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LETTER REPORT REGARDING SURFACE SOIL SAMPLING AND ANALYTICAL RESULTS
ORIGINAL PESTICIDE HANDLING AREA NS MAYPORT FL
12/12/1996
ABB ENVIRONMENTAL SERVICES



08534.302

December 12, 1996

Southern Division
Naval Facilities Engineering Command
ATTN: Mr. David Driggers
P.O. Box 190010
2155 Eagle Drive
North Charleston, SC 29418

**SUBJECT: Surface Soil Sampling and Analytical Results
Original Pesticide Handling Area
U.S. Naval Station, Mayport, Florida
CLEAN District I, Contract No. N62467-89-D-0317/02**

Dear David:

Enclosed please find a copy of the above referenced letter report presenting the results of sampling and chemical analysis of soil samples collected in September 1994 in the vicinity of the Original Pesticide Handling Area.

Sincerely,

ABB ENVIRONMENTAL SERVICES, INC.


Francis K. Lesesne, P.G.
Technical Lead


Terry Hansen, P.G.
Project Manager

cc: Cheryl Mitchell, NAVSTA Mayport
Jim Cason, FDEP
Martha Berry, USEPA

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Southern Division
Naval Facilities Engineering Command
ATTN: Mr. David Driggers
P.O. Box 190010
2155 Eagle Drive
North Charleston, SC 29418

Dear David:

**SUBJECT: Surface Soil Sampling and Analytical Results
Original Pesticide Handling Area
U.S. Naval Station, Mayport, Florida
CLEAN District I, Contract No. N62467-89-D-0317/028**

INTRODUCTION

This document describes the collection and analytical results of six surface soil samples and an associated duplicate from the Original Pesticide Handling Area at the U.S. Naval Station (NAVSTA), Mayport, Florida. Attachments included with this letter report are the following:

- Attachment A: Figures
- Attachment B: Tables
- Attachment C: Analytical Results
- Attachment D: References
- Attachment E: Response to Regulatory Comments

The location of NAVSTA Mayport is shown on Figure 1, and the location of the Original Pesticide Handling Area and sampling locations is shown on Figure 2. The sampling event was performed by ABB Environmental Services, Inc. (ABB-ES), at the request of the Department of the Navy, Southern Division, Naval Facilities Engineering Command (SOUTHNAVFACENGCOM) on behalf of NAVSTA Mayport.

The U.S. Environmental Protection Agency (USEPA) was informed by the Navy in correspondence dated October 19, 1995, that the Original Pesticide Handling Area was considered to be an area of concern (AOC) (U.S. Navy, 1995). The surface soil sampling and analytical results for the Original Pesticide Handling Area are provided to meet the requirement of a solid waste management unit (SWMU) assessment report. The SWMU assessment report is described in Part II. B. 3. of the NAVSTA Mayport Hazardous and Solid Waste Amendment permit (FL9 170 024 260).

The purpose of this sampling and analysis event was to collect surface soil samples for laboratory analysis and assess whether or not hazardous materials have potentially been released to the environment at the Original Pesticide Handling Area. The sampling event was not intended to assess the nature and extent of contamination, if present. Additionally, there are no ecological receptor pathways because the site is paved; therefore, risk to ecological receptors was not considered.

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Background information obtained for the Original Pesticide Handling Area is based on anecdotal evidence obtained during an interview with a NAVSTA Mayport employee, review of available historical aerial photographs, and a site visit.

The Original Pesticide Handling Area was reported by a NAVSTA Mayport employee to have been located approximately 40 to 60 feet north-northwest of Public Works Building Number 38 and adjacent to Mayport Turning Basin (Figure 2). Interpretation of available historical aerial photographs suggests that the original building was present in 1952 and demolished between 1975 and 1980. A 1952 aerial photograph depicted the area immediately north of the Original Pesticide Handling Area building along Mayport Turning Basin as a sandy beach with grass-covered areas located to the west. A 1960 aerial photograph shows that a concrete pier bulkhead had been constructed at the approximate location of the beach. A 1970 aerial photograph shows asphalt pavement adjacent to the pesticide storage building with a grass-covered area located across the street.

FIELD ACTIVITIES

Field activities were limited to the collection of surface soil samples. Subsurface soil samples were not collected based on analytical results of surface and subsurface soil samples collected from SWMU 15, the Old Pesticide Handling Area. This was based on analytical results from SWMU 15, where the highest detected concentrations of pesticides were in the surface soil samples. Additionally, based on review of aerial photographs, it is likely that pavement was placed directly on the original land surface at and in the vicinity of the Original Pesticide Handling Area. Therefore, at paved areas it is not likely that pesticides, if present, would have migrated from surface to subsurface soil.

The following describes the collection of the surface soil samples, laboratory analytical procedures, health and safety requirements, and equipment decontamination.

Surface Soil Sample Collection. Four surface soil samples (MPT-PS-SS01, MPT-PS-SS02, MPT-PS-SS03, and MPT-PS-SS04) and a duplicate were collected in grass-covered areas. The duplicate was collected at the location of surface soil sample MPT-PS-SS02. Two surface soil samples (MPT-PS-SS05 and MPT-PS-SS06) were collected beneath asphalt pavement where historical photographs indicate the presence of a former grass cover. These sampling locations were chosen because of the possibility that rinsing of pesticide and herbicide application equipment occurred at unpaved areas in the vicinity of the Original Pesticide Handling Area.

Where vegetation was present, it was removed and the surface soil sample was collected from the land surface to a depth of 1 foot below land surface (bls). Where asphalt pavement was present, the surface soil sample was collected from a 1-foot interval that began at the interface of either the bottom of the asphalt pavement or associated base course materials. The methodology for surface soil sample collection was consistent with standard operating procedures described in the NAVSTA Mayport Resource Conservation and Recovery Act (RCRA) Facility Investigation (RFI) Workplan (ABB-ES, 1991), the NAVSTA Mayport General Information Report (ABB-ES, 1995), and USEPA Region IV standard operating procedures (USEPA, 1991; and 1996). The soil samples were shipped to the laboratory by express-overnight delivery under the chain-of-custody protocol.

Laboratory Analyses. Soil samples were analyzed for target analytes selected from the Groundwater Monitoring List contained in Appendix IX, 40 Code of Federal Regulations (CFR), Part 264, and USEPA Contract Laboratory Program (CLP) target compound list and target analyte list, including volatile organic compounds (VOCs), semivolatile organic compounds (SVOCs), chlorinated pesticides, polychlorinated biphenyls (PCBs), organophosphate pesticides, chlorinated herbicides, metals, and cyanide

(ABB-ES, 1995). The analysis was conducted using methods contained in Test Methods for Evaluating Solid Waste, Physical/Chemical Methods, USEPA SW846 (USEPA, 1986).

The analytical data package produced by the laboratory was Naval Energy and Environmental Support Activity (NEESA) Level C. The rationale for using NEESA Level C was to provide analytical data that could be validated by substituting the SW846 method criteria for CLP method criteria using National Functional Guidelines for Organic Data Review (USEPA, 1990) and Laboratory Data Validation Functional Guidelines for Evaluating Inorganic Analysis (USEPA, 1988). The data were validated so that the appropriate decision could be made as to whether or not the site should be evaluated under the NAVSTA Mayport RCRA Corrective Action Program.

Health and Safety. The field sampling activities were performed in Occupational Safety and Health Administration (OSHA) Level D personal protective equipment (PPE). The Level D PPE consisted of steel-toed work boots and disposable gloves. The health and safety requirements for performance of the fieldwork are described in the Health and Safety Plan for the Mayport RFI Workplan for NAVSTA Mayport, Volume III (ABB-ES, 1991, revised).

Decontamination. Sampling equipment was decontaminated according to the equipment decontamination procedures specified in the USEPA-approved RFI Workplan for NAVSTA Mayport, Volume II (ABB-ES, 1991), the NAVSTA Mayport General Information Report (ABB-ES, 1995), and USEPA Region IV Standard Operating Procedures (USEPA, 1991; and 1996).

ANALYTICAL RESULTS

The six surface soil samples and duplicate were collected at the Original Pesticide Handling Area on September 14, 1995 (Figure 2). Tables 1 and 2 (Attachment B) summarize the validated analytical results for organic and inorganic analytes, respectively, detected in surface soil samples collected at the Original Pesticide Handling Area. Complete analytical results are provided in Attachment A.

Target analytes detected in the surface soil samples consist of 3 VOCs, 13 SVOCs, 4 pesticides, 1 PCB, and 12 metals and cyanide. The three VOCs detected in the surface soil samples were methylene chloride, acetone, and toluene. Methylene chloride and acetone were detected as single occurrences, and toluene was detected in three environmental samples and associated duplicate.

Eleven SVOCs (phenanthrene, fluoranthene, pyrene, benzo(a)anthracene, chrysene, bis(2-ethylhexyl)phthalate, benzo(b)fluoranthene, benzo(k)fluoranthene, benzo(a)pyrene, indeno(1,2,3-cd)pyrene, and dibenz(a,h)anthracene) were detected in surface soil sample MPT-PS-SS02 and associated duplicate (Table 1, Attachment B). Anthracene was detected in the duplicate sample but not in the environmental sample, and benzo(g,h,i)perylene was detected in the environmental sample but not in the duplicate.

Four pesticides (delta-benzene hexachloride [BHC], heptachlor epoxide, 4,4'-dichlorodiphenyl-dichloroethene [DDE], and 4,4'-dichlorodiphenyltrichloroethane [DDT]) and one PCB (Aroclor-1260) were detected in the surface soil samples (Table 1, Attachment B). Delta-BHC was detected as a single occurrence in the duplicate but not the associated sample (MPT-PS-SS02). Heptachlor epoxide was detected in the environmental sample and associated duplicate. 4,4'-DDE, 4,4'-DDT, and Aroclor-1260 were detected in two environmental samples (MPT-PS-SS01 and MPT-PS-SS02) and associated duplicate. 4,4'-DDE was detected in two environmental samples and duplicate at concentrations higher than the average of the values detected in background surface soil samples (Tables 1 and 3, Attachment B).

Thirteen inorganic analytes (arsenic, barium, cadmium, chromium, copper, lead, mercury, nickel, selenium, tin, vanadium, zinc, and cyanide) were detected at various combinations and concentrations in the surface soil samples (Table 2, Attachment B). Concentrations of arsenic, lead, mercury, nickel, tin, and cyanide were not detected in the background surface soil samples (Table 3, Attachment B). Concentrations of barium, chromium, copper, vanadium, and zinc exceeded the background screening values.

PRELIMINARY RISK EVALUATION

A summary of frequencies of detection, range of detection limits, range of detected concentrations, arithmetic mean, and benchmark comparison values is provided in Table 3 (Attachment B). The target analytes detected in the environmental samples were compared to the background screening values computed from stationwide background surface soil samples (ABB-ES, 1995), benchmark values from USEPA Region III risk-based concentrations (RBCs) (USEPA, 1995), and benchmark values from the Florida Department of Environmental Protection (FDEP) Soil Cleanup Goals (FDEP, 1995a; 1995b; and 1996). Concentrations of analytes detected in the surface soil samples were compared to aggregate residential exposure (child and adult) listed in the USEPA Region III RBCs and the FDEP Soil Cleanup Goals and to industrial worker exposures listed in the FDEP Soil Cleanup Goals.

Each of the benchmarks provided in Table 3 (Attachment B) are human health-based and represent the lower of either a noncarcinogenic hazard index (HI) where values less than 1 represent a concentration at which noncarcinogenic effects are not likely or, for a carcinogen, an excess lifetime cancer risk of 1×10^{-6} , which represents a chance of 1 in 1,000,000 for an adverse carcinogenic effect for a continuous lifetime exposure. The concentrations of noncarcinogens listed for the USEPA Region III RBCs correspond to an HI of 0.1, whereas the FDEP soil cleanup goals are based on an HI of 1. The concentrations for carcinogens listed in both the USEPA Region III RBCs and FDEP Soil Cleanup Goals are at 1×10^{-6} .

The FDEP recommends risk management goals that are protective of human health should be established at 1×10^{-6} for carcinogens and an HI of 1 for noncarcinogens. Continuous lifetime exposure in the range of 1×10^{-4} (a chance of 1 in 10,000 for an adverse carcinogenic effect for a continuous lifetime exposure) to 1×10^{-6} represents concentrations that are considered by the USEPA to be protective of human health (Federal National Oil and Hazard Substances Pollution Contingency Plan [NCP], Final Rule, [40 CFR, Part 300]).

The three VOCs detected in the surface soil samples (Table 1, Attachment B) did not exceed the benchmarks (Table 3, Attachment B).

Two SVOCs, benzo(a)pyrene and dibenz(a,h)anthracene, were detected at concentrations that exceed their respective USEPA Region III and FDEP residential benchmarks, but not their respective industrial FDEP soil cleanup goal (Table 3, Attachment B). Currently there are no USEPA Region III RBCs established for the SVOCs benzo(g,h,i)perylene and phenanthrene; however, there are FDEP soil cleanup goals for residential and industrial exposures that were not exceeded.

The four pesticides were not detected at concentrations that exceed their respective benchmarks (Table 3, Attachment B). The PCB, Aroclor-1260, was detected in an environmental sample and associated duplicate at concentrations that exceed the USEPA Region III RBC, but not the FDEP soil cleanup goals for residential or industrial exposures (Tables 1 and 3, Attachment B).

Only one inorganic analyte, arsenic, was detected at a concentration that exceeds the USEPA Region III RBC and FDEP soil cleanup goal for residential exposure; however, the concentration detected did not exceed the FDEP soil cleanup goal for industrial exposure.

The excess lifetime carcinogenic human health risk was estimated for analytes that exceeded the benchmarks by comparison of the maximum detected value (Table 3, Attachment B) with the estimated 1×10^{-6} cancer risk values from the USEPA Region III RBCs (residential exposure) and the FDEP Soil Cleanup Goals (residential and industrial exposure) (Table 4, Attachment B). This assessment suggests that hypothetical residential exposure is likely to be within the risk management range 1×10^{-4} to 1×10^{-6} that is acceptable to the USEPA. The assessment also suggests that the hypothetical residential exposure based on that specific FDEP soil cleanup goal is likely greater than the FDEP risk management goal of 1×10^{-6} and only slightly exceeds (2×10^{-6}) the FDEP soil cleanup goal (1×10^{-6}) for an industrial exposure.

SUMMARY

Below is a summary of the assessment of the surface soil analytical results.

- Organic analytes were detected at concentrations that exceeded USEPA Region III RBCs (residential exposure), but did not exceed the FDEP soil cleanup goal for residential or industrial exposure.
- Concentrations of benzo(a)pyrene, dibenz(a,h)anthracene, and arsenic, exceeded residential exposure screening levels for USEPA Region III RBCs and the FDEP soil cleanup goal, but did not exceed the industrial worker exposure scenario for that FDEP soil cleanup goal.
- Noncarcinogenic risks were not identified by comparison of the analytical data to the risk-based screening values.

RECOMMENDATIONS

No further investigation at this time is recommended for the Original Pesticide Handling Area. Additionally, the site should no longer be considered an AOC and evaluated under the NAVSTA Mayport RCRA Corrective Action Program. Also, because chemicals are potentially present in surface soil at concentrations that exceed Federal and State guidance for residential use, it is recommended that the area be designated for industrial use only. The recommendations are based on comparison of analytical results from the surface soil samples to human health-based screening criteria; the current use of the Original Pesticide Handling Area is industrial; and the assumption that the industrial land use will not change in the foreseeable future. The recommendations presented in this report should be reevaluated if use of the original Pesticide Handling Area changes from industrial (currently used as an asphalt paved parking area) or a modification(s) is made to the land surface that would result in habitation and/or foraging by ecological receptors.

This document has been prepared under the direction of a Florida Registered Professional Geologist. The work and professional opinions rendered in this report were conducted and developed in accordance with commonly accepted procedures consistent with applicable standards of practice. If conditions are determined to exist that differ from those described, the undersigned geologist should be notified to evaluate the effects of any additional information on the assessment and recommendations in this document. This document was prepared to meet the reporting requirements of an SWMU Assessment

Report for the Original Pesticide Handling Area at NAVSTA Mayport, Florida, and should not be construed to be applicable to any other purpose or site.

This recommendation is based on the analytical results of surface soil samples collected for this assessment and comparison to human health-based benchmarks. Under current use, the industrial exposure scenario will not likely change in the foreseeable future; therefore, the recommendation and assumptions are considered to be consistent with FDEP's risk management goal and the risk range accepted by the USEPA.

If you have any questions or comments concerning this information, or should any additional information become available for this site that would affect this recommendation, please contact us.

Sincerely,

ABB Environmental Services, Inc.



Francis K. Lesesne, P.G.
Technical Lead



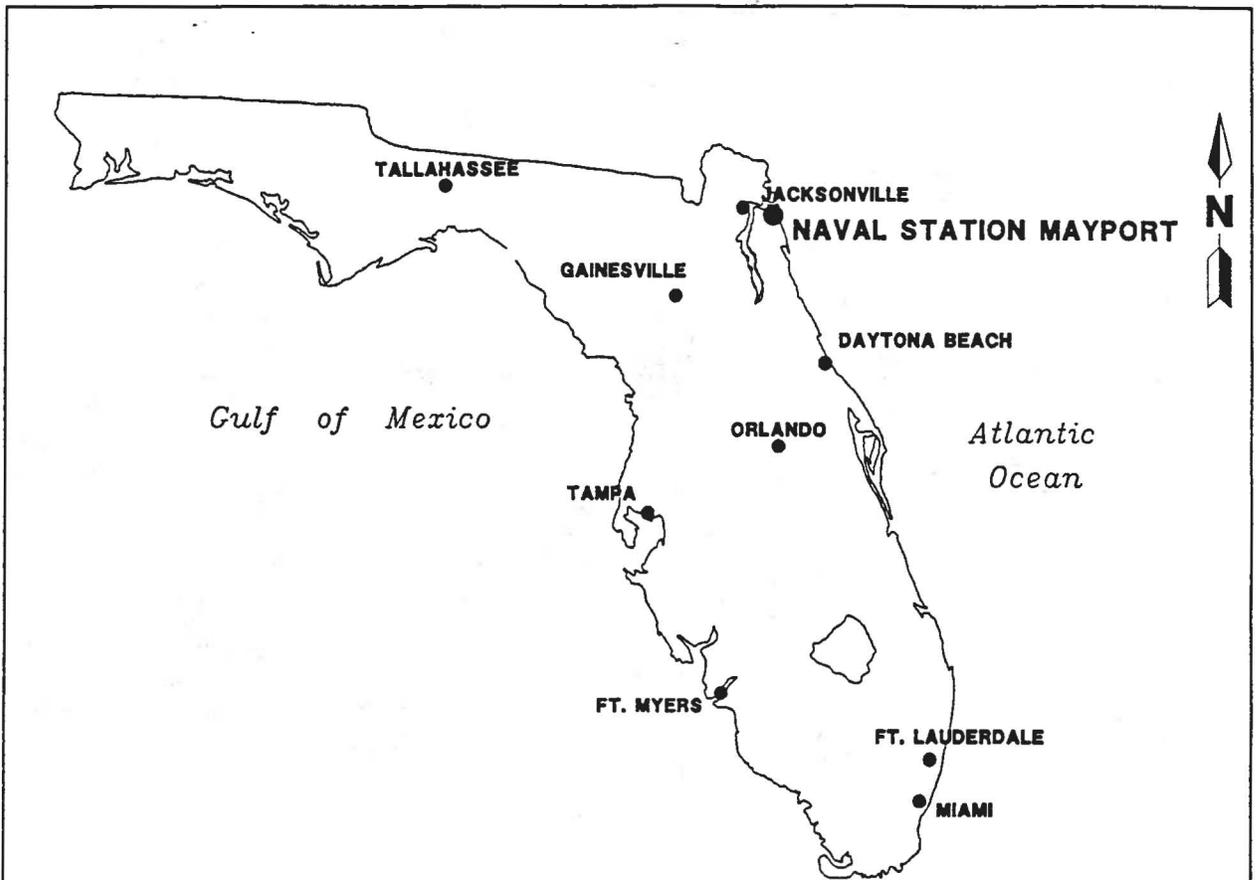
Terry Hansen, P.G.
Project Manager

cc: Cheryl Mitchell, NAVSTA Mayport

PestArea.Ltr
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ATTACHMENT A
FIGURES



NOT TO SCALE

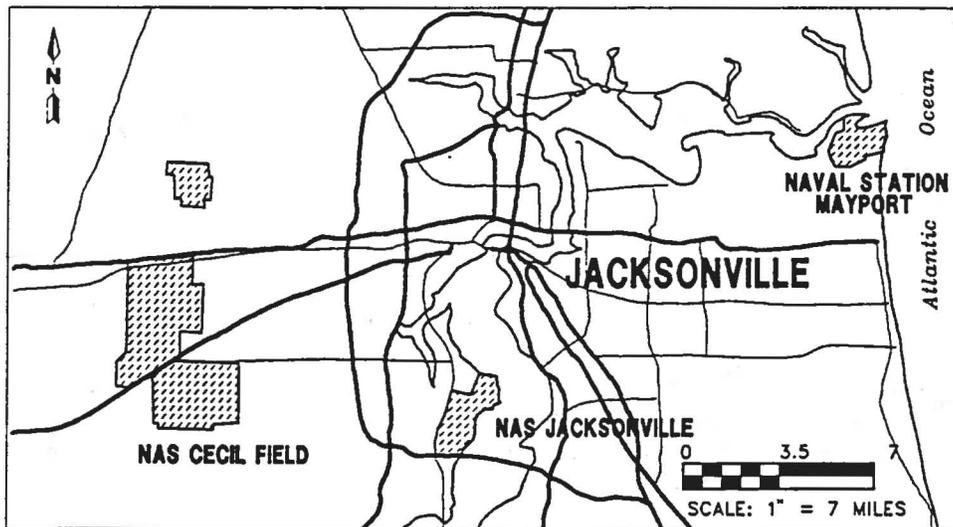


FIGURE 1
FACILITY LOCATION MAP



SAMPLING AND ANALYSIS
REPORT ORIGINAL PESTICIDE
HANDLING AREA

U.S. NAVAL STATION
MAYPORT, FLORIDA

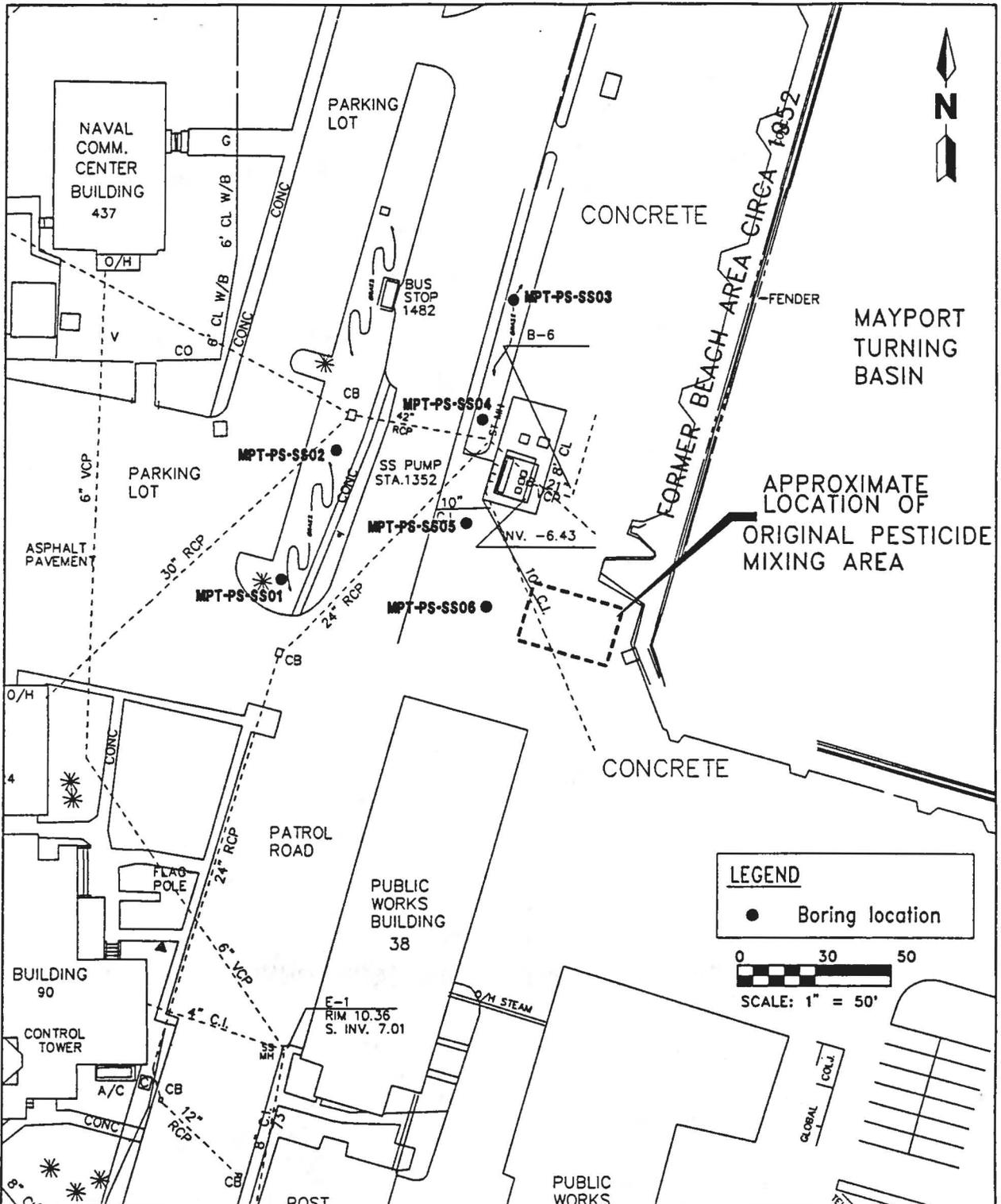


FIGURE 2
SURFACE SOIL SAMPLING LOCATIONS AT ORIGINAL PESTICIDE HANDLING AREA



SAMPLING AND ANALYSIS REPORT
ORIGINAL PESTICIDE HANDLING AREA

U.S. NAVAL STATION
MAYPORT, FLORIDA

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ATTACHMENT B
TABLES

Table 1
Organic Analytes Detected in Surface Soil Samples at the Original Pesticide Handling Area

Surface Soil Sampling and Analytical Results
Original Pesticide Handling Area
U.S. Naval Station
Mayport, Florida

Analytical Batch No.:	R8753	R8753	R8753	R8753	R8753	R8798	R8798
Sample Matrix:	Soil	Soil	Soil	Soil	Soil	Soil	Soil
Sample Location:	MPT-PS-SS01	MPT-PS-SS02	MPT-PS-SS02	MPT-PS-SS03	MPT-PS-SS04	MPT-PS-SS05	MPT-PS-SS06
Sample No.:	PSSS00101	PSSS00201	PSSS00201Dup	PSSS00301	PSSS00401	PSSS00S501	PSSS00601
Date Sampled:	15-SEP-94	15-SEP-94	15-SEP-94	15-SEP-94	15-SEP-94	23-SEP-94	23-SEP-94
Sample Depth (ft bls)	0 to 1	0 to 1	0 to 1	0 to 1	0 to 1	0.25 to 1.25	0.75 to 1.75
<u>Volatile Analytes (µg/kg)</u>							
Methylene chloride	--	1 J	--	--	--	--	--
Acetone	--	--	--	9 J	--	--	--
Toluene	--	2 J	2 J	9	8	--	--
<u>Semivolatile Analytes (µg/kg)</u>							
Phenanthrene	--	170 J	1,300	--	--	--	--
Anthracene	--	--	150 J	--	--	--	--
Fluoranthene	--	600 J	2,400	--	--	--	--
Pyrene	--	400 J	1,700	--	--	--	--
Benzo(a)anthracene	--	260 J	1,100	--	--	--	--
Chrysene	--	360 J	1,400	--	--	--	--
bis(2-Ethylhexyl)phthalate	--	220 J	280 J	--	--	--	--
See notes at end of table.							

Table 1 (Continued)
Organic Analytes Detected in Surface Soil Samples at the Original Pesticide Handling Area

Surface Soil Sampling and Analytical Results
Original Pesticide Handling Area
U.S. Naval Station
Mayport, Florida

Analytical Batch No.:	R8753	R8753	R8753	R8753	R8753	R8798	R8798
Sample Matrix:	Soil	Soil	Soil	Soil	Soil	Soil	Soil
Sample Location:	MPT-PS-SS01	MPT-PS-SS02	MPT-PS-SS02	MPT-PS-SS03	MPT-PS-SS04	MPT-PS-SS05	MPT-PS-SS06
Sample No.:	PSSS00101	PSSS00201	PSSS00201Dup	PSSS00301	PSSS00401	PSSS00S501	PSSS00601
Date Sampled:	15-SEP-94	15-SEP-94	15-SEP-94	15-SEP-94	15-SEP-94	23-SEP-94	23-SEP-94
Sample Depth (ft bls)	0 to 1	0 to 1	0 to 1	0 to 1	0 to 1	0.25 to 1.25	0.75 to 1.75
Semivolatile Analytes ($\mu\text{g}/\text{kg}$) (Continued)							
Benzo(b)fluoranthene	--	360 J	920	--	--	--	--
Benzo(k)fluoranthene	--	350 J	950	--	--	--	--
Benzo(a)pyrene	--	270 J	490 J	--	--	--	--
Indeno(1,2,3-cd)pyrene	--	230 J	410 J	--	--	--	--
Dibenz(a,h)anthracene	--	82 J	260 J	--	--	--	--
Benzo(g,h,i)perylene	--	220 J	--	--	--	--	--
Pesticides and PCBs ($\mu\text{g}/\text{kg}$)							
delta-BHC	--	--	1 J	--	--	--	--
Heptachlor epoxide	--	0.84	0.78	--	--	--	--
4,4-DDE	9.5	84	80	--	--	--	--
4,4-DDT	10	87	81	--	--	--	--
Aroclor-1260	32	130	160	--	--	--	--
Notes: Dup = duplicate. ft bls = feet below land surface. $\mu\text{g}/\text{kg}$ = micrograms per kilogram. -- = concentration of analyte, if present, was less than the detection limit. J = estimated value.				PCBs = polychlorinated biphenyls. BHC = benzene hexachloride. DDE = dichlorodiphenyldichloroethene. DDT = dichlorodiphenyltrichloroethane.			

Table 2
Inorganic Analytes Detected in Surface Soil Samples at the Original Pesticide Handling Area

Surface Soil Sampling and Analytical Results
Original Pesticide Handling Area
U.S. Naval Station
Mayport, Florida

Analytical Batch No.:	R875	R875	R875	R875	R875	R879	R879
Sample Matrix:	Soil	Soil	Soil	Soil	Soil	Soil	Soil
Sample Location:	MPT-PS-SS01	MPT-PS-SS02	MPT-PS-SS02	MPT-PS-SS03	MPT-PS-SS04	MPT-PS-SS05	MPT-PS-SS06
Sample No.	PSSS00101	PSSS00201	PSSS00201Dup	PSSS00301	PSSS00401	PSSS00501	PSSS00601
Date Sampled:	15-SEP-94	15-SEP-94	15-SEP-94	15-SEP-94	15-SEP-94	23-SEP-94	23-SEP-94
Sample Depth (ft bls):	0 to 1	0 to 1	0 to 1	0 to 1	0 to 1	0 to 1	0 to 1
<u>Inorganics Analytes (mg/kg)</u>							
Arsenic	2.67	1.69	1.46	0.91	0.45	0.67	0.27
Barium	13	12.7	10.1	2.8	5	4.5	11.8
Cadmium	0.75	0.89	0.68	--	--	--	0.28
Chromium	8.1	30	11.6	9.6	10.7	5	5.6
Copper	18	16.3	14.7	5.7	5.2	1.3	1.7
Lead	108	131	116	2.32	3.64	1.66	1.66
Mercury	0.2	--	--	--	--	--	--
Nickel	4	18.8	7.2	6.1	3.7	--	--
Selenium	--	0.17	--	0.23	0.35	--	--
Tin	--	4.1	--	--	--	--	--
Vanadium	6.6	14.8	10.9	2.2	3.4	5.5	6.3
Zinc	65.9	70.1	54.9	10.6	8.7	3.8	4.4
Cyanide	--	--	--	--	0.22	0.31	0.181
Notes:	Dup = duplicate. ft bls = feet below land surface. mg/kg = milligrams per kilogram. -- = concentration of analyte, if present, was less than the detection limit.						

Table 3
Preliminary Risk Screening of Surface Soil Samples from the Original Pesticide Handling Area

Surface Soil Sampling and Analytical Results
Original Pesticide Handling Area
U.S. Naval Station
Mayport, Florida

Analyte	Frequency of Detection ¹	Range of Reporting Limits	Range of Detected Concentrations ²	Mean of Detected Concentrations ³	Back-ground Screening Value ⁴	Region III RBC ⁵	FDEP Soil Cleanup Goal ⁶ (Residential)	FDEP Soil Cleanup Goal ⁶ (Industrial)	Exceeds Residential Benchmark (Yes/No)	Exceeds Industrial Benchmark (Yes/No)
<u>Volatile Organic Compounds (µg/kg)</u>										
Acetone	1/6	11 - 11.5	9	9	ND	780,000	260,000	1,800,000	No	No
Methylene chloride	1/6	5 - 6	2*	2	ND	⁷ 85,000	16,000	23,000	No	No
Toluene	3/6	5 - 6	2* - 9	6.3	ND	1,600,000	520,000	3,500,000	No	No
<u>Semivolatile Organic Compounds (µg/kg)</u>										
Anthracene	1/6	730 - 760	267.5*	268	ND	2,300,000	20,000,000	300,000,000	No	No
Benzo(a)anthracene	1/6	730 - 760	680*	680	ND	⁷ 880	1,400	4,900	No	No
Benzo(a)pyrene	1/6	730 - 760	380*	380	ND	⁷ 88	100	500	Yes	No
Benzo(b)fluoranthene	1/6	730 - 760	640*	640	ND	⁷ 880	1,400	5,000	No	No
Benzo(g,h,i)perylene	1/6	730 - 760	297.5*	298	ND	NS	14,000	50,000	No	No
Benzo(k)fluoranthene	1/6	730 - 760	650*	650	ND	⁷ 8,800	14,000	48,000	No	No
Chrysene	1/6	730 - 760	880*	880	ND	⁷ 88,000	140,000	500,000	No	No
Dibenz(a,h)anthracene	1/6	730 - 760	171*	171	ND	⁷ 88	100	500	Yes	No
Fluoranthene	1/6	730 - 760	1,500*	1,500	ND	310,000	2,900,000	48,000,000	No	No
Indeno(1,2,3-cd)pyrene	1/6	730 - 760	320*	320	ND	⁷ 880	1,400	5,000	No	No
Phenanthrene	1/6	730 - 760	735*	735	ND	NS	1,700,000	21,000,000	No	No
Pyrene	1/6	730 - 760	1,050*	1,050	ND	230,000	2,200,000	44,000,000	No	No
bis(2-Ethylhexyl)phthalate	1/6	730 - 760	250*	250	ND	⁷ 46,000	48,000	110,000	No	No
<u>Pesticides and PCBS (µg/kg)</u>										
4,4'-DDE	2/6	0.74 - 0.77	9.5 - 82*	45.8	2.3	⁷ 1,900	3,000	11,000	No	No
4,4'-DDT	2/6	1.4 - 1.5	10 - 84*	47	ND	⁷ 1,900	3,100	12,000	No	No
Heptachlor epoxide	1/6	0.74 - 0.77	0.81*	0.81	ND	⁷ 70	100	300	No	No
delta-BHC	1/6	0.74 - 0.77	0.69*	0.69	ND	NS	23,000	470,000	No	No
Aroclor-1260	2/6	16 - 18.5	32 - 145*	88.5	ND	⁷ 83	900	3,500	Yes	No

See notes at end of table.

Table 3 (Continued)
Preliminary Risk Screening of Surface Soil Samples from the Original Pesticide Handling Area

Surface Soil Sampling and Analytical Results
Original Pesticide Handling Area
U.S. Naval Station
Mayport, Florida

Analyte	Frequency of Detection ¹	Range of Reporting Limits	Range of Detected Concentrations ²	Mean of Detected Concentrations ³	Background Screening Value ⁴	Region III RBC ⁵	Florida Soil Cleanup Goal ⁶ (Residential)	Florida Soil Cleanup Goals ⁶ (Industrial)	Exceeds Residential Benchmark (Yes/No)	Exceeds Industrial Benchmark (Yes/No)
Inorganics (mg/kg)										
Arsenic	6/6	NR	0.27 - 2.67	1.1	ND	⁷ 0.37	^{7,8} 0.8	^{7,8} 3.7	Yes	No
Barium	6/6	NR	2.8 - 13	8.1	5.6	550	5,200	84,000	No	No
Cadmium	3/6	0.22 - 0.23	0.28 - 0.78*	0.61	2.0	3.9	37	600	No	No
Chromium	6/6	NR	5 - 20.8*	10	2.6	⁸ 39	⁸ 290	⁸ 430	No	No
Copper	6/6	NR	1.3 - 18	7.9	2.2	290	⁹ 2,900	⁹ 72,000	No	No
Lead	6/6	NR	1.66 - 123.5*	40.1	ND	¹⁰ 400	500	1,000	No	No
Mercury	1/6	0.07	0.2	0.2	ND	2.3	23	480	No	No
Nickel	4/6	2.2 - 2.3	3.7 - 13*	4.8	ND	160	1,500	26,000	No	No
Selenium	3/6	0.13 - 0.14	0.12* - 0.35	0.23	1.36	39	390	9,900	No	No
Tin	1/6	3.5 - 3.7	2.9*	3	ND	4,700	44,000	670,000	No	No
Vanadium	6/6	NR	2.2 - 12.8*	6.1	4	55	490	4,800	No	No
Zinc	6/6	NR	3.8 - 65.9	26	2.6	2,300	23,000	560,000	No	No
Cyanide	3/6	0.13 - 0.15	0.18 - 0.31	0.24	ND	160	1,600	40,000	No	No
See notes at end of table.										

Table 3 (Continued)
Preliminary Risk Screening of Surface Soil Samples from the Original Pesticide Handling Area

Surface Soil Sampling and Analytical Results
Original Pesticide Handling Area
U.S. Naval Station
Mayport, Florida

¹ Frequency of detection is the number of samples in which the analyte was detected divided by the total number of samples analyzed (excluding rejected values, "R" qualifier).

² Asterisk values are the average of the detected concentrations in a sample and its duplicate. For duplicate samples having one nondetected value, one-half the Contract Required Quantitation Limit is used as a surrogate.

³ The mean of detected concentrations is the arithmetic mean of all samples in which the analyte was detected, including values qualified as "J;" it does not include those samples where the analyte was not detected ("U" or "UJ" qualifiers) and rejected ("R" qualifier).

⁴ The background screening concentration is twice the average of detected concentrations for inorganic analytes in background samples. Organic values are only one time the mean of detected concentrations, and are included for comparison purposes only. Surface soil background samples are MPT-B-SS1, MPT-B-SS1DUP, MPT-B-SS2, MPT-B-SS3, MPT-B-SS4, MPT-B-SS5, and MPT-B-SS6.

⁵ For all chemicals except the essential nutrients (calcium, iron, magnesium, potassium, and sodium), U.S. Environmental Protection Agency (USEPA) Region III RBCs for residential surface soil exposure per January 1993 guidance (Selecting Exposure Routes and Contaminants of Concern by Risk-Based Screening [EPA/903/R-93-001]) were used for screening. Actual values are taken from the USEPA Region III RBC Tables dated February 9, 1995, and are based on a cancer risk of 1×10^{-6} and for noncarcinogens a hazard quotient (HQ) of 1.0.

⁶ Values are taken from the FDEP memorandum, Soil Cleanup Goals for Florida, dated September 29, 1995. The values are for either a residential or industrial worker soil exposure and are based on a cancer risk of 1×10^{-6} and for noncarcinogens an HQ of 1.0.

⁷ The RBC is based on carcinogenic effects.

⁸ Chromium in hexavalent form. Values taken from FDEP memorandum, Applicability of Soil Cleanup Goals for Florida, January 19, 1996.

⁹ Value taken from FDEP memorandum, Soil Cleanup Goals for the Military Sites, dated April 5, 1995, and are based on a cancer risk of 1×10^{-6} and for noncarcinogens an HQ of 1.0.

¹⁰ No RBC is available for lead because of the lack of toxicity data. The value provided is based on USEPA's recommended target cleanup level for Superfund sites (USEPA, 1994).

Notes: Environmental samples included in this evaluation are PSSS00101, PSSS00201, PSSS00201Dup, PSSS00301, PSSS00401, PSSS00501, and PSSS00601.

RBC = risk-based concentration.

FDEP = Florida Department of Environmental Protection.

$\mu\text{g}/\text{kg}$ = micrograms per kilogram.

ND = analyte not detected in background surface soil sample.

* = see footnote 2.

NS = no screening concentration.

PCB = polychlorinated biphenyl.

DDE = dichlorodiphenyldichloroethene.

DDT = dichlorodiphenyltrichloroethane.

delta-BHC = benzene hexachloride-delta isomer or hexachlorocyclohexane-delta isomer.

mg/kg = milligrams per kilogram.

NR = none reported.

Table 4
Estimated Human Health Risk
Surface Soil at the Original Pesticide Handling Area

Surface Soil Sampling and Analytical Results
Original Pesticide Handling Area
U.S. Naval Station
Mayport, Florida

Analyte	Maximum Detected Concentration ¹	Residential Exposure				Industrial Exposure	
		USEPA Region III RBC ²	Estimated Residential Cancer Risk ³	FDEP Soil Cleanup Goal ⁴	Estimated Residential Cancer Risk ³	FDEP Soil Cleanup Goal ⁴	Estimated Industrial Cancer Risk ³
<u>Volatile Organic Compounds (µg/kg)</u>							
No analytes exceeded screening criteria							
<u>Semivolatile Organic Compounds (µg/kg)</u>							
Benzo(a)pyrene	380*	88	4E-6	100	4E-6	500	7E-7
Dibenz(a,h)anthracene	171*	88	2E-6	100	2E-6	500	3E-7
<u>Pesticides and PCBs (µg/kg)</u>							
No analytes exceeded screening criteria							
<u>Inorganics (mg/kg)</u>							
Arsenic	2.67	0.37	7E-6	⁵ 0.8	3E-6	3.7	7E-7
Total Cancer Risk			1E-5		9E-6		2E-6

¹ The maximum value is from Table 3 and represents either the maximum value detected for an analyte in an environmental sample or, if marked with an asterisk, the average for an environmental sample and associated duplicate (one-half the Contract Required Quantitation Limit is used as a surrogate for nondetects ["U" or "UJ" qualified samples for environmental samples and duplicate pairs]).

² USEPA Region III RBCs for residential surface soil exposure per January 1993 guidance (Selecting Exposure Routes and Contaminants of Concern by Risk-Based Screening [EPA/903/R-93-001]) were used for screening. Actual values are taken from the USEPA Region III RBC Tables dated February 9, 1995, and are based on a cancer risk of 10⁻⁶.

³ The cancer risk is an estimated value based on the assumptions used to determine the human health-based risk screening values.

⁴ Values are taken from the FDEP memorandum, Soil Cleanup Goals for Florida, dated September 29, 1995. The values are for either a residential or industrial worker soil exposure and are based on a cancer risk of 10⁻⁶.

⁵ Value for arsenic is taken from FDEP memorandum, Applicability of Soil Cleanup Goals for Florida, January 19, 1996.

Notes: USEPA = U.S. Environmental Protection Agency.
RBC = risk-based concentration.
FDEP = Florida Department of Environmental Protection.
µg/kg = micrograms per kilogram.
* = see footnote 1.
PCB = polychlorinated biphenyl.
mg/kg = milligram per kilogram.

ATTACHMENT C
ANALYTICAL RESULTS



**AR01 - Trend Report
Pesticide Site Surface Soil Data**

Lab Sample Number:
Site
Locator
Collect Date:

R8753001
PESTSITE
PSSS00101
15-SEP-94

R8753002
PESTSITE
PSSS00201
15-SEP-94

R8753003
PESTSITE
PSSS00201D
15-SEP-94

R8753005
PESTSITE
PSSS00301
15-SEP-94

	VALUE	QUAL UNITS	DL									
1,4-Dioxane	220	U ug/kg	220	230	U ug/kg	230	230	U ug/kg	230	220	U ug/kg	220
3-Chloropropene	5	U ug/kg	5	6	U ug/kg	6	6	U ug/kg	6	6	U ug/kg	6
Acetonitrile	110	U ug/kg	110	120	U ug/kg	120	110	U ug/kg	110	110	U ug/kg	110
Chloroprene	220	U ug/kg	220	230	U ug/kg	230	230	U ug/kg	230	220	U ug/kg	220
Methacrylonitrile	5	U ug/kg	5	6	U ug/kg	6	6	U ug/kg	6	6	U ug/kg	6
Methyl methacrylate	11	U ug/kg	11	12	U ug/kg	12	11	U ug/kg	11	11	U ug/kg	11
Pentachloroethane	11	U ug/kg	11	12	U ug/kg	12	11	U ug/kg	11	11	U ug/kg	11
Propionitrile	110	U ug/kg	110	120	U ug/kg	120	110	U ug/kg	110	110	U ug/kg	110
Vinyl acetate	11	U ug/kg	11	12	U ug/kg	12	11	U ug/kg	11	11	U ug/kg	11

U = NOT DETECTED R = RESULT IS REJECTED
 J = ESTIMATED VALUE UJ = REPORTED QUANTITATION LIMIT IS ESTIMATED
 THE ADDITIONAL LISTINGS OF RESULTS FOR 1,2-; 1,3-; AND 1,4-DICHLOROBENZENE WERE GENERATED FROM THE SVOC (8270) ANALYTICAL RUN.



AR01 - Trend Report
Pesticide Site Surface Soil Data

Lab Sample Number:
Site
Locator
Collect Date:

R8753004
PESTSITE
PSSS00401
15-SEP-94

R8798002
PESTSITE
PSSS00501
23-SEP-94

R8798001
PESTSITE
PSSS00601
23-SEP-94

VALUE QUAL UNITS DL VALUE QUAL UNITS DL VALUE QUAL UNITS DL

		R8753004			R8798002			R8798001		
		VALUE	QUAL UNITS	DL	VALUE	QUAL UNITS	DL	VALUE	QUAL UNITS	DL
VOLATILES		ug/kg								
Chloromethane	11 U	ug/kg	11	11 U	ug/kg	11	11 U	ug/kg	11	
Bromomethane	11 U	ug/kg	11	11 U	ug/kg	11	11 U	ug/kg	11	
Vinyl chloride	11 U	ug/kg	11	11 U	ug/kg	11	11 U	ug/kg	11	
Chloroethane	11 U	ug/kg	11	11 U	ug/kg	11	11 U	ug/kg	11	
Methylene chloride	6 U	ug/kg	6	6 U	ug/kg	6	6 U	ug/kg	6	
Acetone	11 U	ug/kg	11	11 U	ug/kg	11	11 U	ug/kg	11	
Carbon disulfide	6 U	ug/kg	6	6 U	ug/kg	6	6 U	ug/kg	6	
1,1-Dichloroethane	6 U	ug/kg	6	6 U	ug/kg	6	6 U	ug/kg	6	
1,1-Dichloroethene	6 U	ug/kg	6	6 U	ug/kg	6	6 U	ug/kg	6	
1,2-Dichloroethene (total)	6 U	ug/kg	6	6 U	ug/kg	6	6 U	ug/kg	6	
Chloroform	6 U	ug/kg	6	6 U	ug/kg	6	6 U	ug/kg	6	
1,2-Dichloroethane	6 U	ug/kg	6	6 U	ug/kg	6	6 U	ug/kg	6	
2-Butanone	11 U	ug/kg	11	11 U	ug/kg	11	11 U	ug/kg	11	
1,1,1-Trichloroethane	6 U	ug/kg	6	6 U	ug/kg	6	6 U	ug/kg	6	
Carbon tetrachloride	6 U	ug/kg	6	6 U	ug/kg	6	6 U	ug/kg	6	
Bromodichloromethane	6 U	ug/kg	6	6 U	ug/kg	6	6 U	ug/kg	6	
1,2-Dichloropropane	6 U	ug/kg	6	6 U	ug/kg	6	6 U	ug/kg	6	
cis-1,3-Dichloropropene	6 U	ug/kg	6	6 U	ug/kg	6	6 U	ug/kg	6	
Trichloroethene	6 U	ug/kg	6	6 U	ug/kg	6	6 U	ug/kg	6	
Dibromochloromethane	6 U	ug/kg	6	6 U	ug/kg	6	6 U	ug/kg	6	
1,1,2-Trichloroethane	6 U	ug/kg	6	6 U	ug/kg	6	6 U	ug/kg	6	
Benzene	6 U	ug/kg	6	6 U	ug/kg	6	6 U	ug/kg	6	
trans-1,3-Dichloropropene	6 U	ug/kg	6	6 U	ug/kg	6	6 U	ug/kg	6	
Bromoform	6 U	ug/kg	6	6 U	ug/kg	6	6 U	ug/kg	6	
4-Methyl-2-pentanone	11 U	ug/kg	11	11 U	ug/kg	11	11 U	ug/kg	11	
2-Hexanone	11 U	ug/kg	11	11 U	ug/kg	11	11 U	ug/kg	11	
Tetrachloroethene	6 U	ug/kg	6	6 U	ug/kg	6	6 U	ug/kg	6	
1,1,2,2-Tetrachloroethane	6 U	ug/kg	6	6 U	ug/kg	6	6 U	ug/kg	6	
Toluene	8	ug/kg		6 U	ug/kg	6	6 U	ug/kg	6	
Chlorobenzene	6 U	ug/kg	6	6 U	ug/kg	6	6 U	ug/kg	6	
Ethylbenzene	6 U	ug/kg	6	6 U	ug/kg	6	6 U	ug/kg	6	
Styrene	6 U	ug/kg	6	6 U	ug/kg	6	6 U	ug/kg	6	
Xylenes (total)	6 U	ug/kg	6	6 U	ug/kg	6	6 U	ug/kg	6	
Dichlorodifluoromethane	11 U	ug/kg	11	11 U	ug/kg	11	11 U	ug/kg	11	
Trichlorofluoromethane	6 U	ug/kg	6	6 U	ug/kg	6	6 U	ug/kg	6	
1,3-Dichlorobenzene	740 U	ug/kg	740	740 U	ug/kg	740	6 U	ug/kg	6	
Acrolein	110 U	ug/kg	110	110 U	ug/kg	110	110 U	ug/kg	110	
Iodomethane	11 U	ug/kg	11	11 U	ug/kg	11	11 U	ug/kg	11	
1,4-Dichlorobenzene	6 U	ug/kg	6	6 U	ug/kg	6	6 U	ug/kg	6	
Acrylonitrile	110 U	ug/kg	110	110 U	ug/kg	110	110 U	ug/kg	110	



AR01 - Trend Report
Pesticide Site Surface Soil Data

Lab Sample Number: Site Locator Collect Date:	R8753004 PESTSITE PSSS00401 15-SEP-94			R8798002 PESTSITE PSSS00501 23-SEP-94			R8798001 PESTSITE PSSS00601 23-SEP-94		
	VALUE	QUAL UNITS	DL	VALUE	QUAL UNITS	DL	VALUE	QUAL UNITS	DL
Dibromomethane	6 U	ug/kg	6	6 U	ug/kg	6	6 U	ug/kg	6
1,2-Dichlorobenzene	6 U	ug/kg	6	6 U	ug/kg	6	740 U	ug/kg	740
2-Chloroethylvinylether	11 U	ug/kg	11	11 U	ug/kg	11	11 U	ug/kg	11
Ethyl methacrylate	6 U	ug/kg	6	6 U	ug/kg	6	6 U	ug/kg	6
1,2,3-Trichloropropane	6 U	ug/kg	6	6 U	ug/kg	6	6 U	ug/kg	6
trans-1,4-Dichloro-2-butene	6 U	ug/kg	6	6 U	ug/kg	6	6 U	ug/kg	6
Isobutyl alcohol	220 U	ug/kg	220	220 U	ug/kg	220	220 U	ug/kg	220
1,1,1,2-Tetrachloroethane	6 U	ug/kg	6	6 U	ug/kg	6	6 U	ug/kg	6
1,2-Dibromo-3-chloropropane	11 U	ug/kg	11	11 U	ug/kg	11	11 U	ug/kg	11
1,2-Dibromoethane	6 U	ug/kg	6	6 U	ug/kg	6	6 U	ug/kg	6
1,4-Dioxane	220 U	ug/kg	220	220 U	ug/kg	220	220 U	ug/kg	220
3-Chloropropene	6 U	ug/kg	6	6 U	ug/kg	6	6 U	ug/kg	6
Acetonitrile	110 U	ug/kg	110	110 U	ug/kg	110	110 U	ug/kg	110
Chloroprene	220 U	ug/kg	220	220 U	ug/kg	220	220 U	ug/kg	220
Methacrylonitrile	6 U	ug/kg	6	6 U	ug/kg	6	6 U	ug/kg	6
Methyl methacrylate	11 U	ug/kg	11	11 U	ug/kg	11	11 U	ug/kg	11
Pentachloroethane	11 U	ug/kg	11	11 U	ug/kg	11	11 U	ug/kg	11
Propionitrile	110 U	ug/kg	110	110 U	ug/kg	110	110 U	ug/kg	110
Vinyl acetate	11 U	ug/kg	11	11 U	ug/kg	11	11 U	ug/kg	11

U = NOT DETECTED R = RESULT IS REJECTED
 J = ESTIMATED VALUE UJ = REPORTED QUANTITATION LIMIT IS ESTIMATED
 THE ADDITIONAL LISTINGS OF RESULTS FOR 1,2-; 1,3-; AND 1,4-DICHLOROBENZENE WERE GENERATED FROM THE SVOC (8270) ANALYTICAL RUN.

AR01 - Trend Report
Pesticide Site Surface Soil Data

Lab Sample Number:
Site
Locator
Collect Date:

R8753001
PESTSITE
PSSS00101
15-SEP-94
VALUE QUAL UNITS DL

R8753002
PESTSITE
PSSS00201
15-SEP-94
VALUE QUAL UNITS DL

R8753003
PESTSITE
PSSS00201D
15-SEP-94
VALUE QUAL UNITS DL

R8753005
PESTSITE
PSSS00301
15-SEP-94
VALUE QUAL UNITS DL

SEMIVOLATILES	ug/kg	VALUE	QUAL UNITS	DL									
N-Nitrosodimethylamine		730 U	ug/kg	730	770 U	ug/kg	770	750 U	ug/kg	750	730 U	ug/kg	730
Phenol		730 U	ug/kg	730	770 U	ug/kg	770	750 U	ug/kg	750	730 U	ug/kg	730
Aniline		730 U	ug/kg	730	770 U	ug/kg	770	750 U	ug/kg	750	730 U	ug/kg	730
bis(2-Chloroethyl) ether		730 U	ug/kg	730	770 U	ug/kg	770	750 U	ug/kg	750	730 U	ug/kg	730
Benzyl Alcohol		730 U	ug/kg	730	770 U	ug/kg	770	750 U	ug/kg	750	730 U	ug/kg	730
2-Methylphenol		730 U	ug/kg	730	770 U	ug/kg	770	750 U	ug/kg	750	730 U	ug/kg	730
bis(2-Chloroisopropyl) ether		730 U	ug/kg	730	770 U	ug/kg	770	750 U	ug/kg	750	730 U	ug/kg	730
N-Nitroso-di-n-propylamine		730 U	ug/kg	730	770 U	ug/kg	770	750 U	ug/kg	750	730 U	ug/kg	730
Hexachloroethane		730 U	ug/kg	730	770 U	ug/kg	770	750 U	ug/kg	750	730 U	ug/kg	730
Nitrobenzene		730 U	ug/kg	730	770 U	ug/kg	770	750 U	ug/kg	750	730 U	ug/kg	730
Isophorone		730 U	ug/kg	730	770 U	ug/kg	770	750 U	ug/kg	750	730 U	ug/kg	730
2-Nitrophenol		730 U	ug/kg	730	770 U	ug/kg	770	750 U	ug/kg	750	730 U	ug/kg	730
2,4-Dimethylphenol		730 U	ug/kg	730	770 U	ug/kg	770	750 U	ug/kg	750	730 U	ug/kg	730
Benzoic acid		3500 U	ug/kg	3500	3700 U	ug/kg	3700	3600 U	ug/kg	3600	3600 U	ug/kg	3600
bis(2-Chloroethoxy)methane		730 U	ug/kg	730	770 U	ug/kg	770	750 U	ug/kg	750	730 U	ug/kg	730
2,4-Dichlorophenol		730 U	ug/kg	730	770 U	ug/kg	770	750 U	ug/kg	750	730 U	ug/kg	730
1,2,4-Trichlorobenzene		730 U	ug/kg	730	770 U	ug/kg	770	750 U	ug/kg	750	730 U	ug/kg	730
Naphthalene		730 U	ug/kg	730	770 U	ug/kg	770	750 U	ug/kg	750	730 U	ug/kg	730
4-Chloroaniline		730 U	ug/kg	730	770 U	ug/kg	770	750 U	ug/kg	750	730 U	ug/kg	730
Hexachlorobutadiene		730 U	ug/kg	730	770 U	ug/kg	770	750 U	ug/kg	750	730 U	ug/kg	730
4-Chloro-3-methylphenol		730 U	ug/kg	730	770 U	ug/kg	770	750 U	ug/kg	750	730 U	ug/kg	730
2-Methylnaphthalene		730 U	ug/kg	730	770 U	ug/kg	770	750 U	ug/kg	750	730 U	ug/kg	730
Hexachlorocyclopentadiene		730 U	ug/kg	730	770 U	ug/kg	770	750 U	ug/kg	750	730 U	ug/kg	730
2,4,6-Trichlorophenol		730 U	ug/kg	730	770 U	ug/kg	770	750 U	ug/kg	750	730 U	ug/kg	730
Dimethylphthalate		730 U	ug/kg	730	770 U	ug/kg	770	750 U	ug/kg	750	730 U	ug/kg	730
2,4,5-Trichlorophenol		3500 U	ug/kg	3500	3700 U	ug/kg	3700	3600 U	ug/kg	3600	3600 U	ug/kg	3600
2-Chloronaphthalene		730 U	ug/kg	730	770 U	ug/kg	770	750 U	ug/kg	750	730 U	ug/kg	730
2-Nitroaniline		3500 U	ug/kg	3500	3700 U	ug/kg	3700	3600 U	ug/kg	3600	3600 U	ug/kg	3600
Acenaphthylene		730 U	ug/kg	730	770 U	ug/kg	770	750 U	ug/kg	750	730 U	ug/kg	730
2,6-Dinitrotoluene		730 U	ug/kg	730	770 U	ug/kg	770	750 U	ug/kg	750	730 U	ug/kg	730
3-Nitroaniline		3500 U	ug/kg	3500	3700 U	ug/kg	3700	3600 U	ug/kg	3600	3600 U	ug/kg	3600
Acenaphthene		730 U	ug/kg	730	770 U	ug/kg	770	750 U	ug/kg	750	730 U	ug/kg	730
2,4-Dinitrophenol		3500 U	ug/kg	3500	3700 U	ug/kg	3700	3600 U	ug/kg	3600	3600 U	ug/kg	3600
4-Nitrophenol		3500 U	ug/kg	3500	3700 U	ug/kg	3700	3600 U	ug/kg	3600	3600 U	ug/kg	3600
Dibenzofuran		730 U	ug/kg	730	770 U	ug/kg	770	750 U	ug/kg	750	730 U	ug/kg	730
2,4-Dinitrotoluene		730 U	ug/kg	730	770 U	ug/kg	770	750 U	ug/kg	750	730 U	ug/kg	730
Diethylphthalate		730 U	ug/kg	730	770 U	ug/kg	770	750 U	ug/kg	750	730 U	ug/kg	730
4-Chlorophenyl-phenylether		730 U	ug/kg	730	770 U	ug/kg	770	750 U	ug/kg	750	730 U	ug/kg	730
Fluorene		730 U	ug/kg	730	770 U	ug/kg	770	750 U	ug/kg	750	730 U	ug/kg	730
4-Nitroaniline		3500 U	ug/kg	3500	3700 U	ug/kg	3700	3600 U	ug/kg	3600	3600 U	ug/kg	3600
4,6-Dinitro-2-methylphenol		3500 U	ug/kg	3500	3700 U	ug/kg	3700	3600 U	ug/kg	3600	3600 U	ug/kg	3600
N-Nitrosodiphenylamine (1)		730 U	ug/kg	730	770 U	ug/kg	770	750 U	ug/kg	750	730 U	ug/kg	730
1,2-Diphenylhydrazine		730 U	ug/kg	730	770 U	ug/kg	770	750 U	ug/kg	750	730 U	ug/kg	730
4-Bromophenyl-phenylether		730 U	ug/kg	730	770 U	ug/kg	770	750 U	ug/kg	750	730 U	ug/kg	730
Hexachlorobenzene		730 U	ug/kg	730	770 U	ug/kg	770	750 U	ug/kg	750	730 U	ug/kg	730
Pentachlorophenol		3500 U	ug/kg	3500	3700 U	ug/kg	3700	3600 U	ug/kg	3600	3600 U	ug/kg	3600
Phenanthrene		730 U	ug/kg	730	170 J	ug/kg		1300	ug/kg		730 U	ug/kg	730
Anthracene		730 U	ug/kg	730	770 U	ug/kg	770	150 J	ug/kg		730 U	ug/kg	730
Di-n-Butylphthalate		730 U	ug/kg	730	770 U	ug/kg	770	750 U	ug/kg	750	730 U	ug/kg	730
Fluoranthene		730 U	ug/kg	730	600 J	ug/kg		2400	ug/kg		730 U	ug/kg	730



AR01 - Trend Report
Pesticide Site Surface Soil Data

Lab Sample Number:
Site
Locator
Collect Date:

	VALUE	QUAL	UNITS	DL												
Pyrene	730	U	ug/kg	730	400	J	ug/kg		1700		ug/kg		730	U	ug/kg	730
Butylbenzylphthalate	730	U	ug/kg	730	770	U	ug/kg	770	750	U	ug/kg	750	730	U	ug/kg	730
3,3'-Dichlorobenzidine	1500	U	ug/kg	1500												
Benzo(a)anthracene	730	U	ug/kg	730	260	J	ug/kg		1100		ug/kg		730	U	ug/kg	730
Chrysene	730	U	ug/kg	730	360	J	ug/kg		1400		ug/kg		730	U	ug/kg	730
bis(2-Ethylhexyl)phthalate	730	U	ug/kg	730	220	J	ug/kg		280	J	ug/kg		730	U	ug/kg	730
Di-n-octylphthalate	730	U	ug/kg	730	770	U	ug/kg	770	750	U	ug/kg	750	730	U	ug/kg	730
Benzo(b)fluoranthene	730	U	ug/kg	730	360	J	ug/kg		920		ug/kg		730	U	ug/kg	730
Benzo(k)fluoranthene	730	U	ug/kg	730	350	J	ug/kg		950		ug/kg		730	U	ug/kg	730
Benzo(a)pyrene	730	U	ug/kg	730	270	J	ug/kg		490	J	ug/kg		730	U	ug/kg	730
Indeno(1,2,3-cd)pyrene	730	U	ug/kg	730	230	J	ug/kg		410	J	ug/kg		730	U	ug/kg	730
Dibenz(a,h)anthracene	730	U	ug/kg	730	82	J	ug/kg		260	J	ug/kg		730	U	ug/kg	730
Benzo(g,h,i)perylene	730	U	ug/kg	730	220	J	ug/kg		750	U	ug/kg	750	730	U	ug/kg	730
2-Picoline	3500	U	ug/kg	3500	3700	U	ug/kg	3700	3600	U	ug/kg	3600	3600	U	ug/kg	3600
Methyl methanesulfonate	730	U	ug/kg	730	770	U	ug/kg	770	750	U	ug/kg	750	730	U	ug/kg	730
Ethyl methanesulfonate	730	U	ug/kg	730	770	U	ug/kg	770	750	U	ug/kg	750	730	U	ug/kg	730
Acetophenone	730	U	ug/kg	730	770	U	ug/kg	770	750	U	ug/kg	750	730	U	ug/kg	730
N-Nitrosopiperidine	730	U	ug/kg	730	770	U	ug/kg	770	750	U	ug/kg	750	730	U	ug/kg	730
Phenyl-tert-butylamine	3500	U	ug/kg	3500	3700	U	ug/kg	3700	3600	U	ug/kg	3600	3600	U	ug/kg	3600
2,6-Dichlorophenol	730	U	ug/kg	730	770	U	ug/kg	770	750	U	ug/kg	750	730	U	ug/kg	730
N-Nitroso-di-n-butylamine	730	U	ug/kg	730	770	U	ug/kg	770	750	U	ug/kg	750	730	U	ug/kg	730
N-Nitrosodiethylamine	730	U	ug/kg	730	770	U	ug/kg	770	750	U	ug/kg	750	730	U	ug/kg	730
N-Nitrosopyrrolidine	730	U	ug/kg	730	770	U	ug/kg	770	750	U	ug/kg	750	730	U	ug/kg	730
Benidine	3500	U	ug/kg	3500	3700	U	ug/kg	3700	3600	U	ug/kg	3600	3600	U	ug/kg	3600
1,2,4,5-Tetrachlorobenzene	3500	U	ug/kg	3500	3700	U	ug/kg	3700	3600	U	ug/kg	3600	3600	U	ug/kg	3600
Pentachlorobenzene	3500	U	ug/kg	3500	3700	U	ug/kg	3700	3600	U	ug/kg	3600	3600	U	ug/kg	3600
1-Naphthylamine	3500	U	ug/kg	3500	3700	U	ug/kg	3700	3600	U	ug/kg	3600	3600	U	ug/kg	3600
2-Naphthylamine	3500	U	ug/kg	3500	3700	U	ug/kg	3700	3600	U	ug/kg	3600	3600	U	ug/kg	3600
2,3,4,6-Tetrachlorophenol	730	U	ug/kg	730	770	U	ug/kg	770	750	U	ug/kg	750	730	U	ug/kg	730
Phenacetin	730	U	ug/kg	730	770	U	ug/kg	770	750	U	ug/kg	750	730	U	ug/kg	730
4-Aminobiphenyl	3500	U	ug/kg	3500	3700	U	ug/kg	3700	3600	U	ug/kg	3600	3600	U	ug/kg	3600
Pentachloronitrobenzene	3500	U	ug/kg	3500	3700	U	ug/kg	3700	3600	U	ug/kg	3600	3600	U	ug/kg	3600
Pronamide	730	U	ug/kg	730	770	U	ug/kg	770	750	U	ug/kg	750	730	U	ug/kg	730
p-(Dimethylamino)azobenzene	730	U	ug/kg	730	770	U	ug/kg	770	750	U	ug/kg	750	730	U	ug/kg	730
7,12-Dimethylbenz(A)Anthracene	730	U	ug/kg	730	770	U	ug/kg	770	750	U	ug/kg	750	730	U	ug/kg	730
3-Methylcholanthrene	730	U	ug/kg	730	770	U	ug/kg	770	750	U	ug/kg	750	730	U	ug/kg	730
Pyridine	3500	U	ug/kg	3500	3700	U	ug/kg	3700	3600	U	ug/kg	3600	3600	U	ug/kg	3600
N-Nitrosomethylethylamine	730	U	ug/kg	730	770	U	ug/kg	770	750	U	ug/kg	750	730	U	ug/kg	730
N-Nitrosomorpholine	730	U	ug/kg	730	770	U	ug/kg	770	750	U	ug/kg	750	730	U	ug/kg	730
o-Toluidine	730	U	ug/kg	730	770	U	ug/kg	770	750	U	ug/kg	750	730	U	ug/kg	730
Hexachloropropene	3500	U	ug/kg	3500	3700	U	ug/kg	3700	3600	U	ug/kg	3600	3600	U	ug/kg	3600
p-Phenylenediamine	35000	U	ug/kg	35000	37000	U	ug/kg	37000	36000	U	ug/kg	36000	36000	U	ug/kg	36000
Safrole	3500	U	ug/kg	3500	3700	U	ug/kg	3700	3600	U	ug/kg	3600	3600	U	ug/kg	3600
Isosafrole	3500	U	ug/kg	3500	3700	U	ug/kg	3700	3600	U	ug/kg	3600	3600	U	ug/kg	3600
1,4-Naphthoquinone	73000	U	ug/kg	73000	77000	U	ug/kg	77000	75000	U	ug/kg	75000	73000	U	ug/kg	73000
1,3-Dinitrobenzene	730	U	ug/kg	730	770	U	ug/kg	770	750	U	ug/kg	750	730	U	ug/kg	730
5-Nitro-o-toluidine	730	U	ug/kg	730	770	U	ug/kg	770	750	U	ug/kg	750	730	U	ug/kg	730
1,3,5-Trinitrobenzene	730	U	ug/kg	730	770	U	ug/kg	770	750	U	ug/kg	750	730	U	ug/kg	730
4-Nitroquinoline-1-oxide	35000	U	ug/kg	35000	37000	U	ug/kg	37000	36000	U	ug/kg	36000	36000	U	ug/kg	36000
Methapyrilene	3500	U	ug/kg	3500	3700	U	ug/kg	3700	3600	U	ug/kg	3600	3600	U	ug/kg	3600
3,3'-Dimethylbenzidine	730	U	ug/kg	730	770	U	ug/kg	770	750	U	ug/kg	750	730	U	ug/kg	730
Hexachlorophene	35000	U	ug/kg	35000	37000	U	ug/kg	37000	36000	U	ug/kg	36000	36000	U	ug/kg	36000



AR01 - Trend Report
Pesticide Site Surface Soil Data

Lab Sample Number:
Site
Locator
Collect Date:

R8753001
PESTSITE
PSSS00101
15-SEP-94

R8753002
PESTSITE
PSSS00201
15-SEP-94

R8753003
PESTSITE
PSSS00201D
15-SEP-94

R8753005
PESTSITE
PSSS00301
15-SEP-94

	VALUE	QUAL	UNITS	DL												
Aramite	3500	U	ug/kg	3500	3700	U	ug/kg	3700	3600	U	ug/kg	3600	3600	U	ug/kg	3600
2-Chlorophenol	730	U	ug/kg	730	770	U	ug/kg	770	750	U	ug/kg	750	730	U	ug/kg	730
3- & 4-Methylphenol (2)	730	U	ug/kg	730	770	U	ug/kg	770	750	U	ug/kg	750	730	U	ug/kg	730
Hexachloropropene	3500	U	ug/kg	3500	3700	U	ug/kg	3700	3600	U	ug/kg	3600	3600	U	ug/kg	3600
2-Acetylaminofluorene	730	U	ug/kg	730	770	U	ug/kg	770	750	U	ug/kg	750	730	U	ug/kg	730

U = NOT DETECTED R = RESULT IS REJECTED

J = ESTIMATED VALUE UJ = REPORTED QUANTITATION LIMIT IS ESTIMATED

THE ADDITIONAL LISTINGS OF RESULTS FOR 1,2-; 1,3-; AND 1,4-DICHLOROBENZENE WERE GENERATED FROM THE SVOC (8270) ANALYTICAL RUN.

AR01 - Trend Report
Pesticide Site Surface Soil Data

Lab Sample Number:	R8753004	R8798002	R8798001						
Site	PESTSITE	PESTSITE	PESTSITE						
Locator	PSSS00401	PSSS00501	PSSS00601						
Collect Date:	15-SEP-94	23-SEP-94	23-SEP-94						
	VALUE	QUAL UNITS	DL	VALUE	QUAL UNITS	DL	VALUE	QUAL UNITS	DL

	ug/kg								
EMIVOLATILES									
N-Nitrosodimethylamine	740 U	ug/kg	740	740 U	ug/kg	740	740 U	ug/kg	740
Phenol	740 U	ug/kg	740	740 U	ug/kg	740	740 U	ug/kg	740
Aniline	740 U	ug/kg	740	740 U	ug/kg	740	740 U	ug/kg	740
bis(2-Chloroethyl) ether	740 U	ug/kg	740	740 U	ug/kg	740	740 U	ug/kg	740
Benzyl Alcohol	740 U	ug/kg	740	740 U	ug/kg	740	740 U	ug/kg	740
2-Methylphenol	740 U	ug/kg	740	740 U	ug/kg	740	740 U	ug/kg	740
bis(2-Chloroisopropyl) ether	740 U	ug/kg	740	740 U	ug/kg	740	740 U	ug/kg	740
N-Nitroso-di-n-propylamine	740 U	ug/kg	740	740 U	ug/kg	740	740 U	ug/kg	740
Hexachloroethane	740 U	ug/kg	740	740 U	ug/kg	740	740 U	ug/kg	740
Nitrobenzene	740 U	ug/kg	740	740 U	ug/kg	740	740 U	ug/kg	740
Isophorone	740 U	ug/kg	740	740 U	ug/kg	740	740 U	ug/kg	740
2-Nitrophenol	740 U	ug/kg	740	740 U	ug/kg	740	740 U	ug/kg	740
2,4-Dimethylphenol	740 U	ug/kg	740	740 U	ug/kg	740	740 U	ug/kg	740
Benzoic acid	3600 U	ug/kg	3600	3600 U	ug/kg	3600	3600 U	ug/kg	3600
bis(2-Chloroethoxy)methane	740 U	ug/kg	740	740 U	ug/kg	740	740 U	ug/kg	740
2,4-Dichlorophenol	740 U	ug/kg	740	740 U	ug/kg	740	740 U	ug/kg	740
1,2,4-Trichlorobenzene	740 U	ug/kg	740	740 U	ug/kg	740	740 U	ug/kg	740
Naphthalene	740 U	ug/kg	740	740 U	ug/kg	740	740 U	ug/kg	740
4-Chloroaniline	740 U	ug/kg	740	740 U	ug/kg	740	740 U	ug/kg	740
Hexachlorobutadiene	740 U	ug/kg	740	740 U	ug/kg	740	740 U	ug/kg	740
4-Chloro-3-methylphenol	740 U	ug/kg	740	740 U	ug/kg	740	740 U	ug/kg	740
2-Methylnaphthalene	740 U	ug/kg	740	740 U	ug/kg	740	740 U	ug/kg	740
Hexachlorocyclopentadiene	740 U	ug/kg	740	740 U	ug/kg	740	740 U	ug/kg	740
2,4,6-Trichlorophenol	740 U	ug/kg	740	740 U	ug/kg	740	740 U	ug/kg	740
Dimethylphthalate	740 U	ug/kg	740	740 U	ug/kg	740	740 U	ug/kg	740
2,4,5-Trichlorophenol	3600 U	ug/kg	3600	3600 U	ug/kg	3600	3600 U	ug/kg	3600
2-Chloronaphthalene	740 U	ug/kg	740	740 U	ug/kg	740	740 U	ug/kg	740
2-Nitroaniline	3600 U	ug/kg	3600	3600 U	ug/kg	3600	3600 U	ug/kg	3600
Acenaphthylene	740 U	ug/kg	740	740 U	ug/kg	740	740 U	ug/kg	740
2,6-Dinitrotoluene	740 U	ug/kg	740	740 U	ug/kg	740	740 U	ug/kg	740
3-Nitroaniline	3600 U	ug/kg	3600	3600 U	ug/kg	3600	3600 U	ug/kg	3600
Acenaphthene	740 U	ug/kg	740	740 U	ug/kg	740	740 U	ug/kg	740
2,4-Dinitrophenol	3600 U	ug/kg	3600	3600 U	ug/kg	3600	3600 U	ug/kg	3600
4-Nitrophenol	3600 U	ug/kg	3600	3600 U	ug/kg	3600	3600 U	ug/kg	3600
Dibenzofuran	740 U	ug/kg	740	740 U	ug/kg	740	740 U	ug/kg	740
2,4-Dinitrotoluene	740 U	ug/kg	740	740 U	ug/kg	740	740 U	ug/kg	740
Diethylphthalate	740 U	ug/kg	740	740 U	ug/kg	740	740 U	ug/kg	740
4-Chlorophenyl-phenylether	740 U	ug/kg	740	740 U	ug/kg	740	740 U	ug/kg	740
Fluorene	740 U	ug/kg	740	740 U	ug/kg	740	740 U	ug/kg	740
4-Nitroaniline	3600 U	ug/kg	3600	3600 U	ug/kg	3600	3600 U	ug/kg	3600



AR01 - Trend Report
Pesticide Site Surface Soil Data

Lab Sample Number:
Site
Locator
Collect Date:

R8753004
PESTSITE
PSSS00401
15-SEP-94

R8798002
PESTSITE
PSSS00501
23-SEP-94

R8798001
PESTSITE
PSSS00601
23-SEP-94

	VALUE	QUAL	UNITS	DL	VALUE	QUAL	UNITS	DL	VALUE	QUAL	UNITS	DL
4,6-Dinitro-2-methylphenol	3600	U	ug/kg	3600	3600	U	ug/kg	3600	3600	U	ug/kg	3600
N-Nitrosodiphenylamine (1)	740	U	ug/kg	740	740	U	ug/kg	740	740	U	ug/kg	740
1,2-Diphenylhydrazine	740	U	ug/kg	740	740	U	ug/kg	740	740	U	ug/kg	740
4-Bromophenyl-phenylether	740	U	ug/kg	740	740	U	ug/kg	740	740	U	ug/kg	740
Hexachlorobenzene	740	U	ug/kg	740	740	U	ug/kg	740	740	U	ug/kg	740
Pentachlorophenol	3600	U	ug/kg	3600	3600	U	ug/kg	3600	3600	U	ug/kg	3600
Phenanthrene	740	U	ug/kg	740	740	U	ug/kg	740	740	U	ug/kg	740
Anthracene	740	U	ug/kg	740	740	U	ug/kg	740	740	U	ug/kg	740
Di-n-Butylphthalate	740	U	ug/kg	740	740	U	ug/kg	740	740	U	ug/kg	740
Fluoranthene	740	U	ug/kg	740	740	U	ug/kg	740	740	U	ug/kg	740
Pyrene	740	U	ug/kg	740	740	U	ug/kg	740	740	U	ug/kg	740
Butylbenzylphthalate	740	U	ug/kg	740	740	U	ug/kg	740	740	U	ug/kg	740
3,3'-Dichlorobenzidine	1500	U	ug/kg	1500	1500	U	ug/kg	1500	1500	U	ug/kg	1500
Benzo(a)anthracene	740	U	ug/kg	740	740	U	ug/kg	740	740	U	ug/kg	740
Chrysene	740	U	ug/kg	740	740	U	ug/kg	740	740	U	ug/kg	740
bis(2-Ethylhexyl)phthalate	740	U	ug/kg	740	740	U	ug/kg	740	740	U	ug/kg	740
Di-n-octylphthalate	740	U	ug/kg	740	740	U	ug/kg	740	740	U	ug/kg	740
Benzo(b)fluoranthene	740	U	ug/kg	740	740	U	ug/kg	740	740	U	ug/kg	740
Benzo(k)fluoranthene	740	U	ug/kg	740	740	U	ug/kg	740	740	U	ug/kg	740
Benzo(a)pyrene	740	U	ug/kg	740	740	U	ug/kg	740	740	U	ug/kg	740
Indeno(1,2,3-cd)pyrene	740	U	ug/kg	740	740	U	ug/kg	740	740	U	ug/kg	740
Dibenz(a,h)anthracene	740	U	ug/kg	740	740	U	ug/kg	740	740	U	ug/kg	740
Benzo(g,h,i)perylene	740	U	ug/kg	740	740	U	ug/kg	740	740	U	ug/kg	740
2-Picoline	3600	U	ug/kg	3600	3600	U	ug/kg	3600	3600	U	ug/kg	3600
Methyl methanesulfonate	740	U	ug/kg	740	740	U	ug/kg	740	740	U	ug/kg	740
Ethyl methanesulfonate	740	U	ug/kg	740	740	U	ug/kg	740	740	U	ug/kg	740
Acetophenone	740	U	ug/kg	740	740	U	ug/kg	740	740	U	ug/kg	740
N-Nitrosopiperidine	740	U	ug/kg	740	740	U	ug/kg	740	740	U	ug/kg	740
Phenyl-tert-butylamine	3600	U	ug/kg	3600	3600	U	ug/kg	3600	3600	U	ug/kg	3600
2,6-Dichlorophenol	740	U	ug/kg	740	740	U	ug/kg	740	740	U	ug/kg	740
N-Nitroso-di-n-butylamine	740	U	ug/kg	740	740	U	ug/kg	740	740	U	ug/kg	740
N-Nitrosodiethylamine	740	U	ug/kg	740	740	U	ug/kg	740	740	U	ug/kg	740
N-Nitrosopyrrolidine	740	U	ug/kg	740	740	U	ug/kg	740	740	U	ug/kg	740
Benzidine	3600	U	ug/kg	3600	3600	U	ug/kg	3600	3600	U	ug/kg	3600
1,2,4,5-Tetrachlorobenzene	3600	U	ug/kg	3600	3600	U	ug/kg	3600	3600	U	ug/kg	3600
Pentachlorobenzene	3600	U	ug/kg	3600	3600	U	ug/kg	3600	3600	U	ug/kg	3600
1-Naphthylamine	3600	U	ug/kg	3600	3600	U	ug/kg	3600	3600	U	ug/kg	3600
2-Naphthylamine	3600	U	ug/kg	3600	3600	U	ug/kg	3600	3600	U	ug/kg	3600
2,3,4,6-Tetrachlorophenol	740	U	ug/kg	740	740	U	ug/kg	740	740	U	ug/kg	740
Phenacetin	740	U	ug/kg	740	740	U	ug/kg	740	740	U	ug/kg	740
4-Aminobiphenyl	3600	U	ug/kg	3600	3600	U	ug/kg	3600	3600	U	ug/kg	3600
Pentachloronitrobenzene	3600	U	ug/kg	3600	3600	U	ug/kg	3600	3600	U	ug/kg	3600
Pronamide	740	U	ug/kg	740	740	U	ug/kg	740	740	U	ug/kg	740
p-(Dimethylamino)azobenzene	740	U	ug/kg	740	740	U	ug/kg	740	740	U	ug/kg	740
7,12-Dimethylbenz(A)Anthracene	740	U	ug/kg	740	740	U	ug/kg	740	740	U	ug/kg	740
3-Methylcholanthrene	740	U	ug/kg	740	740	U	ug/kg	740	740	U	ug/kg	740
Pyridine	3600	U	ug/kg	3600	3600	U	ug/kg	3600	3600	U	ug/kg	3600
N-Nitrosomethylethylamine	740	U	ug/kg	740	740	U	ug/kg	740	740	U	ug/kg	740
N-Nitrosomorpholine	740	U	ug/kg	740	740	U	ug/kg	740	740	U	ug/kg	740
o-Toluidine	740	U	ug/kg	740	740	U	ug/kg	740	740	U	ug/kg	740
Hexachloropropene	3600	U	ug/kg	3600	3600	U	ug/kg	3600	3600	U	ug/kg	3600
p-Phenylenediamine	36000	U	ug/kg	36000	36000	U	ug/kg	36000	36000	U	ug/kg	36000



AR01 - Trend Report
Pesticide Site Surface Soil Data

Lab Sample Number:	R8753004		R8798002		R8798001				
Site	PESTSITE		PESTSITE		PESTSITE				
Locator	PSSS00401		PSSS00501		PSSS00601				
Collect Date:	15-SEP-94		23-SEP-94		23-SEP-94				
	VALUE	QUAL UNITS	DL	VALUE	QUAL UNITS	DL	VALUE	QUAL UNITS	DL

	VALUE	QUAL UNITS	DL	VALUE	QUAL UNITS	DL	VALUE	QUAL UNITS	DL
Safrole	3600 U	ug/kg	3600	3600 U	ug/kg	3600	3600 U	ug/kg	3600
Isosafrole	3600 U	ug/kg	3600	3600 U	ug/kg	3600	3600 U	ug/kg	3600
1,4-Naphthoquinone	74000 U	ug/kg	74000	74000 U	ug/kg	74000	74000 U	ug/kg	74000
1,3-Dinitrobenzene	740 U	ug/kg	740	740 U	ug/kg	740	740 U	ug/kg	740
5-Nitro-o-toluidine	740 U	ug/kg	740	740 U	ug/kg	740	740 U	ug/kg	740
1,3,5-Trinitrobenzene	740 U	ug/kg	740	740 U	ug/kg	740	740 U	ug/kg	740
4-Nitroquinoline-1-oxide	36000 U	ug/kg	36000	36000 U	ug/kg	36000	36000 U	ug/kg	36000
Methapyrilene	3600 U	ug/kg	3600	3600 U	ug/kg	3600	3600 U	ug/kg	3600
3,3'-Dimethylbenzidine	740 U	ug/kg	740	740 U	ug/kg	740	740 U	ug/kg	740
Hexachlorophene	36000 U	ug/kg	36000	36000 U	ug/kg	36000	36000 U	ug/kg	36000
Aramite	3600 U	ug/kg	3600	3600 U	ug/kg	3600	3600 U	ug/kg	3600
2-Chlorophenol	740 U	ug/kg	740	740 U	ug/kg	740	740 U	ug/kg	740
3- & 4-Methylphenol (2)	740 U	ug/kg	740	740 U	ug/kg	740	740 U	ug/kg	740
Hexachloropropene	3600 U	ug/kg	3600	3600 U	ug/kg	3600	3600 U	ug/kg	3600
2-Acetylaminofluorene	740 U	ug/kg	740	740 U	ug/kg	740	740 U	ug/kg	740

U = NOT DETECTED R = RESULT IS REJECTED
 J = ESTIMATED VALUE UJ = REPORTED QUANTITATION LIMIT IS ESTIMATED
 THE ADDITIONAL LISTINGS OF RESULTS FOR 1,2-; 1,3-; AND 1,4-DICHLOROBENZENE WERE GENERATED FROM THE SVOC (8270) ANALYTICAL RUN.



AR01 - Trend Report
Pesticide Site Surface Soil Data

Lab Sample Number:
Site
Locator
Collect Date:

R8753001
PESTSITE
PSSS00101
15-SEP-94

R8753002
PESTSITE
PSSS00201
15-SEP-94

R8753003
PESTSITE
PSSS00201D
15-SEP-94

R8753005
PESTSITE
PSSS00301
15-SEP-94

VALUE QUAL UNITS DL VALUE QUAL UNITS DL VALUE QUAL UNITS DL VALUE QUAL UNITS DL

PESTSITES/PCBs	ug/kg											
alpha-BHC	.74 U	ug/kg	.74	.77 U	ug/kg	.77	.77 U	ug/kg	.77	.74 U	ug/kg	.74
beta-BHC	1.4 U	ug/kg	1.4	1.5 U	ug/kg	1.5	1.5 U	ug/kg	1.5	1.4 U	ug/kg	1.4
delta-BHC	.74 U	ug/kg	.74	.77 U	ug/kg	.77	1 J	ug/kg		.74 U	ug/kg	.74
gamma-BHC (Lindane)	.74 U	ug/kg	.74	.77 U	ug/kg	.77	.77 U	ug/kg	.77	.74 U	ug/kg	.74
Heptachlor	.74 U	ug/kg	.74	.77 U	ug/kg	.77	.77 U	ug/kg	.77	.74 U	ug/kg	.74
Aldrin	.74 U	ug/kg	.74	.77 U	ug/kg	.77	.77 U	ug/kg	.77	.74 U	ug/kg	.74
Heptachlor epoxide	.74 U	ug/kg	.74	.84	ug/kg		.78	ug/kg		.74 U	ug/kg	.74
Endosulfan I	.74 U	ug/kg	.74	.77 U	ug/kg	.77	.77 U	ug/kg	.77	.74 U	ug/kg	.74
Dieldrin	.74 U	ug/kg	.74	.77 U	ug/kg	.77	.77 U	ug/kg	.77	.74 U	ug/kg	.74
4,4-DDE	9.5	ug/kg		84	ug/kg		80	ug/kg		.74 U	ug/kg	.74
Endrin	1.4 U	ug/kg	1.4	1.5 U	ug/kg	1.5	1.5 U	ug/kg	1.5	1.4 U	ug/kg	1.4
Endosulfan II	1.4 U	ug/kg	1.4	1.5 U	ug/kg	1.5	1.5 U	ug/kg	1.5	1.4 U	ug/kg	1.4
4,4-DDD	1.4 U	ug/kg	1.4	1.5 U	ug/kg	1.5	1.5 U	ug/kg	1.5	1.4 U	ug/kg	1.4
Endosulfan sulfate	1.4 U	ug/kg	1.4	1.5 U	ug/kg	1.5	1.5 U	ug/kg	1.5	1.4 U	ug/kg	1.4
4,4-DDT	10	ug/kg		87	ug/kg		81	ug/kg		1.4 U	ug/kg	1.4
Methoxychlor	3 U	ug/kg	3	3.1 U	ug/kg	3.1	3.1 U	ug/kg	3.1	3 U	ug/kg	3
Endrin aldehyde	1.4 U	ug/kg	1.4	1.5 U	ug/kg	1.5	1.5 U	ug/kg	1.5	1.4 U	ug/kg	1.4
Endrin ketone	1.4 U	ug/kg	1.4	1.5 U	ug/kg	1.5	1.5 U	ug/kg	1.5	1.4 U	ug/kg	1.4
Chlordane	7.4 U	ug/kg	7.4	7.8 U	ug/kg	7.8	7.7 U	ug/kg	7.7	7.4 U	ug/kg	7.4
Chlorobenzilate	22 U	ug/kg	22	23 U	ug/kg	23	23 U	ug/kg	23	22 U	ug/kg	22
Diallate	44 U	ug/kg	44	46 U	ug/kg	46	46 U	ug/kg	46	44 U	ug/kg	44
Toxaphene	36 U	ug/kg	36	38 U	ug/kg	38	38 U	ug/kg	38	37 U	ug/kg	37
Isodrin	.74 U	ug/kg	.74	.77 U	ug/kg	.77	.77 U	ug/kg	.77	.74 U	ug/kg	.74
Kepone	44 U	ug/kg	44	47 U	ug/kg	47	46 U	ug/kg	46	44 U	ug/kg	44
Aroclor-1016	36 U	ug/kg	36	38 U	ug/kg	38	38 U	ug/kg	38	37 U	ug/kg	37
Aroclor-1221	74 U	ug/kg	74	78 U	ug/kg	78	77 U	ug/kg	77	74 U	ug/kg	74
Aroclor-1232	74 U	ug/kg	74	78 U	ug/kg	78	77 U	ug/kg	77	74 U	ug/kg	74
Aroclor-1242	36 U	ug/kg	36	38 U	ug/kg	38	38 U	ug/kg	38	37 U	ug/kg	37
Aroclor-1248	36 U	ug/kg	36	38 U	ug/kg	38	38 U	ug/kg	38	37 U	ug/kg	37
Aroclor-1254	18 U	ug/kg	18	19 U	ug/kg	19	18 U	ug/kg	18	18 U	ug/kg	18
Aroclor-1260	32	ug/kg		130	ug/kg		160	ug/kg		18 U	ug/kg	18
ORGANOPHOSPHORUS PESTICIDES	ug/kg											
Dimethoate	740 U	ug/kg	740	770 U	ug/kg	770	760 U	ug/kg	760	73 U	ug/kg	73
Disulfoton	360 U	ug/kg	360	380 U	ug/kg	380	380 U	ug/kg	380	36 U	ug/kg	36
Ethyl parathion	360 U	ug/kg	360	380 U	ug/kg	380	380 U	ug/kg	380	36 U	ug/kg	36
Famphur	360 U	ug/kg	360	380 U	ug/kg	380	380 U	ug/kg	380	36 U	ug/kg	36
Methyl parathion	360 U	ug/kg	360	380 U	ug/kg	380	380 U	ug/kg	380	36 U	ug/kg	36
Phorate	360 U	ug/kg	360	380 U	ug/kg	380	380 U	ug/kg	380	36 U	ug/kg	36
Sulfotepp	360 U	ug/kg	360	380 U	ug/kg	380	380 U	ug/kg	380	36 U	ug/kg	36
Thionazin	360 U	ug/kg	360	380 U	ug/kg	380	380 U	ug/kg	380	36 U	ug/kg	36
Triethylphosphorothioate	360 U	ug/kg	360	380 U	ug/kg	380	380 U	ug/kg	380	36 U	ug/kg	36
CHLORINATED HERBICIDES	ug/kg											
2,4,5-T	11 U	ug/kg	11	12 U	ug/kg	12	11 U	ug/kg	11	11 U	ug/kg	11
2,4-D	55 U	ug/kg	55	58 U	ug/kg	58	57 U	ug/kg	57	55 U	ug/kg	55
Dinoseb	11 U	ug/kg	11	12 U	ug/kg	12	11 U	ug/kg	11	11 U	ug/kg	11
Silvex (2,4,5-TP)	11 U	ug/kg	11	12 U	ug/kg	12	11 U	ug/kg	11	11 U	ug/kg	11

U = NOT DETECTED R = RESULT IS REJECTED
J = ESTIMATED VALUE UJ = REPORTED QUANTITATION LIMIT IS ESTIMATED



AR01 - Trend Report
Pesticide Site Surface Soil Data

Lab Sample Number:
Site
Locator
Collect Date:

R8753001
PESTSITE
PSSS00101
15-SEP-94

R8753002
PESTSITE
PSSS00201
15-SEP-94

R8753003
PESTSITE
PSSS00201D
15-SEP-94

R8753005
PESTSITE
PSSS00301
15-SEP-94

VALUE QUAL UNITS DL VALUE QUAL UNITS DL VALUE QUAL UNITS DL VALUE QUAL UNITS DL

Lab Sample Number:	Site	Locator	Collect Date:	VALUE	QUAL UNITS	DL									

THE ADDITIONAL LISTINGS OF RESULTS FOR 1,2-; 1,3-; AND 1,4-DICHLOROBENZENE WERE GENERATED FROM THE SVOC (8270) ANALYTICAL RUN.



AR01 - Trend Report
Pesticide Site Surface Soil Data

Lab Sample Number:	R8753004		R8798002		R8798001
Site	PESTSITE		PESTSITE		PESTSITE
Locator	PSSS00401		PSSS00501		PSSS00601
Collect Date:	15-SEP-94		23-SEP-94		23-SEP-94

	VALUE	QUAL UNITS	DL	VALUE	QUAL UNITS	DL	VALUE	QUAL UNITS	DL
ESTICIDES/PCBs									
ug/kg									
alpha-BHC	.75 U	ug/kg	.75	.75 U	ug/kg	.75	.75 U	ug/kg	.75
beta-BHC	1.5 U	ug/kg	1.5	1.5 U	ug/kg	1.5	1.5 U	ug/kg	1.5
delta-BHC	.75 U	ug/kg	.75	.75 U	ug/kg	.75	.75 U	ug/kg	.75
gamma-BHC (Lindane)	.75 U	ug/kg	.75	.75 U	ug/kg	.75	.75 U	ug/kg	.75
Heptachlor	.75 U	ug/kg	.75	.75 U	ug/kg	.75	.75 U	ug/kg	.75
Aldrin	.75 U	ug/kg	.75	.75 U	ug/kg	.75	.75 U	ug/kg	.75
Heptachlor epoxide	.75 U	ug/kg	.75	.75 U	ug/kg	.75	.75 U	ug/kg	.75
Endosulfan I	.75 U	ug/kg	.75	.75 U	ug/kg	.75	.75 U	ug/kg	.75
Dieldrin	.75 U	ug/kg	.75	.75 U	ug/kg	.75	.75 U	ug/kg	.75
4,4-DDE	.75 U	ug/kg	.75	.75 U	ug/kg	.75	.75 U	ug/kg	.75
Endrin	1.5 U	ug/kg	1.5	1.5 U	ug/kg	1.5	1.5 U	ug/kg	1.5
Endosulfan II	1.5 U	ug/kg	1.5	1.5 U	ug/kg	1.5	1.5 U	ug/kg	1.5
4,4-DDD	1.5 U	ug/kg	1.5	1.5 U	ug/kg	1.5	1.5 U	ug/kg	1.5
Endosulfan sulfate	1.5 U	ug/kg	1.5	1.5 U	ug/kg	1.5	1.5 U	ug/kg	1.5
4,4-DDT	1.5 U	ug/kg	1.5	1.5 U	ug/kg	1.5	1.5 U	ug/kg	1.5
Methoxychlor	3 U	ug/kg	3	3 U	ug/kg	3	3 U	ug/kg	3
Endrin aldehyde	1.5 U	ug/kg	1.5	1.5 U	ug/kg	1.5	1.5 U	ug/kg	1.5
Endrin ketone	1.5 U	ug/kg	1.5	1.5 U	ug/kg	1.5	1.5 U	ug/kg	1.5
Chlordane	7.5 U	ug/kg	7.5	7.5 U	ug/kg	7.5	7.5 U	ug/kg	7.5
Chlorobenzilate	23 U	ug/kg	23	22 U	ug/kg	22	22 U	ug/kg	22
Diallate	45 U	ug/kg	45	45 U	ug/kg	45	45 U	ug/kg	45
Toxaphene	37 U	ug/kg	37	37 U	ug/kg	37	37 U	ug/kg	37
Isodrin	.75 U	ug/kg	.75	.75 U	ug/kg	.75	.75 U	ug/kg	.75
Kepone	45 U	ug/kg	45	45 U	ug/kg	45	45 U	ug/kg	45
Aroclor-1016	37 U	ug/kg	37	37 U	ug/kg	37	37 U	ug/kg	37
Aroclor-1221	75 U	ug/kg	75	75 U	ug/kg	75	75 U	ug/kg	75
Aroclor-1232	75 U	ug/kg	75	75 U	ug/kg	75	75 U	ug/kg	75
Aroclor-1242	37 U	ug/kg	37	37 U	ug/kg	37	36 U	ug/kg	36
Aroclor-1248	37 U	ug/kg	37	37 U	ug/kg	37	36 U	ug/kg	36
Aroclor-1254	18 U	ug/kg	18	18 U	ug/kg	18	18 U	ug/kg	18
Aroclor-1260	18 U	ug/kg	18	16 U	ug/kg	16	18 U	ug/kg	18
ORGANOPHOSPHORUS PESTICIDES									
ug/kg									
Dimethoate	740 U	ug/kg	740	72 U	ug/kg	72	74 U	ug/kg	74
Disulfoton	370 U	ug/kg	370	35 U	ug/kg	35	37 U	ug/kg	37
Ethyl parathion	370 U	ug/kg	370	35 U	ug/kg	35	37 U	ug/kg	37
Famphur	370 U	ug/kg	370	35 U	ug/kg	35	37 U	ug/kg	37
Methyl parathion	370 U	ug/kg	370	35 U	ug/kg	35	37 U	ug/kg	37
Phorate	370 U	ug/kg	370	35 U	ug/kg	35	37 U	ug/kg	37
Sulfotepp	370 U	ug/kg	370	35 U	ug/kg	35	37 U	ug/kg	37



AR01 - Trend Report
Pesticide Site Surface Soil Data

Lab Sample Number:
Site
Locator
Collect Date:

R8753004
PESTSITE
PSSS00401
15-SEP-94

R8798002
PESTSITE
PSSS00501
23-SEP-94

R8798001
PESTSITE
PSSS00601
23-SEP-94

	VALUE	QUAL	UNITS	DL	VALUE	QUAL	UNITS	DL	VALUE	QUAL	UNITS	DL
Thionazin	370	U	ug/kg	370	35	U	ug/kg	35	37	U	ug/kg	37
Triethylphosphorothioate	370	U	ug/kg	370	35	U	ug/kg	35	37	U	ug/kg	37
CHLORINATED HERBICIDES			ug/kg									
2,4,5-T	11	U	ug/kg	11	11	U	ug/kg	11	11	U	ug/kg	11
2,4-D	56	U	ug/kg	56	56	U	ug/kg	56	56	U	ug/kg	56
Dinoseb	11	U	ug/kg	11	11	U	ug/kg	11	11	U	ug/kg	11
silvex (2,4,5-TP)	11	U	ug/kg	11	11	U	ug/kg	11	11	U	ug/kg	11

U = NOT DETECTED R = RESULT IS REJECTED
 J = ESTIMATED VALUE UJ = REPORTED QUANTITATION LIMIT IS ESTIMATED
 THE ADDITIONAL LISTINGS OF RESULTS FOR 1,2-; 1,3-; AND 1,4-DICHLOROBENZENE WERE GENERATED FROM THE SVOC (8270) ANALYTICAL RUN.



AR01 - Trend Report
Pesticide Site Surface Soil Data

Lab Sample Number:
Site
Locator
Collect Date:

R8753001
PESTSITE
PSSS00101
15-SEP-94

R8753002
PESTSITE
PSSS00201
15-SEP-94

R8753003
PESTSITE
PSSS002010
15-SEP-94

R8753005
PESTSITE
PSSS00301
15-SEP-94

VALUE QUAL UNITS DL VALUE QUAL UNITS DL VALUE QUAL UNITS DL VALUE QUAL UNITS DL

INORGANICS (SOIL)

mg/kg

	VALUE	QUAL UNITS	DL									
Antimony	1.1	U	mg/kg	1.1	1.2	U	mg/kg	1.2	1.14	U	mg/kg	1.14
Arsenic	2.67		mg/kg	1.69		mg/kg	1.46		mg/kg	.91		mg/kg
Barium	13		mg/kg	12.7		mg/kg	10.1		mg/kg	2.8		mg/kg
Beryllium	.22	U	mg/kg	.23	U	mg/kg	.23	U	mg/kg	.22	U	mg/kg
Cadmium	.75		mg/kg	.89		mg/kg	.68		mg/kg	.22	U	mg/kg
Chromium	8.1		mg/kg	30		mg/kg	11.6		mg/kg	9.6		mg/kg
Cobalt	1.1	U	mg/kg	1.2	U	mg/kg	1.1	U	mg/kg	1.1	U	mg/kg
Copper	18		mg/kg	16.3		mg/kg	14.7		mg/kg	5.7		mg/kg
Cyanide	.15	U	mg/kg	.16	U	mg/kg	.15	U	mg/kg	.15	U	mg/kg
Lead	108		mg/kg	131		mg/kg	116		mg/kg	2.32		mg/kg
Mercury	.2		mg/kg	.07	U	mg/kg	.07	U	mg/kg	.07	U	mg/kg
Nickel	4		mg/kg	18.8		mg/kg	7.2		mg/kg	6.1		mg/kg
Selenium	.13	U	mg/kg	.13		mg/kg	.14	U	mg/kg	.14		mg/kg
Silver	.44	U	mg/kg	.44	U	mg/kg	.46	U	mg/kg	.44	U	mg/kg
Thallium	.13	U	mg/kg	.13	U	mg/kg	.14	U	mg/kg	.13	U	mg/kg
Tin	3.5	U	mg/kg	3.5		mg/kg	3.7	U	mg/kg	3.5	U	mg/kg
Vanadium	6.6		mg/kg	14.8		mg/kg	10.9		mg/kg	2.2		mg/kg
Zinc	65.9		mg/kg	70.1		mg/kg	54.9		mg/kg	10.6		mg/kg

U = NOT DETECTED R = RESULT IS REJECTED

J = ESTIMATED VALUE UJ = REPORTED QUANTITATION LIMIT IS ESTIMATED

THE ADDITIONAL LISTINGS OF RESULTS FOR 1,2-; 1,3-; AND 1,4-DICHLOROBENZENE WERE GENERATED FROM THE SVOC (8270) ANALYTICAL RUN.



AR01 - Trend Report
Pesticide Site Surface Soil Data

Lab Sample Number:	R8753004	R8798002	R8798001					
Site	PESTSITE	PESTSITE	PESTSITE					
Locator	PSSS00401	PSSS00501	PSSS00601					
Collect Date:	15-SEP-94	23-SEP-94	23-SEP-94					
VALUE	QUAL UNITS	DL	VALUE	QUAL UNITS	DL	VALUE	QUAL UNITS	DL

ORGANICS (SOIL)

	mg/kg								
Antimony	1.12 U	mg/kg	1.12	1.12 U	mg/kg	1.12	1.12 U	mg/kg	1.12
Arsenic	.45	mg/kg		.67	mg/kg		.27	mg/kg	
Barium	5	mg/kg		4.5	mg/kg		11.8	mg/kg	
Beryllium	.22 U	mg/kg	.22	.22 U	mg/kg	.22	.22 U	mg/kg	.22
Cadmium	.22 U	mg/kg	.22	.22 U	mg/kg	.22	.28	mg/kg	
Chromium	10.7	mg/kg		5	mg/kg		5.6	mg/kg	
Cobalt	1.1 U	mg/kg	1.1	1.1 U	mg/kg	1.1	1.1 U	mg/kg	1.1
Copper	5.2	mg/kg		1.3	mg/kg		1.7	mg/kg	
Cyanide	.22	mg/kg		.31	mg/kg		.181	mg/kg	
Lead	3.64	mg/kg		1.66	mg/kg		1.66	mg/kg	
Mercury	.07 U	mg/kg	.07	.07 U	mg/kg	.07	.07 U	mg/kg	.07
Nickel	3.7	mg/kg		2.2 U	mg/kg	2.2	2.2 U	mg/kg	2.2
Selenium	.35	mg/kg		.14 U	mg/kg	.14	.14 U	mg/kg	.14
Silver	.45 U	mg/kg	.45	.45 U	mg/kg	.45	.45 U	mg/kg	.45
Thallium	.14 U	mg/kg	.14	.14 U	mg/kg	.14	.14 U	mg/kg	.14
Tin	3.6 U	mg/kg	3.6	3.6 U	mg/kg	3.6	3.6 U	mg/kg	3.6
Vanadium	3.4	mg/kg		5.5	mg/kg		6.3	mg/kg	
Zinc	8.7	mg/kg		3.8	mg/kg		4.4	mg/kg	

U = NOT DETECTED R = RESULT IS REJECTED
 J = ESTIMATED VALUE UJ = REPORTED QUANTITATION LIMIT IS ESTIMATED
 THE ADDITIONAL LISTINGS OF RESULTS FOR 1,2-; 1,3-; AND 1,4-DICHLOROBENZENE WERE GENERATED FROM THE SVOC (8270) ANALYTICAL RUN.

ATTACHMENT D
REFERENCES

REFERENCES

- ABB Environmental Services, Inc. (ABB-ES), 1991, Resource Conservation and Recovery Act Facility Investigation Workplan, U.S. Naval Station, Mayport, Florida, Volumes I, II, and III (Interim Final): prepared for Southern Division, Naval Facilities Engineering Command (SOUTHNAVF-ACENCOM), North Charleston, South Carolina, October.
- ABB-ES, 1995, Resource Conservation and Recovery Act Corrective Action Program General Information Report, U.S. Naval Station, Mayport, Florida: prepared for SOUTHNAVFAC-ENCOM, North Charleston, South Carolina, July.
- Florida Department of Environmental Protection (FDEP), 1995a, Memorandum from John M. Ruddell, Director, Division of Waste Management, to District Directors, Waste Management Program, Subject: Soil Cleanup Goals for Florida; FDEP, Tallahassee, Florida, September 29.
- FDEP, 1995b, Memorandum from Ligia Mora-Applegate to Tim Bahr, Technical Review Section, Bureau of Water Cleanup, Subject: Soil Cleanup Goals for the Military Sites; FDEP, Tallahassee, Florida, April 5.
- FDEP, 1996, Memorandum from John M. Ruddell, Director, Division of Waste Management, to District Directors, Waste Management Program, Subject: Applicability of Soil Cleanup Goals for Florida; FDEP, Tallahassee, Florida, January 19.
- U.S. Environmental Protection Agency (USEPA), 1986, Test Methods for Evaluating Solid Waste, Physical/Chemical Methods: SW846.
- USEPA, 1988, Laboratory Data Validation Functional Guidelines for Evaluating Inorganic Analysis, July.
- USEPA, 1990, National Functional Guidelines for Organic Data Review, December (revised June 1991).
- USEPA, 1991, Environmental Compliance Branch Standard Operation Procedures and Quality Assurance Manual, USEPA Region IV, Environmental Services Branch, Athens, Georgia, February.
- USEPA, 1993, Selecting Exposure Routes and Contaminants of Concern by Risk-Based Screening: Region III Technical Guidance Manual, Risk Assessment, USEPA/903/R-93-001, January.
- USEPA, 1994, Revised Interim Soil Lead Guidance for CERCLA Sites and RCRA Corrective Action Facilities, Memorandum from Elliot P. Laws, Assistant Administrator, Office of Solid Waste and Emergency Response (OSWER), Directive 9355.4-12, Washington, D.C.
- USEPA, 1995, Memorandum from Roy L. Smith, Technical Support Section, USEPA Region III to Risk-Based Concentration (RBC) Mailing List, Subject: Risk-Based Concentration Table, February 9.

REFERENCES (Continued)

USEPA, 1996, Environmental Investigations Standard Operating Procedures and Quality Assurance Manual, USEPA Region IV, Athens, Georgia, May.

U.S. Navy, 1995, Correspondence from Mr. M. J. McVann, Acting Staff Civil Engineer, to Mr. Joseph R. Franzmathes, Region IV, USEPA, Subject: Seven Areas of Concern at Naval Station Mayport, Hazardous and Solid Waste Amendment Permit FL9 170 024 260, October 19.

ATTACHMENT E
RESPONSE TO REGULATORY COMMENTS

INTRODUCTION

ABB Environmental Services, Inc. (ABB-ES), under the Comprehensive Long-term Environmental Action Navy (CLEAN) Contract, No. N62467-89-D-0317, is conducting a Resource Conservation and Recovery Act (RCRA) Facility Investigation (RFI) on behalf of the U.S. Navy at the U.S. Naval Station (NAVSTA), Mayport, Florida. This investigation is being conducted in accordance with the Hazardous and Solid Waste Amendment (HSWA) permit No. FL9-170-024-260, issued by the U.S. Environmental Protection Agency (USEPA) on March 25, 1988, and revised and reissued June 15, 1993.

Below are responses to comments by the Florida Department of Environmental Protection (FDEP) in correspondence dated December 21, 1995, concerning the report entitled Surface Soil Sampling and Analytical Results, Original Pesticide Handling Area, NAVSTA, Mayport, Florida (ABB-ES, 1995).

PROJECT REVIEW COMMENTS

Surface and Subsurface Soil Sampling and Analytical Results Original Pesticide Handling Area U.S. Naval Station Mayport, Florida

Florida Department of Environmental Protection

- 1. In a letter dated October 19, 1995 to Mr. Joseph Franzmathes, Region IV EPA, M.J. McVann, acting Staff Civil Engineer, stated that this area was an Area of concern. I recognize that this letter was written after this report; however, please clarify the status of this area.**

The draft Original Pesticide Handling Area report stated that this site was neither a solid waste management unit (SWMU) nor AOC. The report will be revised to be consistent with the Navy's correspondence dated October 19, 1995.

- 2. The report stated that FDEP Soil Cleanup Guidance was not exceeded for a residential or industrial scenario for benzo(a)pyrene and dibenz(a,h)anthracene. The residential guidance number (FDEP April, 1995 guidance) for each analyte was 140 $\mu\text{g}/\text{kg}$ and was exceeded for benzo(a)pyrene in samples MPT-PS-SS02 and MPT-PS-SS02 (duplicate) and in the duplicate for dibenz(a,h)anthracene. The final guidance (September, 1995), although finalized after this document was produced, has a lower residential scenario value for both analytes of 100 $\mu\text{g}/\text{kg}$, which would have the effect of increasing the risk from these compounds in soil.**

Benzo(a)pyrene and dibenz(a,h)anthracene were detected at concentrations exceeding the FDEP Soil Cleanup Goals guidance (FDEP, 1995b). Additionally, the report will be amended to include values from the most current guidance for soil cleanup goals published by the FDEP (FDEP, 1995c; and 1996).

- 3. The report states that concentrations for organic analytes did not exceed the FDEP risk values; however, Table 4 indicates that the estimated cancer risk based on FDEP, April 1995 guidance for a residential exposure to the benzo(a)pyrene component was $3\text{E}-6$. This value exceeds the FDEP risk value of $1\text{E}-6$. Using the final September guidance values, these numbers will be even higher.**

Comment acknowledged, please refer to the response to comment 2.

- 4. Based on the above analytical values, please justify why a ground water sample for semivolatile compounds and pesticides was not obtained. I am aware of similar sites at the base (such as SWMU 15) where pesticide concentrations in the soil were greater and little or no groundwater contamination was observed, but it seems reasonable that a ground water sample, even if from a temporary well, should be obtained.**

PROJECT REVIEW COMMENTS (Continued)

Surface and Subsurface Soil Sampling and Analytical Results Original Pesticide Handling Area U.S. Naval Station Mayport, Florida

The semivolatile organic compounds were detected at one of six sampling locations in an environmental sample and associated duplicate. The sampling location was a grass-covered area located near a stormwater drop inlet. Additionally, there was poor correlation between the number of analytes and concentrations detected in the environmental sample and duplicate from sampling location MPT-PS-SS02. This suggests that either poor mixing of the samples occurred or that the chemicals are present as a heterogenous mixture in the sample. The source of the PAHs at the Original Pesticide Handling Area is likely from the adjacent parking lot.

Pesticides were detected at two of the six sampling locations. One of the locations was at MPT-PS-SS02 and the other sampling location was approximately 45 feet to the southwest, MPT-PS-SS01. 4,4-Dichlorodiphenyltrichloroethane (4,4-DDT) and 4,4-dichlorodiphenyl-dichloroethene (4,4-DDE) were detected at both sampling locations, and heptachlor epoxide and delta benzene hexachloride (BHC) were detected at sampling location MPT-PS-SS02. These chemicals were detected at concentrations less than FDEP leaching criteria in the Florida Soil Cleanup Goals (FDEP, 1995c). The source of the pesticides may be either the historic application of pesticides or the storage and handling of pesticides at the Original Pesticide Handling Area.

Analytical data from other sites at NAVSTA Mayport support the conclusion that monitoring wells are not warranted at sites where low concentrations (i.e., concentrations at or slightly above the analytical detection limits) of organic compounds are detected in soil samples and are not detected in groundwater samples. Assessments for the following sites support this conclusion:

- SWMU 26 (ABB-ES, 1996b)
- SWMU 28 (ABB-ES, 1996b)
- SWMUs 20 and 21 (ABB-ES, 1996c)
- SWMU 52 (ABB-ES, 1996c)

Based on the results of the soil analytical data, there does not appear to have been a release to the environment of significant proportion to result in an adverse impact to groundwater quality; therefore, installing a monitoring well(s) and collecting a groundwater sample(s) at this site is not warranted.

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