the Basewide Background Soil Investigation Report (TINUS, Inc., January 2001) by means of the Wilcoxon Rank Sum Test. If the Wilcoxon Test determined that a constituent concentration was not significantly different from background, that chemical was not selected as a COPC.
(5) - Soil Screening Guidance: Technical Background Document. (U.S. EPA, May 1996). The migration to groundwater value represents a dilution and attenuation factor (DAF) of 1.
(6) - Residential levels for migration from soil to groundwater (IDEM, July 2001).
(7) - Rationale Codes
Selection Reason: Above Screening Levels (ASL)
No Toxicity Information (NTX)
Deletion Reason: Essential Nutrient (NUT)
Below Screening Level (BSL)
Below Background Value (BKG)
(8) - Value is for 4-methylphenol.
(9) - Value is for hexavalent chromium.
Shaded cells indicate that the specified criterion has been exceeded or that the chemical has been selected as a COPC.

Definitions:
NA = Not Applicable.
SQL = Sample Quantitation Limit.
COPC = Chemical of Potential Concern.
ARAR/TBC = Applicable or Relevant and Appropriate Requirement/To Be Considered.
J = Estimated Value.
IDEM = Indiana Department of Environmental Management, Risk Integrated System of Closure (RISC) residential levels for migration from soil to ground water (IDEM, July 2001).

TABLE 2.4

OCCURRENCE, DISTRIBUTION AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN - MIGRATION FROM SUBSURFACE SOIL
NSWC CRANE
CRANE, INDIANA

Scenario Timeframe: Current/Future
Medium: Subsurface Soil
Exposure Medium: Subsurface Soil (Greater than 2 feet)
Exposure Point: SWMU 3 - Old Jeep Trail / Little Sulphur Creek

CAS Number	Chemical	Minimum Concentration (1)	Minimum Qualifier	Maximum Concentration (1)	Maximum Qualifier	Units	Location of Maximum Concentration	Detection Frequency	Range of Nondetects(2)	Concentration Used for Screening(3)	Site Above Background? (4)	U.S. EPA Generic SSL for Soil to Air (5)	U.S. EPA Generic SSL for Migration to Groundwater (5)	IDEM SSL for Migration to Groundwater (6)	COPC Flag	Rationale for Contaminant Deletion or Selection(7)
	ASSOCIATED SAMPLES:															
	03SB020206	03SB110610		03SB211012		03SB390206										
	03SB020610	03SB130206		03SB211215		03SB390610										
	03SB040206	03SB130610		03SB220204		03SB400206										
	03SB040610	03SB140206		03SB221215		03SB400610										
	03SB050206	03SB140610		03SB230610		03SB420206										
	03SB050610	03SB150206		03SB240406		03SB420610										
	03SB060206	03SB150610		03SB241215		03SB440206										
	03SB060610	03SB160206		03SB250608		03SB440610										
	03SB070206	03SB160610		03SB260610		03SB460206										
	03SB070610	03SB170406		03SB270206		03SB460610										
	03SB080206	03SB171214		03SB270607		03SB470206										
	03SB080610	03SB180204		03SB280204		03SB470610										
	03SB090204	03SB190204		03SB340206		03SB480206										
	03SB100206	03SB191215		03SB340610		03SB480610										
	03SB100610	03SB200810		03SB360206												
	03SB110206	03SB201215		03SB360610												

TABLE 2.5

OCCURRENCE, DISTRIBUTION AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN - DIRECT CONTACT WITH GROUNDWATER.
NSWC CRANE
CRANE, INDIANA

Scenario Timeframe: Current/Future
Medium: Ground Water
Exposure Medium: Ground Water
Exposure Point: SWMU 3 - Old Jeep Trail / Little Sulphur Creek

CAS Number	Chemical	Minimum Concentration (1)	Minimum Qualifier	Maximum Concentration (1)	Maximum Qualifier	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits (2)	Concentration Used for Screening (3)	Site Above Background? (4)	Screening Toxicity Value (5)	Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag	Rationale for Contaminant Deletion or Selection (6)
	Volatile Organic Compounds															
79-34-5	1,1,2,2-TETRACHLOROETHANE	3.9	J	530		ug/L	03GW0701	4/15	0.3	530	NA	0.055 C	NA 0.9	NA IDEM	Yes	ASL
79-00-5	1,1,2-TRICHLOROETHANE	0.5	J	12		ug/L	03GW0701	3/15	0.3	12	NA	0.20 C	5 5	FED-MCL IDEM	Yes	ASL
75-35-4	1,1-DICHLOROETHENE	1.1	J	1.1	J	ug/L	03GW0701	1/15	0.3	1.1	NA	0.046 C	7 7	FED-MCL IDEM	Yes	ASL
74-83-9	BROMOMETHANE	0.3	J	0.6		ug/L	03GW2001	4/15	0.5	0.6	NA	0.87 N	NA 11	NA IDEM	No	BSL
156-59-2	CIS-1,2-DICHLOROETHENE	0.3	J	150		ug/L	03GW0701	5/15	0.5	150	NA	6.1 N	70 70	FED-MCL IDEM	Yes	ASL
97-63-2	ETHYL METHACRYLATE	0.5	J	0.5	J	ug/L	03GW1101	1/15	0.5	0.5	NA	55 N	NA NA	NA NA	No	BSL
127-18-4	TETRACHLOROETHENE	0.3	J	5.7		ug/L	03GW0701	2/15	0.5	5.7	NA	1.1 C	5 5	FED-MCL IDEM	Yes	ASL
156-60-5	TRANS-1,2-DICHLOROETHENE	1.2	J	37		ug/L	03GW0701	3/15	0.5	37	NA	12 N	100 100	FED-MCL IDEM	Yes	ASL
79-01-6	TRICHLOROETHENE	0.3	J	640		ug/L	03GW0701	6/15	0.5 - 1.6	640	NA	1.6 C	5 5	FED-MCL IDEM	Yes	ASL
75-01-4	VINYL CHLORIDE	3.9		3.9		ug/L	03GW0701	1/15	0.3	3.9	NA	0.041 C	2 2	FED-MCL IDEM	Yes	ASL
	Semivolatile Organic Compounds															
117-81-7	BIS(2-ETHYLHEXYL)PHTHALATE	2	J	2	J	ug/L	03GW2301	1/15	0.94 - 1.1	2	NA	4.8 C	6 6	FED-MCL IDEM	No	BSL
	Energetics															
99-35-4	1,3,5-TRINITROBENZENE	0.61		0.61		ug/L	03GW2101	1/15	0.35	0.61	NA	110 N	NA NA	NA NA	No	BSL
118-96-7	2,4,6-TRINITROTOLUENE	17		17		ug/L	03GW2101	1/15	0.35	17	NA	2.2 C	NA NA	NA NA	Yes	ASL
35572-78-2	2-AMINO-4,6-DINITROTOLUENE	0.55	J	2.6		ug/L	03GW2101	3/14	0.12 - 0.35	2.6	NA	0.22 N	NA NA	NA NA	Yes	ASL
19406-51-0	4-AMINO-2,6-DINITROTOLUENE	0.62	J	10		ug/L	03GW2101	5/15	0.35	10	NA	0.22 N	NA NA	NA NA	Yes	ASL
2691-41-0	HMX	1.3		170	J	ug/L	03GW2101	8/15	0.35	170	NA	180 N	NA NA	NA NA	No	BSL
121-82-4	RDX	1.5	J	280	J	ug/L	03GW2101	12/15	0.35	280	NA	0.61 C	NA NA	NA NA	Yes	ASL
	Total Metals															
7429-90-5	ALUMINUM	7.5		372		ug/L	03GW2501	10/15	4 - 29.5	372	Yes	3600 N	50 to 200 NA	FED-SMCL NA	Yes	ASL
7440-36-0	ANTIMONY	0.1		0.12		ug/L	03GW1501	2/15	0.1 - 0.5	0.12	No	1.5 N	6 6	FED-MCL IDEM	No	BSL, BKG
7440-38-2	ARSENIC	0.21		0.3		ug/L	03GW2201	3/15	0.2 - 1	0.3	No	0.045 C	10 50	FED-MCL IDEM	No	BKG
7440-39-3	BARIUM	19.4	J	275	J	ug/L	03GW2101	15/15	NA	275	Yes	260 N	2000 2000	FED-MCL IDEM	Yes	ASL
7440-43-9	CADMIUM	12		12		ug/L	03GW1801	1/15	0.7 - 3.5	12	Yes	1.8 N	5 5	FED-MCL IDEM	Yes	ASL
7440-70-2	CALCIUM	13400	J	149000	J	ug/L	03GW2201	15/15	NA	149000	Yes	NA	NA NA	NA NA	No	NUT
7440-47-3	CHROMIUM	0.24		90.8	J	ug/L	03GW1201	12/15	0.34 - 0.47	90.8	Yes	11 (7)N	100 100(7)	FED-MCL IDEM	Yes	ASL
7440-48-4	COBALT	0.12		2.2		ug/L	03GW1201	6/15	0.1 - 0.5	2.2	Yes	220 N	NA NA	NA NA	No	BSL
7440-50-8	COPPER	0.95	J	3	J	ug/L	03GW1701 03GW1101	7/15	0.19 - 0.87	3	Yes	140 N	1300 1300	FED-MCL IDEM	No	BSL
7439-89-6	IRON	103	J	1650	J	ug/L	03GW1301	15/15	NA	1650	Yes	1100 N	300 NA	FED-SMCL IDEM	Yes	ASL

TABLE 2.5

OCCURRENCE, DISTRIBUTION AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN - DIRECT CONTACT WITH GROUNDWATER.
NSWC CRANE
CRANE, INDIANA

Scenario Timeframe: Current/Future
Medium: Ground Water
Exposure Medium: Ground Water
Exposure Point: SWMU 3 - Old Jeep Trail / Little Sulphur Creek

CAS Number	Chemical	Minimum Concentration (1)	Minimum Qualifier	Maximum Concentration (1)	Maximum Qualifier	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits (2)	Concentration Used for Screening (3)	Site Above Background? (4)	Screening Toxicity Value (5)	Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag	Rationale for Contaminant Deletion or Selection (6)
7439-92-1	LEAD	0.17		0.95		ug/L	03GW1301	5/15	0.1 - 0.5	0.95	Yes	NA	15 15	FED-MCL IDEM	No	BSL
7439-95-4	MAGNESIUM	1230		33400	J	ug/L	03GW2201	15/15		NA	Yes	NA	NA NA	NA NA	No	NUT
7439-96-5	MANGANESE	2.1	J	445	J	ug/L	03GW1301	13/15	0.54 - 0.55	445	Yes	88 N	50 NA	FED-SMCL NA	Yes	ASL
7440-02-0	NICKEL	1.3	J	91.2	J	ug/L	03GW1201	15/15	NA	91.2	Yes	73 N	NA 730	NA IDEM	Yes	ASL
7440-09-7	POTASSIUM	923	J	9440	J	ug/L	03GW0701	15/15	NA	9440	Yes	NA	NA NA	NA NA	No	NUT
7782-49-2	SELENIUM	0.41	J	0.79	J	ug/L	03GW2201	4/15	0.4 - 2	0.79	Yes	18 N	50 50	FED-MCL IDEM	No	BSL
7440-23-5	SODIUM	952	J	8930	J	ug/L	03GW2401	15/15	NA	8930	Yes	NA	NA NA	NA NA	No	NUT
7440-28-0	THALLIUM	0.5		0.5		ug/L	03GW2501	1/15	0.1 - 0.5	0.5	Yes	0.24 N	2 2	FED-MCL IDEM	Yes	ASL
7440-62-2	VANADIUM	0.6		1.2		ug/L	03GW2501	5/15	0.1 - 0.78	1.2	Yes	26 N	NA NA	NA NA	No	BSL
7440-66-6	ZINC	3.2		20.4	J	ug/L	03GW2201	10/15	0.5 - 2.7	20.4	Yes	1100 N	5000 11000	FED-SMCL IDEM	No	BSL
	Dissolved Metals															
7429-90-5	ALUMINUM, FILTERED	23.7		23.7		ug/L	03GW2501-F	1/1	NA	23.7	NA	3600 N	50 to 200 NA	FED-SMCL NA	No	BSL
7440-39-3	BARIUM, FILTERED	18.1	J	18.1	J	ug/L	03GW2501-F	1/1	NA	18.1	NA	260 N	2000 2000	FED-MCL IDEM	No	BSL
7440-70-2	CALCIUM, FILTERED	24400	J	24400	J	ug/L	03GW2501-F	1/1	NA	24400	NA	NA	NA NA	NA NA	No	NUT
7440-47-3	CHROMIUM, FILTERED	2.6	J	2.6	J	ug/L	03GW2501-F	1/1	NA	2.6	NA	11 (7)N	100 100(7)	FED-MCL IDEM	No	BSL
7440-50-8	COPPER, FILTERED	0.95	J	0.95	J	ug/L	03GW2501-F	1/1	NA	0.95	NA	140 N	1300 1300	FED-MCL IDEM	No	BSL
7439-89-6	IRON, FILTERED	98.8	J	98.8	J	ug/L	03GW2501-F	1/1	NA	98.8	NA	1100 N	300 NA	FED-MCL NA	No	BSL
7439-95-4	MAGNESIUM, FILTERED	1190		1190		ug/L	03GW2501-F	1/1	NA	1190	NA	NA	NA NA	NA NA	No	NUT
7439-96-5	MANGANESE, FILTERED	1	J	1	J	ug/L	03GW2501-F	1/1	NA	1	NA	88 N	50 NA	FED-SMCL NA	No	BSL
7440-02-0	NICKEL, FILTERED	0.85	J	0.85	J	ug/L	03GW2501-F	1/1	NA	0.85	NA	73 N	NA 730	NA IDEM	No	BSL
7440-09-7	POTASSIUM, FILTERED	950	J	950	J	ug/L	03GW2501-F	1/1	NA	950	NA	NA	NA NA	NA NA	No	NUT
7440-23-5	SODIUM, FILTERED	2460	J	2460	J	ug/L	03GW2501-F	1/1	NA	2460	NA	NA	NA NA	NA NA	No	NUT
7440-31-5	TIN, FILTERED	4.9	J	4.9	J	ug/L	03GW2501-F	1/1	NA	4.9	NA	2200 N	NA NA	NA NA	No	BSL
	Field Parameters															
	DISSOLVED OXYGEN	0.77		19.32		mg/L	03GW2501	15/15	NA	19.32	NA	NA	NA	NA	No	NTX
14797-55-8	NITRATE	0.01		1.65		mg/L	03GW1001	15/15	NA	1.65	NA	1 N	NA	NA	Yes	ASL
14797-65-0	NITRITE	0.001		0.03		mg/L	03GW2201	15/15	NA	0.03	NA	0.1 N	NA	NA	No	BSL
	OXIDATION REDUCTION POTENTIAL	49		733		MV	03GW1501	15/15	NA	733	NA	NA	NA	NA	No	NTX
	pH	3.2		7.39		SU	03GW2501	15/15	NA	7.39	NA	NA	NA	NA	No	NTX
	SPECIFIC CONDUCTANCE	0.149		0.874		MS/CM	03GW2201	15/15	NA	0.874	NA	NA	NA	NA	No	NTX
	TEMPERATURE	12.6		16.4		(C)	03GW2201, 03GW1101	15/15	NA	16.4	NA	NA	NA	NA	No	NTX
	TURBIDITY	0.4		25		NTU	03GW2501	15/15	NA	25	NA	NA	NA	NA	No	NTX

TABLE 2.5

OCCURRENCE, DISTRIBUTION AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN - DIRECT CONTACT WITH GROUNDWATER.
NSWC CRANE
CRANE, INDIANA

Scenario Timeframe: Current/Future
Medium: Ground Water
Exposure Medium: Ground Water
Exposure Point: SWMU 3 - Old Jeep Trail / Little Sulphur Creek

CAS Number	Chemical	Minimum Concentration (1)	Minimum Qualifier	Maximum Concentration (1)	Maximum Qualifier	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits (2)	Concentration Used for Screening (3)	Site Above Background? (4)	Screening Toxicity Value (5)	Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag	Rationale for Contaminant Deletion or Selection (6)

Notes:

(1) - Only the original of duplicate samples was considered for COPC selection. The duplicate was used for quality control purposes only.

(2) - Values presented are sample-specific quantitation limits.

(3) - The maximum detected concentration is used for screening purposes.

(4) - To determine whether metal concentrations were within background levels, groundwater concentrations were statistically compared to concentrations in upgradient groundwater samples. If the site groundwater concentrations were less than the upgradient concentrations, that metal was not selected as a COPC. See Section 4.

(5) - U.S. EPA Region 9 Preliminary Remediation Goals Table, November 1, 2000. (PRGs for noncarcinogens are divided by 10.)

(6) - Rationale Codes

Selection Reason:
- Above Screening Levels (ASL)
- No Toxicity Information (NTX)

Deletion Reason:
- Essential Nutrient (NUT)
- Below Screening Level (BSL)
- Below Background Value (BKG)

(7) - Value is for hexavalent chromium.

Shaded cells indicate that the specified criterion has been exceeded or that the chemical has been selected as a COPC.

Definitions:
- NA = Not Applicable
- SQL = Sample Quantitation Limit
- COPC = Chemical of Potential Concern
- ARAR/TBC = Applicable or Relevant and Appropriate Requirement/To Be Considered
- J = Estimated Value
- C = Carcinogenic
- N = Non-Carcinogenic
- FED-MCL = Federal Maximum Contaminant Level (U.S. EPA, Summer 2000)
- SMCL = Federal Secondary Maximum Contaminant Level based on aesthetic FED-water quality (U.S. EPA, Summer 2000)
- IDEM = Indiana Department of Environmental Management, Risk Integrated System of Closure (RISC) residential closure levels for groundwater (IDEM, July 2001).

Associated Samples

03GW0701	03GW1401	03GW2201
03GW1001	03GW1501	03GW2301
03GW1101	03GW1701	03GW2401
03GW1201	03GW1801	03GW2501
03GW1301	03GW2001	03GW2501-F
	03GW2101	

TABLE 2.6

OCCURRENCE, DISTRIBUTION AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN - DIRECT CONTACT WITH SURFACE WATER - LOW FLOW CONDITIONS
NSWC CRANE
CRANE, INDIANA

Scenario Timeframe: Current/Future
Medium: Surface Water
Exposure Medium: Little Sulfur Creek - Low Flow
Exposure Point: SWMU 3 - Old Jeep Trail / Little Sulphur Creek

CAS Number	Chemical	Minimum Concentration (1)	Minimum Qualifier	Maximum Concentration (1)	Maximum Qualifier	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits (2)	Concentration Used for Screening (3)	Site Above Background? (4)	Screening Toxicity Value (5)	Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag	Rationale for Contaminant Deletion or Selection (6)
	Volatile Organic Compounds															
78-93-3	2-BUTANONE	0.6	J	0.6	J	ug/L	03SW1701	1/5	0.5	0.6	NA	190 N	NA 2500	NA IDEM	No	BSL
74-83-9	BROMOMETHANE	0.8		1.6		ug/L	03SW1701	3/6	0.5	1.6	NA	0.87 N	NA 11	NA IDEM	Yes	ASL
79-01-6	TRICHLOROETHENE	0.4	J	0.4	J	ug/L	03SW1701	1/6	0.5	0.4	NA	1.6 C	5 5	FED-MCL IDEM	No	BSL
	Energetics															
118-96-7	2,4,6-TRINITROTOLUENE	0.56		0.56		ug/L	03SW1701	1/6	0.35	0.56	NA	2.2 C	NA NA	NA NA	No	BSL
35572-78-2	2-AMINO-4,6-DINITROTOLUENE	0.37	J	0.75	J	ug/L	03SW0601	2/6	0.35	0.75	NA	0.22 (7) N	NA NA	NA NA	Yes	ASL
19406-51-0	4-AMINO-2,6-DINITROTOLUENE	0.54	J	1.7		ug/L	03SW0601	4/6	0.35	1.7	NA	0.22 (7) N	NA NA	NA NA	Yes	ASL
2691-41-0	HMX	3.1	J	12		ug/L	03SW0601	6/6	NA	12	NA	180 N	NA NA	NA NA	No	BSL
121-82-4	RDX	2.3		11		ug/L	03SW1701	6/6	NA	11	NA	0.61 C	NA NA	NA NA	Yes	ASL
	Herbicides															
93-76-5	2,4,5-T	0.064	J	0.064	J	ug/L	03SW0601	1/5	0.04	0.064	NA	36 N	NA NA	NA NA	No	BSL
	Total Metals															
7429-90-5	ALUMINUM	24		213	J	ug/L	03SW0601	6/6	NA	213	No	3600 N	50 to 200 NA	FED-SMCL NA	No	BKG
7440-38-2	ARSENIC	0.23		0.56		ug/L	03SW0601	6/6	NA	0.56	No	0.045 C	10 50	FED-MCL IDEM	No	BKG
7440-39-3	BARIUM	61.6		120	J	ug/L	03SW0601	6/6	NA	120	No	260 N	2000 2000	FED-MCL IDEM	No	BSL, BKG
7440-70-2	CALCIUM	26400	J	31600		ug/L	03SW0601	6/6	NA	31600	Yes	NA	NA NA	NA NA	No	NUT
7440-47-3	CHROMIUM	0.6	J	0.6	J	ug/L	03SW0601	1/6	0.33 - 0.49	0.6	Yes	11 (8) N	100 100 (8)	FED-MCL IDEM	No	BSL
7440-48-4	COBALT	0.12		0.31		ug/L	03SW0601	5/6	0.1	0.31	No	220 N	NA NA	NA NA	No	BSL, BKG
7440-50-8	COPPER	0.75		2.5		ug/L	03SW0601	6/6	NA	2.5	No	140 N	1300 1300	FED-MCL IDEM	No	BSL, BKG
7439-89-6	IRON	114	J	373		ug/L	03SW0601	6/6	NA	373	No	1100 N	300 NA	FED-SMCL NA	No	BKG
7439-92-1	LEAD	0.2		20		ug/L	03SW0601	6/6	NA	20	Yes	NA	15 15	FED-MCL IDEM	Yes	ASL
7439-95-4	MAGNESIUM	6290	J	10300	J	ug/L	03SW0601	6/6	NA	10300	Yes	NA	NA NA	NA NA	No	NUT
7439-96-5	MANGANESE	7.4	J	34.8	J	ug/L	03SW1901	6/6	NA	34.8	No	88 N	50 NA	FED-SMCL NA	No	BSL, BKG
7440-02-0	NICKEL	1		1.9	J	ug/L	03SW0601	6/6	NA	1.9	No	73 N	NA 730	NA IDEM	No	BSL, BKG
7440-09-7	POTASSIUM	1170	J	5100		ug/L	03SW0601	6/6	NA	5100	No	NA	NA NA	NA NA	No	NUT, BKG
7440-23-5	SODIUM	3730		5850		ug/L	03SW0601	6/6	NA	5850	No	NA	NA NA	NA NA	No	NUT, BKG
7440-31-5	TIN	2.8	J	4.9	J	ug/L	03SW1901, 03SW1601	5/6	2.6	4.9	Yes	2200 N	NA NA	NA NA	No	BSL
7440-62-2	VANADIUM	0.12		0.54		ug/L	03SW0601	4/6	0.1	0.54	No	26 N	NA NA	NA NA	No	BSL, BKG
7440-66-6	ZINC	1.8		3.4		ug/L	03SW1701	5/6	6.3	3.4	No	1100 N	5000 11000	FED-SMCL IDEM	No	BSL, BKG

TABLE 2.6

OCCURRENCE, DISTRIBUTION AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN - DIRECT CONTACT WITH SURFACE WATER - LOW FLOW CONDITIONS
NSWC CRANE
CRANE, INDIANA

Scenario Timeframe: Current/Future
Medium: Surface Water
Exposure Medium: Little Sulfur Creek - Low Flow
Exposure Point: SWMU 3 - Old Jeep Trail / Little Sulphur Creek

CAS Number	Chemical	Minimum Concentration (1)	Minimum Qualifier	Maximum Concentration (1)	Maximum Qualifier	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits (2)	Concentration Used for Screening (3)	Site Above Background? (4)	Screening Toxicity Value (5)	Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag	Rationale for Contaminant Deletion or Selection (6)
	Dissolved Metals															
7429-90-5	ALUMINUM, FILTERED	5.6		10.6		ug/L	03SW1501-F	2/6	2.6 - 19.3	10.6	No	3600 N	50 to 200 NA	FED-SMCL NA	No	BSL, BKG
7440-36-0	ANTIMONY, FILTERED	1.2	J	1.2	J	ug/L	03SW0601-F	1/6	0.14 - 0.36	1.2	No	1.5 N	6 6	FED-MCL IDEM	No	BSL, BKG
7440-38-2	ARSENIC, FILTERED	0.21		0.42		ug/L	03SW0601-F	5/6	0.2	0.42	Yes	0.045 C	10 50	FED-MCL IDEM	Yes	ASL
7440-39-3	BARIUM, FILTERED	63.1		114	J	ug/L	03SW0601-F	6/6	NA	114	Yes	260 N	2000 2000	FED-MCL IDEM	No	BSL
7440-70-2	CALCIUM, FILTERED	26900	J	31200		ug/L	03SW0601-F	6/6	NA	31200	Yes	NA	NA NA	NA NA	No	NUT
7440-47-3	CHROMIUM, FILTERED	0.53	J	0.53	J	ug/L	03SW1701-F	1/6	0.19 - 0.43	0.53	Yes	11 (8) N	100 100 (8)	FED-MCL IDEM	No	BSL
7440-48-4	COBALT, FILTERED	0.11		0.73		ug/L	03SW1601-F	6/6	NA	0.73	No	220 N	NA NA	NA NA	No	BSL, BKG
7440-50-8	COPPER, FILTERED	0.54		1.5		ug/L	03SW0601-F	6/6	NA	1.5	Yes	140 N	1300 1300	FED-MCL IDEM	No	BSL
7439-89-6	IRON, FILTERED	97.6		154	J	ug/L	03SW0601-F	6/6	NA	154	Yes	1100 N	300 NA	FED-SMCL NA	No	BSL
7439-92-1	LEAD, FILTERED	1.1		1.1		ug/L	03SW0601-F	1/6	0.1	1.1	No	NA	15 15	FED-MCL IDEM	No	BSL, BKG
7439-95-4	MAGNESIUM, FILTERED	6000	J	10400	J	ug/L	03SW0601-F	6/6	NA	10400	Yes	NA	NA NA	NA NA	No	NUT
7439-96-5	MANGANESE, FILTERED	3.4	J	35.6	J	ug/L	03SW1901-F	6/6	NA	35.6	No	88 N	50 NA	FED-SMCL NA	No	BSL, BKG
7440-02-0	NICKEL, FILTERED	1.1		1.4		ug/L	03SW1701-F	6/6	NA	1.4	No	73 N	NA 730	NA IDEM	No	BSL, BKG
7440-09-7	POTASSIUM, FILTERED	1150	J	5010		ug/L	03SW0601-F	6/6	NA	5010	No	NA	NA NA	NA NA	No	NUT, BKG
7782-49-2	SELENIUM, FILTERED	0.52	J	0.52	J	ug/L	03SW0601-F	1/6	0.4	0.52	Yes	18 N	50 50	FED-MCL IDEM	No	BSL
7440-23-5	SODIUM, FILTERED	3540		6020		ug/L	03SW0601-F	6/6	NA	6020	No	NA	NA NA	NA NA	No	NUT, BKG
7440-31-5	TIN, FILTERED	4.6	J	5.6	J	ug/L	03SW1701-F	5/6	4.4	5.6	Yes	2200 N	NA NA	NA NA	No	BSL
7440-62-2	VANADIUM, FILTERED	0.18		0.18		ug/L	03SW0601-F	1/6	0.1	0.18	No	26 N	NA NA	NA NA	No	BSL, BKG
7440-66-6	ZINC, FILTERED	1.5		2.8		ug/L	03SW1701-F	5/6	0.5	2.8	Yes	1100 N	5000 11000	FED-SMCL IDEM	No	BSL
	Miscellaneous Parameters															
	TOTAL SUSPENDED SOLIDS	9		20	J	mg/L	03SW0601	2/6	2	20	NA	NA	NA	NA	No	NTX
	Field Parameters															
	DISSOLVED OXYGEN	7.9		10.92		mg/L	03SW1501	6/6	NA	10.92	NA	NA	NA	NA	No	NTX
14797-55-8	NITRATE	0.1		0.2		mg/L	03SW1701	6/6	NA	0.2	NA	1 N	NA	NA	No	BSL
14797-65-0	NITRITE	0		0.004		mg/L	03SW1701	6/6	NA	0.004	NA	0.1 N	NA	NA	No	BSL
	OXIDATION REDUCTION POTENTIAL	316.4		396		MV	03SW1801	6/6	NA	396	NA	NA	NA	NA	No	NTX
	pH	6.62		8.25		S.U.	03SW0601	6/6	NA	8.25	NA	NA	NA	NA	No	NTX
	SPECIFIC CONDUCTANCE	0.261		0.312		MS/CM	03SW0601	6/6	NA	0.312	NA	NA	NA	NA	No	NTX
	TEMPERATURE	14.5		25.45		C	03SW0601	6/6	NA	25.45	NA	NA	NA	NA	No	NTX
	TURBIDITY	0		8.4		NTU	03SW0601	6/6	NA	8.4	NA	NA	NA	NA	No	NTX

TABLE 2.6

OCCURRENCE, DISTRIBUTION AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN - DIRECT CONTACT WITH SURFACE WATER - LOW FLOW CONDITIONS
NSWC CRANE
CRANE, INDIANA

Scenario Timeframe: Current/Future
Medium: Surface Water
Exposure Medium: Little Sulfur Creek - Low Flow
Exposure Point: SWMU 3 - Old Jeep Trail / Little Sulphur Creek

CAS Number	Chemical	Minimum Concentration (1)	Minimum Qualifier	Maximum Concentration (1)	Maximum Qualifier	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits (2)	Concentration Used for Screening (3)	Site Above Background? (4)	Screening Toxicity Value (5)	Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag	Rationale for Contaminant Deletion or Selection (6)

Notes:

(1) - Only the original of duplicate samples was considered for COPC selection. The duplicate was used for quality control purposes only.

(2) - Values presented are sample-specific quantitation limits.

(3) - The maximum detected concentration is used for screening purposes.

(4) - To determine whether metal concentrations were within background levels, surface water concentrations were statistically compared to concentrations in upgradient surface water samples. If the site surface water concentrations were less than the upgradient concentrations, that metal was not selected as a COPC. See Section 4.

(5) - U.S. EPA Region 9 Preliminary Remediation Goals Table, November 1, 2000. (PRGs for noncarcinogens are divided by 10.)

(6) - Rationale Codes
Selection Reason: Above Screening Levels (ASL)
Deletion Reason: No Toxicity Information (NTX)
Essential Nutrient (NUT)
Below Screening Level (BSL)
Below Background Value (BKG)

(7) - No U.S. EPA Region 9 PRG available, value is from U.S. EPA Region 3 Risk-Based Concentration Table, April 2, 2002.

(8) - Value is for hexavalent chromium.

Shaded cells indicate that the specified criterion has been exceeded or that the chemical has been selected as a COPC.

Definitions:
NA = Not Applicable
SQL = Sample Quantitation Limit
COPC = Chemical of Potential Concern
ARAR/TBC = Applicable or Relevant and Appropriate Requirement/To Be Considered
J = Estimated Value
C = Carcinogenic
N = Non-Carcinogenic
FED-MCL = Federal Maximum Contaminant Level (U.S. EPA, Summer 2000)
SMCL = Federal Secondary Maximum Contaminant Level based on aesthetic FED-water quality (U.S. EPA, Summer 2000)
IDEM = Indiana Department of Environmental Management, Risk Integrated System of Closure (RISC) residential closure levels for groundwater (IDEM, July 2001).

Associated Samples

03SW0601	03SW1701
03SW0601-F	03SW1701-F
03SW1501	03SW1801
03SW1501-F	03SW1801-F
03SW1601	03SW1901
03SW1601-F	03SW1901-F

TABLE 2.7

OCCURRENCE, DISTRIBUTION AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN - DIRECT CONTACT WITH SURFACE WATER - HIGH FLOW CONDITIONS
NSWC CRANE
CRANE, INDIANA

Scenario Timeframe: Current/Future
Medium: Surface Water
Exposure Medium: Little Sulfur Creek - High Flow
Exposure Point: SWMU 3 - Old Jeep Trail / Little Sulphur Creek

CAS Number	Chemical	Minimum Concentration (1)	Minimum Qualifier	Maximum Concentration (1)	Maximum Qualifier	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits (2)	Concentration Used for Screening (3)	Site Above Background? (4)	Screening Toxicity Value (5)	Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag	Rationale for Contaminant Deletion or Selection (6)
	Volatile Organic Compounds															
75-09-2	METHYLENE CHLORIDE	9.5	J	13		ug/L	03SW0802	2/11	0.5 - 5.3	13	NA	4.3 C	5 5	FED-MCL IDEM	Yes	ASL
67-64-1	ACETONE	64		64		ug/L	03SW0902	1/3	23 - 26	64	NA	61 N	NA 770	NA IDEM	Yes	ASL
	Semivolatile Organic Compounds															
208-96-8	ACENAPHTHYLENE	0.22		0.22		ug/L	03SW0902	1/11	0.019 - 0.02	0.22	NA	37 (7) N	NA NA	NA NA	No	BSL
117-81-7	BIS(2-ETHYLHEXYL)PHTHALATE	4		6		ug/L	03SW1402	2/11	0.94 - 1	6	NA	4.8 C	6 6	FED-MCL IDEM	Yes	ASL
	Energetics															
35572-78-2	2-AMINO-4,6-DINITROTOLUENE	1.5	J	1.5	J	ug/L	03SW1702	1/11	0.35	1.5	NA	0.22 (8) N	NA NA	NA NA	Yes	ASL
19406-51-0	4-AMINO-2,6-DINITROTOLUENE	1.4	J	2.9		ug/L	03SW1702	2/11	0.35	2.9	NA	0.22 (8) N	NA NA	NA NA	Yes	ASL
2691-41-0	HMX	1.1	J	90		ug/L	03SW0902	10/11	0.35	90	NA	180 N	NA NA	NA NA	No	BSL
9004-70-0	NITROCELLULOSE	3200		3200		ug/L	03SW1502	1/11	1000	3200	NA	NA	NA NA	NA NA	No	NTX
121-82-4	RDX	0.62		63		ug/L	03SW1702	9/11	0.35	63	NA	0.61 C	NA NA	NA NA	Yes	ASL
	Herbicides															
93-76-5	2,4,5-T	0.23	J	0.63	J	ug/L	03SW0902	3/10	0.04	0.63	NA	36 N	NA NA	NA NA	No	BSL
94-75-7	2,4-D	0.28	J	0.36	J	ug/L	03SW0902	2/11	0.04	0.36	NA	36 N	70 NA	FED-MCL NA	No	BSL
87-86-5	PENTACHLOROPHENOL	0.71	J	0.71	J	ug/L	03SW1102	1/8	0.01	0.71	NA	0.56 C	1 1	FED-MCL IDEM	Yes	ASL
	Total Metals															
7429-90-5	ALUMINUM	211		2010		ug/L	03SW1102	7/11	200	2010	No	3600 N	50 to 200 NA	FED-SMCL NA	No	BKG
7440-36-0	ANTIMONY	2	J	3	J	ug/L	03SW0602	2/11	0.1 - 0.96	3	Yes	1.5 N	6 6	FED-MCL IDEM	Yes	ASL
7440-38-2	ARSENIC	0.29		2.5		ug/L	03SW1102	11/11	NA	2.5	No	0.045 C	10 50	FED-MCL IDEM	No	BKG
7440-39-3	BARIUM	45.6	J	156	J	ug/L	03SW1802	11/11	NA	156	No	260 N	2000 2000	FED-MCL IDEM	No	BSL, BKG
7440-41-7	BERYLLIUM	0.12		0.13		ug/L	03SW0902, 03SW1302	4/11	0.1	0.13	No	7.3 N	4 4	FED-MCL IDEM	No	BSL, BKG
7440-43-9	CADMIUM	0.83		1.4		ug/L	03SW1402	3/11	0.7	1.4	Yes	1.8 N	5 5	FED-MCL IDEM	No	BSL
7440-70-2	CALCIUM	6890		58900		ug/L	03SW1702	11/11	NA	58900	Yes	NA	NA NA	NA NA	No	NUT
7440-47-3	CHROMIUM	0.67	J	4.5	J	ug/L	03SW1102	9/11	0.46 - 0.47	4.5	No	11 (9) N	100 100 (9)	FED-MCL IDEM	No	BSL, BKG
7440-48-4	COBALT	0.12		1.9		ug/L	03SW0902	11/11	NA	1.9	No	220 N	NA NA	NA NA	No	BSL, BKG
7440-50-8	COPPER	0.94		18.4		ug/L	03SW1102	11/11	NA	18.4	Yes	140 N	1300 1300	FED-MCL IDEM	No	BSL
7439-89-6	IRON	115	J	2550	J	ug/L	03SW1102	10/11	100	2550	No	1100 N	300 NA	FED-SMCL NA	No	BKG
7439-92-1	LEAD	0.25		285		ug/L	03SW1102	11/11	NA	285	Yes	NA	15 15	FED-MCL IDEM	Yes	ASL
7439-95-4	MAGNESIUM	6460		14300		ug/L	03SW0602	8/11	5000	14300	No	NA	NA NA	NA NA	No	NUT, BKG
7439-96-5	MANGANESE	33.1		201		ug/L	03SW1902	10/11	15	201	No	88 N	50 NA	FED-SMCL NA	No	BKG

TABLE 2.7

OCCURRENCE, DISTRIBUTION AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN - DIRECT CONTACT WITH SURFACE WATER - HIGH FLOW CONDITIONS
NSWC CRANE
CRANE, INDIANA

Scenario Timeframe: Current/Future
Medium: Surface Water
Exposure Medium: Little Sulfur Creek - High Flow
Exposure Point: SWMU 3 - Old Jeep Trail / Little Sulphur Creek

CAS Number	Chemical	Minimum Concentration (1)	Minimum Qualifier	Maximum Concentration (1)	Maximum Qualifier	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits (2)	Concentration Used for Screening (3)	Site Above Background? (4)	Screening Toxicity Value (5)	Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag	Rationale for Contaminant Deletion or Selection (6)
7440-02-0	NICKEL	1.5		5.3		ug/L	03SW0902	11/11	NA	5.3	No	73 N	NA 730	NA IDEM	No	BSL, BKG
7440-09-7	POTASSIUM	5300	J	21600	J	ug/L	03SW0602	4/11	5000	21600	No	NA	NA NA	NA NA	No	NUT, BKG
7782-49-2	SELENIUM	0.43		0.62		ug/L	03SW0602	3/11	0.4	0.62	Yes	18 N	50 50	FED-MCL IDEM	No	BSL
7440-23-5	SODIUM	5090		8070		ug/L	03SW1102	6/11	5000	8070	No	NA	NA NA	NA NA	No	NUT, BKG
7440-31-5	TIN	3	J	4.7	J	ug/L	03SW1602, 03SW1702	6/11	0.1 - 0.9	4.7	Yes	2200 N	NA NA	NA NA	No	BSL
7440-62-2	VANADIUM	0.22		3.9		ug/L	03SW1102	11/11	NA	3.9	No	26 N	NA NA	NA NA	No	BSL, BKG
7440-66-6	ZINC	2.5		111		ug/L	03SW1102	11/11	NA	111	Yes	1100 N	5000 11000	FED-SMCL IDEM	No	BSL
	Dissolved Metals															
7429-90-5	ALUMINUM, FILTERED	260		332		ug/L	03SW1302-F	5/11	200	332	No	3600 N	50 to 200 NA	FED-SMCL NA	No	BKG
7440-36-0	ANTIMONY, FILTERED	1	J	2.4	J	ug/L	03SW0602-F	3/11	0.13 - 0.57	2.4	Yes	1.5 N	6 6	FED-MCL IDEM	Yes	ASL
7440-38-2	ARSENIC, FILTERED	0.25		1		ug/L	03SW1102-F	11/11	NA	1	Yes	0.045 C	10 50	FED-MCL IDEM	Yes	ASL
7440-39-3	BARIUM, FILTERED	37.7	J	147	J	ug/L	03SW1802-F	11/11	NA	147	No	260 N	2000 2000	FED-MCL IDEM	No	BSL, BKG
7440-43-9	CADMIUM, FILTERED	1.2		1.2		ug/L	03SW1602-F	1/11	0.7	1.2	No	1.8 N	5 5	FED-MCL IDEM	No	BSL, BKG
7440-70-2	CALCIUM, FILTERED	7550		61200		ug/L	03SW1702-F	11/11	NA	61200	Yes	NA	NA NA	NA NA	No	NUT
7440-47-3	CHROMIUM, FILTERED	0.51	J	1.4	J	ug/L	03SW0902-F	9/11	0.36 - 0.41	1.4	No	11 (9) N	100 100 (9)	FED-MCL IDEM	No	BSL, BKG
7440-48-4	COBALT, FILTERED	0.11		0.72		ug/L	03SW1902-F	11/11	NA	0.72	No	220 N	NA NA	NA NA	No	BSL, BKG
7440-50-8	COPPER, FILTERED	0.84		7.6		ug/L	03SW0902-F	11/11	NA	7.6	Yes	140 N	1300 1300	FED-MCL IDEM	No	BSL
7439-89-6	IRON, FILTERED	109		171		ug/L	03SW1302-F	2/11	100	171	No	1100 N	300 NA	FED-SMCL NA	No	BSL, BKG
7439-92-1	LEAD, FILTERED	0.12	J	22.6	J	ug/L	03SW1102-F	9/11	0.1	22.6	Yes	NA	15 15	FED-MCL IDEM	Yes	ASL
7439-95-4	MAGNESIUM, FILTERED	6000		14000		ug/L	03SW0602-F	8/11	5000	14000	No	NA	NA NA	NA NA	No	NUT, BKG
7439-96-5	MANGANESE, FILTERED	17.4		100		ug/L	03SW1902-F	6/11	15	100	No	88 N	50 NA	FED-SMCL NA	No	BKG
7440-02-0	NICKEL, FILTERED	0.88		2.4		ug/L	03SW0902-F	11/11	NA	2.4	No	73 N	NA 730	NA IDEM	No	BSL, BKG
7440-09-7	POTASSIUM, FILTERED	5220		22900		ug/L	03SW0602-F	4/11	5000	22900	Yes	NA	NA NA	NA NA	No	NUT
7782-49-2	SELENIUM, FILTERED	0.43		0.51		ug/L	03SW0602-F	2/11	0.4	0.51	No	18 N	50 50	FED-MCL IDEM	No	BSL, BKG
7440-23-5	SODIUM, FILTERED	5000		9830		ug/L	03SW1702-F	7/11	5000	9830	No	NA	NA NA	NA NA	No	NUT, BKG
7440-31-5	TIN, FILTERED	3.5	J	7.3	J	ug/L	03SW0602-F	11/11	NA	7.3	No	2200 N	NA NA	NA NA	No	BSL, BKG
7440-62-2	VANADIUM, FILTERED	0.18		0.61		ug/L	03SW1102-F	11/11	NA	0.61	No	26 N	NA NA	NA NA	No	BSL, BKG
7440-66-6	ZINC, FILTERED	2.2		21.7		ug/L	03SW1902-F	11/11	NA	21.7	No	1100 N	5000 11000	FED-SMCL IDEM	No	BSL, BKG
	Miscellaneous Parameters															
	TOTAL SUSPENDED SOLIDS	2		100		mg/L	03SW1102	8/11	2	100	NA	NA	NA	NA	No	NTX

TABLE 2.7

OCCURRENCE, DISTRIBUTION AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN - DIRECT CONTACT WITH SURFACE WATER - HIGH FLOW CONDITIONS
NSWC CRANE
CRANE, INDIANA

Scenario Timeframe: Current/Future
Medium: Surface Water
Exposure Medium: Little Sulfur Creek - High Flow
Exposure Point: SWMU 3 - Old Jeep Trail / Little Sulphur Creek

CAS Number	Chemical	Minimum Concentration (1)	Minimum Qualifier	Maximum Concentration (1)	Maximum Qualifier	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits (2)	Concentration Used for Screening (3)	Site Above Background? (4)	Screening Toxicity Value (5)	Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag	Rationale for Contaminant Deletion or Selection (6)
	Field Parameters															
	DISSOLVED OXYGEN	2.39		13.94		mg/L	03SW1102	11/11	NA	13.94	NA	NA	NA	NA	No	NTX
14797-55-8	NITRATE	0.02		1.44		mg/L	03SW0602	10/10	NA	1.44	No	1 N	NA	NA	No	BKG
14797-65-0	NITRITE	0		0.023		mg/L	03SW0602	10/10	NA	0.023	NA	0.1 N	NA	NA	No	BSL
	OXIDATION REDUCTION POTENTIAL	150		320.7		MV	03SW1902	11/11	NA	320.7	NA	NA	NA	NA	No	NTX
	pH	7.2		8.73		S.U.	03SW0902	11/11	NA	8.73	NA	NA	NA	NA	No	NTX
	SPECIFIC CONDUCTANCE	0.058		0.427		MS/CM	03SW1702	11/11	NA	0.427	NA	NA	NA	NA	No	NTX
	TEMPERATURE	16.73		23.5		C	03SW1102	11/11	NA	23.5	NA	NA	NA	NA	No	NTX
	TURBIDITY	0.75		190		NTU	03SW1102	11/11	NA	190	NA	NA	NA	NA	No	NTX

Notes:

(1) - Only the original of duplicate samples was considered for COPC selection. The duplicate was used for quality control purposes only.

(2) - Values presented are sample-specific quantitation limits.

(3) - The maximum detected concentration is used for screening purposes.

(4) - To determine whether metal concentrations were within background levels, surface water concentrations were statistically compared to concentrations in upgradient surface water samples. If the site surface water concentrations were less than the upgradient concentrations, that metal was not selected as a COPC. See Section 4.

(5) - U.S. EPA Region 9 Preliminary Remediation Goals Table, November 1, 2000. (PRGs for noncarcinogens are divided by 10.)

(6) - Rationale Codes
Selection Reason: Above Screening Levels (ASL)
Deletion Reason: No Toxicity Information (NTX)
Essential Nutrient (NUT)
Below Screening Level (BSL)
Below Background Value (BKG)

(7) - Value is for acenaphthene.

(8) - No U.S. EPA Region 9 PRG available, value is from U.S. EPA Region 3 Risk-Based Concentration Table, April 2, 2002.

(9) - Value is for hexavalent chromium.

Shaded cells indicate that the specified criterion has been exceeded or that the chemical has been selected as a COPC.

Definitions:
NA = Not Applicable
SQL = Sample Quantitation Limit
COPC = Chemical of Potential Concern
ARAR/TBC = Applicable or Relevant and Appropriate Requirement/To Be Considered
J = Estimated Value
C = Carcinogenic
N = Non-Carcinogenic
FED-MCL = Federal Maximum Contaminant Level (U.S. EPA, Summer 2000)
SMCL = Federal Secondary Maximum Contaminant Level based on aesthetic FED-water quality (U.S. EPA, Summer 2000)
IDEM = Indiana Department of Environmental Management, Risk Integrated System of Closure (RISC) residential closure levels for groundwater (IDEM, July 2001).

Associated Samples

03SW0602	03SW1102-F	03SW1602-F
03SW0602-F	03SW1302	03SW1702
03SW0802	03SW1302-F	03SW1702-F
03SW0802-F	03SW1402	03SW1802
03SW0902	03SW1402-F	03SW1802-F
03SW0902-F	03SW1502	03SW1902
03SW1102	03SW1502-F	03SW1902-F

TABLE 2.8

OCCURRENCE, DISTRIBUTION AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN - DIRECT CONTACT WITH SHALLOW SEDIMENTS
NSWC CRANE
CRANE, INDIANA

Scenario Timeframe: Current/Future
Medium: Sediment
Exposure Medium: Shallow Sediments (0" - 6")
Exposure Point: SWMU 3 - Old Jeep Trail / Little Sulphur Creek

CAS Number	Chemical	Minimum Concentration (1)	Minimum Qualifier	Maximum Concentration (1)	Maximum Qualifier	Units	Sample with Maximum Concentration	Detection Frequency	Range of Nondetects(2)	Concentration Used for Screening(3)	Site Above Background? (4)	U.S. EPA Region 9 PRG-Residential (5)	Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag	Rationale for Contaminant Deletion or Selection(6)
	Volatile Organic Compounds															
71-55-6	1,1,1-TRICHLOROETHANE	2	J	2	J	ug/kg	03SD180006	1/15	1 - 13	2	NA	63000 N	1800000	IDEM	No	BSL
78-93-3	2-BUTANONE	18	J	18	J	ug/kg	03SD170006	1/15	1 - 13	18	NA	730000 N	20000000	IDEM	No	BSL
108-10-1	4-METHYL-2-PENTANONE	2	J	2	J	ug/kg	03SD190006	1/15	1 - 13	2	NA	79000 N	1000000	IDEM	No	BSL
67-64-1	ACETONE	36	J	160	J	ug/kg	03SD050006	2/15	1 - 240	160	NA	160000 N	3900000	IDEM	No	BSL
75-15-0	CARBON DISULFIDE	1.4	J	2	J	ug/kg	03SD180006	2/15	1 - 13	2	NA	360000 N	3300	IDEM	No	BSL
	Semivolatile Organic Compounds															
83-32-9	ACENAPHTHENE	25		25		ug/kg	03SD180006	1/15	1.4 - 2.1	25	NA	370000 N	9500000	IDEM	No	BSL
84-74-2	DI-N-BUTYL PHTHALATE	77	J	590		ug/kg	03SD110006	2/15	75 - 490	590	NA	610000 N	18000000	IDEM	No	BSL
122-39-4	DIPHENYLAMINE	96	J	420	J	ug/kg	03SD150006	3/15	74 - 96	420	NA	150000 N	NA	NA	No	BSL
206-44-0	FLUORANTHENE	11		12	J	ug/kg	03SD140006	2/15	1.4 - 2.1	12	NA	230000 N	6300000	IDEM	No	BSL
85-01-8	PHENANTHRENE	14	J	14	J	ug/kg	03SD140006	1/15	1.4 - 2.1	14	NA	230000 (8) N	5500000(8)	IDEM	No	BSL
129-00-0	PYRENE	11		11		ug/kg	03SD110006	1/15	1.4 - 26	11	NA	230000 N	5500000	IDEM	No	BSL
	Energetics															
118-96-7	2,4,6-TRINITROTOLUENE	0.29	J	0.69		mg/kg	03SD110006	4/15	0.25	0.69	NA	16 C	NA	NA	No	BSL
121-14-2	2,4-DINITROTOLUENE	1.1		1.1		mg/kg	03SD060006	1/15	0.25 - 0.33	1.1	NA	12 N	NA	NA	No	BSL
35572-78-2	2-AMINO-4,6-DINITROTOLUENE	0.37	J	0.37	J	mg/kg	03SD110006	1/15	0.25	0.37	NA	0.47 (7) N	NA	NA	No	BSL
2691-41-0	HMX	1.1		130		mg/kg	03SD110006	3/15	0.25	130	NA	310 N	NA	NA	No	BSL
	Pesticides/PCB's															
72-43-5	METHOXYCHLOR	17	J	17	J	ug/kg	03SD180006	1/15	10 - 15	17	NA	31000 N	910000	IDEM	No	BSL
	Herbicides															
93-76-5	2,4,5-T	2.7	J	4.8	J	ug/kg	03SD190006	4/15	1.6 - 2.3	4.8	NA	61000 N	NA	NA	No	BSL
93-72-1	2,4,5-TP (SILVEX)	2.4	J	4.5	J	ug/kg	03SD180006	5/14	1.6 - 2	4.5	NA	49000 N	NA	NA	No	BSL
94-75-7	2,4-D	4.9	J	20	J	ug/kg	03SD080006	7/10	1.7 - 1.8	20	NA	69000 N	NA	NA	No	BSL
88-85-7	DINOSEB	3.1	J	8.2	J	ug/kg	03SD080006	3/14	1.6 - 2.3	8.2	NA	6100 N	NA	NA	No	BSL
70-30-4	HEXACHLOROPHENE	3.5	J	3.5	J	ug/kg	03SD080006	1/15	7.4 - 11	3.5	NA	1800 N	NA	NA	No	BSL
	Inorganics															
7429-90-5	**ALUMINUM**	4590	J	23200	J	mg/kg	03SD150006	15/15	NA	23200	Yes	**7600 N**	NA	NA	**Yes**	ASL
7440-36-0	**ANTIMONY**	1.1	J	7.6	J	mg/kg	03SD150006	8/15	0.38 - 2.1	7.6	Yes	**3.1 N**	140	IDEM	**Yes**	ASL
7440-38-2	ARSENIC	4.3		22		mg/kg	03SD150006	15/15	NA	22	No	**0.39 C**	**3.9**	IDEM	No	BKG
7440-39-3	**BARIUM**	91.6	J	853	J	mg/kg	03SD050006	15/15	NA	853	Yes	**540 N**	23000	IDEM	**Yes**	ASL
7440-41-7	BERYLLIUM	0.09		1.7		mg/kg	03SD150006	15/15	NA	1.7	No	15 N	680	IDEM	No	BSL,BKG
7440-43-9	CADMIUM	0.37		3.5	J	mg/kg	03SD110006	15/15	NA	3.5	Yes	3.7 N	12	IDEM	No	BSL
7440-70-2	CALCIUM	833	J	37500	J	mg/kg	03SD090006	15/15	NA	37500	Yes	NA	NA	NA	No	NUT
7440-47-3	CHROMIUM	8.4	J	40.8	J	mg/kg	03SD150006	15/15	NA	40.8	No	**30 (9) C**	430	IDEM	No	BKG
7440-48-4	COBALT	7.9	J	31.2	J	mg/kg	03SD150006	15/15	NA	31.2	No	470 N	NA	NA	No	BSL,BKG
7440-50-8	COPPER	8.1		198		mg/kg	03SD150006	15/15	NA	198	Yes	290 N	13000	IDEM	No	BSL
7439-89-6	IRON	12900	J	68600	J	mg/kg	03SD150006	15/15	NA	68600	No	**2300 N**	NA	NA	No	BKG
7439-92-1	**LEAD**	13.3		653	J	mg/kg	03SD060006	15/15	NA	653	Yes	**400**	**400**	IDEM	**Yes**	ASL
7439-95-4	MAGNESIUM	489	J	14700	J	mg/kg	03SD090006	15/15	NA	14700	No	NA	NA	NA	No	NUT,BKG
7439-96-5	MANGANESE	444	J	2780	J	mg/kg	03SD150006	15/15	NA	2780	No	**180 N**	NA	NA	No	BKG
7439-97-6	MERCURY	0.02		0.31		mg/kg	03SD150006	15/15	NA	0.31	No	2.3 N	55	IDEM	No	BSL,BKG
7440-02-0	NICKEL	10.3	J	36.3	J	mg/kg	03SD100006	15/15	NA	36.3	No	160 N	6900	IDEM	No	BSL
7440-09-7	POTASSIUM	294	J	1260	J	mg/kg	03SD060006	15/15	NA	1260	No	NA	NA	NA	No	NUT,BKG
7782-49-2	SELENIUM	0.2		0.26		mg/kg	03SD150006	3/15	0.16 - 0.8	0.26	Yes	39 N	1700	IDEM	No	BSL
7440-22-4	SILVER	0.46	J	0.71	J	mg/kg	03SD110006	3/15	0.04 - 0.15	0.71	No	39 N	1700	IDEM	No	BSL,BKG
7440-23-5	SODIUM	94.7	J	138	J	mg/kg	03SD060006	2/15	3.4 - 55.5	138	No	NA	NA	NA	No	NUT,BKG
7440-28-0	THALLIUM	0.06		0.12		mg/kg	03SD150006	15/15	NA	0.12	No	0.52 N	31	IDEM	No	BSL,BKG
7440-31-5	TIN	4.4	J	13.8	J	mg/kg	03SD120006	2/15	0.35 - 4.5	13.8	Yes	4700 N	NA	NA	No	BSL
7440-62-2	VANADIUM	12.2	J	44.1	J	mg/kg	03SD150006	15/15	NA	44.1	No	55 N	NA	NA	No	BSL, BKG
7440-66-6	ZINC	27.5	J	385	J	mg/kg	03SD160006	15/15	NA	385	Yes	2300 N	100000	IDEM	No	BSL

TABLE 2.8

OCCURRENCE, DISTRIBUTION AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN - DIRECT CONTACT WITH SHALLOW SEDIMENTS
NSWC CRANE
CRANE, INDIANA

Scenario Timeframe: Current/Future
Medium: Sediment
Exposure Medium: Shallow Sediments (0" - 6")
Exposure Point: SWMU 3 - Old Jeep Trail / Little Sulphur Creek

CAS Number	Chemical	Minimum Concentration (1)	Minimum Qualifier	Maximum Concentration (1)	Maximum Qualifier	Units	Sample with Maximum Concentration	Detection Frequency	Range of Nondetects(2)	Concentration Used for Screening(3)	Site Above Background? (4)	U.S. EPA Region 9 PRG-Residential (5)	Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag	Rationale for Contaminant Deletion or Selection(6)
	Miscellaneous Parameters															
14797-55-8	NITRATE	2.2		8.4		mg/kg	03SD080006	13/15	1.1 - 1.3	8.4	NA	13000 (7) N	NA	NA	No	BSL
14797-65-0	NITRITE	3.4	J	3.5	J	mg/kg	03SD170006	2/11	2.3 - 17	3.5	NA	780 (7) N	NA	NA	No	BSL
TTNUS029	NITRITE/NITRATE	2.2	J	8.4		mg/kg	03SD080006	15/15	NA	8.4	NA	NA	NA	NA	No	NTX
TTNUS003	TOTAL ORGANIC CARBON	4600		28000		mg/kg	03SD080006	14/15	1000	28000	NA	NA	NA	NA	No	NTX
	Miscellaneous Parameters															
TTNUS288	PERCENT MOISTURE	7.4		34.9		&	03SD080006	15/15	NA	34.9	NA	NA	NA	NA	No	NTX
	Miscellaneous Parameters															
TTNUS002	pH	7	J	8.1	J	S.U.	03SD070006	15/15	NA	8.1	NA	NA	NA	NA	No	NTX

Notes:
(1) - Only the original of duplicate samples was considered for COPC selection. The duplicate was used for quality control purposes only.
(2) - Values presented are sample-specific quantitation limits.
(3) - The maximum detected concentration is used for screening purposes.
(4) - To determine whether metal concentrations were within background levels, soil concentrations were compared to Base-wide background data presented in the Basewide Background Soil Investigation Report (TtNUS, Inc., January 2001) by means of the Wilcoxon Rank Sum Test. If the Wilcoxon Test determined that a constituent concentration was not significantly different from background, that chemical was not selected as a COPC.
(5) - U.S. EPA Region 9 Preliminary Remediation Goals Table, November 1, 2000. (PRGs for noncarcinogens are divided by 10.)
(6) - Rationale Codes
Selection Reason: Above Screening Levels (ASL)
Deletion Reason: No Toxicity Information (NTX)
Essential Nutrient (NUT)
Below Screening Level (BSL)
Below Background Value (BKG)
(7) - No U.S. EPA Region 9 PRG available, value is from U.S. EPA Region 3 Risk-Based Concentration Table, April 2, 2002.
(8) - Value is for pyrene.
(9) - Value is for hexavalent chromium.
Shaded cells indicate that the specified criterion has been exceeded or that the chemical has been selected as a COPC.

Definitions: NA = Not Applicable.
SQL = Sample Quantitation Limit.
COPC = Chemical of Potential Concern.
ARAR/TBC = Applicable or Relevant and Appropriate Requirement/To Be Considered.
J = Estimated Value.
C = Carcinogenic.
N = Noncarcinogenic.
IDEM = Indiana Department of Environmental Management, Risk Integrated System of Closure (RISC) residential levels for direct contact with soil (IDEM, July 2001).
sat = Soil saturation limit.

ASSOCIATED SAMPLES:

03SD050006	03SD100006	03SD150006
03SD060006	03SD110006	03SD160006
03SD070006	03SD120006	03SD170006
03SD080006	03SD130006	03SD180006
03SD090006	03SD140006	03SD190006

TABLE 2.9

OCCURRENCE, DISTRIBUTION AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN - DIRECT CONTACT WITH DEEP SEDIMENTS
NSWC CRANE
CRANE, INDIANA

Scenario Timeframe: Current/Future
Medium: Sediment
Exposure Medium: Deep Sediments (6"-12")
Exposure Point: SWMU 3 - Old Jeep Trail / Little Sulphur Creek

CAS Number	Chemical	Minimum Concentration (1)	Minimum Qualifier	Maximum Concentration (1)	Maximum Qualifier	Units	Location of Maximum Concentration	Detection Frequency	Range of Nondetects(2)	Concentration Used for Screening(3)	Site Above Background? (4)	U.S. EPA Region 9 PRG-Residential (5)	Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag	Rationale for Contaminant Deletion or Selection(6)
	Volatile Organic Compounds															
71-55-6	1,1,1-TRICHLOROETHANE	1	J	4		ug/kg	03SD190612	5/15	1.1 - 4.3	4	NA	63000 N	1800000	IDEM	No	BSL
78-93-3	2-BUTANONE	10		60		ug/kg	03SD180612	3/15	0.96 - 4.3	60	NA	730000 N	20000000	IDEM	No	BSL
67-64-1	ACETONE	29	J	220	J	ug/kg	03SD180612	4/15	1.1 - 72	220	NA	160000 N	3900000	IDEM	No	BSL
75-15-0	CARBON DISULFIDE	1	J	1.1	J	ug/kg	03SD060612	3/15	0.96 - 5	1.1	NA	360000 N	3300	IDEM	No	BSL
108-88-3	TOLUENE	54		54		ug/kg	03SD180612	1/15	0.96 - 4.3	54	NA	520000 sat	1700000	IDEM	No	BSL
75-69-4	TRICHLOROFLUOROMETHANE	2	J	2	J	ug/kg	03SD090612	1/15	0.96 - 4.3	2	NA	39000 N	NA	NA	No	BSL
	Semivolatile Organic Compounds															
56-55-3	BENZO(A)ANTHRACENE	11		11		ug/kg	03SD160612	1/15	1.4 - 2.1	11	NA	620 C	5000	IDEM	No	BSL
205-99-2	BENZO(B)FLUORANTHENE	11		15		ug/kg	03SD160612	2/15	1.4 - 2.1	15	NA	620 C	5000	IDEM	No	BSL
218-01-9	CHRYSENE	10		10		ug/kg	03SD160612	1/15	1.4 - 2.1	10	NA	62000 C	500000	IDEM	No	BSL
84-74-2	DI-N-BUTYL PHTHALATE	110	J	880		ug/kg	03SD110612	2/15	73 - 330	880	NA	610000 N	18000000	IDEM	No	BSL
206-44-0	FLUORANTHENE	27		27		ug/kg	03SD160612	1/15	1.4 - 2.1	27	NA	230000 N	6300000	IDEM	No	BSL
85-01-8	PHENANTHRENE	23		23		ug/kg	03SD160612	1/15	1.4 - 2.1	23	NA	230000 (8) N	5500000 (8)	IDEM	No	BSL
129-00-0	PYRENE	19		19		ug/kg	03SD160612	1/15	1.4 - 2.1	19	NA	230000 N	5500000	IDEM	No	BSL
	Energetics															
118-96-7	2,4,6-TRINITROTOLUENE	0.34999	J	2.2		mg/kg	03SD120612	5/15	0.25	2.2	NA	16 C	NA	NA	No	BSL
35572-78-2	**2-AMINO-4,6-DINITROTOLUENE**	0.35	J	0.73		mg/kg	03SD110612	2/15	0.25	0.73	NA	**0.47 (7) N**	NA	NA	**Yes**	ASL
19406-51-0	4-AMINO-2,6-DINITROTOLUENE	0.4	J	0.4	J	mg/kg	03SD120612	1/15	0.25 - 1	0.4	NA	0.47 (7) N	NA	NA	No	BSL
2691-41-0	HMX	0.37	J	19		mg/kg	03SD110612	4/15	0.25	19	NA	310 N	NA	NA	No	BSL
121-82-4	RDX	0.44999	J	0.45	J	mg/kg	03SD110612	2/15	0.25	0.45	NA	4.4 C	NA	NA	No	BSL
	Herbicides															
93-76-5	2,4,5-T	2.5	J	4.5		ug/kg	03SD110612	5/15	1.5 - 2.3	4.5	NA	61000 N	NA	NA	No	BSL
93-72-1	2,4,5-TP (SILVEX)	2.3	J	2.9	J	ug/kg	03SD060612	2/15	1.5 - 2.3	2.9	NA	49000 N	NA	NA	No	BSL
94-75-7	2,4-D	6.9	J	28	J	ug/kg	03SD050612	5/12	1.5 - 2	28	NA	69000 N	NA	NA	No	BSL
88-85-7	DINOSEB	3.5	J	3.5	J	ug/kg	03SD170612, 03SD140612	2/15	1.5 - 2.3	3.5	NA	6100 N	NA	NA	No	BSL
70-30-4	HEXACHLOROPHENE	2.8	J	7.6	J	ug/kg	03SD080612	2/15	7.3 - 9.8	7.6	NA	1800 N	NA	NA	No	BSL
87-86-5	PENTACHLOROPHENOL	2.1		3.7	J	ug/kg	03SD050612	2/11	0.37 - 0.48	3.7	NA	3000 C	20000	IDEM	No	BSL
	Inorganics															
7429-90-5	**ALUMINUM**	3150		56900		mg/kg	03SD110612	15/15	NA	56900	Yes	**7600 N**	NA	NA	**Yes**	ASL
7440-36-0	**ANTIMONY**	0.85	J	6.7	J	mg/kg	03SD110612	8/15	0.36 - 1.3	6.7	Yes	**3.1 N**	140	IDEM	**Yes**	ASL
7440-38-2	ARSENIC	3.5		17.5		mg/kg	03SD150612	15/15	NA	17.5	No	**0.39 C**	**3.9**	IDEM	No	BKG
7440-39-3	**BARIUM**	47.5	J	981	J	mg/kg	03SD110612	15/15	NA	981	Yes	**540 N**	23000	IDEM	**Yes**	ASL
7440-41-7	BERYLLIUM	0.43		1.5		mg/kg	03SD150612, 03SD110612	15/15	NA	1.5	No	15 N	680	IDEM	No	BSL, BKG
7440-43-9	**CADMIUM**	0.39	J	4		mg/kg	03SD120612	14/15	0.31	4	Yes	**3.7 N**	12	IDEM	**Yes**	ASL
7440-70-2	CALCIUM	676	J	32300		mg/kg	03SD060612	15/15	NA	32300	Yes	NA	NA	NA	No	NUT
7440-47-3	CHROMIUM	8	J	48.9	J	mg/kg	03SD110612	15/15	NA	48.9	No	**30 (9) C**	430	IDEM	No	BKG
7440-48-4	COBALT	7.9		29.1	J	mg/kg	03SD150612	15/15	NA	29.1	No	470 N	NA	NA	No	BSL,BKG
7440-50-8	COPPER	7.9		273		mg/kg	03SD110612	15/15	NA	273	Yes	290 N	13000	IDEM	No	BSL
7439-89-6	IRON	12500	J	87700	J	mg/kg	03SD060612	15/15	NA	87700	No	**2300 N**	NA	NA	No	BKG
7439-92-1	**LEAD**	11.8		445		mg/kg	03SD110612	15/15	NA	445	Yes	**400**	**400**	IDEM	**Yes**	ASL
7439-95-4	MAGNESIUM	368	J	4980	J	mg/kg	03SD060612	15/15	NA	4980	No	NA	NA	NA	No	NUT,BKG
7439-96-5	MANGANESE	316	J	2320	J	mg/kg	03SD150612	15/15	NA	2320	No	**180 N**	NA	NA	No	BKG
7439-97-6	MERCURY	0.02		0.13		mg/kg	03SD120612, 03SD140612	13/15	0.01999 - 0.03	0.13	Yes	2.3 N	55	IDEM	No	BSL
7440-02-0	NICKEL	10.1	J	36.1	J	mg/kg	03SD110612	15/15	NA	36.1	No	160 N	6900	IDEM	No	BSL,BKG
7440-09-7	POTASSIUM	236	J	802	J	mg/kg	03SD050612	15/15	NA	802	No	NA	NA	NA	No	NUT,BKG
7782-49-2	SELENIUM	0.36		0.36		mg/kg	03SD130612	1/15	0.16 - 0.78	0.36	No	39 N	1700	IDEM	No	BSL, BKG
7440-22-4	SILVER	0.23	J	0.43	J	mg/kg	03SD110612	4/15	0.04 - 0.28	0.43	Yes	39 N	1700	IDEM	No	BSL
7440-23-5	SODIUM	88.5	J	88.5	J	mg/kg	03SD060612	1/15	3.4 - 48.5	88.5	No	NA	NA	NA	No	NUT,BKG
7440-28-0	THALLIUM	0.05		0.12		mg/kg	03SD090612, 03SD150612	15/15	NA	0.12	No	0.52 N	31	IDEM	No	BSL,BKG
7440-31-5	TIN	1.5	J	4.1	J	mg/kg	03SD100612	3/15	0.39 - 3.8	4.1	Yes	4700 N	NA	NA	No	BSL
7440-62-2	VANADIUM	10.2		47.1		mg/kg	03SD110612	15/15	NA	47.1	No	55 N	NA	NA	No	BSL,BKG
7440-66-6	ZINC	21.4	J	1120	J	mg/kg	03SD110612	15/15	NA	1120	Yes	2300 N	100000	IDEM	No	BSL

TABLE 2.9

OCCURRENCE, DISTRIBUTION AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN - DIRECT CONTACT WITH DEEP SEDIMENTS
NSWC CRANE
CRANE, INDIANA

Scenario Timeframe: Current/Future
Medium: Sediment
Exposure Medium: Deep Sediments (6"-12")
Exposure Point: SWMU 3 - Old Jeep Trail / Little Sulphur Creek

CAS Number	Chemical	Minimum Concentration (1)	Minimum Qualifier	Maximum Concentration (1)	Maximum Qualifier	Units	Location of Maximum Concentration	Detection Frequency	Range of Nondetects(2)	Concentration Used for Screening(3)	Site Above Background? (4)	U.S. EPA Region 9 PRG-Residential (5)	Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag	Rationale for Contaminant Deletion or Selection(6)
	Miscellaneous Parameters															
14797-55-8	NITRATE	1.6		6.5		mg/kg	03SD120612	14/15	1.1	6.5	NA	13000 (7) N	NA	NA	No	BSL
14797-65-0	NITRITE	2.6	J	2.7	J	mg/kg	03SD130612	2/10	2.3 - 52	2.7	NA	780 (7) N	NA	NA	No	BSL
TTNUS029	NITRITE/NITRATE	2.6		6.5		mg/kg	03SD120612	15/15	NA	6.5	NA	NA	NA	NA	No	NTX
TTNUS003	TOTAL ORGANIC CARBON	2300	J	34000		mg/kg	03SD080612	15/15	NA	34000	NA	NA	NA	NA	No	NTX
	Miscellaneous Parameters															
TTNUS288	PERCENT MOISTURE	8.2		38.8		%	03SD180612	15/15	NA	38.8	NA	NA	NA	NA	No	NTX
	Miscellaneous Parameters															
TTNUS002	pH	6.8	J	8	J	S.U.	03SD110612	15/15	NA	8	NA	NA	NA	NA	No	NTX

Notes:
(1) - Only the original of duplicate samples was considered for COPC selection. The duplicate was used for quality control purposes only.
(2) - Values presented are sample-specific quantitation limits.
(3) - The maximum detected concentration is used for screening purposes.
(4) - To determine whether metal concentrations were within background levels, soil concentrations were compared to Base-wide background data presented in the Basewide Background Soil Investigation Report (TtNUS, Inc., January 2001) by means of the Wilcoxon Rank Sum Test. If the Wilcoxon Test determined that a constituent concentration was not significantly different from background, that chemical was not selected as a COPC.
(5) - U.S. EPA Region 9 Preliminary Remediation Goals Table, November 1, 2000. (PRGs for noncarcinogens are divided by 10.)
(6) - Rationale Codes
Selection Reason: Above Screening Levels (ASL)
Deletion Reason: No Toxicity Information (NTX)
Essential Nutrient (NUT)
Below Screening Level (BSL)
Below Background Value (BKG)
(7) - No U.S. EPA Region 9 PRG available, value is from U.S. EPA Region 3 Risk-Based Concentration Table, April 2, 2002.
(8) - Value is for pyrene.
(9) - Value is for hexavalent chromium.
Shaded cells indicate that the specified criterion has been exceeded or that the chemical has been selected as a COPC.

Definitions:
NA = Not Applicable.
SQL = Sample Quantitation Limit.
COPC = Chemical of Potential Concern.
ARAR/TBC = Applicable or Relevant and Appropriate Requirement/To Be Considered.
J = Estimated Value.
C = Carcinogenic.
N = Noncarcinogenic.
IDEM = Indiana Department of Environmental Management, Risk Integrated System of Closure (RISC) residential levels for direct contact with soil (IDEM, July 2001).
sat = Soil saturation limit.

ASSOCIATED SAMPLES:

03SD050612	03SD100612	03SD150612
03SD060612	03SD110612	03SD160612
03SD070612	03SD120612	03SD170612
03SD080612	03SD130612	03SD180612
03SD090612	03SD140612	03SD190612

RAGS Part D Table 3

Medium-Specific Exposure Point Concentration Summary

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MEDIUM-SPECIFIC EXPOSURE POINT CONCENTRATION SUMMARY

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3-3	Surface/Subsurface Soil
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TABLE 3.1
MEDIUM-SPECIFIC EXPOSURE POINT CONCENTRATION SUMMARY
NSWC CRANE
CRANE, INDIANA

Scenario Timeframe: Current/Future
Medium: Surface Soil
Exposure Medium: Surface Soil
Exposure Point: SWMU 3 - 1 Acre Exposure Unit

Chemical of Potential Concern	Units	Arithmetic Mean	95% UCL of Normal Data	Maximum Detected Concentration	Maximum Qualifier	EPC Units	Reasonable Maximum Exposure			Central Tendency Exposure		
							Medium EPC Value	Medium EPC Statistic	Medium EPC Rationale	Medium EPC Value	Medium EPC Statistic	Medium EPC Rationale
2,3,7,8-TCDD Equivalents	mg/kg	0.000004	0.00001	0.0000074		mg/kg	0.000007	Max	W - Test (1)	0.000007	Max	W - Test (1)
2,4,6-Trinitrotoluene	mg/kg	111	262	1700	J	mg/kg	581	95% UCL-L	W - Test (2)	581	95% UCL-L	W - Test (2)
2-Amino-4,6-Dinitrotoluene	mg/kg	1.87	4.44	30	J	mg/kg	2.36	95% UCL-L	W - Test (2)	2.36	95% UCL-L	W - Test (2)
4-Amino-2,6-Dinitrotoluene	mg/kg	1.08	2.36	15	J	mg/kg	1.44	95% UCL-L	W - Test (2)	1.44	95% UCL-L	W - Test (2)
HMX	mg/kg	84.7	223	1600	J	mg/kg	291	95% UCL-L	W - Test (2)	291	95% UCL-L	W - Test (2)
RDX	mg/kg	128	335	2400	J	mg/kg	522	95% UCL-L	W - Test (2)	522	95% UCL-L	W - Test (2)
Barium	mg/kg	164	235	420	J	mg/kg	235	95% UCL-N	W - Test (3)	235	95% UCL-N	W - Test (3)
Cadmium	mg/kg	1.25	2.16	4.4		mg/kg	4.40	95% UCL-L	W - Test (2)	4.40	95% UCL-L	W - Test (2)
Chromium	mg/kg	12.7	14.6	16.4	J	mg/kg	14.6	95% UCL-N	W - Test (3)	14.6	95% UCL-N	W - Test (3)
Iron	mg/kg	17348	21431	28600	J	mg/kg	21431	95% UCL-N	W - Test (3)	21431	95% UCL-N	W - Test (3)
Lead	mg/kg	1324	3727	10200	J	mg/kg	1324	Mean-N	(4)	1324	Mean-N	(4)

Notes:
For non-detects, 1/2 sample quantitation limit was used as a proxy concentration; for duplicate sample results, only the original of duplicate samples was considered for COPC selection. The duplicate was used for quality control purposes only.
W - Test: Developed by Shapiro and Wilk, refer to Supplemental Guidance to RAGS: Calculating the Concentration Term, OSWER Directive 9285.7-081, May 1992.
Statistics: Maximum Detected Value (Max); 95% UCL of Normal Data (95% UCL-N); 95% UCL of Log-transformed Data (95% UCL-L); Mean of Normal Data (Mean-N).
(1) - Shapiro-Wilk W Test indicates that data is lognormally distributed, but the UCL was greater than the maximum detected concentration, therefore the maximum detected concentration is used as the exposure point concentration.
(2) - Shapiro-Wilk W Test indicates that data is lognormally distributed.
(3) - Shapiro-Wilk W Test indicates that data is lognormally distributed.
(4) - Mean concentration is used as exposure point concentration for evaluating exposures to lead.
EPA, 1994:Guidance Manual for the Integrated Exposure Uptake Biokinetic Model for lead in Children

TABLE 3.2
MEDIUM-SPECIFIC EXPOSURE POINT CONCENTRATION SUMMARY
NSWC CRANE
CRANE, INDIANA

Scenario Timeframe: Current/Future
Medium: Surface Soil
Exposure Medium: Surface Soil
Exposure Point: SWMU 3 - 6-Acre Exposure Unit

Chemical of Potential Concern	Units	Arithmetic Mean	95% UCL of Normal Data	Maximum Detected Concentration	Maximum Qualifier	EPC Units	Reasonable Maximum Exposure			Central Tendency Exposure		
							Medium EPC Value	Medium EPC Statistic	Medium EPC Rationale	Medium EPC Value	Medium EPC Statistic	Medium EPC Rationale
2,3,7,8-TCDD Equivalents	mg/kg	0.000002	0.000004	0.000007		mg/kg	0.000007	Max	W - Test (1)	0.000007	Max	W - Test (1)
2,4,6-Trinitrotoluene	mg/kg	46.2	108	1700	J	mg/kg	2.62	95% UCL-L	W - Test (2)	2.62	95% UCL-L	W - Test (2)
2-Amino-4,6-Dinitrotoluene	mg/kg	0.865	1.91	30	J	mg/kg	0.433	95% UCL-L	W - Test (2)	0.433	95% UCL-L	W - Test (2)
4-Amino-2,6-Dinitrotoluene	mg/kg	0.540	1.06	15	J	mg/kg	0.365	95% UCL-L	W - Test (2)	0.365	95% UCL-L	W - Test (2)
HMX	mg/kg	37.4	94.5	1600	J	mg/kg	4.77	95% UCL-L	W - Test (2)	4.77	95% UCL-L	W - Test (2)
RDX	mg/kg	53.3	137	2400	J	mg/kg	3.41	95% UCL-L	W - Test (2)	3.41	95% UCL-L	W - Test (2)
Barium	mg/kg	220	326	2040	J	mg/kg	252	95% UCL-L	W - Test (2)	252	95% UCL-L	W - Test (2)
Cadmium	mg/kg	0.888	1.13	4.4		mg/kg	1.19	95% UCL-L	W - Test (2)	1.19	95% UCL-L	W - Test (2)
Chromium	mg/kg	25.1	39.7	288	J	mg/kg	26.4	95% UCL-L	W - Test (2)	26.4	95% UCL-L	W - Test (2)
Iron	mg/kg	23437	26425	51600	J	mg/kg	26855	95% UCL-L	W - Test (2)	26855	95% UCL-L	W - Test (2)
Lead	mg/kg	358	896	10200	J	mg/kg	358	Mean-N	(3)	358	Mean-N	(3)

Notes:
For non-detects, 1/2 sample quantitation limit was used as a proxy concentration; for duplicate sample results, only the original of duplicate samples was considered for COPC selection. The duplicate was used for quality control purposes only.
W - Test: Developed by Shapiro and Wilk, refer to Supplemental Guidance to RAGS: Calculating the Concentration Term, OSWER Directive 9285.7-081, May 1992.
Statistics: Maximum Detected Value (Max); 95% UCL of Normal Data (95% UCL-N); 95% UCL of Log-transformed Data (95% UCL-L); Mean of Normal Data (Mean-N).
(1) - Shapiro-Wilk W Test indicates that data is lognormally distributed, but the UCL was greater than the maximum detected concentration, therefore the maximum detected concentration is used as the exposure point concentration.
(2) - Shapiro-Wilk W Test indicates that data is lognormally distributed.
(3) - Mean concentration is used as exposure point concentration for evaluating exposures to lead.
EPA, 1994:Guidance Manual for the Integrated Exposure Uptake Biokinetic Model for lead in Children

TABLE 3.3
MEDIUM-SPECIFIC EXPOSURE POINT CONCENTRATION SUMMARY
NSWC CRANE
CRANE, INDIANA

Scenario Timeframe: Current/Future
Medium: Surface/Subsurface Soil
Exposure Medium: Surface/Suburface Soil
Exposure Point: SWMU 3 - Old Jeep Trail

Chemical of Potential Concern	Units	Arithmetic Mean	95% UCL of Normal Data	Maximum Detected Concentration	Maximum Qualifier	EPC Units	Reasonable Maximum Exposure			Central Tendency Exposure		
							Medium EPC Value	Medium EPC Statistic	Medium EPC Rationale	Medium EPC Value	Medium EPC Statistic	Medium EPC Rationale
2,3,7,8-TCDD Equivalents	mg/kg	0.000002	0.000003	0.000007		mg/kg	0.000007	Max	W - Test (1)	0.000007	Max	W - Test (1)
Acetophenone	mg/kg	0.042	0.045	0.12	J	mg/kg	0.044	95% UCL-L	W - Test (2)	0.044	95% UCL-L	W - Test (2)
Benzo(a)pyrene	mg/kg	0.003	0.006	0.11		mg/kg	0.002	95% UCL-L	W - Test (2)	0.002	95% UCL-L	W - Test (2)
2,4,6-Trinitrotoluene	mg/kg	20.3	47.0	1700	J	mg/kg	0.522	95% UCL-L	W - Test (2)	0.522	95% UCL-L	W - Test (2)
2-Amino-4,6-Dinitrotoluene	mg/kg	0.480	0.932	30	J	mg/kg	0.249	95% UCL-L	W - Test (2)	0.249	95% UCL-L	W - Test (2)
4-Amino-2,6-Dinitrotoluene	mg/kg	0.324	0.551	15	J	mg/kg	0.218	95% UCL-L	W - Test (2)	0.218	95% UCL-L	W - Test (2)
HMX	mg/kg	16.7	41.5	1600	J	mg/kg	0.890	95% UCL-L	W - Test (2)	0.890	95% UCL-L	W - Test (2)
RDX	mg/kg	23.4	59.7	2400	J	mg/kg	0.678	95% UCL-L	W - Test (2)	0.678	95% UCL-L	W - Test (2)
Barium	mg/kg	210	276	2040	J	mg/kg	236	95% UCL-L	W - Test (2)	236	95% UCL-L	W - Test (2)
Cadmium	mg/kg	1.03	1.40	12.1		mg/kg	1.13	95% UCL-L	W - Test (2)	1.13	95% UCL-L	W - Test (2)
Chromium	mg/kg	20.3	27.1	288	J	mg/kg	20.9	95% UCL-L	W - Test (2)	20.9	95% UCL-L	W - Test (2)
Cobalt	mg/kg	30.1	51.0	740	J	mg/kg	22.2	95% UCL-L	W - Test (2)	22.2	95% UCL-L	W - Test (2)
Copper	mg/kg	506	1094	22500	J	mg/kg	109	95% UCL-L	W - Test (2)	109	95% UCL-L	W - Test (2)
Iron	mg/kg	24281	26783	56400	J	mg/kg	28009	95% UCL-L	W - Test (2)	28009	95% UCL-L	W - Test (2)
Lead	mg/kg	310	581	10200	J	mg/kg	310	Mean-N	(3)	310	Mean-N	(3)
Manganese (Soil)	mg/kg	1039	1124	1790	J	mg/kg	1217	95% UCL-L	W - Test (2)	1217	95% UCL-L	W - Test (2)
Nickel	mg/kg	1887	4113	79100	J	mg/kg	125	95% UCL-L	W - Test (2)	125	95% UCL-L	W - Test (2)

Notes:
For non-detects, 1/2 sample quantitation limit was used as a proxy concentration; for duplicate sample results, only the original of duplicate samples was considered for COPC selection. The duplicate was used for quality control purposes only.
W - Test: Developed by Shapiro and Wilk, refer to Supplemental Guidance to RAGS: Calculating the Concentration Term, OSWER Directive 9285.7-081, May 1992.
Statistics: Maximum Detected Value (Max); 95% UCL of Normal Data (95% UCL-N); 95% UCL of Log-transformed Data (95% UCL-L); Mean of Normal Data (Mean-N).
(1) - Shapiro-Wilk W Test indicates that data is lognormally distributed, but the UCL was greater than the maximum detected concentration, therefore the maximum detected concentration is used as the exposure point concentration.
(2) - Shapiro-Wilk W Test indicates that data is lognormally distributed.
(3) - Mean concentration is used as exposure point concentration for evaluating exposures to lead.
EPA, 1994:Guidance Manual for the Integrated Exposure Uptake Biokinetic Model for lead in Children

TABLE 3.4
MEDIUM-SPECIFIC EXPOSURE POINT CONCENTRATION SUMMARY
NSWC CRANE
CRANE, INDIANA

Scenario Timeframe: Current/Future
Medium: Groundwater
Exposure Medium: Shallow Aquifer
Exposure Point: SWMU 3 - Old Jeep Trail / Little Sulphur Creek

Chemical of Potential Concern	Units	Arithmetic Mean	95% UCL of Normal Data	Maximum Detected Concentration	Maximum Qualifier	EPC Units	Reasonable Maximum Exposure			Central Tendency Exposure		
							Medium EPC Value	Medium EPC Statistic	Medium EPC Rationale	Medium EPC Value	Medium EPC Statistic	Medium EPC Rationale
1,1,2,2-Tetrachloroethane	ug/L	42.7	105	530		ug/L	43	Mean-N	(1)	43	Mean-N	(1)
1,1,2-Trichloroethane	ug/L	1.11	2.50	12		ug/L	1.11	Mean-N	(1)	1.11	Mean-N	(1)
1,1-Dichloroethene	ug/L	0.213	0.325	1.1	J	ug/L	0.213	Mean-N	(1)	0.213	Mean-N	(1)
cis-1,2-Dichloroethene	ug/L	11.3	28.8	150		ug/L	11.3	Mean-N	(1)	11.3	Mean-N	(1)
Tetrachloroethene	ug/L	0.617	1.26	5.7		ug/L	0.617	Mean-N	(1)	0.617	Mean-N	(1)
trans-1,2-Dichloroethene	ug/L	2.87	7.17	37		ug/L	2.87	Mean-N	(1)	2.87	Mean-N	(1)
Trichloroethene	ug/L	48.9	124	640		ug/L	49	Mean-N	(1)	49	Mean-N	(1)
Vinyl Chloride	ug/L	0.400	0.840	3.9		ug/L	0.400	Mean-N	(1)	0.400	Mean-N	(1)
2,4,6-Trinitrotoluene	ug/L	1.30	3.27	17		ug/L	1.30	Mean-N	(1)	1.30	Mean-N	(1)
2-Amino-4,6-Dinitrotoluene	ug/L	0.409	0.730	2.6		ug/L	0.409	Mean-N	(1)	0.409	Mean-N	(1)
4-Amino-2,6-Dinitrotoluene	ug/L	1.03	2.17	10		ug/L	1.03	Mean-N	(1)	1.03	Mean-N	(1)
RDX	ug/L	27.2	59.3	280	J	ug/L	27	Mean-N	(1)	27	Mean-N	(1)
Aluminum	ug/L	95.3	154	372		ug/L	95.3	Mean-N	(1)	95.3	Mean-N	(1)
Barium	ug/L	87.8	118	275	J	ug/L	87.8	Mean-N	(1)	87.8	Mean-N	(1)
Cadmium	ug/L	1.78	3.10	12.0		ug/L	1.78	Mean-N	(1)	1.78	Mean-N	(1)
Chromium	ug/L	7.02	17.6	90.8	J	ug/L	7.02	Mean-N	(1)	7.02	Mean-N	(1)
Iron	ug/L	505	702	1650	J	ug/L	505	Mean-N	(1)	505	Mean-N	(1)
Manganese	ug/L	58.2	115	445	J	ug/L	58.2	Mean-N	(1)	58.2	Mean-N	(1)
Nickel	ug/L	8.86	19.2	91.2		ug/L	8.86	Mean-N	(1)	8.86	Mean-N	(1)
Thallium	ug/L	0.173	0.235	0.5		ug/L	0.173	Mean-N	(1)	0.173	Mean-N	(1)
Nitrate	ug/L	296	489	1650		ug/L	296	Mean-N	(1)	296	Mean-N	(1)

Notes:
For non-detects, 1/2 sample quantitation limit was used as a proxy concentration; for duplicate sample results, only the original of duplicate samples was considered for COPC selection. The duplicate was used for quality control purposes only.
W - Test: Developed by Shapiro and Wilk, refer to Supplemental Guidance to RAGS: Calculating the Concentration Term, OSWER Directive 9285.7-081, May 1992.
Statistics: Maximum Detected Value (Max); 95% UCL of Normal Data (95% UCL-N); 95% UCL of Log-transformed Data (95% UCL-L); Mean of Normal Data (Mean-N).
(1) - Mean concentration is used as the exposure point concentration for groundwater.

TABLE 3.5
MEDIUM-SPECIFIC EXPOSURE POINT CONCENTRATION SUMMARY
NSWC CRANE
CRANE, INDIANA

Scenario Timeframe: Current/Future
Medium: Sediment
Exposure Medium: Sediment
Exposure Point: SWMU 3 - Little Sulphur Creek

Chemical of Potential Concern	Units	Arithmetic Mean	95% UCL of Normal Data	Maximum Detected Concentration	Maximum Qualifier	EPC Units	Reasonable Maximum Exposure			Central Tendency Exposure		
							Medium EPC Value	Medium EPC Statistic	Medium EPC Rationale	Medium EPC Value	Medium EPC Statistic	Medium EPC Rationale
2-Amino-4,6-Dinitrotoluene	mg/kg	0.161	0.199	0.730		mg/kg	0.178	95% UCL-L	W - Test (1)	0.178	95% UCL-L	W - Test (1)
Aluminum	mg/kg	12157	15266	56900		mg/kg	14916	95% UCL-L	W - Test (1)	14916	95% UCL-L	W - Test (1)
Antimony	mg/kg	1.71	2.29	7.6	J	mg/kg	2.88	95% UCL-L	W - Test (1)	2.88	95% UCL-L	W - Test (1)
Barium	mg/kg	263	336	981	J	mg/kg	359	95% UCL-L	W - Test (1)	359	95% UCL-L	W - Test (1)
Cadmium	mg/kg	1.29	1.58	4		mg/kg	1.78	95% UCL-L	W - Test (1)	1.78	95% UCL-L	W - Test (1)
Lead	mg/kg	120	163	653	J	mg/kg	120	Mean-N	(2)	120	Mean-N	(2)

Notes:
For non-detects, 1/2 sample quantitation limit was used as a proxy concentration; for duplicate sample results, only the original of duplicate samples was considered for COPC selection. The duplicate was used for quality control purposes only.
W - Test: Developed by Shapiro and Wilk, refer to Supplemental Guidance to RAGS: Calculating the Concentration Term, OSWER Directive 9285.7-081, May 1992.
Statistics: Maximum Detected Value (Max); 95% UCL of Normal Data (95% UCL-N); 95% UCL of Log-transformed Data (95% UCL-L); Mean of Normal Data (Mean-N).
(1) - Shapiro-Wilk W Test indicates that data is lognormally distributed.
(2) - Mean concentration is used as exposure point concentration for evaluating exposures to lead.
EPA, 1994:Guidance Manual for the Integrated Exposure Uptake Biokinetic Model for lead in Children

TABLE 3.6
MEDIUM-SPECIFIC EXPOSURE POINT CONCENTRATION SUMMARY
NSWC CRANE
CRANE, INDIANA

Scenario Timeframe: Current/Future
Medium: Surface Water
Exposure Medium: Surface Water
Exposure Point: SWMU 3 - Little Sulphur Creek

Chemical of Potential Concern	Units	Arithmetic Mean	95% UCL of Normal Data	Maximum Detected Concentration	Maximum Qualifier	EPC Units	Reasonable Maximum Exposure			Central Tendency Exposure		
							Medium EPC Value	Medium EPC Statistic	Medium EPC Rationale	Medium EPC Value	Medium EPC Statistic	Medium EPC Rationale
Acetone	ug/L	11.3	26.0	64		ug/L	64	Max	W - Test (1)	64	Max	W - Test (1)
Bromomethane	ug/L	0.406	0.566	1.6		ug/L	0.529	95% UCL-L	W - Test (2)	0.529	95% UCL-L	W - Test (2)
Methylene Chloride	ug/L	1.69	3.25	13		ug/L	3.23	95% UCL-L	W - Test (2)	3.23	95% UCL-L	W - Test (2)
Bis(2-ethylhexyl)phthalate	ug/L	1.02	1.67	6		ug/L	1.36	95% UCL-L	W - Test (2)	1.36	95% UCL-L	W - Test (2)
Pentachlorophenol	ug/L	0.055	0.145	0.71	J	ug/L	0.059	95% UCL-L	W - Test (2)	0.059	95% UCL-L	W - Test (2)
2-Amino-4,6-Dinitrotoluene	ug/L	0.298	0.443	1.5	J	ug/L	0.384	95% UCL-L	W - Test (2)	0.384	95% UCL-L	W - Test (2)
4-Amino-2,6-Dinitrotoluene	ug/L	0.587	0.908	2.9		ug/L	1.06	95% UCL-L	W - Test (2)	1.06	95% UCL-L	W - Test (2)
RDX	ug/L	9.80	16.8	63		ug/L	63	Max	W - Test (1)	63	Max	W - Test (1)
Antimony	ug/L	0.411	0.755	3	J	ug/L	0.784	95% UCL-L	W - Test (2)	0.784	95% UCL-L	W - Test (2)
Lead	ug/L	29.128	59.5	285		ug/L	29.1	Mean-N	(3)	29.128	Mean-N	(3)

Notes:
For non-detects, 1/2 sample quantitation limit was used as a proxy concentration; for duplicate sample results, only the original of duplicate samples was considered for COPC selection. The duplicate was used for quality control purposes only.
W - Test: Developed by Shapiro and Wilk, refer to Supplemental Guidance to RAGS: Calculating the Concentration Term, OSWER Directive 9285.7-081, May 1992.
Statistics: Maximum Detected Value (Max); 95% UCL of Normal Data (95% UCL-N); 95% UCL of Log-transformed Data (95% UCL-L); Mean of Normal Data (Mean-N).
(1) - Shapiro-Wilk W Test indicates that data is lognormally distributed, but the UCL was greater than the maximum detected concentration, therefore the maximum detected concentration is used as the exposure point concentration.
(2) - Shapiro-Wilk W Test indicates that data is lognormally distributed.
(3) - Mean concentration is used as exposure point concentration for evaluating exposures to lead.
EPA, 1994:Guidance Manual for the Integrated Exposure Uptake Biokinetic Model for lead in Children

TABLE 3.7
MEDIUM-SPECIFIC EXPOSURE POINT CONCENTRATION SUMMARY
NSWC CRANE
CRANE, INDIANA

Scenario Timeframe: Future
Medium: Surface Water
Exposure Medium: Surface Water
Exposure Point: SWMU 3 - Little Sulphur Creek Downstream of Spring C

Chemical of Potential Concern	Units	Arithmetic Mean	95% UCL of Normal Data	Maximum Detected Concentration	Maximum Qualifier	EPC Units	Reasonable Maximum Exposure			Central Tendency Exposure		
							Medium EPC Value	Medium EPC Statistic	Medium EPC Rationale	Medium EPC Value	Medium EPC Statistic	Medium EPC Rationale
Bromomethane	ug/L	0.515	0.787	1.6		ug/L	1.6	Max	(1)	1.6	Max	
2-Amino-4,6-Dinitrotoluene	ug/L	0.327	0.569	1.5	J	ug/L	1.5	Max	(1)	1.5	Max	
4-Amino-2,6-Dinitrotoluene	ug/L	0.600	1.09	2.9		ug/L	2.9	Max	(1)	2.9	Max	
RDX	ug/L	14.6	26.4	63		ug/L	63	Max	(1)	63	Max	

Notes:
For non-detects, 1/2 sample quantitation limit was used as a proxy concentration; for duplicate sample results, only the original of duplicate samples was considered for COPC selection. The duplicate was used for quality control purposes only.
Statistics: Maximum Detected Value (Max)
(1) - The maximum detected concentration in surface water is used to evaluate exposures to future on-site residents. See text.

TABLE 3.8
MEDIUM-SPECIFIC EXPOSURE POINT CONCENTRATION SUMMARY
NSWC CRANE
CRANE, INDIANA

Scenario Timeframe: Current/Future
Medium: Surface Water
Exposure Medium: Surface Water
Exposure Point: SWMU 3 - Little Sulphur Creek - 03SWSD19

Chemical of Potential Concern	Units	Arithmetic Mean	95% UCL of Normal Data	Maximum Detected Concentration	Maximum Qualifier	EPC Units	Reasonable Maximum Exposure			Central Tendency Exposure		
							Medium EPC Value	Medium EPC Statistic	Medium EPC Rationale	Medium EPC Value	Medium EPC Statistic	Medium EPC Rationale
4-Amino-2,6-Dinitrotoluene	ug/L	0.358	(1)	0.54	J	ug/L	0.54	Max	(1)	0.54	Max	(1)
RDX	ug/L	8.9	(1)	10		ug/L	10	Max	(1)	10	Max	(1)

Notes:
For non-detects, 1/2 sample quantitation limit was used as a proxy concentration; for duplicate sample results, only the original of duplicate samples was considered for COPC selection. The duplicate was used for quality control purposes only.
Statistics: Maximum Detected Value (Max)
(1) - Insufficient number of samples to calculate statistics, maximum detected concentration is used as the exposure point concentration.

RAGS Part D Table 4

Values Used For Daily Intake Calculations

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4-30	On-Site Adult Resident Exposed to Ground Water (Showering)
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TABLE 4.1
VALUES USED FOR DAILY INTAKE CALCULATIONS
NSWC CRANE, INDIANA

Scenario Timeframe: Current/Future
Medium: Surface Soil
Exposure Medium: Surface Soil
Exposure Point: SWMU 3 - Old Jeep Trail
Receptor Population: Trespassers
Receptor Age: Adolescent

Exposure Route	Parameter Code	Parameter Definition	Units	RME Value	RME Rationale/ Reference	CT Value	CT Rationale/ Reference	Intake Equation/ Model Name
Ingestion	CS	Chemical concentration in soil	mg/kg	Max or 95% UCL	U.S. EPA, 1992	Max or 95% UCL	U.S. EPA, 1992	Intake (mg/kg/day) =
	IR-S	Ingestion Rate	mg/day	100	U.S. EPA, 1993	50	U.S. EPA, 1993	
	CF3	Conversion Factor 3	kg/mg	1.0E-06	--	1.0E-06	--	Cs x IRS x CF3 x FI x EF x ED
	FI	Fraction Ingested	unitless	1	U.S. EPA, 1993	1	U.S. EPA, 1993	BW x AT
	EF	Exposure Frequency	days/year	26	(1)	13	(1)	
	ED	Exposure Duration	years	11	(2)	11	(2)	
	BW	Body Weight	kg	43	U.S. EPA, 1989	43	U.S. EPA, 1989	
	AT-C	Averaging Time (Cancer)	days	25550	U.S. EPA, 1989	25550	U.S. EPA, 1989	
	AT-N	Averaging Time (Non-Cancer)	days	4015	U.S. EPA, 1989	4015	U.S. EPA, 1989	
Dermal	CS	Chemical concentration in soil	mg/kg	Max or 95% UCL	U.S. EPA, 1992	Max or 95% UCL	U.S. EPA, 1992	Dermally Absorbed Dose (mg/kg/day) =
	CF3	Conversion Factor 3	kg/mg	1.0E-06	--	1.0E-06	--	
	SA	Skin Surface Available for Contact	cm2	3280	(3)	3100	(3)	CS x CF3 x SA x SSAF x DABS x EF x ED
	SSAF	Soil to Skin Adherence Factor	mg/cm2/event	0.2	U.S. EPA, 2001	0.04	U.S. EPA, 2001	BW x AT
	DABS	Absorption Factor	unitless	Chemical Specific	U.S. EPA, 1997	Chemical Specific	U.S. EPA, 1997	
	EF	Exposure Frequency	days/year	26	(1)	13	(1)	
	ED	Exposure Duration	years	11	(2)	11	(2)	
	BW	Body Weight	kg	43	U.S. EPA, 1989	43	U.S. EPA, 1989	
	AT-C	Averaging Time (Cancer)	days	25550	U.S. EPA, 1989	25550	U.S. EPA, 1989	
	AT-N	Averaging Time (Non-Cancer)	days	4015	U.S. EPA, 1989	4015	U.S. EPA, 1989	

Notes:
1 - Assume one day a week in warm weather months for RME and one day every other week for CTE.
2 - Adolescents from age 6 to 17.
3 - Assumes that 25 percent of the total body surface area is exposed (U.S. EPA, 1997).
Sources:
U.S. EPA, 1989: Risk Assessment Guidance for Superfund. Vol 1: Human Health Evaluation Manual, Part A. EPA/540/1-86/060.
U.S. EPA, 1992: Supplemental Guidance to RAGS: Calculating the Concentration Term. PB92-963373.
U.S. EPA, 1993: Superfund's Standard Default Exposure Factors for the Central Tendency and Reasonable Maximum Exposure.
U.S. EPA, 1997: Exposure Factors Handbook. EPA/600/8-95/002FA.
U.S. EPA, 2001: Risk Assessment Guidance for Superfund (Part E, Supplemental Guidance for Dermal Risk Assessment) Interim. EPA/540/R/99/005.

Unit Intake Calculations

Incidental Ingestion Intake = (IR-S x CF3 x FI x EF x ED)/(BW x AT)
Dermal Intake = (CF3 x SA x SSAF x EF x ED)/(BW x AT)

Cancer Ingestion Intake (RME) = 2.60E-08
Noncancer Ingestion Intake (RME) = 1.66E-07

Cancer Ingestion Intake (RME) = 6.51E-09
Noncancer Ingestion Intake (RME) = 4.14E-08

Cancer Dermal Intake (RME) = 1.71E-07
Noncancer Dermal Intake (RME) = 1.09E-06

Cancer Dermal Intake (CTE) = 1.61E-08
Noncancer Dermal Intake (CTE) = 1.03E-07

TABLE 4.2
VALUES USED FOR DAILY INTAKE CALCULATIONS
NSWC CRANE, INDIANA

Scenario Timeframe: Current/Future
Medium: Surface Water
Exposure Medium: Surface Water
Exposure Point: SWMU 3 - Little Sulphur Creek
Receptor Population: Trespassers
Receptor Age: Adolescent

Exposure Route	Parameter Code	Parameter Definition	Units	RME Value	RME Rationale/ Reference	CT Value	CT Rationale/ Reference	Intake Equation/ Model Name
Ingestion	CW	Chemical Concentration in Water	ug/L	Max or 95% UCL	U.S. EPA, 1992	Max or 95% UCL	U.S. EPA, 1992	Chronic Daily Intake (CDI) (mg/kg/day) =
	CR	Contact Rate	L/hr	0.05	U.S. EPA 4, 1995	0.05	U.S. EPA 4, 1995	
	CF	Conversion factor	mg/ug	0.001	- -	0.001	- -	CW x CF x IR-GW x EF x ED
	ET	Exposure Time	hours/event	4	(1)	2	(1)	BW x AT
	EF	Exposure Frequency	events/year	26	(2)	13	(2)	
	ED	Exposure Duration	years	11	(3)	11	(3)	
	BW	Body Weight	kg	43	U.S. EPA, 1989	43	U.S. EPA, 1989	
	AT-C	Averaging Time (Cancer)	days	25550	U.S. EPA, 1989	25550	U.S. EPA, 1989	
	AT-N	Averaging Time (Non-Cancer)	days	4015	U.S. EPA, 1989	4015	U.S. EPA, 1989	
Dermal	DAevent	Absorbed dose per event	mg/cm2-event	Calculated	U.S. EPA, 2001	Calculated	U.S. EPA, 2001	Dermally Absorbed Dose (mg/kg/day) =
	SA	Skin Surface Available for Contact	cm2	3280	(4)	3100	(4)	
	EV	Event Frequency	events/day	1	(1)	1	(1)	DAevent x EV x EF x ED x SA
	ET	Exposure Time	hours/event	4	(1)	2	(1)	BW x AT
	EF	Exposure Frequency	days/year	26	(2)	13	(2)	
	ED	Exposure Duration	years	11	(3)	11	(3)	See text for calculation of DAevent.
	BW	Body Weight	kg	43	U.S. EPA, 1989	43	U.S. EPA, 1989	
	AT-C	Averaging Time (Cancer)	days	25550	U.S. EPA, 1989	25550	U.S. EPA, 1989	
	AT-N	Averaging Time (Non-Cancer)	days	4015	U.S. EPA, 1989	4015	U.S. EPA, 1989	

Notes:
1 - Professional judgment.
2 - Assume one day a week in warm weather months for RME and one day every other week for CTE.
3 - Adolescents from age 6 to 17.
4 - Assumes that 25 percent of the total body surface area is exposed (U.S. EPA, 1997).
Sources:
U.S. EPA, 1989: Risk Assessment Guidance for Superfund. Vol 1: Human Health Evaluation Manual, Part A. EPA/540/1-86/060.
U.S. EPA, 1992: Supplemental Guidance to RAGS: Calculating the Concentration Term. PB92-963373.
U.S. EPA, 1993: Superfund's Standard Default Exposure Factors for the Central Tendency and Reasonable Maximum Exposure.
EPA Region 4, 1995: Supplement Guidance to RAGS: Region 4 Bulletins.
U.S. EPA, 2001: Risk Assessment Guidance for Superfund (Part E, Supplemental Guidance for Dermal Risk Assessment) Interim. EPA/540/R/99/005.

Unit Intake Calculations

Ingestion Intake = (CR x CF x ET x EF x ED)/(BW x AT)
Dermal Intake = (SA x EV x EF x ED)/(BW x AT)

Cancer Ingestion Intake (RME) = 5.21E-08	Cancer Ingestion Intake (CTE) = 1.30E-08
Noncancer Ingestion Intake (RME) = 3.31E-07	Noncancer Ingestion Intake (CTE) = 8.28E-08
Cancer Dermal Intake (RME) = 3.42E+00	Cancer Dermal Intake (CTE) = 8.07E-01
Noncancer Dermal Intake (RME) = 2.17E+01	Noncancer Dermal Intake (CTE) = 5.14E+00

TABLE 4.3
VALUES USED FOR DAILY INTAKE CALCULATIONS
NSWC CRANE, INDIANA

Scenario Timeframe: Current/Future
Medium: Sediment
Exposure Medium: Sediment
Exposure Point: SWMU 3 - Little Sulphur Creek
Receptor Population: Trespassers
Receptor Age: Adolescent

Exposure Route	Parameter Code	Parameter Definition	Units	RME Value	RME Rationale/ Reference	CT Value	CT Rationale/ Reference	Intake Equation/ Model Name
Ingestion	CS	Chemical concentration in soil	mg/kg	Max or 95% UCL	U.S. EPA, 1992	Max or 95% UCL	U.S. EPA, 1992	Intake (mg/kg/day) =
	IR-S	Ingestion Rate	mg/day	100	U.S. EPA, 1993	50	U.S. EPA, 1993	
	CF3	Conversion Factor 3	kg/mg	0.000001	--	0.000001	--	Cs x IRS x CF3 x FI x EF x ED
	FI	Fraction Ingested	unitless	1	U.S. EPA, 1993	1	U.S. EPA, 1993	BW x AT
	EF	Exposure Frequency	days/year	26	(1)	13	(1)	
	ED	Exposure Duration	years	11	(2)	11	(2)	
	BW	Body Weight	kg	43	U.S. EPA, 1989	43	U.S. EPA, 1989	
	AT-C	Averaging Time (Cancer)	days	25550	U.S. EPA, 1989	25550	U.S. EPA, 1989	
	AT-N	Averaging Time (Non-Cancer)	days	4015	U.S. EPA, 1989	4015	U.S. EPA, 1989	
Dermal	CS	Chemical concentration in soil	mg/kg	Max or 95% UCL	U.S. EPA, 1992	Max or 95% UCL	U.S. EPA, 1992	Dermally Absorbed Dose (mg/kg/day) =
	CF3	Conversion Factor 3	kg/mg	0.000001	--	0.000001	--	
	SA	Skin Surface Available for Contact	cm2	3280	(3)	3100	(3)	CS x CF3 x SA x SSAF x DABS x EF x ED
	SSAF	Soil to Skin Adherence Factor	mg/cm2/event	0.2	U.S. EPA, 2001	0.04	U.S. EPA, 2001	BW x AT
	DABS	Absorption Factor	unitless	Chemical Specific	U.S. EPA, 1997	Chemical Specific	U.S. EPA, 1997	
	EF	Exposure Frequency	days/year	26	(1)	13	(1)	
	ED	Exposure Duration	years	11	(2)	11	(2)	
	BW	Body Weight	kg	43	U.S. EPA, 1989	43	U.S. EPA, 1989	
	AT-C	Averaging Time (Cancer)	days	25550	U.S. EPA, 1989	25550	U.S. EPA, 1989	
	AT-N	Averaging Time (Non-Cancer)	days	4015	U.S. EPA, 1989	4015	U.S. EPA, 1989	

Notes:
1 - Assume one day a week in warm weather months for RME and one day every other week for CTE.
2 - Adolescents from age 6 to 17.
3 - Assumes that 25 percent of the total body surface area is exposed (EPA, 1997).
Sources:
U.S. EPA, 1989: Risk Assessment Guidance for Superfund. Vol 1: Human Health Evaluation Manual, Part A. EPA/540/1-86/060.
U.S. EPA, 1992: Supplemental Guidance to RAGS: Calculating the Concentration Term. PB92-963373.
U.S. EPA, 1993: Superfund's Standard Default Exposure Factors for the Central Tendency and Reasonable Maximum Exposure.
U.S. EPA, 1997: Exposure Factors Handbook. EPA/600/8-95/002FA.
U.S. EPA, 2001: Risk Assessment Guidance for Superfund (Part E, Supplemental Guidance for Dermal Risk Assessment) Interim. EPA/540/R/99/005.

Unit Intake Calculations

Incidental Ingestion Intake = (IR-S x CF3 x FI x EF x ED)/(BW x AT)
Dermal Intake = (CF3 x SA x SSAF x EF x ED)/(BW x AT)

Cancer Ingestion Intake (RME) = 2.60E-08
Noncancer Ingestion Intake (RME) = 1.66E-07

Cancer Ingestion Intake (CTE) = 6.51E-09
Noncancer Ingestion Intake (CTE) = 4.14E-08

Cancer Dermal Intake (RME) = 1.71E-07
Noncancer Dermal Intake (RME) = 1.09E-06

Cancer Dermal Intake (CTE) = 1.61E-08
Noncancer Dermal Intake (CTE) = 1.03E-07

TABLE 4.4
VALUES USED FOR DAILY INTAKE CALCULATIONS
NSWC CRANE, INDIANA

Scenario Timeframe: Current/Future
Medium: Surface Water
Exposure Medium: Surface Water
Exposure Point: SWMU 3 - Little Sulphur Creek
Receptor Population: Off-Site Resident
Receptor Age: Child

Exposure Route	Parameter Code	Parameter Definition	Units	RME Value	RME Rationale/ Reference	CT Value	CT Rationale/ Reference	Intake Equation/ Model Name
Ingestion	CGW	Chemical Concentration in Surface Water	ug/L	Average	--	Average	--	Chronic Daily Intake (CDI) (mg/kg/day) =
	CF	Conversion Factor	mg/ug	0.001	--	0.001	--	
	IR-SW	Ingestion Rate of Surface Water	L/day	1.5	U.S. EPA, 1997	0.66	U.S. EPA, 1997	$\frac{CW \times CF \times IRSW \times EF \times ED}{BW \times AT}$
	EF	Exposure Frequency	days/year	350	U.S. EPA, 1993	234	U.S. EPA, 1993	
	ED	Exposure Duration	years	6	U.S. EPA, 1993	2	U.S. EPA, 1993	
	BW	Body Weight	kg	15	U.S. EPA, 1993	15	U.S. EPA, 1993	
	AT-C	Averaging Time (Cancer)	days	25,550	U.S. EPA, 1989	25,550	U.S. EPA, 1989	
	AT-N	Averaging Time (Non-Cancer)	days	2,190	U.S. EPA, 1989	730	U.S. EPA, 1989	
Dermal	DAevent	Absorbed dose per event	mg/cm2-event	Calculated	U.S. EPA, 2001	Calculated	U.S. EPA, 2001	Dermally Absorbed Dose (mg/kg/day)
	SA	Skin Surface Available for Contact	cm2	6,600	U.S. EPA, 2001	6,600	U.S. EPA, 2001	
	EV	Event Frequency	events/day	1	U.S. EPA, 2001	1	U.S. EPA, 2001	$\frac{DAevent \times EV \times EF \times ED \times SA}{BW \times AT}$
	ET	Exposure Time	hours/day	0.25	U.S. EPA, 1997	0.167	U.S. EPA, 1997	
	EF	Exposure Frequency	days/year	350	U.S. EPA, 1993	234	U.S. EPA, 1993	
	ED	Exposure Duration	years	6	U.S. EPA, 1993	2	U.S. EPA, 1993	See text for calculation of DAevent.
	BW	Body Weight	kg	15	U.S. EPA, 1993	15	U.S. EPA, 1993	
	AT-C	Averaging Time (Cancer)	days	25,550	U.S. EPA, 1989	25,550	U.S. EPA, 1989	
	AT-N	Averaging Time (Non-Cancer)	days	2,190	U.S. EPA, 1989	730	U.S. EPA, 1989	

Notes:
U.S. EPA, 1989: Risk Assessment Guidance for Superfund. Vol 1: Human Health Evaluation Manual, Part A. EPA/540/1-86/060.
U.S. EPA, 1993: Superfund Standard Default Exposure Factors for the Central Tendency and Reasonable Maximum Exposure.
U.S. EPA, 1997: Exposure Factors Handbook. EPA/600/P-95/002Fa
U.S. EPA, 2001: Risk Assessment Guidance for Superfund (Part E, Supplemental Guidance for Dermal Risk Assessment) Interim. EPA/540/R/99/005.

Unit Intake Calculations

Ingestion Intake = (IR-SW x EF x ED)/(BW x AT)
Dermal Intake = (SA x EV x EF x ED)/(BW x AT)

Cancer Ingestion Intake (RME) = 8.22E-06
Noncancer Ingestion Intake (RME) = 9.59E-05

Cancer Ingestion Intake (CTE) = 8.06E-07
Noncancer Ingestion Intake (CTE) = 2.82E-05

Cancer Dermal Intake (RME) = 3.62E+01
Noncancer Dermal Intake (RME) = 1.05E+02

Cancer Dermal Intake (CTE) = 8.06E+00
Noncancer Dermal Intake (CTE) = 4.71E+01

TABLE 4.5
VALUES USED FOR DAILY INTAKE CALCULATIONS
NSWC CRANE, INDIANA

Scenario Timeframe: Current/Future
Medium: Surface Water
Exposure Medium: Surface Water
Exposure Point: SWMU 3 - Little Sulphur Creek
Receptor Population: Off-Site Resident
Receptor Age: Adult

Exposure Route	Parameter Code	Parameter Definition	Units	RME Value	RME Rationale/ Reference	CT Value	CT Rationale/ Reference	Intake Equation/ Model Name
Ingestion	CGW	Chemical Concentration in Surface Water	ug/L	Average	--	Average	--	Chronic Daily Intake (CDI) (mg/kg/day) =
	CF	Conversion Factor	mg/ug	0.001	--	0.001	--	
	IR-SW	Ingestion Rate of Surface Water	L/day	2	U.S. EPA, 1993	1.4	U.S. EPA, 1993	$\frac{CW \times CF \times IRSW \times EF \times ED}{BW \times AT}$
	EF	Exposure Frequency	days/year	350	U.S. EPA, 1993	234	U.S. EPA, 1993	
	ED	Exposure Duration	years	24	U.S. EPA, 1993	7	U.S. EPA, 1993	
	BW	Body Weight	kg	70	U.S. EPA, 1993	70	U.S. EPA, 1993	
	AT-C	Averaging Time (Cancer)	days	25550	U.S. EPA, 1989	25550	U.S. EPA, 1989	
	AT-N	Averaging Time (Non-Cancer)	days	8760	U.S. EPA, 1989	2555	U.S. EPA, 1989	
Dermal	DAevent	Absorbed dose per event	mg/cm2-event	Calculated	U.S. EPA, 2001	Calculated	U.S. EPA, 2001	Dermally Absorbed Dose (mg/kg/day)
	SA	Skin Surface Available for Contact	cm2	18000	U.S. EPA, 2001	18000	U.S. EPA, 2001	
	EV	Event Frequency	events/day	1	U.S. EPA, 1992	1	U.S. EPA, 1992	$\frac{DAevevt \times EV \times EF \times ED \times SA}{BW \times AT}$
	ET	Exposure Time	hours/day	0.25	U.S. EPA, 1997	0.167	U.S. EPA, 1997	
	EF	Exposure Frequency	days/year	350	U.S. EPA, 1993	234	U.S. EPA, 1993	
	ED	Exposure Duration	years	24	U.S. EPA, 1993	7	U.S. EPA, 1993	See text for calculation of DAevent.
	BW	Body Weight	kg	70	U.S. EPA, 1993	70	U.S. EPA, 1993	
	AT-C	Averaging Time (Cancer)	days	25550	U.S. EPA, 1989	25550	U.S. EPA, 1989	
	AT-N	Averaging Time (Non-Cancer)	days	8760	U.S. EPA, 1989	2555	U.S. EPA, 1989	

Notes:
U.S. EPA, 1989: Risk Assessment Guidance for Superfund. Vol 1: Human Health Evaluation Manual, Part A. EPA/540/1-86/060.
U.S. EPA, 1992: Supplemental Guidance to RAGS: Calculating the Concentration Term. PB92-963373.
U.S. EPA, 1993: Superfund Standard Default Exposure Factors for the Central Tendency and Reasonable Maximum Exposure.
U.S. EPA, 1997: Exposure Factors Handbook. EPA/600/P-95/002Fa
U.S. EPA, 2001: Risk Assessment Guidance for Superfund (Part E, Supplemental Guidance for Dermal Risk Assessment) Interim. EPA/540/R/99/005.

Unit Intake Calculations

Ingestion Intake = (IR-SW x EF x ED)/(BW x AT)
Dermal Intake = (SA x EV x EF x ED)/(BW x AT)

Cancer Ingestion Intake (RME) = 9.39E-06
Noncancer Ingestion Intake (RME) = 2.74E-05

Cancer Ingestion Intake (CTE) = 1.28E-06
Noncancer Ingestion Intake (CTE) = 1.28E-05

Cancer Dermal Intake (RME) = 8.45E+01
Noncancer Dermal Intake (RME) = 6.16E+01

Cancer Dermal Intake (CTE) = 1.65E+01
Noncancer Dermal Intake (CTE) = 2.75E+01

TABLE 4.6
VALUES USED FOR DAILY INTAKE CALCULATIONS
NSWC CRANE, INDIANA

Scenario Timeframe: Future
Medium: Surface/Subsurface Soil
Exposure Medium: Surface/Subsurface Soil
Exposure Point: SWMU 3 - Old Jeep Trail
Receptor Population: Construction Worker
Receptor Age: Adult

Exposure Route	Parameter Code	Parameter Definition	Units	RME Value	RME Rationale/ Reference	CT Value	CT Rationale/ Reference	Intake Equation/ Model Name
Ingestion	CS	Chemical concentration in soil	mg/kg	Max or 95% UCL	U.S. EPA, 1992	Max or 95% UCL	U.S. EPA, 1992	Intake (mg/kg/day) =
	IR-S	Ingestion Rate	mg/day	480	U.S. EPA, 1991	240	(1)	
	CF3	Conversion Factor 3	kg/mg	1.0E-06	--	1.0E-06	--	
	FI	Fraction Ingested	unitless	1	U.S. EPA, 1991	1	U.S. EPA, 1991	$\frac{Cs \times IRS \times CF3 \times FI \times EF \times ED}{BW \times AT}$
	EF	Exposure Frequency	days/year	150	(2)	150	(2)	
	ED	Exposure Duration	years	1	(3)	1	(3)	
	BW	Body Weight	kg	70	U.S. EPA, 1993	70	U.S. EPA, 1993	
	AT-C	Averaging Time (Cancer)	days	25550	U.S. EPA, 1989	25550	U.S. EPA, 1989	
	AT-N	Averaging Time (Non-Cancer)	days	365	U.S. EPA, 1989	365	U.S. EPA, 1989	
Dermal	CS	Chemical concentration in soil	mg/kg	Max or 95% UCL	U.S. EPA, 1992	Max or 95% UCL	U.S. EPA, 1992	Dermally Absorbed Dose (mg/kg/day) =
	CF3	Conversion Factor 3	kg/mg	1.0E-06	--	1.0E-06	--	
	SA	Skin Surface Available for Contact	cm2	3300	U.S. EPA, 2001	3300	U.S. EPA, 2001	
	SSAF	Soil to Skin Adherence Factor	mg/cm2/event	0.3	U.S. EPA, 2001	0.1	U.S. EPA, 2001	
	DABS	Absorption Factor	unitless	Chemical Specific	U.S. EPA, 1997	Chemical Specific	U.S. EPA, 1997	$\frac{Cs \times CF3 \times SA \times SSAF \times DABS \times EF \times ED}{BW \times AT}$
	EF	Exposure Frequency	days/year	150	(2)	150	(2)	
	ED	Exposure Duration	years	1	(3)	1	(3)	
	BW	Body Weight	kg	70	U.S. EPA, 1993	70	U.S. EPA, 1993	
	AT-C	Averaging Time (Cancer)	days	25550	U.S. EPA, 1989	25550	U.S. EPA, 1989	
	AT-N	Averaging Time (Non-Cancer)	days	365	U.S. EPA, 1989	365	U.S. EPA, 1989	

Notes:
1 - CTE is assumed to be one half of RME.
2 - Professional judgement. Ground is assumed to be frozen or snow covered for 22 weeks/year.
3 - Estimated length of construction season.

Sources:
U.S. EPA, 1989: Risk Assessment Guidance for Superfund. Vol 1: Human Health Evaluation Manual, Part A.
U.S. EPA, 1991: Human Health Evaluation Manual, Supplemental Guidance: Standard Default Exposure Factors. OSWER Directive 9285.6-03.
U.S. EPA, 1992: Supplemental Guidance to RAGS: Calculating the Concentration Term. PB92-963373.
U.S. EPA, 1993: Superfund's Standard Default Exposure Factors for the Central Tendency and Reasonable Maximum Exposure.
U.S. EPA, 1997: Exposure Factors Handbook. EPA/600/8-95/002FA.
U.S. EPA, 2001: Risk Assessment Guidance for Superfund (Part E, Supplemental Guidance for Dermal Risk Assessment) Interim. EPA/540/R/99/005.

Unit Intake Calculations

Incidental Ingestion Intake = (IR-S x CF3 x FI x EF x ED)/(BW x AT)
Dermal Intake = (CF3 x SA x SSAF x EF x ED)/(BW x AT)

Cancer Ingestion Intake (RME) = 4.03E-08	Cancer Ingestion Intake (RME) = 2.01E-08
Noncancer Ingestion Intake (RME) = 2.82E-06	Noncancer Ingestion Intake (RME) = 1.41E-06
Cancer Dermal Intake (RME) = 8.30E-08	Cancer Dermal Intake (CTE) = 2.77E-08
Noncancer Dermal Intake (RME) = 5.81E-06	Noncancer Dermal Intake (CTE) = 1.94E-06

TABLE 4.7
VALUES USED FOR DAILY INTAKE CALCULATIONS
NSWC CRANE, INDIANA

Scenario Timeframe: Future
Medium: Ground Water
Exposure Medium: Ground Water
Exposure Point: SWMU 3 - Shallow Ground Water
Receptor Population: Construction Worker
Receptor Age: Adult

Exposure Route	Parameter Code	Parameter Definition	Units	RME Value	RME Rationale/ Reference	CT Value	CT Rationale/ Reference	Intake Equation/ Model Name
Dermal	DAevent	Absorbed dose per event	mg/cm2-event	Calculated	U.S. EPA, 2001	Calculated	U.S. EPA, 2001	Dermally Absorbed Dose (mg/kg/day)
	SA	Skin Surface Available for Contact	cm2	3300	U.S. EPA, 2001	3300	U.S. EPA, 2001	
	EV	Event Frequency	events/day	1	(1)	1	(1)	$\frac{DAevevt \times EV \times EF \times ED \times SA}{BW \times AT}$
	ET	Exposure Time	hours/event	2	(1)	1.5	(1)	
	EF	Exposure Frequency	days/year	150	(2)	150	(2)	
	ED	Exposure Duration	years	1	(3)	1	(3)	See text for calculation of DAevent.
	BW	Body Weight	kg	70	U.S. EPA, 1993	70	U.S. EPA, 1993	
	AT-C	Averaging Time (Cancer)	days	25550	U.S. EPA, 1989	25550	U.S. EPA, 1989	
	AT-N	Averaging Time (Non-Cancer)	days	365	U.S. EPA, 1989	365	U.S. EPA, 1989	

Notes:
1 - Professional judgment.
2 - Professional judgement. Ground is assumed to be frozen or snow covered for 22 weeks/year.
3 - Estimated length of construction season.
U.S. EPA, 1989: Risk Assessment Guidance for Superfund. Vol 1: Human Health Evaluation Manual, Part A. EPA/540/1-86/060.
U.S. EPA, 1993: Superfund's Standard Default Exposure Factors for the Central Tendency and Reasonable Maximum Exposure.
U.S. EPA, 2001: Risk Assessment Guidance for Superfund (Part E, Supplemental Guidance for Dermal Risk Assessment) Interim. EPA/540/R/99/005.

Unit Intake Calculations

Ingestion Intake = (IR-GW x EF x ED)/(BW x AT)
Dermal Intake = (SA x EV x EF x ED)/(BW x AT)

Cancer Ingestion Intake (RME) = NA
Noncancer Ingestion Intake (RME) = NA

Cancer Ingestion Intake (CTE) = NA
Noncancer Ingestion Intake (CTE) = NA

Cancer Dermal Intake (RME) = 2.77E-01
Noncancer Dermal Intake (RME) = 3.87E+01

Cancer Dermal Intake (CTE) = 2.77E-01
Noncancer Dermal Intake (CTE) = 2.91E+01

TABLE 4.8

VALUES USED FOR DAILY INTAKE CALCULATIONS

NSWC CRANE, INDIANA

Scenario Timeframe: Future
Medium: Ground Water
Exposure Medium: Air
Exposure Point: SWMU 3 - Shallow Ground Water
Receptor Population: Construction Worker
Receptor Age: Adult

Exposure Route	Parameter Code	Parameter Definition	Units	RME Value	RME Rationale/ Reference	CT Value	CT Rationale/ Reference	Intake Equation/ Model Name
Inhalation	CA	Chemical concentration in air	mg/m3	Calculated	ASTM E50.04.	Calculated	ASTM E50.04.	Intake (mg/kg/day) =
	CW	Chemical concentration in water.	ug/L	Average	--	Average	--	
	CF	Conversion Factor	ug/mg	1000	--	1000	--	
	IR	Inhalation Rate	m3/hour	2.5	U.S. EPA, 1997	2.5	U.S. EPA, 1997	$\frac{CA \times IR \times ET \times EF \times ED}{BW \times AT}$
	ET	Exposure Time	hours/day	2	(1)	1.5	(1)	
	EF	Exposure Frequency	days/year	150	(2)	150	(2)	
	ED	Exposure Duration	years	1	(3)	1	(3)	
	BW	Body Weight	kg	70	U.S. EPA, 1993	70	U.S. EPA, 1993	CA = CF x CW x VF
	AT-C	Averaging Time (Cancer)	days	25550	U.S. EPA, 1989	25550	U.S. EPA, 1989	
	AT-N	Averaging Time (Non-Cancer)	days	365	U.S. EPA, 1989	365	U.S. EPA, 1989	
	VF	Volatilization Factor	(mg/m3)/(mg/L)	Calculated	ASTM E50.04.	Calculated	ASTM E50.04.	

Notes:

1 - Professional judgment.

2 - Professional judgement. Ground is assumed to be frozen or snow covered for 22 weeks/year.

3 - Estimated length of construction season.

U.S. EPA, 1989: Risk Assessment Guidance for Superfund. Vol 1: Human Health Evaluation Manual, Part A. EPA/540/1-86/060.

U.S. EPA, 1993: Superfund's Standard Default Exposure Factors for the Central Tendency and Reasonable Maximum Exposure.

U.S. EPA, 1997: Exposure Factors Handbook. EPA/600/8-95/002FA.

ASTM, 1997: Standard Guide for Risk-Based Corrective Action, E50.04.

Unit Intake Calculations

Inhalation Intake = (IR x ET x EF x ED)/(BW x AT)

Cancer Inhalation Intake (RME) = 4.19E-04

Noncancer Inhalation Intake (RME) = 2.94E-02

Cancer Inhalation Intake (CTE) = 3.15E-04

Noncancer Inhalation Intake (CTE) = 2.20E-02

TABLE 4.9
VALUES USED FOR DAILY INTAKE CALCULATIONS
NSWC CRANE, INDIANA

Scenario Timeframe: Future
Medium: Surface Soil
Exposure Medium: Surface Soil
Exposure Point: SWMU 3 - Old Jeep Trail
Receptor Population: Maintenance Worker
Receptor Age: Adult

Exposure Route	Parameter Code	Parameter Definition	Units	RME Value	RME Rationale/ Reference	CT Value	CT Rationale/ Reference	Intake Equation/ Model Name
Ingestion	CS	Chemical concentration in soil	mg/kg	Max or 95% UCL	U.S. EPA, 1992	Max or 95% UCL	U.S. EPA, 1992	Intake (mg/kg/day) =
	IR-S	Ingestion Rate	mg/day	100	U.S. EPA, 1993	50	U.S. EPA, 1993	
	CF3	Conversion Factor 3	kg/mg	1.0E-06	--	1.0E-06	--	Cs x IRS x CF3 x FI x EF x ED
	FI	Fraction Ingested	unitless	1	U.S. EPA, 1993	1	U.S. EPA, 1993	BW x AT
	EF	Exposure Frequency	days/year	24	(1)	12	(1)	
	ED	Exposure Duration	years	25	U.S. EPA, 1991	9	U.S. EPA, 1993	
	BW	Body Weight	kg	70	U.S. EPA, 1993	70	U.S. EPA, 1993	
	AT-C	Averaging Time (Cancer)	days	25550	U.S. EPA, 1989	25550	U.S. EPA, 1989	
	AT-N	Averaging Time (Non-Cancer)	days	9125	U.S. EPA, 1989	3285	U.S. EPA, 1989	
Dermal	CS	Chemical concentration in soil	mg/kg	Max or 95% UCL	U.S. EPA, 1992	Max or 95% UCL	U.S. EPA, 1992	Dermally Absorbed Dose (mg/kg/day) =
	CF3	Conversion Factor 3	kg/mg	1.0E-06	--	1.0E-06	--	
	SA	Skin Surface Available for Contact	cm2	3300	U.S. EPA, 2001	3300	U.S. EPA, 2001	CS x CF3 x SA x SSAF x DABS x EF x ED
	SSAF	Soil to Skin Adherence Factor	mg/cm2/event	0.2	U.S. EPA, 2001	0.02	U.S. EPA, 2001	BW x AT
	DABS	Absorption Factor	unitless	Chemical Specific	U.S. EPA, 2001	Chemical Specific	U.S. EPA, 2001	
	EF	Exposure Frequency	days/year	24	(1)	12	(1)	
	ED	Exposure Duration	years	25	U.S. EPA, 1991	9	U.S. EPA, 1989	
	BW	Body Weight	kg	70	U.S. EPA, 1993	70	U.S. EPA, 1993	
	AT-C	Averaging Time (Cancer)	days	25550	U.S. EPA, 1989	25550	U.S. EPA, 1989	
	AT-N	Averaging Time (Non-Cancer)	days	9125	U.S. EPA, 1989	3285	U.S. EPA, 1989	

Notes:
1 - Professional Judgement. Assume 2 days a month for RME and 1 day a month for CTE.
Sources:
U.S. EPA, 1989: Risk Assessment Guidance for Superfund. Vol 1: Human Health Evaluation Manual, Part A.
U.S. EPA, 1991: Human Health Evaluation Manual, Supplemental Guidance: Standard Default Exposure Factors. OSWER Directive 9285.6-03.
U.S. EPA, 1992: Supplemental Guidance to RAGS: Calculating the Concentration Term. PB92-963373.
U.S. EPA, 1993: Superfund's Standard Default Exposure Factors for the Central Tendency and Reasonable Maximum Exposure.
U.S. EPA, 2001: Risk Assessment Guidance for Superfund (Part E, Supplemental Guidance for Dermal Risk Assessment) Interim. EPA/540/R/99/005.

Unit Intake Calculations

Incidental Ingestion Intake = (IR-S x CF3 x FI x EF x ED)/(BW x AT)
Dermal Intake = (CF3 x SA x SSAF x EF x ED)/(BW x AT)

Cancer Ingestion Intake (RME) = 3.35E-08
Noncancer Ingestion Intake (RME) = 9.39E-08

Cancer Ingestion Intake (RME) = 3.02E-09
Noncancer Ingestion Intake (RME) = 2.35E-08

Cancer Dermal Intake (RME) = 2.21E-07
Noncancer Dermal Intake (RME) = 6.20E-07

Cancer Dermal Intake (CTE) = 3.99E-09
Noncancer Dermal Intake (CTE) = 3.10E-08

TABLE 4.10
VALUES USED FOR DAILY INTAKE CALCULATIONS
NSWC CRANE, INDIANA

Scenario Timeframe: Future
Medium: Surface Water
Exposure Medium: Surface Water
Exposure Point: SWMU 3 - Little Sulphur Creek
Receptor Population: Maintenance Worker
Receptor Age: Adult

Exposure Route	Parameter Code	Parameter Definition	Units	RME Value	RME Rationale/ Reference	CT Value	CT Rationale/ Reference	Intake Equation/ Model Name
Dermal	DAevent	Absorbed dose per event	mg/cm2-event	Calculated	U.S. EPA, 2001	Calculated	U.S. EPA, 2001	Dermally Absorbed Dose (mg/kg/day) =
	SA	Skin Surface Available for Contact	cm2	3300	U.S. EPA, 2001	3300	U.S. EPA, 2001	
	EV	Event Frequency	events/day	1	(1)	1	(1)	DAevent x EV x EF x ED x SA
	ET	Exposure Time	hours/event	2	(1)	1.5	(1)	BW x AT
	EF	Exposure Frequency	days/year	24	(1)	12	(1)	
	ED	Exposure Duration	years	25	U.S. EPA, 1991	9	U.S. EPA, 1989	See text for calculation of DAevent.
	BW	Body Weight	kg	70	U.S. EPA, 1993	70	U.S. EPA, 1993	
	AT-C	Averaging Time (Cancer)	days	25550	U.S. EPA, 1989	25550	U.S. EPA, 1989	
	AT-N	Averaging Time (Non-Cancer)	days	9125	U.S. EPA, 1989	3285	U.S. EPA, 1989	

Notes:
1 - Professional Judgement. Assume 2 days a month for RME and 1 day a month for CTE.
Sources:
U.S. EPA, 1989: Risk Assessment Guidance for Superfund. Vol 1: Human Health Evaluation Manual, Part A.
U.S. EPA, 1991: Human Health Evaluation Manual, Supplemental Guidance: Standard Default Exposure Factors. OSWER Directive 9285.6-03.
U.S. EPA, 1993: Superfund's Standard Default Exposure Factors for the Central Tendency and Reasonable Maximum Exposure.
U.S. EPA, 2001: Risk Assessment Guidance for Superfund (Part E, Supplemental Guidance for Dermal Risk Assessment) Interim. EPA/540/R/99/005.

Unit Intake Calculations

Ingestion Intake = (CR x CF x ET x EF x ED)/(BW x AT)
Dermal Intake = (SA x EV x EF x ED)/(BW x AT)

Cancer Ingestion Intake (RME) = 0.00E+00
Noncancer Ingestion Intake (RME) = 0.00E+00

Cancer Ingestion Intake (CTE) = 0.00E+00
Noncancer Ingestion Intake (CTE) = 0.00E+00

Cancer Dermal Intake (RME) = 2.21E+00
Noncancer Dermal Intake (RME) = 6.20E+00

Cancer Dermal Intake (CTE) = 2.99E-01
Noncancer Dermal Intake (CTE) = 2.32E+00

TABLE 4.11
VALUES USED FOR DAILY INTAKE CALCULATIONS
NSWC CRANE, INDIANA

Scenario Timeframe: Future
Medium: Sediment
Exposure Medium: Sediment
Exposure Point: SWMU 3 - Little Sulphur Creek
Receptor Population: Maintenance Worker
Receptor Age: Adult

Exposure Route	Parameter Code	Parameter Definition	Units	RME Value	RME Rationale/ Reference	CT Value	CT Rationale/ Reference	Intake Equation/ Model Name
Ingestion	CS	Chemical concentration in soil	mg/kg	Max or 95% UCL	U.S. EPA, 1992	Max or 95% UCL	U.S. EPA, 1992	Intake (mg/kg/day) =
	IR-S	Ingestion Rate	mg/day	100	U.S. EPA, 1993	50	U.S. EPA, 1993	
	CF3	Conversion Factor 3	kg/mg	0.000001	--	0.000001	--	Cs x IRS x CF3 x FI x EF x ED
	FI	Fraction Ingested	unitless	1	U.S. EPA, 1993	1	U.S. EPA, 1993	BW x AT
	EF	Exposure Frequency	days/year	24	(1)	12	(1)	
	ED	Exposure Duration	years	25	U.S. EPA, 1991	9	U.S. EPA, 1989	
	BW	Body Weight	kg	70	U.S. EPA, 1993	70	U.S. EPA, 1993	
	AT-C	Averaging Time (Cancer)	days	25550	U.S. EPA, 1989	25550	U.S. EPA, 1989	
	AT-N	Averaging Time (Non-Cancer)	days	9125	U.S. EPA, 1989	3285	U.S. EPA, 1989	
Dermal	CS	Chemical concentration in soil	mg/kg	Max or 95% UCL	U.S. EPA, 1992	Max or 95% UCL	U.S. EPA, 1992	Dermally Absorbed Dose (mg/kg/day) =
	CF3	Conversion Factor 3	kg/mg	0.000001	--	0.000001	--	
	SA	Skin Surface Available for Contact	cm2	3300	U.S. EPA, 2001	3300	U.S. EPA, 2001	CS x CF3 x SA x SSAF x DABS x EF x ED
	SSAF	Soil to Skin Adherence Factor	mg/cm2/event	0.2	U.S. EPA, 2001	0.02	U.S. EPA, 2001	BW x AT
	DABS	Absorption Factor	unitless	Chemical Specific	U.S. EPA, 1997	Chemical Specific	U.S. EPA, 1997	
	EF	Exposure Frequency	days/year	24	(1)	12	(1)	
	ED	Exposure Duration	years	25	U.S. EPA, 1991	9	U.S. EPA, 1989	
	BW	Body Weight	kg	70	U.S. EPA, 1993	70	U.S. EPA, 1993	
	AT-C	Averaging Time (Cancer)	days	25550	U.S. EPA, 1989	25550	U.S. EPA, 1989	
	AT-N	Averaging Time (Non-Cancer)	days	9125	U.S. EPA, 1989	3285	U.S. EPA, 1989	

Notes:
1 - Professional Judgement. Assume 2 days a month for RME and 1 day a month for CTE.

Sources:
U.S. EPA, 1989: Risk Assessment Guidance for Superfund. Vol 1: Human Health Evaluation Manual, Part A.
U.S. EPA, 1991: Human Health Evaluation Manual, Supplemental Guidance: Standard Default Exposure Factors. OSWER Directive 9285.6-03.
U.S. EPA, 1992: Supplemental Guidance to RAGS: Calculating the Concentration Term. PB92-963373.
U.S. EPA, 1993: Superfund's Standard Default Exposure Factors for the Central Tendency and Reasonable Maximum Exposure.
U.S. EPA, 1997: Exposure Factors Handbook. EPA/600/8-95/002FA.
U.S. EPA, 2001: Risk Assessment Guidance for Superfund (Part E, Supplemental Guidance for Dermal Risk Assessment) Interim. EPA/540/R/99/005.

Unit Intake Calculations

Incidental Ingestion Intake = (IR-S x CF3 x FI x EF x ED)/(BW x AT)
Dermal Intake = (CF3 x SA x SSAF x EF x ED)/(BW x AT)

Cancer Ingestion Intake (RME) = 3.35E-08
Noncancer Ingestion Intake (RME) = 9.39E-08

Cancer Ingestion Intake (CTE) = 3.02E-09
Noncancer Ingestion Intake (CTE) = 2.35E-08

Cancer Dermal Intake (RME) = 2.21E-07
Noncancer Dermal Intake (RME) = 6.20E-07

Cancer Dermal Intake (CTE) = 3.99E-09
Noncancer Dermal Intake (CTE) = 3.10E-08

TABLE 4.12
VALUES USED FOR DAILY INTAKE CALCULATIONS
NSWC CRANE, INDIANA

Scenario Timeframe: Future
Medium: Surface Soil
Exposure Medium: Surface Soil
Exposure Point: SWMU 3 - Old Jeep Trail
Receptor Population: Occupational Workers
Receptor Age: Adult

Exposure Route	Parameter Code	Parameter Definition	Units	RME Value	RME Rationale/ Reference	CT Value	CT Rationale/ Reference	Intake Equation/ Model Name
Ingestion	CS	Chemical concentration in soil	mg/kg	Max or 95% UCL	U.S. EPA, 1992	Max or 95% UCL	U.S. EPA, 1992	Intake (mg/kg/day) =
	IR-S	Ingestion Rate	mg/day	100	U.S. EPA, 1993	50	U.S. EPA, 1993	
	CF3	Conversion Factor 3	kg/mg	1.0E-06	--	1.0E-06	--	
	FI	Fraction Ingested	unitless	1	U.S. EPA, 1993	1	U.S. EPA, 1993	$\frac{Cs \times IRS \times CF3 \times FI \times EF \times ED}{BW \times AT}$
	EF	Exposure Frequency	days/year	250	U.S. EPA, 1993	219	U.S. EPA, 1993	
	ED	Exposure Duration	years	25	U.S. EPA, 1993	9	U.S. EPA, 1993	
	BW	Body Weight	kg	70	U.S. EPA, 1993	70	U.S. EPA, 1993	
	AT-C	Averaging Time (Cancer)	days	25,550	U.S. EPA, 1989	25,550	U.S. EPA, 1989	
	AT-N	Averaging Time (Non-Cancer)	days	9,125	U.S. EPA, 1989	3,285	U.S. EPA, 1989	
Dermal	CS	Chemical concentration in soil	mg/kg	Max or 95% UCL	U.S. EPA, 1992	Max or 95% UCL	U.S. EPA, 1992	Dermally Absorbed Dose (mg/kg/day) =
	CF3	Conversion Factor 3	kg/mg	1.0E-06	--	1.0E-06	--	
	SA	Skin Surface Available for Contact	cm2	3,300	U.S. EPA, 2001	3,300	U.S. EPA, 2001	
	SSAF	Soil to Skin Adherence Factor	mg/cm2/event	0.2	U.S. EPA, 1997	0.02	U.S. EPA, 1997	
	DABS	Absorption Factor	unitless	Chemical Specific	U.S. EPA, 2001	Chemical Specific	U.S. EPA, 2001	$\frac{Cs \times CF3 \times SA \times SSAF \times DABS \times EF \times ED}{BW \times AT}$
	EF	Exposure Frequency	days/year	250	U.S. EPA, 1993	219	U.S. EPA, 1993	
	ED	Exposure Duration	years	25	U.S. EPA, 1993	9	U.S. EPA, 1993	
	BW	Body Weight	kg	70	U.S. EPA, 1993	70	U.S. EPA, 1993	
	AT-C	Averaging Time (Cancer)	days	25,550	U.S. EPA, 1989	25,550	U.S. EPA, 1989	
	AT-N	Averaging Time (Non-Cancer)	days	9,125	U.S. EPA, 1989	3,285	U.S. EPA, 1989	

Notes:
U.S. EPA, 1989: Risk Assessment Guidance for Superfund. Vol 1: Human Health Evaluation Manual, Part A.
U.S. EPA, 1991: Human Health Evaluation Manual, Supplemental Guidance: Standard Default Exposure Factors. OSWER Directive 9285.6-03.
U.S. EPA, 1992: Supplemental Guidance to RAGS: Calculating the Concentration Term. PB92-963373.
U.S. EPA, 1993: Superfund's Standard Default Exposure Factors for the Central Tendency and Reasonable Maximum Exposure.
U.S. EPA, 1997: Exposure Factors Handbook. EPA/600/8-95/002FA.
U.S. EPA, 2001: Risk Assessment Guidance for Superfund (Part E, Supplemental Guidance for Dermal Risk Assessment) Interim. EPA/540/R/99/005.

Unit Intake Calculations

Incidental Ingestion Intake = (IR-S x CF3 x FI x EF x ED)/(BW x AT)
Dermal Intake = (CF3 x SA x SSAF x EF x ED)/(BW x AT)

Cancer Ingestion Intake (RME) = 3.49E-07
Noncancer Ingestion Intake (RME) = 9.78E-07

Cancer Ingestion Intake (RME) = 5.51E-08
Noncancer Ingestion Intake (RME) = 4.29E-07

Cancer Dermal Intake (RME) = 2.31E-06
Noncancer Dermal Intake (RME) = 6.46E-06

Cancer Dermal Intake (CTE) = 7.27E-08
Noncancer Dermal Intake (CTE) = 5.66E-07

TABLE 4.13
VALUES USED FOR DAILY INTAKE CALCULATIONS
NSWC CRANE, INDIANA

Scenario Timeframe: Future
Medium: Ground Water
Exposure Medium: Ground Water
Exposure Point: SWMU 3 - Shallow Ground Water
Receptor Population: Occupational Workers
Receptor Age: Adult

Exposure Route	Parameter Code	Parameter Definition	Units	RME Value	RME Rationale/ Reference	CT Value	CT Rationale/ Reference	Intake Equation/ Model Name
Ingestion	CGW	Chemical Concentration in Groundwater	ug/L	Average	--	Average	--	Chronic Daily Intake (CDI) (mg/kg/day) =
	CF	Conversion Factor	mg/ug	0.001	--	0.001	--	
	IR-GW	Ingestion Rate of Groundwater	L/day	1	(1)	1	(1)	$\frac{CW \times CF \times IRGW \times EF \times ED}{BW \times AT}$
	EF	Exposure Frequency	days/year	250	U.S. EPA, 1993	219	U.S. EPA, 1993	
	ED	Exposure Duration	years	25	U.S. EPA, 1993	9	U.S. EPA, 1993	
	BW	Body Weight	kg	70	U.S. EPA, 1993	70	U.S. EPA, 1993	
	AT-C	Averaging Time (Cancer)	days	25,550	U.S. EPA, 1989	25,550	U.S. EPA, 1989	
	AT-N	Averaging Time (Non-Cancer)	days	9,125	U.S. EPA, 1989	3,285	U.S. EPA, 1989	
Dermal	DAevent	Absorbed dose per event	mg/cm2-event	Calculated	U.S. EPA, 2001	Calculated	U.S. EPA, 2001	Dermally Absorbed Dose (mg/kg/day)
	SA	Skin Surface Available for Contact	cm2	3,300	U.S. EPA, 2001	3,300	U.S. EPA, 2001	
	EV	Event Frequency	events/day	1	U.S. EPA, 1992	1	U.S. EPA, 1992	$\frac{DAevent \times EV \times EF \times ED \times SA}{BW \times AT}$
	ET	Exposure Time	hours/day	0.25	U.S. EPA, 1997	0.167	U.S. EPA, 1997	
	EF	Exposure Frequency	days/year	250	U.S. EPA, 1993	219	U.S. EPA, 1993	
	ED	Exposure Duration	years	25	U.S. EPA, 1993	9	U.S. EPA, 1993	See text for calculation of DAevent.
	BW	Body Weight	kg	70	U.S. EPA, 1993	70	U.S. EPA, 1993	
	AT-C	Averaging Time (Cancer)	days	25,550	U.S. EPA, 1989	25,550	U.S. EPA, 1989	
	AT-N	Averaging Time (Non-Cancer)	days	9,125	U.S. EPA, 1989	3,285	U.S. EPA, 1989	

Notes:
(1) - Professional judgement.
Sources:
U.S. EPA, 1989: Risk Assessment Guidance for Superfund. Vol 1: Human Health Evaluation Manual, Part A. EPA/540/1-86/060.
U.S. EPA, 1992: Supplemental Guidance to RAGS: Calculating the Concentration Term. PB92-963373.
U.S. EPA, 1993: Superfund Standard Default Exposure Factors for the Central Tendency and Reasonable Maximum Exposure.
U.S. EPA, 1997: Exposure Factors Handbook. EPA/600/P-95/002Fa
U.S. EPA, 2001: Risk Assessment Guidance for Superfund (Part E, Supplemental Guidance for Dermal Risk Assessment) Interim. EPA/540/R/99/005.

Unit Intake Calculations

Ingestion Intake = (IR-GW x EF x ED)/(BW x AT)
Dermal Intake = (SA x EV x EF x ED)/(BW x AT)

Cancer Ingestion Intake (RME) = 3.49E-06
Noncancer Ingestion Intake (RME) = 9.78E-06

Cancer Ingestion Intake (CTE) = 1.10E-06
Noncancer Ingestion Intake (CTE) = 8.57E-06

Cancer Dermal Intake (RME) = 1.15E+01
Noncancer Dermal Intake (RME) = 8.07E+00

Cancer Dermal Intake (CTE) = 3.64E+00
Noncancer Dermal Intake (CTE) = 4.72E+00

TABLE 4.14
VALUES USED FOR DAILY INTAKE CALCULATIONS
NSWC CRANE, INDIANA

Scenario Timeframe: Future
Medium: Surface Soil
Exposure Medium: Surface Soil
Exposure Point: SWMU 3 - Old Jeep Trail
Receptor Population: Recreational Users
Receptor Age: Child

Exposure Route	Parameter Code	Parameter Definition	Units	RME Value	RME Rationale/ Reference	CT Value	CT Rationale/ Reference	Intake Equation/ Model Name
Ingestion	CS	Chemical concentration in soil	mg/kg	Max or 95% UCL	U.S. EPA, 1992	Max or 95% UCL	U.S. EPA, 1992	Intake (mg/kg/day) =
	IR-S	Ingestion Rate	mg/day	200	U.S. EPA, 1993	100	U.S. EPA, 1993	
	CF3	Conversion Factor 3	kg/mg	1.0E-06	--	1.0E-06	--	
	FI	Fraction Ingested	unitless	0.5	(1)	0.5	(1)	$\frac{Cs \times IRS \times CF3 \times FI \times EF \times ED}{BW \times AT}$
	EF	Exposure Frequency	days/year	52	(1)	26	(1)	
	ED	Exposure Duration	years	6	U.S. EPA, 1991	2	U.S. EPA, 1993	
	BW	Body Weight	kg	15	U.S. EPA, 1993	15	U.S. EPA, 1993	
	AT-C	Averaging Time (Cancer)	days	25,550	U.S. EPA, 1989	25,550	U.S. EPA, 1989	
	AT-N	Averaging Time (Non-Cancer)	days	2,190	U.S. EPA, 1989	730	U.S. EPA, 1989	
Dermal	CS	Chemical concentration in soil	mg/kg	Max or 95% UCL	U.S. EPA, 1992	Max or 95% UCL	U.S. EPA, 1992	Dermally Absorbed Dose (mg/kg/day) =
	CF3	Conversion Factor 3	kg/mg	1.0E-06	--	1.0E-06	--	
	SA	Skin Surface Available for Contact	cm2	3,300	(3)	3,300	(3)	
	SSAF	Soil to Skin Adherence Factor	mg/cm2/event	0.20	U.S. EPA, 2001	0.04	U.S. EPA, 2001	$\frac{Cs \times CF3 \times SA \times SSAF \times DABS \times EF \times ED}{BW \times AT}$
	DABS	Absorption Factor	unitless	Chemical Specific	U.S. EPA, 2001	Chemical Specific	U.S. EPA, 2001	
	EF	Exposure Frequency	days/year	52	(2)	26	(2)	
	ED	Exposure Duration	years	6	U.S. EPA, 1993	2	U.S. EPA, 1993	
	BW	Body Weight	kg	15	U.S. EPA, 1993	15	U.S. EPA, 1993	
	AT-C	Averaging Time (Cancer)	days	25,550	U.S. EPA, 1989	25,550	U.S. EPA, 1989	
	AT-N	Averaging Time (Non-Cancer)	days	2,190	U.S. EPA, 1989	730	U.S. EPA, 1989	

Notes:
1 - Professional judgement.
2 - Professional judgement; 2 days/week for the RME in warm weather months and 1 day/week in warm weather months for CTE.
3 - Assume that 50 percent of total body surface area of 6,600 cm2 (EPA, 2001) is exposed.

Sources:
U.S. EPA, 1989: Risk Assessment Guidance for Superfund. Vol 1: Human Health Evaluation Manual, Part A. EPA/540/1-86/060.
U.S. EPA, 1991: Risk Assessment Guidance for Superfund - Supplemental Guidance- Standard Default Exposure Factors Interim Final.
U.S. EPA, 1992: Supplemental Guidance to RAGS: Calculating the Concentration Term. PB92-963373.
U.S. EPA, 1993: Superfund Standard Default Exposure Factors for the Central Tendency and Reasonable Maximum Exposure.
U.S. EPA, 2001: Risk Assessment Guidance for Superfund (Part E, Supplemental Guidance for Dermal Risk Assessment) Interim. EPA/540/R/99/005.

Unit Intake Calculations

Incidental Ingestion Intake = (IR-S x CF3 x FI x EF x ED)/(BW x AT)
Dermal Intake = (CF3 x SA x SSAF x EF x ED)/(BW x AT)

Cancer Ingestion Intake (RME) = 8.14E-08	Cancer Ingestion Intake (RME) = 6.78E-09
Noncancer Ingestion Intake (RME) = 9.50E-07	Noncancer Ingestion Intake (RME) = 2.37E-07
Cancer Dermal Intake (RME) = 5.37E-07	Cancer Dermal Intake (CTE) = 1.79E-08
Noncancer Dermal Intake (RME) = 6.27E-06	Noncancer Dermal Intake (CTE) = 6.27E-07

TABLE 4.15
VALUES USED FOR DAILY INTAKE CALCULATIONS
NSWC CRANE, INDIANA

Scenario Timeframe: Future
Medium: Ground Water
Exposure Medium: Ground Water
Exposure Point: SWMU 3 - Shallow Ground Water
Receptor Population: Recreational Users
Receptor Age: Child

Exposure Route	Parameter Code	Parameter Definition	Units	RME Value	RME Rationale/ Reference	CT Value	CT Rationale/ Reference	Intake Equation/ Model Name
Ingestion	CGW	Chemical Concentration in Groundwater	ug/L	Average	--	Average	--	Chronic Daily Intake (CDI) (mg/kg/day) =
	CF	Conversion Factor	mg/ug	0.001	--	0.001	--	
	IR-GW	Ingestion Rate of Groundwater	L/day	1	(1)	1	(1)	$\frac{CW \times CF \times IRGW \times EF \times ED}{BW \times AT}$
	EF	Exposure Frequency	days/year	52	(1)	26	(1)	
	ED	Exposure Duration	years	6	U.S. EPA, 1991	2	U.S. EPA, 1993	
	BW	Body Weight	kg	15	U.S. EPA, 1993	15	U.S. EPA, 1993	
	AT-C	Averaging Time (Cancer)	days	25,550	U.S. EPA, 1989	25,550	U.S. EPA, 1989	
	AT-N	Averaging Time (Non-Cancer)	days	2,190	U.S. EPA, 1989	730	U.S. EPA, 1989	
Dermal	DAevent	Absorbed dose per event	mg/cm2-event	Calculated	U.S. EPA, 2001	Calculated	U.S. EPA, 2001	Dermally Absorbed Dose (mg/kg/day)
	SA	Skin Surface Available for Contact	cm2	3,300	(2)	3,300	(2)	
	EV	Event Frequency	events/day	1	U.S. EPA, 2001	1	U.S. EPA, 2001	$\frac{DAevent \times EV \times EF \times ED \times SA}{BW \times AT}$
	ET	Exposure Time	hours/day	0.25	U.S. EPA, 1997	0.167	U.S. EPA, 1997	
	EF	Exposure Frequency	days/year	52	(1)	26	(1)	
	ED	Exposure Duration	years	6	U.S. EPA, 1991	2	U.S. EPA, 1993	See text for calculation of DAevent.
	BW	Body Weight	kg	15	U.S. EPA, 1993	15	U.S. EPA, 1993	
	AT-C	Averaging Time (Cancer)	days	25,550	U.S. EPA, 1989	25,550	U.S. EPA, 1989	
	AT-N	Averaging Time (Non-Cancer)	days	2,190	U.S. EPA, 1989	730	U.S. EPA, 1989	

Notes:
1 - Professional judgement; 2 days/week for the RME in warm weather months and 1 day/week in warm weather months for CTE.
2 - Assume that 50 percent of total body surface area of 6,600 cm2 (U.S. EPA, 2001) is exposed.

Sources:
U.S. EPA, 1989: Risk Assessment Guidance for Superfund. Vol 1: Human Health Evaluation Manual, Part A. EPA/540/1-86/060.
U.S. EPA, 1991: Risk Assessment Guidance for Superfund - Supplemental Guidance- Standard Default Exposure Factors Interim Final.
U.S. EPA, 1993: Superfund Standard Default Exposure Factors for the Central Tendency and Reasonable Maximum Exposure.
U.S. EPA, 1997: Exposure Factors Handbook. EPA/600/P-95/002Fa.
U.S. EPA, 2001: Risk Assessment Guidance for Superfund (Part E, Supplemental Guidance for Dermal Risk Assessment) Interim. EPA/540/R/99/005.

Unit Intake Calculations

Ingestion Intake = (IR-GW x EF x ED)/(BW x AT)
Dermal Intake = (SA x EV x EF x ED)/(BW x AT)

Cancer Ingestion Intake (RME) = 8.14E-07
Noncancer Ingestion Intake (RME) = 9.50E-06

Cancer Ingestion Intake (CTE) = 1.36E-07
Noncancer Ingestion Intake (CTE) = 4.75E-06

Cancer Dermal Intake (RME) = 2.69E+00
Noncancer Dermal Intake (RME) = 7.84E+00

Cancer Dermal Intake (CTE) = 4.48E-01
Noncancer Dermal Intake (CTE) = 2.62E+00

TABLE 4.16
VALUES USED FOR DAILY INTAKE CALCULATIONS
NSWC CRANE, INDIANA

Scenario Timeframe: Future
Medium: Surface Water
Exposure Medium: Surface Water
Exposure Point: SWMU 3 - Little Sulphur Creek
Receptor Population: Recreational Users
Receptor Age: Child

Exposure Route	Parameter Code	Parameter Definition	Units	RME Value	RME Rationale/ Reference	CT Value	CT Rationale/ Reference	Intake Equation/ Model Name
Ingestion	CW	Chemical Concentration in Water	ug/L	Max or 95% UCL	U.S. EPA, 1992	Max or 95% UCL	U.S. EPA, 1992	Intake (mg/kg/day) =
	CR	Contact Rate	L/hr	0.05	U.S. EPA 4, 1995	0.05	U.S. EPA 4, 1995	$\frac{CW \times CR \times CF \times ET \times EF \times ED}{BW \times AT}$
	CF	Conversion factor	mg/ug	0.001	- -	0.001	- -	
	ET	Exposure Time	hours/event	4	(1)	2	(1)	
	EF	Exposure Frequency	events/year	52	(2)	26	(2)	
	ED	Exposure Duration	years	6	U.S. EPA, 1993	2	U.S. EPA, 1993	
	BW	Body Weight	kg	15	U.S. EPA, 1993	15	U.S. EPA, 1993	
	AT-C	Averaging Time (Cancer)	days	25,550	U.S. EPA, 1989	25,550	U.S. EPA, 1989	
	AT-N	Averaging Time (Non-Cancer)	days	2,190	U.S. EPA, 1989	730	U.S. EPA, 1989	
Dermal	DAevent	Absorbed dose per event	mg/cm2-event	Calculated	U.S. EPA, 2001	Calculated	U.S. EPA, 2001	Dermally Absorbed Dose (mg/kg/day)
	SA	Skin Surface Available for Contact	cm2	3,300	(3)	3,300	(3)	
	EV	Event Frequency	events/day	1	(1)	1	(1)	$\frac{DAevevt \times EV \times EF \times ED \times SA}{BW \times AT}$
	ET	Exposure Time	hours/event	4	(1)	2	(1)	
	EF	Exposure Frequency	days/year	52	(2)	26	(2)	
	ED	Exposure Duration	years	6	U.S. EPA, 1993	2	U.S. EPA, 1993	See text for calculation of DAevent.
	BW	Body Weight	kg	15	U.S. EPA, 1993	15	U.S. EPA, 1993	
	AT-C	Averaging Time (Cancer)	days	25,550	U.S. EPA, 1989	25,550	U.S. EPA, 1989	
	AT-N	Averaging Time (Non-Cancer)	days	2,190	U.S. EPA, 1989	730	U.S. EPA, 1989	

Notes:
1 - Professional judgement.
2 - Professional judgement; 2 days/week for the RME in warm weather months and 1 day/week in warm weather months for CTE.
3 - Assume that 50 percent of total body surface area of 6,600 cm2 (U.S. EPA, 2001) is exposed.
Sources:
U.S. EPA, 1989: Risk Assessment Guidance for Superfund. Vol 1: Human Health Evaluation Manual, Part A. EPA/540/1-86/060.
U.S. EPA, 1992:Supplemental Guidance to RAGS: Calculating the Concentration Term. PB92-963373.
U.S. EPA, 1993: Superfund Standard Default Exposure Factors for the Central Tendency and Reasonable Maximum Exposure.
U.S. EPA Region 4, 1995: Supplement Guidance to RAGS: Region 4 Bulletins.
U.S. EPA, 2001: Risk Assessment Guidance for Superfund (Part E, Supplemental Guidance for Dermal Risk Assessment) Interim. EPA/540/R/99/005.

Unit Intake Calculations

Ingestion Intake = (CR x CF x ET x EF x ED)/(BW x AT)
Dermal Intake = (SA x EV x EF x ED)/(BW x AT)

Cancer Ingestion Intake (RME) = 1.63E-07
Noncancer Ingestion Intake (RME) = 1.90E-06

Cancer Ingestion Intake (CTE) = 1.36E-08
Noncancer Ingestion Intake (CTE) = 4.75E-07

Cancer Dermal Intake (RME) = 1.07E+01
Noncancer Dermal Intake (RME) = 1.25E+02

Cancer Dermal Intake (CTE) = 8.95E-01
Noncancer Dermal Intake (CTE) = 3.13E+01

TABLE 4.17
VALUES USED FOR DAILY INTAKE CALCULATIONS
NSWC CRANE, INDIANA

Scenario Timeframe: Future
Medium: Sediment
Exposure Medium: Sediment
Exposure Point: SWMU 3 - Little Sulphur Creek
Receptor Population: Recreational Users
Receptor Age: Child

Exposure Route	Parameter Code	Parameter Definition	Units	RME Value	RME Rationale/ Reference	CT Value	CT Rationale/ Reference	Intake Equation/ Model Name
Ingestion	CS	Chemical concentration in soil	mg/kg	Max or 95% UCL	U.S. EPA, 1992	Max or 95% UCL	U.S. EPA, 1992	Intake (mg/kg/day) =
	IR-S	Ingestion Rate	mg/day	200	U.S. EPA, 1993	100	U.S. EPA, 1993	
	CF3	Conversion Factor 3	kg/mg	0.000001	--	0.000001	--	$\frac{Cs \times IRS \times CF3 \times FI \times EF \times ED}{BW \times AT}$
	FI	Fraction Ingested	unitless	0.5	(1)	0.5	(1)	
	EF	Exposure Frequency	days/year	52	(2)	26	(2)	
	ED	Exposure Duration	years	6	U.S. EPA, 1991	2	U.S. EPA, 1993	
	BW	Body Weight	kg	15	U.S. EPA, 1993	15	U.S. EPA, 1993	
	AT-C	Averaging Time (Cancer)	days	25,550	U.S. EPA, 1989	25,550	U.S. EPA, 1989	
	AT-N	Averaging Time (Non-Cancer)	days	2,190	U.S. EPA, 1989	730	U.S. EPA, 1989	
Dermal	CS	Chemical concentration in soil	mg/kg	Max or 95% UCL	U.S. EPA, 1992	Max or 95% UCL	U.S. EPA, 1992	Dermally Absorbed Dose (mg/kg/day) =
	CF3	Conversion Factor 3	kg/mg	0.000001	--	0.000001	--	
	SA	Skin Surface Available for Contact	cm2	3,300	(3)	3,300	(3)	$\frac{Cs \times CF3 \times SA \times SSAF \times DABS \times EF \times ED}{BW \times AT}$
	SSAF	Soil to Skin Adherence Factor	mg/cm2/event	0.20	U.S. EPA, 2001	0.04	U.S. EPA, 2001	
	DABS	Absorption Factor	unitless	Chemical Specific	U.S. EPA, 2001	Chemical Specific	U.S. EPA, 2001	
	EF	Exposure Frequency	days/year	52	(2)	26	(2)	
	ED	Exposure Duration	years	6	U.S. EPA, 1993	2	U.S. EPA, 1993	
	BW	Body Weight	kg	15	U.S. EPA, 1993	15	U.S. EPA, 1993	
	AT-C	Averaging Time (Cancer)	days	25,550	U.S. EPA, 1989	25,550	U.S. EPA, 1989	
	AT-N	Averaging Time (Non-Cancer)	days	2,190	U.S. EPA, 1989	730	U.S. EPA, 1989	

Notes:
1 - Professional judgement.
2 - Professional judgement; 2 days/week for the RME in warm weather months and 1 day/week in warm weather months for CTE.
3 - Assume that 50 percent of total body surface area of 6,600 cm2 (U.S. EPA, 2001) is exposed.

Sources:
U.S. EPA, 1989: Risk Assessment Guidance for Superfund. Vol 1: Human Health Evaluation Manual, Part A. EPA/540/1-86/060.
U.S. EPA, 1991: Risk Assessment Guidance for Superfund - Supplemental Guidance- Standard Default Exposure Factors Interim Final.
U.S. EPA, 1992: Supplemental Guidance to RAGS: Calculating the Concentration Term. PB92-963373.
U.S. EPA, 1993: Superfund Standard Default Exposure Factors for the Central Tendency and Reasonable Maximum Exposure.
U.S. EPA, 2001: Risk Assessment Guidance for Superfund (Part E, Supplemental Guidance for Dermal Risk Assessment) Interim. EPA/540/R/99/005.

Unit Intake Calculations

Incidental Ingestion Intake = (IR-S x CF3 x FI x EF x ED)/(BW x AT)
Dermal Intake = (CF3 x SA x SSAF x EF x ED)/(BW x AT)

Cancer Ingestion Intake (RME) = 8.14E-08
Noncancer Ingestion Intake (RME) = 9.50E-07

Cancer Ingestion Intake (CTE) = 6.78E-09
Noncancer Ingestion Intake (CTE) = 2.37E-07

Cancer Dermal Intake (RME) = 5.37E-07
Noncancer Dermal Intake (RME) = 6.27E-06

Cancer Dermal Intake (CTE) = 1.79E-08
Noncancer Dermal Intake (CTE) = 6.27E-07

TABLE 4.18
VALUES USED FOR DAILY INTAKE CALCULATIONS
NSWC CRANE, INDIANA

Scenario Timeframe: Future
Medium: Surface Soil
Exposure Medium: Surface Soil
Exposure Point: SWMU 3 - Old Jeep Trail
Receptor Population: Recreational Users
Receptor Age: Adult

Exposure Route	Parameter Code	Parameter Definition	Units	RME Value	RME Rationale/ Reference	CT Value	CT Rationale/ Reference	Intake Equation/ Model Name
Ingestion	CS	Chemical concentration in soil	mg/kg	Max or 95% UCL	U.S. EPA, 1992	Max or 95% UCL	U.S. EPA, 1992	Intake (mg/kg/day) =
	IR-S	Ingestion Rate	mg/day	100	U.S. EPA, 1993	50	U.S. EPA, 1993	
	CF3	Conversion Factor 3	kg/mg	1.0E-06	--	1.0E-06	--	
	FI	Fraction Ingested	unitless	0.5	(1)	0.5	(1)	$\frac{Cs \times IRS \times CF3 \times FI \times EF \times ED}{BW \times AT}$
	EF	Exposure Frequency	days/year	52	(2)	26	(2)	
	ED	Exposure Duration	years	24	U.S. EPA, 1993	7	U.S. EPA, 1993	
	BW	Body Weight	kg	70	U.S. EPA, 1993	70	U.S. EPA, 1993	
	AT-C	Averaging Time (Cancer)	days	25,550	U.S. EPA, 1989	25,550	U.S. EPA, 1989	
	AT-N	Averaging Time (Non-Cancer)	days	8,760	U.S. EPA, 1989	2,555	U.S. EPA, 1989	
Dermal	CS	Chemical concentration in soil	mg/kg	Max or 95% UCL	U.S. EPA, 1992	Max or 95% UCL	U.S. EPA, 1992	Dermally Absorbed Dose (mg/kg/day) =
	CF3	Conversion Factor 3	kg/mg	1.0E-06	--	1.0E-06	--	
	SA	Skin Surface Available for Contact	cm2	9,070	(3)	9,070	(3)	
	SSAF	Soil to Skin Adherence Factor	mg/cm2/event	0.07	U.S. EPA, 2001	0.01	U.S. EPA, 2001	
	DABS	Absorption Factor	unitless	Chemical Specific	U.S. EPA, 1997	Chemical Specific	U.S. EPA, 1997	$\frac{Cs \times CF3 \times SA \times SSAF \times DABS \times EF \times ED}{BW \times AT}$
	EF	Exposure Frequency	days/year	52	(2)	26	(2)	
	ED	Exposure Duration	years	24	U.S. EPA, 1993	7	U.S. EPA, 1993	
	BW	Body Weight	kg	70	U.S. EPA, 1993	70	U.S. EPA, 1993	
	AT-C	Averaging Time (Cancer)	days	25,550	U.S. EPA, 1989	25,550	U.S. EPA, 1989	
	AT-N	Averaging Time (Non-Cancer)	days	8,760	U.S. EPA, 1989	2,555	U.S. EPA, 1989	

Notes:
1 - Professional judgement.
2 - Professional judgement; 2 days/week for the RME in warm weather months and 1 day/week in warm weather months for CTE.
3 - Assumed head, arms, hands, lower legs, and feet are exposed. U.S. EPA, 1997.

Sources:
U.S. EPA, 1989: Risk Assessment Guidance for Superfund. Vol 1: Human Health Evaluation Manual, Part A. EPA/540/1-86/060.
U.S. EPA, 1992: Supplemental Guidance to RAGS: Calculating the Concentration Term. PB92-963373.
U.S. EPA, 1993: Superfund Standard Default Exposure Factors for the Central Tendency and Reasonable Maximum Exposure.
U.S. EPA, 1997: Exposure Factors Handbook. EPA/600/P-95/002Fa.
U.S. EPA, 2001: Risk Assessment Guidance for Superfund (Part E, Supplemental Guidance for Dermal Risk Assessment) Interim. EPA/540/R/99/005.

Unit Intake Calculations

Incidental Ingestion Intake = (IR-S x CF3 x FI x EF x ED)/(BW x AT)
Dermal Intake = (CF3 x SA x SSAF x EF x ED)/(BW x AT)

Cancer Ingestion Intake (RME) = 3.49E-08	Cancer Ingestion Intake (RME) = 2.54E-09
Noncancer Ingestion Intake (RME) = 1.02E-07	Noncancer Ingestion Intake (RME) = 2.54E-08
Cancer Dermal Intake (RME) = 4.43E-07	Cancer Dermal Intake (CTE) = 9.23E-09
Noncancer Dermal Intake (RME) = 1.29E-06	Noncancer Dermal Intake (CTE) = 9.23E-08

TABLE 4.19
VALUES USED FOR DAILY INTAKE CALCULATIONS
NSWC CRANE, INDIANA

Scenario Timeframe: Future
Medium: Ground Water
Exposure Medium: Ground Water
Exposure Point: SWMU 3 - Shallow Ground Water
Receptor Population: Recreational Users
Receptor Age: Adult

Exposure Route	Parameter Code	Parameter Definition	Units	RME Value	RME Rationale/ Reference	CT Value	CT Rationale/ Reference	Intake Equation/ Model Name
Ingestion	CGW	Chemical Concentration in Groundwater	ug/L	Average	--	Average	--	Chronic Daily Intake (CDI) (mg/kg/day) =
	CF	Conversion Factor	mg/ug	0.001	--	0.001	--	
	IR-GW	Ingestion Rate of Groundwater	L/day	1	(1)	1	(1)	$\frac{CW \times CF \times IRGW \times EF \times ED}{BW \times AT}$
	EF	Exposure Frequency	days/year	52	(1)	26	(1)	
	ED	Exposure Duration	years	24	U.S. EPA, 1993	7	U.S. EPA, 1993	
	BW	Body Weight	kg	70	U.S. EPA, 1993	70	U.S. EPA, 1993	
	AT-C	Averaging Time (Cancer)	days	25,550	U.S. EPA, 1989	25,550	U.S. EPA, 1989	
	AT-N	Averaging Time (Non-Cancer)	days	8,760	U.S. EPA, 1989	2,555	U.S. EPA, 1989	
Dermal	DAevent	Absorbed dose per event	mg/cm2-event	Calculated	U.S. EPA, 2001	Calculated	U.S. EPA, 2001	Dermally Absorbed Dose (mg/kg/day)
	SA	Skin Surface Available for Contact	cm2	9,070	(2)	9,070	(2)	
	EV	Event Frequency	events/day	1	U.S. EPA, 2001	1	U.S. EPA, 2001	$\frac{DAevevt \times EV \times EF \times ED \times SA}{BW \times AT}$
	ET	Exposure Time	hours/day	0.25	U.S. EPA, 1997	0.167	U.S. EPA, 1997	
	EF	Exposure Frequency	days/year	52	(1)	26	(1)	
	ED	Exposure Duration	years	24	U.S. EPA, 1993	7	U.S. EPA, 1993	See text for calculation of DAevent.
	BW	Body Weight	kg	70	U.S. EPA, 1989	70	U.S. EPA, 1989	
	AT-C	Averaging Time (Cancer)	days	25,550	U.S. EPA, 1989	25,550	U.S. EPA, 1989	
	AT-N	Averaging Time (Non-Cancer)	days	8,760	U.S. EPA, 1989	2,555	U.S. EPA, 1989	

Notes:
1 - Professional judgement; 2 days/week for the RME in warm weather months and 1 day/week in warm weather months for CTE.
2 - Assumed head, arms, hands, lower legs, and feet are exposed. U.S. EPA, 1997.
Sources:
U.S. EPA, 1989: Risk Assessment Guidance for Superfund. Vol 1: Human Health Evaluation Manual, Part A. EPA/540/1-86/060.
U.S. EPA, 1993: Superfund Standard Default Exposure Factors for the Central Tendency and Reasonable Maximum Exposure.
U.S. EPA, 1997: Exposure Factors Handbook. EPA/600/P-95/002Fa.
U.S. EPA, 2001: Risk Assessment Guidance for Superfund (Part E, Supplemental Guidance for Dermal Risk Assessment) Interim. EPA/540/R/99/005.

Unit Intake Calculations

Ingestion Intake = (IR-GW x EF x ED)/(BW x AT)
Dermal Intake = (SA x EV x EF x ED)/(BW x AT)

Cancer Ingestion Intake (RME) = 6.98E-07
Noncancer Ingestion Intake (RME) = 2.04E-06

Cancer Ingestion Intake (CTE) = 1.02E-07
Noncancer Ingestion Intake (CTE) = 1.02E-06

Cancer Dermal Intake (RME) = 6.33E+00
Noncancer Dermal Intake (RME) = 4.61E+00

Cancer Dermal Intake (CTE) = 9.23E-01
Noncancer Dermal Intake (CTE) = 1.54E+00

TABLE 4.20
VALUES USED FOR DAILY INTAKE CALCULATIONS
NSWC CRANE, INDIANA

Scenario Timeframe: Future
Medium: Surface Water
Exposure Medium: Surface Water
Exposure Point: SWMU 3 - Little Sulphur Creek
Receptor Population: Recreational Users
Receptor Age: Adult

Exposure Route	Parameter Code	Parameter Definition	Units	RME Value	RME Rationale/ Reference	CT Value	CT Rationale/ Reference	Intake Equation/ Model Name
Ingestion	CW	Chemical Concentration in Water	ug/L	Max or 95% UCL	U.S. EPA, 1992	Max or 95% UCL	U.S. EPA, 1992	Intake (mg/kg/day) =
	CR	Contact Rate	L/hr	0.01	U.S. EPA 4, 1995	0.01	U.S. EPA 4, 1995	$\frac{CW \times CR \times CF \times ET \times EF \times ED}{BW \times AT}$
	CF	Conversion factor	mg/ug	0.001	- -	0.001	- -	
	ET	Exposure Time	hours/event	4	(1)	2	(1)	
	EF	Exposure Frequency	events/year	52	(2)	26	(2)	
	ED	Exposure Duration	years	24	U.S. EPA, 1993	7	U.S. EPA, 1993	
	BW	Body Weight	kg	70	U.S. EPA, 1993	70	U.S. EPA, 1993	
	AT-C	Averaging Time (Cancer)	days	25,550	U.S. EPA, 1989	25,550	U.S. EPA, 1989	
	AT-N	Averaging Time (Non-Cancer)	days	8,760	U.S. EPA, 1989	2,555	U.S. EPA, 1989	
Dermal	DAevent	Absorbed dose per event	mg/cm2-event	Calculated	U.S. EPA, 2001	Calculated	U.S. EPA, 2001	Dermally Absorbed Dose (mg/kg/day)
	SA	Skin Surface Available for Contact	cm2	9,070	(3)	9,070	(3)	
	EV	Event Frequency	events/day	1	(1)	1	(1)	$\frac{DAevevt \times EV \times EF \times ED \times SA}{BW \times AT}$
	ET	Exposure Time	hours/event	4	(1)	2	(1)	
	EF	Exposure Frequency	days/year	52	(2)	26	(2)	
	ED	Exposure Duration	years	24	U.S. EPA, 1993	7	U.S. EPA, 1993	See text for calculation of DAevent.
	BW	Body Weight	kg	70	U.S. EPA, 1993	70	U.S. EPA, 1993	
	AT-C	Averaging Time (Cancer)	days	25,550	U.S. EPA, 1989	25,550	U.S. EPA, 1989	
	AT-N	Averaging Time (Non-Cancer)	days	8,760	U.S. EPA, 1989	2,555	U.S. EPA, 1989	

Notes:
1 - Professional judgement.
2 - Professional judgement; 2 days/week for the RME in warm weather months and 1 day/week in warm weather months for CTE.
3 - Assumed head, arms, hands, lower legs, and feet are exposed. U.S. EPA, 1997.

Sources:
U.S. EPA, 1989: Risk Assessment Guidance for Superfund. Vol 1: Human Health Evaluation Manual, Part A. EPA/540/1-86/060.
U.S. EPA, 1992: Supplemental Guidance to RAGS: Calculating the Concentration Term. PB92-963373.
U.S. EPA, 1993: Superfund Standard Default Exposure Factors for the Central Tendency and Reasonable Maximum Exposure.
U.S. EPA Region 4, 1995: Supplement Guidance to RAGS: Region 4 Bulletins.
U.S. EPA, 2001: Risk Assessment Guidance for Superfund (Part E, Supplemental Guidance for Dermal Risk Assessment) Interim. EPA/540/R/99/005.

Unit Intake Calculations

Ingestion Intake = (CR x CF x ET x EF x ED)/(BW x AT)
Dermal Intake = (SA x EV x EF x ED)/(BW x AT)

Cancer Ingestion Intake (RME) = 2.79E-08
Noncancer Ingestion Intake (RME) = 8.14E-08

Cancer Ingestion Intake (CTE) = 2.04E-09
Noncancer Ingestion Intake (CTE) = 2.04E-08

Cancer Dermal Intake (RME) = 2.53E+01
Noncancer Dermal Intake (RME) = 7.38E+01

Cancer Dermal Intake (CTE) = 1.85E+00
Noncancer Dermal Intake (CTE) = 1.85E+01

TABLE 4.21
VALUES USED FOR DAILY INTAKE CALCULATIONS
NSWC CRANE, INDIANA

Scenario Timeframe: Future
Medium: Sediment
Exposure Medium: Sediment
Exposure Point: SWMU 3 - Little Sulphur Creek
Receptor Population: Recreational Users
Receptor Age: Adult

Exposure Route	Parameter Code	Parameter Definition	Units	RME Value	RME Rationale/ Reference	CT Value	CT Rationale/ Reference	Intake Equation/ Model Name
Ingestion	CS	Chemical concentration in soil	mg/kg	Max or 95% UCL	U.S. EPA, 1992	Max or 95% UCL	U.S. EPA, 1992	Intake (mg/kg/day) =
	IR-S	Ingestion Rate	mg/day	100	U.S. EPA, 1993	50	U.S. EPA, 1993	
	CF3	Conversion Factor 3	kg/mg	0.000001	--	0.000001	--	$\frac{Cs \times IRS \times CF3 \times FI \times EF \times ED}{BW \times AT}$
	FI	Fraction Ingested	unitless	0.5	(1)	0.5	(1)	
	EF	Exposure Frequency	days/year	52	(2)	26	(2)	
	ED	Exposure Duration	years	24	U.S. EPA, 1993	7	U.S. EPA, 1993	
	BW	Body Weight	kg	70	U.S. EPA, 1989	70	U.S. EPA, 1989	
	AT-C	Averaging Time (Cancer)	days	25,550	U.S. EPA, 1989	25,550	U.S. EPA, 1989	
	AT-N	Averaging Time (Non-Cancer)	days	8,760	U.S. EPA, 1989	2,555	U.S. EPA, 1989	
Dermal	CS	Chemical concentration in soil	mg/kg	Max or 95% UCL	U.S. EPA, 1992	Max or 95% UCL	U.S. EPA, 1992	Dermally Absorbed Dose (mg/kg/day) =
	CF3	Conversion Factor 3	kg/mg	0.000001	--	0.000001	--	
	SA	Skin Surface Available for Contact	cm2	9,070	(3)	9,070	(3)	$\frac{Cs \times CF3 \times SA \times SSAF \times DABS \times EF \times ED}{BW \times AT}$
	SSAF	Soil to Skin Adherence Factor	mg/cm2/event	0.07	U.S. EPA, 2001	0.01	U.S. EPA, 2001	
	DABS	Absorption Factor	unitless	Chemical Specific	U.S. EPA, 1997	Chemical Specific	U.S. EPA, 1997	
	EF	Exposure Frequency	days/year	52	(2)	26	(2)	
	ED	Exposure Duration	years	24	U.S. EPA, 1993	7	U.S. EPA, 1993	
	BW	Body Weight	kg	70	U.S. EPA, 1993	70	U.S. EPA, 1993	
	AT-C	Averaging Time (Cancer)	days	25,550	U.S. EPA, 1989	25,550	U.S. EPA, 1989	
	AT-N	Averaging Time (Non-Cancer)	days	8,760	U.S. EPA, 1989	2,555	U.S. EPA, 1989	

Notes:
1 - Professional judgement.
2 - Professional judgement; 2 days/week for the RME in warm weather months and 1 day/week in warm weather months for CTE.
3 - Assumed head, arms, hands, lower legs, and feet are exposed. U.S. EPA, 1997.
Sources:
U.S. EPA, 1989: Risk Assessment Guidance for Superfund. Vol 1: Human Health Evaluation Manual, Part A. EPA/540/1-86/060.
U.S. EPA, 1992: Supplemental Guidance to RAGS: Calculating the Concentration Term. PB92-963373.
U.S. EPA, 1993: Superfund Standard Default Exposure Factors for the Central Tendency and Reasonable Maximum Exposure.
U.S. EPA, 1997: Exposure Factors Handbook. EPA/600/P-95/002Fa.
U.S. EPA, 2001: Risk Assessment Guidance for Superfund (Part E, Supplemental Guidance for Dermal Risk Assessment) Interim. EPA/540/R/99/005.

Unit Intake Calculations

Incidental Ingestion Intake = (IR-S x CF3 x FI x EF x ED)/(BW x AT)
Dermal Intake = (CF3 x SA x SSAF x EF x ED)/(BW x AT)

Cancer Ingestion Intake (RME) = 3.49E-08
Noncancer Ingestion Intake (RME) = 1.02E-07

Cancer Ingestion Intake (CTE) = 2.54E-09
Noncancer Ingestion Intake (CTE) = 2.54E-08

Cancer Dermal Intake (RME) = 4.43E-07
Noncancer Dermal Intake (RME) = 1.29E-06

Cancer Dermal Intake (CTE) = 9.23E-09
Noncancer Dermal Intake (CTE) = 9.23E-08

TABLE 4.22
VALUES USED FOR DAILY INTAKE CALCULATIONS
NSWC CRANE, INDIANA

Scenario Timeframe: Future
Medium: Surface Soil
Exposure Medium: Surface Soil
Exposure Point: SWMU 3 - 6-Acre Exposure Unit
Receptor Population: On-Site Resident
Receptor Age: Child

Exposure Route	Parameter Code	Parameter Definition	Units	RME Value	RME Rationale/ Reference	CT Value	CT Rationale/ Reference	Intake Equation/ Model Name
Ingestion	CS	Chemical concentration in soil	mg/kg	Max or 95% UCL	U.S. EPA, 1992	Max or 95% UCL	U.S. EPA, 1992	Intake (mg/kg/day) =
	IR-S	Ingestion Rate	mg/day	200	U.S. EPA, 1993	100	U.S. EPA, 1993	
	CF3	Conversion Factor 3	kg/mg	1.0E-06	--	1.0E-06	--	
	FI	Fraction Ingested	unitless	1	U.S. EPA, 1993	1	U.S. EPA, 1993	$\frac{Cs \times IRS \times CF3 \times FI \times EF \times ED}{BW \times AT}$
	EF	Exposure Frequency	days/year	350	U.S. EPA, 1993	234	U.S. EPA, 1993	
	ED	Exposure Duration	years	6	U.S. EPA, 1993	2	U.S. EPA, 1993	
	BW	Body Weight	kg	15	U.S. EPA, 1993	15	U.S. EPA, 1993	
	AT-C	Averaging Time (Cancer)	days	25550	U.S. EPA, 1989	25550	U.S. EPA, 1989	
	AT-N	Averaging Time (Non-Cancer)	days	2190	U.S. EPA, 1989	730	U.S. EPA, 1989	
Dermal	CS	Chemical concentration in soil	mg/kg	Max or 95% UCL	U.S. EPA, 1992	Max or 95% UCL	U.S. EPA, 1992	Dermally Absorbed Dose (mg/kg/day) =
	CF3	Conversion Factor 3	kg/mg	1.0E-06	--	1.0E-06	--	
	SA	Skin Surface Available for Contact	cm2	2800	U.S. EPA, 2001	2800	U.S. EPA, 2001	
	SSAF	Soil to Skin Adherence Factor	mg/cm2/event	0.2	U.S. EPA, 2001	0.04	U.S. EPA, 2001	
	DABS	Absorption Factor	unitless	Chemical Specific	U.S. EPA, 2001	Chemical Specific	U.S. EPA, 2001	$\frac{Cs \times CF3 \times SA \times SSAF \times DABS \times EF \times ED}{BW \times AT}$
	EF	Exposure Frequency	days/year	350	U.S. EPA, 1993	234	U.S. EPA, 1993	
	ED	Exposure Duration	years	6	U.S. EPA, 1993	2	U.S. EPA, 1991	
	BW	Body Weight	kg	15	U.S. EPA, 1993	15	U.S. EPA, 1993	
	AT-C	Averaging Time (Cancer)	days	25550	U.S. EPA, 1989	25550	U.S. EPA, 1989	
	AT-N	Averaging Time (Non-Cancer)	days	2190	U.S. EPA, 1989	730	U.S. EPA, 1989	

Notes:
U.S. EPA, 1989: Risk Assessment Guidance for Superfund. Vol 1: Human Health Evaluation Manual, Part A. EPA/540/1-86/060.
U.S. EPA, 1991: Risk Assessment Guidance for Superfund - Supplemental Guidance- Standard Default Exposure Factors Interim Final.
U.S. EPA, 1992: Supplemental Guidance to RAGS: Calculating the Concentration Term. PB92-963373.
U.S. EPA, 1993: Superfund Standard Default Exposure Factors for the Central Tendency and Reasonable Maximum Exposure.
U.S. EPA, 1997: Exposure Factors Handbook. EPA/600/8-95/002FA.
U.S. EPA, 2001: Risk Assessment Guidance for Superfund (Part E, Supplemental Guidance for Dermal Risk Assessment) Interim. EPA/540/R/99/005.

Unit Intake Calculations

Incidental Ingestion Intake = (IR-S x CF3 x FI x EF x ED)/(BW x AT)
Dermal Intake = (CF3 x SA x SSAF x EF x ED)/(BW x AT)

Cancer Ingestion Intake (RME) = 1.10E-06
Noncancer Ingestion Intake (RME) = 1.28E-05

Cancer Ingestion Intake (RME) = 1.22E-07
Noncancer Ingestion Intake (RME) = 4.27E-06

Cancer Dermal Intake (RME) = 3.07E-06
Noncancer Dermal Intake (RME) = 3.58E-05

Cancer Dermal Intake (CTE) = 1.37E-07
Noncancer Dermal Intake (CTE) = 4.79E-06

TABLE 4.23
VALUES USED FOR DAILY INTAKE CALCULATIONS
NSWC CRANE, INDIANA

Scenario Timeframe: Future
Medium: Ground Water
Exposure Medium: Ground Water
Exposure Point: SWMU 3 - Shallow Ground Water
Receptor Population: On-Site Resident
Receptor Age: Child

Exposure Route	Parameter Code	Parameter Definition	Units	RME Value	RME Rationale/ Reference	CT Value	CT Rationale/ Reference	Intake Equation/ Model Name
Ingestion	CGW	Chemical Concentration in Ground Water	ug/L	Average	--	Average	--	Chronic Daily Intake (CDI) (mg/kg/day) =
	CF	Conversion Factor	mg/ug	0.001	--	0.001	--	
	IR-GW	Ingestion Rate of Ground Water	L/day	1.5	U.S. EPA, 1997	0.66	U.S. EPA, 1997	$\frac{CW \times CF \times IRGW \times EF \times ED}{BW \times AT}$
	EF	Exposure Frequency	days/year	350	U.S. EPA, 1993	234	U.S. EPA, 1993	
	ED	Exposure Duration	years	6	U.S. EPA, 1993	2	U.S. EPA, 1993	
	BW	Body Weight	kg	15	U.S. EPA, 1993	15	U.S. EPA, 1993	
	AT-C	Averaging Time (Cancer)	days	25550	U.S. EPA, 1989	25550	U.S. EPA, 1989	
	AT-N	Averaging Time (Non-Cancer)	days	2190	U.S. EPA, 1989	730	U.S. EPA, 1989	
Dermal	DAevent	Absorbed dose per event	mg/cm2-event	Calculated	U.S. EPA, 2001	Calculated	U.S. EPA, 2001	Dermally Absorbed Dose (mg/kg/day)
	SA	Skin Surface Available for Contact	cm2	6600	U.S. EPA, 2001	6600	U.S. EPA, 2001	
	EV	Event Frequency	events/day	1	U.S. EPA, 2001	1	U.S. EPA, 2001	$\frac{DAevent \times EV \times EF \times ED \times SA}{BW \times AT}$
	ET	Exposure Time	hours/day	0.25	U.S. EPA, 1997	0.167	U.S. EPA, 1997	
	EF	Exposure Frequency	days/year	350	U.S. EPA, 1993	234	U.S. EPA, 1993	
	ED	Exposure Duration	years	6	U.S. EPA, 1993	2	U.S. EPA, 1993	See text for calculation of DAevent.
	BW	Body Weight	kg	15	U.S. EPA, 1993	15	U.S. EPA, 1993	
	AT-C	Averaging Time (Cancer)	days	25550	U.S. EPA, 1989	25550	U.S. EPA, 1989	
	AT-N	Averaging Time (Non-Cancer)	days	2190	U.S. EPA, 1989	730	U.S. EPA, 1989	

Notes:
U.S. EPA, 1989: Risk Assessment Guidance for Superfund. Vol 1: Human Health Evaluation Manual, Part A. EPA/540/1-86/060.
U.S. EPA, 1993: Superfund Standard Default Exposure Factors for the Central Tendency and Reasonable Maximum Exposure.
U.S. EPA, 1997: Exposure Factors Handbook. EPA/600/P-95/002Fa
U.S. EPA, 2001: Risk Assessment Guidance for Superfund (Part E, Supplemental Guidance for Dermal Risk Assessment) Interim. EPA/540/R/99/005.

Unit Intake Calculations

Ingestion Intake = (IR-GW x EF x ED)/(BW x AT)
Dermal Intake = (SA x EV x EF x ED)/(BW x AT)

Cancer Ingestion Intake (RME) = 8.22E-06
Noncancer Ingestion Intake (RME) = 9.59E-05

Cancer Ingestion Intake (CTE) = 8.06E-07
Noncancer Ingestion Intake (CTE) = 2.82E-05

Cancer Dermal Intake (RME) = 3.62E+01
Noncancer Dermal Intake (RME) = 1.05E+02

Cancer Dermal Intake (CTE) = 8.06E+00
Noncancer Dermal Intake (CTE) = 4.71E+01

TABLE 4.24

VALUES USED FOR DAILY INTAKE CALCULATIONS

NSWC CRANE, INDIANA

Scenario Timeframe: Future
Medium: Ground Water
Exposure Medium: Air
Exposure Point: SWMU 3 - Shallow Ground Water
Receptor Population: On-Site Resident
Receptor Age: Child

Exposure Route	Parameter Code	Parameter Definition	Units	RME Value	RME Rationale/ Reference	CTE Value	CTE Rationale/ Reference	Intake Equation/ Model Name
Inhalation	S	Volatile Chemical Generation Rate	mg/m3-min shower	Derived	Foster&Chrostowski 1987	Derived	Foster & Chrostowski 1987	Chronic Daily Intake (CDI) (mg/kg-day)=
	IRsh	Inhalation Rate of volatiles in shower	m3/hr	0.6	U.S. EPA, 1991	0.6	U.S. EPA, 1991	
	EF	Exposure Frequency	days/year	350	U.S. EPA, 1993	234	U.S. EPA, 1993	S x IRsh x K x EF x ED / BW x AT x Ra x CF
	K	Masss Transfer Coefficient	min	Derived	Foster&Chrostowski 1987	Derived	Foster&Chrostowski 1987	
	ED	Exposure Duration	years	6	U.S. EPA, 1993	2	U.S. EPA, 1993	
	BW	Body Weight	kg	15	U.S. EPA, 1993	15	U.S. EPA, 1993	K = Ds + exp(-Ra x Dt)/Ra - [exp(Ra) x (Ds-Dt)]/Ra
	Ra	Air Exchange Rate	min-1	0.017	Foster&Chrostowski 1987	0.017	Foster&Chrostowski 1987	
	CF	Conversion Factor	min/hr	60		60		
	Ds	Shower Duration	min	15	U.S. EPA, 2001	10	U.S. EPA, 2001	
	Dt	Total Time in Bathroom	min	20	Professional judgement	15	Professional Judgement	
	AT-C	Averaging Time (Cancer)	days	25550	U.S. EPA, 1989	25550	U.S. EPA, 1989	
	AT-N	Averaging Time (Noncancer)	days	2190	U.S. EPA, 1989	730	U.S. EPA, 1989	

Sources

U.S. EPA, 1989: Risk Assessment Guidance for Superfund. Vol 1: Human Health Evaluation Manual, Part A. EPA/540/1-86/060.

U.S. EPA, 1991: Risk Assessment Guidance for Superfund - Supplemental Guidance- Standard Default Exposure Factors Interim Final.

U.S. EPA, 1993: Superfund Standard Default Exposure Factors for the Central Tendency and Reasonable Maximum Exposure.

U.S. EPA, 2001: Risk Assessment Guidance for Superfund (Part E, Supplemental Guidance for Dermal Risk Assessment) Interim. EPA/540/R/99/005.

Foster, S.A. and P.C. Chrostowski, 1987. Inhalation Exposure to Volatile Organic Contaminants in the Shower.

Unit Intake Calculations

Inhalation Intake = (S x IRsh x K x EF x ED)/(BW x AT x Ra x CF)

Cancer Inhalation Intake (RME) = 5.48E-05

Noncancer Inhalation Intake (RME) = 6.39E-04

Cancer Inhalation Intake (CTE) = 1.22E-05

Noncancer Inhalation Intake (CTE) = 4.27E-04

TABLE 4.25
VALUES USED FOR DAILY INTAKE CALCULATIONS
NSWC CRANE, INDIANA

Scenario Timeframe: Future
Medium: Surface Water
Exposure Medium: Surface Water
Exposure Point: SWMU 3 - Little Sulphur Creek
Receptor Population: On-Site Resident
Receptor Age: Child

Exposure Route	Parameter Code	Parameter Definition	Units	RME Value	RME Rationale/ Reference	CT Value	CT Rationale/ Reference	Intake Equation/ Model Name
Ingestion	CSW	Chemical Concentration in Surface Water	ug/L	Average	--	Average	--	Chronic Daily Intake (CDI) (mg/kg/day) =
	CF	Conversion Factor	mg/ug	0.001	--	0.001	--	
	IR-SW	Ingestion Rate of Surface Water	L/day	1.5	U.S. EPA, 1997	0.66	U.S. EPA, 1997	$\frac{CSW \times CF \times IR\text{-}SW \times EF \times ED}{BW \times AT}$
	EF	Exposure Frequency	days/year	350	U.S. EPA, 1993	234	U.S. EPA, 1993	
	ED	Exposure Duration	years	6	U.S. EPA, 1993	2	U.S. EPA, 1993	
	BW	Body Weight	kg	15	U.S. EPA, 1993	15	U.S. EPA, 1993	
	AT-C	Averaging Time (Cancer)	days	25,550	U.S. EPA, 1989	25,550	U.S. EPA, 1989	
	AT-N	Averaging Time (Non-Cancer)	days	2,190	U.S. EPA, 1989	730	U.S. EPA, 1989	
Dermal	DAevent	Absorbed dose per event	mg/cm2-event	Calculated	U.S. EPA, 2001	Calculated	U.S. EPA, 2001	Dermally Absorbed Dose (mg/kg/day)
	SA	Skin Surface Available for Contact	cm2	6,600	U.S. EPA, 2001	6,600	U.S. EPA, 2001	
	EV	Event Frequency	events/day	1	U.S. EPA, 2001	1	U.S. EPA, 2001	$\frac{DAevent \times EV \times EF \times ED \times SA}{BW \times AT}$
	ET	Exposure Time	hours/day	0.25	U.S. EPA, 1997	0.167	U.S. EPA, 1997	
	EF	Exposure Frequency	days/year	350	U.S. EPA, 1993	234	U.S. EPA, 1993	
	ED	Exposure Duration	years	6	U.S. EPA, 1993	2	U.S. EPA, 1993	See text for calculation of DAevent.
	BW	Body Weight	kg	15	U.S. EPA, 1993	15	U.S. EPA, 1993	
	AT-C	Averaging Time (Cancer)	days	25,550	U.S. EPA, 1989	25,550	U.S. EPA, 1989	
	AT-N	Averaging Time (Non-Cancer)	days	2,190	U.S. EPA, 1989	730	U.S. EPA, 1989	

Notes:
U.S. EPA, 1989: Risk Assessment Guidance for Superfund. Vol 1: Human Health Evaluation Manual, Part A. EPA/540/1-86/060.
U.S. EPA, 1993: Superfund Standard Default Exposure Factors for the Central Tendency and Reasonable Maximum Exposure.
U.S. EPA, 1997: Exposure Factors Handbook. EPA/600/P-95/002Fa
U.S. EPA, 2001: Risk Assessment Guidance for Superfund (Part E, Supplemental Guidance for Dermal Risk Assessment) Interim. EPA/540/R/99/005.

Unit Intake Calculations

Ingestion Intake = (IR-SW x EF x ED)/(BW x AT)
Dermal Intake = (SA x EV x EF x ED)/(BW x AT)

Cancer Ingestion Intake (RME) = 8.22E-06
Noncancer Ingestion Intake (RME) = 9.59E-05

Cancer Ingestion Intake (CTE) = 8.06E-07
Noncancer Ingestion Intake (CTE) = 2.82E-05

Cancer Dermal Intake (RME) = 3.62E+01
Noncancer Dermal Intake (RME) = 1.05E+02

Cancer Dermal Intake (CTE) = 8.06E+00
Noncancer Dermal Intake (CTE) = 4.71E+01

TABLE 4.26

VALUES USED FOR DAILY INTAKE CALCULATIONS

NSWC CRANE, INDIANA

Scenario Timeframe: Future
Medium: Surface Water
Exposure Medium: Air
Exposure Point: SWMU 3 - Little Sulphur Creek
Receptor Population: On-Site Resident
Receptor Age: Child

Exposure Route	Parameter Code	Parameter Definition	Units	RME Value	RME Rationale/ Reference	CTE Value	CTE Rationale/ Reference	Intake Equation/ Model Name
Inhalation	S	Volatile Chemical Generation Rate	mg/m3-min shower	Derived	Foster&Chrostowski 1987	Derived	Foster & Chrostowski 1987	Chronic Daily Intake (CDI) (mg/kg-day)=
	IRsh	Inhalation Rate of volatiles in shower	m3/hr	0.6	U.S. EPA, 1991	0.6	U.S. EPA, 1991	
	EF	Exposure Frequency	days/year	350	U.S. EPA, 1993	234	U.S. EPA, 1993	S x IRsh x K x EF x ED / BW x AT x Ra x CF
	K	Masss Transfer Coefficient	min	Derived	Foster&Chrostowski 1987	Derived	Foster&Chrostowski 1987	
	ED	Exposure Duration	years	6	U.S. EPA, 1993	2	U.S. EPA, 1993	
	BW	Body Weight	kg	15	U.S. EPA, 1993	15	U.S. EPA, 1993	K = Ds + exp(-Ra x Dt)/Ra - [exp(Ra) x (Ds-Dt)]/Ra
	Ra	Air Exchange Rate	min-1	0.0167	Foster&Chrostowski 1987	0.0167	Foster&Chrostowski 1987	
	CF	Conversion Factor	min/hr	60		60		
	Ds	Shower Duration	min	15	U.S. EPA, 2001	10	U.S. EPA, 2001	
	Dt	Total Time in Bathroom	min	20	Professional judgement	15	Professional Judgement	
	AT-C	Averaging Time (Cancer)	days	25550	U.S. EPA, 1989	25550	U.S. EPA, 1989	
	AT-N	Averaging Time (Noncancer)	days	2190	U.S. EPA, 1989	730	U.S. EPA, 1989	

Sources

U.S. EPA, 1989: Risk Assessment Guidance for Superfund. Vol 1: Human Health Evaluation Manual, Part A. EPA/540/1-86/060.
U.S. EPA, 1991: Risk Assessment Guidance for Superfund - Supplemental Guidance- Standard Default Exposure Factors Interim Final.
U.S. EPA, 1993: Superfund Standard Default Exposure Factors for the Central Tendency and Reasonable Maximum Exposure.
U.S. EPA, 2001: Risk Assessment Guidance for Superfund (Part E, Supplemental Guidance for Dermal Risk Assessment) Interim. EPA/540/R/99/005.
Foster, S.A. and P.C. Chrostowski, 1987. Inhalation Exposure to Volatile Organic Contaminants in the Shower.

Unit Intake Calculations

Inhalation Intake = (S x IRsh x K x EF x ED)/(BW x AT x Ra x CF)

Cancer Inhalation Intake (RME) = 5.48E-05

Noncancer Inhalation Intake (RME) = 6.39E-04

Cancer Inhalation Intake (CTE) = 1.22E-05

Noncancer Inhalation Intake (CTE) = 4.27E-04

TABLE 4.27
VALUES USED FOR DAILY INTAKE CALCULATIONS
NSWC CRANE, INDIANA

Scenario Timeframe: Future
Medium: Sediment
Exposure Medium: Sediment
Exposure Point: SWMU 3 - Little Sulphur Creek
Receptor Population: On-Site Resident
Receptor Age: Child

Exposure Route	Parameter Code	Parameter Definition	Units	RME Value	RME Rationale/ Reference	CT Value	CT Rationale/ Reference	Intake Equation/ Model Name
Ingestion	CS	Chemical concentration in soil	mg/kg	Max or 95% UCL	U.S. EPA, 1992	Max or 95% UCL	U.S. EPA, 1992	Intake (mg/kg/day) =
	IR-S	Ingestion Rate	mg/day	100	(1)	50	(1)	
	CF3	Conversion Factor 3	kg/mg	0.000001	--	0.000001	--	$\frac{Cs \times IRS \times CF3 \times FI \times EF \times ED}{BW \times AT}$
	FI	Fraction Ingested	unitless	1	U.S. EPA, 1993	1	U.S. EPA, 1993	
	EF	Exposure Frequency	days/year	52	(2)	26	(2)	
	ED	Exposure Duration	years	6	U.S. EPA, 1993	2	U.S. EPA, 1993	
	BW	Body Weight	kg	15	U.S. EPA, 1993	15	U.S. EPA, 1993	
	AT-C	Averaging Time (Cancer)	days	25550	U.S. EPA, 1989	25550	U.S. EPA, 1989	
	AT-N	Averaging Time (Non-Cancer)	days	2190	U.S. EPA, 1989	730	U.S. EPA, 1989	
Dermal	CS	Chemical concentration in soil	mg/kg	Max or 95% UCL	U.S. EPA, 1992	Max or 95% UCL	U.S. EPA, 1992	Dermally Absorbed Dose (mg/kg/day) =
	CF3	Conversion Factor 3	kg/mg	0.000001	--	0.000001	--	
	SA	Skin Surface Available for Contact	cm2	2800	U.S. EPA, 2001	2800	U.S. EPA, 2001	$\frac{Cs \times CF3 \times SA \times SSAF \times DABS \times EF \times ED}{BW \times AT}$
	SSAF	Soil to Skin Adherence Factor	mg/cm2/event	0.2	U.S. EPA, 2001	0.04	U.S. EPA, 2001	
	DABS	Absorption Factor	unitless	Chemical Specific	U.S. EPA, 2001	Chemical Specific	U.S. EPA, 2001	
	EF	Exposure Frequency	days/year	52	(2)	26	(2)	
	ED	Exposure Duration	years	6	U.S. EPA, 1993	2	U.S. EPA, 1991	
	BW	Body Weight	kg	15	U.S. EPA, 1993	15	U.S. EPA, 1993	
	AT-C	Averaging Time (Cancer)	days	25550	U.S. EPA, 1989	25550	U.S. EPA, 1989	
	AT-N	Averaging Time (Non-Cancer)	days	2190	U.S. EPA, 1989	730	U.S. EPA, 1989	

Notes:
1 - Professional judgement.
2 - Professional judgement; 2 days/week for the RME in warm weather months and 1 day/week in warm weather months for CTE.
U.S. EPA, 1989: Risk Assessment Guidance for Superfund. Vol 1: Human Health Evaluation Manual, Part A. EPA/540/1-86/060.
U.S. EPA, 1991: Risk Assessment Guidance for Superfund - Supplemental Guidance- Standard Default Exposure Factors Interim Final.
U.S. EPA, 1992: Supplemental Guidance to RAGS: Calculating the Concentration Term. PB92-963373.
U.S. EPA, 1993: Superfund Standard Default Exposure Factors for the Central Tendency and Reasonable Maximum Exposure.
U.S. EPA, 2001: Risk Assessment Guidance for Superfund (Part E, Supplemental Guidance for Dermal Risk Assessment) Interim. EPA/540/R/99/005.

Unit Intake Calculations

Incidental Ingestion Intake = (IR-S x CF3 x FI x EF x ED)/(BW x AT)
Dermal Intake = (CF3 x SA x SSAF x EF x ED)/(BW x AT)

Cancer Ingestion Intake (RME) = 8.14E-08
Noncancer Ingestion Intake (RME) = 9.50E-07

Cancer Ingestion Intake (CTE) = 6.78E-09
Noncancer Ingestion Intake (CTE) = 2.37E-07

Cancer Dermal Intake (RME) = 4.56E-07
Noncancer Dermal Intake (RME) = 5.32E-06

Cancer Dermal Intake (CTE) = 1.52E-08
Noncancer Dermal Intake (CTE) = 5.32E-07

TABLE 4.28
VALUES USED FOR DAILY INTAKE CALCULATIONS
NSWC CRANE, INDIANA

Scenario Timeframe: Future
Medium: Surface Soil
Exposure Medium: Surface Soil
Exposure Point: SWMU 3 - 6-Acre Exposure Unit
Receptor Population: On-Site Resident
Receptor Age: Adult

Exposure Route	Parameter Code	Parameter Definition	Units	RME Value	RME Rationale/ Reference	CT Value	CT Rationale/ Reference	Intake Equation/ Model Name
Ingestion	CS	Chemical concentration in soil	mg/kg	Max or 95% UCL	U.S. EPA, 1992	Max or 95% UCL	U.S. EPA, 1992	Intake (mg/kg/day) =
	IR-S	Ingestion Rate	mg/day	100	U.S. EPA, 1993	50	U.S. EPA, 1993	
	CF3	Conversion Factor 3	kg/mg	1.0E-06	--	1.0E-06	--	
	FI	Fraction Ingested	unitless	1	U.S. EPA, 1993	1	U.S. EPA, 1993	$\frac{Cs \times IRS \times CF3 \times FI \times EF \times ED}{BW \times AT}$
	EF	Exposure Frequency	days/year	350	U.S. EPA, 1993	234	U.S. EPA, 1993	
	ED	Exposure Duration	years	24	U.S. EPA, 1993	7	U.S. EPA, 1993	
	BW	Body Weight	kg	70	U.S. EPA, 1993	70	U.S. EPA, 1993	
	AT-C	Averaging Time (Cancer)	days	25550	U.S. EPA, 1989	25550	U.S. EPA, 1989	
	AT-N	Averaging Time (Non-Cancer)	days	8760	U.S. EPA, 1989	2555	U.S. EPA, 1989	
Dermal	CS	Chemical concentration in soil	mg/kg	Max or 95% UCL	U.S. EPA, 1992	Max or 95% UCL	U.S. EPA, 1992	Dermally Absorbed Dose (mg/kg/day) =
	CF3	Conversion Factor 3	kg/mg	1.0E-06	--	1.0E-06	--	
	SA	Skin Surface Available for Contact	cm2	5700	U.S. EPA, 2001	5700	U.S. EPA, 2001	
	SSAF	Soil to Skin Adherence Factor	mg/cm2/event	0.07	U.S. EPA, 2001	0.01	U.S. EPA, 2001	
	DABS	Absorption Factor	unitless	Chemical Specific	U.S. EPA, 2001	Chemical Specific	U.S. EPA, 2001	$\frac{Cs \times CF3 \times SA \times SSAF \times DABS \times EF \times ED}{BW \times AT}$
	EF	Exposure Frequency	days/year	350	U.S. EPA, 1993	234	U.S. EPA, 1993	
	ED	Exposure Duration	years	24	U.S. EPA, 1993	7	U.S. EPA, 1993	
	BW	Body Weight	kg	70	U.S. EPA, 1993	70	U.S. EPA, 1993	
	AT-C	Averaging Time (Cancer)	days	25550	U.S. EPA, 1989	25550	U.S. EPA, 1989	
	AT-N	Averaging Time (Non-Cancer)	days	8760	U.S. EPA, 1989	2555	U.S. EPA, 1989	

Notes:
U.S. EPA, 1989: Risk Assessment Guidance for Superfund. Vol 1: Human Health Evaluation Manual, Part A.
U.S. EPA, 1991: Risk Assessment Guidance for Superfund - Supplemental Guidance- Standard Default Exposure Factors Interim Final.
U.S. EPA, 1992: Supplemental Guidance to RAGS: Calculating the Concentration Term. PB92-963373.
U.S. EPA, 1993: Superfund Standard Default Exposure Factors for the Central Tendency and Reasonable Maximum Exposure.
U.S. EPA, 1997: Exposure Factors Handbook. EPA/600/P-95/002Fa
U.S. EPA, 2001: Risk Assessment Guidance for Superfund (Part E, Supplemental Guidance for Dermal Risk Assessment) Interim. EPA/540/R/99/005.

Unit Intake Calculations

Incidental Ingestion Intake = (IR-S x CF3 x FI x EF x ED)/(BW x AT)
Dermal Intake = (CF3 x SA x SSAF x EF x ED)/(BW x AT)

Cancer Ingestion Intake (RME) = 4.70E-07
Noncancer Ingestion Intake (RME) = 1.37E-06

Cancer Ingestion Intake (RME) = 4.58E-08
Noncancer Ingestion Intake (RME) = 4.58E-07

Cancer Dermal Intake (RME) = 1.87E-06
Noncancer Dermal Intake (RME) = 5.47E-06

Cancer Dermal Intake (CTE) = 5.22E-08
Noncancer Dermal Intake (CTE) = 5.22E-07

TABLE 4.29
VALUES USED FOR DAILY INTAKE CALCULATIONS
NSWC CRANE, INDIANA

Scenario Timeframe: Future
Medium: Ground Water
Exposure Medium: Ground Water
Exposure Point: SWMU 3 - Shallow Ground Water
Receptor Population: On-Site Resident
Receptor Age: Adult

Exposure Route	Parameter Code	Parameter Definition	Units	RME Value	RME Rationale/ Reference	CT Value	CT Rationale/ Reference	Intake Equation/ Model Name
Ingestion	CGW	Chemical Concentration in Ground Water	ug/L	Average	--	Average	--	Chronic Daily Intake (CDI) (mg/kg/day) =
	CF	Conversion Factor	mg/ug	0.001	--	0.001	--	
	IR-GW	Ingestion Rate of Ground Water	L/day	2	U.S. EPA, 1993	1.4	U.S. EPA, 1993	$\frac{CW \times CF \times IRGW \times EF \times ED}{BW \times AT}$
	EF	Exposure Frequency	days/year	350	U.S. EPA, 1993	234	U.S. EPA, 1993	
	ED	Exposure Duration	years	24	U.S. EPA, 1993	7	U.S. EPA, 1993	
	BW	Body Weight	kg	70	U.S. EPA, 1993	70	U.S. EPA, 1993	
	AT-C	Averaging Time (Cancer)	days	25550	U.S. EPA, 1989	25550	U.S. EPA, 1989	
	AT-N	Averaging Time (Non-Cancer)	days	8760	U.S. EPA, 1989	2555	U.S. EPA, 1989	
Dermal	DAevent	Absorbed dose per event	mg/cm2-event	Calculated	U.S. EPA, 2001	Calculated	U.S. EPA, 2001	Dermally Absorbed Dose (mg/kg/day)
	SA	Skin Surface Available for Contact	cm2	18000	U.S. EPA, 2001	18000	U.S. EPA, 2001	
	EV	Event Frequency	events/day	1	U.S. EPA, 1992	1	U.S. EPA, 1992	$\frac{DAevent \times EV \times EF \times ED \times SA}{BW \times AT}$
	ET	Exposure Time	hours/day	0.25	U.S. EPA, 1997	0.167	U.S. EPA, 1997	
	EF	Exposure Frequency	days/year	350	U.S. EPA, 1993	234	U.S. EPA, 1993	
	ED	Exposure Duration	years	24	U.S. EPA, 1993	7	U.S. EPA, 1993	See text for calculation of DAevent.
	BW	Body Weight	kg	70	U.S. EPA, 1993	70	U.S. EPA, 1993	
	AT-C	Averaging Time (Cancer)	days	25550	U.S. EPA, 1989	25550	U.S. EPA, 1989	
	AT-N	Averaging Time (Non-Cancer)	days	8760	U.S. EPA, 1989	2555	U.S. EPA, 1989	

Notes:
U.S. EPA, 1989: Risk Assessment Guidance for Superfund. Vol 1: Human Health Evaluation Manual, Part A. EPA/540/1-86/060.
U.S. EPA, 1992: Supplemental Guidance to RAGS: Calculating the Concentration Term. PB92-963373.
U.S. EPA, 1993: Superfund Standard Default Exposure Factors for the Central Tendency and Reasonable Maximum Exposure.
U.S. EPA, 1997: Exposure Factors Handbook. EPA/600/P-95/002Fa
U.S. EPA, 2001: Risk Assessment Guidance for Superfund (Part E, Supplemental Guidance for Dermal Risk Assessment) Interim. EPA/540/R/99/005.

Unit Intake Calculations

Ingestion Intake = (IR-GW x EF x ED)/(BW x AT)
Dermal Intake = (SA x EV x EF x ED)/(BW x AT)

Cancer Ingestion Intake (RME) = 9.39E-06
Noncancer Ingestion Intake (RME) = 2.74E-05

Cancer Ingestion Intake (CTE) = 1.28E-06
Noncancer Ingestion Intake (CTE) = 1.28E-05

Cancer Dermal Intake (RME) = 8.45E+01
Noncancer Dermal Intake (RME) = 6.16E+01

Cancer Dermal Intake (CTE) = 1.65E+01
Noncancer Dermal Intake (CTE) = 2.75E+01

TABLE 4.30

VALUES USED FOR DAILY INTAKE CALCULATIONS

NSWC CRANE, INDIANA

Scenario Timeframe: Future
Medium: Ground Water
Exposure Medium: Air
Exposure Point: SWMU 3 - Shallow Ground Water
Receptor Population: On-Site Resident
Receptor Age: Adult

Exposure Route	Parameter Code	Parameter Definition	Units	RME Value	RME Rationale/ Reference	CTE Value	CTE Rationale/ Reference	Intake Equation/ Model Name
Inhalation	S	Volatile Chemical Generation Rate	mg/m3-min shower	Derived	Foster&Chrostowski 1987	Derived	Foster & Chrostowski 1987	Chronic Daily Intake (CDI) (mg/kg-day)=
	IRsh	Inhalation Rate of volatiles in shower	m3/hr	0.6	U.S. EPA 1991	0.6	U.S. EPA 1991	S x IRsh x K x EF x ED / BW x AT x Ra x CF
	EF	Exposure Frequency	days/year	350	U.S. EPA 1993	234	U.S. EPA 1993	
	K	Masss Transfer Coefficient	min	Derived	Foster&Chrostowski 1987	Derived	Foster&Chrostowski 1987	K = Ds + exp(-Ra x Dt)/Ra - [exp(Ra) x (Ds-Dt)]/Ra
	ED	Exposure Duration	years	24	U.S. EPA 1993	7	U.S. EPA 1993	
	BW	Body Weight	kg	70	U.S. EPA 1993	70	U.S. EPA 1993	
	Ra	Air Exchange Rate	min-1	0.017	Foster&Chrostowski 1987	0.017	Foster&Chrostowski 1987	
	CF	Conversion Factor	min/hr	60	0	60	0	
	Ds	Shower Duration	min	15	U.S. EPA 2001	10	U.S. EPA 2001	
	Dt	Total Time in Bathroom	min	20	Professional judgement	15	Professional Judgement	
	AT-C	Averaging Time (Cancer)	days	25550	U.S. EPA 1989	25550	U.S. EPA 1989	
	AT-N	Averaging Time (Noncancer)	days	8760	U.S. EPA 1989	2555	U.S. EPA 1989	

Sources

U.S. EPA, 1989: Risk Assessment Guidance for Superfund. Vol 1: Human Health Evaluation Manual, Part A. EPA/540/1-86/060.

U.S. EPA, 1991: Risk Assessment Guidance for Superfund - Supplemental Guidance- Standard Default Exposure Factors Interim Final.

U.S. EPA, 1993: Superfund Standard Default Exposure Factors for the Central Tendency and Reasonable Maximum Exposure.

U.S. EPA, 2001: Risk Assessment Guidance for Superfund (Part E, Supplemental Guidance for Dermal Risk Assessment) Interim. EPA/540/R/99/005.

Foster, S.A. and P.C. Chrostowski, 1987. Inhalation Exposure to Volatile Organic Contaminants in the Shower.

Unit Intake Calculations

Inhalation Intake = (S x IRsh x K x EF x ED)/(BW x AT x Ra x CF)

Cancer Inhalation Intake (RME) = 4.70E-05

Noncancer Inhalation Intake (RME) = 1.37E-04

Cancer Inhalation Intake (CTE) = 9.16E-06

Noncancer Inhalation Intake (CTE) = 9.16E-05

TABLE 4.31
VALUES USED FOR DAILY INTAKE CALCULATIONS
NSWC CRANE, INDIANA

Scenario Timeframe: Future
Medium: Surface Water
Exposure Medium: Surface Water
Exposure Point: SWMU 3 - Little Sulphur Creek
Receptor Population: On-Site Resident
Receptor Age: Adult

Exposure Route	Parameter Code	Parameter Definition	Units	RME Value	RME Rationale/ Reference	CT Value	CT Rationale/ Reference	Intake Equation/ Model Name
Ingestion	CSW	Chemical Concentration in Surface Water	ug/L	Average	--	Average	--	Chronic Daily Intake (CDI) (mg/kg/day) =
	CF	Conversion Factor	mg/ug	0.001	--	0.001	--	
	IR-SW	Ingestion Rate of Surface Water	L/day	2	U.S. EPA, 1993	1.4	U.S. EPA, 1993	$\frac{CSW \times CF \times IR\text{-}SW \times EF \times ED}{BW \times AT}$
	EF	Exposure Frequency	days/year	350	U.S. EPA, 1993	234	U.S. EPA, 1993	
	ED	Exposure Duration	years	24	U.S. EPA, 1993	7	U.S. EPA, 1993	
	BW	Body Weight	kg	70	U.S. EPA, 1993	70	U.S. EPA, 1993	
	AT-C	Averaging Time (Cancer)	days	25,550	U.S. EPA, 1989	25,550	U.S. EPA, 1989	
	AT-N	Averaging Time (Non-Cancer)	days	8,760	U.S. EPA, 1989	2,555	U.S. EPA, 1989	
Dermal	DAevent	Absorbed dose per event	mg/cm2-event	Calculated	U.S. EPA, 2001	Calculated	U.S. EPA, 2001	Dermally Absorbed Dose (mg/kg/day)
	SA	Skin Surface Available for Contact	cm2	18,000	U.S. EPA, 2001	18,000	U.S. EPA, 2001	
	EV	Event Frequency	events/day	1	U.S. EPA, 1992	1	U.S. EPA, 1992	$\frac{DAevent \times EV \times EF \times ED \times SA}{BW \times AT}$
	ET	Exposure Time	hours/day	0.25	U.S. EPA, 1997	0.167	U.S. EPA, 1997	
	EF	Exposure Frequency	days/year	350	U.S. EPA, 1993	234	U.S. EPA, 1993	
	ED	Exposure Duration	years	24	U.S. EPA, 1993	7	U.S. EPA, 1993	See text for calculation of DAevent.
	BW	Body Weight	kg	70	U.S. EPA, 1993	70	U.S. EPA, 1993	
	AT-C	Averaging Time (Cancer)	days	25,550	U.S. EPA, 1989	25,550	U.S. EPA, 1989	
	AT-N	Averaging Time (Non-Cancer)	days	8,760	U.S. EPA, 1989	2,555	U.S. EPA, 1989	

Notes:
U.S. EPA, 1989: Risk Assessment Guidance for Superfund. Vol 1: Human Health Evaluation Manual, Part A. EPA/540/1-86/060.
U.S. EPA, 1992: Supplemental Guidance to RAGS: Calculating the Concentration Term. PB92-963373.
U.S. EPA, 1993: Superfund Standard Default Exposure Factors for the Central Tendency and Reasonable Maximum Exposure.
U.S. EPA, 1997: Exposure Factors Handbook. EPA/600/P-95/002Fa
U.S. EPA, 2001: Risk Assessment Guidance for Superfund (Part E, Supplemental Guidance for Dermal Risk Assessment) Interim. EPA/540/R/99/005.

Unit Intake Calculations

Ingestion Intake = (IR-SW x EF x ED)/(BW x AT)
Dermal Intake = (SA x EV x EF x ED)/(BW x AT)

Cancer Ingestion Intake (RME) = 9.39E-06
Noncancer Ingestion Intake (RME) = 2.74E-05

Cancer Ingestion Intake (CTE) = 1.28E-06
Noncancer Ingestion Intake (CTE) = 1.28E-05

Cancer Dermal Intake (RME) = 8.45E+01
Noncancer Dermal Intake (RME) = 6.16E+01

Cancer Dermal Intake (CTE) = 1.65E+01
Noncancer Dermal Intake (CTE) = 2.75E+01

TABLE 4.32

VALUES USED FOR DAILY INTAKE CALCULATIONS

NSWC CRANE, INDIANA

Scenario Timeframe: Future
Medium: Surface Water
Exposure Medium: Air
Exposure Point: SWMU 3 - Little Sulphur Creek
Receptor Population: On-Site Resident
Receptor Age: Adult

Exposure Route	Parameter Code	Parameter Definition	Units	RME Value	RME Rationale/ Reference	CTE Value	CTE Rationale/ Reference	Intake Equation/ Model Name
Inhalation	S	Volatile Chemical Generation Rate	mg/m3-min shower	Derived	Foster&Chrostowski 1987	Derived	Foster & Chrostowski 1987	Chronic Daily Intake (CDI) (mg/kg-day)=
	IRsh	Inhalation Rate of volatiles in shower	m3/hr	0.6	U.S. EPA 1991	0.6	U.S. EPA 1991	S x IRsh x K x EF x ED / BW x AT x Ra x CF
	EF	Exposure Frequency	days/year	350	U.S. EPA 1993	234	U.S. EPA 1993	
	K	Masss Transfer Coefficient	min	Derived	Foster&Chrostowski 1987	Derived	Foster&Chrostowski 1987	K = Ds + exp(-Ra x Dt)/Ra - [exp(Ra) x (Ds-Dt)]/Ra
	ED	Exposure Duration	years	24	U.S. EPA 1993	7	U.S. EPA 1993	
	BW	Body Weight	kg	70	U.S. EPA 1993	70	U.S. EPA 1993	
	Ra	Air Exchange Rate	min-1	0.017	Foster&Chrostowski 1987	0.017	Foster&Chrostowski 1987	
	CF	Conversion Factor	min/hr	60		60		
	Ds	Shower Duration	min	15	U.S. EPA 2001	10	U.S. EPA 2001	
	Dt	Total Time in Bathroom	min	20	Professional judgement	15	Professional Judgement	
	AT-C	Averaging Time (Cancer)	days	25550	U.S. EPA 1989	25550	U.S. EPA 1989	
	AT-N	Averaging Time (Noncancer)	days	8760	U.S. EPA 1989	2555	U.S. EPA 1989	

Sources

U.S. EPA, 1989: Risk Assessment Guidance for Superfund. Vol 1: Human Health Evaluation Manual, Part A. EPA/540/1-86/060.
U.S. EPA, 1991: Risk Assessment Guidance for Superfund - Supplemental Guidance- Standard Default Exposure Factors Interim Final.
U.S. EPA, 1993: Superfund Standard Default Exposure Factors for the Central Tendency and Reasonable Maximum Exposure.
U.S. EPA, 2001: Risk Assessment Guidance for Superfund (Part E, Supplemental Guidance for Dermal Risk Assessment) Interim. EPA/540/R/99/005.
Foster, S.A. and P.C. Chrostowski, 1987. Inhalation Exposure to Volatile Organic Contaminants in the Shower.

Unit Intake Calculations

Inhalation Intake = (S x IRsh x K x EF x ED)/(BW x AT x Ra x CF)

Cancer Inhalation Intake (RME) = 4.70E-05

Noncancer Inhalation Intake (RME) = 1.37E-04

Cancer Inhalation Intake (CTE) = 9.16E-06

Noncancer Inhalation Intake (CTE) = 9.16E-05

TABLE 4.33
VALUES USED FOR DAILY INTAKE CALCULATIONS
NSWC CRANE, INDIANA

Scenario Timeframe: Future
Medium: Sediment
Exposure Medium: Sediment
Exposure Point: SWMU 3 - Little Sulphur Creek
Receptor Population: On-Site Resident
Receptor Age: Adult

Exposure Route	Parameter Code	Parameter Definition	Units	RME Value	RME Rationale/ Reference	CT Value	CT Rationale/ Reference	Intake Equation/ Model Name
Ingestion	CS	Chemical concentration in soil	mg/kg	Max or 95% UCL	U.S. EPA, 1992	Max or 95% UCL	U.S. EPA, 1992	Intake (mg/kg/day) =
	IR-S	Ingestion Rate	mg/day	50	(1)	25	(1)	
	CF3	Conversion Factor 3	kg/mg	0.000001	--	0.000001	--	$\frac{Cs \times IRS \times CF3 \times FI \times EF \times ED}{BW \times AT}$
	FI	Fraction Ingested	unitless	1	U.S. EPA, 1993	1	U.S. EPA, 1993	
	EF	Exposure Frequency	days/year	52	(2)	26	(2)	
	ED	Exposure Duration	years	24	U.S. EPA, 1993	7	U.S. EPA, 1993	
	BW	Body Weight	kg	70	U.S. EPA, 1993	70	U.S. EPA, 1993	
	AT-C	Averaging Time (Cancer)	days	25550	U.S. EPA, 1989	25550	U.S. EPA, 1989	
	AT-N	Averaging Time (Non-Cancer)	days	8760	U.S. EPA, 1989	2555	U.S. EPA, 1989	
Dermal	CS	Chemical concentration in soil	mg/kg	Max or 95% UCL	U.S. EPA, 1992	Max or 95% UCL	U.S. EPA, 1992	Dermally Absorbed Dose (mg/kg/day) =
	CF3	Conversion Factor 3	kg/mg	0.000001	--	0.000001	--	
	SA	Skin Surface Available for Contact	cm2	5700	U.S. EPA, 2001	5700	U.S. EPA, 2001	$\frac{Cs \times CF3 \times SA \times SSAF \times DABS \times EF \times ED}{BW \times AT}$
	SSAF	Soil to Skin Adherence Factor	mg/cm2/event	0.07	U.S. EPA, 2001	0.01	U.S. EPA, 2001	
	DABS	Absorption Factor	unitless	Chemical Specific	U.S. EPA, 2001	Chemical Specific	U.S. EPA, 2001	
	EF	Exposure Frequency	days/year	52	(2)	26	(2)	
	ED	Exposure Duration	years	24	U.S. EPA, 1993	7	U.S. EPA, 1993	
	BW	Body Weight	kg	70	U.S. EPA, 1993	70	U.S. EPA, 1993	
	AT-C	Averaging Time (Cancer)	days	25550	U.S. EPA, 1989	25550	U.S. EPA, 1989	
	AT-N	Averaging Time (Non-Cancer)	days	8760	U.S. EPA, 1989	2555	U.S. EPA, 1989	

Notes:
1 - Professional judgement.
2 - Professional judgement; 2 days/week for the RME in warm weather months and 1 day/week in warm weather months for CTE.
Sources:
U.S. EPA, 1989: Risk Assessment Guidance for Superfund. Vol 1: Human Health Evaluation Manual, Part A.
U.S. EPA, 1992: Supplemental Guidance to RAGS: Calculating the Concentration Term. PB92-963373.
U.S. EPA, 1993: Superfund Standard Default Exposure Factors for the Central Tendency and Reasonable Maximum Exposure.
U.S. EPA, 1997: Exposure Factors Handbook. EPA/600/P-95/002Fa.
U.S. EPA, 2001: Risk Assessment Guidance for Superfund (Part E, Supplemental Guidance for Dermal Risk Assessment) Interim. EPA/540/R/99/005.

Unit Intake Calculations

Incidental Ingestion Intake = (IR-S x CF3 x FI x EF x ED)/(BW x AT)
Dermal Intake = (CF3 x SA x SSAF x EF x ED)/(BW x AT)

Cancer Ingestion Intake (RME) = 3.49E-08
Noncancer Ingestion Intake (RME) = 1.02E-07

Cancer Ingestion Intake (CTE) = 2.54E-09
Noncancer Ingestion Intake (CTE) = 2.54E-08

Cancer Dermal Intake (RME) = 2.78E-07
Noncancer Dermal Intake (RME) = 8.12E-07

Cancer Dermal Intake (CTE) = 5.80E-09
Noncancer Dermal Intake (CTE) = 5.80E-08

RAGS Part D Table 5

Non-Cancer Toxicity Data

TABLE 5.1
NON-CANCER TOXICITY DATA -- ORAL/DERMAL
SWMU 3 - OLD JEEP TRAIL/LITTLE SULPHUR CREEK
NSWC CRANE
CRANE, INDIANA

Chemical of Potential Concern	Chronic/ Subchronic	Oral RfD Value	Oral RfD Units	Oral to Dermal Adjustment Factor (1)	Adjusted Dermal RfD (2)	Units	Primary Target Organ	Combined Uncertainty/Modifying Factors	Sources of RfD: Target Organ	Dates of RfD: Target Organ (3) (MM/DD/YY)
Dioxin/Furans										
2,3,7,8-TCDD Equivalents	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Volatile Organic Compounds										
Acetone	Chronic	1.0E-01	mg/kg/day	1	1.0E-01	mg/kg/day	Liver, Kidney	1000/1	IRIS	06/27/02
Bromomethane	Chronic	1.4E-03	mg/kg/day	1	1.4E-03	mg/kg/day	GS	1000/1	IRIS	06/27/02
Methylene Chloride	Chronic	6.0E-02	mg/kg/day	1	6.0E-02	mg/kg/day	Liver	100/1	IRIS	06/27/02
1,1,2,2-Tetrachloroethane	Chronic	6.0E-02	mg/kg/day	1	6.0E-02	mg/kg/day	Liver	NA	NCEA	4/02/02
Trichloroethene	Chronic	3.0E-04	mg/kg/day	1	3.0E-04	mg/kg/day	Liver	NA	NCEA	4/02/02
1,1,2-Trichloroethane	Chronic	4.0E-03	mg/kg/day	1	4.0E-03	mg/kg/day	Blood	1000/1	IRIS	06/27/02
1,1-Dichloroethene	Chronic	9.0E-03	mg/kg/day	1	9.0E-03	mg/kg/day	Liver	1000/1	IRIS	06/27/02
Cis-1,2-Dichloroethene	Chronic	1.0E-02	mg/kg/day	1	1.0E-02	mg/kg/day	Blood	3000/1	HEAST	7/97
Tetrachloroethene	Chronic	1.0E-02	mg/kg/day	1	1.0E-02	mg/kg/day	Liver	1000/1	IRIS	06/27/02
Trans-1,2-Dichloroethene	Chronic	2.0E-02	mg/kg/day	1	2.0E-02	mg/kg/day	Blood	1000/1	IRIS	06/27/02
Vinyl Chloride	Chronic	3.0E-03	mg/kg/day	1	3.0E-03	mg/kg/day	Liver	30/1	IRIS	06/27/02
Semivolatile Organic Compounds										
Acetophenone	Chronic	1.0E-01	mg/kg/day	1	1.0E-01	mg/kg/day	None Reported	3000/1	IRIS	06/27/02
Benzo(a)pyrene	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzo(b)fluoranthene	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Bis(2-ethylhexyl)phthalate	Chronic	2.0E-02	mg/kg/day	1	2.0E-02	mg/kg/day	Liver	1000/1	IRIS	06/27/02
Pentachlorophenol	Chronic	3.0E-02	mg/kg/day	1	3.0E-02	mg/kg/day	Liver, Kidney	100/1	IRIS	06/27/02
Energetics										
2,4-Dinitrotoluene	Chronic	2.0E-03	mg/kg/day	1	2.0E-03	mg/kg/day	Liver, CNS	100/1	IRIS	06/27/02
2,4,6-Trinitrotoluene	Chronic	5.0E-04	mg/kg/day	1	5.0E-04	mg/kg/day	Liver	1000/1	IRIS	06/27/02
2-Amino-4,6-Dinitrotoluene	Chronic	6.0E-05	mg/kg/day	1	6.0E-05	mg/kg/day	Liver	NA	NCEA	4/02/02
4-Amino-2,6-Dinitrotoluene	Chronic	6.0E-05	mg/kg/day	1	6.0E-05	mg/kg/day	Liver	NA	NCEA	4/02/02
HMX	Chronic	5.0E-02	mg/kg/day	1	5.0E-02	mg/kg/day	Liver	1000/1	IRIS	06/27/02
RDX	Chronic	3.0E-03	mg/kg/day	1	3.0E-03	mg/kg/day	Prostate	100/1	IRIS	06/27/02
Inorganics										
Aluminum	Chronic	1.0E+00	mg/kg/day	1	1.0E+00	mg/kg/day	Immune, Nails	NA	NCEA	4/02/02
Antimony	Chronic	4.0E-04	mg/kg/day	0.15	6.0E-05	mg/kg/day	Blood	1000/1	IRIS	06/27/02
Arsenic	Chronic	3.0E-04	mg/kg/day	1	3.0E-04	mg/kg/day	Skin, CVS	3/1	IRIS	06/27/02
Barium	Chronic	7.0E-02	mg/kg/day	0.07	4.9E-03	mg/kg/day	Kidney	3/1	IRIS	06/27/02
Beryllium	Chronic	2.0E-03	mg/kg/day	0.007	1.4E-05	mg/kg/day	GS	300/1	IRIS	06/27/02
Cadmium	Chronic	5.0E-04	mg/kg/day	0.05	2.5E-05	mg/kg/day	Kidney	10/1	IRIS	06/27/02
Chromium VI	Chronic	3.0E-03	mg/kg/day	0.025	7.5E-05	mg/kg/day	None Reported	300/3	IRIS	06/27/02
Cobalt	Chronic	2.0E-02	mg/kg/day	1	2.0E-02	mg/kg/day	CVS, Immune, CNS	NA	NCEA	4/02/02
Copper	Chronic	4.0E-02	mg/kg/day	1	4.0E-02	mg/kg/day	GS	NA	HEAST	07/97
Iron	Chronic	3.0E-01	mg/kg/day	1	3.0E-01	mg/kg/day	Blood, GS	NA	NCEA	4/02/02
Manganese	Chronic	7.2E-02	mg/kg/day	0.04	2.9E-03	mg/kg/day	CNS	1/1	IRIS	06/27/02
Nickel	Chronic	2.0E-02	mg/kg/day	0.04	8.0E-04	mg/kg/day	Body Weight	300/1	IRIS	06/27/02
Thallium	Chronic	7.0E-05	mg/kg/day	1	7.0E-05	mg/kg/day	Liver	NA	IRIS	06/27/02
Zinc	Chronic	3.0E-01	mg/kg/day	1	3.0E-01	mg/kg/day	Blood	3/1	IRIS	06/27/02
Miscellaneous Parameters										
Nitrate	Chronic	1.6E+00	mg/kg/day	1	1.6E+00	mg/kg/day	Blood	1/1	IRIS	06/27/02

TABLE 5.1
NON-CANCER TOXICITY DATA -- ORAL/DERMAL
SWMU 3 - OLD JEEP TRAIL/LITTLE SULPHUR CREEK
NSWC CRANE
CRANE, INDIANA

Chemical of Potential Concern	Chronic/ Subchronic	Oral RfD Value	Oral RfD Units	Oral to Dermal Adjustment Factor (1)	Adjusted Dermal RfD (2)	Units	Primary Target Organ	Combined Uncertainty/Modifying Factors	Sources of RfD: Target Organ	Dates of RfD: Target Organ (3) (MM/DD/YY)

Notes:
(1) - U.S. EPA, 2001: Risk Assessment Guidance for Superfund (Part E, Supplemental Guidance for Dermal Risk Assessment) Interim. EPA/540/R/99/005.
(2) - RfDdermal = RfDoral x Oral to Dermal Adjustment Factor.
(3) - Dates of IRIS, HEAST, or NCEA.

Definitions:
CNS = Central nervous system.
CVS = Cardiovascular system.
Immune = Immunological.
GS = Gastrointestinal.
NA = Not applicable.
IRIS = Integrated Risk Information System.
HEAST= Health Effects Assessment Summary Tables.
NCEA = U.S. EPA National Center for Environmental Assessment (U.S. EPA Region 3 RBC Table, April 2, 2002).

TABLE 5.2
NON-CANCER TOXICITY DATA -- INHALATION
SWMU 3 - OLD JEEP TRAIL/LITTLE SULPHUR CREEK
NSWC CRANE
CRANE, INDIANA

Chemical of Potential Concern	Chronic/ Subchronic	Value Inhalation RfC	Units	Adjusted Inhalation RfD (1)	Units	Primary Target Organ	Combined Uncertainty/Modifying Factors	Sources of RfC:RfD: Target Organ	Dates (2) (MM/DD/YY)
Dioxin/Furans									
2,3,7,8-TCDD Equivalents	NA	NA	NA	NA	NA	NA	NA	NA	NA
Volatile Organic Compounds									
Acetone	NA	NA	NA	NA	NA	NA	NA	NA	NA
Bromomethane	Chronic	5.0E-03	mg/m^3	1.4E-03	mg/kg/day	Respiratory tract	100/1	IRIS	06/27/02
Methylene Chloride	Chronic	3.0E+00	mg/m^3	8.6E-01	mg/kg/day	Liver	100	HEAST	7/97
1,1,2,2-Tetrachloroethane	NA	NA	NA	NA	NA	NA	NA	NA	NA
Trichloroethene	Chronic	NA	NA	1.0E-02	mg/kg/day	Liver	NA	NCEA	04/2/2002
1,1,2-Trichloroethane	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,1-Dichloroethene	NA	NA	NA	NA	NA	NA	NA	NA	NA
Cis-1,2-Dichloroethene	NA	NA	NA	NA	NA	NA	NA	NA	NA
Tetrachloroethene	Chronic	NA	NA	1.4E-01	mg/kg/day	Liver	NA	NCEA	04/02/02
Trans-1,2-Dichloroethene	NA	NA	NA	NA	NA	NA	NA	NA	NA
Vinyl Chloride	Chronic	1.0E-01	mg/m^3	2.8E-02	mg/kg/day	Liver	30/1	IRIS	06/27/02
Semivolatile Organic Compounds									
Acetophenone	Chronic	NA	NA	5.7E-06	mg/kg/day	None Reported	NA	IRIS	06/27/02
Benzo(a)pyrene	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzo(b)fluoranthene	NA	NA	NA	NA	NA	NA	NA	NA	NA
Bis(2-ethylhexyl)phthalate	NA	NA	NA	NA	NA	NA	NA	NA	NA
Pentachlorophenol	NA	NA	NA	NA	NA	NA	NA	NA	NA
Energetics									
2,4-Dinitrotoluene	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4,6-Trinitrotoluene	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Amino-4,6-Dinitrotoluene	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Amino-2,6-Dinitrotoluene	NA	NA	NA	NA	NA	NA	NA	NA	NA
HMX	NA	NA	NA	NA	NA	NA	NA	NA	NA
RDX	NA	NA	NA	NA	NA	NA	NA	NA	NA
Inorganics									
Aluminum	Chronic	NA	NA	1.0E-03	mg/kg/day	NA	NA	NCEA	04/02/02
Antimony	NA	NA	NA	NA	NA	NA	NA	NA	NA
Arsenic	NA	NA	NA	NA	NA	NA	NA	NA	NA
Barium	Chronic	NA	NA	1.4E-04	mg/kg/day	NA	NA	HEAST ALT	7/97
Beryllium	Chronic	2.0E-05	mg/m^3	5.7E-06	mg/kg/day	GS	30/1	IRIS	06/27/02
Cadmium	NA	NA	NA	5.7E-05	mg/kg/day	NA	NA	NCEA	04/02/02
Chromium VI	Chronic	1.0E-04	mg/m^3	2.9E-05	mg/kg/day	Respiratory tract	90/1	IRIS	06/27/02
Cobalt	NA	NA	NA	NA	NA	NA	NA	NA	NA
Copper	NA	NA	NA	NA	NA	NA	NA	NA	NA
Iron	NA	NA	NA	NA	NA	NA	NA	NA	NA
Manganese	Chronic	5.0E-05	mg/m^3	1.4E-05	mg/kg/day	Neuorological	1/1	IRIS	06/27/02
Nickel	NA	NA	NA	NA	NA	NA	NA	NA	NA
Thallium	NA	NA	NA	NA	NA	NA	NA	NA	NA
Zinc	NA	NA	NA	NA	NA	NA	NA	NA	NA
Miscellaneous Parameters									
Nitrate	NA	NA	NA	NA	NA	NA	NA	NA	NA

TABLE 5.2
NON-CANCER TOXICITY DATA -- INHALATION
SWMU 3 - OLD JEEP TRAIL/LITTLE SULPHUR CREEK
NSWC CRANE
CRANE, INDIANA

Chemical of Potential Concern	Chronic/ Subchronic	Value Inhalation RfC	Units	Adjusted Inhalation RfD (1)	Units	Primary Target Organ	Combined Uncertainty/Modifying Factors	Sources of RfC:RfD: Target Organ	Dates (2) (MM/DD/YY)

Notes:
(1) Provide equation used for derivation in text.
(2) For IRIS values, provide the date IRIS was searched.
For HEAST values, provide the date of HEAST.
For NCEA values, provide the date of the article provided by NCEA.

Definitions:
N/A = Not Applicable
CBD = Chronic beryllium Disease
CNS = Central Nervous System
GS = Gastrointestinal
IRIS = Integrated Risk Information System
HEAST= Health Effects Assessment Summary Tables

RAGS Part D Table 6

Cancer Toxicity Data

TABLE 6.1
CANCER TOXICITY DATA -- ORAL/DERMAL
SWMU 3 - OLD JEEP TRAIL/LITTLE SULPHUR CREEK
NSWC CRANE
CRANE, INDIANA

Chemical of Potential Concern	Oral Cancer Slope Factor	Oral to Dermal Adjustment Factor (1)	Adjusted Dermal Cancer Slope Factor (2)	Units	Weight of Evidence/ Cancer Guideline Description	Source	Date (3) (MM/DD/YY)
Dioxin/Furans							
2,3,7,8-TCDD Equivalents	1.5E+05	1	1.5E+05	$(mg/kg/day)^{-1}$	B2	HEAST	7/97
Volatile Organic Compounds							
Acetone	NA	NA	NA	NA	D	IRIS	06/27/02
Bromomethane	NA	NA	NA	NA	D	IRIS	06/27/02
Methylene Chloride	7.5E-03	1	7.5E-03	$(mg/kg/day)^{-1}$	B2	IRIS	06/27/02
1,1,2,2-Tetrachloroethane	2.0E-01	1	2.0E-01	$(mg/kg/day)^{-1}$	C	IRIS	06/27/02
Trichloroethene	4.0E-01	1	4.0E-01	$(mg/kg/day)^{-1}$	NA	NCEA	04/02/02
1,1,2-Trichloroethane	5.7E-02	1	5.7E-02	$(mg/kg/day)^{-1}$	C	IRIS	06/27/02
1,1-Dichloroethene	6.0E-01	1	6.0E-01	$(mg/kg/day)^{-1}$	C	IRIS	06/27/02
Cis-1,2-Dichloroethene	NA	NA	NA	NA	D	IRIS	06/27/02
Tetrachloroethene	5.2E-02	1	5.2E-02	$(mg/kg/day)^{-1}$	NA	NCEA	04/02/02
Trans-1,2-Dichloroethene	NA	NA	NA	NA	NA	NA	NA
Vinyl Chloride	7.2E-01	1	7.2E-01	$(mg/kg/day)^{-1}$	A	IRIS	06/27/02
Semivolatile Organic Compounds							
Acetophenone	NA	NA	NA	NA	D	IRIS	06/27/02
Benzo(a)pyrene	7.3E+00	1	7.3E+00	$(mg/kg/day)^{-1}$	B2	IRIS	06/27/02
Benzo(b)fluoranthene	7.3E-01	1	7.3E-01	$(mg/kg/day)^{-1}$	B2	EPA	07/93
Bis(2-ethylhexyl)phthalate	1.4E-02	1	1.4E-02	$(mg/kg/day)^{-1}$	B2	IRIS	06/27/02
Pentachlorophenol	1.2E-01	1	1.2E-01	$(mg/kg/day)^{-1}$	B2	IRIS	06/27/02
Energetics							
2,4-Dinitrotoluene	NA	NA	NA	NA	NA	NA	NA
2,4,6-Trinitrotoluene	3.0E-02	1	3.0E-02	$(mg/kg/day)^{-1}$	C	IRIS	06/27/02
2-Amino-4,6-Dinitrotoluene	NA	NA	NA	NA	NA	NCEA	04/02/02
4-Amino-2,6-Dinitrotoluene	NA	NA	NA	NA	NA	NCEA	04/02/02
HMX	NA	NA	NA	NA	D	IRIS	06/27/02
RDX	1.1E-01	1	1.1E-01	$(mg/kg/day)^{-1}$	C	IRIS	06/27/02
Inorganics							
Aluminum	NA	NA	NA	NA	NA	NA	NA

TABLE 6.1
CANCER TOXICITY DATA -- ORAL/DERMAL
SWMU 3 - OLD JEEP TRAIL/LITTLE SULPHUR CREEK
NSWC CRANE
CRANE, INDIANA

Chemical of Potential Concern	Oral Cancer Slope Factor	Oral to Dermal Adjustment Factor (1)	Adjusted Dermal Cancer Slope Factor (2)	Units	Weight of Evidence/ Cancer Guideline Description	Source	Date (3) (MM/DD/YY)
Antimony	NA	NA	NA	NA	NA	NA	NA
Arsenic	1.5E+00	1	1.5E+00	$(mg/kg\text{-}day)^{-1}$	A	IRIS	06/27/02
Barium	NA	NA	NA	NA	D	IRIS	06/27/02
Beryllium	NA	NA	NA	NA	B1	IRIS	06/27/02
Cadmium	NA	NA	NA	NA	B1	IRIS	06/27/02
Chromium VI	NA	NA	NA	NA	A	IRIS	06/27/02
Cobalt	NA	NA	NA	NA	NA	NA	NA
Copper	NA	NA	NA	NA	NA	NA	NA
Iron	NA	NA	NA	NA	NA	NA	NA
Manganese	NA	NA	NA	NA	D	IRIS	06/27/02
Nickel	NA	NA	NA	NA	NA	NA	NA
Thallium	NA	NA	NA	NA	D	IRIS	06/27/02
Zinc	NA	NA	NA	NA	D	IRIS	06/27/02
Miscellaneous Parameters							
Nitrate	NA	NA	NA	NA	NA	NA	NA

Notes:

(1) - U.S. EPA, 2001: Risk Assessment Guidance for Superfund (Part E, Supplemental Guidance for Dermal Risk Assessment) Interim. EPA/540/R/99/005.

(2) - CSFdermal = CSForal/Oral to Dermal Adjustment Factor.

(3) - Dates of IRIS, HEAST, or NCEA.

EPA Group:

A - Human carcinogen.

B1 - Probable human carcinogen - indicates that limited human data are available.

B2 - Probable human carcinogen - indicates sufficient evidence in animals and inadequate or no evidence in humans .

C - Possible human carcinogen.

D - Not classifiable as a human carcinogen.

E - Evidence of noncarcinogenicity.

Definitions:

IRIS = Integrated Risk Information System.

HEAST= Health Effects Assessment Summary Tables.

NA = Not Available.

NCEA = U.S. EPA National Center for Environmental Assessment (U.S. EPA Region 3 RBC Table, April 2, 2002).

EPA = U.S. EPA, Provisional Guidance for Quantitative Risk Assessment of Polycyclic Aromatic Hydrocarbons, July, 1993, EPA/600/R-93/089.

TABLE 6.2
CANCER TOXICITY DATA -- INHALATION
SWMU 3 - OLD JEEP TRAIL/LITTLE SULPHUR CREEK
NSWC CRANE
CRANE, INDIANA

Chemical of Potential Concern	Unit Risk	Units	Adjustment	Inhalation Cancer Slope Factor	Units	Weight of Evidence/ Cancer Guideline Description	Source	Date (1) (MM/DD/YY)
Dioxin/Furans								
2,3,7,8-TCDD Equivalents	NA	NA	NA	1.5E+05	$(mg/kg\text{-}day)^{-1}$	B2	IRIS	06/27/02
Volatile Organic Compounds								
Acetone	NA	NA	NA	NA	NA	NA	NA	NA
Bromomethane	NA	NA	NA	NA	NA	NA	NA	NA
Methylene Chloride	NA	NA	NA	1.65E-03	$(mg/kg\text{-}day)^{-1}$	B2	IRIS	06/27/02
1,1,2,2-Tetrachloroethane	NA	NA	NA	2.0E-01	$(mg/kg\text{-}day)^{-1}$	C	IRIS	06/27/02
Trichloroethene	NA	NA	NA	4.0E-01	$(mg/kg\text{-}day)^{-1}$	NA	NCEA	4/02/02
1,1,2-Trichloroethane	NA	NA	NA	5.6E-02	$(mg/kg\text{-}day)^{-1}$	C	IRIS	06/27/02
1,1-Dichloroethene	NA	NA	NA	1.75E-01	$(mg/kg\text{-}day)^{-1}$	C	IRIS	06/27/02
Cis-1,2-Dichloroethene	NA	NA	NA	NA	NA	D	IRIS	06/27/02
Tetrachloroethene	NA	NA	NA	1.0E-02	$(mg/kg\text{-}day)^{-1}$	NA	NCEA	04/02/02
Trans-1,2-Dichloroethene	NA	NA	NA	NA	NA	NA	NA	NA
Vinyl Chloride	4.4E-03	$(mg/m^3)^{-1}$	3.5	1.5E-02	$(mg/kg\text{-}day)^{-1}$	A	IRIS	06/27/02
Semivolatile Organic Compounds								
Acetophenone	NA	NA	NA	NA	NA	NA	NA	NA
Benzo(a)pyrene	NA	NA	NA	3.1E+00	$(mg/kg\text{-}day)^{-1}$	B2	NCEA	04/02/02
Benzo(b)fluoranthene	NA	NA	NA	NA	NA	NA	NA	NA
Bis(2-ethylhexyl)phthalate	NA	NA	NA	1.4E-02	$(mg/kg\text{-}day)^{-1}$	NA	NCEA	04/02/02
Pentachlorophenol	NA	NA	NA	NA	NA	NA	NA	NA
Energetics								
2,4-Dinitrotoluene	NA	NA	NA	NA	NA	NA	NA	NA
2,4,6-Trinitrotoluene	NA	NA	NA	NA	NA	NA	NA	NA
2-Amino-4,6-Dinitrotoluene	NA	NA	NA	NA	NA	NA	NA	NA
4-Amino-2,6-Dinitrotoluene	NA	NA	NA	NA	NA	NA	NA	NA
HMX	NA	NA	NA	NA	NA	NA	NA	NA
RDX	NA	NA	NA	NA	NA	NA	NA	NA
Inorganics								
Aluminum	NA	NA	NA	NA	NA	NA	NA	NA
Antimony	NA	NA	NA	NA	NA	NA	NA	NA
Arsenic	4.3E+00	$(mg/m^3)^{-1}$	3.5	1.5E+01	$(mg/kg\text{-}day)^{-1}$	A	IRIS	06/27/02
Barium	NA	NA	NA	NA	NA	NA	NA	NA
Beryllium	2.4E+00	$(mg/m^3)^{-1}$	3.5	8.4E+00	$(mg/kg\text{-}day)^{-1}$	B1	IRIS	06/27/02
Cadmium	1.8E+00	$(mg/m^3)^{-1}$	3.5	6.3E+00	$(mg/kg\text{-}day)^{-1}$	B1	IRIS	06/27/02
Chromium VI	1.2E+01	$(mg/m^3)^{-1}$	3.5	4.2E+01	$(mg/kg\text{-}day)^{-1}$	A	IRIS	06/27/02
Cobalt	NA	NA	NA	NA	NA	NA	NA	NA
Copper	NA	NA	NA	NA	NA	NA	NA	NA
Iron	NA	NA	NA	NA	NA	NA	NA	NA
Manganese	NA	NA	NA	NA	NA	D	IRIS	06/27/02
Nickel	NA	NA	NA	NA	NA	NA	NA	NA
Thallium	NA	NA	NA	NA	NA	NA	NA	NA
Zinc	NA	NA	NA	NA	NA	NA	NA	NA
Miscellaneous Parameters								
Nitrate	NA	NA	NA	NA	NA	NA	NA	NA

TABLE 6.2
CANCER TOXICITY DATA -- INHALATION
SWMU 3 - OLD JEEP TRAIL/LITTLE SULPHUR CREEK
NSWC CRANE
CRANE, INDIANA

Chemical of Potential Concern	Unit Risk	Units	Adjustment	Inhalation Cancer Slope Factor	Units	Weight of Evidence/ Cancer Guideline Description	Source	Date (1) (MM/DD/YY)

Notes:
(1) For IRIS values, the date IRIS was searched.
For HEAST values, the date of HEAST.
Definitions:
IRIS = Integrated Risk Information System
HEAST= Health Effects Assessment Summary Tables
NA = Not Available
NCEA = U.S. EPA National Center for Environmental Assessment

EPA Group:
A - Human carcinogen
B1 - Probable human carcinogen - indicates that limited human data are available
B2 - Probable human carcinogen - indicates sufficient evidence in animals and inadequate or no evidence in humans
C - Possible human carcinogen
D - Not classifiable as a human carcinogen
E - Evidence of noncarcinogenicity

RAGS Part D Table 7

Calculation Of Non-Cancer Hazards

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TABLE 7.1
CALCULATION OF NON-CANCER HAZARDS
REASONABLE MAXIMUM EXPOSURE
NSWC CRANE, INDIANA

Scenario Timeframe: Current/Future
Medium: Surface Soil
Exposure Medium: Surface Soil
Exposure Point: SWMU 3 - Old Jeep Trail
Receptor Population: Trespassers
Receptor Age: Adolescent

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Hazard Calculation (1)	Intake (Non-Cancer)	Intake (Non-Cancer) Units	Reference Dose (2)	Reference Dose Units	Reference Concentration	Reference Concentration Units	Hazard Quotient
Ingestion	2,3,7,8-TCDD Equivalents	0.0000074	mg/kg	0.0000074	mg/kg	M	1.2E-12	mg/kg/day	NA	mg/kg/day	N/A	N/A	- -
	2,4,6-Trinitrotoluene	2.62	mg/kg	2.62	mg/kg	M	4.3E-07	mg/kg/day	5.0E-04	mg/kg/day	N/A	N/A	8.7E-04
	2-Amino-4,6-Dinitrotoluene	0.433	mg/kg	0.433	mg/kg	M	7.2E-08	mg/kg/day	6.0E-05	mg/kg/day	N/A	N/A	1.2E-03
	4-Amino-2,6-Dinitrotoluene	0.365	mg/kg	0.365	mg/kg	M	6.0E-08	mg/kg/day	6.0E-05	mg/kg/day	N/A	N/A	1.0E-03
	HMX	4.77	mg/kg	4.77	mg/kg	M	7.9E-07	mg/kg/day	5.0E-02	mg/kg/day	N/A	N/A	1.6E-05
	RDX	3.41	mg/kg	3.41	mg/kg	M	5.6E-07	mg/kg/day	3.0E-03	mg/kg/day	N/A	N/A	1.9E-04
	Barium	252	mg/kg	252	mg/kg	M	4.2E-05	mg/kg/day	7.0E-02	mg/kg/day	N/A	N/A	6.0E-04
	Cadmium	1.19	mg/kg	1.19	mg/kg	M	2.0E-07	mg/kg/day	5.0E-04	mg/kg/day	N/A	N/A	3.9E-04
	Chromium	26.4	mg/kg	26.4	mg/kg	M	4.4E-06	mg/kg/day	1.5E+00	mg/kg/day	N/A	N/A	2.9E-06
	Iron	26855	mg/kg	26855	mg/kg	M	4.4E-03	mg/kg/day	3.0E-01	mg/kg/day	N/A	N/A	1.5E-02
	Lead	358	mg/kg	358	mg/kg	M	5.9E-05	mg/kg/day	NA	mg/kg/day	N/A	N/A	- -
	(Total)												1.9E-02
Dermal	2,3,7,8-TCDD Equivalents	0.0000074	mg/kg	0.0000074	mg/kg	M	2.4E-13	mg/kg/day	NA	mg/kg/day	N/A	N/A	- -
	2,4,6-Trinitrotoluene	2.62	mg/kg	2.62	mg/kg	M	2.9E-07	mg/kg/day	5.0E-04	mg/kg/day	N/A	N/A	5.7E-04
	2-Amino-4,6-Dinitrotoluene	0.433	mg/kg	0.433	mg/kg	M	4.7E-08	mg/kg/day	6.0E-05	mg/kg/day	N/A	N/A	7.8E-04
	4-Amino-2,6-Dinitrotoluene	0.365	mg/kg	0.365	mg/kg	M	4.0E-08	mg/kg/day	6.0E-05	mg/kg/day	N/A	N/A	6.6E-04
	HMX	4.77	mg/kg	4.77	mg/kg	M	5.2E-07	mg/kg/day	5.0E-02	mg/kg/day	N/A	N/A	1.0E-05
	RDX	3.41	mg/kg	3.41	mg/kg	M	3.7E-07	mg/kg/day	3.0E-03	mg/kg/day	N/A	N/A	1.2E-04
	Barium	252	mg/kg	252	mg/kg	M	0.0E+00	mg/kg/day	4.9E-03	mg/kg/day	N/A	N/A	- -
	Cadmium	1.19	mg/kg	1.19	mg/kg	M	1.3E-09	mg/kg/day	2.5E-05	mg/kg/day	N/A	N/A	5.2E-05
	Chromium	26.4	mg/kg	26.4	mg/kg	M	0.0E+00	mg/kg/day	2.0E-02	mg/kg/day	N/A	N/A	- -
	Iron	26855	mg/kg	26855	mg/kg	M	0.0E+00	mg/kg/day	3.0E-01	mg/kg/day	N/A	N/A	- -
	Lead	358	mg/kg	358	mg/kg	M	0.0E+00	mg/kg/day	NA	mg/kg/day	N/A	N/A	- -
	(Total)												2.2E-03
												Total Hazard Index Across All Exposure Routes/Pathways	2.1E-02

(1) Medium-Specific (M) EPC selected for hazard calculation.
(2) Chronic.

TABLE 7.2
CALCULATION OF NON-CANCER HAZARDS
CENTRAL TENDENCY EXPOSURES
NSWC CRANE, INDIANA

Scenario Timeframe: Current/Future
Medium: Surface Soil
Exposure Medium: Surface Soil
Exposure Point: SWMU 3 - Old Jeep Trail
Receptor Population: Trespassers
Receptor Age: Adolescent

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Hazard Calculation (1)	Intake (Non-Cancer)	Intake (Non-Cancer) Units	Reference Dose (2)	Reference Dose Units	Reference Concentration	Reference Concentration Units	Hazard Quotient
Ingestion	2,3,7,8-TCDD Equivalents	0.0000074	mg/kg	0.0000074	mg/kg	M	3.1E-13	mg/kg/day	NA	mg/kg/day	N/A	N/A	- -
	2,4,6-Trinitrotoluene	2.62	mg/kg	2.62	mg/kg	M	1.1E-07	mg/kg/day	5.0E-04	mg/kg/day	N/A	N/A	2.2E-04
	2-Amino-4,6-Dinitrotoluene	0.433	mg/kg	0.433	mg/kg	M	1.8E-08	mg/kg/day	6.0E-05	mg/kg/day	N/A	N/A	3.0E-04
	4-Amino-2,6-Dinitrotoluene	0.365	mg/kg	0.365	mg/kg	M	1.5E-08	mg/kg/day	6.0E-05	mg/kg/day	N/A	N/A	2.5E-04
	HMX	4.77	mg/kg	4.77	mg/kg	M	2.0E-07	mg/kg/day	5.0E-02	mg/kg/day	N/A	N/A	4.0E-06
	RDX	3.41	mg/kg	3.41	mg/kg	M	1.4E-07	mg/kg/day	3.0E-03	mg/kg/day	N/A	N/A	4.7E-05
	Barium	252	mg/kg	252	mg/kg	M	1.0E-05	mg/kg/day	7.0E-02	mg/kg/day	N/A	N/A	1.5E-04
	Cadmium	1.19	mg/kg	1.19	mg/kg	M	4.9E-08	mg/kg/day	5.0E-04	mg/kg/day	N/A	N/A	9.9E-05
	Chromium	26.4	mg/kg	26.4	mg/kg	M	1.1E-06	mg/kg/day	1.5E+00	mg/kg/day	N/A	N/A	7.3E-07
	Iron	26855	mg/kg	26855	mg/kg	M	1.1E-03	mg/kg/day	3.0E-01	mg/kg/day	N/A	N/A	3.7E-03
	Lead	358	mg/kg	358	mg/kg	M	1.5E-05	mg/kg/day	NA	mg/kg/day	N/A	N/A	- -
	(Total)												4.8E-03
Dermal	2,3,7,8-TCDD Equivalents	0.0000074	mg/kg	0.0000074	mg/kg	M	2.3E-14	mg/kg/day	NA	mg/kg/day	N/A	N/A	- -
	2,4,6-Trinitrotoluene	2.62	mg/kg	2.62	mg/kg	M	2.7E-08	mg/kg/day	5.0E-04	mg/kg/day	N/A	N/A	5.4E-05
	2-Amino-4,6-Dinitrotoluene	0.433	mg/kg	0.433	mg/kg	M	4.4E-09	mg/kg/day	6.0E-05	mg/kg/day	N/A	N/A	7.4E-05
	4-Amino-2,6-Dinitrotoluene	0.365	mg/kg	0.365	mg/kg	M	3.7E-09	mg/kg/day	6.0E-05	mg/kg/day	N/A	N/A	6.2E-05
	HMX	4.77	mg/kg	4.77	mg/kg	M	4.9E-08	mg/kg/day	5.0E-02	mg/kg/day	N/A	N/A	9.8E-07
	RDX	3.41	mg/kg	3.41	mg/kg	M	3.5E-08	mg/kg/day	3.0E-03	mg/kg/day	N/A	N/A	1.2E-05
	Barium	252	mg/kg	252	mg/kg	M	0.0E+00	mg/kg/day	4.9E-03	mg/kg/day	N/A	N/A	- -
	Cadmium	1.19	mg/kg	1.19	mg/kg	M	1.2E-10	mg/kg/day	2.5E-05	mg/kg/day	N/A	N/A	4.9E-06
	Chromium	26.4	mg/kg	26.4	mg/kg	M	0.0E+00	mg/kg/day	2.0E-02	mg/kg/day	N/A	N/A	- -
	Iron	26855	mg/kg	26855	mg/kg	M	0.0E+00	mg/kg/day	3.0E-01	mg/kg/day	N/A	N/A	- -
	Lead	358	mg/kg	358	mg/kg	M	0.0E+00	mg/kg/day	NA	mg/kg/day	N/A	N/A	- -
	(Total)												2.1E-04
												Total Hazard Index Across All Exposure Routes/Pathways	5.0E-03

(1) Medium-Specific (M) EPC selected for hazard calculation.
(2) Chronic.

TABLE 7.3
CALCULATION OF NON-CANCER HAZARDS
REASONABLE MAXIMUM EXPOSURE
NSWC CRANE, INDIANA

Scenario Timeframe: Current/Future
Medium: Surface Water
Exposure Medium: Surface Water
Exposure Point: SWMU 3 - Little Sulphur Creek
Receptor Population: Trespassers
Receptor Age: Adolescent

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Hazard Calculation (1)	Intake (Non-Cancer)	Intake (Non-Cancer) Units	Reference Dose (2)	Reference Dose Units	Reference Concentration	Reference Concentration Units	Hazard Quotient
Ingestion	Acetone	64.0	ug/L	64.0	ug/L	M	2.1E-05	mg/kg/day	1.0E-01	mg/kg/day	N/A	N/A	2.1E-04
	Bromomethane	0.529	ug/L	0.529	ug/L	M	1.8E-07	mg/kg/day	1.4E-03	mg/kg/day	N/A	N/A	1.3E-04
	Methylene Chloride	3.23	ug/L	3.23	ug/L	M	1.1E-06	mg/kg/day	6.0E-02	mg/kg/day	N/A	N/A	1.8E-05
	Bis(2-ethylhexyl)phthalate	1.36	ug/L	1.36	ug/L	M	4.5E-07	mg/kg/day	2.0E-02	mg/kg/day	N/A	N/A	2.2E-05
	Pentachlorophenol	0.059	ug/L	0.059	ug/L	M	2.0E-08	mg/kg/day	3.0E-02	mg/kg/day	N/A	N/A	6.5E-07
	2-Amino-4,6-Dinitrotoluene	0.384	ug/L	0.384	ug/L	M	1.3E-07	mg/kg/day	6.0E-05	mg/kg/day	N/A	N/A	2.1E-03
	4-Amino-2,6-Dinitrotoluene	1.06	ug/L	1.06	ug/L	M	3.5E-07	mg/kg/day	6.0E-05	mg/kg/day	N/A	N/A	5.8E-03
	RDX	63.0	ug/L	63.0	ug/L	M	2.1E-05	mg/kg/day	3.0E-03	mg/kg/day	N/A	N/A	7.0E-03
	Antimony	0.784	ug/L	0.784	ug/L	M	2.6E-07	mg/kg/day	4.0E-04	mg/kg/day	N/A	N/A	6.5E-04
	Lead	29.1	ug/L	29.1	ug/L	M	9.7E-06	mg/kg/day	NA	mg/kg/day	N/A	N/A	- -
	(Total)												1.6E-02
Dermal	Acetone	64.0	ug/L	64.0	ug/L	M	8.0E-07	mg/kg/day	1.0E-01	mg/kg/day	N/A	N/A	8.0E-06
	Bromomethane	0.529	ug/L	0.529	ug/L	M	3.8E-08	mg/kg/day	1.4E-03	mg/kg/day	N/A	N/A	2.7E-05
	Methylene Chloride	3.23	ug/L	3.23	ug/L	M	2.9E-07	mg/kg/day	6.0E-02	mg/kg/day	N/A	N/A	4.8E-06
	Bis(2-ethylhexyl)phthalate	1.36	ug/L	1.36	ug/L	M	3.3E-06	mg/kg/day	2.0E-02	mg/kg/day	N/A	N/A	1.7E-04
	Pentachlorophenol	0.059	ug/L	0.059	ug/L	M	1.1E-06	mg/kg/day	3.0E-02	mg/kg/day	N/A	N/A	3.8E-05
	2-Amino-4,6-Dinitrotoluene	0.384	ug/L	0.384	ug/L	M	8.9E-09	mg/kg/day	6.0E-05	mg/kg/day	N/A	N/A	1.5E-04
	4-Amino-2,6-Dinitrotoluene	1.06	ug/L	1.06	ug/L	M	2.5E-08	mg/kg/day	6.0E-05	mg/kg/day	N/A	N/A	4.1E-04
	RDX	63.0	ug/L	63.0	ug/L	M	8.9E-07	mg/kg/day	3.0E-03	mg/kg/day	N/A	N/A	3.0E-04
	Antimony	0.784	ug/L	0.784	ug/L	M	1.7E-08	mg/kg/day	6.0E-05	mg/kg/day	N/A	N/A	2.8E-04
	Lead	29.1	ug/L	29.1	ug/L	M	6.3E-07	mg/kg/day	NA	mg/kg/day	N/A	N/A	- -
	(Total)												1.4E-03
												Total Hazard Index Across All Exposure Routes/Pathways	1.7E-02

(1) Medium-Specific (M) EPC selected for hazard calculation.
(2) Chronic.

TABLE 7.4
CALCULATION OF NON-CANCER HAZARDS
CENTRAL TENDENCY EXPOSURES
NSWC CRANE, INDIANA

Scenario Timeframe: Current/Future
Medium: Surface Water
Exposure Medium: Surface Water
Exposure Point: SWMU 3 - Little Sulphur Creek
Receptor Population: Trespassers
Receptor Age: Adolescent

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Hazard Calculation (1)	Intake (Non-Cancer)	Intake (Non-Cancer) Units	Reference Dose (2)	Reference Dose Units	Reference Concentration	Reference Concentration Units	Hazard Quotient
Ingestion	Acetone	64.0	ug/L	64.0	ug/L	M	5.3E-06	mg/kg/day	1.0E-01	mg/kg/day	N/A	N/A	5.3E-05
	Bromomethane	0.529	ug/L	0.529	ug/L	M	4.4E-08	mg/kg/day	1.4E-03	mg/kg/day	N/A	N/A	3.1E-05
	Methylene Chloride	3.23	ug/L	3.23	ug/L	M	2.7E-07	mg/kg/day	6.0E-02	mg/kg/day	N/A	N/A	4.5E-06
	Bis(2-ethylhexyl)phthalate	1.36	ug/L	1.36	ug/L	M	1.1E-07	mg/kg/day	2.0E-02	mg/kg/day	N/A	N/A	5.6E-06
	Pentachlorophenol	0.059	ug/L	0.059	ug/L	M	4.9E-09	mg/kg/day	3.0E-02	mg/kg/day	N/A	N/A	1.6E-07
	2-Amino-4,6-Dinitrotoluene	0.384	ug/L	0.384	ug/L	M	3.2E-08	mg/kg/day	6.0E-05	mg/kg/day	N/A	N/A	5.3E-04
	4-Amino-2,6-Dinitrotoluene	1.06	ug/L	1.06	ug/L	M	8.8E-08	mg/kg/day	6.0E-05	mg/kg/day	N/A	N/A	1.5E-03
	RDX	63.0	ug/L	63.0	ug/L	M	5.2E-06	mg/kg/day	3.0E-03	mg/kg/day	N/A	N/A	1.7E-03
	Antimony	0.784	ug/L	0.784	ug/L	M	6.5E-08	mg/kg/day	4.0E-04	mg/kg/day	N/A	N/A	1.6E-04
	Lead	29.1	ug/L	29.1	ug/L	M	2.4E-06	mg/kg/day	NA	mg/kg/day	N/A	N/A	- -
	(Total)												4.0E-03
Dermal	Acetone	64.0	ug/L	64.0	ug/L	M	2.1E-07	mg/kg/day	1.0E-01	mg/kg/day	N/A	N/A	2.1E-06
	Bromomethane	0.529	ug/L	0.529	ug/L	M	1.0E-08	mg/kg/day	1.4E-03	mg/kg/day	N/A	N/A	7.5E-06
	Methylene Chloride	3.23	ug/L	3.23	ug/L	M	7.7E-08	mg/kg/day	6.0E-02	mg/kg/day	N/A	N/A	1.3E-06
	Bis(2-ethylhexyl)phthalate	1.36	ug/L	1.36	ug/L	M	1.1E-06	mg/kg/day	2.0E-02	mg/kg/day	N/A	N/A	5.5E-05
	Pentachlorophenol	0.059	ug/L	0.059	ug/L	M	3.8E-07	mg/kg/day	3.0E-02	mg/kg/day	N/A	N/A	1.3E-05
	2-Amino-4,6-Dinitrotoluene	0.384	ug/L	0.384	ug/L	M	2.9E-09	mg/kg/day	6.0E-05	mg/kg/day	N/A	N/A	4.8E-05
	4-Amino-2,6-Dinitrotoluene	1.06	ug/L	1.06	ug/L	M	7.9E-09	mg/kg/day	6.0E-05	mg/kg/day	N/A	N/A	1.3E-04
	RDX	63.0	ug/L	63.0	ug/L	M	3.0E-07	mg/kg/day	3.0E-03	mg/kg/day	N/A	N/A	9.9E-05
	Antimony	0.784	ug/L	0.784	ug/L	M	4.0E-09	mg/kg/day	6.0E-05	mg/kg/day	N/A	N/A	6.7E-05
	Lead	29.1	ug/L	29.1	ug/L	M	1.5E-07	mg/kg/day	NA	mg/kg/day	N/A	N/A	- -
	(Total)												4.2E-04
												Total Hazard Index Across All Exposure Routes/Pathways	4.4E-03

(1) Medium-Specific (M) EPC selected for hazard calculation.
(2) Chronic.

TABLE 7.5
CALCULATION OF NON-CANCER HAZARDS
REASONABLE MAXIMUM EXPOSURE
NSWC CRANE, INDIANA

Scenario Timeframe: Current/Future
Medium: Sediment
Exposure Medium: Sediment
Exposure Point: SWMU 3 - Little Sulphur Creek
Receptor Population: Trespassers
Receptor Age: Adolescent

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Hazard Calculation (1)	Intake (Non-Cancer)	Intake (Non-Cancer) Units	Reference Dose (2)	Reference Dose Units	Reference Concentration	Reference Concentration Units	Hazard Quotient
Ingestion	2-Amino-4,6-Dinitrotoluene	0.178	mg/kg	0.178	mg/kg	M	3.0E-08	mg/kg/day	6.0E-05	mg/kg/day	N/A	N/A	4.9E-04
	Aluminum	14916	mg/kg	14916	mg/kg	M	2.5E-03	mg/kg/day	1.0E+00	mg/kg/day	N/A	N/A	2.5E-03
	Antimony	2.88	mg/kg	2.88	mg/kg	M	4.8E-07	mg/kg/day	4.0E-04	mg/kg/day	N/A	N/A	1.2E-03
	Barium	359	mg/kg	359	mg/kg	M	5.9E-05	mg/kg/day	7.0E-02	mg/kg/day	N/A	N/A	8.5E-04
	Cadmium	1.78	mg/kg	1.78	mg/kg	M	2.9E-07	mg/kg/day	5.0E-04	mg/kg/day	N/A	N/A	5.9E-04
	Lead	120	mg/kg	120	mg/kg	M	2.0E-05	mg/kg/day	NA	mg/kg/day	N/A	N/A	- -
	(Total)												5.6E-03
Dermal	2-Amino-4,6-Dinitrotoluene	0.178	mg/kg	0.178	mg/kg	M	1.9E-08	mg/kg/day	6.0E-05	mg/kg/day	N/A	N/A	3.2E-04
	Aluminum	14916	mg/kg	14916	mg/kg	M	0.0E+00	mg/kg/day	1.0E+00	mg/kg/day	N/A	N/A	- -
	Antimony	2.88	mg/kg	2.88	mg/kg	M	0.0E+00	mg/kg/day	6.0E-05	mg/kg/day	N/A	N/A	- -
	Barium	359	mg/kg	359	mg/kg	M	0.0E+00	mg/kg/day	4.9E-03	mg/kg/day	N/A	N/A	- -
	Cadmium	1.78	mg/kg	1.78	mg/kg	M	1.9E-09	mg/kg/day	2.5E-05	mg/kg/day	N/A	N/A	7.7E-05
	Lead	120	mg/kg	120	mg/kg	M	0.0E+00	mg/kg/day	NA	mg/kg/day	N/A	N/A	- -
	(Total)												4.0E-04
												Total Hazard Index Across All Exposure Routes/Pathways	6.0E-03

(1) Medium-Specific (M) EPC selected for hazard calculation.
(2) Chronic.

TABLE 7.6
CALCULATION OF NON-CANCER HAZARDS
CENTRAL TENDENCY EXPOSURES
NSWC CRANE, INDIANA

Scenario Timeframe: Current/Future
Medium: Sediment
Exposure Medium: Sediment
Exposure Point: SWMU 3 - Little Sulphur Creek
Receptor Population: Trespassers
Receptor Age: Adolescent

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Hazard Calculation (1)	Intake (Non-Cancer)	Intake (Non-Cancer) Units	Reference Dose (2)	Reference Dose Units	Reference Concentration	Reference Concentration Units	Hazard Quotient
Ingestion	2-Amino-4,6-Dinitrotoluene	0.178	mg/kg	0.178	mg/kg	M	7.4E-09	mg/kg/day	6.0E-05	mg/kg/day	N/A	N/A	1.2E-04
	Aluminum	14916	mg/kg	14916	mg/kg	M	6.2E-04	mg/kg/day	1.0E+00	mg/kg/day	N/A	N/A	6.2E-04
	Antimony	2.88	mg/kg	2.88	mg/kg	M	1.2E-07	mg/kg/day	4.0E-04	mg/kg/day	N/A	N/A	3.0E-04
	Barium	359	mg/kg	359	mg/kg	M	1.5E-05	mg/kg/day	7.0E-02	mg/kg/day	N/A	N/A	2.1E-04
	Cadmium	1.78	mg/kg	1.78	mg/kg	M	7.4E-08	mg/kg/day	5.0E-04	mg/kg/day	N/A	N/A	1.5E-04
	Lead	120	mg/kg	120	mg/kg	M	5.0E-06	mg/kg/day	NA	mg/kg/day	N/A	N/A	- -
	(Total)												1.4E-03
Dermal	2-Amino-4,6-Dinitrotoluene	0.178	mg/kg	0.178	mg/kg	M	1.8E-09	mg/kg/day	6.0E-05	mg/kg/day	N/A	N/A	3.1E-05
	Aluminum	14916	mg/kg	14916	mg/kg	M	0.0E+00	mg/kg/day	1.0E+00	mg/kg/day	N/A	N/A	- -
	Antimony	2.88	mg/kg	2.88	mg/kg	M	0.0E+00	mg/kg/day	6.0E-05	mg/kg/day	N/A	N/A	- -
	Barium	359	mg/kg	359	mg/kg	M	0.0E+00	mg/kg/day	4.9E-03	mg/kg/day	N/A	N/A	- -
	Cadmium	1.78	mg/kg	1.78	mg/kg	M	1.8E-10	mg/kg/day	2.5E-05	mg/kg/day	N/A	N/A	7.3E-06
	Lead	120	mg/kg	120	mg/kg	M	0.0E+00	mg/kg/day	NA	mg/kg/day	N/A	N/A	- -
	(Total)												3.8E-05
												Total Hazard Index Across All Exposure Routes/Pathways	1.4E-03

(1) Medium-Specific (M) EPC selected for hazard calculation.
(2) Chronic.

TABLE 7.7
CALCULATION OF NON-CANCER HAZARDS
REASONABLE MAXIMUM EXPOSURE
NSWC CRANE, INDIANA

Scenario Timeframe: Current/Future
Medium: Surface Water
Exposure Medium: Surface Water
Exposure Point: SWMU 3 - Little Sulphur Creek
Receptor Population: Off-Site Resident
Receptor Age: Child

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Hazard Calculation (1)	Intake (Non-Cancer)	Intake (Non-Cancer) Units	Reference Dose (2)	Reference Dose Units	Reference Concentration	Reference Concentration Units	Hazard Quotient
Ingestion	4-Amino-2,6-Dinitrotoluene	0.540	ug/L	0.540	ug/L	M	5.2E-05	mg/kg/day	6.0E-05	mg/kg/day	N/A	N/A	8.6E-01
	RDX	10.0	ug/L	10.0	ug/L	M	9.6E-04	mg/kg/day	3.0E-03	mg/kg/day	N/A	N/A	3.2E-01
	(Total)												1.2E+00
Dermal	4-Amino-2,6-Dinitrotoluene	0.540	ug/L	0.540	ug/L	M	2.3E-07	mg/kg/day	6.0E-05	mg/kg/day	N/A	N/A	3.9E-03
	RDX	10.0	ug/L	10.0	ug/L	M	2.7E-06	mg/kg/day	3.0E-03	mg/kg/day	N/A	N/A	9.1E-04
	(Total)												4.8E-03
												Total Hazard Index Across All Exposure Routes/Pathways	1.2E+00

(1) Medium-Specific (M) EPC selected for hazard calculation.
(2) Chronic.

TABLE 7.8
CALCULATION OF NON-CANCER HAZARDS
CENTRAL TENDENCY EXPOSURES
NSWC CRANE, INDIANA

Scenario Timeframe: Current/Future
Medium: Surface Water
Exposure Medium: Surface Water
Exposure Point: SWMU 3 - Little Sulphur Creek
Receptor Population: Off-Site Resident
Receptor Age: Child

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Hazard Calculation (1)	Intake (Non-Cancer)	Intake (Non-Cancer) Units	Reference Dose (2)	Reference Dose Units	Reference Concentration	Reference Concentration Units	Hazard Quotient
Ingestion	4-Amino-2,6-Dinitrotoluene	0.540	ug/L	0.540	ug/L	M	1.5E-05	mg/kg/day	6.0E-05	mg/kg/day	N/A	N/A	2.5E-01
	RDX	10.0	ug/L	10.0	ug/L	M	2.8E-04	mg/kg/day	3.0E-03	mg/kg/day	N/A	N/A	9.4E-02
	(Total)												3.5E-01
Dermal	4-Amino-2,6-Dinitrotoluene	0.540	ug/L	0.540	ug/L	M	1.3E-07	mg/kg/day	6.0E-05	mg/kg/day	N/A	N/A	2.1E-03
	RDX	10.0	ug/L	10.0	ug/L	M	1.5E-06	mg/kg/day	3.0E-03	mg/kg/day	N/A	N/A	5.0E-04
	(Total)												2.6E-03
												Total Hazard Index Across All Exposure Routes/Pathways	3.5E-01

(1) Medium-Specific (M) EPC selected for hazard calculation.
(2) Chronic.

TABLE 7.9
CALCULATION OF NON-CANCER HAZARDS
REASONABLE MAXIMUM EXPOSURE
NSWC CRANE, INDIANA

Scenario Timeframe: Current/Future
Medium: Surface Water
Exposure Medium: Surface Water
Exposure Point: SWMU 3 - Little Sulphur Creek
Receptor Population: Off-Site Resident
Receptor Age: Adult

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Hazard Calculation (1)	Intake (Non-Cancer)	Intake (Non-Cancer) Units	Reference Dose (2)	Reference Dose Units	Reference Concentration	Reference Concentration Units	Hazard Quotient
Ingestion	4-Amino-2,6-Dinitrotoluene	0.540	ug/L	0.540	ug/L	M	1.5E-05	mg/kg/day	6.0E-05	mg/kg/day	N/A	N/A	2.5E-01
	RDX	10.0	ug/L	10.0	ug/L	M	2.7E-04	mg/kg/day	3.0E-03	mg/kg/day	N/A	N/A	9.1E-02
	(Total)												3.4E-01
Dermal	4-Amino-2,6-Dinitrotoluene	0.540	ug/L	0.540	ug/L	M	1.4E-07	mg/kg/day	6.0E-05	mg/kg/day	N/A	N/A	2.3E-03
	RDX	10.0	ug/L	10.0	ug/L	M	1.6E-06	mg/kg/day	3.0E-03	mg/kg/day	N/A	N/A	5.3E-04
	(Total)												2.8E-03
												Total Hazard Index Across All Exposure Routes/Pathways	3.4E-01

(1) Medium-Specific (M) EPC selected for hazard calculation.
(2) Chronic.

TABLE 7.10
CALCULATION OF NON-CANCER HAZARDS
CENTRAL TENDENCY EXPOSURES
NSWC CRANE, INDIANA

Scenario Timeframe: Current/Future
Medium: Surface Water
Exposure Medium: Surface Water
Exposure Point: SWMU 3 - Little Sulphur Creek
Receptor Population: Off-Site Resident
Receptor Age: Adult

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Hazard Calculation (1)	Intake (Non-Cancer)	Intake (Non-Cancer) Units	Reference Dose (2)	Reference Dose Units	Reference Concentration	Reference Concentration Units	Hazard Quotient
Ingestion	4-Amino-2,6-Dinitrotoluene	0.540	ug/L	0.540	ug/L	M	6.9E-06	mg/kg/day	6.0E-05	mg/kg/day	N/A	N/A	1.2E-01
	RDX	10.0	ug/L	10.0	ug/L	M	1.3E-04	mg/kg/day	3.0E-03	mg/kg/day	N/A	N/A	4.3E-02
	(Total)												1.6E-01
Dermal	4-Amino-2,6-Dinitrotoluene	0.540	ug/L	0.540	ug/L	M	7.4E-08	mg/kg/day	6.0E-05	mg/kg/day	N/A	N/A	1.2E-03
	RDX	10.0	ug/L	10.0	ug/L	M	8.7E-07	mg/kg/day	3.0E-03	mg/kg/day	N/A	N/A	2.9E-04
	(Total)												1.5E-03
												Total Hazard Index Across All Exposure Routes/Pathways	1.6E-01

(1) Medium-Specific (M) EPC selected for hazard calculation.
(2) Chronic.

TABLE 7.11
CALCULATION OF NON-CANCER HAZARDS
REASONABLE MAXIMUM EXPOSURE
NSWC CRANE, INDIANA

Scenario Timeframe: Future
Medium: Surface/Subsurface Soil
Exposure Medium: Surface/Subsurface Soil
Exposure Point: SWMU 3 - Old Jeep Trail
Receptor Population: Construction Worker
Receptor Age: Adult

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Hazard Calculation (1)	Intake (Non-Cancer)	Intake (Non-Cancer) Units	Reference Dose (2)	Reference Dose Units	Reference Concentration	Reference Concentration Units	Hazard Quotient
Ingestion	2,3,7,8-TCDD Equivalents	0.0000074	mg/kg	0.0000074	mg/kg	M	2.1E-11	mg/kg/day	NA	mg/kg/day	N/A	N/A	- -
	2,4,6-Trinitrotoluene	2.62	mg/kg	2.62	mg/kg	M	7.4E-06	mg/kg/day	5.0E-04	mg/kg/day	N/A	N/A	1.5E-02
	2-Amino-4,6-Dinitrotoluene	0.433	mg/kg	0.433	mg/kg	M	1.2E-06	mg/kg/day	6.0E-05	mg/kg/day	N/A	N/A	2.0E-02
	4-Amino-2,6-Dinitrotoluene	0.365	mg/kg	0.365	mg/kg	M	1.0E-06	mg/kg/day	6.0E-05	mg/kg/day	N/A	N/A	1.7E-02
	HMX	4.77	mg/kg	4.77	mg/kg	M	1.3E-05	mg/kg/day	5.0E-02	mg/kg/day	N/A	N/A	2.7E-04
	RDX	3.41	mg/kg	3.41	mg/kg	M	9.6E-06	mg/kg/day	3.0E-03	mg/kg/day	N/A	N/A	3.2E-03
	Barium	252	mg/kg	252	mg/kg	M	7.1E-04	mg/kg/day	7.0E-02	mg/kg/day	N/A	N/A	1.0E-02
	Cadmium	1.19	mg/kg	1.19	mg/kg	M	3.4E-06	mg/kg/day	5.0E-04	mg/kg/day	N/A	N/A	6.7E-03
	Chromium	26.4	mg/kg	26.4	mg/kg	M	7.4E-05	mg/kg/day	1.5E+00	mg/kg/day	N/A	N/A	5.0E-05
	Iron	26855	mg/kg	26855	mg/kg	M	7.6E-02	mg/kg/day	3.0E-01	mg/kg/day	N/A	N/A	2.5E-01
	Lead	358	mg/kg	358	mg/kg	M	1.0E-03	mg/kg/day	NA	mg/kg/day	N/A	N/A	- -
	(Total)												3.2E-01
Dermal	2,3,7,8-TCDD Equivalents	0.0000074	mg/kg	0.0000074	mg/kg	M	1.3E-12	mg/kg/day	NA	mg/kg/day	N/A	N/A	- -
	2,4,6-Trinitrotoluene	2.62	mg/kg	2.62	mg/kg	M	1.5E-06	mg/kg/day	5.0E-04	mg/kg/day	N/A	N/A	3.0E-03
	2-Amino-4,6-Dinitrotoluene	0.433	mg/kg	0.433	mg/kg	M	2.5E-07	mg/kg/day	6.0E-05	mg/kg/day	N/A	N/A	4.2E-03
	4-Amino-2,6-Dinitrotoluene	0.365	mg/kg	0.365	mg/kg	M	2.1E-07	mg/kg/day	6.0E-05	mg/kg/day	N/A	N/A	3.5E-03
	HMX	4.77	mg/kg	4.77	mg/kg	M	2.8E-06	mg/kg/day	5.0E-02	mg/kg/day	N/A	N/A	5.5E-05
	RDX	3.41	mg/kg	3.41	mg/kg	M	2.0E-06	mg/kg/day	3.0E-03	mg/kg/day	N/A	N/A	6.6E-04
	Barium	252	mg/kg	252	mg/kg	M	0.0E+00	mg/kg/day	4.9E-03	mg/kg/day	N/A	N/A	- -
	Cadmium	1.19	mg/kg	1.19	mg/kg	M	6.9E-09	mg/kg/day	2.5E-05	mg/kg/day	N/A	N/A	2.8E-04
	Chromium	26.4	mg/kg	26.4	mg/kg	M	0.0E+00	mg/kg/day	2.0E-02	mg/kg/day	N/A	N/A	- -
	Iron	26855	mg/kg	26855	mg/kg	M	0.0E+00	mg/kg/day	3.0E-01	mg/kg/day	N/A	N/A	- -
	Lead	358	mg/kg	358	mg/kg	M	0.0E+00	mg/kg/day	NA	mg/kg/day	N/A	N/A	- -
	(Total)												1.2E-02
												Total Hazard Index Across All Exposure Routes/Pathways	3.4E-01

(1) Medium-Specific (M) EPC selected for hazard calculation.
(2) Chronic.

TABLE 7.12
CALCULATION OF NON-CANCER HAZARDS
CENTRAL TENDENCY EXPOSURES
NSWC CRANE, INDIANA

Scenario Timeframe: Future
Medium: Surface/Subsurface Soil
Exposure Medium: Surface/Subsurface Soil
Exposure Point: SWMU 3 - Old Jeep Trail
Receptor Population: Construction Worker
Receptor Age: Adult

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Hazard Calculation (1)	Intake (Non-Cancer)	Intake (Non-Cancer) Units	Reference Dose (2)	Reference Dose Units	Reference Concentration	Reference Concentration Units	Hazard Quotient
Ingestion	2,3,7,8-TCDD Equivalents	0.0000074	mg/kg	0.0000074	mg/kg	M	1.0E-11	mg/kg/day	NA	mg/kg/day	N/A	N/A	- -
	2,4,6-Trinitrotoluene	2.62	mg/kg	2.62	mg/kg	M	3.7E-06	mg/kg/day	5.0E-04	mg/kg/day	N/A	N/A	7.4E-03
	2-Amino-4,6-Dinitrotoluene	0.433	mg/kg	0.433	mg/kg	M	6.1E-07	mg/kg/day	6.0E-05	mg/kg/day	N/A	N/A	1.0E-02
	4-Amino-2,6-Dinitrotoluene	0.365	mg/kg	0.365	mg/kg	M	5.1E-07	mg/kg/day	6.0E-05	mg/kg/day	N/A	N/A	8.6E-03
	HMX	4.77	mg/kg	4.77	mg/kg	M	6.7E-06	mg/kg/day	5.0E-02	mg/kg/day	N/A	N/A	1.3E-04
	RDX	3.41	mg/kg	3.41	mg/kg	M	4.8E-06	mg/kg/day	3.0E-03	mg/kg/day	N/A	N/A	1.6E-03
	Barium	252	mg/kg	252	mg/kg	M	3.6E-04	mg/kg/day	7.0E-02	mg/kg/day	N/A	N/A	5.1E-03
	Cadmium	1.19	mg/kg	1.19	mg/kg	M	1.7E-06	mg/kg/day	5.0E-04	mg/kg/day	N/A	N/A	3.4E-03
	Chromium	26.4	mg/kg	26.4	mg/kg	M	3.7E-05	mg/kg/day	1.5E+00	mg/kg/day	N/A	N/A	2.5E-05
	Iron	26855	mg/kg	26855	mg/kg	M	3.8E-02	mg/kg/day	3.0E-01	mg/kg/day	N/A	N/A	1.3E-01
	Lead	358	mg/kg	358	mg/kg	M	5.0E-04	mg/kg/day	NA	mg/kg/day	N/A	N/A	- -
	(Total)												1.6E-01
Dermal	2,3,7,8-TCDD Equivalents	0.0000074	mg/kg	0.0000074	mg/kg	M	4.3E-13	mg/kg/day	NA	mg/kg/day	N/A	N/A	- -
	2,4,6-Trinitrotoluene	2.62	mg/kg	2.62	mg/kg	M	5.1E-07	mg/kg/day	5.0E-04	mg/kg/day	N/A	N/A	1.0E-03
	2-Amino-4,6-Dinitrotoluene	0.433	mg/kg	0.433	mg/kg	M	8.4E-08	mg/kg/day	6.0E-05	mg/kg/day	N/A	N/A	1.4E-03
	4-Amino-2,6-Dinitrotoluene	0.365	mg/kg	0.365	mg/kg	M	7.1E-08	mg/kg/day	6.0E-05	mg/kg/day	N/A	N/A	1.2E-03
	HMX	4.77	mg/kg	4.77	mg/kg	M	9.2E-07	mg/kg/day	5.0E-02	mg/kg/day	N/A	N/A	1.8E-05
	RDX	3.41	mg/kg	3.41	mg/kg	M	6.6E-07	mg/kg/day	3.0E-03	mg/kg/day	N/A	N/A	2.2E-04
	Barium	252	mg/kg	252	mg/kg	M	0.0E+00	mg/kg/day	4.9E-03	mg/kg/day	N/A	N/A	- -
	Cadmium	1.19	mg/kg	1.19	mg/kg	M	2.3E-09	mg/kg/day	2.5E-05	mg/kg/day	N/A	N/A	9.2E-05
	Chromium	26.4	mg/kg	26.4	mg/kg	M	0.0E+00	mg/kg/day	2.0E-02	mg/kg/day	N/A	N/A	- -
	Iron	26855	mg/kg	26855	mg/kg	M	0.0E+00	mg/kg/day	3.0E-01	mg/kg/day	N/A	N/A	- -
	Lead	358	mg/kg	358	mg/kg	M	0.0E+00	mg/kg/day	NA	mg/kg/day	N/A	N/A	- -
	(Total)												3.9E-03
												Total Hazard Index Across All Exposure Routes/Pathways	1.7E-01

(1) Medium-Specific (M) EPC selected for hazard calculation.
(2) Chronic.

TABLE 7.13
CALCULATION OF NON-CANCER HAZARDS
REASONABLE MAXIMUM EXPOSURE
NSWC CRANE, INDIANA

Scenario Timeframe: Future
Medium: Ground Water
Exposure Medium: Ground Water
Exposure Point: SWMU 3 - Shallow Ground Water
Receptor Population: Construction Worker
Receptor Age: Adult

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Hazard Calculation (1)	Intake (Non-Cancer)	Intake (Non-Cancer) Units	Reference Dose (2)	Reference Dose Units	Reference Concentration	Reference Concentration Units	Hazard Quotient
Dermal	1,1,2,2-Tetrachloroethane	42.7	ug/L	42.7	ug/L	M	2.2E-05	mg/kg/day	6.0E-02	mg/kg/day	N/A	N/A	3.6E-04
	1,1,2-Trichloroethane	1.11	ug/L	1.11	ug/L	M	4.4E-07	mg/kg/day	4.0E-03	mg/kg/day	N/A	N/A	1.1E-04
	1,1-Dichloroethene	0.213	ug/L	0.213	ug/L	M	1.3E-07	mg/kg/day	9.0E-03	mg/kg/day	N/A	N/A	1.4E-05
	cis-1,2-Dichloroethene	11.3	ug/L	11.3	ug/L	M	7.5E-06	mg/kg/day	1.0E-02	mg/kg/day	N/A	N/A	7.5E-04
	Tetrachloroethene	0.617	ug/L	0.617	ug/L	M	1.5E-06	mg/kg/day	1.0E-02	mg/kg/day	N/A	N/A	1.5E-04
	trans-1,2-Dichloroethene	2.87	ug/L	2.87	ug/L	M	1.2E-06	mg/kg/day	2.0E-02	mg/kg/day	N/A	N/A	5.8E-05
	Trichloroethene	48.9	ug/L	48.9	ug/L	M	3.4E-05	mg/kg/day	3.0E-04	mg/kg/day	N/A	N/A	1.1E-01
	Vinyl Chloride	0.400	ug/L	0.400	ug/L	M	1.1E-07	mg/kg/day	3.0E-03	mg/kg/day	N/A	N/A	3.5E-05
	2,4,6-Trinitrotoluene	1.30	ug/L	1.30	ug/L	M	1.3E-07	mg/kg/day	5.0E-04	mg/kg/day	N/A	N/A	2.7E-04
	2-Amino-4,6-Dinitrotoluene	0.409	ug/L	0.409	ug/L	M	2.3E-08	mg/kg/day	6.0E-05	mg/kg/day	N/A	N/A	3.8E-04
	4-Amino-2,6-Dinitrotoluene	1.03	ug/L	1.03	ug/L	M	5.8E-08	mg/kg/day	6.0E-05	mg/kg/day	N/A	N/A	9.6E-04
	RDX	27.2	ug/L	27.2	ug/L	M	9.7E-07	mg/kg/day	3.0E-03	mg/kg/day	N/A	N/A	3.2E-04
	Aluminum	95.3	ug/L	95.3	ug/L	M	3.7E-06	mg/kg/day	1.0E+00	mg/kg/day	N/A	N/A	3.7E-06
	Barium	87.8	ug/L	87.8	ug/L	M	3.4E-06	mg/kg/day	4.9E-03	mg/kg/day	N/A	N/A	6.9E-04
	Cadmium	1.78	ug/L	1.78	ug/L	M	6.9E-08	mg/kg/day	2.5E-05	mg/kg/day	N/A	N/A	2.8E-03
	Chromium	7.02	ug/L	7.02	ug/L	M	5.4E-07	mg/kg/day	2.0E-02	mg/kg/day	N/A	N/A	2.8E-05
	Iron	505	ug/L	505	ug/L	M	2.0E-05	mg/kg/day	3.0E-01	mg/kg/day	N/A	N/A	6.5E-05
	Manganese	58.2	ug/L	58.2	ug/L	M	2.3E-06	mg/kg/day	2.9E-03	mg/kg/day	N/A	N/A	7.8E-04
	Nickel	8.86	ug/L	8.86	ug/L	M	6.9E-08	mg/kg/day	8.0E-04	mg/kg/day	N/A	N/A	8.6E-05
	Thallium	0.173	ug/L	0.173	ug/L	M	6.7E-09	mg/kg/day	7.0E-05	mg/kg/day	N/A	N/A	9.6E-05
	Nitrate	296	ug/L	296	ug/L	M	1.1E-05	mg/kg/day	1.6E+00	mg/kg/day	N/A	N/A	7.2E-06
	(Total)												1.2E-01
												Total Hazard Index Across All Exposure Routes/Pathways	1.2E-01

(1) Medium-Specific (M) EPC selected for hazard calculation.
(2) Chronic.

TABLE 7.14
CALCULATION OF NON-CANCER HAZARDS
CENTRAL TENDENCY EXPOSURES
NSWC CRANE, INDIANA

Scenario Timeframe: Future
Medium: Ground Water
Exposure Medium: Ground Water
Exposure Point: SWMU 3 - Shallow Ground Water
Receptor Population: Construction Worker
Receptor Age: Adult

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Hazard Calculation (1)	Intake (Non-Cancer)	Intake (Non-Cancer) Units	Reference Dose (2)	Reference Dose Units	Reference Concentration	Reference Concentration Units	Hazard Quotient
Dermal	1,1,2,2-Tetrachloroethane	42.7	ug/L	42.7	ug/L	M	1.9E-05	mg/kg/day	6.0E-02	mg/kg/day	N/A	N/A	3.1E-04
	1,1,2-Trichloroethane	1.11	ug/L	1.11	ug/L	M	3.7E-07	mg/kg/day	4.0E-03	mg/kg/day	N/A	N/A	9.3E-05
	1,1-Dichloroethene	0.213	ug/L	0.213	ug/L	M	1.1E-07	mg/kg/day	9.0E-03	mg/kg/day	N/A	N/A	1.2E-05
	cis-1,2-Dichloroethene	11.3	ug/L	11.3	ug/L	M	6.2E-06	mg/kg/day	1.0E-02	mg/kg/day	N/A	N/A	6.2E-04
	Tetrachloroethene	0.617	ug/L	0.617	ug/L	M	1.3E-06	mg/kg/day	1.0E-02	mg/kg/day	N/A	N/A	1.3E-04
	trans-1,2-Dichloroethene	2.87	ug/L	2.87	ug/L	M	9.5E-07	mg/kg/day	2.0E-02	mg/kg/day	N/A	N/A	4.8E-05
	Trichloroethene	48.9	ug/L	48.9	ug/L	M	2.9E-05	mg/kg/day	3.0E-04	mg/kg/day	N/A	N/A	9.7E-02
	Vinyl Chloride	0.400	ug/L	0.400	ug/L	M	8.5E-08	mg/kg/day	3.0E-03	mg/kg/day	N/A	N/A	2.8E-05
	2,4,6-Trinitrotoluene	1.30	ug/L	1.30	ug/L	M	1.1E-07	mg/kg/day	5.0E-04	mg/kg/day	N/A	N/A	2.3E-04
	2-Amino-4,6-Dinitrotoluene	0.409	ug/L	0.409	ug/L	M	2.0E-08	mg/kg/day	6.0E-05	mg/kg/day	N/A	N/A	3.3E-04
	4-Amino-2,6-Dinitrotoluene	1.03	ug/L	1.03	ug/L	M	5.0E-08	mg/kg/day	6.0E-05	mg/kg/day	N/A	N/A	8.3E-04
	RDX	27.2	ug/L	27.2	ug/L	M	8.4E-07	mg/kg/day	3.0E-03	mg/kg/day	N/A	N/A	2.8E-04
	Aluminum	95.3	ug/L	95.3	ug/L	M	2.6E-06	mg/kg/day	1.0E+00	mg/kg/day	N/A	N/A	2.6E-06
	Barium	87.8	ug/L	87.8	ug/L	M	5.2E-08	mg/kg/day	4.9E-03	mg/kg/day	N/A	N/A	1.1E-05
	Cadmium	1.8	ug/L	1.8	ug/L	M	4.1E-07	mg/kg/day	2.5E-05	mg/kg/day	N/A	N/A	1.6E-02
	Chromium	7.0	ug/L	7.0	ug/L	M	1.5E-05	mg/kg/day	2.0E-02	mg/kg/day	N/A	N/A	7.5E-04
	Iron	505.5	ug/L	505.5	ug/L	M	1.7E-06	mg/kg/day	3.0E-01	mg/kg/day	N/A	N/A	5.6E-06
	Manganese	58.2	ug/L	58.2	ug/L	M	5.1E-08	mg/kg/day	2.9E-03	mg/kg/day	N/A	N/A	1.8E-05
	Nickel	8.9	ug/L	8.9	ug/L	M	5.0E-09	mg/kg/day	8.0E-04	mg/kg/day	N/A	N/A	6.3E-06
	Thallium	0.2	ug/L	0.2	ug/L	M	8.6E-06	mg/kg/day	7.0E-05	mg/kg/day	N/A	N/A	1.2E-01
	Nitrate	296.4	ug/L	296.4	ug/L	M	0.0E+00	mg/kg/day	1.6E+00	mg/kg/day	N/A	N/A	- -
	(Total)												2.4E-01
												Total Hazard Index Across All Exposure Routes/Pathways	2.4E-01

(1) Medium-Specific (M) EPC selected for hazard calculation.
(2) Chronic.

TABLE 7.15
CALCULATION OF NON-CANCER HAZARDS
REASONABLE MAXIMUM EXPOSURE
NSWC CRANE, INDIANA

Scenario Timeframe: Future
Medium: Ground Water
Exposure Medium: Air
Exposure Point: SWMU 3 - Shallow Ground Water
Receptor Population: Construction Worker
Receptor Age: Adult

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Hazard Calculation (1)	Intake (Non-Cancer)	Intake (Non-Cancer) Units	Reference Dose (2)	Reference Dose Units	Reference Concentration	Reference Concentration Units	Hazard Quotient
Inhalation	1,1,2,2-Tetrachloroethane	42.7	ug/L	4.3E-05	mg/m3	R	1.3E-06	mg/kg/day	NA	mg/kg/day	N/A	N/A	- -
	1,1,2-Trichloroethane	1.11	ug/L	1.4E-06	mg/m3	R	4.1E-08	mg/kg/day	NA	mg/kg/day	N/A	N/A	- -
	1,1-Dichloroethene	0.213	ug/L	1.9E-06	mg/m3	R	5.5E-08	mg/kg/day	NA	mg/kg/day	N/A	N/A	- -
	cis-1,2-Dichloroethene	11.3	ug/L	2.6E-05	mg/m3	R	7.6E-07	mg/kg/day	NA	mg/kg/day	N/A	N/A	- -
	Tetrachloroethene	0.617	ug/L	3.2E-06	mg/m3	R	9.5E-08	mg/kg/day	1.4E-01	mg/kg/day	N/A	N/A	6.8E-07
	trans-1,2-Dichloroethene	2.87	ug/L	1.0E-05	mg/m3	R	3.0E-07	mg/kg/day	NA	mg/kg/day	N/A	N/A	- -
	Trichloroethene	48.9	ug/L	1.8E-04	mg/m3	R	5.3E-06	mg/kg/day	1.0E-02	mg/kg/day	N/A	N/A	5.3E-04
	Vinyl Chloride	0.400	ug/L	4.3E-06	mg/m3	R	1.3E-07	mg/kg/day	2.9E-02	mg/kg/day	N/A	N/A	4.4E-06
	2,4,6-Trinitrotoluene	1.30	ug/L	0.0E+00	mg/m3	R	0.0E+00	mg/kg/day	NA	mg/kg/day	N/A	N/A	- -
	2-Amino-4,6-Dinitrotoluene	0.409	ug/L	0.0E+00	mg/m3	R	0.0E+00	mg/kg/day	NA	mg/kg/day	N/A	N/A	- -
	4-Amino-2,6-Dinitrotoluene	1.03	ug/L	0.0E+00	mg/m3	R	0.0E+00	mg/kg/day	NA	mg/kg/day	N/A	N/A	- -
	RDX	27.2	ug/L	0.0E+00	mg/m3	R	0.0E+00	mg/kg/day	NA	mg/kg/day	N/A	N/A	- -
	Aluminum	95.3	ug/L	0.0E+00	mg/m3	R	0.0E+00	mg/kg/day	1.0E-03	mg/kg/day	N/A	N/A	- -
	Barium	87.8	ug/L	0.0E+00	mg/m3	R	0.0E+00	mg/kg/day	1.4E-04	mg/kg/day	N/A	N/A	- -
	Cadmium	1.78	ug/L	0.0E+00	mg/m3	R	0.0E+00	mg/kg/day	5.7E-05	mg/kg/day	N/A	N/A	- -
	Chromium	7.02	ug/L	0.0E+00	mg/m3	R	0.0E+00	mg/kg/day	NA	mg/kg/day	N/A	N/A	- -
	Iron	505	ug/L	0.0E+00	mg/m3	R	0.0E+00	mg/kg/day	NA	mg/kg/day	N/A	N/A	- -
	Manganese	58.2	ug/L	0.0E+00	mg/m3	R	0.0E+00	mg/kg/day	1.4E-05	mg/kg/day	N/A	N/A	- -
	Nickel	8.86	ug/L	0.0E+00	mg/m3	R	0.0E+00	mg/kg/day	NA	mg/kg/day	N/A	N/A	- -
	Thallium	0.173	ug/L	0.0E+00	mg/m3	R	0.0E+00	mg/kg/day	NA	mg/kg/day	N/A	N/A	- -
	Nitrate	296	ug/L	0.0E+00	mg/m3	R	0.0E+00	mg/kg/day	NA	mg/kg/day	N/A	N/A	- -
	(Total)												5.3E-04
												Total Hazard Index Across All Exposure Routes/Pathways	5.3E-04

(1) Route-Specific (R) EPC selected for hazard calculation.
(2) Chronic.

TABLE 7.16
CALCULATION OF NON-CANCER HAZARDS
CENTRAL TENDENCY EXPOSURES
NSWC CRANE, INDIANA

Scenario Timeframe: Future
Medium: Ground Water
Exposure Medium: Air
Exposure Point: SWMU 3 - Shallow Ground Water
Receptor Population: Construction Worker
Receptor Age: Adult

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Hazard Calculation (1)	Intake (Non-Cancer)	Intake (Non-Cancer) Units	Reference Dose (2)	Reference Dose Units	Reference Concentration	Reference Concentration Units	Hazard Quotient
Inhalation	1,1,2,2-Tetrachloroethane	42.7	ug/L	4.3E-05	mg/m3	R	9.5E-07	mg/kg/day	NA	mg/kg/day	N/A	N/A	- -
	1,1,2-Trichloroethane	1.11	ug/L	1.4E-06	mg/m3	R	3.1E-08	mg/kg/day	NA	mg/kg/day	N/A	N/A	- -
	1,1-Dichloroethene	0.213	ug/L	1.9E-06	mg/m3	R	4.1E-08	mg/kg/day	NA	mg/kg/day	N/A	N/A	- -
	cis-1,2-Dichloroethene	11.3	ug/L	2.6E-05	mg/m3	R	5.7E-07	mg/kg/day	NA	mg/kg/day	N/A	N/A	- -
	Tetrachloroethene	0.617	ug/L	3.2E-06	mg/m3	R	7.1E-08	mg/kg/day	1.4E-01	mg/kg/day	N/A	N/A	5.1E-07
	trans-1,2-Dichloroethene	2.87	ug/L	1.0E-05	mg/m3	R	2.2E-07	mg/kg/day	NA	mg/kg/day	N/A	N/A	- -
	Trichloroethene	48.9	ug/L	1.8E-04	mg/m3	R	4.0E-06	mg/kg/day	1.0E-02	mg/kg/day	N/A	N/A	4.0E-04
	Vinyl Chloride	0.400	ug/L	4.3E-06	mg/m3	R	9.4E-08	mg/kg/day	2.9E-02	mg/kg/day	N/A	N/A	3.3E-06
	2,4,6-Trinitrotoluene	1.30	ug/L	0.0E+00	mg/m3	R	0.0E+00	mg/kg/day	NA	mg/kg/day	N/A	N/A	- -
	2-Amino-4,6-Dinitrotoluene	0.409	ug/L	0.0E+00	mg/m3	R	0.0E+00	mg/kg/day	NA	mg/kg/day	N/A	N/A	- -
	4-Amino-2,6-Dinitrotoluene	1.03	ug/L	0.0E+00	mg/m3	R	0.0E+00	mg/kg/day	NA	mg/kg/day	N/A	N/A	- -
	RDX	27.2	ug/L	0.0E+00	mg/m3	R	0.0E+00	mg/kg/day	NA	mg/kg/day	N/A	N/A	- -
	Aluminum	95.3	ug/L	0.0E+00	mg/m3	R	0.0E+00	mg/kg/day	1.0E-03	mg/kg/day	N/A	N/A	- -
	Barium	87.8	ug/L	0.0E+00	mg/m3	R	0.0E+00	mg/kg/day	1.4E-04	mg/kg/day	N/A	N/A	- -
	Cadmium	1.78	ug/L	0.0E+00	mg/m3	R	0.0E+00	mg/kg/day	5.7E-05	mg/kg/day	N/A	N/A	- -
	Chromium	7.02	ug/L	0.0E+00	mg/m3	R	0.0E+00	mg/kg/day	NA	mg/kg/day	N/A	N/A	- -
	Iron	505	ug/L	0.0E+00	mg/m3	R	0.0E+00	mg/kg/day	NA	mg/kg/day	N/A	N/A	- -
	Manganese	58.2	ug/L	0.0E+00	mg/m3	R	0.0E+00	mg/kg/day	1.4E-05	mg/kg/day	N/A	N/A	- -
	Nickel	8.86	ug/L	0.0E+00	mg/m3	R	0.0E+00	mg/kg/day	NA	mg/kg/day	N/A	N/A	- -
	Thallium	0.173	ug/L	0.0E+00	mg/m3	R	0.0E+00	mg/kg/day	NA	mg/kg/day	N/A	N/A	- -
	Nitrate	296	ug/L	0.0E+00	mg/m3	R	0.0E+00	mg/kg/day	NA	mg/kg/day	N/A	N/A	- -
	(Total)												4.0E-04
												Total Hazard Index Across All Exposure Routes/Pathways	4.0E-04

(1) Route-Specific (R) EPC selected for hazard calculation.
(2) Chronic.

TABLE 7.17
CALCULATION OF NON-CANCER HAZARDS
REASONABLE MAXIMUM EXPOSURE
NSWC CRANE, INDIANA

Scenario Timeframe: Future
Medium: Surface Soil
Exposure Medium: Surface Soil
Exposure Point: SWMU 3 - Old Jeep Trail
Receptor Population: Maintenance Worker
Receptor Age: Adult

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Hazard Calculation (1)	Intake (Non-Cancer)	Intake (Non-Cancer) Units	Reference Dose (2)	Reference Dose Units	Reference Concentration	Reference Concentration Units	Hazard Quotient
Ingestion	2,3,7,8-TCDD Equivalents	0.0000074	mg/kg	0.0000074	mg/kg	M	7.0E-13	mg/kg/day	NA	mg/kg/day	N/A	N/A	- -
	2,4,6-Trinitrotoluene	2.62	mg/kg	2.62	mg/kg	M	2.5E-07	mg/kg/day	5.0E-04	mg/kg/day	N/A	N/A	4.9E-04
	2-Amino-4,6-Dinitrotoluene	0.433	mg/kg	0.433	mg/kg	M	4.1E-08	mg/kg/day	6.0E-05	mg/kg/day	N/A	N/A	6.8E-04
	4-Amino-2,6-Dinitrotoluene	0.365	mg/kg	0.365	mg/kg	M	3.4E-08	mg/kg/day	6.0E-05	mg/kg/day	N/A	N/A	5.7E-04
	HMX	4.77	mg/kg	4.77	mg/kg	M	4.5E-07	mg/kg/day	5.0E-02	mg/kg/day	N/A	N/A	9.0E-06
	RDX	3.41	mg/kg	3.41	mg/kg	M	3.2E-07	mg/kg/day	3.0E-03	mg/kg/day	N/A	N/A	1.1E-04
	Barium	252	mg/kg	252	mg/kg	M	2.4E-05	mg/kg/day	7.0E-02	mg/kg/day	N/A	N/A	3.4E-04
	Cadmium	1.19	mg/kg	1.19	mg/kg	M	1.1E-07	mg/kg/day	5.0E-04	mg/kg/day	N/A	N/A	2.2E-04
	Chromium	26.4	mg/kg	26.4	mg/kg	M	2.5E-06	mg/kg/day	1.5E+00	mg/kg/day	N/A	N/A	1.7E-06
	Iron	26855	mg/kg	26855	mg/kg	M	2.5E-03	mg/kg/day	3.0E-01	mg/kg/day	N/A	N/A	8.4E-03
	Lead	358	mg/kg	358	mg/kg	M	3.4E-05	mg/kg/day	NA	mg/kg/day	N/A	N/A	- -
	(Total)												1.1E-02
Dermal	2,3,7,8-TCDD Equivalents	0.0000074	mg/kg	0.0000074	mg/kg	M	1.4E-13	mg/kg/day	NA	mg/kg/day	N/A	N/A	- -
	2,4,6-Trinitrotoluene	2.62	mg/kg	2.62	mg/kg	M	1.6E-07	mg/kg/day	5.0E-04	mg/kg/day	N/A	N/A	3.3E-04
	2-Amino-4,6-Dinitrotoluene	0.433	mg/kg	0.433	mg/kg	M	2.7E-08	mg/kg/day	6.0E-05	mg/kg/day	N/A	N/A	4.5E-04
	4-Amino-2,6-Dinitrotoluene	0.365	mg/kg	0.365	mg/kg	M	2.3E-08	mg/kg/day	6.0E-05	mg/kg/day	N/A	N/A	3.8E-04
	HMX	4.77	mg/kg	4.77	mg/kg	M	3.0E-07	mg/kg/day	5.0E-02	mg/kg/day	N/A	N/A	5.9E-06
	RDX	3.41	mg/kg	3.41	mg/kg	M	2.1E-07	mg/kg/day	3.0E-03	mg/kg/day	N/A	N/A	7.0E-05
	Barium	252	mg/kg	252	mg/kg	M	0.0E+00	mg/kg/day	4.9E-03	mg/kg/day	N/A	N/A	- -
	Cadmium	1.19	mg/kg	1.19	mg/kg	M	7.4E-10	mg/kg/day	2.5E-05	mg/kg/day	N/A	N/A	3.0E-05
	Chromium	26.4	mg/kg	26.4	mg/kg	M	0.0E+00	mg/kg/day	2.0E-02	mg/kg/day	N/A	N/A	- -
	Iron	26855	mg/kg	26855	mg/kg	M	0.0E+00	mg/kg/day	3.0E-01	mg/kg/day	N/A	N/A	- -
	Lead	358	mg/kg	358	mg/kg	M	0.0E+00	mg/kg/day	NA	mg/kg/day	N/A	N/A	- -
	(Total)												1.3E-03
												Total Hazard Index Across All Exposure Routes/Pathways	1.2E-02

(1) Medium-Specific (M) EPC selected for hazard calculation.
(2) Chronic.

TABLE 7.18
CALCULATION OF NON-CANCER HAZARDS
CENTRAL TENDENCY EXPOSURES
NSWC CRANE, INDIANA

Scenario Timeframe: Future
Medium: Surface Soil
Exposure Medium: Surface Soil
Exposure Point: SWMU 3 - Old Jeep Trail
Receptor Population: Maintenance Worker
Receptor Age: Adult

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Hazard Calculation (1)	Intake (Non-Cancer)	Intake (Non-Cancer) Units	Reference Dose (2)	Reference Dose Units	Reference Concentration	Reference Concentration Units	Hazard Quotient
Ingestion	2,3,7,8-TCDD Equivalents	0.0000074	mg/kg	0.0000074	mg/kg	M	1.7E-13	mg/kg/day	NA	mg/kg/day	N/A	N/A	- -
	2,4,6-Trinitrotoluene	2.62	mg/kg	2.62	mg/kg	M	6.2E-08	mg/kg/day	5.0E-04	mg/kg/day	N/A	N/A	1.2E-04
	2-Amino-4,6-Dinitrotoluene	0.433	mg/kg	0.433	mg/kg	M	1.0E-08	mg/kg/day	6.0E-05	mg/kg/day	N/A	N/A	1.7E-04
	4-Amino-2,6-Dinitrotoluene	0.365	mg/kg	0.365	mg/kg	M	8.6E-09	mg/kg/day	6.0E-05	mg/kg/day	N/A	N/A	1.4E-04
	HMX	4.77	mg/kg	4.77	mg/kg	M	1.1E-07	mg/kg/day	5.0E-02	mg/kg/day	N/A	N/A	2.2E-06
	RDX	3.41	mg/kg	3.41	mg/kg	M	8.0E-08	mg/kg/day	3.0E-03	mg/kg/day	N/A	N/A	2.7E-05
	Barium	252	mg/kg	252	mg/kg	M	5.9E-06	mg/kg/day	7.0E-02	mg/kg/day	N/A	N/A	8.5E-05
	Cadmium	1.19	mg/kg	1.19	mg/kg	M	2.8E-08	mg/kg/day	5.0E-04	mg/kg/day	N/A	N/A	5.6E-05
	Chromium	26.4	mg/kg	26.4	mg/kg	M	6.2E-07	mg/kg/day	1.5E+00	mg/kg/day	N/A	N/A	4.1E-07
	Iron	26855	mg/kg	26855	mg/kg	M	6.3E-04	mg/kg/day	3.0E-01	mg/kg/day	N/A	N/A	2.1E-03
	Lead	358	mg/kg	358	mg/kg	M	8.4E-06	mg/kg/day	NA	mg/kg/day	N/A	N/A	- -
	(Total)												2.7E-03
Dermal	2,3,7,8-TCDD Equivalents	0.0000074	mg/kg	0.0000074	mg/kg	M	6.9E-15	mg/kg/day	NA	mg/kg/day	N/A	N/A	- -
	2,4,6-Trinitrotoluene	2.62	mg/kg	2.62	mg/kg	M	8.1E-09	mg/kg/day	5.0E-04	mg/kg/day	N/A	N/A	1.6E-05
	2-Amino-4,6-Dinitrotoluene	0.433	mg/kg	0.433	mg/kg	M	1.3E-09	mg/kg/day	6.0E-05	mg/kg/day	N/A	N/A	2.2E-05
	4-Amino-2,6-Dinitrotoluene	0.365	mg/kg	0.365	mg/kg	M	1.1E-09	mg/kg/day	6.0E-05	mg/kg/day	N/A	N/A	1.9E-05
	HMX	4.77	mg/kg	4.77	mg/kg	M	1.5E-08	mg/kg/day	5.0E-02	mg/kg/day	N/A	N/A	3.0E-07
	RDX	3.41	mg/kg	3.41	mg/kg	M	1.1E-08	mg/kg/day	3.0E-03	mg/kg/day	N/A	N/A	3.5E-06
	Barium	252	mg/kg	252	mg/kg	M	0.0E+00	mg/kg/day	4.9E-03	mg/kg/day	N/A	N/A	- -
	Cadmium	1.19	mg/kg	1.19	mg/kg	M	3.7E-11	mg/kg/day	2.5E-05	mg/kg/day	N/A	N/A	1.5E-06
	Chromium	26.4	mg/kg	26.4	mg/kg	M	0.0E+00	mg/kg/day	2.0E-02	mg/kg/day	N/A	N/A	- -
	Iron	26855	mg/kg	26855	mg/kg	M	0.0E+00	mg/kg/day	3.0E-01	mg/kg/day	N/A	N/A	- -
	Lead	358	mg/kg	358	mg/kg	M	0.0E+00	mg/kg/day	NA	mg/kg/day	N/A	N/A	- -
	(Total)												6.3E-05
												Total Hazard Index Across All Exposure Routes/Pathways	2.8E-03

(1) Medium-Specific (M) EPC selected for hazard calculation.
(2) Chronic.

TABLE 7.19
CALCULATION OF NON-CANCER HAZARDS
REASONABLE MAXIMUM EXPOSURE
NSWC CRANE, INDIANA

Scenario Timeframe: Future
Medium: Surface Water
Exposure Medium: Surface Water
Exposure Point: SWMU 3 - Little Sulphur Creek
Receptor Population: Maintenance Worker
Receptor Age: Adult

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Hazard Calculation (1)	Intake (Non-Cancer)	Intake (Non-Cancer) Units	Reference Dose (2)	Reference Dose Units	Reference Concentration	Reference Concentration Units	Hazard Quotient
Dermal	Acetone	64.0	ug/L	64.0	ug/L	M	2.5E-07	mg/kg/day	1.0E-01	mg/kg/day	N/A	N/A	2.5E-06
	Bromomethane	0.529	ug/L	0.529	ug/L	M	1.3E-08	mg/kg/day	1.4E-03	mg/kg/day	N/A	N/A	9.0E-06
	Methylene Chloride	3.23	ug/L	3.23	ug/L	M	9.3E-08	mg/kg/day	6.0E-02	mg/kg/day	N/A	N/A	1.5E-06
	Bis(2-ethylhexyl)phthalate	1.36	ug/L	1.36	ug/L	M	1.3E-06	mg/kg/day	2.0E-02	mg/kg/day	N/A	N/A	6.7E-05
	Pentachlorophenol	0.059	ug/L	0.059	ug/L	M	4.6E-07	mg/kg/day	3.0E-02	mg/kg/day	N/A	N/A	1.5E-05
	2-Amino-4,6-Dinitrotoluene	0.384	ug/L	0.384	ug/L	M	3.4E-09	mg/kg/day	6.0E-05	mg/kg/day	N/A	N/A	5.7E-05
	4-Amino-2,6-Dinitrotoluene	1.06	ug/L	1.06	ug/L	M	9.5E-09	mg/kg/day	6.0E-05	mg/kg/day	N/A	N/A	1.6E-04
	RDX	63.0	ug/L	63.0	ug/L	M	3.6E-07	mg/kg/day	3.0E-03	mg/kg/day	N/A	N/A	1.2E-04
	Antimony	0.784	ug/L	0.784	ug/L	M	4.9E-09	mg/kg/day	6.0E-05	mg/kg/day	N/A	N/A	8.1E-05
	Lead	29.1	ug/L	29.1	ug/L	M	1.8E-07	mg/kg/day	NA	mg/kg/day	N/A	N/A	- -
	(Total)												5.1E-04
												Total Hazard Index Across All Exposure Routes/Pathways	5.1E-04

(1) Medium-Specific (M) EPC selected for hazard calculation.
(2) Chronic.

TABLE 7.20
CALCULATION OF NON-CANCER HAZARDS
CENTRAL TENDENCY EXPOSURES
NSWC CRANE, INDIANA

Scenario Timeframe: Future
Medium: Surface Water
Exposure Medium: Surface Water
Exposure Point: SWMU 3 - Little Sulphur Creek
Receptor Population: Maintenance Worker
Receptor Age: Adult

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Hazard Calculation (1)	Intake (Non-Cancer)	Intake (Non-Cancer) Units	Reference Dose (2)	Reference Dose Units	Reference Concentration	Reference Concentration Units	Hazard Quotient
Dermal	Acetone	64.0	ug/L	64.0	ug/L	M	1.0E-07	mg/kg/day	1.0E-01	mg/kg/day	N/A	N/A	1.0E-06
	Bromomethane	0.529	ug/L	0.529	ug/L	M	5.2E-09	mg/kg/day	1.4E-03	mg/kg/day	N/A	N/A	3.7E-06
	Methylene Chloride	3.23	ug/L	3.23	ug/L	M	3.8E-08	mg/kg/day	6.0E-02	mg/kg/day	N/A	N/A	6.3E-07
	Bis(2-ethylhexyl)phthalate	1.36	ug/L	1.36	ug/L	M	5.8E-07	mg/kg/day	2.0E-02	mg/kg/day	N/A	N/A	2.9E-05
	Pentachlorophenol	0.059	ug/L	0.059	ug/L	M	2.0E-07	mg/kg/day	3.0E-02	mg/kg/day	N/A	N/A	6.7E-06
	2-Amino-4,6-Dinitrotoluene	0.384	ug/L	0.384	ug/L	M	1.5E-09	mg/kg/day	6.0E-05	mg/kg/day	N/A	N/A	2.5E-05
	4-Amino-2,6-Dinitrotoluene	1.06	ug/L	1.06	ug/L	M	4.1E-09	mg/kg/day	6.0E-05	mg/kg/day	N/A	N/A	6.9E-05
	RDX	63.0	ug/L	63.0	ug/L	M	1.6E-07	mg/kg/day	3.0E-03	mg/kg/day	N/A	N/A	5.2E-05
	Antimony	0.784	ug/L	0.784	ug/L	M	1.8E-09	mg/kg/day	6.0E-05	mg/kg/day	N/A	N/A	3.0E-05
	Lead	29.1	ug/L	29.1	ug/L	M	6.8E-08	mg/kg/day	NA	mg/kg/day	N/A	N/A	- -
	(Total)												2.2E-04
												Total Hazard Index Across All Exposure Routes/Pathways	2.2E-04

(1) Medium-Specific (M) EPC selected for hazard calculation.
(2) Chronic.

TABLE 7.21
CALCULATION OF NON-CANCER HAZARDS
REASONABLE MAXIMUM EXPOSURE
NSWC CRANE, INDIANA

Scenario Timeframe: Future
Medium: Sediment
Exposure Medium: Sediment
Exposure Point: SWMU 3 - Little Sulphur Creek
Receptor Population: Maintenance Worker
Receptor Age: Adult

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Hazard Calculation (1)	Intake (Non-Cancer)	Intake (Non-Cancer) Units	Reference Dose (2)	Reference Dose Units	Reference Concentration	Reference Concentration Units	Hazard Quotient
Ingestion	2-Amino-4,6-Dinitrotoluene	0.178	mg/kg	0.178	mg/kg	M	1.7E-08	mg/kg/day	6.0E-05	mg/kg/day	N/A	N/A	2.8E-04
	Aluminum	14916	mg/kg	14916	mg/kg	M	1.4E-03	mg/kg/day	1.0E+00	mg/kg/day	N/A	N/A	1.4E-03
	Antimony	2.88	mg/kg	2.88	mg/kg	M	2.7E-07	mg/kg/day	4.0E-04	mg/kg/day	N/A	N/A	6.8E-04
	Barium	359	mg/kg	359	mg/kg	M	3.4E-05	mg/kg/day	7.0E-02	mg/kg/day	N/A	N/A	4.8E-04
	Cadmium	1.78	mg/kg	1.78	mg/kg	M	1.7E-07	mg/kg/day	5.0E-04	mg/kg/day	N/A	N/A	3.3E-04
	Lead	120	mg/kg	120	mg/kg	M	1.1E-05	mg/kg/day	NA	mg/kg/day	N/A	N/A	- -
	(Total)												3.2E-03
Dermal	2-Amino-4,6-Dinitrotoluene	0.178	mg/kg	0.178	mg/kg	M	1.1E-08	mg/kg/day	6.0E-05	mg/kg/day	N/A	N/A	1.8E-04
	Aluminum	14916	mg/kg	14916	mg/kg	M	0.0E+00	mg/kg/day	1.0E+00	mg/kg/day	N/A	N/A	- -
	Antimony	2.88	mg/kg	2.88	mg/kg	M	0.0E+00	mg/kg/day	6.0E-05	mg/kg/day	N/A	N/A	- -
	Barium	359	mg/kg	359	mg/kg	M	0.0E+00	mg/kg/day	4.9E-03	mg/kg/day	N/A	N/A	- -
	Cadmium	1.78	mg/kg	1.78	mg/kg	M	1.1E-09	mg/kg/day	2.5E-05	mg/kg/day	N/A	N/A	4.4E-05
	Lead	120	mg/kg	120	mg/kg	M	0.0E+00	mg/kg/day	NA	mg/kg/day	N/A	N/A	- -
	(Total)												2.3E-04
												Total Hazard Index Across All Exposure Routes/Pathways	3.4E-03

(1) Medium-Specific (M) EPC selected for hazard calculation.
(2) Chronic.

TABLE 7.22
CALCULATION OF NON-CANCER HAZARDS
CENTRAL TENDENCY EXPOSURES
NSWC CRANE, INDIANA

Scenario Timeframe: Future
Medium: Sediment
Exposure Medium: Sediment
Exposure Point: SWMU 3 - Little Sulphur Creek
Receptor Population: Maintenance Worker
Receptor Age: Adult

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Hazard Calculation (1)	Intake (Non-Cancer)	Intake (Non-Cancer) Units	Reference Dose (2)	Reference Dose Units	Reference Concentration	Reference Concentration Units	Hazard Quotient
Ingestion	2-Amino-4,6-Dinitrotoluene	0.178	mg/kg	0.178	mg/kg	M	4.2E-09	mg/kg/day	6.0E-05	mg/kg/day	N/A	N/A	7.0E-05
	Aluminum	14916	mg/kg	14916	mg/kg	M	3.5E-04	mg/kg/day	1.0E+00	mg/kg/day	N/A	N/A	3.5E-04
	Antimony	2.88	mg/kg	2.88	mg/kg	M	6.8E-08	mg/kg/day	4.0E-04	mg/kg/day	N/A	N/A	1.7E-04
	Barium	359	mg/kg	359	mg/kg	M	8.4E-06	mg/kg/day	7.0E-02	mg/kg/day	N/A	N/A	1.2E-04
	Cadmium	1.78	mg/kg	1.78	mg/kg	M	4.2E-08	mg/kg/day	5.0E-04	mg/kg/day	N/A	N/A	8.3E-05
	Lead	120	mg/kg	120	mg/kg	M	2.8E-06	mg/kg/day	NA	mg/kg/day	N/A	N/A	- -
	(Total)												7.9E-04
Dermal	2-Amino-4,6-Dinitrotoluene	0.178	mg/kg	0.178	mg/kg	M	5.5E-10	mg/kg/day	6.0E-05	mg/kg/day	N/A	N/A	9.2E-06
	Aluminum	14916	mg/kg	14916	mg/kg	M	0.0E+00	mg/kg/day	1.0E+00	mg/kg/day	N/A	N/A	- -
	Antimony	2.88	mg/kg	2.88	mg/kg	M	0.0E+00	mg/kg/day	6.0E-05	mg/kg/day	N/A	N/A	- -
	Barium	359	mg/kg	359	mg/kg	M	0.0E+00	mg/kg/day	4.9E-03	mg/kg/day	N/A	N/A	- -
	Cadmium	1.78	mg/kg	1.78	mg/kg	M	5.5E-11	mg/kg/day	2.5E-05	mg/kg/day	N/A	N/A	2.2E-06
	Lead	120	mg/kg	120	mg/kg	M	0.0E+00	mg/kg/day	NA	mg/kg/day	N/A	N/A	- -
	(Total)												1.1E-05
												Total Hazard Index Across All Exposure Routes/Pathways	8.0E-04

(1) Medium-Specific (M) EPC selected for hazard calculation.
(2) Chronic.

TABLE 7.23
CALCULATION OF NON-CANCER HAZARDS
REASONABLE MAXIMUM EXPOSURE
NSWC CRANE, INDIANA

Scenario Timeframe: Future
Medium: Surface Soil
Exposure Medium: Surface Soil
Exposure Point: SWMU 3 - Old Jeep Trail
Receptor Population: Occupational Workers
Receptor Age: Adult

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Hazard Calculation (1)	Intake (Non-Cancer)	Intake (Non-Cancer) Units	Reference Dose (2)	Reference Dose Units	Reference Concentration	Reference Concentration Units	Hazard Quotient
Ingestion	2,3,7,8-TCDD Equivalents	0.0000074	mg/kg	0.0000074	mg/kg	M	7.2E-12	mg/kg/day	NA	mg/kg/day	N/A	N/A	- -
	2,4,6-Trinitrotoluene	2.62	mg/kg	2.62	mg/kg	M	2.6E-06	mg/kg/day	5.0E-04	mg/kg/day	N/A	N/A	5.1E-03
	2-Amino-4,6-Dinitrotoluene	0.433	mg/kg	0.433	mg/kg	M	4.2E-07	mg/kg/day	6.0E-05	mg/kg/day	N/A	N/A	7.1E-03
	4-Amino-2,6-Dinitrotoluene	0.365	mg/kg	0.365	mg/kg	M	3.6E-07	mg/kg/day	6.0E-05	mg/kg/day	N/A	N/A	5.9E-03
	HMX	4.77	mg/kg	4.77	mg/kg	M	4.7E-06	mg/kg/day	5.0E-02	mg/kg/day	N/A	N/A	9.3E-05
	RDX	3.41	mg/kg	3.41	mg/kg	M	3.3E-06	mg/kg/day	3.0E-03	mg/kg/day	N/A	N/A	1.1E-03
	Barium	252	mg/kg	252	mg/kg	M	2.5E-04	mg/kg/day	7.0E-02	mg/kg/day	N/A	N/A	3.5E-03
	Cadmium	1.19	mg/kg	1.19	mg/kg	M	1.2E-06	mg/kg/day	5.0E-04	mg/kg/day	N/A	N/A	2.3E-03
	Chromium	26.4	mg/kg	26.4	mg/kg	M	2.6E-05	mg/kg/day	1.5E+00	mg/kg/day	N/A	N/A	1.7E-05
	Iron	26855	mg/kg	26855	mg/kg	M	2.6E-02	mg/kg/day	3.0E-01	mg/kg/day	N/A	N/A	8.8E-02
	Lead	358	mg/kg	358	mg/kg	M	3.5E-04	mg/kg/day	NA	mg/kg/day	N/A	N/A	- -
	(Total)												1.1E-01
Dermal	2,3,7,8-TCDD Equivalents	0.0000074	mg/kg	0.0000074	mg/kg	M	1.4E-12	mg/kg/day	NA	mg/kg/day	N/A	N/A	- -
	2,4,6-Trinitrotoluene	2.62	mg/kg	2.62	mg/kg	M	1.7E-06	mg/kg/day	5.0E-04	mg/kg/day	N/A	N/A	3.4E-03
	2-Amino-4,6-Dinitrotoluene	0.433	mg/kg	0.433	mg/kg	M	2.8E-07	mg/kg/day	6.0E-05	mg/kg/day	N/A	N/A	4.7E-03
	4-Amino-2,6-Dinitrotoluene	0.365	mg/kg	0.365	mg/kg	M	2.4E-07	mg/kg/day	6.0E-05	mg/kg/day	N/A	N/A	3.9E-03
	HMX	4.77	mg/kg	4.77	mg/kg	M	3.1E-06	mg/kg/day	5.0E-02	mg/kg/day	N/A	N/A	6.2E-05
	RDX	3.41	mg/kg	3.41	mg/kg	M	2.2E-06	mg/kg/day	3.0E-03	mg/kg/day	N/A	N/A	7.3E-04
	Barium	252	mg/kg	252	mg/kg	M	0.0E+00	mg/kg/day	4.9E-03	mg/kg/day	N/A	N/A	- -
	Cadmium	1.19	mg/kg	1.19	mg/kg	M	7.7E-09	mg/kg/day	2.5E-05	mg/kg/day	N/A	N/A	3.1E-04
	Chromium	26.4	mg/kg	26.4	mg/kg	M	0.0E+00	mg/kg/day	2.0E-02	mg/kg/day	N/A	N/A	- -
	Iron	26855	mg/kg	26855	mg/kg	M	0.0E+00	mg/kg/day	3.0E-01	mg/kg/day	N/A	N/A	- -
	Lead	358	mg/kg	358	mg/kg	M	0.0E+00	mg/kg/day	NA	mg/kg/day	N/A	N/A	- -
	(Total)												1.3E-02
												Total Hazard Index Across All Exposure Routes/Pathways	1.3E-01

(1) Medium-Specific (M) EPC selected for hazard calculation.
(2) Chronic.

TABLE 7.24
CALCULATION OF NON-CANCER HAZARDS
CENTRAL TENDENCY EXPOSURES
NSWC CRANE, INDIANA

Scenario Timeframe: Future
Medium: Surface Soil
Exposure Medium: Surface Soil
Exposure Point: SWMU 3 - Old Jeep Trail
Receptor Population: Occupational Workers
Receptor Age: Adult

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Hazard Calculation (1)	Intake (Non-Cancer)	Intake (Non-Cancer) Units	Reference Dose (2)	Reference Dose Units	Reference Concentration	Reference Concentration Units	Hazard Quotient
Ingestion	2,3,7,8-TCDD Equivalents	0.0000074	mg/kg	0.0000074	mg/kg	M	3.2E-12	mg/kg/day	NA	mg/kg/day	N/A	N/A	- -
	2,4,6-Trinitrotoluene	2.62	mg/kg	2.62	mg/kg	M	1.1E-06	mg/kg/day	5.0E-04	mg/kg/day	N/A	N/A	2.2E-03
	2-Amino-4,6-Dinitrotoluene	0.433	mg/kg	0.433	mg/kg	M	1.9E-07	mg/kg/day	6.0E-05	mg/kg/day	N/A	N/A	3.1E-03
	4-Amino-2,6-Dinitrotoluene	0.365	mg/kg	0.365	mg/kg	M	1.6E-07	mg/kg/day	6.0E-05	mg/kg/day	N/A	N/A	2.6E-03
	HMX	4.77	mg/kg	4.77	mg/kg	M	2.0E-06	mg/kg/day	5.0E-02	mg/kg/day	N/A	N/A	4.1E-05
	RDX	3.41	mg/kg	3.41	mg/kg	M	1.5E-06	mg/kg/day	3.0E-03	mg/kg/day	N/A	N/A	4.9E-04
	Barium	252	mg/kg	252	mg/kg	M	1.1E-04	mg/kg/day	7.0E-02	mg/kg/day	N/A	N/A	1.5E-03
	Cadmium	1.19	mg/kg	1.19	mg/kg	M	5.1E-07	mg/kg/day	5.0E-04	mg/kg/day	N/A	N/A	1.0E-03
	Chromium	26.4	mg/kg	26.4	mg/kg	M	1.1E-05	mg/kg/day	1.5E+00	mg/kg/day	N/A	N/A	7.5E-06
	Iron	26855	mg/kg	26855	mg/kg	M	1.2E-02	mg/kg/day	3.0E-01	mg/kg/day	N/A	N/A	3.8E-02
	Lead	358	mg/kg	358	mg/kg	M	1.5E-04	mg/kg/day	NA	mg/kg/day	N/A	N/A	- -
	(Total)												4.9E-02
Dermal	2,3,7,8-TCDD Equivalents	0.0000074	mg/kg	0.0000074	mg/kg	M	1.3E-13	mg/kg/day	NA	mg/kg/day	N/A	N/A	- -
	2,4,6-Trinitrotoluene	2.62	mg/kg	2.62	mg/kg	M	1.5E-07	mg/kg/day	5.0E-04	mg/kg/day	N/A	N/A	3.0E-04
	2-Amino-4,6-Dinitrotoluene	0.433	mg/kg	0.433	mg/kg	M	2.5E-08	mg/kg/day	6.0E-05	mg/kg/day	N/A	N/A	4.1E-04
	4-Amino-2,6-Dinitrotoluene	0.365	mg/kg	0.365	mg/kg	M	2.1E-08	mg/kg/day	6.0E-05	mg/kg/day	N/A	N/A	3.4E-04
	HMX	4.77	mg/kg	4.77	mg/kg	M	2.7E-07	mg/kg/day	5.0E-02	mg/kg/day	N/A	N/A	5.4E-06
	RDX	3.41	mg/kg	3.41	mg/kg	M	1.9E-07	mg/kg/day	3.0E-03	mg/kg/day	N/A	N/A	6.4E-05
	Barium	252	mg/kg	252	mg/kg	M	0.0E+00	mg/kg/day	4.9E-03	mg/kg/day	N/A	N/A	- -
	Cadmium	1.19	mg/kg	1.19	mg/kg	M	6.7E-10	mg/kg/day	2.5E-05	mg/kg/day	N/A	N/A	2.7E-05
	Chromium	26.4	mg/kg	26.4	mg/kg	M	0.0E+00	mg/kg/day	2.0E-02	mg/kg/day	N/A	N/A	- -
	Iron	26855	mg/kg	26855	mg/kg	M	0.0E+00	mg/kg/day	3.0E-01	mg/kg/day	N/A	N/A	- -
	Lead	358	mg/kg	358	mg/kg	M	0.0E+00	mg/kg/day	NA	mg/kg/day	N/A	N/A	- -
	(Total)												1.1E-03
												Total Hazard Index Across All Exposure Routes/Pathways	5.1E-02

(1) Medium-Specific (M) EPC selected for hazard calculation.
(2) Chronic.

TABLE 7.25
CALCULATION OF NON-CANCER HAZARDS
REASONABLE MAXIMUM EXPOSURE
NSWC CRANE, INDIANA

Scenario Timeframe: Future
Medium: Ground Water
Exposure Medium: Ground Water
Exposure Point: SWMU 3 - Shallow Ground Water
Receptor Population: Occupational Workers
Receptor Age: Adult

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Hazard Calculation (1)	Intake (Non-Cancer)	Intake (Non-Cancer) Units	Reference Dose (2)	Reference Dose Units	Reference Concentration	Reference Concentration Units	Hazard Quotient
Ingestion	1,1,2,2-Tetrachloroethane	42.7	ug/L	42.7	ug/L	M	4.2E-04	mg/kg/day	6.0E-02	mg/kg/day	N/A	N/A	7.0E-03
	1,1,2-Trichloroethane	1.11	ug/L	1.11	ug/L	M	1.1E-05	mg/kg/day	4.0E-03	mg/kg/day	N/A	N/A	2.7E-03
	1,1-Dichloroethene	0.213	ug/L	0.213	ug/L	M	2.1E-06	mg/kg/day	9.0E-03	mg/kg/day	N/A	N/A	2.3E-04
	cis-1,2-Dichloroethene	11.3	ug/L	11.3	ug/L	M	1.1E-04	mg/kg/day	1.0E-02	mg/kg/day	N/A	N/A	1.1E-02
	Tetrachloroethene	0.617	ug/L	0.617	ug/L	M	6.0E-06	mg/kg/day	1.0E-02	mg/kg/day	N/A	N/A	6.0E-04
	trans-1,2-Dichloroethene	2.87	ug/L	2.87	ug/L	M	2.8E-05	mg/kg/day	2.0E-02	mg/kg/day	N/A	N/A	1.4E-03
	Trichloroethene	48.9	ug/L	48.9	ug/L	M	4.8E-04	mg/kg/day	3.0E-04	mg/kg/day	N/A	N/A	1.6E+00
	Vinyl Chloride	0.400	ug/L	0.400	ug/L	M	3.9E-06	mg/kg/day	3.0E-03	mg/kg/day	N/A	N/A	1.3E-03
	2,4,6-Trinitrotoluene	1.30	ug/L	1.30	ug/L	M	1.3E-05	mg/kg/day	5.0E-04	mg/kg/day	N/A	N/A	2.5E-02
	2-Amino-4,6-Dinitrotoluene	0.409	ug/L	0.409	ug/L	M	4.0E-06	mg/kg/day	6.0E-05	mg/kg/day	N/A	N/A	6.7E-02
	4-Amino-2,6-Dinitrotoluene	1.03	ug/L	1.03	ug/L	M	1.0E-05	mg/kg/day	6.0E-05	mg/kg/day	N/A	N/A	1.7E-01
	RDX	27.2	ug/L	27.2	ug/L	M	2.7E-04	mg/kg/day	3.0E-03	mg/kg/day	N/A	N/A	8.9E-02
	Aluminum	95.3	ug/L	95.3	ug/L	M	9.3E-04	mg/kg/day	1.0E+00	mg/kg/day	N/A	N/A	9.3E-04
	Barium	87.8	ug/L	87.8	ug/L	M	8.6E-04	mg/kg/day	7.0E-02	mg/kg/day	N/A	N/A	1.2E-02
	Cadmium	1.78	ug/L	1.78	ug/L	M	1.7E-05	mg/kg/day	5.0E-04	mg/kg/day	N/A	N/A	3.5E-02
	Chromium	7.02	ug/L	7.02	ug/L	M	6.9E-05	mg/kg/day	1.5E+00	mg/kg/day	N/A	N/A	4.6E-05
	Iron	505	ug/L	505	ug/L	M	4.9E-03	mg/kg/day	3.0E-01	mg/kg/day	N/A	N/A	1.6E-02
	Manganese	58.2	ug/L	58.2	ug/L	M	5.7E-04	mg/kg/day	7.2E-02	mg/kg/day	N/A	N/A	7.9E-03
	Nickel	8.86	ug/L	8.86	ug/L	M	8.7E-05	mg/kg/day	2.0E-02	mg/kg/day	N/A	N/A	4.3E-03
	Thallium	0.173	ug/L	0.173	ug/L	M	1.7E-06	mg/kg/day	7.0E-05	mg/kg/day	N/A	N/A	2.4E-02
	Nitrate	296	ug/L	296	ug/L	M	2.9E-03	mg/kg/day	1.6E+00	mg/kg/day	N/A	N/A	1.8E-03
	(Total)												2.1E+00
Dermal	1,1,2,2-Tetrachloroethane	42.7	ug/L	42.7	ug/L	M	1.3E-05	mg/kg/day	6.0E-02	mg/kg/day	N/A	N/A	2.1E-04
	1,1,2-Trichloroethane	1.11	ug/L	1.11	ug/L	M	2.5E-07	mg/kg/day	4.0E-03	mg/kg/day	N/A	N/A	6.1E-05
	1,1-Dichloroethene	0.213	ug/L	0.213	ug/L	M	6.8E-08	mg/kg/day	9.0E-03	mg/kg/day	N/A	N/A	7.5E-06
	cis-1,2-Dichloroethene	11.3	ug/L	11.3	ug/L	M	3.9E-06	mg/kg/day	1.0E-02	mg/kg/day	N/A	N/A	3.9E-04
	Tetrachloroethene	0.617	ug/L	0.617	ug/L	M	8.8E-07	mg/kg/day	1.0E-02	mg/kg/day	N/A	N/A	8.8E-05
	trans-1,2-Dichloroethene	2.87	ug/L	2.87	ug/L	M	6.0E-07	mg/kg/day	2.0E-02	mg/kg/day	N/A	N/A	3.0E-05
	Trichloroethene	48.9	ug/L	48.9	ug/L	M	1.9E-05	mg/kg/day	3.0E-04	mg/kg/day	N/A	N/A	6.4E-02
	Vinyl Chloride	0.400	ug/L	0.400	ug/L	M	4.9E-08	mg/kg/day	3.0E-03	mg/kg/day	N/A	N/A	1.6E-05
	2,4,6-Trinitrotoluene	1.30	ug/L	1.30	ug/L	M	7.8E-08	mg/kg/day	5.0E-04	mg/kg/day	N/A	N/A	1.6E-04
	2-Amino-4,6-Dinitrotoluene	0.409	ug/L	0.409	ug/L	M	1.4E-08	mg/kg/day	6.0E-05	mg/kg/day	N/A	N/A	2.3E-04
	4-Amino-2,6-Dinitrotoluene	1.03	ug/L	1.03	ug/L	M	3.4E-08	mg/kg/day	6.0E-05	mg/kg/day	N/A	N/A	5.7E-04
	RDX	27.2	ug/L	27.2	ug/L	M	5.7E-07	mg/kg/day	3.0E-03	mg/kg/day	N/A	N/A	1.9E-04
	Aluminum	95.3	ug/L	95.3	ug/L	M	7.7E-07	mg/kg/day	1.0E+00	mg/kg/day	N/A	N/A	7.7E-07
	Barium	87.8	ug/L	87.8	ug/L	M	7.1E-07	mg/kg/day	4.9E-03	mg/kg/day	N/A	N/A	1.4E-04
	Cadmium	1.78	ug/L	1.78	ug/L	M	1.4E-08	mg/kg/day	2.5E-05	mg/kg/day	N/A	N/A	5.7E-04
	Chromium	7.02	ug/L	7.02	ug/L	M	1.1E-07	mg/kg/day	2.0E-02	mg/kg/day	N/A	N/A	5.8E-06
	Iron	505	ug/L	505	ug/L	M	4.1E-06	mg/kg/day	3.0E-01	mg/kg/day	N/A	N/A	1.4E-05
	Manganese	58.2	ug/L	58.2	ug/L	M	4.7E-07	mg/kg/day	2.9E-03	mg/kg/day	N/A	N/A	1.6E-04
	Nickel	8.86	ug/L	8.86	ug/L	M	1.4E-08	mg/kg/day	8.0E-04	mg/kg/day	N/A	N/A	1.8E-05
	Thallium	0.173	ug/L	0.173	ug/L	M	1.4E-09	mg/kg/day	7.0E-05	mg/kg/day	N/A	N/A	2.0E-05
	Nitrate	296	ug/L	296	ug/L	M	2.4E-06	mg/kg/day	1.6E+00	mg/kg/day	N/A	N/A	1.5E-06
	(Total)												6.7E-02
												Total Hazard Index Across All Exposure Routes/Pathways	2.1E+00

(1) Medium-Specific (M) EPC selected for hazard calculation.
(2) Chronic.

TABLE 7.26
CALCULATION OF NON-CANCER HAZARDS
CENTRAL TENDENCY EXPOSURES
NSWC CRANE, INDIANA

Scenario Timeframe: Future
Medium: Ground Water
Exposure Medium: Ground Water
Exposure Point: SWMU 3 - Shallow Ground Water
Receptor Population: Occupational Workers
Receptor Age: Adult

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Hazard Calculation (1)	Intake (Non-Cancer)	Intake (Non-Cancer) Units	Reference Dose (2)	Reference Dose Units	Reference Concentration	Reference Concentration Units	Hazard Quotient
Ingestion	1,1,2,2-Tetrachloroethane	42.7	ug/L	42.7	ug/L	M	3.7E-04	mg/kg/day	6.0E-02	mg/kg/day	N/A	N/A	6.1E-03
	1,1,2-Trichloroethane	1.11	ug/L	1.11	ug/L	M	9.5E-06	mg/kg/day	4.0E-03	mg/kg/day	N/A	N/A	2.4E-03
	1,1-Dichloroethene	0.213	ug/L	0.213	ug/L	M	1.8E-06	mg/kg/day	9.0E-03	mg/kg/day	N/A	N/A	2.0E-04
	cis-1,2-Dichloroethene	11.3	ug/L	11.3	ug/L	M	9.7E-05	mg/kg/day	1.0E-02	mg/kg/day	N/A	N/A	9.7E-03
	Tetrachloroethene	0.617	ug/L	0.617	ug/L	M	5.3E-06	mg/kg/day	1.0E-02	mg/kg/day	N/A	N/A	5.3E-04
	trans-1,2-Dichloroethene	2.87	ug/L	2.87	ug/L	M	2.5E-05	mg/kg/day	2.0E-02	mg/kg/day	N/A	N/A	1.2E-03
	Trichloroethene	48.9	ug/L	48.9	ug/L	M	4.2E-04	mg/kg/day	3.0E-04	mg/kg/day	N/A	N/A	1.4E+00
	Vinyl Chloride	0.400	ug/L	0.400	ug/L	M	3.4E-06	mg/kg/day	3.0E-03	mg/kg/day	N/A	N/A	1.1E-03
	2,4,6-Trinitrotoluene	1.30	ug/L	1.30	ug/L	M	1.1E-05	mg/kg/day	5.0E-04	mg/kg/day	N/A	N/A	2.2E-02
	2-Amino-4,6-Dinitrotoluene	0.409	ug/L	0.409	ug/L	M	3.5E-06	mg/kg/day	6.0E-05	mg/kg/day	N/A	N/A	5.8E-02
	4-Amino-2,6-Dinitrotoluene	1.03	ug/L	1.03	ug/L	M	8.8E-06	mg/kg/day	6.0E-05	mg/kg/day	N/A	N/A	1.5E-01
	RDX	27.2	ug/L	27.2	ug/L	M	2.3E-04	mg/kg/day	3.0E-03	mg/kg/day	N/A	N/A	7.8E-02
	Aluminum	95.3	ug/L	95.3	ug/L	M	8.2E-04	mg/kg/day	1.0E+00	mg/kg/day	N/A	N/A	8.2E-04
	Barium	87.8	ug/L	87.8	ug/L	M	7.5E-04	mg/kg/day	7.0E-02	mg/kg/day	N/A	N/A	1.1E-02
	Cadmium	1.78	ug/L	1.78	ug/L	M	1.5E-05	mg/kg/day	5.0E-04	mg/kg/day	N/A	N/A	3.1E-02
	Chromium	7.02	ug/L	7.02	ug/L	M	6.0E-05	mg/kg/day	1.5E+00	mg/kg/day	N/A	N/A	4.0E-05
	Iron	505	ug/L	505	ug/L	M	4.3E-03	mg/kg/day	3.0E-01	mg/kg/day	N/A	N/A	1.4E-02
	Manganese	58.2	ug/L	58.2	ug/L	M	5.0E-04	mg/kg/day	7.2E-02	mg/kg/day	N/A	N/A	6.9E-03
	Nickel	8.86	ug/L	8.86	ug/L	M	7.6E-05	mg/kg/day	2.0E-02	mg/kg/day	N/A	N/A	3.8E-03
	Thallium	0.173	ug/L	0.173	ug/L	M	1.5E-06	mg/kg/day	7.0E-05	mg/kg/day	N/A	N/A	2.1E-02
	Nitrate	296	ug/L	296	ug/L	M	2.5E-03	mg/kg/day	1.6E+00	mg/kg/day	N/A	N/A	1.6E-03
	(Total)												1.8E+00
Dermal	1,1,2,2-Tetrachloroethane	42.7	ug/L	42.7	ug/L	M	9.1E-06	mg/kg/day	6.0E-02	mg/kg/day	N/A	N/A	1.5E-04
	1,1,2-Trichloroethane	1.11	ug/L	1.11	ug/L	M	1.8E-07	mg/kg/day	4.0E-03	mg/kg/day	N/A	N/A	4.4E-05
	1,1-Dichloroethene	0.213	ug/L	0.213	ug/L	M	4.8E-08	mg/kg/day	9.0E-03	mg/kg/day	N/A	N/A	5.4E-06
	cis-1,2-Dichloroethene	11.3	ug/L	11.3	ug/L	M	2.8E-06	mg/kg/day	1.0E-02	mg/kg/day	N/A	N/A	2.8E-04
	Tetrachloroethene	0.617	ug/L	0.617	ug/L	M	6.3E-07	mg/kg/day	1.0E-02	mg/kg/day	N/A	N/A	6.3E-05
	trans-1,2-Dichloroethene	2.87	ug/L	2.87	ug/L	M	4.3E-07	mg/kg/day	2.0E-02	mg/kg/day	N/A	N/A	2.2E-05
	Trichloroethene	48.9	ug/L	48.9	ug/L	M	1.4E-05	mg/kg/day	3.0E-04	mg/kg/day	N/A	N/A	4.6E-02
	Vinyl Chloride	0.400	ug/L	0.400	ug/L	M	3.5E-08	mg/kg/day	3.0E-03	mg/kg/day	N/A	N/A	1.2E-05
	2,4,6-Trinitrotoluene	1.30	ug/L	1.30	ug/L	M	5.6E-08	mg/kg/day	5.0E-04	mg/kg/day	N/A	N/A	1.1E-04
	2-Amino-4,6-Dinitrotoluene	0.409	ug/L	0.409	ug/L	M	9.7E-09	mg/kg/day	6.0E-05	mg/kg/day	N/A	N/A	1.6E-04
	4-Amino-2,6-Dinitrotoluene	1.03	ug/L	1.03	ug/L	M	2.4E-08	mg/kg/day	6.0E-05	mg/kg/day	N/A	N/A	4.1E-04
	RDX	27.2	ug/L	27.2	ug/L	M	4.1E-07	mg/kg/day	3.0E-03	mg/kg/day	N/A	N/A	1.4E-04
	Aluminum	95.3	ug/L	95.3	ug/L	M	4.5E-07	mg/kg/day	1.0E+00	mg/kg/day	N/A	N/A	4.5E-07
	Barium	87.8	ug/L	87.8	ug/L	M	4.1E-07	mg/kg/day	4.9E-03	mg/kg/day	N/A	N/A	8.5E-05
	Cadmium	1.78	ug/L	1.78	ug/L	M	8.4E-09	mg/kg/day	2.5E-05	mg/kg/day	N/A	N/A	3.4E-04
	Chromium	7.02	ug/L	7.02	ug/L	M	6.6E-08	mg/kg/day	2.0E-02	mg/kg/day	N/A	N/A	3.4E-06
	Iron	505	ug/L	505	ug/L	M	2.4E-06	mg/kg/day	3.0E-01	mg/kg/day	N/A	N/A	8.0E-06
	Manganese	58.2	ug/L	58.2	ug/L	M	2.7E-07	mg/kg/day	2.9E-03	mg/kg/day	N/A	N/A	9.5E-05
	Nickel	8.86	ug/L	8.86	ug/L	M	8.4E-09	mg/kg/day	8.0E-04	mg/kg/day	N/A	N/A	1.0E-05
	Thallium	0.173	ug/L	0.173	ug/L	M	8.2E-10	mg/kg/day	7.0E-05	mg/kg/day	N/A	N/A	1.2E-05
	Nitrate	296	ug/L	296	ug/L	M	1.4E-06	mg/kg/day	1.6E+00	mg/kg/day	N/A	N/A	8.8E-07
	(Total)												4.8E-02
												Total Hazard Index Across All Exposure Routes/Pathways	1.9E+00

(1) Medium-Specific (M) EPC selected for hazard calculation.
(2) Chronic.

TABLE 7.27
CALCULATION OF NON-CANCER HAZARDS
REASONABLE MAXIMUM EXPOSURE
NSWC CRANE, INDIANA

Scenario Timeframe: Future
Medium: Surface Soil
Exposure Medium: Surface Soil
Exposure Point: SWMU 3 - Old Jeep Trail
Receptor Population: Recreational Users
Receptor Age: Child

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Hazard Calculation (1)	Intake (Non-Cancer)	Intake (Non-Cancer) Units	Reference Dose (2)	Reference Dose Units	Reference Concentration	Reference Concentration Units	Hazard Quotient
Ingestion	2,3,7,8-TCDD Equivalents	0.0000074	mg/kg	0.0000074	mg/kg	M	7.0E-12	mg/kg/day	NA	mg/kg/day	N/A	N/A	- -
	2,4,6-Trinitrotoluene	2.62	mg/kg	2.62	mg/kg	M	2.5E-06	mg/kg/day	5.0E-04	mg/kg/day	N/A	N/A	5.0E-03
	2-Amino-4,6-Dinitrotoluene	0.433	mg/kg	0.433	mg/kg	M	4.1E-07	mg/kg/day	6.0E-05	mg/kg/day	N/A	N/A	6.9E-03
	4-Amino-2,6-Dinitrotoluene	0.365	mg/kg	0.365	mg/kg	M	3.5E-07	mg/kg/day	6.0E-05	mg/kg/day	N/A	N/A	5.8E-03
	HMX	4.77	mg/kg	4.77	mg/kg	M	4.5E-06	mg/kg/day	5.0E-02	mg/kg/day	N/A	N/A	9.1E-05
	RDX	3.41	mg/kg	3.41	mg/kg	M	3.2E-06	mg/kg/day	3.0E-03	mg/kg/day	N/A	N/A	1.1E-03
	Barium	252	mg/kg	252	mg/kg	M	2.4E-04	mg/kg/day	7.0E-02	mg/kg/day	N/A	N/A	3.4E-03
	Cadmium	1.19	mg/kg	1.19	mg/kg	M	1.1E-06	mg/kg/day	5.0E-04	mg/kg/day	N/A	N/A	2.3E-03
	Chromium	26.4	mg/kg	26.4	mg/kg	M	2.5E-05	mg/kg/day	1.5E+00	mg/kg/day	N/A	N/A	1.7E-05
	Iron	26855	mg/kg	26855	mg/kg	M	2.6E-02	mg/kg/day	3.0E-01	mg/kg/day	N/A	N/A	8.5E-02
	Lead	358	mg/kg	358	mg/kg	M	3.4E-04	mg/kg/day	NA	mg/kg/day	N/A	N/A	- -
	(Total)												1.1E-01
Dermal	2,3,7,8-TCDD Equivalents	0.0000074	mg/kg	0.0000074	mg/kg	M	1.4E-12	mg/kg/day	NA	mg/kg/day	N/A	N/A	- -
	2,4,6-Trinitrotoluene	2.62	mg/kg	2.62	mg/kg	M	1.6E-06	mg/kg/day	5.0E-04	mg/kg/day	N/A	N/A	3.3E-03
	2-Amino-4,6-Dinitrotoluene	0.433	mg/kg	0.433	mg/kg	M	2.7E-07	mg/kg/day	6.0E-05	mg/kg/day	N/A	N/A	4.5E-03
	4-Amino-2,6-Dinitrotoluene	0.365	mg/kg	0.365	mg/kg	M	2.3E-07	mg/kg/day	6.0E-05	mg/kg/day	N/A	N/A	3.8E-03
	HMX	4.77	mg/kg	4.77	mg/kg	M	3.0E-06	mg/kg/day	5.0E-02	mg/kg/day	N/A	N/A	6.0E-05
	RDX	3.41	mg/kg	3.41	mg/kg	M	2.1E-06	mg/kg/day	3.0E-03	mg/kg/day	N/A	N/A	7.1E-04
	Barium	252	mg/kg	252	mg/kg	M	0.0E+00	mg/kg/day	4.9E-03	mg/kg/day	N/A	N/A	- -
	Cadmium	1.19	mg/kg	1.19	mg/kg	M	7.5E-09	mg/kg/day	2.5E-05	mg/kg/day	N/A	N/A	3.0E-04
	Chromium	26.4	mg/kg	26.4	mg/kg	M	0.0E+00	mg/kg/day	2.0E-02	mg/kg/day	N/A	N/A	- -
	Iron	26855	mg/kg	26855	mg/kg	M	0.0E+00	mg/kg/day	3.0E-01	mg/kg/day	N/A	N/A	- -
	Lead	358	mg/kg	358	mg/kg	M	0.0E+00	mg/kg/day	NA	mg/kg/day	N/A	N/A	- -
	(Total)												1.3E-02
												Total Hazard Index Across All Exposure Routes/Pathways	1.2E-01

(1) Medium-Specific (M) EPC selected for hazard calculation.
(2) Chronic.

TABLE 7.28
CALCULATION OF NON-CANCER HAZARDS
CENTRAL TENDENCY EXPOSURES
NSWC CRANE, INDIANA

Scenario Timeframe: Future
Medium: Surface Soil
Exposure Medium: Surface Soil
Exposure Point: SWMU 3 - Old Jeep Trail
Receptor Population: Recreational Users
Receptor Age: Child

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Hazard Calculation (1)	Intake (Non-Cancer)	Intake (Non-Cancer) Units	Reference Dose (2)	Reference Dose Units	Reference Concentration	Reference Concentration Units	Hazard Quotient
Ingestion	2,3,7,8-TCDD Equivalents	0.0000074	mg/kg	0.0000074	mg/kg	M	1.8E-12	mg/kg/day	NA	mg/kg/day	N/A	N/A	- -
	2,4,6-Trinitrotoluene	2.62	mg/kg	2.62	mg/kg	M	6.2E-07	mg/kg/day	5.0E-04	mg/kg/day	N/A	N/A	1.2E-03
	2-Amino-4,6-Dinitrotoluene	0.433	mg/kg	0.433	mg/kg	M	1.0E-07	mg/kg/day	6.0E-05	mg/kg/day	N/A	N/A	1.7E-03
	4-Amino-2,6-Dinitrotoluene	0.365	mg/kg	0.365	mg/kg	M	8.7E-08	mg/kg/day	6.0E-05	mg/kg/day	N/A	N/A	1.4E-03
	HMX	4.77	mg/kg	4.77	mg/kg	M	1.1E-06	mg/kg/day	5.0E-02	mg/kg/day	N/A	N/A	2.3E-05
	RDX	3.41	mg/kg	3.41	mg/kg	M	8.1E-07	mg/kg/day	3.0E-03	mg/kg/day	N/A	N/A	2.7E-04
	Barium	252	mg/kg	252	mg/kg	M	6.0E-05	mg/kg/day	7.0E-02	mg/kg/day	N/A	N/A	8.6E-04
	Cadmium	1.19	mg/kg	1.19	mg/kg	M	2.8E-07	mg/kg/day	5.0E-04	mg/kg/day	N/A	N/A	5.7E-04
	Chromium	26.4	mg/kg	26.4	mg/kg	M	6.3E-06	mg/kg/day	1.5E+00	mg/kg/day	N/A	N/A	4.2E-06
	Iron	26855	mg/kg	26855	mg/kg	M	6.4E-03	mg/kg/day	3.0E-01	mg/kg/day	N/A	N/A	2.1E-02
	Lead	358	mg/kg	358	mg/kg	M	8.5E-05	mg/kg/day	NA	mg/kg/day	N/A	N/A	- -
	(Total)												2.7E-02
Dermal	2,3,7,8-TCDD Equivalents	0.0000074	mg/kg	0.0000074	mg/kg	M	1.4E-13	mg/kg/day	NA	mg/kg/day	N/A	N/A	- -
	2,4,6-Trinitrotoluene	2.62	mg/kg	2.62	mg/kg	M	1.6E-07	mg/kg/day	5.0E-04	mg/kg/day	N/A	N/A	3.3E-04
	2-Amino-4,6-Dinitrotoluene	0.433	mg/kg	0.433	mg/kg	M	2.7E-08	mg/kg/day	6.0E-05	mg/kg/day	N/A	N/A	4.5E-04
	4-Amino-2,6-Dinitrotoluene	0.365	mg/kg	0.365	mg/kg	M	2.3E-08	mg/kg/day	6.0E-05	mg/kg/day	N/A	N/A	3.8E-04
	HMX	4.77	mg/kg	4.77	mg/kg	M	3.0E-07	mg/kg/day	5.0E-02	mg/kg/day	N/A	N/A	6.0E-06
	RDX	3.41	mg/kg	3.41	mg/kg	M	2.1E-07	mg/kg/day	3.0E-03	mg/kg/day	N/A	N/A	7.1E-05
	Barium	252	mg/kg	252	mg/kg	M	0.0E+00	mg/kg/day	4.9E-03	mg/kg/day	N/A	N/A	- -
	Cadmium	1.19	mg/kg	1.19	mg/kg	M	7.5E-10	mg/kg/day	2.5E-05	mg/kg/day	N/A	N/A	3.0E-05
	Chromium	26.4	mg/kg	26.4	mg/kg	M	0.0E+00	mg/kg/day	2.0E-02	mg/kg/day	N/A	N/A	- -
	Iron	26855	mg/kg	26855	mg/kg	M	0.0E+00	mg/kg/day	3.0E-01	mg/kg/day	N/A	N/A	- -
	Lead	358	mg/kg	358	mg/kg	M	0.0E+00	mg/kg/day	NA	mg/kg/day	N/A	N/A	- -
	(Total)												1.3E-03
												Total Hazard Index Across All Exposure Routes/Pathways	2.9E-02

(1) Medium-Specific (M) EPC selected for hazard calculation.
(2) Chronic.

TABLE 7.29
CALCULATION OF NON-CANCER HAZARDS
REASONABLE MAXIMUM EXPOSURE
NSWC CRANE, INDIANA

Scenario Timeframe: Future
Medium: Ground Water
Exposure Medium: Ground Water
Exposure Point: SWMU 3 - Shallow Ground Water
Receptor Population: Recreational Users
Receptor Age: Child

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Hazard Calculation (1)	Intake (Non-Cancer)	Intake (Non-Cancer) Units	Reference Dose (2)	Reference Dose Units	Reference Concentration	Reference Concentration Units	Hazard Quotient
Ingestion	1,1,2,2-Tetrachloroethane	42.7	ug/L	42.7	ug/L	M	4.1E-04	mg/kg/day	6.0E-02	mg/kg/day	N/A	N/A	6.8E-03
	1,1,2-Trichloroethane	1.11	ug/L	1.11	ug/L	M	1.1E-05	mg/kg/day	4.0E-03	mg/kg/day	N/A	N/A	2.6E-03
	1,1-Dichloroethene	0.213	ug/L	0.213	ug/L	M	2.0E-06	mg/kg/day	9.0E-03	mg/kg/day	N/A	N/A	2.3E-04
	cis-1,2-Dichloroethene	11.3	ug/L	11.3	ug/L	M	1.1E-04	mg/kg/day	1.0E-02	mg/kg/day	N/A	N/A	1.1E-02
	Tetrachloroethene	0.617	ug/L	0.617	ug/L	M	5.9E-06	mg/kg/day	1.0E-02	mg/kg/day	N/A	N/A	5.9E-04
	trans-1,2-Dichloroethene	2.87	ug/L	2.87	ug/L	M	2.7E-05	mg/kg/day	2.0E-02	mg/kg/day	N/A	N/A	1.4E-03
	Trichloroethene	48.9	ug/L	48.9	ug/L	M	4.6E-04	mg/kg/day	3.0E-04	mg/kg/day	N/A	N/A	1.5E+00
	Vinyl Chloride	0.400	ug/L	0.400	ug/L	M	3.8E-06	mg/kg/day	3.0E-03	mg/kg/day	N/A	N/A	1.3E-03
	2,4,6-Trinitrotoluene	1.30	ug/L	1.30	ug/L	M	1.2E-05	mg/kg/day	5.0E-04	mg/kg/day	N/A	N/A	2.5E-02
	2-Amino-4,6-Dinitrotoluene	0.409	ug/L	0.409	ug/L	M	3.9E-06	mg/kg/day	6.0E-05	mg/kg/day	N/A	N/A	6.5E-02
	4-Amino-2,6-Dinitrotoluene	1.03	ug/L	1.03	ug/L	M	9.8E-06	mg/kg/day	6.0E-05	mg/kg/day	N/A	N/A	1.6E-01
	RDX	27.2	ug/L	27.2	ug/L	M	2.6E-04	mg/kg/day	3.0E-03	mg/kg/day	N/A	N/A	8.6E-02
	Aluminum	95.3	ug/L	95.3	ug/L	M	9.1E-04	mg/kg/day	1.0E+00	mg/kg/day	N/A	N/A	9.1E-04
	Barium	87.8	ug/L	87.8	ug/L	M	8.3E-04	mg/kg/day	7.0E-02	mg/kg/day	N/A	N/A	1.2E-02
	Cadmium	1.78	ug/L	1.78	ug/L	M	1.7E-05	mg/kg/day	5.0E-04	mg/kg/day	N/A	N/A	3.4E-02
	Chromium	7.02	ug/L	7.02	ug/L	M	6.7E-05	mg/kg/day	1.5E+00	mg/kg/day	N/A	N/A	4.4E-05
	Iron	505	ug/L	505	ug/L	M	4.8E-03	mg/kg/day	3.0E-01	mg/kg/day	N/A	N/A	1.6E-02
	Manganese	58.2	ug/L	58.2	ug/L	M	5.5E-04	mg/kg/day	7.2E-02	mg/kg/day	N/A	N/A	7.7E-03
	Nickel	8.86	ug/L	8.86	ug/L	M	8.4E-05	mg/kg/day	2.0E-02	mg/kg/day	N/A	N/A	4.2E-03
	Thallium	0.173	ug/L	0.173	ug/L	M	1.6E-06	mg/kg/day	7.0E-05	mg/kg/day	N/A	N/A	2.4E-02
	Nitrate	296	ug/L	296	ug/L	M	2.8E-03	mg/kg/day	1.6E+00	mg/kg/day	N/A	N/A	1.8E-03
	(Total)												2.0E+00
Dermal	1,1,2,2-Tetrachloroethane	42.7	ug/L	42.7	ug/L	M	1.2E-05	mg/kg/day	6.0E-02	mg/kg/day	N/A	N/A	2.1E-04
	1,1,2-Trichloroethane	1.11	ug/L	1.11	ug/L	M	2.4E-07	mg/kg/day	4.0E-03	mg/kg/day	N/A	N/A	6.0E-05
	1,1-Dichloroethene	0.213	ug/L	0.213	ug/L	M	6.6E-08	mg/kg/day	9.0E-03	mg/kg/day	N/A	N/A	7.3E-06
	cis-1,2-Dichloroethene	11.3	ug/L	11.3	ug/L	M	3.8E-06	mg/kg/day	1.0E-02	mg/kg/day	N/A	N/A	3.8E-04
	Tetrachloroethene	0.617	ug/L	0.617	ug/L	M	8.5E-07	mg/kg/day	1.0E-02	mg/kg/day	N/A	N/A	8.5E-05
	trans-1,2-Dichloroethene	2.87	ug/L	2.87	ug/L	M	5.9E-07	mg/kg/day	2.0E-02	mg/kg/day	N/A	N/A	2.9E-05
	Trichloroethene	48.9	ug/L	48.9	ug/L	M	1.9E-05	mg/kg/day	3.0E-04	mg/kg/day	N/A	N/A	6.3E-02
	Vinyl Chloride	0.400	ug/L	0.400	ug/L	M	4.7E-08	mg/kg/day	3.0E-03	mg/kg/day	N/A	N/A	1.6E-05
	2,4,6-Trinitrotoluene	1.30	ug/L	1.30	ug/L	M	7.6E-08	mg/kg/day	5.0E-04	mg/kg/day	N/A	N/A	1.5E-04
	2-Amino-4,6-Dinitrotoluene	0.409	ug/L	0.409	ug/L	M	1.3E-08	mg/kg/day	6.0E-05	mg/kg/day	N/A	N/A	2.2E-04
	4-Amino-2,6-Dinitrotoluene	1.03	ug/L	1.03	ug/L	M	3.3E-08	mg/kg/day	6.0E-05	mg/kg/day	N/A	N/A	5.5E-04
	RDX	27.2	ug/L	27.2	ug/L	M	5.5E-07	mg/kg/day	3.0E-03	mg/kg/day	N/A	N/A	1.8E-04
	Aluminum	95.3	ug/L	95.3	ug/L	M	7.5E-07	mg/kg/day	1.0E+00	mg/kg/day	N/A	N/A	7.5E-07
	Barium	87.8	ug/L	87.8	ug/L	M	6.9E-07	mg/kg/day	4.9E-03	mg/kg/day	N/A	N/A	1.4E-04
	Cadmium	1.78	ug/L	1.78	ug/L	M	1.4E-08	mg/kg/day	2.5E-05	mg/kg/day	N/A	N/A	5.6E-04
	Chromium	7.02	ug/L	7.02	ug/L	M	1.1E-07	mg/kg/day	2.0E-02	mg/kg/day	N/A	N/A	5.6E-06
	Iron	505	ug/L	505	ug/L	M	4.0E-06	mg/kg/day	3.0E-01	mg/kg/day	N/A	N/A	1.3E-05
	Manganese	58.2	ug/L	58.2	ug/L	M	4.6E-07	mg/kg/day	2.9E-03	mg/kg/day	N/A	N/A	1.6E-04
	Nickel	8.86	ug/L	8.86	ug/L	M	1.4E-08	mg/kg/day	8.0E-04	mg/kg/day	N/A	N/A	1.7E-05
	Thallium	0.173	ug/L	0.173	ug/L	M	1.4E-09	mg/kg/day	7.0E-05	mg/kg/day	N/A	N/A	1.9E-05
	Nitrate	296	ug/L	296	ug/L	M	2.3E-06	mg/kg/day	1.6E+00	mg/kg/day	N/A	N/A	1.5E-06
	(Total)												6.5E-02
												Total Hazard Index Across All Exposure Routes/Pathways	2.1E+00

(1) Medium-Specific (M) EPC selected for hazard calculation.
(2) Chronic.

TABLE 7.30
CALCULATION OF NON-CANCER HAZARDS
CENTRAL TENDENCY EXPOSURES
NSWC CRANE, INDIANA

Scenario Timeframe: Future
Medium: Ground Water
Exposure Medium: Ground Water
Exposure Point: SWMU 3 - Shallow Ground Water
Receptor Population: Recreational Users
Receptor Age: Child

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Hazard Calculation (1)	Intake (Non-Cancer)	Intake (Non-Cancer) Units	Reference Dose (2)	Reference Dose Units	Reference Concentration	Reference Concentration Units	Hazard Quotient
Ingestion	1,1,2,2-Tetrachloroethane	42.7	ug/L	42.7	ug/L	M	2.0E-04	mg/kg/day	6.0E-02	mg/kg/day	N/A	N/A	3.4E-03
	1,1,2-Trichloroethane	1.11	ug/L	1.11	ug/L	M	5.3E-06	mg/kg/day	4.0E-03	mg/kg/day	N/A	N/A	1.3E-03
	1,1-Dichloroethene	0.213	ug/L	0.213	ug/L	M	1.0E-06	mg/kg/day	9.0E-03	mg/kg/day	N/A	N/A	1.1E-04
	cis-1,2-Dichloroethene	11.3	ug/L	11.3	ug/L	M	5.4E-05	mg/kg/day	1.0E-02	mg/kg/day	N/A	N/A	5.4E-03
	Tetrachloroethene	0.617	ug/L	0.617	ug/L	M	2.9E-06	mg/kg/day	1.0E-02	mg/kg/day	N/A	N/A	2.9E-04
	trans-1,2-Dichloroethene	2.87	ug/L	2.87	ug/L	M	1.4E-05	mg/kg/day	2.0E-02	mg/kg/day	N/A	N/A	6.8E-04
	Trichloroethene	48.9	ug/L	48.9	ug/L	M	2.3E-04	mg/kg/day	3.0E-04	mg/kg/day	N/A	N/A	7.7E-01
	Vinyl Chloride	0.400	ug/L	0.400	ug/L	M	1.9E-06	mg/kg/day	3.0E-03	mg/kg/day	N/A	N/A	6.3E-04
	2,4,6-Trinitrotoluene	1.30	ug/L	1.30	ug/L	M	6.2E-06	mg/kg/day	5.0E-04	mg/kg/day	N/A	N/A	1.2E-02
	2-Amino-4,6-Dinitrotoluene	0.409	ug/L	0.409	ug/L	M	1.9E-06	mg/kg/day	6.0E-05	mg/kg/day	N/A	N/A	3.2E-02
	4-Amino-2,6-Dinitrotoluene	1.03	ug/L	1.03	ug/L	M	4.9E-06	mg/kg/day	6.0E-05	mg/kg/day	N/A	N/A	8.2E-02
	RDX	27.2	ug/L	27.2	ug/L	M	1.3E-04	mg/kg/day	3.0E-03	mg/kg/day	N/A	N/A	4.3E-02
	Aluminum	95.3	ug/L	95.3	ug/L	M	4.5E-04	mg/kg/day	1.0E+00	mg/kg/day	N/A	N/A	4.5E-04
	Barium	87.8	ug/L	87.8	ug/L	M	4.2E-04	mg/kg/day	7.0E-02	mg/kg/day	N/A	N/A	6.0E-03
	Cadmium	1.78	ug/L	1.78	ug/L	M	8.5E-06	mg/kg/day	5.0E-04	mg/kg/day	N/A	N/A	1.7E-02
	Chromium	7.02	ug/L	7.02	ug/L	M	3.3E-05	mg/kg/day	1.5E+00	mg/kg/day	N/A	N/A	2.2E-05
	Iron	505	ug/L	505	ug/L	M	2.4E-03	mg/kg/day	3.0E-01	mg/kg/day	N/A	N/A	8.0E-03
	Manganese	58.2	ug/L	58.2	ug/L	M	2.8E-04	mg/kg/day	7.2E-02	mg/kg/day	N/A	N/A	3.8E-03
	Nickel	8.86	ug/L	8.86	ug/L	M	4.2E-05	mg/kg/day	2.0E-02	mg/kg/day	N/A	N/A	2.1E-03
	Thallium	0.173	ug/L	0.173	ug/L	M	8.2E-07	mg/kg/day	7.0E-05	mg/kg/day	N/A	N/A	1.2E-02
	Nitrate	296	ug/L	296	ug/L	M	1.4E-03	mg/kg/day	1.6E+00	mg/kg/day	N/A	N/A	8.8E-04
	(Total)												1.0E+00
Dermal	1,1,2,2-Tetrachloroethane	42.7	ug/L	42.7	ug/L	M	5.1E-06	mg/kg/day	6.0E-02	mg/kg/day	N/A	N/A	8.4E-05
	1,1,2-Trichloroethane	1.11	ug/L	1.11	ug/L	M	9.7E-08	mg/kg/day	4.0E-03	mg/kg/day	N/A	N/A	2.4E-05
	1,1-Dichloroethene	0.213	ug/L	0.213	ug/L	M	2.7E-08	mg/kg/day	9.0E-03	mg/kg/day	N/A	N/A	3.0E-06
	cis-1,2-Dichloroethene	11.3	ug/L	11.3	ug/L	M	1.6E-06	mg/kg/day	1.0E-02	mg/kg/day	N/A	N/A	1.6E-04
	Tetrachloroethene	0.617	ug/L	0.617	ug/L	M	3.5E-07	mg/kg/day	1.0E-02	mg/kg/day	N/A	N/A	3.5E-05
	trans-1,2-Dichloroethene	2.87	ug/L	2.87	ug/L	M	2.4E-07	mg/kg/day	2.0E-02	mg/kg/day	N/A	N/A	1.2E-05
	Trichloroethene	48.9	ug/L	48.9	ug/L	M	7.7E-06	mg/kg/day	3.0E-04	mg/kg/day	N/A	N/A	2.6E-02
	Vinyl Chloride	0.400	ug/L	0.400	ug/L	M	1.9E-08	mg/kg/day	3.0E-03	mg/kg/day	N/A	N/A	6.5E-06
	2,4,6-Trinitrotoluene	1.30	ug/L	1.30	ug/L	M	3.1E-08	mg/kg/day	5.0E-04	mg/kg/day	N/A	N/A	6.2E-05
	2-Amino-4,6-Dinitrotoluene	0.409	ug/L	0.409	ug/L	M	5.4E-09	mg/kg/day	6.0E-05	mg/kg/day	N/A	N/A	8.9E-05
	4-Amino-2,6-Dinitrotoluene	1.03	ug/L	1.03	ug/L	M	1.4E-08	mg/kg/day	6.0E-05	mg/kg/day	N/A	N/A	2.3E-04
	RDX	27.2	ug/L	27.2	ug/L	M	2.3E-07	mg/kg/day	3.0E-03	mg/kg/day	N/A	N/A	7.5E-05
	Aluminum	95.3	ug/L	95.3	ug/L	M	2.5E-07	mg/kg/day	1.0E+00	mg/kg/day	N/A	N/A	2.5E-07
	Barium	87.8	ug/L	87.8	ug/L	M	2.3E-07	mg/kg/day	4.9E-03	mg/kg/day	N/A	N/A	4.7E-05
	Cadmium	1.78	ug/L	1.78	ug/L	M	4.7E-09	mg/kg/day	2.5E-05	mg/kg/day	N/A	N/A	1.9E-04
	Chromium	7.02	ug/L	7.02	ug/L	M	3.7E-08	mg/kg/day	2.0E-02	mg/kg/day	N/A	N/A	1.9E-06
	Iron	505	ug/L	505	ug/L	M	1.3E-06	mg/kg/day	3.0E-01	mg/kg/day	N/A	N/A	4.4E-06
	Manganese	58.2	ug/L	58.2	ug/L	M	1.5E-07	mg/kg/day	2.9E-03	mg/kg/day	N/A	N/A	5.3E-05
	Nickel	8.86	ug/L	8.86	ug/L	M	4.6E-09	mg/kg/day	8.0E-04	mg/kg/day	N/A	N/A	5.8E-06
	Thallium	0.173	ug/L	0.173	ug/L	M	4.5E-10	mg/kg/day	7.0E-05	mg/kg/day	N/A	N/A	6.5E-06
	Nitrate	296	ug/L	296	ug/L	M	7.8E-07	mg/kg/day	1.6E+00	mg/kg/day	N/A	N/A	4.8E-07
	(Total)												2.7E-02
												Total Hazard Index Across All Exposure Routes/Pathways	1.0E+00

(1) Medium-Specific (M) EPC selected for hazard calculation.
(2) Chronic.

TABLE 7.31
CALCULATION OF NON-CANCER HAZARDS
REASONABLE MAXIMUM EXPOSURE
NSWC CRANE, INDIANA

Scenario Timeframe: Future
Medium: Surface Water
Exposure Medium: Surface Water
Exposure Point: SWMU 3 - Little Sulphur Creek
Receptor Population: Recreational Users
Receptor Age: Child

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Hazard Calculation (1)	Intake (Non-Cancer)	Intake (Non-Cancer) Units	Reference Dose (2)	Reference Dose Units	Reference Concentration	Reference Concentration Units	Hazard Quotient
Ingestion	Acetone	64.0	ug/L	64.0	ug/L	M	1.2E-04	mg/kg/day	1.0E-01	mg/kg/day	N/A	N/A	1.2E-03
	Bromomethane	0.529	ug/L	0.529	ug/L	M	1.0E-06	mg/kg/day	1.4E-03	mg/kg/day	N/A	N/A	7.2E-04
	Methylene Chloride	3.23	ug/L	3.23	ug/L	M	6.1E-06	mg/kg/day	6.0E-02	mg/kg/day	N/A	N/A	1.0E-04
	Bis(2-ethylhexyl)phthalate	1.36	ug/L	1.36	ug/L	M	2.6E-06	mg/kg/day	2.0E-02	mg/kg/day	N/A	N/A	1.3E-04
	Pentachlorophenol	0.059	ug/L	0.059	ug/L	M	1.1E-07	mg/kg/day	3.0E-02	mg/kg/day	N/A	N/A	3.7E-06
	2-Amino-4,6-Dinitrotoluene	0.384	ug/L	0.384	ug/L	M	7.3E-07	mg/kg/day	6.0E-05	mg/kg/day	N/A	N/A	1.2E-02
	4-Amino-2,6-Dinitrotoluene	1.06	ug/L	1.06	ug/L	M	2.0E-06	mg/kg/day	6.0E-05	mg/kg/day	N/A	N/A	3.4E-02
	RDX	63.0	ug/L	63.0	ug/L	M	1.2E-04	mg/kg/day	3.0E-03	mg/kg/day	N/A	N/A	4.0E-02
	Antimony	0.784	ug/L	0.784	ug/L	M	1.5E-06	mg/kg/day	4.0E-04	mg/kg/day	N/A	N/A	3.7E-03
	Lead	29.1	ug/L	29.1	ug/L	M	5.5E-05	mg/kg/day	NA	mg/kg/day	N/A	N/A	- -
	(Total)												9.1E-02
Dermal	Acetone	64.0	ug/L	64.0	ug/L	M	4.6E-06	mg/kg/day	1.0E-01	mg/kg/day	N/A	N/A	4.6E-05
	Bromomethane	0.529	ug/L	0.529	ug/L	M	2.2E-07	mg/kg/day	1.4E-03	mg/kg/day	N/A	N/A	1.6E-04
	Methylene Chloride	3.23	ug/L	3.23	ug/L	M	1.6E-06	mg/kg/day	6.0E-02	mg/kg/day	N/A	N/A	2.7E-05
	Bis(2-ethylhexyl)phthalate	1.36	ug/L	1.36	ug/L	M	1.9E-05	mg/kg/day	2.0E-02	mg/kg/day	N/A	N/A	9.6E-04
	Pentachlorophenol	0.059	ug/L	0.059	ug/L	M	6.6E-06	mg/kg/day	3.0E-02	mg/kg/day	N/A	N/A	2.2E-04
	2-Amino-4,6-Dinitrotoluene	0.384	ug/L	0.384	ug/L	M	5.1E-08	mg/kg/day	6.0E-05	mg/kg/day	N/A	N/A	8.6E-04
	4-Amino-2,6-Dinitrotoluene	1.06	ug/L	1.06	ug/L	M	1.4E-07	mg/kg/day	6.0E-05	mg/kg/day	N/A	N/A	2.4E-03
	RDX	63.0	ug/L	63.0	ug/L	M	5.1E-06	mg/kg/day	3.0E-03	mg/kg/day	N/A	N/A	1.7E-03
	Antimony	0.784	ug/L	0.784	ug/L	M	9.8E-08	mg/kg/day	6.0E-05	mg/kg/day	N/A	N/A	1.6E-03
	Lead	29.1	ug/L	29.1	ug/L	M	3.7E-06	mg/kg/day	NA	mg/kg/day	N/A	N/A	- -
	(Total)												8.0E-03
												Total Hazard Index Across All Exposure Routes/Pathways	9.9E-02

(1) Medium-Specific (M) EPC selected for hazard calculation.
(2) Chronic.

TABLE 7.32
CALCULATION OF NON-CANCER HAZARDS
CENTRAL TENDENCY EXPOSURES
NSWC CRANE, INDIANA

Scenario Timeframe: Future
Medium: Surface Water
Exposure Medium: Surface Water
Exposure Point: SWMU 3 - Little Sulphur Creek
Receptor Population: Recreational Users
Receptor Age: Child

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Hazard Calculation (1)	Intake (Non-Cancer)	Intake (Non-Cancer) Units	Reference Dose (2)	Reference Dose Units	Reference Concentration	Reference Concentration Units	Hazard Quotient
Ingestion	Acetone	64.0	ug/L	64.0	ug/L	M	3.0E-05	mg/kg/day	1.0E-01	mg/kg/day	N/A	N/A	3.0E-04
	Bromomethane	0.529	ug/L	0.529	ug/L	M	2.5E-07	mg/kg/day	1.4E-03	mg/kg/day	N/A	N/A	1.8E-04
	Methylene Chloride	3.23	ug/L	3.23	ug/L	M	1.5E-06	mg/kg/day	6.0E-02	mg/kg/day	N/A	N/A	2.6E-05
	Bis(2-ethylhexyl)phthalate	1.36	ug/L	1.36	ug/L	M	6.4E-07	mg/kg/day	2.0E-02	mg/kg/day	N/A	N/A	3.2E-05
	Pentachlorophenol	0.059	ug/L	0.059	ug/L	M	2.8E-08	mg/kg/day	3.0E-02	mg/kg/day	N/A	N/A	9.4E-07
	2-Amino-4,6-Dinitrotoluene	0.384	ug/L	0.384	ug/L	M	1.8E-07	mg/kg/day	6.0E-05	mg/kg/day	N/A	N/A	3.0E-03
	4-Amino-2,6-Dinitrotoluene	1.06	ug/L	1.06	ug/L	M	5.0E-07	mg/kg/day	6.0E-05	mg/kg/day	N/A	N/A	8.4E-03
	RDX	63.0	ug/L	63.0	ug/L	M	3.0E-05	mg/kg/day	3.0E-03	mg/kg/day	N/A	N/A	1.0E-02
	Antimony	0.784	ug/L	0.784	ug/L	M	3.7E-07	mg/kg/day	4.0E-04	mg/kg/day	N/A	N/A	9.3E-04
	Lead	29.1	ug/L	29.1	ug/L	M	1.4E-05	mg/kg/day	NA	mg/kg/day	N/A	N/A	- -
	(Total)												2.3E-02
Dermal	Acetone	64.0	ug/L	64.0	ug/L	M	1.3E-06	mg/kg/day	1.0E-01	mg/kg/day	N/A	N/A	1.3E-05
	Bromomethane	0.529	ug/L	0.529	ug/L	M	6.4E-08	mg/kg/day	1.4E-03	mg/kg/day	N/A	N/A	4.6E-05
	Methylene Chloride	3.23	ug/L	3.23	ug/L	M	4.7E-07	mg/kg/day	6.0E-02	mg/kg/day	N/A	N/A	7.8E-06
	Bis(2-ethylhexyl)phthalate	1.36	ug/L	1.36	ug/L	M	6.8E-06	mg/kg/day	2.0E-02	mg/kg/day	N/A	N/A	3.4E-04
	Pentachlorophenol	0.059	ug/L	0.059	ug/L	M	2.3E-06	mg/kg/day	3.0E-02	mg/kg/day	N/A	N/A	7.8E-05
	2-Amino-4,6-Dinitrotoluene	0.384	ug/L	0.384	ug/L	M	1.7E-08	mg/kg/day	6.0E-05	mg/kg/day	N/A	N/A	2.9E-04
	4-Amino-2,6-Dinitrotoluene	1.06	ug/L	1.06	ug/L	M	4.8E-08	mg/kg/day	6.0E-05	mg/kg/day	N/A	N/A	8.0E-04
	RDX	63.0	ug/L	63.0	ug/L	M	1.8E-06	mg/kg/day	3.0E-03	mg/kg/day	N/A	N/A	6.0E-04
	Antimony	0.784	ug/L	0.784	ug/L	M	2.5E-08	mg/kg/day	6.0E-05	mg/kg/day	N/A	N/A	4.1E-04
	Lead	29.1	ug/L	29.1	ug/L	M	9.1E-07	mg/kg/day	NA	mg/kg/day	N/A	N/A	- -
	(Total)												2.6E-03
												Total Hazard Index Across All Exposure Routes/Pathways	2.5E-02

(1) Medium-Specific (M) EPC selected for hazard calculation.
(2) Chronic.

TABLE 7.33
CALCULATION OF NON-CANCER HAZARDS
REASONABLE MAXIMUM EXPOSURE
NSWC CRANE, INDIANA

Scenario Timeframe: Future
Medium: Sediment
Exposure Medium: Sediment
Exposure Point: SWMU 3 - Little Sulphur Creek
Receptor Population: Recreational Users
Receptor Age: Child

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Hazard Calculation (1)	Intake (Non-Cancer)	Intake (Non-Cancer) Units	Reference Dose (2)	Reference Dose Units	Reference Concentration	Reference Concentration Units	Hazard Quotient
Ingestion	2-Amino-4,6-Dinitrotoluene	0.178	mg/kg	0.178	mg/kg	M	1.7E-07	mg/kg/day	6.0E-05	mg/kg/day	N/A	N/A	2.8E-03
	Aluminum	14916	mg/kg	14916	mg/kg	M	1.4E-02	mg/kg/day	1.0E+00	mg/kg/day	N/A	N/A	1.4E-02
	Antimony	2.88	mg/kg	2.88	mg/kg	M	2.7E-06	mg/kg/day	4.0E-04	mg/kg/day	N/A	N/A	6.8E-03
	Barium	359	mg/kg	359	mg/kg	M	3.4E-04	mg/kg/day	7.0E-02	mg/kg/day	N/A	N/A	4.9E-03
	Cadmium	1.78	mg/kg	1.78	mg/kg	M	1.7E-06	mg/kg/day	5.0E-04	mg/kg/day	N/A	N/A	3.4E-03
	Lead	120	mg/kg	120	mg/kg	M	1.1E-04	mg/kg/day	NA	mg/kg/day	N/A	N/A	- -
	(Total)												3.2E-02
Dermal	2-Amino-4,6-Dinitrotoluene	0.178	mg/kg	0.178	mg/kg	M	1.1E-07	mg/kg/day	6.0E-05	mg/kg/day	N/A	N/A	1.9E-03
	Aluminum	14916	mg/kg	14916	mg/kg	M	0.0E+00	mg/kg/day	1.0E+00	mg/kg/day	N/A	N/A	- -
	Antimony	2.88	mg/kg	2.88	mg/kg	M	0.0E+00	mg/kg/day	6.0E-05	mg/kg/day	N/A	N/A	- -
	Barium	359	mg/kg	359	mg/kg	M	0.0E+00	mg/kg/day	4.9E-03	mg/kg/day	N/A	N/A	- -
	Cadmium	1.78	mg/kg	1.78	mg/kg	M	1.1E-08	mg/kg/day	2.5E-05	mg/kg/day	N/A	N/A	4.5E-04
	Lead	120	mg/kg	120	mg/kg	M	0.0E+00	mg/kg/day	NA	mg/kg/day	N/A	N/A	- -
	(Total)												2.3E-03
												Total Hazard Index Across All Exposure Routes/Pathways	3.4E-02

(1) Medium-Specific (M) EPC selected for hazard calculation.
(2) Chronic.

TABLE 7.34
CALCULATION OF NON-CANCER HAZARDS
CENTRAL TENDENCY EXPOSURES
NSWC CRANE, INDIANA

Scenario Timeframe: Future
Medium: Sediment
Exposure Medium: Sediment
Exposure Point: SWMU 3 - Little Sulphur Creek
Receptor Population: Recreational Users
Receptor Age: Child

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Hazard Calculation (1)	Intake (Non-Cancer)	Intake (Non-Cancer) Units	Reference Dose (2)	Reference Dose Units	Reference Concentration	Reference Concentration Units	Hazard Quotient
Ingestion	2-Amino-4,6-Dinitrotoluene	0.178	mg/kg	0.178	mg/kg	M	4.2E-08	mg/kg/day	6.0E-05	mg/kg/day	N/A	N/A	7.1E-04
	Aluminum	14916	mg/kg	14916	mg/kg	M	3.5E-03	mg/kg/day	1.0E+00	mg/kg/day	N/A	N/A	3.5E-03
	Antimony	2.88	mg/kg	2.88	mg/kg	M	6.8E-07	mg/kg/day	4.0E-04	mg/kg/day	N/A	N/A	1.7E-03
	Barium	359	mg/kg	359	mg/kg	M	8.5E-05	mg/kg/day	7.0E-02	mg/kg/day	N/A	N/A	1.2E-03
	Cadmium	1.78	mg/kg	1.78	mg/kg	M	4.2E-07	mg/kg/day	5.0E-04	mg/kg/day	N/A	N/A	8.4E-04
	Lead	120	mg/kg	120	mg/kg	M	2.8E-05	mg/kg/day	NA	mg/kg/day	N/A	N/A	- -
	(Total)												8.0E-03
Dermal	2-Amino-4,6-Dinitrotoluene	0.178	mg/kg	0.178	mg/kg	M	1.1E-08	mg/kg/day	6.0E-05	mg/kg/day	N/A	N/A	1.9E-04
	Aluminum	14916	mg/kg	14916	mg/kg	M	0.0E+00	mg/kg/day	1.0E+00	mg/kg/day	N/A	N/A	- -
	Antimony	2.88	mg/kg	2.88	mg/kg	M	0.0E+00	mg/kg/day	6.0E-05	mg/kg/day	N/A	N/A	- -
	Barium	359	mg/kg	359	mg/kg	M	0.0E+00	mg/kg/day	4.9E-03	mg/kg/day	N/A	N/A	- -
	Cadmium	1.78	mg/kg	1.78	mg/kg	M	1.1E-09	mg/kg/day	2.5E-05	mg/kg/day	N/A	N/A	4.5E-05
	Lead	120	mg/kg	120	mg/kg	M	0.0E+00	mg/kg/day	NA	mg/kg/day	N/A	N/A	- -
	(Total)												2.3E-04
												Total Hazard Index Across All Exposure Routes/Pathways	8.2E-03

(1) Medium-Specific (M) EPC selected for hazard calculation.
(2) Chronic.

TABLE 8.37
CALCULATION OF CANCER RISKS
REASONABLE MAXIMUM EXPOSURE
NSWC CRANE, INDIANA

Scenario Timeframe: Future
Medium: Ground Water
Exposure Medium: Ground Water
Exposure Point: SWMU 3 - Shallow Ground Water
Receptor Population: Recreatlonal Users
Receptor Age: Adult

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Risk Calculation (1)	Intake (Cancer)	Intake (Cancer) Units	Cancer Slope Factor	Cancer Slope Factor Units	Cancer Risk
Ingestion	1,1,2,2-Tetrachloroethane	42.7	ug/L	42.7	ug/L	M	3.0E-05	mg/kg/day	2.0E-01	(mg/kg/day) -1	6.0E-06
	1,1,2-Trichloroethane	1.11	ug/L	1.11	ug/L	M	7.7E-07	mg/kg/day	5.7E-02	(mg/kg/day) -1	4.4E-08
	1,1-Dichloroethene	0.213	ug/L	0.213	ug/L	M	1.5E-07	mg/kg/day	6.0E-01	(mg/kg/day) -1	8.9E-08
	cis-1,2-Dichloroethene	11.3	ug/L	11.3	ug/L	M	7.9E-06	mg/kg/day	NA	(mg/kg/day) -1	- -
	Tetrachloroethene	0.617	ug/L	0.617	ug/L	M	4.3E-07	mg/kg/day	5.2E-02	(mg/kg/day) -1	2.2E-08
	trans-1,2-Dichloroethene	2.87	ug/L	2.87	ug/L	M	2.0E-06	mg/kg/day	NA	(mg/kg/day) -1	- -
	Trichloroethene	48.9	ug/L	48.9	ug/L	M	3.4E-05	mg/kg/day	4.0E-01	(mg/kg/day) -1	1.4E-05
	Vinyl Chloride	0.400	ug/L	0.400	ug/L	M	2.8E-07	mg/kg/day	7.2E-01	(mg/kg/day) -1	2.0E-07
	2,4,6-Trinitrotoluene	1.30	ug/L	1.30	ug/L	M	9.0E-07	mg/kg/day	3.0E-02	(mg/kg/day) -1	2.7E-08
	2-Amino-4,6-Dinitrotoluene	0.409	ug/L	0.409	ug/L	M	2.9E-07	mg/kg/day	NA	(mg/kg/day) -1	- -
	4-Amino-2,6-Dinitrotoluene	1.03	ug/L	1.03	ug/L	M	7.2E-07	mg/kg/day	NA	(mg/kg/day) -1	- -
	RDX	27.2	ug/L	27.2	ug/L	M	1.9E-05	mg/kg/day	1.1E-01	(mg/kg/day) -1	2.1E-06
	Aluminum	95.3	ug/L	95.3	ug/L	M	6.7E-05	mg/kg/day	NA	(mg/kg/day) -1	- -
	Barium	87.8	ug/L	87.8	ug/L	M	6.1E-05	mg/kg/day	NA	(mg/kg/day) -1	- -
	Cadmium	1.78	ug/L	1.78	ug/L	M	1.2E-06	mg/kg/day	NA	(mg/kg/day) -1	- -
	Chromium	7.02	ug/L	7.02	ug/L	M	4.9E-06	mg/kg/day	NA	(mg/kg/day) -1	- -
	Iron	505	ug/L	505	ug/L	M	3.5E-04	mg/kg/day	NA	(mg/kg/day) -1	- -
	Manganese	58.2	ug/L	58.2	ug/L	M	4.1E-05	mg/kg/day	NA	(mg/kg/day) -1	- -
	Nickel	8.86	ug/L	8.86	ug/L	M	6.2E-06	mg/kg/day	NA	(mg/kg/day) -1	- -
	Thallium	0.173	ug/L	0.173	ug/L	M	1.2E-07	mg/kg/day	NA	(mg/kg/day) -1	- -
	Nitrate	296	ug/L	296	ug/L	M	2.1E-04	mg/kg/day	NA	(mg/kg/day) -1	- -
	(Total)										2.2E-05
Dermal	1,1,2,2-Tetrachloroethane	42.7	ug/L	42.7	ug/L	M	2.5E-06	mg/kg/day	2.0E-01	(mg/kg/day) -1	5.0E-07
	1,1,2-Trichloroethane	1.11	ug/L	1.11	ug/L	M	4.8E-08	mg/kg/day	5.7E-02	(mg/kg/day) -1	2.7E-09
	1,1-Dichloroethene	0.213	ug/L	0.213	ug/L	M	1.3E-08	mg/kg/day	6.0E-01	(mg/kg/day) -1	8.0E-09
	cis-1,2-Dichloroethene	11.3	ug/L	11.3	ug/L	M	7.7E-07	mg/kg/day	NA	(mg/kg/day) -1	- -
	Tetrachloroethene	0.617	ug/L	0.617	ug/L	M	1.7E-07	mg/kg/day	5.2E-02	(mg/kg/day) -1	8.9E-09
	trans-1,2-Dichloroethene	2.87	ug/L	2.87	ug/L	M	1.2E-07	mg/kg/day	NA	(mg/kg/day) -1	- -
	Trichloroethene	48.9	ug/L	48.9	ug/L	M	3.8E-06	mg/kg/day	4.0E-01	(mg/kg/day) -1	1.5E-06
	Vinyl Chloride	0.400	ug/L	0.400	ug/L	M	9.6E-09	mg/kg/day	7.2E-01	(mg/kg/day) -1	6.9E-09
	2,4,6-Trinitrotoluene	1.30	ug/L	1.30	ug/L	M	1.5E-08	mg/kg/day	3.0E-02	(mg/kg/day) -1	4.6E-10
	2-Amino-4,6-Dinitrotoluene	0.409	ug/L	0.409	ug/L	M	2.7E-09	mg/kg/day	NA	(mg/kg/day) -1	- -
	4-Amino-2,6-Dinitrotoluene	1.03	ug/L	1.03	ug/L	M	6.7E-09	mg/kg/day	NA	(mg/kg/day) -1	- -
	RDX	27.2	ug/L	27.2	ug/L	M	1.1E-07	mg/kg/day	1.1E-01	(mg/kg/day) -1	1.2E-08
	Aluminum	95.3	ug/L	95.3	ug/L	M	1.5E-07	mg/kg/day	NA	(mg/kg/day) -1	- -
	Barium	87.8	ug/L	87.8	ug/L	M	1.4E-07	mg/kg/day	NA	(mg/kg/day) -1	- -
	Cadmium	1.78	ug/L	1.78	ug/L	M	2.8E-09	mg/kg/day	NA	(mg/kg/day) -1	- -
	Chromium	7.02	ug/L	7.02	ug/L	M	2.2E-08	mg/kg/day	NA	(mg/kg/day) -1	- -
	Iron	505	ug/L	505	ug/L	M	8.0E-07	mg/kg/day	NA	(mg/kg/day) -1	- -
	Manganese	58.2	ug/L	58.2	ug/L	M	9.2E-08	mg/kg/day	NA	(mg/kg/day) -1	- -
	Nickel	8.86	ug/L	8.86	ug/L	M	2.8E-09	mg/kg/day	NA	(mg/kg/day) -1	- -
	Thallium	0.173	ug/L	0.173	ug/L	M	2.7E-10	mg/kg/day	NA	(mg/kg/day) -1	- -
	Nitrate	296	ug/L	296	ug/L	M	4.7E-07	mg/kg/day	NA	(mg/kg/day) -1	- -
	(Total)										2.1E-06
										Total Risk Across All Exposure Routes/Pathways	2.4E-05

(1) Medium-Specific (M) EPC selected for risk calculation.

TABLE 7.36
CALCULATION OF NON-CANCER HAZARDS
CENTRAL TENDENCY EXPOSURES
NSWC CRANE, INDIANA

Scenario Timeframe: Future
Medium: Surface Soil
Exposure Medium: Surface Soil
Exposure Point: SWMU 3 - Old Jeep Trail
Receptor Population: Recreational Users
Receptor Age: Adult

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Hazard Calculation (1)	Intake (Non-Cancer)	Intake (Non-Cancer) Units	Reference Dose (2)	Reference Dose Units	Reference Concentration	Reference Concentration Units	Hazard Quotient
Ingestion	2,3,7,8-TCDD Equivalents	0.0000074	mg/kg	0.0000074	mg/kg	M	1.9E-13	mg/kg/day	NA	mg/kg/day	N/A	N/A	- -
	2,4,6-Trinitrotoluene	2.62	mg/kg	2.62	mg/kg	M	6.7E-08	mg/kg/day	5.0E-04	mg/kg/day	N/A	N/A	1.3E-04
	2-Amino-4,6-Dinitrotoluene	0.433	mg/kg	0.433	mg/kg	M	1.1E-08	mg/kg/day	6.0E-05	mg/kg/day	N/A	N/A	1.8E-04
	4-Amino-2,6-Dinitrotoluene	0.365	mg/kg	0.365	mg/kg	M	9.3E-09	mg/kg/day	6.0E-05	mg/kg/day	N/A	N/A	1.5E-04
	HMX	4.77	mg/kg	4.77	mg/kg	M	1.2E-07	mg/kg/day	5.0E-02	mg/kg/day	N/A	N/A	2.4E-06
	RDX	3.41	mg/kg	3.41	mg/kg	M	8.7E-08	mg/kg/day	3.0E-03	mg/kg/day	N/A	N/A	2.9E-05
	Barium	252	mg/kg	252	mg/kg	M	6.4E-06	mg/kg/day	7.0E-02	mg/kg/day	N/A	N/A	9.2E-05
	Cadmium	1.19	mg/kg	1.19	mg/kg	M	3.0E-08	mg/kg/day	5.0E-04	mg/kg/day	N/A	N/A	6.1E-05
	Chromium	26.4	mg/kg	26.4	mg/kg	M	6.7E-07	mg/kg/day	1.5E+00	mg/kg/day	N/A	N/A	4.5E-07
	Iron	26855	mg/kg	26855	mg/kg	M	6.8E-04	mg/kg/day	3.0E-01	mg/kg/day	N/A	N/A	2.3E-03
	Lead	358	mg/kg	358	mg/kg	M	9.1E-06	mg/kg/day	NA	mg/kg/day	N/A	N/A	- -
	(Total)												2.9E-03
Dermal	2,3,7,8-TCDD Equivalents	0.0000074	mg/kg	0.0000074	mg/kg	M	2.0E-14	mg/kg/day	NA	mg/kg/day	N/A	N/A	- -
	2,4,6-Trinitrotoluene	2.62	mg/kg	2.62	mg/kg	M	2.4E-08	mg/kg/day	5.0E-04	mg/kg/day	N/A	N/A	4.8E-05
	2-Amino-4,6-Dinitrotoluene	0.433	mg/kg	0.433	mg/kg	M	4.0E-09	mg/kg/day	6.0E-05	mg/kg/day	N/A	N/A	6.7E-05
	4-Amino-2,6-Dinitrotoluene	0.365	mg/kg	0.365	mg/kg	M	3.4E-09	mg/kg/day	6.0E-05	mg/kg/day	N/A	N/A	5.6E-05
	HMX	4.77	mg/kg	4.77	mg/kg	M	4.4E-08	mg/kg/day	5.0E-02	mg/kg/day	N/A	N/A	8.8E-07
	RDX	3.41	mg/kg	3.41	mg/kg	M	3.1E-08	mg/kg/day	3.0E-03	mg/kg/day	N/A	N/A	1.0E-05
	Barium	252	mg/kg	252	mg/kg	M	0.0E+00	mg/kg/day	4.9E-03	mg/kg/day	N/A	N/A	- -
	Cadmium	1.19	mg/kg	1.19	mg/kg	M	1.1E-10	mg/kg/day	2.5E-05	mg/kg/day	N/A	N/A	4.4E-06
	Chromium	26.4	mg/kg	26.4	mg/kg	M	0.0E+00	mg/kg/day	2.0E-02	mg/kg/day	N/A	N/A	- -
	Iron	26855	mg/kg	26855	mg/kg	M	0.0E+00	mg/kg/day	3.0E-01	mg/kg/day	N/A	N/A	- -
	Lead	358	mg/kg	358	mg/kg	M	0.0E+00	mg/kg/day	NA	mg/kg/day	N/A	N/A	- -
	(Total)												1.9E-04
												Total Hazard Index Across All Exposure Routes/Pathways	3.1E-03

(1) Medium-Specific (M) EPC selected for hazard calculation.
(2) Chronic.

TABLE 7.37
CALCULATION OF NON-CANCER HAZARDS
REASONABLE MAXIMUM EXPOSURE
NSWC CRANE, INDIANA

Scenario Timeframe: Future
Medium: Ground Water
Exposure Medium: Ground Water
Exposure Point: SWMU 3 - Shallow Ground Water
Receptor Population: Recreational Users
Receptor Age: Adult

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Hazard Calculation (1)	Intake (Non-Cancer)	Intake (Non-Cancer) Units	Reference Dose (2)	Reference Dose Units	Reference Concentration	Reference Concentration Units	Hazard Quotient
Ingestion	1,1,2,2-Tetrachloroethane	42.7	ug/L	42.7	ug/L	M	8.7E-05	mg/kg/day	6.0E-02	mg/kg/day	N/A	N/A	1.4E-03
	1,1,2-Trichloroethane	1.11	ug/L	1.11	ug/L	M	2.3E-06	mg/kg/day	4.0E-03	mg/kg/day	N/A	N/A	5.6E-04
	1,1-Dichloroethene	0.213	ug/L	0.213	ug/L	M	4.3E-07	mg/kg/day	9.0E-03	mg/kg/day	N/A	N/A	4.8E-05
	cis-1,2-Dichloroethene	11.3	ug/L	11.3	ug/L	M	2.3E-05	mg/kg/day	1.0E-02	mg/kg/day	N/A	N/A	2.3E-03
	Tetrachloroethene	0.617	ug/L	0.617	ug/L	M	1.3E-06	mg/kg/day	1.0E-02	mg/kg/day	N/A	N/A	1.3E-04
	trans-1,2-Dichloroethene	2.87	ug/L	2.87	ug/L	M	5.8E-06	mg/kg/day	2.0E-02	mg/kg/day	N/A	N/A	2.9E-04
	Trichloroethene	48.9	ug/L	48.9	ug/L	M	9.9E-05	mg/kg/day	3.0E-04	mg/kg/day	N/A	N/A	3.3E-01
	Vinyl Chloride	0.400	ug/L	0.400	ug/L	M	8.1E-07	mg/kg/day	3.0E-03	mg/kg/day	N/A	N/A	2.7E-04
	2,4,6-Trinitrotoluene	1.30	ug/L	1.30	ug/L	M	2.6E-06	mg/kg/day	5.0E-04	mg/kg/day	N/A	N/A	5.3E-03
	2-Amino-4,6-Dinitrotoluene	0.409	ug/L	0.409	ug/L	M	8.3E-07	mg/kg/day	6.0E-05	mg/kg/day	N/A	N/A	1.4E-02
	4-Amino-2,6-Dinitrotoluene	1.03	ug/L	1.03	ug/L	M	2.1E-06	mg/kg/day	6.0E-05	mg/kg/day	N/A	N/A	3.5E-02
	RDX	27.2	ug/L	27.2	ug/L	M	5.5E-05	mg/kg/day	3.0E-03	mg/kg/day	N/A	N/A	1.8E-02
	Aluminum	95.3	ug/L	95.3	ug/L	M	1.9E-04	mg/kg/day	1.0E+00	mg/kg/day	N/A	N/A	1.9E-04
	Barium	87.8	ug/L	87.8	ug/L	M	1.8E-04	mg/kg/day	7.0E-02	mg/kg/day	N/A	N/A	2.6E-03
	Cadmium	1.78	ug/L	1.78	ug/L	M	3.6E-06	mg/kg/day	5.0E-04	mg/kg/day	N/A	N/A	7.2E-03
	Chromium	7.02	ug/L	7.02	ug/L	M	1.4E-05	mg/kg/day	1.5E+00	mg/kg/day	N/A	N/A	9.5E-06
	Iron	505	ug/L	505	ug/L	M	1.0E-03	mg/kg/day	3.0E-01	mg/kg/day	N/A	N/A	3.4E-03
	Manganese	58.2	ug/L	58.2	ug/L	M	1.2E-04	mg/kg/day	7.2E-02	mg/kg/day	N/A	N/A	1.6E-03
	Nickel	8.86	ug/L	8.86	ug/L	M	1.8E-05	mg/kg/day	2.0E-02	mg/kg/day	N/A	N/A	9.0E-04
	Thallium	0.173	ug/L	0.173	ug/L	M	3.5E-07	mg/kg/day	7.0E-05	mg/kg/day	N/A	N/A	5.0E-03
	Nitrate	296	ug/L	296	ug/L	M	6.0E-04	mg/kg/day	1.6E+00	mg/kg/day	N/A	N/A	3.8E-04
	(Total)												4.3E-01
Dermal	1,1,2,2-Tetrachloroethane	42.7	ug/L	42.7	ug/L	M	7.3E-06	mg/kg/day	6.0E-02	mg/kg/day	N/A	N/A	1.2E-04
	1,1,2-Trichloroethane	1.11	ug/L	1.11	ug/L	M	1.4E-07	mg/kg/day	4.0E-03	mg/kg/day	N/A	N/A	3.5E-05
	1,1-Dichloroethene	0.213	ug/L	0.213	ug/L	M	3.9E-08	mg/kg/day	9.0E-03	mg/kg/day	N/A	N/A	4.3E-06
	cis-1,2-Dichloroethene	11.3	ug/L	11.3	ug/L	M	2.2E-06	mg/kg/day	1.0E-02	mg/kg/day	N/A	N/A	2.2E-04
	Tetrachloroethene	0.617	ug/L	0.617	ug/L	M	5.0E-07	mg/kg/day	1.0E-02	mg/kg/day	N/A	N/A	5.0E-05
	trans-1,2-Dichloroethene	2.87	ug/L	2.87	ug/L	M	3.4E-07	mg/kg/day	2.0E-02	mg/kg/day	N/A	N/A	1.7E-05
	Trichloroethene	48.9	ug/L	48.9	ug/L	M	1.1E-05	mg/kg/day	3.0E-04	mg/kg/day	N/A	N/A	3.7E-02
	Vinyl Chloride	0.400	ug/L	0.400	ug/L	M	2.8E-08	mg/kg/day	3.0E-03	mg/kg/day	N/A	N/A	9.3E-06
	2,4,6-Trinitrotoluene	1.30	ug/L	1.30	ug/L	M	4.5E-08	mg/kg/day	5.0E-04	mg/kg/day	N/A	N/A	8.9E-05
	2-Amino-4,6-Dinitrotoluene	0.409	ug/L	0.409	ug/L	M	7.7E-09	mg/kg/day	6.0E-05	mg/kg/day	N/A	N/A	1.3E-04
	4-Amino-2,6-Dinitrotoluene	1.03	ug/L	1.03	ug/L	M	1.9E-08	mg/kg/day	6.0E-05	mg/kg/day	N/A	N/A	3.2E-04
	RDX	27.2	ug/L	27.2	ug/L	M	3.3E-07	mg/kg/day	3.0E-03	mg/kg/day	N/A	N/A	1.1E-04
	Aluminum	95.3	ug/L	95.3	ug/L	M	4.4E-07	mg/kg/day	1.0E+00	mg/kg/day	N/A	N/A	4.4E-07
	Barium	87.8	ug/L	87.8	ug/L	M	4.1E-07	mg/kg/day	4.9E-03	mg/kg/day	N/A	N/A	8.3E-05
	Cadmium	1.78	ug/L	1.78	ug/L	M	8.2E-09	mg/kg/day	2.5E-05	mg/kg/day	N/A	N/A	3.3E-04
	Chromium	7.02	ug/L	7.02	ug/L	M	6.5E-08	mg/kg/day	2.0E-02	mg/kg/day	N/A	N/A	3.3E-06
	Iron	505	ug/L	505	ug/L	M	2.3E-06	mg/kg/day	3.0E-01	mg/kg/day	N/A	N/A	7.8E-06
	Manganese	58.2	ug/L	58.2	ug/L	M	2.7E-07	mg/kg/day	2.9E-03	mg/kg/day	N/A	N/A	9.3E-05
	Nickel	8.86	ug/L	8.86	ug/L	M	8.2E-09	mg/kg/day	8.0E-04	mg/kg/day	N/A	N/A	1.0E-05
	Thallium	0.173	ug/L	0.173	ug/L	M	8.0E-10	mg/kg/day	7.0E-05	mg/kg/day	N/A	N/A	1.1E-05
	Nitrate	296	ug/L	296	ug/L	M	1.4E-06	mg/kg/day	1.6E+00	mg/kg/day	N/A	N/A	8.5E-07
	(Total)												3.9E-02
												Total Hazard Index Across All Exposure Routes/Pathways	4.7E-01

(1) Medium-Specific (M) EPC selected for hazard calculation.
(2) Chronic.

TABLE 7.38
CALCULATION OF NON-CANCER HAZARDS
CENTRAL TENDENCY EXPOSURES
NSWC CRANE, INDIANA

Scenario Timeframe: Future
Medium: Ground Water
Exposure Medium: Ground Water
Exposure Point: SWMU 3 - Shallow Ground Water
Receptor Population: Recreational Users
Receptor Age: Adult

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Hazard Calculation (1)	Intake (Non-Cancer)	Intake (Non-Cancer) Units	Reference Dose (2)	Reference Dose Units	Reference Concentration	Reference Concentration Units	Hazard Quotient
Ingestion	1,1,2,2-Tetrachloroethane	42.7	ug/L	42.7	ug/L	M	4.3E-05	mg/kg/day	6.0E-02	mg/kg/day	N/A	N/A	7.2E-04
	1,1,2-Trichloroethane	1.11	ug/L	1.11	ug/L	M	1.1E-06	mg/kg/day	4.0E-03	mg/kg/day	N/A	N/A	2.8E-04
	1,1-Dichloroethene	0.213	ug/L	0.213	ug/L	M	2.2E-07	mg/kg/day	9.0E-03	mg/kg/day	N/A	N/A	2.4E-05
	cis-1,2-Dichloroethene	11.3	ug/L	11.3	ug/L	M	1.1E-05	mg/kg/day	1.0E-02	mg/kg/day	N/A	N/A	1.1E-03
	Tetrachloroethene	0.617	ug/L	0.617	ug/L	M	6.3E-07	mg/kg/day	1.0E-02	mg/kg/day	N/A	N/A	6.3E-05
	trans-1,2-Dichloroethene	2.87	ug/L	2.87	ug/L	M	2.9E-06	mg/kg/day	2.0E-02	mg/kg/day	N/A	N/A	1.5E-04
	Trichloroethene	48.9	ug/L	48.9	ug/L	M	5.0E-05	mg/kg/day	3.0E-04	mg/kg/day	N/A	N/A	1.7E-01
	Vinyl Chloride	0.400	ug/L	0.400	ug/L	M	4.1E-07	mg/kg/day	3.0E-03	mg/kg/day	N/A	N/A	1.4E-04
	2,4,6-Trinitrotoluene	1.30	ug/L	1.30	ug/L	M	1.3E-06	mg/kg/day	5.0E-04	mg/kg/day	N/A	N/A	2.6E-03
	2-Amino-4,6-Dinitrotoluene	0.409	ug/L	0.409	ug/L	M	4.2E-07	mg/kg/day	6.0E-05	mg/kg/day	N/A	N/A	6.9E-03
	4-Amino-2,6-Dinitrotoluene	1.03	ug/L	1.03	ug/L	M	1.0E-06	mg/kg/day	6.0E-05	mg/kg/day	N/A	N/A	1.7E-02
	RDX	27.2	ug/L	27.2	ug/L	M	2.8E-05	mg/kg/day	3.0E-03	mg/kg/day	N/A	N/A	9.2E-03
	Aluminum	95.3	ug/L	95.3	ug/L	M	9.7E-05	mg/kg/day	1.0E+00	mg/kg/day	N/A	N/A	9.7E-05
	Barium	87.8	ug/L	87.8	ug/L	M	8.9E-05	mg/kg/day	7.0E-02	mg/kg/day	N/A	N/A	1.3E-03
	Cadmium	1.78	ug/L	1.78	ug/L	M	1.8E-06	mg/kg/day	5.0E-04	mg/kg/day	N/A	N/A	3.6E-03
	Chromium	7.02	ug/L	7.02	ug/L	M	7.1E-06	mg/kg/day	1.5E+00	mg/kg/day	N/A	N/A	4.8E-06
	Iron	505	ug/L	505	ug/L	M	5.1E-04	mg/kg/day	3.0E-01	mg/kg/day	N/A	N/A	1.7E-03
	Manganese	58.2	ug/L	58.2	ug/L	M	5.9E-05	mg/kg/day	7.2E-02	mg/kg/day	N/A	N/A	8.2E-04
	Nickel	8.86	ug/L	8.86	ug/L	M	9.0E-06	mg/kg/day	2.0E-02	mg/kg/day	N/A	N/A	4.5E-04
	Thallium	0.173	ug/L	0.173	ug/L	M	1.8E-07	mg/kg/day	7.0E-05	mg/kg/day	N/A	N/A	2.5E-03
	Nitrate	296	ug/L	296	ug/L	M	3.0E-04	mg/kg/day	1.6E+00	mg/kg/day	N/A	N/A	1.9E-04
	(Total)												2.2E-01
Dermal	1,1,2,2-Tetrachloroethane	42.7	ug/L	42.7	ug/L	M	3.0E-06	mg/kg/day	6.0E-02	mg/kg/day	N/A	N/A	5.0E-05
	1,1,2-Trichloroethane	1.11	ug/L	1.11	ug/L	M	5.7E-08	mg/kg/day	4.0E-03	mg/kg/day	N/A	N/A	1.4E-05
	1,1-Dichloroethene	0.213	ug/L	0.213	ug/L	M	1.6E-08	mg/kg/day	9.0E-03	mg/kg/day	N/A	N/A	1.8E-06
	cis-1,2-Dichloroethene	11.3	ug/L	11.3	ug/L	M	9.1E-07	mg/kg/day	1.0E-02	mg/kg/day	N/A	N/A	9.1E-05
	Tetrachloroethene	0.617	ug/L	0.617	ug/L	M	2.0E-07	mg/kg/day	1.0E-02	mg/kg/day	N/A	N/A	2.0E-05
	trans-1,2-Dichloroethene	2.87	ug/L	2.87	ug/L	M	1.4E-07	mg/kg/day	2.0E-02	mg/kg/day	N/A	N/A	7.0E-06
	Trichloroethene	48.9	ug/L	48.9	ug/L	M	4.5E-06	mg/kg/day	3.0E-04	mg/kg/day	N/A	N/A	1.5E-02
	Vinyl Chloride	0.400	ug/L	0.400	ug/L	M	1.1E-08	mg/kg/day	3.0E-03	mg/kg/day	N/A	N/A	3.8E-06
	2,4,6-Trinitrotoluene	1.30	ug/L	1.30	ug/L	M	1.8E-08	mg/kg/day	5.0E-04	mg/kg/day	N/A	N/A	3.7E-05
	2-Amino-4,6-Dinitrotoluene	0.409	ug/L	0.409	ug/L	M	3.2E-09	mg/kg/day	6.0E-05	mg/kg/day	N/A	N/A	5.3E-05
	4-Amino-2,6-Dinitrotoluene	1.03	ug/L	1.03	ug/L	M	8.0E-09	mg/kg/day	6.0E-05	mg/kg/day	N/A	N/A	1.3E-04
	RDX	27.2	ug/L	27.2	ug/L	M	1.3E-07	mg/kg/day	3.0E-03	mg/kg/day	N/A	N/A	4.4E-05
	Aluminum	95.3	ug/L	95.3	ug/L	M	1.5E-07	mg/kg/day	1.0E+00	mg/kg/day	N/A	N/A	1.5E-07
	Barium	87.8	ug/L	87.8	ug/L	M	1.4E-07	mg/kg/day	4.9E-03	mg/kg/day	N/A	N/A	2.8E-05
	Cadmium	1.78	ug/L	1.78	ug/L	M	2.7E-09	mg/kg/day	2.5E-05	mg/kg/day	N/A	N/A	1.1E-04
	Chromium	7.02	ug/L	7.02	ug/L	M	2.2E-08	mg/kg/day	2.0E-02	mg/kg/day	N/A	N/A	1.1E-06
	Iron	505	ug/L	505	ug/L	M	7.8E-07	mg/kg/day	3.0E-01	mg/kg/day	N/A	N/A	2.6E-06
	Manganese	58.2	ug/L	58.2	ug/L	M	9.0E-08	mg/kg/day	2.9E-03	mg/kg/day	N/A	N/A	3.1E-05
	Nickel	8.86	ug/L	8.86	ug/L	M	2.7E-09	mg/kg/day	8.0E-04	mg/kg/day	N/A	N/A	3.4E-06
	Thallium	0.173	ug/L	0.173	ug/L	M	2.7E-10	mg/kg/day	7.0E-05	mg/kg/day	N/A	N/A	3.8E-06
	Nitrate	296	ug/L	296	ug/L	M	4.6E-07	mg/kg/day	1.6E+00	mg/kg/day	N/A	N/A	2.9E-07
	(Total)												1.6E-02
												Total Hazard Index Across All Exposure Routes/Pathways	2.3E-01

(1) Medium-Specific (M) EPC selected for hazard calculation.
(2) Chronic.

TABLE 7.39
CALCULATION OF NON-CANCER HAZARDS
REASONABLE MAXIMUM EXPOSURE
NSWC CRANE, INDIANA

Scenario Timeframe: Future
Medium: Surface Water
Exposure Medium: Surface Water
Exposure Point: SWMU 3 - Little Sulphur Creek
Receptor Population: Recreational Users
Receptor Age: Adult

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Hazard Calculation (1)	Intake (Non-Cancer)	Intake (Non-Cancer) Units	Reference Dose (2)	Reference Dose Units	Reference Concentration	Reference Concentration Units	Hazard Quotient
Ingestion	Acetone	64.0	ug/L	64.0	ug/L	M	5.2E-06	mg/kg/day	1.0E-01	mg/kg/day	N/A	N/A	5.2E-05
	Bromomethane	0.529	ug/L	0.529	ug/L	M	4.3E-08	mg/kg/day	1.4E-03	mg/kg/day	N/A	N/A	3.1E-05
	Methylene Chloride	3.23	ug/L	3.23	ug/L	M	2.6E-07	mg/kg/day	6.0E-02	mg/kg/day	N/A	N/A	4.4E-06
	Bis(2-ethylhexyl)phthalate	1.36	ug/L	1.36	ug/L	M	1.1E-07	mg/kg/day	2.0E-02	mg/kg/day	N/A	N/A	5.5E-06
	Pentachlorophenol	0.059	ug/L	0.059	ug/L	M	4.8E-09	mg/kg/day	3.0E-02	mg/kg/day	N/A	N/A	1.6E-07
	2-Amino-4,6-Dinitrotoluene	0.384	ug/L	0.384	ug/L	M	3.1E-08	mg/kg/day	6.0E-05	mg/kg/day	N/A	N/A	5.2E-04
	4-Amino-2,6-Dinitrotoluene	1.06	ug/L	1.06	ug/L	M	8.6E-08	mg/kg/day	6.0E-05	mg/kg/day	N/A	N/A	1.4E-03
	RDX	63.0	ug/L	63.0	ug/L	M	5.1E-06	mg/kg/day	3.0E-03	mg/kg/day	N/A	N/A	1.7E-03
	Antimony	0.784	ug/L	0.784	ug/L	M	6.4E-08	mg/kg/day	4.0E-04	mg/kg/day	N/A	N/A	1.6E-04
	Lead	29.1	ug/L	29.1	ug/L	M	2.4E-06	mg/kg/day	NA	mg/kg/day	N/A	N/A	- -
	(Total)												3.9E-03
Dermal	Acetone	64.0	ug/L	64.0	ug/L	M	2.7E-06	mg/kg/day	1.0E-01	mg/kg/day	N/A	N/A	2.7E-05
	Bromomethane	0.529	ug/L	0.529	ug/L	M	1.3E-07	mg/kg/day	1.4E-03	mg/kg/day	N/A	N/A	9.3E-05
	Methylene Chloride	3.23	ug/L	3.23	ug/L	M	9.7E-07	mg/kg/day	6.0E-02	mg/kg/day	N/A	N/A	1.6E-05
	Bis(2-ethylhexyl)phthalate	1.36	ug/L	1.36	ug/L	M	1.1E-05	mg/kg/day	2.0E-02	mg/kg/day	N/A	N/A	5.6E-04
	Pentachlorophenol	0.059	ug/L	0.059	ug/L	M	3.9E-06	mg/kg/day	3.0E-02	mg/kg/day	N/A	N/A	1.3E-04
	2-Amino-4,6-Dinitrotoluene	0.384	ug/L	0.384	ug/L	M	3.0E-08	mg/kg/day	6.0E-05	mg/kg/day	N/A	N/A	5.1E-04
	4-Amino-2,6-Dinitrotoluene	1.06	ug/L	1.06	ug/L	M	8.3E-08	mg/kg/day	6.0E-05	mg/kg/day	N/A	N/A	1.4E-03
	RDX	63.0	ug/L	63.0	ug/L	M	3.0E-06	mg/kg/day	3.0E-03	mg/kg/day	N/A	N/A	1.0E-03
	Antimony	0.784	ug/L	0.784	ug/L	M	5.8E-08	mg/kg/day	6.0E-05	mg/kg/day	N/A	N/A	9.6E-04
	Lead	29.1	ug/L	29.1	ug/L	M	2.2E-06	mg/kg/day	NA	mg/kg/day	N/A	N/A	- -
	(Total)												4.7E-03
												Total Hazard Index Across All Exposure Routes/Pathways	8.6E-03

(1) Medium-Specific (M) EPC selected for hazard calculation.
(2) Chronic.

TABLE 7.40
CALCULATION OF NON-CANCER HAZARDS
CENTRAL TENDENCY EXPOSURES
NSWC CRANE, INDIANA

Scenario Timeframe: Future
Medium: Surface Water
Exposure Medium: Surface Water
Exposure Point: SWMU 3 - Little Sulphur Creek
Receptor Population: Recreational Users
Receptor Age: Adult

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Hazard Calculation (1)	Intake (Non-Cancer)	Intake (Non-Cancer) Units	Reference Dose (2)	Reference Dose Units	Reference Concentration	Reference Concentration Units	Hazard Quotient
Ingestion	Acetone	64.0	ug/L	64.0	ug/L	M	1.3E-06	mg/kg/day	1.0E-01	mg/kg/day	N/A	N/A	1.3E-05
	Bromomethane	0.529	ug/L	0.529	ug/L	M	1.1E-08	mg/kg/day	1.4E-03	mg/kg/day	N/A	N/A	7.7E-06
	Methylene Chloride	3.23	ug/L	3.23	ug/L	M	6.6E-08	mg/kg/day	6.0E-02	mg/kg/day	N/A	N/A	1.1E-06
	Bis(2-ethylhexyl)phthalate	1.36	ug/L	1.36	ug/L	M	2.8E-08	mg/kg/day	2.0E-02	mg/kg/day	N/A	N/A	1.4E-06
	Pentachlorophenol	0.059	ug/L	0.059	ug/L	M	1.2E-09	mg/kg/day	3.0E-02	mg/kg/day	N/A	N/A	4.0E-08
	2-Amino-4,6-Dinitrotoluene	0.384	ug/L	0.384	ug/L	M	7.8E-09	mg/kg/day	6.0E-05	mg/kg/day	N/A	N/A	1.3E-04
	4-Amino-2,6-Dinitrotoluene	1.06	ug/L	1.06	ug/L	M	2.2E-08	mg/kg/day	6.0E-05	mg/kg/day	N/A	N/A	3.6E-04
	RDX	63.0	ug/L	63.0	ug/L	M	1.3E-06	mg/kg/day	3.0E-03	mg/kg/day	N/A	N/A	4.3E-04
	Antimony	0.784	ug/L	0.784	ug/L	M	1.6E-08	mg/kg/day	4.0E-04	mg/kg/day	N/A	N/A	4.0E-05
	Lead	29.1	ug/L	29.1	ug/L	M	5.9E-07	mg/kg/day	NA	mg/kg/day	N/A	N/A	- -
	(Total)												9.8E-04
Dermal	Acetone	64.0	ug/L	64.0	ug/L	M	7.5E-07	mg/kg/day	1.0E-01	mg/kg/day	N/A	N/A	7.5E-06
	Bromomethane	0.529	ug/L	0.529	ug/L	M	3.8E-08	mg/kg/day	1.4E-03	mg/kg/day	N/A	N/A	2.7E-05
	Methylene Chloride	3.23	ug/L	3.23	ug/L	M	2.8E-07	mg/kg/day	6.0E-02	mg/kg/day	N/A	N/A	4.6E-06
	Bis(2-ethylhexyl)phthalate	1.36	ug/L	1.36	ug/L	M	4.0E-06	mg/kg/day	2.0E-02	mg/kg/day	N/A	N/A	2.0E-04
	Pentachlorophenol	0.059	ug/L	0.059	ug/L	M	1.4E-06	mg/kg/day	3.0E-02	mg/kg/day	N/A	N/A	4.6E-05
	2-Amino-4,6-Dinitrotoluene	0.384	ug/L	0.384	ug/L	M	1.0E-08	mg/kg/day	6.0E-05	mg/kg/day	N/A	N/A	1.7E-04
	4-Amino-2,6-Dinitrotoluene	1.06	ug/L	1.06	ug/L	M	2.8E-08	mg/kg/day	6.0E-05	mg/kg/day	N/A	N/A	4.7E-04
	RDX	63.0	ug/L	63.0	ug/L	M	1.1E-06	mg/kg/day	3.0E-03	mg/kg/day	N/A	N/A	3.6E-04
	Antimony	0.784	ug/L	0.784	ug/L	M	1.4E-08	mg/kg/day	6.0E-05	mg/kg/day	N/A	N/A	2.4E-04
	Lead	29.1	ug/L	29.1	ug/L	M	5.4E-07	mg/kg/day	NA	mg/kg/day	N/A	N/A	- -
	(Total)												1.5E-03
												Total Hazard Index Across All Exposure Routes/Pathways	2.5E-03

(1) Medium-Specific (M) EPC selected for hazard calculation.
(2) Chronic.

TABLE 7.41
CALCULATION OF NON-CANCER HAZARDS
REASONABLE MAXIMUM EXPOSURE
NSWC CRANE, INDIANA

Scenario Timeframe: Future
Medium: Sediment
Exposure Medium: Sediment
Exposure Point: SWMU 3 - Little Sulphur Creek
Receptor Population: Recreational Users
Receptor Age: Adult

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Hazard Calculation (1)	Intake (Non-Cancer)	Intake (Non-Cancer) Units	Reference Dose (2)	Reference Dose Units	Reference Concentration	Reference Concentration Units	Hazard Quotient
Ingestion	2-Amino-4,6-Dinitrotoluene	0.178	mg/kg	0.178	mg/kg	M	1.8E-08	mg/kg/day	6.0E-05	mg/kg/day	N/A	N/A	3.0E-04
	Aluminum	14916	mg/kg	14916	mg/kg	M	1.5E-03	mg/kg/day	1.0E+00	mg/kg/day	N/A	N/A	1.5E-03
	Antimony	2.88	mg/kg	2.88	mg/kg	M	2.9E-07	mg/kg/day	4.0E-04	mg/kg/day	N/A	N/A	7.3E-04
	Barium	359	mg/kg	359	mg/kg	M	3.7E-05	mg/kg/day	7.0E-02	mg/kg/day	N/A	N/A	5.2E-04
	Cadmium	1.78	mg/kg	1.78	mg/kg	M	1.8E-07	mg/kg/day	5.0E-04	mg/kg/day	N/A	N/A	3.6E-04
	Lead	120	mg/kg	120	mg/kg	M	1.2E-05	mg/kg/day	NA	mg/kg/day	N/A	N/A	- -
	(Total)												3.4E-03
Dermal	2-Amino-4,6-Dinitrotoluene	0.178	mg/kg	0.178	mg/kg	M	2.3E-08	mg/kg/day	6.0E-05	mg/kg/day	N/A	N/A	3.8E-04
	Aluminum	14916	mg/kg	14916	mg/kg	M	0.0E+00	mg/kg/day	1.0E+00	mg/kg/day	N/A	N/A	- -
	Antimony	2.88	mg/kg	2.88	mg/kg	M	0.0E+00	mg/kg/day	6.0E-05	mg/kg/day	N/A	N/A	- -
	Barium	359	mg/kg	359	mg/kg	M	0.0E+00	mg/kg/day	4.9E-03	mg/kg/day	N/A	N/A	- -
	Cadmium	1.78	mg/kg	1.78	mg/kg	M	2.3E-09	mg/kg/day	2.5E-05	mg/kg/day	N/A	N/A	9.2E-05
	Lead	120	mg/kg	120	mg/kg	M	0.0E+00	mg/kg/day	NA	mg/kg/day	N/A	N/A	- -
	(Total)												4.8E-04
												Total Hazard Index Across All Exposure Routes/Pathways	3.9E-03

(1) Medium-Specific (M) EPC selected for hazard calculation.
(2) Chronic.

TABLE 7.42
CALCULATION OF NON-CANCER HAZARDS
CENTRAL TENDENCY EXPOSURES
NSWC CRANE, INDIANA

Scenario Timeframe: Future
Medium: Sediment
Exposure Medium: Sediment
Exposure Point: SWMU 3 - Little Sulphur Creek
Receptor Population: Recreational Users
Receptor Age: Adult

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Hazard Calculation (1)	Intake (Non-Cancer)	Intake (Non-Cancer) Units	Reference Dose (2)	Reference Dose Units	Reference Concentration	Reference Concentration Units	Hazard Quotient
Ingestion	2-Amino-4,6-Dinitrotoluene	0.178	mg/kg	0.178	mg/kg	M	4.5E-09	mg/kg/day	6.0E-05	mg/kg/day	N/A	N/A	7.6E-05
	Aluminum	14916	mg/kg	14916	mg/kg	M	3.8E-04	mg/kg/day	1.0E+00	mg/kg/day	N/A	N/A	3.8E-04
	Antimony	2.88	mg/kg	2.88	mg/kg	M	7.3E-08	mg/kg/day	4.0E-04	mg/kg/day	N/A	N/A	1.8E-04
	Barium	359	mg/kg	359	mg/kg	M	9.1E-06	mg/kg/day	7.0E-02	mg/kg/day	N/A	N/A	1.3E-04
	Cadmium	1.78	mg/kg	1.78	mg/kg	M	4.5E-08	mg/kg/day	5.0E-04	mg/kg/day	N/A	N/A	9.0E-05
	Lead	120	mg/kg	120	mg/kg	M	3.1E-06	mg/kg/day	NA	mg/kg/day	N/A	N/A	- -
	(Total)												8.6E-04
Dermal	2-Amino-4,6-Dinitrotoluene	0.178	mg/kg	0.178	mg/kg	M	1.6E-09	mg/kg/day	6.0E-05	mg/kg/day	N/A	N/A	2.7E-05
	Aluminum	14916	mg/kg	14916	mg/kg	M	0.0E+00	mg/kg/day	1.0E+00	mg/kg/day	N/A	N/A	- -
	Antimony	2.88	mg/kg	2.88	mg/kg	M	0.0E+00	mg/kg/day	6.0E-05	mg/kg/day	N/A	N/A	- -
	Barium	359	mg/kg	359	mg/kg	M	0.0E+00	mg/kg/day	4.9E-03	mg/kg/day	N/A	N/A	- -
	Cadmium	1.78	mg/kg	1.78	mg/kg	M	1.6E-10	mg/kg/day	2.5E-05	mg/kg/day	N/A	N/A	6.6E-06
	Lead	120	mg/kg	120	mg/kg	M	0.0E+00	mg/kg/day	NA	mg/kg/day	N/A	N/A	- -
	(Total)												3.4E-05
												Total Hazard Index Across All Exposure Routes/Pathways	8.9E-04

(1) Medium-Specific (M) EPC selected for hazard calculation.
(2) Chronic.

TABLE 7.43
CALCULATION OF NON-CANCER HAZARDS
REASONABLE MAXIMUM EXPOSURE
NSWC CRANE, INDIANA

Scenario Timeframe: Future
Medium: Surface Soil
Exposure Medium: Surface Soil
Exposure Point: SWMU 3 - 1 Acre Exposure Unit
Receptor Population: On-Site Resident
Receptor Age: Child

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Hazard Calculation (1)	Intake (Non-Cancer)	Intake (Non-Cancer) Units	Reference Dose (2)	Reference Dose Units	Reference Concentration	Reference Concentration Units	Hazard Quotient
Ingestion	2,3,7,8-TCDD Equivalents	0.0000074	mg/kg	0.0000074	mg/kg	M	9.5E-11	mg/kg/day	NA	mg/kg/day	N/A	N/A	- -
	2,4,6-Trinitrotoluene	581	mg/kg	581	mg/kg	M	7.4E-03	mg/kg/day	5.0E-04	mg/kg/day	N/A	N/A	1.5E+01
	2-Amino-4,6-Dinitrotoluene	2.36	mg/kg	2.36	mg/kg	M	3.0E-05	mg/kg/day	6.0E-05	mg/kg/day	N/A	N/A	5.0E-01
	4-Amino-2,6-Dinitrotoluene	1.44	mg/kg	1.44	mg/kg	M	1.8E-05	mg/kg/day	6.0E-05	mg/kg/day	N/A	N/A	3.1E-01
	HMX	291	mg/kg	291	mg/kg	M	3.7E-03	mg/kg/day	5.0E-02	mg/kg/day	N/A	N/A	7.4E-02
	RDX	522	mg/kg	522	mg/kg	M	6.7E-03	mg/kg/day	3.0E-03	mg/kg/day	N/A	N/A	2.2E+00
	Barium	235	mg/kg	235	mg/kg	M	3.0E-03	mg/kg/day	7.0E-02	mg/kg/day	N/A	N/A	4.3E-02
	Cadmium	4.40	mg/kg	4.40	mg/kg	M	5.6E-05	mg/kg/day	5.0E-04	mg/kg/day	N/A	N/A	1.1E-01
	Chromium	14.6	mg/kg	14.6	mg/kg	M	1.9E-04	mg/kg/day	1.5E+00	mg/kg/day	N/A	N/A	1.2E-04
	Iron	21431	mg/kg	21431	mg/kg	M	2.7E-01	mg/kg/day	3.0E-01	mg/kg/day	N/A	N/A	9.1E-01
	Lead	1324	mg/kg	1324	mg/kg	M	1.7E-02	mg/kg/day	NA	mg/kg/day	N/A	N/A	- -
	(Total)												1.9E+01
Dermal	2,3,7,8-TCDD Equivalents	0.0000074	mg/kg	0.0000074	mg/kg	M	7.9E-12	mg/kg/day	NA	mg/kg/day	N/A	N/A	- -
	2,4,6-Trinitrotoluene	581	mg/kg	581	mg/kg	M	2.1E-03	mg/kg/day	5.0E-04	mg/kg/day	N/A	N/A	4.2E+00
	2-Amino-4,6-Dinitrotoluene	2.36	mg/kg	2.36	mg/kg	M	8.4E-06	mg/kg/day	6.0E-05	mg/kg/day	N/A	N/A	1.4E-01
	4-Amino-2,6-Dinitrotoluene	1.44	mg/kg	1.44	mg/kg	M	5.1E-06	mg/kg/day	6.0E-05	mg/kg/day	N/A	N/A	8.6E-02
	HMX	291	mg/kg	291	mg/kg	M	1.0E-03	mg/kg/day	5.0E-02	mg/kg/day	N/A	N/A	2.1E-02
	RDX	522	mg/kg	522	mg/kg	M	1.9E-03	mg/kg/day	3.0E-03	mg/kg/day	N/A	N/A	6.2E-01
	Barium	235	mg/kg	235	mg/kg	M	0.0E+00	mg/kg/day	4.9E-03	mg/kg/day	N/A	N/A	- -
	Cadmium	4.40	mg/kg	4.40	mg/kg	M	1.6E-07	mg/kg/day	2.5E-05	mg/kg/day	N/A	N/A	6.3E-03
	Chromium	14.6	mg/kg	14.6	mg/kg	M	0.0E+00	mg/kg/day	2.0E-02	mg/kg/day	N/A	N/A	- -
	Iron	21431	mg/kg	21431	mg/kg	M	0.0E+00	mg/kg/day	3.0E-01	mg/kg/day	N/A	N/A	- -
	Lead	1324	mg/kg	1324	mg/kg	M	0.0E+00	mg/kg/day	NA	mg/kg/day	N/A	N/A	- -
	(Total)												5.0E+00
												Total Hazard Index Across All Exposure Routes/Pathways	2.4E+01

(1) Medium-Specific (M) EPC selected for hazard calculation.
(2) Chronic.

TABLE 7.44
CALCULATION OF NON-CANCER HAZARDS
CENTRAL TENDENCY EXPOSURES
NSWC CRANE, INDIANA

Scenario Timeframe: Future
Medium: Surface Soil
Exposure Medium: Surface Soil
Exposure Point: SWMU 3 - 1 Acre Exposure Unit
Receptor Population: On-Site Resident
Receptor Age: Child

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Hazard Calculation (1)	Intake (Non-Cancer)	Intake (Non-Cancer) Units	Reference Dose (2)	Reference Dose Units	Reference Concentration	Reference Concentration Units	Hazard Quotient
Ingestion	2,3,7,8-TCDD Equivalents	0.0000074	mg/kg	0.0000074	mg/kg	M	3.2E-11	mg/kg/day	NA	mg/kg/day	N/A	N/A	- -
	2,4,6-Trinitrotoluene	581	mg/kg	581	mg/kg	M	2.5E-03	mg/kg/day	5.0E-04	mg/kg/day	N/A	N/A	5.0E+00
	2-Amino-4,6-Dinitrotoluene	2.36	mg/kg	2.36	mg/kg	M	1.0E-05	mg/kg/day	6.0E-05	mg/kg/day	N/A	N/A	1.7E-01
	4-Amino-2,6-Dinitrotoluene	1.44	mg/kg	1.44	mg/kg	M	6.1E-06	mg/kg/day	6.0E-05	mg/kg/day	N/A	N/A	1.0E-01
	HMX	291	mg/kg	291	mg/kg	M	1.2E-03	mg/kg/day	5.0E-02	mg/kg/day	N/A	N/A	2.5E-02
	RDX	522	mg/kg	522	mg/kg	M	2.2E-03	mg/kg/day	3.0E-03	mg/kg/day	N/A	N/A	7.4E-01
	Barium	235	mg/kg	235	mg/kg	M	1.0E-03	mg/kg/day	7.0E-02	mg/kg/day	N/A	N/A	1.4E-02
	Cadmium	4.40	mg/kg	4.40	mg/kg	M	1.9E-05	mg/kg/day	5.0E-04	mg/kg/day	N/A	N/A	3.8E-02
	Chromium	14.6	mg/kg	14.6	mg/kg	M	6.3E-05	mg/kg/day	1.5E+00	mg/kg/day	N/A	N/A	4.2E-05
	Iron	21431	mg/kg	21431	mg/kg	M	9.2E-02	mg/kg/day	3.0E-01	mg/kg/day	N/A	N/A	3.1E-01
	Lead	1324	mg/kg	1324	mg/kg	M	5.7E-03	mg/kg/day	NA	mg/kg/day	N/A	N/A	- -
	(Total)												6.4E+00
Dermal	2,3,7,8-TCDD Equivalents	0.0000074	mg/kg	0.0000074	mg/kg	M	1.1E-12	mg/kg/day	NA	mg/kg/day	N/A	N/A	- -
	2,4,6-Trinitrotoluene	581	mg/kg	581	mg/kg	M	2.8E-04	mg/kg/day	5.0E-04	mg/kg/day	N/A	N/A	5.6E-01
	2-Amino-4,6-Dinitrotoluene	2.36	mg/kg	2.36	mg/kg	M	1.1E-06	mg/kg/day	6.0E-05	mg/kg/day	N/A	N/A	1.9E-02
	4-Amino-2,6-Dinitrotoluene	1.44	mg/kg	1.44	mg/kg	M	6.9E-07	mg/kg/day	6.0E-05	mg/kg/day	N/A	N/A	1.1E-02
	HMX	291	mg/kg	291	mg/kg	M	1.4E-04	mg/kg/day	5.0E-02	mg/kg/day	N/A	N/A	2.8E-03
	RDX	522	mg/kg	522	mg/kg	M	2.5E-04	mg/kg/day	3.0E-03	mg/kg/day	N/A	N/A	8.3E-02
	Barium	235	mg/kg	235	mg/kg	M	0.0E+00	mg/kg/day	4.9E-03	mg/kg/day	N/A	N/A	- -
	Cadmium	4.40	mg/kg	4.40	mg/kg	M	2.1E-08	mg/kg/day	2.5E-05	mg/kg/day	N/A	N/A	8.4E-04
	Chromium	14.6	mg/kg	14.6	mg/kg	M	0.0E+00	mg/kg/day	2.0E-02	mg/kg/day	N/A	N/A	- -
	Iron	21431	mg/kg	21431	mg/kg	M	0.0E+00	mg/kg/day	3.0E-01	mg/kg/day	N/A	N/A	- -
	Lead	1324	mg/kg	1324	mg/kg	M	0.0E+00	mg/kg/day	NA	mg/kg/day	N/A	N/A	- -
	(Total)												6.7E-01
												Total Hazard Index Across All Exposure Routes/Pathways	7.0E+00

(1) Medium-Specific (M) EPC selected for hazard calculation.
(2) Chronic.

TABLE 7.45
CALCULATION OF NON-CANCER HAZARDS
REASONABLE MAXIMUM EXPOSURE
NSWC CRANE, INDIANA

Scenario Timeframe: Future
Medium: Surface Soil
Exposure Medium: Surface Soil
Exposure Point: SWMU 3 - 6-Acre Exposure Unit
Receptor Population: On-Site Resident
Receptor Age: Child

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Hazard Calculation (1)	Intake (Non-Cancer)	Intake (Non-Cancer) Units	Reference Dose (2)	Reference Dose Units	Reference Concentration	Reference Concentration Units	Hazard Quotient
Ingestion	2,3,7,8-TCDD Equivalents	0.0000074	mg/kg	0.0000074	mg/kg	M	9.5E-11	mg/kg/day	NA	mg/kg/day	N/A	N/A	- -
	2,4,6-Trinitrotoluene	2.62	mg/kg	2.62	mg/kg	M	3.4E-05	mg/kg/day	5.0E-04	mg/kg/day	N/A	N/A	6.7E-02
	2-Amino-4,6-Dinitrotoluene	0.433	mg/kg	0.433	mg/kg	M	5.5E-06	mg/kg/day	6.0E-05	mg/kg/day	N/A	N/A	9.2E-02
	4-Amino-2,6-Dinitrotoluene	0.365	mg/kg	0.365	mg/kg	M	4.7E-06	mg/kg/day	6.0E-05	mg/kg/day	N/A	N/A	7.8E-02
	HMX	4.77	mg/kg	4.77	mg/kg	M	6.1E-05	mg/kg/day	5.0E-02	mg/kg/day	N/A	N/A	1.2E-03
	RDX	3.41	mg/kg	3.41	mg/kg	M	4.4E-05	mg/kg/day	3.0E-03	mg/kg/day	N/A	N/A	1.5E-02
	Barium	252	mg/kg	252	mg/kg	M	3.2E-03	mg/kg/day	7.0E-02	mg/kg/day	N/A	N/A	4.6E-02
	Cadmium	1.19	mg/kg	1.19	mg/kg	M	1.5E-05	mg/kg/day	5.0E-04	mg/kg/day	N/A	N/A	3.0E-02
	Chromium	26.4	mg/kg	26.4	mg/kg	M	3.4E-04	mg/kg/day	1.5E+00	mg/kg/day	N/A	N/A	2.3E-04
	Iron	26855	mg/kg	26855	mg/kg	M	3.4E-01	mg/kg/day	3.0E-01	mg/kg/day	N/A	N/A	1.1E+00
	Lead	358	mg/kg	358	mg/kg	M	4.6E-03	mg/kg/day	NA	mg/kg/day	N/A	N/A	- -
	(Total)												1.5E+00
Dermal	2,3,7,8-TCDD Equivalents	0.0000074	mg/kg	0.0000074	mg/kg	M	7.9E-12	mg/kg/day	NA	mg/kg/day	N/A	N/A	- -
	2,4,6-Trinitrotoluene	2.62	mg/kg	2.62	mg/kg	M	9.4E-06	mg/kg/day	5.0E-04	mg/kg/day	N/A	N/A	1.9E-02
	2-Amino-4,6-Dinitrotoluene	0.433	mg/kg	0.433	mg/kg	M	1.6E-06	mg/kg/day	6.0E-05	mg/kg/day	N/A	N/A	2.6E-02
	4-Amino-2,6-Dinitrotoluene	0.365	mg/kg	0.365	mg/kg	M	1.3E-06	mg/kg/day	6.0E-05	mg/kg/day	N/A	N/A	2.2E-02
	HMX	4.77	mg/kg	4.77	mg/kg	M	1.7E-05	mg/kg/day	5.0E-02	mg/kg/day	N/A	N/A	3.4E-04
	RDX	3.41	mg/kg	3.41	mg/kg	M	1.2E-05	mg/kg/day	3.0E-03	mg/kg/day	N/A	N/A	4.1E-03
	Barium	252	mg/kg	252	mg/kg	M	0.0E+00	mg/kg/day	4.9E-03	mg/kg/day	N/A	N/A	- -
	Cadmium	1.19	mg/kg	1.19	mg/kg	M	4.3E-08	mg/kg/day	2.5E-05	mg/kg/day	N/A	N/A	1.7E-03
	Chromium	26.4	mg/kg	26.4	mg/kg	M	0.0E+00	mg/kg/day	2.0E-02	mg/kg/day	N/A	N/A	- -
	Iron	26855	mg/kg	26855	mg/kg	M	0.0E+00	mg/kg/day	3.0E-01	mg/kg/day	N/A	N/A	- -
	Lead	358	mg/kg	358	mg/kg	M	0.0E+00	mg/kg/day	NA	mg/kg/day	N/A	N/A	- -
	(Total)												7.2E-02
												Total Hazard Index Across All Exposure Routes/Pathways	1.5E+00

(1) Medium-Specific (M) EPC selected for hazard calculation.
(2) Chronic.

TABLE 7.46
CALCULATION OF NON-CANCER HAZARDS
CENTRAL TENDENCY EXPOSURES
NSWC CRANE, INDIANA

Scenario Timeframe: Future
Medium: Surface Soil
Exposure Medium: Surface Soil
Exposure Point: SWMU 3 - 6-Acre Exposure Unit
Receptor Population: On-Site Resident
Receptor Age: Child

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Hazard Calculation (1)	Intake (Non-Cancer)	Intake (Non-Cancer) Units	Reference Dose (2)	Reference Dose Units	Reference Concentration	Reference Concentration Units	Hazard Quotient
Ingestion	2,3,7,8-TCDD Equivalents	0.0000074	mg/kg	0.0000074	mg/kg	M	3.2E-11	mg/kg/day	NA	mg/kg/day	N/A	N/A	- -
	2,4,6-Trinitrotoluene	2.62	mg/kg	2.62	mg/kg	M	1.1E-05	mg/kg/day	5.0E-04	mg/kg/day	N/A	N/A	2.2E-02
	2-Amino-4,6-Dinitrotoluene	0.433	mg/kg	0.433	mg/kg	M	1.9E-06	mg/kg/day	6.0E-05	mg/kg/day	N/A	N/A	3.1E-02
	4-Amino-2,6-Dinitrotoluene	0.365	mg/kg	0.365	mg/kg	M	1.6E-06	mg/kg/day	6.0E-05	mg/kg/day	N/A	N/A	2.6E-02
	HMX	4.77	mg/kg	4.77	mg/kg	M	2.0E-05	mg/kg/day	5.0E-02	mg/kg/day	N/A	N/A	4.1E-04
	RDX	3.41	mg/kg	3.41	mg/kg	M	1.5E-05	mg/kg/day	3.0E-03	mg/kg/day	N/A	N/A	4.9E-03
	Barium	252	mg/kg	252	mg/kg	M	1.1E-03	mg/kg/day	7.0E-02	mg/kg/day	N/A	N/A	1.5E-02
	Cadmium	1.19	mg/kg	1.19	mg/kg	M	5.1E-06	mg/kg/day	5.0E-04	mg/kg/day	N/A	N/A	1.0E-02
	Chromium	26.4	mg/kg	26.4	mg/kg	M	1.1E-04	mg/kg/day	1.5E+00	mg/kg/day	N/A	N/A	7.5E-05
	Iron	26855	mg/kg	26855	mg/kg	M	1.1E-01	mg/kg/day	3.0E-01	mg/kg/day	N/A	N/A	3.8E-01
	Lead	358	mg/kg	358	mg/kg	M	1.5E-03	mg/kg/day	NA	mg/kg/day	N/A	N/A	- -
	(Total)												4.9E-01
Dermal	2,3,7,8-TCDD Equivalents	0.0000074	mg/kg	0.0000074	mg/kg	M	1.1E-12	mg/kg/day	NA	mg/kg/day	N/A	N/A	- -
	2,4,6-Trinitrotoluene	2.62	mg/kg	2.62	mg/kg	M	1.3E-06	mg/kg/day	5.0E-04	mg/kg/day	N/A	N/A	2.5E-03
	2-Amino-4,6-Dinitrotoluene	0.433	mg/kg	0.433	mg/kg	M	2.1E-07	mg/kg/day	6.0E-05	mg/kg/day	N/A	N/A	3.5E-03
	4-Amino-2,6-Dinitrotoluene	0.365	mg/kg	0.365	mg/kg	M	1.7E-07	mg/kg/day	6.0E-05	mg/kg/day	N/A	N/A	2.9E-03
	HMX	4.77	mg/kg	4.77	mg/kg	M	2.3E-06	mg/kg/day	5.0E-02	mg/kg/day	N/A	N/A	4.6E-05
	RDX	3.41	mg/kg	3.41	mg/kg	M	1.6E-06	mg/kg/day	3.0E-03	mg/kg/day	N/A	N/A	5.4E-04
	Barium	252	mg/kg	252	mg/kg	M	0.0E+00	mg/kg/day	4.9E-03	mg/kg/day	N/A	N/A	- -
	Cadmium	1.19	mg/kg	1.19	mg/kg	M	5.7E-09	mg/kg/day	2.5E-05	mg/kg/day	N/A	N/A	2.3E-04
	Chromium	26.4	mg/kg	26.4	mg/kg	M	0.0E+00	mg/kg/day	2.0E-02	mg/kg/day	N/A	N/A	- -
	Iron	26855	mg/kg	26855	mg/kg	M	0.0E+00	mg/kg/day	3.0E-01	mg/kg/day	N/A	N/A	- -
	Lead	358	mg/kg	358	mg/kg	M	0.0E+00	mg/kg/day	NA	mg/kg/day	N/A	N/A	- -
	(Total)												9.7E-03
												Total Hazard Index Across All Exposure Routes/Pathways	5.0E-01

(1) Medium-Specific (M) EPC selected for hazard calculation.
(2) Chronic.

TABLE 7.47
CALCULATION OF NON-CANCER HAZARDS
REASONABLE MAXIMUM EXPOSURE
NSWC CRANE, INDIANA

Scenario Timeframe: Future
Medium: Ground Water
Exposure Medium: Ground Water
Exposure Point: SWMU 3 - Shallow Ground Water
Receptor Population: On-Site Resident
Receptor Age: Child

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Hazard Calculation (1)	Intake (Non-Cancer)	Intake (Non-Cancer) Units	Reference Dose (2)	Reference Dose Units	Reference Concentration	Reference Concentration Units	Hazard Quotient
Ingestion	1,1,2,2-Tetrachloroethane	42.7	ug/L	42.7	ug/L	M	4.1E-03	mg/kg/day	6.0E-02	mg/kg/day	N/A	N/A	6.8E-02
	1,1,2-Trichloroethane	1.11	ug/L	1.11	ug/L	M	1.1E-04	mg/kg/day	4.0E-03	mg/kg/day	N/A	N/A	2.7E-02
	1,1-Dichloroethene	0.213	ug/L	0.213	ug/L	M	2.0E-05	mg/kg/day	9.0E-03	mg/kg/day	N/A	N/A	2.3E-03
	cis-1,2-Dichloroethene	11.3	ug/L	11.3	ug/L	M	1.1E-03	mg/kg/day	1.0E-02	mg/kg/day	N/A	N/A	1.1E-01
	Tetrachloroethene	0.617	ug/L	0.617	ug/L	M	5.9E-05	mg/kg/day	1.0E-02	mg/kg/day	N/A	N/A	5.9E-03
	trans-1,2-Dichloroethene	2.87	ug/L	2.87	ug/L	M	2.8E-04	mg/kg/day	2.0E-02	mg/kg/day	N/A	N/A	1.4E-02
	Trichloroethene	48.9	ug/L	48.9	ug/L	M	4.7E-03	mg/kg/day	3.0E-04	mg/kg/day	N/A	N/A	1.6E+01
	Vinyl Chloride	0.400	ug/L	0.400	ug/L	M	3.8E-05	mg/kg/day	3.0E-03	mg/kg/day	N/A	N/A	1.3E-02
	2,4,6-Trinitrotoluene	1.30	ug/L	1.30	ug/L	M	1.2E-04	mg/kg/day	5.0E-04	mg/kg/day	N/A	N/A	2.5E-01
	2-Amino-4,6-Dinitrotoluene	0.409	ug/L	0.409	ug/L	M	3.9E-05	mg/kg/day	6.0E-05	mg/kg/day	N/A	N/A	6.5E-01
	4-Amino-2,6-Dinitrotoluene	1.03	ug/L	1.03	ug/L	M	9.9E-05	mg/kg/day	6.0E-05	mg/kg/day	N/A	N/A	1.6E+00
	RDX	27.2	ug/L	27.2	ug/L	M	2.6E-03	mg/kg/day	3.0E-03	mg/kg/day	N/A	N/A	8.7E-01
	Aluminum	95.3	ug/L	95.3	ug/L	M	9.1E-03	mg/kg/day	1.0E+00	mg/kg/day	N/A	N/A	9.1E-03
	Barium	87.8	ug/L	87.8	ug/L	M	8.4E-03	mg/kg/day	7.0E-02	mg/kg/day	N/A	N/A	1.2E-01
	Cadmium	1.78	ug/L	1.78	ug/L	M	1.7E-04	mg/kg/day	5.0E-04	mg/kg/day	N/A	N/A	3.4E-01
	Chromium	7.02	ug/L	7.02	ug/L	M	6.7E-04	mg/kg/day	1.5E+00	mg/kg/day	N/A	N/A	4.5E-04
	Iron	505	ug/L	505	ug/L	M	4.8E-02	mg/kg/day	3.0E-01	mg/kg/day	N/A	N/A	1.6E-01
	Manganese	58.2	ug/L	58.2	ug/L	M	5.6E-03	mg/kg/day	7.2E-02	mg/kg/day	N/A	N/A	7.7E-02
	Nickel	8.86	ug/L	8.86	ug/L	M	8.5E-04	mg/kg/day	2.0E-02	mg/kg/day	N/A	N/A	4.2E-02
	Thallium	0.173	ug/L	0.173	ug/L	M	1.7E-05	mg/kg/day	7.0E-05	mg/kg/day	N/A	N/A	2.4E-01
	Nitrate	296	ug/L	296	ug/L	M	2.8E-02	mg/kg/day	1.6E+00	mg/kg/day	N/A	N/A	1.8E-02
	(Total)												2.0E+01
Dermal	1,1,2,2-Tetrachloroethane	42.7	ug/L	42.7	ug/L	M	1.7E-04	mg/kg/day	6.0E-02	mg/kg/day	N/A	N/A	2.8E-03
	1,1,2-Trichloroethane	1.11	ug/L	1.11	ug/L	M	3.2E-06	mg/kg/day	4.0E-03	mg/kg/day	N/A	N/A	8.0E-04
	1,1-Dichloroethene	0.213	ug/L	0.213	ug/L	M	8.8E-07	mg/kg/day	9.0E-03	mg/kg/day	N/A	N/A	9.8E-05
	cis-1,2-Dichloroethene	11.3	ug/L	11.3	ug/L	M	5.1E-05	mg/kg/day	1.0E-02	mg/kg/day	N/A	N/A	5.1E-03
	Tetrachloroethene	0.617	ug/L	0.617	ug/L	M	1.1E-05	mg/kg/day	1.0E-02	mg/kg/day	N/A	N/A	1.1E-03
	trans-1,2-Dichloroethene	2.87	ug/L	2.87	ug/L	M	7.9E-06	mg/kg/day	2.0E-02	mg/kg/day	N/A	N/A	3.9E-04
	Trichloroethene	48.9	ug/L	48.9	ug/L	M	2.5E-04	mg/kg/day	3.0E-04	mg/kg/day	N/A	N/A	8.4E-01
	Vinyl Chloride	0.400	ug/L	0.400	ug/L	M	6.4E-07	mg/kg/day	3.0E-03	mg/kg/day	N/A	N/A	2.1E-04
	2,4,6-Trinitrotoluene	1.30	ug/L	1.30	ug/L	M	1.0E-06	mg/kg/day	5.0E-04	mg/kg/day	N/A	N/A	2.0E-03
	2-Amino-4,6-Dinitrotoluene	0.409	ug/L	0.409	ug/L	M	1.8E-07	mg/kg/day	6.0E-05	mg/kg/day	N/A	N/A	2.9E-03
	4-Amino-2,6-Dinitrotoluene	1.03	ug/L	1.03	ug/L	M	4.5E-07	mg/kg/day	6.0E-05	mg/kg/day	N/A	N/A	7.4E-03
	RDX	27.2	ug/L	27.2	ug/L	M	7.4E-06	mg/kg/day	3.0E-03	mg/kg/day	N/A	N/A	2.5E-03
	Aluminum	95.3	ug/L	95.3	ug/L	M	1.0E-05	mg/kg/day	1.0E+00	mg/kg/day	N/A	N/A	1.0E-05
	Barium	87.8	ug/L	87.8	ug/L	M	9.3E-06	mg/kg/day	4.9E-03	mg/kg/day	N/A	N/A	1.9E-03
	Cadmium	1.78	ug/L	1.78	ug/L	M	1.9E-07	mg/kg/day	2.5E-05	mg/kg/day	N/A	N/A	7.5E-03
	Chromium	7.02	ug/L	7.02	ug/L	M	1.5E-06	mg/kg/day	2.0E-02	mg/kg/day	N/A	N/A	7.6E-05
	Iron	505	ug/L	505	ug/L	M	5.3E-05	mg/kg/day	3.0E-01	mg/kg/day	N/A	N/A	1.8E-04
	Manganese	58.2	ug/L	58.2	ug/L	M	6.1E-06	mg/kg/day	2.9E-03	mg/kg/day	N/A	N/A	2.1E-03
	Nickel	8.86	ug/L	8.86	ug/L	M	1.9E-07	mg/kg/day	8.0E-04	mg/kg/day	N/A	N/A	2.3E-04
	Thallium	0.173	ug/L	0.173	ug/L	M	1.8E-08	mg/kg/day	7.0E-05	mg/kg/day	N/A	N/A	2.6E-04
	Nitrate	296	ug/L	296	ug/L	M	3.1E-05	mg/kg/day	1.6E+00	mg/kg/day	N/A	N/A	2.0E-05
	(Total)												8.8E-01
												Total Hazard Index Across All Exposure Routes/Pathways	2.1E+01

(1) Medium-Specific (M) EPC selected for hazard calculation.
(2) Chronic.

TABLE 7.48
CALCULATION OF NON-CANCER HAZARDS
CENTRAL TENDENCY EXPOSURES
NSWC CRANE, INDIANA

Scenario Timeframe: Future
Medium: Ground Water
Exposure Medium: Ground Water
Exposure Point: SWMU 3 - Shallow Ground Water
Receptor Population: On-Site Resident
Receptor Age: Child

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Hazard Calculation (1)	Intake (Non-Cancer)	Intake (Non-Cancer) Units	Reference Dose (2)	Reference Dose Units	Reference Concentration	Reference Concentration Units	Hazard Quotient
Ingestion	1,1,2,2-Tetrachloroethane	42.7	ug/L	42.7	ug/L	M	1.2E-03	mg/kg/day	6.0E-02	mg/kg/day	N/A	N/A	2.0E-02
	1,1,2-Trichloroethane	1.11	ug/L	1.11	ug/L	M	3.1E-05	mg/kg/day	4.0E-03	mg/kg/day	N/A	N/A	7.8E-03
	1,1-Dichloroethene	0.213	ug/L	0.213	ug/L	M	6.0E-06	mg/kg/day	9.0E-03	mg/kg/day	N/A	N/A	6.7E-04
	cis-1,2-Dichloroethene	11.3	ug/L	11.3	ug/L	M	3.2E-04	mg/kg/day	1.0E-02	mg/kg/day	N/A	N/A	3.2E-02
	Tetrachloroethene	0.617	ug/L	0.617	ug/L	M	1.7E-05	mg/kg/day	1.0E-02	mg/kg/day	N/A	N/A	1.7E-03
	trans-1,2-Dichloroethene	2.87	ug/L	2.87	ug/L	M	8.1E-05	mg/kg/day	2.0E-02	mg/kg/day	N/A	N/A	4.1E-03
	Trichloroethene	48.9	ug/L	48.9	ug/L	M	1.4E-03	mg/kg/day	3.0E-04	mg/kg/day	N/A	N/A	4.6E+00
	Vinyl Chloride	0.400	ug/L	0.400	ug/L	M	1.1E-05	mg/kg/day	3.0E-03	mg/kg/day	N/A	N/A	3.8E-03
	2,4,6-Trinitrotoluene	1.30	ug/L	1.30	ug/L	M	3.7E-05	mg/kg/day	5.0E-04	mg/kg/day	N/A	N/A	7.3E-02
	2-Amino-4,6-Dinitrotoluene	0.409	ug/L	0.409	ug/L	M	1.2E-05	mg/kg/day	6.0E-05	mg/kg/day	N/A	N/A	1.9E-01
	4-Amino-2,6-Dinitrotoluene	1.03	ug/L	1.03	ug/L	M	2.9E-05	mg/kg/day	6.0E-05	mg/kg/day	N/A	N/A	4.8E-01
	RDX	27.2	ug/L	27.2	ug/L	M	7.7E-04	mg/kg/day	3.0E-03	mg/kg/day	N/A	N/A	2.6E-01
	Aluminum	95.3	ug/L	95.3	ug/L	M	2.7E-03	mg/kg/day	1.0E+00	mg/kg/day	N/A	N/A	2.7E-03
	Barium	87.8	ug/L	87.8	ug/L	M	2.5E-03	mg/kg/day	7.0E-02	mg/kg/day	N/A	N/A	3.5E-02
	Cadmium	1.78	ug/L	1.78	ug/L	M	5.0E-05	mg/kg/day	5.0E-04	mg/kg/day	N/A	N/A	1.0E-01
	Chromium	7.02	ug/L	7.02	ug/L	M	2.0E-04	mg/kg/day	1.5E+00	mg/kg/day	N/A	N/A	1.3E-04
	Iron	505	ug/L	505	ug/L	M	1.4E-02	mg/kg/day	3.0E-01	mg/kg/day	N/A	N/A	4.8E-02
	Manganese	58.2	ug/L	58.2	ug/L	M	1.6E-03	mg/kg/day	7.2E-02	mg/kg/day	N/A	N/A	2.3E-02
	Nickel	8.86	ug/L	8.86	ug/L	M	2.5E-04	mg/kg/day	2.0E-02	mg/kg/day	N/A	N/A	1.2E-02
	Thallium	0.173	ug/L	0.173	ug/L	M	4.9E-06	mg/kg/day	7.0E-05	mg/kg/day	N/A	N/A	7.0E-02
	Nitrate	296	ug/L	296	ug/L	M	8.4E-03	mg/kg/day	1.6E+00	mg/kg/day	N/A	N/A	5.2E-03
	(Total)												6.0E+00
Dermal	1,1,2,2-Tetrachloroethane	42.7	ug/L	42.7	ug/L	M	9.1E-05	mg/kg/day	6.0E-02	mg/kg/day	N/A	N/A	1.5E-03
	1,1,2-Trichloroethane	1.11	ug/L	1.11	ug/L	M	1.8E-06	mg/kg/day	4.0E-03	mg/kg/day	N/A	N/A	4.4E-04
	1,1-Dichloroethene	0.213	ug/L	0.213	ug/L	M	4.8E-07	mg/kg/day	9.0E-03	mg/kg/day	N/A	N/A	5.4E-05
	cis-1,2-Dichloroethene	11.3	ug/L	11.3	ug/L	M	2.8E-05	mg/kg/day	1.0E-02	mg/kg/day	N/A	N/A	2.8E-03
	Tetrachloroethene	0.617	ug/L	0.617	ug/L	M	6.3E-06	mg/kg/day	1.0E-02	mg/kg/day	N/A	N/A	6.3E-04
	trans-1,2-Dichloroethene	2.87	ug/L	2.87	ug/L	M	4.3E-06	mg/kg/day	2.0E-02	mg/kg/day	N/A	N/A	2.2E-04
	Trichloroethene	48.9	ug/L	48.9	ug/L	M	1.4E-04	mg/kg/day	3.0E-04	mg/kg/day	N/A	N/A	4.6E-01
	Vinyl Chloride	0.400	ug/L	0.400	ug/L	M	3.5E-07	mg/kg/day	3.0E-03	mg/kg/day	N/A	N/A	1.2E-04
	2,4,6-Trinitrotoluene	1.30	ug/L	1.30	ug/L	M	5.6E-07	mg/kg/day	5.0E-04	mg/kg/day	N/A	N/A	1.1E-03
	2-Amino-4,6-Dinitrotoluene	0.409	ug/L	0.409	ug/L	M	9.7E-08	mg/kg/day	6.0E-05	mg/kg/day	N/A	N/A	1.6E-03
	4-Amino-2,6-Dinitrotoluene	1.03	ug/L	1.03	ug/L	M	2.4E-07	mg/kg/day	6.0E-05	mg/kg/day	N/A	N/A	4.1E-03
	RDX	27.2	ug/L	27.2	ug/L	M	4.1E-06	mg/kg/day	3.0E-03	mg/kg/day	N/A	N/A	1.4E-03
	Aluminum	95.3	ug/L	95.3	ug/L	M	4.5E-06	mg/kg/day	1.0E+00	mg/kg/day	N/A	N/A	4.5E-06
	Barium	87.8	ug/L	87.8	ug/L	M	4.1E-06	mg/kg/day	4.9E-03	mg/kg/day	N/A	N/A	8.4E-04
	Cadmium	1.78	ug/L	1.78	ug/L	M	8.4E-08	mg/kg/day	2.5E-05	mg/kg/day	N/A	N/A	3.4E-03
	Chromium	7.02	ug/L	7.02	ug/L	M	6.6E-07	mg/kg/day	2.0E-02	mg/kg/day	N/A	N/A	3.4E-05
	Iron	505	ug/L	505	ug/L	M	2.4E-05	mg/kg/day	3.0E-01	mg/kg/day	N/A	N/A	7.9E-05
	Manganese	58.2	ug/L	58.2	ug/L	M	2.7E-06	mg/kg/day	2.9E-03	mg/kg/day	N/A	N/A	9.5E-04
	Nickel	8.86	ug/L	8.86	ug/L	M	8.3E-08	mg/kg/day	8.0E-04	mg/kg/day	N/A	N/A	1.0E-04
	Thallium	0.173	ug/L	0.173	ug/L	M	8.2E-09	mg/kg/day	7.0E-05	mg/kg/day	N/A	N/A	1.2E-04
	Nitrate	296	ug/L	296	ug/L	M	1.4E-05	mg/kg/day	1.6E+00	mg/kg/day	N/A	N/A	8.7E-06
	(Total)												4.8E-01
												Total Hazard Index Across All Exposure Routes/Pathways	6.4E+00

(1) Medium-Specific (M) EPC selected for hazard calculation.
(2) Chronic.

TABLE 7.49
CALCULATION OF NON-CANCER HAZARDS
REASONABLE MAXIMUM EXPOSURE
NSWC CRANE, INDIANA

Scenario Timeframe: Future
Medium: Ground Water
Exposure Medium: Air
Exposure Point: SWMU 3 - Shallow Ground Water
Receptor Population: On-Site Resident
Receptor Age: Child

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Hazard Calculation (1)	Intake (Non-Cancer)	Intake (Non-Cancer) Units	Reference Dose (2)	Reference Dose Units	Reference Concentration	Reference Concentration Units	Hazard Quotient
Inhalation	1,1,2,2-Tetrachloroethane	42.7	ug/L	2.3E-02	mg/m3	R	8.7E-04	mg/kg/day	NA	mg/kg/day	N/A	N/A	- -
	1,1,2-Trichloroethane	1.11	ug/L	8.4E-04	mg/m3	R	3.2E-05	mg/kg/day	NA	mg/kg/day	N/A	N/A	- -
	1,1-Dichloroethene	0.213	ug/L	2.2E-04	mg/m3	R	8.4E-06	mg/kg/day	NA	mg/kg/day	N/A	N/A	- -
	cis-1,2-Dichloroethene	11.3	ug/L	1.1E-02	mg/m3	R	4.3E-04	mg/kg/day	NA	mg/kg/day	N/A	N/A	- -
	Tetrachloroethene	0.617	ug/L	5.2E-04	mg/m3	R	2.0E-05	mg/kg/day	1.4E-01	mg/kg/day	N/A	N/A	1.4E-04
	trans-1,2-Dichloroethene	2.87	ug/L	2.9E-03	mg/m3	R	1.1E-04	mg/kg/day	NA	mg/kg/day	N/A	N/A	- -
	Trichloroethene	48.9	ug/L	4.4E-02	mg/m3	R	1.7E-03	mg/kg/day	1.0E-02	mg/kg/day	N/A	N/A	1.7E-01
	Vinyl Chloride	0.400	ug/L	4.8E-04	mg/m3	R	1.8E-05	mg/kg/day	2.9E-02	mg/kg/day	N/A	N/A	6.5E-04
	2,4,6-Trinitrotoluene	1.30	ug/L	0.0E+00	mg/m3	R	0.0E+00	mg/kg/day	NA	mg/kg/day	N/A	N/A	- -
	2-Amino-4,6-Dinitrotoluene	0.409	ug/L	0.0E+00	mg/m3	R	0.0E+00	mg/kg/day	NA	mg/kg/day	N/A	N/A	- -
	4-Amino-2,6-Dinitrotoluene	1.03	ug/L	0.0E+00	mg/m3	R	0.0E+00	mg/kg/day	NA	mg/kg/day	N/A	N/A	- -
	RDX	27.2	ug/L	0.0E+00	mg/m3	R	0.0E+00	mg/kg/day	NA	mg/kg/day	N/A	N/A	- -
	Aluminum	95.3	ug/L	0.0E+00	mg/m3	R	0.0E+00	mg/kg/day	1.0E-03	mg/kg/day	N/A	N/A	- -
	Barium	87.8	ug/L	0.0E+00	mg/m3	R	0.0E+00	mg/kg/day	1.4E-04	mg/kg/day	N/A	N/A	- -
	Cadmium	1.78	ug/L	0.0E+00	mg/m3	R	0.0E+00	mg/kg/day	5.7E-05	mg/kg/day	N/A	N/A	- -
	Chromium	7.02	ug/L	0.0E+00	mg/m3	R	0.0E+00	mg/kg/day	NA	mg/kg/day	N/A	N/A	- -
	Iron	505	ug/L	0.0E+00	mg/m3	R	0.0E+00	mg/kg/day	NA	mg/kg/day	N/A	N/A	- -
	Manganese	58.2	ug/L	0.0E+00	mg/m3	R	0.0E+00	mg/kg/day	1.4E-05	mg/kg/day	N/A	N/A	- -
	Nickel	8.86	ug/L	0.0E+00	mg/m3	R	0.0E+00	mg/kg/day	NA	mg/kg/day	N/A	N/A	- -
	Thallium	0.173	ug/L	0.0E+00	mg/m3	R	0.0E+00	mg/kg/day	NA	mg/kg/day	N/A	N/A	- -
	Nitrate	296	ug/L	0.0E+00	mg/m3	R	0.0E+00	mg/kg/day	NA	mg/kg/day	N/A	N/A	- -
	(Total)												1.7E-01
												Total Hazard Index Across All Exposure Routes/Pathways	1.7E-01

(1) Route-Specific (R) EPC selected for hazard calculation.
(2) Chronic.

TABLE 7.50
CALCULATION OF NON-CANCER HAZARDS
CENTRAL TENDENCY EXPOSURES
NSWC CRANE, INDIANA

Scenario Timeframe: Future
Medium: Ground Water
Exposure Medium: Air
Exposure Point: SWMU 3 - Shallow Ground Water
Receptor Population: On-Site Resident
Receptor Age: Child

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Hazard Calculation (1)	Intake (Non-Cancer)	Intake (Non-Cancer) Units	Reference Dose (2)	Reference Dose Units	Reference Concentration	Reference Concentration Units	Hazard Quotient
Inhalation	1,1,2,2-Tetrachloroethane	42.7	ug/L	1.2E-02	mg/m3	R	3.2E-04	mg/kg/day	NA	mg/kg/day	N/A	N/A	- -
	1,1,2-Trichloroethane	1.11	ug/L	4.6E-04	mg/m3	R	1.2E-05	mg/kg/day	NA	mg/kg/day	N/A	N/A	- -
	1,1-Dichloroethene	0.213	ug/L	1.2E-04	mg/m3	R	3.1E-06	mg/kg/day	NA	mg/kg/day	N/A	N/A	- -
	cis-1,2-Dichloroethene	11.3	ug/L	6.1E-03	mg/m3	R	1.6E-04	mg/kg/day	NA	mg/kg/day	N/A	N/A	- -
	Tetrachloroethene	0.617	ug/L	2.8E-04	mg/m3	R	7.2E-06	mg/kg/day	1.4E-01	mg/kg/day	N/A	N/A	5.2E-05
	trans-1,2-Dichloroethene	2.87	ug/L	1.6E-03	mg/m3	R	4.1E-05	mg/kg/day	NA	mg/kg/day	N/A	N/A	- -
	Trichloroethene	48.9	ug/L	2.4E-02	mg/m3	R	6.2E-04	mg/kg/day	1.0E-02	mg/kg/day	N/A	N/A	6.2E-02
	Vinyl Chloride	0.400	ug/L	2.6E-04	mg/m3	R	6.8E-06	mg/kg/day	2.9E-02	mg/kg/day	N/A	N/A	2.4E-04
	2,4,6-Trinitrotoluene	1.30	ug/L	0.0E+00	mg/m3	R	0.0E+00	mg/kg/day	NA	mg/kg/day	N/A	N/A	- -
	2-Amino-4,6-Dinitrotoluene	0.409	ug/L	0.0E+00	mg/m3	R	0.0E+00	mg/kg/day	NA	mg/kg/day	N/A	N/A	- -
	4-Amino-2,6-Dinitrotoluene	1.03	ug/L	0.0E+00	mg/m3	R	0.0E+00	mg/kg/day	NA	mg/kg/day	N/A	N/A	- -
	RDX	27.2	ug/L	0.0E+00	mg/m3	R	0.0E+00	mg/kg/day	NA	mg/kg/day	N/A	N/A	- -
	Aluminum	95.3	ug/L	0.0E+00	mg/m3	R	0.0E+00	mg/kg/day	1.0E-03	mg/kg/day	N/A	N/A	- -
	Barium	87.8	ug/L	0.0E+00	mg/m3	R	0.0E+00	mg/kg/day	1.4E-04	mg/kg/day	N/A	N/A	- -
	Cadmium	1.78	ug/L	0.0E+00	mg/m3	R	0.0E+00	mg/kg/day	5.7E-05	mg/kg/day	N/A	N/A	- -
	Chromium	7.02	ug/L	0.0E+00	mg/m3	R	0.0E+00	mg/kg/day	NA	mg/kg/day	N/A	N/A	- -
	Iron	505	ug/L	0.0E+00	mg/m3	R	0.0E+00	mg/kg/day	NA	mg/kg/day	N/A	N/A	- -
	Manganese	58.2	ug/L	0.0E+00	mg/m3	R	0.0E+00	mg/kg/day	1.4E-05	mg/kg/day	N/A	N/A	- -
	Nickel	8.86	ug/L	0.0E+00	mg/m3	R	0.0E+00	mg/kg/day	NA	mg/kg/day	N/A	N/A	- -
	Thallium	0.173	ug/L	0.0E+00	mg/m3	R	0.0E+00	mg/kg/day	NA	mg/kg/day	N/A	N/A	- -
	Nitrate	296	ug/L	0.0E+00	mg/m3	R	0.0E+00	mg/kg/day	NA	mg/kg/day	N/A	N/A	- -
	(Total)												6.3E-02
												Total Hazard Index Across All Exposure Routes/Pathways	6.3E-02

(1) Route-Specific (R) EPC selected for hazard calculation.
(2) Chronic.

TABLE 7.51
CALCULATION OF NON-CANCER HAZARDS
REASONABLE MAXIMUM EXPOSURE
NSWC CRANE, INDIANA

Scenario Timeframe: Future
Medium: Surface Water
Exposure Medium: Surface Water
Exposure Point: SWMU 3 - Little Sulphur Creek
Receptor Population: On-Site Resident
Receptor Age: Child

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Hazard Calculation (1)	Intake (Non-Cancer)	Intake (Non-Cancer) Units	Reference Dose (2)	Reference Dose Units	Reference Concentration	Reference Concentration Units	Hazard Quotient
Ingestion	Bromomethane	1.60	ug/L	1.60	ug/L	M	1.5E-04	mg/kg/day	1.4E-03	mg/kg/day	N/A	N/A	1.1E-01
	2-Amino-4,6-Dinitrotoluene	1.50	ug/L	1.50	ug/L	M	1.4E-04	mg/kg/day	6.0E-05	mg/kg/day	N/A	N/A	2.4E+00
	4-Amino-2,6-Dinitrotoluene	2.90	ug/L	2.90	ug/L	M	2.8E-04	mg/kg/day	6.0E-05	mg/kg/day	N/A	N/A	4.6E+00
	RDX	63.0	ug/L	63.0	ug/L	M	6.0E-03	mg/kg/day	3.0E-03	mg/kg/day	N/A	N/A	2.0E+00
	(Total)												9.2E+00
Dermal	Bromomethane	1.60	ug/L	1.60	ug/L	M	1.6E-06	mg/kg/day	1.4E-03	mg/kg/day	N/A	N/A	1.1E-03
	2-Amino-4,6-Dinitrotoluene	1.50	ug/L	1.50	ug/L	M	6.5E-07	mg/kg/day	6.0E-05	mg/kg/day	N/A	N/A	1.1E-02
	4-Amino-2,6-Dinitrotoluene	2.90	ug/L	2.90	ug/L	M	1.3E-06	mg/kg/day	6.0E-05	mg/kg/day	N/A	N/A	2.1E-02
	RDX	63.0	ug/L	63.0	ug/L	M	1.7E-05	mg/kg/day	3.0E-03	mg/kg/day	N/A	N/A	5.7E-03
	(Total)												3.9E-02
												Total Hazard Index Across All Exposure Routes/Pathways	9.2E+00

(1) Medium-Specific (M) EPC selected for hazard calculation.
(2) Chronic.

TABLE 7.52
CALCULATION OF NON-CANCER HAZARDS
CENTRAL TENDENCY EXPOSURES
NSWC CRANE, INDIANA

Scenario Timeframe: Future
Medium: Surface Water
Exposure Medium: Surface Water
Exposure Point: SWMU 3 - Little Sulphur Creek
Receptor Population: On-Site Resident
Receptor Age: Child

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Hazard Calculation (1)	Intake (Non-Cancer)	Intake (Non-Cancer) Units	Reference Dose (2)	Reference Dose Units	Reference Concentration	Reference Concentration Units	Hazard Quotient
Ingestion	Bromomethane	1.60	ug/L	1.60	ug/L	M	4.5E-05	mg/kg/day	1.4E-03	mg/kg/day	N/A	N/A	3.2E-02
	2-Amino-4,6-Dinitrotoluene	1.50	ug/L	1.50	ug/L	M	4.2E-05	mg/kg/day	6.0E-05	mg/kg/day	N/A	N/A	7.1E-01
	4-Amino-2,6-Dinitrotoluene	2.90	ug/L	2.90	ug/L	M	8.2E-05	mg/kg/day	6.0E-05	mg/kg/day	N/A	N/A	1.4E+00
	RDX	63.0	ug/L	63.0	ug/L	M	1.8E-03	mg/kg/day	3.0E-03	mg/kg/day	N/A	N/A	5.9E-01
	(Total)												2.7E+00
Dermal	Bromomethane	1.60	ug/L	1.60	ug/L	M	8.7E-07	mg/kg/day	1.4E-03	mg/kg/day	N/A	N/A	6.2E-04
	2-Amino-4,6-Dinitrotoluene	1.50	ug/L	1.50	ug/L	M	3.5E-07	mg/kg/day	6.0E-05	mg/kg/day	N/A	N/A	5.9E-03
	4-Amino-2,6-Dinitrotoluene	2.90	ug/L	2.90	ug/L	M	6.8E-07	mg/kg/day	6.0E-05	mg/kg/day	N/A	N/A	1.1E-02
	RDX	63.0	ug/L	63.0	ug/L	M	9.4E-06	mg/kg/day	3.0E-03	mg/kg/day	N/A	N/A	3.1E-03
	(Total)												2.1E-02
												Total Hazard Index Across All Exposure Routes/Pathways	2.7E+00

(1) Medium-Specific (M) EPC selected for hazard calculation.
(2) Chronic.

TABLE 7.53
CALCULATION OF NON-CANCER HAZARDS
REASONABLE MAXIMUM EXPOSURE
NSWC CRANE, INDIANA

Scenario Timeframe: Future
Medium: Surface Water
Exposure Medium: Air
Exposure Point: SWMU 3 - Little Sulphur Creek
Receptor Population: On-Site Resident
Receptor Age: Child

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Hazard Calculation (1)	Intake (Non-Cancer)	Intake (Non-Cancer) Units	Reference Dose (2)	Reference Dose Units	Reference Concentration	Reference Concentration Units	Hazard Quotient
Inhalation	Bromomethane	1.60	ug/L	1.6E-03	mg/m3	R	6.2E-05	mg/kg/day	1.4E-03	mg/kg/day	N/A	N/A	4.5E-02
	2-Amino-4,6-Dinitrotoluene	1.50	ug/L	0.0E+00	mg/m3	R	0.0E+00	mg/kg/day	NA	mg/kg/day	N/A	N/A	- -
	4-Amino-2,6-Dinitrotoluene	2.90	ug/L	0.0E+00	mg/m3	R	0.0E+00	mg/kg/day	NA	mg/kg/day	N/A	N/A	- -
	RDX	63.0	ug/L	0.0E+00	mg/m3	R	0.0E+00	mg/kg/day	NA	mg/kg/day	N/A	N/A	- -
	(Total)												4.5E-02
												Total Hazard Index Across All Exposure Routes/Pathways	4.5E-02

(1) Route-Specific (R) EPC selected for hazard calculation.
(2) Chronic.

TABLE 7.54
CALCULATION OF NON-CANCER HAZARDS
CENTRAL TENDENCY EXPOSURES
NSWC CRANE, INDIANA

Scenario Timeframe: Future
Medium: Surface Water
Exposure Medium: Air
Exposure Point: SWMU 3 - Little Sulphur Creek
Receptor Population: On-Site Resident
Receptor Age: Child

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Hazard Calculation (1)	Intake (Non-Cancer)	Intake (Non-Cancer) Units	Reference Dose (2)	Reference Dose Units	Reference Concentration	Reference Concentration Units	Hazard Quotient
Inhalation	Bromomethane	1.60	ug/L	8.9E-04	mg/m3	R	2.3E-05	mg/kg/day	1.4E-03	mg/kg/day	N/A	N/A	1.6E-02
	2-Amino-4,6-Dinitrotoluene	1.50	ug/L	0.0E+00	mg/m3	R	0.0E+00	mg/kg/day	NA	mg/kg/day	N/A	N/A	- -
	4-Amino-2,6-Dinitrotoluene	2.90	ug/L	0.0E+00	mg/m3	R	0.0E+00	mg/kg/day	NA	mg/kg/day	N/A	N/A	- -
	RDX	63.0	ug/L	0.0E+00	mg/m3	R	0.0E+00	mg/kg/day	NA	mg/kg/day	N/A	N/A	- -
	(Total)												1.6E-02
												Total Hazard Index Across All Exposure Routes/Pathways	1.6E-02

(1) Route-Specific (R) EPC selected for hazard calculation.
(2) Chronic.

TABLE 7.55
CALCULATION OF NON-CANCER HAZARDS
REASONABLE MAXIMUM EXPOSURE
NSWC CRANE, INDIANA

Scenario Timeframe: Future
Medium: Sediment
Exposure Medium: Sediment
Exposure Point: SWMU 3 - Little Sulphur Creek
Receptor Population: On-Site Resident
Receptor Age: Child

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Hazard Calculation (1)	Intake (Non-Cancer)	Intake (Non-Cancer) Units	Reference Dose (2)	Reference Dose Units	Reference Concentration	Reference Concentration Units	Hazard Quotient
Ingestion	2-Amino-4,6-Dinitrotoluene	0.178	mg/kg	0.178	mg/kg	M	1.7E-07	mg/kg/day	6.0E-05	mg/kg/day	N/A	N/A	2.8E-03
	Aluminum	14916	mg/kg	14916	mg/kg	M	1.4E-02	mg/kg/day	1.0E+00	mg/kg/day	N/A	N/A	1.4E-02
	Antimony	2.88	mg/kg	2.88	mg/kg	M	2.7E-06	mg/kg/day	4.0E-04	mg/kg/day	N/A	N/A	6.8E-03
	Barium	359	mg/kg	359	mg/kg	M	3.4E-04	mg/kg/day	7.0E-02	mg/kg/day	N/A	N/A	4.9E-03
	Cadmium	1.78	mg/kg	1.78	mg/kg	M	1.7E-06	mg/kg/day	5.0E-04	mg/kg/day	N/A	N/A	3.4E-03
	Lead	120	mg/kg	120	mg/kg	M	1.1E-04	mg/kg/day	NA	mg/kg/day	N/A	N/A	- -
	(Total)												3.2E-02
Dermal	2-Amino-4,6-Dinitrotoluene	0.178	mg/kg	0.178	mg/kg	M	9.5E-08	mg/kg/day	6.0E-05	mg/kg/day	N/A	N/A	1.6E-03
	Aluminum	14916	mg/kg	14916	mg/kg	M	0.0E+00	mg/kg/day	1.0E+00	mg/kg/day	N/A	N/A	- -
	Antimony	2.88	mg/kg	2.88	mg/kg	M	0.0E+00	mg/kg/day	6.0E-05	mg/kg/day	N/A	N/A	- -
	Barium	359	mg/kg	359	mg/kg	M	0.0E+00	mg/kg/day	4.9E-03	mg/kg/day	N/A	N/A	- -
	Cadmium	1.78	mg/kg	1.78	mg/kg	M	9.4E-09	mg/kg/day	2.5E-05	mg/kg/day	N/A	N/A	3.8E-04
	Lead	120	mg/kg	120	mg/kg	M	0.0E+00	mg/kg/day	NA	mg/kg/day	N/A	N/A	- -
	(Total)												2.0E-03
												Total Hazard Index Across All Exposure Routes/Pathways	3.4E-02

(1) Medium-Specific (M) EPC selected for hazard calculation.
(2) Chronic.

TABLE 7.56
CALCULATION OF NON-CANCER HAZARDS
CENTRAL TENDENCY EXPOSURES
NSWC CRANE, INDIANA

Scenario Timeframe: Future
Medium: Sediment
Exposure Medium: Sediment
Exposure Point: SWMU 3 - Little Sulphur Creek
Receptor Population: On-Site Resident
Receptor Age: Child

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Hazard Calculation (1)	Intake (Non-Cancer)	Intake (Non-Cancer) Units	Reference Dose (2)	Reference Dose Units	Reference Concentration	Reference Concentration Units	Hazard Quotient
Ingestion	2-Amino-4,6-Dinitrotoluene	0.178	mg/kg	0.178	mg/kg	M	4.2E-08	mg/kg/day	6.0E-05	mg/kg/day	N/A	N/A	7.1E-04
	Aluminum	14916	mg/kg	14916	mg/kg	M	3.5E-03	mg/kg/day	1.0E+00	mg/kg/day	N/A	N/A	3.5E-03
	Antimony	2.88	mg/kg	2.88	mg/kg	M	6.8E-07	mg/kg/day	4.0E-04	mg/kg/day	N/A	N/A	1.7E-03
	Barium	359	mg/kg	359	mg/kg	M	8.5E-05	mg/kg/day	7.0E-02	mg/kg/day	N/A	N/A	1.2E-03
	Cadmium	1.78	mg/kg	1.78	mg/kg	M	4.2E-07	mg/kg/day	5.0E-04	mg/kg/day	N/A	N/A	8.4E-04
	Lead	120	mg/kg	120	mg/kg	M	2.8E-05	mg/kg/day	NA	mg/kg/day	N/A	N/A	- -
	(Total)												8.0E-03
Dermal	2-Amino-4,6-Dinitrotoluene	0.178	mg/kg	0.178	mg/kg	M	9.5E-09	mg/kg/day	6.0E-05	mg/kg/day	N/A	N/A	1.6E-04
	Aluminum	14916	mg/kg	14916	mg/kg	M	0.0E+00	mg/kg/day	1.0E+00	mg/kg/day	N/A	N/A	- -
	Antimony	2.88	mg/kg	2.88	mg/kg	M	0.0E+00	mg/kg/day	6.0E-05	mg/kg/day	N/A	N/A	- -
	Barium	359	mg/kg	359	mg/kg	M	0.0E+00	mg/kg/day	4.9E-03	mg/kg/day	N/A	N/A	- -
	Cadmium	1.78	mg/kg	1.78	mg/kg	M	9.4E-10	mg/kg/day	2.5E-05	mg/kg/day	N/A	N/A	3.8E-05
	Lead	120	mg/kg	120	mg/kg	M	0.0E+00	mg/kg/day	NA	mg/kg/day	N/A	N/A	- -
	(Total)												2.0E-04
												Total Hazard Index Across All Exposure Routes/Pathways	8.2E-03

(1) Medium-Specific (M) EPC selected for hazard calculation.
(2) Chronic.

TABLE 7.57
CALCULATION OF NON-CANCER HAZARDS
REASONABLE MAXIMUM EXPOSURE
NSWC CRANE, INDIANA

Scenario Timeframe: Future
Medium: Surface Soil
Exposure Medium: Surface Soil
Exposure Point: SWMU 3 - 1 Acre Exposure Unit
Receptor Population: On-Site Resident
Receptor Age: Adult

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Hazard Calculation (1)	Intake (Non-Cancer)	Intake (Non-Cancer) Units	Reference Dose (2)	Reference Dose Units	Reference Concentration	Reference Concentration Units	Hazard Quotient
Ingestion	2,3,7,8-TCDD Equivalents	0.0000074	mg/kg	0.0000074	mg/kg	M	1.0E-11	mg/kg/day	NA	mg/kg/day	N/A	N/A	- -
	2,4,6-Trinitrotoluene	581	mg/kg	581	mg/kg	M	8.0E-04	mg/kg/day	5.0E-04	mg/kg/day	N/A	N/A	1.6E+00
	2-Amino-4,6-Dinitrotoluene	2.36	mg/kg	2.36	mg/kg	M	3.2E-06	mg/kg/day	6.0E-05	mg/kg/day	N/A	N/A	5.4E-02
	4-Amino-2,6-Dinitrotoluene	1.44	mg/kg	1.44	mg/kg	M	2.0E-06	mg/kg/day	6.0E-05	mg/kg/day	N/A	N/A	3.3E-02
	HMX	291	mg/kg	291	mg/kg	M	4.0E-04	mg/kg/day	5.0E-02	mg/kg/day	N/A	N/A	8.0E-03
	RDX	522	mg/kg	522	mg/kg	M	7.2E-04	mg/kg/day	3.0E-03	mg/kg/day	N/A	N/A	2.4E-01
	Barium	235	mg/kg	235	mg/kg	M	3.2E-04	mg/kg/day	7.0E-02	mg/kg/day	N/A	N/A	4.6E-03
	Cadmium	4.40	mg/kg	4.40	mg/kg	M	6.0E-06	mg/kg/day	5.0E-04	mg/kg/day	N/A	N/A	1.2E-02
	Chromium	14.6	mg/kg	14.6	mg/kg	M	2.0E-05	mg/kg/day	1.5E+00	mg/kg/day	N/A	N/A	1.3E-05
	Iron	21431	mg/kg	21431	mg/kg	M	2.9E-02	mg/kg/day	3.0E-01	mg/kg/day	N/A	N/A	9.8E-02
	Lead	1324	mg/kg	1324	mg/kg	M	1.8E-03	mg/kg/day	NA	mg/kg/day	N/A	N/A	- -
	(Total)												2.0E+00
Dermal	2,3,7,8-TCDD Equivalents	0.0000074	mg/kg	0.0000074	mg/kg	M	1.2E-12	mg/kg/day	NA	mg/kg/day	N/A	N/A	- -
	2,4,6-Trinitrotoluene	581	mg/kg	581	mg/kg	M	3.2E-04	mg/kg/day	5.0E-04	mg/kg/day	N/A	N/A	6.4E-01
	2-Amino-4,6-Dinitrotoluene	2.36	mg/kg	2.36	mg/kg	M	1.3E-06	mg/kg/day	6.0E-05	mg/kg/day	N/A	N/A	2.1E-02
	4-Amino-2,6-Dinitrotoluene	1.44	mg/kg	1.44	mg/kg	M	7.9E-07	mg/kg/day	6.0E-05	mg/kg/day	N/A	N/A	1.3E-02
	HMX	291	mg/kg	291	mg/kg	M	1.6E-04	mg/kg/day	5.0E-02	mg/kg/day	N/A	N/A	3.2E-03
	RDX	522	mg/kg	522	mg/kg	M	2.9E-04	mg/kg/day	3.0E-03	mg/kg/day	N/A	N/A	9.5E-02
	Barium	235	mg/kg	235	mg/kg	M	0.0E+00	mg/kg/day	4.9E-03	mg/kg/day	N/A	N/A	- -
	Cadmium	4.40	mg/kg	4.40	mg/kg	M	2.4E-08	mg/kg/day	2.5E-05	mg/kg/day	N/A	N/A	9.6E-04
	Chromium	14.6	mg/kg	14.6	mg/kg	M	0.0E+00	mg/kg/day	2.0E-02	mg/kg/day	N/A	N/A	- -
	Iron	21431	mg/kg	21431	mg/kg	M	0.0E+00	mg/kg/day	3.0E-01	mg/kg/day	N/A	N/A	- -
	Lead	1324	mg/kg	1324	mg/kg	M	0.0E+00	mg/kg/day	NA	mg/kg/day	N/A	N/A	- -
	(Total)												7.7E-01
												Total Hazard Index Across All Exposure Routes/Pathways	2.8E+00

(1) Medium-Specific (M) EPC selected for hazard calculation.
(2) Chronic.

TABLE 7.58
CALCULATION OF NON-CANCER HAZARDS
CENTRAL TENDENCY EXPOSURES
NSWC CRANE, INDIANA

Scenario Timeframe: Future
Medium: Surface Soil
Exposure Medium: Surface Soil
Exposure Point: SWMU 3 - 1 Acre Exposure Unit
Receptor Population: On-Site Resident
Receptor Age: Adult

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Hazard Calculation (1)	Intake (Non-Cancer)	Intake (Non-Cancer) Units	Reference Dose (2)	Reference Dose Units	Reference Concentration	Reference Concentration Units	Hazard Quotient
Ingestion	2,3,7,8-TCDD Equivalents	0.0000074	mg/kg	0.0000074	mg/kg	M	3.4E-12	mg/kg/day	NA	mg/kg/day	N/A	N/A	- -
	2,4,6-Trinitrotoluene	581	mg/kg	581	mg/kg	M	2.7E-04	mg/kg/day	5.0E-04	mg/kg/day	N/A	N/A	5.3E-01
	2-Amino-4,6-Dinitrotoluene	2.36	mg/kg	2.36	mg/kg	M	1.1E-06	mg/kg/day	6.0E-05	mg/kg/day	N/A	N/A	1.8E-02
	4-Amino-2,6-Dinitrotoluene	1.44	mg/kg	1.44	mg/kg	M	6.6E-07	mg/kg/day	6.0E-05	mg/kg/day	N/A	N/A	1.1E-02
	HMX	291	mg/kg	291	mg/kg	M	1.3E-04	mg/kg/day	5.0E-02	mg/kg/day	N/A	N/A	2.7E-03
	RDX	522	mg/kg	522	mg/kg	M	2.4E-04	mg/kg/day	3.0E-03	mg/kg/day	N/A	N/A	8.0E-02
	Barium	235	mg/kg	235	mg/kg	M	1.1E-04	mg/kg/day	7.0E-02	mg/kg/day	N/A	N/A	1.5E-03
	Cadmium	4.40	mg/kg	4.40	mg/kg	M	2.0E-06	mg/kg/day	5.0E-04	mg/kg/day	N/A	N/A	4.0E-03
	Chromium	14.6	mg/kg	14.6	mg/kg	M	6.7E-06	mg/kg/day	1.5E+00	mg/kg/day	N/A	N/A	4.5E-06
	Iron	21431	mg/kg	21431	mg/kg	M	9.8E-03	mg/kg/day	3.0E-01	mg/kg/day	N/A	N/A	3.3E-02
	Lead	1324	mg/kg	1324	mg/kg	M	6.1E-04	mg/kg/day	NA	mg/kg/day	N/A	N/A	- -
	(Total)												6.8E-01
Dermal	2,3,7,8-TCDD Equivalents	0.0000074	mg/kg	0.0000074	mg/kg	M	1.2E-13	mg/kg/day	NA	mg/kg/day	N/A	N/A	- -
	2,4,6-Trinitrotoluene	581	mg/kg	581	mg/kg	M	3.0E-05	mg/kg/day	5.0E-04	mg/kg/day	N/A	N/A	6.1E-02
	2-Amino-4,6-Dinitrotoluene	2.36	mg/kg	2.36	mg/kg	M	1.2E-07	mg/kg/day	6.0E-05	mg/kg/day	N/A	N/A	2.0E-03
	4-Amino-2,6-Dinitrotoluene	1.44	mg/kg	1.44	mg/kg	M	7.5E-08	mg/kg/day	6.0E-05	mg/kg/day	N/A	N/A	1.3E-03
	HMX	291	mg/kg	291	mg/kg	M	1.5E-05	mg/kg/day	5.0E-02	mg/kg/day	N/A	N/A	3.0E-04
	RDX	522	mg/kg	522	mg/kg	M	2.7E-05	mg/kg/day	3.0E-03	mg/kg/day	N/A	N/A	9.1E-03
	Barium	235	mg/kg	235	mg/kg	M	0.0E+00	mg/kg/day	4.9E-03	mg/kg/day	N/A	N/A	- -
	Cadmium	4.40	mg/kg	4.40	mg/kg	M	2.3E-09	mg/kg/day	2.5E-05	mg/kg/day	N/A	N/A	9.2E-05
	Chromium	14.6	mg/kg	14.6	mg/kg	M	0.0E+00	mg/kg/day	2.0E-02	mg/kg/day	N/A	N/A	- -
	Iron	21431	mg/kg	21431	mg/kg	M	0.0E+00	mg/kg/day	3.0E-01	mg/kg/day	N/A	N/A	- -
	Lead	1324	mg/kg	1324	mg/kg	M	0.0E+00	mg/kg/day	NA	mg/kg/day	N/A	N/A	- -
	(Total)												7.3E-02
												Total Hazard Index Across All Exposure Routes/Pathways	7.6E-01

(1) Medium-Specific (M) EPC selected for hazard calculation.
(2) Chronic.

TABLE 7.59
CALCULATION OF NON-CANCER HAZARDS
REASONABLE MAXIMUM EXPOSURE
NSWC CRANE, INDIANA

Scenario Timeframe: Future
Medium: Surface Soil
Exposure Medium: Surface Soil
Exposure Point: SWMU 3 - 6-Acre Exposure Unit
Receptor Population: On-Site Resident
Receptor Age: Adult

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Hazard Calculation (1)	Intake (Non-Cancer)	Intake (Non-Cancer) Units	Reference Dose (2)	Reference Dose Units	Reference Concentration	Reference Concentration Units	Hazard Quotient
Ingestion	2,3,7,8-TCDD Equivalents	0.0000074	mg/kg	0.0000074	mg/kg	M	1.0E-11	mg/kg/day	NA	mg/kg/day	N/A	N/A	- -
	2,4,6-Trinitrotoluene	2.62	mg/kg	2.62	mg/kg	M	3.6E-06	mg/kg/day	5.0E-04	mg/kg/day	N/A	N/A	7.2E-03
	2-Amino-4,6-Dinitrotoluene	0.433	mg/kg	0.433	mg/kg	M	5.9E-07	mg/kg/day	6.0E-05	mg/kg/day	N/A	N/A	9.9E-03
	4-Amino-2,6-Dinitrotoluene	0.365	mg/kg	0.365	mg/kg	M	5.0E-07	mg/kg/day	6.0E-05	mg/kg/day	N/A	N/A	8.3E-03
	HMX	4.77	mg/kg	4.77	mg/kg	M	6.5E-06	mg/kg/day	5.0E-02	mg/kg/day	N/A	N/A	1.3E-04
	RDX	3.41	mg/kg	3.41	mg/kg	M	4.7E-06	mg/kg/day	3.0E-03	mg/kg/day	N/A	N/A	1.6E-03
	Barium	252	mg/kg	252	mg/kg	M	3.5E-04	mg/kg/day	7.0E-02	mg/kg/day	N/A	N/A	4.9E-03
	Cadmium	1.19	mg/kg	1.19	mg/kg	M	1.6E-06	mg/kg/day	5.0E-04	mg/kg/day	N/A	N/A	3.3E-03
	Chromium	26.4	mg/kg	26.4	mg/kg	M	3.6E-05	mg/kg/day	1.5E+00	mg/kg/day	N/A	N/A	2.4E-05
	Iron	26855	mg/kg	26855	mg/kg	M	3.7E-02	mg/kg/day	3.0E-01	mg/kg/day	N/A	N/A	1.2E-01
	Lead	358	mg/kg	358	mg/kg	M	4.9E-04	mg/kg/day	NA	mg/kg/day	N/A	N/A	- -
	(Total)												1.6E-01
Dermal	2,3,7,8-TCDD Equivalents	0.0000074	mg/kg	0.0000074	mg/kg	M	1.2E-12	mg/kg/day	NA	mg/kg/day	N/A	N/A	- -
	2,4,6-Trinitrotoluene	2.62	mg/kg	2.62	mg/kg	M	1.4E-06	mg/kg/day	5.0E-04	mg/kg/day	N/A	N/A	2.9E-03
	2-Amino-4,6-Dinitrotoluene	0.433	mg/kg	0.433	mg/kg	M	2.4E-07	mg/kg/day	6.0E-05	mg/kg/day	N/A	N/A	3.9E-03
	4-Amino-2,6-Dinitrotoluene	0.365	mg/kg	0.365	mg/kg	M	2.0E-07	mg/kg/day	6.0E-05	mg/kg/day	N/A	N/A	3.3E-03
	HMX	4.77	mg/kg	4.77	mg/kg	M	2.6E-06	mg/kg/day	5.0E-02	mg/kg/day	N/A	N/A	5.2E-05
	RDX	3.41	mg/kg	3.41	mg/kg	M	1.9E-06	mg/kg/day	3.0E-03	mg/kg/day	N/A	N/A	6.2E-04
	Barium	252	mg/kg	252	mg/kg	M	0.0E+00	mg/kg/day	4.9E-03	mg/kg/day	N/A	N/A	- -
	Cadmium	1.19	mg/kg	1.19	mg/kg	M	6.5E-09	mg/kg/day	2.5E-05	mg/kg/day	N/A	N/A	2.6E-04
	Chromium	26.4	mg/kg	26.4	mg/kg	M	0.0E+00	mg/kg/day	2.0E-02	mg/kg/day	N/A	N/A	- -
	Iron	26855	mg/kg	26855	mg/kg	M	0.0E+00	mg/kg/day	3.0E-01	mg/kg/day	N/A	N/A	- -
	Lead	358	mg/kg	358	mg/kg	M	0.0E+00	mg/kg/day	NA	mg/kg/day	N/A	N/A	- -
	(Total)												1.1E-02
												Total Hazard Index Across All Exposure Routes/Pathways	1.7E-01

(1) Medium-Specific (M) EPC selected for hazard calculation.
(2) Chronic.

TABLE 7.60
CALCULATION OF NON-CANCER HAZARDS
CENTRAL TENDENCY EXPOSURES
NSWC CRANE, INDIANA

Scenario Timeframe: Future
Medium: Surface Soil
Exposure Medium: Surface Soil
Exposure Point: SWMU 3 - 6-Acre Exposure Unit
Receptor Population: On-Site Resident
Receptor Age: Adult

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Hazard Calculation (1)	Intake (Non-Cancer)	Intake (Non-Cancer) Units	Reference Dose (2)	Reference Dose Units	Reference Concentration	Reference Concentration Units	Hazard Quotient
Ingestion	2,3,7,8-TCDD Equivalents	0.0000074	mg/kg	0.0000074	mg/kg	M	3.4E-12	mg/kg/day	NA	mg/kg/day	N/A	N/A	- -
	2,4,6-Trinitrotoluene	2.62	mg/kg	2.62	mg/kg	M	1.2E-06	mg/kg/day	5.0E-04	mg/kg/day	N/A	N/A	2.4E-03
	2-Amino-4,6-Dinitrotoluene	0.433	mg/kg	0.433	mg/kg	M	2.0E-07	mg/kg/day	6.0E-05	mg/kg/day	N/A	N/A	3.3E-03
	4-Amino-2,6-Dinitrotoluene	0.365	mg/kg	0.365	mg/kg	M	1.7E-07	mg/kg/day	6.0E-05	mg/kg/day	N/A	N/A	2.8E-03
	HMX	4.77	mg/kg	4.77	mg/kg	M	2.2E-06	mg/kg/day	5.0E-02	mg/kg/day	N/A	N/A	4.4E-05
	RDX	3.41	mg/kg	3.41	mg/kg	M	1.6E-06	mg/kg/day	3.0E-03	mg/kg/day	N/A	N/A	5.2E-04
	Barium	252	mg/kg	252	mg/kg	M	1.2E-04	mg/kg/day	7.0E-02	mg/kg/day	N/A	N/A	1.7E-03
	Cadmium	1.19	mg/kg	1.19	mg/kg	M	5.5E-07	mg/kg/day	5.0E-04	mg/kg/day	N/A	N/A	1.1E-03
	Chromium	26.4	mg/kg	26.4	mg/kg	M	1.2E-05	mg/kg/day	1.5E+00	mg/kg/day	N/A	N/A	8.1E-06
	Iron	26855	mg/kg	26855	mg/kg	M	1.2E-02	mg/kg/day	3.0E-01	mg/kg/day	N/A	N/A	4.1E-02
	Lead	358	mg/kg	358	mg/kg	M	1.6E-04	mg/kg/day	NA	mg/kg/day	N/A	N/A	- -
	(Total)												5.3E-02
Dermal	2,3,7,8-TCDD Equivalents	0.0000074	mg/kg	0.0000074	mg/kg	M	1.2E-13	mg/kg/day	NA	mg/kg/day	N/A	N/A	- -
	2,4,6-Trinitrotoluene	2.62	mg/kg	2.62	mg/kg	M	1.4E-07	mg/kg/day	5.0E-04	mg/kg/day	N/A	N/A	2.7E-04
	2-Amino-4,6-Dinitrotoluene	0.433	mg/kg	0.433	mg/kg	M	2.3E-08	mg/kg/day	6.0E-05	mg/kg/day	N/A	N/A	3.8E-04
	4-Amino-2,6-Dinitrotoluene	0.365	mg/kg	0.365	mg/kg	M	1.9E-08	mg/kg/day	6.0E-05	mg/kg/day	N/A	N/A	3.2E-04
	HMX	4.77	mg/kg	4.77	mg/kg	M	2.5E-07	mg/kg/day	5.0E-02	mg/kg/day	N/A	N/A	5.0E-06
	RDX	3.41	mg/kg	3.41	mg/kg	M	1.8E-07	mg/kg/day	3.0E-03	mg/kg/day	N/A	N/A	5.9E-05
	Barium	252	mg/kg	252	mg/kg	M	0.0E+00	mg/kg/day	4.9E-03	mg/kg/day	N/A	N/A	- -
	Cadmium	1.19	mg/kg	1.19	mg/kg	M	6.2E-10	mg/kg/day	2.5E-05	mg/kg/day	N/A	N/A	2.5E-05
	Chromium	26.4	mg/kg	26.4	mg/kg	M	0.0E+00	mg/kg/day	2.0E-02	mg/kg/day	N/A	N/A	- -
	Iron	26855	mg/kg	26855	mg/kg	M	0.0E+00	mg/kg/day	3.0E-01	mg/kg/day	N/A	N/A	- -
	Lead	358	mg/kg	358	mg/kg	M	0.0E+00	mg/kg/day	NA	mg/kg/day	N/A	N/A	- -
	(Total)												1.1E-03
												Total Hazard Index Across All Exposure Routes/Pathways	5.4E-02

(1) Medium-Specific (M) EPC selected for hazard calculation.
(2) Chronic.

TABLE 7.61
CALCULATION OF NON-CANCER HAZARDS
REASONABLE MAXIMUM EXPOSURE
NSWC CRANE, INDIANA

Scenario Timeframe: Future
Medium: Ground Water
Exposure Medium: Ground Water
Exposure Point: SWMU 3 - Shallow Ground Water
Receptor Population: On-Site Resident
Receptor Age: Adult

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Hazard Calculation (1)	Intake (Non-Cancer)	Intake (Non-Cancer) Units	Reference Dose (2)	Reference Dose Units	Reference Concentration	Reference Concentration Units	Hazard Quotient
Ingestion	1,1,2,2-Tetrachloroethane	42.7	ug/L	42.7	ug/L	M	1.2E-03	mg/kg/day	6.0E-02	mg/kg/day	N/A	N/A	1.9E-02
	1,1,2-Trichloroethane	1.11	ug/L	1.11	ug/L	M	3.0E-05	mg/kg/day	4.0E-03	mg/kg/day	N/A	N/A	7.6E-03
	1,1-Dichloroethene	0.213	ug/L	0.213	ug/L	M	5.8E-06	mg/kg/day	9.0E-03	mg/kg/day	N/A	N/A	6.5E-04
	cis-1,2-Dichloroethene	11.3	ug/L	11.3	ug/L	M	3.1E-04	mg/kg/day	1.0E-02	mg/kg/day	N/A	N/A	3.1E-02
	Tetrachloroethene	0.617	ug/L	0.617	ug/L	M	1.7E-05	mg/kg/day	1.0E-02	mg/kg/day	N/A	N/A	1.7E-03
	trans-1,2-Dichloroethene	2.87	ug/L	2.87	ug/L	M	7.9E-05	mg/kg/day	2.0E-02	mg/kg/day	N/A	N/A	3.9E-03
	Trichloroethene	48.9	ug/L	48.9	ug/L	M	1.3E-03	mg/kg/day	3.0E-04	mg/kg/day	N/A	N/A	4.5E+00
	Vinyl Chloride	0.400	ug/L	0.400	ug/L	M	1.1E-05	mg/kg/day	3.0E-03	mg/kg/day	N/A	N/A	3.7E-03
	2,4,6-Trinitrotoluene	1.30	ug/L	1.30	ug/L	M	3.6E-05	mg/kg/day	5.0E-04	mg/kg/day	N/A	N/A	7.1E-02
	2-Amino-4,6-Dinitrotoluene	0.409	ug/L	0.409	ug/L	M	1.1E-05	mg/kg/day	6.0E-05	mg/kg/day	N/A	N/A	1.9E-01
	4-Amino-2,6-Dinitrotoluene	1.03	ug/L	1.03	ug/L	M	2.8E-05	mg/kg/day	6.0E-05	mg/kg/day	N/A	N/A	4.7E-01
	RDX	27.2	ug/L	27.2	ug/L	M	7.5E-04	mg/kg/day	3.0E-03	mg/kg/day	N/A	N/A	2.5E-01
	Aluminum	95.3	ug/L	95.3	ug/L	M	2.6E-03	mg/kg/day	1.0E+00	mg/kg/day	N/A	N/A	2.6E-03
	Barium	87.8	ug/L	87.8	ug/L	M	2.4E-03	mg/kg/day	7.0E-02	mg/kg/day	N/A	N/A	3.4E-02
	Cadmium	1.78	ug/L	1.78	ug/L	M	4.9E-05	mg/kg/day	5.0E-04	mg/kg/day	N/A	N/A	9.8E-02
	Chromium	7.02	ug/L	7.02	ug/L	M	1.9E-04	mg/kg/day	1.5E+00	mg/kg/day	N/A	N/A	1.3E-04
	Iron	505	ug/L	505	ug/L	M	1.4E-02	mg/kg/day	3.0E-01	mg/kg/day	N/A	N/A	4.6E-02
	Manganese	58.2	ug/L	58.2	ug/L	M	1.6E-03	mg/kg/day	7.2E-02	mg/kg/day	N/A	N/A	2.2E-02
	Nickel	8.86	ug/L	8.86	ug/L	M	2.4E-04	mg/kg/day	2.0E-02	mg/kg/day	N/A	N/A	1.2E-02
	Thallium	0.173	ug/L	0.173	ug/L	M	4.7E-06	mg/kg/day	7.0E-05	mg/kg/day	N/A	N/A	6.8E-02
	Nitrate	296	ug/L	296	ug/L	M	8.1E-03	mg/kg/day	1.6E+00	mg/kg/day	N/A	N/A	5.1E-03
	(Total)												5.8E+00
Dermal	1,1,2,2-Tetrachloroethane	42.7	ug/L	42.7	ug/L	M	9.7E-05	mg/kg/day	6.0E-02	mg/kg/day	N/A	N/A	1.6E-03
	1,1,2-Trichloroethane	1.11	ug/L	1.11	ug/L	M	1.9E-06	mg/kg/day	4.0E-03	mg/kg/day	N/A	N/A	4.7E-04
	1,1-Dichloroethene	0.213	ug/L	0.213	ug/L	M	5.2E-07	mg/kg/day	9.0E-03	mg/kg/day	N/A	N/A	5.7E-05
	cis-1,2-Dichloroethene	11.3	ug/L	11.3	ug/L	M	3.0E-05	mg/kg/day	1.0E-02	mg/kg/day	N/A	N/A	3.0E-03
	Tetrachloroethene	0.617	ug/L	0.617	ug/L	M	6.7E-06	mg/kg/day	1.0E-02	mg/kg/day	N/A	N/A	6.7E-04
	trans-1,2-Dichloroethene	2.87	ug/L	2.87	ug/L	M	4.6E-06	mg/kg/day	2.0E-02	mg/kg/day	N/A	N/A	2.3E-04
	Trichloroethene	48.9	ug/L	48.9	ug/L	M	1.5E-04	mg/kg/day	3.0E-04	mg/kg/day	N/A	N/A	4.9E-01
	Vinyl Chloride	0.400	ug/L	0.400	ug/L	M	3.7E-07	mg/kg/day	3.0E-03	mg/kg/day	N/A	N/A	1.2E-04
	2,4,6-Trinitrotoluene	1.30	ug/L	1.30	ug/L	M	6.0E-07	mg/kg/day	5.0E-04	mg/kg/day	N/A	N/A	1.2E-03
	2-Amino-4,6-Dinitrotoluene	0.409	ug/L	0.409	ug/L	M	1.0E-07	mg/kg/day	6.0E-05	mg/kg/day	N/A	N/A	1.7E-03
	4-Amino-2,6-Dinitrotoluene	1.03	ug/L	1.03	ug/L	M	2.6E-07	mg/kg/day	6.0E-05	mg/kg/day	N/A	N/A	4.3E-03
	RDX	27.2	ug/L	27.2	ug/L	M	4.3E-06	mg/kg/day	3.0E-03	mg/kg/day	N/A	N/A	1.4E-03
	Aluminum	95.3	ug/L	95.3	ug/L	M	5.9E-06	mg/kg/day	1.0E+00	mg/kg/day	N/A	N/A	5.9E-06
	Barium	87.8	ug/L	87.8	ug/L	M	5.4E-06	mg/kg/day	4.9E-03	mg/kg/day	N/A	N/A	1.1E-03
	Cadmium	1.78	ug/L	1.78	ug/L	M	1.1E-07	mg/kg/day	2.5E-05	mg/kg/day	N/A	N/A	4.4E-03
	Chromium	7.02	ug/L	7.02	ug/L	M	8.7E-07	mg/kg/day	2.0E-02	mg/kg/day	N/A	N/A	4.4E-05
	Iron	505	ug/L	505	ug/L	M	3.1E-05	mg/kg/day	3.0E-01	mg/kg/day	N/A	N/A	1.0E-04
	Manganese	58.2	ug/L	58.2	ug/L	M	3.6E-06	mg/kg/day	2.9E-03	mg/kg/day	N/A	N/A	1.2E-03
	Nickel	8.86	ug/L	8.86	ug/L	M	1.1E-07	mg/kg/day	8.0E-04	mg/kg/day	N/A	N/A	1.4E-04
	Thallium	0.173	ug/L	0.173	ug/L	M	1.1E-08	mg/kg/day	7.0E-05	mg/kg/day	N/A	N/A	1.5E-04
	Nitrate	296	ug/L	296	ug/L	M	1.8E-05	mg/kg/day	1.6E+00	mg/kg/day	N/A	N/A	1.1E-05
	(Total)												5.1E-01
												Total Hazard Index Across All Exposure Routes/Pathways	6.3E+00

(1) Medium-Specific (M) EPC selected for hazard calculation.
(2) Chronic.

TABLE 7.62
CALCULATION OF NON-CANCER HAZARDS
CENTRAL TENDENCY EXPOSURES
NSWC CRANE, INDIANA

Scenario Timeframe: Future
Medium: Ground Water
Exposure Medium: Ground Water
Exposure Point: SWMU 3 - Shallow Ground Water
Receptor Population: On-Site Resident
Receptor Age: Adult

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Hazard Calculation (1)	Intake (Non-Cancer)	Intake (Non-Cancer) Units	Reference Dose (2)	Reference Dose Units	Reference Concentration	Reference Concentration Units	Hazard Quotient
Ingestion	1,1,2,2-Tetrachloroethane	42.7	ug/L	42.7	ug/L	M	5.5E-04	mg/kg/day	6.0E-02	mg/kg/day	N/A	N/A	9.1E-03
	1,1,2-Trichloroethane	1.11	ug/L	1.11	ug/L	M	1.4E-05	mg/kg/day	4.0E-03	mg/kg/day	N/A	N/A	3.5E-03
	1,1-Dichloroethene	0.213	ug/L	0.213	ug/L	M	2.7E-06	mg/kg/day	9.0E-03	mg/kg/day	N/A	N/A	3.0E-04
	cis-1,2-Dichloroethene	11.3	ug/L	11.3	ug/L	M	1.4E-04	mg/kg/day	1.0E-02	mg/kg/day	N/A	N/A	1.4E-02
	Tetrachloroethene	0.617	ug/L	0.617	ug/L	M	7.9E-06	mg/kg/day	1.0E-02	mg/kg/day	N/A	N/A	7.9E-04
	trans-1,2-Dichloroethene	2.87	ug/L	2.87	ug/L	M	3.7E-05	mg/kg/day	2.0E-02	mg/kg/day	N/A	N/A	1.8E-03
	Trichloroethene	48.9	ug/L	48.9	ug/L	M	6.3E-04	mg/kg/day	3.0E-04	mg/kg/day	N/A	N/A	2.1E+00
	Vinyl Chloride	0.400	ug/L	0.400	ug/L	M	5.1E-06	mg/kg/day	3.0E-03	mg/kg/day	N/A	N/A	1.7E-03
	2,4,6-Trinitrotoluene	1.30	ug/L	1.30	ug/L	M	1.7E-05	mg/kg/day	5.0E-04	mg/kg/day	N/A	N/A	3.3E-02
	2-Amino-4,6-Dinitrotoluene	0.409	ug/L	0.409	ug/L	M	5.2E-06	mg/kg/day	6.0E-05	mg/kg/day	N/A	N/A	8.7E-02
	4-Amino-2,6-Dinitrotoluene	1.03	ug/L	1.03	ug/L	M	1.3E-05	mg/kg/day	6.0E-05	mg/kg/day	N/A	N/A	2.2E-01
	RDX	27.2	ug/L	27.2	ug/L	M	3.5E-04	mg/kg/day	3.0E-03	mg/kg/day	N/A	N/A	1.2E-01
	Aluminum	95.3	ug/L	95.3	ug/L	M	1.2E-03	mg/kg/day	1.0E+00	mg/kg/day	N/A	N/A	1.2E-03
	Barium	87.8	ug/L	87.8	ug/L	M	1.1E-03	mg/kg/day	7.0E-02	mg/kg/day	N/A	N/A	1.6E-02
	Cadmium	1.78	ug/L	1.78	ug/L	M	2.3E-05	mg/kg/day	5.0E-04	mg/kg/day	N/A	N/A	4.6E-02
	Chromium	7.02	ug/L	7.02	ug/L	M	9.0E-05	mg/kg/day	1.5E+00	mg/kg/day	N/A	N/A	6.0E-05
	Iron	505	ug/L	505	ug/L	M	6.5E-03	mg/kg/day	3.0E-01	mg/kg/day	N/A	N/A	2.2E-02
	Manganese	58.2	ug/L	58.2	ug/L	M	7.5E-04	mg/kg/day	7.2E-02	mg/kg/day	N/A	N/A	1.0E-02
	Nickel	8.86	ug/L	8.86	ug/L	M	1.1E-04	mg/kg/day	2.0E-02	mg/kg/day	N/A	N/A	5.7E-03
	Thallium	0.173	ug/L	0.173	ug/L	M	2.2E-06	mg/kg/day	7.0E-05	mg/kg/day	N/A	N/A	3.2E-02
	Nitrate	296	ug/L	296	ug/L	M	3.8E-03	mg/kg/day	1.6E+00	mg/kg/day	N/A	N/A	2.4E-03
	(Total)												2.7E+00
Dermal	1,1,2,2-Tetrachloroethane	42.7	ug/L	42.7	ug/L	M	5.3E-05	mg/kg/day	6.0E-02	mg/kg/day	N/A	N/A	8.9E-04
	1,1,2-Trichloroethane	1.11	ug/L	1.11	ug/L	M	1.0E-06	mg/kg/day	4.0E-03	mg/kg/day	N/A	N/A	2.6E-04
	1,1-Dichloroethene	0.213	ug/L	0.213	ug/L	M	2.8E-07	mg/kg/day	9.0E-03	mg/kg/day	N/A	N/A	3.1E-05
	cis-1,2-Dichloroethene	11.3	ug/L	11.3	ug/L	M	1.6E-05	mg/kg/day	1.0E-02	mg/kg/day	N/A	N/A	1.6E-03
	Tetrachloroethene	0.617	ug/L	0.617	ug/L	M	3.7E-06	mg/kg/day	1.0E-02	mg/kg/day	N/A	N/A	3.7E-04
	trans-1,2-Dichloroethene	2.87	ug/L	2.87	ug/L	M	2.5E-06	mg/kg/day	2.0E-02	mg/kg/day	N/A	N/A	1.3E-04
	Trichloroethene	48.9	ug/L	48.9	ug/L	M	8.1E-05	mg/kg/day	3.0E-04	mg/kg/day	N/A	N/A	2.7E-01
	Vinyl Chloride	0.400	ug/L	0.400	ug/L	M	2.0E-07	mg/kg/day	3.0E-03	mg/kg/day	N/A	N/A	6.8E-05
	2,4,6-Trinitrotoluene	1.30	ug/L	1.30	ug/L	M	3.3E-07	mg/kg/day	5.0E-04	mg/kg/day	N/A	N/A	6.5E-04
	2-Amino-4,6-Dinitrotoluene	0.409	ug/L	0.409	ug/L	M	5.6E-08	mg/kg/day	6.0E-05	mg/kg/day	N/A	N/A	9.4E-04
	4-Amino-2,6-Dinitrotoluene	1.03	ug/L	1.03	ug/L	M	1.4E-07	mg/kg/day	6.0E-05	mg/kg/day	N/A	N/A	2.4E-03
	RDX	27.2	ug/L	27.2	ug/L	M	2.4E-06	mg/kg/day	3.0E-03	mg/kg/day	N/A	N/A	7.9E-04
	Aluminum	95.3	ug/L	95.3	ug/L	M	2.6E-06	mg/kg/day	1.0E+00	mg/kg/day	N/A	N/A	2.6E-06
	Barium	87.8	ug/L	87.8	ug/L	M	2.4E-06	mg/kg/day	4.9E-03	mg/kg/day	N/A	N/A	4.9E-04
	Cadmium	1.78	ug/L	1.78	ug/L	M	4.9E-08	mg/kg/day	2.5E-05	mg/kg/day	N/A	N/A	2.0E-03
	Chromium	7.02	ug/L	7.02	ug/L	M	3.9E-07	mg/kg/day	2.0E-02	mg/kg/day	N/A	N/A	2.0E-05
	Iron	505	ug/L	505	ug/L	M	1.4E-05	mg/kg/day	3.0E-01	mg/kg/day	N/A	N/A	4.6E-05
	Manganese	58.2	ug/L	58.2	ug/L	M	1.6E-06	mg/kg/day	2.9E-03	mg/kg/day	N/A	N/A	5.6E-04
	Nickel	8.86	ug/L	8.86	ug/L	M	4.9E-08	mg/kg/day	8.0E-04	mg/kg/day	N/A	N/A	6.1E-05
	Thallium	0.173	ug/L	0.173	ug/L	M	4.8E-09	mg/kg/day	7.0E-05	mg/kg/day	N/A	N/A	6.8E-05
	Nitrate	296	ug/L	296	ug/L	M	8.2E-06	mg/kg/day	1.6E+00	mg/kg/day	N/A	N/A	5.1E-06
	(Total)												2.8E-01
												Total Hazard Index Across All Exposure Routes/Pathways	3.0E+00

(1) Medium-Specific (M) EPC selected for hazard calculation.
(2) Chronic.

TABLE 7.63
CALCULATION OF NON-CANCER HAZARDS
REASONABLE MAXIMUM EXPOSURE
NSWC CRANE, INDIANA

Scenario Timeframe: Future
Medium: Ground Water
Exposure Medium: Air
Exposure Point: SWMU 3 - Shallow Ground Water
Receptor Population: On-Site Resident
Receptor Age: Adult

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Hazard Calculation (1)	Intake (Non-Cancer)	Intake (Non-Cancer) Units	Reference Dose (2)	Reference Dose Units	Reference Concentration	Reference Concentration Units	Hazard Quotient
Inhalation	1,1,2,2-Tetrachloroethane	42.7	ug/L	2.3E-02	mg/m3	R	1.9E-04	mg/kg/day	NA	mg/kg/day	N/A	N/A	- -
	1,1,2-Trichloroethane	1.11	ug/L	8.4E-04	mg/m3	R	6.9E-06	mg/kg/day	NA	mg/kg/day	N/A	N/A	- -
	1,1-Dichloroethene	0.213	ug/L	2.2E-04	mg/m3	R	1.8E-06	mg/kg/day	NA	mg/kg/day	N/A	N/A	- -
	cis-1,2-Dichloroethene	11.3	ug/L	1.1E-02	mg/m3	R	9.2E-05	mg/kg/day	NA	mg/kg/day	N/A	N/A	- -
	Tetrachloroethene	0.617	ug/L	5.2E-04	mg/m3	R	4.2E-06	mg/kg/day	1.4E-01	mg/kg/day	N/A	N/A	3.0E-05
	trans-1,2-Dichloroethene	2.87	ug/L	2.9E-03	mg/m3	R	2.4E-05	mg/kg/day	NA	mg/kg/day	N/A	N/A	- -
	Trichloroethene	48.9	ug/L	4.4E-02	mg/m3	R	3.7E-04	mg/kg/day	1.0E-02	mg/kg/day	N/A	N/A	3.7E-02
	Vinyl Chloride	0.400	ug/L	4.8E-04	mg/m3	R	4.0E-06	mg/kg/day	2.9E-02	mg/kg/day	N/A	N/A	1.4E-04
	2,4,6-Trinitrotoluene	1.30	ug/L	0.0E+00	mg/m3	R	0.0E+00	mg/kg/day	NA	mg/kg/day	N/A	N/A	- -
	2-Amino-4,6-Dinitrotoluene	0.409	ug/L	0.0E+00	mg/m3	R	0.0E+00	mg/kg/day	NA	mg/kg/day	N/A	N/A	- -
	4-Amino-2,6-Dinitrotoluene	1.03	ug/L	0.0E+00	mg/m3	R	0.0E+00	mg/kg/day	NA	mg/kg/day	N/A	N/A	- -
	RDX	27.2	ug/L	0.0E+00	mg/m3	R	0.0E+00	mg/kg/day	NA	mg/kg/day	N/A	N/A	- -
	Aluminum	95.3	ug/L	0.0E+00	mg/m3	R	0.0E+00	mg/kg/day	1.0E-03	mg/kg/day	N/A	N/A	- -
	Barium	87.8	ug/L	0.0E+00	mg/m3	R	0.0E+00	mg/kg/day	1.4E-04	mg/kg/day	N/A	N/A	- -
	Cadmium	1.78	ug/L	0.0E+00	mg/m3	R	0.0E+00	mg/kg/day	5.7E-05	mg/kg/day	N/A	N/A	- -
	Chromium	7.02	ug/L	0.0E+00	mg/m3	R	0.0E+00	mg/kg/day	NA	mg/kg/day	N/A	N/A	- -
	Iron	505	ug/L	0.0E+00	mg/m3	R	0.0E+00	mg/kg/day	NA	mg/kg/day	N/A	N/A	- -
	Manganese	58.2	ug/L	0.0E+00	mg/m3	R	0.0E+00	mg/kg/day	1.4E-05	mg/kg/day	N/A	N/A	- -
	Nickel	8.86	ug/L	0.0E+00	mg/m3	R	0.0E+00	mg/kg/day	NA	mg/kg/day	N/A	N/A	- -
	Thallium	0.173	ug/L	0.0E+00	mg/m3	R	0.0E+00	mg/kg/day	NA	mg/kg/day	N/A	N/A	- -
	Nitrate	296	ug/L	0.0E+00	mg/m3	R	0.0E+00	mg/kg/day	NA	mg/kg/day	N/A	N/A	- -
	(Total)												3.7E-02
												Total Hazard Index Across All Exposure Routes/Pathways	3.7E-02

(1) Route-Specific (R) EPC selected for hazard calculation.
(2) Chronic.

TABLE 7.64
CALCULATION OF NON-CANCER HAZARDS
CENTRAL TENDENCY EXPOSURES
NSWC CRANE, INDIANA

Scenario Timeframe: Future
Medium: Ground Water
Exposure Medium: Air
Exposure Point: SWMU 3 - Shallow Ground Water
Receptor Population: On-Site Resident
Receptor Age: Adult

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Hazard Calculation (1)	Intake (Non-Cancer)	Intake (Non-Cancer) Units	Reference Dose (2)	Reference Dose Units	Reference Concentration	Reference Concentration Units	Hazard Quotient
Inhalation	1,1,2,2-Tetrachloroethane	42.7	ug/L	1.2E-02	mg/m3	R	6.8E-05	mg/kg/day	NA	mg/kg/day	N/A	N/A	- -
	1,1,2-Trichloroethane	1.11	ug/L	4.6E-04	mg/m3	R	2.5E-06	mg/kg/day	NA	mg/kg/day	N/A	N/A	- -
	1,1-Dichloroethene	0.213	ug/L	1.2E-04	mg/m3	R	6.6E-07	mg/kg/day	NA	mg/kg/day	N/A	N/A	- -
	cis-1,2-Dichloroethene	11.3	ug/L	6.1E-03	mg/m3	R	3.4E-05	mg/kg/day	NA	mg/kg/day	N/A	N/A	- -
	Tetrachloroethene	0.617	ug/L	2.8E-04	mg/m3	R	1.6E-06	mg/kg/day	1.4E-01	mg/kg/day	N/A	N/A	1.1E-05
	trans-1,2-Dichloroethene	2.87	ug/L	1.6E-03	mg/m3	R	8.8E-06	mg/kg/day	NA	mg/kg/day	N/A	N/A	- -
	Trichloroethene	48.9	ug/L	2.4E-02	mg/m3	R	1.3E-04	mg/kg/day	1.0E-02	mg/kg/day	N/A	N/A	1.3E-02
	Vinyl Chloride	0.400	ug/L	2.6E-04	mg/m3	R	1.4E-06	mg/kg/day	2.9E-02	mg/kg/day	N/A	N/A	5.1E-05
	2,4,6-Trinitrotoluene	1.30	ug/L	0.0E+00	mg/m3	R	0.0E+00	mg/kg/day	NA	mg/kg/day	N/A	N/A	- -
	2-Amino-4,6-Dinitrotoluene	0.409	ug/L	0.0E+00	mg/m3	R	0.0E+00	mg/kg/day	NA	mg/kg/day	N/A	N/A	- -
	4-Amino-2,6-Dinitrotoluene	1.03	ug/L	0.0E+00	mg/m3	R	0.0E+00	mg/kg/day	NA	mg/kg/day	N/A	N/A	- -
	RDX	27.2	ug/L	0.0E+00	mg/m3	R	0.0E+00	mg/kg/day	NA	mg/kg/day	N/A	N/A	- -
	Aluminum	95.3	ug/L	0.0E+00	mg/m3	R	0.0E+00	mg/kg/day	1.0E-03	mg/kg/day	N/A	N/A	- -
	Barium	87.8	ug/L	0.0E+00	mg/m3	R	0.0E+00	mg/kg/day	1.4E-04	mg/kg/day	N/A	N/A	- -
	Cadmium	1.78	ug/L	0.0E+00	mg/m3	R	0.0E+00	mg/kg/day	5.7E-05	mg/kg/day	N/A	N/A	- -
	Chromium	7.02	ug/L	0.0E+00	mg/m3	R	0.0E+00	mg/kg/day	NA	mg/kg/day	N/A	N/A	- -
	Iron	505	ug/L	0.0E+00	mg/m3	R	0.0E+00	mg/kg/day	NA	mg/kg/day	N/A	N/A	- -
	Manganese	58.2	ug/L	0.0E+00	mg/m3	R	0.0E+00	mg/kg/day	1.4E-05	mg/kg/day	N/A	N/A	- -
	Nickel	8.86	ug/L	0.0E+00	mg/m3	R	0.0E+00	mg/kg/day	NA	mg/kg/day	N/A	N/A	- -
	Nitrate	296	ug/L	0.0E+00	mg/m3	R	0.0E+00	mg/kg/day	NA	mg/kg/day	N/A	N/A	- -
	(Total)												1.3E-02
												Total Hazard Index Across All Exposure Routes/Pathways	1.3E-02

(1) Route-Specific (R) EPC selected for hazard calculation.
(2) Chronic.

TABLE 7.65
CALCULATION OF NON-CANCER HAZARDS
REASONABLE MAXIMUM EXPOSURE
NSWC CRANE, INDIANA

Scenario Timeframe: Future
Medium: Surface Water
Exposure Medium: Surface Water
Exposure Point: SWMU 3 - Little Sulphur Creek
Receptor Population: On-Site Resident
Receptor Age: Adult

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Hazard Calculation (1)	Intake (Non-Cancer)	Intake (Non-Cancer) Units	Reference Dose (2)	Reference Dose Units	Reference Concentration	Reference Concentration Units	Hazard Quotient
Ingestion	Bromomethane	1.60	ug/L	1.60	ug/L	M	4.4E-05	mg/kg/day	1.4E-03	mg/kg/day	N/A	N/A	3.1E-02
	2-Amino-4,6-Dinitrotoluene	1.50	ug/L	1.50	ug/L	M	4.1E-05	mg/kg/day	6.0E-05	mg/kg/day	N/A	N/A	6.8E-01
	4-Amino-2,6-Dinitrotoluene	2.90	ug/L	2.90	ug/L	M	7.9E-05	mg/kg/day	6.0E-05	mg/kg/day	N/A	N/A	1.3E+00
	RDX	63.0	ug/L	63.0	ug/L	M	1.7E-03	mg/kg/day	3.0E-03	mg/kg/day	N/A	N/A	5.8E-01
	(Total)												2.6E+00
Dermal	Bromomethane	1.60	ug/L	1.60	ug/L	M	9.3E-07	mg/kg/day	1.4E-03	mg/kg/day	N/A	N/A	6.7E-04
	2-Amino-4,6-Dinitrotoluene	1.50	ug/L	1.50	ug/L	M	3.8E-07	mg/kg/day	6.0E-05	mg/kg/day	N/A	N/A	6.3E-03
	4-Amino-2,6-Dinitrotoluene	2.90	ug/L	2.90	ug/L	M	7.3E-07	mg/kg/day	6.0E-05	mg/kg/day	N/A	N/A	1.2E-02
	RDX	63.0	ug/L	63.0	ug/L	M	1.0E-05	mg/kg/day	3.0E-03	mg/kg/day	N/A	N/A	3.4E-03
	(Total)												2.3E-02
												Total Hazard Index Across All Exposure Routes/Pathways	2.6E+00

(1) Medium-Specific (M) EPC selected for hazard calculation.
(2) Chronic.

TABLE 7.66
CALCULATION OF NON-CANCER HAZARDS
CENTRAL TENDENCY EXPOSURES
NSWC CRANE, INDIANA

Scenario Timeframe: Future
Medium: Surface Water
Exposure Medium: Surface Water
Exposure Point: SWMU 3 - Little Sulphur Creek
Receptor Population: On-Site Resident
Receptor Age: Adult

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Hazard Calculation (1)	Intake (Non-Cancer)	Intake (Non-Cancer) Units	Reference Dose (2)	Reference Dose Units	Reference Concentration	Reference Concentration Units	Hazard Quotient
Ingestion	Bromomethane	1.60	ug/L	1.60	ug/L	M	2.1E-05	mg/kg/day	1.4E-03	mg/kg/day	N/A	N/A	1.5E-02
	2-Amino-4,6-Dinitrotoluene	1.50	ug/L	1.50	ug/L	M	1.9E-05	mg/kg/day	6.0E-05	mg/kg/day	N/A	N/A	3.2E-01
	4-Amino-2,6-Dinitrotoluene	2.90	ug/L	2.90	ug/L	M	3.7E-05	mg/kg/day	6.0E-05	mg/kg/day	N/A	N/A	6.2E-01
	RDX	63.0	ug/L	63.0	ug/L	M	8.1E-04	mg/kg/day	3.0E-03	mg/kg/day	N/A	N/A	2.7E-01
	(Total)												1.2E+00
Dermal	Bromomethane	1.60	ug/L	1.60	ug/L	M	5.1E-07	mg/kg/day	1.4E-03	mg/kg/day	N/A	N/A	3.6E-04
	2-Amino-4,6-Dinitrotoluene	1.50	ug/L	1.50	ug/L	M	2.1E-07	mg/kg/day	6.0E-05	mg/kg/day	N/A	N/A	3.4E-03
	4-Amino-2,6-Dinitrotoluene	2.90	ug/L	2.90	ug/L	M	4.0E-07	mg/kg/day	6.0E-05	mg/kg/day	N/A	N/A	6.7E-03
	RDX	63.0	ug/L	63.0	ug/L	M	5.5E-06	mg/kg/day	3.0E-03	mg/kg/day	N/A	N/A	1.8E-03
	(Total)												1.2E-02
												Total Hazard Index Across All Exposure Routes/Pathways	1.2E+00

(1) Medium-Specific (M) EPC selected for hazard calculation.
(2) Chronic.

TABLE 7.67
CALCULATION OF NON-CANCER HAZARDS
REASONABLE MAXIMUM EXPOSURE
NSWC CRANE, INDIANA

Scenario Timeframe: Future
Medium: Surface Water
Exposure Medium: Air
Exposure Point: SWMU 3 - Little Sulphur Creek
Receptor Population: On-Site Resident
Receptor Age: Adult

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Hazard Calculation (1)	Intake (Non-Cancer)	Intake (Non-Cancer) Units	Reference Dose (2)	Reference Dose Units	Reference Concentration	Reference Concentration Units	Hazard Quotient
Inhalation	Bromomethane	1.60	ug/L	1.6E-03	mg/m3	R	1.3E-05	mg/kg/day	1.4E-03	mg/kg/day	N/A	N/A	9.6E-03
	2-Amino-4,6-Dinitrotoluene	1.50	ug/L	0.0E+00	mg/m3	R	0.0E+00	mg/kg/day	NA	mg/kg/day	N/A	N/A	- -
	4-Amino-2,6-Dinitrotoluene	2.90	ug/L	0.0E+00	mg/m3	R	0.0E+00	mg/kg/day	NA	mg/kg/day	N/A	N/A	- -
	RDX	63.0	ug/L	0.0E+00	mg/m3	R	0.0E+00	mg/kg/day	NA	mg/kg/day	N/A	N/A	- -
	(Total)												9.6E-03
												Total Hazard Index Across All Exposure Routes/Pathways	9.6E-03

(1) Route-Specific (R) EPC selected for hazard calculation.
(2) Chronic.

TABLE 7.68
CALCULATION OF NON-CANCER HAZARDS
CENTRAL TENDENCY EXPOSURES
NSWC CRANE, INDIANA

Scenario Timeframe: Future
Medium: Surface Water
Exposure Medium: Air
Exposure Point: SWMU 3 - Little Sulphur Creek
Receptor Population: On-Site Resident
Receptor Age: Adult

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Hazard Calculation (1)	Intake (Non-Cancer)	Intake (Non-Cancer) Units	Reference Dose (2)	Reference Dose Units	Reference Concentration	Reference Concentration Units	Hazard Quotient
Inhalation	Bromomethane	1.60	ug/L	8.9E-04	mg/m3	R	4.9E-06	mg/kg/day	1.4E-03	mg/kg/day	N/A	N/A	3.5E-03
	2-Amino-4,6-Dinitrotoluene	1.50	ug/L	0.0E+00	mg/m3	R	0.0E+00	mg/kg/day	NA	mg/kg/day	N/A	N/A	- -
	4-Amino-2,6-Dinitrotoluene	2.90	ug/L	0.0E+00	mg/m3	R	0.0E+00	mg/kg/day	NA	mg/kg/day	N/A	N/A	- -
	RDX	63.0	ug/L	0.0E+00	mg/m3	R	0.0E+00	mg/kg/day	NA	mg/kg/day	N/A	N/A	- -
	(Total)												3.5E-03
												Total Hazard Index Across All Exposure Routes/Pathways	3.5E-03

(1) Route-Specific (R) EPC selected for hazard calculation.
(2) Chronic.

TABLE 7.69
CALCULATION OF NON-CANCER HAZARDS
REASONABLE MAXIMUM EXPOSURE
NSWC CRANE, INDIANA

Scenario Timeframe: Future
Medium: Sediment
Exposure Medium: Sediment
Exposure Point: SWMU 3 - Little Sulphur Creek
Receptor Population: On-Site Resident
Receptor Age: Adult

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Hazard Calculation (1)	Intake (Non-Cancer)	Intake (Non-Cancer) Units	Reference Dose (2)	Reference Dose Units	Reference Concentration	Reference Concentration Units	Hazard Quotient
Ingestion	2-Amino-4,6-Dinitrotoluene	0.178	mg/kg	0.178	mg/kg	M	1.8E-08	mg/kg/day	6.0E-05	mg/kg/day	N/A	N/A	3.0E-04
	Aluminum	14916	mg/kg	14916	mg/kg	M	1.5E-03	mg/kg/day	1.0E+00	mg/kg/day	N/A	N/A	1.5E-03
	Antimony	2.88	mg/kg	2.88	mg/kg	M	2.9E-07	mg/kg/day	4.0E-04	mg/kg/day	N/A	N/A	7.3E-04
	Barium	359	mg/kg	359	mg/kg	M	3.7E-05	mg/kg/day	7.0E-02	mg/kg/day	N/A	N/A	5.2E-04
	Cadmium	1.78	mg/kg	1.78	mg/kg	M	1.8E-07	mg/kg/day	5.0E-04	mg/kg/day	N/A	N/A	3.6E-04
	Lead	120	mg/kg	120	mg/kg	M	1.2E-05	mg/kg/day	NA	mg/kg/day	N/A	N/A	- -
	(Total)												3.4E-03
Dermal	2-Amino-4,6-Dinitrotoluene	0.178	mg/kg	0.178	mg/kg	M	1.4E-08	mg/kg/day	6.0E-05	mg/kg/day	N/A	N/A	2.4E-04
	Aluminum	14916	mg/kg	14916	mg/kg	M	0.0E+00	mg/kg/day	1.0E+00	mg/kg/day	N/A	N/A	- -
	Antimony	2.88	mg/kg	2.88	mg/kg	M	0.0E+00	mg/kg/day	6.0E-05	mg/kg/day	N/A	N/A	- -
	Barium	359	mg/kg	359	mg/kg	M	0.0E+00	mg/kg/day	4.9E-03	mg/kg/day	N/A	N/A	- -
	Cadmium	1.78	mg/kg	1.78	mg/kg	M	1.4E-09	mg/kg/day	2.5E-05	mg/kg/day	N/A	N/A	5.8E-05
	Lead	120	mg/kg	120	mg/kg	M	0.0E+00	mg/kg/day	NA	mg/kg/day	N/A	N/A	- -
	(Total)												3.0E-04
												Total Hazard Index Across All Exposure Routes/Pathways	3.7E-03

(1) Medium-Specific (M) EPC selected for hazard calculation.
(2) Chronic.

TABLE 7.70
CALCULATION OF NON-CANCER HAZARDS
CENTRAL TENDENCY EXPOSURES
NSWC CRANE, INDIANA

Scenario Timeframe: Future
Medium: Sediment
Exposure Medium: Sediment
Exposure Point: SWMU 3 - Little Sulphur Creek
Receptor Population: On-Site Resident
Receptor Age: Adult

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Hazard Calculation (1)	Intake (Non-Cancer)	Intake (Non-Cancer) Units	Reference Dose (2)	Reference Dose Units	Reference Concentration	Reference Concentration Units	Hazard Quotient
Ingestion	2-Amino-4,6-Dinitrotoluene	0.178	mg/kg	0.178	mg/kg	M	4.5E-09	mg/kg/day	6.0E-05	mg/kg/day	N/A	N/A	7.6E-05
	Aluminum	14916	mg/kg	14916	mg/kg	M	3.8E-04	mg/kg/day	1.0E+00	mg/kg/day	N/A	N/A	3.8E-04
	Antimony	2.88	mg/kg	2.88	mg/kg	M	7.3E-08	mg/kg/day	4.0E-04	mg/kg/day	N/A	N/A	1.8E-04
	Barium	359	mg/kg	359	mg/kg	M	9.1E-06	mg/kg/day	7.0E-02	mg/kg/day	N/A	N/A	1.3E-04
	Cadmium	1.78	mg/kg	1.78	mg/kg	M	4.5E-08	mg/kg/day	5.0E-04	mg/kg/day	N/A	N/A	9.0E-05
	Lead	120	mg/kg	120	mg/kg	M	3.1E-06	mg/kg/day	NA	mg/kg/day	N/A	N/A	- -
	(Total)												8.6E-04
Dermal	2-Amino-4,6-Dinitrotoluene	0.178	mg/kg	0.178	mg/kg	M	1.0E-09	mg/kg/day	6.0E-05	mg/kg/day	N/A	N/A	1.7E-05
	Aluminum	14916	mg/kg	14916	mg/kg	M	0.0E+00	mg/kg/day	1.0E+00	mg/kg/day	N/A	N/A	- -
	Antimony	2.88	mg/kg	2.88	mg/kg	M	0.0E+00	mg/kg/day	6.0E-05	mg/kg/day	N/A	N/A	- -
	Barium	359	mg/kg	359	mg/kg	M	0.0E+00	mg/kg/day	4.9E-03	mg/kg/day	N/A	N/A	- -
	Cadmium	1.78	mg/kg	1.78	mg/kg	M	1.0E-10	mg/kg/day	2.5E-05	mg/kg/day	N/A	N/A	4.1E-06
	Lead	120	mg/kg	120	mg/kg	M	0.0E+00	mg/kg/day	NA	mg/kg/day	N/A	N/A	- -
	(Total)												2.1E-05
												Total Hazard Index Across All Exposure Routes/Pathways	8.8E-04

(1) Medium-Specific (M) EPC selected for hazard calculation.
(2) Chronic.

RAGS Part D Table 8

Calculation Of Cancer Risks

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TABLE 8.1
CALCULATION OF CANCER RISKS
REASONABLE MAXIMUM EXPOSURE
NSWC CRANE, INDIANA

Scenario Timeframe: Current/Future
Medium: Surface Soil
Exposure Medium: Surface Soil
Exposure Point: SWMU 3 - Old Jeep Trail
Receptor Population: Trespassers
Receptor Age: Adolescent

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Risk Calculation (1)	Intake (Cancer)	Intake (Cancer) Units	Cancer Slope Factor	Cancer Slope Factor Units	Cancer Risk
Ingestion	2,3,7,8-TCDD Equivalents	0.0000074	mg/kg	0.0000074	mg/kg	M	1.9E-13	mg/kg/day	1.5E+05	(mg/kg/day) $^{-1}$	2.9E-08
	2,4,6-Trinitrotoluene	2.62	mg/kg	2.62	mg/kg	M	6.8E-08	mg/kg/day	3.0E-02	(mg/kg/day) $^{-1}$	2.0E-09
	2-Amino-4,6-Dinitrotoluene	0.433	mg/kg	0.433	mg/kg	M	1.1E-08	mg/kg/day	NA	(mg/kg/day) $^{-1}$	- -
	4-Amino-2,6-Dinitrotoluene	0.365	mg/kg	0.365	mg/kg	M	9.5E-09	mg/kg/day	NA	(mg/kg/day) $^{-1}$	- -
	HMX	4.77	mg/kg	4.77	mg/kg	M	1.2E-07	mg/kg/day	NA	(mg/kg/day) $^{-1}$	- -
	RDX	3.41	mg/kg	3.41	mg/kg	M	8.9E-08	mg/kg/day	1.1E-01	(mg/kg/day) $^{-1}$	9.8E-09
	Barium	252	mg/kg	252	mg/kg	M	6.6E-06	mg/kg/day	NA	(mg/kg/day) $^{-1}$	- -
	Cadmium	1.19	mg/kg	1.19	mg/kg	M	3.1E-08	mg/kg/day	NA	(mg/kg/day) $^{-1}$	- -
	Chromium	26.4	mg/kg	26.4	mg/kg	M	6.9E-07	mg/kg/day	NA	(mg/kg/day) $^{-1}$	- -
	Iron	26855	mg/kg	26855	mg/kg	M	7.0E-04	mg/kg/day	NA	(mg/kg/day) $^{-1}$	- -
	Lead	358	mg/kg	358	mg/kg	M	9.3E-06	mg/kg/day	NA	(mg/kg/day) $^{-1}$	- -
	(Total)										4.1E-08
Dermal	2,3,7,8-TCDD Equivalents	0.0000074	mg/kg	0.0000074	mg/kg	M	3.8E-14	mg/kg/day	1.5E+05	(mg/kg/day) $^{-1}$	5.7E-09
	2,4,6-Trinitrotoluene	2.62	mg/kg	2.62	mg/kg	M	4.5E-08	mg/kg/day	3.0E-02	(mg/kg/day) $^{-1}$	1.3E-09
	2-Amino-4,6-Dinitrotoluene	0.433	mg/kg	0.433	mg/kg	M	7.4E-09	mg/kg/day	NA	(mg/kg/day) $^{-1}$	- -
	4-Amino-2,6-Dinitrotoluene	0.365	mg/kg	0.365	mg/kg	M	6.2E-09	mg/kg/day	NA	(mg/kg/day) $^{-1}$	- -
	HMX	4.77	mg/kg	4.77	mg/kg	M	8.1E-08	mg/kg/day	NA	(mg/kg/day) $^{-1}$	- -
	RDX	3.41	mg/kg	3.41	mg/kg	M	5.8E-08	mg/kg/day	1.1E-01	(mg/kg/day) $^{-1}$	6.4E-09
	Barium	252	mg/kg	252	mg/kg	M	0.0E+00	mg/kg/day	NA	(mg/kg/day) $^{-1}$	- -
	Cadmium	1.19	mg/kg	1.19	mg/kg	M	2.0E-10	mg/kg/day	NA	(mg/kg/day) $^{-1}$	- -
	Chromium	26.4	mg/kg	26.4	mg/kg	M	0.0E+00	mg/kg/day	NA	(mg/kg/day) $^{-1}$	- -
	Iron	26855	mg/kg	26855	mg/kg	M	0.0E+00	mg/kg/day	NA	(mg/kg/day) $^{-1}$	- -
	Lead	358	mg/kg	358	mg/kg	M	0.0E+00	mg/kg/day	NA	(mg/kg/day) $^{-1}$	- -
	(Total)										1.3E-08
										Total Risk Across All Exposure Routes/Pathways	5.4E-08

(1) Medium-Specific (M) EPC selected for risk calculation.

TABLE 8.2
CALCULATION OF CANCER RISKS
CENTRAL TENDENCY EXPOSURES
NSWC CRANE, INDIANA

Scenario Timeframe: Current/Future
Medium: Surface Soil
Exposure Medium: Surface Soil
Exposure Point: SWMU 3 - Old Jeep Trail
Receptor Population: Trespassers
Receptor Age: Adolescent

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Risk Calculation (1)	Intake (Cancer)	Intake (Cancer) Units	Cancer Slope Factor	Cancer Slope Factor Units	Cancer Risk
Ingestion	2,3,7,8-TCDD Equivalents	0.0000074	mg/kg	0.0000074	mg/kg	M	4.8E-14	mg/kg/day	1.5E+05	(mg/kg/day) $^{-1}$	7.2E-09
	2,4,6-Trinitrotoluene	2.62	mg/kg	2.62	mg/kg	M	1.7E-08	mg/kg/day	3.0E-02	(mg/kg/day) $^{-1}$	5.1E-10
	2-Amino-4,6-Dinitrotoluene	0.433	mg/kg	0.433	mg/kg	M	2.8E-09	mg/kg/day	NA	(mg/kg/day) $^{-1}$	- -
	4-Amino-2,6-Dinitrotoluene	0.365	mg/kg	0.365	mg/kg	M	2.4E-09	mg/kg/day	NA	(mg/kg/day) $^{-1}$	- -
	HMX	4.77	mg/kg	4.77	mg/kg	M	3.1E-08	mg/kg/day	NA	(mg/kg/day) $^{-1}$	- -
	RDX	3.41	mg/kg	3.41	mg/kg	M	2.2E-08	mg/kg/day	1.1E-01	(mg/kg/day) $^{-1}$	2.4E-09
	Barium	252	mg/kg	252	mg/kg	M	1.6E-06	mg/kg/day	NA	(mg/kg/day) $^{-1}$	- -
	Cadmium	1.19	mg/kg	1.19	mg/kg	M	7.7E-09	mg/kg/day	NA	(mg/kg/day) $^{-1}$	- -
	Chromium	26.4	mg/kg	26.4	mg/kg	M	1.7E-07	mg/kg/day	NA	(mg/kg/day) $^{-1}$	- -
	Iron	26855	mg/kg	26855	mg/kg	M	1.7E-04	mg/kg/day	NA	(mg/kg/day) $^{-1}$	- -
	Lead	358	mg/kg	358	mg/kg	M	2.3E-06	mg/kg/day	NA	(mg/kg/day) $^{-1}$	- -
	(Total)										1.0E-08
Dermal	2,3,7,8-TCDD Equivalents	0.0000074	mg/kg	0.0000074	mg/kg	M	3.6E-15	mg/kg/day	1.5E+05	(mg/kg/day) $^{-1}$	5.4E-10
	2,4,6-Trinitrotoluene	2.62	mg/kg	2.62	mg/kg	M	4.2E-09	mg/kg/day	3.0E-02	(mg/kg/day) $^{-1}$	1.3E-10
	2-Amino-4,6-Dinitrotoluene	0.433	mg/kg	0.433	mg/kg	M	7.0E-10	mg/kg/day	NA	(mg/kg/day) $^{-1}$	- -
	4-Amino-2,6-Dinitrotoluene	0.365	mg/kg	0.365	mg/kg	M	5.9E-10	mg/kg/day	NA	(mg/kg/day) $^{-1}$	- -
	HMX	4.77	mg/kg	4.77	mg/kg	M	7.7E-09	mg/kg/day	NA	(mg/kg/day) $^{-1}$	- -
	RDX	3.41	mg/kg	3.41	mg/kg	M	5.5E-09	mg/kg/day	1.1E-01	(mg/kg/day) $^{-1}$	6.1E-10
	Barium	252	mg/kg	252	mg/kg	M	0.0E+00	mg/kg/day	NA	(mg/kg/day) $^{-1}$	- -
	Cadmium	1.19	mg/kg	1.19	mg/kg	M	1.9E-11	mg/kg/day	NA	(mg/kg/day) $^{-1}$	- -
	Chromium	26.4	mg/kg	26.4	mg/kg	M	0.0E+00	mg/kg/day	NA	(mg/kg/day) $^{-1}$	- -
	Iron	26855	mg/kg	26855	mg/kg	M	0.0E+00	mg/kg/day	NA	(mg/kg/day) $^{-1}$	- -
	Lead	358	mg/kg	358	mg/kg	M	0.0E+00	mg/kg/day	NA	(mg/kg/day) $^{-1}$	- -
	(Total)										1.3E-09
										Total Risk Across All Exposure Routes/Pathways	1.1E-08

(1) Medium-Specific (M) EPC selected for risk calculation.

TABLE 8.3
CALCULATION OF CANCER RISKS
REASONABLE MAXIMUM EXPOSURE
NSWC CRANE, INDIANA

Scenario Timeframe: Current/Future
Medium: Surface Water
Exposure Medium: Surface Water
Exposure Point: SWMU 3 - Little Sulphur Creek
Receptor Population: Trespassers
Receptor Age: Adolescent

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Risk Calculation (1)	Intake (Cancer)	Intake (Cancer) Units	Cancer Slope Factor	Cancer Slope Factor Units	Cancer Risk
Ingestion	Acetone	64.0	ug/L	64.0	ug/L	M	3.3E-06	mg/kg/day	NA	(mg/kg/day) $^{-1}$	- -
	Bromomethane	0.529	ug/L	0.529	ug/L	M	2.8E-08	mg/kg/day	NA	(mg/kg/day) $^{-1}$	- -
	Methylene Chloride	3.23	ug/L	3.23	ug/L	M	1.7E-07	mg/kg/day	7.5E-03	(mg/kg/day) $^{-1}$	1.3E-09
	Bis(2-ethylhexyl)phthalate	1.36	ug/L	1.36	ug/L	M	7.1E-08	mg/kg/day	1.4E-02	(mg/kg/day) $^{-1}$	9.9E-10
	Pentachlorophenol	0.059	ug/L	0.059	ug/L	M	3.1E-09	mg/kg/day	1.2E-01	(mg/kg/day) $^{-1}$	3.7E-10
	2-Amino-4,6-Dinitrotoluene	0.384	ug/L	0.384	ug/L	M	2.0E-08	mg/kg/day	NA	(mg/kg/day) $^{-1}$	- -
	4-Amino-2,6-Dinitrotoluene	1.06	ug/L	1.06	ug/L	M	5.5E-08	mg/kg/day	NA	(mg/kg/day) $^{-1}$	- -
	RDX	63.0	ug/L	63.0	ug/L	M	3.3E-06	mg/kg/day	1.1E-01	(mg/kg/day) $^{-1}$	3.6E-07
	Antimony	0.784	ug/L	0.784	ug/L	M	4.1E-08	mg/kg/day	NA	(mg/kg/day) $^{-1}$	- -
	Lead	29.1	ug/L	29.1	ug/L	M	1.5E-06	mg/kg/day	NA	(mg/kg/day) $^{-1}$	- -
	(Total)										3.6E-07
Dermal	Acetone	64.0	ug/L	64.0	ug/L	M	1.3E-07	mg/kg/day	NA	(mg/kg/day) $^{-1}$	- -
	Bromomethane	0.529	ug/L	0.529	ug/L	M	6.0E-09	mg/kg/day	NA	(mg/kg/day) $^{-1}$	- -
	Methylene Chloride	3.23	ug/L	3.23	ug/L	M	4.5E-08	mg/kg/day	7.5E-03	(mg/kg/day) $^{-1}$	3.4E-10
	Bis(2-ethylhexyl)phthalate	1.36	ug/L	1.36	ug/L	M	5.2E-07	mg/kg/day	1.4E-02	(mg/kg/day) $^{-1}$	7.3E-09
	Pentachlorophenol	0.059	ug/L	0.059	ug/L	M	1.8E-07	mg/kg/day	1.2E-01	(mg/kg/day) $^{-1}$	2.2E-08
	2-Amino-4,6-Dinitrotoluene	0.384	ug/L	0.384	ug/L	M	1.4E-09	mg/kg/day	NA	(mg/kg/day) $^{-1}$	- -
	4-Amino-2,6-Dinitrotoluene	1.06	ug/L	1.06	ug/L	M	3.9E-09	mg/kg/day	NA	(mg/kg/day) $^{-1}$	- -
	RDX	63.0	ug/L	63.0	ug/L	M	1.4E-07	mg/kg/day	1.1E-01	(mg/kg/day) $^{-1}$	1.5E-08
	Antimony	0.784	ug/L	0.784	ug/L	M	2.7E-09	mg/kg/day	NA	(mg/kg/day) $^{-1}$	- -
	Lead	29.1	ug/L	29.1	ug/L	M	9.9E-08	mg/kg/day	NA	(mg/kg/day) $^{-1}$	- -
	(Total)										4.5E-08
										Total Risk Across All Exposure Routes/Pathways	4.1E-07

(1) Medium-Specific (M) EPC selected for risk calculation.

TABLE 8.4
CALCULATION OF CANCER RISKS
CENTRAL TENDENCY EXPOSURES
NSWC CRANE, INDIANA

Scenario Timeframe: Current/Future
Medium: Surface Water
Exposure Medium: Surface Water
Exposure Point: SWMU 3 - Little Sulphur Creek
Receptor Population: Trespassers
Receptor Age: Adolescent

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Risk Calculation (1)	Intake (Cancer)	Intake (Cancer) Units	Cancer Slope Factor	Cancer Slope Factor Units	Cancer Risk
Ingestion	Acetone	64.0	ug/L	64.0	ug/L	M	8.3E-07	mg/kg/day	NA	(mg/kg/day) $^{-1}$	- -
	Bromomethane	0.529	ug/L	0.529	ug/L	M	6.9E-09	mg/kg/day	NA	(mg/kg/day) $^{-1}$	- -
	Methylene Chloride	3.23	ug/L	3.23	ug/L	M	4.2E-08	mg/kg/day	7.5E-03	(mg/kg/day) $^{-1}$	3.2E-10
	Bis(2-ethylhexyl)phthalate	1.36	ug/L	1.36	ug/L	M	1.8E-08	mg/kg/day	1.4E-02	(mg/kg/day) $^{-1}$	2.5E-10
	Pentachlorophenol	0.059	ug/L	0.059	ug/L	M	7.7E-10	mg/kg/day	1.2E-01	(mg/kg/day) $^{-1}$	9.2E-11
	2-Amino-4,6-Dinitrotoluene	0.384	ug/L	0.384	ug/L	M	5.0E-09	mg/kg/day	NA	(mg/kg/day) $^{-1}$	- -
	4-Amino-2,6-Dinitrotoluene	1.06	ug/L	1.06	ug/L	M	1.4E-08	mg/kg/day	NA	(mg/kg/day) $^{-1}$	- -
	RDX	63.0	ug/L	63.0	ug/L	M	8.2E-07	mg/kg/day	1.1E-01	(mg/kg/day) $^{-1}$	9.0E-08
	Antimony	0.784	ug/L	0.784	ug/L	M	1.0E-08	mg/kg/day	NA	(mg/kg/day) $^{-1}$	- -
	Lead	29.1	ug/L	29.1	ug/L	M	3.8E-07	mg/kg/day	NA	(mg/kg/day) $^{-1}$	- -
	(Total)										9.1E-08
Dermal	Acetone	64.0	ug/L	64.0	ug/L	M	3.3E-08	mg/kg/day	NA	(mg/kg/day) $^{-1}$	- -
	Bromomethane	0.529	ug/L	0.529	ug/L	M	1.6E-09	mg/kg/day	NA	(mg/kg/day) $^{-1}$	- -
	Methylene Chloride	3.23	ug/L	3.23	ug/L	M	1.2E-08	mg/kg/day	7.5E-03	(mg/kg/day) $^{-1}$	9.1E-11
	Bis(2-ethylhexyl)phthalate	1.36	ug/L	1.36	ug/L	M	1.7E-07	mg/kg/day	1.4E-02	(mg/kg/day) $^{-1}$	2.4E-09
	Pentachlorophenol	0.059	ug/L	0.059	ug/L	M	6.0E-08	mg/kg/day	1.2E-01	(mg/kg/day) $^{-1}$	7.2E-09
	2-Amino-4,6-Dinitrotoluene	0.384	ug/L	0.384	ug/L	M	4.5E-10	mg/kg/day	NA	(mg/kg/day) $^{-1}$	- -
	4-Amino-2,6-Dinitrotoluene	1.06	ug/L	1.06	ug/L	M	1.2E-09	mg/kg/day	NA	(mg/kg/day) $^{-1}$	- -
	RDX	63.0	ug/L	63.0	ug/L	M	4.7E-08	mg/kg/day	1.1E-01	(mg/kg/day) $^{-1}$	5.1E-09
	Antimony	0.784	ug/L	0.784	ug/L	M	6.3E-10	mg/kg/day	NA	(mg/kg/day) $^{-1}$	- -
	Lead	29.1	ug/L	29.1	ug/L	M	2.4E-08	mg/kg/day	NA	(mg/kg/day) $^{-1}$	- -
	(Total)										1.5E-08
										Total Risk Across All Exposure Routes/Pathways	1.1E-07

(1) Medium-Specific (M) EPC selected for risk calculation.

TABLE 8.5
CALCULATION OF CANCER RISKS
REASONABLE MAXIMUM EXPOSURE
NSWC CRANE, INDIANA

Scenario Timeframe: Current/Future
Medium: Sediment
Exposure Medium: Sediment
Exposure Point: SWMU 3 - Little Sulphur Creek
Receptor Population: Trespassers
Receptor Age: Adolescent

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Risk Calculation (1)	Intake (Cancer)	Intake (Cancer) Units	Cancer Slope Factor	Cancer Slope Factor Units	Cancer Risk
Ingestion	2-Amino-4,6-Dinitrotoluene	0.178	mg/kg	0.178	mg/kg	M	4.6E-09	mg/kg/day	NA	(mg/kg/day) $^{-1}$	- -
	Aluminum	14916	mg/kg	14916	mg/kg	M	3.9E-04	mg/kg/day	NA	(mg/kg/day) $^{-1}$	- -
	Antimony	2.88	mg/kg	2.88	mg/kg	M	7.5E-08	mg/kg/day	NA	(mg/kg/day) $^{-1}$	- -
	Barium	359	mg/kg	359	mg/kg	M	9.3E-06	mg/kg/day	NA	(mg/kg/day) $^{-1}$	- -
	Cadmium	1.78	mg/kg	1.78	mg/kg	M	4.6E-08	mg/kg/day	NA	(mg/kg/day) $^{-1}$	- -
	Lead	120	mg/kg	120	mg/kg	M	3.1E-06	mg/kg/day	NA	(mg/kg/day) $^{-1}$	- -
	(Total)										- -
Dermal	2-Amino-4,6-Dinitrotoluene	0.178	mg/kg	0.178	mg/kg	M	3.0E-09	mg/kg/day	NA	(mg/kg/day) $^{-1}$	- -
	Aluminum	14916	mg/kg	14916	mg/kg	M	0.0E+00	mg/kg/day	NA	(mg/kg/day) $^{-1}$	- -
	Antimony	2.88	mg/kg	2.88	mg/kg	M	0.0E+00	mg/kg/day	NA	(mg/kg/day) $^{-1}$	- -
	Barium	359	mg/kg	359	mg/kg	M	0.0E+00	mg/kg/day	NA	(mg/kg/day) $^{-1}$	- -
	Cadmium	1.78	mg/kg	1.78	mg/kg	M	3.0E-10	mg/kg/day	NA	(mg/kg/day) $^{-1}$	- -
	Lead	120	mg/kg	120	mg/kg	M	0.0E+00	mg/kg/day	NA	(mg/kg/day) $^{-1}$	- -
	(Total)										- -
										Total Risk Across All Exposure Routes/Pathways	- -

(1) Medium-Specific (M) EPC selected for risk calculation.

TABLE 8.6
CALCULATION OF CANCER RISKS
CENTRAL TENDENCY EXPOSURES
NSWC CRANE, INDIANA

Scenario Timeframe: Current/Future
Medium: Sediment
Exposure Medium: Sediment
Exposure Point: SWMU 3 - Little Sulphur Creek
Receptor Population: Trespassers
Receptor Age: Adolescent

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Risk Calculation (1)	Intake (Cancer)	Intake (Cancer) Units	Cancer Slope Factor	Cancer Slope Factor Units	Cancer Risk
Ingestion	2-Amino-4,6-Dinitrotoluene	0.178	mg/kg	0.178	mg/kg	M	1.2E-09	mg/kg/day	NA	(mg/kg/day) $^{-1}$	- -
	Aluminum	14916	mg/kg	14916	mg/kg	M	9.7E-05	mg/kg/day	NA	(mg/kg/day) $^{-1}$	- -
	Antimony	2.88	mg/kg	2.88	mg/kg	M	1.9E-08	mg/kg/day	NA	(mg/kg/day) $^{-1}$	- -
	Barium	359	mg/kg	359	mg/kg	M	2.3E-06	mg/kg/day	NA	(mg/kg/day) $^{-1}$	- -
	Cadmium	1.78	mg/kg	1.78	mg/kg	M	1.2E-08	mg/kg/day	NA	(mg/kg/day) $^{-1}$	- -
	Lead	120	mg/kg	120	mg/kg	M	7.8E-07	mg/kg/day	NA	(mg/kg/day) $^{-1}$	- -
	(Total)										- -
Dermal	2-Amino-4,6-Dinitrotoluene	0.178	mg/kg	0.178	mg/kg	M	2.9E-10	mg/kg/day	NA	(mg/kg/day) $^{-1}$	- -
	Aluminum	14916	mg/kg	14916	mg/kg	M	0.0E+00	mg/kg/day	NA	(mg/kg/day) $^{-1}$	- -
	Antimony	2.88	mg/kg	2.88	mg/kg	M	0.0E+00	mg/kg/day	NA	(mg/kg/day) $^{-1}$	- -
	Barium	359	mg/kg	359	mg/kg	M	0.0E+00	mg/kg/day	NA	(mg/kg/day) $^{-1}$	- -
	Cadmium	1.78	mg/kg	1.78	mg/kg	M	2.9E-11	mg/kg/day	NA	(mg/kg/day) $^{-1}$	- -
	Lead	120	mg/kg	120	mg/kg	M	0.0E+00	mg/kg/day	NA	(mg/kg/day) $^{-1}$	- -
	(Total)										- -
										Total Risk Across All Exposure Routes/Pathways	- -

(1) Medium-Specific (M) EPC selected for risk calculation.

TABLE 8.7
CALCULATION OF CANCER RISKS
REASONABLE MAXIMUM EXPOSURE
NSWC CRANE, INDIANA

Scenario Timeframe: Current/Future
Medium: Surface Water
Exposure Medium: Surface Water
Exposure Point: SWMU 3 - Little Sulphur Creek
Receptor Population: Off-Site Resident
Receptor Age: Child

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Risk Calculation (1)	Intake (Cancer)	Intake (Cancer) Units	Cancer Slope Factor	Cancer Slope Factor Units	Cancer Risk
Ingestion	4-Amino-2,6-Dinitrotoluene	0.540	ug/L	0.540	ug/L	M	4.4E-06	mg/kg/day	NA	(mg/kg/day) -1	- -
	RDX	10.0	ug/L	10.0	ug/L	M	8.2E-05	mg/kg/day	1.1E-01	(mg/kg/day) -1	9.0E-06
	(Total)										9.0E-06
Dermal	4-Amino-2,6-Dinitrotoluene	0.540	ug/L	0.540	ug/L	M	2.0E-08	mg/kg/day	NA	(mg/kg/day) -1	- -
	RDX	10.0	ug/L	10.0	ug/L	M	2.3E-07	mg/kg/day	1.1E-01	(mg/kg/day) -1	2.6E-08
	(Total)										2.6E-08
										Total Risk Across All Exposure Routes/Pathways	9.1E-06

(1) Medium-Specific (M) EPC selected for risk calculation.

TABLE 8.8
CALCULATION OF CANCER RISKS
CENTRAL TENDENCY EXPOSURES
NSWC CRANE, INDIANA

Scenario Timeframe: Current/Future
Medium: Surface Water
Exposure Medium: Surface Water
Exposure Point: SWMU 3 - Little Sulphur Creek
Receptor Population: Off-Site Resident
Receptor Age: Child

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Risk Calculation (1)	Intake (Cancer)	Intake (Cancer) Units	Cancer Slope Factor	Cancer Slope Factor Units	Cancer Risk
Ingestion	4-Amino-2,6-Dinitrotoluene	0.540	ug/L	0.540	ug/L	M	4.4E-07	mg/kg/day	NA	(mg/kg/day) -1	- -
	RDX	10.0	ug/L	10.0	ug/L	M	8.1E-06	mg/kg/day	1.1E-01	(mg/kg/day) -1	8.9E-07
	(Total)										8.9E-07
Dermal	4-Amino-2,6-Dinitrotoluene	0.540	ug/L	0.540	ug/L	M	3.6E-09	mg/kg/day	NA	(mg/kg/day) -1	- -
	RDX	10.0	ug/L	10.0	ug/L	M	4.3E-08	mg/kg/day	1.1E-01	(mg/kg/day) -1	4.7E-09
	(Total)										4.7E-09
										Total Risk Across All Exposure Routes/Pathways	8.9E-07

(1) Medium-Specific (M) EPC selected for risk calculation.

TABLE 8.9
CALCULATION OF CANCER RISKS
REASONABLE MAXIMUM EXPOSURE
NSWC CRANE, INDIANA

Scenario Timeframe: Current/Future
Medium: Surface Water
Exposure Medium: Surface Water
Exposure Point: SWMU 3 - Little Sulphur Creek
Receptor Population: Off-Site Resident
Receptor Age: Adult

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Risk Calculation (1)	Intake (Cancer)	Intake (Cancer) Units	Cancer Slope Factor	Cancer Slope Factor Units	Cancer Risk
Ingestion	4-Amino-2,6-Dinitrotoluene	0.540	ug/L	0.540	ug/L	M	5.1E-06	mg/kg/day	NA	(mg/kg/day) -1	- -
	RDX	10.0	ug/L	10.0	ug/L	M	9.4E-05	mg/kg/day	1.1E-01	(mg/kg/day) -1	1.0E-05
	(Total)										1.0E-05
Dermal	4-Amino-2,6-Dinitrotoluene	0.540	ug/L	0.540	ug/L	M	4.7E-08	mg/kg/day	NA	(mg/kg/day) -1	- -
	RDX	10.0	ug/L	10.0	ug/L	M	5.5E-07	mg/kg/day	1.1E-01	(mg/kg/day) -1	6.0E-08
	(Total)										6.0E-08
										Total Risk Across All Exposure Routes/Pathways	1.0E-05

(1) Medium-Specific (M) EPC selected for risk calculation.

TABLE 8.10
CALCULATION OF CANCER RISKS
CENTRAL TENDENCY EXPOSURES
NSWC CRANE, INDIANA

Scenario Timeframe: Current/Future
Medium: Surface Water
Exposure Medium: Surface Water
Exposure Point: SWMU 3 - Little Sulphur Creek
Receptor Population: Off-Site Resident
Receptor Age: Adult

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Risk Calculation (1)	Intake (Cancer)	Intake (Cancer) Units	Cancer Slope Factor	Cancer Slope Factor Units	Cancer Risk
Ingestion	4-Amino-2,6-Dinitrotoluene	0.540	ug/L	0.540	ug/L	M	6.9E-07	mg/kg/day	NA	(mg/kg/day) -1	- -
	RDX	10.0	ug/L	10.0	ug/L	M	1.3E-05	mg/kg/day	1.1E-01	(mg/kg/day) -1	1.4E-06
	(Total)										1.4E-06
Dermal	4-Amino-2,6-Dinitrotoluene	0.540	ug/L	0.540	ug/L	M	7.4E-09	mg/kg/day	NA	(mg/kg/day) -1	- -
	RDX	10.0	ug/L	10.0	ug/L	M	8.7E-08	mg/kg/day	1.1E-01	(mg/kg/day) -1	9.6E-09
	(Total)										9.6E-09
										Total Risk Across All Exposure Routes/Pathways	1.4E-06

(1) Medium-Specific (M) EPC selected for risk calculation.

TABLE 8.11
CALCULATION OF CANCER RISKS
REASONABLE MAXIMUM EXPOSURE
NSWC CRANE, INDIANA

Scenario Timeframe: Future
Medium: Surface/Subsurface Soil
Exposure Medium: Surface/Subsurface Soil
Exposure Point: SWMU 3 - Old Jeep Trail
Receptor Population: Construction Worker
Receptor Age: Adult

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Risk Calculation (1)	Intake (Cancer)	Intake (Cancer) Units	Cancer Slope Factor	Cancer Slope Factor Units	Cancer Risk
Ingestion	2,3,7,8-TCDD Equivalents	0.0000074	mg/kg	0.0000074	mg/kg	M	3.0E-13	mg/kg/day	1.5E+05	(mg/kg/day) -1	4.5E-08
	2,4,6-Trinitrotoluene	2.62	mg/kg	2.62	mg/kg	M	1.1E-07	mg/kg/day	3.0E-02	(mg/kg/day) -1	3.2E-09
	2-Amino-4,6-Dinitrotoluene	0.433	mg/kg	0.433	mg/kg	M	1.7E-08	mg/kg/day	NA	(mg/kg/day) -1	- -
	4-Amino-2,6-Dinitrotoluene	0.365	mg/kg	0.365	mg/kg	M	1.5E-08	mg/kg/day	NA	(mg/kg/day) -1	- -
	HMX	4.77	mg/kg	4.77	mg/kg	M	1.9E-07	mg/kg/day	NA	(mg/kg/day) -1	- -
	RDX	3.41	mg/kg	3.41	mg/kg	M	1.4E-07	mg/kg/day	1.1E-01	(mg/kg/day) -1	1.5E-08
	Barium	252	mg/kg	252	mg/kg	M	1.0E-05	mg/kg/day	NA	(mg/kg/day) -1	- -
	Cadmium	1.19	mg/kg	1.19	mg/kg	M	4.8E-08	mg/kg/day	NA	(mg/kg/day) -1	- -
	Chromium	26.4	mg/kg	26.4	mg/kg	M	1.1E-06	mg/kg/day	NA	(mg/kg/day) -1	- -
	Iron	26855	mg/kg	26855	mg/kg	M	1.1E-03	mg/kg/day	NA	(mg/kg/day) -1	- -
	Lead	358	mg/kg	358	mg/kg	M	1.4E-05	mg/kg/day	NA	(mg/kg/day) -1	- -
	(Total)										6.3E-08
Dermal	2,3,7,8-TCDD Equivalents	0.0000074	mg/kg	0.0000074	mg/kg	M	1.8E-14	mg/kg/day	1.5E+05	(mg/kg/day) -1	2.8E-09
	2,4,6-Trinitrotoluene	2.62	mg/kg	2.62	mg/kg	M	2.2E-08	mg/kg/day	3.0E-02	(mg/kg/day) -1	6.5E-10
	2-Amino-4,6-Dinitrotoluene	0.433	mg/kg	0.433	mg/kg	M	3.6E-09	mg/kg/day	NA	(mg/kg/day) -1	- -
	4-Amino-2,6-Dinitrotoluene	0.365	mg/kg	0.365	mg/kg	M	3.0E-09	mg/kg/day	NA	(mg/kg/day) -1	- -
	HMX	4.77	mg/kg	4.77	mg/kg	M	4.0E-08	mg/kg/day	NA	(mg/kg/day) -1	- -
	RDX	3.41	mg/kg	3.41	mg/kg	M	2.8E-08	mg/kg/day	1.1E-01	(mg/kg/day) -1	3.1E-09
	Barium	252	mg/kg	252	mg/kg	M	0.0E+00	mg/kg/day	NA	(mg/kg/day) -1	- -
	Cadmium	1.19	mg/kg	1.19	mg/kg	M	9.9E-11	mg/kg/day	NA	(mg/kg/day) -1	- -
	Chromium	26.4	mg/kg	26.4	mg/kg	M	0.0E+00	mg/kg/day	NA	(mg/kg/day) -1	- -
	Iron	26855	mg/kg	26855	mg/kg	M	0.0E+00	mg/kg/day	NA	(mg/kg/day) -1	- -
	Lead	358	mg/kg	358	mg/kg	M	0.0E+00	mg/kg/day	NA	(mg/kg/day) -1	- -
	(Total)										6.5E-09
										Total Risk Across All Exposure Routes/Pathways	6.9E-08

(1) Medium-Specific (M) EPC selected for risk calculation.

TABLE 8.12
CALCULATION OF CANCER RISKS
CENTRAL TENDENCY EXPOSURES
NSWC CRANE, INDIANA

Scenario Timeframe: Future
Medium: Surface/Subsurface Soil
Exposure Medium: Surface/Subsurface Soil
Exposure Point: SWMU 3 - Old Jeep Trail
Receptor Population: Construction Worker
Receptor Age: Adult

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Risk Calculation (1)	Intake (Cancer)	Intake (Cancer) Units	Cancer Slope Factor	Cancer Slope Factor Units	Cancer Risk
Ingestion	2,3,7,8-TCDD Equivalents	0.0000074	mg/kg	0.0000074	mg/kg	M	1.5E-13	mg/kg/day	1.5E+05	(mg/kg/day) -1	2.2E-08
	2,4,6-Trinitrotoluene	2.62	mg/kg	2.62	mg/kg	M	5.3E-08	mg/kg/day	3.0E-02	(mg/kg/day) -1	1.6E-09
	2-Amino-4,6-Dinitrotoluene	0.433	mg/kg	0.433	mg/kg	M	8.7E-09	mg/kg/day	NA	(mg/kg/day) -1	- -
	4-Amino-2,6-Dinitrotoluene	0.365	mg/kg	0.365	mg/kg	M	7.3E-09	mg/kg/day	NA	(mg/kg/day) -1	- -
	HMX	4.77	mg/kg	4.77	mg/kg	M	9.6E-08	mg/kg/day	NA	(mg/kg/day) -1	- -
	RDX	3.41	mg/kg	3.41	mg/kg	M	6.9E-08	mg/kg/day	1.1E-01	(mg/kg/day) -1	7.5E-09
	Barium	252	mg/kg	252	mg/kg	M	5.1E-06	mg/kg/day	NA	(mg/kg/day) -1	- -
	Cadmium	1.19	mg/kg	1.19	mg/kg	M	2.4E-08	mg/kg/day	NA	(mg/kg/day) -1	- -
	Chromium	26.4	mg/kg	26.4	mg/kg	M	5.3E-07	mg/kg/day	NA	(mg/kg/day) -1	- -
	Iron	26855	mg/kg	26855	mg/kg	M	5.4E-04	mg/kg/day	NA	(mg/kg/day) -1	- -
	Lead	358	mg/kg	358	mg/kg	M	7.2E-06	mg/kg/day	NA	(mg/kg/day) -1	- -
	(Total)										3.1E-08
Dermal	2,3,7,8-TCDD Equivalents	0.0000074	mg/kg	0.0000074	mg/kg	M	6.1E-15	mg/kg/day	1.5E+05	(mg/kg/day) -1	9.2E-10
	2,4,6-Trinitrotoluene	2.62	mg/kg	2.62	mg/kg	M	7.3E-09	mg/kg/day	3.0E-02	(mg/kg/day) -1	2.2E-10
	2-Amino-4,6-Dinitrotoluene	0.433	mg/kg	0.433	mg/kg	M	1.2E-09	mg/kg/day	NA	(mg/kg/day) -1	- -
	4-Amino-2,6-Dinitrotoluene	0.365	mg/kg	0.365	mg/kg	M	1.0E-09	mg/kg/day	NA	(mg/kg/day) -1	- -
	HMX	4.77	mg/kg	4.77	mg/kg	M	1.3E-08	mg/kg/day	NA	(mg/kg/day) -1	- -
	RDX	3.41	mg/kg	3.41	mg/kg	M	9.4E-09	mg/kg/day	1.1E-01	(mg/kg/day) -1	1.0E-09
	Barium	252	mg/kg	252	mg/kg	M	0.0E+00	mg/kg/day	NA	(mg/kg/day) -1	- -
	Cadmium	1.19	mg/kg	1.19	mg/kg	M	3.3E-11	mg/kg/day	NA	(mg/kg/day) -1	- -
	Chromium	26.4	mg/kg	26.4	mg/kg	M	0.0E+00	mg/kg/day	NA	(mg/kg/day) -1	- -
	Iron	26855	mg/kg	26855	mg/kg	M	0.0E+00	mg/kg/day	NA	(mg/kg/day) -1	- -
	Lead	358	mg/kg	358	mg/kg	M	0.0E+00	mg/kg/day	NA	(mg/kg/day) -1	- -
	(Total)										2.2E-09
										Total Risk Across All Exposure Routes/Pathways	3.4E-08

(1) Medium-Specific (M) EPC selected for risk calculation.

TABLE 8.13
CALCULATION OF CANCER RISKS
REASONABLE MAXIMUM EXPOSURE
NSWC CRANE, INDIANA

Scenario Timeframe: Future
Medium: Ground Water
Exposure Medium: Ground Water
Exposure Point: SWMU 3 - Shallow Ground Water
Receptor Population: Construction Worker
Receptor Age: Adult

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Risk Calculation (1)	Intake (Cancer)	Intake (Cancer) Units	Cancer Slope Factor	Cancer Slope Factor Units	Cancer Risk
Dermal	1,1,2,2-Tetrachloroethane	42.7	ug/L	42.7	ug/L	M	3.1E-07	mg/kg/day	2.0E-01	(mg/kg/day) -1	6.2E-08
	1,1,2-Trichloroethane	1.11	ug/L	1.11	ug/L	M	6.3E-09	mg/kg/day	5.7E-02	(mg/kg/day) -1	3.6E-10
	1,1-Dichloroethene	0.213	ug/L	0.213	ug/L	M	1.9E-09	mg/kg/day	6.0E-01	(mg/kg/day) -1	1.1E-09
	cis-1,2-Dichloroethene	11.3	ug/L	11.3	ug/L	M	1.1E-07	mg/kg/day	NA	(mg/kg/day) -1	- -
	Tetrachloroethene	0.617	ug/L	0.617	ug/L	M	2.1E-08	mg/kg/day	5.2E-02	(mg/kg/day) -1	1.1E-09
	trans-1,2-Dichloroethene	2.87	ug/L	2.87	ug/L	M	1.7E-08	mg/kg/day	NA	(mg/kg/day) -1	- -
	Trichloroethene	48.9	ug/L	48.9	ug/L	M	4.9E-07	mg/kg/day	4.0E-01	(mg/kg/day) -1	2.0E-07
	Vinyl Chloride	0.400	ug/L	0.400	ug/L	M	1.5E-09	mg/kg/day	7.2E-01	(mg/kg/day) -1	1.1E-09
	2,4,6-Trinitrotoluene	1.30	ug/L	1.30	ug/L	M	1.9E-09	mg/kg/day	3.0E-02	(mg/kg/day) -1	5.7E-11
	2-Amino-4,6-Dinitrotoluene	0.409	ug/L	0.409	ug/L	M	3.3E-10	mg/kg/day	NA	(mg/kg/day) -1	- -
	4-Amino-2,6-Dinitrotoluene	1.03	ug/L	1.03	ug/L	M	8.3E-10	mg/kg/day	NA	(mg/kg/day) -1	- -
	RDX	27.2	ug/L	27.2	ug/L	M	1.4E-08	mg/kg/day	1.1E-01	(mg/kg/day) -1	1.5E-09
	Aluminum	95.3	ug/L	95.3	ug/L	M	5.3E-08	mg/kg/day	NA	(mg/kg/day) -1	- -
	Barium	87.8	ug/L	87.8	ug/L	M	4.9E-08	mg/kg/day	NA	(mg/kg/day) -1	- -
	Cadmium	1.78	ug/L	1.8	ug/L	M	9.9E-10	mg/kg/day	NA	(mg/kg/day) -1	- -
	Chromium	7.02	ug/L	7.0	ug/L	M	7.8E-09	mg/kg/day	NA	(mg/kg/day) -1	- -
	Iron	505	ug/L	505.5	ug/L	M	2.8E-07	mg/kg/day	NA	(mg/kg/day) -1	- -
	Manganese	58.2	ug/L	58.2	ug/L	M	3.2E-08	mg/kg/day	NA	(mg/kg/day) -1	- -
	Nickel	8.86	ug/L	8.9	ug/L	M	9.8E-10	mg/kg/day	NA	(mg/kg/day) -1	- -
	Thallium	0.173	ug/L	0.2	ug/L	M	9.6E-11	mg/kg/day	NA	(mg/kg/day) -1	- -
	Nitrate	296	ug/L	296.4	ug/L	M	1.6E-07	mg/kg/day	NA	(mg/kg/day) -1	- -
	(Total)										2.6E-07
										Total Risk Across All Exposure Routes/Pathways	2.6E-07

(1) Medium-Specific (M) EPC selected for risk calculation.

TABLE 8.14
CALCULATION OF CANCER RISKS
CENTRAL TENDENCY EXPOSURES
NSWC CRANE, INDIANA

Scenario Timeframe: Future
Medium: Ground Water
Exposure Medium: Ground Water
Exposure Point: SWMU 3 - Shallow Ground Water
Receptor Population: Construction Worker
Receptor Age: Adult

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Risk Calculation (1)	Intake (Cancer)	Intake (Cancer) Units	Cancer Slope Factor	Cancer Slope Factor Units	Cancer Risk
Dermal	1,1,2,2-Tetrachloroethane	42.7	ug/L	42.7	ug/L	M	2.7E-07	mg/kg/day	2.0E-01	(mg/kg/day) -1	5.4E-08
	1,1,2-Trichloroethane	1.11	ug/L	1.11	ug/L	M	5.3E-09	mg/kg/day	5.7E-02	(mg/kg/day) -1	3.0E-10
	1,1-Dichloroethene	0.213	ug/L	0.213	ug/L	M	1.5E-09	mg/kg/day	6.0E-01	(mg/kg/day) -1	9.1E-10
	cis-1,2-Dichloroethene	11.3	ug/L	11.3	ug/L	M	8.8E-08	mg/kg/day	NA	(mg/kg/day) -1	- -
	Tetrachloroethene	0.617	ug/L	0.617	ug/L	M	1.8E-08	mg/kg/day	5.2E-02	(mg/kg/day) -1	9.6E-10
	trans-1,2-Dichloroethene	2.87	ug/L	2.87	ug/L	M	1.4E-08	mg/kg/day	NA	(mg/kg/day) -1	- -
	Trichloroethene	48.9	ug/L	48.9	ug/L	M	4.2E-07	mg/kg/day	4.0E-01	(mg/kg/day) -1	1.7E-07
	Vinyl Chloride	0.400	ug/L	0.400	ug/L	M	1.2E-09	mg/kg/day	7.2E-01	(mg/kg/day) -1	8.7E-10
	2,4,6-Trinitrotoluene	1.30	ug/L	1.30	ug/L	M	1.6E-09	mg/kg/day	3.0E-02	(mg/kg/day) -1	4.9E-11
	2-Amino-4,6-Dinitrotoluene	0.409	ug/L	0.409	ug/L	M	2.8E-10	mg/kg/day	NA	(mg/kg/day) -1	- -
	4-Amino-2,6-Dinitrotoluene	1.03	ug/L	1.03	ug/L	M	7.2E-10	mg/kg/day	NA	(mg/kg/day) -1	- -
	RDX	27.2	ug/L	27.2	ug/L	M	1.2E-08	mg/kg/day	1.1E-01	(mg/kg/day) -1	1.3E-09
	Aluminum	95.3	ug/L	95.3	ug/L	M	3.6E-08	mg/kg/day	NA	(mg/kg/day) -1	- -
	Barium	87.8	ug/L	87.8	ug/L	M	7.4E-10	mg/kg/day	NA	(mg/kg/day) -1	- -
	Cadmium	1.78	ug/L	1.8	ug/L	M	2.1E-07	mg/kg/day	NA	(mg/kg/day) -1	- -
	Chromium	7.02	ug/L	7.0	ug/L	M	7.4E-10	mg/kg/day	NA	(mg/kg/day) -1	- -
	Iron	505	ug/L	505.5	ug/L	M	1.2E-07	mg/kg/day	NA	(mg/kg/day) -1	- -
	Manganese	58.2	ug/L	58.2	ug/L	M	0.0E+00	mg/kg/day	NA	(mg/kg/day) -1	- -
	Nickel	8.86	ug/L	8.9	ug/L	M	0.0E+00	mg/kg/day	NA	(mg/kg/day) -1	- -
	Thallium	0.173	ug/L	0.2	ug/L	M	0.0E+00	mg/kg/day	NA	(mg/kg/day) -1	- -
	Nitrate	296	ug/L	296.4	ug/L	M	0.0E+00	mg/kg/day	NA	(mg/kg/day) -1	- -
	(Total)										2.2E-07
										Total Risk Across All Exposure Routes/Pathways	2.2E-07

(1) Medium-Specific (M) EPC selected for risk calculation.

TABLE 8.15
CALCULATION OF CANCER RISKS
REASONABLE MAXIMUM EXPOSURE
NSWC CRANE, INDIANA

Scenario Timeframe: Future
Medium: Ground Water
Exposure Medium: Air
Exposure Point: SWMU 3 - Shallow Ground Water
Receptor Population: Construction Worker
Receptor Age: Adult

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Risk Calculation (1)	Intake (Cancer)	Intake (Cancer) Units	Cancer Slope Factor	Cancer Slope Factor Units	Cancer Risk
Inhalation	1,1,2,2-Tetrachloroethane	42.7	ug/L	4.3E-05	mg/m3	R	1.8E-08	mg/kg/day	2.0E-01	(mg/kg/day) $^{-1}$	3.6E-09
	1,1,2-Trichloroethane	1.11	ug/L	1.4E-06	mg/m3	R	5.9E-10	mg/kg/day	5.6E-02	(mg/kg/day) $^{-1}$	3.3E-11
	1,1-Dichloroethene	0.213	ug/L	1.9E-06	mg/m3	R	7.9E-10	mg/kg/day	1.8E-01	(mg/kg/day) $^{-1}$	1.4E-10
	cis-1,2-Dichloroethene	11.3	ug/L	2.6E-05	mg/m3	R	1.1E-08	mg/kg/day	NA	(mg/kg/day) $^{-1}$	N/A
	Tetrachloroethene	0.617	ug/L	3.2E-06	mg/m3	R	1.4E-09	mg/kg/day	1.0E-02	(mg/kg/day) $^{-1}$	1.4E-11
	trans-1,2-Dichloroethene	2.87	ug/L	1.0E-05	mg/m3	R	4.3E-09	mg/kg/day	NA	(mg/kg/day) $^{-1}$	N/A
	Trichloroethene	48.9	ug/L	1.8E-04	mg/m3	R	7.6E-08	mg/kg/day	4.0E-01	(mg/kg/day) $^{-1}$	3.0E-08
	Vinyl Chloride	0.400	ug/L	4.3E-06	mg/m3	R	1.8E-09	mg/kg/day	1.5E-02	(mg/kg/day) $^{-1}$	2.7E-11
	2,4,6-Trinitrotoluene	1.30	ug/L	0.0E+00	mg/m3	R	0.0E+00	mg/kg/day	NA	(mg/kg/day) $^{-1}$	N/A
	2-Amino-4,6-Dinitrotoluene	0.409	ug/L	0.0E+00	mg/m3	R	0.0E+00	mg/kg/day	NA	(mg/kg/day) $^{-1}$	N/A
	4-Amino-2,6-Dinitrotoluene	1.03	ug/L	0.0E+00	mg/m3	R	0.0E+00	mg/kg/day	NA	(mg/kg/day) $^{-1}$	N/A
	RDX	27.2	ug/L	0.0E+00	mg/m3	R	0.0E+00	mg/kg/day	NA	(mg/kg/day) $^{-1}$	N/A
	Aluminum	95.3	ug/L	0.0E+00	mg/m3	R	0.0E+00	mg/kg/day	NA	(mg/kg/day) $^{-1}$	N/A
	Barium	87.8	ug/L	0.0E+00	mg/m3	R	0.0E+00	mg/kg/day	NA	(mg/kg/day) $^{-1}$	N/A
	Cadmium	1.78	ug/L	0.0E+00	mg/m3	R	0.0E+00	mg/kg/day	6.3E+00	(mg/kg/day) $^{-1}$	N/A
	Chromium	7.02	ug/L	0.0E+00	mg/m3	R	0.0E+00	mg/kg/day	NA	(mg/kg/day) $^{-1}$	N/A
	Iron	505	ug/L	0.0E+00	mg/m3	R	0.0E+00	mg/kg/day	NA	(mg/kg/day) $^{-1}$	N/A
	Manganese	58.2	ug/L	0.0E+00	mg/m3	R	0.0E+00	mg/kg/day	NA	(mg/kg/day) $^{-1}$	N/A
	Nickel	8.86	ug/L	0.0E+00	mg/m3	R	0.0E+00	mg/kg/day	NA	(mg/kg/day) $^{-1}$	N/A
	Thallium	0.173	ug/L	0.0E+00	mg/m3	R	0.0E+00	mg/kg/day	NA	(mg/kg/day) $^{-1}$	N/A
	Nitrate	296	ug/L	0.0E+00	mg/m3	R	0.0E+00	mg/kg/day	NA	(mg/kg/day) $^{-1}$	N/A
	(Total)										3.4E-08
										Total Risk Across All Exposure Routes/Pathways	3.4E-08

(1) Route-Specific (R) EPC selected for risk calculation.

TABLE 8.16
CALCULATION OF CANCER RISKS
CENTRAL TENDENCY EXPOSURES
NSWC CRANE, INDIANA

Scenario Timeframe: Future
Medium: Ground Water
Exposure Medium: Air
Exposure Point: SWMU 3 - Shallow Ground Water
Receptor Population: Construction Worker
Receptor Age: Adult

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Risk Calculation (1)	Intake (Cancer)	Intake (Cancer) Units	Cancer Slope Factor	Cancer Slope Factor Units	Cancer Risk
Inhalation	1,1,2,2-Tetrachloroethane	42.7	ug/L	4.3E-05	mg/m3	R	1.4E-08	mg/kg/day	2.0E-01	(mg/kg/day) $^{-1}$	2.7E-09
	1,1,2-Trichloroethane	1.11	ug/L	1.4E-06	mg/m3	R	4.4E-10	mg/kg/day	5.6E-02	(mg/kg/day) $^{-1}$	2.5E-11
	1,1-Dichloroethene	0.213	ug/L	1.9E-06	mg/m3	R	5.9E-10	mg/kg/day	1.8E-01	(mg/kg/day) $^{-1}$	1.0E-10
	cis-1,2-Dichloroethene	11.3	ug/L	2.6E-05	mg/m3	R	8.2E-09	mg/kg/day	NA	(mg/kg/day) $^{-1}$	N/A
	Tetrachloroethene	0.617	ug/L	3.2E-06	mg/m3	R	1.0E-09	mg/kg/day	1.0E-02	(mg/kg/day) $^{-1}$	1.0E-11
	trans-1,2-Dichloroethene	2.87	ug/L	1.0E-05	mg/m3	R	3.2E-09	mg/kg/day	NA	(mg/kg/day) $^{-1}$	N/A
	Trichloroethene	48.9	ug/L	1.8E-04	mg/m3	R	5.7E-08	mg/kg/day	4.0E-01	(mg/kg/day) $^{-1}$	2.3E-08
	Vinyl Chloride	0.400	ug/L	4.3E-06	mg/m3	R	1.3E-09	mg/kg/day	1.5E-02	(mg/kg/day) $^{-1}$	2.0E-11
	2,4,6-Trinitrotoluene	1.30	ug/L	0.0E+00	mg/m3	R	0.0E+00	mg/kg/day	NA	(mg/kg/day) $^{-1}$	N/A
	2-Amino-4,6-Dinitrotoluene	0.409	ug/L	0.0E+00	mg/m3	R	0.0E+00	mg/kg/day	NA	(mg/kg/day) $^{-1}$	N/A
	4-Amino-2,6-Dinitrotoluene	1.03	ug/L	0.0E+00	mg/m3	R	0.0E+00	mg/kg/day	NA	(mg/kg/day) $^{-1}$	N/A
	RDX	27.2	ug/L	0.0E+00	mg/m3	R	0.0E+00	mg/kg/day	NA	(mg/kg/day) $^{-1}$	N/A
	Aluminum	95.3	ug/L	0.0E+00	mg/m3	R	0.0E+00	mg/kg/day	NA	(mg/kg/day) $^{-1}$	N/A
	Barium	87.8	ug/L	0.0E+00	mg/m3	R	0.0E+00	mg/kg/day	NA	(mg/kg/day) $^{-1}$	N/A
	Cadmium	1.78	ug/L	0.0E+00	mg/m3	R	0.0E+00	mg/kg/day	6.3E+00	(mg/kg/day) $^{-1}$	N/A
	Chromium	7.02	ug/L	0.0E+00	mg/m3	R	0.0E+00	mg/kg/day	NA	(mg/kg/day) $^{-1}$	N/A
	Iron	505	ug/L	0.0E+00	mg/m3	R	0.0E+00	mg/kg/day	NA	(mg/kg/day) $^{-1}$	N/A
	Manganese	58.2	ug/L	0.0E+00	mg/m3	R	0.0E+00	mg/kg/day	NA	(mg/kg/day) $^{-1}$	N/A
	Nickel	8.86	ug/L	0.0E+00	mg/m3	R	0.0E+00	mg/kg/day	NA	(mg/kg/day) $^{-1}$	N/A
	Thallium	0.173	ug/L	0.0E+00	mg/m3	R	0.0E+00	mg/kg/day	NA	(mg/kg/day) $^{-1}$	N/A
	Nitrate	296	ug/L	0.0E+00	mg/m3	R	0.0E+00	mg/kg/day	NA	(mg/kg/day) $^{-1}$	N/A
	(Total)										2.6E-08
										Total Risk Across All Exposure Routes/Pathways	2.6E-08

(1) Route-Specific (R) EPC selected for risk calculation.

TABLE 8.17
CALCULATION OF CANCER RISKS
REASONABLE MAXIMUM EXPOSURE
NSWC CRANE, INDIANA

Scenario Timeframe: Future
Medium: Surface Soil
Exposure Medium: Surface Soil
Exposure Point: SWMU 3 - Old Jeep Trail
Receptor Population: Maintenance Worker
Receptor Age: Adult

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Risk Calculation (1)	Intake (Cancer)	Intake (Cancer) Units	Cancer Slope Factor	Cancer Slope Factor Units	Cancer Risk
Ingestion	2,3,7,8-TCDD Equivalents	0.0000074	mg/kg	0.0000074	mg/kg	M	2.5E-13	mg/kg/day	1.5E+05	(mg/kg/day) $^{-1}$	3.7E-08
	2,4,6-Trinitrotoluene	2.62	mg/kg	2.62	mg/kg	M	8.8E-08	mg/kg/day	3.0E-02	(mg/kg/day) $^{-1}$	2.6E-09
	2-Amino-4,6-Dinitrotoluene	0.433	mg/kg	0.433	mg/kg	M	1.5E-08	mg/kg/day	NA	(mg/kg/day) $^{-1}$	- -
	4-Amino-2,6-Dinitrotoluene	0.365	mg/kg	0.365	mg/kg	M	1.2E-08	mg/kg/day	NA	(mg/kg/day) $^{-1}$	- -
	HMX	4.77	mg/kg	4.77	mg/kg	M	1.6E-07	mg/kg/day	NA	(mg/kg/day) $^{-1}$	- -
	RDX	3.41	mg/kg	3.41	mg/kg	M	1.1E-07	mg/kg/day	1.1E-01	(mg/kg/day) $^{-1}$	1.3E-08
	Barium	252	mg/kg	252	mg/kg	M	8.5E-06	mg/kg/day	NA	(mg/kg/day) $^{-1}$	- -
	Cadmium	1.19	mg/kg	1.19	mg/kg	M	4.0E-08	mg/kg/day	NA	(mg/kg/day) $^{-1}$	- -
	Chromium	26.4	mg/kg	26.4	mg/kg	M	8.9E-07	mg/kg/day	NA	(mg/kg/day) $^{-1}$	- -
	Iron	26855	mg/kg	26855	mg/kg	M	9.0E-04	mg/kg/day	NA	(mg/kg/day) $^{-1}$	- -
	Lead	358	mg/kg	358	mg/kg	M	1.2E-05	mg/kg/day	NA	(mg/kg/day) $^{-1}$	- -
	(Total)										5.2E-08
Dermal	2,3,7,8-TCDD Equivalents	0.0000074	mg/kg	0.0000074	mg/kg	M	4.9E-14	mg/kg/day	1.5E+05	(mg/kg/day) $^{-1}$	7.4E-09
	2,4,6-Trinitrotoluene	2.62	mg/kg	2.62	mg/kg	M	5.8E-08	mg/kg/day	3.0E-02	(mg/kg/day) $^{-1}$	1.7E-09
	2-Amino-4,6-Dinitrotoluene	0.433	mg/kg	0.433	mg/kg	M	9.6E-09	mg/kg/day	NA	(mg/kg/day) $^{-1}$	- -
	4-Amino-2,6-Dinitrotoluene	0.365	mg/kg	0.365	mg/kg	M	8.1E-09	mg/kg/day	NA	(mg/kg/day) $^{-1}$	- -
	HMX	4.77	mg/kg	4.77	mg/kg	M	1.1E-07	mg/kg/day	NA	(mg/kg/day) $^{-1}$	- -
	RDX	3.41	mg/kg	3.41	mg/kg	M	7.5E-08	mg/kg/day	1.1E-01	(mg/kg/day) $^{-1}$	8.3E-09
	Barium	252	mg/kg	252	mg/kg	M	0.0E+00	mg/kg/day	NA	(mg/kg/day) $^{-1}$	- -
	Cadmium	1.19	mg/kg	1.19	mg/kg	M	2.6E-10	mg/kg/day	NA	(mg/kg/day) $^{-1}$	- -
	Chromium	26.4	mg/kg	26.4	mg/kg	M	0.0E+00	mg/kg/day	NA	(mg/kg/day) $^{-1}$	- -
	Iron	26855	mg/kg	26855	mg/kg	M	0.0E+00	mg/kg/day	NA	(mg/kg/day) $^{-1}$	- -
	Lead	358	mg/kg	358	mg/kg	M	0.0E+00	mg/kg/day	NA	(mg/kg/day) $^{-1}$	- -
	(Total)										1.7E-08
										Total Risk Across All Exposure Routes/Pathways	7.0E-08

(1) Medium-Specific (M) EPC selected for risk calculation.

TABLE 8.18
CALCULATION OF CANCER RISKS
CENTRAL TENDENCY EXPOSURES
NSWC CRANE, INDIANA

Scenario Timeframe: Future
Medium: Surface Soil
Exposure Medium: Surface Soil
Exposure Point: SWMU 3 - Old Jeep Trail
Receptor Population: Maintenance Worker
Receptor Age: Adult

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Risk Calculation (1)	Intake (Cancer)	Intake (Cancer) Units	Cancer Slope Factor	Cancer Slope Factor Units	Cancer Risk
Ingestion	2,3,7,8-TCDD Equivalents	0.0000074	mg/kg	0.0000074	mg/kg	M	2.2E-14	mg/kg/day	1.5E+05	(mg/kg/day) $^{-1}$	3.4E-09
	2,4,6-Trinitrotoluene	2.62	mg/kg	2.62	mg/kg	M	7.9E-09	mg/kg/day	3.0E-02	(mg/kg/day) $^{-1}$	2.4E-10
	2-Amino-4,6-Dinitrotoluene	0.433	mg/kg	0.433	mg/kg	M	1.3E-09	mg/kg/day	NA	(mg/kg/day) $^{-1}$	- -
	4-Amino-2,6-Dinitrotoluene	0.365	mg/kg	0.365	mg/kg	M	1.1E-09	mg/kg/day	NA	(mg/kg/day) $^{-1}$	- -
	HMX	4.77	mg/kg	4.77	mg/kg	M	1.4E-08	mg/kg/day	NA	(mg/kg/day) $^{-1}$	- -
	RDX	3.41	mg/kg	3.41	mg/kg	M	1.0E-08	mg/kg/day	1.1E-01	(mg/kg/day) $^{-1}$	1.1E-09
	Barium	252	mg/kg	252	mg/kg	M	7.6E-07	mg/kg/day	NA	(mg/kg/day) $^{-1}$	- -
	Cadmium	1.19	mg/kg	1.19	mg/kg	M	3.6E-09	mg/kg/day	NA	(mg/kg/day) $^{-1}$	- -
	Chromium	26.4	mg/kg	26.4	mg/kg	M	8.0E-08	mg/kg/day	NA	(mg/kg/day) $^{-1}$	- -
	Iron	26855	mg/kg	26855	mg/kg	M	8.1E-05	mg/kg/day	NA	(mg/kg/day) $^{-1}$	- -
	Lead	358	mg/kg	358	mg/kg	M	1.1E-06	mg/kg/day	NA	(mg/kg/day) $^{-1}$	- -
	(Total)										4.7E-09
Dermal	2,3,7,8-TCDD Equivalents	0.0000074	mg/kg	0.0000074	mg/kg	M	8.8E-16	mg/kg/day	1.5E+05	(mg/kg/day) $^{-1}$	1.3E-10
	2,4,6-Trinitrotoluene	2.62	mg/kg	2.62	mg/kg	M	1.0E-09	mg/kg/day	3.0E-02	(mg/kg/day) $^{-1}$	3.1E-11
	2-Amino-4,6-Dinitrotoluene	0.433	mg/kg	0.433	mg/kg	M	1.7E-10	mg/kg/day	NA	(mg/kg/day) $^{-1}$	- -
	4-Amino-2,6-Dinitrotoluene	0.365	mg/kg	0.365	mg/kg	M	1.5E-10	mg/kg/day	NA	(mg/kg/day) $^{-1}$	- -
	HMX	4.77	mg/kg	4.77	mg/kg	M	1.9E-09	mg/kg/day	NA	(mg/kg/day) $^{-1}$	- -
	RDX	3.41	mg/kg	3.41	mg/kg	M	1.4E-09	mg/kg/day	1.1E-01	(mg/kg/day) $^{-1}$	1.5E-10
	Barium	252	mg/kg	252	mg/kg	M	0.0E+00	mg/kg/day	NA	(mg/kg/day) $^{-1}$	- -
	Cadmium	1.19	mg/kg	1.19	mg/kg	M	4.7E-12	mg/kg/day	NA	(mg/kg/day) $^{-1}$	- -
	Chromium	26.4	mg/kg	26.4	mg/kg	M	0.0E+00	mg/kg/day	NA	(mg/kg/day) $^{-1}$	- -
	Iron	26855	mg/kg	26855	mg/kg	M	0.0E+00	mg/kg/day	NA	(mg/kg/day) $^{-1}$	- -
	Lead	358	mg/kg	358	mg/kg	M	0.0E+00	mg/kg/day	NA	(mg/kg/day) $^{-1}$	- -
	(Total)										3.1E-10
										Total Risk Across All Exposure Routes/Pathways	5.0E-09

(1) Medium-Specific (M) EPC selected for risk calculation.

TABLE 8.19
CALCULATION OF CANCER RISKS
REASONABLE MAXIMUM EXPOSURE
NSWC CRANE, INDIANA

Scenario Timeframe: Future
Medium: Surface Water
Exposure Medium: Surface Water
Exposure Point: SWMU 3 - Little Sulphur Creek
Receptor Population: Maintenance Worker
Receptor Age: Adult

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Risk Calculation (1)	Intake (Cancer)	Intake (Cancer) Units	Cancer Slope Factor	Cancer Slope Factor Units	Cancer Risk
Dermal	Acetone	64.0	ug/L	64.0	ug/L	M	9.0E-08	mg/kg/day	NA	$(mg/kg/day)^{-1}$	- -
	Bromomethane	0.529	ug/L	0.529	ug/L	M	4.5E-09	mg/kg/day	NA	$(mg/kg/day)^{-1}$	- -
	Methylene Chloride	3.23	ug/L	3.23	ug/L	M	3.3E-08	mg/kg/day	7.5E-03	$(mg/kg/day)^{-1}$	2.5E-10
	Bis(2-ethylhexyl)phthalate	1.36	ug/L	1.36	ug/L	M	4.8E-07	mg/kg/day	1.4E-02	$(mg/kg/day)^{-1}$	6.7E-09
	Pentachlorophenol	0.059	ug/L	0.059	ug/L	M	1.7E-07	mg/kg/day	1.2E-01	$(mg/kg/day)^{-1}$	2.0E-08
	2-Amino-4,6-Dinitrotoluene	0.384	ug/L	0.384	ug/L	M	1.2E-09	mg/kg/day	NA	$(mg/kg/day)^{-1}$	- -
	4-Amino-2,6-Dinitrotoluene	1.06	ug/L	1.06	ug/L	M	3.4E-09	mg/kg/day	NA	$(mg/kg/day)^{-1}$	- -
	RDX	63.0	ug/L	63.0	ug/L	M	1.3E-07	mg/kg/day	1.1E-01	$(mg/kg/day)^{-1}$	1.4E-08
	Antimony	0.784	ug/L	0.784	ug/L	M	1.7E-09	mg/kg/day	NA	$(mg/kg/day)^{-1}$	- -
	Lead	29.1	ug/L	29.1	ug/L	M	6.4E-08	mg/kg/day	NA	$(mg/kg/day)^{-1}$	- -
	(Total)										4.1E-08
										Total Risk Across All Exposure Routes/Pathways	4.1E-08

(1) Medium-Specific (M) EPC selected for risk calculation.

TABLE 8.20
CALCULATION OF CANCER RISKS
CENTRAL TENDENCY EXPOSURES
NSWC CRANE, INDIANA

Scenario Timeframe: Future
Medium: Surface Water
Exposure Medium: Surface Water
Exposure Point: SWMU 3 - Little Sulphur Creek
Receptor Population: Maintenance Worker
Receptor Age: Adult

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Risk Calculation (1)	Intake (Cancer)	Intake (Cancer) Units	Cancer Slope Factor	Cancer Slope Factor Units	Cancer Risk
Dermal	Acetone	64.0	ug/L	64.0	ug/L	M	1.3E-08	mg/kg/day	NA	(mg/kg/day) $^{-1}$	- -
	Bromomethane	0.529	ug/L	0.529	ug/L	M	6.6E-10	mg/kg/day	NA	(mg/kg/day) $^{-1}$	- -
	Methylene Chloride	3.23	ug/L	3.23	ug/L	M	4.8E-09	mg/kg/day	7.5E-03	(mg/kg/day) $^{-1}$	3.6E-11
	Bis(2-ethylhexyl)phthalate	1.36	ug/L	1.36	ug/L	M	7.4E-08	mg/kg/day	1.4E-02	(mg/kg/day) $^{-1}$	1.0E-09
	Pentachlorophenol	0.059	ug/L	0.059	ug/L	M	2.6E-08	mg/kg/day	1.2E-01	(mg/kg/day) $^{-1}$	3.1E-09
	2-Amino-4,6-Dinitrotoluene	0.384	ug/L	0.384	ug/L	M	1.9E-10	mg/kg/day	NA	(mg/kg/day) $^{-1}$	- -
	4-Amino-2,6-Dinitrotoluene	1.06	ug/L	1.06	ug/L	M	5.3E-10	mg/kg/day	NA	(mg/kg/day) $^{-1}$	- -
	RDX	63.0	ug/L	63.0	ug/L	M	2.0E-08	mg/kg/day	1.1E-01	(mg/kg/day) $^{-1}$	2.2E-09
	Antimony	0.784	ug/L	0.784	ug/L	M	2.3E-10	mg/kg/day	NA	(mg/kg/day) $^{-1}$	- -
	Lead	29.1	ug/L	29.1	ug/L	M	8.7E-09	mg/kg/day	NA	(mg/kg/day) $^{-1}$	- -
	(Total)										6.4E-09
										Total Risk Across All Exposure Routes/Pathways	6.4E-09

(1) Medium-Specific (M) EPC selected for risk calculation.

TABLE 8.21
CALCULATION OF CANCER RISKS
REASONABLE MAXIMUM EXPOSURE
NSWC CRANE, INDIANA

Scenario Timeframe: Future
Medium: Sediment
Exposure Medium: Sediment
Exposure Point: SWMU 3 - Little Sulphur Creek
Receptor Population: Maintenance Worker
Receptor Age: Adult

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Risk Calculation (1)	Intake (Cancer)	Intake (Cancer) Units	Cancer Slope Factor	Cancer Slope Factor Units	Cancer Risk
Ingestion	2-Amino-4,6-Dinitrotoluene	0.178	mg/kg	0.178	mg/kg	M	6.0E-09	mg/kg/day	NA	(mg/kg/day) $^{-1}$	- -
	Aluminum	14916	mg/kg	14916	mg/kg	M	5.0E-04	mg/kg/day	NA	(mg/kg/day) $^{-1}$	- -
	Antimony	2.88	mg/kg	2.88	mg/kg	M	9.7E-08	mg/kg/day	NA	(mg/kg/day) $^{-1}$	- -
	Barium	359	mg/kg	359	mg/kg	M	1.2E-05	mg/kg/day	NA	(mg/kg/day) $^{-1}$	- -
	Cadmium	1.78	mg/kg	1.78	mg/kg	M	6.0E-08	mg/kg/day	NA	(mg/kg/day) $^{-1}$	- -
	Lead	120	mg/kg	120	mg/kg	M	4.0E-06	mg/kg/day	NA	(mg/kg/day) $^{-1}$	- -
	(Total)										- -
Dermal	2-Amino-4,6-Dinitrotoluene	0.178	mg/kg	0.178	mg/kg	M	3.9E-09	mg/kg/day	NA	(mg/kg/day) $^{-1}$	- -
	Aluminum	14916	mg/kg	14916	mg/kg	M	0.0E+00	mg/kg/day	NA	(mg/kg/day) $^{-1}$	- -
	Antimony	2.88	mg/kg	2.88	mg/kg	M	0.0E+00	mg/kg/day	NA	(mg/kg/day) $^{-1}$	- -
	Barium	359	mg/kg	359	mg/kg	M	0.0E+00	mg/kg/day	NA	(mg/kg/day) $^{-1}$	- -
	Cadmium	1.78	mg/kg	1.78	mg/kg	M	3.9E-10	mg/kg/day	NA	(mg/kg/day) $^{-1}$	- -
	Lead	120	mg/kg	120	mg/kg	M	0.0E+00	mg/kg/day	NA	(mg/kg/day) $^{-1}$	- -
	(Total)										- -
										Total Risk Across All Exposure Routes/Pathways	- -

(1) Medium-Specific (M) EPC selected for risk calculation.

TABLE 8.22
CALCULATION OF CANCER RISKS
CENTRAL TENDENCY EXPOSURES
NSWC CRANE, INDIANA

Scenario Timeframe: Future
Medium: Sediment
Exposure Medium: Sediment
Exposure Point: SWMU 3 - Little Sulphur Creek
Receptor Population: Maintenance Worker
Receptor Age: Adult

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Risk Calculation (1)	Intake (Cancer)	Intake (Cancer) Units	Cancer Slope Factor	Cancer Slope Factor Units	Cancer Risk
Ingestion	2-Amino-4,6-Dinitrotoluene	0.178	mg/kg	0.178	mg/kg	M	5.4E-10	mg/kg/day	NA	(mg/kg/day) $^{-1}$	- -
	Aluminum	14916	mg/kg	14916	mg/kg	M	4.5E-05	mg/kg/day	NA	(mg/kg/day) $^{-1}$	- -
	Antimony	2.88	mg/kg	2.88	mg/kg	M	8.7E-09	mg/kg/day	NA	(mg/kg/day) $^{-1}$	- -
	Barium	359	mg/kg	359	mg/kg	M	1.1E-06	mg/kg/day	NA	(mg/kg/day) $^{-1}$	- -
	Cadmium	1.78	mg/kg	1.78	mg/kg	M	5.4E-09	mg/kg/day	NA	(mg/kg/day) $^{-1}$	- -
	Lead	120	mg/kg	120	mg/kg	M	3.6E-07	mg/kg/day	NA	(mg/kg/day) $^{-1}$	- -
	(Total)										- -
Dermal	2-Amino-4,6-Dinitrotoluene	0.178	mg/kg	0.178	mg/kg	M	7.1E-11	mg/kg/day	NA	(mg/kg/day) $^{-1}$	- -
	Aluminum	14916	mg/kg	14916	mg/kg	M	0.0E+00	mg/kg/day	NA	(mg/kg/day) $^{-1}$	- -
	Antimony	2.88	mg/kg	2.88	mg/kg	M	0.0E+00	mg/kg/day	NA	(mg/kg/day) $^{-1}$	- -
	Barium	359	mg/kg	359	mg/kg	M	0.0E+00	mg/kg/day	NA	(mg/kg/day) $^{-1}$	- -
	Cadmium	1.78	mg/kg	1.78	mg/kg	M	7.1E-12	mg/kg/day	NA	(mg/kg/day) $^{-1}$	- -
	Lead	120	mg/kg	120	mg/kg	M	0.0E+00	mg/kg/day	NA	(mg/kg/day) $^{-1}$	- -
	(Total)										- -
										Total Risk Across All Exposure Routes/Pathways	- -

(1) Medium-Specific (M) EPC selected for risk calculation.

TABLE 8.23
CALCULATION OF CANCER RISKS
REASONABLE MAXIMUM EXPOSURE
NSWC CRANE, INDIANA

Scenario Timeframe: Future
Medium: Surface Soil
Exposure Medium: Surface Soil
Exposure Point: SWMU 3 - Old Jeep Trail
Receptor Population: Occupational Workers
Receptor Age: Adult

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Risk Calculation (1)	Intake (Cancer)	Intake (Cancer) Units	Cancer Slope Factor	Cancer Slope Factor Units	Cancer Risk
Ingestion	2,3,7,8-TCDD Equivalents	0.0000074	mg/kg	0.0000074	mg/kg	M	2.6E-12	mg/kg/day	1.5E+05	(mg/kg/day) -1	3.9E-07
	2,4,6-Trinitrotoluene	2.62	mg/kg	2.62	mg/kg	M	9.2E-07	mg/kg/day	3.0E-02	(mg/kg/day) -1	2.8E-08
	2-Amino-4,6-Dinitrotoluene	0.433	mg/kg	0.433	mg/kg	M	1.5E-07	mg/kg/day	NA	(mg/kg/day) -1	- -
	4-Amino-2,6-Dinitrotoluene	0.365	mg/kg	0.365	mg/kg	M	1.3E-07	mg/kg/day	NA	(mg/kg/day) -1	- -
	HMX	4.77	mg/kg	4.77	mg/kg	M	1.7E-06	mg/kg/day	NA	(mg/kg/day) -1	- -
	RDX	3.41	mg/kg	3.41	mg/kg	M	1.2E-06	mg/kg/day	1.1E-01	(mg/kg/day) -1	1.3E-07
	Barium	252	mg/kg	252	mg/kg	M	8.8E-05	mg/kg/day	NA	(mg/kg/day) -1	- -
	Cadmium	1.19	mg/kg	1.19	mg/kg	M	4.2E-07	mg/kg/day	NA	(mg/kg/day) -1	- -
	Chromium	26.4	mg/kg	26.4	mg/kg	M	9.2E-06	mg/kg/day	NA	(mg/kg/day) -1	- -
	Iron	26855	mg/kg	26855	mg/kg	M	9.4E-03	mg/kg/day	NA	(mg/kg/day) -1	- -
	Lead	358	mg/kg	358	mg/kg	M	1.3E-04	mg/kg/day	NA	(mg/kg/day) -1	- -
	(Total)										5.5E-07
Dermal	2,3,7,8-TCDD Equivalents	0.0000074	mg/kg	0.0000074	mg/kg	M	5.1E-13	mg/kg/day	1.5E+05	(mg/kg/day) -1	7.7E-08
	2,4,6-Trinitrotoluene	2.62	mg/kg	2.62	mg/kg	M	6.1E-07	mg/kg/day	3.0E-02	(mg/kg/day) -1	1.8E-08
	2-Amino-4,6-Dinitrotoluene	0.433	mg/kg	0.433	mg/kg	M	1.0E-07	mg/kg/day	NA	(mg/kg/day) -1	- -
	4-Amino-2,6-Dinitrotoluene	0.365	mg/kg	0.365	mg/kg	M	8.4E-08	mg/kg/day	NA	(mg/kg/day) -1	- -
	HMX	4.77	mg/kg	4.77	mg/kg	M	1.1E-06	mg/kg/day	NA	(mg/kg/day) -1	- -
	RDX	3.41	mg/kg	3.41	mg/kg	M	7.9E-07	mg/kg/day	1.1E-01	(mg/kg/day) -1	8.6E-08
	Barium	252	mg/kg	252	mg/kg	M	0.0E+00	mg/kg/day	NA	(mg/kg/day) -1	- -
	Cadmium	1.19	mg/kg	1.19	mg/kg	M	2.7E-09	mg/kg/day	NA	(mg/kg/day) -1	- -
	Chromium	26.4	mg/kg	26.4	mg/kg	M	0.0E+00	mg/kg/day	NA	(mg/kg/day) -1	- -
	Iron	26855	mg/kg	26855	mg/kg	M	0.0E+00	mg/kg/day	NA	(mg/kg/day) -1	- -
	Lead	358	mg/kg	358	mg/kg	M	0.0E+00	mg/kg/day	NA	(mg/kg/day) -1	- -
	(Total)										1.8E-07
										Total Risk Across All Exposure Routes/Pathways	7.3E-07

(1) Medium-Specific (M) EPC selected for risk calculation.

TABLE 8.24
CALCULATION OF CANCER RISKS
CENTRAL TENDENCY EXPOSURES
NSWC CRANE, INDIANA

Scenario Timeframe: Future
Medium: Surface Soil
Exposure Medium: Surface Soil
Exposure Point: SWMU 3 - Old Jeep Trail
Receptor Population: Occupational Workers
Receptor Age: Adult

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Risk Calculation (1)	Intake (Cancer)	Intake (Cancer) Units	Cancer Slope Factor	Cancer Slope Factor Units	Cancer Risk
Ingestion	2,3,7,8-TCDD Equivalents	0.0000074	mg/kg	0.0000074	mg/kg	M	4.1E-13	mg/kg/day	1.5E+05	(mg/kg/day) -1	6.1E-08
	2,4,6-Trinitrotoluene	2.62	mg/kg	2.62	mg/kg	M	1.4E-07	mg/kg/day	3.0E-02	(mg/kg/day) -1	4.3E-09
	2-Amino-4,6-Dinitrotoluene	0.433	mg/kg	0.433	mg/kg	M	2.4E-08	mg/kg/day	NA	(mg/kg/day) -1	- -
	4-Amino-2,6-Dinitrotoluene	0.365	mg/kg	0.365	mg/kg	M	2.0E-08	mg/kg/day	NA	(mg/kg/day) -1	- -
	HMX	4.77	mg/kg	4.77	mg/kg	M	2.6E-07	mg/kg/day	NA	(mg/kg/day) -1	- -
	RDX	3.41	mg/kg	3.41	mg/kg	M	1.9E-07	mg/kg/day	1.1E-01	(mg/kg/day) -1	2.1E-08
	Barium	252	mg/kg	252	mg/kg	M	1.4E-05	mg/kg/day	NA	(mg/kg/day) -1	- -
	Cadmium	1.19	mg/kg	1.19	mg/kg	M	6.6E-08	mg/kg/day	NA	(mg/kg/day) -1	- -
	Chromium	26.4	mg/kg	26.4	mg/kg	M	1.5E-06	mg/kg/day	NA	(mg/kg/day) -1	- -
	Iron	26855	mg/kg	26855	mg/kg	M	1.5E-03	mg/kg/day	NA	(mg/kg/day) -1	- -
	Lead	358	mg/kg	358	mg/kg	M	2.0E-05	mg/kg/day	NA	(mg/kg/day) -1	- -
	(Total)										8.6E-08
Dermal	2,3,7,8-TCDD Equivalents	0.0000074	mg/kg	0.0000074	mg/kg	M	1.6E-14	mg/kg/day	1.5E+05	(mg/kg/day) -1	2.4E-09
	2,4,6-Trinitrotoluene	2.62	mg/kg	2.62	mg/kg	M	1.9E-08	mg/kg/day	3.0E-02	(mg/kg/day) -1	5.7E-10
	2-Amino-4,6-Dinitrotoluene	0.433	mg/kg	0.433	mg/kg	M	3.2E-09	mg/kg/day	NA	(mg/kg/day) -1	- -
	4-Amino-2,6-Dinitrotoluene	0.365	mg/kg	0.365	mg/kg	M	2.7E-09	mg/kg/day	NA	(mg/kg/day) -1	- -
	HMX	4.77	mg/kg	4.77	mg/kg	M	3.5E-08	mg/kg/day	NA	(mg/kg/day) -1	- -
	RDX	3.41	mg/kg	3.41	mg/kg	M	2.5E-08	mg/kg/day	1.1E-01	(mg/kg/day) -1	2.7E-09
	Barium	252	mg/kg	252	mg/kg	M	0.0E+00	mg/kg/day	NA	(mg/kg/day) -1	- -
	Cadmium	1.19	mg/kg	1.19	mg/kg	M	8.7E-11	mg/kg/day	NA	(mg/kg/day) -1	- -
	Chromium	26.4	mg/kg	26.4	mg/kg	M	0.0E+00	mg/kg/day	NA	(mg/kg/day) -1	- -
	Iron	26855	mg/kg	26855	mg/kg	M	0.0E+00	mg/kg/day	NA	(mg/kg/day) -1	- -
	Lead	358	mg/kg	358	mg/kg	M	0.0E+00	mg/kg/day	NA	(mg/kg/day) -1	- -
	(Total)										5.7E-09
										Total Risk Across All Exposure Routes/Pathways	9.2E-08

(1) Medium-Specific (M) EPC selected for risk calculation.

TABLE 8.25
CALCULATION OF CANCER RISKS
REASONABLE MAXIMUM EXPOSURE
NSWC CRANE, INDIANA

Scenario Timeframe: Future
Medium: Ground Water
Exposure Medium: Ground Water
Exposure Point: SWMU 3 - Shallow Ground Water
Receptor Population: Occupational Workers
Receptor Age: Adult

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Risk Calculation (1)	Intake (Cancer)	Intake (Cancer) Units	Cancer Slope Factor	Cancer Slope Factor Units	Cancer Risk
Ingestion	1,1,2,2-Tetrachloroethane	42.7	ug/L	42.7	ug/L	M	1.5E-04	mg/kg/day	2.0E-01	(mg/kg/day) -1	3.0E-05
	1,1,2-Trichloroethane	1.11	ug/L	1.11	ug/L	M	3.9E-06	mg/kg/day	5.7E-02	(mg/kg/day) -1	2.2E-07
	1,1-Dichloroethene	0.213	ug/L	0.213	ug/L	M	7.5E-07	mg/kg/day	6.0E-01	(mg/kg/day) -1	4.5E-07
	cis-1,2-Dichloroethene	11.3	ug/L	11.3	ug/L	M	3.9E-05	mg/kg/day	NA	(mg/kg/day) -1	- -
	Tetrachloroethene	0.617	ug/L	0.617	ug/L	M	2.2E-06	mg/kg/day	5.2E-02	(mg/kg/day) -1	1.1E-07
	trans-1,2-Dichloroethene	2.87	ug/L	2.87	ug/L	M	1.0E-05	mg/kg/day	NA	(mg/kg/day) -1	- -
	Trichloroethene	48.9	ug/L	48.9	ug/L	M	1.7E-04	mg/kg/day	4.0E-01	(mg/kg/day) -1	6.8E-05
	Vinyl Chloride	0.400	ug/L	0.400	ug/L	M	1.4E-06	mg/kg/day	7.2E-01	(mg/kg/day) -1	1.0E-06
	2,4,6-Trinitrotoluene	1.30	ug/L	1.30	ug/L	M	4.5E-06	mg/kg/day	3.0E-02	(mg/kg/day) -1	1.4E-07
	2-Amino-4,6-Dinitrotoluene	0.409	ug/L	0.409	ug/L	M	1.4E-06	mg/kg/day	NA	(mg/kg/day) -1	- -
	4-Amino-2,6-Dinitrotoluene	1.03	ug/L	1.03	ug/L	M	3.6E-06	mg/kg/day	NA	(mg/kg/day) -1	- -
	RDX	27.2	ug/L	27.2	ug/L	M	9.5E-05	mg/kg/day	1.1E-01	(mg/kg/day) -1	1.0E-05
	Aluminum	95.3	ug/L	95.3	ug/L	M	3.3E-04	mg/kg/day	NA	(mg/kg/day) -1	- -
	Barium	87.8	ug/L	87.8	ug/L	M	3.1E-04	mg/kg/day	NA	(mg/kg/day) -1	- -
	Cadmium	1.78	ug/L	1.78	ug/L	M	6.2E-06	mg/kg/day	NA	(mg/kg/day) -1	- -
	Chromium	7.02	ug/L	7.02	ug/L	M	2.5E-05	mg/kg/day	NA	(mg/kg/day) -1	- -
	Iron	505	ug/L	505	ug/L	M	1.8E-03	mg/kg/day	NA	(mg/kg/day) -1	- -
	Manganese	58.2	ug/L	58.2	ug/L	M	2.0E-04	mg/kg/day	NA	(mg/kg/day) -1	- -
	Nickel	8.86	ug/L	8.86	ug/L	M	3.1E-05	mg/kg/day	NA	(mg/kg/day) -1	- -
	Thallium	0.173	ug/L	0.173	ug/L	M	6.1E-07	mg/kg/day	NA	(mg/kg/day) -1	- -
	Nitrate	296	ug/L	296	ug/L	M	1.0E-03	mg/kg/day	NA	(mg/kg/day) -1	- -
	(Total)										1.1E-04
Dermal	1,1,2,2-Tetrachloroethane	42.7	ug/L	42.7	ug/L	M	4.6E-06	mg/kg/day	2.0E-01	(mg/kg/day) -1	9.1E-07
	1,1,2-Trichloroethane	1.11	ug/L	1.11	ug/L	M	8.8E-08	mg/kg/day	5.7E-02	(mg/kg/day) -1	5.0E-09
	1,1-Dichloroethene	0.213	ug/L	0.213	ug/L	M	2.4E-08	mg/kg/day	6.0E-01	(mg/kg/day) -1	1.5E-08
	cis-1,2-Dichloroethene	11.3	ug/L	11.3	ug/L	M	1.4E-06	mg/kg/day	NA	(mg/kg/day) -1	- -
	Tetrachloroethene	0.617	ug/L	0.617	ug/L	M	3.1E-07	mg/kg/day	5.2E-02	(mg/kg/day) -1	1.6E-08
	trans-1,2-Dichloroethene	2.87	ug/L	2.87	ug/L	M	2.2E-07	mg/kg/day	NA	(mg/kg/day) -1	- -
	Trichloroethene	48.9	ug/L	48.9	ug/L	M	6.9E-06	mg/kg/day	4.0E-01	(mg/kg/day) -1	2.8E-06
	Vinyl Chloride	0.400	ug/L	0.400	ug/L	M	1.7E-08	mg/kg/day	7.2E-01	(mg/kg/day) -1	1.3E-08
	2,4,6-Trinitrotoluene	1.30	ug/L	1.30	ug/L	M	2.8E-08	mg/kg/day	3.0E-02	(mg/kg/day) -1	8.4E-10
	2-Amino-4,6-Dinitrotoluene	0.409	ug/L	0.409	ug/L	M	4.8E-09	mg/kg/day	NA	(mg/kg/day) -1	- -
	4-Amino-2,6-Dinitrotoluene	1.03	ug/L	1.03	ug/L	M	1.2E-08	mg/kg/day	NA	(mg/kg/day) -1	- -
	RDX	27.2	ug/L	27.2	ug/L	M	2.0E-07	mg/kg/day	1.1E-01	(mg/kg/day) -1	2.2E-08
	Aluminum	95.3	ug/L	95.3	ug/L	M	2.7E-07	mg/kg/day	NA	(mg/kg/day) -1	- -
	Barium	87.8	ug/L	87.8	ug/L	M	2.5E-07	mg/kg/day	NA	(mg/kg/day) -1	- -
	Cadmium	1.78	ug/L	1.78	ug/L	M	5.1E-09	mg/kg/day	NA	(mg/kg/day) -1	- -
	Chromium	7.02	ug/L	7.02	ug/L	M	4.0E-08	mg/kg/day	NA	(mg/kg/day) -1	- -
	Iron	505	ug/L	505	ug/L	M	1.5E-06	mg/kg/day	NA	(mg/kg/day) -1	- -
	Manganese	58.2	ug/L	58.2	ug/L	M	1.7E-07	mg/kg/day	NA	(mg/kg/day) -1	- -
	Nickel	8.86	ug/L	8.86	ug/L	M	5.1E-09	mg/kg/day	NA	(mg/kg/day) -1	- -
	Thallium	0.173	ug/L	0.173	ug/L	M	5.0E-10	mg/kg/day	NA	(mg/kg/day) -1	- -
	Nitrate	296	ug/L	296	ug/L	M	8.5E-07	mg/kg/day	NA	(mg/kg/day) -1	- -
	(Total)										3.7E-06
										Total Risk Across All Exposure Routes/Pathways	1.1E-04

(1) Medium-Specific (M) EPC selected for risk calculation.

TABLE 8.26
CALCULATION OF CANCER RISKS
CENTRAL TENDENCY EXPOSURES
NSWC CRANE, INDIANA

Scenario Timeframe: Future
Medium: Ground Water
Exposure Medium: Ground Water
Exposure Point: SWMU 3 - Shallow Ground Water
Receptor Population: Occupational Workers
Receptor Age: Adult

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Risk Calculation (1)	Intake (Cancer)	Intake (Cancer) Units	Cancer Slope Factor	Cancer Slope Factor Units	Cancer Risk
Ingestion	1,1,2,2-Tetrachloroethane	42.7	ug/L	42.7	ug/L	M	4.7E-05	mg/kg/day	2.0E-01	(mg/kg/day) -1	9.4E-06
	1,1,2-Trichloroethane	1.11	ug/L	1.11	ug/L	M	1.2E-06	mg/kg/day	5.7E-02	(mg/kg/day) -1	7.0E-08
	1,1-Dichloroethene	0.213	ug/L	0.213	ug/L	M	2.4E-07	mg/kg/day	6.0E-01	(mg/kg/day) -1	1.4E-07
	cis-1,2-Dichloroethene	11.3	ug/L	11.3	ug/L	M	1.2E-05	mg/kg/day	NA	(mg/kg/day) -1	- -
	Tetrachloroethene	0.617	ug/L	0.617	ug/L	M	6.8E-07	mg/kg/day	5.2E-02	(mg/kg/day) -1	3.5E-08
	trans-1,2-Dichloroethene	2.87	ug/L	2.87	ug/L	M	3.2E-06	mg/kg/day	NA	(mg/kg/day) -1	- -
	Trichloroethene	48.9	ug/L	48.9	ug/L	M	5.4E-05	mg/kg/day	4.0E-01	(mg/kg/day) -1	2.2E-05
	Vinyl Chloride	0.400	ug/L	0.400	ug/L	M	4.4E-07	mg/kg/day	7.2E-01	(mg/kg/day) -1	3.2E-07
	2,4,6-Trinitrotoluene	1.30	ug/L	1.30	ug/L	M	1.4E-06	mg/kg/day	3.0E-02	(mg/kg/day) -1	4.3E-08
	2-Amino-4,6-Dinitrotoluene	0.409	ug/L	0.409	ug/L	M	4.5E-07	mg/kg/day	NA	(mg/kg/day) -1	- -
	4-Amino-2,6-Dinitrotoluene	1.03	ug/L	1.03	ug/L	M	1.1E-06	mg/kg/day	NA	(mg/kg/day) -1	- -
	RDX	27.2	ug/L	27.2	ug/L	M	3.0E-05	mg/kg/day	1.1E-01	(mg/kg/day) -1	3.3E-06
	Aluminum	95.3	ug/L	95.3	ug/L	M	1.1E-04	mg/kg/day	NA	(mg/kg/day) -1	- -
	Barium	87.8	ug/L	87.8	ug/L	M	9.7E-05	mg/kg/day	NA	(mg/kg/day) -1	- -
	Cadmium	1.78	ug/L	1.78	ug/L	M	2.0E-06	mg/kg/day	NA	(mg/kg/day) -1	- -
	Chromium	7.02	ug/L	7.02	ug/L	M	7.7E-06	mg/kg/day	NA	(mg/kg/day) -1	- -
	Iron	505	ug/L	505	ug/L	M	5.6E-04	mg/kg/day	NA	(mg/kg/day) -1	- -
	Manganese	58.2	ug/L	58.2	ug/L	M	6.4E-05	mg/kg/day	NA	(mg/kg/day) -1	- -
	Nickel	8.86	ug/L	8.86	ug/L	M	9.8E-06	mg/kg/day	NA	(mg/kg/day) -1	- -
	Thallium	0.173	ug/L	0.173	ug/L	M	1.9E-07	mg/kg/day	NA	(mg/kg/day) -1	- -
	Nitrate	296	ug/L	296	ug/L	M	3.3E-04	mg/kg/day	NA	(mg/kg/day) -1	- -
	(Total)										3.5E-05
Dermal	1,1,2,2-Tetrachloroethane	42.7	ug/L	42.7	ug/L	M	1.2E-06	mg/kg/day	2.0E-01	(mg/kg/day) -1	2.3E-07
	1,1,2-Trichloroethane	1.11	ug/L	1.11	ug/L	M	2.3E-08	mg/kg/day	5.7E-02	(mg/kg/day) -1	1.3E-09
	1,1-Dichloroethene	0.213	ug/L	0.213	ug/L	M	6.2E-09	mg/kg/day	6.0E-01	(mg/kg/day) -1	3.7E-09
	cis-1,2-Dichloroethene	11.3	ug/L	11.3	ug/L	M	3.6E-07	mg/kg/day	NA	(mg/kg/day) -1	- -
	Tetrachloroethene	0.617	ug/L	0.617	ug/L	M	8.1E-08	mg/kg/day	5.2E-02	(mg/kg/day) -1	4.2E-09
	trans-1,2-Dichloroethene	2.87	ug/L	2.87	ug/L	M	5.6E-08	mg/kg/day	NA	(mg/kg/day) -1	- -
	Trichloroethene	48.9	ug/L	48.9	ug/L	M	1.8E-06	mg/kg/day	4.0E-01	(mg/kg/day) -1	7.1E-07
	Vinyl Chloride	0.400	ug/L	0.400	ug/L	M	4.5E-09	mg/kg/day	7.2E-01	(mg/kg/day) -1	3.2E-09
	2,4,6-Trinitrotoluene	1.30	ug/L	1.30	ug/L	M	7.2E-09	mg/kg/day	3.0E-02	(mg/kg/day) -1	2.2E-10
	2-Amino-4,6-Dinitrotoluene	0.409	ug/L	0.409	ug/L	M	1.2E-09	mg/kg/day	NA	(mg/kg/day) -1	- -
	4-Amino-2,6-Dinitrotoluene	1.03	ug/L	1.03	ug/L	M	3.1E-09	mg/kg/day	NA	(mg/kg/day) -1	- -
	RDX	27.2	ug/L	27.2	ug/L	M	5.2E-08	mg/kg/day	1.1E-01	(mg/kg/day) -1	5.8E-09
	Aluminum	95.3	ug/L	95.3	ug/L	M	5.8E-08	mg/kg/day	NA	(mg/kg/day) -1	- -
	Barium	87.8	ug/L	87.8	ug/L	M	5.3E-08	mg/kg/day	NA	(mg/kg/day) -1	- -
	Cadmium	1.78	ug/L	1.78	ug/L	M	1.1E-09	mg/kg/day	NA	(mg/kg/day) -1	- -
	Chromium	7.02	ug/L	7.02	ug/L	M	8.5E-09	mg/kg/day	NA	(mg/kg/day) -1	- -
	Iron	505	ug/L	505	ug/L	M	3.1E-07	mg/kg/day	NA	(mg/kg/day) -1	- -
	Manganese	58.2	ug/L	58.2	ug/L	M	3.5E-08	mg/kg/day	NA	(mg/kg/day) -1	- -
	Nickel	8.86	ug/L	8.86	ug/L	M	1.1E-09	mg/kg/day	NA	(mg/kg/day) -1	- -
	Thallium	0.173	ug/L	0.173	ug/L	M	1.1E-10	mg/kg/day	NA	(mg/kg/day) -1	- -
	Nitrate	296	ug/L	296	ug/L	M	1.8E-07	mg/kg/day	NA	(mg/kg/day) -1	- -
	(Total)										9.7E-07
										Total Risk Across All Exposure Routes/Pathways	3.6E-05

(1) Medium-Specific (M) EPC selected for risk calculation.

TABLE 8.27
CALCULATION OF CANCER RISKS
REASONABLE MAXIMUM EXPOSURE
NSWC CRANE, INDIANA

Scenario Timeframe: Future
Medium: Surface Soil
Exposure Medium: Surface Soil
Exposure Point: SWMU 3 - Old Jeep Trail
Receptor Population: Recreational Users
Receptor Age: Child

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Risk Calculation (1)	Intake (Cancer)	Intake (Cancer) Units	Cancer Slope Factor	Cancer Slope Factor Units	Cancer Risk
Ingestion	2,3,7,8-TCDD Equivalents	0.0000074	mg/kg	0.0000074	mg/kg	M	6.0E-13	mg/kg/day	1.5E+05	(mg/kg/day) -1	9.0E-08
	2,4,6-Trinitrotoluene	2.62	mg/kg	2.62	mg/kg	M	2.1E-07	mg/kg/day	3.0E-02	(mg/kg/day) -1	6.4E-09
	2-Amino-4,6-Dinitrotoluene	0.433	mg/kg	0.433	mg/kg	M	3.5E-08	mg/kg/day	NA	(mg/kg/day) -1	- -
	4-Amino-2,6-Dinitrotoluene	0.365	mg/kg	0.365	mg/kg	M	3.0E-08	mg/kg/day	NA	(mg/kg/day) -1	- -
	HMX	4.77	mg/kg	4.77	mg/kg	M	3.9E-07	mg/kg/day	NA	(mg/kg/day) -1	- -
	RDX	3.41	mg/kg	3.41	mg/kg	M	2.8E-07	mg/kg/day	1.1E-01	(mg/kg/day) -1	3.1E-08
	Barium	252	mg/kg	252	mg/kg	M	2.1E-05	mg/kg/day	NA	(mg/kg/day) -1	- -
	Cadmium	1.19	mg/kg	1.19	mg/kg	M	9.7E-08	mg/kg/day	NA	(mg/kg/day) -1	- -
	Chromium	26.4	mg/kg	26.4	mg/kg	M	2.1E-06	mg/kg/day	NA	(mg/kg/day) -1	- -
	Iron	26855	mg/kg	26855	mg/kg	M	2.2E-03	mg/kg/day	NA	(mg/kg/day) -1	- -
	Lead	358	mg/kg	358	mg/kg	M	2.9E-05	mg/kg/day	NA	(mg/kg/day) -1	- -
	(Total)										1.3E-07
Dermal	2,3,7,8-TCDD Equivalents	0.0000074	mg/kg	0.0000074	mg/kg	M	1.2E-13	mg/kg/day	1.5E+05	(mg/kg/day) -1	1.8E-08
	2,4,6-Trinitrotoluene	2.62	mg/kg	2.62	mg/kg	M	1.4E-07	mg/kg/day	3.0E-02	(mg/kg/day) -1	4.2E-09
	2-Amino-4,6-Dinitrotoluene	0.433	mg/kg	0.433	mg/kg	M	2.3E-08	mg/kg/day	NA	(mg/kg/day) -1	- -
	4-Amino-2,6-Dinitrotoluene	0.365	mg/kg	0.365	mg/kg	M	2.0E-08	mg/kg/day	NA	(mg/kg/day) -1	- -
	HMX	4.77	mg/kg	4.77	mg/kg	M	2.6E-07	mg/kg/day	NA	(mg/kg/day) -1	- -
	RDX	3.41	mg/kg	3.41	mg/kg	M	1.8E-07	mg/kg/day	1.1E-01	(mg/kg/day) -1	2.0E-08
	Barium	252	mg/kg	252	mg/kg	M	0.0E+00	mg/kg/day	NA	(mg/kg/day) -1	- -
	Cadmium	1.19	mg/kg	1.19	mg/kg	M	6.4E-10	mg/kg/day	NA	(mg/kg/day) -1	- -
	Chromium	26.4	mg/kg	26.4	mg/kg	M	0.0E+00	mg/kg/day	NA	(mg/kg/day) -1	- -
	Iron	26855	mg/kg	26855	mg/kg	M	0.0E+00	mg/kg/day	NA	(mg/kg/day) -1	- -
	Lead	358	mg/kg	358	mg/kg	M	0.0E+00	mg/kg/day	NA	(mg/kg/day) -1	- -
	(Total)										4.2E-08
										Total Risk Across All Exposure Routes/Pathways	1.7E-07

(1) Medium-Specific (M) EPC selected for risk calculation.

TABLE 8.28
CALCULATION OF CANCER RISKS
CENTRAL TENDENCY EXPOSURES
NSWC CRANE, INDIANA

Scenario Timeframe: Future
Medium: Surface Soil
Exposure Medium: Surface Soil
Exposure Point: SWMU 3 - Old Jeep Trail
Receptor Population: Recreational Users
Receptor Age: Child

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Risk Calculation (1)	Intake (Cancer)	Intake (Cancer) Units	Cancer Slope Factor	Cancer Slope Factor Units	Cancer Risk
Ingestion	2,3,7,8-TCDD Equivalents	0.0000074	mg/kg	0.0000074	mg/kg	M	5.0E-14	mg/kg/day	1.5E+05	(mg/kg/day) -1	7.5E-09
	2,4,6-Trinitrotoluene	2.62	mg/kg	2.62	mg/kg	M	1.8E-08	mg/kg/day	3.0E-02	(mg/kg/day) -1	5.3E-10
	2-Amino-4,6-Dinitrotoluene	0.433	mg/kg	0.433	mg/kg	M	2.9E-09	mg/kg/day	NA	(mg/kg/day) -1	- -
	4-Amino-2,6-Dinitrotoluene	0.365	mg/kg	0.365	mg/kg	M	2.5E-09	mg/kg/day	NA	(mg/kg/day) -1	- -
	HMX	4.77	mg/kg	4.77	mg/kg	M	3.2E-08	mg/kg/day	NA	(mg/kg/day) -1	- -
	RDX	3.41	mg/kg	3.41	mg/kg	M	2.3E-08	mg/kg/day	1.1E-01	(mg/kg/day) -1	2.5E-09
	Barium	252	mg/kg	252	mg/kg	M	1.7E-06	mg/kg/day	NA	(mg/kg/day) -1	- -
	Cadmium	1.19	mg/kg	1.19	mg/kg	M	8.1E-09	mg/kg/day	NA	(mg/kg/day) -1	- -
	Chromium	26.4	mg/kg	26.4	mg/kg	M	1.8E-07	mg/kg/day	NA	(mg/kg/day) -1	- -
	Iron	26855	mg/kg	26855	mg/kg	M	1.8E-04	mg/kg/day	NA	(mg/kg/day) -1	- -
	Lead	358	mg/kg	358	mg/kg	M	2.4E-06	mg/kg/day	NA	(mg/kg/day) -1	- -
	(Total)										1.1E-08
Dermal	2,3,7,8-TCDD Equivalents	0.0000074	mg/kg	0.0000074	mg/kg	M	4.0E-15	mg/kg/day	1.5E+05	(mg/kg/day) -1	6.0E-10
	2,4,6-Trinitrotoluene	2.62	mg/kg	2.62	mg/kg	M	4.7E-09	mg/kg/day	3.0E-02	(mg/kg/day) -1	1.4E-10
	2-Amino-4,6-Dinitrotoluene	0.433	mg/kg	0.433	mg/kg	M	7.8E-10	mg/kg/day	NA	(mg/kg/day) -1	- -
	4-Amino-2,6-Dinitrotoluene	0.365	mg/kg	0.365	mg/kg	M	6.5E-10	mg/kg/day	NA	(mg/kg/day) -1	- -
	HMX	4.77	mg/kg	4.77	mg/kg	M	8.5E-09	mg/kg/day	NA	(mg/kg/day) -1	- -
	RDX	3.41	mg/kg	3.41	mg/kg	M	6.1E-09	mg/kg/day	1.1E-01	(mg/kg/day) -1	6.7E-10
	Barium	252	mg/kg	252	mg/kg	M	0.0E+00	mg/kg/day	NA	(mg/kg/day) -1	- -
	Cadmium	1.19	mg/kg	1.19	mg/kg	M	2.1E-11	mg/kg/day	NA	(mg/kg/day) -1	- -
	Chromium	26.4	mg/kg	26.4	mg/kg	M	0.0E+00	mg/kg/day	NA	(mg/kg/day) -1	- -
	Iron	26855	mg/kg	26855	mg/kg	M	0.0E+00	mg/kg/day	NA	(mg/kg/day) -1	- -
	Lead	358	mg/kg	358	mg/kg	M	0.0E+00	mg/kg/day	NA	(mg/kg/day) -1	- -
	(Total)										1.4E-09
										Total Risk Across All Exposure Routes/Pathways	1.2E-08

(1) Medium-Specific (M) EPC selected for risk calculation.

TABLE 8.29
CALCULATION OF CANCER RISKS
REASONABLE MAXIMUM EXPOSURE
NSWC CRANE, INDIANA

Scenario Timeframe: Future
Medium: Ground Water
Exposure Medium: Ground Water
Exposure Point: SWMU 3 - Shallow Ground Water
Receptor Population: Recreational Users
Receptor Age: Child

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Risk Calculation (1)	Intake (Cancer)	Intake (Cancer) Units	Cancer Slope Factor	Cancer Slope Factor Units	Cancer Risk
Ingestion	1,1,2,2-Tetrachloroethane	42.7	ug/L	42.7	ug/L	M	3.5E-05	mg/kg/day	2.0E-01	(mg/kg/day) -1	7.0E-06
	1,1,2-Trichloroethane	1.11	ug/L	1.11	ug/L	M	9.0E-07	mg/kg/day	5.7E-02	(mg/kg/day) -1	5.1E-08
	1,1-Dichloroethene	0.213	ug/L	0.213	ug/L	M	1.7E-07	mg/kg/day	6.0E-01	(mg/kg/day) -1	1.0E-07
	cis-1,2-Dichloroethene	11.3	ug/L	11.3	ug/L	M	9.2E-06	mg/kg/day	NA	(mg/kg/day) -1	- -
	Tetrachloroethene	0.617	ug/L	0.617	ug/L	M	5.0E-07	mg/kg/day	5.2E-02	(mg/kg/day) -1	2.6E-08
	trans-1,2-Dichloroethene	2.87	ug/L	2.87	ug/L	M	2.3E-06	mg/kg/day	NA	(mg/kg/day) -1	- -
	Trichloroethene	48.9	ug/L	48.9	ug/L	M	4.0E-05	mg/kg/day	4.0E-01	(mg/kg/day) -1	1.6E-05
	Vinyl Chloride	0.400	ug/L	0.400	ug/L	M	3.3E-07	mg/kg/day	7.2E-01	(mg/kg/day) -1	2.3E-07
	2,4,6-Trinitrotoluene	1.30	ug/L	1.30	ug/L	M	1.1E-06	mg/kg/day	3.0E-02	(mg/kg/day) -1	3.2E-08
	2-Amino-4,6-Dinitrotoluene	0.409	ug/L	0.409	ug/L	M	3.3E-07	mg/kg/day	NA	(mg/kg/day) -1	- -
	4-Amino-2,6-Dinitrotoluene	1.03	ug/L	1.03	ug/L	M	8.4E-07	mg/kg/day	NA	(mg/kg/day) -1	- -
	RDX	27.2	ug/L	27.2	ug/L	M	2.2E-05	mg/kg/day	1.1E-01	(mg/kg/day) -1	2.4E-06
	Aluminum	95.3	ug/L	95.3	ug/L	M	7.8E-05	mg/kg/day	NA	(mg/kg/day) -1	- -
	Barium	87.8	ug/L	87.8	ug/L	M	7.1E-05	mg/kg/day	NA	(mg/kg/day) -1	- -
	Cadmium	1.78	ug/L	1.78	ug/L	M	1.4E-06	mg/kg/day	NA	(mg/kg/day) -1	- -
	Chromium	7.02	ug/L	7.02	ug/L	M	5.7E-06	mg/kg/day	NA	(mg/kg/day) -1	- -
	Iron	505	ug/L	505	ug/L	M	4.1E-04	mg/kg/day	NA	(mg/kg/day) -1	- -
	Manganese	58.2	ug/L	58.2	ug/L	M	4.7E-05	mg/kg/day	NA	(mg/kg/day) -1	- -
	Nickel	8.86	ug/L	8.86	ug/L	M	7.2E-06	mg/kg/day	NA	(mg/kg/day) -1	- -
	Thallium	0.173	ug/L	0.173	ug/L	M	1.4E-07	mg/kg/day	NA	(mg/kg/day) -1	- -
	Nitrate	296	ug/L	296	ug/L	M	2.4E-04	mg/kg/day	NA	(mg/kg/day) -1	- -
	(Total)										2.6E-05
Dermal	1,1,2,2-Tetrachloroethane	42.7	ug/L	42.7	ug/L	M	1.1E-06	mg/kg/day	2.0E-01	(mg/kg/day) -1	2.1E-07
	1,1,2-Trichloroethane	1.11	ug/L	1.11	ug/L	M	2.0E-08	mg/kg/day	5.7E-02	(mg/kg/day) -1	1.2E-09
	1,1-Dichloroethene	0.213	ug/L	0.213	ug/L	M	5.6E-09	mg/kg/day	6.0E-01	(mg/kg/day) -1	3.4E-09
	cis-1,2-Dichloroethene	11.3	ug/L	11.3	ug/L	M	3.3E-07	mg/kg/day	NA	(mg/kg/day) -1	- -
	Tetrachloroethene	0.617	ug/L	0.617	ug/L	M	7.3E-08	mg/kg/day	5.2E-02	(mg/kg/day) -1	3.8E-09
	trans-1,2-Dichloroethene	2.87	ug/L	2.87	ug/L	M	5.0E-08	mg/kg/day	NA	(mg/kg/day) -1	- -
	Trichloroethene	48.9	ug/L	48.9	ug/L	M	1.6E-06	mg/kg/day	4.0E-01	(mg/kg/day) -1	6.4E-07
	Vinyl Chloride	0.400	ug/L	0.400	ug/L	M	4.1E-09	mg/kg/day	7.2E-01	(mg/kg/day) -1	2.9E-09
	2,4,6-Trinitrotoluene	1.30	ug/L	1.30	ug/L	M	6.5E-09	mg/kg/day	3.0E-02	(mg/kg/day) -1	2.0E-10
	2-Amino-4,6-Dinitrotoluene	0.409	ug/L	0.409	ug/L	M	1.1E-09	mg/kg/day	NA	(mg/kg/day) -1	- -
	4-Amino-2,6-Dinitrotoluene	1.03	ug/L	1.03	ug/L	M	2.8E-09	mg/kg/day	NA	(mg/kg/day) -1	- -
	RDX	27.2	ug/L	27.2	ug/L	M	4.7E-08	mg/kg/day	1.1E-01	(mg/kg/day) -1	5.2E-09
	Aluminum	95.3	ug/L	95.3	ug/L	M	6.4E-08	mg/kg/day	NA	(mg/kg/day) -1	- -
	Barium	87.8	ug/L	87.8	ug/L	M	5.9E-08	mg/kg/day	NA	(mg/kg/day) -1	- -
	Cadmium	1.78	ug/L	1.78	ug/L	M	1.2E-09	mg/kg/day	NA	(mg/kg/day) -1	- -
	Chromium	7.02	ug/L	7.02	ug/L	M	9.4E-09	mg/kg/day	NA	(mg/kg/day) -1	- -
	Iron	505	ug/L	505	ug/L	M	3.4E-07	mg/kg/day	NA	(mg/kg/day) -1	- -
	Manganese	58.2	ug/L	58.2	ug/L	M	3.9E-08	mg/kg/day	NA	(mg/kg/day) -1	- -
	Nickel	8.86	ug/L	8.86	ug/L	M	1.2E-09	mg/kg/day	NA	(mg/kg/day) -1	- -
	Thallium	0.173	ug/L	0.173	ug/L	M	1.2E-10	mg/kg/day	NA	(mg/kg/day) -1	- -
	Nitrate	296	ug/L	296	ug/L	M	2.0E-07	mg/kg/day	NA	(mg/kg/day) -1	- -
	(Total)										8.7E-07
										Total Risk Across All Exposure Routes/Pathways	2.7E-05

(1) Medium-Specific (M) EPC selected for risk calculation.

TABLE 8.30
CALCULATION OF CANCER RISKS
CENTRAL TENDENCY EXPOSURES
NSWC CRANE, INDIANA

Scenario Timeframe: Future
Medium: Ground Water
Exposure Medium: Ground Water
Exposure Point: SWMU 3 - Shallow Ground Water
Receptor Population: Recreational Users
Receptor Age: Child

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Risk Calculation (1)	Intake (Cancer)	Intake (Cancer) Units	Cancer Slope Factor	Cancer Slope Factor Units	Cancer Risk
Ingestion	1,1,2,2-Tetrachloroethane	42.7	ug/L	42.7	ug/L	M	5.8E-06	mg/kg/day	2.0E-01	(mg/kg/day) -1	1.2E-06
	1,1,2-Trichloroethane	1.11	ug/L	1.11	ug/L	M	1.5E-07	mg/kg/day	5.7E-02	(mg/kg/day) -1	8.6E-09
	1,1-Dichloroethene	0.213	ug/L	0.213	ug/L	M	2.9E-08	mg/kg/day	6.0E-01	(mg/kg/day) -1	1.7E-08
	cis-1,2-Dichloroethene	11.3	ug/L	11.3	ug/L	M	1.5E-06	mg/kg/day	NA	(mg/kg/day) -1	- -
	Tetrachloroethene	0.617	ug/L	0.617	ug/L	M	8.4E-08	mg/kg/day	5.2E-02	(mg/kg/day) -1	4.4E-09
	trans-1,2-Dichloroethene	2.87	ug/L	2.87	ug/L	M	3.9E-07	mg/kg/day	NA	(mg/kg/day) -1	- -
	Trichloroethene	48.9	ug/L	48.9	ug/L	M	6.6E-06	mg/kg/day	4.0E-01	(mg/kg/day) -1	2.7E-06
	Vinyl Chloride	0.400	ug/L	0.400	ug/L	M	5.4E-08	mg/kg/day	7.2E-01	(mg/kg/day) -1	3.9E-08
	2,4,6-Trinitrotoluene	1.30	ug/L	1.30	ug/L	M	1.8E-07	mg/kg/day	3.0E-02	(mg/kg/day) -1	5.3E-09
	2-Amino-4,6-Dinitrotoluene	0.409	ug/L	0.409	ug/L	M	5.6E-08	mg/kg/day	NA	(mg/kg/day) -1	- -
	4-Amino-2,6-Dinitrotoluene	1.03	ug/L	1.03	ug/L	M	1.4E-07	mg/kg/day	NA	(mg/kg/day) -1	- -
	RDX	27.2	ug/L	27.2	ug/L	M	3.7E-06	mg/kg/day	1.1E-01	(mg/kg/day) -1	4.1E-07
	Aluminum	95.3	ug/L	95.3	ug/L	M	1.3E-05	mg/kg/day	NA	(mg/kg/day) -1	- -
	Barium	87.8	ug/L	87.8	ug/L	M	1.2E-05	mg/kg/day	NA	(mg/kg/day) -1	- -
	Cadmium	1.78	ug/L	1.78	ug/L	M	2.4E-07	mg/kg/day	NA	(mg/kg/day) -1	- -
	Chromium	7.02	ug/L	7.02	ug/L	M	9.5E-07	mg/kg/day	NA	(mg/kg/day) -1	- -
	Iron	505	ug/L	505	ug/L	M	6.9E-05	mg/kg/day	NA	(mg/kg/day) -1	- -
	Manganese	58.2	ug/L	58.2	ug/L	M	7.9E-06	mg/kg/day	NA	(mg/kg/day) -1	- -
	Nickel	8.86	ug/L	8.86	ug/L	M	1.2E-06	mg/kg/day	NA	(mg/kg/day) -1	- -
	Thallium	0.173	ug/L	0.173	ug/L	M	2.4E-08	mg/kg/day	NA	(mg/kg/day) -1	- -
	Nitrate	296	ug/L	296	ug/L	M	4.0E-05	mg/kg/day	NA	(mg/kg/day) -1	- -
	(Total)										4.3E-06
Dermal	1,1,2,2-Tetrachloroethane	42.7	ug/L	42.7	ug/L	M	1.4E-07	mg/kg/day	2.0E-01	(mg/kg/day) -1	2.9E-08
	1,1,2-Trichloroethane	1.11	ug/L	1.11	ug/L	M	2.8E-09	mg/kg/day	5.7E-02	(mg/kg/day) -1	1.6E-10
	1,1-Dichloroethene	0.213	ug/L	0.213	ug/L	M	7.7E-10	mg/kg/day	6.0E-01	(mg/kg/day) -1	4.6E-10
	cis-1,2-Dichloroethene	11.3	ug/L	11.3	ug/L	M	4.4E-08	mg/kg/day	NA	(mg/kg/day) -1	- -
	Tetrachloroethene	0.617	ug/L	0.617	ug/L	M	9.9E-09	mg/kg/day	5.2E-02	(mg/kg/day) -1	5.2E-10
	trans-1,2-Dichloroethene	2.87	ug/L	2.87	ug/L	M	6.8E-09	mg/kg/day	NA	(mg/kg/day) -1	- -
	Trichloroethene	48.9	ug/L	48.9	ug/L	M	2.2E-07	mg/kg/day	4.0E-01	(mg/kg/day) -1	8.8E-08
	Vinyl Chloride	0.400	ug/L	0.400	ug/L	M	5.5E-10	mg/kg/day	7.2E-01	(mg/kg/day) -1	4.0E-10
	2,4,6-Trinitrotoluene	1.30	ug/L	1.30	ug/L	M	8.9E-10	mg/kg/day	3.0E-02	(mg/kg/day) -1	2.7E-11
	2-Amino-4,6-Dinitrotoluene	0.409	ug/L	0.409	ug/L	M	1.5E-10	mg/kg/day	NA	(mg/kg/day) -1	- -
	4-Amino-2,6-Dinitrotoluene	1.03	ug/L	1.03	ug/L	M	3.9E-10	mg/kg/day	NA	(mg/kg/day) -1	- -
	RDX	27.2	ug/L	27.2	ug/L	M	6.5E-09	mg/kg/day	1.1E-01	(mg/kg/day) -1	7.1E-10
	Aluminum	95.3	ug/L	95.3	ug/L	M	7.1E-09	mg/kg/day	NA	(mg/kg/day) -1	- -
	Barium	87.8	ug/L	87.8	ug/L	M	6.6E-09	mg/kg/day	NA	(mg/kg/day) -1	- -
	Cadmium	1.78	ug/L	1.78	ug/L	M	1.3E-10	mg/kg/day	NA	(mg/kg/day) -1	- -
	Chromium	7.02	ug/L	7.02	ug/L	M	1.0E-09	mg/kg/day	NA	(mg/kg/day) -1	- -
	Iron	505	ug/L	505	ug/L	M	3.8E-08	mg/kg/day	NA	(mg/kg/day) -1	- -
	Manganese	58.2	ug/L	58.2	ug/L	M	4.3E-09	mg/kg/day	NA	(mg/kg/day) -1	- -
	Nickel	8.86	ug/L	8.86	ug/L	M	1.3E-10	mg/kg/day	NA	(mg/kg/day) -1	- -
	Thallium	0.173	ug/L	0.173	ug/L	M	1.3E-11	mg/kg/day	NA	(mg/kg/day) -1	- -
	Nitrate	296	ug/L	296	ug/L	M	2.2E-08	mg/kg/day	NA	(mg/kg/day) -1	- -
	(Total)										1.2E-07
										Total Risk Across All Exposure Routes/Pathways	4.4E-06

(1) Medium-Specific (M) EPC selected for risk calculation.

TABLE 8.31
CALCULATION OF CANCER RISKS
REASONABLE MAXIMUM EXPOSURE
NSWC CRANE, INDIANA

Scenario Timeframe: Future
Medium: Surface Water
Exposure Medium: Surface Water
Exposure Point: SWMU 3 - Little Sulphur Creek
Receptor Population: Recreational Users
Receptor Age: Child

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Risk Calculation (1)	Intake (Cancer)	Intake (Cancer) Units	Cancer Slope Factor	Cancer Slope Factor Units	Cancer Risk
Ingestion	Acetone	64.0	ug/L	64.0	ug/L	M	1.0E-05	mg/kg/day	NA	(mg/kg/day) -1	- -
	Bromomethane	0.529	ug/L	0.529	ug/L	M	8.6E-08	mg/kg/day	NA	(mg/kg/day) -1	- -
	Methylene Chloride	3.23	ug/L	3.23	ug/L	M	5.3E-07	mg/kg/day	7.5E-03	(mg/kg/day) -1	3.9E-09
	Bis(2-ethylhexyl)phthalate	1.36	ug/L	1.36	ug/L	M	2.2E-07	mg/kg/day	1.4E-02	(mg/kg/day) -1	3.1E-09
	Pentachlorophenol	0.059	ug/L	0.059	ug/L	M	9.6E-09	mg/kg/day	1.2E-01	(mg/kg/day) -1	1.2E-09
	2-Amino-4,6-Dinitrotoluene	0.384	ug/L	0.384	ug/L	M	6.3E-08	mg/kg/day	NA	(mg/kg/day) -1	- -
	4-Amino-2,6-Dinitrotoluene	1.06	ug/L	1.06	ug/L	M	1.7E-07	mg/kg/day	NA	(mg/kg/day) -1	- -
	RDX	63.0	ug/L	63.0	ug/L	M	1.0E-05	mg/kg/day	1.1E-01	(mg/kg/day) -1	1.1E-06
	Antimony	0.784	ug/L	0.784	ug/L	M	1.3E-07	mg/kg/day	NA	(mg/kg/day) -1	- -
	Lead	29.1	ug/L	29.1	ug/L	M	4.7E-06	mg/kg/day	NA	(mg/kg/day) -1	- -
	(Total)										1.1E-06
Dermal	Acetone	64.0	ug/L	64.0	ug/L	M	4.0E-07	mg/kg/day	NA	(mg/kg/day) -1	- -
	Bromomethane	0.529	ug/L	0.529	ug/L	M	1.9E-08	mg/kg/day	NA	(mg/kg/day) -1	- -
	Methylene Chloride	3.23	ug/L	3.23	ug/L	M	1.4E-07	mg/kg/day	7.5E-03	(mg/kg/day) -1	1.1E-09
	Bis(2-ethylhexyl)phthalate	1.36	ug/L	1.36	ug/L	M	1.6E-06	mg/kg/day	1.4E-02	(mg/kg/day) -1	2.3E-08
	Pentachlorophenol	0.059	ug/L	0.059	ug/L	M	5.7E-07	mg/kg/day	1.2E-01	(mg/kg/day) -1	6.8E-08
	2-Amino-4,6-Dinitrotoluene	0.384	ug/L	0.384	ug/L	M	4.4E-09	mg/kg/day	NA	(mg/kg/day) -1	- -
	4-Amino-2,6-Dinitrotoluene	1.06	ug/L	1.06	ug/L	M	1.2E-08	mg/kg/day	NA	(mg/kg/day) -1	- -
	RDX	63.0	ug/L	63.0	ug/L	M	4.4E-07	mg/kg/day	1.1E-01	(mg/kg/day) -1	4.8E-08
	Antimony	0.784	ug/L	0.784	ug/L	M	8.4E-09	mg/kg/day	NA	(mg/kg/day) -1	- -
	Lead	29.1	ug/L	29.1	ug/L	M	3.1E-07	mg/kg/day	NA	(mg/kg/day) -1	- -
	(Total)										1.4E-07
										Total Risk Across All Exposure Routes/Pathways	1.3E-06

(1) Medium-Specific (M) EPC selected for risk calculation.

TABLE 8.32
CALCULATION OF CANCER RISKS
CENTRAL TENDENCY EXPOSURES
NSWC CRANE, INDIANA

Scenario Timeframe: Future
Medium: Surface Water
Exposure Medium: Surface Water
Exposure Point: SWMU 3 - Little Sulphur Creek
Receptor Population: Recreational Users
Receptor Age: Child

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Risk Calculation (1)	Intake (Cancer)	Intake (Cancer) Units	Cancer Slope Factor	Cancer Slope Factor Units	Cancer Risk
Ingestion	Acetone	64.0	ug/L	64.0	ug/L	M	8.7E-07	mg/kg/day	NA	(mg/kg/day) -1	- -
	Bromomethane	0.529	ug/L	0.529	ug/L	M	7.2E-09	mg/kg/day	NA	(mg/kg/day) -1	- -
	Methylene Chloride	3.23	ug/L	3.23	ug/L	M	4.4E-08	mg/kg/day	7.5E-03	(mg/kg/day) -1	3.3E-10
	Bis(2-ethylhexyl)phthalate	1.36	ug/L	1.36	ug/L	M	1.8E-08	mg/kg/day	1.4E-02	(mg/kg/day) -1	2.6E-10
	Pentachlorophenol	0.059	ug/L	0.059	ug/L	M	8.0E-10	mg/kg/day	1.2E-01	(mg/kg/day) -1	9.6E-11
	2-Amino-4,6-Dinitrotoluene	0.384	ug/L	0.384	ug/L	M	5.2E-09	mg/kg/day	NA	(mg/kg/day) -1	- -
	4-Amino-2,6-Dinitrotoluene	1.06	ug/L	1.06	ug/L	M	1.4E-08	mg/kg/day	NA	(mg/kg/day) -1	- -
	RDX	63.0	ug/L	63.0	ug/L	M	8.5E-07	mg/kg/day	1.1E-01	(mg/kg/day) -1	9.4E-08
	Antimony	0.784	ug/L	0.784	ug/L	M	1.1E-08	mg/kg/day	NA	(mg/kg/day) -1	- -
	Lead	29.1	ug/L	29.1	ug/L	M	4.0E-07	mg/kg/day	NA	(mg/kg/day) -1	- -
	(Total)										9.5E-08
Dermal	Acetone	64.0	ug/L	64.0	ug/L	M	3.6E-08	mg/kg/day	NA	(mg/kg/day) -1	- -
	Bromomethane	0.529	ug/L	0.529	ug/L	M	1.8E-09	mg/kg/day	NA	(mg/kg/day) -1	- -
	Methylene Chloride	3.23	ug/L	3.23	ug/L	M	1.3E-08	mg/kg/day	7.5E-03	(mg/kg/day) -1	1.0E-10
	Bis(2-ethylhexyl)phthalate	1.36	ug/L	1.36	ug/L	M	1.9E-07	mg/kg/day	1.4E-02	(mg/kg/day) -1	2.7E-09
	Pentachlorophenol	0.059	ug/L	0.059	ug/L	M	6.7E-08	mg/kg/day	1.2E-01	(mg/kg/day) -1	8.0E-09
	2-Amino-4,6-Dinitrotoluene	0.384	ug/L	0.384	ug/L	M	5.0E-10	mg/kg/day	NA	(mg/kg/day) -1	- -
	4-Amino-2,6-Dinitrotoluene	1.06	ug/L	1.06	ug/L	M	1.4E-09	mg/kg/day	NA	(mg/kg/day) -1	- -
	RDX	63.0	ug/L	63.0	ug/L	M	5.2E-08	mg/kg/day	1.1E-01	(mg/kg/day) -1	5.7E-09
	Antimony	0.784	ug/L	0.784	ug/L	M	7.0E-10	mg/kg/day	NA	(mg/kg/day) -1	- -
	Lead	29.1	ug/L	29.1	ug/L	M	2.6E-08	mg/kg/day	NA	(mg/kg/day) -1	- -
	(Total)										1.7E-08
										Total Risk Across All Exposure Routes/Pathways	1.1E-07

(1) Medium-Specific (M) EPC selected for risk calculation.

TABLE 8.33
CALCULATION OF CANCER RISKS
REASONABLE MAXIMUM EXPOSURE
NSWC CRANE, INDIANA

Scenario Timeframe: Future
Medium: Sediment
Exposure Medium: Sediment
Exposure Point: SWMU 3 - Little Sulphur Creek
Receptor Population: Recreational Users
Receptor Age: Child

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Risk Calculation (1)	Intake (Cancer)	Intake (Cancer) Units	Cancer Slope Factor	Cancer Slope Factor Units	Cancer Risk
Ingestion	2-Amino-4,6-Dinitrotoluene	0.178	mg/kg	0.178	mg/kg	M	1.5E-08	mg/kg/day	NA	(mg/kg/day) -1	- -
	Aluminum	14916	mg/kg	14916	mg/kg	M	1.2E-03	mg/kg/day	NA	(mg/kg/day) -1	- -
	Antimony	2.88	mg/kg	2.88	mg/kg	M	2.3E-07	mg/kg/day	NA	(mg/kg/day) -1	- -
	Barium	359	mg/kg	359	mg/kg	M	2.9E-05	mg/kg/day	NA	(mg/kg/day) -1	- -
	Cadmium	1.78	mg/kg	1.78	mg/kg	M	1.4E-07	mg/kg/day	NA	(mg/kg/day) -1	- -
	Lead	120	mg/kg	120	mg/kg	M	9.8E-06	mg/kg/day	NA	(mg/kg/day) -1	- -
	(Total)										- -
Dermal	2-Amino-4,6-Dinitrotoluene	0.178	mg/kg	0.178	mg/kg	M	9.6E-09	mg/kg/day	NA	(mg/kg/day) -1	- -
	Aluminum	14916	mg/kg	14916	mg/kg	M	0.0E+00	mg/kg/day	NA	(mg/kg/day) -1	- -
	Antimony	2.88	mg/kg	2.88	mg/kg	M	0.0E+00	mg/kg/day	NA	(mg/kg/day) -1	- -
	Barium	359	mg/kg	359	mg/kg	M	0.0E+00	mg/kg/day	NA	(mg/kg/day) -1	- -
	Cadmium	1.78	mg/kg	1.78	mg/kg	M	9.5E-10	mg/kg/day	NA	(mg/kg/day) -1	- -
	Lead	120	mg/kg	120	mg/kg	M	0.0E+00	mg/kg/day	NA	(mg/kg/day) -1	- -
	(Total)										- -
										Total Risk Across All Exposure Routes/Pathways	- -

(1) Medium-Specific (M) EPC selected for risk calculation.

TABLE 8.34
CALCULATION OF CANCER RISKS
CENTRAL TENDENCY EXPOSURES
NSWC CRANE, INDIANA

Scenario Timeframe: Future
Medium: Sediment
Exposure Medium: Sediment
Exposure Point: SWMU 3 - Little Sulphur Creek
Receptor Population: Recreational Users
Receptor Age: Child

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Risk Calculation (1)	Intake (Cancer)	Intake (Cancer) Units	Cancer Slope Factor	Cancer Slope Factor Units	Cancer Risk
Ingestion	2-Amino-4,6-Dinitrotoluene	0.178	mg/kg	0.178	mg/kg	M	1.2E-09	mg/kg/day	NA	(mg/kg/day) -1	- -
	Aluminum	14916	mg/kg	14916	mg/kg	M	1.0E-04	mg/kg/day	NA	(mg/kg/day) -1	- -
	Antimony	2.88	mg/kg	2.88	mg/kg	M	2.0E-08	mg/kg/day	NA	(mg/kg/day) -1	- -
	Barium	359	mg/kg	359	mg/kg	M	2.4E-06	mg/kg/day	NA	(mg/kg/day) -1	- -
	Cadmium	1.78	mg/kg	1.78	mg/kg	M	1.2E-08	mg/kg/day	NA	(mg/kg/day) -1	- -
	Lead	120	mg/kg	120	mg/kg	M	8.1E-07	mg/kg/day	NA	(mg/kg/day) -1	- -
	(Total)										- -
Dermal	2-Amino-4,6-Dinitrotoluene	0.178	mg/kg	0.178	mg/kg	M	3.2E-10	mg/kg/day	NA	(mg/kg/day) -1	- -
	Aluminum	14916	mg/kg	14916	mg/kg	M	0.0E+00	mg/kg/day	NA	(mg/kg/day) -1	- -
	Antimony	2.88	mg/kg	2.88	mg/kg	M	0.0E+00	mg/kg/day	NA	(mg/kg/day) -1	- -
	Barium	359	mg/kg	359	mg/kg	M	0.0E+00	mg/kg/day	NA	(mg/kg/day) -1	- -
	Cadmium	1.78	mg/kg	1.78	mg/kg	M	3.2E-11	mg/kg/day	NA	(mg/kg/day) -1	- -
	Lead	120	mg/kg	120	mg/kg	M	0.0E+00	mg/kg/day	NA	(mg/kg/day) -1	- -
	(Total)										- -
										Total Risk Across All Exposure Routes/Pathways	- -

(1) Medium-Specific (M) EPC selected for risk calculation.

TABLE 8.35
CALCULATION OF CANCER RISKS
REASONABLE MAXIMUM EXPOSURE
NSWC CRANE, INDIANA

Scenario Timeframe: Future
Medium: Surface Soil
Exposure Medium: Surface Soil
Exposure Point: SWMU 3 - Old Jeep Trail
Receptor Population: Recreational Users
Receptor Age: Adult

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Risk Calculation (1)	Intake (Cancer)	Intake (Cancer) Units	Cancer Slope Factor	Cancer Slope Factor Units	Cancer Risk
Ingestion	2,3,7,8-TCDD Equivalents	0.0000074	mg/kg	0.0000074	mg/kg	M	2.6E-13	mg/kg/day	1.5E+05	(mg/kg/day) -1	3.9E-08
	2,4,6-Trinitrotoluene	2.62	mg/kg	2.62	mg/kg	M	9.2E-08	mg/kg/day	3.0E-02	(mg/kg/day) -1	2.7E-09
	2-Amino-4,6-Dinitrotoluene	0.433	mg/kg	0.433	mg/kg	M	1.5E-08	mg/kg/day	NA	(mg/kg/day) -1	- -
	4-Amino-2,6-Dinitrotoluene	0.365	mg/kg	0.365	mg/kg	M	1.3E-08	mg/kg/day	NA	(mg/kg/day) -1	- -
	HMX	4.77	mg/kg	4.77	mg/kg	M	1.7E-07	mg/kg/day	NA	(mg/kg/day) -1	- -
	RDX	3.41	mg/kg	3.41	mg/kg	M	1.2E-07	mg/kg/day	1.1E-01	(mg/kg/day) -1	1.3E-08
	Barium	252	mg/kg	252	mg/kg	M	8.8E-06	mg/kg/day	NA	(mg/kg/day) -1	- -
	Cadmium	1.19	mg/kg	1.19	mg/kg	M	4.2E-08	mg/kg/day	NA	(mg/kg/day) -1	- -
	Chromium	26.4	mg/kg	26.4	mg/kg	M	9.2E-07	mg/kg/day	NA	(mg/kg/day) -1	- -
	Iron	26855	mg/kg	26855	mg/kg	M	9.4E-04	mg/kg/day	NA	(mg/kg/day) -1	- -
	Lead	358	mg/kg	358	mg/kg	M	1.2E-05	mg/kg/day	NA	(mg/kg/day) -1	- -
	(Total)										5.5E-08
Dermal	2,3,7,8-TCDD Equivalents	0.0000074	mg/kg	0.0000074	mg/kg	M	9.8E-14	mg/kg/day	1.5E+05	(mg/kg/day) -1	1.5E-08
	2,4,6-Trinitrotoluene	2.62	mg/kg	2.62	mg/kg	M	1.2E-07	mg/kg/day	3.0E-02	(mg/kg/day) -1	3.5E-09
	2-Amino-4,6-Dinitrotoluene	0.433	mg/kg	0.433	mg/kg	M	1.9E-08	mg/kg/day	NA	(mg/kg/day) -1	- -
	4-Amino-2,6-Dinitrotoluene	0.365	mg/kg	0.365	mg/kg	M	1.6E-08	mg/kg/day	NA	(mg/kg/day) -1	- -
	HMX	4.77	mg/kg	4.77	mg/kg	M	2.1E-07	mg/kg/day	NA	(mg/kg/day) -1	- -
	RDX	3.41	mg/kg	3.41	mg/kg	M	1.5E-07	mg/kg/day	1.1E-01	(mg/kg/day) -1	1.7E-08
	Barium	252	mg/kg	252	mg/kg	M	0.0E+00	mg/kg/day	NA	(mg/kg/day) -1	- -
	Cadmium	1.19	mg/kg	1.19	mg/kg	M	5.3E-10	mg/kg/day	NA	(mg/kg/day) -1	- -
	Chromium	26.4	mg/kg	26.4	mg/kg	M	0.0E+00	mg/kg/day	NA	(mg/kg/day) -1	- -
	Iron	26855	mg/kg	26855	mg/kg	M	0.0E+00	mg/kg/day	NA	(mg/kg/day) -1	- -
	Lead	358	mg/kg	358	mg/kg	M	0.0E+00	mg/kg/day	NA	(mg/kg/day) -1	- -
	(Total)										3.5E-08
										Total Risk Across All Exposure Routes/Pathways	8.9E-08

(1) Medium-Specific (M) EPC selected for risk calculation.

TABLE 8.36
CALCULATION OF CANCER RISKS
CENTRAL TENDENCY EXPOSURES
NSWC CRANE, INDIANA

Scenario Timeframe: Future
Medium: Surface Soil
Exposure Medium: Surface Soil
Exposure Point: SWMU 3 - Old Jeep Trail
Receptor Population: Recreational Users
Receptor Age: Adult

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Risk Calculation (1)	Intake (Cancer)	Intake (Cancer) Units	Cancer Slope Factor	Cancer Slope Factor Units	Cancer Risk
Ingestion	2,3,7,8-TCDD Equivalents	0.0000074	mg/kg	0.0000074	mg/kg	M	1.9E-14	mg/kg/day	1.5E+05	(mg/kg/day) -1	2.8E-09
	2,4,6-Trinitrotoluene	2.62	mg/kg	2.62	mg/kg	M	6.7E-09	mg/kg/day	3.0E-02	(mg/kg/day) -1	2.0E-10
	2-Amino-4,6-Dinitrotoluene	0.433	mg/kg	0.433	mg/kg	M	1.1E-09	mg/kg/day	NA	(mg/kg/day) -1	- -
	4-Amino-2,6-Dinitrotoluene	0.365	mg/kg	0.365	mg/kg	M	9.3E-10	mg/kg/day	NA	(mg/kg/day) -1	- -
	HMX	4.77	mg/kg	4.77	mg/kg	M	1.2E-08	mg/kg/day	NA	(mg/kg/day) -1	- -
	RDX	3.41	mg/kg	3.41	mg/kg	M	8.7E-09	mg/kg/day	1.1E-01	(mg/kg/day) -1	9.5E-10
	Barium	252	mg/kg	252	mg/kg	M	6.4E-07	mg/kg/day	NA	(mg/kg/day) -1	- -
	Cadmium	1.19	mg/kg	1.19	mg/kg	M	3.0E-09	mg/kg/day	NA	(mg/kg/day) -1	- -
	Chromium	26.4	mg/kg	26.4	mg/kg	M	6.7E-08	mg/kg/day	NA	(mg/kg/day) -1	- -
	Iron	26855	mg/kg	26855	mg/kg	M	6.8E-05	mg/kg/day	NA	(mg/kg/day) -1	- -
	Lead	358	mg/kg	358	mg/kg	M	9.1E-07	mg/kg/day	NA	(mg/kg/day) -1	- -
	(Total)										4.0E-09
Dermal	2,3,7,8-TCDD Equivalents	0.0000074	mg/kg	0.0000074	mg/kg	M	2.0E-15	mg/kg/day	1.5E+05	(mg/kg/day) -1	3.1E-10
	2,4,6-Trinitrotoluene	2.62	mg/kg	2.62	mg/kg	M	2.4E-09	mg/kg/day	3.0E-02	(mg/kg/day) -1	7.3E-11
	2-Amino-4,6-Dinitrotoluene	0.433	mg/kg	0.433	mg/kg	M	4.0E-10	mg/kg/day	NA	(mg/kg/day) -1	- -
	4-Amino-2,6-Dinitrotoluene	0.365	mg/kg	0.365	mg/kg	M	3.4E-10	mg/kg/day	NA	(mg/kg/day) -1	- -
	HMX	4.77	mg/kg	4.77	mg/kg	M	4.4E-09	mg/kg/day	NA	(mg/kg/day) -1	- -
	RDX	3.41	mg/kg	3.41	mg/kg	M	3.1E-09	mg/kg/day	1.1E-01	(mg/kg/day) -1	3.5E-10
	Barium	252	mg/kg	252	mg/kg	M	0.0E+00	mg/kg/day	NA	(mg/kg/day) -1	- -
	Cadmium	1.19	mg/kg	1.19	mg/kg	M	1.1E-11	mg/kg/day	NA	(mg/kg/day) -1	- -
	Chromium	26.4	mg/kg	26.4	mg/kg	M	0.0E+00	mg/kg/day	NA	(mg/kg/day) -1	- -
	Iron	26855	mg/kg	26855	mg/kg	M	0.0E+00	mg/kg/day	NA	(mg/kg/day) -1	- -
	Lead	358	mg/kg	358	mg/kg	M	0.0E+00	mg/kg/day	NA	(mg/kg/day) -1	- -
	(Total)										7.3E-10
										Total Risk Across All Exposure Routes/Pathways	4.7E-09

(1) Medium-Specific (M) EPC selected for risk calculation.

TABLE 8.37
CALCULATION OF CANCER RISKS
REASONABLE MAXIMUM EXPOSURE
NSWC CRANE, INDIANA

Scenario Timeframe: Future
Medium: Ground Water
Exposure Medium: Ground Water
Exposure Point: SWMU 3 - Shallow Ground Water
Receptor Population: Recreational Users
Receptor Age: Adult

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Risk Calculation (1)	Intake (Cancer)	Intake (Cancer) Units	Cancer Slope Factor	Cancer Slope Factor Units	Cancer Risk
Ingestion	1,1,2,2-Tetrachloroethane	42.7	ug/L	42.7	ug/L	M	3.0E-05	mg/kg/day	2.0E-01	(mg/kg/day) -1	6.0E-06
	1,1,2-Trichloroethane	1.11	ug/L	1.11	ug/L	M	7.7E-07	mg/kg/day	5.7E-02	(mg/kg/day) -1	4.4E-08
	1,1-Dichloroethene	0.213	ug/L	0.213	ug/L	M	1.5E-07	mg/kg/day	6.0E-01	(mg/kg/day) -1	8.9E-08
	cis-1,2-Dichloroethene	11.3	ug/L	11.3	ug/L	M	7.9E-06	mg/kg/day	NA	(mg/kg/day) -1	- -
	Tetrachloroethene	0.617	ug/L	0.617	ug/L	M	4.3E-07	mg/kg/day	5.2E-02	(mg/kg/day) -1	2.2E-08
	trans-1,2-Dichloroethene	2.87	ug/L	2.87	ug/L	M	2.0E-06	mg/kg/day	NA	(mg/kg/day) -1	- -
	Trichloroethene	48.9	ug/L	48.9	ug/L	M	3.4E-05	mg/kg/day	4.0E-01	(mg/kg/day) -1	1.4E-05
	Vinyl Chloride	0.400	ug/L	0.400	ug/L	M	2.8E-07	mg/kg/day	7.2E-01	(mg/kg/day) -1	2.0E-07
	2,4,6-Trinitrotoluene	1.30	ug/L	1.30	ug/L	M	9.0E-07	mg/kg/day	3.0E-02	(mg/kg/day) -1	2.7E-08
	2-Amino-4,6-Dinitrotoluene	0.409	ug/L	0.409	ug/L	M	2.9E-07	mg/kg/day	NA	(mg/kg/day) -1	- -
	4-Amino-2,6-Dinitrotoluene	1.03	ug/L	1.03	ug/L	M	7.2E-07	mg/kg/day	NA	(mg/kg/day) -1	- -
	RDX	27.2	ug/L	27.2	ug/L	M	1.9E-05	mg/kg/day	1.1E-01	(mg/kg/day) -1	2.1E-06
	Aluminum	95.3	ug/L	95.3	ug/L	M	6.7E-05	mg/kg/day	NA	(mg/kg/day) -1	- -
	Barium	87.8	ug/L	87.8	ug/L	M	6.1E-05	mg/kg/day	NA	(mg/kg/day) -1	- -
	Cadmium	1.78	ug/L	1.78	ug/L	M	1.2E-06	mg/kg/day	NA	(mg/kg/day) -1	- -
	Chromium	7.02	ug/L	7.02	ug/L	M	4.9E-06	mg/kg/day	NA	(mg/kg/day) -1	- -
	Iron	505	ug/L	505	ug/L	M	3.5E-04	mg/kg/day	NA	(mg/kg/day) -1	- -
	Manganese	58.2	ug/L	58.2	ug/L	M	4.1E-05	mg/kg/day	NA	(mg/kg/day) -1	- -
	Nickel	8.86	ug/L	8.86	ug/L	M	6.2E-06	mg/kg/day	NA	(mg/kg/day) -1	- -
	Thallium	0.173	ug/L	0.173	ug/L	M	1.2E-07	mg/kg/day	NA	(mg/kg/day) -1	- -
	Nitrate	296	ug/L	296	ug/L	M	2.1E-04	mg/kg/day	NA	(mg/kg/day) -1	- -
	(Total)										2.2E-05
Dermal	1,1,2,2-Tetrachloroethane	42.7	ug/L	42.7	ug/L	M	2.5E-06	mg/kg/day	2.0E-01	(mg/kg/day) -1	5.0E-07
	1,1,2-Trichloroethane	1.11	ug/L	1.11	ug/L	M	4.8E-08	mg/kg/day	5.7E-02	(mg/kg/day) -1	2.7E-09
	1,1-Dichloroethene	0.213	ug/L	0.213	ug/L	M	1.3E-08	mg/kg/day	6.0E-01	(mg/kg/day) -1	8.0E-09
	cis-1,2-Dichloroethene	11.3	ug/L	11.3	ug/L	M	7.7E-07	mg/kg/day	NA	(mg/kg/day) -1	- -
	Tetrachloroethene	0.617	ug/L	0.617	ug/L	M	1.7E-07	mg/kg/day	5.2E-02	(mg/kg/day) -1	8.9E-09
	trans-1,2-Dichloroethene	2.87	ug/L	2.87	ug/L	M	1.2E-07	mg/kg/day	NA	(mg/kg/day) -1	- -
	Trichloroethene	48.9	ug/L	48.9	ug/L	M	3.8E-06	mg/kg/day	4.0E-01	(mg/kg/day) -1	1.5E-06
	Vinyl Chloride	0.400	ug/L	0.400	ug/L	M	9.6E-09	mg/kg/day	7.2E-01	(mg/kg/day) -1	6.9E-09
	2,4,6-Trinitrotoluene	1.30	ug/L	1.30	ug/L	M	1.5E-08	mg/kg/day	3.0E-02	(mg/kg/day) -1	4.6E-10
	2-Amino-4,6-Dinitrotoluene	0.409	ug/L	0.409	ug/L	M	2.7E-09	mg/kg/day	NA	(mg/kg/day) -1	- -
	4-Amino-2,6-Dinitrotoluene	1.03	ug/L	1.03	ug/L	M	6.7E-09	mg/kg/day	NA	(mg/kg/day) -1	- -
	RDX	27.2	ug/L	27.2	ug/L	M	1.1E-07	mg/kg/day	1.1E-01	(mg/kg/day) -1	1.2E-08
	Aluminum	95.3	ug/L	95.3	ug/L	M	1.5E-07	mg/kg/day	NA	(mg/kg/day) -1	- -
	Barium	87.8	ug/L	87.8	ug/L	M	1.4E-07	mg/kg/day	NA	(mg/kg/day) -1	- -
	Cadmium	1.78	ug/L	1.78	ug/L	M	2.8E-09	mg/kg/day	NA	(mg/kg/day) -1	- -
	Chromium	7.02	ug/L	7.02	ug/L	M	2.2E-08	mg/kg/day	NA	(mg/kg/day) -1	- -
	Iron	505	ug/L	505	ug/L	M	8.0E-07	mg/kg/day	NA	(mg/kg/day) -1	- -
	Manganese	58.2	ug/L	58.2	ug/L	M	9.2E-08	mg/kg/day	NA	(mg/kg/day) -1	- -
	Nickel	8.86	ug/L	8.86	ug/L	M	2.8E-09	mg/kg/day	NA	(mg/kg/day) -1	- -
	Thallium	0.173	ug/L	0.173	ug/L	M	2.7E-10	mg/kg/day	NA	(mg/kg/day) -1	- -
	Nitrate	296	ug/L	296	ug/L	M	4.7E-07	mg/kg/day	NA	(mg/kg/day) -1	- -
	(Total)										2.1E-06
										Total Risk Across All Exposure Routes/Pathways	2.4E-05

(1) Medium-Specific (M) EPC selected for risk calculation.

TABLE 8.38
CALCULATION OF CANCER RISKS
CENTRAL TENDENCY EXPOSURES
NSWC CRANE, INDIANA

Scenario Timeframe: Future
Medium: Ground Water
Exposure Medium: Ground Water
Exposure Point: SWMU 3 - Shallow Ground Water
Receptor Population: Recreational Users
Receptor Age: Adult

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Risk Calculation (1)	Intake (Cancer)	Intake (Cancer) Units	Cancer Slope Factor	Cancer Slope Factor Units	Cancer Risk
Ingestion	1,1,2,2-Tetrachloroethane	42.7	ug/L	42.7	ug/L	M	4.3E-06	mg/kg/day	2.0E-01	(mg/kg/day) -1	8.7E-07
	1,1,2-Trichloroethane	1.11	ug/L	1.11	ug/L	M	1.1E-07	mg/kg/day	5.7E-02	(mg/kg/day) -1	6.4E-09
	1,1-Dichloroethene	0.213	ug/L	0.213	ug/L	M	2.2E-08	mg/kg/day	6.0E-01	(mg/kg/day) -1	1.3E-08
	cis-1,2-Dichloroethene	11.3	ug/L	11.3	ug/L	M	1.1E-06	mg/kg/day	NA	(mg/kg/day) -1	- -
	Tetrachloroethene	0.617	ug/L	0.617	ug/L	M	6.3E-08	mg/kg/day	5.2E-02	(mg/kg/day) -1	3.3E-09
	trans-1,2-Dichloroethene	2.87	ug/L	2.87	ug/L	M	2.9E-07	mg/kg/day	NA	(mg/kg/day) -1	- -
	Trichloroethene	48.9	ug/L	48.9	ug/L	M	5.0E-06	mg/kg/day	4.0E-01	(mg/kg/day) -1	2.0E-06
	Vinyl Chloride	0.400	ug/L	0.400	ug/L	M	4.1E-08	mg/kg/day	7.2E-01	(mg/kg/day) -1	2.9E-08
	2,4,6-Trinitrotoluene	1.30	ug/L	1.30	ug/L	M	1.3E-07	mg/kg/day	3.0E-02	(mg/kg/day) -1	4.0E-09
	2-Amino-4,6-Dinitrotoluene	0.409	ug/L	0.409	ug/L	M	4.2E-08	mg/kg/day	NA	(mg/kg/day) -1	- -
	4-Amino-2,6-Dinitrotoluene	1.03	ug/L	1.03	ug/L	M	1.0E-07	mg/kg/day	NA	(mg/kg/day) -1	- -
	RDX	27.2	ug/L	27.2	ug/L	M	2.8E-06	mg/kg/day	1.1E-01	(mg/kg/day) -1	3.0E-07
	Aluminum	95.3	ug/L	95.3	ug/L	M	9.7E-06	mg/kg/day	NA	(mg/kg/day) -1	- -
	Barium	87.8	ug/L	87.8	ug/L	M	8.9E-06	mg/kg/day	NA	(mg/kg/day) -1	- -
	Cadmium	1.78	ug/L	1.78	ug/L	M	1.8E-07	mg/kg/day	NA	(mg/kg/day) -1	- -
	Chromium	7.02	ug/L	7.02	ug/L	M	7.1E-07	mg/kg/day	NA	(mg/kg/day) -1	- -
	Iron	505	ug/L	505	ug/L	M	5.1E-05	mg/kg/day	NA	(mg/kg/day) -1	- -
	Manganese	58.2	ug/L	58.2	ug/L	M	5.9E-06	mg/kg/day	NA	(mg/kg/day) -1	- -
	Nickel	8.86	ug/L	8.86	ug/L	M	9.0E-07	mg/kg/day	NA	(mg/kg/day) -1	- -
	Thallium	0.173	ug/L	0.173	ug/L	M	1.8E-08	mg/kg/day	NA	(mg/kg/day) -1	- -
	Nitrate	296	ug/L	296	ug/L	M	3.0E-05	mg/kg/day	NA	(mg/kg/day) -1	- -
	(Total)										3.2E-06
Dermal	1,1,2,2-Tetrachloroethane	42.7	ug/L	42.7	ug/L	M	3.0E-07	mg/kg/day	2.0E-01	(mg/kg/day) -1	6.0E-08
	1,1,2-Trichloroethane	1.11	ug/L	1.11	ug/L	M	5.7E-09	mg/kg/day	5.7E-02	(mg/kg/day) -1	3.3E-10
	1,1-Dichloroethene	0.213	ug/L	0.213	ug/L	M	1.6E-09	mg/kg/day	6.0E-01	(mg/kg/day) -1	9.5E-10
	cis-1,2-Dichloroethene	11.3	ug/L	11.3	ug/L	M	9.1E-08	mg/kg/day	NA	(mg/kg/day) -1	- -
	Tetrachloroethene	0.617	ug/L	0.617	ug/L	M	2.0E-08	mg/kg/day	5.2E-02	(mg/kg/day) -1	1.1E-09
	trans-1,2-Dichloroethene	2.87	ug/L	2.87	ug/L	M	1.4E-08	mg/kg/day	NA	(mg/kg/day) -1	- -
	Trichloroethene	48.9	ug/L	48.9	ug/L	M	4.5E-07	mg/kg/day	4.0E-01	(mg/kg/day) -1	1.8E-07
	Vinyl Chloride	0.400	ug/L	0.400	ug/L	M	1.1E-09	mg/kg/day	7.2E-01	(mg/kg/day) -1	8.2E-10
	2,4,6-Trinitrotoluene	1.30	ug/L	1.30	ug/L	M	1.8E-09	mg/kg/day	3.0E-02	(mg/kg/day) -1	5.5E-11
	2-Amino-4,6-Dinitrotoluene	0.409	ug/L	0.409	ug/L	M	3.2E-10	mg/kg/day	NA	(mg/kg/day) -1	- -
	4-Amino-2,6-Dinitrotoluene	1.03	ug/L	1.03	ug/L	M	8.0E-10	mg/kg/day	NA	(mg/kg/day) -1	- -
	RDX	27.2	ug/L	27.2	ug/L	M	1.3E-08	mg/kg/day	1.1E-01	(mg/kg/day) -1	1.5E-09
	Aluminum	95.3	ug/L	95.3	ug/L	M	1.5E-08	mg/kg/day	NA	(mg/kg/day) -1	- -
	Barium	87.8	ug/L	87.8	ug/L	M	1.4E-08	mg/kg/day	NA	(mg/kg/day) -1	- -
	Cadmium	1.78	ug/L	1.78	ug/L	M	2.7E-10	mg/kg/day	NA	(mg/kg/day) -1	- -
	Chromium	7.02	ug/L	7.02	ug/L	M	2.2E-09	mg/kg/day	NA	(mg/kg/day) -1	- -
	Iron	505	ug/L	505	ug/L	M	7.8E-08	mg/kg/day	NA	(mg/kg/day) -1	- -
	Manganese	58.2	ug/L	58.2	ug/L	M	9.0E-09	mg/kg/day	NA	(mg/kg/day) -1	- -
	Nickel	8.86	ug/L	8.86	ug/L	M	2.7E-10	mg/kg/day	NA	(mg/kg/day) -1	- -
	Thallium	0.173	ug/L	0.173	ug/L	M	2.7E-11	mg/kg/day	NA	(mg/kg/day) -1	- -
	Nitrate	296	ug/L	296	ug/L	M	4.6E-08	mg/kg/day	NA	(mg/kg/day) -1	- -
	(Total)										2.5E-07
										Total Risk Across All Exposure Routes/Pathways	3.5E-06

(1) Medium-Specific (M) EPC selected for risk calculation.

TABLE 8.39
CALCULATION OF CANCER RISKS
REASONABLE MAXIMUM EXPOSURE
NSWC CRANE, INDIANA

Scenario Timeframe: Future
Medium: Surface Water
Exposure Medium: Surface Water
Exposure Point: SWMU 3 - Little Sulphur Creek
Receptor Population: Recreational Users
Receptor Age: Adult

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Risk Calculation (1)	Intake (Cancer)	Intake (Cancer) Units	Cancer Slope Factor	Cancer Slope Factor Units	Cancer Risk
Ingestion	Acetone	64.0	ug/L	64.0	ug/L	M	1.8E-06	mg/kg/day	NA	(mg/kg/day) -1	- -
	Bromomethane	0.529	ug/L	0.529	ug/L	M	1.5E-08	mg/kg/day	NA	(mg/kg/day) -1	- -
	Methylene Chloride	3.23	ug/L	3.23	ug/L	M	9.0E-08	mg/kg/day	7.5E-03	(mg/kg/day) -1	6.8E-10
	Bis(2-ethylhexyl)phthalate	1.36	ug/L	1.36	ug/L	M	3.8E-08	mg/kg/day	1.4E-02	(mg/kg/day) -1	5.3E-10
	Pentachlorophenol	0.059	ug/L	0.059	ug/L	M	1.7E-09	mg/kg/day	1.2E-01	(mg/kg/day) -1	2.0E-10
	2-Amino-4,6-Dinitrotoluene	0.384	ug/L	0.384	ug/L	M	1.1E-08	mg/kg/day	NA	(mg/kg/day) -1	- -
	4-Amino-2,6-Dinitrotoluene	1.06	ug/L	1.06	ug/L	M	3.0E-08	mg/kg/day	NA	(mg/kg/day) -1	- -
	RDX	63.0	ug/L	63.0	ug/L	M	1.8E-06	mg/kg/day	1.1E-01	(mg/kg/day) -1	1.9E-07
	Antimony	0.784	ug/L	0.784	ug/L	M	2.2E-08	mg/kg/day	NA	(mg/kg/day) -1	- -
	Lead	29.1	ug/L	29.1	ug/L	M	8.1E-07	mg/kg/day	NA	(mg/kg/day) -1	- -
	(Total)										1.9E-07
Dermal	Acetone	64.0	ug/L	64.0	ug/L	M	9.4E-07	mg/kg/day	NA	(mg/kg/day) -1	- -
	Bromomethane	0.529	ug/L	0.529	ug/L	M	4.5E-08	mg/kg/day	NA	(mg/kg/day) -1	- -
	Methylene Chloride	3.23	ug/L	3.23	ug/L	M	3.3E-07	mg/kg/day	7.5E-03	(mg/kg/day) -1	2.5E-09
	Bis(2-ethylhexyl)phthalate	1.36	ug/L	1.36	ug/L	M	3.9E-06	mg/kg/day	1.4E-02	(mg/kg/day) -1	5.4E-08
	Pentachlorophenol	0.059	ug/L	0.059	ug/L	M	1.3E-06	mg/kg/day	1.2E-01	(mg/kg/day) -1	1.6E-07
	2-Amino-4,6-Dinitrotoluene	0.384	ug/L	0.384	ug/L	M	1.0E-08	mg/kg/day	NA	(mg/kg/day) -1	- -
	4-Amino-2,6-Dinitrotoluene	1.06	ug/L	1.06	ug/L	M	2.9E-08	mg/kg/day	NA	(mg/kg/day) -1	- -
	RDX	63.0	ug/L	63.0	ug/L	M	1.0E-06	mg/kg/day	1.1E-01	(mg/kg/day) -1	1.1E-07
	Antimony	0.784	ug/L	0.784	ug/L	M	2.0E-08	mg/kg/day	NA	(mg/kg/day) -1	- -
	Lead	29.1	ug/L	29.1	ug/L	M	7.4E-07	mg/kg/day	NA	(mg/kg/day) -1	- -
	(Total)										3.3E-07
										Total Risk Across All Exposure Routes/Pathways	5.3E-07

(1) Medium-Specific (M) EPC selected for risk calculation.

TABLE 8.40
CALCULATION OF CANCER RISKS
CENTRAL TENDENCY EXPOSURES
NSWC CRANE, INDIANA

Scenario Timeframe: Future
Medium: Surface Water
Exposure Medium: Surface Water
Exposure Point: SWMU 3 - Little Sulphur Creek
Receptor Population: Recreational Users
Receptor Age: Adult

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Risk Calculation (1)	Intake (Cancer)	Intake (Cancer) Units	Cancer Slope Factor	Cancer Slope Factor Units	Cancer Risk
Ingestion	Acetone	64.0	ug/L	64.0	ug/L	M	1.3E-07	mg/kg/day	NA	(mg/kg/day) -1	- -
	Bromomethane	0.529	ug/L	0.529	ug/L	M	1.1E-09	mg/kg/day	NA	(mg/kg/day) -1	- -
	Methylene Chloride	3.23	ug/L	3.23	ug/L	M	6.6E-09	mg/kg/day	7.5E-03	(mg/kg/day) -1	4.9E-11
	Bis(2-ethylhexyl)phthalate	1.36	ug/L	1.36	ug/L	M	2.8E-09	mg/kg/day	1.4E-02	(mg/kg/day) -1	3.9E-11
	Pentachlorophenol	0.059	ug/L	0.059	ug/L	M	1.2E-10	mg/kg/day	1.2E-01	(mg/kg/day) -1	1.4E-11
	2-Amino-4,6-Dinitrotoluene	0.384	ug/L	0.384	ug/L	M	7.8E-10	mg/kg/day	NA	(mg/kg/day) -1	- -
	4-Amino-2,6-Dinitrotoluene	1.06	ug/L	1.06	ug/L	M	2.2E-09	mg/kg/day	NA	(mg/kg/day) -1	- -
	RDX	63.0	ug/L	63.0	ug/L	M	1.3E-07	mg/kg/day	1.1E-01	(mg/kg/day) -1	1.4E-08
	Antimony	0.784	ug/L	0.784	ug/L	M	1.6E-09	mg/kg/day	NA	(mg/kg/day) -1	- -
	Lead	29.1	ug/L	29.1	ug/L	M	5.9E-08	mg/kg/day	NA	(mg/kg/day) -1	- -
	(Total)										1.4E-08
Dermal	Acetone	64.0	ug/L	64.0	ug/L	M	7.5E-08	mg/kg/day	NA	(mg/kg/day) -1	- -
	Bromomethane	0.529	ug/L	0.529	ug/L	M	3.8E-09	mg/kg/day	NA	(mg/kg/day) -1	- -
	Methylene Chloride	3.23	ug/L	3.23	ug/L	M	2.8E-08	mg/kg/day	7.5E-03	(mg/kg/day) -1	2.1E-10
	Bis(2-ethylhexyl)phthalate	1.36	ug/L	1.36	ug/L	M	4.0E-07	mg/kg/day	1.4E-02	(mg/kg/day) -1	5.6E-09
	Pentachlorophenol	0.059	ug/L	0.059	ug/L	M	1.4E-07	mg/kg/day	1.2E-01	(mg/kg/day) -1	1.7E-08
	2-Amino-4,6-Dinitrotoluene	0.384	ug/L	0.384	ug/L	M	1.0E-09	mg/kg/day	NA	(mg/kg/day) -1	- -
	4-Amino-2,6-Dinitrotoluene	1.06	ug/L	1.06	ug/L	M	2.8E-09	mg/kg/day	NA	(mg/kg/day) -1	- -
	RDX	63.0	ug/L	63.0	ug/L	M	1.1E-07	mg/kg/day	1.1E-01	(mg/kg/day) -1	1.2E-08
	Antimony	0.784	ug/L	0.784	ug/L	M	1.4E-09	mg/kg/day	NA	(mg/kg/day) -1	- -
	Lead	29.1	ug/L	29.1	ug/L	M	5.4E-08	mg/kg/day	NA	(mg/kg/day) -1	- -
	(Total)										3.4E-08
										Total Risk Across All Exposure Routes/Pathways	4.8E-08

(1) Medium-Specific (M) EPC selected for risk calculation.

TABLE 8.41
CALCULATION OF CANCER RISKS
REASONABLE MAXIMUM EXPOSURE
NSWC CRANE, INDIANA

Scenario Timeframe: Future
Medium: Sediment
Exposure Medium: Sediment
Exposure Point: SWMU 3 - Little Sulphur Creek
Receptor Population: Recreational Users
Receptor Age: Adult

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Risk Calculation (1)	Intake (Cancer)	Intake (Cancer) Units	Cancer Slope Factor	Cancer Slope Factor Units	Cancer Risk
Ingestion	2-Amino-4,6-Dinitrotoluene	0.178	mg/kg	0.178	mg/kg	M	6.2E-09	mg/kg/day	NA	(mg/kg/day) -1	- -
	Aluminum	14916	mg/kg	14916	mg/kg	M	5.2E-04	mg/kg/day	NA	(mg/kg/day) -1	- -
	Antimony	2.88	mg/kg	2.88	mg/kg	M	1.0E-07	mg/kg/day	NA	(mg/kg/day) -1	- -
	Barium	359	mg/kg	359	mg/kg	M	1.3E-05	mg/kg/day	NA	(mg/kg/day) -1	- -
	Cadmium	1.78	mg/kg	1.78	mg/kg	M	6.2E-08	mg/kg/day	NA	(mg/kg/day) -1	- -
	Lead	120	mg/kg	120	mg/kg	M	4.2E-06	mg/kg/day	NA	(mg/kg/day) -1	- -
	(Total)										- -
Dermal	2-Amino-4,6-Dinitrotoluene	0.178	mg/kg	0.178	mg/kg	M	7.9E-09	mg/kg/day	NA	(mg/kg/day) -1	- -
	Aluminum	14916	mg/kg	14916	mg/kg	M	0.0E+00	mg/kg/day	NA	(mg/kg/day) -1	- -
	Antimony	2.88	mg/kg	2.88	mg/kg	M	0.0E+00	mg/kg/day	NA	(mg/kg/day) -1	- -
	Barium	359	mg/kg	359	mg/kg	M	0.0E+00	mg/kg/day	NA	(mg/kg/day) -1	- -
	Cadmium	1.78	mg/kg	1.78	mg/kg	M	7.9E-10	mg/kg/day	NA	(mg/kg/day) -1	- -
	Lead	120	mg/kg	120	mg/kg	M	0.0E+00	mg/kg/day	NA	(mg/kg/day) -1	- -
	(Total)										- -
										Total Risk Across All Exposure Routes/Pathways	- -

(1) Medium-Specific (M) EPC selected for risk calculation.

TABLE 8.42
CALCULATION OF CANCER RISKS
CENTRAL TENDENCY EXPOSURES
NSWC CRANE, INDIANA

Scenario Timeframe: Future
Medium: Sediment
Exposure Medium: Sediment
Exposure Point: SWMU 3 - Little Sulphur Creek
Receptor Population: Recreational Users
Receptor Age: Adult

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Risk Calculation (1)	Intake (Cancer)	Intake (Cancer) Units	Cancer Slope Factor	Cancer Slope Factor Units	Cancer Risk
Ingestion	2-Amino-4,6-Dinitrotoluene	0.178	mg/kg	0.178	mg/kg	M	4.5E-10	mg/kg/day	NA	(mg/kg/day) -1	- -
	Aluminum	14916	mg/kg	14916	mg/kg	M	3.8E-05	mg/kg/day	NA	(mg/kg/day) -1	- -
	Antimony	2.88	mg/kg	2.88	mg/kg	M	7.3E-09	mg/kg/day	NA	(mg/kg/day) -1	- -
	Barium	359	mg/kg	359	mg/kg	M	9.1E-07	mg/kg/day	NA	(mg/kg/day) -1	- -
	Cadmium	1.78	mg/kg	1.78	mg/kg	M	4.5E-09	mg/kg/day	NA	(mg/kg/day) -1	- -
	Lead	120	mg/kg	120	mg/kg	M	3.1E-07	mg/kg/day	NA	(mg/kg/day) -1	- -
	(Total)										- -
Dermal	2-Amino-4,6-Dinitrotoluene	0.178	mg/kg	0.178	mg/kg	M	1.6E-10	mg/kg/day	NA	(mg/kg/day) -1	- -
	Aluminum	14916	mg/kg	14916	mg/kg	M	0.0E+00	mg/kg/day	NA	(mg/kg/day) -1	- -
	Antimony	2.88	mg/kg	2.88	mg/kg	M	0.0E+00	mg/kg/day	NA	(mg/kg/day) -1	- -
	Barium	359	mg/kg	359	mg/kg	M	0.0E+00	mg/kg/day	NA	(mg/kg/day) -1	- -
	Cadmium	1.78	mg/kg	1.78	mg/kg	M	1.6E-11	mg/kg/day	NA	(mg/kg/day) -1	- -
	Lead	120	mg/kg	120	mg/kg	M	0.0E+00	mg/kg/day	NA	(mg/kg/day) -1	- -
	(Total)										- -
										Total Risk Across All Exposure Routes/Pathways	- -

(1) Medium-Specific (M) EPC selected for risk calculation.

TABLE 8.43
CALCULATION OF CANCER RISKS
REASONABLE MAXIMUM EXPOSURE
NSWC CRANE, INDIANA

Scenario Timeframe: Future
Medium: Surface Soil
Exposure Medium: Surface Soil
Exposure Point: SWMU 3 - 1 Acre Exposure Unit
Receptor Population: On-Site Resident
Receptor Age: Child

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Risk Calculation (1)	Intake (Cancer)	Intake (Cancer) Units	Cancer Slope Factor	Cancer Slope Factor Units	Cancer Risk
Ingestion	2,3,7,8-TCDD Equivalents	0.0000074	mg/kg	0.0000074	mg/kg	M	8.1E-12	mg/kg/day	1.5E+05	(mg/kg/day) -1	1.2E-06
	2,4,6-Trinitrotoluene	581	mg/kg	581	mg/kg	M	6.4E-04	mg/kg/day	3.0E-02	(mg/kg/day) -1	1.9E-05
	2-Amino-4,6-Dinitrotoluene	2.36	mg/kg	2.36	mg/kg	M	2.6E-06	mg/kg/day	NA	(mg/kg/day) -1	- -
	4-Amino-2,6-Dinitrotoluene	1.44	mg/kg	1.44	mg/kg	M	1.6E-06	mg/kg/day	NA	(mg/kg/day) -1	- -
	HMX	291	mg/kg	291	mg/kg	M	3.2E-04	mg/kg/day	NA	(mg/kg/day) -1	- -
	RDX	522	mg/kg	522	mg/kg	M	5.7E-04	mg/kg/day	1.1E-01	(mg/kg/day) -1	6.3E-05
	Barium	235	mg/kg	235	mg/kg	M	2.6E-04	mg/kg/day	NA	(mg/kg/day) -1	- -
	Cadmium	4.40	mg/kg	4.40	mg/kg	M	4.8E-06	mg/kg/day	NA	(mg/kg/day) -1	- -
	Chromium	14.6	mg/kg	14.6	mg/kg	M	1.6E-05	mg/kg/day	NA	(mg/kg/day) -1	- -
	Iron	21431	mg/kg	21431	mg/kg	M	2.3E-02	mg/kg/day	NA	(mg/kg/day) -1	- -
	Lead	1324	mg/kg	1324	mg/kg	M	1.5E-03	mg/kg/day	NA	(mg/kg/day) -1	- -
	(Total)										8.3E-05
Dermal	2,3,7,8-TCDD Equivalents	0.0000074	mg/kg	0.0000074	mg/kg	M	6.8E-13	mg/kg/day	1.5E+05	(mg/kg/day) -1	1.0E-07
	2,4,6-Trinitrotoluene	581	mg/kg	581	mg/kg	M	1.8E-04	mg/kg/day	3.0E-02	(mg/kg/day) -1	5.3E-06
	2-Amino-4,6-Dinitrotoluene	2.36	mg/kg	2.36	mg/kg	M	7.2E-07	mg/kg/day	NA	(mg/kg/day) -1	- -
	4-Amino-2,6-Dinitrotoluene	1.44	mg/kg	1.44	mg/kg	M	4.4E-07	mg/kg/day	NA	(mg/kg/day) -1	- -
	HMX	291	mg/kg	291	mg/kg	M	8.9E-05	mg/kg/day	NA	(mg/kg/day) -1	- -
	RDX	522	mg/kg	522	mg/kg	M	1.6E-04	mg/kg/day	1.1E-01	(mg/kg/day) -1	1.8E-05
	Barium	235	mg/kg	235	mg/kg	M	0.0E+00	mg/kg/day	NA	(mg/kg/day) -1	- -
	Cadmium	4.40	mg/kg	4.40	mg/kg	M	1.4E-08	mg/kg/day	NA	(mg/kg/day) -1	- -
	Chromium	14.6	mg/kg	14.6	mg/kg	M	0.0E+00	mg/kg/day	NA	(mg/kg/day) -1	- -
	Iron	21431	mg/kg	21431	mg/kg	M	0.0E+00	mg/kg/day	NA	(mg/kg/day) -1	- -
	Lead	1324	mg/kg	1324	mg/kg	M	0.0E+00	mg/kg/day	NA	(mg/kg/day) -1	- -
	(Total)										2.3E-05
										Total Risk Across All Exposure Routes/Pathways	1.1E-04

(1) Medium-Specific (M) EPC selected for risk calculation.

TABLE 8.44
CALCULATION OF CANCER RISKS
CENTRAL TENDENCY EXPOSURES
NSWC CRANE, INDIANA

Scenario Timeframe: Future
Medium: Surface Soil
Exposure Medium: Surface Soil
Exposure Point: SWMU 3 - 1 Acre Exposure Unit
Receptor Population: On-Site Resident
Receptor Age: Child

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Risk Calculation (1)	Intake (Cancer)	Intake (Cancer) Units	Cancer Slope Factor	Cancer Slope Factor Units	Cancer Risk
Ingestion	2,3,7,8-TCDD Equivalents	0.0000074	mg/kg	0.0000074	mg/kg	M	9.0E-13	mg/kg/day	1.5E+05	(mg/kg/day) -1	1.4E-07
	2,4,6-Trinitrotoluene	581	mg/kg	581	mg/kg	M	7.1E-05	mg/kg/day	3.0E-02	(mg/kg/day) -1	2.1E-06
	2-Amino-4,6-Dinitrotoluene	2.36	mg/kg	2.36	mg/kg	M	2.9E-07	mg/kg/day	NA	(mg/kg/day) -1	- -
	4-Amino-2,6-Dinitrotoluene	1.44	mg/kg	1.44	mg/kg	M	1.8E-07	mg/kg/day	NA	(mg/kg/day) -1	- -
	HMX	291	mg/kg	291	mg/kg	M	3.6E-05	mg/kg/day	NA	(mg/kg/day) -1	- -
	RDX	522	mg/kg	522	mg/kg	M	6.4E-05	mg/kg/day	1.1E-01	(mg/kg/day) -1	7.0E-06
	Barium	235	mg/kg	235	mg/kg	M	2.9E-05	mg/kg/day	NA	(mg/kg/day) -1	- -
	Cadmium	4.40	mg/kg	4.40	mg/kg	M	5.4E-07	mg/kg/day	NA	(mg/kg/day) -1	- -
	Chromium	14.6	mg/kg	14.6	mg/kg	M	1.8E-06	mg/kg/day	NA	(mg/kg/day) -1	- -
	Iron	21431	mg/kg	21431	mg/kg	M	2.6E-03	mg/kg/day	NA	(mg/kg/day) -1	- -
	Lead	1324	mg/kg	1324	mg/kg	M	1.6E-04	mg/kg/day	NA	(mg/kg/day) -1	- -
	(Total)										9.3E-06
Dermal	2,3,7,8-TCDD Equivalents	0.0000074	mg/kg	0.0000074	mg/kg	M	3.0E-14	mg/kg/day	1.5E+05	(mg/kg/day) -1	4.6E-09
	2,4,6-Trinitrotoluene	581	mg/kg	581	mg/kg	M	7.9E-06	mg/kg/day	3.0E-02	(mg/kg/day) -1	2.4E-07
	2-Amino-4,6-Dinitrotoluene	2.36	mg/kg	2.36	mg/kg	M	3.2E-08	mg/kg/day	NA	(mg/kg/day) -1	- -
	4-Amino-2,6-Dinitrotoluene	1.44	mg/kg	1.44	mg/kg	M	2.0E-08	mg/kg/day	NA	(mg/kg/day) -1	- -
	HMX	291	mg/kg	291	mg/kg	M	4.0E-06	mg/kg/day	NA	(mg/kg/day) -1	- -
	RDX	522	mg/kg	522	mg/kg	M	7.1E-06	mg/kg/day	1.1E-01	(mg/kg/day) -1	7.9E-07
	Barium	235	mg/kg	235	mg/kg	M	0.0E+00	mg/kg/day	NA	(mg/kg/day) -1	- -
	Cadmium	4.40	mg/kg	4.40	mg/kg	M	6.0E-10	mg/kg/day	NA	(mg/kg/day) -1	- -
	Chromium	14.6	mg/kg	14.6	mg/kg	M	0.0E+00	mg/kg/day	NA	(mg/kg/day) -1	- -
	Iron	21431	mg/kg	21431	mg/kg	M	0.0E+00	mg/kg/day	NA	(mg/kg/day) -1	- -
	Lead	1324	mg/kg	1324	mg/kg	M	0.0E+00	mg/kg/day	NA	(mg/kg/day) -1	- -
	(Total)										1.0E-06
										Total Risk Across All Exposure Routes/Pathways	1.0E-05

(1) Medium-Specific (M) EPC selected for risk calculation.

TABLE 8.45
CALCULATION OF CANCER RISKS
REASONABLE MAXIMUM EXPOSURE
NSWC CRANE, INDIANA

Scenario Timeframe: Future
Medium: Surface Soil
Exposure Medium: Surface Soil
Exposure Point: SWMU 3 - 6-Acre Exposure Unit
Receptor Population: On-Site Resident
Receptor Age: Child

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Risk Calculation (1)	Intake (Cancer)	Intake (Cancer) Units	Cancer Slope Factor	Cancer Slope Factor Units	Cancer Risk
Ingestion	2,3,7,8-TCDD Equivalents	0.0000074	mg/kg	0.0000074	mg/kg	M	8.1E-12	mg/kg/day	1.5E+05	(mg/kg/day) -1	1.2E-06
	2,4,6-Trinitrotoluene	2.62	mg/kg	2.62	mg/kg	M	2.9E-06	mg/kg/day	3.0E-02	(mg/kg/day) -1	8.6E-08
	2-Amino-4,6-Dinitrotoluene	0.433	mg/kg	0.433	mg/kg	M	4.7E-07	mg/kg/day	NA	(mg/kg/day) -1	- -
	4-Amino-2,6-Dinitrotoluene	0.365	mg/kg	0.365	mg/kg	M	4.0E-07	mg/kg/day	NA	(mg/kg/day) -1	- -
	HMX	4.77	mg/kg	4.77	mg/kg	M	5.2E-06	mg/kg/day	NA	(mg/kg/day) -1	- -
	RDX	3.41	mg/kg	3.41	mg/kg	M	3.7E-06	mg/kg/day	1.1E-01	(mg/kg/day) -1	4.1E-07
	Barium	252	mg/kg	252	mg/kg	M	2.8E-04	mg/kg/day	NA	(mg/kg/day) -1	- -
	Cadmium	1.19	mg/kg	1.19	mg/kg	M	1.3E-06	mg/kg/day	NA	(mg/kg/day) -1	- -
	Chromium	26.4	mg/kg	26.4	mg/kg	M	2.9E-05	mg/kg/day	NA	(mg/kg/day) -1	- -
	Iron	26855	mg/kg	26855	mg/kg	M	2.9E-02	mg/kg/day	NA	(mg/kg/day) -1	- -
	Lead	358	mg/kg	358	mg/kg	M	3.9E-04	mg/kg/day	NA	(mg/kg/day) -1	- -
	(Total)										1.7E-06
Dermal	2,3,7,8-TCDD Equivalents	0.0000074	mg/kg	0.0000074	mg/kg	M	6.8E-13	mg/kg/day	1.5E+05	(mg/kg/day) -1	1.0E-07
	2,4,6-Trinitrotoluene	2.62	mg/kg	2.62	mg/kg	M	8.1E-07	mg/kg/day	3.0E-02	(mg/kg/day) -1	2.4E-08
	2-Amino-4,6-Dinitrotoluene	0.433	mg/kg	0.433	mg/kg	M	1.3E-07	mg/kg/day	NA	(mg/kg/day) -1	- -
	4-Amino-2,6-Dinitrotoluene	0.365	mg/kg	0.365	mg/kg	M	1.1E-07	mg/kg/day	NA	(mg/kg/day) -1	- -
	HMX	4.77	mg/kg	4.77	mg/kg	M	1.5E-06	mg/kg/day	NA	(mg/kg/day) -1	- -
	RDX	3.41	mg/kg	3.41	mg/kg	M	1.0E-06	mg/kg/day	1.1E-01	(mg/kg/day) -1	1.2E-07
	Barium	252	mg/kg	252	mg/kg	M	0.0E+00	mg/kg/day	NA	(mg/kg/day) -1	- -
	Cadmium	1.19	mg/kg	1.19	mg/kg	M	3.7E-09	mg/kg/day	NA	(mg/kg/day) -1	- -
	Chromium	26.4	mg/kg	26.4	mg/kg	M	0.0E+00	mg/kg/day	NA	(mg/kg/day) -1	- -
	Iron	26855	mg/kg	26855	mg/kg	M	0.0E+00	mg/kg/day	NA	(mg/kg/day) -1	- -
	Lead	358	mg/kg	358	mg/kg	M	0.0E+00	mg/kg/day	NA	(mg/kg/day) -1	- -
	(Total)										2.4E-07
										Total Risk Across All Exposure Routes/Pathways	2.0E-06

(1) Medium-Specific (M) EPC selected for risk calculation.

TABLE 8.46
CALCULATION OF CANCER RISKS
CENTRAL TENDENCY EXPOSURES
NSWC CRANE, INDIANA

Scenario Timeframe: Future
Medium: Surface Soil
Exposure Medium: Surface Soil
Exposure Point: SWMU 3 - 6-Acre Exposure Unit
Receptor Population: On-Site Resident
Receptor Age: Child

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Risk Calculation (1)	Intake (Cancer)	Intake (Cancer) Units	Cancer Slope Factor	Cancer Slope Factor Units	Cancer Risk
Ingestion	2,3,7,8-TCDD Equivalents	0.0000074	mg/kg	0.0000074	mg/kg	M	9.0E-13	mg/kg/day	1.5E+05	(mg/kg/day) -1	1.4E-07
	2,4,6-Trinitrotoluene	2.62	mg/kg	2.62	mg/kg	M	3.2E-07	mg/kg/day	3.0E-02	(mg/kg/day) -1	9.6E-09
	2-Amino-4,6-Dinitrotoluene	0.433	mg/kg	0.433	mg/kg	M	5.3E-08	mg/kg/day	NA	(mg/kg/day) -1	- -
	4-Amino-2,6-Dinitrotoluene	0.365	mg/kg	0.365	mg/kg	M	4.5E-08	mg/kg/day	NA	(mg/kg/day) -1	- -
	HMX	4.77	mg/kg	4.77	mg/kg	M	5.8E-07	mg/kg/day	NA	(mg/kg/day) -1	- -
	RDX	3.41	mg/kg	3.41	mg/kg	M	4.2E-07	mg/kg/day	1.1E-01	(mg/kg/day) -1	4.6E-08
	Barium	252	mg/kg	252	mg/kg	M	3.1E-05	mg/kg/day	NA	(mg/kg/day) -1	- -
	Cadmium	1.19	mg/kg	1.19	mg/kg	M	1.5E-07	mg/kg/day	NA	(mg/kg/day) -1	- -
	Chromium	26.4	mg/kg	26.4	mg/kg	M	3.2E-06	mg/kg/day	NA	(mg/kg/day) -1	- -
	Iron	26855	mg/kg	26855	mg/kg	M	3.3E-03	mg/kg/day	NA	(mg/kg/day) -1	- -
	Lead	358	mg/kg	358	mg/kg	M	4.4E-05	mg/kg/day	NA	(mg/kg/day) -1	- -
	(Total)										1.9E-07
Dermal	2,3,7,8-TCDD Equivalents	0.0000074	mg/kg	0.0000074	mg/kg	M	3.0E-14	mg/kg/day	1.5E+05	(mg/kg/day) -1	4.6E-09
	2,4,6-Trinitrotoluene	2.62	mg/kg	2.62	mg/kg	M	3.6E-08	mg/kg/day	3.0E-02	(mg/kg/day) -1	1.1E-09
	2-Amino-4,6-Dinitrotoluene	0.433	mg/kg	0.433	mg/kg	M	5.9E-09	mg/kg/day	NA	(mg/kg/day) -1	- -
	4-Amino-2,6-Dinitrotoluene	0.365	mg/kg	0.365	mg/kg	M	5.0E-09	mg/kg/day	NA	(mg/kg/day) -1	- -
	HMX	4.77	mg/kg	4.77	mg/kg	M	6.5E-08	mg/kg/day	NA	(mg/kg/day) -1	- -
	RDX	3.41	mg/kg	3.41	mg/kg	M	4.7E-08	mg/kg/day	1.1E-01	(mg/kg/day) -1	5.1E-09
	Barium	252	mg/kg	252	mg/kg	M	0.0E+00	mg/kg/day	NA	(mg/kg/day) -1	- -
	Cadmium	1.19	mg/kg	1.19	mg/kg	M	1.6E-10	mg/kg/day	NA	(mg/kg/day) -1	- -
	Chromium	26.4	mg/kg	26.4	mg/kg	M	0.0E+00	mg/kg/day	NA	(mg/kg/day) -1	- -
	Iron	26855	mg/kg	26855	mg/kg	M	0.0E+00	mg/kg/day	NA	(mg/kg/day) -1	- -
	Lead	358	mg/kg	358	mg/kg	M	0.0E+00	mg/kg/day	NA	(mg/kg/day) -1	- -
	(Total)										1.1E-08
										Total Risk Across All Exposure Routes/Pathways	2.0E-07

(1) Medium-Specific (M) EPC selected for risk calculation.

TABLE 8.47
CALCULATION OF CANCER RISKS
REASONABLE MAXIMUM EXPOSURE
NSWC CRANE, INDIANA

Scenario Timeframe: Future
Medium: Ground Water
Exposure Medium: Ground Water
Exposure Point: SWMU 3 - Shallow Ground Water
Receptor Population: On-Site Resident
Receptor Age: Child

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Risk Calculation (1)	Intake (Cancer)	Intake (Cancer) Units	Cancer Slope Factor	Cancer Slope Factor Units	Cancer Risk
Ingestion	1,1,2,2-Tetrachloroethane	42.7	ug/L	42.7	ug/L	M	3.5E-04	mg/kg/day	2.0E-01	(mg/kg/day) -1	7.0E-05
	1,1,2-Trichloroethane	1.11	ug/L	1.11	ug/L	M	9.1E-06	mg/kg/day	5.7E-02	(mg/kg/day) -1	5.2E-07
	1,1-Dichloroethene	0.213	ug/L	0.213	ug/L	M	1.8E-06	mg/kg/day	6.0E-01	(mg/kg/day) -1	1.1E-06
	cis-1,2-Dichloroethene	11.3	ug/L	11.3	ug/L	M	9.3E-05	mg/kg/day	NA	(mg/kg/day) -1	- -
	Tetrachloroethene	0.617	ug/L	0.617	ug/L	M	5.1E-06	mg/kg/day	5.2E-02	(mg/kg/day) -1	2.6E-07
	trans-1,2-Dichloroethene	2.87	ug/L	2.87	ug/L	M	2.4E-05	mg/kg/day	NA	(mg/kg/day) -1	- -
	Trichloroethene	48.9	ug/L	48.9	ug/L	M	4.0E-04	mg/kg/day	4.0E-01	(mg/kg/day) -1	1.6E-04
	Vinyl Chloride	0.400	ug/L	0.400	ug/L	M	3.3E-06	mg/kg/day	7.2E-01	(mg/kg/day) -1	2.4E-06
	2,4,6-Trinitrotoluene	1.30	ug/L	1.30	ug/L	M	1.1E-05	mg/kg/day	3.0E-02	(mg/kg/day) -1	3.2E-07
	2-Amino-4,6-Dinitrotoluene	0.409	ug/L	0.409	ug/L	M	3.4E-06	mg/kg/day	NA	(mg/kg/day) -1	- -
	4-Amino-2,6-Dinitrotoluene	1.03	ug/L	1.03	ug/L	M	8.5E-06	mg/kg/day	NA	(mg/kg/day) -1	- -
	RDX	27.2	ug/L	27.2	ug/L	M	2.2E-04	mg/kg/day	1.1E-01	(mg/kg/day) -1	2.5E-05
	Aluminum	95.3	ug/L	95.3	ug/L	M	7.8E-04	mg/kg/day	NA	(mg/kg/day) -1	- -
	Barium	87.8	ug/L	87.8	ug/L	M	7.2E-04	mg/kg/day	NA	(mg/kg/day) -1	- -
	Cadmium	1.78	ug/L	1.78	ug/L	M	1.5E-05	mg/kg/day	NA	(mg/kg/day) -1	- -
	Chromium	7.02	ug/L	7.02	ug/L	M	5.8E-05	mg/kg/day	NA	(mg/kg/day) -1	- -
	Iron	505	ug/L	505	ug/L	M	4.2E-03	mg/kg/day	NA	(mg/kg/day) -1	- -
	Manganese	58.2	ug/L	58.2	ug/L	M	4.8E-04	mg/kg/day	NA	(mg/kg/day) -1	- -
	Nickel	8.86	ug/L	8.86	ug/L	M	7.3E-05	mg/kg/day	NA	(mg/kg/day) -1	- -
	Thallium	0.173	ug/L	0.173	ug/L	M	1.4E-06	mg/kg/day	NA	(mg/kg/day) -1	- -
	Nitrate	296	ug/L	296	ug/L	M	2.4E-03	mg/kg/day	NA	(mg/kg/day) -1	- -
	(Total)										2.6E-04
Dermal	1,1,2,2-Tetrachloroethane	42.7	ug/L	42.7	ug/L	M	1.4E-05	mg/kg/day	2.0E-01	(mg/kg/day) -1	2.9E-06
	1,1,2-Trichloroethane	1.11	ug/L	1.11	ug/L	M	2.7E-07	mg/kg/day	5.7E-02	(mg/kg/day) -1	1.6E-08
	1,1-Dichloroethene	0.213	ug/L	0.213	ug/L	M	7.6E-08	mg/kg/day	6.0E-01	(mg/kg/day) -1	4.5E-08
	cis-1,2-Dichloroethene	11.3	ug/L	11.3	ug/L	M	4.4E-06	mg/kg/day	NA	(mg/kg/day) -1	- -
	Tetrachloroethene	0.617	ug/L	0.617	ug/L	M	9.8E-07	mg/kg/day	5.2E-02	(mg/kg/day) -1	5.1E-08
	trans-1,2-Dichloroethene	2.87	ug/L	2.87	ug/L	M	6.8E-07	mg/kg/day	NA	(mg/kg/day) -1	- -
	Trichloroethene	48.9	ug/L	48.9	ug/L	M	2.2E-05	mg/kg/day	4.0E-01	(mg/kg/day) -1	8.7E-06
	Vinyl Chloride	0.400	ug/L	0.400	ug/L	M	5.5E-08	mg/kg/day	7.2E-01	(mg/kg/day) -1	3.9E-08
	2,4,6-Trinitrotoluene	1.30	ug/L	1.30	ug/L	M	8.8E-08	mg/kg/day	3.0E-02	(mg/kg/day) -1	2.6E-09
	2-Amino-4,6-Dinitrotoluene	0.409	ug/L	0.409	ug/L	M	1.5E-08	mg/kg/day	NA	(mg/kg/day) -1	- -
	4-Amino-2,6-Dinitrotoluene	1.03	ug/L	1.03	ug/L	M	3.8E-08	mg/kg/day	NA	(mg/kg/day) -1	- -
	RDX	27.2	ug/L	27.2	ug/L	M	6.4E-07	mg/kg/day	1.1E-01	(mg/kg/day) -1	7.0E-08
	Aluminum	95.3	ug/L	95.3	ug/L	M	8.6E-07	mg/kg/day	NA	(mg/kg/day) -1	- -
	Barium	87.8	ug/L	87.8	ug/L	M	7.9E-07	mg/kg/day	NA	(mg/kg/day) -1	- -
	Cadmium	1.78	ug/L	1.78	ug/L	M	1.6E-08	mg/kg/day	NA	(mg/kg/day) -1	- -
	Chromium	7.02	ug/L	7.02	ug/L	M	1.3E-07	mg/kg/day	NA	(mg/kg/day) -1	- -
	Iron	505	ug/L	505	ug/L	M	4.6E-06	mg/kg/day	NA	(mg/kg/day) -1	- -
	Manganese	58.2	ug/L	58.2	ug/L	M	5.3E-07	mg/kg/day	NA	(mg/kg/day) -1	- -
	Nickel	8.86	ug/L	8.86	ug/L	M	1.6E-08	mg/kg/day	NA	(mg/kg/day) -1	- -
	Thallium	0.173	ug/L	0.173	ug/L	M	1.6E-09	mg/kg/day	NA	(mg/kg/day) -1	- -
	Nitrate	296	ug/L	296	ug/L	M	2.7E-06	mg/kg/day	NA	(mg/kg/day) -1	- -
	(Total)										1.2E-05
										Total Risk Across All Exposure Routes/Pathways	2.7E-04

(1) Medium-Specific (M) EPC selected for risk calculation.

TABLE 8.48
CALCULATION OF CANCER RISKS
CENTRAL TENDENCY EXPOSURES
NSWC CRANE, INDIANA

Scenario Timeframe: Future
Medium: Ground Water
Exposure Medium: Ground Water
Exposure Point: SWMU 3 - Shallow Ground Water
Receptor Population: On-Site Resident
Receptor Age: Child

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Risk Calculation (1)	Intake (Cancer)	Intake (Cancer) Units	Cancer Slope Factor	Cancer Slope Factor Units	Cancer Risk
Ingestion	1,1,2,2-Tetrachloroethane	42.7	ug/L	42.7	ug/L	M	3.4E-05	mg/kg/day	2.0E-01	(mg/kg/day) -1	6.9E-06
	1,1,2-Trichloroethane	1.11	ug/L	1.11	ug/L	M	8.9E-07	mg/kg/day	5.7E-02	(mg/kg/day) -1	5.1E-08
	1,1-Dichloroethene	0.213	ug/L	0.213	ug/L	M	1.7E-07	mg/kg/day	6.0E-01	(mg/kg/day) -1	1.0E-07
	cis-1,2-Dichloroethene	11.3	ug/L	11.3	ug/L	M	9.1E-06	mg/kg/day	NA	(mg/kg/day) -1	- -
	Tetrachloroethene	0.617	ug/L	0.617	ug/L	M	5.0E-07	mg/kg/day	5.2E-02	(mg/kg/day) -1	2.6E-08
	trans-1,2-Dichloroethene	2.87	ug/L	2.87	ug/L	M	2.3E-06	mg/kg/day	NA	(mg/kg/day) -1	- -
	Trichloroethene	48.9	ug/L	48.9	ug/L	M	3.9E-05	mg/kg/day	4.0E-01	(mg/kg/day) -1	1.6E-05
	Vinyl Chloride	0.400	ug/L	0.400	ug/L	M	3.2E-07	mg/kg/day	7.2E-01	(mg/kg/day) -1	2.3E-07
	2,4,6-Trinitrotoluene	1.30	ug/L	1.30	ug/L	M	1.0E-06	mg/kg/day	3.0E-02	(mg/kg/day) -1	3.1E-08
	2-Amino-4,6-Dinitrotoluene	0.409	ug/L	0.409	ug/L	M	3.3E-07	mg/kg/day	NA	(mg/kg/day) -1	- -
	4-Amino-2,6-Dinitrotoluene	1.03	ug/L	1.03	ug/L	M	8.3E-07	mg/kg/day	NA	(mg/kg/day) -1	- -
	RDX	27.2	ug/L	27.2	ug/L	M	2.2E-05	mg/kg/day	1.1E-01	(mg/kg/day) -1	2.4E-06
	Aluminum	95.3	ug/L	95.3	ug/L	M	7.7E-05	mg/kg/day	NA	(mg/kg/day) -1	- -
	Barium	87.8	ug/L	87.8	ug/L	M	7.1E-05	mg/kg/day	NA	(mg/kg/day) -1	- -
	Cadmium	1.78	ug/L	1.78	ug/L	M	1.4E-06	mg/kg/day	NA	(mg/kg/day) -1	- -
	Chromium	7.02	ug/L	7.02	ug/L	M	5.7E-06	mg/kg/day	NA	(mg/kg/day) -1	- -
	Iron	505	ug/L	505	ug/L	M	4.1E-04	mg/kg/day	NA	(mg/kg/day) -1	- -
	Manganese	58.2	ug/L	58.2	ug/L	M	4.7E-05	mg/kg/day	NA	(mg/kg/day) -1	- -
	Nickel	8.86	ug/L	8.86	ug/L	M	7.1E-06	mg/kg/day	NA	(mg/kg/day) -1	- -
	Thallium	0.173	ug/L	0.173	ug/L	M	1.4E-07	mg/kg/day	NA	(mg/kg/day) -1	- -
	Nitrate	296	ug/L	296	ug/L	M	2.4E-04	mg/kg/day	NA	(mg/kg/day) -1	- -
	(Total)										2.5E-05
Dermal	1,1,2,2-Tetrachloroethane	42.7	ug/L	42.7	ug/L	M	2.6E-06	mg/kg/day	2.0E-01	(mg/kg/day) -1	5.2E-07
	1,1,2-Trichloroethane	1.11	ug/L	1.11	ug/L	M	5.0E-08	mg/kg/day	5.7E-02	(mg/kg/day) -1	2.9E-09
	1,1-Dichloroethene	0.213	ug/L	0.213	ug/L	M	1.4E-08	mg/kg/day	6.0E-01	(mg/kg/day) -1	8.3E-09
	cis-1,2-Dichloroethene	11.3	ug/L	11.3	ug/L	M	8.0E-07	mg/kg/day	NA	(mg/kg/day) -1	- -
	Tetrachloroethene	0.617	ug/L	0.617	ug/L	M	1.8E-07	mg/kg/day	5.2E-02	(mg/kg/day) -1	9.3E-09
	trans-1,2-Dichloroethene	2.87	ug/L	2.87	ug/L	M	1.2E-07	mg/kg/day	NA	(mg/kg/day) -1	- -
	Trichloroethene	48.9	ug/L	48.9	ug/L	M	3.9E-06	mg/kg/day	4.0E-01	(mg/kg/day) -1	1.6E-06
	Vinyl Chloride	0.400	ug/L	0.400	ug/L	M	1.0E-08	mg/kg/day	7.2E-01	(mg/kg/day) -1	7.2E-09
	2,4,6-Trinitrotoluene	1.30	ug/L	1.30	ug/L	M	1.6E-08	mg/kg/day	3.0E-02	(mg/kg/day) -1	4.8E-10
	2-Amino-4,6-Dinitrotoluene	0.409	ug/L	0.409	ug/L	M	2.8E-09	mg/kg/day	NA	(mg/kg/day) -1	- -
	4-Amino-2,6-Dinitrotoluene	1.03	ug/L	1.03	ug/L	M	6.9E-09	mg/kg/day	NA	(mg/kg/day) -1	- -
	RDX	27.2	ug/L	27.2	ug/L	M	1.2E-07	mg/kg/day	1.1E-01	(mg/kg/day) -1	1.3E-08
	Aluminum	95.3	ug/L	95.3	ug/L	M	1.3E-07	mg/kg/day	NA	(mg/kg/day) -1	- -
	Barium	87.8	ug/L	87.8	ug/L	M	1.2E-07	mg/kg/day	NA	(mg/kg/day) -1	- -
	Cadmium	1.78	ug/L	1.78	ug/L	M	2.4E-09	mg/kg/day	NA	(mg/kg/day) -1	- -
	Chromium	7.02	ug/L	7.02	ug/L	M	1.9E-08	mg/kg/day	NA	(mg/kg/day) -1	- -
	Iron	505	ug/L	505	ug/L	M	6.8E-07	mg/kg/day	NA	(mg/kg/day) -1	- -
	Manganese	58.2	ug/L	58.2	ug/L	M	7.8E-08	mg/kg/day	NA	(mg/kg/day) -1	- -
	Nickel	8.86	ug/L	8.86	ug/L	M	2.4E-09	mg/kg/day	NA	(mg/kg/day) -1	- -
	Thallium	0.173	ug/L	0.173	ug/L	M	2.3E-10	mg/kg/day	NA	(mg/kg/day) -1	- -
	Nitrate	296	ug/L	296	ug/L	M	4.0E-07	mg/kg/day	NA	(mg/kg/day) -1	- -
	(Total)										2.1E-06
										Total Risk Across All Exposure Routes/Pathways	2.8E-05

(1) Medium-Specific (M) EPC selected for risk calculation.

TABLE 8.49
CALCULATION OF CANCER RISKS
REASONABLE MAXIMUM EXPOSURE
NSWC CRANE, INDIANA

Scenario Timeframe: Future
Medium: Ground Water
Exposure Medium: Air
Exposure Point: SWMU 3 - Shallow Ground Water
Receptor Population: On-Site Resident
Receptor Age: Child

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Risk Calculation (1)	Intake (Cancer)	Intake (Cancer) Units	Cancer Slope Factor	Cancer Slope Factor Units	Cancer Risk
Inhalation	1,1,2,2-Tetrachloroethane	42.7	ug/L	2.3E-02	mg/m3	R	7.5E-05	mg/kg/day	2.0E-01	(mg/kg/day) $^{-1}$	1.5E-05
	1,1,2-Trichloroethane	1.11	ug/L	8.4E-04	mg/m3	R	2.8E-06	mg/kg/day	5.6E-02	(mg/kg/day) $^{-1}$	1.5E-07
	1,1-Dichloroethene	0.213	ug/L	2.2E-04	mg/m3	R	7.2E-07	mg/kg/day	1.8E-01	(mg/kg/day) $^{-1}$	1.3E-07
	cis-1,2-Dichloroethene	11.3	ug/L	1.1E-02	mg/m3	R	3.7E-05	mg/kg/day	NA	(mg/kg/day) $^{-1}$	N/A
	Tetrachloroethene	0.617	ug/L	5.2E-04	mg/m3	R	1.7E-06	mg/kg/day	1.0E-02	(mg/kg/day) $^{-1}$	1.7E-08
	trans-1,2-Dichloroethene	2.87	ug/L	2.9E-03	mg/m3	R	9.6E-06	mg/kg/day	NA	(mg/kg/day) $^{-1}$	N/A
	Trichloroethene	48.9	ug/L	4.4E-02	mg/m3	R	1.5E-04	mg/kg/day	4.0E-01	(mg/kg/day) $^{-1}$	5.8E-05
	Vinyl Chloride	0.400	ug/L	4.8E-04	mg/m3	R	1.6E-06	mg/kg/day	1.5E-02	(mg/kg/day) $^{-1}$	2.4E-08
	2,4,6-Trinitrotoluene	1.30	ug/L	0.0E+00	mg/m3	R	0.0E+00	mg/kg/day	NA	(mg/kg/day) $^{-1}$	N/A
	2-Amino-4,6-Dinitrotoluene	0.409	ug/L	0.0E+00	mg/m3	R	0.0E+00	mg/kg/day	NA	(mg/kg/day) $^{-1}$	N/A
	4-Amino-2,6-Dinitrotoluene	1.03	ug/L	0.0E+00	mg/m3	R	0.0E+00	mg/kg/day	NA	(mg/kg/day) $^{-1}$	N/A
	RDX	27.2	ug/L	0.0E+00	mg/m3	R	0.0E+00	mg/kg/day	NA	(mg/kg/day) $^{-1}$	N/A
	Aluminum	95.3	ug/L	0.0E+00	mg/m3	R	0.0E+00	mg/kg/day	NA	(mg/kg/day) $^{-1}$	N/A
	Barium	87.8	ug/L	0.0E+00	mg/m3	R	0.0E+00	mg/kg/day	NA	(mg/kg/day) $^{-1}$	N/A
	Cadmium	1.8	ug/L	0.0E+00	mg/m3	R	0.0E+00	mg/kg/day	6.3E+00	(mg/kg/day) $^{-1}$	N/A
	Chromium	7.0	ug/L	0.0E+00	mg/m3	R	0.0E+00	mg/kg/day	NA	(mg/kg/day) $^{-1}$	N/A
	Iron	505.5	ug/L	0.0E+00	mg/m3	R	0.0E+00	mg/kg/day	NA	(mg/kg/day) $^{-1}$	N/A
	Manganese	58.2	ug/L	0.0E+00	mg/m3	R	0.0E+00	mg/kg/day	NA	(mg/kg/day) $^{-1}$	N/A
	Nickel	8.9	ug/L	0.0E+00	mg/m3	R	0.0E+00	mg/kg/day	NA	(mg/kg/day) $^{-1}$	N/A
	Thallium	0.2	ug/L	0.0E+00	mg/m3	R	0.0E+00	mg/kg/day	NA	(mg/kg/day) $^{-1}$	N/A
	Nitrate	296	ug/L	0.0E+00	mg/m3	R	0.0E+00	mg/kg/day	NA	(mg/kg/day) $^{-1}$	N/A
	(Total)										7.4E-05
										Total Risk Across All Exposure Routes/Pathways	7.4E-05

(1) Route-Specific (R) EPC selected for risk calculation.

TABLE 8.50
CALCULATION OF CANCER RISKS
CENTRAL TENDENCY EXPOSURES
NSWC CRANE, INDIANA

Scenario Timeframe: Future
Medium: Ground Water
Exposure Medium: Air
Exposure Point: SWMU 3 - Shallow Ground Water
Receptor Population: On-Site Resident
Receptor Age: Child

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Risk Calculation (1)	Intake (Cancer)	Intake (Cancer) Units	Cancer Slope Factor	Cancer Slope Factor Units	Cancer Risk
Inhalation	1,1,2,2-Tetrachloroethane	42.7	ug/L	1.2E-02	mg/m3	R	9.1E-06	mg/kg/day	2.0E-01	(mg/kg/day) $^{-1}$	1.8E-06
	1,1,2-Trichloroethane	1.11	ug/L	4.6E-04	mg/m3	R	3.4E-07	mg/kg/day	5.6E-02	(mg/kg/day) $^{-1}$	1.9E-08
	1,1-Dichloroethene	0.213	ug/L	1.2E-04	mg/m3	R	8.8E-08	mg/kg/day	1.8E-01	(mg/kg/day) $^{-1}$	1.5E-08
	cis-1,2-Dichloroethene	11.3	ug/L	6.1E-03	mg/m3	R	4.5E-06	mg/kg/day	NA	(mg/kg/day) $^{-1}$	N/A
	Tetrachloroethene	0.617	ug/L	2.8E-04	mg/m3	R	2.1E-07	mg/kg/day	1.0E-02	(mg/kg/day) $^{-1}$	2.1E-09
	trans-1,2-Dichloroethene	2.87	ug/L	1.6E-03	mg/m3	R	1.2E-06	mg/kg/day	NA	(mg/kg/day) $^{-1}$	N/A
	Trichloroethene	48.9	ug/L	2.4.E-02	mg/m3	R	1.8E-05	mg/kg/day	4.0E-01	(mg/kg/day) $^{-1}$	7.1E-06
	Vinyl Chloride	0.400	ug/L	2.6.E-04	mg/m3	R	1.9E-07	mg/kg/day	1.5E-02	(mg/kg/day) $^{-1}$	2.9E-09
	2,4,6-Trinitrotoluene	1.30	ug/L	0.0E+00	mg/m3	R	0.0E+00	mg/kg/day	NA	(mg/kg/day) $^{-1}$	N/A
	2-Amino-4,6-Dinitrotoluene	0.409	ug/L	0.0E+00	mg/m3	R	0.0E+00	mg/kg/day	NA	(mg/kg/day) $^{-1}$	N/A
	4-Amino-2,6-Dinitrotoluene	1.03	ug/L	0.0E+00	mg/m3	R	0.0E+00	mg/kg/day	NA	(mg/kg/day) $^{-1}$	N/A
	RDX	27.2	ug/L	0.0E+00	mg/m3	R	0.0E+00	mg/kg/day	NA	(mg/kg/day) $^{-1}$	N/A
	Aluminum	95.3	ug/L	0.0E+00	mg/m3	R	0.0E+00	mg/kg/day	NA	(mg/kg/day) $^{-1}$	N/A
	Barium	87.8	ug/L	0.0E+00	mg/m3	R	0.0E+00	mg/kg/day	NA	(mg/kg/day) $^{-1}$	N/A
	Cadmium	1.78	ug/L	0.0E+00	mg/m3	R	0.0E+00	mg/kg/day	6.3E+00	(mg/kg/day) $^{-1}$	N/A
	Chromium	7.02	ug/L	0.0E+00	mg/m3	R	0.0E+00	mg/kg/day	NA	(mg/kg/day) $^{-1}$	N/A
	Iron	505	ug/L	0.0E+00	mg/m3	R	0.0E+00	mg/kg/day	NA	(mg/kg/day) $^{-1}$	N/A
	Manganese	58.2	ug/L	0.0E+00	mg/m3	R	0.0E+00	mg/kg/day	NA	(mg/kg/day) $^{-1}$	N/A
	Nickel	8.86	ug/L	0.0E+00	mg/m3	R	0.0E+00	mg/kg/day	NA	(mg/kg/day) $^{-1}$	N/A
	Thallium	0.173	ug/L	0.0E+00	mg/m3	R	0.0E+00	mg/kg/day	NA	(mg/kg/day) $^{-1}$	N/A
	Nitrate	296	ug/L	0.0E+00	mg/m3	R	0.0E+00	mg/kg/day	NA	(mg/kg/day) $^{-1}$	N/A
	(Total)										9.0E-06
										Total Risk Across All Exposure Routes/Pathways	9.0E-06

(1) Route-Specific (R) EPC selected for risk calculation.

TABLE 8.51
CALCULATION OF CANCER RISKS
REASONABLE MAXIMUM EXPOSURE
NSWC CRANE, INDIANA

Scenario Timeframe: Future
Medium: Surface Water
Exposure Medium: Surface Water
Exposure Point: SWMU 3 - Little Sulphur Creek
Receptor Population: On-Site Resident
Receptor Age: Child

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Risk Calculation (1)	Intake (Cancer)	Intake (Cancer) Units	Cancer Slope Factor	Cancer Slope Factor Units	Cancer Risk
Ingestion	Bromomethane	1.60	ug/L	1.60	ug/L	M	1.3E-05	mg/kg/day	NA	(mg/kg/day) -1	- -
	2-Amino-4,6-Dinitrotoluene	1.50	ug/L	1.50	ug/L	M	1.2E-05	mg/kg/day	NA	(mg/kg/day) -1	- -
	4-Amino-2,6-Dinitrotoluene	2.90	ug/L	2.90	ug/L	M	2.4E-05	mg/kg/day	NA	(mg/kg/day) -1	- -
	RDX	63.0	ug/L	63.0	ug/L	M	5.2E-04	mg/kg/day	1.1E-01	(mg/kg/day) -1	5.7E-05
	(Total)										5.7E-05
Dermal	Bromomethane	1.60	ug/L	1.60	ug/L	M	1.4E-07	mg/kg/day	NA	(mg/kg/day) -1	- -
	2-Amino-4,6-Dinitrotoluene	1.50	ug/L	1.50	ug/L	M	5.6E-08	mg/kg/day	NA	(mg/kg/day) -1	- -
	4-Amino-2,6-Dinitrotoluene	2.90	ug/L	2.90	ug/L	M	1.1E-07	mg/kg/day	NA	(mg/kg/day) -1	- -
	RDX	63.0	ug/L	63.0	ug/L	M	1.5E-06	mg/kg/day	1.1E-01	(mg/kg/day) -1	1.6E-07
	(Total)										1.6E-07
										Total Risk Across All Exposure Routes/Pathways	5.7E-05

(1) Medium-Specific (M) EPC selected for risk calculation.

TABLE 8.52
CALCULATION OF CANCER RISKS
CENTRAL TENDENCY EXPOSURES
NSWC CRANE, INDIANA

Scenario Timeframe: Future
Medium: Surface Water
Exposure Medium: Surface Water
Exposure Point: SWMU 3 - Little Sulphur Creek
Receptor Population: On-Site Resident
Receptor Age: Child

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Risk Calculation (1)	Intake (Cancer)	Intake (Cancer) Units	Cancer Slope Factor	Cancer Slope Factor Units	Cancer Risk
Ingestion	Bromomethane	1.60	ug/L	1.60	ug/L	M	1.3E-06	mg/kg/day	NA	(mg/kg/day) -1	- -
	2-Amino-4,6-Dinitrotoluene	1.50	ug/L	1.50	ug/L	M	1.2E-06	mg/kg/day	NA	(mg/kg/day) -1	- -
	4-Amino-2,6-Dinitrotoluene	2.90	ug/L	2.90	ug/L	M	2.3E-06	mg/kg/day	NA	(mg/kg/day) -1	- -
	RDX	63.0	ug/L	63.0	ug/L	M	5.1E-05	mg/kg/day	1.1E-01	(mg/kg/day) -1	5.6E-06
	(Total)										5.6E-06
Dermal	Bromomethane	1.60	ug/L	1.60	ug/L	M	2.5E-08	mg/kg/day	NA	(mg/kg/day) -1	- -
	2-Amino-4,6-Dinitrotoluene	1.50	ug/L	1.50	ug/L	M	1.0E-08	mg/kg/day	NA	(mg/kg/day) -1	- -
	4-Amino-2,6-Dinitrotoluene	2.90	ug/L	2.90	ug/L	M	2.0E-08	mg/kg/day	NA	(mg/kg/day) -1	- -
	RDX	63.0	ug/L	63.0	ug/L	M	2.7E-07	mg/kg/day	1.1E-01	(mg/kg/day) -1	3.0E-08
	(Total)										3.0E-08
										Total Risk Across All Exposure Routes/Pathways	5.6E-06

(1) Medium-Specific (M) EPC selected for risk calculation.

TABLE 8.53
CALCULATION OF CANCER RISKS
REASONABLE MAXIMUM EXPOSURE
NSWC CRANE, INDIANA

Scenario Timeframe: Future
Medium: Surface Water
Exposure Medium: Air
Exposure Point: SWMU 3 - Little Sulphur Creek
Receptor Population: On-Site Resident
Receptor Age: Child

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Risk Calculation (1)	Intake (Cancer)	Intake (Cancer) Units	Cancer Slope Factor	Cancer Slope Factor Units	Cancer Risk
Inhalation	Bromomethane	1.60	ug/L	1.6E-03	mg/m3	R	5.4E-06	mg/kg/day	NA	$(mg/kg/day)^{-1}$	N/A
	2-Amino-4,6-Dinitrotoluene	1.50	ug/L	0.0E+00	mg/m3	R	0.0E+00	mg/kg/day	NA	$(mg/kg/day)^{-1}$	N/A
	4-Amino-2,6-Dinitrotoluene	2.90	ug/L	0.0E+00	mg/m3	R	0.0E+00	mg/kg/day	NA	$(mg/kg/day)^{-1}$	N/A
	RDX	63.0	ug/L	0.0E+00	mg/m3	R	0.0E+00	mg/kg/day	NA	$(mg/kg/day)^{-1}$	N/A
	(Total)										0.0E+00
										Total Risk Across All Exposure Routes/Pathways	NA

(1) Route-Specific (R) EPC selected for risk calculation.

TABLE 8.54
CALCULATION OF CANCER RISKS
CENTRAL TENDENCY EXPOSURES
NSWC CRANE, INDIANA

Scenario Timeframe: Future
Medium: Surface Water
Exposure Medium: Air
Exposure Point: SWMU 3 - Little Sulphur Creek
Receptor Population: On-Site Resident
Receptor Age: Child

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Risk Calculation (1)	Intake (Cancer)	Intake (Cancer) Units	Cancer Slope Factor	Cancer Slope Factor Units	Cancer Risk
Inhalation	Bromomethane	1.60	ug/L	8.9E-04	mg/m3	R	6.5E-07	mg/kg/day	NA	$(mg/kg/day)^{-1}$	N/A
	2-Amino-4,6-Dinitrotoluene	1.50	ug/L	0.0E+00	mg/m3	R	0.0E+00	mg/kg/day	NA	$(mg/kg/day)^{-1}$	N/A
	4-Amino-2,6-Dinitrotoluene	2.90	ug/L	0.0E+00	mg/m3	R	0.0E+00	mg/kg/day	NA	$(mg/kg/day)^{-1}$	N/A
	RDX	63.0	ug/L	0.0E+00	mg/m3	R	0.0E+00	mg/kg/day	NA	$(mg/kg/day)^{-1}$	N/A
	(Total)										0.0E+00
										Total Risk Across All Exposure Routes/Pathways	NA

(1) Route-Specific (R) EPC selected for risk calculation.

TABLE 8.55
CALCULATION OF CANCER RISKS
REASONABLE MAXIMUM EXPOSURE
NSWC CRANE, INDIANA

Scenario Timeframe: Future
Medium: Sediment
Exposure Medium: Sediment
Exposure Point: SWMU 3 - Little Sulphur Creek
Receptor Population: On-Site Resident
Receptor Age: Child

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Risk Calculation (1)	Intake (Cancer)	Intake (Cancer) Units	Cancer Slope Factor	Cancer Slope Factor Units	Cancer Risk
Ingestion	2-Amino-4,6-Dinitrotoluene	0.178	mg/kg	0.178	mg/kg	M	1.5E-08	mg/kg/day	NA	(mg/kg/day) -1	- -
	Aluminum	14916	mg/kg	14916	mg/kg	M	1.2E-03	mg/kg/day	NA	(mg/kg/day) -1	- -
	Antimony	2.88	mg/kg	2.88	mg/kg	M	2.3E-07	mg/kg/day	NA	(mg/kg/day) -1	- -
	Barium	359	mg/kg	359	mg/kg	M	2.9E-05	mg/kg/day	NA	(mg/kg/day) -1	- -
	Cadmium	1.78	mg/kg	1.78	mg/kg	M	1.4E-07	mg/kg/day	NA	(mg/kg/day) -1	- -
	Lead	120	mg/kg	120	mg/kg	M	9.8E-06	mg/kg/day	NA	(mg/kg/day) -1	- -
	(Total)										- -
Dermal	2-Amino-4,6-Dinitrotoluene	0.178	mg/kg	0.178	mg/kg	M	8.1E-09	mg/kg/day	NA	(mg/kg/day) -1	- -
	Aluminum	14916	mg/kg	14916	mg/kg	M	0.0E+00	mg/kg/day	NA	(mg/kg/day) -1	- -
	Antimony	2.88	mg/kg	2.88	mg/kg	M	0.0E+00	mg/kg/day	NA	(mg/kg/day) -1	- -
	Barium	359	mg/kg	359	mg/kg	M	0.0E+00	mg/kg/day	NA	(mg/kg/day) -1	- -
	Cadmium	1.78	mg/kg	1.78	mg/kg	M	8.1E-10	mg/kg/day	NA	(mg/kg/day) -1	- -
	Lead	120	mg/kg	120	mg/kg	M	0.0E+00	mg/kg/day	NA	(mg/kg/day) -1	- -
	(Total)										- -
										Total Risk Across All Exposure Routes/Pathways	- -

(1) Medium-Specific (M) EPC selected for risk calculation.

TABLE 8.56
CALCULATION OF CANCER RISKS
CENTRAL TENDENCY EXPOSURES
NSWC CRANE, INDIANA

Scenario Timeframe: Future
Medium: Sediment
Exposure Medium: Sediment
Exposure Point: SWMU 3 - Little Sulphur Creek
Receptor Population: On-Site Resident
Receptor Age: Child

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Risk Calculation (1)	Intake (Cancer)	Intake (Cancer) Units	Cancer Slope Factor	Cancer Slope Factor Units	Cancer Risk
Ingestion	2-Amino-4,6-Dinitrotoluene	0.178	mg/kg	0.178	mg/kg	M	1.2E-09	mg/kg/day	NA	(mg/kg/day) -1	- -
	Aluminum	14916	mg/kg	14916	mg/kg	M	1.0E-04	mg/kg/day	NA	(mg/kg/day) -1	- -
	Antimony	2.88	mg/kg	2.88	mg/kg	M	2.0E-08	mg/kg/day	NA	(mg/kg/day) -1	- -
	Barium	359	mg/kg	359	mg/kg	M	2.4E-06	mg/kg/day	NA	(mg/kg/day) -1	- -
	Cadmium	1.78	mg/kg	1.78	mg/kg	M	1.2E-08	mg/kg/day	NA	(mg/kg/day) -1	- -
	Lead	120	mg/kg	120	mg/kg	M	8.1E-07	mg/kg/day	NA	(mg/kg/day) -1	- -
	(Total)										- -
Dermal	2-Amino-4,6-Dinitrotoluene	0.178	mg/kg	0.178	mg/kg	M	2.7E-10	mg/kg/day	NA	(mg/kg/day) -1	- -
	Aluminum	14916	mg/kg	14916	mg/kg	M	0.0E+00	mg/kg/day	NA	(mg/kg/day) -1	- -
	Antimony	2.88	mg/kg	2.88	mg/kg	M	0.0E+00	mg/kg/day	NA	(mg/kg/day) -1	- -
	Barium	359	mg/kg	359	mg/kg	M	0.0E+00	mg/kg/day	NA	(mg/kg/day) -1	- -
	Cadmium	1.78	mg/kg	1.78	mg/kg	M	2.7E-11	mg/kg/day	NA	(mg/kg/day) -1	- -
	Lead	120	mg/kg	120	mg/kg	M	0.0E+00	mg/kg/day	NA	(mg/kg/day) -1	- -
	(Total)										- -
										Total Risk Across All Exposure Routes/Pathways	- -

(1) Medium-Specific (M) EPC selected for risk calculation.

TABLE 8.57
CALCULATION OF CANCER RISKS
REASONABLE MAXIMUM EXPOSURE
NSWC CRANE, INDIANA

Scenario Timeframe: Future
Medium: Surface Soil
Exposure Medium: Surface Soil
Exposure Point: SWMU 3 - 1 Acre Exposure Unit
Receptor Population: On-Site Resident
Receptor Age: Adult

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Risk Calculation (1)	Intake (Cancer)	Intake (Cancer) Units	Cancer Slope Factor	Cancer Slope Factor Units	Cancer Risk
Ingestion	2,3,7,8-TCDD Equivalents	0.0000074	mg/kg	0.0000074	mg/kg	M	3.5E-12	mg/kg/day	1.5E+05	(mg/kg/day) -1	5.2E-07
	2,4,6-Trinitrotoluene	581	mg/kg	581	mg/kg	M	2.7E-04	mg/kg/day	3.0E-02	(mg/kg/day) -1	8.2E-06
	2-Amino-4,6-Dinitrotoluene	2.36	mg/kg	2.36	mg/kg	M	1.1E-06	mg/kg/day	NA	(mg/kg/day) -1	- -
	4-Amino-2,6-Dinitrotoluene	1.44	mg/kg	1.44	mg/kg	M	6.7E-07	mg/kg/day	NA	(mg/kg/day) -1	- -
	HMX	291	mg/kg	291	mg/kg	M	1.4E-04	mg/kg/day	NA	(mg/kg/day) -1	- -
	RDX	522	mg/kg	522	mg/kg	M	2.5E-04	mg/kg/day	1.1E-01	(mg/kg/day) -1	2.7E-05
	Barium	235	mg/kg	235	mg/kg	M	1.1E-04	mg/kg/day	NA	(mg/kg/day) -1	- -
	Cadmium	4.40	mg/kg	4.40	mg/kg	M	2.1E-06	mg/kg/day	NA	(mg/kg/day) -1	- -
	Chromium	14.6	mg/kg	14.6	mg/kg	M	6.9E-06	mg/kg/day	NA	(mg/kg/day) -1	- -
	Iron	21431	mg/kg	21431	mg/kg	M	1.0E-02	mg/kg/day	NA	(mg/kg/day) -1	- -
	Lead	1324	mg/kg	1324	mg/kg	M	6.2E-04	mg/kg/day	NA	(mg/kg/day) -1	- -
	(Total)										3.6E-05
Dermal	2,3,7,8-TCDD Equivalents	0.0000074	mg/kg	0.0000074	mg/kg	M	4.2E-13	mg/kg/day	1.5E+05	(mg/kg/day) -1	6.2E-08
	2,4,6-Trinitrotoluene	581	mg/kg	581	mg/kg	M	1.1E-04	mg/kg/day	3.0E-02	(mg/kg/day) -1	3.3E-06
	2-Amino-4,6-Dinitrotoluene	2.36	mg/kg	2.36	mg/kg	M	4.4E-07	mg/kg/day	NA	(mg/kg/day) -1	- -
	4-Amino-2,6-Dinitrotoluene	1.44	mg/kg	1.44	mg/kg	M	2.7E-07	mg/kg/day	NA	(mg/kg/day) -1	- -
	HMX	291	mg/kg	291	mg/kg	M	5.5E-05	mg/kg/day	NA	(mg/kg/day) -1	- -
	RDX	522	mg/kg	522	mg/kg	M	9.8E-05	mg/kg/day	1.1E-01	(mg/kg/day) -1	1.1E-05
	Barium	235	mg/kg	235	mg/kg	M	0.0E+00	mg/kg/day	NA	(mg/kg/day) -1	- -
	Cadmium	4.40	mg/kg	4.40	mg/kg	M	8.2E-09	mg/kg/day	NA	(mg/kg/day) -1	- -
	Chromium	14.6	mg/kg	14.6	mg/kg	M	0.0E+00	mg/kg/day	NA	(mg/kg/day) -1	- -
	Iron	21431	mg/kg	21431	mg/kg	M	0.0E+00	mg/kg/day	NA	(mg/kg/day) -1	- -
	Lead	1324	mg/kg	1324	mg/kg	M	0.0E+00	mg/kg/day	NA	(mg/kg/day) -1	- -
	(Total)										1.4E-05
										Total Risk Across All Exposure Routes/Pathways	5.0E-05

(1) Medium-Specific (M) EPC selected for risk calculation.

TABLE 8.58
CALCULATION OF CANCER RISKS
CENTRAL TENDENCY EXPOSURES
NSWC CRANE, INDIANA

Scenario Timeframe: Future
Medium: Surface Soil
Exposure Medium: Surface Soil
Exposure Point: SWMU 3 - 1 Acre Exposure Unit
Receptor Population: On-Site Resident
Receptor Age: Adult

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Risk Calculation (1)	Intake (Cancer)	Intake (Cancer) Units	Cancer Slope Factor	Cancer Slope Factor Units	Cancer Risk
Ingestion	2,3,7,8-TCDD Equivalents	0.0000074	mg/kg	0.0000074	mg/kg	M	3.4E-13	mg/kg/day	1.5E+05	(mg/kg/day) -1	5.1E-08
	2,4,6-Trinitrotoluene	581	mg/kg	581	mg/kg	M	2.7E-05	mg/kg/day	3.0E-02	(mg/kg/day) -1	8.0E-07
	2-Amino-4,6-Dinitrotoluene	2.36	mg/kg	2.36	mg/kg	M	1.1E-07	mg/kg/day	NA	(mg/kg/day) -1	- -
	4-Amino-2,6-Dinitrotoluene	1.44	mg/kg	1.44	mg/kg	M	6.6E-08	mg/kg/day	NA	(mg/kg/day) -1	- -
	HMX	291	mg/kg	291	mg/kg	M	1.3E-05	mg/kg/day	NA	(mg/kg/day) -1	- -
	RDX	522	mg/kg	522	mg/kg	M	2.4E-05	mg/kg/day	1.1E-01	(mg/kg/day) -1	2.6E-06
	Barium	235	mg/kg	235	mg/kg	M	1.1E-05	mg/kg/day	NA	(mg/kg/day) -1	- -
	Cadmium	4.40	mg/kg	4.40	mg/kg	M	2.0E-07	mg/kg/day	NA	(mg/kg/day) -1	- -
	Chromium	14.6	mg/kg	14.6	mg/kg	M	6.7E-07	mg/kg/day	NA	(mg/kg/day) -1	- -
	Iron	21431	mg/kg	21431	mg/kg	M	9.8E-04	mg/kg/day	NA	(mg/kg/day) -1	- -
	Lead	1324	mg/kg	1324	mg/kg	M	6.1E-05	mg/kg/day	NA	(mg/kg/day) -1	- -
	(Total)										3.5E-06
Dermal	2,3,7,8-TCDD Equivalents	0.0000074	mg/kg	0.0000074	mg/kg	M	1.2E-14	mg/kg/day	1.5E+05	(mg/kg/day) -1	1.7E-09
	2,4,6-Trinitrotoluene	581	mg/kg	581	mg/kg	M	3.0E-06	mg/kg/day	3.0E-02	(mg/kg/day) -1	9.1E-08
	2-Amino-4,6-Dinitrotoluene	2.36	mg/kg	2.36	mg/kg	M	1.2E-08	mg/kg/day	NA	(mg/kg/day) -1	- -
	4-Amino-2,6-Dinitrotoluene	1.44	mg/kg	1.44	mg/kg	M	7.5E-09	mg/kg/day	NA	(mg/kg/day) -1	- -
	HMX	291	mg/kg	291	mg/kg	M	1.5E-06	mg/kg/day	NA	(mg/kg/day) -1	- -
	RDX	522	mg/kg	522	mg/kg	M	2.7E-06	mg/kg/day	1.1E-01	(mg/kg/day) -1	3.0E-07
	Barium	235	mg/kg	235	mg/kg	M	0.0E+00	mg/kg/day	NA	(mg/kg/day) -1	- -
	Cadmium	4.40	mg/kg	4.40	mg/kg	M	2.3E-10	mg/kg/day	NA	(mg/kg/day) -1	- -
	Chromium	14.6	mg/kg	14.6	mg/kg	M	0.0E+00	mg/kg/day	NA	(mg/kg/day) -1	- -
	Iron	21431	mg/kg	21431	mg/kg	M	0.0E+00	mg/kg/day	NA	(mg/kg/day) -1	- -
	Lead	1324	mg/kg	1324	mg/kg	M	0.0E+00	mg/kg/day	NA	(mg/kg/day) -1	- -
	(Total)										3.9E-07
										Total Risk Across All Exposure Routes/Pathways	3.9E-06

(1) Medium-Specific (M) EPC selected for risk calculation.

TABLE 8.59
CALCULATION OF CANCER RISKS
REASONABLE MAXIMUM EXPOSURE
NSWC CRANE, INDIANA

Scenario Timeframe: Future
Medium: Surface Soil
Exposure Medium: Surface Soil
Exposure Point: SWMU 3 - 6-Acre Exposure Unit
Receptor Population: On-Site Resident
Receptor Age: Adult

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Risk Calculation (1)	Intake (Cancer)	Intake (Cancer) Units	Cancer Slope Factor	Cancer Slope Factor Units	Cancer Risk
Ingestion	2,3,7,8-TCDD Equivalents	0.0000074	mg/kg	0.0000074	mg/kg	M	3.5E-12	mg/kg/day	1.5E+05	(mg/kg/day) -1	5.2E-07
	2,4,6-Trinitrotoluene	2.62	mg/kg	2.62	mg/kg	M	1.2E-06	mg/kg/day	3.0E-02	(mg/kg/day) -1	3.7E-08
	2-Amino-4,6-Dinitrotoluene	0.433	mg/kg	0.433	mg/kg	M	2.0E-07	mg/kg/day	NA	(mg/kg/day) -1	- -
	4-Amino-2,6-Dinitrotoluene	0.365	mg/kg	0.365	mg/kg	M	1.7E-07	mg/kg/day	NA	(mg/kg/day) -1	- -
	HMX	4.77	mg/kg	4.77	mg/kg	M	2.2E-06	mg/kg/day	NA	(mg/kg/day) -1	- -
	RDX	3.41	mg/kg	3.41	mg/kg	M	1.6E-06	mg/kg/day	1.1E-01	(mg/kg/day) -1	1.8E-07
	Barium	252	mg/kg	252	mg/kg	M	1.2E-04	mg/kg/day	NA	(mg/kg/day) -1	- -
	Cadmium	1.19	mg/kg	1.19	mg/kg	M	5.6E-07	mg/kg/day	NA	(mg/kg/day) -1	- -
	Chromium	26.4	mg/kg	26.4	mg/kg	M	1.2E-05	mg/kg/day	NA	(mg/kg/day) -1	- -
	Iron	26855	mg/kg	26855	mg/kg	M	1.3E-02	mg/kg/day	NA	(mg/kg/day) -1	- -
	Lead	358	mg/kg	358	mg/kg	M	1.7E-04	mg/kg/day	NA	(mg/kg/day) -1	- -
	(Total)										7.3E-07
Dermal	2,3,7,8-TCDD Equivalents	0.0000074	mg/kg	0.0000074	mg/kg	M	4.2E-13	mg/kg/day	1.5E+05	(mg/kg/day) -1	6.2E-08
	2,4,6-Trinitrotoluene	2.62	mg/kg	2.62	mg/kg	M	4.9E-07	mg/kg/day	3.0E-02	(mg/kg/day) -1	1.5E-08
	2-Amino-4,6-Dinitrotoluene	0.433	mg/kg	0.433	mg/kg	M	8.1E-08	mg/kg/day	NA	(mg/kg/day) -1	- -
	4-Amino-2,6-Dinitrotoluene	0.365	mg/kg	0.365	mg/kg	M	6.8E-08	mg/kg/day	NA	(mg/kg/day) -1	- -
	HMX	4.77	mg/kg	4.77	mg/kg	M	8.9E-07	mg/kg/day	NA	(mg/kg/day) -1	- -
	RDX	3.41	mg/kg	3.41	mg/kg	M	6.4E-07	mg/kg/day	1.1E-01	(mg/kg/day) -1	7.0E-08
	Barium	252	mg/kg	252	mg/kg	M	0.0E+00	mg/kg/day	NA	(mg/kg/day) -1	- -
	Cadmium	1.19	mg/kg	1.19	mg/kg	M	2.2E-09	mg/kg/day	NA	(mg/kg/day) -1	- -
	Chromium	26.4	mg/kg	26.4	mg/kg	M	0.0E+00	mg/kg/day	NA	(mg/kg/day) -1	- -
	Iron	26855	mg/kg	26855	mg/kg	M	0.0E+00	mg/kg/day	NA	(mg/kg/day) -1	- -
	Lead	358	mg/kg	358	mg/kg	M	0.0E+00	mg/kg/day	NA	(mg/kg/day) -1	- -
	(Total)										1.5E-07
										Total Risk Across All Exposure Routes/Pathways	8.8E-07

(1) Medium-Specific (M) EPC selected for risk calculation.

TABLE 8.60
CALCULATION OF CANCER RISKS
CENTRAL TENDENCY EXPOSURES
NSWC CRANE, INDIANA

Scenario Timeframe: Future
Medium: Surface Soil
Exposure Medium: Surface Soil
Exposure Point: SWMU 3 - 6-Acre Exposure Unit
Receptor Population: On-Site Resident
Receptor Age: Adult

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Risk Calculation (1)	Intake (Cancer)	Intake (Cancer) Units	Cancer Slope Factor	Cancer Slope Factor Units	Cancer Risk
Ingestion	2,3,7,8-TCDD Equivalents	0.0000074	mg/kg	0.0000074	mg/kg	M	3.4E-13	mg/kg/day	1.5E+05	(mg/kg/day) -1	5.1E-08
	2,4,6-Trinitrotoluene	2.62	mg/kg	2.62	mg/kg	M	1.2E-07	mg/kg/day	3.0E-02	(mg/kg/day) -1	3.6E-09
	2-Amino-4,6-Dinitrotoluene	0.433	mg/kg	0.433	mg/kg	M	2.0E-08	mg/kg/day	NA	(mg/kg/day) -1	- -
	4-Amino-2,6-Dinitrotoluene	0.365	mg/kg	0.365	mg/kg	M	1.7E-08	mg/kg/day	NA	(mg/kg/day) -1	- -
	HMX	4.77	mg/kg	4.77	mg/kg	M	2.2E-07	mg/kg/day	NA	(mg/kg/day) -1	- -
	RDX	3.41	mg/kg	3.41	mg/kg	M	1.6E-07	mg/kg/day	1.1E-01	(mg/kg/day) -1	1.7E-08
	Barium	252	mg/kg	252	mg/kg	M	1.2E-05	mg/kg/day	NA	(mg/kg/day) -1	- -
	Cadmium	1.19	mg/kg	1.19	mg/kg	M	5.5E-08	mg/kg/day	NA	(mg/kg/day) -1	- -
	Chromium	26.4	mg/kg	26.4	mg/kg	M	1.2E-06	mg/kg/day	NA	(mg/kg/day) -1	- -
	Iron	26855	mg/kg	26855	mg/kg	M	1.2E-03	mg/kg/day	NA	(mg/kg/day) -1	- -
	Lead	358	mg/kg	358	mg/kg	M	1.6E-05	mg/kg/day	NA	(mg/kg/day) -1	- -
	(Total)										7.2E-08
Dermal	2,3,7,8-TCDD Equivalents	0.0000074	mg/kg	0.0000074	mg/kg	M	1.2E-14	mg/kg/day	1.5E+05	(mg/kg/day) -1	1.7E-09
	2,4,6-Trinitrotoluene	2.62	mg/kg	2.62	mg/kg	M	1.4E-08	mg/kg/day	3.0E-02	(mg/kg/day) -1	4.1E-10
	2-Amino-4,6-Dinitrotoluene	0.433	mg/kg	0.433	mg/kg	M	2.3E-09	mg/kg/day	NA	(mg/kg/day) -1	- -
	4-Amino-2,6-Dinitrotoluene	0.365	mg/kg	0.365	mg/kg	M	1.9E-09	mg/kg/day	NA	(mg/kg/day) -1	- -
	HMX	4.77	mg/kg	4.77	mg/kg	M	2.5E-08	mg/kg/day	NA	(mg/kg/day) -1	- -
	RDX	3.41	mg/kg	3.41	mg/kg	M	1.8E-08	mg/kg/day	1.1E-01	(mg/kg/day) -1	2.0E-09
	Barium	252	mg/kg	252	mg/kg	M	0.0E+00	mg/kg/day	NA	(mg/kg/day) -1	- -
	Cadmium	1.19	mg/kg	1.19	mg/kg	M	6.2E-11	mg/kg/day	NA	(mg/kg/day) -1	- -
	Chromium	26.4	mg/kg	26.4	mg/kg	M	0.0E+00	mg/kg/day	NA	(mg/kg/day) -1	- -
	Iron	26855	mg/kg	26855	mg/kg	M	0.0E+00	mg/kg/day	NA	(mg/kg/day) -1	- -
	Lead	358	mg/kg	358	mg/kg	M	0.0E+00	mg/kg/day	NA	(mg/kg/day) -1	- -
	(Total)										4.1E-09
										Total Risk Across All Exposure Routes/Pathways	7.6E-08

(1) Medium-Specific (M) EPC selected for risk calculation.

TABLE 8.61
CALCULATION OF CANCER RISKS
REASONABLE MAXIMUM EXPOSURE
NSWC CRANE, INDIANA

Scenario Timeframe: Future
Medium: Ground Water
Exposure Medium: Ground Water
Exposure Point: SWMU 3 - Shallow Ground Water
Receptor Population: On-Site Resident
Receptor Age: Adult

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Risk Calculation (1)	Intake (Cancer)	Intake (Cancer) Units	Cancer Slope Factor	Cancer Slope Factor Units	Cancer Risk
Ingestion	1,1,2,2-Tetrachloroethane	42.7	ug/L	42.7	ug/L	M	4.0E-04	mg/kg/day	2.0E-01	(mg/kg/day) -1	8.0E-05
	1,1,2-Trichloroethane	1.11	ug/L	1.11	ug/L	M	1.0E-05	mg/kg/day	5.7E-02	(mg/kg/day) -1	5.9E-07
	1,1-Dichloroethene	0.213	ug/L	0.213	ug/L	M	2.0E-06	mg/kg/day	6.0E-01	(mg/kg/day) -1	1.2E-06
	cis-1,2-Dichloroethene	11.3	ug/L	11.3	ug/L	M	1.1E-04	mg/kg/day	NA	(mg/kg/day) -1	- -
	Tetrachloroethene	0.617	ug/L	0.617	ug/L	M	5.8E-06	mg/kg/day	5.2E-02	(mg/kg/day) -1	3.0E-07
	trans-1,2-Dichloroethene	2.87	ug/L	2.87	ug/L	M	2.7E-05	mg/kg/day	NA	(mg/kg/day) -1	- -
	Trichloroethene	48.9	ug/L	48.9	ug/L	M	4.6E-04	mg/kg/day	4.0E-01	(mg/kg/day) -1	1.8E-04
	Vinyl Chloride	0.400	ug/L	0.400	ug/L	M	3.8E-06	mg/kg/day	7.2E-01	(mg/kg/day) -1	2.7E-06
	2,4,6-Trinitrotoluene	1.30	ug/L	1.30	ug/L	M	1.2E-05	mg/kg/day	3.0E-02	(mg/kg/day) -1	3.7E-07
	2-Amino-4,6-Dinitrotoluene	0.409	ug/L	0.409	ug/L	M	3.8E-06	mg/kg/day	NA	(mg/kg/day) -1	- -
	4-Amino-2,6-Dinitrotoluene	1.03	ug/L	1.03	ug/L	M	9.7E-06	mg/kg/day	NA	(mg/kg/day) -1	- -
	RDX	27.2	ug/L	27.2	ug/L	M	2.6E-04	mg/kg/day	1.1E-01	(mg/kg/day) -1	2.8E-05
	Aluminum	95.3	ug/L	95.3	ug/L	M	9.0E-04	mg/kg/day	NA	(mg/kg/day) -1	- -
	Barium	87.8	ug/L	87.8	ug/L	M	8.2E-04	mg/kg/day	NA	(mg/kg/day) -1	- -
	Cadmium	1.78	ug/L	1.78	ug/L	M	1.7E-05	mg/kg/day	NA	(mg/kg/day) -1	- -
	Chromium	7.02	ug/L	7.02	ug/L	M	6.6E-05	mg/kg/day	NA	(mg/kg/day) -1	- -
	Iron	505	ug/L	505	ug/L	M	4.7E-03	mg/kg/day	NA	(mg/kg/day) -1	- -
	Manganese	58.2	ug/L	58.2	ug/L	M	5.5E-04	mg/kg/day	NA	(mg/kg/day) -1	- -
	Nickel	8.86	ug/L	8.86	ug/L	M	8.3E-05	mg/kg/day	NA	(mg/kg/day) -1	- -
	Thallium	0.173	ug/L	0.173	ug/L	M	1.6E-06	mg/kg/day	NA	(mg/kg/day) -1	- -
	Nitrate	296	ug/L	296	ug/L	M	2.8E-03	mg/kg/day	NA	(mg/kg/day) -1	- -
	(Total)										3.0E-04
Dermal	1,1,2,2-Tetrachloroethane	42.7	ug/L	42.7	ug/L	M	3.3E-05	mg/kg/day	2.0E-01	(mg/kg/day) -1	6.7E-06
	1,1,2-Trichloroethane	1.11	ug/L	1.11	ug/L	M	6.4E-07	mg/kg/day	5.7E-02	(mg/kg/day) -1	3.7E-08
	1,1-Dichloroethene	0.213	ug/L	0.213	ug/L	M	1.8E-07	mg/kg/day	6.0E-01	(mg/kg/day) -1	1.1E-07
	cis-1,2-Dichloroethene	11.3	ug/L	11.3	ug/L	M	1.0E-05	mg/kg/day	NA	(mg/kg/day) -1	- -
	Tetrachloroethene	0.617	ug/L	0.617	ug/L	M	2.3E-06	mg/kg/day	5.2E-02	(mg/kg/day) -1	1.2E-07
	trans-1,2-Dichloroethene	2.87	ug/L	2.87	ug/L	M	1.6E-06	mg/kg/day	NA	(mg/kg/day) -1	- -
	Trichloroethene	48.9	ug/L	48.9	ug/L	M	5.1E-05	mg/kg/day	4.0E-01	(mg/kg/day) -1	2.0E-05
	Vinyl Chloride	0.400	ug/L	0.400	ug/L	M	1.3E-07	mg/kg/day	7.2E-01	(mg/kg/day) -1	9.2E-08
	2,4,6-Trinitrotoluene	1.30	ug/L	1.30	ug/L	M	2.0E-07	mg/kg/day	3.0E-02	(mg/kg/day) -1	6.1E-09
	2-Amino-4,6-Dinitrotoluene	0.409	ug/L	0.409	ug/L	M	3.5E-08	mg/kg/day	NA	(mg/kg/day) -1	- -
	4-Amino-2,6-Dinitrotoluene	1.03	ug/L	1.03	ug/L	M	8.9E-08	mg/kg/day	NA	(mg/kg/day) -1	- -
	RDX	27.2	ug/L	27.2	ug/L	M	1.5E-06	mg/kg/day	1.1E-01	(mg/kg/day) -1	1.6E-07
	Aluminum	95.3	ug/L	95.3	ug/L	M	2.0E-06	mg/kg/day	NA	(mg/kg/day) -1	- -
	Barium	87.8	ug/L	87.8	ug/L	M	1.9E-06	mg/kg/day	NA	(mg/kg/day) -1	- -
	Cadmium	1.78	ug/L	1.78	ug/L	M	3.8E-08	mg/kg/day	NA	(mg/kg/day) -1	- -
	Chromium	7.02	ug/L	7.02	ug/L	M	3.0E-07	mg/kg/day	NA	(mg/kg/day) -1	- -
	Iron	505	ug/L	505	ug/L	M	1.1E-05	mg/kg/day	NA	(mg/kg/day) -1	- -
	Manganese	58.2	ug/L	58.2	ug/L	M	1.2E-06	mg/kg/day	NA	(mg/kg/day) -1	- -
	Nickel	8.86	ug/L	8.86	ug/L	M	3.7E-08	mg/kg/day	NA	(mg/kg/day) -1	- -
	Thallium	0.173	ug/L	0.173	ug/L	M	3.7E-09	mg/kg/day	NA	(mg/kg/day) -1	- -
	Nitrate	296	ug/L	296	ug/L	M	6.3E-06	mg/kg/day	NA	(mg/kg/day) -1	- -
	(Total)										2.7E-05
										Total Risk Across All Exposure Routes/Pathways	3.2E-04

(1) Medium-Specific (M) EPC selected for risk calculation.

TABLE 8.62
CALCULATION OF CANCER RISKS
CENTRAL TENDENCY EXPOSURES
NSWC CRANE, INDIANA

Scenario Timeframe: Future
Medium: Ground Water
Exposure Medium: Ground Water
Exposure Point: SWMU 3 - Shallow Ground Water
Receptor Population: On-Site Resident
Receptor Age: Adult

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Risk Calculation (1)	Intake (Cancer)	Intake (Cancer) Units	Cancer Slope Factor	Cancer Slope Factor Units	Cancer Risk
Ingestion	1,1,2,2-Tetrachloroethane	42.7	ug/L	42.7	ug/L	M	5.5E-05	mg/kg/day	2.0E-01	(mg/kg/day) -1	1.1E-05
	1,1,2-Trichloroethane	1.11	ug/L	1.11	ug/L	M	1.4E-06	mg/kg/day	5.7E-02	(mg/kg/day) -1	8.1E-08
	1,1-Dichloroethene	0.213	ug/L	0.213	ug/L	M	2.7E-07	mg/kg/day	6.0E-01	(mg/kg/day) -1	1.6E-07
	cis-1,2-Dichloroethene	11.3	ug/L	11.3	ug/L	M	1.4E-05	mg/kg/day	NA	(mg/kg/day) -1	- -
	Tetrachloroethene	0.617	ug/L	0.617	ug/L	M	7.9E-07	mg/kg/day	5.2E-02	(mg/kg/day) -1	4.1E-08
	trans-1,2-Dichloroethene	2.87	ug/L	2.87	ug/L	M	3.7E-06	mg/kg/day	NA	(mg/kg/day) -1	- -
	Trichloroethene	48.9	ug/L	48.9	ug/L	M	6.3E-05	mg/kg/day	4.0E-01	(mg/kg/day) -1	2.5E-05
	Vinyl Chloride	0.400	ug/L	0.400	ug/L	M	5.1E-07	mg/kg/day	7.2E-01	(mg/kg/day) -1	3.7E-07
	2,4,6-Trinitrotoluene	1.30	ug/L	1.30	ug/L	M	1.7E-06	mg/kg/day	3.0E-02	(mg/kg/day) -1	5.0E-08
	2-Amino-4,6-Dinitrotoluene	0.409	ug/L	0.409	ug/L	M	5.2E-07	mg/kg/day	NA	(mg/kg/day) -1	- -
	4-Amino-2,6-Dinitrotoluene	1.03	ug/L	1.03	ug/L	M	1.3E-06	mg/kg/day	NA	(mg/kg/day) -1	- -
	RDX	27.2	ug/L	27.2	ug/L	M	3.5E-05	mg/kg/day	1.1E-01	(mg/kg/day) -1	3.8E-06
	Aluminum	95.3	ug/L	95.3	ug/L	M	1.2E-04	mg/kg/day	NA	(mg/kg/day) -1	- -
	Barium	87.8	ug/L	87.8	ug/L	M	1.1E-04	mg/kg/day	NA	(mg/kg/day) -1	- -
	Cadmium	1.78	ug/L	1.78	ug/L	M	2.3E-06	mg/kg/day	NA	(mg/kg/day) -1	- -
	Chromium	7.02	ug/L	7.02	ug/L	M	9.0E-06	mg/kg/day	NA	(mg/kg/day) -1	- -
	Iron	505	ug/L	505	ug/L	M	6.5E-04	mg/kg/day	NA	(mg/kg/day) -1	- -
	Manganese	58.2	ug/L	58.2	ug/L	M	7.5E-05	mg/kg/day	NA	(mg/kg/day) -1	- -
	Nickel	8.86	ug/L	8.86	ug/L	M	1.1E-05	mg/kg/day	NA	(mg/kg/day) -1	- -
	Thallium	0.173	ug/L	0.173	ug/L	M	2.2E-07	mg/kg/day	NA	(mg/kg/day) -1	- -
	Nitrate	296	ug/L	296	ug/L	M	3.8E-04	mg/kg/day	NA	(mg/kg/day) -1	- -
	(Total)										4.1E-05
Dermal	1,1,2,2-Tetrachloroethane	42.7	ug/L	42.7	ug/L	M	5.3E-06	mg/kg/day	2.0E-01	(mg/kg/day) -1	1.1E-06
	1,1,2-Trichloroethane	1.11	ug/L	1.11	ug/L	M	1.0E-07	mg/kg/day	5.7E-02	(mg/kg/day) -1	5.8E-09
	1,1-Dichloroethene	0.213	ug/L	0.213	ug/L	M	2.8E-08	mg/kg/day	6.0E-01	(mg/kg/day) -1	1.7E-08
	cis-1,2-Dichloroethene	11.3	ug/L	11.3	ug/L	M	1.6E-06	mg/kg/day	NA	(mg/kg/day) -1	- -
	Tetrachloroethene	0.617	ug/L	0.617	ug/L	M	3.7E-07	mg/kg/day	5.2E-02	(mg/kg/day) -1	1.9E-08
	trans-1,2-Dichloroethene	2.87	ug/L	2.87	ug/L	M	2.5E-07	mg/kg/day	NA	(mg/kg/day) -1	- -
	Trichloroethene	48.9	ug/L	48.9	ug/L	M	8.1E-06	mg/kg/day	4.0E-01	(mg/kg/day) -1	3.2E-06
	Vinyl Chloride	0.400	ug/L	0.400	ug/L	M	2.0E-08	mg/kg/day	7.2E-01	(mg/kg/day) -1	1.5E-08
	2,4,6-Trinitrotoluene	1.30	ug/L	1.30	ug/L	M	3.3E-08	mg/kg/day	3.0E-02	(mg/kg/day) -1	9.8E-10
	2-Amino-4,6-Dinitrotoluene	0.409	ug/L	0.409	ug/L	M	5.6E-09	mg/kg/day	NA	(mg/kg/day) -1	- -
	4-Amino-2,6-Dinitrotoluene	1.03	ug/L	1.03	ug/L	M	1.4E-08	mg/kg/day	NA	(mg/kg/day) -1	- -
	RDX	27.2	ug/L	27.2	ug/L	M	2.4E-07	mg/kg/day	1.1E-01	(mg/kg/day) -1	2.6E-08
	Aluminum	95.3	ug/L	95.3	ug/L	M	2.6E-07	mg/kg/day	NA	(mg/kg/day) -1	- -
	Barium	87.8	ug/L	87.8	ug/L	M	2.4E-07	mg/kg/day	NA	(mg/kg/day) -1	- -
	Cadmium	1.78	ug/L	1.78	ug/L	M	4.9E-09	mg/kg/day	NA	(mg/kg/day) -1	- -
	Chromium	7.02	ug/L	7.02	ug/L	M	3.9E-08	mg/kg/day	NA	(mg/kg/day) -1	- -
	Iron	505	ug/L	505	ug/L	M	1.4E-06	mg/kg/day	NA	(mg/kg/day) -1	- -
	Manganese	58.2	ug/L	58.2	ug/L	M	1.6E-07	mg/kg/day	NA	(mg/kg/day) -1	- -
	Nickel	8.86	ug/L	8.86	ug/L	M	4.9E-09	mg/kg/day	NA	(mg/kg/day) -1	- -
	Thallium	0.173	ug/L	0.173	ug/L	M	4.8E-10	mg/kg/day	NA	(mg/kg/day) -1	- -
	Nitrate	296	ug/L	296	ug/L	M	8.2E-07	mg/kg/day	NA	(mg/kg/day) -1	- -
	(Total)										4.4E-06
										Total Risk Across All Exposure Routes/Pathways	4.5E-05

(1) Medium-Specific (M) EPC selected for risk calculation.

TABLE 8.63
CALCULATION OF CANCER RISKS
REASONABLE MAXIMUM EXPOSURE
NSWC CRANE, INDIANA

Scenario Timeframe: Future
Medium: Ground Water
Exposure Medium: Air
Exposure Point: SWMU 3 - Shallow Ground Water
Receptor Population: On-Site Resident
Receptor Age: Adult

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Risk Calculation (1)	Intake (Cancer)	Intake (Cancer) Units	Cancer Slope Factor	Cancer Slope Factor Units	Cancer Risk
Inhalation	1,1,2,2-Tetrachloroethane	42.7	ug/L	2.3E-02	mg/m3	R	6.4E-05	mg/kg/day	2.0E-01	(mg/kg/day) $^{-1}$	1.3E-05
	1,1,2-Trichloroethane	1.11	ug/L	8.4E-04	mg/m3	R	2.4E-06	mg/kg/day	5.6E-02	(mg/kg/day) $^{-1}$	1.3E-07
	1,1-Dichloroethene	0.213	ug/L	2.2E-04	mg/m3	R	6.2E-07	mg/kg/day	1.8E-01	(mg/kg/day) $^{-1}$	1.1E-07
	cis-1,2-Dichloroethene	11.3	ug/L	1.1E-02	mg/m3	R	3.2E-05	mg/kg/day	NA	(mg/kg/day) $^{-1}$	N/A
	Tetrachloroethene	0.617	ug/L	5.2E-04	mg/m3	R	1.5E-06	mg/kg/day	1.0E-02	(mg/kg/day) $^{-1}$	1.5E-08
	trans-1,2-Dichloroethene	2.87	ug/L	2.9E-03	mg/m3	R	8.3E-06	mg/kg/day	NA	(mg/kg/day) $^{-1}$	N/A
	Trichloroethene	48.9	ug/L	4.4E-02	mg/m3	R	1.3E-04	mg/kg/day	4.0E-01	(mg/kg/day) $^{-1}$	5.0E-05
	Vinyl Chloride	0.400	ug/L	4.8E-04	mg/m3	R	1.4E-06	mg/kg/day	1.5E-02	(mg/kg/day) $^{-1}$	2.0E-08
	2,4,6-Trinitrotoluene	1.30	ug/L	0.0E+00	mg/m3	R	0.0E+00	mg/kg/day	NA	(mg/kg/day) $^{-1}$	N/A
	2-Amino-4,6-Dinitrotoluene	0.409	ug/L	0.0E+00	mg/m3	R	0.0E+00	mg/kg/day	NA	(mg/kg/day) $^{-1}$	N/A
	4-Amino-2,6-Dinitrotoluene	1.03	ug/L	0.0E+00	mg/m3	R	0.0E+00	mg/kg/day	NA	(mg/kg/day) $^{-1}$	N/A
	RDX	27.2	ug/L	0.0E+00	mg/m3	R	0.0E+00	mg/kg/day	NA	(mg/kg/day) $^{-1}$	N/A
	Aluminum	95.3	ug/L	0.0E+00	mg/m3	R	0.0E+00	mg/kg/day	NA	(mg/kg/day) $^{-1}$	N/A
	Barium	87.8	ug/L	0.0E+00	mg/m3	R	0.0E+00	mg/kg/day	NA	(mg/kg/day) $^{-1}$	N/A
	Cadmium	1.78	ug/L	0.0E+00	mg/m3	R	0.0E+00	mg/kg/day	6.3E+00	(mg/kg/day) $^{-1}$	N/A
	Chromium	7.02	ug/L	0.0E+00	mg/m3	R	0.0E+00	mg/kg/day	NA	(mg/kg/day) $^{-1}$	N/A
	Iron	505	ug/L	0.0E+00	mg/m3	R	0.0E+00	mg/kg/day	NA	(mg/kg/day) $^{-1}$	N/A
	Manganese	58.2	ug/L	0.0E+00	mg/m3	R	0.0E+00	mg/kg/day	NA	(mg/kg/day) $^{-1}$	N/A
	Nickel	8.86	ug/L	0.0E+00	mg/m3	R	0.0E+00	mg/kg/day	NA	(mg/kg/day) $^{-1}$	N/A
	Thallium	0.173	ug/L	0.0E+00	mg/m3	R	0.0E+00	mg/kg/day	NA	(mg/kg/day) $^{-1}$	N/A
	Nitrate	296	ug/L	0.0E+00	mg/m3	R	0.0E+00	mg/kg/day	NA	(mg/kg/day) $^{-1}$	N/A
	(Total)										6.3E-05
										Total Risk Across All Exposure Routes/Pathways	6.3E-05

(1) Route-Specific (R) EPC selected for risk calculation.

TABLE 8.64
CALCULATION OF CANCER RISKS
CENTRAL TENDENCY EXPOSURES
NSWC CRANE, INDIANA

Scenario Timeframe: Future
Medium: Ground Water
Exposure Medium: Air
Exposure Point: SWMU 3 - Shallow Ground Water
Receptor Population: On-Site Resident
Receptor Age: Adult

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Risk Calculation (1)	Intake (Cancer)	Intake (Cancer) Units	Cancer Slope Factor	Cancer Slope Factor Units	Cancer Risk
Inhalation	1,1,2,2-Tetrachloroethane	42.7	ug/L	1.2E-02	mg/m3	R	6.8E-06	mg/kg/day	2.0E-01	(mg/kg/day) $^{-1}$	1.4E-06
	1,1,2-Trichloroethane	1.11	ug/L	4.6E-04	mg/m3	R	2.5E-07	mg/kg/day	5.6E-02	(mg/kg/day) $^{-1}$	1.4E-08
	1,1-Dichloroethene	0.213	ug/L	1.2E-04	mg/m3	R	6.6E-08	mg/kg/day	1.8E-01	(mg/kg/day) $^{-1}$	1.2E-08
	cis-1,2-Dichloroethene	11.3	ug/L	6.1E-03	mg/m3	R	3.4E-06	mg/kg/day	NA	(mg/kg/day) $^{-1}$	N/A
	Tetrachloroethene	0.617	ug/L	2.8E-04	mg/m3	R	1.6E-07	mg/kg/day	1.0E-02	(mg/kg/day) $^{-1}$	1.6E-09
	trans-1,2-Dichloroethene	2.87	ug/L	1.6E-03	mg/m3	R	8.8E-07	mg/kg/day	NA	(mg/kg/day) $^{-1}$	N/A
	Trichloroethene	48.9	ug/L	2.4E-02	mg/m3	R	1.3E-05	mg/kg/day	4.0E-01	(mg/kg/day) $^{-1}$	5.3E-06
	Vinyl Chloride	0.400	ug/L	2.6E-04	mg/m3	R	1.4E-07	mg/kg/day	1.5E-02	(mg/kg/day) $^{-1}$	2.2E-09
	2,4,6-Trinitrotoluene	1.30	ug/L	0.0E+00	mg/m3	R	0.0E+00	mg/kg/day	NA	(mg/kg/day) $^{-1}$	N/A
	2-Amino-4,6-Dinitrotoluene	0.409	ug/L	0.0E+00	mg/m3	R	0.0E+00	mg/kg/day	NA	(mg/kg/day) $^{-1}$	N/A
	4-Amino-2,6-Dinitrotoluene	1.03	ug/L	0.0E+00	mg/m3	R	0.0E+00	mg/kg/day	NA	(mg/kg/day) $^{-1}$	N/A
	RDX	27.2	ug/L	0.0E+00	mg/m3	R	0.0E+00	mg/kg/day	NA	(mg/kg/day) $^{-1}$	N/A
	Aluminum	95.3	ug/L	0.0E+00	mg/m3	R	0.0E+00	mg/kg/day	NA	(mg/kg/day) $^{-1}$	N/A
	Barium	87.8	ug/L	0.0E+00	mg/m3	R	0.0E+00	mg/kg/day	NA	(mg/kg/day) $^{-1}$	N/A
	Cadmium	1.78	ug/L	0.0E+00	mg/m3	R	0.0E+00	mg/kg/day	6.3E+00	(mg/kg/day) $^{-1}$	N/A
	Chromium	7.02	ug/L	0.0E+00	mg/m3	R	0.0E+00	mg/kg/day	NA	(mg/kg/day) $^{-1}$	N/A
	Iron	505	ug/L	0.0E+00	mg/m3	R	0.0E+00	mg/kg/day	NA	(mg/kg/day) $^{-1}$	N/A
	Manganese	58.2	ug/L	0.0E+00	mg/m3	R	0.0E+00	mg/kg/day	NA	(mg/kg/day) $^{-1}$	N/A
	Nickel	8.86	ug/L	0.0E+00	mg/m3	R	0.0E+00	mg/kg/day	NA	(mg/kg/day) $^{-1}$	N/A
	Thallium	0.173	ug/L	0.0E+00	mg/m3	R	0.0E+00	mg/kg/day	NA	(mg/kg/day) $^{-1}$	N/A
	Nitrate	296	ug/L	0.0E+00	mg/m3	R	0.0E+00	mg/kg/day	NA	(mg/kg/day) $^{-1}$	N/A
	(Total)										6.7E-06
										Total Risk Across All Exposure Routes/Pathways	6.7E-06

(1) Route-Specific (R) EPC selected for risk calculation.

TABLE 8.65
CALCULATION OF CANCER RISKS
REASONABLE MAXIMUM EXPOSURE
NSWC CRANE, INDIANA

Scenario Timeframe: Future
Medium: Surface Water
Exposure Medium: Surface Water
Exposure Point: SWMU 3 - Little Sulphur Creek
Receptor Population: On-Site Resident
Receptor Age: Adult

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Risk Calculation (1)	Intake (Cancer)	Intake (Cancer) Units	Cancer Slope Factor	Cancer Slope Factor Units	Cancer Risk
Ingestion	Bromomethane	1.60	ug/L	1.60	ug/L	M	1.5E-05	mg/kg/day	NA	(mg/kg/day) -1	- -
	2-Amino-4,6-Dinitrotoluene	1.50	ug/L	1.50	ug/L	M	1.4E-05	mg/kg/day	NA	(mg/kg/day) -1	- -
	4-Amino-2,6-Dinitrotoluene	2.90	ug/L	2.90	ug/L	M	2.7E-05	mg/kg/day	NA	(mg/kg/day) -1	- -
	RDX	63.0	ug/L	63.0	ug/L	M	5.9E-04	mg/kg/day	1.1E-01	(mg/kg/day) -1	6.5E-05
	(Total)										6.5E-05
Dermal	Bromomethane	1.60	ug/L	1.60	ug/L	M	3.2E-07	mg/kg/day	NA	(mg/kg/day) -1	- -
	2-Amino-4,6-Dinitrotoluene	1.50	ug/L	1.50	ug/L	M	1.3E-07	mg/kg/day	NA	(mg/kg/day) -1	- -
	4-Amino-2,6-Dinitrotoluene	2.90	ug/L	2.90	ug/L	M	2.5E-07	mg/kg/day	NA	(mg/kg/day) -1	- -
	RDX	63.0	ug/L	63.0	ug/L	M	3.5E-06	mg/kg/day	1.1E-01	(mg/kg/day) -1	3.8E-07
	(Total)										3.8E-07
										Total Risk Across All Exposure Routes/Pathways	6.5E-05

(1) Medium-Specific (M) EPC selected for risk calculation.

TABLE 8.66
CALCULATION OF CANCER RISKS
CENTRAL TENDENCY EXPOSURES
NSWC CRANE, INDIANA

Scenario Timeframe: Future
Medium: Surface Water
Exposure Medium: Surface Water
Exposure Point: SWMU 3 - Little Sulphur Creek
Receptor Population: On-Site Resident
Receptor Age: Adult

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Risk Calculation (1)	Intake (Cancer)	Intake (Cancer) Units	Cancer Slope Factor	Cancer Slope Factor Units	Cancer Risk
Ingestion	Bromomethane	1.60	ug/L	1.60	ug/L	M	2.1E-06	mg/kg/day	NA	(mg/kg/day) -1	- -
	2-Amino-4,6-Dinitrotoluene	1.50	ug/L	1.50	ug/L	M	1.9E-06	mg/kg/day	NA	(mg/kg/day) -1	- -
	4-Amino-2,6-Dinitrotoluene	2.90	ug/L	2.90	ug/L	M	3.7E-06	mg/kg/day	NA	(mg/kg/day) -1	- -
	RDX	63.0	ug/L	63.0	ug/L	M	8.1E-05	mg/kg/day	1.1E-01	(mg/kg/day) -1	8.9E-06
	(Total)										8.9E-06
Dermal	Bromomethane	1.60	ug/L	1.60	ug/L	M	5.1E-08	mg/kg/day	NA	(mg/kg/day) -1	- -
	2-Amino-4,6-Dinitrotoluene	1.50	ug/L	1.50	ug/L	M	2.1E-08	mg/kg/day	NA	(mg/kg/day) -1	- -
	4-Amino-2,6-Dinitrotoluene	2.90	ug/L	2.90	ug/L	M	4.0E-08	mg/kg/day	NA	(mg/kg/day) -1	- -
	RDX	63.0	ug/L	63.0	ug/L	M	5.5E-07	mg/kg/day	1.1E-01	(mg/kg/day) -1	6.1E-08
	(Total)										6.1E-08
										Total Risk Across All Exposure Routes/Pathways	8.9E-06

(1) Medium-Specific (M) EPC selected for risk calculation.

TABLE 8.67
CALCULATION OF CANCER RISKS
REASONABLE MAXIMUM EXPOSURE
NSWC CRANE, INDIANA

Scenario Timeframe: Future
Medium: Surface Water
Exposure Medium: Air
Exposure Point: SWMU 3 - Little Sulphur Creek
Receptor Population: On-Site Resident
Receptor Age: Adult

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Risk Calculation (1)	Intake (Cancer)	Intake (Cancer) Units	Cancer Slope Factor	Cancer Slope Factor Units	Cancer Risk
Inhalation	Bromomethane	1.60	ug/L	1.6E-03	mg/m3	R	4.6E-06	mg/kg/day	NA	$(mg/kg/day)^{-1}$	N/A
	2-Amino-4,6-Dinitrotoluene	1.50	ug/L	0.0E+00	mg/m3	R	0.0E+00	mg/kg/day	NA	$(mg/kg/day)^{-1}$	N/A
	4-Amino-2,6-Dinitrotoluene	2.90	ug/L	0.0E+00	mg/m3	R	0.0E+00	mg/kg/day	NA	$(mg/kg/day)^{-1}$	N/A
	RDX	63.0	ug/L	0.0E+00	mg/m3	R	0.0E+00	mg/kg/day	NA	$(mg/kg/day)^{-1}$	N/A
	(Total)										0.0E+00
										Total Risk Across All Exposure Routes/Pathways	NA

(1) Route-Specific (R) EPC selected for risk calculation.

TABLE 8.68
CALCULATION OF CANCER RISKS
CENTRAL TENDENCY EXPOSURES
NSWC CRANE, INDIANA

Scenario Timeframe: Future
Medium: Surface Water
Exposure Medium: Air
Exposure Point: SWMU 3 - Little Sulphur Creek
Receptor Population: On-Site Resident
Receptor Age: Adult

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Risk Calculation (1)	Intake (Cancer)	Intake (Cancer) Units	Cancer Slope Factor	Cancer Slope Factor Units	Cancer Risk
Inhalation	Bromomethane	1.60	ug/L	8.9E-04	mg/m3	R	4.9E-07	mg/kg/day	NA	$(mg/kg/day)^{-1}$	N/A
	2-Amino-4,6-Dinitrotoluene	1.50	ug/L	0.0E+00	mg/m3	R	0.0E+00	mg/kg/day	NA	$(mg/kg/day)^{-1}$	N/A
	4-Amino-2,6-Dinitrotoluene	2.90	ug/L	0.0E+00	mg/m3	R	0.0E+00	mg/kg/day	NA	$(mg/kg/day)^{-1}$	N/A
	RDX	63.0	ug/L	0.0E+00	mg/m3	R	0.0E+00	mg/kg/day	NA	$(mg/kg/day)^{-1}$	N/A
	(Total)										0.0E+00
										Total Risk Across All Exposure Routes/Pathways	NA

(1) Route-Specific (R) EPC selected for risk calculation.

TABLE 8.69
CALCULATION OF CANCER RISKS
REASONABLE MAXIMUM EXPOSURE
NSWC CRANE, INDIANA

Scenario Timeframe: Future
Medium: Sediment
Exposure Medium: Sediment
Exposure Point: SWMU 3 - Little Sulphur Creek
Receptor Population: On-Site Resident
Receptor Age: Adult

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Risk Calculation (1)	Intake (Cancer)	Intake (Cancer) Units	Cancer Slope Factor	Cancer Slope Factor Units	Cancer Risk
Ingestion	2-Amino-4,6-Dinitrotoluene	0.178	mg/kg	0.178	mg/kg	M	6.2E-09	mg/kg/day	NA	(mg/kg/day) -1	- -
	Aluminum	14916	mg/kg	14916	mg/kg	M	5.2E-04	mg/kg/day	NA	(mg/kg/day) -1	- -
	Antimony	2.88	mg/kg	2.88	mg/kg	M	1.0E-07	mg/kg/day	NA	(mg/kg/day) -1	- -
	Barium	359	mg/kg	359	mg/kg	M	1.3E-05	mg/kg/day	NA	(mg/kg/day) -1	- -
	Cadmium	1.78	mg/kg	1.78	mg/kg	M	6.2E-08	mg/kg/day	NA	(mg/kg/day) -1	- -
	Lead	120	mg/kg	120	mg/kg	M	4.2E-06	mg/kg/day	NA	(mg/kg/day) -1	- -
	(Total)										- -
Dermal	2-Amino-4,6-Dinitrotoluene	0.178	mg/kg	0.178	mg/kg	M	5.0E-09	mg/kg/day	NA	(mg/kg/day) -1	- -
	Aluminum	14916	mg/kg	14916	mg/kg	M	0.0E+00	mg/kg/day	NA	(mg/kg/day) -1	- -
	Antimony	2.88	mg/kg	2.88	mg/kg	M	0.0E+00	mg/kg/day	NA	(mg/kg/day) -1	- -
	Barium	359	mg/kg	359	mg/kg	M	0.0E+00	mg/kg/day	NA	(mg/kg/day) -1	- -
	Cadmium	1.78	mg/kg	1.78	mg/kg	M	4.9E-10	mg/kg/day	NA	(mg/kg/day) -1	- -
	Lead	120	mg/kg	120	mg/kg	M	0.0E+00	mg/kg/day	NA	(mg/kg/day) -1	- -
	(Total)										- -
										Total Risk Across All Exposure Routes/Pathways	- -

(1) Medium-Specific (M) EPC selected for risk calculation.

TABLE 8.70
CALCULATION OF CANCER RISKS
CENTRAL TENDENCY EXPOSURES
NSWC CRANE, INDIANA

Scenario Timeframe: Future
Medium: Sediment
Exposure Medium: Sediment
Exposure Point: SWMU 3 - Little Sulphur Creek
Receptor Population: On-Site Resident
Receptor Age: Adult

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Risk Calculation (1)	Intake (Cancer)	Intake (Cancer) Units	Cancer Slope Factor	Cancer Slope Factor Units	Cancer Risk
Ingestion	2-Amino-4,6-Dinitrotoluene	0.178	mg/kg	0.178	mg/kg	M	4.5E-10	mg/kg/day	NA	(mg/kg/day) -1	- -
	Aluminum	14916	mg/kg	14916	mg/kg	M	3.8E-05	mg/kg/day	NA	(mg/kg/day) -1	- -
	Antimony	2.88	mg/kg	2.88	mg/kg	M	7.3E-09	mg/kg/day	NA	(mg/kg/day) -1	- -
	Barium	359	mg/kg	359	mg/kg	M	9.1E-07	mg/kg/day	NA	(mg/kg/day) -1	- -
	Cadmium	1.78	mg/kg	1.78	mg/kg	M	4.5E-09	mg/kg/day	NA	(mg/kg/day) -1	- -
	Lead	120	mg/kg	120	mg/kg	M	3.1E-07	mg/kg/day	NA	(mg/kg/day) -1	- -
	(Total)										- -
Dermal	2-Amino-4,6-Dinitrotoluene	0.178	mg/kg	0.178	mg/kg	M	1.0E-10	mg/kg/day	NA	(mg/kg/day) -1	- -
	Aluminum	14916	mg/kg	14916	mg/kg	M	0.0E+00	mg/kg/day	NA	(mg/kg/day) -1	- -
	Antimony	2.88	mg/kg	2.88	mg/kg	M	0.0E+00	mg/kg/day	NA	(mg/kg/day) -1	- -
	Barium	359	mg/kg	359	mg/kg	M	0.0E+00	mg/kg/day	NA	(mg/kg/day) -1	- -
	Cadmium	1.78	mg/kg	1.78	mg/kg	M	1.0E-11	mg/kg/day	NA	(mg/kg/day) -1	- -
	Lead	120	mg/kg	120	mg/kg	M	0.0E+00	mg/kg/day	NA	(mg/kg/day) -1	- -
	(Total)										- -
										Total Risk Across All Exposure Routes/Pathways	- -

(1) Medium-Specific (M) EPC selected for risk calculation.

RAGS Part D Table 9

Summary Of Receptor Risks And Hazards For COPCs

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SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs

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TABLE 9.1
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
REASONABLE MAXIMUM EXPOSURE
NSWC CRANE, INDIANA

Scenario Timeframe: Current/Future
Receptor Population: Trespassers
Receptor Age: Adolescent

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk				Chemical	Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total		Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes Total
Surface Soil	Surface Soil	SWMU 3 - Old Jeep Trail	2,3,7,8-TCDD Equivalents	3E-08	- -	6E-09	3E-08	2,3,7,8-TCDD Equivalents	NA	- -	--	- -	--
			2,4,6-Trinitrotoluene	2E-09	- -	1E-09	3E-09	2,4,6-Trinitrotoluene	Liver	0.0009	--	0.0006	0.001
			2-Amino-4,6-Dinitrotoluene	- -	- -	- -	- -	2-Amino-4,6-Dinitrotoluene	Liver	0.001	--	0.0008	0.002
			4-Amino-2,6-Dinitrotoluene	- -	- -	- -	- -	4-Amino-2,6-Dinitrotoluene	Liver	0.001	--	0.0007	0.002
			HMX	- -	- -	- -	- -	HMX	Liver	0.00002	--	0.00001	0.00003
			RDX	1E-08	- -	6E-09	2E-08	RDX	Prostate	0.0002	--	0.0001	0.0003
			Barium	- -	- -	- -	- -	Barium	Kidney	0.0006	--	--	0.0006
			Cadmium	- -	- -	- -	- -	Cadmium	Kidney	0.0004	--	0.00005	0.0004
			Chromium	- -	- -	- -	- -	Chromium	None Reported	0.000003	--	--	0.000003
			Iron	- -	- -	- -	- -	Iron	Blood, GS	0.01	--	--	0.01
			Lead	- -	- -	- -	- -	Lead	NA	- -	--	- -	--
			(Total)	4E-08	- -	1E-08	5E-08	(Total)		0.02	--	0.002	0.02
Surface Water	Surface Water	SWMU 3 - Little Sulphur Creek	Acetone	- -	- -	- -	- -	Acetone	Liver, Kidney	0.0002	- -	0.000008	0.0002
			Bromomethane	- -	- -	- -	- -	Bromomethane	GS	0.0001	- -	0.00003	0.0002
			Methylene Chloride	1E-09	- -	3E-10	2E-09	Methylene Chloride	Liver	0.00002	- -	0.000005	0.00002
			Bis(2-ethylhexyl)phthalate	1E-09	- -	7E-09	8E-09	Bis(2-ethylhexyl)phthalate	Liver	0.00002	- -	0.0002	0.0002
			Pentachlorophenol	4E-10	- -	2E-08	2E-08	Pentachlorophenol	Liver, Kidney	0.0000007	- -	0.00004	0.00004
			2-Amino-4,6-Dinitrotoluene	- -	- -	- -	- -	2-Amino-4,6-Dinitrotoluene	Liver	0.002	- -	0.0001	0.002
			4-Amino-2,6-Dinitrotoluene	- -	- -	- -	- -	4-Amino-2,6-Dinitrotoluene	Liver	0.006	- -	0.0004	0.006
			RDX	4E-07	- -	2E-08	4E-07	RDX	Prostate	0.007	- -	0.0003	0.007
			Antimony	- -	- -	- -	- -	Antimony	Blood	0.0006	- -	0.0003	0.0009
			Lead	- -	- -	- -	- -	Lead	NA	- -	- -	- -	--
			(Total)	4E-07	- -	4E-08	4E-07	(Total)		0.02	--	0.001	0.02
Sediment	Sediment	SWMU 3 - Little Sulphur Creek	2-Amino-4,6-Dinitrotoluene	- -	- -	- -	- -	2-Amino-4,6-Dinitrotoluene	Liver	0.0005	- -	0.0003	0.0008
			Aluminum	- -	- -	- -	- -	Aluminum	Immune, Nails	0.002	- -	--	0.002
			Antimony	- -	- -	- -	- -	Antimony	Blood	0.001	- -	--	0.001
			Barium	- -	- -	- -	- -	Barium	Kidney	0.0008	- -	--	0.0008
			Cadmium	- -	- -	- -	- -	Cadmium	Kidney	0.0006	- -	0.00008	0.0007
			Lead	- -	- -	- -	- -	Lead	NA	- -	- -	- -	--
			(Total)	- -	- -	- -	- -	(Total)		0.006	--	0.0004	0.006

Total Risk Across Soil	5E-08
Total Risk Across Surface Water	4E-07
Total Risk Across Sediment	- -
Total Risk Across All Media and All Exposure Routes	5E-07

Total Hazard Index Across All Media and All Exposure Routes	0.04

Total Blood HI	0.02
Total GS HI	0.01
Total Kidney HI	0.003
Total Liver HI	0.01
Total Nails HI	0.002
Total Prostate HI	0.008
Total Immune HI	0.002
Total None Reported HI	0.000003

TABLE 9.2
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
CENTRAL TENDENCY EXPOSURES
NSWC CRANE, INDIANA

Scenario Timeframe: Current/Future
Receptor Population: Trespassers
Receptor Age: Adolescent

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk				Chemical	Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total		Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes Total
Surface Soil	Surface Soil	SWMU 3 - Old Jeep Trail	2,3,7,8-TCDD Equivalents	7E-09	- -	5E-10	8E-09	2,3,7,8-TCDD Equivalents	NA	- -	--	- -	--
			2,4,6-Trinitrotoluene	5E-10	- -	1E-10	6E-10	2,4,6-Trinitrotoluene	Liver	0.0002	--	0.00005	0.0003
			2-Amino-4,6-Dinitrotoluene	- -	- -	- -	- -	2-Amino-4,6-Dinitrotoluene	Liver	0.0003	--	0.00007	0.0004
			4-Amino-2,6-Dinitrotoluene	- -	- -	- -	- -	4-Amino-2,6-Dinitrotoluene	Liver	0.0003	--	0.00006	0.0003
			HMX	- -	- -	- -	- -	HMX	Liver	0.000004	--	0.0000010	0.000005
			RDX	2E-09	- -	6E-10	3E-09	RDX	Prostate	0.00005	--	0.00001	0.00006
			Barium	- -	- -	- -	- -	Barium	Kidney	0.0001	--	--	0.0001
			Cadmium	- -	- -	- -	- -	Cadmium	Kidney	0.00010	--	0.000005	0.0001
			Chromium	- -	- -	- -	- -	Chromium	None Reported	0.0000007	--	--	0.0000007
			Iron	- -	- -	- -	- -	Iron	Blood, GS	0.004	--	--	0.004
			Lead	- -	- -	- -	- -	Lead	NA	- -	--	- -	--
			(Total)	1E-08	- -	1E-09	1E-08	(Total)		0.005	--	0.0002	0.005
Surface Water	Surface Water	SWMU 3 - Little Sulphur Creek	Acetone	- -	- -	- -	- -	Acetone	Liver, Kidney	0.00005	- -	0.000002	0.00006
			Bromomethane	- -	- -	- -	- -	Bromomethane	GS	0.00003	- -	0.000007	0.00004
			Methylene Chloride	3E-10	- -	9E-11	4E-10	Methylene Chloride	Liver	0.000004	- -	0.000001	0.000006
			Bis(2-ethylhexyl)phthalate	2E-10	- -	2E-09	3E-09	Bis(2-ethylhexyl)phthalate	Liver	0.000006	- -	0.00006	0.00006
			Pentachlorophenol	9E-11	- -	7E-09	7E-09	Pentachlorophenol	Liver, Kidney	0.0000002	- -	0.00001	0.00001
			2-Amino-4,6-Dinitrotoluene	- -	- -	- -	- -	2-Amino-4,6-Dinitrotoluene	Liver	0.0005	- -	0.00005	0.0006
			4-Amino-2,6-Dinitrotoluene	- -	- -	- -	- -	4-Amino-2,6-Dinitrotoluene	Liver	0.001	- -	0.0001	0.002
			RDX	9E-08	- -	5E-09	1E-07	RDX	Prostate	0.002	- -	0.00010	0.002
			Antimony	- -	- -	- -	- -	Antimony	Blood	0.0002	- -	0.00007	0.0002
			Lead	- -	- -	- -	- -	Lead	NA	- -	- -	- -	--
			(Total)	9E-08	- -	1E-08	1E-07	(Total)		0.004	--	0.0004	0.004
Sediment	Sediment	SWMU 3 - Little Sulphur Creek	2-Amino-4,6-Dinitrotoluene	- -	- -	- -	- -	2-Amino-4,6-Dinitrotoluene	Liver	0.0001	- -	0.00003	0.0002
			Aluminum	- -	- -	- -	- -	Aluminum	Immune, Nails	0.0006	- -	--	0.0006
			Antimony	- -	- -	- -	- -	Antimony	Blood	0.0003	- -	--	0.0003
			Barium	- -	- -	- -	- -	Barium	Kidney	0.0002	- -	--	0.0002
			Cadmium	- -	- -	- -	- -	Cadmium	Kidney	0.0001	- -	0.000007	0.0002
			Lead	- -	- -	- -	- -	Lead	NA	- -	- -	- -	--
			(Total)	- -	- -	- -	- -	(Total)		0.001	--	0.00004	0.001

Total Risk Across Soil	1E-08
Total Risk Across Surface Water	1E-07
Total Risk Across Sediment	- -
Total Risk Across All Media and All Exposure Routes	1E-07

Total Hazard Index Across All Media and All Exposure Routes	0.01
Total Blood HI	0.004
Total GS HI	0.004
Total Kidney HI	0.0007
Total Liver HI	0.003
Total Nails HI	0.0006
Total Prostate HI	0.002
Total Immune HI	0.0006
Total None Reported HI	0.0000007

TABLE 9.3
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
REASONABLE MAXIMUM EXPOSURE
NSWC CRANE, INDIANA

Scenario Timeframe: Current/Future
Receptor Population: Off-Site Resident
Receptor Age: Child

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk				Chemical	Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total		Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes Total
Surface Water	Surface Water	SWMU 3 - Little Sulphur Creek	4-Amino-2,6-Dinitrotoluene	- -	- -	- -	- -	4-Amino-2,6-Dinitrotoluene	Liver	0.9	- -	0.004	0.9
			RDX	9E-06	- -	3E-08	9E-06	RDX	Prostate	0.3	- -	0.0009	0.3
			(Total)	9E-06	- -	3E-08	9E-06	(Total)		1	--	0.005	1
						Total Risk Across Groundwater	9E-06					Total Hazard Index Across All Media and All Exposure Routes	1
						Total Risk Across All Media and All Exposure Routes	9E-06						

Total Liver HI	0.9
Total Prostate HI	0.3

TABLE 9.4
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
CENTRAL TENDENCY EXPOSURES
NSWC CRANE, INDIANA

Scenario Timeframe: Current/Future
Receptor Population: Off-Site Resident
Receptor Age: Child

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk				Chemical	Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total		Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes Total
Surface Water	Surface Water	SWMU 3 - Little Sulphur Creek	4-Amino-2,6-Dinitrotoluene	- -	- -	- -	- -	4-Amino-2,6-Dinitrotoluene	Liver	0.3	- -	0.002	0.3
			RDX	9E-07	- -	5E-09	9E-07	RDX	Prostate	0.09	- -	0.0005	0.09
			(Total)	9E-07	- -	5E-09	9E-07	(Total)		0.3	--	0.003	0.4
						Total Risk Across Groundwater	9E-07					Total Hazard Index Across All Media and All Exposure Routes	0.4
						Total Risk Across All Media and All Exposure Routes	9E-07						

Total Liver HI	0.3
Total Prostate HI	0.09

TABLE 9.5
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
REASONABLE MAXIMUM EXPOSURE
NSWC CRANE, INDIANA

Scenario Timeframe: Current/Future
Receptor Population: Off-Site Resident
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk				Chemical	Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total		Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes Total
Surface Water	Surface Water	SWMU 3 - Little Sulphur Creek	4-Amino-2,6-Dinitrotoluene	- -	- -	- -	- -	4-Amino-2,6-Dinitrotoluene	Liver	0.2	- -	0.002	0.2
			RDX	1E-05	- -	6E-08	1E-05	RDX	Prostate	0.09	- -	0.0005	0.09
			(Total)	1E-05	- -	6E-08	1E-05	(Total)		0.3	--	0.003	0.3
						Total Risk Across Groundwater	1E-05					Total Hazard Index Across All Media and All Exposure Routes	0.3
						Total Risk Across All Media and All Exposure Routes	1E-05						

Total Liver HI	0.2
Total Prostate HI	0.09

TABLE 9.6
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
CENTRAL TENDENCY EXPOSURES
NSWC CRANE, INDIANA

Scenario Timeframe: Current/Future
Receptor Population: Off-Site Resident
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk				Chemical	Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total		Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes Total
Surface Water	Surface Water	SWMU 3 - Little Sulphur Creek	4-Amino-2,6-Dinitrotoluene	- -	- -	- -	- -	4-Amino-2,6-Dinitrotoluene	Liver	0.1	- -	0.001	0.1
			RDX	1E-06	- -	1E-08	1E-06	RDX	Prostate	0.04	- -	0.0003	0.04
			(Total)	1E-06	- -	1E-08	1E-06	(Total)		0.2	--	0.002	0.2
						Total Risk Across Groundwater	1E-06					Total Hazard Index Across All Media and All Exposure Routes	0.2
						Total Risk Across All Media and All Exposure Routes	1E-06						

Total Liver HI	0.1
Total Prostate HI	0.04

TABLE 9.7
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
REASONABLE MAXIMUM EXPOSURE
NSWC CRANE, INDIANA

Scenario Timeframe: Current/Future
Receptor Population: Off-Site Resident
Receptor Age: Lifelong (Child and Adult)

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk				Chemical	Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total		Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes Total
Surface Water	Surface Water	SWMU 3 - Little Sulphur Creek	4-Amino-2,6-Dinitrotoluene	- -	- -	- -	- -	4-Amino-2,6-Dinitrotoluene	Liver				
			RDX	2E-05	- -	9E-08	2E-05	RDX	Prostate				
			(Total)	2E-05	- -	9E-08	2E-05	(Total)					
						Total Risk Across Groundwater	2E-05					Total Hazard Index Across All Media and All Exposure Routes	
						Total Risk Across All Media and All Exposure Routes	2E-05						

TABLE 9.8
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
CENTRAL TENDENCY EXPOSURES
NSWC CRANE, INDIANA

Scenario Timeframe: Current/Future
Receptor Population: Off-Site Resident
Receptor Age: Lifelong (Child and Adult)

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk				Chemical	Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total		Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes Total
Surface Water	Surface Water	SWMU 3 - Little Sulphur Creek	4-Amino-2,6-Dinitrotoluene	- -	- -	- -	- -	4-Amino-2,6-Dinitrotoluene	Liver				
			RDX	2E-06	- -	1E-08	2E-06	RDX	Prostate				
			(Total)	2E-06	- -	1E-08	2E-06	(Total)					
						Total Risk Across Groundwater	2E-06					Total Hazard Index Across All Media and All Exposure Routes	
						Total Risk Across All Media and All Exposure Routes	2E-06						

TABLE 9.9
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
REASONABLE MAXIMUM EXPOSURE
NSWC CRANE, INDIANA

Scenario Timeframe: Future
Receptor Population: Construction Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk				Chemical	Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total		Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes Total
Surface/Subsurface Soil	Surface/Subsurface Soil	SWMU 3 - Old Jeep Trail	2,3,7,8-TCDD Equivalents	4E-08	- -	3E-09	5E-08	2,3,7,8-TCDD Equivalents	NA	- -	--	- -	--
			2,4,6-Trinitrotoluene	3E-09	- -	7E-10	4E-09	2,4,6-Trinitrotoluene	Liver	0.01	--	0.003	0.02
			2-Amino-4,6-Dinitrotoluene	- -	- -	- -	- -	2-Amino-4,6-Dinitrotoluene	Liver	0.02	--	0.004	0.02
			4-Amino-2,6-Dinitrotoluene	- -	- -	- -	- -	4-Amino-2,6-Dinitrotoluene	Liver	0.02	--	0.004	0.02
			HMX	- -	- -	- -	- -	HMX	Liver	0.0003	--	0.00006	0.0003
			RDX	2E-08	- -	3E-09	2E-08	RDX	Prostate	0.003	--	0.0007	0.004
			Barium	- -	- -	- -	- -	Barium	Kidney	0.01	--	--	0.01
			Cadmium	- -	- -	- -	- -	Cadmium	Kidney	0.007	--	0.0003	0.007
			Chromium	- -	- -	- -	- -	Chromium	None Reported	0.00005	--	--	0.00005
			Iron	- -	- -	- -	- -	Iron	Blood, GS	0.3	--	--	0.3
			Lead	- -	- -	- -	- -	Lead	NA	- -	--	- -	--
			(Total)	6E-08	- -	7E-09	7E-08	(Total)		0.3	--	0.01	0.3
Ground Water	Ground Water	SWMU 3 - Shallow Ground Water	1,1,2,2-Tetrachloroethane	- -	4E-09	6E-08	7E-08	1,1,2,2-Tetrachloroethane	Liver	--	- -	0.0004	0.0004
			1,1,2-Trichloroethane	- -	3E-11	4E-10	4E-10	1,1,2-Trichloroethane	Blood	--	- -	0.0001	0.0001
			1,1-Dichloroethene	- -	1E-10	1E-09	1E-09	1,1-Dichloroethene	Liver	--	- -	0.00001	0.00001
			cis-1,2-Dichloroethene	- -	- -	- -	- -	cis-1,2-Dichloroethene	Blood	--	- -	0.0008	0.0008
			Tetrachloroethene	- -	1E-11	1E-09	1E-09	Tetrachloroethene	Liver	--	0.0000007	0.0001	0.0001
			trans-1,2-Dichloroethene	- -	- -	- -	- -	trans-1,2-Dichloroethene	Blood	--	- -	0.00006	0.00006
			Trichloroethene	- -	3E-08	2E-07	2E-07	Trichloroethene	Liver	--	0.0005	0.1	0.1
			Vinyl Chloride	- -	3E-11	1E-09	1E-09	Vinyl Chloride	Liver	--	0.000004	0.00004	0.00004
			2,4,6-Trinitrotoluene	- -	- -	6E-11	6E-11	2,4,6-Trinitrotoluene	Liver	--	- -	0.0003	0.0003
			2-Amino-4,6-Dinitrotoluene	- -	- -	- -	- -	2-Amino-4,6-Dinitrotoluene	Liver	--	- -	0.0004	0.0004
			4-Amino-2,6-Dinitrotoluene	- -	- -	- -	- -	4-Amino-2,6-Dinitrotoluene	Liver	--	- -	0.0010	0.0010
			RDX	- -	- -	2E-09	2E-09	RDX	Prostate	--	- -	0.0003	0.0003
			Aluminum	- -	- -	- -	- -	Aluminum	Immune, Nails	--	- -	0.000004	0.000004
			Barium	- -	- -	- -	- -	Barium	Kidney	--	- -	0.0007	0.0007
			Cadmium	- -	- -	- -	- -	Cadmium	Kidney	--	- -	0.003	0.003
			Chromium	- -	- -	- -	- -	Chromium	None Reported	--	- -	0.00003	0.00003
			Iron	- -	- -	- -	- -	Iron	Blood, GS	--	- -	0.00007	0.00007
			Manganese	- -	- -	- -	- -	Manganese	CNS	--	- -	0.0008	0.0008
			Nickel	- -	- -	- -	- -	Nickel	Body Weight	--	- -	0.00009	0.00009
			Thallium	- -	- -	- -	- -	Thallium	Liver	--	- -	0.0001	0.0001
			Nitrate	- -	- -	- -	- -	Nitrate	Blood	--	- -	0.000007	0.000007
			(Total)	- -	3E-08	3E-07	3E-07	(Total)		--	0.0005	0.1	0.1

Total Risk Across Soil	7E-08
Total Risk Across Groundwater	3E-07
Total Risk Across All Media and All Exposure Routes	4E-07

Total Hazard Index Across All Media and All Exposure Routes	0.5

Total Blood HI	0.3
Total Body Weight HI	0.00009
Total GS HI	0.3
Total Kidney HI	0.02
Total Liver HI	0.2
Total None Reported HI	0.00008
Total Prostate HI	0.004
Total CNS HI	0.001

TABLE 9.10
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
CENTRAL TENDENCY EXPOSURES
NSWC CRANE, INDIANA

Scenario Timeframe: Future
Receptor Population: Construction Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk				Chemical	Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total		Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes Total
Surface/Subsurface Soil	Surface/Subsurface Soil	SWMU 3 - Old Jeep Trail	2,3,7,8-TCDD Equivalents	2E-08	- -	9E-10	2E-08	2,3,7,8-TCDD Equivalents	NA	- -	--	- -	--
			2,4,6-Trinitrotoluene	2E-09	- -	2E-10	2E-09	2,4,6-Trinitrotoluene	Liver	0.007	--	0.001	0.008
			2-Amino-4,6-Dinitrotoluene	- -	- -	- -	- -	2-Amino-4,6-Dinitrotoluene	Liver	0.01	--	0.001	0.01
			4-Amino-2,6-Dinitrotoluene	- -	- -	- -	- -	4-Amino-2,6-Dinitrotoluene	Liver	0.009	--	0.001	0.010
			HMX	- -	- -	- -	- -	HMX	Liver	0.0001	--	0.00002	0.0002
			RDX	8E-09	- -	1E-09	9E-09	RDX	Prostate	0.002	--	0.0002	0.002
			Barium	- -	- -	- -	- -	Barium	Kidney	0.005	--	--	0.005
			Cadmium	- -	- -	- -	- -	Cadmium	Kidney	0.003	--	0.00009	0.003
			Chromium	- -	- -	- -	- -	Chromium	None Reported	0.00002	--	--	0.00002
			Iron	- -	- -	- -	- -	Iron	Blood, GS	0.1	--	--	0.1
			Lead	- -	- -	- -	- -	Lead	NA	- -	--	- -	--
			(Total)	3E-08	- -	2E-09	3E-08	(Total)		0.2	--	0.004	0.2
Ground Water	Ground Water	SWMU 3 - Shallow Ground Water	1,1,2,2-Tetrachloroethane	- -	3E-09	5E-08	6E-08	1,1,2,2-Tetrachloroethane	Liver	--	- -	0.0003	0.0003
			1,1,2-Trichloroethane	- -	2E-11	3E-10	3E-10	1,1,2-Trichloroethane	Blood	--	- -	0.00009	0.00009
			1,1-Dichloroethene	- -	1E-10	9E-10	1E-09	1,1-Dichloroethene	Liver	--	- -	0.00001	0.00001
			cis-1,2-Dichloroethene	- -	- -	- -	- -	cis-1,2-Dichloroethene	Blood	--	- -	0.0006	0.0006
			Tetrachloroethene	- -	1E-11	1E-09	1E-09	Tetrachloroethene	Liver	--	0.0000005	0.0001	0.0001
			trans-1,2-Dichloroethene	- -	- -	- -	- -	trans-1,2-Dichloroethene	Blood	--	- -	0.00005	0.00005
			Trichloroethene	- -	2E-08	2E-07	2E-07	Trichloroethene	Liver	--	0.0004	0.10	0.10
			Vinyl Chloride	- -	2E-11	9E-10	9E-10	Vinyl Chloride	Liver	--	0.000003	0.00003	0.00003
			2,4,6-Trinitrotoluene	- -	- -	5E-11	5E-11	2,4,6-Trinitrotoluene	Liver	--	- -	0.0002	0.0002
			2-Amino-4,6-Dinitrotoluene	- -	- -	- -	- -	2-Amino-4,6-Dinitrotoluene	Liver	--	- -	0.0003	0.0003
			4-Amino-2,6-Dinitrotoluene	- -	- -	- -	- -	4-Amino-2,6-Dinitrotoluene	Liver	--	- -	0.0008	0.0008
			RDX	- -	- -	1E-09	1E-09	RDX	Prostate	--	- -	0.0003	0.0003
			Aluminum	- -	- -	- -	- -	Aluminum	Immune, Nails	--	- -	0.000003	0.000003
			Barium	- -	- -	- -	- -	Barium	Kidney	--	- -	0.00001	0.00001
			Cadmium	- -	- -	- -	- -	Cadmium	Kidney	--	- -	0.02	0.02
			Chromium	- -	- -	- -	- -	Chromium	None Reported	--	- -	0.0008	0.0008
			Iron	- -	- -	- -	- -	Iron	Blood, GS	--	- -	0.000006	0.000006
			Manganese	- -	- -	- -	- -	Manganese	CNS	--	- -	0.00002	0.00002
			Nickel	- -	- -	- -	- -	Nickel	Body Weight	--	- -	0.000006	0.000006
			Thallium	- -	- -	- -	- -	Thallium	Liver	--	- -	0.1	0.1
			Nitrate	- -	- -	- -	- -	Nitrate	Blood	--	- -	- -	--
			(Total)	- -	3E-08	2E-07	3E-07	(Total)		--	0.0004	0.2	0.2

Total Risk Across Soil	3E-08
Total Risk Across Groundwater	3E-07
Total Risk Across All Media and All Exposure Routes	3E-07

Total Hazard Index Across All Media and All Exposure Routes	0.4

Total Blood HI	0.1
Total Body Weight HI	0.00001
Total GS HI	0.1
Total Kidney HI	0.02
Total Liver HI	0.3
Total None Reported HI	0.0008
Total Prostate HI	0.002
Total CNS HI	0.00002

TABLE 9.11
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
REASONABLE MAXIMUM EXPOSURE
NSWC CRANE, INDIANA

Scenario Timeframe: Future
Receptor Population: Maintenance Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk				Chemical	Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total		Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes Total
Surface Soil	Surface Soil	SWMU 3 - Old Jeep Trail	2,3,7,8-TCDD Equivalents	4E-08	- -	7E-09	4E-08	2,3,7,8-TCDD Equivalents	NA	- -	--	- -	--
			2,4,6-Trinitrotoluene	3E-09	- -	2E-09	4E-09	2,4,6-Trinitrotoluene	Liver	0.0005	--	0.0003	0.0008
			2-Amino-4,6-Dinitrotoluene	- -	- -	- -	- -	2-Amino-4,6-Dinitrotoluene	Liver	0.0007	--	0.0004	0.001
			4-Amino-2,6-Dinitrotoluene	- -	- -	- -	- -	4-Amino-2,6-Dinitrotoluene	Liver	0.0006	--	0.0004	0.0009
			HMX	- -	- -	- -	- -	HMX	Liver	0.000009	--	0.000006	0.00001
			RDX	1E-08	- -	8E-09	2E-08	RDX	Prostate	0.0001	--	0.00007	0.0002
			Barium	- -	- -	- -	- -	Barium	Kidney	0.0003	--	--	0.0003
			Cadmium	- -	- -	- -	- -	Cadmium	Kidney	0.0002	--	0.00003	0.0003
			Chromium	- -	- -	- -	- -	Chromium	None Reported	0.000002	--	--	0.000002
			Iron	- -	- -	- -	- -	Iron	Blood, GS	0.008	--	--	0.008
			Lead	- -	- -	- -	- -	Lead	NA	- -	--	- -	--
			(Total)	5E-08	- -	2E-08	7E-08	(Total)		0.01	--	0.001	0.01
Surface Water	Surface Water	SWMU 3 - Little Sulphur Creek	Acetone	- -	- -	- -	- -	Acetone	Liver, Kidney	--	- -	0.000003	0.000003
			Bromomethane	- -	- -	- -	- -	Bromomethane	GS	--	- -	0.000009	0.000009
			Methylene Chloride	- -	- -	2E-10	2E-10	Methylene Chloride	Liver	--	- -	0.000002	0.000002
			Bis(2-ethylhexyl)phthalate	- -	- -	7E-09	7E-09	Bis(2-ethylhexyl)phthalate	Liver	--	- -	0.00007	0.00007
			Pentachlorophenol	- -	- -	2E-08	2E-08	Pentachlorophenol	Liver, Kidney	--	- -	0.00002	0.00002
			2-Amino-4,6-Dinitrotoluene	- -	- -	- -	- -	2-Amino-4,6-Dinitrotoluene	Liver	--	- -	0.00006	0.00006
			4-Amino-2,6-Dinitrotoluene	- -	- -	- -	- -	4-Amino-2,6-Dinitrotoluene	Liver	--	- -	0.0002	0.0002
			RDX	- -	- -	1E-08	1E-08	RDX	Prostate	--	- -	0.0001	0.0001
			Antimony	- -	- -	- -	- -	Antimony	Blood	--	- -	0.00008	0.00008
			Lead	- -	- -	- -	- -	Lead	NA	- -	- -	- -	--
			(Total)	- -	- -	4E-08	4E-08	(Total)		--	--	0.0005	0.0005
Sediment	Sediment	SWMU 3 - Little Sulphur Creek	2-Amino-4,6-Dinitrotoluene	- -	- -	- -	- -	2-Amino-4,6-Dinitrotoluene	Liver	0.0003	- -	0.0002	0.0005
			Aluminum	- -	- -	- -	- -	Aluminum	Immune, Nails	0.001	- -	--	0.001
			Antimony	- -	- -	- -	- -	Antimony	Blood	0.0007	- -	--	0.0007
			Barium	- -	- -	- -	- -	Barium	Kidney	0.0005	- -	--	0.0005
			Cadmium	- -	- -	- -	- -	Cadmium	Kidney	0.0003	- -	0.00004	0.0004
			Lead	- -	- -	- -	- -	Lead	NA	- -	- -	- -	--
			(Total)	- -	- -	- -	- -	(Total)		0.003	--	0.0002	0.003

Total Risk Across Soil	7E-08
Total Risk Across Surface Water	4E-08
Total Risk Across Sediment	- -
Total Risk Across All Media and All Exposure Routes	1E-07

Total Hazard Index Across All Media and All Exposure Routes	0.02
Total Blood HI	0.009
Total GS HI	0.008
Total Immune HI	0.001
Total Kidney HI	0.001
Total Liver HI	0.004
Total None Reported HI	0.000002
Total Prostate HI	0.0003
Total Nails HI	0.001

TABLE 9.12
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
CENTRAL TENDENCY EXPOSURES
NSWC CRANE, INDIANA

Scenario Timeframe: Future
Receptor Population: Maintenance Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk				Chemical	Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total		Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes Total
Surface Soil	Surface Soil	SWMU 3 - Old Jeep Trail	2,3,7,8-TCDD Equivalents	3E-09	- -	1E-10	3E-09	2,3,7,8-TCDD Equivalents	NA	- -	--	- -	--
			2,4,6-Trinitrotoluene	2E-10	- -	3E-11	3E-10	2,4,6-Trinitrotoluene	Liver	0.0001	--	0.00002	0.0001
			2-Amino-4,6-Dinitrotoluene	- -	- -	- -	- -	2-Amino-4,6-Dinitrotoluene	Liver	0.0002	--	0.00002	0.0002
			4-Amino-2,6-Dinitrotoluene	- -	- -	- -	- -	4-Amino-2,6-Dinitrotoluene	Liver	0.0001	--	0.00002	0.0002
			HMX	- -	- -	- -	- -	HMX	Liver	0.000002	--	0.0000003	0.000003
			RDX	1E-09	- -	1E-10	1E-09	RDX	Prostate	0.00003	--	0.000004	0.00003
			Barium	- -	- -	- -	- -	Barium	Kidney	0.00008	--	--	0.00008
			Cadmium	- -	- -	- -	- -	Cadmium	Kidney	0.00006	--	0.000001	0.00006
			Chromium	- -	- -	- -	- -	Chromium	None Reported	0.0000004	--	--	0.0000004
			Iron	- -	- -	- -	- -	Iron	Blood, GS	0.002	--	--	0.002
			Lead	- -	- -	- -	- -	Lead	NA	- -	--	- -	--
			(Total)	5E-09	- -	3E-10	5E-09	(Total)		0.003	--	0.00006	0.003
Surface Water	Surface Water	SWMU 3 - Little Sulphur Creek	Acetone	- -	- -	- -	- -	Acetone	Liver, Kidney	--	- -	0.000001	0.000001
			Bromomethane	- -	- -	- -	- -	Bromomethane	GS	--	- -	0.000004	0.000004
			Methylene Chloride	- -	- -	4E-11	4E-11	Methylene Chloride	Liver	--	- -	0.0000006	0.0000006
			Bis(2-ethylhexyl)phthalate	- -	- -	1E-09	1E-09	Bis(2-ethylhexyl)phthalate	Liver	--	- -	0.00003	0.00003
			Pentachlorophenol	- -	- -	3E-09	3E-09	Pentachlorophenol	Liver, Kidney	--	- -	0.000007	0.000007
			2-Amino-4,6-Dinitrotoluene	- -	- -	- -	- -	2-Amino-4,6-Dinitrotoluene	Liver	--	- -	0.00002	0.00002
			4-Amino-2,6-Dinitrotoluene	- -	- -	- -	- -	4-Amino-2,6-Dinitrotoluene	Liver	--	- -	0.00007	0.00007
			RDX	- -	- -	2E-09	2E-09	RDX	Prostate	--	- -	0.00005	0.00005
			Antimony	- -	- -	- -	- -	Antimony	Blood	--	- -	0.00003	0.00003
			Lead	- -	- -	- -	- -	Lead	NA	- -	- -	- -	--
			(Total)	- -	- -	6E-09	6E-09	(Total)		--	--	0.0002	0.0002
Sediment	Sediment	SWMU 3 - Little Sulphur Creek	2-Amino-4,6-Dinitrotoluene	- -	- -	- -	- -	2-Amino-4,6-Dinitrotoluene	Liver	0.00007	- -	0.000009	0.00008
			Aluminum	- -	- -	- -	- -	Aluminum	Immune, Nails	0.0004	- -	--	0.0004
			Antimony	- -	- -	- -	- -	Antimony	Blood	0.0002	- -	--	0.0002
			Barium	- -	- -	- -	- -	Barium	Kidney	0.0001	- -	--	0.0001
			Cadmium	- -	- -	- -	- -	Cadmium	Kidney	0.00008	- -	0.000002	0.00009
			Lead	- -	- -	- -	- -	Lead	NA	- -	- -	- -	--
			(Total)	- -	- -	- -	- -	(Total)		0.0008	--	0.00001	0.0008

Total Risk Across Soil	5E-09
Total Risk Across Surface Water	6E-09
Total Risk Across Sediment	- -
Total Risk Across All Media and All Exposure Routes	1E-08

Total Hazard Index Across All Media and All Exposure Routes	0.004
Total Blood HI	0.002
Total GS HI	0.002
Total Immune HI	0.0004
Total Kidney HI	0.0004
Total Liver HI	0.0007
Total None Reported HI	0.0000004
Total Prostate HI	0.00008
Total Nails HI	0.0004

TABLE 9.13
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
REASONABLE MAXIMUM EXPOSURE
NSWC CRANE, INDIANA

Scenario Timeframe: Future
Receptor Population: Occupational Workers
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk				Chemical	Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total		Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes Total
Surface Soil	Surface Soil	SWMU 3 - Old Jeep Trail	2,3,7,8-TCDD Equivalents	4E-07	- -	8E-08	5E-07	2,3,7,8-TCDD Equivalents	NA	- -	--	- -	--
			2,4,6-Trinitrotoluene	3E-08	- -	2E-08	5E-08	2,4,6-Trinitrotoluene	Liver	0.005	--	0.003	0.009
			2-Amino-4,6-Dinitrotoluene	- -	- -	- -	- -	2-Amino-4,6-Dinitrotoluene	Liver	0.007	--	0.005	0.01
			4-Amino-2,6-Dinitrotoluene	- -	- -	- -	- -	4-Amino-2,6-Dinitrotoluene	Liver	0.006	--	0.004	0.010
			HMX	- -	- -	- -	- -	HMX	Liver	0.00009	--	0.00006	0.0002
			RDX	1E-07	- -	9E-08	2E-07	RDX	Prostate	0.001	--	0.0007	0.002
			Barium	- -	- -	- -	- -	Barium	Kidney	0.004	--	--	0.004
			Cadmium	- -	- -	- -	- -	Cadmium	Kidney	0.002	--	0.0003	0.003
			Chromium	- -	- -	- -	- -	Chromium	None Reported	0.00002	--	--	0.00002
			Iron	- -	- -	- -	- -	Iron	Blood, GS	0.09	--	--	0.09
			Lead	- -	- -	- -	- -	Lead	NA	- -	--	- -	--
			(Total)	5E-07	- -	2E-07	7E-07	(Total)		0.1	--	0.01	0.1
Ground Water	Ground Water	SWMU 3 - Shallow Ground Water	1,1,2,2-Tetrachloroethane	3E-05	- -	9E-07	3E-05	1,1,2,2-Tetrachloroethane	Liver	0.007	--	0.0002	0.007
			1,1,2-Trichloroethane	2E-07	- -	5E-09	2E-07	1,1,2-Trichloroethane	Blood	0.003	--	0.00006	0.003
			1,1-Dichloroethene	4E-07	- -	1E-08	5E-07	1,1-Dichloroethene	Liver	0.0002	--	0.000008	0.0002
			cis-1,2-Dichloroethene	- -	- -	- -	- -	cis-1,2-Dichloroethene	Blood	0.01	--	0.0004	0.01
			Tetrachloroethene	1E-07	- -	2E-08	1E-07	Tetrachloroethene	Liver	0.0006	--	0.00009	0.0007
			trans-1,2-Dichloroethene	- -	- -	- -	- -	trans-1,2-Dichloroethene	Blood	0.001	--	0.00003	0.001
			Trichloroethene	7E-05	- -	3E-06	7E-05	Trichloroethene	Liver	2	--	0.06	2
			Vinyl Chloride	1E-06	- -	1E-08	1E-06	Vinyl Chloride	Liver	0.001	--	0.00002	0.001
			2,4,6-Trinitrotoluene	1E-07	- -	8E-10	1E-07	2,4,6-Trinitrotoluene	Liver	0.03	--	0.0002	0.03
			2-Amino-4,6-Dinitrotoluene	- -	- -	- -	- -	2-Amino-4,6-Dinitrotoluene	Liver	0.07	--	0.0002	0.07
			4-Amino-2,6-Dinitrotoluene	- -	- -	- -	- -	4-Amino-2,6-Dinitrotoluene	Liver	0.2	--	0.0006	0.2
			RDX	1E-05	- -	2E-08	1E-05	RDX	Prostate	0.09	--	0.0002	0.09
			Aluminum	- -	- -	- -	- -	Aluminum	Immune, Nails	0.0009	--	0.0000008	0.0009
			Barium	- -	- -	- -	- -	Barium	Kidney	0.01	--	0.0001	0.01
			Cadmium	- -	- -	- -	- -	Cadmium	Kidney	0.03	--	0.0006	0.04
			Chromium	- -	- -	- -	- -	Chromium	None Reported	0.00005	--	0.000006	0.00005
			Iron	- -	- -	- -	- -	Iron	Blood, GS	0.02	--	0.00001	0.02
			Manganese	- -	- -	- -	- -	Manganese	CNS	0.008	--	0.0002	0.008
			Nickel	- -	- -	- -	- -	Nickel	Body Weight	0.004	--	0.00002	0.004
			Thallium	- -	- -	- -	- -	Thallium	Liver	0.02	--	0.00002	0.02
			Nitrate	- -	- -	- -	- -	Nitrate	Blood	0.002	--	0.000001	0.002
			(Total)	1E-04	- -	4E-06	1E-04	(Total)		2	--	0.07	2

Total Risk Across Soil	7E-07
Total Risk Across Groundwater	1E-04
Total Risk Across All Media and All Exposure Routes	1E-04

Total Hazard Index Across All Media and All Exposure Routes	2

Total Blood HI	0.1
Total Body Weight HI	0.004
Total GS HI	0.1
Total Kidney HI	0.05
Total Liver HI	2
Total None Reported HI	0.00007
Total Prostate HI	0.09
Total CNS HI	0.01

TABLE 9.14
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
CENTRAL TENDENCY EXPOSURES
NSWC CRANE, INDIANA

Scenario Timeframe: Future
Receptor Population: Occupational Workers
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk				Chemical	Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total		Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes Total
Surface Soil	Surface Soil	SWMU 3 - Old Jeep Trail	2,3,7,8-TCDD Equivalents	6E-08	- -	2E-09	6E-08	2,3,7,8-TCDD Equivalents	NA	- -	--	- -	--
			2,4,6-Trinitrotoluene	4E-09	- -	6E-10	5E-09	2,4,6-Trinitrotoluene	Liver	0.002	--	0.0003	0.003
			2-Amino-4,6-Dinitrotoluene	- -	- -	- -	- -	2-Amino-4,6-Dinitrotoluene	Liver	0.003	--	0.0004	0.004
			4-Amino-2,6-Dinitrotoluene	- -	- -	- -	- -	4-Amino-2,6-Dinitrotoluene	Liver	0.003	--	0.0003	0.003
			HMX	- -	- -	- -	- -	HMX	Liver	0.00004	--	0.000005	0.00005
			RDX	2E-08	- -	3E-09	2E-08	RDX	Prostate	0.0005	--	0.00006	0.0006
			Barium	- -	- -	- -	- -	Barium	Kidney	0.002	--	--	0.002
			Cadmium	- -	- -	- -	- -	Cadmium	Kidney	0.001	--	0.00003	0.001
			Chromium	- -	- -	- -	- -	Chromium	None Reported	0.000008	--	--	0.000008
			Iron	- -	- -	- -	- -	Iron	Blood, GS	0.04	--	--	0.04
			Lead	- -	- -	- -	- -	Lead	NA	- -	--	- -	--
			(Total)	9E-08	- -	6E-09	9E-08	(Total)		0.05	--	0.001	0.05
Ground Water	Ground Water	SWMU 3 - Shallow Ground Water	1,1,2,2-Tetrachloroethane	9E-06	- -	2E-07	1E-05	1,1,2,2-Tetrachloroethane	Liver	0.006	--	0.0002	0.006
			1,1,2-Trichloroethane	7E-08	- -	1E-09	7E-08	1,1,2-Trichloroethane	Blood	0.002	--	0.00004	0.002
			1,1-Dichloroethene	1E-07	- -	4E-09	1E-07	1,1-Dichloroethene	Liver	0.0002	--	0.000005	0.0002
			cis-1,2-Dichloroethene	- -	- -	- -	- -	cis-1,2-Dichloroethene	Blood	0.010	--	0.0003	0.010
			Tetrachloroethene	4E-08	- -	4E-09	4E-08	Tetrachloroethene	Liver	0.0005	--	0.00006	0.0006
			trans-1,2-Dichloroethene	- -	- -	- -	- -	trans-1,2-Dichloroethene	Blood	0.001	--	0.00002	0.001
			Trichloroethene	2E-05	- -	7E-07	2E-05	Trichloroethene	Liver	1	--	0.05	1
			Vinyl Chloride	3E-07	- -	3E-09	3E-07	Vinyl Chloride	Liver	0.001	--	0.00001	0.001
			2,4,6-Trinitrotoluene	4E-08	- -	2E-10	4E-08	2,4,6-Trinitrotoluene	Liver	0.02	--	0.0001	0.02
			2-Amino-4,6-Dinitrotoluene	- -	- -	- -	- -	2-Amino-4,6-Dinitrotoluene	Liver	0.06	--	0.0002	0.06
			4-Amino-2,6-Dinitrotoluene	- -	- -	- -	- -	4-Amino-2,6-Dinitrotoluene	Liver	0.1	--	0.0004	0.1
			RDX	3E-06	- -	6E-09	3E-06	RDX	Prostate	0.08	--	0.0001	0.08
			Aluminum	- -	- -	- -	- -	Aluminum	Immune, Nails	0.0008	--	0.0000005	0.0008
			Barium	- -	- -	- -	- -	Barium	Kidney	0.01	--	0.00008	0.01
			Cadmium	- -	- -	- -	- -	Cadmium	Kidney	0.03	--	0.0003	0.03
			Chromium	- -	- -	- -	- -	Chromium	None Reported	0.00004	--	0.000003	0.00004
			Iron	- -	- -	- -	- -	Iron	Blood, GS	0.01	--	0.000008	0.01
			Manganese	- -	- -	- -	- -	Manganese	CNS	0.007	--	0.00010	0.007
			Nickel	- -	- -	- -	- -	Nickel	Body Weight	0.004	--	0.00001	0.004
			Thallium	- -	- -	- -	- -	Thallium	Liver	0.02	--	0.00001	0.02
			Nitrate	- -	- -	- -	- -	Nitrate	Blood	0.002	--	0.0000009	0.002
			(Total)	3E-05	- -	1E-06	4E-05	(Total)		2	--	0.05	2

Total Risk Across Soil	9E-08
Total Risk Across Groundwater	4E-05
Total Risk Across All Media and All Exposure Routes	4E-05
Total Hazard Index Across All Media and All Exposure Routes	2

Total Blood HI	0.07
Total Body Weight HI	0.004
Total GS HI	0.05
Total Kidney HI	0.04
Total Liver HI	2
Total None Reported HI	0.00005
Total Prostate HI	0.08
Total CNS HI	0.007

TABLE 9.15
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
REASONABLE MAXIMUM EXPOSURE
NSWC CRANE, INDIANA

Scenario Timeframe: Future
Receptor Population: Recreational Users
Receptor Age: Child

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk				Chemical	Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total		Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes Total
Surface Soil	Surface Soil	SWMU 3 - Old Jeep Trail	2,3,7,8-TCDD Equivalents	9E-08	--	2E-08	1E-07	2,3,7,8-TCDD Equivalents	NA	--	--	--	--
			2,4,6-Trinitrotoluene	6E-09	--	4E-09	1E-08	2,4,6-Trinitrotoluene	Liver	0.005	--	0.003	0.008
			2-Amino-4,6-Dinitrotoluene	--	--	--	--	2-Amino-4,6-Dinitrotoluene	Liver	0.007	--	0.005	0.01
			4-Amino-2,6-Dinitrotoluene	--	--	--	--	4-Amino-2,6-Dinitrotoluene	Liver	0.006	--	0.004	0.010
			HMX	--	--	--	--	HMX	Liver	0.00009	--	0.00006	0.0002
			RDX	3E-08	--	2E-08	5E-08	RDX	Prostate	0.001	--	0.0007	0.002
			Barium	--	--	--	--	Barium	Kidney	0.003	--	--	0.003
			Cadmium	--	--	--	--	Cadmium	Kidney	0.002	--	0.0003	0.003
			Chromium	--	--	--	--	Chromium	None Reported	0.00002	--	--	0.00002
			Iron	--	--	--	--	Iron	Blood, GS	0.09	--	--	0.09
			Lead	--	--	--	--	Lead	NA	--	--	--	--
			(Total)	1E-07	--	4E-08	2E-07	(Total)		0.1	--	0.01	0.1
Ground Water	Ground Water	SWMU 3 - Shallow Ground Water	1,1,2,2-Tetrachloroethane	7E-06	--	2E-07	7E-06	1,1,2,2-Tetrachloroethane	Liver	0.007	--	0.0002	0.007
			1,1,2-Trichloroethane	5E-08	--	1E-09	5E-08	1,1,2-Trichloroethane	Blood	0.003	--	0.00006	0.003
			1,1-Dichloroethene	1E-07	--	3E-09	1E-07	1,1-Dichloroethene	Liver	0.0002	--	0.000007	0.0002
			cis-1,2-Dichloroethene	--	--	--	--	cis-1,2-Dichloroethene	Blood	0.01	--	0.0004	0.01
			Tetrachloroethene	3E-08	--	4E-09	3E-08	Tetrachloroethene	Liver	0.0006	--	0.00009	0.0007
			trans-1,2-Dichloroethene	--	--	--	--	trans-1,2-Dichloroethene	Blood	0.001	--	0.00003	0.001
			Trichloroethene	2E-05	--	6E-07	2E-05	Trichloroethene	Liver	2	--	0.06	2
			Vinyl Chloride	2E-07	--	3E-09	2E-07	Vinyl Chloride	Liver	0.001	--	0.00002	0.001
			2,4,6-Trinitrotoluene	3E-08	--	2E-10	3E-08	2,4,6-Trinitrotoluene	Liver	0.02	--	0.0002	0.02
			2-Amino-4,6-Dinitrotoluene	--	--	--	--	2-Amino-4,6-Dinitrotoluene	Liver	0.06	--	0.0002	0.07
			4-Amino-2,6-Dinitrotoluene	--	--	--	--	4-Amino-2,6-Dinitrotoluene	Liver	0.2	--	0.0006	0.2
			RDX	2E-06	--	5E-09	2E-06	RDX	Prostate	0.09	--	0.0002	0.09
			Aluminum	--	--	--	--	Aluminum	Immune, Nails	0.0009	--	0.0000007	0.0009
			Barium	--	--	--	--	Barium	Kidney	0.01	--	0.0001	0.01
			Cadmium	--	--	--	--	Cadmium	Kidney	0.03	--	0.0006	0.03
			Chromium	--	--	--	--	Chromium	None Reported	0.00004	--	0.000006	0.00005
			Iron	--	--	--	--	Iron	Blood, GS	0.02	--	0.00001	0.02
			Manganese	--	--	--	--	Manganese	CNS	0.008	--	0.0002	0.008
			Nickel	--	--	--	--	Nickel	Body Weight	0.004	--	0.00002	0.004
			Thallium	--	--	--	--	Thallium	Liver	0.02	--	0.00002	0.02
			Nitrate	--	--	--	--	Nitrate	Blood	0.002	--	0.000001	0.002
			(Total)	3E-05	--	9E-07	3E-05	(Total)		2	--	0.07	2
Surface Water	Surface Water	SWMU 3 - Little Sulphur Creek	Acetone	--	--	--	--	Acetone	Liver, Kidney	0.001	--	0.00005	0.001
			Bromomethane	--	--	--	--	Bromomethane	GS	0.0007	--	0.0002	0.0009
			Methylene Chloride	4E-09	--	1E-09	5E-09	Methylene Chloride	Liver	0.0001	--	0.00003	0.0001
			Bis(2-ethylhexyl)phthalate	3E-09	--	2E-08	3E-08	Bis(2-ethylhexyl)phthalate	Liver	0.0001	--	0.0010	0.001
			Pentachlorophenol	1E-09	--	7E-08	7E-08	Pentachlorophenol	Liver, Kidney	0.000004	--	0.0002	0.0002
			2-Amino-4,6-Dinitrotoluene	--	--	--	--	2-Amino-4,6-Dinitrotoluene	Liver	0.01	--	0.0009	0.01
			4-Amino-2,6-Dinitrotoluene	--	--	--	--	4-Amino-2,6-Dinitrotoluene	Liver	0.03	--	0.002	0.04
			RDX	1E-06	--	5E-08	1E-06	RDX	Prostate	0.04	--	0.002	0.04
			Antimony	--	--	--	--	Antimony	Blood	0.004	--	0.002	0.005
			Lead	--	--	--	--	Lead	NA	--	--	--	--
			(Total)	1E-06	--	1E-07	1E-06	(Total)		0.09	--	0.008	0.1
Sediment	Sediment	SWMU 3 - Little Sulphur Creek	2-Amino-4,6-Dinitrotoluene	--	--	--	--	2-Amino-4,6-Dinitrotoluene	Liver	0.003	--	0.002	0.005
			Aluminum	--	--	--	--	Aluminum	Immune, Nails	0.01	--	--	0.01
			Antimony	--	--	--	--	Antimony	Blood	0.007	--	--	0.007
			Barium	--	--	--	--	Barium	Kidney	0.005	--	--	0.005
			Cadmium	--	--	--	--	Cadmium	Kidney	0.003	--	0.0004	0.004
			Lead	--	--	--	--	Lead	NA	--	--	--	--
			(Total)	--	--	--	--	(Total)		0.03	--	0.002	0.03

Total Risk Across Soil	2E-07
Total Risk Across Groundwater	3E-05
Total Risk Across Surface Water	1E-06
Total Risk Across Sediment	--
Total Risk Across All Media and All Exposure Routes	3E-05

Total Hazard Index Across All Media and All Exposure Routes	2
Total Blood HI	0.1
Total Body Weight HI	0.004
Total GS HI	0.1
Total Immune HI	0.02
Total Kidney HI	0.06
Total Liver HI	2
Total None Reported HI	0.00007
Total Prostate HI	0.1
Total Nails HI	0.02
Total CNS HI	0.01

TABLE 9.16
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
CENTRAL TENDENCY EXPOSURES
NSWC CRANE, INDIANA

Scenario Timeframe: Future
Receptor Population: Recreational Users
Receptor Age: Child

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk				Chemical	Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total		Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes Total
Surface Soil	Surface Soil	SWMU 3 - Old Jeep Trail	2,3,7,8-TCDD Equivalents	8E-09	- -	6E-10	8E-09	2,3,7,8-TCDD Equivalents	NA	- -	--	- -	--
			2,4,6-Trinitrotoluene	5E-10	- -	1E-10	7E-10	2,4,6-Trinitrotoluene	Liver	0.001	--	0.0003	0.002
			2-Amino-4,6-Dinitrotoluene	- -	- -	- -	- -	2-Amino-4,6-Dinitrotoluene	Liver	0.002	--	0.0005	0.002
			4-Amino-2,6-Dinitrotoluene	- -	- -	- -	- -	4-Amino-2,6-Dinitrotoluene	Liver	0.001	--	0.0004	0.002
			HMX	- -	- -	- -	- -	HMX	Liver	0.00002	--	0.000006	0.00003
			RDX	3E-09	- -	7E-10	3E-09	RDX	Prostate	0.0003	--	0.00007	0.0003
			Barium	- -	- -	- -	- -	Barium	Kidney	0.0009	--	--	0.0009
			Cadmium	- -	- -	- -	- -	Cadmium	Kidney	0.0006	--	0.00003	0.0006
			Chromium	- -	- -	- -	- -	Chromium	None Reported	0.000004	--	--	0.000004
			Iron	- -	- -	- -	- -	Iron	Blood, GS	0.02	--	--	0.02
			Lead	- -	- -	- -	- -	Lead	NA	- -	--	- -	--
			(Total)	1E-08	- -	1E-09	1E-08	(Total)		0.03	--	0.001	0.03
Ground Water	Ground Water	SWMU 3 - Shallow Ground Water	1,1,2,2-Tetrachloroethane	1E-06	- -	3E-08	1E-06	1,1,2,2-Tetrachloroethane	Liver	0.003	--	0.00008	0.003
			1,1,2-Trichloroethane	9E-09	- -	2E-10	9E-09	1,1,2-Trichloroethane	Blood	0.001	--	0.00002	0.001
			1,1-Dichloroethene	2E-08	- -	5E-10	2E-08	1,1-Dichloroethene	Liver	0.0001	--	0.000003	0.0001
			cis-1,2-Dichloroethene	- -	- -	- -	- -	cis-1,2-Dichloroethene	Blood	0.005	--	0.0002	0.006
			Tetrachloroethene	4E-09	- -	5E-10	5E-09	Tetrachloroethene	Liver	0.0003	--	0.00003	0.0003
			trans-1,2-Dichloroethene	- -	- -	- -	- -	trans-1,2-Dichloroethene	Blood	0.0007	--	0.00001	0.0007
			Trichloroethene	3E-06	- -	9E-08	3E-06	Trichloroethene	Liver	0.8	--	0.03	0.8
			Vinyl Chloride	4E-08	- -	4E-10	4E-08	Vinyl Chloride	Liver	0.0006	--	0.000006	0.0006
			2,4,6-Trinitrotoluene	5E-09	- -	3E-11	5E-09	2,4,6-Trinitrotoluene	Liver	0.01	--	0.00006	0.01
			2-Amino-4,6-Dinitrotoluene	- -	- -	- -	- -	2-Amino-4,6-Dinitrotoluene	Liver	0.03	--	0.00009	0.03
			4-Amino-2,6-Dinitrotoluene	- -	- -	- -	- -	4-Amino-2,6-Dinitrotoluene	Liver	0.08	--	0.0002	0.08
			RDX	4E-07	- -	7E-10	4E-07	RDX	Prostate	0.04	--	0.00008	0.04
			Aluminum	- -	- -	- -	- -	Aluminum	Immune, Nails	0.0005	--	0.0000002	0.0005
			Barium	- -	- -	- -	- -	Barium	Kidney	0.006	--	0.00005	0.006
			Cadmium	- -	- -	- -	- -	Cadmium	Kidney	0.02	--	0.0002	0.02
			Chromium	- -	- -	- -	- -	Chromium	None Reported	0.00002	--	0.000002	0.00002
			Iron	- -	- -	- -	- -	Iron	Blood, GS	0.008	--	0.000004	0.008
			Manganese	- -	- -	- -	- -	Manganese	CNS	0.004	--	0.00005	0.004
			Nickel	- -	- -	- -	- -	Nickel	Body Weight	0.002	--	0.000006	0.002
			Thallium	- -	- -	- -	- -	Thallium	Liver	0.01	--	0.000006	0.01
			Nitrate	- -	- -	- -	- -	Nitrate	Blood	0.0009	--	0.0000005	0.0009
			(Total)	4E-06	- -	1E-07	4E-06	(Total)		1	--	0.03	1
Surface Water	Surface Water	SWMU 3 - Little Sulphur Creek	Acetone	- -	- -	- -	- -	Acetone	Liver, Kidney	0.0003	- -	0.00001	0.0003
			Bromomethane	- -	- -	- -	- -	Bromomethane	GS	0.0002	- -	0.00005	0.0002
			Methylene Chloride	3E-10	- -	1E-10	4E-10	Methylene Chloride	Liver	0.00003	- -	0.000008	0.00003
			Bis(2-ethylhexyl)phthalate	3E-10	- -	3E-09	3E-09	Bis(2-ethylhexyl)phthalate	Liver	0.00003	- -	0.0003	0.0004
			Pentachlorophenol	1E-10	- -	8E-09	8E-09	Pentachlorophenol	Liver, Kidney	0.0000009	- -	0.00008	0.00008
			2-Amino-4,6-Dinitrotoluene	- -	- -	- -	- -	2-Amino-4,6-Dinitrotoluene	Liver	0.003	- -	0.0003	0.003
			4-Amino-2,6-Dinitrotoluene	- -	- -	- -	- -	4-Amino-2,6-Dinitrotoluene	Liver	0.008	- -	0.0008	0.009
			RDX	9E-08	- -	6E-09	1E-07	RDX	Prostate	0.010	- -	0.0006	0.01
			Antimony	- -	- -	- -	- -	Antimony	Blood	0.0009	- -	0.0004	0.001
			Lead	- -	- -	- -	- -	Lead	NA	- -	- -	- -	--
			(Total)	9E-08	- -	2E-08	1E-07	(Total)		0.02	--	0.003	0.03
Sediment	Sediment	SWMU 3 - Little Sulphur Creek	2-Amino-4,6-Dinitrotoluene	- -	- -	- -	- -	2-Amino-4,6-Dinitrotoluene	Liver	0.0007	- -	0.0002	0.0009
			Aluminum	- -	- -	- -	- -	Aluminum	Immune, Nails	0.004	- -	--	0.004
			Antimony	- -	- -	- -	- -	Antimony	Blood	0.002	- -	--	0.002
			Barium	- -	- -	- -	- -	Barium	Kidney	0.001	- -	--	0.001
			Cadmium	- -	- -	- -	- -	Cadmium	Kidney	0.0008	- -	0.00004	0.0009
			Lead	- -	- -	- -	- -	Lead	NA	- -	- -	- -	--
			(Total)	- -	- -	- -	- -	(Total)		0.008	--	0.0002	0.008

Total Risk Across Soil	1E-08
Total Risk Across Groundwater	4E-06
Total Risk Across Surface Water	1E-07
Total Risk Across Sediment	- -
Total Risk Across All Media and All Exposure Routes	5E-06

Total Hazard Index Across All Media and All Exposure Routes	1
Total Blood HI	0.04
Total Body Weight HI	0.002
Total GS HI	0.03
Total Immune HI	0.004
Total Kidney HI	0.03
Total Liver HI	1
Total None Reported HI	0.000028
Total Prostate HI	0.05
Total Nails HI	0.004
Total CNS HI	0.004

TABLE 9.17
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
REASONABLE MAXIMUM EXPOSURE
NSWC CRANE, INDIANA

Scenario Timeframe: Future
Receptor Population: Recreational Users
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk				Chemical	Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total		Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes Total
Surface Soil	Surface Soil	SWMU 3 - Old Jeep Trail	2,3,7,8-TCDD Equivalents	4E-08	- -	1E-08	5E-08	2,3,7,8-TCDD Equivalents	NA	- -	--	- -	--
			2,4,6-Trinitrotoluene	3E-09	- -	3E-09	6E-09	2,4,6-Trinitrotoluene	Liver	0.0005	--	0.0007	0.001
			2-Amino-4,6-Dinitrotoluene	- -	- -	- -	- -	2-Amino-4,6-Dinitrotoluene	Liver	0.0007	--	0.0009	0.002
			4-Amino-2,6-Dinitrotoluene	- -	- -	- -	- -	4-Amino-2,6-Dinitrotoluene	Liver	0.0006	--	0.0008	0.001
			HMX	- -	- -	- -	- -	HMX	Liver	0.000010	--	0.00001	0.00002
			RDX	1E-08	- -	2E-08	3E-08	RDX	Prostate	0.0001	--	0.0001	0.0003
			Barium	- -	- -	- -	- -	Barium	Kidney	0.0004	--	--	0.0004
			Cadmium	- -	- -	- -	- -	Cadmium	Kidney	0.0002	--	0.00006	0.0003
			Chromium	- -	- -	- -	- -	Chromium	None Reported	0.000002	--	--	0.000002
			Iron	- -	- -	- -	- -	Iron	Blood, GS	0.009	--	--	0.009
			Lead	- -	- -	- -	- -	Lead	NA	- -	--	- -	--
			(Total)	5E-08	- -	3E-08	9E-08	(Total)		0.01	--	0.003	0.01
Ground Water	Ground Water	SWMU 3 - Shallow Ground Water	1,1,2,2-Tetrachloroethane	6E-06	- -	5E-07	6E-06	1,1,2,2-Tetrachloroethane	Liver	0.001	--	0.0001	0.002
			1,1,2-Trichloroethane	4E-08	- -	3E-09	5E-08	1,1,2-Trichloroethane	Blood	0.0006	--	0.00004	0.0006
			1,1-Dichloroethene	9E-08	- -	8E-09	1E-07	1,1-Dichloroethene	Liver	0.00005	--	0.000004	0.00005
			cis-1,2-Dichloroethene	- -	- -	- -	- -	cis-1,2-Dichloroethene	Blood	0.002	--	0.0002	0.003
			Tetrachloroethene	2E-08	- -	9E-09	3E-08	Tetrachloroethene	Liver	0.0001	--	0.00005	0.0002
			trans-1,2-Dichloroethene	- -	- -	- -	- -	trans-1,2-Dichloroethene	Blood	0.0003	--	0.00002	0.0003
			Trichloroethene	1E-05	- -	2E-06	2E-05	Trichloroethene	Liver	0.3	--	0.04	0.4
			Vinyl Chloride	2E-07	- -	7E-09	2E-07	Vinyl Chloride	Liver	0.0003	--	0.000009	0.0003
			2,4,6-Trinitrotoluene	3E-08	- -	5E-10	3E-08	2,4,6-Trinitrotoluene	Liver	0.005	--	0.00009	0.005
			2-Amino-4,6-Dinitrotoluene	- -	- -	- -	- -	2-Amino-4,6-Dinitrotoluene	Liver	0.01	--	0.0001	0.01
			4-Amino-2,6-Dinitrotoluene	- -	- -	- -	- -	4-Amino-2,6-Dinitrotoluene	Liver	0.03	--	0.0003	0.04
			RDX	2E-06	- -	1E-08	2E-06	RDX	Prostate	0.02	--	0.0001	0.02
			Aluminum	- -	- -	- -	- -	Aluminum	Immune, Nails	0.0002	--	0.0000004	0.0002
			Barium	- -	- -	- -	- -	Barium	Kidney	0.003	--	0.00008	0.003
			Cadmium	- -	- -	- -	- -	Cadmium	Kidney	0.007	--	0.0003	0.008
			Chromium	- -	- -	- -	- -	Chromium	None Reported	0.000010	--	0.000003	0.00001
			Iron	- -	- -	- -	- -	Iron	Blood, GS	0.003	--	0.000008	0.003
			Manganese	- -	- -	- -	- -	Manganese	CNS	0.002	--	0.00009	0.002
			Nickel	- -	- -	- -	- -	Nickel	Body Weight	0.0009	--	0.00001	0.0009
			Thallium	- -	- -	- -	- -	Thallium	Liver	0.005	--	0.00001	0.005
			Nitrate	- -	- -	- -	- -	Nitrate	Blood	0.0004	--	0.0000009	0.0004
			(Total)	2E-05	- -	2E-06	2E-05	(Total)		0.4	--	0.04	0.5
Surface Water	Surface Water	SWMU 3 - Little Sulphur Creek	Acetone	- -	- -	- -	- -	Acetone	Liver, Kidney	0.00005	- -	0.00003	0.00008
			Bromomethane	- -	- -	- -	- -	Bromomethane	GS	0.00003	- -	0.00009	0.0001
			Methylene Chloride	7E-10	- -	2E-09	3E-09	Methylene Chloride	Liver	0.000004	- -	0.00002	0.00002
			Bis(2-ethylhexyl)phthalate	5E-10	- -	5E-08	5E-08	Bis(2-ethylhexyl)phthalate	Liver	0.000006	- -	0.0006	0.0006
			Pentachlorophenol	2E-10	- -	2E-07	2E-07	Pentachlorophenol	Liver, Kidney	0.0000002	- -	0.0001	0.0001
			2-Amino-4,6-Dinitrotoluene	- -	- -	- -	- -	2-Amino-4,6-Dinitrotoluene	Liver	0.0005	- -	0.0005	0.001
			4-Amino-2,6-Dinitrotoluene	- -	- -	- -	- -	4-Amino-2,6-Dinitrotoluene	Liver	0.001	- -	0.001	0.003
			RDX	2E-07	- -	1E-07	3E-07	RDX	Prostate	0.002	- -	0.001	0.003
			Antimony	- -	- -	- -	- -	Antimony	Blood	0.0002	- -	0.0010	0.001
			Lead	- -	- -	- -	- -	Lead	NA	- -	- -	- -	--
			(Total)	2E-07	- -	3E-07	5E-07	(Total)		0.004	--	0.005	0.009
Sediment	Sediment	SWMU 3 - Little Sulphur Creek	2-Amino-4,6-Dinitrotoluene	- -	- -	- -	- -	2-Amino-4,6-Dinitrotoluene	Liver	0.0003	- -	0.0004	0.0007
			Aluminum	- -	- -	- -	- -	Aluminum	Immune, Nails	0.002	- -	--	0.002
			Antimony	- -	- -	- -	- -	Antimony	Blood	0.0007	- -	--	0.0007
			Barium	- -	- -	- -	- -	Barium	Kidney	0.0005	- -	--	0.0005
			Cadmium	- -	- -	- -	- -	Cadmium	Kidney	0.0004	- -	0.00009	0.0005
			Lead	- -	- -	- -	- -	Lead	NA	- -	- -	- -	--
			(Total)	- -	- -	- -	- -	(Total)		0.003	--	0.0005	0.004

Total Risk Across Soil	9E-08
Total Risk Across Groundwater	2E-05
Total Risk Across Surface Water	5E-07
Total Risk Across Sediment	- -
Total Risk Across All Media and All Exposure Routes	2E-05

Total Hazard Index Across All Media and All Exposure Routes	0.5
Total Blood HI	0.02
Total Body Weight HI	0.0009
Total GS HI	0.01
Total Immune HI	0.002
Total Kidney HI	0.01
Total Liver HI	0.4
Total None Reported HI	0.00001
Total Prostate HI	0.02
Total Nails HI	0.002
Total CNS HI	0.002

TABLE 9.18
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
CENTRAL TENDENCY EXPOSURES
NSWC CRANE, INDIANA

Scenario Timeframe: Future
Receptor Population: Recreational Users
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk				Chemical	Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total		Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes Total
Surface Soil	Surface Soil	SWMU 3 - Old Jeep Trail	2,3,7,8-TCDD Equivalents	3E-09	- -	3E-10	3E-09	2,3,7,8-TCDD Equivalents	NA	- -	--	- -	--
			2,4,6-Trinitrotoluene	2E-10	- -	7E-11	3E-10	2,4,6-Trinitrotoluene	Liver	0.0001	--	0.00005	0.0002
			2-Amino-4,6-Dinitrotoluene	- -	- -	- -	- -	2-Amino-4,6-Dinitrotoluene	Liver	0.0002	--	0.00007	0.0003
			4-Amino-2,6-Dinitrotoluene	- -	- -	- -	- -	4-Amino-2,6-Dinitrotoluene	Liver	0.0002	--	0.00006	0.0002
			HMX	- -	- -	- -	- -	HMX	Liver	0.000002	--	0.0000009	0.000003
			RDX	1E-09	- -	3E-10	1E-09	RDX	Prostate	0.00003	--	0.00001	0.00004
			Barium	- -	- -	- -	- -	Barium	Kidney	0.00009	--	--	0.00009
			Cadmium	- -	- -	- -	- -	Cadmium	Kidney	0.00006	--	0.000004	0.00006
			Chromium	- -	- -	- -	- -	Chromium	None Reported	0.0000004	--	--	0.0000004
			Iron	- -	- -	- -	- -	Iron	Blood, GS	0.002	--	--	0.002
			Lead	- -	- -	- -	- -	Lead	NA	- -	--	- -	--
			(Total)	4E-09	- -	7E-10	5E-09	(Total)		0.003	--	0.0002	0.003
Ground Water	Ground Water	SWMU 3 - Shallow Ground Water	1,1,2,2-Tetrachloroethane	9E-07	- -	6E-08	9E-07	1,1,2,2-Tetrachloroethane	Liver	0.0007	--	0.00005	0.0008
			1,1,2-Trichloroethane	6E-09	- -	3E-10	7E-09	1,1,2-Trichloroethane	Blood	0.0003	--	0.00001	0.0003
			1,1-Dichloroethene	1E-08	- -	9E-10	1E-08	1,1-Dichloroethene	Liver	0.00002	--	0.000002	0.00003
			cis-1,2-Dichloroethene	- -	- -	- -	- -	cis-1,2-Dichloroethene	Blood	0.001	--	0.00009	0.001
			Tetrachloroethene	3E-09	- -	1E-09	4E-09	Tetrachloroethene	Liver	0.00006	--	0.00002	0.00008
			trans-1,2-Dichloroethene	- -	- -	- -	- -	trans-1,2-Dichloroethene	Blood	0.0001	--	0.000007	0.0002
			Trichloroethene	2E-06	- -	2E-07	2E-06	Trichloroethene	Liver	0.2	--	0.02	0.2
			Vinyl Chloride	3E-08	- -	8E-10	3E-08	Vinyl Chloride	Liver	0.0001	--	0.000004	0.0001
			2,4,6-Trinitrotoluene	4E-09	- -	5E-11	4E-09	2,4,6-Trinitrotoluene	Liver	0.003	--	0.00004	0.003
			2-Amino-4,6-Dinitrotoluene	- -	- -	- -	- -	2-Amino-4,6-Dinitrotoluene	Liver	0.007	--	0.00005	0.007
			4-Amino-2,6-Dinitrotoluene	- -	- -	- -	- -	4-Amino-2,6-Dinitrotoluene	Liver	0.02	--	0.0001	0.02
			RDX	3E-07	- -	1E-09	3E-07	RDX	Prostate	0.009	--	0.00004	0.009
			Aluminum	- -	- -	- -	- -	Aluminum	Immune, Nails	0.000	--	0.0000001	0.00010
			Barium	- -	- -	- -	- -	Barium	Kidney	0.001	--	0.00003	0.001
			Cadmium	- -	- -	- -	- -	Cadmium	Kidney	0.004	--	0.0001	0.004
			Chromium	- -	- -	- -	- -	Chromium	None Reported	0.000	--	0.000001	0.000006
			Iron	- -	- -	- -	- -	Iron	Blood, GS	0.002	--	0.000003	0.002
			Manganese	- -	- -	- -	- -	Manganese	CNS	0.001	--	0.00003	0.0009
			Nickel	- -	- -	- -	- -	Nickel	Body Weight	0.000	--	0.000003	0.0005
			Thallium	- -	- -	- -	- -	Thallium	Liver	0.003	--	0.000004	0.003
			(Total)	3E-06	- -	2E-07	3E-06	(Total)		0.2	--	0.02	0.2
Surface Water	Surface Water	SWMU 3 - Little Sulphur Creek	Acetone	- -	- -	- -	- -	Acetone	Liver, Kidney	0.00001	- -	0.000008	0.00002
			Bromomethane	- -	- -	- -	- -	Bromomethane	GS	0.000008	- -	0.00003	0.00003
			Methylene Chloride	5E-11	- -	2E-10	3E-10	Methylene Chloride	Liver	0.000001	- -	0.000005	0.000006
			Bis(2-ethylhexyl)phthalate	4E-11	- -	6E-09	6E-09	Bis(2-ethylhexyl)phthalate	Liver	0.000001	- -	0.0002	0.0002
			Pentachlorophenol	1E-11	- -	2E-08	2E-08	Pentachlorophenol	Liver, Kidney	0.00000004	- -	0.00005	0.00005
			2-Amino-4,6-Dinitrotoluene	- -	- -	- -	- -	2-Amino-4,6-Dinitrotoluene	Liver	0.0001	- -	0.0002	0.0003
			4-Amino-2,6-Dinitrotoluene	- -	- -	- -	- -	4-Amino-2,6-Dinitrotoluene	Liver	0.0004	- -	0.0005	0.0008
			RDX	1E-08	- -	1E-08	3E-08	RDX	Prostate	0.0004	- -	0.0004	0.0008
			Antimony	- -	- -	- -	- -	Antimony	Blood	0.00004	- -	0.0002	0.0003
			Lead	- -	- -	- -	- -	Lead	NA	- -	- -	- -	--
			(Total)	1E-08	- -	3E-08	5E-08	(Total)		0.0010	--	0.002	0.003
Sediment	Sediment	SWMU 3 - Little Sulphur Creek	2-Amino-4,6-Dinitrotoluene	- -	- -	- -	- -	2-Amino-4,6-Dinitrotoluene	Liver	0.00008	- -	0.00003	0.0001
			Aluminum	- -	- -	- -	- -	Aluminum	Immune, Nails	0.0004	- -	--	0.0004
			Antimony	- -	- -	- -	- -	Antimony	Blood	0.0002	- -	--	0.0002
			Barium	- -	- -	- -	- -	Barium	Kidney	0.0001	- -	--	0.0001
			Cadmium	- -	- -	- -	- -	Cadmium	Kidney	0.00009	- -	0.000007	0.00010
			Lead	- -	- -	- -	- -	Lead	NA	- -	- -	- -	--
			(Total)	- -	- -	- -	- -	(Total)		0.0009	--	0.00003	0.0009

Total Risk Across Soil	5E-09
Total Risk Across Groundwater	3E-06
Total Risk Across Surface Water	5E-08
Total Risk Across Sediment	- -
Total Risk Across All Media and All Exposure Routes	4E-06

Total Hazard Index Across All Media and All Exposure Routes	0.2
Total Blood HI	0.006
Total Body Weight HI	0.0005
Total GS HI	0.004
Total Immune HI	0.0005
Total Kidney HI	0.005
Total Liver HI	0.2
Total None Reported HI	0.000006
Total Prostate HI	0.01
Total Nails HI	0.0005
Total CNS HI	0.0009

TABLE 9.19
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
REASONABLE MAXIMUM EXPOSURE
NSWC CRANE, INDIANA

Scenario Timeframe: Future
Receptor Population: Recreational Users
Receptor Age: Lifelong (Child and Adult)

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk				Chemical	Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total		Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes Total
Surface Soil	Surface Soil	SWMU 3 - Old Jeep Trail	2,3,7,8-TCDD Equivalents	1E-07	- -	3E-08	2E-07	2,3,7,8-TCDD Equivalents	NA				
			2,4,6-Trinitrotoluene	9E-09	- -	8E-09	2E-08	2,4,6-Trinitrotoluene	Liver				
			2-Amino-4,6-Dinitrotoluene	- -	- -	- -	- -	2-Amino-4,6-Dinitrotoluene	Liver				
			4-Amino-2,6-Dinitrotoluene	- -	- -	- -	- -	4-Amino-2,6-Dinitrotoluene	Liver				
			HMX	- -	- -	- -	- -	HMX	Liver				
			RDX	4E-08	- -	4E-08	8E-08	RDX	Prostate				
			Barium	- -	- -	- -	- -	Barium	Kidney				
			Cadmium	- -	- -	- -	- -	Cadmium	Kidney				
			Chromium	- -	- -	- -	- -	Chromium	None Reported				
			Iron	- -	- -	- -	- -	Iron	Blood, GS				
			Lead	- -	- -	- -	- -	Lead	NA				
			(Total)	2E-07	- -	8E-08	3E-07	(Total)					
Ground Water	Ground Water	SWMU 3 - Shallow Ground Water	1,1,2,2-Tetrachloroethane	1E-05	- -	7E-07	1E-05	1,1,2,2-Tetrachloroethane	Liver				
			1,1,2-Trichloroethane	1E-07	- -	4E-09	1E-07	1,1,2-Trichloroethane	Blood				
			1,1-Dichloroethene	2E-07	- -	1E-08	2E-07	1,1-Dichloroethene	Liver				
			cis-1,2-Dichloroethene	- -	- -	- -	- -	cis-1,2-Dichloroethene	Blood				
			Tetrachloroethene	5E-08	- -	1E-08	6E-08	Tetrachloroethene	Liver				
			trans-1,2-Dichloroethene	- -	- -	- -	- -	trans-1,2-Dichloroethene	Blood				
			Trichloroethene	3E-05	- -	2E-06	3E-05	Trichloroethene	Liver				
			Vinyl Chloride	4E-07	- -	1E-08	4E-07	Vinyl Chloride	Liver				
			2,4,6-Trinitrotoluene	6E-08	- -	7E-10	6E-08	2,4,6-Trinitrotoluene	Liver				
			2-Amino-4,6-Dinitrotoluene	- -	- -	- -	- -	2-Amino-4,6-Dinitrotoluene	Liver				
			4-Amino-2,6-Dinitrotoluene	- -	- -	- -	- -	4-Amino-2,6-Dinitrotoluene	Liver				
			RDX	5E-06	- -	2E-08	5E-06	RDX	Prostate				
			Aluminum	- -	- -	- -	- -	Aluminum	Immune, Nails				
			Barium	- -	- -	- -	- -	Barium	Kidney				
			Cadmium	- -	- -	- -	- -	Cadmium	Kidney				
			Chromium	- -	- -	- -	- -	Chromium	None Reported				
			Iron	- -	- -	- -	- -	Iron	Blood, GS				
			Manganese	- -	- -	- -	- -	Manganese	CNS				
			Nickel	- -	- -	- -	- -	Nickel	Body Weight				
			(Total)	5E-05	- -	3E-06	5E-05	(Total)					
Surface Water	Surface Water	SWMU 3 - Little Sulphur Creek	Acetone	- -	- -	- -	- -	Acetone	Liver, Kidney				
			Bromomethane	- -	- -	- -	- -	Bromomethane	GS				
			Methylene Chloride	5E-09	- -	4E-09	8E-09	Methylene Chloride	Liver				
			Bis(2-ethylhexyl)phthalate	4E-09	- -	8E-08	8E-08	Bis(2-ethylhexyl)phthalate	Liver				
			Pentachlorophenol	1E-09	- -	2E-07	2E-07	Pentachlorophenol	Liver, Kidney				
			2-Amino-4,6-Dinitrotoluene	- -	- -	- -	- -	2-Amino-4,6-Dinitrotoluene	Liver				
			4-Amino-2,6-Dinitrotoluene	- -	- -	- -	- -	4-Amino-2,6-Dinitrotoluene	Liver				
			RDX	1E-06	- -	2E-07	1E-06	RDX	Prostate				
			Antimony	- -	- -	- -	- -	Antimony	Blood				
			Lead	- -	- -	- -	- -	Lead	NA				
			#REF!	#REF!	- -	#REF!	#REF!	#REF!	#REF!				
			(Total)	#REF!	- -	#REF!	#REF!	(Total)					
Sediment	Sediment	SWMU 3 - Little Sulphur Creek	2-Amino-4,6-Dinitrotoluene	- -	- -	- -	- -	2-Amino-4,6-Dinitrotoluene	Liver				
			Aluminum	- -	- -	- -	- -	Aluminum	Immune, Nails				
			Antimony	- -	- -	- -	- -	Antimony	Blood				
			Barium	- -	- -	- -	- -	Barium	Kidney				
			Cadmium	- -	- -	- -	- -	Cadmium	Kidney				
			Lead	- -	- -	- -	- -	Lead	NA				
			(Total)	- -	- -	- -	- -	(Total)					

Total Risk Across Soil	3E-07
Total Risk Across Groundwater	5E-05
Total Risk Across Surface Water	#REF!
Total Risk Across Sediment	- -
Total Risk Across All Media and All Exposure Routes	#REF!

Total Hazard Index Across All Media and All Exposure Routes	

TABLE 9.20
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
CENTRAL TENDENCY EXPOSURES
NSWC CRANE, INDIANA

Scenario Timeframe: Future
Receptor Population: Recreational Users
Receptor Age: Lifelong (Child and Adult)

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk				Chemical	Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total		Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes Total
Surface Soil	Surface Soil	SWMU 3 - Old Jeep Trail	2,3,7,8-TCDD Equivalents	1E-08	--	9E-10	1E-08	2,3,7,8-TCDD Equivalents	NA				
			2,4,6-Trinitrotoluene	7E-10	--	2E-10	9E-10	2,4,6-Trinitrotoluene	Liver				
			2-Amino-4,6-Dinitrotoluene	--	--	--	--	2-Amino-4,6-Dinitrotoluene	Liver				
			4-Amino-2,6-Dinitrotoluene	--	--	--	--	4-Amino-2,6-Dinitrotoluene	Liver				
			HMX	--	--	--	--	HMX	Liver				
			RDX	3E-09	--	1E-09	5E-09	RDX	Prostate				
			Barium	--	--	--	--	Barium	Kidney				
			Cadmium	--	--	--	--	Cadmium	Kidney				
			Chromium	--	--	--	--	Chromium	None Reported				
			Iron	--	--	--	--	Iron	Blood, GS				
			Lead	--	--	--	--	Lead	NA				
			(Total)	1E-08	--	2E-09	2E-08	(Total)					
Ground Water	Ground Water	SWMU 3 - Shallow Ground Water	1,1,2,2-Tetrachloroethane	2E-06	--	9E-08	2E-06	1,1,2,2-Tetrachloroethane	Liver				
			1,1,2-Trichloroethane	1E-08	--	5E-10	2E-08	1,1,2-Trichloroethane	Blood				
			1,1-Dichloroethene	3E-08	--	1E-09	3E-08	1,1-Dichloroethene	Liver				
			cis-1,2-Dichloroethene	--	--	--	--	cis-1,2-Dichloroethene	Blood				
			Tetrachloroethene	8E-09	--	2E-09	9E-09	Tetrachloroethene	Liver				
			trans-1,2-Dichloroethene	--	--	--	--	trans-1,2-Dichloroethene	Blood				
			Trichloroethene	5E-06	--	3E-07	5E-06	Trichloroethene	Liver				
			Vinyl Chloride	7E-08	--	1E-09	7E-08	Vinyl Chloride	Liver				
			2,4,6-Trinitrotoluene	9E-09	--	8E-11	9E-09	2,4,6-Trinitrotoluene	Liver				
			2-Amino-4,6-Dinitrotoluene	--	--	--	--	2-Amino-4,6-Dinitrotoluene	Liver				
			4-Amino-2,6-Dinitrotoluene	--	--	--	--	4-Amino-2,6-Dinitrotoluene	Liver				
			RDX	7E-07	--	2E-09	7E-07	RDX	Prostate				
			Aluminum	--	--	--	--	Aluminum	Immune, Nails				
			Barium	--	--	--	--	Barium	Kidney				
			Cadmium	--	--	--	--	Cadmium	Kidney				
			Chromium	--	--	--	--	Chromium	None Reported				
			Iron	--	--	--	--	Iron	Blood, GS				
			Manganese	--	--	--	--	Manganese	CNS				
			Nickel	--	--	--	--	Nickel	Body Weight				
			Thallium	--	--	--	--	Thallium	Liver				
			(Total)	8E-06	--	4E-07	8E-06	(Total)					
Surface Water	Surface Water	SWMU 3 - Little Sulphur Creek	Acetone	--	--	--	--	Acetone	Liver, Kidney				
			Bromomethane	--	--	--	--	Bromomethane	GS				
			Methylene Chloride	4E-10	--	3E-10	7E-10	Methylene Chloride	Liver				
			Bis(2-ethylhexyl)phthalate	3E-10	--	8E-09	9E-09	Bis(2-ethylhexyl)phthalate	Liver				
			Pentachlorophenol	1E-10	--	2E-08	2E-08	Pentachlorophenol	Liver, Kidney				
			2-Amino-4,6-Dinitrotoluene	--	--	--	--	2-Amino-4,6-Dinitrotoluene	Liver				
			4-Amino-2,6-Dinitrotoluene	--	--	--	--	4-Amino-2,6-Dinitrotoluene	Liver				
			RDX	1E-07	--	2E-08	1E-07	RDX	Prostate				
			Antimony	--	--	--	--	Antimony	Blood				
			Lead	--	--	--	--	Lead	NA				
			#REF!	#REF!	--	#REF!	#REF!	#REF!	#REF!				
			(Total)	#REF!	--	#REF!	#REF!	(Total)					
Sediment	Sediment	SWMU 3 - Little Sulphur Creek	2-Amino-4,6-Dinitrotoluene	--	--	--	--	2-Amino-4,6-Dinitrotoluene	Liver				
			Aluminum	--	--	--	--	Aluminum	Immune, Nails				
			Antimony	--	--	--	--	Antimony	Blood				
			Barium	--	--	--	--	Barium	Kidney				
			Cadmium	--	--	--	--	Cadmium	Kidney				
			Lead	--	--	--	--	Lead	NA				
			(Total)	--	--	--	--	(Total)					

Total Risk Across Soil	2E-08
Total Risk Across Groundwater	8E-06
Total Risk Across Surface Water	#REF!
Total Risk Across Sediment	--
Total Risk Across All Media and All Exposure Routes	#REF!

Total Hazard Index Across All Media and All Exposure Routes

TABLE 9.21
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
REASONABLE MAXIMUM EXPOSURE
NSWC CRANE, INDIANA

Scenario Timeframe: Future
Receptor Population: On-Site Resident
Receptor Age: Child

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk				Chemical	Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total		Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes Total
Surface Soil	Surface Soil	SWMU 3 - 1 Acre Exposure Unit	2,3,7,8-TCDD Equivalents	1E-06	- -	1E-07	1E-06	2,3,7,8-TCDD Equivalents	NA	- -	--	- -	--
			2,4,6-Trinitrotoluene	2E-05	- -	5E-06	2E-05	2,4,6-Trinitrotoluene	Liver	15	--	4	19
			2-Amino-4,6-Dinitrotoluene	- -	- -	- -	- -	2-Amino-4,6-Dinitrotoluene	Liver	0.5	--	0.1	0.6
			4-Amino-2,6-Dinitrotoluene	- -	- -	- -	- -	4-Amino-2,6-Dinitrotoluene	Liver	0.3	--	0.09	0.4
			HMX	- -	- -	- -	- -	HMX	Liver	0.07	--	0.02	0.10
			RDX	6E-05	- -	2E-05	8E-05	RDX	Prostate	2	--	0.6	2.8
			Barium	- -	- -	- -	- -	Barium	Kidney	0.04	--	--	0.04
			Cadmium	- -	- -	- -	- -	Cadmium	Kidney	0.1	--	0.006	0.1
			Chromium	- -	- -	- -	- -	Chromium	None Reported	0.0001	--	--	0.0001
			Iron	- -	- -	- -	- -	Iron	Blood, GS	0.9	--	--	0.9
			Lead	- -	- -	- -	- -	Lead	NA	- -	--	- -	--
			(Total)	8E-05	- -	2E-05	1E-04	(Total)		19	--	5	24
Ground Water	Ground Water	SWMU 3 - Shallow Ground Water	1,1,2,2-Tetrachloroethane	7E-05	1E-05	3E-06	9E-05	1,1,2,2-Tetrachloroethane	Liver	0.07	- -	0.003	0.07
			1,1,2-Trichloroethane	5E-07	2E-07	2E-08	7E-07	1,1,2-Trichloroethane	Blood	0.03	- -	0.0008	0.03
			1,1-Dichloroethene	1E-06	1E-07	5E-08	1E-06	1,1-Dichloroethene	Liver	0.002	- -	0.0001	0.002
			cis-1,2-Dichloroethene	- -	- -	- -	- -	cis-1,2-Dichloroethene	Blood	0.1	- -	0.005	0.1
			Tetrachloroethene	3E-07	2E-08	5E-08	3E-07	Tetrachloroethene	Liver	0.006	0.0001	0.001	0.007
			trans-1,2-Dichloroethene	- -	- -	- -	- -	trans-1,2-Dichloroethene	Blood	0.01	- -	0.0004	0.01
			Trichloroethene	2E-04	6E-05	9E-06	2E-04	Trichloroethene	Liver	16	0.2	0.8	17
			Vinyl Chloride	2E-06	2E-08	4E-08	2E-06	Vinyl Chloride	Liver	0.01	0.0006	0.0002	0.01
			2,4,6-Trinitrotoluene	3E-07	- -	3E-09	3E-07	2,4,6-Trinitrotoluene	Liver	0.2	- -	0.002	0.3
			2-Amino-4,6-Dinitrotoluene	- -	- -	- -	- -	2-Amino-4,6-Dinitrotoluene	Liver	0.7	- -	0.003	0.7
			4-Amino-2,6-Dinitrotoluene	- -	- -	- -	- -	4-Amino-2,6-Dinitrotoluene	Liver	1.6	- -	0.007	1.7
			RDX	2E-05	- -	7E-08	2E-05	RDX	Prostate	0.9	- -	0.002	0.9
			Aluminum	- -	- -	- -	- -	Aluminum	Immune, Nails	0.009	- -	0.00001	0.009
			Barium	- -	- -	- -	- -	Barium	Kidney	0.1	- -	0.002	0.1
			Cadmium	- -	- -	- -	- -	Cadmium	Kidney	0.3	- -	0.008	0.3
			Chromium	- -	- -	- -	- -	Chromium	None Reported	0.0004	- -	0.00008	0.0005
			Iron	- -	- -	- -	- -	Iron	Blood, GS	0.2	- -	0.0002	0.2
			Manganese	- -	- -	- -	- -	Manganese	CNS	0.08	- -	0.002	0.08
			Nickel	- -	- -	- -	- -	Nickel	Body Weight	0.04	- -	0.0002	0.04
			Thallium	- -	- -	- -	- -	Thallium	Liver	0.2	- -	0.0003	0.2
			Nitrate	- -	- -	- -	- -	Nitrate	Blood	0.02	- -	0.00002	0.02
			(Total)	3E-04	7E-05	1E-05	3E-04	(Total)		20	0.2	0.9	21
Surface Water	Surface Water	SWMU 3 - Little Sulphur Creek	Bromomethane	- -	- -	- -	- -	Bromomethane	GS	0.1	0.04	0.001	0.2
			2-Amino-4,6-Dinitrotoluene	- -	- -	- -	- -	2-Amino-4,6-Dinitrotoluene	Liver	2	- -	0.01	2
			4-Amino-2,6-Dinitrotoluene	- -	- -	- -	- -	4-Amino-2,6-Dinitrotoluene	Liver	5	- -	0.02	5
			RDX	6E-05	- -	2E-07	6E-05	RDX	Prostate	2	- -	0.006	2
			(Total)	6E-05	- -	2E-07	6E-05	(Total)		9	0.0	0.04	9
Sediment	Sediment	SWMU 3 - Little Sulphur Creek	2-Amino-4,6-Dinitrotoluene	- -	- -	- -	- -	2-Amino-4,6-Dinitrotoluene	Liver	0.003	- -	0.002	0.004
			Aluminum	- -	- -	- -	- -	Aluminum	Immune, Nails	0.01	- -	--	0.01
			Antimony	- -	- -	- -	- -	Antimony	Blood	0.007	- -	--	0.007
			Barium	- -	- -	- -	- -	Barium	Kidney	0.005	- -	--	0.005
			Cadmium	- -	- -	- -	- -	Cadmium	Kidney	0.003	- -	0.0004	0.004
			Lead	- -	- -	- -	- -	Lead	NA	- -	- -	- -	--
			(Total)	- -	- -	- -	- -	(Total)		0.03	--	0.002	0.03

Total Risk Across Soil	1E-04
Total Risk Across Groundwater	3E-04
Total Risk Across SWMU 3 - Little Sulphur Creek	6E-05
Total Risk Across Sediment	- -
Total Risk Across All Media and All Exposure Routes	5E-04

Total Hazard Index Across All Media and All Exposure Routes	55
Total Blood HI	1
Total Body Weight HI	0.04
Total GS HI	1
Total Kidney HI	0.6
Total Liver HI	47
Total None Reported HI	0.0006
Total Prostate HI	6
Total Nails HI	0.02
Total CNS HI	0.08

TABLE 9.22
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
CENTRAL TENDENCY EXPOSURES
NSWC CRANE, INDIANA

Scenario Timeframe: Future
Receptor Population: On-Site Resident
Receptor Age: Child

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk				Chemical	Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total		Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes Total
Surface Soil	Surface Soil	SWMU 3 - 1 Acre Exposure Unit	2,3,7,8-TCDD Equivalents	1E-07	- -	5E-09	1E-07	2,3,7,8-TCDD Equivalents	NA	- -	- -	- -	- -
			2,4,6-Trinitrotoluene	2E-06	- -	2E-07	2E-06	2,4,6-Trinitrotoluene	Liver	5	- -	0.6	6
			2-Amino-4,6-Dinitrotoluene	- -	- -	- -	- -	2-Amino-4,6-Dinitrotoluene	Liver	0.2	- -	0.02	0.2
			4-Amino-2,6-Dinitrotoluene	- -	- -	- -	- -	4-Amino-2,6-Dinitrotoluene	Liver	0.1	- -	0.01	0.1
			HMX	- -	- -	- -	- -	HMX	Liver	0.02	- -	0.003	0.03
			RDX	7E-06	- -	8E-07	8E-06	RDX	Prostate	0.7	- -	0.08	0.8
			Barium	- -	- -	- -	- -	Barium	Kidney	0.01	- -	- -	0.01
			Cadmium	- -	- -	- -	- -	Cadmium	Kidney	0.04	- -	0.0008	0.04
			Chromium	- -	- -	- -	- -	Chromium	None Reported	0.00004	- -	- -	0.00004
			Iron	- -	- -	- -	- -	Iron	Blood, GS	0.3	- -	- -	0.3
			Lead	- -	- -	- -	- -	Lead	NA	- -	- -	- -	- -
			(Total)	9E-06	- -	1E-06	1E-05	(Total)		6	- -	0.7	7
Ground Water	Ground Water	SWMU 3 - Shallow Ground Water	1,1,2,2-Tetrachloroethane	7E-06	2E-06	5E-07	9E-06	1,1,2,2-Tetrachloroethane	Liver	0.02	- -	0.002	0.02
			1,1,2-Trichloroethane	5E-08	2E-08	3E-09	7E-08	1,1,2-Trichloroethane	Blood	0.008	- -	0.0004	0.008
			1,1-Dichloroethene	1E-07	2E-08	8E-09	1E-07	1,1-Dichloroethene	Liver	0.0007	- -	0.00005	0.0007
			cis-1,2-Dichloroethene	- -	- -	- -	- -	cis-1,2-Dichloroethene	Blood	0.03	- -	0.003	0.03
			Tetrachloroethene	3E-08	2E-09	9E-09	4E-08	Tetrachloroethene	Liver	0.002	0.00005	0.0006	0.002
			trans-1,2-Dichloroethene	- -	- -	- -	- -	trans-1,2-Dichloroethene	Blood	0.004	- -	0.0002	0.004
			Trichloroethene	2E-05	7E-06	2E-06	2E-05	Trichloroethene	Liver	5	0.06	0.5	5
			Vinyl Chloride	2E-07	3E-09	7E-09	2E-07	Vinyl Chloride	Liver	0.004	0.0002	0.0001	0.004
			2,4,6-Trinitrotoluene	3E-08	- -	5E-10	3E-08	2,4,6-Trinitrotoluene	Liver	0.07	- -	0.001	0.07
			2-Amino-4,6-Dinitrotoluene	- -	- -	- -	- -	2-Amino-4,6-Dinitrotoluene	Liver	0.2	- -	0.002	0.2
			4-Amino-2,6-Dinitrotoluene	- -	- -	- -	- -	4-Amino-2,6-Dinitrotoluene	Liver	0.5	- -	0.004	0.5
			RDX	2E-06	- -	1E-08	2E-06	RDX	Prostate	0.3	- -	0.001	0.3
			Aluminum	- -	- -	- -	- -	Aluminum	Immune, Nails	0.003	- -	0.000004	0.003
			Barium	- -	- -	- -	- -	Barium	Kidney	0.04	- -	0.0008	0.04
			Cadmium	- -	- -	- -	- -	Cadmium	Kidney	0.1	- -	0.003	0.1
			Chromium	- -	- -	- -	- -	Chromium	None Reported	0.0001	- -	0.00003	0.0002
			Iron	- -	- -	- -	- -	Iron	Blood, GS	0.05	- -	0.00008	0.05
			Manganese	- -	- -	- -	- -	Manganese	CNS	0.02	- -	0.0010	0.02
			Nickel	- -	- -	- -	- -	Nickel	Body Weight	0.01	- -	0.0001	0.01
			Thallium	- -	- -	- -	- -	Thallium	Liver	0.07	- -	0.0001	0.07
			Nitrate	- -	- -	- -	- -	Nitrate	Blood	0.005	- -	0.000009	0.005
			(Total)	3E-05	9E-06	2E-06	4E-05	(Total)		6	0.06	0.5	7
Surface Water	Surface Water	SWMU 3 - Little Sulphur Creek	Bromomethane	- -	- -	- -	- -	Bromomethane	GS	0.03	0.02	0.0006	0.05
			2-Amino-4,6-Dinitrotoluene	- -	- -	- -	- -	2-Amino-4,6-Dinitrotoluene	Liver	0.7	- -	0.006	0.7
			4-Amino-2,6-Dinitrotoluene	- -	- -	- -	- -	4-Amino-2,6-Dinitrotoluene	Liver	1	- -	0.01	1
			RDX	6E-06	- -	3E-08	6E-06	RDX	Prostate	0.6	- -	0.003	0.6
			(Total)	6E-06	- -	3E-08	6E-06	(Total)		3	0.02	0.02	3
Sediment	Sediment	SWMU 3 - Little Sulphur Creek	2-Amino-4,6-Dinitrotoluene	- -	- -	- -	- -	2-Amino-4,6-Dinitrotoluene	Liver	0.0007	- -	0.0002	0.0009
			Aluminum	- -	- -	- -	- -	Aluminum	Immune, Nails	0.004	- -	- -	0.004
			Antimony	- -	- -	- -	- -	Antimony	Blood	0.002	- -	- -	0.002
			Barium	- -	- -	- -	- -	Barium	Kidney	0.001	- -	- -	0.001
			Cadmium	- -	- -	- -	- -	Cadmium	Kidney	0.0008	- -	0.00004	0.0009
			Lead	- -	- -	- -	- -	Lead	NA	- -	- -	- -	- -
			(Total)	- -	- -	- -	- -	(Total)		0.008	- -	0.0002	0.008

Total Risk Across Soil	1E-05
Total Risk Across Groundwater	4E-05
Total Risk Across SWMU 3 - Little Sulphur Creek	6E-06
Total Risk Across Sediment	- -
Total Risk Across All Media and All Exposure Routes	5E-05

Total Hazard Index Across All Media and All Exposure Routes	16
Total Blood HI	0.4
Total Body Weight HI	0.01
Total GS HI	0.4
Total Kidney HI	0.2
Total Liver HI	14
Total None Reported HI	0.00021
Total Prostate HI	2
Total Nails HI	0.006
Total CNS HI	0.024

TABLE 9.23
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
REASONABLE MAXIMUM EXPOSURE
NSWC CRANE, INDIANA

Scenario Timeframe: Future
Receptor Population: On-Site Resident
Receptor Age: Child

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk				Chemical	Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total		Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes Total
Surface Soil	Surface Soil	SWMU 3 - 6-Acre Exposure Unit	2,3,7,8-TCDD Equivalents	1E-06	- -	1E-07	1E-06	2,3,7,8-TCDD Equivalents	NA	- -	--	- -	--
			2,4,6-Trinitrotoluene	9E-08	- -	2E-08	1E-07	2,4,6-Trinitrotoluene	Liver	0.07	--	0.02	0.09
			2-Amino-4,6-Dinitrotoluene	- -	- -	- -	- -	2-Amino-4,6-Dinitrotoluene	Liver	0.09	--	0.03	0.1
			4-Amino-2,6-Dinitrotoluene	- -	- -	- -	- -	4-Amino-2,6-Dinitrotoluene	Liver	0.08	--	0.02	0.10
			HMX	- -	- -	- -	- -	HMX	Liver	0.001	--	0.0003	0.002
			RDX	4E-07	- -	1E-07	5E-07	RDX	Prostate	0.01	--	0.004	0.02
			Barium	- -	- -	- -	- -	Barium	Kidney	0.05	--	--	0.05
			Cadmium	- -	- -	- -	- -	Cadmium	Kidney	0.03	--	0.002	0.03
			Chromium	- -	- -	- -	- -	Chromium	None Reported	0.0002	--	--	0.0002
			Iron	- -	- -	- -	- -	Iron	Blood, GS	1	--	--	1
			Lead	- -	- -	- -	- -	Lead	NA	- -	--	- -	--
			(Total)	2E-06	- -	2E-07	2E-06	(Total)		1	--	0.07	2
Ground Water	Ground Water	SWMU 3 - Shallow Ground Water	1,1,2,2-Tetrachloroethane	7E-05	1E-05	3E-06	9E-05	1,1,2,2-Tetrachloroethane	Liver	0.07	- -	0.003	0.07
			1,1,2-Trichloroethane	5E-07	2E-07	2E-08	7E-07	1,1,2-Trichloroethane	Blood	0.03	- -	0.0008	0.03
			1,1-Dichloroethene	1E-06	1E-07	5E-08	1E-06	1,1-Dichloroethene	Liver	0.002	- -	0.00010	0.002
			cis-1,2-Dichloroethene	- -	- -	- -	- -	cis-1,2-Dichloroethene	Blood	0.1	- -	0.005	0.1
			Tetrachloroethene	3E-07	2E-08	5E-08	3E-07	Tetrachloroethene	Liver	0.006	0.0001	0.001	0.007
			trans-1,2-Dichloroethene	- -	- -	- -	- -	trans-1,2-Dichloroethene	Blood	0.01	- -	0.0004	0.01
			Trichloroethene	2E-04	6E-05	9E-06	2E-04	Trichloroethene	Liver	16	0.2	0.8	17
			Vinyl Chloride	2E-06	2E-08	4E-08	2E-06	Vinyl Chloride	Liver	0.01	0.0006	0.0002	0.01
			2,4,6-Trinitrotoluene	3E-07	- -	3E-09	3E-07	2,4,6-Trinitrotoluene	Liver	0.2	- -	0.002	0.3
			2-Amino-4,6-Dinitrotoluene	- -	- -	- -	- -	2-Amino-4,6-Dinitrotoluene	Liver	0.7	- -	0.003	0.7
			4-Amino-2,6-Dinitrotoluene	- -	- -	- -	- -	4-Amino-2,6-Dinitrotoluene	Liver	2	- -	0.007	2
			RDX	2E-05	- -	7E-08	2E-05	RDX	Prostate	0.9	- -	0.002	0.9
			Aluminum	- -	- -	- -	- -	Aluminum	Immune, Nails	0.009	- -	0.00001	0.009
			Barium	- -	- -	- -	- -	Barium	Kidney	0.1	- -	0.002	0.1
			Cadmium	- -	- -	- -	- -	Cadmium	Kidney	0.3	- -	0.008	0.3
			Chromium	- -	- -	- -	- -	Chromium	None Reported	0.0004	- -	0.00008	0.0005
			Iron	- -	- -	- -	- -	Iron	Blood, GS	0.2	- -	0.0002	0.2
			Manganese	- -	- -	- -	- -	Manganese	CNS	0.08	- -	0.002	0.08
			Nickel	- -	- -	- -	- -	Nickel	Body Weight	0.04	- -	0.0002	0.04
			Thallium	- -	- -	- -	- -	Thallium	Liver	0.2	- -	0.4	0.7
			Nitrate	- -	- -	- -	- -	Nitrate	Blood	0.02	- -	0.00002	0.02
			(Total)	3E-04	7E-05	1E-05	3E-04	(Total)		20	0.2	1.3	22
Surface Water	Surface Water	SWMU 3 - Little Sulphur Creek	Bromomethane	- -	- -	- -	- -	Bromomethane	GS	0.1	0.04	0.001	0.2
			2-Amino-4,6-Dinitrotoluene	- -	- -	- -	- -	2-Amino-4,6-Dinitrotoluene	Liver	2	- -	0.01	2
			4-Amino-2,6-Dinitrotoluene	- -	- -	- -	- -	4-Amino-2,6-Dinitrotoluene	Liver	5	- -	0.02	5
			RDX	6E-05	- -	2E-07	6E-05	RDX	Prostate	2	- -	0.006	2
			(Total)	6E-05	- -	2E-07	6E-05	(Total)		9	0.0	0.04	9
Sediment	Sediment	SWMU 3 - Little Sulphur Creek	2-Amino-4,6-Dinitrotoluene	- -	- -	- -	- -	2-Amino-4,6-Dinitrotoluene	Liver	0.003	- -	0.002	0.004
			Aluminum	- -	- -	- -	- -	Aluminum	Immune, Nails	0.01	- -	--	0.01
			Antimony	- -	- -	- -	- -	Antimony	Blood	0.007	- -	--	0.007
			Barium	- -	- -	- -	- -	Barium	Kidney	0.005	- -	--	0.005
			Cadmium	- -	- -	- -	- -	Cadmium	Kidney	0.003	- -	0.0004	0.004
			Lead	- -	- -	- -	- -	Lead	NA	- -	- -	- -	--
			(Total)	- -	- -	- -	- -	(Total)		0.03	--	0.002	0.03

Total Risk Across Soil	2E-06
Total Risk Across Groundwater	3E-04
Total Risk Across SWMU 3 - Little Sulphur Creek	6E-05
Total Risk Across Sediment	- -
Total Risk Across All Media and All Exposure Routes	4E-04

Total Hazard Index Across All Media and All Exposure Routes	33
Total Blood HI	1
Total Body Weight HI	0.04
Total GS HI	1.5
Total Kidney HI	0.6
Total Liver HI	27
Total None Reported HI	0.0007
Total Prostate HI	3
Total Nails HI	0.02
Total CNS HI	0.08

TABLE 9.24
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
CENTRAL TENDENCY EXPOSURES
NSWC CRANE, INDIANA

Scenario Timeframe: Future
Receptor Population: On-Site Resident
Receptor Age: Child

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk				Chemical	Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total		Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes Total
Surface Soil	Surface Soil	SWMU 3 - 6-Acre Exposure Unit	2,3,7,8-TCDD Equivalents	1E-07	- -	5E-09	1E-07	2,3,7,8-TCDD Equivalents	NA	- -	--	- -	--
			2,4,6-Trinitrotoluene	1E-08	- -	1E-09	1E-08	2,4,6-Trinitrotoluene	Liver	0.02	--	0.003	0.02
			2-Amino-4,6-Dinitrotoluene	- -	- -	- -	- -	2-Amino-4,6-Dinitrotoluene	Liver	0.03	--	0.003	0.03
			4-Amino-2,6-Dinitrotoluene	- -	- -	- -	- -	4-Amino-2,6-Dinitrotoluene	Liver	0.03	--	0.003	0.03
			HMX	- -	- -	- -	- -	HMX	Liver	0.0004	--	0.00005	0.0005
			RDX	5E-08	- -	5E-09	5E-08	RDX	Prostate	0.005	--	0.0005	0.005
			Barium	- -	- -	- -	- -	Barium	Kidney	0.02	--	--	0.02
			Cadmium	- -	- -	- -	- -	Cadmium	Kidney	0.01	--	0.0002	0.01
			Chromium	- -	- -	- -	- -	Chromium	None Reported	0.00008	--	--	0.00008
			Iron	- -	- -	- -	- -	Iron	Blood, GS	0.4	--	--	0.4
			Lead	- -	- -	- -	- -	Lead	NA	- -	--	- -	--
			(Total)	2E-07	- -	1E-08	2E-07	(Total)		0.5	--	0.010	0.5
Ground Water	Ground Water	SWMU 3 - Shallow Ground Water	1,1,2,2-Tetrachloroethane	7E-06	2E-06	5E-07	9E-06	1,1,2,2-Tetrachloroethane	Liver	0.02	- -	0.002	0.02
			1,1,2-Trichloroethane	5E-08	2E-08	3E-09	7E-08	1,1,2-Trichloroethane	Blood	0.008	- -	0.0004	0.008
			1,1-Dichloroethene	1E-07	2E-08	8E-09	1E-07	1,1-Dichloroethene	Liver	0.0007	- -	0.00005	0.0007
			cis-1,2-Dichloroethene	- -	- -	- -	- -	cis-1,2-Dichloroethene	Blood	0.03	- -	0.003	0.03
			Tetrachloroethene	3E-08	2E-09	9E-09	4E-08	Tetrachloroethene	Liver	0.002	0.00005	0.0006	0.002
			trans-1,2-Dichloroethene	- -	- -	- -	- -	trans-1,2-Dichloroethene	Blood	0.004	- -	0.0002	0.004
			Trichloroethene	2E-05	7E-06	2E-06	2E-05	Trichloroethene	Liver	5	0.06	0.5	5
			Vinyl Chloride	2E-07	3E-09	7E-09	2E-07	Vinyl Chloride	Liver	0.004	0.0002	0.0001	0.004
			2,4,6-Trinitrotoluene	3E-08	- -	5E-10	3E-08	2,4,6-Trinitrotoluene	Liver	0.07	- -	0.001	0.07
			2-Amino-4,6-Dinitrotoluene	- -	- -	- -	- -	2-Amino-4,6-Dinitrotoluene	Liver	0.2	- -	0.002	0.2
			4-Amino-2,6-Dinitrotoluene	- -	- -	- -	- -	4-Amino-2,6-Dinitrotoluene	Liver	0.5	- -	0.004	0.5
			RDX	2E-06	- -	1E-08	2E-06	RDX	Prostate	0.3	- -	0.001	0.3
			Aluminum	- -	- -	- -	- -	Aluminum	Immune, Nails	0.003	- -	0.000004	0.003
			Barium	- -	- -	- -	- -	Barium	Kidney	0.04	- -	0.0008	0.04
			Cadmium	- -	- -	- -	- -	Cadmium	Kidney	0.1	- -	0.003	0.1
			Chromium	- -	- -	- -	- -	Chromium	None Reported	0.0001	- -	0.00003	0.0002
			Iron	- -	- -	- -	- -	Iron	Blood, GS	0.05	- -	0.00008	0.05
			Manganese	- -	- -	- -	- -	Manganese	CNS	0.02	- -	0.0010	0.02
			Nickel	- -	- -	- -	- -	Nickel	Body Weight	0.01	- -	0.0001	0.01
			Thallium	- -	- -	- -	- -	Thallium	Liver	0.07	- -	0.2	0.3
			Nitrate	- -	- -	- -	- -	Nitrate	Blood	0.005	- -	0.000009	0.005
			(Total)	3E-05	9E-06	2E-06	4E-05	(Total)		6	0.06	0.7	7
Surface Water	Surface Water	SWMU 3 - Little Sulphur Creek	Bromomethane	- -	- -	- -	- -	Bromomethane	GS	0.03	0.02	0.0006	0.05
			2-Amino-4,6-Dinitrotoluene	- -	- -	- -	- -	2-Amino-4,6-Dinitrotoluene	Liver	0.7	- -	0.006	0.7
			4-Amino-2,6-Dinitrotoluene	- -	- -	- -	- -	4-Amino-2,6-Dinitrotoluene	Liver	1	- -	0.01	1
			RDX	6E-06	- -	3E-08	6E-06	RDX	Prostate	0.6	- -	0.003	0.6
			(Total)	6E-06	- -	3E-08	6E-06	(Total)		3	0.02	0.02	3
Sediment	Sediment	SWMU 3 - Little Sulphur Creek	2-Amino-4,6-Dinitrotoluene	- -	- -	- -	- -	2-Amino-4,6-Dinitrotoluene	Liver	0.0007	- -	0.0002	0.0009
			Aluminum	- -	- -	- -	- -	Aluminum	Immune, Nails	0.004	- -	--	0.004
			Antimony	- -	- -	- -	- -	Antimony	Blood	0.002	- -	--	0.002
			Barium	- -	- -	- -	- -	Barium	Kidney	0.001	- -	--	0.001
			Cadmium	- -	- -	- -	- -	Cadmium	Kidney	0.0008	- -	0.00004	0.0009
			Lead	- -	- -	- -	- -	Lead	NA	- -	- -	- -	--
			(Total)	- -	- -	- -	- -	(Total)		0.008	--	0.0002	0.008

Total Risk Across Soil	2E-07
Total Risk Across Groundwater	4E-05
Total Risk Across SWMU 3 - Little Sulphur Creek	6E-06
Total Risk Across Sediment	- -
Total Risk Across All Media and All Exposure Routes	4E-05

Total Hazard Index Across All Media and All Exposure Routes	10
Total Blood HI	0.5
Total Body Weight HI	0.01
Total GS HI	0.5
Total Kidney HI	0.2
Total Liver HI	8
Total None Reported HI	0.0002
Total Prostate HI	0.9
Total Nails HI	0.006
Total CNS HI	0.02

TABLE 9.25
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
REASONABLE MAXIMUM EXPOSURE
NSWC CRANE, INDIANA

Scenario Timeframe: Future
Receptor Population: On-Site Resident
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk				Chemical	Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total		Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes Total
Surface Soil	Surface Soil	SWMU 3 - 1 Acre Exposure Unit	2,3,7,8-TCDD Equivalents	5E-07	- -	6E-08	6E-07	2,3,7,8-TCDD Equivalents	NA	- -	--	- -	--
			2,4,6-Trinitrotoluene	8E-06	- -	3E-06	1E-05	2,4,6-Trinitrotoluene	Liver	2	--	0.6	2
			2-Amino-4,6-Dinitrotoluene	- -	- -	- -	- -	2-Amino-4,6-Dinitrotoluene	Liver	0.05	--	0.02	0.08
			4-Amino-2,6-Dinitrotoluene	- -	- -	- -	- -	4-Amino-2,6-Dinitrotoluene	Liver	0.03	--	0.01	0.05
			HMX	- -	- -	- -	- -	HMX	Liver	0.008	--	0.003	0.01
			RDX	3E-05	- -	1E-05	4E-05	RDX	Prostate	0.2	--	0.10	0.3
			Barium	- -	- -	- -	- -	Barium	Kidney	0.005	--	--	0.005
			Cadmium	- -	- -	- -	- -	Cadmium	Kidney	0.01	--	0.0010	0.01
			Chromium	- -	- -	- -	- -	Chromium	None Reported	0.00001	--	--	0.00001
			Iron	- -	- -	- -	- -	Iron	Blood, GS	0.10	--	--	0.10
			Lead	- -	- -	- -	- -	Lead	NA	- -	--	- -	--
			(Total)	4E-05	- -	1E-05	5E-05	(Total)		2	--	0.8	3
Ground Water	Ground Water	SWMU 3 - Shallow Ground Water	1,1,2,2-Tetrachloroethane	8E-05	1E-05	7E-06	1E-04	1,1,2,2-Tetrachloroethane	Liver	0.02	- -	0.002	0.02
			1,1,2-Trichloroethane	6E-07	1E-07	4E-08	8E-07	1,1,2-Trichloroethane	Blood	0.008	- -	0.0005	0.008
			1,1-Dichloroethene	1E-06	1E-07	1E-07	1E-06	1,1-Dichloroethene	Liver	0.0006	- -	0.00006	0.0007
			cis-1,2-Dichloroethene	- -	- -	- -	- -	cis-1,2-Dichloroethene	Blood	0.03	- -	0.003	0.03
			Tetrachloroethene	3E-07	1E-08	1E-07	4E-07	Tetrachloroethene	Liver	0.002	0.00003	0.0007	0.002
			trans-1,2-Dichloroethene	- -	- -	- -	- -	trans-1,2-Dichloroethene	Blood	0.004	- -	0.0002	0.004
			Trichloroethene	2E-04	5E-05	2E-05	3E-04	Trichloroethene	Liver	4	0.04	0.5	5
			Vinyl Chloride	3E-06	2E-08	9E-08	3E-06	Vinyl Chloride	Liver	0.004	0.0001	0.0001	0.004
			2,4,6-Trinitrotoluene	4E-07	- -	6E-09	4E-07	2,4,6-Trinitrotoluene	Liver	0.07	- -	0.001	0.07
			2-Amino-4,6-Dinitrotoluene	- -	- -	- -	- -	2-Amino-4,6-Dinitrotoluene	Liver	0.2	- -	0.002	0.2
			4-Amino-2,6-Dinitrotoluene	- -	- -	- -	- -	4-Amino-2,6-Dinitrotoluene	Liver	0.5	- -	0.004	0.5
			RDX	3E-05	- -	2E-07	3E-05	RDX	Prostate	0.2	- -	0.001	0.2
			Aluminum	- -	- -	- -	- -	Aluminum	Immune, Nails	0.003	- -	0.000006	0.003
			Barium	- -	- -	- -	- -	Barium	Kidney	0.03	- -	0.001	0.04
			Cadmium	- -	- -	- -	- -	Cadmium	Kidney	0.10	- -	0.004	0.1
			Chromium	- -	- -	- -	- -	Chromium	None Reported	0.0001	- -	0.00004	0.0002
			Iron	- -	- -	- -	- -	Iron	Blood, GS	0.05	- -	0.0001	0.05
			Manganese	- -	- -	- -	- -	Manganese	CNS	0.02	- -	0.001	0.02
			Nickel	- -	- -	- -	- -	Nickel	Body Weight	0.01	- -	0.0001	0.01
			Thallium	- -	- -	- -	- -	Thallium	Liver	0.07	- -	0.0002	0.07
			Nitrate	- -	- -	- -	- -	Nitrate	Blood	0.005	- -	0.00001	0.005
			(Total)	3E-04	6E-05	3E-05	4E-04	(Total)		6	0.04	0.5	6
Surface Water	Surface Water	SWMU 3 - Little Sulphur Creek	Bromomethane	- -	- -	- -	- -	Bromomethane	GS	0.03	0.01	0.0007	0.04
			2-Amino-4,6-Dinitrotoluene	- -	- -	- -	- -	2-Amino-4,6-Dinitrotoluene	Liver	0.7	- -	0.006	0.7
			4-Amino-2,6-Dinitrotoluene	- -	- -	- -	- -	4-Amino-2,6-Dinitrotoluene	Liver	1	- -	0.01	1
			RDX	7E-05	- -	4E-07	7E-05	RDX	Prostate	0.6	- -	0.003	0.6
			(Total)	7E-05	- -	4E-07	7E-05	(Total)		3	0.0	0.02	3
Sediment	Sediment	SWMU 3 - Little Sulphur Creek	2-Amino-4,6-Dinitrotoluene	- -	- -	- -	- -	2-Amino-4,6-Dinitrotoluene	Liver	0.0003	- -	0.0002	0.0005
			Aluminum	- -	- -	- -	- -	Aluminum	Immune, Nails	0.002	- -	--	0.002
			Antimony	- -	- -	- -	- -	Antimony	Blood	0.0007	- -	--	0.0007
			Barium	- -	- -	- -	- -	Barium	Kidney	0.0005	- -	--	0.0005
			Cadmium	- -	- -	- -	- -	Cadmium	Kidney	0.0004	- -	0.00006	0.0004
			Lead	- -	- -	- -	- -	Lead	NA	- -	- -	- -	--
			(Total)	- -	- -	- -	- -	(Total)		0.003	--	0.0003	0.004

Total Risk Across Soil	5E-05
Total Risk Across Groundwater	4E-04
Total Risk Across SWMU 3 - Little Sulphur Creek	7E-05
Total Risk Across Sediment	- -
Total Risk Across All Media and All Exposure Routes	5E-04

Total Hazard Index Across All Media and All Exposure Routes	12
Total Blood HI	0.2
Total Body Weight HI	0.01
Total GS HI	0.2
Total Kidney HI	0.2
Total Liver HI	10
Total None Reported HI	0.0002
Total Prostate HI	1
Total Nails HI	0.004
Total CNS HI	0.02

TABLE 9.26
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
CENTRAL TENDENCY EXPOSURES
NSWC CRANE, INDIANA

Scenario Timeframe: Future
Receptor Population: On-Site Resident
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk				Chemical	Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total		Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes Total
Surface Soil	Surface Soil	SWMU 3 - 1 Acre Exposure Unit	2,3,7,8-TCDD Equivalents	5E-08	- -	2E-09	5E-08	2,3,7,8-TCDD Equivalents	NA	- -	--	- -	--
			2,4,6-Trinitrotoluene	8E-07	- -	9E-08	9E-07	2,4,6-Trinitrotoluene	Liver	0.5	--	0.06	0.6
			2-Amino-4,6-Dinitrotoluene	- -	- -	- -	- -	2-Amino-4,6-Dinitrotoluene	Liver	0.02	--	0.002	0.02
			4-Amino-2,6-Dinitrotoluene	- -	- -	- -	- -	4-Amino-2,6-Dinitrotoluene	Liver	0.01	--	0.001	0.01
			HMX	- -	- -	- -	- -	HMX	Liver	0.003	--	0.0003	0.003
			RDX	3E-06	- -	3E-07	3E-06	RDX	Prostate	0.08	--	0.009	0.09
			Barium	- -	- -	- -	- -	Barium	Kidney	0.002	--	--	0.002
			Cadmium	- -	- -	- -	- -	Cadmium	Kidney	0.004	--	0.00009	0.004
			Chromium	- -	- -	- -	- -	Chromium	None Reported	0.000004	--	--	0.000004
			Iron	- -	- -	- -	- -	Iron	Blood, GS	0.03	--	--	0.03
			Lead	- -	- -	- -	- -	Lead	NA	- -	--	- -	--
			(Total)	3E-06	- -	4E-07	4E-06	(Total)		0.68	--	0.073	0.76
Ground Water	Ground Water	SWMU 3 - Shallow Ground Water	1,1,2,2-Tetrachloroethane	1E-05	1E-06	1E-06	1E-05	1,1,2,2-Tetrachloroethane	Liver	0.009	- -	0.0009	0.01
			1,1,2-Trichloroethane	8E-08	1E-08	6E-09	1E-07	1,1,2-Trichloroethane	Blood	0.004	- -	0.0003	0.004
			1,1-Dichloroethene	2E-07	1E-08	2E-08	2E-07	1,1-Dichloroethene	Liver	0.0003	- -	0.00003	0.0003
			cis-1,2-Dichloroethene	- -	- -	- -	- -	cis-1,2-Dichloroethene	Blood	0.01	- -	0.002	0.02
			Tetrachloroethene	4E-08	2E-09	2E-08	6E-08	Tetrachloroethene	Liver	0.0008	0.00001	0.0004	0.001
			trans-1,2-Dichloroethene	- -	- -	- -	- -	trans-1,2-Dichloroethene	Blood	0.002	- -	0.0001	0.002
			Trichloroethene	3E-05	5E-06	3E-06	3E-05	Trichloroethene	Liver	2	0.01	0.3	2
			Vinyl Chloride	4E-07	2E-09	1E-08	4E-07	Vinyl Chloride	Liver	0.002	0.00005	0.00007	0.002
			2,4,6-Trinitrotoluene	5E-08	- -	1E-09	5E-08	2,4,6-Trinitrotoluene	Liver	0.03	- -	0.0007	0.03
			2-Amino-4,6-Dinitrotoluene	- -	- -	- -	- -	2-Amino-4,6-Dinitrotoluene	Liver	0.09	- -	0.0009	0.09
			4-Amino-2,6-Dinitrotoluene	- -	- -	- -	- -	4-Amino-2,6-Dinitrotoluene	Liver	0.2	- -	0.002	0.2
			RDX	4E-06	- -	3E-08	4E-06	RDX	Prostate	0.1	- -	0.0008	0.1
			Aluminum	- -	- -	- -	- -	Aluminum	Immune, Nails	0.001	- -	0.000003	0.001
			Barium	- -	- -	- -	- -	Barium	Kidney	0.02	- -	0.0005	0.02
			Cadmium	- -	- -	- -	- -	Cadmium	Kidney	0.05	- -	0.002	0.05
			Chromium	- -	- -	- -	- -	Chromium	None Reported	0.00006	- -	0.00002	0.00008
			Iron	- -	- -	- -	- -	Iron	Blood, GS	0.02	- -	0.00005	0.02
			Manganese	- -	- -	- -	- -	Manganese	CNS	0.01	- -	0.0006	0.01
			Nickel	- -	- -	- -	- -	Nickel	Body Weight	0.006	- -	0.00006	0.006
			Thallium	- -	- -	- -	- -	Thallium	Liver	0.03	- -	0.00007	0.03
			Nitrate	- -	- -	- -	- -	Nitrate	Blood	0.002	- -	0.000005	0.002
			(Total)	4E-05	7E-06	4E-06	5E-05	(Total)		3	0.01	0.3	3
Surface Water	Surface Water	SWMU 3 - Little Sulphur Creek	Bromomethane	- -	- -	- -	- -	Bromomethane	GS	0.01	0.003	0.0004	0.02
			2-Amino-4,6-Dinitrotoluene	- -	- -	- -	- -	2-Amino-4,6-Dinitrotoluene	Liver	0.3	- -	0.003	0.3
			4-Amino-2,6-Dinitrotoluene	- -	- -	- -	- -	4-Amino-2,6-Dinitrotoluene	Liver	0.6	- -	0.007	0.6
			RDX	9E-06	- -	6E-08	9E-06	RDX	Prostate	0.3	- -	0.002	0.3
			(Total)	9E-06	- -	6E-08	9E-06	(Total)		1	0.003	0.01	1
Sediment	Sediment	SWMU 3 - Little Sulphur Creek	2-Amino-4,6-Dinitrotoluene	- -	- -	- -	- -	2-Amino-4,6-Dinitrotoluene	Liver	0.00008	- -	0.00002	0.00009
			Aluminum	- -	- -	- -	- -	Aluminum	Immune, Nails	0.0004	- -	--	0.0004
			Antimony	- -	- -	- -	- -	Antimony	Blood	0.0002	- -	--	0.0002
			Barium	- -	- -	- -	- -	Barium	Kidney	0.0001	- -	--	0.0001
			Cadmium	- -	- -	- -	- -	Cadmium	Kidney	0.00009	- -	0.000004	0.00009
			Lead	- -	- -	- -	- -	Lead	NA	- -	- -	- -	--
			(Total)	- -	- -	- -	- -	(Total)		0.0009	--	0.00002	0.0009

Total Risk Across Soil	4E-06
Total Risk Across Groundwater	5E-05
Total Risk Across SWMU 3 - Little Sulphur Creek	9E-06
Total Risk Across Sediment	- -
Total Risk Across All Media and All Exposure Routes	6E-05

Total Hazard Index Across All Media and All Exposure Routes	5
Total Blood HI	0.08
Total Body Weight HI	0.006
Total GS HI	0.07
Total Kidney HI	0.07
Total Liver HI	4
Total None Reported HI	0.00008
Total Prostate HI	0.5
Total Nails HI	0.002
Total CNS HI	0.01

TABLE 9.27
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
REASONABLE MAXIMUM EXPOSURE
NSWC CRANE, INDIANA

Scenario Timeframe: Future
Receptor Population: On-Site Resident
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk				Chemical	Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total		Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes Total
Surface Soil	Surface Soil	SWMU 3 - 6-Acre Exposure Unit	2,3,7,8-TCDD Equivalents	5E-07	- -	6E-08	6E-07	2,3,7,8-TCDD Equivalents	NA	- -	--	- -	--
			2,4,6-Trinitrotoluene	4E-08	- -	1E-08	5E-08	2,4,6-Trinitrotoluene	Liver	0.007	--	0.003	0.01
			2-Amino-4,6-Dinitrotoluene	- -	- -	- -	- -	2-Amino-4,6-Dinitrotoluene	Liver	0.010	--	0.004	0.01
			4-Amino-2,6-Dinitrotoluene	- -	- -	- -	- -	4-Amino-2,6-Dinitrotoluene	Liver	0.008	--	0.003	0.01
			HMX	- -	- -	- -	- -	HMX	Liver	0.0001	--	0.00005	0.0002
			RDX	2E-07	- -	7E-08	2E-07	RDX	Prostate	0.002	--	0.0006	0.002
			Barium	- -	- -	- -	- -	Barium	Kidney	0.005	--	--	0.005
			Cadmium	- -	- -	- -	- -	Cadmium	Kidney	0.003	--	0.0003	0.004
			Chromium	- -	- -	- -	- -	Chromium	None Reported	0.00002	--	--	0.00002
			Iron	- -	- -	- -	- -	Iron	Blood, GS	0.1	--	--	0.1
			Lead	- -	- -	- -	- -	Lead	NA	- -	--	- -	--
			(Total)	7E-07	- -	1E-07	9E-07	(Total)		0.2	--	0.01	0.2
Ground Water	Ground Water	SWMU 3 - Shallow Ground Water	1,1,2,2-Tetrachloroethane	8E-05	1E-05	7E-06	1E-04	1,1,2,2-Tetrachloroethane	Liver	0.02	- -	0.002	0.02
			1,1,2-Trichloroethane	6E-07	1E-07	4E-08	8E-07	1,1,2-Trichloroethane	Blood	0.008	- -	0.0005	0.008
			1,1-Dichloroethene	1E-06	1E-07	1E-07	1E-06	1,1-Dichloroethene	Liver	0.0006	- -	0.00006	0.0007
			cis-1,2-Dichloroethene	- -	- -	- -	- -	cis-1,2-Dichloroethene	Blood	0.03	- -	0.003	0.03
			Tetrachloroethene	3E-07	1E-08	1E-07	4E-07	Tetrachloroethene	Liver	0.002	0.00003	0.0007	0.002
			trans-1,2-Dichloroethene	- -	- -	- -	- -	trans-1,2-Dichloroethene	Blood	0.004	- -	0.0002	0.004
			Trichloroethene	2E-04	5E-05	2E-05	3E-04	Trichloroethene	Liver	4	0.04	0.5	5
			Vinyl Chloride	3E-06	2E-08	9E-08	3E-06	Vinyl Chloride	Liver	0.004	0.0001	0.0001	0.004
			2,4,6-Trinitrotoluene	4E-07	- -	6E-09	4E-07	2,4,6-Trinitrotoluene	Liver	0.07	- -	0.001	0.07
			2-Amino-4,6-Dinitrotoluene	- -	- -	- -	- -	2-Amino-4,6-Dinitrotoluene	Liver	0.2	- -	0.002	0.2
			4-Amino-2,6-Dinitrotoluene	- -	- -	- -	- -	4-Amino-2,6-Dinitrotoluene	Liver	0.5	- -	0.004	0.5
			RDX	3E-05	- -	2E-07	3E-05	RDX	Prostate	0.2	- -	0.001	0.2
			Aluminum	- -	- -	- -	- -	Aluminum	Immune, Nails	0.003	- -	0.000006	0.003
			Barium	- -	- -	- -	- -	Barium	Kidney	0.03	- -	0.001	0.04
			Cadmium	- -	- -	- -	- -	Cadmium	Kidney	0.10	- -	0.004	0.1
			Chromium	- -	- -	- -	- -	Chromium	None Reported	0.0001	- -	0.00004	0.0002
			Iron	- -	- -	- -	- -	Iron	Blood, GS	0.05	- -	0.0001	0.05
			Manganese	- -	- -	- -	- -	Manganese	CNS	0.02	- -	0.001	0.02
			Nickel	- -	- -	- -	- -	Nickel	Body Weight	0.01	- -	0.0001	0.01
			Thallium	- -	- -	- -	- -	Thallium	Liver	0.07	- -	0.0002	0.07
			Nitrate	- -	- -	- -	- -	Nitrate	Blood	0.005	- -	0.00001	0.005
			(Total)	3E-04	6E-05	3E-05	4E-04	(Total)		6	0.04	0.5	6
Surface Water	Surface Water	SWMU 3 - Little Sulphur Creek	Bromomethane	- -	- -	- -	- -	Bromomethane	GS	0.03	0.01	0.0007	0.04
			2-Amino-4,6-Dinitrotoluene	- -	- -	- -	- -	2-Amino-4,6-Dinitrotoluene	Liver	0.7	- -	0.006	0.7
			4-Amino-2,6-Dinitrotoluene	- -	- -	- -	- -	4-Amino-2,6-Dinitrotoluene	Liver	1	- -	0.01	1
			RDX	7E-05	- -	4E-07	7E-05	RDX	Prostate	0.6	- -	0.003	0.6
			(Total)	7E-05	- -	4E-07	7E-05	(Total)		3	0.01	0.02	3
Sediment	Sediment	SWMU 3 - Little Sulphur Creek	2-Amino-4,6-Dinitrotoluene	- -	- -	- -	- -	2-Amino-4,6-Dinitrotoluene	Liver	0.0003	- -	0.0002	0.0005
			Aluminum	- -	- -	- -	- -	Aluminum	Immune, Nails	0.002	- -	--	0.002
			Antimony	- -	- -	- -	- -	Antimony	Blood	0.0007	- -	--	0.0007
			Barium	- -	- -	- -	- -	Barium	Kidney	0.0005	- -	--	0.0005
			Cadmium	- -	- -	- -	- -	Cadmium	Kidney	0.0004	- -	0.00006	0.0004
			Lead	- -	- -	- -	- -	Lead	NA	- -	- -	- -	--
			(Total)	- -	- -	- -	- -	(Total)		0.003	--	0.0003	0.004

Total Risk Across Soil	9E-07
Total Risk Across Groundwater	4E-04
Total Risk Across SWMU 3 - Little Sulphur Creek	7E-05
Total Risk Across Sediment	- -
Total Risk Across All Media and All Exposure Routes	5E-04

Total Hazard Index Across All Media and All Exposure Routes	9

Total Blood HI	0.2
Total Body Weight HI	0.01
Total GS HI	0.2
Total Kidney HI	0.1
Total Liver HI	8
Total None Reported HI	0.0002
Total Prostate HI	0.8
Total Nails HI	0.004
Total CNS HI	0.02

TABLE 9.28
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
CENTRAL TENDENCY EXPOSURES
NSWC CRANE, INDIANA

Scenario Timeframe: Future
Receptor Population: On-Site Resident
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk				Chemical	Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total		Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes Total
Surface Soil	Surface Soil	SWMU 3 - 6-Acre Exposure Unit	2,3,7,8-TCDD Equivalents	5E-08	- -	2E-09	5E-08	2,3,7,8-TCDD Equivalents	NA	- -	--	- -	--
			2,4,6-Trinitrotoluene	4E-09	- -	4E-10	4E-09	2,4,6-Trinitrotoluene	Liver	0.002	--	0.0003	0.003
			2-Amino-4,6-Dinitrotoluene	- -	- -	- -	- -	2-Amino-4,6-Dinitrotoluene	Liver	0.003	--	0.0004	0.004
			4-Amino-2,6-Dinitrotoluene	- -	- -	- -	- -	4-Amino-2,6-Dinitrotoluene	Liver	0.003	--	0.0003	0.003
			HMX	- -	- -	- -	- -	HMX	Liver	0.00004	--	0.000005	0.00005
			RDX	2E-08	- -	2E-09	2E-08	RDX	Prostate	0.0005	--	0.00006	0.0006
			Barium	- -	- -	- -	- -	Barium	Kidney	0.002	--	--	0.002
			Cadmium	- -	- -	- -	- -	Cadmium	Kidney	0.001	--	0.00002	0.001
			Chromium	- -	- -	- -	- -	Chromium	None Reported	0.000008	--	--	0.000008
			Iron	- -	- -	- -	- -	Iron	Blood, GS	0.04	--	--	0.04
			Lead	- -	- -	- -	- -	Lead	NA	- -	--	- -	--
			(Total)	7E-08	- -	4E-09	8E-08	(Total)		0.05	--	0.001	0.05
Ground Water	Ground Water	SWMU 3 - Shallow Ground Water	1,1,2,2-Tetrachloroethane	1E-05	1E-06	1E-06	1E-05	1,1,2,2-Tetrachloroethane	Liver	0.009	- -	0.0009	0.01
			1,1,2-Trichloroethane	8E-08	1E-08	6E-09	1E-07	1,1,2-Trichloroethane	Blood	0.004	- -	0.0003	0.004
			1,1-Dichloroethene	2E-07	1E-08	2E-08	2E-07	1,1-Dichloroethene	Liver	0.0003	- -	0.00003	0.0003
			cis-1,2-Dichloroethene	- -	- -	- -	- -	cis-1,2-Dichloroethene	Blood	0.01	- -	0.002	0.02
			Tetrachloroethene	4E-08	2E-09	2E-08	6E-08	Tetrachloroethene	Liver	0.0008	0.00001	0.0004	0.001
			trans-1,2-Dichloroethene	- -	- -	- -	- -	trans-1,2-Dichloroethene	Blood	0.002	- -	0.0001	0.002
			Trichloroethene	3E-05	5E-06	3E-06	3E-05	Trichloroethene	Liver	2	0.01	0.3	2
			Vinyl Chloride	4E-07	2E-09	1E-08	4E-07	Vinyl Chloride	Liver	0.002	0.00005	0.00007	0.002
			2,4,6-Trinitrotoluene	5E-08	- -	1E-09	5E-08	2,4,6-Trinitrotoluene	Liver	0.03	- -	0.0007	0.03
			2-Amino-4,6-Dinitrotoluene	- -	- -	- -	- -	2-Amino-4,6-Dinitrotoluene	Liver	0.09	- -	0.0009	0.09
			4-Amino-2,6-Dinitrotoluene	- -	- -	- -	- -	4-Amino-2,6-Dinitrotoluene	Liver	0.2	- -	0.002	0.2
			RDX	4E-06	- -	3E-08	4E-06	RDX	Prostate	0.1	- -	0.0008	0.1
			Aluminum	- -	- -	- -	- -	Aluminum	Immune, Nails	0.001	- -	0.000003	0.001
			Barium	- -	- -	- -	- -	Barium	Kidney	0.02	- -	0.0005	0.02
			Cadmium	- -	- -	- -	- -	Cadmium	Kidney	0.05	- -	0.002	0.05
			Chromium	- -	- -	- -	- -	Chromium	None Reported	0.00006	- -	0.00002	0.00008
			Iron	- -	- -	- -	- -	Iron	Blood, GS	0.02	- -	0.00005	0.02
			Manganese	- -	- -	- -	- -	Manganese	CNS	0.01	- -	0.0006	0.01
			Nickel	- -	- -	- -	- -	Nickel	Body Weight	0.006	- -	0.00006	0.006
			Thallium	- -	- -	- -	- -	Thallium	Liver	0.03	- -	0.00007	0.03
			Nitrate	- -	- -	- -	- -	Nitrate	Blood	0.002	- -	0.000005	0.002
			(Total)	4E-05	7E-06	4E-06	5E-05	(Total)		3	0.01	0.3	3
Surface Water	Surface Water	SWMU 3 - Little Sulphur Creek	Bromomethane	- -	- -	- -	- -	Bromomethane	GS	0.01	0.003	0.0004	0.02
			2-Amino-4,6-Dinitrotoluene	- -	- -	- -	- -	2-Amino-4,6-Dinitrotoluene	Liver	0.3	- -	0.003	0.3
			4-Amino-2,6-Dinitrotoluene	- -	- -	- -	- -	4-Amino-2,6-Dinitrotoluene	Liver	0.6	- -	0.007	0.6
			RDX	9E-06	- -	6E-08	9E-06	RDX	Prostate	0.3	- -	0.002	0.3
			(Total)	9E-06	- -	6E-08	9E-06	(Total)		1	0.003	0.01	1
Sediment	Sediment	SWMU 3 - Little Sulphur Creek	2-Amino-4,6-Dinitrotoluene	- -	- -	- -	- -	2-Amino-4,6-Dinitrotoluene	Liver	0.00008	- -	0.00002	0.00009
			Aluminum	- -	- -	- -	- -	Aluminum	Immune, Nails	0.0004	- -	--	0.0004
			Antimony	- -	- -	- -	- -	Antimony	Blood	0.0002	- -	--	0.0002
			Barium	- -	- -	- -	- -	Barium	Kidney	0.0001	- -	--	0.0001
			Cadmium	- -	- -	- -	- -	Cadmium	Kidney	0.00009	- -	0.000004	0.00009
			Lead	- -	- -	- -	- -	Lead	NA	- -	- -	- -	--
			(Total)	- -	- -	- -	- -	(Total)		0.0009	--	0.00002	0.0009

Total Risk Across Soil	8E-08
Total Risk Across Groundwater	5E-05
Total Risk Across SWMU 3 - Little Sulphur Creek	9E-06
Total Risk Across Sediment	- -
Total Risk Across All Media and All Exposure Routes	6E-05

Total Hazard Index Across All Media and All Exposure Routes	4

Total Blood HI	0.09
Total Body Weight HI	0.006
Total GS HI	0.08
Total Kidney HI	0.07
Total Liver HI	4
Total None Reported HI	0.00009
Total Prostate HI	0.4
Total Nails HI	0.002
Total CNS HI	0.01

TABLE 9.29
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
REASONABLE MAXIMUM EXPOSURE
NSWC CRANE, INDIANA

Scenario Timeframe: Future
Receptor Population: On-Site Resident
Receptor Age: Lifelong (Child and Adult)

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk				Chemical	Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total		Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes Total
Surface Soil	Surface Soil	SWMU 3 - 1 Acre Exposure Unit	2,3,7,8-TCDD Equivalents	2E-06	- -	2E-07	2E-06	2,3,7,8-TCDD Equivalents	NA				
			2,4,6-Trinitrotoluene	3E-05	- -	9E-06	4E-05	2,4,6-Trinitrotoluene	Liver				
			2-Amino-4,6-Dinitrotoluene	- -	- -	- -	- -	2-Amino-4,6-Dinitrotoluene	Liver				
			4-Amino-2,6-Dinitrotoluene	- -	- -	- -	- -	4-Amino-2,6-Dinitrotoluene	Liver				
			HMX	- -	- -	- -	- -	HMX	Liver				
			RDX	9E-05	- -	3E-05	1E-04	RDX	Prostate				
			Barium	- -	- -	- -	- -	Barium	Kidney				
			Cadmium	- -	- -	- -	- -	Cadmium	Kidney				
			Chromium	- -	- -	- -	- -	Chromium	None Reported				
			Iron	- -	- -	- -	- -	Iron	Blood, GS				
			Lead	- -	- -	- -	- -	Lead	NA				
			(Total)	1E-04	- -	4E-05	2E-04	(Total)					
Ground Water	Ground Water	SWMU 3 - Shallow Ground Water	1,1,2,2-Tetrachloroethane	2E-04	3E-05	1E-05	2E-04	1,1,2,2-Tetrachloroethane	Liver				
			1,1,2-Trichloroethane	1E-06	3E-07	5E-08	1E-06	1,1,2-Trichloroethane	Blood				
			1,1-Dichloroethene	2E-06	2E-07	2E-07	3E-06	1,1-Dichloroethene	Liver				
			cis-1,2-Dichloroethene	- -	- -	- -	- -	cis-1,2-Dichloroethene	Blood				
			Tetrachloroethene	6E-07	3E-08	2E-07	8E-07	Tetrachloroethene	Liver				
			trans-1,2-Dichloroethene	- -	- -	- -	- -	trans-1,2-Dichloroethene	Blood				
			Trichloroethene	3E-04	1E-04	3E-05	5E-04	Trichloroethene	Liver				
			Vinyl Chloride	5E-06	4E-08	1E-07	5E-06	Vinyl Chloride	Liver				
			2,4,6-Trinitrotoluene	7E-07	- -	9E-09	7E-07	2,4,6-Trinitrotoluene	Liver				
			2-Amino-4,6-Dinitrotoluene	- -	- -	- -	- -	2-Amino-4,6-Dinitrotoluene	Liver				
			4-Amino-2,6-Dinitrotoluene	- -	- -	- -	- -	4-Amino-2,6-Dinitrotoluene	Liver				
			RDX	5E-05	- -	2E-07	5E-05	RDX	Prostate				
			Aluminum	- -	- -	- -	- -	Aluminum	Immune, Nails				
			Barium	- -	- -	- -	- -	Barium	Kidney				
			Cadmium	- -	- -	- -	- -	Cadmium	Kidney				
			Chromium	- -	- -	- -	- -	Chromium	None Reported				
			Iron	- -	- -	- -	- -	Iron	Blood, GS				
			Manganese	- -	- -	- -	- -	Manganese	CNS				
			Nickel	- -	- -	- -	- -	Nickel	Body Weight				
			Thallium	- -	- -	- -	- -	Thallium	Liver				
			Nitrate	- -	- -	- -	- -	Nitrate	Blood				
			(Total)	6E-04	1E-04	4E-05	7E-04	(Total)					
Surface Water	Surface Water	SWMU 3 - Little Sulphur Creek	Bromomethane	- -	- -	- -	- -	Bromomethane	GS				
			2-Amino-4,6-Dinitrotoluene	- -	- -	- -	- -	2-Amino-4,6-Dinitrotoluene	Liver				
			4-Amino-2,6-Dinitrotoluene	- -	- -	- -	- -	4-Amino-2,6-Dinitrotoluene	Liver				
			RDX	1E-04	- -	5E-07	1E-04	RDX	Prostate				
			(Total)	1E-04	- -	5E-07	1E-04	(Total)					
Sediment	Sediment	SWMU 3 - Little Sulphur Creek	2-Amino-4,6-Dinitrotoluene	- -	- -	- -	- -	2-Amino-4,6-Dinitrotoluene	Liver				
			Aluminum	- -	- -	- -	- -	Aluminum	Immune, Nails				
			Antimony	- -	- -	- -	- -	Antimony	Blood				
			Barium	- -	- -	- -	- -	Barium	Kidney				
			Cadmium	- -	- -	- -	- -	Cadmium	Kidney				
			Lead	- -	- -	- -	- -	Lead	NA				
			(Total)	- -	- -	- -	- -	(Total)					

Total Risk Across Soil	2E-04
Total Risk Across Groundwater	7E-04
Total Risk Across SWMU 3 - Little Sulphur Creek	1E-04
Total Risk Across Sediment	- -
Total Risk Across All Media and All Exposure Routes	1E-03

Total Hazard Index Across All Media and All Exposure Routes	

TABLE 9.30
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
CENTRAL TENDENCY EXPOSURES
NSWC CRANE, INDIANA

Scenario Timeframe: Future
Receptor Population: On-Site Resident
Receptor Age: Lifelong (Child and Adult)

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk				Chemical	Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total		Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes Total
Surface Soil	Surface Soil	SWMU 3 - 1 Acre Exposure Unit	2,3,7,8-TCDD Equivalents	2E-07	- -	6E-09	2E-07	2,3,7,8-TCDD Equivalents	NA				
			2,4,6-Trinitrotoluene	3E-06	- -	3E-07	3E-06	2,4,6-Trinitrotoluene	Liver				
			2-Amino-4,6-Dinitrotoluene	- -	- -	- -	- -	2-Amino-4,6-Dinitrotoluene	Liver				
			4-Amino-2,6-Dinitrotoluene	- -	- -	- -	- -	4-Amino-2,6-Dinitrotoluene	Liver				
			HMX	- -	- -	- -	- -	HMX	Liver				
			RDX	1E-05	- -	1E-06	1E-05	RDX	Prostate				
			Barium	- -	- -	- -	- -	Barium	Kidney				
			Cadmium	- -	- -	- -	- -	Cadmium	Kidney				
			Chromium	- -	- -	- -	- -	Chromium	None Reported				
			Iron	- -	- -	- -	- -	Iron	Blood, GS				
			Lead	- -	- -	- -	- -	Lead	NA				
			(Total)	1E-05	- -	1E-06	1E-05	(Total)					
Ground Water	Ground Water	SWMU 3 - Shallow Ground Water	1,1,2,2-Tetrachloroethane	2E-05	3E-06	2E-06	2E-05	1,1,2,2-Tetrachloroethane	Liver				
			1,1,2-Trichloroethane	1E-07	3E-08	9E-09	2E-07	1,1,2-Trichloroethane	Blood				
			1,1-Dichloroethene	3E-07	3E-08	3E-08	3E-07	1,1-Dichloroethene	Liver				
			cis-1,2-Dichloroethene	- -	- -	- -	- -	cis-1,2-Dichloroethene	Blood				
			Tetrachloroethene	7E-08	4E-09	3E-08	1E-07	Tetrachloroethene	Liver				
			trans-1,2-Dichloroethene	- -	- -	- -	- -	trans-1,2-Dichloroethene	Blood				
			Trichloroethene	4E-05	1E-05	5E-06	6E-05	Trichloroethene	Liver				
			Vinyl Chloride	6E-07	5E-09	2E-08	6E-07	Vinyl Chloride	Liver				
			2,4,6-Trinitrotoluene	8E-08	- -	1E-09	8E-08	2,4,6-Trinitrotoluene	Liver				
			2-Amino-4,6-Dinitrotoluene	- -	- -	- -	- -	2-Amino-4,6-Dinitrotoluene	Liver				
			4-Amino-2,6-Dinitrotoluene	- -	- -	- -	- -	4-Amino-2,6-Dinitrotoluene	Liver				
			RDX	6E-06	- -	4E-08	6E-06	RDX	Prostate				
			Aluminum	- -	- -	- -	- -	Aluminum	Immune, Nails				
			Barium	- -	- -	- -	- -	Barium	Kidney				
			Cadmium	- -	- -	- -	- -	Cadmium	Kidney				
			Chromium	- -	- -	- -	- -	Chromium	None Reported				
			Iron	- -	- -	- -	- -	Iron	Blood, GS				
			Manganese	- -	- -	- -	- -	Manganese	CNS				
			Nickel	- -	- -	- -	- -	Nickel	Body Weight				
			Thallium	- -	- -	- -	- -	Thallium	Liver				
			Nitrate	- -	- -	- -	- -	Nitrate	Blood				
			(Total)	7E-05	2E-05	7E-06	9E-05	(Total)					
Surface Water	Surface Water	SWMU 3 - Little Sulphur Creek	Bromomethane	- -	- -	- -	- -	Bromomethane	GS				
			2-Amino-4,6-Dinitrotoluene	- -	- -	- -	- -	2-Amino-4,6-Dinitrotoluene	Liver				
			4-Amino-2,6-Dinitrotoluene	- -	- -	- -	- -	4-Amino-2,6-Dinitrotoluene	Liver				
			RDX	1E-05	- -	9E-08	1E-05	RDX	Prostate				
			(Total)	1E-05	- -	9E-08	1E-05	(Total)					
Sediment	Sediment	SWMU 3 - Little Sulphur Creek	2-Amino-4,6-Dinitrotoluene	- -	- -	- -	- -	2-Amino-4,6-Dinitrotoluene	Liver				
			Aluminum	- -	- -	- -	- -	Aluminum	Immune, Nails				
			Antimony	- -	- -	- -	- -	Antimony	Blood				
			Barium	- -	- -	- -	- -	Barium	Kidney				
			Cadmium	- -	- -	- -	- -	Cadmium	Kidney				
			Lead	- -	- -	- -	- -	Lead	NA				
			(Total)	- -	- -	- -	- -	(Total)					

Total Risk Across Soil	1E-05
Total Risk Across Groundwater	9E-05
Total Risk Across SWMU 3 - Little Sulphur Creek	1E-05
Total Risk Across Sediment	- -
Total Risk Across All Media and All Exposure Routes	1E-04

Total Hazard Index Across All Media and All Exposure Routes

TABLE 9.31
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
REASONABLE MAXIMUM EXPOSURE
NSWC CRANE, INDIANA

Scenario Timeframe: Future
Receptor Population: On-Site Resident
Receptor Age: Lifelong (Child and Adult)

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk				Chemical	Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total		Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes Total
Surface Soil	Surface Soil	SWMU 3 - 6-Acre Exposure Unit	2,3,7,8-TCDD Equivalents	2E-06	- -	2E-07	2E-06	2,3,7,8-TCDD Equivalents	NA				
			2,4,6-Trinitrotoluene	1E-07	- -	4E-08	2E-07	2,4,6-Trinitrotoluene	Liver				
			2-Amino-4,6-Dinitrotoluene	- -	- -	- -	- -	2-Amino-4,6-Dinitrotoluene	Liver				
			4-Amino-2,6-Dinitrotoluene	- -	- -	- -	- -	4-Amino-2,6-Dinitrotoluene	Liver				
			HMX	- -	- -	- -	- -	HMX	Liver				
			RDX	6E-07	- -	2E-07	8E-07	RDX	Prostate				
			Barium	- -	- -	- -	- -	Barium	Kidney				
			Cadmium	- -	- -	- -	- -	Cadmium	Kidney				
			Chromium	- -	- -	- -	- -	Chromium	None Reported				
			Iron	- -	- -	- -	- -	Iron	Blood, GS				
			Lead	- -	- -	- -	- -	Lead	NA				
			(Total)	2E-06	- -	4E-07	3E-06	(Total)					
Ground Water	Ground Water	SWMU 3 - Shallow Ground Water	1,1,2,2-Tetrachloroethane	2E-04	3E-05	1E-05	2E-04	1,1,2,2-Tetrachloroethane	Liver				
			1,1,2-Trichloroethane	1E-06	3E-07	5E-08	1E-06	1,1,2-Trichloroethane	Blood				
			1,1-Dichloroethene	2E-06	2E-07	2E-07	3E-06	1,1-Dichloroethene	Liver				
			cis-1,2-Dichloroethene	- -	- -	- -	- -	cis-1,2-Dichloroethene	Blood				
			Tetrachloroethene	6E-07	3E-08	2E-07	8E-07	Tetrachloroethene	Liver				
			trans-1,2-Dichloroethene	- -	- -	- -	- -	trans-1,2-Dichloroethene	Blood				
			Trichloroethene	3E-04	1E-04	3E-05	5E-04	Trichloroethene	Liver				
			Vinyl Chloride	5E-06	4E-08	1E-07	5E-06	Vinyl Chloride	Liver				
			2,4,6-Trinitrotoluene	7E-07	- -	9E-09	7E-07	2,4,6-Trinitrotoluene	Liver				
			2-Amino-4,6-Dinitrotoluene	- -	- -	- -	- -	2-Amino-4,6-Dinitrotoluene	Liver				
			4-Amino-2,6-Dinitrotoluene	- -	- -	- -	- -	4-Amino-2,6-Dinitrotoluene	Liver				
			RDX	5E-05	- -	2E-07	5E-05	RDX	Prostate				
			Aluminum	- -	- -	- -	- -	Aluminum	Immune, Nails				
			Barium	- -	- -	- -	- -	Barium	Kidney				
			Cadmium	- -	- -	- -	- -	Cadmium	Kidney				
			Chromium	- -	- -	- -	- -	Chromium	None Reported				
			Iron	- -	- -	- -	- -	Iron	Blood, GS				
			Manganese	- -	- -	- -	- -	Manganese	CNS				
			Nickel	- -	- -	- -	- -	Nickel	Body Weight				
			Thallium	- -	- -	- -	- -	Thallium	Liver				
			Nitrate	- -	- -	- -	- -	Nitrate	Blood				
			(Total)	6E-04	1E-04	4E-05	7E-04	(Total)					
Surface Water	Surface Water	SWMU 3 - Little Sulphur Creek	Bromomethane	- -	- -	- -	- -	Bromomethane	GS				
			2-Amino-4,6-Dinitrotoluene	- -	- -	- -	- -	2-Amino-4,6-Dinitrotoluene	Liver				
			4-Amino-2,6-Dinitrotoluene	- -	- -	- -	- -	4-Amino-2,6-Dinitrotoluene	Liver				
			RDX	1E-04	- -	5E-07	1E-04	RDX	Prostate				
			(Total)	1E-04	- -	5E-07	1E-04	(Total)					
Sediment	Sediment	SWMU 3 - Little Sulphur Creek	2-Amino-4,6-Dinitrotoluene	- -	- -	- -	- -	2-Amino-4,6-Dinitrotoluene	Liver				
			Aluminum	- -	- -	- -	- -	Aluminum	Immune, Nails				
			Antimony	- -	- -	- -	- -	Antimony	Blood				
			Barium	- -	- -	- -	- -	Barium	Kidney				
			Cadmium	- -	- -	- -	- -	Cadmium	Kidney				
			Lead	- -	- -	- -	- -	Lead	NA				
			(Total)	- -	- -	- -	- -	(Total)					

Total Risk Across Soil	3E-06
Total Risk Across Groundwater	7E-04
Total Risk Across SWMU 3 - Little Sulphur Creek	1E-04
Total Risk Across Sediment	- -
Total Risk Across All Media and All Exposure Routes	9E-04

Total Hazard Index Across All Media and All Exposure Routes	

TABLE 9.32
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
CENTRAL TENDENCY EXPOSURES
NSWC CRANE, INDIANA

Scenario Timeframe: Future
Receptor Population: On-Site Resident
Receptor Age: Lifelong (Child and Adult)

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk				Chemical	Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total		Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes Total
Surface Soil	Surface Soil	SWMU 3 - 6-Acre Exposure Unit	2,3,7,8-TCDD Equivalents	2E-07	--	6E-09	2E-07	2,3,7,8-TCDD Equivalents	NA				
			2,4,6-Trinitrotoluene	1E-08	--	1E-09	1E-08	2,4,6-Trinitrotoluene	Liver				
			2-Amino-4,6-Dinitrotoluene	--	--	--	--	2-Amino-4,6-Dinitrotoluene	Liver				
			4-Amino-2,6-Dinitrotoluene	--	--	--	--	4-Amino-2,6-Dinitrotoluene	Liver				
			HMX	--	--	--	--	HMX	Liver				
			RDX	6E-08	--	7E-09	7E-08	RDX	Prostate				
			Barium	--	--	--	--	Barium	Kidney				
			Cadmium	--	--	--	--	Cadmium	Kidney				
			Chromium	--	--	--	--	Chromium	None Reported				
			Iron	--	--	--	--	Iron	Blood, GS				
			Lead	--	--	--	--	Lead	NA				
			(Total)	3E-07	--	1E-08	3E-07	(Total)					
Ground Water	Ground Water	SWMU 3 - Shallow Ground Water	1,1,2,2-Tetrachloroethane	2E-05	3E-06	2E-06	2E-05	1,1,2,2-Tetrachloroethane	Liver				
			1,1,2-Trichloroethane	1E-07	3E-08	9E-09	2E-07	1,1,2-Trichloroethane	Blood				
			1,1-Dichloroethene	3E-07	3E-08	3E-08	3E-07	1,1-Dichloroethene	Liver				
			cis-1,2-Dichloroethene	--	--	--	--	cis-1,2-Dichloroethene	Blood				
			Tetrachloroethene	7E-08	4E-09	3E-08	1E-07	Tetrachloroethene	Liver				
			trans-1,2-Dichloroethene	--	--	--	--	trans-1,2-Dichloroethene	Blood				
			Trichloroethene	4E-05	1E-05	5E-06	6E-05	Trichloroethene	Liver				
			Vinyl Chloride	6E-07	5E-09	2E-08	6E-07	Vinyl Chloride	Liver				
			2,4,6-Trinitrotoluene	8E-08	--	1E-09	8E-08	2,4,6-Trinitrotoluene	Liver				
			2-Amino-4,6-Dinitrotoluene	--	--	--	--	2-Amino-4,6-Dinitrotoluene	Liver				
			4-Amino-2,6-Dinitrotoluene	--	--	--	--	4-Amino-2,6-Dinitrotoluene	Liver				
			RDX	6E-06	--	4E-08	6E-06	RDX	Prostate				
			Aluminum	--	--	--	--	Aluminum	Immune, Nails				
			Barium	--	--	--	--	Barium	Kidney				
			Cadmium	--	--	--	--	Cadmium	Kidney				
			Chromium	--	--	--	--	Chromium	None Reported				
			Iron	--	--	--	--	Iron	Blood, GS				
			Manganese	--	--	--	--	Manganese	CNS				
			Nickel	--	--	--	--	Nickel	Body Weight				
			Thallium	--	--	--	--	Thallium	Liver				
			Nitrate	--	--	--	--	Nitrate	Blood				
			(Total)	7E-05	2E-05	7E-06	9E-05	(Total)					
Surface Water	Surface Water	SWMU 3 - Little Sulphur Creek	Bromomethane	--	--	--	--	Bromomethane	GS				
			2-Amino-4,6-Dinitrotoluene	--	--	--	--	2-Amino-4,6-Dinitrotoluene	Liver				
			4-Amino-2,6-Dinitrotoluene	--	--	--	--	4-Amino-2,6-Dinitrotoluene	Liver				
			RDX	1E-05	--	9E-08	1E-05	RDX	Prostate				
			(Total)	1E-05	--	9E-08	1E-05	(Total)					
Sediment	Sediment	SWMU 3 - Little Sulphur Creek	2-Amino-4,6-Dinitrotoluene	--	--	--	--	2-Amino-4,6-Dinitrotoluene	Liver				
			Aluminum	--	--	--	--	Aluminum	Immune, Nails				
			Antimony	--	--	--	--	Antimony	Blood				
			Barium	--	--	--	--	Barium	Kidney				
			Cadmium	--	--	--	--	Cadmium	Kidney				
			Lead	--	--	--	--	Lead	NA				
			(Total)	--	--	--	--	(Total)					

Total Risk Across Soil	3E-07
Total Risk Across Groundwater	9E-05
Total Risk Across SWMU 3 - Little Sulphur Creek	1E-05
Total Risk Across Sediment	--
Total Risk Across All Media and All Exposure Routes	1E-04

Total Hazard Index Across All Media and All Exposure Routes

RAGS Part D Table 10

Risks Assessment Summaries

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TABLE 10.1
RISK ASSESSMENT SUMMARY
REASONABLE MAXIMUM EXPOSURE
NSWC CRANE, INDIANA

Scenario Timeframe: Current/Future
Receptor Population: Trespassers
Receptor Age: Adolescent

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk				Chemical	Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total		Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes Total
Surface Soil	Surface Soil	SWMU 3 - Old Jeep Trail	All Cancer Risks Less than 1E-06						All Hazard Quotients less than 1				
Surface Water	Surface Water	SWMU 3 - Little Sulphur Creek	All Cancer Risks Less than 1E-06						All Hazard Quotients less than 1				
Sediment	Sediment	SWMU 3 - Little Sulphur Creek	All Cancer Risks Less than 1E-06						All Hazard Quotients less than 1				

TABLE 10.2
RISK ASSESSMENT SUMMARY
CENTRAL TENDENCY EXPOSURES
NSWC CRANE, INDIANA

Scenario Timeframe: Current/Future
Receptor Population: Trespassers
Receptor Age: Adolescent

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk				Chemical	Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Tota		Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes Tota
Surface Soil	Surface Soil	SWMU 3 - Old Jeep Trail	All Cancer Risks Less than 1E-06						All Hazard Quotients less than 1				
Surface Water	Surface Water	SWMU 3 - Little Sulphur Creek	All Cancer Risks Less than 1E-06						All Hazard Quotients less than 1				
Sediment	Sediment	SWMU 3 - Little Sulphur Creek	All Cancer Risks Less than 1E-06						All Hazard Quotients less than 1				

TABLE 10.3
RISK ASSESSMENT SUMMARY
REASONABLE MAXIMUM EXPOSURE
NSWC CRANE, INDIANA

Scenario Timeframe: Current/Future
Receptor Population: Off-Site Resident
Receptor Age: Child

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk				Chemical	Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total		Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes Total
Surface Water	Surface Water	SWMU 3 - Little Sulphur Creek	RDX	9E-06	- -	3E-08	9E-06	RDX	Prostate	0.3	- -	0.0009	0.3
			(Total)	9E-06	- -	3E-08	9E-06	(Total)		0.3	--	0.0009	0.3
						Total Risk Across Groundwater	9E-06					Total Hazard Index Across All Media and All Exposure Routes	0.3
						Total Risk Across All Media and All Exposure Routes	9E-06						
												Total Prostate HI	0.3

TABLE 10.4
RISK ASSESSMENT SUMMARY
CENTRAL TENDENCY EXPOSURES
NSWC CRANE, INDIANA

Scenario Timeframe: Current/Future
Receptor Population: Off-Site Resident
Receptor Age: Child

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk				Chemical	Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total		Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes Total
Surface Water	Surface Water	SWMU 3 - Little Sulphur Creek	All Cancer Risks Less than 1E-06						All Hazard Quotients less than 1				

TABLE 10.5
RISK ASSESSMENT SUMMARY
REASONABLE MAXIMUM EXPOSURE
NSWC CRANE, INDIANA

Scenario Timeframe: Current/Future
Receptor Population: Off-Site Resident
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk				Chemical	Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total		Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes Total
Surface Water	Surface Water	SWMU 3 - Little Sulphur Creek	RDX	1E-05	- -	6E-08	1E-05	RDX	Prostate	0.09	- -	0.0005	0.09
			(Total)	1E-05	- -	6E-08	1E-05	(Total)		0.09	--	0.0005	0.09
						Total Risk Across Groundwater	1E-05					Total Hazard Index Across All Media and All Exposure Routes	0.09
						Total Risk Across All Media and All Exposure Routes	1E-05						
												Total Prostate HI	0.09

TABLE 10.6
RISK ASSESSMENT SUMMARY
CENTRAL TENDENCY EXPOSURES
NSWC CRANE, INDIANA

Scenario Timeframe: Current/Future
Receptor Population: Off-Site Resident
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk				Chemical	Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total		Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes Total
Surface Water	Surface Water	SWMU 3 - Little Sulphur Creek	RDX	1E-06	- -	1E-08	1E-06	RDX	Prostate	0.04	- -	0.0003	0.04
			(Total)	1E-06	- -	1E-08	1E-06	(Total)		0.04	--	0.0003	0.04
						Total Risk Across Groundwater	1E-06					Total Hazard Index Across All Media and All Exposure Routes	0.04
						Total Risk Across All Media and All Exposure Routes	1E-06						
												Total Prostate HI	0.04

TABLE 10.7
RISK ASSESSMENT SUMMARY
REASONABLE MAXIMUM EXPOSURE
NSWC CRANE, INDIANA

Scenario Timeframe: Current/Future
Receptor Population: Off-Site Resident
Receptor Age: Lifelong (Child and Adult)

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk				Chemical	Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total		Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes Total
Surface Water	Surface Water	SWMU 3 - Little Sulphur Creek	RDX	2E-05	- -	9E-08	2E-05						
			(Total)	2E-05	- -	9E-08	2E-05						
			Total Risk Across Groundwater				2E-05						
			Total Risk Across All Media and All Exposure Routes				2E-05						

TABLE 10.8
RISK ASSESSMENT SUMMARY
CENTRAL TENDENCY EXPOSURES
NSWC CRANE, INDIANA

Scenario Timeframe: Current/Future
Receptor Population: Off-Site Resident
Receptor Age: Lifelong (Child and Adult)

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk				Chemical	Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total		Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes Total
Surface Water	Surface Water	SWMU 3 - Little Sulphur Creek	RDX	2E-06	- -	1E-08	2E-06						
			(Total)	2E-06	- -	1E-08	2E-06						
						Total Risk Across Groundwater	2E-06						
						Total Risk Across All Media and All Exposure Routes	2E-06						

TABLE 10.9
RISK ASSESSMENT SUMMARY
REASONABLE MAXIMUM EXPOSURE
NSWC CRANE, INDIANA

Scenario Timeframe: Future
Receptor Population: Construction Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk				Chemical	Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total		Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes Total
Surface/Subsurface Soil	Surface/Subsurface Soil	SWMU 3 - Old Jeep Trail	All Cancer Risks Less than 1E-06						All Hazard Quotients less than 1				
Ground Water	Ground Water	SWMU 3 - Shallow Ground Water	All Cancer Risks Less than 1E-06						All Hazard Quotients less than 1				

TABLE 10.10
RISK ASSESSMENT SUMMARY
CENTRAL TENDENCY EXPOSURES
NSWC CRANE, INDIANA

Scenario Timeframe: Future
Receptor Population: Construction Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk				Chemical	Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total		Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes Total
Surface/Subsurface Soil	Surface/Subsurface Soil	SWMU 3 - Old Jeep Trail	All Cancer Risks Less than 1E-06						All Hazard Quotients less than 1				
Ground Water	Ground Water	SWMU 3 - Shallow Ground Water	All Cancer Risks Less than 1E-06						All Hazard Quotients less than 1				

TABLE 10.11
RISK ASSESSMENT SUMMARY
REASONABLE MAXIMUM EXPOSURE
NSWC CRANE, INDIANA

Scenario Timeframe: Future
Receptor Population: Maintenance Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk				Chemical	Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Tota		Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes Tota
Surface Soil	Surface Soil	SWMU 3 - Old Jeep Trail	All Cancer Risks Less than 1E-06						All Hazard Quotients less than 1				
Surface Water	Surface Water	SWMU 3 - Little Sulphur Creek	All Cancer Risks Less than 1E-06						All Hazard Quotients less than 1				
Sediment	Sediment	SWMU 3 - Little Sulphur Creek	All Cancer Risks Less than 1E-06						All Hazard Quotients less than 1				

TABLE 10.12
RISK ASSESSMENT SUMMARY
CENTRAL TENDENCY EXPOSURES
NSWC CRANE, INDIANA

Scenario Timeframe: Future
Receptor Population: Maintenance Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk				Chemical	Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total		Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes Total
Surface Soil	Surface Soil	SWMU 3 - Old Jeep Trail	All Cancer Risks Less than 1E-06						All Hazard Quotients less than 1				
Surface Water	Surface Water	SWMU 3 - Little Sulphur Creek	All Cancer Risks Less than 1E-06						All Hazard Quotients less than 1				
Sediment	Sediment	SWMU 3 - Little Sulphur Creek	All Cancer Risks Less than 1E-06						All Hazard Quotients less than 1				

TABLE 10.13
RISK ASSESSMENT SUMMARY
REASONABLE MAXIMUM EXPOSURE
NSWC CRANE, INDIANA

Scenario Timeframe: Future
Receptor Population: Occupational Workers
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk				Chemical	Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total		Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes Total
Surface Soil	Surface Soil	SWMU 3 - Old Jeep Trail	All Cancer Risks Less than 1E-06						All Hazard Quotients less than 1				
Ground Water	Ground Water	SWMU 3 - Shallow Ground Water	1,1,2,2-Tetrachloroethane	3E-05	- -	9E-07	3E-05	1,1,2,2-Tetrachloroethane	Liver	0.007	--	0.0002	0.007
			Trichloroethene	7E-05	- -	3E-06	7E-05	Trichloroethene	Liver	2	--	0.06	2
			Vinyl Chloride	1E-06	- -	1E-08	1E-06	Vinyl Chloride	Liver	0.001	--	0.00002	0.001
			RDX	1E-05	- -	2E-08	1E-05	RDX	Prostate	0.09	--	0.0002	0.09
			(Total)	1E-04	- -	4E-06	1E-04	(Total)		2	--	0.06	2
			Total Risk Across Groundwater				1E-04	Total Hazard Index Across All Media and All Exposure Routes					2

Total Liver HI	2
Total Prostate HI	0.09

TABLE 10.14
RISK ASSESSMENT SUMMARY
CENTRAL TENDENCY EXPOSURES
NSWC CRANE, INDIANA

Scenario Timeframe: Future
Receptor Population: Occupational Workers
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk				Chemical	Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total		Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes Total
Surface Soil	Surface Soil	SWMU 3 - Old Jeep Trail	All Cancer Risks Less than 1E-06						All Hazard Quotients less than 1				
Ground Water	Ground Water	SWMU 3 - Shallow Ground Water	1,1,2,2-Tetrachloroethane	9E-06	- -	2E-07	1E-05	1,1,2,2-Tetrachloroethane	Liver	0.006	--	0.0002	0.006
			Trichloroethene	2E-05	- -	7E-07	2E-05	Trichloroethene	Liver	1	--	0.05	1
			RDX	3E-06	- -	6E-09	3E-06	RDX	Prostate	0.08	--	0.0001	0.08
			(Total)	3E-05	- -	1E-06	4E-05	(Total)		1	--	0.05	2
						Total Risk Across Groundwater	4E-05					Total Hazard Index Across All Media and All Exposure Routes	2

Total Liver HI	1
Total Prostate HI	0.08

TABLE 10.15
RISK ASSESSMENT SUMMARY
REASONABLE MAXIMUM EXPOSURE
NSWC CRANE, INDIANA

Scenario Timeframe: Future
Receptor Population: Recreational Users
Receptor Age: Child

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk				Chemical	Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total		Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes Total
Surface Soil	Surface Soil	SWMU 3 - Old Jeep Trail	All Cancer Risks Less than 1E-06						All Hazard Quotients less than 1				
Ground Water	Ground Water	SWMU 3 - Shallow Ground Water	1,1,2,2-Tetrachloroethane	7E-06	- -	2E-07	7E-06	1,1,2,2-Tetrachloroethane	Liver	0.007	--	0.0002	0.007
			Trichloroethene	2E-05	- -	6E-07	2E-05	Trichloroethene	Liver	2	--	0.06	2
			RDX	2E-06	- -	5E-09	2E-06	RDX	Prostate	0.09	--	0.0002	0.09
			(Total)	3E-05	- -	9E-07	3E-05	(Total)		2	--	0.06	2
Surface Water	Surface Water	SWMU 3 - Little Sulphur Creek	RDX	1E-06	- -	5E-08	1E-06	RDX	Prostate	0.04	- -	0.002	0.04
			(Total)	1E-06	- -	5E-08	1E-06	(Total)		0.04	--	0.002	0.04
Sediment	Sediment	SWMU 3 - Little Sulphur Creek	All Cancer Risks Less than 1E-06						All Hazard Quotients less than 1				

Total Risk Across Groundwater	3E-05
Total Risk Across Surface Water	1E-06
Total Hazard Index Across All Media and All Exposure Routes	2
Total Liver HI	2
Total Prostate HI	0.1

TABLE 10.16
RISK ASSESSMENT SUMMARY
CENTRAL TENDENCY EXPOSURES
NSWC CRANE, INDIANA

Scenario Timeframe: Future
Receptor Population: Recreational Users
Receptor Age: Child

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk				Chemical	Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total		Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes Total
Surface Soil	Surface Soil	SWMU 3 - Old Jeep Trail	All Cancer Risks Less than 1E-06						All Hazard Quotients less than 1				
Ground Water	Ground Water	SWMU 3 - Shallow Ground Water	1,1,2,2-Tetrachloroethane	1E-06	- -	3E-08	1E-06	1,1,2,2-Tetrachloroethane	Liver	0.003	--	0.00008	0.003
			Trichloroethene	3E-06	- -	9E-08	3E-06	Trichloroethene	Liver	0.8	--	0.03	0.8
			(Total)	4E-06	- -	1E-07	4E-06	(Total)		0.8	--	0.03	0.8
Surface Water	Surface Water	SWMU 3 - Little Sulphur Creek	All Cancer Risks Less than 1E-06						All Hazard Quotients less than 1				
Sediment	Sediment	SWMU 3 - Little Sulphur Creek	All Cancer Risks Less than 1E-06						All Hazard Quotients less than 1				
						Total Risk Across Groundwater	4E-06					Total Hazard Index Across All Media and All Exposure Routes	0.8

Total Liver HI 0.8

TABLE 10.17
RISK ASSESSMENT SUMMARY
REASONABLE MAXIMUM EXPOSURE
NSWC CRANE, INDIANA

Scenario Timeframe: Future
Receptor Population: Recreational Users
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk				Chemical	Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total		Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes Total
Surface Soil	Surface Soil	SWMU 3 - Old Jeep Trail	All Cancer Risks Less than 1E-06						All Hazard Quotients less than 1				
Ground Water	Ground Water	SWMU 3 - Shallow Ground Water	1,1,2,2-Tetrachloroethane	6E-06	- -	5E-07	6E-06	1,1,2,2-Tetrachloroethane	Liver	0.001	--	0.0001	0.002
			Trichloroethene	1E-05	- -	2E-06	2E-05	Trichloroethene	Liver	0.3	--	0.04	0.4
			RDX	2E-06	- -	1E-08	2E-06	RDX	Prostate	0.02	--	0.0001	0.02
			(Total)	2E-05	- -	2E-06	2E-05	(Total)		0.4	--	0.04	0.4
Surface Water	Surface Water	SWMU 3 - Little Sulphur Creek	All Cancer Risks Less than 1E-06						All Hazard Quotients less than 1				
Sediment	Sediment	SWMU 3 - Little Sulphur Creek	All Cancer Risks Less than 1E-06						All Hazard Quotients less than 1				
			Total Risk Across Groundwater				2E-05	Total Hazard Index Across All Media and All Exposure Routes					0.4

Total Liver HI	0.4
Total Prostate HI	0.02

TABLE 10.19
RISK ASSESSMENT SUMMARY
REASONABLE MAXIMUM EXPOSURE
NSWC CRANE, INDIANA

Scenario Timeframe: Future
Receptor Population: Recreational Users
Receptor Age: Lifelong (Child and Adult)

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk				Chemical	Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total		Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes Total
Surface Soil	Surface Soil	SWMU 3 - Old Jeep Trail	All Cancer Risks Less than 1E-06										
			(Total)	- -	- -	- -	- -						
Ground Water	Ground Water	SWMU 3 - Shallow Ground Water	1,1,2,2-Tetrachloroethane	1E-05	- -	7E-07	1E-05						
			Trichloroethene	3E-05	- -	2E-06	3E-05						
			RDX	5E-06	- -	2E-08	5E-06						
			(Total)	5E-05	- -	3E-06	5E-05						
Surface Water	Surface Water	SWMU 3 - Little Sulphur Creek	RDX	1E-06	- -	2E-07	1E-06						
			(Total)	1E-06	- -	2E-07	1E-06						
Sediment	Sediment	SWMU 3 - Little Sulphur Creek	All Cancer Risks Less than 1E-06										

Total Risk Across Groundwater	5E-05
Total Risk Across Surface Water	1E-06

TABLE 10.18
RISK ASSESSMENT SUMMARY
CENTRAL TENDENCY EXPOSURES
NSWC CRANE, INDIANA

Scenario Timeframe: Future
Receptor Population: Recreational Users
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk				Chemical	Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total		Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes Total
Surface Soil	Surface Soil	SWMU 3 - Old Jeep Trail	All Cancer Risks Less than 1E-06						All Hazard Quotients less than 1				
Ground Water	Ground Water	SWMU 3 - Shallow Ground Water	Trichloroethene	2E-06	- -	2E-07	2E-06	Trichloroethene	Liver	0.2	--	0.02	0.2
			(Total)	2E-06	- -	2E-07	2E-06	(Total)		0.2	--	0.02	0.2
Surface Water	Surface Water	SWMU 3 - Little Sulphur Creek	All Cancer Risks Less than 1E-06						All Hazard Quotients less than 1				
Sediment	Sediment	SWMU 3 - Little Sulphur Creek	All Cancer Risks Less than 1E-06						All Hazard Quotients less than 1				
			Total Risk Across Groundwater				2E-06	Total Hazard Index Across All Media and All Exposure Routes					0.2

Total Liver HI 0.2

TABLE 10.20
RISK ASSESSMENT SUMMARY
CENTRAL TENDENCY EXPOSURES
NSWC CRANE, INDIANA

Scenario Timeframe: Future
Receptor Population: Recreational Users
Receptor Age: Lifelong (Child and Adult)

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk				Chemical	Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total		Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes Total
Surface Soil	Surface Soil	SWMU 3 - Old Jeep Trail	All Cancer Risks Less than 1E-06										
Ground Water	Ground Water	SWMU 3 - Shallow Ground Water	1,1,2,2-Tetrachloroethane	2E-06	- -	9E-08	2E-06						
			Trichloroethene	5E-06	- -	3E-07	5E-06						
			(Total)	7E-06	- -	4E-07	7E-06						
Surface Water	Surface Water	SWMU 3 - Little Sulphur Creek	All Cancer Risks Less than 1E-06										
Sediment	Sediment	SWMU 3 - Little Sulphur Creek	All Cancer Risks Less than 1E-06										
			Total Risk Across Groundwater				7E-06						

TABLE 10.21
RISK ASSESSMENT SUMMARY
REASONABLE MAXIMUM EXPOSURE
NSWC CRANE, INDIANA

Scenario Timeframe: Future
Receptor Population: On-Site Resident
Receptor Age: Child

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk				Chemical	Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total		Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes Total
Surface Soil	Surface Soil	SWMU 3 - 1 Acre Exposure Unit	2,3,7,8-TCDD Equivalents	1E-06	- -	1E-07	1E-06	2,3,7,8-TCDD Equivalents	NA	- -	--	- -	--
			2,4,6-Trinitrotoluene	2E-05	- -	5E-06	2E-05	2,4,6-Trinitrotoluene	Liver	15	--	4	19
			RDX	6E-05	- -	2E-05	8E-05	RDX	Prostate	2	--	0.6	2.8
			(Total)	8E-05	- -	2E-05	1E-04	(Total)		17	--	5	22
Ground Water	Ground Water	SWMU 3 - Shallow Ground Water	1,1,2,2-Tetrachloroethane	7E-05	1E-05	3E-06	9E-05	1,1,2,2-Tetrachloroethane	Liver	0.07	- -	0.003	0.07
			1,1-Dichloroethene	1E-06	1E-07	5E-08	1E-06	1,1-Dichloroethene	Liver	0.002	- -	0.0001	0.002
			Trichloroethene	2E-04	6E-05	9E-06	2E-04	Trichloroethene	Liver	16	0.2	0.8	17
			Vinyl Chloride	2E-06	2E-08	4E-08	2E-06	Vinyl Chloride	Liver	0.01	0.0006	0.0002	0.01
			4-Amino-2,6-Dinitrotoluene	- -	- -	- -	- -	4-Amino-2,6-Dinitrotoluene	Liver	1.6	- -	0.007	1.7
			RDX	2E-05	- -	7E-08	2E-05	RDX	Prostate	0.9	- -	0.002	0.9
			(Total)	3E-04	7E-05	1E-05	3E-04	(Total)		18	0.2	0.9	19
Surface Water	Surface Water	SWMU 3 - Little Sulphur Creek	2-Amino-4,6-Dinitrotoluene	- -	- -	- -	- -	2-Amino-4,6-Dinitrotoluene	Liver	2	- -	0.01	2
			4-Amino-2,6-Dinitrotoluene	- -	- -	- -	- -	4-Amino-2,6-Dinitrotoluene	Liver	5	- -	0.02	5
			RDX	6E-05	- -	2E-07	6E-05	RDX	Prostate	2	- -	0.006	2
			(Total)	6E-05	- -	2E-07	6E-05	(Total)		9	0.0	0.04	9
Sediment	Sediment	SWMU 3 - Little Sulphur Creek	All Cancer Risks Less than 1E-06						All Hazard Quotients less than 1				

Total Risk Across Soil	1E-04
Total Risk Across Groundwater	3E-04
Total Risk Across SWMU 3 - Little Sulphur Creek	6E-05
Total Risk Across All Media and All Exposure Routes	5E-04

Total Hazard Index Across All Media and All Exposure Routes	50
Total Liver HI	44
Total Prostate HI	6

TABLE 10.22
RISK ASSESSMENT SUMMARY
CENTRAL TENDENCY EXPOSURES
NSWC CRANE, INDIANA

Scenario Timeframe: Future
Receptor Population: On-Site Resident
Receptor Age: Child

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk				Chemical	Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total		Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes Total
Surface Soil	Surface Soil	SWMU 3 - 1 Acre Exposure Unit	2,4,6-Trinitrotoluene	2E-06	- -	2E-07	2E-06	2,4,6-Trinitrotoluene	Liver	5	- -	0.6	6
			RDX	7E-06	- -	8E-07	8E-06	RDX	Prostate	0.7	- -	0.08	0.8
			(Total)	9E-06	- -	1E-06	1E-05	(Total)		6	- -	0.6	6
Ground Water	Ground Water	SWMU 3 - Shallow Ground Water	1,1,2,2-Tetrachloroethane	7E-06	2E-06	5E-07	9E-06	1,1,2,2-Tetrachloroethane	Liver	0.02	- -	0.002	0.02
			Trichloroethene	2E-05	7E-06	2E-06	2E-05	Trichloroethene	Liver	5	0.06	0.5	5
			RDX	2E-06	- -	1E-08	2E-06	RDX	Prostate	0.3	- -	0.001	0.3
			(Total)	3E-05	9E-06	2E-06	4E-05	(Total)		5	0.06	0.5	5
Surface Water	Surface Water	SWMU 3 - Little Sulphur Creek	4-Amino-2,6-Dinitrotoluene	- -	- -	- -	- -	4-Amino-2,6-Dinitrotoluene	Liver	1	- -	0.01	1
			RDX	6E-06	- -	3E-08	6E-06	RDX	Prostate	0.6	- -	0.003	0.6
			(Total)	6E-06	- -	3E-08	6E-06	(Total)		2	0.00	0.01	2
Sediment	Sediment	SWMU 3 - Little Sulphur Creek	All Cancer Risks Less than 1E-06						All Hazard Quotients less than 1				

Total Risk Across Soil	1E-05
Total Risk Across Groundwater	4E-05
Total Risk Across SWMU 3 - Little Sulphur Creek	6E-06
Total Risk Across All Media and All Exposure Routes	5E-05

Total Hazard Index Across All Media and All Exposure Routes	14
Total Liver HI	12
Total Prostate HI	2

TABLE 10.23
RISK ASSESSMENT SUMMARY
REASONABLE MAXIMUM EXPOSURE
NSWC CRANE, INDIANA

Scenario Timeframe: Future
Receptor Population: On-Site Resident
Receptor Age: Child

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk				Chemical	Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total		Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes Total
Surface Soil	Surface Soil	SWMU 3 - 6-Acre Exposure Unit	2,3,7,8-TCDD Equivalents	1E-06	- -	1E-07	1E-06	2,3,7,8-TCDD Equivalents	NA	- -	--	- -	--
			Iron	- -	- -	- -	- -	Iron	Blood, GS	1	--	--	1
			(Total)	1E-06	- -	1E-07	1E-06	(Total)		1	--	--	1
Ground Water	Ground Water	SWMU 3 - Shallow Ground Water	1,1,2,2-Tetrachloroethane	7E-05	1E-05	3E-06	9E-05	1,1,2,2-Tetrachloroethane	Liver	0.07	- -	0.003	0.07
			1,1-Dichloroethene	1E-06	1E-07	5E-08	1E-06	1,1-Dichloroethene	Liver	0.002	- -	0.00010	0.002
			Trichloroethene	2E-04	6E-05	9E-06	2E-04	Trichloroethene	Liver	16	0.2	0.8	17
			Vinyl Chloride	2E-06	2E-08	4E-08	2E-06	Vinyl Chloride	Liver	0.01	0.0006	0.0002	0.01
			4-Amino-2,6-Dinitrotoluene	- -	- -	- -	- -	4-Amino-2,6-Dinitrotoluene	Liver	2	- -	0.007	2
			RDX	2E-05	- -	7E-08	2E-05	RDX	Prostate	0.9	- -	0.002	0.9
			(Total)	3E-04	7E-05	1E-05	3E-04	(Total)		18	0.2	0.9	19
Surface Water	Surface Water	SWMU 3 - Little Sulphur Creek	2-Amino-4,6-Dinitrotoluene	- -	- -	- -	- -	2-Amino-4,6-Dinitrotoluene	Liver	2	- -	0.01	2
			4-Amino-2,6-Dinitrotoluene	- -	- -	- -	- -	4-Amino-2,6-Dinitrotoluene	Liver	5	- -	0.02	5
			RDX	6E-05	- -	2E-07	6E-05	RDX	Prostate	2	- -	0.006	2
			(Total)	6E-05	- -	2E-07	6E-05	(Total)		9	0.0	0.04	9
Sediment	Sediment	SWMU 3 - Little Sulphur Creek	All Cancer Risks Less than 1E-06						All Hazard Quotients less than 1				

Total Risk Across Soil	1E-06
Total Risk Across Groundwater	3E-04
Total Risk Across SWMU 3 - Little Sulphur Creek	6E-05
Total Risk Across All Media and All Exposure Routes	4E-04

Total Hazard Index Across All Media and All Exposure Routes	29
Total Blood HI	1
Total GS HI	1
Total Liver HI	25
Total Prostate HI	3

TABLE 10.24
RISK ASSESSMENT SUMMARY
CENTRAL TENDENCY EXPOSURES
NSWC CRANE, INDIANA

Scenario Timeframe: Future
Receptor Population: On-Site Resident
Receptor Age: Child

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk				Chemical	Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total		Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes Total
Surface Soil	Surface Soil	SWMU 3 - 6-Acre Exposure Unit	All Cancer Risks Less than 1E-06						All Hazard Quotients less than 1				
Ground Water	Ground Water	SWMU 3 - Shallow Ground Water	1,1,2,2-Tetrachloroethane	7E-06	2E-06	5E-07	9E-06	1,1,2,2-Tetrachloroethane	Liver	0.02	- -	0.002	0.02
			Trichloroethene	2E-05	7E-06	2E-06	2E-05	Trichloroethene	Liver	5	0.06	0.5	5
			RDX	2E-06	- -	1E-08	2E-06	RDX	Prostate	0.3	- -	0.001	0.3
			(Total)	3E-05	9E-06	2E-06	4E-05	(Total)		5	0.06	0.5	5
Surface Water	Surface Water	SWMU 3 - Little Sulphur Creek	4-Amino-2,6-Dinitrotoluene	- -	- -	- -	- -	4-Amino-2,6-Dinitrotoluene	Liver	1	- -	0.01	1
			RDX	6E-06	- -	3E-08	6E-06	RDX	Prostate	0.6	- -	0.003	0.6
			(Total)	6E-06	- -	3E-08	6E-06	(Total)		2	--	0.01	2
Sediment	Sediment	SWMU 3 - Little Sulphur Creek	All Cancer Risks Less than 1E-06						All Hazard Quotients less than 1				

Total Risk Across Groundwater	4E-05
Total Risk Across SWMU 3 - Little Sulphur Creek	6E-06
Total Risk Across All Media and All Exposure Routes	4E-05

Total Hazard Index Across All Media and All Exposure Routes	7
Total Liver HI	7
Total Prostate HI	0.9

TABLE 10.25
RISK ASSESSMENT SUMMARY
REASONABLE MAXIMUM EXPOSURE
NSWC CRANE, INDIANA

Scenario Timeframe: Future
Receptor Population: On-Site Resident
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk				Chemical	Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total		Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes Total
Surface Soil	Surface Soil	SWMU 3 - 1 Acre Exposure Unit	2,4,6-Trinitrotoluene	8E-06	- -	3E-06	1E-05	2,4,6-Trinitrotoluene	Liver	2	--	0.6	2
			RDX	3E-05	- -	1E-05	4E-05	RDX	Prostate	0.2	--	0.10	0.3
			(Total)	4E-05	- -	1E-05	5E-05	(Total)		2	--	0.7	3
Ground Water	Ground Water	SWMU 3 - Shallow Ground Water	1,1,2,2-Tetrachloroethane	8E-05	1E-05	7E-06	1E-04	1,1,2,2-Tetrachloroethane	Liver	0.02	- -	0.002	0.02
			1,1-Dichloroethene	1E-06	1E-07	1E-07	1E-06	1,1-Dichloroethene	Liver	0.0006	- -	0.00006	0.0007
			Trichloroethene	2E-04	5E-05	2E-05	3E-04	Trichloroethene	Liver	4	0.04	0.5	5
			Vinyl Chloride	3E-06	2E-08	9E-08	3E-06	Vinyl Chloride	Liver	0.004	0.0001	0.0001	0.004
			RDX	3E-05	- -	2E-07	3E-05	RDX	Prostate	0.2	- -	0.001	0.2
			(Total)	3E-04	6E-05	3E-05	4E-04	(Total)		5	0.04	0.5	5
Surface Water	Surface Water	SWMU 3 - Little Sulphur Creek	4-Amino-2,6-Dinitrotoluene	- -	- -	- -	- -	4-Amino-2,6-Dinitrotoluene	Liver	1	- -	0.01	1
			RDX	7E-05	- -	4E-07	7E-05	RDX	Prostate	0.6	- -	0.003	0.6
			(Total)	7E-05	- -	4E-07	7E-05	(Total)		2	0.0	0.02	2
Sediment	Sediment	SWMU 3 - Little Sulphur Creek	All Cancer Risks Less than 1E-06						All Hazard Quotients less than 1				

Total Risk Across Soil	5E-05
Total Risk Across Groundwater	4E-04
Total Risk Across SWMU 3 - Little Sulphur Creek	7E-05
Total Risk Across All Media and All Exposure Routes	5E-04

Total Hazard Index Across All Media and All Exposure Routes	10
Total Liver HI	8.6
Total Prostate HI	1.2

TABLE 10.26
RISK ASSESSMENT SUMMARY
CENTRAL TENDENCY EXPOSURES
NSWC CRANE, INDIANA

Scenario Timeframe: Future
Receptor Population: On-Site Resident
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk				Chemical	Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total		Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes Total
Surface Soil	Surface Soil	SWMU 3 - 1 Acre Exposure Unit	RDX	3E-06	- -	3E-07	3E-06	RDX	Prostate	0.08	--	0.009	0.09
			(Total)	3E-06	- -	3E-07	3E-06	(Total)		0.08	--	0.009	0.09
Ground Water	Ground Water	SWMU 3 - Shallow Ground Water	1,1,2,2-Tetrachloroethane	1E-05	1E-06	1E-06	1E-05	1,1,2,2-Tetrachloroethane	Liver	0.009	- -	0.0009	0.01
			Trichloroethene	3E-05	5E-06	3E-06	3E-05	Trichloroethene	Liver	2	0.01	0.3	2
			RDX	4E-06	- -	3E-08	4E-06	RDX	Prostate	0.1	- -	0.0008	0.1
			(Total)	4E-05	7E-06	4E-06	5E-05	(Total)		2	0.01	0.3	2
Surface Water	Surface Water	SWMU 3 - Little Sulphur Creek	RDX	9E-06	- -	6E-08	9E-06	RDX	Prostate	0.3	- -	0.002	0.3
			(Total)	9E-06	- -	6E-08	9E-06	(Total)		0	0.000	0.00	0
Sediment	Sediment	SWMU 3 - Little Sulphur Creek	All Cancer Risks Less than 1E-06						All Hazard Quotients less than 1				

Total Risk Across Soil	3E-06
Total Risk Across Groundwater	5E-05
Total Risk Across SWMU 3 - Little Sulphur Creek	9E-06
Total Risk Across All Media and All Exposure Routes	6E-05

Total Hazard Index Across All Media and All Exposure Routes	3
Total Liver HI	2
Total Prostate HI	0.5

TABLE 10.27
RISK ASSESSMENT SUMMARY
REASONABLE MAXIMUM EXPOSURE
NSWC CRANE, INDIANA

Scenario Timeframe: Future
Receptor Population: On-Site Resident
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk				Chemical	Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total		Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes Total
Surface Soil	Surface Soil	SWMU 3 - 6-Acre Exposure Unit	All Cancer Risks Less than 1E-06						All Hazard Quotients less than 1				
Ground Water	Ground Water	SWMU 3 - Shallow Ground Water	1,1,2,2-Tetrachloroethane	8E-05	1E-05	7E-06	1E-04	1,1,2,2-Tetrachloroethane	Liver	0.02	- -	0.002	0.02
			1,1-Dichloroethene	1E-06	1E-07	1E-07	1E-06	1,1-Dichloroethene	Liver	0.0006	- -	0.00006	0.0007
			Trichloroethene	2E-04	5E-05	2E-05	3E-04	Trichloroethene	Liver	4	0.04	0.5	5
			Vinyl Chloride	3E-06	2E-08	9E-08	3E-06	Vinyl Chloride	Liver	0.004	0.0001	0.0001	0.004
			RDX	3E-05	- -	2E-07	3E-05	RDX	Prostate	0.2	- -	0.001	0.2
			(Total)	3E-04	6E-05	3E-05	4E-04	(Total)		5	0.04	0.5	5
Surface Water	Surface Water	SWMU 3 - Little Sulphur Creek	4-Amino-2,6-Dinitrotoluene	- -	- -	- -	- -	4-Amino-2,6-Dinitrotoluene	Liver	1	- -	0.01	1
			RDX	7E-05	- -	4E-07	7E-05	RDX	Prostate	0.6	- -	0.003	0.6
			(Total)	7E-05	- -	4E-07	7E-05	(Total)		2	--	0.02	2
Sediment	Sediment	SWMU 3 - Little Sulphur Creek	All Cancer Risks Less than 1E-06						All Hazard Quotients less than 1				

Total Risk Across Groundwater	4E-04
Total Risk Across SWMU 3 - Little Sulphur Creek	7E-05
Total Risk Across All Media and All Exposure Routes	5E-04

Total Hazard Index Across All Media and All Exposure Routes	7
Total Liver HI	6
Total Prostate HI	0.8

TABLE 10.28
RISK ASSESSMENT SUMMARY
CENTRAL TENDENCY EXPOSURES
NSWC CRANE, INDIANA

Scenario Timeframe: Future
Receptor Population: On-Site Resident
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk				Chemical	Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total		Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes Total
Surface Soil	Surface Soil	SWMU 3 - 6-Acre Exposure Unit	All Cancer Risks Less than 1E-06						All Hazard Quotients less than 1				
Ground Water	Ground Water	SWMU 3 - Shallow Ground Water	1,1,2,2-Tetrachloroethane	1E-05	1E-06	1E-06	1E-05	1,1,2,2-Tetrachloroethane	Liver	0.009	- -	0.0009	0.01
			Trichloroethene	3E-05	5E-06	3E-06	3E-05	Trichloroethene	Liver	2	0.01	0.3	2
			RDX	4E-06	- -	3E-08	4E-06	RDX	Prostate	0.1	- -	0.0008	0.1
			(Total)	4E-05	7E-06	4E-06	5E-05	(Total)		2	0.01	0.3	2
Surface Water	Surface Water	SWMU 3 - Little Sulphur Creek	RDX	9E-06	- -	6E-08	9E-06	RDX	Prostate	0.3	- -	0.002	0.3
			(Total)	9E-06	- -	6E-08	9E-06	(Total)		0.3	--	0.002	0.3
Sediment	Sediment	SWMU 3 - Little Sulphur Creek	All Cancer Risks Less than 1E-06						All Hazard Quotients less than 1				

Total Risk Across Groundwater	5E-05
Total Risk Across SWMU 3 - Little Sulphur Creek	9E-06
Total Risk Across All Media and All Exposure Routes	6.0E-05

Total Hazard Index Across All Media and All Exposure Routes	3
Total Liver HI	2
Total Prostate HI	0.4

TABLE 10.29
RISK ASSESSMENT SUMMARY
REASONABLE MAXIMUM EXPOSURE
NSWC CRANE, INDIANA

Scenario Timeframe: Future
Receptor Population: On-Site Resident
Receptor Age: Lifelong (Child and Adult)

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk				Chemical	Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total		Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes Total
Surface Soil	Surface Soil	SWMU 3 - 1 Acre Exposure Unit	2,3,7,8-TCDD Equivalents	2E-06	- -	2E-07	2E-06						
			RDX	9E-05	- -	3E-05	1E-04						
			(Total)	9E-05	- -	3E-05	1E-04						
Ground Water	Ground Water	SWMU 3 - Shallow Ground Water	1,1,2,2-Tetrachloroethane	2E-04	3E-05	1E-05	2E-04						
			1,1,2-Trichloroethane	1E-06	3E-07	5E-08	1E-06						
			1,1-Dichloroethene	2E-06	2E-07	2E-07	3E-06						
			Trichloroethene	3E-04	1E-04	3E-05	5E-04						
			Vinyl Chloride	5E-06	4E-08	1E-07	5E-06						
			RDX	5E-05	- -	2E-07	5E-05						
			(Total)	6E-04	1E-04	4E-05	7E-04						
Surface Water	Surface Water	SWMU 3 - Little Sulphur Creek	RDX	1E-04	- -	5E-07	1E-04						
			(Total)	1E-04	- -	5E-07	1E-04						
Sediment	Sediment	SWMU 3 - Little Sulphur Creek	All Cancer Risks Less than 1E-06										

Total Risk Across Soil	1E-04
Total Risk Across Groundwater	7E-04
Total Risk Across SWMU 3 - Little Sulphur Creek	1E-04
Total Risk Across All Media and All Exposure Routes	1E-03

TABLE 10.30
RISK ASSESSMENT SUMMARY
CENTRAL TENDENCY EXPOSURES
NSWC CRANE, INDIANA

Scenario Timeframe: Future
Receptor Population: On-Site Resident
Receptor Age: Lifelong (Child and Adult)

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk				Chemical	Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total		Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes Total
Surface Soil	Surface Soil	SWMU 3 - 1 Acre Exposure Unit	2,4,6-Trinitrotoluene	3E-06	- -	3E-07	3E-06						
			RDX	1E-05	- -	1E-06	1E-05						
			(Total)	1E-05	- -	1E-06	1E-05						
Ground Water	Ground Water	SWMU 3 - Shallow Ground Water	1,1,2,2-Tetrachloroethane	2E-05	3E-06	2E-06	2E-05						
			Trichloroethene	4E-05	1E-05	5E-06	6E-05						
			RDX	6E-06	- -	4E-08	6E-06						
			(Total)	6E-05	2E-05	6E-06	9E-05						
Surface Water	Surface Water	SWMU 3 - Little Sulphur Creek	RDX	1E-05	- -	9E-08	1E-05						
			(Total)	1E-05	- -	9E-08	1E-05						
Sediment	Sediment	SWMU 3 - Little Sulphur Creek	All Cancer Risks Less than 1E-06										

Total Risk Across Soil	1E-05
Total Risk Across Groundwater	9E-05
Total Risk Across SWMU 3 - Little Sulphur Creek	1E-05
Total Risk Across All Media and All Exposure Routes	1E-04

TABLE 10.31
RISK ASSESSMENT SUMMARY
REASONABLE MAXIMUM EXPOSURE
NSWC CRANE, INDIANA

Scenario Timeframe: Future
Receptor Population: On-Site Resident
Receptor Age: Lifelong (Child and Adult)

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk				Chemical	Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total		Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes Total
Surface Soil	Surface Soil	SWMU 3 - 6-Acre Exposure Unit	2,3,7,8-TCDD Equivalents	2E-06	- -	2E-07	2E-06						
			(Total)	2E-06	- -	2E-07	2E-06						
Ground Water	Ground Water	SWMU 3 - Shallow Ground Water	1,1,2,2-Tetrachloroethane	2E-04	3E-05	1E-05	2E-04						
			1,1,2-Trichloroethane	1E-06	3E-07	5E-08	1E-06						
			1,1-Dichloroethene	2E-06	2E-07	2E-07	3E-06						
			Trichloroethene	3E-04	1E-04	3E-05	5E-04						
			Vinyl Chloride	5E-06	4E-08	1E-07	5E-06						
			RDX	5E-05	- -	2E-07	5E-05						
			(Total)	6E-04	1E-04	4E-05	7E-04						
Surface Water	Surface Water	SWMU 3 - Little Sulphur Creek	RDX	1E-04	- -	5E-07	1E-04						
			(Total)	1E-04	- -	5E-07	1E-04						
Sediment	Sediment	SWMU 3 - Little Sulphur Creek	All Cancer Risks Less than 1E-06										

Total Risk Across Soil	2E-06
Total Risk Across Groundwater	7E-04
Total Risk Across SWMU 3 - Little Sulphur Creek	1E-04
Total Risk Across All Media and All Exposure Routes	9E-04

TABLE 10.32
RISK ASSESSMENT SUMMARY
CENTRAL TENDENCY EXPOSURES
NSWC CRANE, INDIANA

Scenario Timeframe: Future
Receptor Population: On-Site Resident
Receptor Age: Lifelong (Child and Adult)

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk				Chemical	Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total		Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes Total
Surface Soil	Surface Soil	SWMU 3 - 6-Acre Exposure Unit	All Cancer Risks Less than 1E-06										
Ground Water	Ground Water	SWMU 3 - Shallow Ground Water	1,1,2,2-Tetrachloroethane	2E-05	3E-06	2E-06	2E-05						
			Trichloroethene	4E-05	1E-05	5E-06	6E-05						
			RDX	6E-06	- -	4E-08	6E-06						
			(Total)	6E-05	2E-05	6E-06	9E-05						
Surface Water	Surface Water	SWMU 3 - Little Sulphur Creek	RDX	1E-05	- -	9E-08	1E-05						
			(Total)	1E-05	- -	9E-08	1E-05						
Sediment	Sediment	SWMU 3 - Little Sulphur Creek	All Cancer Risks Less than 1E-06										

Total Risk Across Groundwater	9E-05
Total Risk Across SWMU 3 - Little Sulphur Creek	1E-05
Total Risk Across All Media and All Exposure Routes	1E-04

APPENDIX G.4

LEAD MODELING RESULTS

==========
Location: NSWC Crane
Site Name: SWMU3 - 1-Acre Exposure Unit
Date: June 24, 2002
Run Mode: Site Risk Assessment

Soil/Dust Data
Average concentration of lead in surface soil assuming a 1-acre EU, 1324 mg/kg.
Water Data
Average concentration of lead in site ground water, 0.34 ug/L.
==========
The time step used in this model run: 1 - Every 4 Hours (6 times a day).

****** Air ******

Indoor Air Pb Concentration: 30.000 percent of outdoor.
Other Air Parameters:

Age	Time Outdoors (hours)	Ventilation Rate (m^3/day)	Lung Absorption (%)	Outdoor Air Pb Conc (ug Pb/m^3)
.5-1	1.000	2.000	32.000	0.100
1-2	2.000	3.000	32.000	0.100
2-3	3.000	5.000	32.000	0.100
3-4	4.000	5.000	32.000	0.100
4-5	4.000	5.000	32.000	0.100
5-6	4.000	7.000	32.000	0.100
6-7	4.000	7.000	32.000	0.100

****** Diet ******

Age	Diet Intake(ug/day)
.5-1	5.530
1-2	5.780
2-3	6.490
3-4	6.240
4-5	6.010
5-6	6.340
6-7	7.000

****** Drinking Water ******

Water Consumption:

Age	Water (L/day)
.5-1	0.200
1-2	0.500
2-3	0.520
3-4	0.530
4-5	0.550
5-6	0.580
6-7	0.590

Drinking Water Concentration: 0.340 ug Pb/L

Location: NSWC Crane
Site Name: SWMU3 - 1-Acre Exposure Unit
Date: June 24, 2002
Run Mode: Site Risk Assessment

****** Soil & Dust ******

Multiple Source Analysis Used
Average multiple source concentration: 936.800 ug/g

Mass fraction of outdoor soil to indoor dust conversion factor: 0.700
Outdoor airborne lead to indoor household dust lead concentration: 100.000
Use alternate indoor dust Pb sources? No

Age	Soil (ug Pb/g)	House Dust (ug Pb/g)
.5-1	1324.000	936.800
1-2	1324.000	936.800
2-3	1324.000	936.800
3-4	1324.000	936.800
4-5	1324.000	936.800
5-6	1324.000	936.800
6-7	1324.000	936.800

****** Alternate Intake ******

Age	Alternate (ug Pb/day)
.5-1	0.000
1-2	0.000
2-3	0.000
3-4	0.000
4-5	0.000
5-6	0.000
6-7	0.000

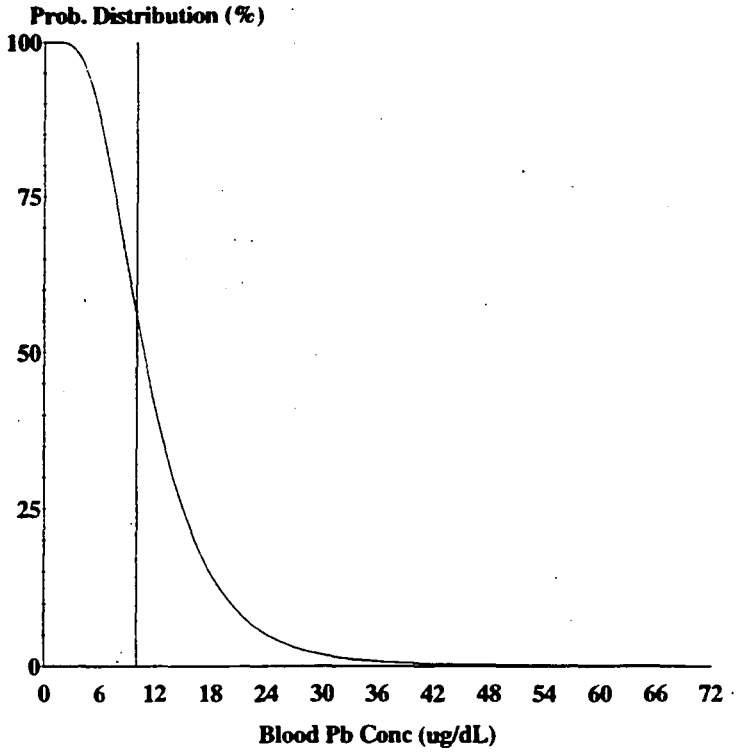
****** Maternal Contribution: Infant Model ******

Maternal Blood Concentration: 2.500 ug Pb/dL

****
CALCULATED BLOOD LEAD AND LEAD UPTAKES:
****

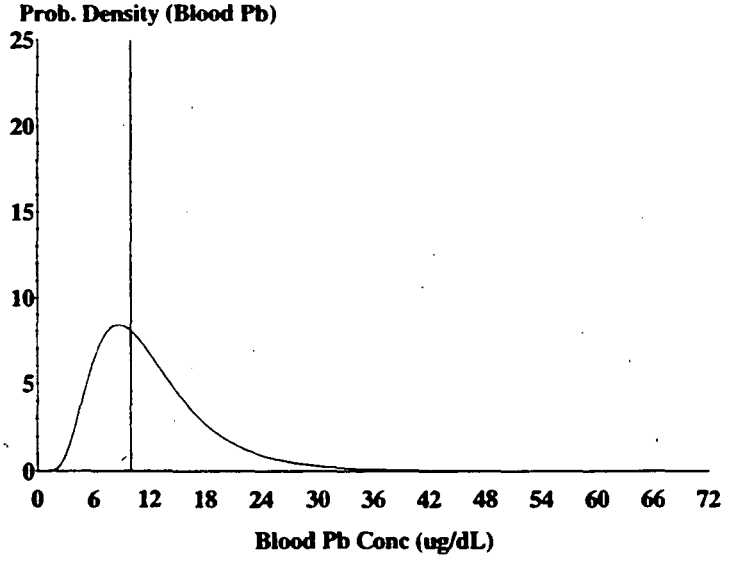
Year	Air (ug/dL)	Diet (ug/day)	Alternate (ug/day)	Water (ug/day)
.5-1	0.021	2.094	0.000	0.026
1-2	0.034	2.102	0.000	0.062
2-3	0.062	2.448	0.000	0.067
3-4	0.067	2.435	0.000	0.070
4-5	0.067	2.529	0.000	0.079
5-6	0.093	2.747	0.000	0.085
6-7	0.093	3.081	0.000	0.088

Year	Soil+Dust (ug/day)	Total (ug/day)	Blood (ug/dL)
.5-1	21.454	23.595	12.3
1-2	32.724	34.922	14.1
2-3	33.942	36.518	13.3
3-4	35.125	37.697	12.9
4-5	28.056	30.731	10.8
5-6	26.000	28.926	9.1
6-7	24.938	28.200	8.1



Cutoff = 10.000 ug/dl
Geo Mean = 11.289
GSD = 1.600
% Above = 60.178

Age Range = 0 to 84 months
Time Step = Every 4 Hours
Run Mode = Site Risk Assessment
Comment = 1-Acre Exposure Unit



Cutoff = 10.000 ug/dl
Geo Mean = 11.289
GSD = 1.600
% Above = 60.178
% Below = 39.822

Age Range = 0 to 84 months
Time Step = Every 4 Hours
Run Mode = Site Risk Assessment
Comment = 1-Acre Exposure Unit

==========
Location: NSWC Crane
Site Name: SWMU3 - 6-Acre Exposure Unit
Date: June 24, 2002
Run Mode: Site Risk Assessment

Soil/Dust Data
Average concentration of lead in surface soil assuming a 6-acre EU, 358 mg/kg.
Water Data
Average concentration of lead in site ground water, 0.34 ug/L.
==========
The time step used in this model run: 1 - Every 4 Hours (6 times a day).

****** Air ******

Indoor Air Pb Concentration: 30.000 percent of outdoor.
Other Air Parameters:

Age	Time Outdoors (hours)	Ventilation Rate (m^3/day)	Lung Absorption (%)	Outdoor Air Pb Conc (ug Pb/m^3)
.5-1	1.000	2.000	32.000	0.100
1-2	2.000	3.000	32.000	0.100
2-3	3.000	5.000	32.000	0.100
3-4	4.000	5.000	32.000	0.100
4-5	4.000	5.000	32.000	0.100
5-6	4.000	7.000	32.000	0.100
6-7	4.000	7.000	32.000	0.100

****** Diet ******

Age	Diet Intake(ug/day)
.5-1	5.530
1-2	5.780
2-3	6.490
3-4	6.240
4-5	6.010
5-6	6.340
6-7	7.000

****** Drinking Water ******

Water Consumption:

Age	Water (L/day)
.5-1	0.200
1-2	0.500
2-3	0.520
3-4	0.530
4-5	0.550
5-6	0.580
6-7	0.590

Drinking Water Concentration: 0.340 ug Pb/L

Location: NSWC Crane
Site Name: SWMU3 - 6-Acre Exposure Unit
Date: June 24, 2002
Run Mode: Site Risk Assessment

****** Soil & Dust ******

Multiple Source Analysis Used
Average multiple source concentration: 260.600 ug/g

Mass fraction of outdoor soil to indoor dust conversion factor: 0.700
Outdoor airborne lead to indoor household dust lead concentration: 100.000
Use alternate indoor dust Pb sources? No

Age	Soil (ug Pb/g)	House Dust (ug Pb/g)
.5-1	358.000	260.600
1-2	358.000	260.600
2-3	358.000	260.600
3-4	358.000	260.600
4-5	358.000	260.600
5-6	358.000	260.600
6-7	358.000	260.600

****** Alternate Intake ******

Age	Alternate (ug Pb/day)
.5-1	0.000
1-2	0.000
2-3	0.000
3-4	0.000
4-5	0.000
5-6	0.000
6-7	0.000

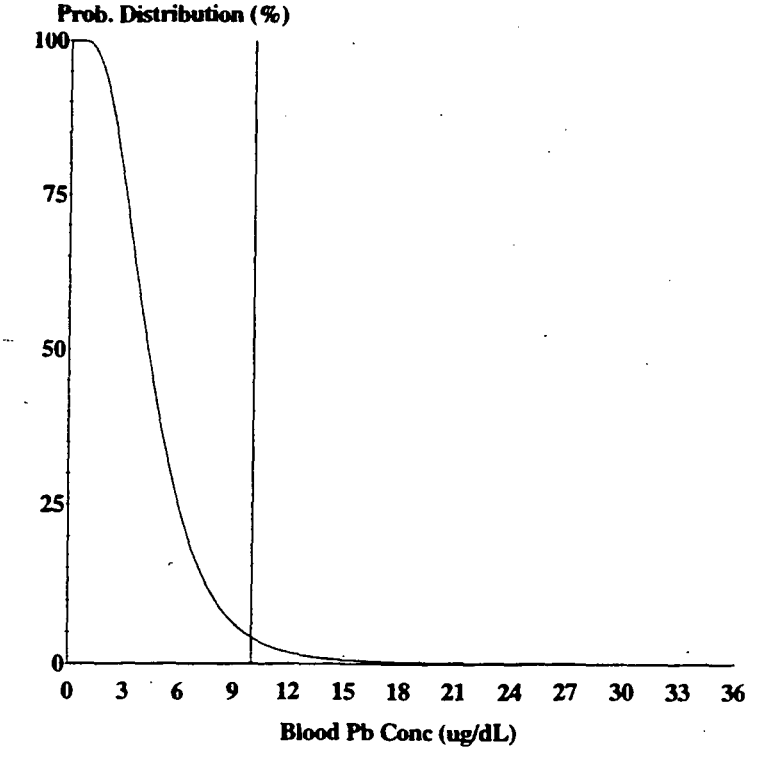
****** Maternal Contribution: Infant Model ******

Maternal Blood Concentration: 2.500 ug Pb/dL

****
CALCULATED BLOOD LEAD AND LEAD UPTAKES:
****

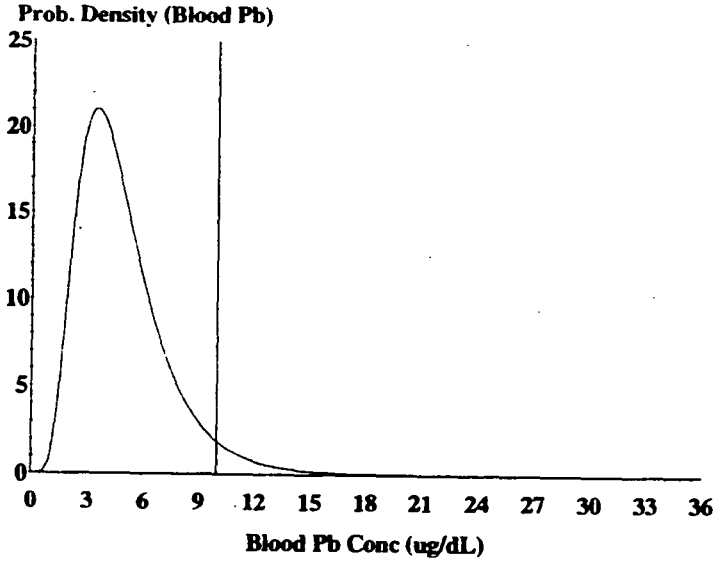
Year	Air (ug/dL)	Diet (ug/day)	Alternate (ug/day)	Water (ug/day)
.5-1	0.021	2.480	0.000	0.030
1-2	0.034	2.562	0.000	0.075
2-3	0.062	2.919	0.000	0.080
3-4	0.067	2.849	0.000	0.082
4-5	0.067	2.821	0.000	0.088
5-6	0.093	3.006	0.000	0.094
6-7	0.093	3.335	0.000	0.096

Year	Soil+Dust (ug/day)	Total (ug/day)	Blood (ug/dL)
.5-1	6.962	9.493	5.1
1-2	10.931	13.603	5.6
2-3	11.090	14.150	5.3
3-4	11.258	14.256	5.0
4-5	8.574	11.550	4.1
5-6	7.795	10.988	3.5
6-7	7.397	10.920	3.1



Cutoff = 10.000 ug/dl
Geo Mean = 4.497
GSD = 1.600
% Above = 4.452

Age Range = 0 to 84 months
Time Step = Every 4 Hours
Run Mode = Site Risk Assessment
Comment = 6-Acre Exposure Unit



Cutoff = 10.000 ug/dl
Geo Mean = 4.497
GSD = 1.600
% Above = 4.452
% Below = 95.548

Age Range = 0 to 84 months
Time Step = Every 4 Hours
Run Mode = Site Risk Assessment
Comment = 6-Acre Exposure Unit

==========
Location: NSWC Crane
Site Name: SWMU - Old Jeep Trail
Date: June 24, 2002
Run Mode: Site Risk Assessment

Soil/Dust Data
Average concentration of lead in site sediment, 120 mg/kg.

==========
The time step used in this model run: 1 - Every 4 Hours (6 times a day).

****** Air ******

Indoor Air Pb Concentration: 30.000 percent of outdoor.
Other Air Parameters:

Age	Time Outdoors (hours)	Ventilation Rate (m^3/day)	Lung Absorption (%)	Outdoor Air Pb Conc (ug Pb/m^3)
.5-1	1.000	2.000	32.000	0.100
1-2	2.000	3.000	32.000	0.100
2-3	3.000	5.000	32.000	0.100
3-4	4.000	5.000	32.000	0.100
4-5	4.000	5.000	32.000	0.100
5-6	4.000	7.000	32.000	0.100
6-7	4.000	7.000	32.000	0.100

****** Diet ******

Age	Diet Intake(ug/day)
.5-1	5.530
1-2	5.780
2-3	6.490
3-4	6.240
4-5	6.010
5-6	6.340
6-7	7.000

****** Drinking Water ******

Water Consumption:

Age	Water (L/day)
.5-1	0.200
1-2	0.500
2-3	0.520
3-4	0.530
4-5	0.550
5-6	0.580
6-7	0.590

Drinking Water Concentration: 0.000 ug Pb/L

Location: NSWC Crane
Site Name: SWMU - Old Jeep Trail
Date: June 24, 2002
Run Mode: Site Risk Assessment

****** Soil & Dust ******

Multiple Source Analysis Used
Average multiple source concentration: 94.000 ug/g

Mass fraction of outdoor soil to indoor dust conversion factor: 0.700
Outdoor airborne lead to indoor household dust lead concentration: 100.000
Use alternate indoor dust Pb sources? No

Age	Soil (ug Pb/g)	House Dust (ug Pb/g)
.5-1	120.000	94.000
1-2	120.000	94.000
2-3	120.000	94.000
3-4	120.000	94.000
4-5	120.000	94.000
5-6	120.000	94.000
6-7	120.000	94.000

****** Alternate Intake ******

Age	Alternate (ug Pb/day)
.5-1	0.000
1-2	0.000
2-3	0.000
3-4	0.000
4-5	0.000
5-6	0.000
6-7	0.000

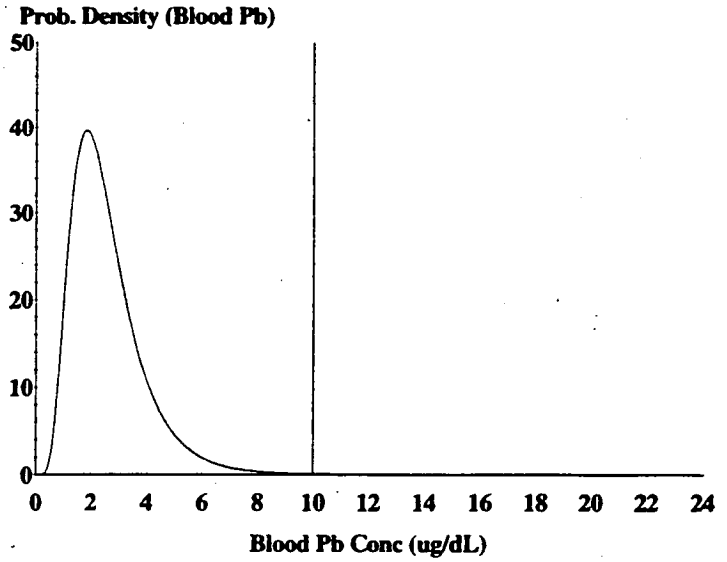
****** Maternal Contribution: Infant Model ******

Maternal Blood Concentration: 2.500 ug Pb/dL

****
CALCULATED BLOOD LEAD AND LEAD UPTAKES:
****

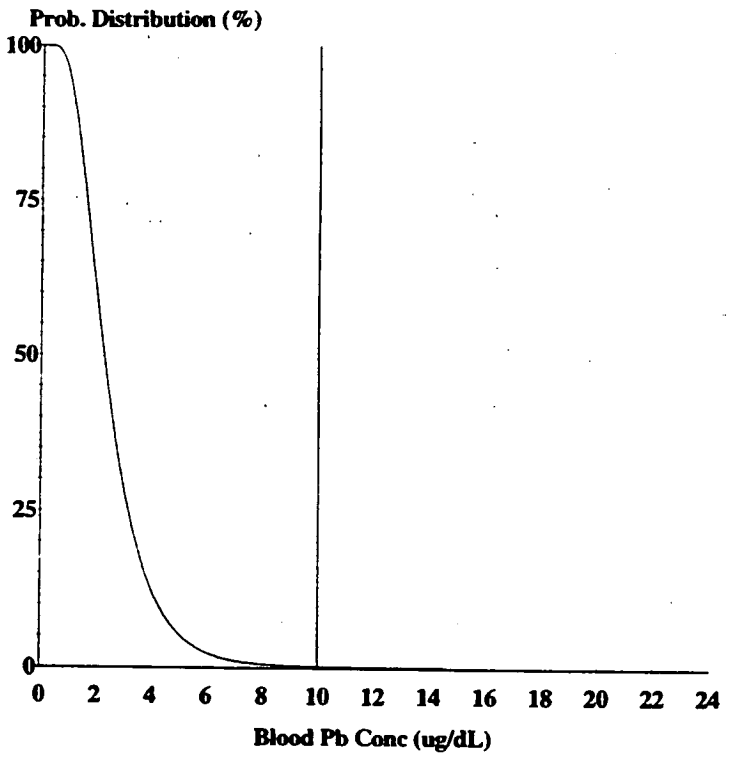
Year	Air (ug/dL)	Diet (ug/day)	Alternate (ug/day)	Water (ug/day)
.5-1	0.021	2.608	0.000	0.000
1-2	0.034	2.724	0.000	0.000
2-3	0.062	3.077	0.000	0.000
3-4	0.067	2.983	0.000	0.000
4-5	0.067	2.908	0.000	0.000
5-6	0.093	3.081	0.000	0.000
6-7	0.093	3.407	0.000	0.000

Year	Soil+Dust (ug/day)	Total (ug/day)	Blood (ug/dL)
.5-1	2.542	5.171	2.8
1-2	4.035	6.793	2.9
2-3	4.060	7.199	2.7
3-4	4.093	7.143	2.5
4-5	3.069	6.044	2.1
5-6	2.774	5.949	1.9
6-7	2.624	6.125	1.7



Cutoff = 10.000 ug/dl
Geo Mean = 2.386
GSD = 1.600
% Above = 0.115
% Below = 99.885

Age Range = 0 to 84 months
Time Step = Every 4 Hours
Run Mode = Site Risk Assessment
Comment = Sediment



Cutoff = 10.000 ug/dl
Geo Mean = 2.386
GSD = 1.600
% Above = 0.115

Age Range = 0 to 84 months
Time Step = Every 4 Hours
Run Mode = Site Risk Assessment
Comment = Sediment

Calculations of 95th Percentile Fetal Blood Lead Concentrations for Adult Exposure to Soil

SITE NAME: NSWC CRANE, CRANE, INDIANA
LOCATION: OLD JEEP TRAIL
RECEPTOR: CONSTRUCTION WORKERS AND OCCUPATIONAL WORKERS
DATE: JUNE 24, 2002

OBJECTIVE: Adult exposure to lead in soil is addressed by an evaluation of the relationship between the site soil lead concentration and the blood leac concentration in the developing fetuses of adult women. This spreadsheet calculates a range of 95th percentile fetal blood lead concentrations from centr estimates of blood lead concentrations in pregnant adult women using the exposure parameters identified below (U.S. EPA, Recommendations of the Technical Review Workgroup for Lead for an Interim Approach to Assessing Risks Associated with Adult Exposures to Lead in Soil, December 1996).

RELEVANT EQUATIONS:

$$PbB_{fetal,\,GM} = R_{fetal/maternal} \times [PbB_{adult,\,0} + (PbS \times BKSF \times IR_s \times AF_s \times EF_s)/AT]$$

and

$$PbB_{fetal,\,0.95} = PbB_{fetal,\,GM} \times GSD_{i,\,adult}^{1.645}$$

Exposure Parameter	Description (units)	Construction Worker	Occupational Worker
$PbB_{adult,\,0}$	Typical blood lead concentration in adult women of child-bearing age in absence of site exposures (ug/dL)	2.0	2.0
PbS	Site-specific soil lead concentration (mg/kg)	310	358
BKSF	Biokinetic slope factor (ug/dL per ug/day))	0.4	0.4
IR_s	Intake rate of soil, includes outdoor soil and indoor soil-derived dust (g/day)	0.100	0.050
AF_s	Absolute gastrointestinal absorption fraction (unitless)	0.12	0.12
EF_s	Exposure frequency (days/year)	150	219
AT	Averaging time (days/year)	365	365
$GSD_{i,\,adult}$	Estimate of individual geometric standard deviation among adults (unitless)	2.0	2.0
$R_{fetal/maternal}$	Constant of proportionality between fetal blood lead concentraiton at birth and maternal blood lead concentration (unitless)	0.9	0.9
$PbB_{adult,\,central}$	Calculated central estimate of blood lead concentration in adult women of child-bearing age from site exposures (ug/dL)	2.61	2.52
$PbB_{fetal,\,GM}$	Central estimate of blood lead concentration (ug/dL) for fetuses carried by women who have site exposures to soil lead at concentration PbS	2.35	2.28
	Probability that PbB_{fetal} exceeds 10 ug/dL	1.84	1.81
$PbB_{fetal,\,95}$	Calculated 95th percentile blood lead concentrations in fetuses born to women having site exposures (ug/dL)	7.35	7.08
RBRG	Lead soil concentration corresponding to a 95th percentile 10 ug/dL lead blood level in a fetus (mg/kg)	787	1,078

APPENDIX H

SUPPORTING MATERIALS FOR THE ECOLOGICAL RISK ASSESSMENT

APPENDIX H.1

CHEMICAL TOXICITY INFORMATION

APPENDIX H.1

This appendix presents a discussion of the different chemical classes that were detected at SWMU 3, Jeep Trail including toxicity information, potential food chain and trophic transfer, and bioaccumulation potential (Attachment Table H.1-1).

Metals

Many metals occur naturally at various concentrations in the surface water, and sediment primarily to chemical weathering of rocks and fallout from volcanoes. Most metals are toxic to aquatic (i.e., fish, invertebrates) and terrestrial (i.e., plants, invertebrates, vertebrates) ecological receptors above certain concentrations, with some metals being more toxic at lower concentrations than others. Also, different chemical forms of the metals may be more toxic than others. For example, hexavalent chromium is typically more toxic than trivalent chromium, and methylmercury is more toxic than inorganic mercury. In addition, the toxicity of several metals (cadmium, chromium, copper, lead, nickel, silver, and zinc) to aquatic receptors in freshwater systems decreases with increasing water hardness.

Many factors (e.g., pH, Eh, clay content, organic matter content) influence the bioavailability of metals to invertebrates in sediment. One way to estimate the bioavailable portion of certain divalent metals (cadmium, copper, lead, nickel, and zinc) in sediment is to measure the amount of acid volatile sulfides (AVS) and simultaneously extracted metals (SEM) in a sediment sample. If the molar concentration of AVS is higher than the molar concentration of SEM, than the SEM metals are expected to be unavailable to aquatic invertebrates and, therefore, nontoxic. AVS plays little or no role in determining interstitial water concentrations of metals in aerobic systems or those with low productivity (i.e., where the absence of organic carbon limits sulfate reduction) (Ankley et al., 1995), or when ingestion of sediments is the primary exposure route (Lee at al., 2000).

Semivolatile Organic Compounds

The most common semivolatile organic compounds that are found at naval facilities include polynuclear aromatic hydrocarbons (PAHs) and phthalates. PAHs are a diverse group of compounds consisting of two or more substituted and unsubstituted polynuclear aromatic rings formed by the incomplete combustion of carbonaceous materials. PAHs are ubiquitous in the modern environment and are common constituents of coal tar, soot, vehicle exhaust, cigarette smoke, certain petroleum products, road tar, mineral oils, creosote, and many cooked foods.

PAHs also are released to the environment through natural sources such as volcanoes and forest fires.

PAHs are transferred from surface water by volatilization and sorption to settling particles. The compounds are transformed in surface water by photooxidation, chemical oxidation, and microbial metabolism (ATSDR, 1989a). In soil and sediments, microbial metabolism is the major process for degradation of PAHs (ATSDR, 1989a). Although PAHs accumulate in terrestrial and aquatic plants, many organisms are able to metabolize and eliminate these compounds. Vertebrates can readily metabolize PAHs, but lower forms (insects and worms) cannot metabolize PAHs as quickly. However, food chain uptake does not appear to be a major exposure source to PAHs for aquatic animals (ATSDR, 1989a).

PAHs vary substantially in their toxicity to aquatic organisms. In general, toxicity increases as molecular weight increases, with the exception of some high molecular weight PAHs that have low acute toxicity. Most species of aquatic organisms rapidly accumulate PAHs that occur at low concentrations in the ambient medium. However, uptake of PAHs is highly species-specific, it is higher in algae, mollusks, and other species that are incapable of metabolizing PAHs (Eisler, 1987). The ability of fish to metabolize PAHs may explain why benzo(a)pyrene is frequently not detected or is found at only very low levels in fish from environments heavily contaminated with PAHs (ATSDR, 1989a).

Phthalates are semivolatile organic compounds that are used in production of plastics (ATSDR, 1993). Most phthalates are expected to sorb to soil or sediment particles after their release because of their high Log K_{OC} values (Howard, 1989). Some phthalates may bioconcentrate in aquatic organisms [Spectrum Laboratories, 1999; Howard, 1989; ATSDR, 1989a].

Pesticides

Pesticides are used to control pestiferous invertebrates and, therefore, they are toxic to many soil and aquatic invertebrates. In addition, many pesticides are toxic to ecological receptors at higher trophic levels such as mammals and birds. For example, DDT compounds have been linked to eggshell thinning and subsequent decreased survival of several birds of prey (such as eagles and falcons). Other pesticides such as chlordanes, dieldrin, aldrin, endrin, and heptachlor also are very toxic to mammals and birds (Newell et al., 1987).

Organochlorine insecticides such as DDT, chlordane, aldrin, dieldrin, heptachlor, endosulfan, and endrin and their associated breakdown products generally degrade very slowly and tend to be soluble in lipids. These result in bioaccumulation and possible increases in concentrations

through food webs (Newman, 1998). Pesticides have high Log K_{oc} values so they are expected to sorb strongly to soil and sediment particles when released to the environment. Consequently, these compounds may migrate from their site of application when the soil is eroded, although they will not have a tendency to leach to groundwater.

DDT, DDE, and DDD are highly lipid soluble, which combined with an extremely long half-life, results in bioaccumulation (ATSDR, 1989b). When present in ambient water, DDT and its metabolites are concentrated in freshwater and marine plankton, insects, mollusks, and other invertebrates and fish (ATSDR, 1989b). A progressive accumulation of residues may result in high levels of residues in organisms at the top of the food chain (ATSDR, 1989b). Moderate to significant bioconcentration in aquatic species has been reported for dieldrin, with bioconcentration factors (BCFs) ranging from 100 to 10,000 (Howard, 1991). Heptachlor also has been reported to bioconcentrate in aquatic species, with bioconcentration factors in fish up to about 20,000 (Howard, 1991). The BSAF values for these pesticides as reported in USEPA (1997) ranged from 1.67 to 7.7.

Dioxins

Dioxin and dioxin-like compounds consist of the following chemical classes: polychlorinated dibenzo-p-dioxins (PCDDs or CDDs), polychlorinated dibenzofurans (PCDFs of CDFs), polybrominated dibenzodioxins (PBDDs or BDDs), polybrominated dibenzofurans (PBDFs or BDFs), and PCBs (USEPA, 1998). The CDDs and BDDs each include 75 individual compounds, and the CDFs BDFs each include 135 different compounds (USEPA, 1998). Of all these compounds, only 7 of the 75 congeners of CDDs or BDDs are thought to have dioxin-like toxicity, as are 10 of the 135 congeners of CDFs, or BDFs (USEPA, 1998). These are the ones with chlorine/bromine substitutions in, at least, the 2, 3, 7, and 8 positions (USEPA, 1998). Of the 209 PCB congeners, 13 are thought to have dioxin-like toxicity, which include the PCBs with four or more chlorines with just one or no substitution in the ortho position (USEPA, 1998).

There are very few toxicity data for dioxins except for 2,3,7,8-TCDD, which has been associated with lethal, carcinogenic, teratogenic, reproductive, mutagenic, histopathologic, and immunotoxic effects (Eisler, 1986). 2,3,7,8-Tetrachlorodibenzo-p-dioxin (TCDD) is the most toxic congener within these groups of compounds (Van den Berg et al., 1998). Because of this, toxicity equivalency factors (developed to estimate the relative toxicity of the dioxin and dioxin-like compounds to 2,3,7,8-TCDD (Van den Berg et al., 1998). There are substantial inter- and intraspecific differences in sensitivity and toxic responses to 2,3,7,8-TCDD (Eisler, 1986b). Two species of earthworms showed no adverse effects at soil concentrations of 5 mg/kg; however,

they died at 10 mg/kg of 2,3,7,8-TCDD (Eisler, 1986b). This indicates that terrestrial invertebrates may be resistant to 2,3,7,8-TCDD.

Although there presently is no evidence of biomagnification of PCDDs in birds, it is suspected that piscivorous birds have a greater potential to accumulate PCDDs than the fish that they eat (Eisler, 1986b).

PCBs

The term polychlorinated biphenyls (PCBs) commonly refers to a variety of mixtures of individual biphenyl isomers, each consisting of two joined benzene rings and up to 10 chlorine atoms. Mixtures of these isomers are known by their commercial designation of Aroclor. This trade name is followed by a four-digit number; the first two numbers indicate the type of isomer mixture and the last two numbers indicate the approximate weight percent of chlorine in the mixture (USEPA, 1985).

PCBs released into water adsorb to sediments and other organic matter. Typically, PCB concentrations are greater in the sediment and suspended material than in the water column. Substantial quantities of PCBs in aquatic sediments can act as an environmental reservoir from which PCBs may be released slowly over a long period of time (ATSDR, 1989c). For PCBs that exist in the dissolved state in water, volatilization becomes the primary fate process. PCBs have the capability to bioaccumulate and biomagnify (USEPA, 1985).

Degradation of PCBs in the environment is dependent upon the degree of chlorination. Generally, the more chlorinated the PCB molecule, the more persistent it will be in the environment. Factors that determine biodegradability include the amount of chlorination, concentration, type of microbial population, available nutrients, and the temperature (ATSDR, 1989c).

Because PCBs are highly lipophilic, they can bioaccumulate in the lipid portions of animals. Bioconcentration factors in the thousands have been reported for various aquatic species (Eisler, 1986a). PCBs can also accumulate in upper trophic level animals such as piscivorous birds and mammals that feed on contaminated prey items (Eisler, 1986). BSAFs for PCBS were reported as 1.85 (USEPA, 1997).

Adverse effects of PCBs on terrestrial wildlife include increased mortality, reproductive effects, and behavioral effects (USEPA, 1985). As a group, birds are more resistant to acutely toxic effects of PCBs than mammals (Eisler, 1986a). Among sensitive avian species, PCBs disrupt the

normal pattern of growth, reproduction, metabolism, and behavior (Eisler, 1986a). Of the mammals, the mink is the most sensitive wildlife species tested for which data are available (Eisler, 1986a). Impacts to mink include anorexia, weight loss, lethargy, reproductive effects, and death (Eisler, 1986a).

Volatile Organic Compounds

VOCs are usually very mobile in the environment because they are poorly adsorbed to soil and sediment particles. Also, because they are very volatile, they typically are only detected in surface water, surface soil, and sediment at low concentrations.

Most VOCs have very little potential to bioaccumulate in ecological receptors; therefore, biomagnification through the food chain does not appear to be significant. VOCs are not expected to biomagnify in plants and are typically toxic to ecological receptors at relatively high concentrations.

Explosives

Some of the more common explosives include nitroaromatic compounds such as 2,4,6-trinitrotoluene, hexahydro-1,3,5-trinitro-1,3,5-triazine, octahydro-1,3,5,7-tetranitro-1,3,5-tetrazocine, N-methyl-N,2,4,6-tetranitroaniline, and associated by-products and degradation products that may have been released to the environment during manufacturing and load, assembly, and pack processes at military facilities (Talmage et al., 1999). These explosives are moderately to highly toxic to freshwater organisms, with chronic screening values less than 1 mg/L, although some of the screening values are low because of the conservative methods used to develop them based on an absence of data (Talmage et al., 1999). Available data indicate that none of the compounds are expected to bioconcentrate (Talmage et al., 1999). Most of the explosives do not appear to be highly toxic to mammals. Terrestrial reference values (TRVs) are greater than 1 mg/kg-day.

Explosives have little to moderate potential to adsorb to soil and sediment (Talmage et al., 1999). Therefore, explosives will have moderate to high mobility in soils and sediment, and most of the explosives will be found in the water column (Talmage et al., 1999).

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TABLE H.1-1

BAFS AND BSAFS FOR PLANTS, EARTHWORMS, FISH, AND SEDIMENT INVERTEBRATES
NAVAL SURFACE WARFARE CENTER, CRANE, INDIANA

Chemicals	Plant BAFs[1,2]		Earthworm BAFs[3]		Sediment BSAFs[4,5,7]	
	Conservative[6]	Average[6]	Conservative[6]	Average[6]	Conservative[6]	Average[6]
Semivolatile Organics						
Acenaphthene	2.50E-02	2.50E-02	2.57E-01	9.70E-02	2.90E-01	2.90E-01
Pesticides						
Methoxychlor	2.20E-02	2.20E-02	1.00E+00	1.00E+00	1.80E+00	1.80E+00
Dioxins						
1,2,3,4,6,7,8-HPCDD	2.40E-04	2.40E-04	3.56E+00	1.76E+00	2.50E-02	2.50E-02
1,2,3,4,6,7,8-HPCDF	2.40E-04	2.40E-04	3.56E+00	1.76E+00	2.50E-02	2.50E-02
1,2,3,4,7,8,9-HPCDF	2.40E-04	2.40E-04	3.56E+00	1.76E+00	2.50E-02	2.50E-02
1,2,3,4,7,8-HXCDD	2.40E-04	2.40E-04	3.56E+00	1.76E+00	2.50E-02	2.50E-02
1,2,3,4,7,8-HXCDF	2.40E-04	2.40E-04	3.56E+00	1.76E+00	2.50E-02	2.50E-02
1,2,3,6,7,8-HXCDD	2.40E-04	2.40E-04	3.56E+00	1.76E+00	2.50E-02	2.50E-02
1,2,3,6,7,8-HXCDF	2.40E-04	2.40E-04	3.56E+00	1.76E+00	2.50E-02	2.50E-02
1,2,3,7,8,9-HXCDD	2.40E-04	2.40E-04	3.56E+00	1.76E+00	2.50E-02	2.50E-02
1,2,3,7,8,9-HxCDF	2.40E-04	2.40E-04	3.56E+00	1.76E+00	2.50E-02	2.50E-02
1,2,3,7,8-PECDD	1.30E-03	1.30E-03	3.56E+00	1.76E+00	2.50E-02	2.50E-02
1,2,3,7,8-PECDF	8.90E-04	8.90E-04	3.56E+00	1.76E+00	2.50E-02	2.50E-02
2,3,4,6,7,8-HXCDF	2.40E-04	2.40E-04	3.56E+00	1.76E+00	2.50E-02	2.50E-02
2,3,4,7,8-PECDF	7.50E-04	7.50E-04	3.56E+00	1.76E+00	2.50E-02	2.50E-02
2,3,7,8-TCDD	8.80E-04	8.80E-04	3.56E+00	1.76E+00	2.50E-02	2.50E-02
2,3,7,8-TCDF	3.20E-03	3.20E-03	3.56E+00	1.76E+00	5.90E-02	5.90E-02
1,2,3,4,6,7,8,9-OCDD	6.20E-05	6.20E-05	3.56E+00	1.76E+00	2.50E-02	2.50E-02
1,2,3,4,6,7,8,9-OCDF	7.90E-05	7.90E-05	3.56E+00	1.76E+00	2.50E-02	2.50E-02
TOTAL HPCDD	2.40E-04	2.40E-04	3.56E+00	1.76E+00	2.50E-02	2.50E-02
TOTAL HXCDD	2.40E-04	2.40E-04	3.56E+00	1.76E+00	2.50E-02	2.50E-02
TOTAL PECDD	1.30E-03	1.30E-03	3.56E+00	1.76E+00	2.50E-02	2.50E-02
Total HPCDF	2.40E-04	2.40E-04	3.56E+00	1.76E+00	2.50E-02	2.50E-02
Total HXCDF	2.40E-04	2.40E-04	3.56E+00	1.76E+00	2.50E-02	2.50E-02
Total PECDF	8.90E-04	8.90E-04	3.56E+00	1.76E+00	2.50E-02	2.50E-02
Total TCDD	8.80E-04	8.80E-04	3.56E+00	1.76E+00	2.50E-02	2.50E-02
Total TCDF	3.20E-03	3.20E-03	3.56E+00	1.76E+00	5.90E-02	5.90E-02

TABLE H.1-1

BAFS AND BSAFS FOR PLANTS, EARTHWORMS, FISH, AND SEDIMENT INVERTEBRATES
NAVAL SURFACE WARFARE CENTER, CRANE, INDIANA

Chemicals	Plant BAFs[1,2]		Earthworm BAFs[3]		Sediment BSAFs[4,5,7]	
	Conservative[6]	Average[6]	Conservative[6]	Average[6]	Conservative[6]	Average[6]
Inorganics						
Cadmium	9.75E-01	1.76E-01	6.51E+00	1.23E+00	2.32E+00	1.74E-01
Chromium	2.52E-02	1.23E-02	5.06E-01	4.90E-02	1.36E-01	2.90E-02
Copper	1.88E-01	3.72E-02	2.45E-01	8.24E-02	1.52E+00	4.51E-01
Lead	1.40E-01	1.17E-02	2.44E-01	4.26E-02	1.76E-01	2.06E-02
Mercury	1.50E+00	1.96E-01	3.30E+00	2.71E-01	8.32E-01	3.29E-01
Nickel	4.23E-01	5.40E-03	7.57E-01	1.69E-01	6.73E-01	1.41E-01
Selenium	9.04E-01	2.02E-01	2.14E-01	1.58E-01	1.00E+00	1.00E+00
Zinc	5.46E-01	1.10E-01	2.06E+00	5.12E-01	2.18E+00	5.61E-01

Notes:
BAF - Bioaccumulation Factor
BSAF - Biota Sediment Accumulation Factor
1 - ORNL (2002) for organics; only one value is available for conservative and average exposures
2 - ORNL (1998) for inorganics; conservative value is 90th percentile; average value is median value
3 - ORNL (September, 1998) for all chemicals; conservative value is 90th percentile; average value is median value
4 - U.S. EPA, September 1997 was used for the organic chemicals; only one value is available for conservative and average exposures
5 - ORNL (August, 1998) was used for the metals; conservative value is 90th percentile; average value is median value
6 - Conservative and average refers to the exposure scenarios for which the uptake factors are used
7 - Sediment to fish BSAFs were used for the organics and sediment to invertebrate BSAFs were used for the metals; This was done because not sediment to fish BSAFs were available for metals so the invertebrate BSAFs were used as surrogates.

- The plant and soil invertebrate uptake factors from Sample (1997) and ORNL (September 1998) were multiplied by 0.3 and 0.16 to convert the uptake factors for plants and earthworms, respectively, from dry weight to wet weight
- The invertebrate BSAFs were multiplied by 0.29 to convert from dry weight to wet weight.
- Default value of 1 is assigned to parameters without uptake factors

APPENDIX H.2

SURROGATE SPECIES' RECEPTOR PROFILES

APPENDIX H.2

This appendix presents the receptor profiles for the meadow vole, American robin, short-tailed shrew, belted kingfisher, and the raccoon. The majority of the information for the profiles was obtained from the Wildlife Exposure Factors Handbook (EPA, 1993). The data for the incidental soil ingestion rates were obtained from the Estimates of Soil Ingestion by Wildlife (Beyer, 1993) except for the shrew which was in Talmage and Walton (undated). The exposure parameters that were selected for this SERA work plan are based on animals collected in or near southern Indiana, when available.

The food and water ingestion rates are presented in g/g (of body weight)-day on a wet weight basis. The home ranges are presented in hectares in EPA (1993) but were converted to acres in this SERA by multiplying the number of hectares by 2.471. Also note that the estimated percent of soil in the diets are listed in dry weight, while the other exposure factors are in wet weight. The soil dry weight was not converted to a wet weight in this SERA because the percent moisture of the soils is not known. Also, incidental soil ingestion is only a small portion of the overall diet (2.4 to 13 percent).

Table H.2-1 presents the calculation of the exposure parameters. Note that in this table the ingestion rates in kg/day (or L/day) for the conservative scenario was calculated by multiplying the maximum ingestion rate in g/g-day by the average body weight, while the ingestion rates in kg/day (or L/day) for the average scenario was calculated by multiplying the average ingestion rate in g/g-day by the average body weight. Typically, a minimum body weight is used in the conservative models. However, using the minimum body weight to calculate the maximum ingestion rate sometimes causes the conservative ingestion rate to be lower that the average ingestion rate. Therefore, the average body weight was selected to ensure that the ingestion rate for the conservative scenario was higher than the ingestion rate for the average scenario. The minimum body weight will be used in the dose equation for the conservative scenario. The only exception to this was for the water ingestion rates for the shrew and robin. Because only one ingestion rate was available, the maximum body weights were used to calculate the conservative ingestion rates and the average body weights were used to calculate the average ingestion rates.

Meadow Vole (*Microtus pennsylvanicus*)

Meadow voles inhabit grassy fields, marshes, and bogs; however, they prefer fields with more grass, more cover, and fewer woody plants. They typically consume green succulent vegetation, sedges,

seeds, roots, bark, fungi, insects, and animal matter. Green succulent vegetation makes up the majority of their diet.

The adult body weight for the vole in southern Indiana ranged from 0.0329 to 0.039 kg with an average of 0.0366 kg. The only listed food ingestion rates were for voles in Russia which ranged from 0.30 to 0.35 g/g-day, with an average of 0.325 g/g-day. The water ingestion rates are 0.14 (estimated) and 0.21 g/g-day, with an average of 0.175 g/g-day. Finally, the incidental soil ingestion rate was calculated by multiplying the ingestion rate by the percentage of soil that is incidentally ingested (2.4 percent) from Beyer, (1993).

The home range for the meadow vole was calculated using data from a Michigan old field. The values ranged from 0.0297 to 1.06 acres with an average home range of 0.164 acres.

American Robin (*Turdus migratorius*)

American robins habitats include parks, lawns, moist forests, swamps, open woodlands, and orchards. Robins forage on the ground in open areas, along habitat edges, or the edges of streams. They also may forage above ground in shrubs and within the lower branches of trees. In the months preceding and during the breeding season, robins feed primarily on invertebrates and on some fruits. During the rest of the year their diet consists primarily of fruits.

The adult body weight for the American robin in New York woodlands and forests, and in Pennsylvania ranged from 0.0773 to 0.0862 kg with an average of 0.081 kg. The only listed food ingestion rates were for robins in Kansas (1.52 g/g-day) and California (0.89 g/g-day), with an average of 0.1205 g/g-day. The water ingestion rate was estimated as 0.14 g/g-day. The incidental soil ingestion rate was calculated by multiplying the ingestion rate by the percentage of soil that is incidentally ingested (10.4 percent for the woodcock) from Beyer, (1993).

The home range for the robin was calculated using data from an Ontario forest. The values ranged from 0.37 to 2 acres with an average home range of 1.19 acres.

Northern Bobwhite Quail *(Colinus virginianus)*

Quails inhabit grasslands, idle fields, pastures, and large clumps of grasses. Bobwhites forage in areas with open vegetation, some bare ground, and light litter. Seeds from weeds, woody plants, and grasses comprise the majority of an adult's diet, although green vegetation has been found to dominate their diet in winter in the south.

The adult body weight for the bobwhite quail in southern Illinois agricultural areas ranged from 0.162 to 0.1855 kg with an average of 0.177 kg. The listed food ingestion rates are for quails in Kansas and Texas lab studies, and in a captive study from Massachusetts. The values ranged from 0.067 to 0.093 g/g-day, with an average of 0.082 g/g-day. The water ingestion rate was estimated as 0.10 and 0.11 g/g-day, and measured in a Texas lab (0.86 to 0.131 g/g-day), for an average water ingestion rate of 0.104 g/g-day. The incidental soil ingestion rate is calculated by multiplying the food ingestion rate by the percentage of soil that is incidentally ingested (0.082 percent for a Canada goose) from Beyer (1993).

The home range for the quail was calculated using data from southern Illinois idle farms, woods, brush, and cornfields. The values for individuals ranged from 15.8 to 41.3 acres with an average home range of 28.6 acres.

Short-Tailed Shrew (*Blarina brevicauda*)

Shrews inhabit a wide variety of habitats and are common in areas with abundant vegetative cover. They need cool, moist habitats because of their high metabolic and water-loss rates. The short-tailed shrew is primarily carnivorous, eating insects such as earthworms, slugs, and snails.

The adult body weight for the short-tailed shrew in various Pennsylvania habitats ranged from 0.01525 to 0.01921kg with an average of 0.01687 kg. The listed food ingestion rates are for shrews in labs on Ohio (0.49 g/g-day), Wisconsin (0.43 to 0.96 g/g-day), and Virginia (0.541 g/g-day), with an average of 0.61 g/g-day. The water ingestion rate was determined as 0.223 g/g-day in an Illinois laboratory. The incidental soil ingestion rate was calculated by multiplying the ingestion rate by the percentage of soil that is incidentally ingested (13 percent) from Talmage and Walton (undated).

The home range for the shrew was calculated using data from a tamarak bog in Manitoba (only value available). The value was 0.97 acres.

Raccoon (*Procyon lotor*)

Raccoons are found near virtually every aquatic habitat, particularly in hardwood swamps, mangroves, floodplain forests, and freshwater and saltwater marshes. They are also common in suburban residential areas. They use surface waters for both drinking and foraging. They feed primarily on fleshy fruits, nuts, acorns, and corn, but also eat grains, insects, frogs, crayfish, eggs, and virtually any animal and vegetable matter.

The adult body weights based on data from Illinois, range from 5.34 to 8.86 kg, with an average of 6.865 kg. The average food ingestion rate of 0.3347 kg/day was calculated using the average body weight and the following equation from EPA (1993):

$$FI = (0.0687)\ (BW^{0.822})/0.25$$

Where: FI = Food ingestion rate (kg/day)
BW = Body weight in kg

To convert the food ingestion rate into a dry weight value, the mean percent solids content of bony fish (0.25) was incorporated into the equation (Sample et al., 1997).

The range of water ingestion rates is listed as 0.082 to 0.083 g/g-day. The incidental soil ingestion rate is calculated by multiplying the ingestion rate by the percentage of soil that is incidentally ingestion (0.094), as presented in Beyer (1993).

Based on data from Michigan, home range sizes for the raccoon range from 266.9 to 504.1 acres for an average home range of 385.5 acres.

Belted Kingfisher *Ceryle alcyon)*

Belted kingfishers are typically found along rivers, streams, and the edges of lakes and ponds. They are also common along seacoasts and estuaries. They prefer water that is free of thick vegetation and overhanging trees that obscure the view of the water. Because kingfishers eat primarily fish that swim near the surface or in shallow water, they require relatively clear water to see and catch their prey. Although kingfishers feed predominantly on fish, they have been know to consume crayfish, crabs, mussels, lizards, frogs, toads, small snakes, turtles, insects, salamanders, newts, young birds, mice, and berries.

Based on data from Michigan, Pennsylvania, Ohio, and Minnesota, the adult body weights range from 0.136 to 0.170 kg, with an average of 0.152 kg. The listed food ingestion rates, based on data from Michigan, ranges from 0.41 to 0.5 g/g-day. The water ingestion rate is estimated as 0.11 g/g-day. The incidental sediment ingestion rate was calculated by multiplying the ingestion rate by the percentage of soil that is incidentally ingested (2 percent), based on the ring-necked duck presented in Beyer (1994).

The home range for the kingfisher ranges from 0.39 to 2.185 km of shoreline, based on data from streams in Pennsylvania and Ohio.

References

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TABLE H.2-1

CALCULATION OF EXPOSURE PARAMETERS FOR WILDLIFE RECEPTORS
NAVAL SURFACE WARFARE CENTER, CRANE, INDIANA

Exposure Parameters	Meadow Vole		Short-Tailed Shrew		American Robin	Bobwhite Quail		Raccoon		Belted Kingfisher
Body Weights (g)	32.9	35.5	17.61	16.87	77.3	180	181	7090	6160	150
	39.1	39	17.33	15.58	80.8	168	183	7140	6440	136
			19.21	15.7	86.2	162	179	7600	5340	158
			17.4	15.25	83.6	175	175	6000	5620	147
					77.4	178	183.2	6400	8860	148
					80.6	179	185.5	7740	7560	170
						180	173	6560	7600	
						162.8	180.4			
Minimum	***32.9***		***15.25***		***77.3***	***162***		***5340***		***136***
Maximum	***39.1***		***19.21***		***86.2***	***185.5***		***8860.0***		***170.0***
Average	***36.63***		***16.87***		***81.0***	***177***		***6865***		***152***
Food Ingestion Rate (g/g-day) [1]	0.3	0.35	0.49	0.77	0.89	0.067	0.079			0.5
			0.62	0.55	1.52	0.072	0.093			0.41
			0.43	0.96		0.09	0.089			
			0.52	0.54						
Minimum	***0.3***		***0.43***		***0.89***	***0.067***				***0.41***
Maximum	***0.35***		***0.96***		***1.52***	***0.093***				***0.5***
Average	***0.325***		***0.61***		***1.205***	***0.082***				***0.455***
Food Ingestion Rate (kg/day)										
Conservative	***0.0128***		***0.0162***		***0.1231***	***0.0164***		***1.6512***		***0.0758***
Average	***0.0119***		***0.0103***		***0.0976***	***0.0144***		***1.3388***		***0.0689***
Water Ingestion Rate (g/g-day)	0.14	0.21	0.223		0.14	0.115	0.1	0.082	0.083	0.11
						0.106	0.131			
						0.093	0.101			
						0.086	0.102			
						0.11	0.1			
Minimum	***0.14***		***0.223***		***0.14***	***0.086***		***0.082***		***0.11***
Maximum	***0.21***		***0.223***		***0.14***	***0.131***		***0.083***		***0.11***
Average	***0.175***		***0.223***		***0.14***	***0.104***		***0.083***		***0.110***
Water Ingestion Rate (L/day)										
Conservative	***0.0077***		***0.0043***		***0.0121***	***0.0231***		***0.5698***		***0.0187***
Average	***0.0064***		***0.0038***		***0.0113***	***0.0184***		***0.5664***		***0.0167***
Home Range (Ha) [2]	0.43	0.097	0.3925		0.15	7.6	6.4	204	108	2.185
	0.019	0.041			0.81	16.7	15.6			1.028
	0.013	0.033								1.03
	0.012	0.013								0.39
	0.043	0.057								
	0.023	0.032								
	0.051	0.078								
	0.058	0.061								
Minimum (acres) [2]	***0.0297***		***0.9699***		***0.37***	***15.8***		***266.9***		***0.39***
Maximum (acres) [2]	***1.06***		***0.97***		***2.00***	***41.3***		***504.1***		***2.19***
Average (acres) [2]	***0.164***		***0.970***		***1.19***	***28.6***		***385.5***		***1.16***

Notes:
Source of data is EPA, 1993.
1 - Food Ingestion Rate (kg/day) for the raccoon was calculated using the following equation:
$FI = (0.0687)(BW^{0.822})/0.25$, where FI = Food Ingestion Rate (kg/day) and BW = Body Weight (kg).
2 - Home range for the kingfisher is presented in km of shoreline.
Ingestion Rates (kg/day or L/day) (if more than 1 ingestion rate is available)
- Conservative value = Max Ingestion Rate (g/g-day)* Avg. Body Weight
- Average value = Avg. Ingestion Rate (g/g-day)*Avg. Body Weight

Ingestion Rates (L/day) (if only 1 ingestion rate is available)
- Conservative value = Ingestion Rate (g/g-day)* Max. Body Weight
- Average value = Ingestion Rate (g/g-day)*Avg. Body Weight

APPENDIX H.3

TOXICITY REFERENCE VALUES

TABLE H.3-1
EXPOSURE PARAMETERS FOR TEST SPECIES AND SURROGATE WILDLIFE SPECIES
NAVAL SURFACE WARFARE CENTER, CRANE, INDIANA

Species	Body Weight (kg)			Food Ingestion Rate (kg/day)		Water Ingestion Rate (L/day)		Soil/Sediment Ingestion Rate (kg/day)		Home Range (acres) [7]		
	Avg.	Min.	Max.	Avg.	Conserv.	Avg.	Conserv.	Avg.	Conserv.	Avg.	Min.	Max.
Potential Test Species[1]												
Rat[2]	0.35	NA	NA	NA		NA		NA		NA		
Old field mouse[3]	0.014	NA	NA	NA		NA		NA		NA		
Mouse[2]	0.03	NA	NA	NA		NA		NA		NA		
Rabbit	3.8	NA	NA	NA		NA		NA		NA		
Mink[4]	1	NA	NA	NA		NA		NA		NA		
Rhesus monkey[4]	5	NA	NA	NA		NA		NA		NA		
Beagle[2]	10	NA	NA	NA		NA		NA		NA		
Surrogate Wildlife Species [6]												
Bobwhite Quail	0.177	0.162	0.1855	0.0144	0.0164	0.0184	0.0231	0.001181	0.001345	28.6	15.8	41.3
American Robin	0.081	0.0773	0.0862	0.0976	0.1231	0.0113	0.0121	0.01015	0.012802	1.19	0.37	2
Short-Tailed Shrew	0.01687	0.01525	0.01921	0.0103	0.0162	0.0038	0.0043	0.001339	0.002106	0.97	0.97	0.97
Meadow Vole	0.03663	0.0329	0.0391	0.0119	0.0128	0.0064	0.0077	0.000286	0.000307	0.03	0.164	1.06
Raccoon	6.865	5.34	8.86	0.3347	0.4128	0.5664	0.5698	0.031462	0.038803	385.5	266.9	504.1
Belted Kingfisher	0.152	0.136	0.17	0.0689	0.0758	0.0167	0.0187	0.001378	0.001516	2.862	0.964	5.399

Notes:
See Table 8-6 for the exposure factors.
NA - Not Applicable
1 - Only one value was provided so it was placed in the average column and some generic body weights may have been replaced by study-specific body weights.
2 - U.S. EPA, 1998
3 - Silva and Downing, 1996
5 - Barsotti et al, 1976
4 - U.S. EPA 1993
6 - Source is U.S. EPA, 1993 for all factors except soil ingestion; Beyer (1993) or Talmage and Walton (in press) for soil ingestion rates.
7 - Home range for the kingfisher is presented in km of shoreline.

APPENDIX H.3

DERIVATIONS OF MAMMAL TRVS
USING MAXIMUM BODY WEIGHT
NAVAL SURFACE WARFARE CENTER, CRANE, INDIANA

Parameter[3]	Mammals				Short-tailed Shrew		Meadow Vole		Raccoon		Brown Bat	
	NOAEL	LOAEL	Test Species	Body Weight (kg)	NOAEL	LOAEL	NOAEL	LOAEL	NOAEL	LOAEL	NOAEL	LOAEL
SEMIVOLATILES (mg/kg)												
2,2'-Oxybis(1-chloropropane)	NV	NV	NA	NA								
2,4-D	1	5	rat	0.35	2.1	10.3	1.7	8.6	0.4	2.2	2.4	12.1
2,4,5-Trichlorophenol	10	30	rat	0.35	20.7	62.0	17.3	51.9	4.5	13.4	24.1	72.4
2,4,5-T	3	10	rat	0.35	6.2	20.7	5.2	17.3	1.3	4.5	7.2	24.1
2,4,6-Trichlorophenol	0.42	4.2	rat	0.35	0.87	8.68	0.73	7.3	0.19	1.9	1.0	10.1
2-Methylnaphthalene	7	179	rat	0.35	14.5	369.8	12.1	309.6	3.1	79.8	16.9	432.2
2-Methylphenol	5	15	rat	0.35	10.3	31.0	8.6	25.9	2.2	6.7	12.1	36.2
4-Nitroaniline	NV	NV	NA	NA								
4-Nitrophenol	NV	NV	NA	NA								
Acenaphthene	17.5	35	mouse	0.03	19.6	39.1	16.4	32.8	4.2	8.4	22.9	45.7
Acenaphthylene	1	10	mouse	0.03	1.1	11.2	0.9	9.4	0.2	2.4	1.3	13.1
Anthracene	100	1000	mouse	0.03	112	1118	94	935.9	24	241	131	1306
Benzo(a)anthracene	1	10	mouse	0.03	1.1	11.2	0.94	9.4	0.24	2.4	1.3	13.1
Benzo(a)pyrene	1	10	mouse	0.03	1.1	11.2	0.94	9.4	0.24	2.4	1.3	13.1
Benzo(b)fluoranthene	1	10	mouse	0.03	1.1	11.2	0.94	9.4	0.24	2.4	1.3	13.1
Benzo(g,h,i)perylene	1	10	mouse	0.03	1.1	11.2	0.94	9.4	0.24	2.4	1.3	13.1
Benzo(k)fluoranthene	1	10	mouse	0.03	1.1	11.2	0.94	9.4	0.24	2.4	1.3	13.1
Bis(2-Ethylhexyl)phthalate	18.3	183	mouse	0.03	20.5	205	17.1	171.3	4.4	44.1	23.9	239
Butylbenzyl Phthalate	159	470	rat	0.35	328	971	275	813.0	71	210	384	1135
Carbazole	1	10	mouse	0.03	1.1	11.2	0.94	9.4	0.24	2.4	1.3	13.1
Chrysene	1	10	mouse	0.03	1.1	11.2	0.94	9.4	0.24	2.4	1.3	13.1
Dibenzo(a,h)anthracene	1	10	mouse	0.03	1.1	11.2	0.94	9.4	0.24	2.4	1.3	13.1
Dibenzofuran	NV	NV	NA	NA								
Diethyl Phthalate	4583	45830	mouse	0.03	5123	51233	4289	42893.0	1106	11055	5987	59872
Di-n-butyl phthalate	550	1833	mouse	0.03	615	2049	515	1715.5	133	442	719	2395
Di-n-octyl phthalate	NV	NV	NA	NA								
Dinoseb	0.1	1	rat	0.35	0.21	2.07	0.17	1.7	0.04	0.45	0.24	2.41
Fluoranthene	12.5	25	mouse	0.03	14.0	27.9	11.7	23.4	3.0	6.0	16.3	32.7
Fluorene	12.5	25	mouse	0.03	14.0	27.9	11.7	23.4	3.0	6.0	16.3	32.7
Hexachloroethane	0.1	1.5	rat	0.35	0.21	3.1	0.17	2.6	0.04	0.67	0.24	3.6
Indeno(1,2,3-cd)pyrene	1	10	mouse	0.03	1.1	11.2	0.94	9.4	0.24	2.4	1.3	13.1
Isophorone	15	179	beagle	10	71.6	855	60.0	715.8	15.5	184	83.7	999
Naphthalene	7.1	14.2	rat	0.35	14.7	29.3	12.3	24.6	3.2	6.3	17.1	34.3
Phenanthrene	1	10	mouse	0.03	1.1	11.2	0.9	9.4	0.2	2.4	1.3	13.1
Phenol	6	12	rat	0.35	12.4	24.8	10.4	20.8	2.7	5.3	14.5	29.0
Pyrene	7.5	12.5	mouse	0.03	8.4	14.0	7.0	11.7	1.8	3.0	9.8	16.3

APPENDIX H.3

DERIVATIONS OF MAMMAL TRVS
USING MAXIMUM BODY WEIGHT
NAVAL SURFACE WARFARE CENTER, CRANE, INDIANA

Parameter[3]	Mammals				Short-tailed Shrew		Meadow Vole		Raccoon		Brown Bat	
	NOAEL	LOAEL	Test Species	Body Weight (kg)	NOAEL	LOAEL	NOAEL	LOAEL	NOAEL	LOAEL	NOAEL	LOAEL
PESTICIDES/PCBs (mg/kg)												
4,4'-DDD	0.8	4	rat	0.35	1.7	8.3	1.4	6.9	0.36	1.8	1.9	9.7
4,4'-DDE	0.8	4	rat	0.35	1.7	8.3	1.4	6.9	0.36	1.8	1.9	9.7
4,4'-DDT	0.8	4	rat	0.35	1.7	8.3	1.4	6.9	0.36	1.8	1.9	9.7
Aldrin	0.2	1	rat	0.35	0.41	2.1	0.35	1.7	0.09	0.45	0.48	2.4
alpha-BHC	0.014	0.14	mink	1	0.04	0.38	0.03	0.3	0.01	0.08	0.04	0.44
Alpha-Chlordane	4.58	9.16	mouse	0.03	5.1	10.2	4.3	8.6	1.1	2.2	6.0	12.0
Aroclor-1232	0.068	0.68	Oldfield mouse	0.014	0.06	0.63	0.05	0.5	0.01	0.14	0.07	0.73
Aroclor-1242	0.069	0.69	mink	1	0.19	1.9	0.16	1.6	0.04	0.4	0.2	2.2
Aroclor-1248	0.01	0.1	Rhesus monkey	5	0.04	0.40	0.03	0.3	0.01	0.09	0.05	0.47
Aroclor-1254	0.068	0.68	Oldfield mouse	0.014	0.06	0.63	0.05	0.5	0.01	0.14	0.07	0.73
Aroclor-1260	0.068	0.68	Oldfield mouse	0.014	0.06	0.63	0.05	0.5	0.01	0.14	0.07	0.73
beta-BHC	0.4	2	rat	0.35	0.83	4.1	0.69	3.5	0.18	0.89	0.97	4.83
delta-BHC	1.6	3.2	rat	0.35	3.3	6.6	2.8	5.5	0.7	1.4	3.9	7.7
Dieldrin	0.02	0.2	rat	0.35	0.04	0.41	0.03	0.3	0.01	0.09	0.05	0.48
Endosulfan I	0.15	1.5	rat	0.35	0.31	3.1	0.26	2.6	0.07	0.67	0.36	3.6
Endosulfan II	0.15	1.5	rat	0.35	0.31	3.1	0.26	2.6	0.07	0.67	0.36	3.6
Endosulfan Sulfate	0.15	1.5	rat	0.35	0.31	3.1	0.26	2.6	0.07	0.67	0.36	3.6
Endrin	0.092	0.92	mouse	0.03	0.10	1.0	0.09	0.9	0.02	0.22	0.12	1.2
Endrin Aldehyde	0.092	0.92	mouse	0.03	0.10	1.0	0.09	0.9	0.02	0.22	0.12	1.2
Endrin Ketone	0.092	0.92	mouse	0.03	0.10	1.0	0.09	0.9	0.02	0.22	0.12	1.2
Gamma-BHC (Lindane)	8	80	rat	0.35	16.5	165.3	13.8	138.4	3.6	35.7	19.3	193.2
Gamma-Chlordane	4.58	9.16	mouse	0.03	5.1	10.2	4.3	8.6	1.1	2.2	6.0	12.0
Heptachlor	0.1	1	mink	1	0.27	2.7	0.22	2.2	0.06	0.58	0.31	3.1
Heptachlor Epoxide	0.1	1	mink	1	0.27	2.7	0.22	2.2	0.06	0.58	0.31	3.1
Methoxychlor	4	8	rat	0.35	8.3	16.5	6.9	13.8	1.8	3.6	9.7	19.3
Toxaphene	8	80	rat	0.35	16.5	165	13.8	138.4	3.6	35.7	19.3	193
DIOXINS AND FURANS (mg/kg)												
1,2,3,4,6,7,8-HpCDD	0.0016	0.016	rat	0.35	3.3E-03	3.3E-02	2.8E-03	2.8E-02	7.1E-04	7.1E-03	3.9E-03	3.9E-02
1,2,3,4,6,7,8-HpCDF	0.0016	0.016	rat	0.35	3.3E-03	3.3E-02	2.8E-03	2.8E-02	7.1E-04	7.1E-03	3.9E-03	3.9E-02
1,2,3,4,7,8,9-HPCDF	0.0016	0.016	rat	0.35	3.3E-03	3.3E-02	2.8E-03	2.8E-02	7.1E-04	7.1E-03	3.9E-03	3.9E-02
1,2,3,4,7,8-HXCDD	0.00016	0.0016	rat	0.35	3.3E-04	3.3E-03	2.8E-04	2.8E-03	7.1E-05	7.1E-04	3.9E-04	3.9E-03
1,2,3,4,7,8-HxCDF	0.00016	0.0016	rat	0.35	3.3E-04	3.3E-03	2.8E-04	2.8E-03	7.1E-05	7.1E-04	3.9E-04	3.9E-03
1,2,3,6,7,8-HxCDD	0.00016	0.0016	rat	0.35	3.3E-04	3.3E-03	2.8E-04	2.8E-03	7.1E-05	7.1E-04	3.9E-04	3.9E-03
1,2,3,6,7,8-HxCDF	0.00016	0.0016	rat	0.35	3.3E-04	3.3E-03	2.8E-04	2.8E-03	7.1E-05	7.1E-04	3.9E-04	3.9E-03
1,2,3,7,8,9-HxCDD	0.00016	0.0016	rat	0.35	3.3E-04	3.3E-03	2.8E-04	2.8E-03	7.1E-05	7.1E-04	3.9E-04	3.9E-03
1,2,3,7,8,9-HXCDF	0.00016	0.0016	rat	0.35	3.3E-04	3.3E-03	2.8E-04	2.8E-03	7.1E-05	7.1E-04	3.9E-04	3.9E-03
2,3,4,6,7,8-HxCDF	0.00016	0.0016	rat	0.35	3.3E-04	3.3E-03	2.8E-04	2.8E-03	7.1E-05	7.1E-04	3.9E-04	3.9E-03
1,2,3,7,8-PECDD	0.000001	0.00001	rat	0.35	2.1E-06	2.1E-05	1.7E-06	1.7E-05	4.5E-07	4.5E-06	2.4E-06	2.4E-05

APPENDIX H.3

DERIVATIONS OF MAMMAL TRVS
USING MAXIMUM BODY WEIGHT
NAVAL SURFACE WARFARE CENTER, CRANE, INDIANA

Parameter[3]	Mammals				Short-tailed Shrew		Meadow Vole		Raccoon		Brown Bat	
	NOAEL	LOAEL	Test Species	Body Weight (kg)	NOAEL	LOAEL	NOAEL	LOAEL	NOAEL	LOAEL	NOAEL	LOAEL
1,2,3,7,8-PECDF	0.00016	0.0016	rat	0.35	3.3E-04	3.3E-03	2.8E-04	2.8E-03	7.1E-05	7.1E-04	3.9E-04	3.9E-03
2,3,4,7,8-PECDF	0.000016	0.00016	rat	0.35	3.3E-05	3.3E-04	2.8E-05	2.8E-04	7.1E-06	7.1E-05	3.9E-05	3.9E-04
2,3,7,8-TCDD	0.000001	0.00001	rat	0.35	2.1E-06	2.1E-05	1.7E-06	1.7E-05	4.5E-07	4.5E-06	2.4E-06	2.4E-05
2,3,7,8-TCDF	0.00001	0.0001	rat	0.35	2.1E-05	2.1E-04	1.7E-05	1.7E-04	4.5E-06	4.5E-05	2.4E-05	2.4E-04
1,2,3,4,6,7,8,9-OCDD	0.01	0.1	rat	0.35	2.1E-02	2.1E-01	1.7E-02	1.7E-01	4.5E-03	4.5E-02	2.4E-02	2.4E-01
1,2,3,4,6,7,8,9-OCDF	0.01	0.1	rat	0.35	2.1E-02	2.1E-01	1.7E-02	1.7E-01	4.5E-03	4.5E-02	2.4E-02	2.4E-01
TOTAL HpCDD	0.0016	0.016	rat	0.35	3.3E-03	3.3E-02	2.8E-03	2.8E-02	7.1E-04	7.1E-03	3.9E-03	3.9E-02
TOTAL HxCDD	0.00016	0.0016	rat	0.35	3.3E-04	3.3E-03	2.8E-04	2.8E-03	7.1E-05	7.1E-04	3.9E-04	3.9E-03
TOTAL PeCDD	0.000001	0.00001	rat	0.35	2.1E-06	2.1E-05	1.7E-06	1.7E-05	4.5E-07	4.5E-06	2.4E-06	2.4E-05
Total HpCDF	0.0016	0.016	rat	0.35	3.3E-03	3.3E-02	2.8E-03	2.8E-02	7.1E-04	7.1E-03	3.9E-03	3.9E-02
Total HxCDF	0.00016	0.0016	rat	0.35	3.3E-04	3.3E-03	2.8E-04	2.8E-03	7.1E-05	7.1E-04	3.9E-04	3.9E-03
Total PeCDF	0.000016	0.00016	rat	0.35	3.3E-05	3.3E-04	2.8E-05	2.8E-04	7.1E-06	7.1E-05	3.9E-05	3.9E-04
Total TCDD	0.000001	0.00001	rat	0.35	2.1E-06	2.1E-05	1.7E-06	1.7E-05	4.5E-07	4.5E-06	2.4E-06	2.4E-05
Total TCDF	0.00001	0.0001	rat	0.35	2.1E-05	2.1E-04	1.7E-05	1.7E-04	4.5E-06	4.5E-05	2.4E-05	2.4E-04
EXPLOSIVES (mg/kg)												
1,3 Dinitrobenzene	0.04	0.107	rat	0.35	0.08	0.22	0.07	0.2	0.02	0.05	0.10	0.26
1,3,5-Trinitrobenzene	2.64	13.31	rat	0.35	5.5	27.5	4.6	23.0	1.2	5.9	6.4	32.1
2,4-Dinitrotoluene	0.2	1.5	beagle	10	1.0	7.2	0.80	6.0	0.21	1.5	1.1	8.4
2,4,6-Trinitrotoluene	1.6	16	rat	0.35	3.31	33.1	2.8	27.7	0.71	7.1	3.9	38.6
2-Amino-4,6-dinitrotoluene	NV	NV	NA	NA								
2-Nitrotoluene	20	200	rat	0.35	41.3	413	34.6	345.9	8.9	89.2	48.3	483
3-Nitrotoluene	20	200	rat	0.35	41.3	413	34.6	345.9	8.9	89.2	48.3	483
4-Amino-2,6-dinitrotoluene	NV	NV	NA	NA								
4-Nitrotoluene	20	200	rat	0.35	41.3	413	34.6	345.9	8.9	89.2	48.3	483
Ammonia	NV	NV	NA	NA								
HMX	3	7.5	mouse	0.03	3.4	8.4	2.8	7.0	0.7	1.8	3.9	9.8
Nitrobenzene (exp)	NV	NV	NA	NA								
RDX	7	35	mouse	0.03	7.8	39.1	6.6	32.8	1.7	8.4	9.1	45.7
Tetryl	1.3	13	rat	0.35	2.7	26.9	2.2	22.5	0.58	5.8	3.1	31.4
INORGANICS (mg/kg)												
Aluminum	1.93	19.3	mouse	0.03	2.2	21.6	1.8	18.1	0.5	4.7	2.5	25.2
Antimony	0.125	1.25	mouse	0.03	0.14	1.4	0.12	1.2	0.03	0.30	0.16	1.6
Arsenic	0.126	1.26	mouse	0.03	0.14	1.4	0.12	1.2	0.03	0.30	0.16	1.6
Barium	5.1	19.8	rat	0.435/0.35[1]	11.1	40.9	9.3	34.2	2.4	8.8	13.0	47.8
Beryllium	0.66	6.6	rat	0.35	1.4	13.6	1.1	11.4	0.3	2.9	1.6	15.9
Cadmium	1	10	rat	0.303	2.0	19.9	1.7	16.7	0.4	4.3	2.3	23.3
Chromium	3.28	13.14	rat	0.35	6.8	27.1	5.7	22.7	1.5	5.9	7.9	31.7
Hexavalent Chromium	3.28	13.14	rat	0.35	6.8	27.1	5.7	22.7	1.5	5.9	7.9	31.7
Cobalt	1.2	12	rat	0.35	2.5	24.8	2.1	20.8	0.5	5.3	2.9	29.0

APPENDIX H.3

DERIVATIONS OF MAMMAL TRVS
USING MAXIMUM BODY WEIGHT
NAVAL SURFACE WARFARE CENTER, CRANE, INDIANA

Parameter[3]	Mammals				Short-tailed Shrew		Meadow Vole		Raccoon		Brown Bat	
	NOAEL	LOAEL	Test Species	Body Weight (kg)	NOAEL	LOAEL	NOAEL	LOAEL	NOAEL	LOAEL	NOAEL	LOAEL
Copper	11.71	15.14	mink	1	31.5	40.7	26.3	34.0	6.8	8.8	36.8	47.5
Cyanide	68.7	687	rat	0.273	133	1334	112	1116.7	29	288	156	1559
Iron	50	500	rabbit	3.8	188	1875	157	1569.9	40	405	219	2191
Lead	8	80	rat	0.35	16.5	165	13.8	138.4	3.6	35.7	19.3	193
Manganese	88	284	rat	0.35	182	587	152	491.2	39	127	212	686
Mercury	0.015	0.025	mink	1	0.0	0.1	0.0	0.1	0.0	0.0	0.0471	0.0785
Nickel	40	80	rat	0.35	82.6	165	69.2	138.4	17.8	35.7	96.6	193.2
Selenium	0.2	0.33	rat	0.35	0.4	0.7	0.3	0.6	0.1	0.1	0.5	0.8
Silver	1.81	18.1	mouse	0.03	2.0	20.2	1.7	16.9	0.4	4.4	2.4	23.6
Thallium	0.0074	0.074	rat	0.365	0.0	0.2	0.0	0.1	0.0	0.0	0.0	0.2
Vanadium	0.21	2.1	rat	0.26	0.4	4.0	0.3	3.4	0.1	0.9	0.5	4.7
Zinc	160	320	rat	0.35	330.6	661	277	553.5	71.3	143	386	773

Notes:
NV - No Value Established
1 - Two separate studies were performed. The average body weight was 0.435 for the NOAEL and 0.35 for the LOAEL.

2 - The sources of these NOAELS and LOAELS are presented in the table titled "Sources and Endpoints for NOAELS and LOAELS for Terrestrial Wildlife" in this appendix. The NOAELS and LOAELS in the source table were divided by 10 if a subchronic study was the basis for the value. Also, if only a NOAEL was available, the value was multiplied by 10 to estimate the LOAEL and if only a LOAEL was available, the value was divided by 10 to estimate the NOAEL

3 - Note that all of the parameters listed on this table may not have been included in the Food Chain Models for SWMU 3.

Derivation NOAEL/LOAEL Equation:
Derived NOAEL = NOAEL*(test species body weight/surrogate species maximum body weight)^0.25
Derived LOAEL = LOAEL*(test species body weight/surrogate species maximum body weight)^0.25

Maximum body weight for surrogate wildlife species can be found in Appendix H.2.

TRV = Toxicity Reference Value
NOAEL = No Observed Adverse Effect Level
LOAEL = Lowest Observed Adverse Effect Level
NV = No Value
NA = Not Applicable

APPENDIX H.3

NOAELS AND LOAELS FOR BIRDS
NAVAL SURFACE WARFARE CENTER, CRANE, INDIANA

Parameter[2]	Birds[1] NOAEL (mg/kg-day)	Birds[1] LOAEL (mg/kg-day)
SEMIVOLATILES		
2,2'-Oxybis(1-chloropropane)	NV	NV
2,4-D	NV	NV
2,4,5-Trichlorophenol	NV	NV
2,4,5-T	NV	NV
2,4,6-Trichlorophenol	NV	NV
2-Methylnaphthalene	2	20
2-Methylphenol	NV	NV
4-Nitroaniline	NV	NV
4-Nitrophenol	NV	NV
Acenaphthene	2	20
Acenaphthylene	2	20
Anthracene	2	20
Benzo(a)anthracene	2	20
Benzo(a)pyrene	2	20
Benzo(b)fluoranthene	2	20
Benzo(g,h,i)perylene	2	20
Benzo(k)fluoranthene	2	20
Bis(2-Ethylhexyl)phthalate	1.11	11.1
Butylbenzyl Phthalate	NV	NV
Carbazole	2	20
Chrysene	2	20
Dibenzo(a,h)anthracene	2	20
Dibenzofuran	NV	NV
Diethyl Phthalate	1.11	11.1
Di-n-butyl phthalate	0.11	1.1
Di-n-octyl phthalate	NV	NV
Fluoranthene	2	20
Fluorene	2	20
Hexachloroethane	NV	NV
Indeno(1,2,3-cd)pyrene	2	20
Isophorone	NV	NV
Naphthalene	2	20
Phenanthrene	2	20
Phenol	NV	NV
Pyrene	2	20
PESTICIDES/PCBs		
4,4'-DDD	0.0028	0.028
4,4'-DDE	0.0028	0.028
4,4'-DDT	0.0028	0.028
Aldrin	NV	NV
alpha-BHC	0.56	2.25
Alpha-Chlordane	2.14	10.7
Aroclor-1232	0.18	1.8
Aroclor-1242	0.41	4.1

APPENDIX H.3

NOAELS AND LOAELS FOR BIRDS
NAVAL SURFACE WARFARE CENTER, CRANE, INDIANA

Parameter[2]	Birds[1] NOAEL (mg/kg-day)	Birds[1] LOAEL (mg/kg-day)
Aroclor-1248	NV	NV
Aroclor-1254	0.18	1.8
Aroclor-1260	0.18	1.8
beta-BHC	0.56	2.25
delta-BHC	0.56	2.25
Dieldrin	0.077	0.77
Endosulfan I	10	100
Endosulfan II	10	100
Endosulfan Sulfate	10	100
Endrin	0.01	0.1
Endrin Aldehyde	0.01	0.1
Endrin Ketone	0.01	0.1
Gamma-BHC (Lindane)	2	20
Gamma-Chlordane	2.14	10.7
Heptachlor	NV	NV
Heptachlor Epoxide	NV	NV
Methoxychlor	NV	NV
Toxaphene	NV	NV
DIOXINS AND FURANS		
1,2,3,4,6,7,8-HpCDD	0.014	0.14
1,2,3,4,6,7,8-HpCDF	0.0014	0.014
1,2,3,4,7,8,9-HPCDF	0.0014	0.014
1,2,3,4,7,8-HXCDD	0.00028	0.0028
1,2,3,4,7,8-HxCDF	0.00014	0.0014
1,2,3,6,7,8-HxCDD	0.0014	0.014
1,2,3,6,7,8-HxCDF	0.00014	0.0014
1,2,3,7,8,9-HXCDF	0.00014	0.0014
1,2,3,7,8,9-HxCDD	0.00014	0.0014
1,2,3,4,6,7,8,9-OCDD	0.14	1.4
1,2,3,4,6,7,8,9-OCDF	0.14	1.4
2,3,4,6,7,8-HxCDF	0.00014	0.0014
1,2,3,7,8-PECDD	0.000014	0.00014
1,2,3,7,8-PECDF	0.00014	0.0014
2,3,4,7,8-PECDF	0.000014	0.00014
2,3,7,8-TCDD	0.000014	0.00014
2,3,7,8-TCDF	0.000014	0.00014
OCDD	0.14	1.4
OCDF	0.14	1.4
TOTAL HpCDD	0.014	0.14
TOTAL HxCDD	0.00014	0.0014
TOTAL PeCDD	0.000014	0.00014
Total HpCDF	0.0014	0.014
Total HxCDF	0.00014	0.0014
Total PeCDF	0.000014	0.00014
Total TCDD	0.000014	0.00014

APPENDIX H.3

NOAELS AND LOAELS FOR BIRDS
NAVAL SURFACE WARFARE CENTER, CRANE, INDIANA

Parameter[2]	Birds[1] NOAEL (mg/kg-day)	Birds[1] LOAEL (mg/kg-day)
Total TCDF	0.000014	0.00014
EXPLOSIVES		
1,3 Dinitrobenzene	NV	NV
1,3,5-Trinitrobenzene	NV	NV
2,4-Dinitrotoluene	NV	NV
2,4,6-Trinitrotoluene	NV	NV
2-Amino-4,6-dinitrotoluene	NV	NV
2-Nitrotoluene	NV	NV
3-Nitrotoluene	NV	NV
4-Amino-2,6-dinitrotoluene	NV	NV
4-Nitrotoluene	NV	NV
Ammonia	NV	NV
HMX	NV	NV
Nitrobenzene (exp)	NV	NV
RDX	NV	NV
Tetryl	NV	NV
INORGANICS		
Aluminum	109.7	1097
Antimony	NV	NV
Arsenic	2.46	7.38
Barium	20.8	41.7
Beryllium	NV	NV
Cadmium	1.45	20
Chromium	1	5
Hexavalent Chromium	1	5
Cobalt	NV	NV
Copper	46.97	61.72
Cyanide	NV	NV
Iron	100	1000
Lead	1.13	11.3
Manganese	997	9970
Mercury	0.0064	0.064
Nickel	77.4	107
Selenium	0.4	0.8
Silver	NV	NV
Thallium	NV	NV
Vanadium	11.38	113.8
Zinc	14.49	130.9

1 - The sources of these NOAELS and LOAELS are presented in the table titled "Sources and Endpoints for NOAELS and LOAELS for Terrestrial Wildlife" in this appendix. The NOAELS and LOAELS in the source table were divided by 10 if a subchronic study was the basis for the value. Also, if only a NOAEL was available, the value was multiplied by 10 to estimate the LOAEL and if only a LOAEL was available, the value was divided by 10 to estimate the NOAEL

APPENDIX H.3

NOAELS AND LOAELS FOR BIRDS
NAVAL SURFACE WARFARE CENTER, CRANE, INDIANA

Parameter[2]	Birds[1]	
	NOAEL (mg/kg-day)	LOAEL (mg/kg-day)

2 - Note that all of the parameters listed on this table may not have been included in the Food Chain Models for SWMU 3.

NOAEL = No Observed Adverse Effect Level
LOAEL = Lowest Observed Adverse Effect Level

APPENDIX H.3

SOURCES AND ENDPOINTS FOR NOAELS AND LOAELS FOR TERRESTRIAL WILDLIFE

Parameters	Concentration (mg/kg-day)	Endpoint	Effect	Chronic/ Subchronic	Species	Primary Reference	Source of Reference
Semivolatiles Organics							
Acenaphthene	175	NOAEL	systemic	subchronic	mouse	USEPA, 1989a	IRIS, 2001
Acenaphthene	350	LOAEL	systemic	subchronic	mouse	USEPA, 1989a	IRIS, 2001
Acenaphthylene	700	NOAEL	mortality/BW	subchronic	mouse	**USEPA, 1989a**	PRC, 1996
Anthracene	1000	NOAEL	systemic	subchronic	mouse	USEPA, 1989b	IRIS, 2001
Anthracene	1000	NOAEL	reproductive	Subchronic	mouse	USEPA, 1989b	IT Corp, 1997
Benzo(a)anthracene	17.1	NOAEL	carcinogenic	acute	mouse	Clayson et al., 1968	PRC, 1996
Benzo(a)pyrene	10	LOAEL	reproductive	chronic	mouse	Mackenzie and Angevine, 1981	Sample et.al., 1996
Benzo(b)fluoranthene	40	LOAEL	carcinogenic	chronic	rodent	Lo and Sandi, 1978	PRC, 1996
Benzo(g,h,i)perylene	72	LOAEL	carcinogenic	chronic	rodent	Simms and Overcash, 1983	PRC, 1996
Bis(2-ethylhexyl)phthalate	18.33	NOAEL	reproductive	chronic	mouse	Lamb et al., 1987	Sample et.al., 1996
Bis(2-ethylhexyl)phthalate	183.3	LOAEL	reproductive	chronic	mouse	Lamb et al., 1987	Sample et.al., 1996
Bis(2-ethylhexyl)phthalate	1.11	NOAEL	reproductive	chronic	ringed dove	Peakall, 1974	Sample et.al., 1996
Chrysene	17.1	NOAEL	carcinogenic	acute	mouse	Clayson et al., 1968	PRC, 1996
Dibenzo(a,h)anthracene	13.3	LOAEL	carcinogenic	chronic	mouse	Lorenz and Stewart, 1948	PRC, 1996
Di-n-butylphthalate	550	NOAEL	reproductive	chronic	mouse	Lamb et al., 1987	Sample et.al., 1996
Di-n-butylphthalate	1833	LOAEL	reproductive	chronic	mouse	Lamb et al., 1987	Sample et.al., 1996
Di-n-butylphthalate	1.11	LOAEL	reproductive	chronic	ringed dove	Peakall, 1974	Sample et.al., 1996
Fluoranthene	125	NOAEL	systemic	subchronic	mouse	USEPA, 1988	IRIS, 2001
Fluoranthene	250	LOAEL	systemic	subchronic	mouse	USEPA, 1988	IRIS, 2001
Fluorene	125	NOAEL	systemic	subchronic	mouse	USEPA, 1988	IRIS, 2001
Fluorene	250	LOAEL	systemic	subchronic	mouse	USEPA, 1988	IRIS, 2001
Fluorene	125		systemic		mouse	USEPA, 1989c	PRC, 1996
Indeno(1,2,3-cd)pyrene	72	LOAEL	carcinogenic	chronic	rodent	Simms and Overcash, 1983	PRC, 1996
2-Methylnaphthalene	41	NOAEL	mortality	chronic	rat	Schmahl, 1955	Used naphthalene value
Naphthalene	71	NOAEL	systemic	subchronic	rat	BCL, 1980	IRIS, 2001
Naphthalene	142	LOAEL	systemic	subchronic	rat	BCL, 1980	IRIS, 2001
Pyrene	75	NOAEL	systemic	subchronic	mouse	USEPA, 1989c	IRIS, 2001
Pyrene	125	LOAEL	systemic	subchronic	mouse	USEPA, 1989c	IRIS, 2001
Herbicides							
Dinoseb	1	LOAEL	reproductive	chronic	rat	Dow Chemical, 1981a	IRIS, 2001
2,4-D	1	NOAEL	systemic	chronic	rat	Dow Chemical, 1983	IRIS, 2001
2,4-D	5	LOAEL	systemic	chronic	rat	Dow Chemical, 1983	IRIS, 2001
2,4,5-T	3	NOAEL	reproductive	chronic	rat	Kociba et al, 1979	IRIS, 2001
2,4,5-T	10	LOAEL	reproductive	chronic	rat	Kociba et al, 1979	IRIS, 2001
Pesticides							
Methoxychlor	4	NOAEL	reproduction	chronic	rat	Gray et al., 1988	Sample et.al., 1996
Methoxychlor	8	LOAEL	reproduction	chronic	rat	Gray et al., 1988	Sample et.al., 1996
Dioxins/Furans							
1,2,3,6,7,8-HXCDF	0.0016	NOAEL	systemic	subchronic	rat	Poiger et al., 1989	Sample et.al., 1996
1,2,3,6,7,8-HXCDF	0.016	LOAEL	systemic	subchronic	rat	Poiger et al., 1989	Sample et.al., 1996
1,2,3,7,8-PCDF	0.0016	NOAEL	systemic	subchronic	rat	Poiger et al., 1989	Sample et.al., 1996
1,2,3,7,8-PCDF	0.016	LOAEL	systemic	subchronic	rat	Poiger et al., 1989	Sample et.al., 1996
2,3,4,7,8-PCDF	0.00016	NOAEL	systemic	subchronic	rat	Poiger et al., 1989	Sample et.al., 1996
2,3,4,7,8-PCDF	0.0016	LOAEL	systemic	subchronic	rat	Poiger et al., 1989	Sample et.al., 1996
2,3,7,8-TCDD	0.000001	NOAEL	reproduction	chronic	rat	Murray et al., 1979	Sample et.al., 1996
2,3,7,8-TCDD	0.00001	LOAEL	reproduction	chronic	rat	Murray et al., 1979	Sample et.al., 1996
2,3,7,8-TCDD	0.000014	NOAEL	reproduction	chronic	pheasant	Nosek et al., 1992	Sample et.al., 1996
2,3,7,8-TCDD	0.00014	LOAEL	reproduction	chronic	pheasant	Nosek et al., 1992	Sample et.al., 1996
Explosives							
2,4-Dinitrotoluene	0.2	NOAEL	neurotoxicity	chronic	dog	Ellis et al., 1985	IRIS, 2001
2,4-Dinitrotoluene	1.5	LOAEL	neurotoxicity	chronic	dog	Ellis et al., 1985	IRIS, 2001
m, o, and p-Nitrotoluene	200	LOAEL	systemic	chronic	rat	Ciss et al., 1980	USEPA, 1997 (HEAST)
HMX	30	NOAEL	mortality	subchronic	mouse	Everett and Maddock, 1985	Talmage et al., 1999
HMX	75	LOAEL	mortality	subchronic	mouse	Everett and Maddock, 1985	Talmage et al., 1999
RDX	7	NOAEL	reproduction	chronic	mouse	Lish et al., 1984	Talmage et al., 1999
RDX	35	LOAEL	reproduction	chronic	mouse	Lish et al., 1984	Talmage et al., 1999
1,3,5-Trinitrobenzene	2.64	NOAEL	systemic	chronic	rat	Reddy et al, 1996	IRIS, 2001
1,3,5-Trinitrobenzene	13.31	LOAEL	systemic	chronic	rat	Reddy et al, 1996	IRIS, 2001
2,4,6-Trinitrotoluene	160	LOAEL	reproductive	subchronic	rat	Dilley et al., 1982	Talmage et al., 1999
Inorganics							
Aluminum	109.7	NOAEL	reproductive	chronic	ringed dove	Carriere et al., 1986	Sample et.al., 1996
Aluminum	19.3	LOAEL	reproductive	chronic	mouse	Ondreicka et al., 1966	Sample et.al., 1996
Antimony	1.25	LOAEL	lifespan	chronic	mouse	Schroeder et al., 1968b	Sample et.al., 1996
Arsenic	1.261	LOAEL	reproductive	chronic	mouse	Schroeder and Mitchner, 1971	Sample et.al., 1996
Arsenic	2.46	NOAEL	mortality	chronic	brown-headed cowbird	USFWS, 1969	Sample et.al., 1996
Arsenic	7.38	LOAEL	mortality	chronic	brown-headed cowbird	USFWS, 1969	Sample et.al., 1996
Barium	5.1	NOAEL	growth	chronic	rat	Perry et al., 1983	Sample et.al., 1996
Barium	198	LOAEL	mortality	subchronic	rat	Borzelleca et al., 1988	Sample et.al., 1996

APPENDIX H.3

SOURCES AND ENDPOINTS FOR NOAELS AND LOAELS FOR TERRESTRIAL WILDLIFE

Parameters	Concentration (mg/kg-day)	Endpoint	Effect	Chronic/ Subchronic	Species	Primary Reference	Source of Reference
Barium	208.26	NOAEL	mortality	subchronic	chicks	Johnson et al., 1960	Sample et.al., 1996
Barium	416.53	LOAEL	mortality	subchronic	chicks	Johnson et al., 1960	Sample et.al., 1996
Beryllium	0.66	NOAEL	systemic	chronic	rat	Schroeder and Mitchner, 1975	Sample et.al., 1996
Cadmium	1	NOAEL	reproductive	chronic	rat	Sutou et al., 1980b	Sample et.al., 1996
Cadmium	10	LOAEL	reproductive	chronic	rat	Sutou et al., 1980b	Sample et.al., 1996
Cadmium	1.45	NOAEL	reproductive	chronic	mallard duck	White and Finely, 1978	Sample et.al., 1996
Cadmium	20	LOAEL	reproductive	chronic	mallard duck	White and Finely, 1978	Sample et.al., 1996
Chromium(III)	1	NOAEL	reproductive	chronic	black duck	Haseltine et al., unpubl.	Sample et.al., 1996
Chromium(III)	5	LOAEL	reproductive	chronic	black duck	Haseltine et al., unpubl.	Sample et.al., 1996
Chromium(VI)	3.28	NOAEL	BW/food cons.	chronic	rat	Mackenzie, 1958	Sample et.al., 1996
Chromium(VI)	131.4	LOAEL	mortality	subchronic	rat	Steven et al., 1976	Sample et.al., 1996
Cobalt	12	LOAEL	growth	chronic	rat	Domingo et al., 1985	Eng. Field Activity,1998
Copper	11.71	NOAEL	reproductive	chronic	mink	Aulerich et al., 1982	Sample et.al., 1996
Copper	15.14	LOAEL	reproductive	chronic	mink	Aulerich et al., 1982	Sample et.al., 1996
Copper	46.97	NOAEL	mortality	chronic	chicks	Mehring et al., 1960	Sample et.al., 1996
Copper	61.72	LOAEL	mortality	chronic	chicks	Mehring et al., 1960	Sample et.al., 1996
Iron	500	LOAEL	unknown	chronic	rabbit	NAS, 1980	
Iron	1000	LOAEL	unknown	chronic	poultry	NAS, 1980	
Lead	8	NOAEL	reproductive	chronic	rat	Azar et al., 1973	Sample et.al., 1996
Lead	80	LOAEL	reproductive	chronic	rat	Azar et al., 1973	Sample et.al., 1996
Lead	1.13	NOAEL	reproductive	chronic	Japanese quail	Edens et al., 1982	Sample et.al., 1996
Lead	11.3	LOAEL	reproductive	chronic	Japanese quail	Edens et al., 1982	Sample et.al., 1996
Manganese	997	NOAEL	growth	chronic	Japanese quail	Laskey and Edens, 1985	Sample et.al., 1996
Manganese	88	NOAEL	reproductive	chronic	rat	Laskey et al., 1982	Sample et.al., 1996
Manganese	284	LOAEL	reproductive	chronic	rat	Laskey et al., 1982	Sample et.al., 1996
Mercury	0.064	LOAEL	reproductive	chronic	mallard duck	Heinze, 1979	Sample et.al., 1996
Mercury	0.032	NOAEL	reproductive	chronic	rat	Verschuuren et al., 1976	Sample et.al., 1996
Mercury	0.16	LOAEL	reproductive	chronic	rat	Verschuuren et al., 1976	Sample et.al., 1996
Nickel	40	NOAEL	reproductive	chronic	rat	Ambrose et al., 1976	Sample et.al., 1996
Nickel	80	LOAEL	reproductive	chronic	rat	Ambrose et al., 1976	Sample et.al., 1996
Nickel	77.4	NOAEL	mortality	chronic	mallard duck	Cain and Pafford, 1981	Sample et.al., 1996
Nickel	107	LOAEL	mortality	chronic	mallard duck	Cain and Pafford, 1981	Sample et.al., 1996
Selenium	0.5	NOAEL	reproductive	chronic	mallard duck	Heinz, et al., 1987	Sample et.al., 1996
Selenium	1	LOAEL	reproductive	chronic	mallard duck	Heinz, et al., 1987	Sample et.al., 1996
Selenium	0.2	NOAEL	reproductive	chronic	rat	Rosenfeld and Beath, 1954	Sample et.al., 1996
Selenium	0.33	LOAEL	reproductive	chronic	rat	Rosenfeld and Beath, 1954	Sample et.al., 1996
Silver	18.1	NOAEL	systemic	subchronic	mouse	Rungby, 1984	ATSDR, 1989
Silver	54.4	LOAEL	survival	chronic	chicks	Petersen and Jensen, 1975	
Silver	23.81	LOAEL	weight loss		mouse	Rungby and Danscher, 1984	
Thallium	0.74	LOAEL	reproductive	subchronic	rat	Formigli et al., 1986	Sample et.al., 1996
Tin	23.4	NOAEL	reproductive	chronic	mouse	Davis et al., 1987	Sample et.al., 1996
Tin	35	LOAEL	reproductive	chronic	mouse	Davis et al., 1987	Sample et.al., 1996
Tin	6.76	NOAEL	reproductive	chronic	Japanese quail	Schlatterer et al., 1993	Sample et.al., 1996
Tin	16.9	LOAEL	reproductive	chronic	Japanese quail	Schlatterer et al., 1993	Sample et.al., 1996
Vanadium	2.1	LOAEL	reproductive	chronic	rat	Domingo et al., 1986	Sample et.al., 1996
Vanadium	11.38	NOAEL	mortality,BW	chronic	mallard duck	White and Dieter, 1978	Sample et.al., 1996
Zinc	160	NOAEL	reproductive	chronic	rat	Schlicker and Cox, 1986	Sample et.al., 1996
Zinc	320	LOAEL	reproductive	chronic	rat	Schlicker and Cox, 1986	Sample et.al., 1996
Zinc	14.49	NOAEL	reproductive	chronic	white leghorn hen	Stahl et al., 1990	Sample et.al., 1996
Zinc	130.9	LOAEL	reproductive	chronic	white leghorn hen	Stahl et al., 1990	Sample et.al., 1996

Notes: The NOAELS and LOAELS for the PAHs that do not have values are based on the benzo(a)pyrene values
The NOAELS and LOAELS for the PAHs for birds were based on 7,12-dimethylbenz(a)anthracene.

NOAEL = No Observed Adverse Effect Level
LOAEL = Lowest Observed Adverse Effect Level

APPENDIX H.4

FOOD-CHAIN MODELS

APPENDIX H.4

SURFACE SOIL 95% UPPER CONFIDENCE LIMITS
SWMU 3
NSWC CRANE, CRANE, INDIANA

PARAMETER	UNITS	DETECTS	COUNT	AVERAGE	W NORMAL	W LOGNORMAL	W TEST	DISTRIBUTION	UCL - NORMAL	UCL - LOGNORMAL	DETECTS - MAX	95% UCL
1,1,1-TRICHLOROETHANE	µg/kg	4	15	3.9243	0.6593	0.933	0.881	LOGNORMAL	6.3011	9.8149	19	9.8149
1,2,3,4,6,7,8,9-OCDD	ng/kg	11	11	1364.1818	0.8369	0.9336	0.85	LOGNORMAL	2014.5043	3911.583	3440	3440
1,2,3,4,6,7,8,9-OCDF	ng/kg	3	11	7.6259	0.469	0.8701	0.85	LOGNORMAL	17.6933	157.3948	62.2	62.2
1,2,3,4,6,7,8-HPCDD	ng/kg	11	11	36.1182	0.4982	0.9347	0.85	LOGNORMAL	72.3202	117.0577	233	117.0577
1,2,3,4,6,7,8-HPCDF	ng/kg	5	11	4.9955	0.5891	0.8497	0.85	LOGNORMAL	10.3377	208.6124	32.1	32.1
1,2,3,4,7,8,9-HPCDF	ng/kg	4	11	0.52	0.7359	0.8466	0.85	LOGNORMAL	0.8851	2.4295	2.1	2.1
1,2,3,4,7,8-HXCDD	ng/kg	4	11	0.4991	0.7221	0.8739	0.85	LOGNORMAL	0.8353	1.6731	2.1	1.6731
1,2,3,4,7,8-HXCDF	ng/kg	2	11	0.8355	0.6417	0.8982	0.85	LOGNORMAL	1.5786	8.1608	3.9	3.9
1,2,3,6,7,8-HXCDD	ng/kg	5	11	1.3236	0.4746	0.9373	0.85	LOGNORMAL	2.9354	10.5067	10.1	10.1
1,2,3,6,7,8-HXCDF	ng/kg	6	11	0.6186	0.7516	0.9043	0.85	LOGNORMAL	1.0698	7.563	2.4	2.4
1,2,3,7,8,9-HXCDD	ng/kg	5	11	1.3786	0.6848	0.8453	0.85	LOGNORMAL	2.4448	6.7533	6.5	6.5
1,2,3,7,8,9-HXCDF	ng/kg	1	11	0.1186	0.8304	0.8962	0.85	LOGNORMAL	0.168	0.2124	0.22	0.2124
1,2,3,7,8-PECDD	ng/kg	5	11	0.3527	0.7918	0.8672	0.85	LOGNORMAL	0.572	1.7802	1.3	1.3
1,2,3,7,8-PECDF	ng/kg	3	11	0.2773	0.6661	0.872	0.85	LOGNORMAL	0.4921	1.297	1.1	1.1
1,3,5-TRINITROBENZENE	µg/kg	3	48	0.3864	0.1766	0.2697	0.947	LOGNORMAL	0.768	0.2493	11	0.2493
1,4-PHENYLENEDIAMINE		1	29	45.3621	0.2666	0.3921	0.926	LOGNORMAL	55.4134	48.9916	210	48.9916
2,3,4,6,7,8-HXCDF	ng/kg	5	11	0.6664	0.7395	0.835	0.85	LOGNORMAL	1.1747	10.6542	2.7	2.7
2,3,4,7,8-PECDF	ng/kg	4	11	0.3736	0.7628	0.8921	0.85	LOGNORMAL	0.6318	2.6796	1.4	1.4
2,3,7,8-TCDD	ng/kg	5	11	0.4955	0.4399	0.8671	0.85	LOGNORMAL	1.1163	1.9802	3.9	1.9802
2,3,7,8-TCDF	ng/kg	4	11	0.2986	0.8053	0.82	0.85	LOGNORMAL	0.4636	1.8949	0.78	0.78
2,4,5-T	µg/kg	1	5	1.94	0.5606	0.58	0.762	LOGNORMAL	4.3173	15.2315	6.4	6.4
2,4,6-TRINITROTOLUENE	µg/kg	4	48	46.206	0.1983	0.2773	0.947	LOGNORMAL	107.9335	2.6236	1700	2.6236
2,4-D	µg/kg	3	5	4.83	0.793	0.7392	0.762	NORMAL	8.3574	217.9044	8.3	8.3
2,4-DINITROTOLUENE	µg/kg	1	48	0.1432	0.1466	0.1466	0.947	LOGNORMAL	0.1738	0.1475	1	0.1475
2-AMINO-4,6-DINITROTOLUENE	µg/kg	7	48	0.8645	0.1806	0.4292	0.947	LOGNORMAL	1.9096	0.4332	30	0.4332
2-HEXANONE	µg/kg	1	15	2.5977	0.8535	0.8385	0.881	LOGNORMAL	3.538	6.2151	5	5
2-METHYLNAPHTHALENE	µg/kg	2	45	8.3564	0.1886	0.3818	0.945	LOGNORMAL	19.1983	3.1207	290	3.1207
2-NITROTOLUENE	µg/kg	1	48	0.1282	0.1466	0.1466	0.947	LOGNORMAL	0.1337	0.1317	0.28	0.1317
4-AMINO-2,6-DINITROTOLUENE	µg/kg	7	48	0.5403	0.2093	0.4298	0.947	LOGNORMAL	1.0639	0.3646	15	0.3646
4-METHYL-2-PENTANONE	µg/kg	1	15	2.531	0.8698	0.8455	0.881	LOGNORMAL	3.4405	5.9219	4	4
ACENAPHTHENE	µg/kg	1	45	1.7964	0.2549	0.3639	0.945	LOGNORMAL	2.9733	1.5067	18	1.5067
ACENAPHTHYLENE	µg/kg	2	45	1.9354	0.3062	0.4173	0.945	LOGNORMAL	3.0934	1.7243	14	1.7243
ALUMINUM	mg/kg	32	32	7819.375	0.8825	0.8997	0.93	LOGNORMAL	8599.9419	8761.3789	14900	8761.3789
ANTHRACENE	µg/kg	1	45	5.8688	0.1957	0.3888	0.945	LOGNORMAL	12.9868	2.6355	12	2.6355
ANTIMONY	mg/kg	8	32	0.6511	0.6153	0.9061	0.93	LOGNORMAL	0.9176	0.9029	4.4	0.9029
ARSENIC	mg/kg	30	32	6.45	0.5737	0.8932	0.93	LOGNORMAL	7.7685	7.5817	28.4	7.5817
BARIUM	mg/kg	32	32	220.2844	0.4085	0.8092	0.93	LOGNORMAL	325.9026	252.3155	2040	252.3155
BENZO(A)ANTHRACENE	µg/kg	3	45	6.9617	0.2432	0.473	0.945	LOGNORMAL	14.1772	4.135	37	4.135
BENZO(A)PYRENE	µg/kg	5	45	4.5088	0.3618	0.4539	0.945	LOGNORMAL	7.5248	3.6623	54	3.6623
BENZO(B)FLUORANTHENE	µg/kg	13	45	12.8286	0.4009	0.6899	0.945	LOGNORMAL	21.2651	20.5693	160	20.5693
BENZO(G,H,I)PERYLENE	µg/kg	7	45	4.9077	0.4286	0.5502	0.945	LOGNORMAL	7.865	5.144	67	5.144
BERYLLIUM	mg/kg	31	32	0.7409	0.9815	0.833	0.93	NORMAL	0.8207	0.8953	1.4	0.8207
BIS(2-ETHYLHEXYL)PHTHALATE	µg/kg	7	45	78.1889	0.3499	0.5567	0.945	LOGNORMAL	112.4273	80.0285	870	80.0285
CADMIUM	mg/kg	29	32	0.8883	0.7154	0.9661	0.93	LOGNORMAL	1.1349	1.1908	4.4	1.1908
CALCIUM	mg/kg	32	32	24250.9375	0.52	0.9348	0.93	LOGNORMAL	38534.9692	46549.0681	244000	46549.068
CHROMIUM	mg/kg	32	32	25.1313	0.303	0.7371	0.93	LOGNORMAL	39.7477	26.3991	288	26.3991
CHRYSENE	µg/kg	7	45	8.5827	0.3023	0.6038	0.945	LOGNORMAL	16.0537	7.6206	68	7.6206

APPENDIX H.4

SURFACE SOIL 95% UPPER CONFIDENCE LIMITS
SWMU 3
NSWC CRANE, CRANE, INDIANA

PARAMETER	UNITS	DETECTS	COUNT	AVERAGE	W NORMAL	W LOGNORMAL	W TEST	DISTRIBUTION	UCL - NORMAL	UCL - LOGNORMAL	DETECTS - MAX	95% UCL
COBALT	mg/kg	32	32	13.2719	0.9635	0.8319	0.93	NORMAL	14.4274	15.2764	19.9	14.4274
COPPER	mg/kg	32	32	22.2719	0.7661	0.8726	0.93	LOGNORMAL	27.9405	29.8751	63.9	29.8751
DIBENZO(A,H)ANTHRACENE	µg/kg	1	45	1.5742	0.2298	0.3797	0.945	LOGNORMAL	2.6047	1.373	8	1.373
DI-N-BUTYL PHTHALATE	µg/kg	9	45	219.6111	0.3018	0.5511	0.945	LOGNORMAL	394.5845	181.1292	4500	181.1292
DI-N-OCTYL PHTHALATE	µg/kg	1	39	45.8077	0.2282	0.3708	0.939	LOGNORMAL	55.795	48.1526	270	48.1526
DINOSEB	µg/kg	1	3	4.2167	0.7537	0.7673	0.767	LOGNORMAL	14.1204	5734508142	11	11
FLUORANTHENE	µg/kg	8	45	9.6864	0.2634	0.5761	0.945	LOGNORMAL	19.2034	7.7275	250	7.7275
FLUORENE	µg/kg	1	45	1.7298	0.2528	0.3684	0.945	LOGNORMAL	2.8517	1.4727	15	1.4727
HMX	µg/kg	9	47	37.3655	0.1666	0.4361	0.946	LOGNORMAL	94.5415	4.7719	1600	4.7719
INDENO(1,2,3-CD)PYRENE	µg/kg	5	45	3.831	0.3964	0.4833	0.945	LOGNORMAL	6.181	3.5017	49	3.5017
IRON	mg/kg	32	32	23436.875	0.8951	0.9793	0.93	LOGNORMAL	26424.5015	26855.2495	51600	26855.25
LEAD	mg/kg	32	32	357.7719	0.1955	0.7029	0.93	LOGNORMAL	896.3191	150.634	10200	150.634
MAGNESIUM	mg/kg	32	32	2183.4063	0.5587	0.9279	0.93	LOGNORMAL	2982.9685	2736.9971	15000	2736.9971
MANGANESE	mg/kg	32	32	997.8125	0.9342	0.8485	0.93	NORMAL	1124.641	1252.2839	1760	1124.641
MERCURY	mg/kg	31	32	0.067	0.7581	0.8929	0.93	LOGNORMAL	0.0869	0.095	0.26	0.095
NAPHTHALENE	µg/kg	4	45	5.5797	0.2779	0.4442	0.945	LOGNORMAL	10.6281	3.7707	130	3.7707
NICKEL	mg/kg	32	32	17.2688	0.9431	0.9744	0.93	LOGNORMAL	18.9084	19.1183	32.6	19.1183
NITRATE	mg/kg	46	48	4.1865	0.3991	0.9241	0.947	LOGNORMAL	5.9666	4.7773	49	4.7773
NITRITE	mg/kg	2	39	5.8038	0.8536	0.8841	0.939	LOGNORMAL	7.0282	8.569	5.6	5.6
NITRITE/NITRATE	mg/kg	46	48	4.1865	0.3991	0.9241	0.947	LOGNORMAL	5.9666	4.7773	49	4.7773
PERCHLORATE		3	48	25.375	0.2256	0.3427	0.947	LOGNORMAL	42.7179	20.5446	470	20.5446
PHENANTHRENE	µg/kg	5	45	10.1409	0.2141	0.4794	0.945	LOGNORMAL	22.1378	5.1928	320	5.1928
POTASSIUM	mg/kg	32	32	646.875	0.6336	0.8625	0.93	LOGNORMAL	766.2329	733.5	2180	733.5
PYRENE	µg/kg	9	45	10.0738	0.2739	0.6278	0.945	LOGNORMAL	19.6093	9.0283	250	9.0283
RDX	µg/kg	6	48	53.2892	0.1594	0.3787	0.947	LOGNORMAL	137.2866	3.4085	2400	3.4085
SELENIUM	mg/kg	29	32	0.2617	0.9537	0.8405	0.93	NORMAL	0.2874	0.3062	0.42	0.2874
SILVER	mg/kg	5	32	0.1369	0.6777	0.7965	0.93	LOGNORMAL	0.1942	0.2449	0.72	0.2449
SODIUM	mg/kg	9	32	99.7469	0.6325	0.9598	0.93	LOGNORMAL	139.5745	149.9647	598	149.9647
TEQ BIRD	ng/kg	11	11	1.9225	0.7713	0.8988	0.85	LOGNORMAL	3.3124	39.0271	7.5	7.5
TEQ FISH	ng/kg	11	11	1.6023	0.7432	0.8754	0.85	LOGNORMAL	2.8336	36.9181	6.5	6.5
TEQ HUMAN	ng/kg	11	11	2.0055	0.7114	0.8828	0.85	LOGNORMAL	3.5217	19.1182	7.4	7.4
TETRACHLOROETHENE	µg/kg	2	15	2.5243	0.8879	0.8974	0.881	LOGNORMAL	3.3918	5.2555	3	3
THALLIUM	mg/kg	32	32	0.1066	0.8086	0.8933	0.93	LOGNORMAL	0.1162	0.1165	0.21	0.1165
TOTAL HPCDD	ng/kg	10	11	70.1864	0.5414	0.9744	0.85	LOGNORMAL	134.8325	317.8648	419	317.8648
TOTAL HPCDF	ng/kg	5	11	7.6955	0.6069	0.9264	0.85	LOGNORMAL	15.5977	323.1649	19	19
TOTAL HXCDD	ng/kg	2	11	5.7955	0.6245	0.9495	0.85	LOGNORMAL	10.3574	18.5679	4	4
TOTAL HXCDF	ng/kg	2	11	5.6405	0.6489	0.957	0.85	LOGNORMAL	11.0304	710.7716	17.8	17.8
TOTAL PECDD	ng/kg	1	11	1.3523	0.7445	0.8565	0.85	LOGNORMAL	2.3753	44.067	0.45	0.45
TOTAL TCDD	ng/kg	1	11	0.7168	0.6507	0.8845	0.85	LOGNORMAL	1.3648	6.5114	1	1
TOTAL XYLENES	µg/kg	1	15	7.4343	0.3546	0.8504	0.881	LOGNORMAL	16.8488	17.6219	82	17.6219
TRICHLOROETHENE	µg/kg	3	15	3.6263	0.7775	0.9391	0.881	LOGNORMAL	5.1638	7.9354	14	7.9354
VANADIUM	mg/kg	32	32	18.7125	0.9371	0.9601	0.93	LOGNORMAL	20.1901	20.3499	29.1	20.3499
ZINC	mg/kg	32	32	101.2	0.5492	0.9066	0.93	LOGNORMAL	140.8535	129.6385	739	129.6385

UCL = Upper Confidence Limit
TEQ = Toxicity Equivalence

APPENDIX H.4

COMBINED HIGH FLOW AND LOW FLOW SURFACE WATER 95% UPPER CONFIDENCE LIMITS
SWMU 3
NSWC CRANE, CRANE, INDIANA

PARAMETER	UNITS	DETECTS	COUNT	AVERAGE	W NORMAL	W LOGNORMAL	W TEST	DISTRIBUTION	UCL - NORMAL	UCL - LOGNORMAL	DETECTS - MAX	95% UCL
2,4,5-T	µg/L	4	15	0.0976	0.5377	0.6057	0.881	LOGNORMAL	0.1761	0.2174	0.63	0.2174
2,4,6-TRINITROTOLUENE	µg/L	1	17	0.1976	0.2622	0.2622	0.892	LOGNORMAL	0.2372	0.2222	0.56	0.2222
2,4-D	µg/L	2	15	0.06	0.4281	0.4197	0.881	LOGNORMAL	0.1085	0.0939	0.36	0.0939
2-AMINO-4,6-DINITROTOLUENE	µg/L	3	17	0.2982	0.4302	0.4864	0.892	LOGNORMAL	0.4429	0.3844	1.5	0.3844
2-BUTANONE	µg/L	1	5	0.32	0.5521	0.5521	0.762	LOGNORMAL	0.4692	0.5381	0.6	0.5381
4-AMINO-2,6-DINITROTOLUENE	µg/L	6	17	0.5868	0.6331	0.7048	0.892	LOGNORMAL	0.9076	1.0587	2.9	1.0587
ACENAPHTHYLENE	µg/L	1	17	0.0221	0.2667	0.2929	0.892	LOGNORMAL	0.0437	0.0243	0.22	0.0243
ACETONE	µg/L	1	8	11.3	0.5894	0.7938	0.818	LOGNORMAL	26.0152	8788.6704	64	64
ALUMINUM	µg/L	13	17	562.6059	0.7364	0.898	0.892	LOGNORMAL	864.0287	2496.9119	2010	2010
ALUMINUM, FILTERED	µg/L	7	17	120.1029	0.8325	0.8159	0.892	LOGNORMAL	169.4591	3305.1905	332	332
ANTIMONY	µg/L	2	17	0.4109	0.4907	0.8098	0.892	LOGNORMAL	0.755	0.7835	3	0.7835
ANTIMONY, FILTERED	µg/L	4	17	0.4894	0.6441	0.8479	0.892	LOGNORMAL	0.7899	1.0977	2.4	1.0977
ARSENIC	µg/L	17	17	0.8194	0.7971	0.8832	0.892	LOGNORMAL	1.1243	1.3665	2.5	1.3665
ARSENIC, FILTERED	µg/L	16	17	0.4141	0.8718	0.961	0.892	LOGNORMAL	0.5155	0.5653	1	0.5653
BARIUM	mg/L	17	17	101.6647	0.9705	0.947	0.892	NORMAL	115.2393	120.858	156	115.2393
BARIUM, FILTERED	µg/L	17	17	94.0706	0.9546	0.9226	0.892	NORMAL	108.6413	116.9505	147	108.6413
BERYLLIUM	µg/L	4	17	0.0676	0.5507	0.5453	0.892	LOGNORMAL	0.0816	0.0817	0.13	0.0817
BIS(2-ETHYLHEXYL)PHTHALATE	µg/L	2	17	1.0194	0.4044	0.4194	0.892	LOGNORMAL	1.6713	1.3555	6	1.3555
BROMOMETHANE	µg/L	3	17	0.4059	0.4902	0.5007	0.892	LOGNORMAL	0.5655	0.5288	1.6	0.5288
CADMIUM	µg/L	3	17	0.4771	0.4962	0.5009	0.892	LOGNORMAL	0.6048	0.5816	1.4	0.5816
CADMIUM, FILTERED	µg/L	1	17	0.4	0.2622	0.2622	0.892	LOGNORMAL	0.4873	0.4523	1.2	0.4523
CALCIUM	µg/L	17	17	33745.294	0.9467	0.8506	0.892	NORMAL	39969.5108	47660.8861	58900	39969.5108
CALCIUM, FILTERED	µg/L	17	17	31833.529	0.9424	0.932	0.892	NORMAL	38627.4828	45014.9058	61200	38627.4828
CHROMIUM	µg/L	10	17	1.2179	0.798	0.8908	0.892	LOGNORMAL	1.7742	3.0705	4.5	3.0705
CHROMIUM, FILTERED	µg/L	10	17	0.565	0.8846	0.9119	0.892	LOGNORMAL	0.7391	0.9855	1.4	0.9855
COBALT	µg/L	16	17	0.5718	0.8018	0.9087	0.892	LOGNORMAL	0.8211	1.366	1.9	1.366
COBALT, FILTERED	µg/L	17	17	0.2547	0.7096	0.8755	0.892	LOGNORMAL	0.3364	0.3462	0.73	0.3462
COPPER	µg/L	17	17	5.2159	0.7019	0.852	0.892	LOGNORMAL	7.8735	11.5589	18.4	11.5589
COPPER, FILTERED	µg/L	17	17	2.5629	0.7246	0.8714	0.892	LOGNORMAL	3.597	4.2085	7.6	4.2085
DISSOLVED OXYGEN	mg/L	17	17	9.3212	0.9198	0.8493	0.892	NORMAL	10.9356	12.7783	13.94	10.9356
HMX	µg/L	16	17	13.2103	0.5308	0.9354	0.892	LOGNORMAL	21.9595	52.6003	90	52.6003
IRON	µg/L	16	17	857.0588	0.7245	0.8934	0.892	LOGNORMAL	1276.7739	2688.143	2550	2550
IRON, FILTERED	µg/L	8	17	82.3647	0.7793	0.7699	0.892	LOGNORMAL	99.236	103.7183	171	103.7183
LEAD	µg/L	17	17	29.1276	0.4734	0.8664	0.892	LOGNORMAL	59.4977	943.6087	285	285
LEAD, FILTERED	µg/L	10	17	2.3759	0.4768	0.8288	0.892	LOGNORMAL	4.8031	21.8513	22.6	21.8513
MAGNESIUM	µg/L	14	17	8101.1765	0.9512	0.8325	0.892	NORMAL	9557.3002	11215.7037	14300	9557.3002
MAGNESIUM, FILTERED	µg/L	14	17	8022.9412	0.9507	0.8524	0.892	NORMAL	9514.5392	11121.0847	14000	9514.5392
MANGANESE	µg/L	16	17	63.9588	0.8591	0.9567	0.892	LOGNORMAL	88.485	143.7947	201	143.7947
MANGANESE, FILTERED	µg/L	12	17	20.5294	0.6634	0.9498	0.892	LOGNORMAL	30.3498	34.9344	100	34.9344
METHYLENE CHLORIDE	µg/L	2	17	1.6853	0.4543	0.4926	0.892	LOGNORMAL	3.2515	3.2307	13	3.2307
NICKEL	µg/L	17	17	2.2412	0.8508	0.9338	0.892	LOGNORMAL	2.7707	2.9185	5.3	2.9185
NICKEL, FILTERED	µg/L	17	17	1.4282	0.9099	0.9531	0.892	LOGNORMAL	1.5851	1.6013	2.4	1.6013
NITRATE	mg/L	16	16	0.31	0.6774	0.9278	0.887	LOGNORMAL	0.4644	0.6271	1.44	0.6271
NITRITE	mg/L	10	10	0.0048	0.5763	0.9041	0.842	LOGNORMAL	0.0086	0.0113	0.023	0.0113
NITROCELLULOSE	mg/L	1	17	614.7059	0.3286	0.4729	0.892	LOGNORMAL	897.9876	733.8737	3200	733.8737
OXIDATION REDUCTION POTENTIAL		17	17	292.2235	0.9641	0.9267	0.892	NORMAL	321.5349	330.9686	396	321.5349
PENTACHLOROPHENOL	mg/L	1	14	0.0554	0.2969	0.2969	0.874	LOGNORMAL	0.1445	0.0592	0.71	0.0592
PH		17	17	7.6841	0.9622	0.9631	0.892	LOGNORMAL	7.9104	8.5882	8.73	8.5882
POTASSIUM	µg/L	10	17	4725.2941	0.6226	0.8429	0.892	LOGNORMAL	6992.6996	7141.9892	21600	7141.9892
POTASSIUM, FILTERED	µg/L	10	17	4829.4118	0.6192	0.8458	0.892	LOGNORMAL	7225.0797	7417.329	22900	7417.329
RDX	µg/L	15	17	9.8029	0.5954	0.9656	0.892	LOGNORMAL	16.7881	64.3128	63	63
SELENIUM	µg/L	3	17	0.2571	0.5002	0.497	0.892	LOGNORMAL	0.3127	0.3052	0.62	0.3052

APPENDIX H.4

COMBINED HIGH FLOW AND LOW FLOW SURFACE WATER 95% UPPER CONFIDENCE LIMITS
SWMU 3
NSWC CRANE, CRANE, INDIANA

PARAMETER	UNITS	DETECTS	COUNT	AVERAGE	W NORMAL	W LOGNORMAL	W TEST	DISTRIBUTION	UCL - NORMAL	UCL - LOGNORMAL	DETECTS - MAX	95% UCL
SELENIUM, FILTERED	µg/L	3	17	0.2506	0.4891	0.4855	0.892	LOGNORMAL	0.2989	0.2937	0.52	0.2937
SODIUM	µg/L	12	17	4672.3529	0.9062	0.8879	0.892	NORMAL	5456.7145	5776.6835	8070	5456.7145
SODIUM, FILTERED	µg/L	13	17	5524.1176	0.8885	0.8969	0.892	LOGNORMAL	6633.8694	7215.5672	9830	7215.5672
TEMPERATURE		17	17	19.5547	0.8846	0.8684	0.892	LOGNORMAL	21.1009	21.3647	25.45	21.3647
TIN	µg/L	11	17	2.8229	0.8175	0.7489	0.892	LOGNORMAL	3.6603	25.2944	4.9	4.9
TIN, FILTERED	µg/L	16	17	4.8765	0.9275	0.8424	0.892	NORMAL	5.3277	5.5041	7.3	5.3277
TOTAL SUSPENDED SOLIDS	mg/L	10	17	25.5882	0.7192	0.8193	0.892	LOGNORMAL	40.6564	288.0767	100	100
TRICHLOROETHENE	µg/L	1	17	0.2588	0.2622	0.2622	0.892	LOGNORMAL	0.2742	0.2719	0.4	0.2719
TURBIDITY	%	15	15	44.658	0.7625	0.8896	0.881	LOGNORMAL	72.2906	1089.8604	190	190
VANADIUM	µg/L	15	17	1.2406	0.7526	0.9182	0.892	LOGNORMAL	1.864	5.8458	3.9	3.9
VANADIUM, FILTERED	µg/L	12	17	0.2559	0.88	0.8559	0.892	LOGNORMAL	0.3377	0.5171	0.61	0.5171
ZINC	µg/L	16	17	21.5676	0.6858	0.8172	0.892	LOGNORMAL	35.0592	76.9934	111	76.9934
ZINC, FILTERED	µg/L	16	17	5.7971	0.7903	0.943	0.892	LOGNORMAL	8.154	13.2179	21.7	13.2179

UCL = Upper Confidence Limit

APPENDIX H.4

COMBINED SHALLOW AND DEEP SEDIMENT 95% UPPER CONFIDENCE LIMITS
SWMU 3
NSWC CRANE, CRANE, INDIANA

PARAMETER	UNITS	DETECTS	COUNT	AVERAGE	W NORMAL	W LOGNORMAL	W TEST	DISTRIBUTION	UCL - NORMAL	UCL - LOGNORMAL	DETECTS - MAX	95% UCL
1,1,1-TRICHLOROETHANE	µg/kg	6	30	1.7767	0.8227	0.9342	0.927	LOGNORMAL	2.1995	2.3741	4	2.3741
2,4,5-T	µg/kg	9	30	1.695	0.7083	0.7565	0.927	LOGNORMAL	2.0915	2.1137	4.8	2.1137
2,4,5-TP (SILVEX)	µg/kg	7	29	1.4224	0.6428	0.7261	0.926	LOGNORMAL	1.752	1.6992	4.5	1.6992
2,4,6-TRINITROTOLUENE	µg/kg	9	30	0.3162	0.5217	0.6507	0.927	LOGNORMAL	0.4489	0.3996	2.2	0.3996
2,4-D	µg/kg	12	22	6.6705	0.8034	0.829	0.911	LOGNORMAL	9.3505	18.297	28	18.297
2,4-DINITROTOLUENE	µg/kg	1	30	0.1588	0.1982	0.2201	0.927	LOGNORMAL	0.214	0.1685	1.1	0.1685
2-AMINO-4,6-DINITROTOLUENE	µg/kg	3	30	0.1608	0.3391	0.3626	0.927	LOGNORMAL	0.199	0.1782	0.73	0.1782
2-BUTANONE	µg/kg	4	30	4.7377	0.4137	0.843	0.927	LOGNORMAL	8.2352	6.8617	60	6.8617
4-AMINO-2,6-DINITROTOLUENE	µg/kg	1	30	0.1525	0.3598	0.3622	0.927	LOGNORMAL	0.1798	0.1684	0.4	0.1684
4-METHYL-2-PENTANONE	µg/kg	1	30	1.5027	0.7421	0.8816	0.927	LOGNORMAL	1.9236	1.9888	2	1.9888
ACENAPHTHENE	µg/kg	1	30	1.635	0.2028	0.3287	0.927	LOGNORMAL	3.0042	1.4346	25	1.4346
ACETONE	µg/kg	6	30	33.3633	0.6743	0.9145	0.927	LOGNORMAL	49.3883	237.333	220	220
ALUMINUM	mg/kg	30	30	12157.333	0.669	0.9683	0.927	LOGNORMAL	15265.7168	14915.8395	56900	14915.8395
ANTIMONY	mg/kg	16	30	1.714	0.7656	0.9692	0.927	LOGNORMAL	2.2866	2.8779	7.6	2.8779
ARSENIC	mg/kg	30	30	9.45	0.9027	0.9576	0.927	LOGNORMAL	10.995	11.431	22	11.431
BARIUM	mg/kg	30	30	262.9733	0.7656	0.965	0.927	LOGNORMAL	335.5264	358.7897	981	358.7897
BENZO(A)ANTHRACENE	µg/kg	1	30	1.575	0.3118	0.421	0.927	LOGNORMAL	2.4583	1.6325	11	1.6325
BENZO(B)FLUORANTHENE	µg/kg	2	30	1.6383	0.3103	0.4142	0.927	LOGNORMAL	2.6105	1.6729	15	1.6729
BERYLLIUM	mg/kg	30	30	0.931	0.9587	0.8545	0.927	NORMAL	1.0593	1.2141	1.7	1.0593
CADMIUM	mg/kg	29	30	1.2888	0.8666	0.9827	0.927	LOGNORMAL	1.5785	1.7754	4	1.7754
CALCIUM	mg/kg	30	30	6126.2	0.5672	0.9129	0.927	LOGNORMAL	9053.8584	9177.9451	37500	9177.9451
CARBON DISULFIDE	µg/kg	5	30	1.6343	0.7916	0.9461	0.927	LOGNORMAL	2.0439	2.1546	2	2
CHROMIUM	mg/kg	30	30	26.09	0.9212	0.9008	0.927	LOGNORMAL	30.2124	33.4077	48.9	33.4077
CHRYSENE	µg/kg	1	30	1.5417	0.3146	0.4252	0.927	LOGNORMAL	2.3907	1.6054	10	1.6054
COBALT	mg/kg	30	30	16.6033	0.9398	0.9701	0.927	LOGNORMAL	18.5284	18.9288	31.2	18.9288
COPPER	mg/kg	30	30	57.3	0.7717	0.9438	0.927	LOGNORMAL	76.3661	96.9254	273	96.9254
DI-N-BUTYL PHTHALATE	µg/kg	4	30	109.6667	0.4453	0.7062	0.927	LOGNORMAL	165.4893	128.1736	880	128.1736
DINOSEB	µg/kg	5	29	1.5086	0.509	0.6296	0.926	LOGNORMAL	2.0154	1.7882	8.2	1.7882
DIPHENYLAMINE	µg/kg	3	30	59	0.303	0.5109	0.927	LOGNORMAL	80.6274	63.9555	420	63.9555
FLUORANTHENE	µg/kg	3	30	2.4133	0.3578	0.4714	0.927	LOGNORMAL	4.0809	2.4647	27	2.4647
HEXACHLOROPHENE	µg/kg	3	30	4.2733	0.7785	0.883	0.927	LOGNORMAL	4.5212	4.5041	7.6	4.5041
HMX	µg/kg	7	30	5.3535	0.2391	0.5192	0.927	LOGNORMAL	12.7393	3.1501	130	3.1501
IRON	mg/kg	30	30	39800	0.9044	0.8788	0.927	LOGNORMAL	46856.9848	52606.8699	87700	52606.8699
LEAD	mg/kg	30	30	119.9767	0.724	0.9654	0.927	LOGNORMAL	162.9031	210.1605	653	210.1605
MAGNESIUM	mg/kg	30	30	1867.4333	0.5189	0.904	0.927	LOGNORMAL	2723.4374	2427.3855	14700	2427.3855
MANGANESE	mg/kg	30	30	1194.6667	0.9527	0.9295	0.927	NORMAL	1373.9221	1498.6426	2780	1373.9221
MERCURY	mg/kg	28	30	0.0682	0.7619	0.9656	0.927	LOGNORMAL	0.0878	0.095	0.31	0.095
METHOXYCHLOR	µg/kg	1	30	6.1633	0.45	0.6277	0.927	LOGNORMAL	6.8324	6.5933	17	6.5933
NICKEL	mg/kg	30	30	22.13	0.9385	0.9462	0.927	LOGNORMAL	24.6443	25.4037	36.3	25.4037
NITRATE	mg/kg	27	30	3.5083	0.9207	0.7948	0.927	LOGNORMAL	4.0156	4.7412	8.4	4.7412
NITRITE	mg/kg	4	21	3.981	0.5327	0.8639	0.908	LOGNORMAL	6.0474	5.6607	3.5	3.5
NITRITE/NITRATE	mg/kg	30	30	3.9033	0.8143	0.9365	0.927	LOGNORMAL	4.2868	4.2621	8.4	4.2621
PENTACHLOROPHENOL	µg/kg	2	22	0.4543	0.3505	0.422	0.911	LOGNORMAL	0.7586	0.5208	3.7	0.5208
PH		30	30	7.5967	0.9554	0.9479	0.927	NORMAL	7.6922	8.7403	8.1	7.6922
PHENANTHRENE	µg/kg	2	30	2.0083	0.301	0.4058	0.927	LOGNORMAL	3.4467	1.9159	23	1.9159
POTASSIUM	mg/kg	30	30	477.2	0.8091	0.9487	0.927	LOGNORMAL	542.8781	539.5297	1260	539.5297
PYRENE	µg/kg	2	30	2.18	0.3828	0.4709	0.927	LOGNORMAL	3.5027	2.322	19	2.322
RDX	µg/kg	2	30	0.1467	0.2776	0.2776	0.927	LOGNORMAL	0.1722	0.1601	0.45	0.1601
SELENIUM	mg/kg	4	30	0.1568	0.7294	0.7885	0.927	LOGNORMAL	0.1885	0.1892	0.36	0.1892
SILVER	mg/kg	7	30	0.1267	0.6546	0.8317	0.927	LOGNORMAL	0.182	0.205	0.71	0.205

APPENDIX H.4

COMBINED SHALLOW AND DEEP SEDIMENT 95% UPPER CONFIDENCE LIMITS
SWMU 3
NSWC CRANE, CRANE, INDIANA

PARAMETER	UNITS	DETECTS	COUNT	AVERAGE	W NORMAL	W LOGNORMAL	W TEST	DISTRIBUTION	UCL - NORMAL	UCL - LOGNORMAL	DETECTS - MAX	95% UCL
SODIUM	mg/kg	3	30	17.2867	0.5119	0.8922	0.927	LOGNORMAL	27.1644	26.6726	138	26.6726
THALLIUM	mg/kg	30	30	0.0827	0.8881	0.9234	0.927	LOGNORMAL	0.0884	0.0888	0.12	0.0888
TIN	mg/kg	5	30	1.583	0.5002	0.9562	0.927	LOGNORMAL	2.3662	2.3702	13.8	2.3702
TOLUENE	µg/kg	1	30	3.2327	0.2809	0.8009	0.927	LOGNORMAL	6.2365	3.378	54	3.378
TOTAL ORGANIC CARBON	mg/kg	29	30	9483.3267	0.7892	0.9423	0.927	LOGNORMAL	11888.1066	14050.1814	34000	14050.1814
TRICHLOROFLUOROMETHANE	µg/kg	1	30	1.5043	0.7405	0.8784	0.927	LOGNORMAL	1.9248	1.9866	2	1.9866
VANADIUM	mg/kg	30	30	25.15	0.9396	0.9517	0.927	LOGNORMAL	28.4514	29.6173	47.1	29.6173
ZINC	mg/kg	30	30	197.8933	0.6926	0.9738	0.927	LOGNORMAL	262.9136	308.6501	1120	308.6501

UCL = Upper Confidence Limit

APPENDIX H.4
SWMU 3 - JEEP TRAIL
TERRESTRIAL WILDLIFE MODEL HAZARD QUOTIENT CALCULATION
BELTED KINGFISHER - CONSERVATIVE INPUTS
NSWC CRANE, INDIANA

Parameters	Max. Sed. Concentration (mg/kg)	95%UCL SW Concentration (mg/L)	BAF/ BSAF (sed to fish)[1]	Fish Concentration (mg/kg)	Dose (mg/kg/day)	NOAEL (mg/kg/day)	LOAEL (mg/kg/day)	NOAEL EEQ	LOAEL EEQ
Semi-Volatiles									
Acenaphthene	1.43E-03	0.00E+00	2.90E-01	1.56E-03	8.86E-04	2.00E+00	2.00E+01	4.43E-04	4.43E-05
Pesticides									
Methoxychlor	6.59E-03	0.00E+00	1.80E+00	4.46E-02	2.49E-02	NV	NV	#VALUE!	#VALUE!
Energetics									
2,4,6-Trinitrotoluene	4.00E-04	2.22E-04	1.00E+00	1.50E-03	8.71E-04	NV	NV	#VALUE!	#VALUE!
2,4-Dinitrotoluene	1.69E-04	0.00E+00	1.00E+00	6.33E-04	3.54E-04	NV	NV	#VALUE!	#VALUE!
2-Amino-4,6-dinitrotoluene	1.78E-04	3.84E-04	1.00E+00	6.69E-04	4.28E-04	NV	NV	#VALUE!	#VALUE!
4-Amino-2,6-dinitrotoluene	1.68E-04	1.06E-03	1.00E+00	6.32E-04	5.00E-04	NV	NV	#VALUE!	#VALUE!
HMX	3.15E-03	5.26E-02	1.00E+00	1.18E-02	1.39E-02	NV	NV	#VALUE!	#VALUE!
RDX	1.60E-04	6.30E-02	1.00E+00	6.01E-04	9.00E-03	NV	NV	#VALUE!	#VALUE!
Nitrocellulose	0.00E+00	7.34E-01	1.00E+00	0.00E+00	1.01E-01	NV	NV	#VALUE!	#VALUE!
Herbicides									
2,4-D	1.83E-02	9.39E-05	1.00E+00	6.87E-02	3.85E-02	NV	NV	#VALUE!	#VALUE!
Inorganics									
Cadmium	1.78E+00	5.82E-04	2.32E+00	4.11E+00	2.31E+00	1.45E+00	2.00E+01	1.59E+00	1.16E-01
Copper	9.69E+01	1.16E-02	1.52E+00	1.48E+02	8.33E+01	4.70E+01	6.17E+01	1.77E+00	1.35E+00
Lead	2.10E+02	2.85E-01	1.76E-01	3.70E+01	2.30E+01	1.13E+00	1.13E+01	2.04E+01	2.04E+00
Selenium	1.89E-01	3.05E-04	1.00E+00	1.89E-01	1.08E-01	4.00E-01	8.00E-01	2.69E-01	1.35E-01
Zinc	3.09E+02	7.70E-02	2.18E+00	6.74E+02	3.79E+02	1.45E+01	1.31E+02	2.62E+01	2.90E+00

Cells are shaded if the EEQ is greater than 1.0.

1 - The sediment to invertebrate BAF was used for metals because no sediment to fish BAFs were available for metals.

Definitions:
EEQ - Ecological Effects Quotient
NOAEL - No Observed Adverse Effects Level
LOAEL - Lowest Observed Adverse Effects Level
BAF - Bioaccumulation factor (for metals)
BSAF - Bioaccumulation factor (for organics)

Dose=[(If*Cf+Is*Cs+Iw*Cw)H]/BW

Body Weight = (BW)	0.136	kg
Food Ingestion Rate = (If)	0.07580	kg/day
Water Ingestion Rate = (Iw)	0.01870	L/day
Sediment Ingestion Rate = (Is)	0.00152	kg/day
Home Range = (HR)	Assume 100% on site	
Contaminated Area = (CA)	Assume equal to home range	

Cs = Contaminant concentration in sediment
Cw = Contaminant concentration in water
Cf = Contaminant conc. in food:
Metals = sediment concentration * BAF
Organics = (sediment concentration * BSAF * %lipids)/(% total organic carbon)
Where:
% Lipids = 3.56 % (see Appendix H.5)
% TOC = 0.9483 % (average of all sediment samples)

APPENDIX H.4
SWMU 3 - JEEP TRAIL
TERRESTRIAL WILDLIFE MODEL HAZARD QUOTIENT CALCULATION
BELTED KINGFISHER - AVERAGE INPUTS
NSWC CRANE, INDIANA

Parameters	Avg. Sed. Concentration (mg/kg)	Avg. SW Concentration (mg/L)	BAF/ BSAF (sed to fish)[1]	Fish Concentration (mg/kg)	Dose (mg/kg/day)	NOAEL (mg/kg/day)	LOAEL (mg/kg/day)	NOAEL EEQ	LOAEL EEQ
Semi-Volatiles									
Acenaphthene	1.43E-03	0.00E+00	2.90E-01	1.56E-03	7.21E-04	2.00E+00	2.00E+01	3.60E-04	3.60E-05
Pesticides									
Methoxychlor	6.16E-03	0.00E+00	1.80E+00	4.16E-02	1.89E-02	NV	NV	#VALUE!	#VALUE!
Energetics									
2,4,6-Trinitrotoluene	3.16E-04	1.98E-04	1.00E+00	1.19E-03	5.63E-04	NV	NV	#VALUE!	#VALUE!
2,4-Dinitrotoluene	1.59E-04	0.00E+00	1.00E+00	5.96E-04	2.72E-04	NV	NV	#VALUE!	#VALUE!
2-Amino-4,6-dinitrotoluene	1.61E-04	2.98E-04	1.00E+00	6.04E-04	3.08E-04	NV	NV	#VALUE!	#VALUE!
4-Amino-2,6-dinitrotoluene	1.53E-04	5.87E-04	1.00E+00	5.72E-04	3.25E-04	NV	NV	#VALUE!	#VALUE!
HMX	3.15E-03	1.32E-02	1.00E+00	1.18E-02	6.84E-03	NV	NV	#VALUE!	#VALUE!
RDX	1.47E-04	9.80E-03	1.00E+00	5.51E-04	1.33E-03	NV	NV	#VALUE!	#VALUE!
Nitrocellulose	0.00E+00	6.15E-01	1.00E+00	0.00E+00	6.75E-02	NV	NV	#VALUE!	#VALUE!
Herbicides									
2,4-D	6.67E-03	6.00E-05	1.00E+00	2.50E-02	1.14E-02	NV	NV	#VALUE!	#VALUE!
Inorganics									
Cadmium	1.29E+00	4.77E-04	1.74E-01	2.24E-01	1.13E-01	1.45E+00	2.00E+01	7.82E-02	5.67E-03
Copper	5.73E+01	5.22E-03	4.51E-01	2.59E+01	1.22E+01	4.70E+01	6.17E+01	2.61E-01	1.98E-01
Lead	1.20E+02	2.91E-02	2.06E-02	2.47E+00	2.21E+00	1.13E+00	1.13E+01	1.96E+00	1.96E-01
Selenium	1.57E-01	2.57E-04	1.00E+00	1.57E-01	7.25E-02	4.00E-01	8.00E-01	1.81E-01	9.07E-02
Zinc	1.98E+02	2.16E-02	5.61E-01	1.11E+02	5.22E+01	1.45E+01	1.31E+02	3.60E+00	3.98E-01

Cells are shaded if the EEQ is greater than 1.0.

1 - The sediment to invertebrate BAF was used for metals because no sediment to fish BAFs were available for metals.

The average concentrations were used except in cases where the 95% UCL was greater than the average concentration and the 95%UCL was then used.

Definitions:
EEQ - Ecological Effects Quotient
NOAEL - No Observed Adverse Effects Level
LOAEL - Lowest Observed Adverse Effects Level
BAF - Bioaccumulation factor (for metals)
BSAF - Bioaccumulation factor (for organics)

Dose=[(If*Cf+Is*Cs+Iw*Cw)H]/BW

Body Weight = (BW)	0.152	kg
Food Ingestion Rate = (If)	0.069	kg/day
Water Ingestion Rate = (Iw)	0.017	L/day
Sediment Ingestion Rate = (Is)	0.001378	kg/day
Home Range = (HR)	Assume 100% on site	
Contaminated Area = (CA)	Assume equal to home range	

Cs = Contaminant concentration in sediment
Cw = Contaminant concentration in water
Cf = Contaminant conc. in food:
Metals = sediment concentration * BAF
Organics = (sediment concentration * BSAF * %lipids)/(% total organic carbon)
Where:
% Lipids = 3.56 % (see Appendix H.5)
% TOC = 0.9483 % (average of all sediment samples)

APPENDIX H.4
SWMU 3 - JEEP TRAIL
TERRESTRIAL WILDLIFE MODEL HAZARD QUOTIENT CALCULATION
RACCOON - CONSERVATIVE INPUTS
NSWC CRANE, INDIANA

Parameters	Max. Sed. Concentration (mg/kg)	95% UCL SW Concentration (mg/L)	BAF/ BSAF (sed to fish)[1]	Fish Concentration (mg/kg)	Dose (mg/kg/day)	NOAEL (mg/kg/day)	LOAEL (mg/kg/day)	NOAEL EEQ	LOAEL EEQ
Semi-Volatiles									
Acenaphthene	1.43E-03	0.00E+00	2.90E-01	1.56E-03	5.25E-04	5.93E-02	1.19E-01	8.85E-03	4.43E-03
Pesticides									
Methoxychlor	6.59E-03	0.00E+00	1.80E+00	4.46E-02	1.40E-02	1.58E-01	3.16E-01	8.84E-02	4.42E-02
Energetics									
2,4,6-Trinitrotoluene	4.00E-04	2.22E-04	1.00E+00	1.50E-03	4.99E-04	6.32E-02	6.32E-01	7.90E-03	7.90E-04
2,4-Dinitrotoluene	1.69E-04	0.00E+00	1.00E+00	6.33E-04	2.00E-04	2.26E-01	1.69E+00	8.88E-04	1.18E-04
2-Amino-4,6-dinitrotoluene	1.78E-04	3.84E-04	1.00E+00	6.69E-04	2.53E-04	#VALUE!	#VALUE!	#VALUE!	#VALUE!
4-Amino-2,6-dinitrotoluene	1.68E-04	1.06E-03	1.00E+00	6.32E-04	3.13E-04	#VALUE!	#VALUE!	#VALUE!	#VALUE!
HMX	3.15E-03	5.26E-02	1.00E+00	1.18E-02	9.36E-03	1.02E-02	2.54E-02	9.22E-01	3.69E-01
RDX	1.60E-04	6.30E-02	1.00E+00	6.01E-04	6.91E-03	2.37E-02	1.19E-01	2.92E-01	5.83E-02
Nitrocellulose	0.00E+00	7.34E-01	1.00E+00	0.00E+00	7.83E-02	#N/A	#N/A	#N/A	#N/A
Herbicides									
2,4-D	1.83E-02	9.39E-05	1.00E+00	6.87E-02	2.18E-02	3.95E-02	1.98E-01	5.51E-01	1.10E-01
Inorganics									
Cadmium	1.78E+00	5.82E-04	2.32E+00	4.11E+00	1.32E+00	3.42E-02	3.42E-01	3.87E+01	3.87E+00
Copper	9.69E+01	1.16E-02	1.52E+00	1.48E+02	4.84E+01	1.32E+00	1.71E+00	3.67E+01	2.84E+01
Lead	2.10E+02	2.85E-01	1.76E-01	3.70E+01	1.76E+01	3.16E-01	3.16E+00	5.56E+01	5.56E+00
Selenium	1.89E-01	3.05E-04	1.00E+00	1.89E-01	6.40E-02	7.90E-03	1.30E-02	8.11E+00	4.91E+00
Zinc	3.09E+02	7.70E-02	2.18E+00	6.74E+02	2.17E+02	6.32E+00	1.26E+01	3.44E+01	1.72E+01

Cells are shaded if the EEQ is greater than 1.0.

1 - The sediment to invertebrate BAF was used for metals because no sediment to fish BAFs were available for metals.

Definitions:
EEQ - Ecological Effects Quotient
NOAEL - No Observed Adverse Effects Level
LOAEL - Lowest Observed Adverse Effects Level
BAF - Bioaccumulation factor (for metals)
BSAF - Bioaccumulation factor (for organics)

Dose=[(If*Cf+Is*Cs+Iw*Cw)H]/BW

Body Weight = (BW)	5.34E+00	kg
Food Ingestion Rate = (If)	1.65E+00	kg/day
Water Ingestion Rate = (Iw)	5.70E-01	L/day
Sediment Ingestion Rate = (Is)	1.55E-01	kg/day
Home Range = (HR)	Assume 100% on site	
Contaminated Area = (CA)	Assume equal to home range	

Cs = Contaminant concentration in sediment
Cw = Contaminant concentration in water
Cf = Contaminant conc. in food:
Metals = sediment concentration * BAF
Organics = (sediment concentration * BSAF * %lipids)/(% total organic carbon)
Where:
% Lipids = 3.56 % (see Appendix H.5)
% TOC = 0.9483 % (average of all sediment samples)

APPENDIX H.4
SWMU 3 - JEEP TRAIL
TERRESTRIAL WILDLIFE MODEL HAZARD QUOTIENT CALCULATION
RACCOON - AVERAGE INPUTS
NSWC CRANE, INDIANA

Parameters	Avg. Sed. Concentration (mg/kg)	Avg. SW Concentration (mg/L)	BAF/ BSAF (sed to fish)[1]	Fish Concentration (mg/kg)	Dose (mg/kg/day)	NOAEL (mg/kg/day)	LOAEL (mg/kg/day)	NOAEL EEQ	LOAEL EEQ
Semi-Volatiles									
Acenaphthene	1.43E-03	0.00E+00	2.90E-01	1.56E-03	3.31E-04	7.65E-02	1.53E-01	4.33E-03	2.16E-03
Pesticides									
Methoxychlor	6.16E-03	0.00E+00	1.80E+00	4.16E-02	8.24E-03	2.04E-01	4.08E-01	4.04E-02	2.02E-02
Energetics									
2,4,6-Trinitrotoluene	3.16E-04	1.98E-04	1.00E+00	1.19E-03	2.54E-04	8.16E-02	8.16E-01	3.11E-03	3.11E-04
2,4-Dinitrotoluene	1.59E-04	0.00E+00	1.00E+00	5.96E-04	1.19E-04	2.91E-01	2.18E+00	4.09E-04	5.45E-05
2-Amino-4,6-dinitrotoluene	1.61E-04	2.98E-04	1.00E+00	6.04E-04	1.45E-04	#VALUE!	#VALUE!	#VALUE!	#VALUE!
4-Amino-2,6-dinitrotoluene	1.53E-04	5.87E-04	1.00E+00	5.72E-04	1.63E-04	#VALUE!	#VALUE!	#VALUE!	#VALUE!
HMX	3.15E-03	1.32E-02	1.00E+00	1.18E-02	3.45E-03	1.31E-02	3.28E-02	2.63E-01	1.05E-01
RDX	1.47E-04	9.80E-03	1.00E+00	5.51E-04	9.19E-04	3.06E-02	1.53E-01	3.00E-02	6.01E-03
Nitrocellulose	0.00E+00	6.15E-01	1.00E+00	0.00E+00	5.07E-02	#N/A	#N/A	#N/A	#N/A
Herbicides									
2,4-D	6.67E-03	6.00E-05	1.00E+00	2.50E-02	5.01E-03	5.10E-02	2.55E-01	9.83E-02	1.97E-02
Inorganics									
Cadmium	1.29E+00	4.77E-04	1.74E-01	2.24E-01	6.74E-02	4.41E-02	4.41E-01	1.53E+00	1.53E-01
Copper	5.73E+01	5.22E-03	4.51E-01	2.59E+01	6.09E+00	1.71E+00	2.21E+00	3.57E+00	2.76E+00
Lead	1.20E+02	2.91E-02	2.06E-02	2.47E+00	2.68E+00	4.08E-01	4.08E+00	6.58E+00	6.58E-01
Selenium	1.57E-01	2.57E-04	1.00E+00	1.57E-01	3.35E-02	1.02E-02	1.68E-02	3.28E+00	1.99E+00
Zinc	1.98E+02	2.16E-02	5.61E-01	1.11E+02	2.53E+01	8.16E+00	1.63E+01	3.10E+00	1.55E+00

Cells are shaded if the EEQ is greater than 1.0.

1 - The sediment to invertebrate BAF was used for metals because no sediment to fish BAFs were available for metals.

The average concentrations were used except in cases where the 95% UCL was greater than the average concentration and the 95%UCL was then used.

Definitions:
EEQ - Ecological Effects Quotient
NOAEL - No Observed Adverse Effects Level
LOAEL - Lowest Observed Adverse Effects Level
BAF - Bioaccumulation factor (for metals)
BSAF - Bioaccumulation factor (for organics)

Dose=[(If*Cf+Is*Cs+Iw*Cw)H]/BW

Body Weight = (BW)	6.86E+00	kg
Food Ingestion Rate = (If)	1.34E+00	kg/day
Water Ingestion Rate = (Iw)	5.66E-01	L/day
Sediment Ingestion Rate = (Is)	1.26E-01	kg/day
Home Range = (HR)	Assume 100% on site	
Contaminated Area = (CA)	Assume equal to home range	
H=HR/CA (Assume = to 1)		

Dose=[(If*Cf+Is*Cs+Iw*Cw)H]/BW

Cs = Contaminant concentration in sediment
Cw = Contaminant concentration in water
Cf = Contaminant conc. in food:
Metals = sediment concentration * BAF
Organics = (sediment concentration * BSAF * %lipids)/(% total organic carbon)
Where:
% Lipids = 3.56 % (see Appendix H.5)
% TOC = 0.9483 % (average of all sediment samples)

APPENDIX H.4
SWMU 3 - JEEP TRAIL
TERRESTRIAL WILDLIFE MODEL ECOLOGICAL EFFECTS QUOTIENT CALCULATION
AMERICAN ROBIN - CONSERVATIVE INPUTS
NSWC CRANE, INDIANA

Parameter	95% UCL Soil Concentration (mg/kg)	95% UCL SW Concentration (mg/L)	Biotransfer Factor (soil to inv.)	Invertebrate Concentration (mg/kg)	Dose (mg/kg/day)	NOAEL (mg/kg/day)	LOAEL (mg/kg/day)	NOAEL EEQ	LOAEL EEQ
Dioxins/Furans									
TEQ Bird	7.50E-06	0.00E+00	3.56E+00	2.67E-05	4.37E-05	1.40E-05	1.40E-04	3.12E+00	3.12E-01
Energetics									
1,3,5-Trinitrobenzene	2.49E-01	0.00E+00	1.00E+00	2.49E-01	4.38E-01	NV	NV	#VALUE!	#VALUE!
2,4,6-Trinitrotoluene	2.62E+00	0.00E+00	1.00E+00	2.62E+00	4.61E+00	NV	NV	#VALUE!	#VALUE!
2-Amino-4,6-dinitrotoluene	4.33E-01	3.84E-04	1.00E+00	4.33E-01	7.62E-01	NV	NV	#VALUE!	#VALUE!
2-Nitrotoluene	1.32E-01	0.00E+00	1.00E+00	1.32E-01	2.32E-01	NV	NV	#VALUE!	#VALUE!
4-Amino-2,6-dinitrotoluene	3.65E-01	1.06E-03	1.00E+00	3.65E-01	6.41E-01	NV	NV	#VALUE!	#VALUE!
Nitrocellulose	0.00E+00	7.34E-01	1.00E+00	0.00E+00	1.15E-01	NV	NV	#VALUE!	#VALUE!
HMX	4.77E+00	5.26E-02	1.00E+00	4.77E+00	8.40E+00	NV	NV	#VALUE!	#VALUE!
RDX	3.41E+00	6.30E-02	1.00E+00	3.41E+00	6.00E+00	NV	NV	#VALUE!	#VALUE!
Inorganics									
Cadmium	1.19E+00	5.82E-04	6.51E+00	7.75E+00	1.25E+01	1.45E+00	2.00E+01	8.65E+00	6.27E-01
Chromium	2.64E+01	3.07E-03	5.06E-01	1.34E+01	2.56E+01	1.00E+00	5.00E+00	2.56E+01	5.13E+00
Copper	2.99E+01	1.16E-02	2.45E-01	7.32E+00	1.66E+01	4.70E+01	6.17E+01	3.53E-01	2.69E-01
Lead	1.51E+02	2.85E-01	2.44E-01	3.67E+01	8.34E+01	1.13E+00	1.13E+01	7.38E+01	7.38E+00
Mercury	9.50E-02	0.00E+00	3.30E+00	3.14E-01	5.15E-01	6.40E-03	6.40E-02	8.05E+01	8.05E+00
Nickel	1.91E+01	2.92E-03	7.57E-01	1.45E+01	2.62E+01	7.74E+01	1.07E+02	3.39E-01	2.45E-01
Zinc	1.30E+02	7.70E-02	2.06E+00	2.67E+02	4.47E+02	1.45E+01	1.31E+02	3.09E+01	3.42E+00

Cells are shaded if the EEQ is greater than 1.0.

Definitions:
EEQ - Ecological Effects Quotient
NOAEL - No Observed Adverse Effects Level
LOAEL - Lowest Observed Adverse Effects Level

Dose=[(If*Ci+Is*Cs+Iw*Cw)H]/BW

Body Weight = (BW)	7.730E-02	kg
Food Ingestion Rate = (If)	1.231E-01	kg/day
Water Ingestion Rate = (Iw)	1.210E-02	L/day
Soil Ingestion Rate = (Is)	1.280E-02	kg/day
Home Range = (HR)	Assume 100% on site	
Contaminated Area = (CA)	Assume equal to home range	

H=HR/CA (Assume = to 1 for maximum exposure)

Cs = Contaminant concentration in soil
Cw = Contaminant concentration in water
Ci = Contaminant conc. in soil invertebrates (=soil conc. * Biotransfer Factor)

APPENDIX H.4
SWMU 3 - JEEP TRAIL
TERRESTRIAL WILDLIFE MODEL ECOLOGICAL EFFECTS QUOTIENT CALCULATION
AMERICAN ROBIN - AVERAGE INPUTS
NSWC CRANE, INDIANA

Parameter	Avg. All Soil Concentration (mg/kg)	Avg. SW Concentration (mg/L)	Biotransfer Factor (soil to inv.)	Invertebrate Concentration (mg/kg)	Dose (mg/kg/day)	NOAEL (mg/kg/day)	LOAEL (mg/kg/day)	NOAEL EEQ	LOAEL EEQ
Dioxins/Furans									
TEQ Bird	1.92E-06	0.00E+00	1.76E+00	3.39E-06	4.32E-06	1.40E-05	1.40E-04	3.09E-01	3.09E-02
Energetics									
1,3,5-Trinitrobenzene	2.49E-01	0.00E+00	1.00E+00	2.49E-01	3.32E-01	NV	NV	#VALUE!	#VALUE!
2,4,6-Trinitrotoluene	2.62E+00	0.00E+00	1.00E+00	2.62E+00	3.49E+00	NV	NV	#VALUE!	#VALUE!
2-Amino-4,6-dinitrotoluene	4.33E-01	3.00E-04	1.00E+00	4.33E-01	5.76E-01	NV	NV	#VALUE!	#VALUE!
2-Nitrotoluene	1.00E-01	0.00E+00	1.00E+00	1.00E-01	1.33E-01	NV	NV	#VALUE!	#VALUE!
4-Amino-2,6-dinitrotoluene	3.65E-01	5.87E-04	1.00E+00	3.65E-01	4.85E-01	NV	NV	#VALUE!	#VALUE!
Nitrocellulose	0.00E+00	6.15E-01	1.00E+00	0.00E+00	8.58E-02	NV	NV	#VALUE!	#VALUE!
HMX	4.77E+00	1.32E-02	1.00E+00	4.77E+00	6.35E+00	NV	NV	#VALUE!	#VALUE!
RDX	3.41E+00	9.80E-03	1.00E+00	3.41E+00	4.54E+00	NV	NV	#VALUE!	#VALUE!
Inorganics									
Cadmium	8.88E-01	4.77E-04	1.23E+00	1.10E+00	1.43E+00	1.45E+00	2.00E+01	9.87E-01	7.16E-02
Chromium	2.51E+01	1.22E-03	4.90E-02	1.23E+00	4.63E+00	1.00E+00	5.00E+00	4.63E+00	9.26E-01
Copper	2.23E+01	5.22E-03	8.24E-02	1.84E+00	5.00E+00	4.70E+01	6.17E+01	1.07E-01	8.11E-02
Lead	1.51E+02	2.91E-02	4.26E-02	6.41E+00	2.66E+01	1.13E+00	1.13E+01	2.35E+01	2.35E+00
Mercury	6.70E-02	0.00E+00	2.71E-01	1.81E-02	3.03E-02	6.40E-03	6.40E-02	4.73E+00	4.73E-01
Nickel	1.73E+01	2.24E-03	1.69E-01	2.93E+00	5.69E+00	7.74E+01	1.07E+02	7.35E-02	5.32E-02
Zinc	1.01E+02	2.16E-02	5.12E-01	5.18E+01	7.51E+01	1.45E+01	1.31E+02	5.19E+00	5.74E-01

Cells are shaded if the EEQ is greater than 1.0.
The average concentrations were used except in cases where the 95% UCL was greater than the average concentration and the 95%UCL was then used.

Definitions:
EEQ - Ecological Effects Quotient
NOAEL - No Observed Adverse Effects Level
LOAEL - Lowest Observed Adverse Effects Level

Dose=[(If*Ci+Is*Cs+Iw*Cw)H]/BW

Body Weight = (BW)	8.100E-02	kg
Food Ingestion Rate = (If)	9.760E-02	kg/day
Water Ingestion Rate = (Iw)	1.130E-02	L/day
Soil Ingestion Rate = (Is)	1.015E-02	kg/day
Home Range = (HR)	Assume 100% on site	
Contaminated Area = (CA)	Assume equal to home range	

H=HR/CA (Assume = to 1 for maximum exposure)

Cs = Contaminant concentration in soil
Cw = Contaminant concentration in water
Ci = Contaminant conc. in soil invertebrates (=soil conc. * Biotransfer Factor)

APPENDIX H.4
SWMU 3 - JEEP TRAIL
TERRESTRIAL WILDLIFE MODEL ECOLOGICAL EFFECTS QUOTIENT CALCULATION
BOBWHITE QUAIL - CONSERVATIVE INPUTS
NSWC CRANE, INDIANA

Parameter	95% UCL Soil Concentration (mg/kg)	95% UCL SW Concentration (mg/L)	Biotransfer Factor (soil to veg.)	Vegetation Concentration (mg/kg)	Dose (mg/kg/day)	NOAEL (mg/kg/day)	LOAEL (mg/kg/day)	NOAEL EEQ	LOAEL EEQ
Dioxins/Furans									
TEQ Bird	7.50E-06	0.00E+00	3.20E-03	2.40E-08	6.47E-08	1.40E-05	1.40E-04	4.62E-03	4.62E-04
Energetics									
1,3,5-Trinitrobenzene	2.49E-01	0.00E+00	1.60E+00	3.99E-01	4.25E-02	NV	NV	#VALUE!	#VALUE!
2,4,6-Trinitrotoluene	2.62E+00	0.00E+00	3.60E-01	9.44E-01	1.17E-01	NV	NV	#VALUE!	#VALUE!
2-Amino-4,6-dinitrotoluene	4.33E-01	3.84E-04	1.00E+00	4.33E-01	4.75E-02	NV	NV	#VALUE!	#VALUE!
2-Nitrotoluene	1.32E-01	0.00E+00	3.60E-01	4.74E-02	5.89E-03	NV	NV	#VALUE!	#VALUE!
4-Amino-2,6-dinitrotoluene	3.65E-01	1.06E-03	1.00E+00	3.65E-01	4.01E-02	NV	NV	#VALUE!	#VALUE!
Nitrocellulose	0.00E+00	7.34E-01	0.00E+00	0.00E+00	1.05E-01	NV	NV	#VALUE!	#VALUE!
HMX	4.77E+00	5.26E-02	3.50E+00	1.67E+01	1.74E+00	NV	NV	#VALUE!	#VALUE!
RDX	3.41E+00	6.30E-02	9.40E-02	3.20E-01	6.97E-02	NV	NV	#VALUE!	#VALUE!
Inorganics									
Cadmium	1.19E+00	5.82E-04	9.75E-01	1.16E+00	1.28E-01	1.45E+00	2.00E+01	8.79E-02	6.38E-03
Chromium	2.64E+01	3.07E-03	2.52E-02	6.64E-01	2.87E-01	1.00E+00	5.00E+00	2.87E-01	5.74E-02
Copper	2.99E+01	1.16E-02	1.88E-01	5.60E+00	8.17E-01	4.70E+01	6.17E+01	1.74E-02	1.32E-02
Lead	1.51E+02	2.85E-01	1.40E-01	2.11E+01	3.43E+00	1.13E+00	1.13E+01	3.04E+00	3.04E-01
Mercury	9.50E-02	0.00E+00	1.50E+00	1.43E-01	1.52E-02	6.40E-03	6.40E-02	2.38E+00	2.38E-01
Nickel	1.91E+01	2.92E-03	4.23E-01	8.09E+00	9.78E-01	7.74E+01	1.07E+02	1.26E-02	9.14E-03
Zinc	1.30E+02	7.70E-02	5.46E-01	7.08E+01	8.25E+00	1.45E+01	1.31E+02	5.70E-01	6.30E-02

Cells are shaded if the EEQ is greater than 1.0.

Definitions:
EEQ - Ecological Effects Quotient
NOAEL - No Observed Adverse Effects Level
LOAEL - Lowest Observed Adverse Effects Level

Dose=[(If*Cv+Is*Cs+Iw*Cw)H]/BW

Body Weight = (BW)	1.620E-01	kg
Food Ingestion Rate = (If)	1.640E-02	kg/day
Water Ingestion Rate = (Iw)	2.310E-02	L/day
Soil Ingestion Rate = (Is)	1.345E-03	kg/day
Home Range = (HR)	Assume 100% on site	
Contaminated Area = (CA)	Assume equal to home range.	

H=HR/CA (Assume = to 1 for maximum exposure)

Cs = Contaminant concentration in soil
Cw = Contaminant concentration in water
Cv = Contaminant conc. in vegetation (=soil conc. * Biotransfer Factor)

APPENDIX H.4
SWMU 3 - JEEP TRAIL
TERRESTRIAL WILDLIFE MODEL ECOLOGICAL EFFECTS QUOTIENT CALCULATION
BOBWHITE QUAIL - AVERAGE INPUTS
NSWC CRANE, INDIANA

Parameter	Avg. All Soil Concentration (mg/kg)	Avg. SW Concentration (mg/L)	Biotransfer Factor (soil to veg.)	Vegetation Concentration (mg/kg)	Dose (mg/kg/day)	NOAEL (mg/kg/day)	LOAEL (mg/kg/day)	NOAEL EEQ	LOAEL EEQ
Dioxins/Furans									
TEQ Bird	1.92E-06	0.00E+00	3.20E-03	6.15E-09	1.33E-08	1.40E-05	1.40E-04	9.52E-04	9.52E-05
Energetics									
1,3,5-Trinitrobenzene	2.49E-01	0.00E+00	1.60E+00	3.99E-01	3.41E-02	NV	NV	#VALUE!	#VALUE!
2,4,6-Trinitrotoluene	2.62E+00	0.00E+00	3.60E-01	9.44E-01	9.43E-02	NV	NV	#VALUE!	#VALUE!
2-Amino-4,6-dinitrotoluene	4.33E-01	3.00E-04	1.00E+00	4.33E-01	3.82E-02	NV	NV	#VALUE!	#VALUE!
2-Nitrotoluene	1.00E-01	0.00E+00	3.60E-01	3.60E-02	3.60E-03	NV	NV	#VALUE!	#VALUE!
4-Amino-2,6-dinitrotoluene	3.65E-01	5.87E-04	1.00E+00	3.65E-01	3.22E-02	NV	NV	#VALUE!	#VALUE!
Nitrocellulose	0.00E+00	6.15E-01	0.00E+00	0.00E+00	6.39E-02	NV	NV	#VALUE!	#VALUE!
HMX	4.77E+00	1.32E-02	3.50E+00	1.67E+01	1.39E+00	NV	NV	#VALUE!	#VALUE!
RDX	3.41E+00	9.80E-03	9.40E-02	3.20E-01	4.98E-02	NV	NV	#VALUE!	#VALUE!
Inorganics									
Cadmium	8.88E-01	4.77E-04	1.76E-01	1.56E-01	1.87E-02	1.45E+00	2.00E+01	1.29E-02	9.34E-04
Chromium	2.51E+01	1.22E-03	1.23E-02	3.09E-01	1.93E-01	1.00E+00	5.00E+00	1.93E-01	3.86E-02
Copper	2.23E+01	5.22E-03	3.72E-02	8.29E-01	2.17E-01	4.70E+01	6.17E+01	4.61E-03	3.51E-03
Lead	1.51E+02	2.91E-02	1.17E-02	1.76E+00	1.15E+00	1.13E+00	1.13E+01	1.02E+00	1.02E-01
Mercury	6.70E-02	0.00E+00	1.96E-01	1.31E-02	1.51E-03	6.40E-03	6.40E-02	2.36E-01	2.36E-02
Nickel	1.73E+01	2.24E-03	5.40E-03	9.33E-02	1.23E-01	7.74E+01	1.07E+02	1.59E-03	1.15E-03
Zinc	1.01E+02	2.16E-02	1.10E-01	1.11E+01	1.58E+00	1.45E+01	1.31E+02	1.09E-01	1.21E-02

Cells are shaded if the EEQ is greater than 1.0.
The average concentrations were used except in cases where the 95% UCL was greater than the average concentration and the 95%UCL was then used.

Definitions:
EEQ - Ecological Effects Quotient
NOAEL - No Observed Adverse Effects Level
LOAEL - Lowest Observed Adverse Effects Level

Dose=[(If*Cv+Is*Cs+Iw*Cw)H]/BW

Body Weight = (BW)	1.770E-01	kg
Food Ingestion Rate = (If)	1.440E-02	kg/day
Water Ingestion Rate = (Iw)	1.840E-02	L/day
Soil Ingestion Rate = (Is)	1.181E-03	kg/day
Home Range = (HR)	Assume 100% on site	
Contaminated Area = (CA)	Assume equal to home range	

H=HR/CA (Assume = to 1 for maximum exposure)

Cs = Contaminant concentration in soil
Cw = Contaminant concentration in water
Cv = Contaminant conc. in vegetation (=soil conc. * Biotransfer Factor)

APPENDIX H.4
SWMU 3 - JEEP TRAIL
TERRESTRIAL WILDLIFE MODEL ECOLOGICAL EFFECTS QUOTIENT CALCULATION
MEADOW VOLE - CONSERVATIVE INPUTS
NSWC CRANE, INDIANA

Parameter	95% UCL Soil Concentration (mg/kg)	95% UCL SW Concentration (mg/L)	Biotransfer Factor (soil to veg.)	Vegetation Concentration (mg/kg)	Dose (mg/kg/day)	NOAEL (mg/kg/day)	LOAEL (mg/kg/day)	NOAEL EEQ	LOAEL EEQ
Dioxins/Furans									
TEQ Mammal	7.40E-06	0.00E+00	3.20E-03	2.37E-08	7.83E-08	8.95E-06	8.95E-05	8.74E-03	8.74E-04
Energetics									
1,3,5-Trinitrobenzene	2.49E-01	0.00E+00	1.60E+00	3.99E-01	1.58E-01	2.36E+01	1.19E+02	6.67E-03	1.32E-03
2,4,6-Trinitrotoluene	2.62E+00	0.00E+00	3.60E-01	9.44E-01	3.92E-01	1.43E+01	1.43E+02	2.74E-02	2.74E-03
2-Amino-4,6-dinitrotoluene	4.33E-01	3.84E-04	1.00E+00	4.33E-01	1.73E-01	#VALUE!	#VALUE!	#VALUE!	#VALUE!
2-Nitrotoluene	1.32E-01	0.00E+00	3.60E-01	4.74E-02	1.97E-02	1.79E+02	1.79E+03	1.10E-04	1.10E-05
4-Amino-2,6-dinitrotoluene	3.65E-01	1.06E-03	1.00E+00	3.65E-01	1.46E-01	#VALUE!	#VALUE!	#VALUE!	#VALUE!
Nitrocellulose	0.00E+00	7.34E-01	0.00E+00	0.00E+00	1.72E-01	#N/A	#N/A	#N/A	#N/A
HMX	4.77E+00	5.26E-02	3.50E+00	1.67E+01	6.55E+00	2.30E+00	5.75E+00	2.85E+00	1.14E+00
RDX	3.41E+00	6.30E-02	9.40E-02	3.20E-01	1.71E-01	5.37E+00	2.69E+01	3.19E-02	6.38E-03
Inorganics									
Cadmium	1.19E+00	5.82E-04	9.75E-01	1.16E+00	4.63E-01	7.75E+00	7.75E+01	5.97E-02	5.97E-03
Chromium	2.64E+01	3.07E-03	2.52E-02	6.64E-01	5.06E-01	2.94E+01	1.18E+02	1.72E-02	4.30E-03
Copper	2.99E+01	1.16E-02	1.88E-01	5.60E+00	2.46E+00	2.99E+02	3.87E+02	8.22E-03	6.36E-03
Lead	1.51E+02	2.85E-01	1.40E-01	2.11E+01	9.70E+00	7.16E+01	7.16E+02	1.35E-01	1.35E-02
Mercury	9.50E-02	0.00E+00	1.50E+00	1.43E-01	5.63E-02	3.84E-01	6.39E-01	1.47E-01	8.81E-02
Nickel	1.91E+01	2.92E-03	4.23E-01	8.09E+00	3.33E+00	3.58E+02	7.16E+02	9.29E-03	4.65E-03
Zinc	1.30E+02	7.70E-02	5.46E-01	7.08E+01	2.88E+01	1.43E+03	2.86E+03	2.01E-02	1.00E-02

Cells are shaded if the EEQ is greater than 1.0.

Definitions:
EEQ - Ecological Effects Quotient
NOAEL - No Observed Adverse Effects Level
LOAEL - Lowest Observed Adverse Effects Level

Dose=[(If*Cv+Is*Cs+Iw*Cw)H]/BW

Body Weight = (BW)	0.0329000 kg
Food Ingestion Rate = (If)	0.0128000 kg/day
Water Ingestion Rate = (Iw)	0.0077000 L/day
Soil Ingestion Rate = (Is)	0.0003070 kg/day
Home Range = (HR)	Assume 100% on site
Contaminated Area = (CA)	Assume equal to home range
HR/CA (Assume = to 1 for maximum exposure)	

Cs = Contaminant concentration in soil
Cw = Contaminant concentration in water
Cv = Contaminant conc. in vegetation (=soil conc. * Biotransfer Factor)

APPENDIX H.4
SWMU 3 - JEEP TRAIL
TERRESTRIAL WILDLIFE MODEL ECOLOGICAL EFFECTS QUOTIENT CALCULATION
MEADOW VOLE - AVERAGE INPUTS
NSWC CRANE, INDIANA

Parameter	Avg. All Soil Concentration (mg/kg)	Avg. SW Concentration (mg/L)	Biotransfer Factor (soil to veg.)	Vegetation Concentration (mg/kg)	Dose (mg/kg/day)	NOAEL (mg/kg/day)	LOAEL (mg/kg/day)	NOAEL EEQ	LOAEL EEQ
Dioxins/Furans									
TEQ Mammal	2.01E-06	0.00E+00	3.20E-03	6.42E-09	1.77E-08	9.56E-06	9.56E-05	1.86E-03	1.86E-04
Energetics									
1,3,5-Trinitrobenzene	2.49E-01	0.00E+00	1.60E+00	3.99E-01	1.32E-01	2.52E+01	1.28E+02	5.21E-03	1.02E-03
2,4,6-Trinitrotoluene	2.62E+00	0.00E+00	3.60E-01	9.44E-01	3.27E-01	1.53E+01	1.53E+02	2.14E-02	2.14E-03
2-Amino-4,6-dinitrotoluene	4.33E-01	3.00E-04	1.00E+00	4.33E-01	1.44E-01	#VALUE!	#VALUE!	#VALUE!	#VALUE!
2-Nitrotoluene	1.00E-01	0.00E+00	3.60E-01	3.60E-02	1.25E-02	1.91E+02	1.91E+03	6.53E-05	6.53E-06
4-Amino-2,6-dinitrotoluene	3.65E-01	5.87E-04	1.00E+00	3.65E-01	1.21E-01	#VALUE!	#VALUE!	#VALUE!	#VALUE!
Nitrocellulose	0.00E+00	6.15E-01	0.00E+00	0.00E+00	1.07E-01	#N/A	#N/A	#N/A	#N/A
HMX	4.77E+00	1.32E-02	3.50E+00	1.67E+01	5.47E+00	2.46E+00	6.14E+00	2.22E+00	8.90E-01
RDX	3.41E+00	9.80E-03	9.40E-02	3.20E-01	1.32E-01	5.73E+00	2.87E+01	2.31E-02	4.62E-03
Inorganics									
Cadmium	8.88E-01	4.77E-04	1.76E-01	1.56E-01	5.78E-02	8.27E+00	8.27E+01	6.98E-03	6.98E-04
Chromium	2.51E+01	1.22E-03	1.23E-02	3.09E-01	2.97E-01	3.13E+01	1.26E+02	9.47E-03	2.36E-03
Copper	2.23E+01	5.22E-03	3.72E-02	8.29E-01	4.44E-01	3.20E+02	4.13E+02	1.39E-03	1.07E-03
Lead	1.51E+02	2.91E-02	1.17E-02	1.76E+00	1.75E+00	7.64E+01	7.64E+02	2.29E-02	2.29E-03
Mercury	6.70E-02	0.00E+00	1.96E-01	1.31E-02	4.78E-03	4.10E-01	6.83E-01	1.17E-02	7.00E-03
Nickel	1.73E+01	2.24E-03	5.40E-03	9.33E-02	1.66E-01	3.82E+02	7.64E+02	4.33E-04	2.17E-04
Zinc	1.01E+02	2.16E-02	1.10E-01	1.11E+01	4.40E+00	1.53E+03	3.06E+03	2.88E-03	1.44E-03

Cells are shaded if the EEQ is greater than 1.0.
The average concentrations were used except in cases where the 95% UCL was greater than the average concentration and the 95%UCL was then used.

Definitions:
EEQ - Ecological Effects Quotient
NOAEL - No Observed Adverse Effects Level
LOAEL - Lowest Observed Adverse Effects Level

Dose=[(If*Cv+Is*Cs+Iw*Cw)(H)]/BW

Body Weight = (BW) 0.0366300 kg
Food Ingestion Rate = (If) 0.0119000 kg/day
Water Ingestion Rate = (Iw) 0.0064000 L/day
Soil Ingestion Rate = (Is) 0.0002860 kg/day
Home Range = (HR) Assume 100% on site
Contaminated Area = (CA) Assume equal to home range
H=HR/CA (Assume = to 1 for maximum exposure)

Cs = Contaminant concentration in soil
Cw = Contaminant concentration in water
Cv = Contaminant conc. in vegetation (=soil conc. * Biotransfer Factor)

APPENDIX H.4
SWMU 3 - JEEP TRAIL
TERRESTRIAL WILDLIFE MODEL ECOLOGICAL EFFECTS QUOTIENT CALCULATION
SHORT-TAILED SHREW - CONSERVATIVE INPUTS
NSWC CRANE, INDIANA

Parameter	95% UCL Soil Concentration (mg/kg)	95% UCL SW Concentration (mg/L)	Biotransfer Factor (soil to inv.)	Invertebrate Concentration (mg/kg)	Dose (mg/kg/day)	NOAEL (mg/kg/day)	LOAEL (mg/kg/day)	NOAEL EEQ	LOAEL EEQ
Dioxins/Furans									
TEQ Mammal	7.40E-06	0.00E+00	3.56E+00	2.63E-05	2.90E-05	1.82E-05	1.82E-04	1.59E+00	1.59E-01
Energetics									
1,3,5-Trinitrobenzene	2.49E-01	0.00E+00	1.00E+00	2.49E-01	2.99E-01	4.81E+01	2.43E+02	6.22E-03	1.23E-03
2,4,6-Trinitrotoluene	2.62E+00	0.00E+00	1.00E+00	2.62E+00	3.15E+00	2.92E+01	2.92E+02	1.08E-01	1.08E-02
2-Amino-4,6-dinitrotoluene	4.33E-01	3.84E-04	1.00E+00	4.33E-01	5.20E-01	#VALUE!	#VALUE!	#VALUE!	#VALUE!
2-Nitrotoluene	1.32E-01	0.00E+00	1.00E+00	1.32E-01	1.58E-01	3.64E+02	3.64E+03	4.34E-04	4.34E-05
4-Amino-2,6-dinitrotoluene	3.65E-01	1.06E-03	1.00E+00	3.65E-01	4.38E-01	#VALUE!	#VALUE!	#VALUE!	#VALUE!
Nitrocellulose	0.00E+00	7.34E-01	1.00E+00	0.00E+00	2.07E-01	#N/A	#N/A	#N/A	#N/A
HMX	4.77E+00	5.26E-02	1.00E+00	4.77E+00	5.74E+00	4.69E+00	1.17E+01	1.23E+00	4.90E-01
RDX	3.41E+00	6.30E-02	1.00E+00	3.41E+00	4.11E+00	1.09E+01	5.47E+01	3.76E-01	7.52E-02
Inorganics									
Cadmium	1.19E+00	5.82E-04	6.51E+00	7.75E+00	8.40E+00	1.58E+01	1.58E+02	5.33E-01	5.33E-02
Chromium	2.64E+01	3.07E-03	5.06E-01	1.34E+01	1.78E+01	5.98E+01	2.39E+02	2.98E-01	7.45E-02
Copper	2.99E+01	1.16E-02	2.45E-01	7.32E+00	1.19E+01	6.10E+02	7.88E+02	1.95E-02	1.51E-02
Lead	1.51E+02	2.85E-01	2.44E-01	3.67E+01	5.99E+01	1.46E+02	1.46E+03	4.11E-01	4.11E-02
Mercury	9.50E-02	0.00E+00	3.30E+00	3.14E-01	3.46E-01	7.81E-01	1.30E+00	4.43E-01	2.66E-01
Nickel	1.91E+01	2.92E-03	7.57E-01	1.45E+01	1.80E+01	7.29E+02	1.46E+03	2.47E-02	1.24E-02
Zinc	1.30E+02	7.70E-02	2.06E+00	2.67E+02	3.02E+02	2.92E+03	5.83E+03	1.04E-01	5.18E-02

Cells are shaded if the EEQ is greater than 1.0.

Definitions:
EEQ - Ecological Effects Quotient
NOAEL - No Observed Adverse Effects Level
LOAEL - Lowest Observed Adverse Effects Level

Dose=[(If*Ci+Is*Cs+Iw*Cw)H]/BW

Body Weight = (BW)	0.0152500 kg
Food Ingestion Rate = (If)	0.0162000 kg/day
Water Ingestion Rate = (Iw)	0.0043000 L/day
Soil Ingestion Rate = (Is)	0.0021060 kg/day
Home Range = (HR)	Assume 100% on site
Contaminated Area = (CA)	Assume equal to home range

H=HR/CA (Assume = to 1 for maximum exposure)

Cs = Contaminant concentration in soil
Cw = Contaminant concentration in water
Ci = Contaminant conc. in soil invertebrates (=soil conc. * Biotransfer Factor)

APPENDIX H.4
SWMU 3 - JEEP TRAIL
TERRESTRIAL WILDLIFE MODEL ECOLOGICAL EFFECTS QUOTIENT CALCULATION
SHORT-TAILED SHREW - AVERAGE INPUTS
NSWC CRANE, INDIANA

Parameter	Avg. All Soil Concentration (mg/kg)	Avg. SW Concentration (mg/L)	Biotransfer Factor (soil to inv.)	Invertebrate Concentration (mg/kg)	Dose (mg/kg/day)	NOAEL (mg/kg/day)	LOAEL (mg/kg/day)	NOAEL EEQ	LOAEL EEQ
Dioxins/Furans									
TEQ Mammal	2.01E-06	0.00E+00	1.76E+00	3.53E-06	2.32E-06	2.07E-05	2.07E-04	1.12E-01	1.12E-02
Energetics									
1,3,5-Trinitrobenzene	2.49E-01	0.00E+00	1.00E+00	2.49E-01	1.72E-01	5.48E+01	2.79E+02	3.14E-03	6.17E-04
2,4,6-Trinitrotoluene	2.62E+00	0.00E+00	1.00E+00	2.62E+00	1.81E+00	3.32E+01	3.32E+02	5.45E-02	5.45E-03
2-Amino-4,6-dinitrotoluene	4.33E-01	3.00E-04	1.00E+00	4.33E-01	2.99E-01	#VALUE!	#VALUE!	#VALUE!	#VALUE!
2-Nitrotoluene	1.00E-01	0.00E+00	1.00E+00	1.00E-01	6.90E-02	4.15E+02	4.15E+03	1.66E-04	1.66E-05
4-Amino-2,6-dinitrotoluene	3.65E-01	5.87E-04	1.00E+00	3.65E-01	2.52E-01	#VALUE!	#VALUE!	#VALUE!	#VALUE!
Nitrocellulose	0.00E+00	6.15E-01	1.00E+00	0.00E+00	1.38E-01	#N/A	#N/A	#N/A	#N/A
HMX	4.77E+00	1.32E-02	1.00E+00	4.77E+00	3.30E+00	5.33E+00	1.33E+01	6.18E-01	2.47E-01
RDX	3.41E+00	9.80E-03	1.00E+00	3.41E+00	2.35E+00	1.24E+01	6.22E+01	1.89E-01	3.78E-02
Inorganics									
Cadmium	8.88E-01	4.77E-04	1.23E+00	1.10E+00	7.39E-01	1.80E+01	1.80E+02	4.12E-02	4.12E-03
Chromium	2.51E+01	1.22E-03	4.90E-02	1.23E+00	2.75E+00	6.80E+01	2.73E+02	4.04E-02	1.01E-02
Copper	2.23E+01	5.22E-03	8.24E-02	1.84E+00	2.89E+00	6.94E+02	8.97E+02	4.16E-03	3.22E-03
Lead	1.51E+02	2.91E-02	4.26E-02	6.41E+00	1.59E+01	1.66E+02	1.66E+03	9.57E-02	9.57E-03
Mercury	6.70E-02	0.00E+00	2.71E-01	1.81E-02	1.64E-02	8.89E-01	1.48E+00	1.84E-02	1.11E-02
Nickel	1.73E+01	2.24E-03	1.69E-01	2.93E+00	3.16E+00	8.30E+02	1.66E+03	3.80E-03	1.90E-03
Zinc	1.01E+02	2.16E-02	5.12E-01	5.18E+01	3.97E+01	3.32E+03	6.64E+03	1.20E-02	5.98E-03

Cells are shaded if the EEQ is greater than 1.0.
The average concentrations were used except in cases where the 95% UCL was greater than the average concentration and the 95%UCL was then used.

Definitions:
EEQ - Ecological Effects Quotient
NOAEL - No Observed Adverse Effects Level
LOAEL - Lowest Observed Adverse Effects Level

Dose=[(If*Ci+Is*Cs+Iw*Cw)H]/BW

Body Weight = (BW)	0.0168700 kg
Food Ingestion Rate = (If)	0.0103000 kg/day
Water Ingestion Rate = (Iw)	0.0038000 L/day
Soil Ingestion Rate = (Is)	0.0013390 kg/day
Home Range = (HR)	Assume 100% on site
Contaminated Area = (CA)	Assume equal to home range

H=HR/CA (Assume = to 1 for maximum exposure)

Cs = Contaminant concentration in soil
Cw = Contaminant concentration in water
Ci = Contaminant conc. in soil invertebrates (=soil conc. * Biotransfer Factor)

APPENDIX I

JEEP TRAIL AND AMMUNITION BURNING GROUNDS DYE TEST

Jeep Trail Dye Test

Ammunition Burning Grounds
(ABG)

6/04/02

BY

Indiana University Geological Science Department
"Hydrogeology Laboratory"

By Shannon R Jock and N.C. Krothe

Introduction

On May 23, 2002 a dye test was performed at the Crane Naval Base. This test was performed at the ABG and along the Jeep Trail down gradient from the ABG. The injection points were located at the swallow hole (ABG) and at well number 24 (figure 1). These locations are of interest because the well-logs suggest that a void or a possible conduit may exist at well 24 and the swallow hole is believed to be directly connected to Spring A and A'. The dye tests are being used to validate the first test (well 24 data) as well as to answer the question, is the swallow hole directly connected to Springs A and A'? ISCO water samplers were used to sample the three possible discharge locations. The ISCO's were placed at Spring C, Spring A and Spring A' . The three Springs are of interest because previous studies and test have shown that contaminates are present at the three sites. Spring A is the only spring that is directly linked to the ABG. Low levels but persistent RDX concentrations have been found in Spring C. Two samplers were set up at each spring location. Two samplers ran for three days, one for two days and one for one and a half days.

Two different dyes Fluorescein and Rhodamine were used in order to track and identify different pathways. Fluorescein was injected into well 24.in order to retest the first round results. Rhodamine was injected into the stream were the swallow hole sinks into the subsurface. This test was run in order to check the connection of the swallow hole to springs A and A'.

Analysis and Discussion

Three new graphs were created after all of the samples were run on the Shimadzu. One graph for Spring C (figure 2), one was for Spring A (figure 3) and one was for

Spring A' (figure 4). These graphs are called breakthrough curves and are representative of what happened at that location during the dye test. The curves are created from the data collected at that specific spring during that dye test. The data which is used to create the graphs are the time (hour) and concentration (ppb) of dye (if present). The graphs compare time vs. concentration.

Spring A''s breakthrough curve (figure 4) shows Rhodamine entering the spring 3 days after injection. This graph indicates that the swallow hole is connected to the spring. It also indicates that well 24 isn't connected to Spring A'.

The graph for Spring A (figure 3) shows Rhodamine entering the spring 1 day after injection. Finally it indicates that the connection is more direct in Spring A compared to Spring A' as well as that well 24 isn't connected to Spring A.

Spring C's breakthrough curves (figure 2) show that the dye traveled .3 miles in 17 hours and the dye was completely through the system in 58 hours. One peak is present between 4:30 (May 25, 2002) and 10:30 (May 25, 2002). This information indicates two things. The first is that well 24 is directly in contact with Spring C. The second is that when compared to previous dye test at the ABG, the conduit at this location is not as well developed as the one that is running from the ABG to Springs A and A'. The dye that was injected at the ABG traveled 1.5 miles in 7 hours. The short travel time indicates a well developed direct pathway for the water and contaminates to travel. The conduit at well 24 is directly connected to C, however it isn't as well developed as the one feeding Springs A and A'.

In addition to the results at Spring C a mass flux (total amount of dye injected vs. total amount collected) was calculated. The results of this calculation are uncertain,

because the dye test wasn't set up to collect this information. However, after collecting discharge data from the data loggers on Spring C we were able to determine with some success that .574 lbs of dye was recovered at Spring C. The total amount injected was .5 lbs. The error is due to inaccurate discharge rates and the previous injection (1 lbs of dye on the 10th of May).

Overall the dye tests indicate that well 24 is directly related to Spring C only and the swallow hole at the ABG is only connected to Springs A and A'. The test also supports three previous dye traces that indicate all groundwater at the ABG and Little Sulfur Creek Floodplain are confined to the Little Sulfur Creek Drainage

Figure 1

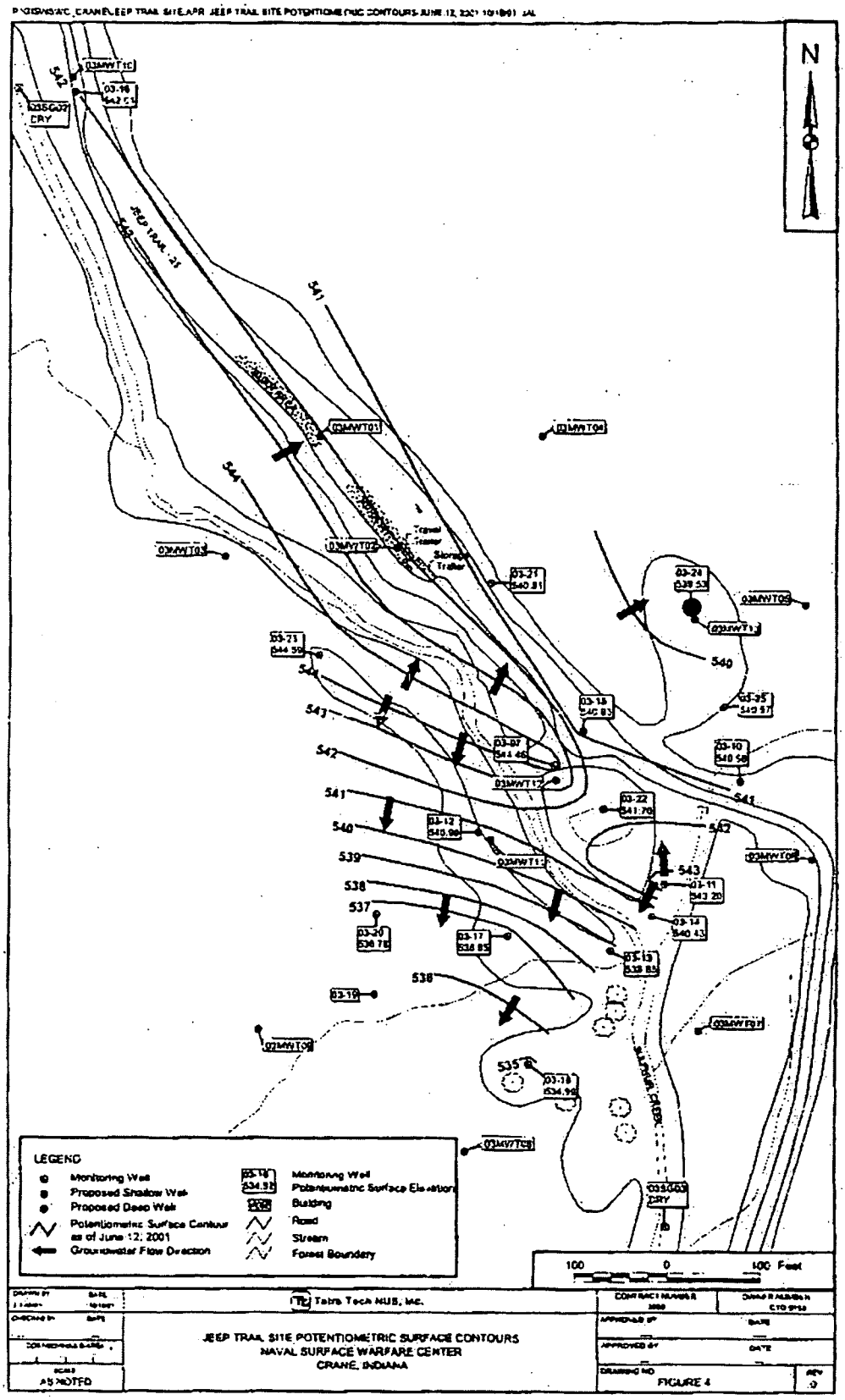
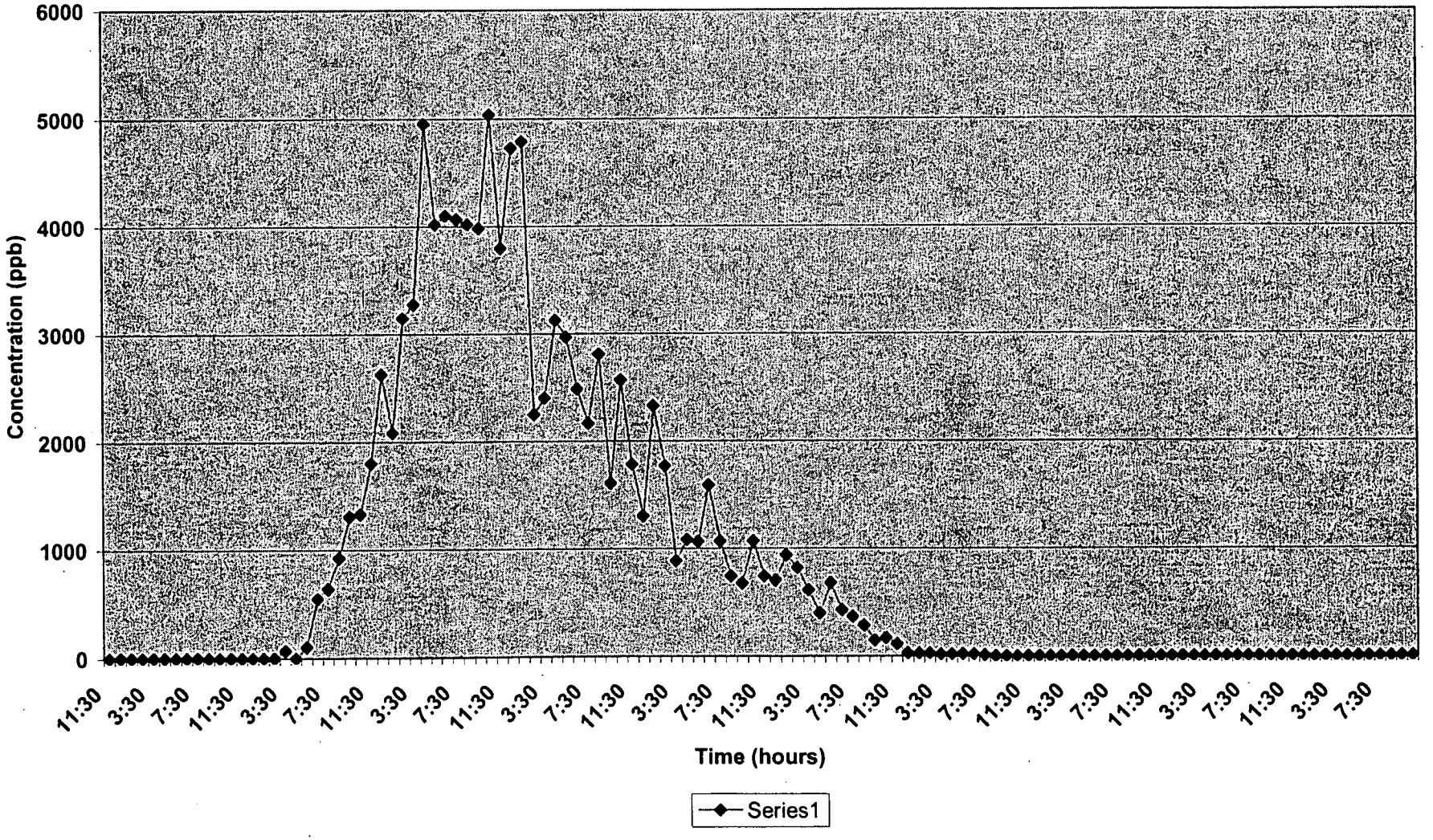
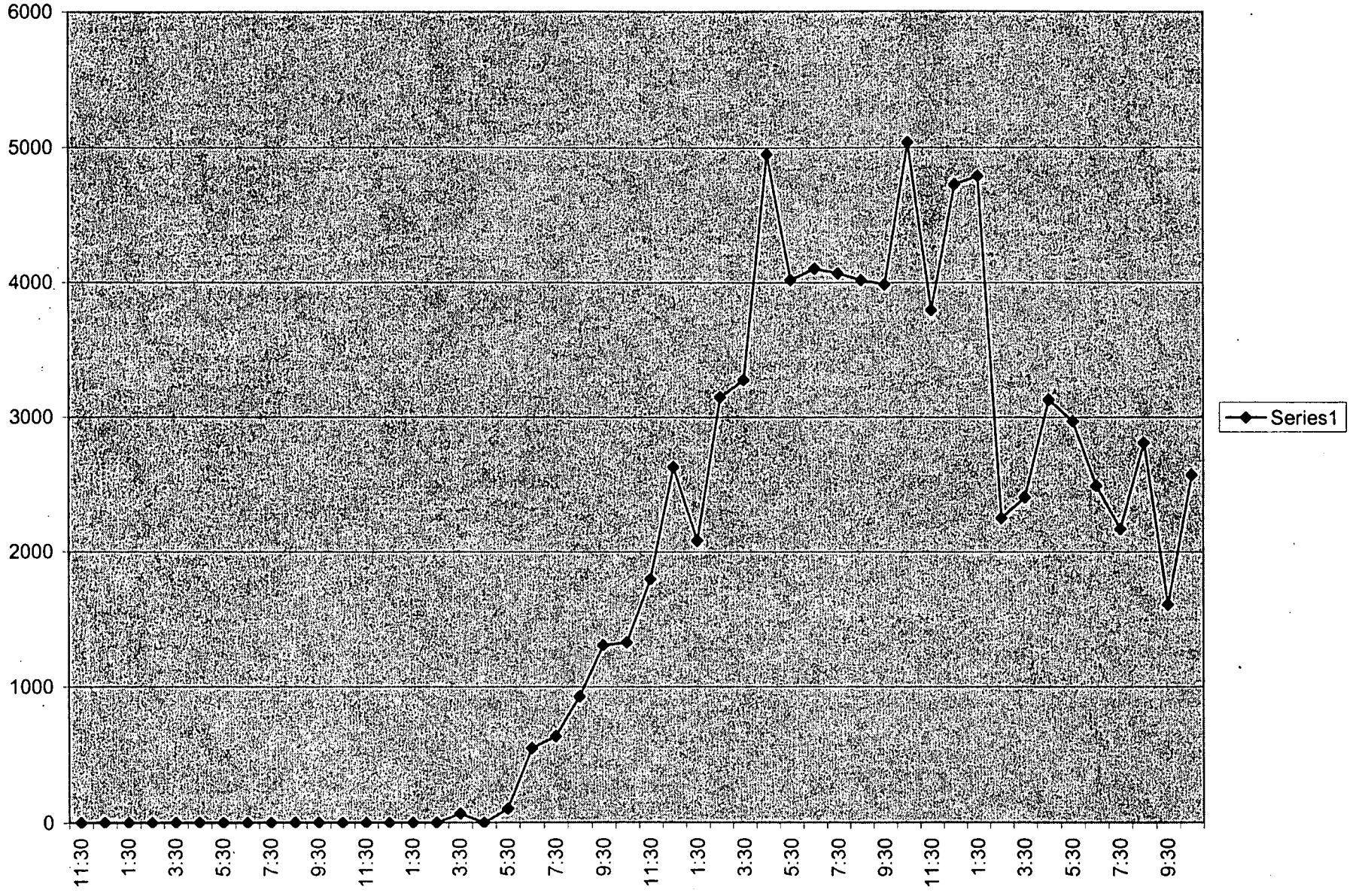

N
LEGEND
Monitoring Well
Proposed Shallow Well
Proposed Deep Well
Potentiometric Surface Contour as of June 12, 2001
Groundwater Flow Direction
Monitoring Well
Potentiometric Surface Elevation
Building
Road
Stream
Forest Boundary
100 0 100 Feet
Tetra Tech NUS, Inc.
JEEP TRAIL SITE POTENTIOMETRIC SURFACE CONTOURS
NAVAL SURFACE WARFARE CENTER
CRANE, INDIANA
FIGURE 4

Figure 2:
Spring C Dye Test Fluoresine




6000
5000
4000
3000
2000
1000
0
11:30
1:30
3:30
5:30
7:30
9:30
11:30
1:30
3:30
5:30
7:30
9:30
11:30
1:30
3:30
5:30
7:30
9:30
11:30
1:30
3:30
5:30
7:30
9:30
Series1

5/23/2002
Dye Test
Crane #2

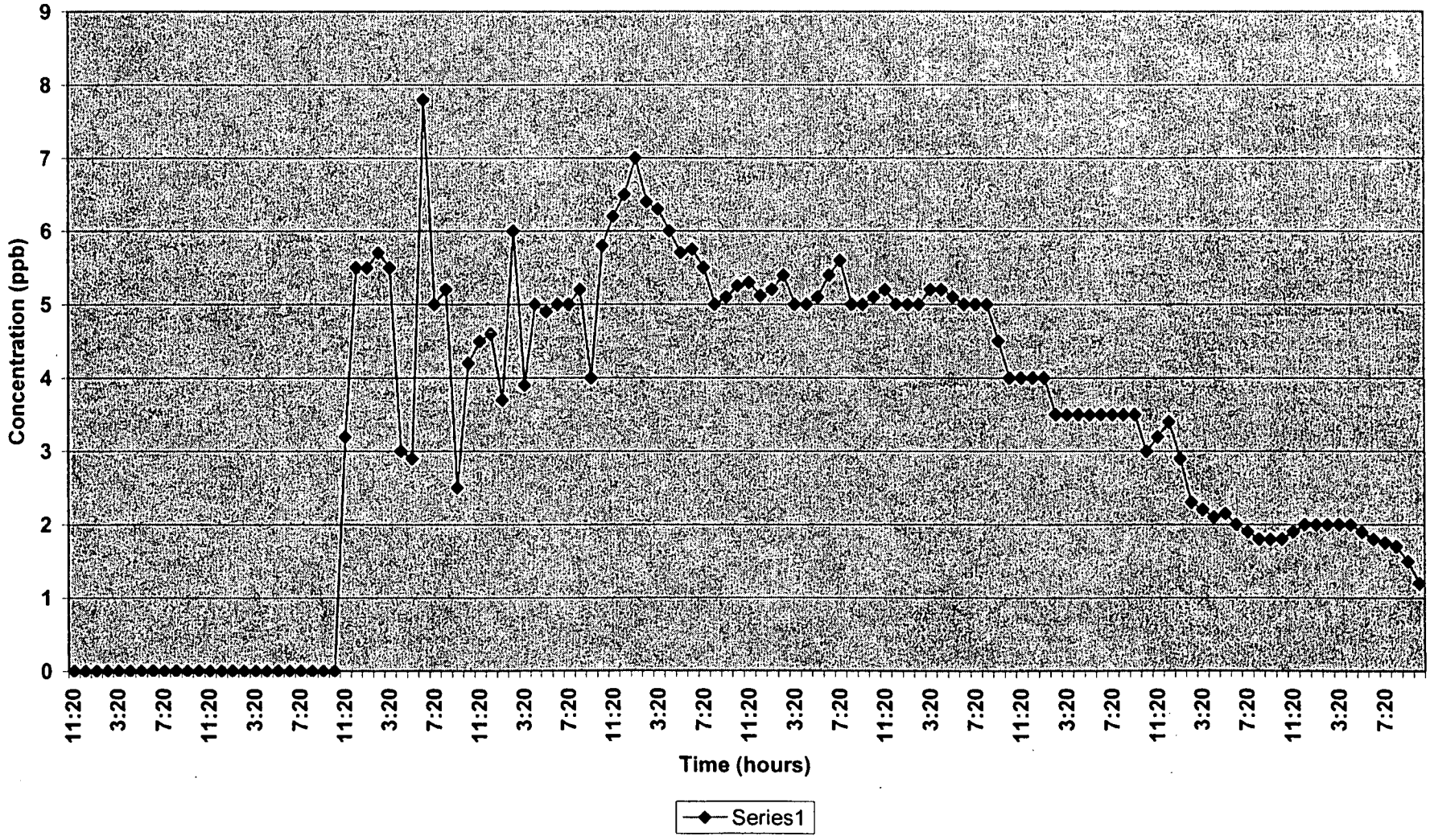
Spring C

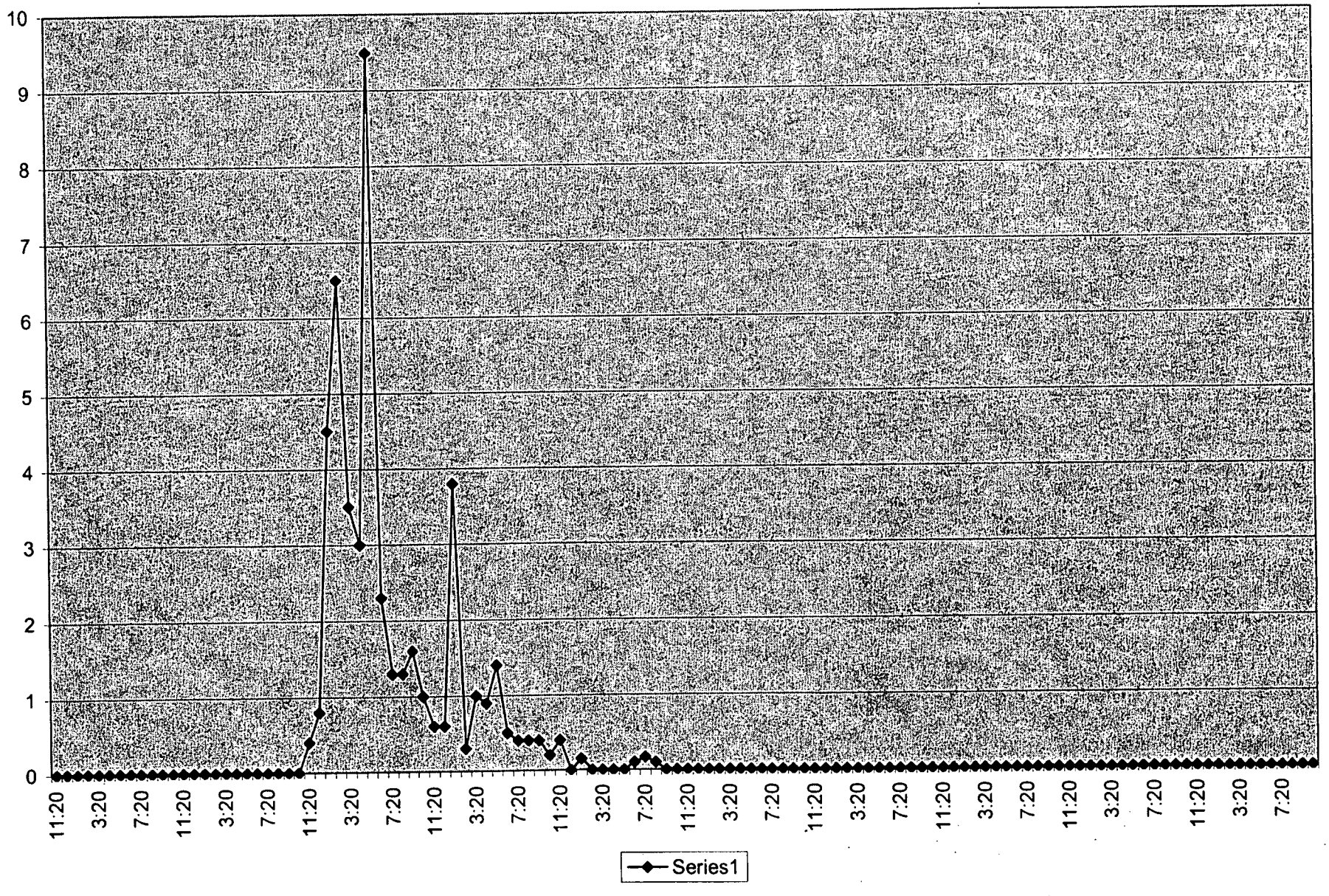
Time (Hour)	Concentration (ppb) Fluorescein			
11:30	250	231	0	0
12:30	245		0	0
1:30	240		0	0
2:30	225		0	0
3:30	220		0	0
4:30	227		0	0
5:30	227		0	0
6:30	230		0	0
7:30	230		0	0
8:30	229		0	0
9:30	231		0	0
10:30	229		0	0
11:30	228		0	0
12:30	225		0	0
1:30	225		0	0
2:30	240		0	0
3:30	300	69	69	69
4:30	210	-21	0	0
5:30	335	104	104	104
6:30	780	549	549	549
7:30	870	639	639	639
8:30	1160	929	929	929
9:30	1540	1309	1309	1309
10:30	1560	1329	1329	1329
11:30	2030	1799	1799	1799
12:30	2860	2629	2629	2629
1:30	3315	3084	2084	2084
2:30	3380		3149	3149
3:30	3510		3279	3279
4:30	5185		4954	4954
5:30	4250		4019	4019
6:30	4335		4104	4104
7:30	4301		4070	4070
8:30	4250		4019	4019
9:30	4216		3985	3985
10:30	5270		5039	5039
11:30	4030		3799	3799
12:30	4960		4729	4729
1:30	5022		4791	4791
2:30	2480		2249	2249
3:30	2635		2404	2404
4:30	3360		3129	3129
5:30	3200		2969	2969
6:30	2720		2489	2489

7:30	2400		2169	2169
8:30	3040		2809	2809
9:30	1840		1609	1609
10:30	2800		2569	2569
11:30	2015	231	1784	1784
12:30	1536	231	1305	1305
1:30	2560	231	2329	2329
2:30	2000	231	1769	1769
3:30	1120	231	889	889
4:30	1312	231	1081	1081
5:30	1296	231	1065	1065
6:30	1820	231	1589	1589
7:30	1300	231	1069	1069
8:30	975	231	744	744
9:30	910	231	679	679
10:30	1300	231	1069	1069
11:30	975	231	744	744
12:30	936	231	705	705
1:30	1170	231	939	939
2:30	1053	231	822	822
3:30	845	231	614	614
4:30	630	231	399	399
5:30	910	231	679	679
6:30	660	231	429	429
7:30	600	231	369	369
8:30	520	231	289	289
9:30	380	231	149	149
10:30	400	231	169	169
11:30				115
12:30				29
1:30				28
2:30				29
3:30				19
4:30				19
5:30				19
6:30				20
7:30				9
8:30				0
9:30				0
10:30				0
11:30				0
12:30				0
1:30				0
2:30				0
3:30				0
4:30				0
5:30				0
6:30				0
7:30				0
8:30				0
9:30				0
10:30				0

11:30	0
12:30	0
1:30	0
2:30	0
3:30	0
4:30	0
5:30	0
6:30	0
7:30	0
8:30	0
9:30	0
10:30	0
11:30	0
12:30	0
1:30	0
2:30	0
3:30	0
4:30	0
5:30	0
6:30	0
7:30	0
8:30	0
9:30	0
10:30	0

Figure 3:
Spring A Rhodamine Dye Test




10
9
8
7
6
5
4
3
2
1
0
11:20
3:20
7:20
Series1

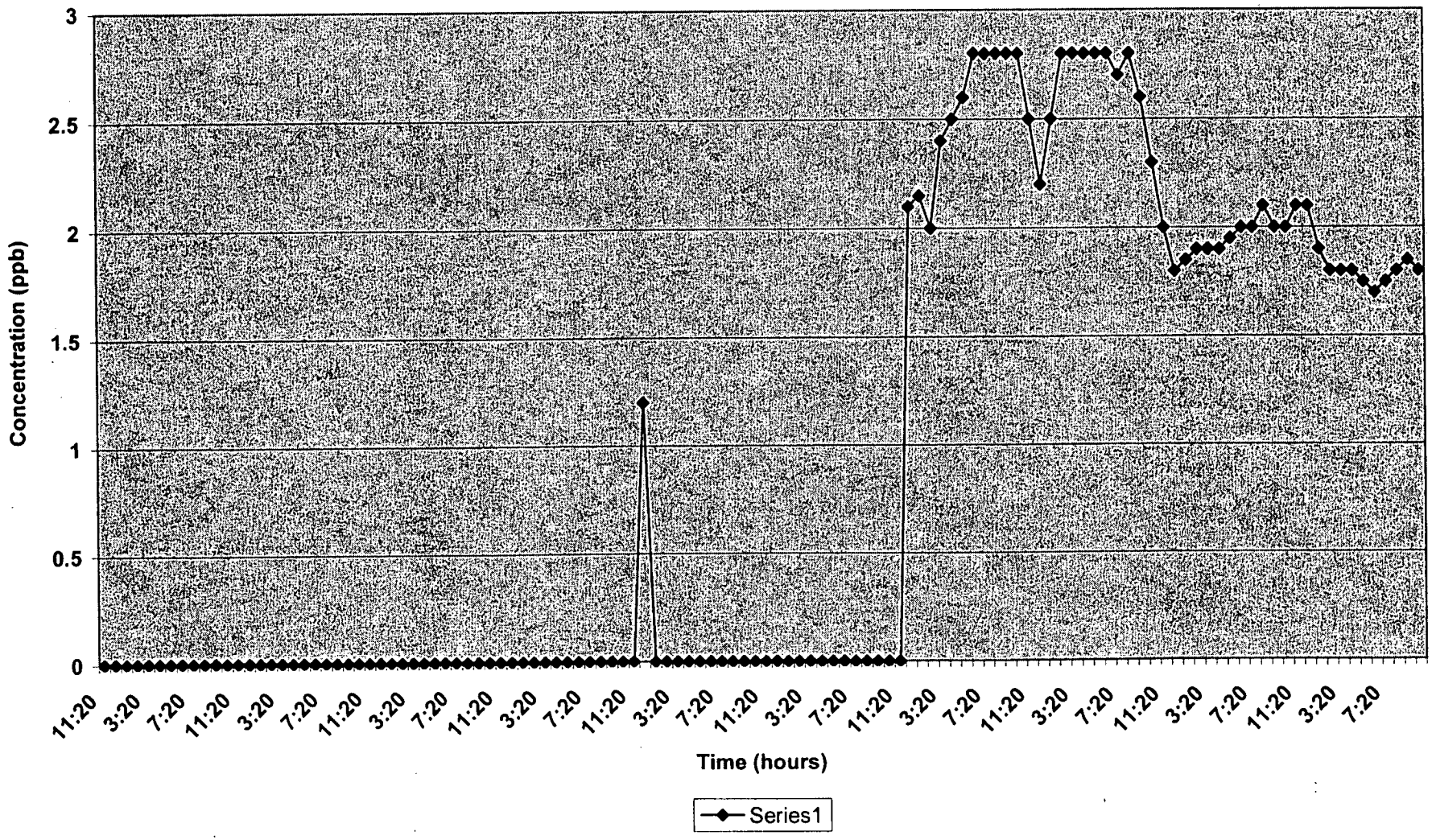
Spring A

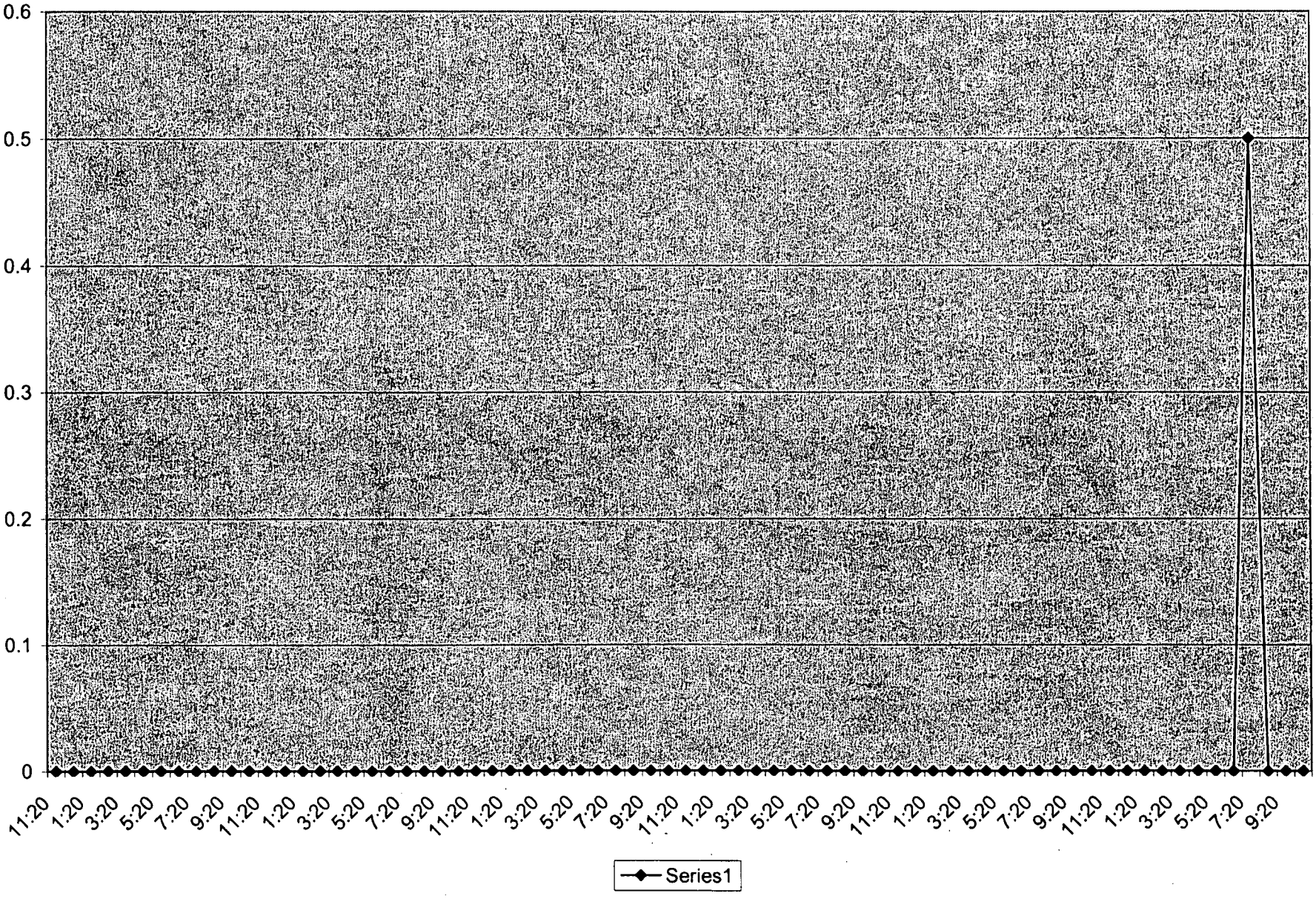
Time Hour	Concentration)ppb) fluorescien	Concentration)ppb) Rhodimine
11:20	0	0
12:20	0	0
1:20	0	0
2:20	0	0
3:20	0	0
4:20	0	0
5:20	0	0
6:20	0	0
7:20	0	0
8:20	0	0
9:20	0	0
10:20	0	0
11:20	0	0
12:20	0	0
1:20	0	0
2:20	0	0
3:20	0	0
4:20	0	0
5:20	0	0
6:20	0	0
7:20	0	0
8:20	0	0
9:20	0	0
10:20	0	0
11:20	0.4	3.2
12:20	0.8	5.5
1:20	4.5	5.5
2:20	6.5	5.7
3:20	3.5	5.5
4:20	3	3
5:20	9.5	2.9
6:20	2.3	7.8
7:20	1.3	5
8:20	1.3	5.2
9:20	1.6	2.5
10:20	1	4.2
11:20	0.6	4.5
12:20	0.6	4.6
1:20	3.8	3.7
2:20	0.3	6
3:20	1	3.9
4:20	0.9	5
5:20	1.4	4.9
6:20	0.5	5
7:20	0.4	5
8:20	0.4	5.2
9:20	0.4	4
10:20	0.2	5.8

11:20	0.4	6.2
12:20	0	6.5
1:20	0.15	7
2:20	0	6.4
3:20	0	6.3
4:20	0	6
5:20	0	5.7
6:20	0.1	5.75
7:20	0.17	5.5
8:20	0.1	5
9:20	0	5.1
10:20	0	5.25
11:20	0	5.3
12:20	0	5.12
1:20	0	5.2
2:20	0	5.4
3:20	0	5
4:20	0	5
5:20	0	5.1
6:20	0	5.4
7:20	0	5.6
8:20	0	5
9:20	0	5
10:20	0	5.1
11:20	0	5.2
12:20	0	5
1:20	0	5
2:20	0	5
3:20	0	5.2
4:20	0	5.2
5:20	0	5.1
6:20	0	5
7:20	0	5
8:20	0	5
9:20	0	4.5
10:20	0	4
11:20	0	4
12:20	0	4
1:20	0	4
2:20	0	3.5
3:20	0	3.5
4:20	0	3.5
5:20	0	3.5
6:20	0	3.5
7:20	0	3.5
8:20	0	3.5
9:20	0	3.5
10:20	0	3
11:20	0	3.2
12:20	0	3.4
1:20	0	2.9
2:20	0	2.3

3:20	0	2.2
4:20	0	2.1
5:20	0	2.15
6:20	0	2
7:20	0	1.9
8:20	0	1.8
9:20	0	1.8
10:20	0	1.8
11:20	0	1.9
12:20	0	2
1:20	0	2
2:20	0	2
3:20	0	2
4:20	0	2
5:20	0	1.9
6:20	0	1.8
7:20	0	1.75
8:20	0	1.7
9:20	0	1.5
10:20	0	1.2

Figure 4:
Spring A' Rhodamine Dye Test




0.6
0.5
0.4
0.3
0.2
0.1
0
11:20
1:20
3:20
5:20
7:20
9:20
11:20
1:20
3:20
5:20
7:20
9:20
11:20
1:20
3:20
5:20
7:20
9:20
11:20
1:20
3:20
5:20
7:20
9:20
11:20
1:20
3:20
5:20
7:20
9:20
Series1

time	A' concentration f	r
11:20	0	0
12:20	0	0
1:20	0	0
2:20	0	0
3:20	0	0
4:20	0	0
5:20	0	0
6:20	0	0
7:20	0	0
8:20	0	0
9:20	0	0
10:20	0	0
11:20	0	0
12:20	0	0
1:20	0	0
2:20	0	0
3:20	0	0
4:20	0	0
5:20	0	0
6:20	0	0
7:20	0	0
8:20	0	0
9:20	0	0
10:20	0	0
11:20	0	0
12:20	0	0
1:20	0	0
2:20	0	0
3:20	0	0
4:20	0	0
5:20	0	0
6:20	0	0
7:20	0	0
8:20	0	0
9:20	0	0
10:20	0	0
11:20	0	0
12:20	0	0
1:20	0	0
2:20	0	0
3:20	0	0
4:20	0	0
5:20	0	0
6:20	0	0
7:20	0	0
8:20	0	0
9:20	0	0
10:20	0	0

11:20	0	0
12:20	0	1.2
1:20	0	0
2:20	0	0
3:20	0	0
4:20	0	0
5:20	0	0
6:20	0	0
7:20	0	0
8:20	0	0
9:20	0	0
10:20	0	0
11:20	0	0
12:20	0	0
1:20	0	0
2:20	0	0
3:20	0	0
4:20	0	0
5:20	0	0
6:20	0	0
7:20	0.5	0
8:20	0	0
9:20	0	0
10:20	0	0
11:20		0
12:20		2.1
1:20		2.15
2:20		2
3:20		2.4
4:20		2.5
5:20		2.6
6:20		2.8
7:20		2.8
8:20		2.8
9:20		2.8
10:20		2.8
11:20		2.5
12:20		2.2
1:20		2.5
2:20		2.8
3:20		2.8
4:20		2.8
5:20		2.8
6:20		2.8
7:20		2.7
8:20		2.8
9:20		2.6
10:20		2.3
11:20		2
12:20		1.8
1:20		1.85
2:20		1.9

3:20	1.9
4:20	1.9
5:20	1.95
6:20	2
7:20	2
8:20	2.1
9:20	2
10:20	2
11:20	2.1
12:20	2.1
1:20	1.9
2:20	1.8
3:20	1.8
4:20	1.8
5:20	1.75
6:20	1.7
7:20	1.75
8:20	1.8
9:20	1.85
10:20	1.8

APPENDIX J

RISK EVALUATION FOR INDIANA BATS CONSUMING INSECTS COLLECTED ALONG LITTLE SULPHUR CREEK

RISK EVALUATION FOR INDIANA BATS CONSUMING INSECTS COLLECTED ALONG LITTLE SULPHUR CREEK

1.0 INTRODUCTION

Previous investigations in Little Sulphur Creek (LSC) identified metals and explosives in the sediment and surface water as chemicals of concern for the creek. The results of these investigations are summarized in the Insect Capture and Analysis for Evaluation of Contaminants in the Forage Area of the Indiana Bat at Ammunition Burning Grounds, Naval Surface Warfare Center (NSWC), Crane, Indiana (NSWC, 2001). Also, one male Federally Endangered Indiana bat (*Myotis sodalis*) was collected along LSC during a bat survey in 1996 (Whitaker, 1996). Based on the findings in the previous investigations, and the presence of the Indiana bat along LSC, the Navy agreed to collect insects along LSC to determine if contaminants are transported through the bat's food-chain. This sampling was conducted in the summer of 2000, and the results are presented in the above-mentioned report.

1.1 Objective

The objective of this risk evaluation memorandum is to determine if concentrations of metals in insects collected adjacent to LSC downstream of Ammunition Burning Grounds (ABG) pose a risk to Indiana bats that consume the insects. The goal of this risk evaluation memorandum is to determine if there will be a decrease in reproduction or survival of individual Indian bats. Note that although explosives were identified as chemicals of concern for LSC, no explosive chemicals were detected in the insect tissue samples. Therefore, risk to bats from explosives are not evaluated in this memorandum.

This risk evaluation memorandum presents the food-chain modeling that was conducted for the Indiana bat using the results of the analysis of insect samples were collected along LSC. This memorandum is included as an appendix to the ecological risk assessment (ERA) that was conducted as part of the Resource Conservation and Recovery Act Facility Investigation Report for SWMU 03 - Old Jeep Trail (OJT)/LSC. It is presented separately from the ERA since it is focuses on assessing risk to an endangered species and was conducted using site-specific biological data (i.e., insect tissue data). Therefore, the methodologies used to calculate risk to the Indiana bat are slightly different than the methodologies that were used to calculate risk to the food-chain receptors in the ERA. The results of the bat risk evaluation are summarized in the body of the ERA, and various sections of the ERA are referenced in this risk evaluation, as necessary.

1.2 Data Used in Evaluation

In the summer of 2000, a study was conducted to determine concentrations of explosive chemicals, phosphorous, and metals in insects in the foraging area of the Indiana bat at the ABG at NSWC Crane (NSWC, 2001). All study procedures were conducted in accordance with a QAPP approved by USEPA Region 5 (NSWC, 2000). The Insect Capture Report (NSWC, 2001) presents the methodology and results of the insect collection along LSC.

The study consisted of collecting insects from three locations adjacent to LSC immediately downstream of the ABG (NSWC, 2001). Insects were collected from two locations using light traps and from a third location using a funnel trap known as a Malaise trap. The traps were operated for four nights each in the months of June, July, and August, 2000. The insects were separated into three groups prior to analysis: terrestrial insects (not including Lepidoptera), aquatic insects, and Lepidoptera insects (moths and butterflies). Finally, the three monthly samples for each group were composited into one sample for each group. The metal concentrations in the three sample groups were evaluated separately in this risk evaluation.

The insect tissue samples were analyzed for explosive compounds, total phosphorous, and metals (NSWC, 2001). None of the explosive compounds were detected in any of the insect samples. The concentrations of total phosphorous in the insects from the site were similar to the total phosphorous concentrations in the control insects (crickets). The metals concentrations in the insects from the site were greater than the concentrations in the control insects. Also, NSWC (2001) reported that the concentrations of three metals (cadmium, copper, and lead) were greater than concentrations in insects from an uncontaminated stream; no "uncontaminated" insect data were found in the literature for the other metals that were analyzed for in the insect samples (NSWC, 2001).

Sediment data collected in LSC were not included in the risk evaluation because the ingestion of sediment by bats is expected to be negligible. Also, although bats consume surface water, the ingestion of surface water was not included in this risk evaluation since surface water ingestion is only a minor component of a bat's diet and the chemical concentrations in the surface water are much lower than the concentrations in the insects. In addition, surface water samples were not collected at the time of the insect collections.

2.0 PROBLEM FORMULATION

The problem formulation includes general descriptions of the site with emphasis on the habitats and ecological receptors present. This phase also involves characterization of site-related chemicals, chemical sources, migration routes, and an evaluation of routes of chemical exposure. The assessment and measurement endpoints to be evaluated are also selected. Finally, a conceptual model is developed that describes how chemicals associated with the site in question may come into contact with ecological receptors. The following sections provide descriptions of the steps completed as a part of the problem formulation.

2.1 Environmental Setting/Potential Ecological Receptors

The environmental setting is described in detail in Section 1.3.7 of the ERA. Therefore, this section will focus on the ecology of the Indiana bat. As presented in Section 1.0, one male Indiana bat was collected adjacent to LSC in 1996 (Whitaker, 1996).

Indiana bats inhabit forested areas during the summer months, roosting in the loose bark of shagbark hickory or dead trees. Females need areas exposed to solar radiation for ideal young development. They tend to forage in riparian areas, woodlots, and upland forests, consuming insects 2-30 meters above the ground. The foraging area can be between 1.5 to 4.5 hectares, but it is also influenced by the time of summer and development of the young. USFWS (1999) indicated that the foraging range for an Indiana bat maternal colony has been reported to range from a linear strip of creek vegetation 0.8 km to 1.2 km in length.

Indiana bats arrive at their hibernacula (caves or abandoned mines) between mid-August and November, with intense foraging and fat deposition once they arrive. The inactive hibernation period is approximately 190 days, with females hibernating between October and April and males hibernating between November and May.

Indiana bats feed consistently on moths, although they are opportunistic and their diets will vary individually and seasonally (BCI, 2001). In a study based on volume, Indiana bats consumed 42 percent moths, 20 percent caddisflies, 18 percent beetles, 10 percent flies, 6 percent homopteran insects, and less than 5 percent other insects (BCI, 2001). As presented in NSWC (2001), the total weight of the Lepidoptera (650 grams – wet weight) and other terrestrial insects (439 grams – wet weight) that were collected were much greater than the weight of the aquatic insects (55 grams – wet weight). Therefore, the insects that were collected are the appropriate types of insects that the bats will consume. It is not

known, however, if the sampling methods used in NSWC (2001) biased the collection of certain types of insects or the percentages reported for each type.

2.2 Contaminant Ecotoxicity/Fate and Transport

Heavy metals can have long-term effects on bats if they are exposed to small doses over an extended period of time. Because bats have a higher longevity than other small mammals, they are more susceptible to metal toxicity (Clark, 1979). Accumulation of metals such as arsenic, cadmium, and lead is related to contamination of their food supply. Insects are the main food of bats, so this allows the passage of contaminants to the higher trophic levels through bioaccumulation.

Exposure of bats to lead can affect their kidney and brain functions. At high enough levels, lead can also affect the population levels by causing reproductive problems, sickness, or death. Cadmium has been reported to cause reproductive effects in males as well (Shore and Rattner, 2001).

No data were located regarding the effects levels for metals for juvenile bats. However, as discussed in the next section, juvenile bats are expected to have a similar or lower exposure dose of chemicals than its mother.

2.3 Potential Exposure Pathways

Section 1 of the RFI report presents the potential sources of contamination at LSC as well as the conceptualized hydrologic model for contaminant migration in the watershed. In summary, contaminants from the OJT and ABG may have entered LSC via surface soil erosion, air deposition, and groundwater discharge. Terrestrial and aquatic insects can then accumulate chemicals in the surface soil, surface water and sediment. Indiana bats that consume the insects are then exposed to the chemicals that accumulated in the insect tissue.

U.S. EPA has expressed concerns regarding juvenile bat exposure to bio-accumulative chemicals (e.g. lead) in the maternal milk while feeding. Because metals, and primarily lead, are considered to be the chemicals of concern in the sediment, the following discussion on maternal transfer of chemicals as a potential exposure pathway for juvenile bats focuses on lead and a few other metals.

Lead is not expected to be present at greater concentrations in the milk of lactating females than in the food source consumed by female bats. One study conducted with lactating mice determined that 25% of the internal maternal dose (absorbed dose) was transferred to the suckling pups (Keller and Doherty,

1980). A similar study of mice conducted by Hallen et al., (1996) determined that approximately one-third of the administered dose was excreted in milk. It also has been reported that juvenile organs (collected from bats approximately one week before weaning) contained lower concentrations of cadmium and lead than their mothers' organs (Streit and Nagel, 1993). Therefore, it appears that the juvenile bats will be exposed to lower concentrations of lead from consuming the mothers' milk than will the mothers from consuming insects containing lead. Also, Streit and Nagel (1993) studied the transfer of metals (lead, cadmium, nickel, chromium, and copper) between adult female and young common pipistrelles (a species of bats). Adults and young averaging about 25 days old (one week away from weaning) were analyzed. It was concluded that chromium, copper, and nickel transferred more readily than lead or cadmium. Concentrations of cadmium in the liver and kidney of the young were especially small relative to concentrations in these organs of adults. Harmful effects were not noted for these metals.

In summary, although there is a potential exposure pathway for juvenile bats via maternal milk, it does not appear that this pathway needs to be evaluated in this risk evaluation because the dose of metals received by juvenile bats from maternal milk will be similar or less than the dose received by the mother from consuming insects. Also, methods to quantify the contaminant concentrations in maternal milk of bats have not been adequately developed.

2.4 Endpoints

2.4.1 Assessment Endpoints

Assessment endpoints are an explicit expression of the environmental value that is to be protected (USEPA, 1997). The Indiana bat was selected as an assessment endpoint because it is a Federally endangered species, it has been collected along OJT, and Indiana bats may consume insects associated with the OJT and LSC.

The assessment endpoints for the non-protected species at SWMU 3 are listed in Section 8.2.5.1 of the ERA. One of the assessment endpoints listed is the protection of insectivorous mammals. For non-protected species, it is appropriate to protect populations of those species. However, for protected species it is important to protect individuals because of their regulatory status. Therefore, for this risk evaluation, the assessment endpoint is the protection of individual Indiana bats from a decrease in growth and reproduction caused by site-related chemicals.

2.4.2 Measurement Endpoints

Measurement endpoints are estimates of biological impacts (i.e., growth, and reproduction) that are used to evaluate the assessment endpoints. The following measurement endpoint was used to evaluate the assessment endpoints in this ERA.

- Decreases in growth and reproduction of the Indiana bat were evaluated by comparing the estimated ingested dose of contaminants in the insects to no-observed-adverse-effects-levels (NOAELs) and lowest-observed-adverse-effects-levels (LOAELs).

There is little exposure parameter data (i.e., ingestion rates) for the Indiana bat, so the little brown bat was used as a surrogate species for the food-chain modeling. The little brown bat is an acceptable surrogate because the diet composition and habitat are very similar. Both bats are strict insectivores and consume a variety of flying insects. They also have similar hibernation habits, arriving at the hibernacula several weeks before hibernation for intense foraging to build up fat reserves. Both species typically forage over riparian areas, such as LSC (Sample et al., 1997 and Menzel et al., 2001). However, the Indiana bat has a smaller home range than similar species (Menzel et al., 2001).

2.5 Conceptual Site Model

The conceptual site model is presented in Section 8.2.6 of the ERA.

3.0 EXPOSURE CHARACTERIZATION

As discussed in Section 2.4.2, the little brown bat was used as a surrogate species for the Indiana bat. Risk to the little brown bat from metals in insects were determined by estimating the Chronic Daily Intake (CDI) and comparing the CDI to Toxicity Reference Values (TRVs) representing acceptable daily doses in mg/kg/day. The TRVs were developed from No-Observed-Adverse-Effect-Levels (NOAELs) and Lowest-Observed-Adverse-Effect-Levels (LOAELs) obtained from wildlife studies. The majority of the TRVs are obtained from the ORNL Toxicological Benchmarks for Wildlife: 1996 Revision (Sample et al., 1996). Table 1 presents the TRVs that were used in this report and the derivation of the TRVs using the body-weight scaling equation presented below. Table 2 presents the sources and ecological endpoints for the TRVs. When a subchronic study was used to develop the TRV, the final value was multiplied by a factor of 0.1 to account for uncertainty between subchronic and chronic effects. Also, when a LOAEL study was used to develop the NOAEL TRV, the LOAEL was multiplied by a factor of 0.1 to obtain the NOAEL.

In accordance with U.S. Region 5 policy, the NOAEL (or LOAEL) from the test species (i.e., rat, mouse) was adjusted to a NOAEL (or LOAEL) for the surrogate species (the little brown bat) using the following body weight scaling equation from Sample et al., (1996) (Note that the scaling factor of 0.25 is not included in the equation below based on recent guidance from U.S. EPA Region 5 related to other risk assessments conducted for NSWC Crane):

$$NOAEL_w = NOAEL_t * (bw_t / bw_w)$$

Where: $NOAEL_w$ = No Observed Adverse Effect Level for the surrogate wildlife species
$NOAEL_t$ = No Observed Adverse Effect Level for the test species
bw_t = body weight of the test species
bw_w = body weight of the little brown bat

Exposure of the little brown bat to metals in the insects was determined by estimating the daily dose in mg/kg-day using the following exposure equation.

$$\text{CDI Dose} = \frac{(FI * FC)}{BW}$$

Where: CDI = Chronic Daily Intake (mg/kg-day)
FI = Food ingestion rate (kg/day)
FC = Food concentration (insect concentration) (mg/kg)
BW = Body weight (kg)

The insect concentrations were reported in NSWC, (2001) on a dry weight basis. Risks were calculated separately for each of the three insect groups (aquatic insects, Lepidoptera insects and other terrestrial insects) as discussed in Section 1.2. The ingestion rate of the little brown bat was reported on a wet weight basis, so wet weight metal concentrations were calculated by multiplying the dry weight concentration (mg/kg) by the percent solid for each insect group (see Table 3).

Risk was evaluated using a conservative exposure scenario and an average exposure scenario. The conservative exposure scenario is based on consistently conservative assumptions and NOAEL toxicity values (USEPA, 1997) and represents the greatest potential risk. The average exposure scenario is based on average exposure assumptions and LOAEL toxicity values and represents the less conservative potential risk. Both scenarios were evaluated to provide an overall range of potential risk as presented in the following table:

Conservative Scenario	Average Scenario
Highest receptor body weight for calculation of NOAELs	Average receptor body weight for calculation of LOAELs
Lowest receptor body weight for calculation of exposure dose	Average receptor body weight for calculation of exposure dose
Conservative receptor ingestion rate for calculation of exposure dose	Average receptor ingestion rate for calculation of exposure dose

As indicated in Section 2.4, the little brown bat was used as a surrogate for the Indiana bat because more exposure factors were available for the little brown bat. Exposure assumptions (i.e., ingestion rate, body weight) for the little brown bat are listed in several documents (Nagy, 2001, Sample et al., 1996 and Sample et al., 1997). The following paragraphs discuss each source of data and then present the values that are used for this risk evaluation.

Nagy (2001) provides an ingestion rate for the little brown bat from measured field metabolic rates in free living bats. The document lists a fresh weight ingestion rate of 4.85 g/day based on a body weight of 9 grams. By dividing the ingestion rate by the body weight, an ingestion rate of 0.539 g/g body weight-day is calculated. Nagy (2001) indicates that the regression equation used to calculate the ingestion rate probably overestimates the ingestion rate during some phases of their lives when they either do not or cannot feed normally.

Gould (1955) and Anthony and Kunz (1977), both cited in Sample et al. (1996), list a body weight of 7.5 grams and an ingestion weight of 2.5 g/day (wet) for the little brown bat, respectively. The ingestion rate is based on pregnant bats.

Sample et al. (1997) lists body weights for little brown bats in Indiana from two different studies (Silva and Downing, [1995] and Stones and Wieber, [1965]). These body weights (6.03 to 6.99 grams) are listed in Table 4. Anthony and Kunz (1977) as cited in Sample et al., (1997) lists ingestion rates for pregnant (2.4 g/day or 0.23 g/g-day), lactating (3.7 g/day or 0.48 g/g-day), and juvenile (1.8 g/day or 0.29 g/g-day) little brown bats. Sample et al., (1997) also lists ingestion rates of 0.15 g/g-day and 1.12 g/g-day.

For this risk evaluation it was determined that the ingestion rate for lactating bats of 0.48 g/g-day is an appropriate ingestion rate this risk evaluation because it accounts for feeding during a sensitive life stage. It is similar to the value of 0.54 g/g-day reported in Nagy (2001) that may overestimate the ingestion rate during some phases of the animals life. Also, it has been reported that Indiana bats consume up to half their body weight each night (U.S. FWS, 2002), which is in line with the feeding rate of 0.48 g/g-day. The

body weights selected for this risk evaluation were the body weights for bats in Indiana since they are most representative of bats at NSWC Crane. Table 4 presents the exposure factors that were used for the food-chain model and the values that were used to calculate the exposure factors.

4.0 RISK CHARACTERIZATION

The risk characterization compares the exposure to the ecological effects. An Ecological Effects Quotient (EEQ) approach was used to characterize the risk to the bat. An EEQ greater than "1.0" is considered indicative of a potential risk. The EEQ is not an expression of probability, and the meaning of values greater than 1.0 must be interpreted in light of attendant uncertainties in risk management. The EEQ for the bat wildlife model was calculated as follows:

$$EEQ = \frac{Dose}{TRV}$$

Where: EEQ = Ecological Effects Quotient, (unitless)
Dose = Daily Intake Dose, (mg/kg-day)
TRV = Toxicity Reference Value (NOAEL or LOAEL), (mg/kg-day)

Tables 5 and 6 present the results of the food-chain models using the conservative and average scenarios for the three insect groups. For bats consuming terrestrial insects, two metals (aluminum and arsenic) had EEQs that were greater than 1.0 based on the conservative inputs and the NOAEL as the TRV (Table 5). One metal (aluminum) had an EEQ greater than 1.0 for bats consuming aquatic insects, under the same conservative exposure scenario (Table 5). No metals had EEQs greater than 1.0 for the bats consuming Lepidoptera, under the same conservative exposure scenario (Table 5).

Based on the average exposure scenario, aluminum was the only metal that had an EEQ greater than 1.0 for bats that consumed aquatic and terrestrial insects (based on the NOAEL) (Table 6). No metals had EEQs greater than 1.0 for the bats consuming Lepidoptera, under the same average exposure scenario (Table 6).

Note that although the measurement endpoint focused on decreases in growth and reproduction of the Indiana bat, most of the TRVs were based on reproductive endpoints, with a few based on survival; only one TRV was based on growth. Therefore, risks to the Indiana bat were based primarily on reproductive effects.

In summary, aluminum and arsenic were the only metals that had EEQs greater than 1.0 for any of the exposure scenarios, with the maximum EEQ for aluminum of 3.0 and the maximum EEQ for arsenic of 1.1. The EEQs greater than 1.0 were based on NOAELs; no EEQs were greater than 1.0 based on LOAELs. As presented in the screening tables in the RFI report (Tables 4-20 through and 4-24), arsenic and aluminum concentrations in surface soil (at OJT) and surface water (in LSC) and arsenic in the sediment (in LSC) samples were not detected at concentrations greater than background. Although, aluminum was detected at concentrations above background in the sediment samples, it is not considered to be an important bioaccumulative chemical according to USEPA (2000). Also, the pH in the sediment samples (not including the background samples) ranged from 6.8 to 8.1 standard units (see Tables 4-21 and 4-22). Although no data were specifically located regarding the bioavailability of aluminum at various sediment pH levels, aluminum is only sparingly soluble in water between pH 6 and pH 8 (ASTDR, 1999). The pH levels in the surface water of LSC ranged from 6.6 to 8.7 with average pH levels of 7.5 and 7.8 (see Tables 4-23 and 4-24). Therefore, it is not likely that aluminum is not expected to be soluble and therefore not bioavailable for uptake into aquatic organisms. For the reasons discussed above, neither aluminum nor arsenic in the collected aquatic or terrestrial insects are likely to be site-related.

5.0 UNCERTAINTIES

Despite the fact the EEQs for aluminum and arsenic slightly exceed 1.0 for the most conservative exposure scenario, and the EEQs for aluminum slightly exceed 1.0 for the average exposure scenario there are many uncertainties in the evaluation. Most of the uncertainties tend to overestimate risk and are discussed in the following paragraphs.

The ingestion rates used for the bat are high because they are based on lactating females, which demonstrate the greatest ingestion rates according to the literature (see Section 3.0). Since Indiana bats only lactate for a few weeks during the year, it is likely that the estimated dose is overestimated. Bats also consume greater amounts of food immediately prior to hibernation, but again that is only for a few weeks during the year (USFWS, 1999). The ingestion rates were calculated by multiplying the ingestion rate in g/g (body weight)-day by the body weight of the bat. For the conservative scenario, the ingestion rate was calculated using the maximum body weight, but the lowest body weight was used in the dose equation. This is done to ensure that the dose for the conservative scenario is greater than the dose for the average scenario. These conservative scenarios assume that the smallest bat is eating the greatest amount of food, which overpredicts exposure. Therefore, the doses that are being compared to the NOAELs and LOAELs are biased high.

Similar to the above discussion, when the NOAELs and LOAELs are calculated based on the body weight of the bat, the maximum body weight is used for the conservative scenario. This is because the larger body weight yields lower NOAELs and LOAELs which are more conservative. Again, this will bias the EEQ higher because the NOAELs and LOAELs are the denominators in the EEQ equation

As discussed in the insect capture report (NSWC, 2001), paint chips from the insect traps flaked off into the sample drawers. The larger paint chips were easily removed from the sample, however, many small paint chips could not be removed and were included in the sample that was sent to the laboratory for chemical analysis. Various metals are associated with paints, including aluminum and arsenic among others. Therefore, it is possible that the aluminum and arsenic in the tissue samples are due, at least in part, to the paint chips that were present in the samples. Also, the sampler was constructed from metal so metals adhering to the paint chips may also have been a source of metals in the samples.

Finally, the risk evaluations were conducted assuming that the bats were consuming either 100 percent terrestrial insects, 100 percent aquatic insects, or 100 percent Lepidoptera. Based on the literature and the samples that were collected, it is likely that Lepidoptera constitute a large portion of the diet for bats in the area. The chemical concentrations in Lepidoptera were much lower than the concentrations in the terrestrial or aquatic insects, and none of the EEQs were greater than 1.0 based on the ingestion of Lepidoptera. Therefore, if it is assumed that Lepidoptera comprise 40 to 50 percent of the bats diet (which is reasonable to assume based on the discussion in Section 2.1), the EEQ for arsenic would drop below 1.0 and the EEQs for aluminum would either drop below 1.0 or be similar to 1.

6.0 SUMMARY/CONCLUSIONS/RECOMMENDATIONS

The two exposure scenarios (conservative and average) were presented to show the range of risk to bats. NOAELS are the highest concentrations in a particular study where no adverse effects were observed, whereas LOAELS are the lowest concentrations in a particular study where adverse effects were observed. Therefore, an EEQ that is greater than 1.0 using a NOAEL but less than 1.0 using the LOAEL is not as likely to cause a significant risk to ecological receptors as an EEQ greater than 1.0 based on the LOAEL.

Aluminum and arsenic were the only metals that had EEQs slightly greater than 1.0 in the conservative scenario, based on the NOAEL. Aluminum was the only metal that had an EEQ slightly greater than 1.0 in the average scenario, based on the NOAEL. No metals had EEQs greater than 1.0 based on the LOAEL. The maximum EEQ for aluminum was 3.0 and the maximum EEQ for arsenic was 1.1.

The aluminum EEQs that were greater than 1.0 occurred for the calculations using the terrestrial and aquatic insect samples. Based on the conservative assumptions as described in the uncertainty analysis section, it is unlikely that aluminum will impact individual bats because the EEQs were very low (maximum = 3.0) and were based on no effects levels. Also, the aluminum in the insect tissue is not likely to be site-related because aluminum was below background levels in the surface water and surface soil samples, it is not considered to be an important bioaccumulative chemical according to USEPA (2000), and its bioavailability in the LSC sediment samples is expected to be low based on the pH levels in the sediment.

The arsenic EEQs that were greater than 1.0 occurred for the calculations using the terrestrial and insect samples and only under the conservative scenario. Based on the conservative assumptions as described in the uncertainty analysis section, it is unlikely that arsenic will impact individual bats because the EEQ was very low (1.1) and was based on no effects levels.

Finally, as discussed in Section 5.0, based on the likely composition of insects in the diet of the bats, the EEQ for arsenic would drop below 1.0 and the EEQs for aluminum would drop below 1.0 or would be similar to 1.0. It is also possible that the aluminum and arsenic in the tissue samples may be due to the paint chips in some of the samples or from natural levels of the metals in the insect tissue.

7.0 REFERENCES

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TABLE 1

TOXICITY REFERENCE VALUES FOR THE LITTLE BROWN BAT
AMMUNITION BURNING GROUNDS
NSWC CRANE, CRANE INDIANA

Parameter	Test Species				Little Brown Bat (conservative value)(1,2)		Little Brown Bat (average value)(1,3)	
	NOAEL	LOAEL	Species	Body Weight (kg)	NOAEL	LOAEL	NOAEL	LOAEL
Aluminum	1.93	19.3	mouse	0.03	8.3	82.8	9.1	91.5
Antimony	0.125	1.25	mouse	0.03	0.54	5.4	0.59	5.9
Arsenic	0.126	1.26	mouse	0.03	0.54	5.4	0.60	6.0
Barium	5.1	19.8	rat	0.435/0.35(1)	318	991	350	1095
Cadmium	1	10	rat	0.303	43.3	433	48	479
Chromium	3.28	13.14	rat	0.35	164	658	181	727
Hexavalent Chromium	3.28	13.14	rat	0.35	164	658	181	727
Copper	11.71	15.14	mink	1	1675	2166	1850	2392
Lead	8	80	rat	0.35	401	4006	442	4423
Manganese	88	284	rat	0.35	4406	14220	4866	15703
Mercury	0.015	0.025	mink	1	2.146	3.577	2.37	3.95
Nickel	40	80	rat	0.35	2003	4006	2212	4423
Silver	1.81	18.1	mouse	0.03	7.8	77.7	8.6	85.8
Zinc	160	320	rat	0.35	8011	16023	8847	17694

NOAEL and LOAEL units are mg/kg-day
NOAEL - No Observered Adverse Effect Level
LOAEL - Lowest Observered Adverse Effect Level
1 - The NOAEL and LOAEL for the bat was calculated using the following equation: $NOAEL_w$ (or $LOAEL_w$) =$NOAEL_t$ (or $LOAEL_t$)*(bw_t/bw_w)

Where: $NOAEL_w$ (or $LOAEL_w$) = NOAEL (or LOAEL) for the bat
$NOAEL_t$ (or $LOAEL_t$) = NOAEL (or LOAEL) for the test species
bw_w - body weight of the bat
bw_t - body weight of the test species

2 - The conservative values were calculated using the maximum body weight of 6.99 g for the bat (see Table 4).
3 - The average values were calculated using the average body weight of 6.33 g for the bat (see Table 4).

TABLE 2

ENDPOINTS AND SOURCES FOR TOXICITY REFERENCE VALUES FOR MAMMALS
AMMUNITION BURNING GROUNDS
NSWC CRANE, CRANE INDIANA

Parameters	Concentration (mg/kd-day)	Endpoint	Effect	Chronic/ Subchronic	Species	Primary Reference	Source of Reference
Aluminum	19.3	LOAEL	reproductive	chronic	mouse	Ondreicka et al., 1966	Sample et.al., 1996
Antimony	1.25	LOAEL	lifespan	chronic	mouse	Schroeder et al., 1968b	Sample et.al., 1996
Arsenic	1.261	LOAEL	reproductive	chronic	mouse	Schroeder and Mitchner, 1971	Sample et.al., 1996
Barium	5.1	NOAEL	growth	chronic	rat	Perry et al., 1983	Sample et.al., 1996
Barium	198	LOAEL	mortality	subchronic	rat	Borzelleca et al., 1988	Sample et.al., 1996
Cadmium	1	NOAEL	reproduction	chronic	rat	Sutou et al., 1980b	Sample et.al., 1996
Cadmium	10	LOAEL	reproduction	chronic	rat	Sutou et al., 1980b	Sample et.al., 1996
Chromium(VI)	3.28	NOAEL	BW/food cons.	chronic	rat	Mackenzie, 1958	Sample et.al., 1996
Chromium(VI)	131.4	LOAEL	mortality	subchronic	rat	Steven et al., 1976	Sample et.al., 1996
Copper	11.71	NOAEL	reproduction	chronic	mink	Aulerich et al., 1982	Sample et.al., 1996
Copper	15.14	LOAEL	reproduction	chronic	mink	Aulerich et al., 1982	Sample et.al., 1996
Lead	8	NOAEL	reproductive	chronic	rat	Azar et al., 1973	Sample et.al., 1996
Lead	80	LOAEL	reproductive	chronic	rat	Azar et al., 1973	Sample et.al., 1996
Manganese	88	NOAEL	reproductive	chronic	rat	Laskey et al., 1982	Sample et.al., 1996
Manganese	284	LOAEL	reproductive	chronic	rat	Laskey et al., 1982	Sample et.al., 1996
Mercury	0.032	NOAEL	reproductive	chronic	rat	Verschuuren et al., 1976	Sample et.al., 1996
Mercury	0.16	LOAEL	reproductive	chronic	rat	Verschuuren et al., 1976	Sample et.al., 1996
Nickel	40	NOAEL	reproductive	chronic	rat	Ambrose et al., 1976	Sample et.al., 1996
Nickel	80	LOAEL	reproductive	chronic	rat	Ambrose et al., 1976	Sample et.al., 1996
Silver	18.1	LOAEL	systemic	subchronic	mouse	Rungby and Danscher, 1984	ATSDR, 1989
Zinc	160	NOAEL	reproductive	chronic	rat	Schlicker and Cox, 1986	Sample et.al., 1996
Zinc	320	LOAEL	reproductive	chronic	rat	Schlicker and Cox, 1986	Sample et.al., 1996

TABLE 3

DRY WEIGHT TO WET WEIGHT CONVERSION FOR INSECTS
AMMUNITION BURNING GROUNDS
NSWC CRANE, INDIANA

	Terrestrial		Aquatic		Lepidoptera	
Inorganics	Dry Weight[1] mg/kg	Wet Weight[2] mg/kg	Dry Weight[1] mg/kg	Wet Weight[2] mg/kg	Dry Weight[1] mg/kg	Wet Weight[2] mg/kg
ALUMINUM	93.8	31.6	134	44.2	10.7	2.4
ANTIMONY	0.138	0.05	0.113	0.04	0.0205	0.005
ARSENIC	3.25	1.1	0.597	0.20	0.169	0.04
BARIUM	11.7	3.9	20.7	6.8	6.58	1.5
CADMIUM	0.871	0.29	0.83	0.27	0.698	0.16
CHROMIUM	38.6	13.0	209	69.0	28.6	6.4
COPPER	74.8	25.2	114	37.6	36.1	8.1
LEAD	16	5.4	16.5	5.4	1.75	0.39
MANGANESE	74.2	25.0	77.4	25.6	28.5	6.4
MERCURY	0.083	0.03	0.072	0.02	0.04	0.01
NICKEL	30.5	10.3	147	48.5	21.1	4.7
SILVER	0.0515	0.02	0.55	0.18	0.0942	0.02
ZINC	582	196	913	301	234	52.5
Percent Solid	33.67		33.02		22.43	

1 - Source of data is NSWC, 2001

2 - The wet weight concentration was calculated by multplying the dry weight concentration by the percent solid (divided by 100).

TABLE 4

CALCULATION OF EXPOSURE PARAMETERS FOR THE LITTLE BROWN BAT
AMMUNITION BURNING GROUNDS
NSWC, CRANE, INDIANA

Exposure Parameters	Value	Basis	Reference
Body Weights (g)	6.15	male Indiana (mean value)	Silva and Downing, 1995
	6.15	female Indiana (mean value)	Silva and Downing, 1995
	6.03	male Indiana (mean value)	Stones and Wieber, 1965
	6.99	female Indiana (mean value)	Stones and Wieber, 1965
Minimum (Conservative)	***6.03***		
Maximum	***6.99***		
Average	***6.33***		
Food Ingestion Rate (g/g-day) [1]	0.48	lactating bat	Anthony and Kunz, 1977
Food Ingestion Rate (kg/day)			
Conservative	***0.0034***	Food ingestion rate * Maximum body weight	
Average	***0.0030***	Food ingestion rate * Average body weight	
Home Range (km) [1]	0.80		USFWS, 1999
	1.20		USFWS, 1999
Minimum (km)[1]	***0.80***		
Maximum (km)[1]	***1.20***		
Average (km)[1]	***1.00***		

Notes:
1 - Home range for the Indiana Bat is presented in km of shoreline.

TABLE 5

TERRESTRIAL WILDLIFE MODEL ECOLOGICAL EFFECTS QUOTIENT CALCULATION
LITTLE BROWN BAT - CONSERVATIVE INPUTS
AMMUNITION BURNING GROUNDS
NSWC, CRANE, INDIANA

Parameter	Insect Concentration[1] (mg/kg)	Dose[2] (mg/kg-day)	NOAEL (mg/kg-day)	LOAEL (mg/kg-day)	NOAEL EEQn	LOAEL EEQl
TERRESTRIAL INSECTS						
ALUMINUM	32	18	8.3	83	2.1	0.21
ANTIMONY	0.046	0.026	0.54	5.36	0.05	0.005
ARSENIC	1.1	0.6	0.5	5.4	1.1	0.11
BARIUM	3.9	2.2	318	991	0.01	0.002
CADMIUM	0.3	0.17	43.3	433	0.004	0.0004
CHROMIUM	13	7	164	658	0.04	0.011
COPPER	25	14	1675	2166	0.008	0.007
LEAD	5.4	3.0	401	4006	0.008	0.001
MANGANESE	25	14.1	4406	14220	0.003	0.001
MERCURY	0.028	0.016	2.1	3.6	0.01	0.004
NICKEL	10	6	2003	4006	0.003	0.001
SILVER	0.017	0.010	0.78	7.8	0.013	0.0013
ZINC	196	110	8011	16023	0.01	0.01
AQUATIC INSECTS						
ALUMINUM	44	25	8.3	83	3.0	0.30
ANTIMONY	0.037	0.021	0.54	5.4	0.04	0.004
ARSENIC	0.20	0.11	0.54	5.4	0.21	0.02
BARIUM	6.8	3.9	318	991	0.01	0.004
CADMIUM	0.27	0.15	43.3	433	0.004	0.0004
CHROMIUM	69	39	164	658	0	0.1
COPPER	38	21	1675	2166	0.01	0.01
LEAD	5.45	3.1	401	4006	0.01	0.001
MANGANESE	26	14	4406	14220	0.003	0.001
MERCURY	0.024	0.013	2.1	3.6	0.01	0.004
NICKEL	49	27	2003	4006	0.01	0.01
SILVER	0.18	0.10	0.78	7.8	0.13	0.013
ZINC	301	170	8011	16023	0.02	0.01
LEPIDOPTERA						
ALUMINUM	2.4	1.4	8.3	83	0.16	0.02
ANTIMONY	0.0046	0.0026	0.54	5.4	0.005	0.0005
ARSENIC	0.038	0.021	0.54	5.4	0.04	0.004
BARIUM	1.5	0.8	318	991	0.003	0.001
CADMIUM	0.16	0.09	43.3	433	0.002	0.0002
CHROMIUM	6.4	3.6	164	658	0.0	0.01
COPPER	8.1	5	1675	2166	0.003	0.002
LEAD	0.4	0.2	401	4006	0.001	0.0001
MANGANESE	6.4	3.6	4406	14220	0.001	0.0003
MERCURY	0.0090	0.005	2.1	3.6	0.002	0.001
NICKEL	4.7	2.7	2003	4006	0.001	0.001
SILVER	0.021	0.012	0.78	7.8	0.015	0.0015
ZINC	52	30	8011	16023	0.004	0.002

Cells are shaded if the EEQ is greater than 1.0.

1 - The insect concentrations are the wet-weight concentrations as presented in Table 3
2 - The dose is calculated using the dose equation on Section 3 of the document and the conservative exposure parameters on Table 4.

Definitions:
NOAEL - No Observed Adverse Effects Level
LOAEL - Lowest Observed Adverse Effects Level
EEQn - Ecological Effects Quotient based on the NOAEL
EEQl - Ecological Effects Quotient based on the LOAEL

TABLE 6

TERRESTRIAL WILDLIFE MODEL ECOLOGICAL EFFECTS QUOTIENT CALCULATION
LITTLE BROWN BAT - AVERAGE INPUTS
AMMUNITION BURNING GROUNDS
NSWC, CRANE, INDIANA

	Insect Concentration[1] (mg/kg)	Dose[2] (mg/kg-day)	NOAEL (mg/kg-day)	LOAEL (mg/kg-day)	NOAEL EEQn	LOAEL EEQl
TERRESTRIAL INSECTS						
ALUMINUM	32	15	9.1	91	1.6	0.16
ANTIMONY	0.046	0.0	0.6	5.9	0.04	0.004
ARSENIC	1.1	0.5	0.6	6.0	0.87	0.087
BARIUM	3.9	1.9	350	1095	0.01	0.002
CADMIUM	0.29	0.1	47.9	479	0.003	0.0003
CHROMIUM	13	6.2	181	727	0.03	0.008
COPPER	25	12	1850	2392	0.006	0.005
LEAD	5.4	2.6	442	4423	0.006	0.0006
MANGANESE	25	12	4866	15703	0.002	0.0008
MERCURY	0.028	0.0	2.4	3.9	0.006	0.003
NICKEL	10	4.9	2212	4423	0.002	0.001
SILVER	0.017	0.0	0.86	8.6	0.010	0.0010
ZINC	196	93	8847	17694	0.01	0.01
AQUATIC INSECTS						
ALUMINUM	44	21	9.1	91	2.3	0.23
ANTIMONY	0.037	0.0	0.6	5.9	0.03	0.003
ARSENIC	0.20	0.1	0.6	6.0	0.16	0.02
BARIUM	6.8	3.2	350	1095	0.009	0.003
CADMIUM	0.27	0.1	47.9	479	0.003	0.0003
CHROMIUM	69	33	181	727	0.18	0.05
COPPER	38	18	1850	2392	0.01	0.007
LEAD	5.4	2.6	442	4423	0.006	0.001
MANGANESE	26	12	4866	15703	0.002	0.001
MERCURY	0.024	0.0	2.4	3.9	0.005	0.003
NICKEL	49	23	2212	4423	0.01	0.005
SILVER	0.18	0.1	0.86	8.6	0.10	0.010
ZINC	301	143	8847	17694	0.02	0.01
LEPIDOPTERA						
ALUMINUM	2.4	1.1	9.1	91	0.12	0.01
ANTIMONY	0.0046	0.0	0.6	5.9	0.004	0.0004
ARSENIC	0.038	0.0	0.6	6.0	0.03	0.003
BARIUM	1.5	0.7	350	1095	0.002	0.001
CADMIUM	0.16	0.1	47.9	479	0.002	0.0002
CHROMIUM	6.4	3.0	181	727	0.02	0.004
COPPER	8.1	3.8	1850	2392	0.002	0.002
LEAD	0.39	0.2	442	4423	0.0004	0.00004
MANGANESE	6.4	3.0	4866	15703	0.001	0.0002
MERCURY	0.0090	0.0	2.4	3.9	0.002	0.001
NICKEL	4.7	2.2	2212	4423	0.001	0.001
SILVER	0.021	0.0	0.86	8.6	0.012	0.0012
ZINC	52	25	8847	17694	0.003	0.001

Cells are shaded if the EEQ is greater than 1.0.

1 - The insect concentrations are the wet-weight concentrations as presented in Table 3
2 - The dose is calculated using the dose equation on Section 3 of the document and the average exposure parameters on Table 4.

Definitions:
NOAEL - No Observed Adverse Effects Level
LOAEL - Lowest Observed Adverse Effects Level
EEQn - Ecological Effects Quotient based on the NOAEL
EEQl - Ecological Effects Quotient based on the LOAEL