Interim Groundwater Monitoring Report
Round 3
Site 3 - Ninth Street Landfill

Naval Air Station
Joint Reserve Base
Willow Grove, Pennsylvania

Naval Facilities Engineering Command
Mid-Atlantic

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TETRA TECH

SITE 3 - NINTH STREET LANDFILL
INTERIM GROUNDWATER MONITORING REPORT
ROUND 3

INTRODUCTION

This report presents the results of Round 3 Interim Groundwater Monitoring (IGWM) at Site 3 – Ninth Street Landfill at the Naval Air Station Joint Reserve Base (NAS JRB) Willow Grove, Pennsylvania. Round 3 consisted of a partial sampling round that included seven monitoring wells, the off-Base irrigation well, and two off-Base surface water samples. The intent of the IGWM is to provide interim groundwater data to evaluate the status of groundwater in the vicinity of Site 3 while the Remedial Investigation/Feasibility Study (RI/FS) process continues. IGWM Round 3 field work, consisting of groundwater level measurements, groundwater sampling and surface water sampling at Site 3 was performed on April 1 and 2, 2009 in accordance with the approved Uniform Federal Procurement (UFP) Sampling and Analysis Plan (SAP) for IGWM; Site 3- Ninth Street Landfill (Tetra Tech, March 2008). This report presents a summary of IGWM Round 3 field operations and results.

SITE DESCRIPTION AND PHYSICAL SETTING

NAS JRB Willow Grove, Pennsylvania is located in Horsham Township, Montgomery County in southeastern Pennsylvania. The Ninth Street Landfill occupies about 9 acres along the western boundary of NAS JRB Willow Grove (Figure 1).

The Ninth Street Landfill was active from 1960 to 1967. Wastes reportedly disposed in the landfill include trichloroethene (TCE), paint wastes, asbestos, polychlorinated biphenyl (PCB) fluids, general refuse, metal scrap, sewage sludge, and industrial pretreatment plant sludge. Wastes were dumped in trenches, burned, and buried. Subsequent to the landfill's closure, a salvage yard was established over a large portion of the landfill for the handling of empty drums, discarded equipment, and transformers containing PCBs.

The Ninth Street Landfill is located in an undeveloped area between Ninth Street and Dawes Road. The ground surface is well vegetated with a mixture of grass and woody vegetation. The ground surface slopes at a grade of approximately five percent in a generally north-northwest direction toward a wetland area, intermittent stream, downgradient of the storm water retention basin located approximately 200 feet north of the site. Recreational facilities including a pavilion, playground and baseball diamond are located within or immediately adjacent to the site.

NAS JRB Willow Grove is located within the Triassic Basin of southeastern Pennsylvania. The bedrock underlying the Air Station consists of the middle arkose member of the Late Triassic age Stockton

Formation. Soil borings and monitoring well boreholes drilled in the vicinity of the Site 3 typically encountered the top of bedrock at a depth of 10 feet to 15 feet below the ground surface. The overburden consists of silty to sandy clay that grade downward to weathered siltstone or shale. The overburden is generally thinnest (3 feet to 5 feet) in the northwest portion of the site.

The maximum depth of the monitoring well boreholes at Site 3 is 225 feet. The bedrock to this depth typically consists of alternating sequences of sandstone, siltstone, and shale. In general, the lithologic units at this site are rather thick and fairly continuous, although it is not unusual to encounter local, finer-grained lenses within a generally coarser matrix within any particular unit.

The major source of groundwater in the vicinity of NAS JRB Willow Grove is the fractured bedrock of the Stockton Formation. These rocks form a multi-aquifer system of relatively discrete water-bearing zones separated by less permeable zones. Transmissivity and groundwater movement within water-bearing zones are greater parallel to bedding than across bedding. Groundwater is generally first encountered between 5 feet and 25 feet bgs.

Groundwater within the Stockton Formation locally occurs under both unconfined and confined conditions. The unconfined conditions generally extend to a subsurface depth of about 75 to 100 feet, depending on the local lithologies. Confined conditions are generally encountered below a depth of about 150 feet. A semi-confined or transitional aquifer lies between the unconfined and confined aquifers. Although significant amounts of groundwater may be held in storage within the primary porosity of the fine- to medium-grained sandstones, groundwater migration is chiefly through the secondary porosity created by fractures and joints and along bedding-plane partings. The finer grained shale and siltstone beds typically have very low permeability. In addition, fractures and joints are typically not as well developed in these finer grained beds. Consequently, the shale and siltstone units may act as confining layers to groundwater flow.

PREVIOUS GROUNDWATER INVESTIGATIONS

A Site Inspection (SI) was completed in 1990 (EA Engineering, May 1990). Seven monitoring wells were installed and sampled for full target compound list/target analyte list (TCL/TAL) parameters, total organic carbon, and total petroleum hydrocarbons. Four of the wells, 03MW01S, 03MW02S, 03MW03S, and 03MW04S, were shallow, 4-inch wells designed to intercept the water table, and three of the wells, 03MW01SI, 03MW03SI, and 03MW04SI, were deeper, 2-inch diameter wells.

During the Phase I Remedial Investigation (Halliburton NUS Corporation, 1993), four new bedrock monitoring wells were installed: 03MW01I, 03MW03I, 03MW04I, and 03MW05S. Monitoring well 03MW05S was installed upgradient of the 03MW01 well cluster to investigate the tetrachloroethene

(PCE) contamination that was detected upgradient of the landfill. Monitoring wells 03MW01I, 03MW03I, and 03MW04I were installed to investigate groundwater quality in the deeper portion of the aquifer at these well cluster locations. The four new and seven existing monitoring wells were sampled for TAL metals and full TCL organic compounds in September 1991. PCE was detected in eight wells at concentrations ranging from 5 ug/l to 61 ug/l. There were no semivolatiles detected at levels exceeding reference criteria during Phase I.

During the Phase II Remedial Investigation (Brown & Root Environmental, 1996), a total of seven new monitoring wells were installed: 03MW02SI, 03MW02I, 03MW05I, 03MW06S, 03MW06SI, 03MW06I, and 03MW07S. The 03MW06 cluster was installed upgradient of the 03MW05 cluster to further investigate the PCE contamination detected upgradient of the landfill. Samples were collected from all of the new and existing wells in June 1997 and analyzed for TAL metals and full TCL organic compounds. PCE was detected in eleven wells at concentrations ranging from 5 ug/l to 39 ug/l. Only one semivolatile organic compound (SVOC), bis(2-ethylhexyl) phthalate, was detected during the Phase II sampling round, in 03MW05I (6J ug/l) and 03MW06SI (11 ug/l).

During the Phase II follow-on activities (Tetra Tech, September 2006), two new wells, 03MW08S and 03MW08D, were installed upgradient of the 03MW06 cluster in a further attempt to identify the Site 3 groundwater source, since PCE had been detected at the upgradient monitoring well 03MW06. Construction details for all wells are listed in Table 1. Groundwater samples were obtained from all existing and newly installed permanent monitoring wells at Site 3 in February 2006. There was no sample collected from 03MW03I because the well was obstructed. The samples from the two new wells, 03MW08S and 03MW08D, were analyzed for TCL VOCs and SVOCs. The samples from the remaining wells were analyzed for TCL volatile organic compounds (VOCs) only. PCE was detected in sixteen wells at concentrations ranging from 0.23 ug/l to 14 ug/l. There were no semivolatiles detected in the two new wells.

Round 1 of IGWM at Site 3 was performed from March 10 to March 20, 2008. Two surface water samples (03SW10 and 03SW11) were collected from the off-Base surface water stream for TCL VOCs, 1,4-Dioxane and TAL total metals analysis. Toluene was detected at 03SW10 at a trace level (0.21J ug/l) below screening criteria. No other VOCs were detected in surface water samples. All 20 monitoring wells and the off-Base well were analyzed for TCL VOCs, 1,4-dioxane, TAL total metals and TAL dissolved metals. Hexavalent chromium analysis was performed on samples from eight well locations. There was no 1,4-dioxane or hexavalent chromium detected. Arsenic, bromodichloromethane, dibromochloromethane and PCE were identified at concentrations above Region 3 Risk Based Concentrations (RBCs) for tap water. In the filtered groundwater samples, arsenic was detected in six wells at concentrations ranging from 0.5J ug/l to 10.1 ug/l. In the unfiltered groundwater samples, arsenic was detected in nine wells at concentrations ranging from 0.5J ug/l to 9.1 ug/l. Bromodichloromethane

(1.1 ug/l) and dibromochloromethane (1.5 ug/l) were detected in 03MW04S at concentrations exceeding RBCs. PCE was detected in fifteen wells at concentrations ranging from 0.45J ug/l to 12 ug/l. PCE was detected in the off-Base Lot 1 irrigation well at 6.3 ug/l.

Round 2 of IGWM at Site 3 was performed from October 13 to October 21, 2008. All twenty monitoring wells, the off-Base well, and the two surface water samples were analyzed for TCL VOCs. There were no detections in the surface water samples. PCE, chloroform, 1,1-dichloroethane, and TCE were identified in groundwater at concentrations above EPA Region 3 Regional Screening Levels (RSLs). PCE exceeded its RSL of 0.11 ug/l in fourteen wells, at concentrations ranging from 0.41J ug/l to 12.4 ug/l. PCE was detected in the off-Base Matrix Development Lot 1 irrigation well at 5.8 ug/l. Chloroform exceeded its RSL of 0.19 ug/l in four wells, at concentrations ranging from 0.57 ug/l to 1.6 ug/l. 1,1-dichloroethane (8.2 ug/l) and TCE (3.1 ug/l) were detected in 03MW08D at concentrations exceeding their respective RSLs of 2.4 ug/l and 1.7 ug/l. Several other VOCs were also detected in 03MW08D at concentrations below RSLs.

SCOPE OF THE ROUND 3 GROUNDWATER INVESTIGATION

Groundwater samples were collected from seven of the Site 3 monitoring wells (03MW03S, 03MW03SI, 03MW03I, 03MW04S, 03MW04SI, 03MW04I, and 03MW07S) and one off-Base downgradient well (Matrix Development Lot 1 irrigation well). This well is a flowing artesian well that discharges to the unnamed tributary to Park Creek north of the site. Two surface water samples, approximating the sample locations from Rounds 1 and 2, were collected from the unnamed tributary, one upgradient (03SW10) and one downgradient (03SW11) of the point of discharge of the Lot 1 flowing irrigation well. Sampling locations are illustrated on Figure 2. The groundwater and surface water samples were analyzed for TCL VOCs.

Groundwater elevation measurements were obtained from the twenty Site 3 monitoring wells to refine the interpreted directions of groundwater flow (see Figures 3 and 4).

FIELD INVESTIGATION

Sampling Methods

Each of the monitoring wells was purged prior to sampling. Monitoring wells with a screen length of 10 feet or less were purged and sampled following the low-flow sampling technique prescribed by the EPA Region 3 Recommended Procedure (Bulletin QAD023 - June 16, 1999). Table 1 shows monitoring well construction details. The monitoring wells were purged and sampled using a submersible pump with an adjustable flow rate. In each well, the Redi-Flo2 pump was positioned within the well screen interval at

the depth of the water-producing fracture, which was identified using the boring logs and geophysical logs. Sample pumping rate was set at between 0.1 to 0.4 liter/minute, and water levels were monitored to assure that the static water level was not drawn down into the well screen. Purged water was monitored for pH, specific conductivity, temperature, turbidity, redox potential, and dissolved oxygen every five minutes. When the levels of these parameters stabilized, and a minimum of two saturated screen volumes had been removed from the well, the purging was considered complete and the groundwater samples were obtained. Parameter stabilization was defined as three successive readings (taken at least 5 minutes apart) within 0.1 unit for pH, 3% for conductivity, 10% for turbidity and dissolved oxygen, and 10 mV for redox potential. The vertical location of the pump, the required minimum purge volume, and the calculations for parameter stabilization were recorded on the groundwater sample log sheet. Sample collection log sheets are included in Appendix B.

Monitoring wells having a screen length greater than 10 feet were sampled by purging three to five well volumes prior to sample collection. Water quality indicator parameters pH, specific conductivity, temperature, turbidity, redox potential, and dissolved oxygen were recorded for every half well volume. When three consecutive readings had reached stabilization, and at least three well volumes had been purged, the samples were collected. The Redi-Flo2 pump was used to purge wells and collect samples. Well 03MW01SI has damage that prevents the use of a submersible pump in the well. This well was sampled using a small diameter bailer after purging three well volumes with a peristaltic pump.

The off-Base, Lot 1 irrigation well (designated 03IW01 for this investigation), which is an open-bedrock borehole flowing artesian well, was sampled by directly filling sample bottles from the flow of water from the well. Surface water samples were collected by directly filling the bottles from the stream. The sampling methods for each well are summarized in Table 2.

Groundwater Elevation Measurements

Water-level elevation measurements were collected on April 1, 2009. Elevation measurements were obtained during a day of no precipitation, and at least 48 hours after the conclusion of any precipitation event. Static water levels were measured in all available wells using an electronic water-level indicator and were recorded to the nearest 0.01 foot. The static water levels in the flowing artesian monitoring wells were obtained by extending the casing stick-up of the wells and measuring the height of the water above the reference point elevation. Groundwater elevation data are included in Appendix C.

RESULTS OF INVESTIGATION

Hydrogeology

The hydraulic head data indicate that two hydrogeologic units, an upper unconfined zone and a deeper semi-confined to confined zone, exist beneath Site 3. Monitoring wells at the site are completed in both of these groundwater zones, based on the vertical distribution of hydraulic head. Semi-confined to confined conditions are present in monitoring wells 03MW01I, 03MW02I, 03MW03SI, 03MW03I, 03MW04SI and 03MW04I. Monitoring wells 03MW03I, 03MW03SI, 03MW04SI, and 03MW04I are typically flowing. During the present sampling round, all of these wells except 03MW4SI were flowing.

Groundwater Flow Directions

The groundwater flow directions for the unconfined groundwater zone and the confined groundwater zone are illustrated in Figure 3 (unconfined zone) and Figure 4 (confined zone). The maps were constructed using the groundwater elevations measured on April 1, 2009. These results are similar to the site-specific groundwater flow directions interpreted for previous reports.

Groundwater at the water table and within the unconfined groundwater zone beneath Site 3 flows in an overall northwestward direction. The configuration of the water table appears to be a subdued reflection of the surface topography, as is typical for this area. Groundwater in the confined zone flows in a generally northward direction.

Data Usability Evaluation

Data collected during the groundwater investigation were determined to be of sufficient quality to be used to evaluate interim groundwater conditions. Quality assurance/quality control (QA/QC) samples collected during the April 2009 sampling event included two duplicate samples, one matrix spike (MS), one matrix spike duplicate (MSD), and one trip blank. EPA SW-846 method 8260B was used for VOC analysis. Data validation was performed on all data in accordance with the final Sampling and Analysis Plan (SAP) (Tetra Tech, March 2008) following Tetra Tech SOPs DV-02 and EPA Functional Guidelines for Organic Data Review, as amended for use within EPA Region 3 (9/94), in conjunction with method specific criteria presented in the SAP. Data validation summary narrative reports are included in Appendix D.

No sampling issues or field conditions affected data usability. Field duplicate precision was met (within 30%) for all analytes. No problems were associated with data representativeness.

Some usable results were flagged with the qualifiers J, or U because the data were outside quality control criteria. Results were flagged estimated (J) by the laboratory if the positive concentration was below the contract quantitation limit. Unusable results were flagged with B (blank contamination) or UR (considered unusable due to exceedance of technical quality control criteria). Data validation qualifiers and discussion can be found in Appendix D.

Surface Water Analytical Results

Two surface water samples (03SW10 and 03SW11) were collected from the off-Base surface water stream. Samples were analyzed for TCL VOCs analysis. Figure 2 presents sample locations. Appendix A presents a summary of surface water analytical results.

No VOCs were detected in surface water samples.

Groundwater Analytical Results

Samples from the seven monitoring wells and the off-Base well were analyzed for TCL VOCs. Figure 2 presents sample locations. Table 3 presents a comparison of detected compounds to EPA Region 3 RSLs for tap water. Table 4 presents a historical comparison of the PCE concentrations detected in Site 3 monitoring wells. Figure 5 shows sample locations and concentrations of compounds that exceed EPA Region 3 RSLs for tap water. Appendix A presents a summary of groundwater analytical results.

PCE was detected at concentrations exceeding its RSL of 0.11 µg/l in all seven of the monitoring wells sampled. The PCE concentrations ranged from 0.41J ug/l in 03MW04I to 10.8 ug/l in 03MW03SI.

Two compounds, 1,1,2-trichlorotritrifluoroethane and methyl tert-butyl ether (MTBE), were detected at concentrations below their respective RSLs of 59,000 µg/L and 12 µg/L. 1,1,2-trichlorotrifluoroethane was detected in monitoring well 03MW07S at 0.34J µg/L and in 03IW01 at 0.48J µg/L. MTBE was detected in sample 03MW03S and duplicate sample 03MW03S-D at concentrations of 0.63J µg/L and 0.42J µg/L, respectively.

CONCLUSIONS

The concentrations of PCE detected in this sampling round were similar to the concentrations reported in the previous two IGWM sampling rounds in March 2008 and October 2008. Table 4 shows the historical PCE sample results from 1991 to the present. The PCE concentrations from the present round are consistent with the apparent decreasing trend in PCE concentrations over time noted in the previous reports. The greatest change in PCE concentration since October 2008 was a decrease from 10.4 ug/l to

4.3 ug/l in 03MW03I. Chloroform, which was detected in 03MW03I, 03MW04S, 03MW04SI and 03MW07S in IGWM Round 2, was not detected in the present sampling round.

PCE was detected in the off-Base Lot 1 irrigation well at 4.4 ug/l, which is similar to previous results (5.8 ug/l in October 2008 and 6.3 in March 2008). Consistent with previous results, surface water samples upstream and downstream of where this artesian flow enters surface flow did not show VOCs.

TABLES

TABLE 1

Monitoring Well Construction Summary
Site 3 - Ninth Street Landfill
NASJRB, Willow Grove, Pennsylvania

Monitoring Well	Well Diameter (inches)	Screen Interval (ft bgs)	Sand-Pack Interval (ft bgs)	Elevation TOC (ft amsl)
Site Inspection				
03MW01S	4	12 – 32	10 - 33	347.49
03MS01SI	2	60 – 80	57 - 81	346.98
03MW02S	4	4.5 – 22.5	4 - 23	326.15
03MW03S	4	5 – 20	4 - 22	312.96
03MW03SI	2	60 – 80	58 - 81	313.75
03MW04S	4	5 - 35	4 - 37	324.49
03MW04SI	2	60 – 80	53 - 81	323.87
Phase I RI				
03MW01I	4	159 - 179	156 – 179.5	347.50
03MW03I	4	148.5 – 168.5	145 - 171	315.00
03MW04I	4	148 - 168	145 - 169	324.85
03MW05S	4	17 - 37	15 – 37.5	362.90
Initial Phase II RI				
03MW02SI	2	55 - 65	52 - 70	326.33
03MW02I	2	134 - 144	130 - 144	326.38
03MW05I	2	82 - 92	78 - 96	362.93
03MW06S	2	26 - 36	25 - 38	367.00
03MW06SI	2	75 - 85	72 - 85	366.86
03MW06I	2	140 - 150	136 - 150	366.82
03MW07S	2	34 - 44	30.5 - 50	324.90
Phase II RI Follow-on Activities				
03MW08S	2	38 - 68	33 –- 73	365.59
03MW08D	2	163 - 173	158 - 178	365.63

TABLE 2

Groundwater Sampling Methods
Site 3 - Ninth Street Landfill

Sampling Location	Well Diameter (inches)	Screen Interval (ft bgs)	Elevation TOC (ft amsl)	Sampling Method	Note
03MW01S	4	12 - 32	347.49	NA	Not Sampled
03MS01SI	2	60 - 80	346.98	NA	Not Sampled
03MW02S	4	4.5 - 22.5	326.15	NA	Not Sampled
03MW03S	4	5 - 20	312.96	Purging and Sampling	Redi-Flo2 Pump
03MW03SI	2	60 - 80	313.75	Purging and Sampling	Redi-Flo2 Pump
03MW04S	4	5 - 35	324.49	Purging and Sampling	Redi-Flo2 Pump
03MW04SI	2	60 - 80	323.87	Purging and Sampling	Redi-Flo2 Pump
03MW01I	4	159 - 179	347.50	NA	Not Sampled
03MW03I	4	148.5 - 168.5	315.00	Purging and Sampling	Redi-Flo2 Pump
03MW04I	4	148 - 168	324.85	Purging and Sampling	Redi-Flo2 Pump
03MW05S	4	17 - 37	362.90	NA	Not Sampled
03MW02SI	2	55 - 65	326.33	NA	Not Sampled
03MW02I	2	134 - 144	326.38	NA	Not Sampled
03MW05I	2	82 - 92	362.93	NA	Not Sampled
03MW06S	2	26 - 36	367.00	NA	Not Sampled
03MW06SI	2	75 - 85	366.86	NA	Not Sampled
03MW06I	2	140 - 150	366.82	NA	Not Sampled
03MW07S	2	34 - 44	324.90	Low-Flow Purging and Sampling	Redi-Flo2 Pump
03MW08S	2	38 - 68	365.59	NA	Not Sampled
03MW08D	2	163 - 173	365.63	NA	Not Sampled
03IW 01	6	NA	NA	Direct Fill	

TABLE 3

DATA SUMMARY OF POSITIVE VOLATILE ORGANIC COMPOUND RESULTS
SITE 3 IGWM - ROUND 3 GROUNDWATER SAMPLES- APRIL 2009
NAS JRB WILLOW GROVE, PENNSYLVANIA

Sample ID:	Region 3 Tapwater SL	03IW01		03MW03I1		03MW03S		03MW03S-D		03MW03SI		03MW04I		03MW04S		03MW04SI		03MW07S		03SW10		03SW10-D		03SW11	
Sample Date:		4/1/09		4/1/09		4/1/09		4/1/09		4/1/09		4/2/09		4/2/09		4/2/09		4/2/09		4/1/09		4/1/09		4/1/09	
Duplicate of:								03MW03S														03SW10			
VOLATILES	ug/L	ug/L		ug/L		ug/L		ug/L		ug/L		ug/L		ug/L		ug/L		ug/L		ug/L		ug/L		ug/L	
1,1,2-Trichlorotrifluoroethane	59000	0.48	J	1	U	1	U	1	U	1	U	1	U	1	U	1	U	0.34	J	1	U	1	U	1	U
Methyl Tert-butyl Ether	12	1	U	1	U	0.63	J	0.42	J	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U
Tetrachloroethene	0.11	4.4		4.3		3		3.2		10.8		0.41	J	3.1		5.7		0.74	J	1	U	1	U	1	U

Data Qualifiers:
J -- Value is considered estimated due to exceedance of technical quality control criteria or because result is less than the Contract Required Quantitation Limit (CRQL).
U -- Value is a non-detected result as reported by the laboratory.

Shaded values exceed the Region 3 Screening Level for Tapwater.

Database source file: H:\WILLOWGROVE\SITE 3 IGWM\APR09DATA.DBF data retrieved on: 06/16/09

TABLE 4
HISTORICAL PCE CONCENTRATIONS IN GROUNDWATER
NINTH STREET LANDFILL
NAS JRB WILLOW GROVE, PENNSYLVANIA

WELL	SEPTEMBER 1991	JUNE 1997	FEBRUARY 2006	MARCH 2008	OCTOBER 2008	APRIL 2009
SHALLOW WELLS						
03MW01S	15	6J	0.9	1.9	2.6	NS
03MW02S	ND	ND	ND	ND	ND	NS
03MW03S	8	5J	14	2.5	2.6	3.1
03MW04S	61	21	9.1	4.5	2.7	3.1
03MW05S	7	2J	0.67J	ND	0.49J	NS
03MW06S	NA	29	1.3	0.76J	1.8	NS
03MW07S	NA	ND	1.4	1.1	0.41J	0.74J
SHALLOW-INTERMEDIATE DEPTH WELLS						
03MW01SI	29	---	4.9	8.8	9.7	NS
03MW02SI	NA	6J	1.9	3.3	3.3	NS
03MW03SI	35	18	12	12	12.4	10.8
03MW04SI	56	20	10	4.6	3.9	5.7
03MW05I	NA	ND	0.70J	0.46J	ND	NS
03MW06SI	NA	ND	ND	ND	ND	NS
03MW08S	NA	NA	ND	ND	ND	NS
INTERMEDIATE DEPTH WELLS						
03MW01I	ND	ND	0.23J	ND	ND	NS
03MW02I	NA	8J	2.4	7.8	7.5	NS
03MW03I	5	6J	---	6.9	10.4	4.3
03MW04I	ND	ND	0.52J	0.45J	ND	0.41J
03MW06I	NA	39	0.79J	ND	ND	NS
03MW08D	NA	NA	0.78J	1	1.3	NS
OFF-BASE LOT 1 IRRIGATION WELL						
03IW01	25	15 *	---	6.3	5.6	4.4

Notes: The unit of concentrations is ug/L.

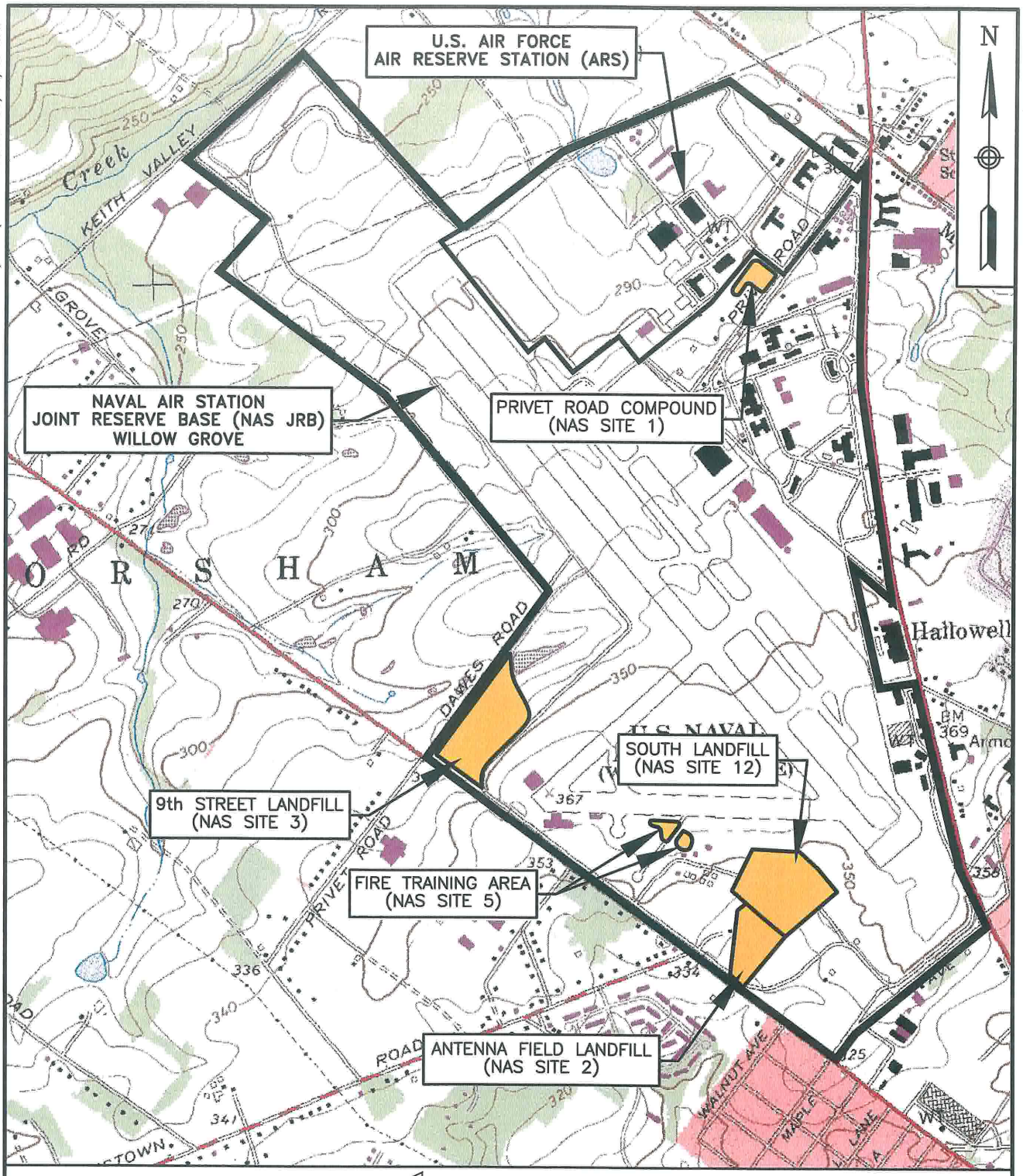
NA = Not Available. Well had not been installed at time of sampling round.

ND = Non-Detected.

NS = Not Sampled

* = Sampled March 1998

FIGURES



2192 WillowGrove\1227\2192CM01.DWG 05/19/09 MKB

BASE MAP IS A PORTION OF THE AMBLER, PA U.S.G.S. 7.5 MINUTE QUADRANGLE MAP, DATED 1963, PHOTOREVISED IN 1983.

QUADRANGLE LOCATION

0 1500 3000

SCALE IN FEET

TETRA TECH NUS, INC.

LOCATION OF RI SITES
NAS JRB WILLOW GROVE
WILLOW GROVE, PENNSYLVANIA

SCALE	AS NOTED
FILE	2192CM01.DWG
REV	0
DATE	05/19/09
FIGURE NUMBER	FIGURE 1

112G00845\0341\112G00845GM01-1.DWG 08/24/09 MKB

N

RIDGEVIEW

PRIVET ROAD

9TH STREET

PARKING

HELICOPTER

HANGER

PARKING AREA

HORSHAM ROAD

BASE BOUNDARY

ARMY RESERVE CENTER

03MW02SI 03MW02S 03MW02I

03MW03S 03MW03I 03MW03SI

03SW10

03SW11

LOT 1 IRRIGATION WELL

03MW04I 03MW04S 03MW04SI

03MW01SI 03MW01S 03MW01I

03MW07S

03MW05S 03MW05I

03MW06S 03MW06SI 03MW06I

03MW08S 03MW08D

0 300 600

SCALE IN FEET

LEGEND

ON-SITE MONITORING WELL LOCATION

OFF BASE WELL LOCATION

SURFACE WATER SAMPLE LOCATION

TETRA TECH NUS, INC.

MONITORING WELL LOCATIONS
INTERIM GROUNDWATER MONITORING
ROUND 2 NAS JRB SITE 3
9TH STREET LANDFILL
NAS JRB WILLOW GROVE
WILLOW GROVE, PENNSYLVANIA

FILE	SCALE
112G00845GM01-1	AS NOTED
FIGURE NUMBER	REV / DATE
FIGURE 2	0 / 08/24/09

112G00845\0334\112G00845GM02-2.DWG 08/24/09 MKB

N

RIDGEVIEW

PRIVET ROAD

9TH STREET

HORSHAM ROAD

PARKING

HELICOPTER

HANGER

PARKING AREA

ARMY RESERVE CENTER

BASE BOUNDARY

03SW10

03SW11

LOT 1 IRRIGATION WELL

315.25
03MW02S
03MW02SI
03MW02I
313.42

307.31
03MW03S
03MW03I
03MW03SI

310.82
03MW04S
03MW04I
03MW04SI

320.69
03MW01SI
03MW01I
03MW01S
322.97

03MW07S
311.88

332.57
03MW05S
03MW05I
334.23

331.90
03MW06S
03MW06SI
335.56
03MW06I
335.75

337.29
03MW08S
03MW08D
337.04

310
315
320
325
330
335

0 300 600
SCALE IN FEET

LEGEND

- ON-SITE MONITORING WELL LOCATION
- OFF BASE WELL LOCATION
- SURFACE WATER SAMPLE LOCATION
- 332.57 GROUNDWATER ELEVATION (FEET, AMSL)
- 330 GROUNDWATER CONTOUR

TETRA TECH NUS, INC.

GROUNDWATER ELEVATION MAP
UNCONFINED GROUNDWATER ZONE
01 APRIL 2009
NAS JRB SITE 3
9TH STREET LANDFILL
NAS JRB WILLOW GROVE
WILLOW GROVE, PENNSYLVANIA

FILE	SCALE
112G00845GM02-2	AS NOTED
FIGURE NUMBER	REV / DATE
FIGURE 3	0 / 08/24/09

112G00845\0334\112G00845GM02-2.DWG 06/22/09 MKB

RIDGEVIEW

PRIVET ROAD

9TH STREET

HORSHAM ROAD

PARKING

HELICOPTER

HANGER

PARKING AREA

ARMY RESERVE CENTER

BASE BOUNDARY

03MW02S
03MW02SI
03MW02I
322.06

03MW03S
03MW03I
03MW03SI
323.32
321.19

03SW10

03SW11

LOT 1 IRRIGATION WELL

03MW04S
03MW04I
03MW04SI
336.85
(325.77)

03MW01SI
03MW01I
03MW01S
334.40

03MW05S
03MW05I

03MW07S

03MW06S
03MW06SI
03MW06I

03MW08S
03MW08D

325
330
335

N

0 300 600
SCALE IN FEET

LEGEND

- ON-SITE MONITORING WELL LOCATION
- OFF BASE WELL LOCATION
- SURFACE WATER SAMPLE LOCATION
- 334.40 GROUNDWATER ELEVATION (FEET, AMSL)
- 330 GROUNDWATER CONTOUR

TETRA TECH NUS, INC.

GROUNDWATER ELEVATION MAP
CONFINED GROUNDWATER ZONE
01 APRIL 2009
NAS JRB SITE 3
9TH STREET LANDFILL
NAS JRB WILLOW GROVE
WILLOW GROVE, PENNSYLVANIA

FILE	SCALE
112G00845GM02-1	AS NOTED
FIGURE NUMBER	REV / DATE
FIGURE 4	0 / 06/22/09

112G00845\0341\112G00845GM03.DWG 08/24/09 MKB

RIDGEVIEW

ROAD

9TH STREET

PARKING

HELICOPTER

HANGAR

PARKING AREA

ARMY RESERVE CENTER

HORS

BASE BOUNDARY

03MW03S DUPLICATE
Tetrachloroethene *3.0 ug/L* *3.2 ug/L*

03MW03SI
Tetrachloroethene *10.8 ug/L*

03MW03I
Tetrachloroethene *4.3 ug/L*

03IW01
Tetrachloroethene *4.4 ug/L*

03MW04I
Tetrachloroethene *0.41 J ug/L*

03MW04S
Tetrachloroethene *3.1 ug/L*

03MW04SI
Tetrachloroethene *5.7 ug/L*

03MW07S
Tetrachloroethene *0.74 J ug/L*

03MW03S 03MW03I 03MW03SI
03MW02SI 03MW02S 03MW02I
03SW10
03SW11
LOT 1 IRRIGATION WELL
03MW04I 03MW04S 03MW04SI
03MW07S
03MW01SI 03MW01S 03MW01I
03MW05S 03MW05I
03MW06S 03MW06SI 03MW06I
03MW08S 03MW08D

NS NOT SAMPLED

N

LEGEND
- ON-SITE MONITORING WELL LOCATION
- OFF BASE WELL LOCATION
- SURFACE WATER SAMPLE LOCATION
- *NS* NOT SAMPLED

0 300 600
SCALE IN FEET

TETRA TECH NUS, INC.

GROUNDWATER CONCENTRATIONS ABOVE SCREENING LEVELS INTERIM GROUNDWATER MONITORING APRIL 2009 NAS JRB SITE 3 9TH STREET LANDFILL NAS JRB WILLOW GROVE WILLOW GROVE, PENNSYLVANIA

FILE	SCALE
112G00845GM03	AS NOTED
FIGURE NUMBER	REV / DATE
FIGURE 5	0 / 08/24/09

APPENDIX A

ANALYTICAL RESULTS

DATA SUMMARY OF VOLATILE ORGANIC COMPOUND RESULTS
SITE 3 GROUNDWATER SAMPLES - APRIL 2009
NAS JRB WILLOW GROVE, WILLOW GROVE, PENNSYLVANIA

Sample ID:	03IW01		03MW03I1		03MW03S		03MW03S-D		03MW03SI		03MW04I		03MW04S		03MW04SI		03MW07S	
Sample Date:	4/1/09		4/1/09		4/1/09		4/1/09		4/1/09		4/2/09		4/2/09		4/2/09		4/2/09	
Duplicate of:							03MW03S											
VOLATILES	ug/L		ug/L		ug/L		ug/L		ug/L		ug/L		ug/L		ug/L		ug/L	
1,1,1-Trichloroethane	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U
1,1,2,2-Tetrachloroethane	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U
1,1,2-Trichloroethane	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U
1,1,2-Trichlorotrifluoroethane	0.48	J	1	U	1	U	1	U	1	U	1	U	1	U	1	U	0.34	J
1,1-Dichloroethane	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U
1,1-Dichloroethene	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U
1,2,3-Trichlorobenzene	2	U	2	U	2	U	2	U	2	U	2	U	2	U	2	U	2	U
1,2,4-Trichlorobenzene	2	U	2	U	2	U	2	U	2	U	2	U	2	U	2	U	2	U
1,2-Dibromo-3-chloropropane	7	U	7	U	7	U	7	U	7	U	7	U	7	U	7	U	7	U
1,2-Dibromoethane	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U
1,2-Dichlorobenzene	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U
1,2-Dichloroethane	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U
1,2-Dichloroethene (cis)	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U
1,2-Dichloroethene (trans)	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U
1,2-Dichloropropane	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U
1,3-Dichlorobenzene	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U
1,4-Dichlorobenzene	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U
2-Butanone	10	UR	10	UR	10	UR	10	UR	10	UR	10	UR	10	UR	10	UR	10	UR
2-Hexanone	5	U	5	U	5	U	5	U	5	U	5	U	5	U	5	U	5	U
4-Methyl-2-pentanone	5	U	5	U	5	U	5	U	5	U	5	U	5	U	5	U	5	U
Acetone	10	UR	10	UR	10	UR	10	UR	10	UR	10	UR	10	UR	10	UR	10	UR
Benzene	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U
Bromochloromethane	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U
Bromodichloromethane	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U
Bromoform	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U
Bromomethane	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U
Carbon Disulfide	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U
Carbon Tetrachloride	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U
Chlorobenzene	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U
Chloroethane	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U
Chloroform	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U
Chloromethane	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U
cis-1,3-Dichloropropene	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U
Cyclohexane	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U
Dibromochloromethane	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U
Dichlorodifluoromethane	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U
Ethylbenzene	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U
Isopropylbenzene	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U
M+p-xylenes	2	U	2	U	2	U	2	U	2	U	2	U	2	U	2	U	2	U
Methyl Acetate	2	U	2	U	2	U	2	U	2	U	2	U	2	U	2	U	2	U
Methyl Cyclohexane	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U
Methyl Tert-butyl Ether	1	U	1	U	0.63	J	0.42	J	1	U	1	U	1	U	1	U	1	U
Methylene Chloride	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U
O-xylene	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U
Styrene	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U
Tetrachloroethene	4.4		4.3		3		3.2		10.8		0.41	J	3.1		5.7		0.74	J
Toluene	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U
trans-1,3-Dichloropropene	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U
Trichloroethene	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U
Trichlorofluoromethane	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U
Vinyl Chloride	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U

DATA SUMMARY OF VOLATILE ORGANIC COMPOUND RESULTS
SITE 3 IGWM - APRIL 2009
NAS JRB WILLOW GROVE, WILLOW GROVE, PENNSYLVANIA

Data Qualifiers:
J -- Value is considered estimated due to exceedance of technical quality control criteria or because result is less than the Contract Required Quantitation Limit (CRQL).
U -- Value is a non-detected result as reported by the laboratory.
UR -- Non-detected result is considered unusable due to exceedance of technical quality control criteria.

Database source file: H:\WILLOWGROVE\SITE 3 IGWM\APR09DATA.DBF data retrieved on: 06/16/09

DATA SUMMARY OF VOLATILE ORGANIC COMPOUND RESULTS
SITE 3 SURFACE WATER SAMPLES - APRIL 2009
NAS JRB WILLOW GROVE, WILLOW GROVE, PENNSYLVANIA

Sample ID:	**03SW10**		**03SW10-D**		**03SW11**	
Sample Date:	**4/1/09**		**4/1/09**		**4/1/09**	
Duplicate of:			**03SW10**			
VOLATILES	**ug/L**		**ug/L**		**ug/L**	
1,1,1-Trichloroethane	1	U	1	U	1	U
1,1,2,2-Tetrachloroethane	1	U	1	U	1	U
1,1,2-Trichloroethane	1	U	1	U	1	U
1,1,2-Trichlorotrifluoroethane	1	U	1	U	1	U
1,1-Dichloroethane	1	U	1	U	1	U
1,1-Dichloroethene	1	U	1	U	1	U
1,2,3-Trichlorobenzene	2	U	2	U	2	U
1,2,4-Trichlorobenzene	2	U	2	U	2	U
1,2-Dibromo-3-chloropropane	7	U	7	U	7	U
1,2-Dibromoethane	1	U	1	U	1	U
1,2-Dichlorobenzene	1	U	1	U	1	U
1,2-Dichloroethane	1	U	1	U	1	U
1,2-Dichloroethene (cis)	1	U	1	U	1	U
1,2-Dichloroethene (trans)	1	U	1	U	1	U
1,2-Dichloropropane	1	U	1	U	1	U
1,3-Dichlorobenzene	1	U	1	U	1	U
1,4-Dichlorobenzene	1	U	1	U	1	U
2-Butanone	10	UR	10	UR	10	UR
2-Hexanone	5	U	5	U	5	U
4-Methyl-2-pentanone	5	U	5	U	5	U
Acetone	10	UR	10	UR	10	UR
Benzene	1	U	1	U	1	U
Bromochloromethane	1	U	1	U	1	U
Bromodichloromethane	1	U	1	U	1	U
Bromoform	1	U	1	U	1	U
Bromomethane	1	U	1	U	1	U
Carbon Disulfide	1	U	1	U	1	U
Carbon Tetrachloride	1	U	1	U	1	U
Chlorobenzene	1	U	1	U	1	U
Chloroethane	1	U	1	U	1	U
Chloroform	1	U	1	U	1	U
Chloromethane	1	U	1	U	1	U
cis-1,3-Dichloropropene	1	U	1	U	1	U
Cyclohexane	1	U	1	U	1	U
Dibromochloromethane	1	U	1	U	1	U
Dichlorodifluoromethane	1	U	1	U	1	U
Ethylbenzene	1	U	1	U	1	U
Isopropylbenzene	1	U	1	U	1	U
M+p-xylenes	2	U	2	U	2	U
Methyl Acetate	2	U	2	U	2	U
Methyl Cyclohexane	1	U	1	U	1	U
Methyl Tert-butyl Ether	1	U	1	U	1	U
Methylene Chloride	1	U	1	U	1	U
O-xylene	1	U	1	U	1	U
Styrene	1	U	1	U	1	U
Tetrachloroethene	1	U	1	U	1	U
Toluene	1	U	1	U	1	U
trans-1,3-Dichloropropene	1	U	1	U	1	U
Trichloroethene	1	U	1	U	1	U
Trichlorofluoromethane	1	U	1	U	1	U
Vinyl Chloride	1	U	1	U	1	U

DATA SUMMARY OF VOLATILE ORGANIC COMPOUND RESULTS
SITE 3 IGWM - APRIL 2009
NAS JRB WILLOW GROVE, WILLOW GROVE, PENNSYLVANIA

Data Qualifiers:
J -- Value is considered estimated due to exceedance of technical quality control criteria or because result is less than the Contract Required Quantitation Limit (CRQL).
U -- Value is a non-detected result as reported by the laboratory.
UR -- Non-detected result is considered unusable due to exceedance of technical quality control criteria.

Database source file: H:\WILLOWGROVE\SITE 3 IGWM\APR09DATA.DBF data retrieved on: 06/16/09

APPENDIX B

SAMPLE COLLECTION LOGS

Tetra Tech NUS, Inc.

GROUNDWATER SAMPLE LOG SHEET

Page___ of ___

Project Site Name: NASJRB Willow Grove
Project No.: 112G00845

[] Domestic Well Data
[X] Monitoring Well Data
[] Other Well Type:
[] QA Sample Type:

Sample ID No.: 03MW03S20090401
Sample Location: 03MW03S
Sampled By: VS/CM
C.O.C. No.:
Type of Sample:
[X] Low Concentration
[] High Concentration

SAMPLING DATA:

Date: 4/1/09	Color	pH	S.C.	Temp.	Turbidity	DO	ORP	TBD
Time: 1235	Visual	Standard	mS/cm	°C	NTU	mg/l	mV	
Method: Rediflo-2 Pump	clear	6.82	0.223	10.1	0.4	5.29	209	

PURGE DATA:

Date: 4/1/09	Volume	pH	S.C.	Temp. (C)	Turbidity	DO	ORP	TBD
Method: Rediflo-2 Pump	Initial	7.12	0.311	9.9	17.2	4.59	264	
Monitor Reading (ppm): 0.0	0.5 Vol	7.13	0.256	9.8	7.7	3.54	255	
Well Casing Diameter & Material	1.0 Vol	7.01	0.237	9.9	2.3	4.68	234	
Type: 4" PVC	1.5 Vol	6.91	0.236	10.0	2.6	4.77	220	
Total Well Depth (TD): 21.40	2.0 Vol	6.85	0.227	10.1	1.3	5.15	214	
Static Water Level (WL): 5.15	2.5 Vol	6.82	0.227	10.1	0.6	5.18	210	
One Casing Volume(gal/L): 1.064	3.0 Vol	6.82	0.223	10.1	0.2	5.26	211	
Start Purge (hrs): 1150	3.5 Vol	6.82	0.223	10.1	0.4	5.29	209	
End Purge (hrs): 1235								
Total Purge Time (min): 45								
Total Vol. Purged (gal/L): 45								

SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Collected
VOC	HCL	40 ml VOA Vials	2

OBSERVATIONS / NOTES:

The flow rate was 1 gallon Per Minute

Root mat was found at 9.60 feet. Water Level probe would not go through. The pump punched thoough total depth was 21.40 feet

Circle if Applicable:

MS/MSD

Duplicate ID No.: 03Dup02 20090401
Assigned Time = 0000

Signature(s):

TBD: To Be Determined

Tetra Tech NUS, Inc.

GROUNDWATER SAMPLE LOG SHEET

Project Site Name: NASJRB Willow Grove
Project No.: 112G00845

[] Domestic Well Data
[X] Monitoring Well Data
[] Other Well Type: _____
[] QA Sample Type: _____

Sample ID No.: 03MW03SI 20090401
Sample Location: 03MW03SI
Sampled By: VS/CM
C.O.C. No.: _____
Type of Sample:
[X] Low Concentration
[] High Concentration

SAMPLING DATA:

Date: 4-1-09	Color	pH	S.C.	Temp.	Turbidity	DO	ORP	TBD
Time: 1338	Visual	Standard	mS/cm	^{0}C	NTU	mg/l	mV	
Method: Artesian Flow	Clear	7.38	0.276	12.1	0.0	6.14	219	

PURGE DATA:

Date: 4/1/09	Volume	pH	S.C.	Temp. (C)	Turbidity	DO	ORP	TBD
Method: Rediflo2 Pump	Initial	7.20	0.278	12.0	0.0	7.47	221	
Monitor Reading (ppm): 0.0	0.5 Vol	7.32	0.276	12.2	0.0	6.33	219	
Well Casing Diameter & Material	1.0 Vol	7.34	0.277	12.1	0.0	6.38	219	
Type: 2" PVC	1.5 Vol	7.43	0.266	12.1	0.0	7.96	226	
Total Well Depth (TD): 90.00	2.0 Vol	7.38	0.279	12.1	0.0	6.09	223	
Static Water Level (WL): -0-	2.5 Vol	7.38	0.277	12.1	0.0	6.13	220	
One Casing Volume(gal/L): 13.04	3.0 Vol	7.38	0.276	12.1	0.0	6.14	219	
Start Purge (hrs): 1250								
End Purge (hrs): 1338								
Total Purge Time (min): 48								
Total Vol. Purged (gal/L): 48								

SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Collected
VOC	HCL	40 ml VOA Vials	2

OBSERVATIONS / NOTES:

80
.163
240
480
80
13040

Circle if Applicable:

MS/MSD | Duplicate ID No.:

Signature(s):

TBD: To Be Determined

Tetra Tech NUS, Inc.

GROUNDWATER SAMPLE LOG SHEET

Project Site Name: NASJRB Willow Grove
Project No.: 112G00845

[] Domestic Well Data
[X] Monitoring Well Data
[] Other Well Type: _____
[] QA Sample Type: _____

Sample ID No.: 03MW03E20090401
Sample Location: 03MW03E
Sampled By: VS/CM
C.O.C. No.: _____
Type of Sample:
[X] Low Concentration
[] High Concentration

SAMPLING DATA:

Date: 4/11/09 Time: 1555	Color Visual	pH Standard	S.C. mS/cm	Temp. ^{0}C	Turbidity NTU	DO mg/l	ORP mV	TBD
Method: Rediflo-2 Pump	Clear	8.89	0.297	12.8	0.0	6.82	167	

PURGE DATA:

Date: 4/11/09	Volume	pH	S.C.	Temp. (C)	Turbidity	DO	ORP	TBD
Method: Rediflo-2 Pump	Initial	8.30	0.328	12.4	0.3	9.60	205	
Monitor Reading (ppm): 0.0	0.5 Vol	9.52	0.306	12.7	0.0	6.69	168	
Well Casing Diameter & Material	1.0 Vol	9.24	0.301	12.7	0.0	6.87	166	
Type: 4" PVC	1.5 Vol	9.04	0.299	12.8	0.0	6.81	168	
Total Well Depth (TD): 170.00	2.0 Vol	8.95	0.299	12.8	0.0	6.85	167	
Static Water Level (WL): -0-	2.5 Vol	8.91	0.298	12.8	0.0	6.87	168	
One Casing Volume(gal/L): 111.01	3.0 Vol	8.89	0.297	12.8	0.0	6.82	167	
Start Purge (hrs): 1355								
End Purge (hrs): 1555								
Total Purge Time (min): 120								
Total Vol. Purged (gal/L): 360								

SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Collected
VOC	HCL	40 ml VOA Vials	2

OBSERVATIONS / NOTES:

Flow rate of 3 gpm

Circle if Applicable:

MS/MSD	Duplicate ID No.:

Signature(s):

TBD: To Be Determined

Tetra Tech NUS, Inc.

GROUNDWATER SAMPLE LOG SHEET

Page___ of ___

Project Site Name: NASJRB Willow Grove
Project No.: 112G00845

[] Domestic Well Data
[X] Monitoring Well Data
[] Other Well Type:
[] QA Sample Type:

Sample ID No.: 03MW04S L0090402
Sample Location: 03MW04S
Sampled By: VS/CM
C.O.C. No.:
Type of Sample:
[X] Low Concentration
[] High Concentration

SAMPLING DATA:

Date: 4/2/09	Color	pH	S.C.	Temp.	Turbidity	DO	ORP	TBD
Time: 0955	Visual	Standard	mS/cm	^{0}C	NTU	mg/l	mV	
Method: Redi-flo-2 Pump	clear	6.92	0.429	13.1	3.9	7.43	194	

PURGE DATA:

Date: 4/2/09	Volume	pH	S.C.	Temp. (C)	Turbidity	DO	ORP	TBD
Method: Redi-flo-2 Pump	Initial	6.83	0.424	11.8	30.5	7.81	196	
Monitor Reading (ppm): 0.0	0.5 vol	6.76	0.422	12.3	227.9	8.28	289	
Well Casing Diameter & Material	1.0 vol	6.89	0.427	12.7	46.8	7.56	271	
Type: 4" PVC	1.5 vol	6.92	0.430	12.2	11.4	7.50	239	
Total Well Depth (TD): 37.00	2.0 vol	6.90	0.430	12.8	14.5	7.53	222	
Static Water Level (WL): 13.62	2.5 vol	6.93	0.429	13.0	6.5	7.39	207	
One Casing Volume(gal/L): 15.24	3.0 vol	6.82	0.429	13.1	3.9	7.43	194	
Start Purge (hrs): 0830								
End Purge (hrs): 0955								
Total Purge Time (min): 85								
Total Vol. Purged (gal/L): 45								

SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Collected
VOC	HCL	40 ml VOA Vials	2

OBSERVATIONS / NOTES:

The flow rate was 0.5 gpm. The initial volume from the well was a dark brown in color with what appeared to be an algae type material. The water had no odor or sheen present. The water began to clear after 1 volume was removed from the well

Circle if Applicable:

MS/MSD	Duplicate ID No.:

Signature(s):

TBD: To Be Determined

Tetra Tech NUS, Inc.

GROUNDWATER SAMPLE LOG SHEET

Page___ of ___

Project Site Name: NASJRB Willow Grove
Project No.: 112G00845

[] Domestic Well Data
[X] Monitoring Well Data
[] Other Well Type:
[] QA Sample Type:

Sample ID No.: 03MW045E20090402
Sample Location: 03MW045E
Sampled By: VS/CM
C.O.C. No.:
Type of Sample:
[X] Low Concentration
[] High Concentration

SAMPLING DATA:

Date: 4-2-09	Color	pH	S.C.	Temp.	Turbidity	DO	ORP	TBD
Time: 1045	Visual	Standard	mS/cm	^{0}C	NTU	mg/l	mV	
Method: Redi-Flow pump	clear	6.95	0.415	12.1	0.4	7.45	172	

PURGE DATA:

Date: 4/2/09	Volume	pH	S.C.	Temp. (C)	Turbidity	DO	ORP	TBD
Method: Redi-flo-2 Pump	Initial	7.03	0.417	11.9	1.4	7.10	144	
Monitor Reading (ppm): 0.0	0.5 vol	6.98	0.417	12.0	0.5	7.60	151	
Well Casing Diameter & Material	1.0	7.00	0.419	12.1	3.4	7.51	159	
Type: 2" PVC	1.5	6.97	0.417	12.0	0.7	7.53	165	
Total Well Depth (TD): 81.00	2.0	6.98	0.417	12.1	0.4	7.50	169	
Static Water Level (WL): 4.61	2.5	6.96	0.415	12.1	0.4	7.47	171	
One Casing Volume(gal/L): 12.45	3.0	6.95	0.415	12.1	0.4	7.45	172	
Start Purge (hrs): 1005								
End Purge (hrs): 1045								
Total Purge Time (min): 40								
Total Vol. Purged (gal/L): 40								

SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Collected
VOC	HCL	40 ml VOA Vials	2

OBSERVATIONS / NOTES:

Flow Rate = 1 gpm water clear no odor or sheen

Circle if Applicable:

MS/MSD | Duplicate ID No.:

Signature(s):

TBD: To Be Determined

Tetra Tech NUS, Inc.

GROUNDWATER SAMPLE LOG SHEET

Project Site Name: NASJRB Willow Grove
Project No.: 112G00845

[] Domestic Well Data
[X] Monitoring Well Data
[] Other Well Type:
[] QA Sample Type:

Sample ID No.: 03MW04I 20090402
Sample Location: 03MW04I
Sampled By: VS/CM
C.O.C. No.:
Type of Sample:
[X] Low Concentration
[] High Concentration

SAMPLING DATA:

Date: 4/2/09	Color	pH	S.C.	Temp.	Turbidity	DO	ORP	TBD
Time: 1110	Visual	Standard	mS/cm	^{0}C	NTU	mg/l	mV	
Method: Redi flo-2 Pump	clear	7.30	0.346	12.1	0.4	7.07	138	

PURGE DATA:

Date: 4/2/09	Volume	pH	S.C.	Temp. (C)	Turbidity	DO	ORP	TBD
Method: Redi flo-2 Pump	Initial	6.76	0.1924	11.0	0.4	7.32	277	
Monitor Reading (ppm): 0.0	0.5 Vol	7.11	0.339	11.9	0.5	7.44	270	
Well Casing Diameter & Material	1.0 Vol	7.22	0.329	12.0	0.5	6.97	243	
Type: 4" PVC	1.5 Vol	7.19	0.345	12.0	0.4	7.05	193	
Total Well Depth (TD): 170.00	2.0 Vol	7.24	0.346	12.1	0.4	7.09	164	
Static Water Level (WL): ~0~	2.5 Vol	7.29	0.346	12.1	0.4	7.10	145	
One Casing Volume(gal/L): 111.01	3.0 Vol	7.30	0.346	12.1	0.4	7.07	138	
Start Purge (hrs): 0810								
End Purge (hrs): 1110								
Total Purge Time (min): 180								
Total Vol. Purged (gal/L): 360								

SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Collected
VOC	HCL	40 ml VOA Vials	2

OBSERVATIONS / NOTES:

Flow rate is 2 gpm. The water was clear with no odor or sheen present

Circle if Applicable:

MS/MSD | Duplicate ID No.:

Signature(s):

TBD: To Be Determined

Tetra Tech NUS, Inc.

GROUNDWATER SAMPLE LOG SHEET

Page___ of ___

Project Site Name: Willow Grove JRB Site 3
Project No.: 112G00845

[] Domestic Well Data
[X] Monitoring Well Data
[] Other Well Type:
[] QA Sample Type:

Sample ID No.: 03MW07S20090402
Sample Location: 03MW07S
Sampled By: CM/VS
C.O.C. No.:
Type of Sample:
[X] Low Concentration
[] High Concentration

SAMPLING DATA:

Date: 4/02/09	Color	pH	S.C.	Temp.	Turbidity	DO	ORP	TBD
Time: 1210	Visual	Standard	mS/cm	°C	NTU	mg/l	mV	
Method: Redi-flo-2 Pump	clear	6.22	0.647	14.9	0.0	7.15	200	

PURGE DATA:

Date: 4/2/09	Volume	pH	S.C.	Temp. (C)	Turbidity	DO	ORP	TBD
Method: Redi-flo-2 pump								
Monitor Reading (ppm): 0.0								
Well Casing Diameter & Material Type: 2" PVC	(See Low Flow Purge Data sheet)							
Total Well Depth (TD): 46.92								
Static Water Level (WL): 12.94								
Two Screen Vol's (gal/L): 3.28								
Start Purge (hrs): 1105								
End Purge (hrs): 1205								
Total Purge Time (min): 60								
Total Vol. Purged (gal/L): 4.0								

SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Collected
VOC	HCL	40 ml VOA Vials	6

OBSERVATIONS / NOTES:

Vertical Pump Placement = 42 feet BTOC
Flowrate 250 ml/min NO draw down water clear with no odor or sheen present

Circle if Applicable:

(MS/MSD) Duplicate ID No.:

Signature(s):

TBD: To Be Determined

Tetra Tech NUS, Inc.

LOW FLOW PURGE DATA SHEET

PROJECT SITE NAME: Willow Grove JRB Site 3 **WELL ID.:** 03MW07S20090402
PROJECT NUMBER: 112G00845 **DATE:** 4/21/09

Time (Hrs.)	Water Level (Ft. below TOC)	Flow (mL/Min.)	pH (S.U.)	Cond. (mS/cm)	Turb. (NTU)	DO (mg/L)	Temp. (Celsius)	ORP (mV)	Vertical Pump Placement Other Comments
1105	12.94	250	5.97	0.640	15.1	6.52	13.0	235	42 FT BTOC
1110	13.00	300	6.02	0.623	8.6	8.92	13.7	228	
1115	12.98	250	6.11	0.631	0.7	8.53	14.0	216	
1120	12.98	250	6.14	0.650	0.2	8.36	14.1	207	
1125	12.98	250	6.16	0.655	0.0	8.11	14.5	202	
1130	12.98	250	6.18	0.648	0.0	7.96	14.5	200	
1135	12.98	250	6.19	0.646	0.0	7.82	14.7	200	
1140	12.98	250	6.21	0.645	0.0	7.60	14.9	200	
1145	12.98	250	6.21	0.645	0.0	7.55	14.8	200	
1150	12.98	250	6.22	0.645	0.0	7.42	14.9	200	
1155	12.98	250	6.22	0.646	0.0	7.34	14.9	200	
1200	12.99	250	6.21	0.644	0.0	7.19	15.0	200	
1205	12.94	250	6.22	0.647	0.0	7.15	14.9	200	
1210	Sample	03MW07S20090402			MS/MSD	was	collected		

CALCULATIONS

SIGNATURE(S): _____ **PAGE** 1 **OF** 1

Tetra Tech NUS, Inc.

GROUNDWATER SAMPLE LOG SHEET

Page___ of ___

Project Site Name: NASJRB Willow Grove
Project No.: 112G00845

[] Domestic Well Data
[X] Monitoring Well Data
[] Other Well Type: _____
[] QA Sample Type: _____

Sample ID No.: 03IW01200904O1
Sample Location: 03IW01
Sampled By: VS/CM
C.O.C. No.: _____
Type of Sample:
[X] Low Concentration
[] High Concentration

SAMPLING DATA:

Date: 4/1/09	Color	pH	S.C.	Temp.	Turbidity	DO	ORP	TBD
Time: 1025	Visual	Standard	mS/cm	°C	NTU	mg/l	mV	
Method: Artesian Well	clear	6.52	0.745	12.7	0.10	6.48	273	

PURGE DATA:

Date: N/A	Volume	pH	S.C.	Temp. (C)	Turbidity	DO	ORP	TBD
Method: N/A								
Monitor Reading (ppm): N/A								
Well Casing Diameter & Material								
Type: N/A								
Total Well Depth (TD): N/A								
Static Water Level (WL): N/A								
One Casing Volume(gal/L): N/A								
Start Purge (hrs): N/A								
End Purge (hrs): N/A								
Total Purge Time (min): N/A								
Total Vol. Purged (gal/L): N/A								

Artesian Well

SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Collected
VOC	HCL	40 ml VOA Vials	2

OBSERVATIONS / NOTES:

The well is under artesian pressure used by the golf course for irrigation. The water discharges to the unnamed tributary

Circle if Applicable:

MS/MSD	Duplicate ID No.:

Signature(s):

TBD: To Be Determined

Tetra Tech NUS, Inc.

SURFACE WATER SAMPLE LOG SHEET

Project Site Name: NASJRB Willow Grove
Project No.: 112G00845

Sample ID No.: 035W10 20090401
Sample Location: 035W10
Sampled By: ~~DW/CM~~ VS/CM
C.O.C. No.:

[X] Stream
[] Spring
[] Pond
[] Lake
[] Other:
[] QA Sample Type:

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

SAMPLING DATA:

Date: 4/1/09 Time: 1040 Depth: 0-6 Method: Sample Bottles	Color Visual	pH Standard	S.C. mS/cm	Temp. Degrees C	Turbidity NTU	DO mg/l	ORP Mv	Other NA
	clear	7.17	0.223	10.3	2.9	8.93	219	

SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Collected
VOC	HCl	40 ml VOA Vial	4

OBSERVATIONS / NOTES:

MAP:

Circle if Applicable:

MS/MSD

Duplicate ID No.: 03Dup01 20090401
Assigned Time = 0000

Signature(s):

Tetra Tech NUS, Inc.

SURFACE WATER SAMPLE LOG SHEET

Project Site Name: NASJRB Willow Grove
Project No.: 112G00845

[X] Stream
[] Spring
[] Pond
[] Lake
[] Other: _____
[] QA Sample Type: _____

Sample ID No.: 035WI120090401
Sample Location: 035WI1
Sampled By: ~~DW/CM~~ VS/CM
C.O.C. No.: _____

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

SAMPLING DATA:

Date: 4/1/09 Time: 1038 Depth: 0-6" Method: Sample Bottles	Color Visual	pH Standard	S.C. mS/cm	Temp. Degrees C	Turbidity NTU	DO mg/l	ORP Mv	Other NA
	Clear	6.79	0.667	10.3	1.8	9.98	215	

SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Collected
VOC	HCl	40 ml VOA Vial	2

OBSERVATIONS / NOTES:

MAP:

Circle if Applicable:

MS/MSD	Duplicate ID No.:

Signature(s):

APPENDIX C

GROUNDWATER LEVEL DATA

Tetra Tech NUS, Inc.

GROUNDWATER LEVEL MEASUREMENT SHEET

Project Name: NAS JRB Willow Grove Site3
Project No.: 112G00845
Location: Willow Grove JRB
Personnel: CM/VS
Weather Conditions: Cloudy
Measuring Device: Herron Dipper
Tidally Influenced: Yes ___ No _X_
Remarks:

Well or Piezometer Number	Date	Time	Elevation of Reference Point (feet)*	Total Well Depth (feet)*	Water Level Indicator Reading (feet)*	Groundwater Elevation (feet)*	Comments
03MW01S	4/1/2009	8:20	347.49	33.93	24.52	322.97	PID: 0.0
03MS01SI	4/1/2009	8:18	346.98	80.85	26.29	320.69	PID: 0.0
03MW02S	4/1/2009	8:25	326.15	24.26	10.90	315.25	PID: 0.0
03MW03S	4/1/2009	9:16	312.96	9.15	5.15	307.81	PID:0.0
03MW03SI	4/1/2009	9:10	313.75	80.00	5.95 ATOC	319.70	PID: 0.0
03MW04S	4/1/2009	8:41	324.49	36.47	13.66	310.83	PID: 0.0
03MW04SI	4/1/2009	8:40	323.87	80.00	4.90	318.97	PID: 0.0
03MW01I	4/1/2009	8:20	347.50	180.61	11.96	335.54	PID: 0.0
03MW03I	4/1/2009	9:23	315.00	168.50	6.55 ATOC	321.55	PID: 0.0
03MW04I	4/1/2009	8:50	324.85	168.00	7.52 ATOC	332.37	PID: 0.0
03MW05S	4/1/2009	9:34	362.90	40.44	30.33	332.57	PID: 0.0
03MW02SI	4/1/2009	8:27	326.33	66.95	12.91	313.42	PID: 0.0
03MW02I	4/1/2009	8:28	326.38	146.05	6.62	319.76	PID: 0.0
03MW05I	4/1/2009	9:33	362.93	93.98	28.70	334.23	PID: 0.0
03MW06S	4/1/2009	9:44	367.00	38.27	35.10	331.90	PID: 0.0
03MW06SI	4/1/2009	9:45	366.86	86.35	31.30	335.56	PID: 0.0
03MW06I	4/1/2009	9:43	366.82	148.82	31.07	335.75	PID: 0.0
03MW07S	4/1/2009	8:38	324.90	46.33	13.02	311.88	PID: 0.0
03MW08S	4/1/2009	9:39	365.59	69.47	28.30	337.29	PID: 0.0
03MW08D	4/1/2009	9:40	365.63	175.05	28.59	337.04	PID: 0.0

* All measurements to the nearest 0.01 foot

APPENDIX D

DATA VALIDATION REPORT SUMMARIES

TETRA TECH NUS

PHIL- 22988

TO: RUSS TURNER **DATE:** JUNE 4, 2009

FROM: MEGAN RITCHIE **COPIES:** FILE

SUBJECT: ORGANIC DATA VALIDATION – VOC
NAS JRB WILLOW GROVE SITE 3, WILLOW GROVE, PENNSYLVANIA
SDG NO. TWM-006

SAMPLES: 13/Aqueous/

03DUP01	03MW03S	03MW04SI	TB
03DUP02	03MW03SI	03MW07S	
03IW01	03MW04I	03SW10	
03MW03I	03MW04S	03SW11	

*Dates were truncated from the sample ID for simplicity.

OVERVIEW

The sample set for the NAS JRB Willow Grove Site 3 IGWM – Willow Grove, PA, SDG TWM-006 consists of 12 aqueous environmental samples (designated 03IW-, 03MW-, 03SW-, and 03DUP-), and 1 field quality control (QC) blank (designated TB-). Sample 03MW07S was designated for matrix spike/matrix spike duplicate (MS/MSD) analyses. Two field duplicate pairs (03SW10/03DUP01 and 03MW03S/DUP02) were included in this sample set. All samples were analyzed for Target Compound List (TCL) Volatile Organic Compounds (VOCs).

The samples were collected by Tetra Tech NUS on April 1 and 2, 2009 and analyzed by Analytical Laboratories Services, Inc. of Middletown, Pennsylvania.

The analyses were conducted using EPA SW-846 Method 8260B.

SUMMARY

Most analytes were successfully analyzed in all samples. The findings offered in this report are based upon a general review of all available data including data completeness, holding times until analysis, GC/MS tuning and calibration data, laboratory and field quality control blank results, system monitoring compound recoveries, matrix spike/matrix spike duplicate results, laboratory control spike results, internal standards performance, compound identification, compound quantitation, and field duplicate results.

MAJOR PROBLEMS

- The initial calibration relative response factors (RRF) were below the QC criteria of 0.05 for acetone and 2-butanone. The non-detected results for acetone and 2-butanone were qualified as unusable (R) for all samples.

MINOR PROBLEMS

- Positive results at concentrations less than the reporting limits (RLs) were qualified as estimated (J).

NOTES

The continuing calibration percent differences (%Ds) for 2-hexanone and methyl acetate exceeded the QC criteria of 25%. No qualifications were made because there were no positive detections of 2-hexanone or methyl acetate in the associated samples.

EXECUTIVE SUMMARY

Laboratory Performance: Two compounds exceeded initial calibration RRF criteria. Two compounds exceeded the continuing calibration %D criteria.

Other Factors Affecting Data Quality: None.

The data for these analyses were reviewed with reference to the EPA "Functional Guidelines for Organic Data Review", as amended for use within EPA Region 3 (9/94).

The text of this report has been formatted to address only those problem areas affecting data quality.

"I attest that the data referenced herein were validated according to the agreed upon validation criteria as specified in the Functional Guidelines and the Quality Assurance Project Plan (QAPjP)."

Megan Ritchie

Megan N. Ritchie
Chemist

Russell Sloboda

Tetra Tech NUS, Inc.
Russell Sloboda
Data Validation Quality Assurance Officer

Attachments:

1. Appendix A - Qualified Analytical Results
2. Appendix B - Laboratory Analytical Results
3. Appendix C – Support Documentation

APPENDIX A

Qualified Analytical Results

PROJ_NO: 00845

SDG: TWM-006 MEDIA: WATER DATA FRACTION: OV

nsample	03DUP0120090401	nsample	03DUP0120090401	nsample	03DUP0220090401
samp_date	4/1/2009	samp_date	4/1/2009	samp_date	4/1/2009
lab_id	9783420008	lab_id	9783420008	lab_id	9783420009
qc_type	FD	qc_type	FD	qc_type	FD
units	UG/L	units	UG/L	units	UG/L
Pct_Solids		Pct_Solids		Pct_Solids	
DUP_OF:	03SW1020090401	DUP_OF:	03SW1020090401	DUP_OF:	03MW03S20090401

Parameter	Result	Val Qual	Qual Code
1,1,1-TRICHLOROETHANE	1	U	
1,1,2,2-TETRACHLOROETHANE	1	U	
1,1,2-TRICHLOROETHANE	1	U	
1,1,2-TRICHLOROTRIFLUOROETHANE	1	U	
1,1-DICHLOROETHANE	1	U	
1,1-DICHLOROETHENE	1	U	
1,2,3-TRICHLOROBENZENE	2	U	
1,2,4-TRICHLOROBENZENE	2	U	
1,2-DIBROMO-3-CHLOROPROPANE	7	U	
1,2-DIBROMOETHANE	1	U	
1,2-DICHLOROBENZENE	1	U	
1,2-DICHLOROETHANE	1	U	
1,2-DICHLOROPROPANE	1	U	
1,3-DICHLOROBENZENE	1	U	
1,4-DICHLOROBENZENE	1	U	
2-BUTANONE	10	UR	C
2-HEXANONE	5	U	
4-METHYL-2-PENTANONE	5	U	
ACETONE	10	UR	C
BENZENE	1	U	
BROMOCHLOROMETHANE	1	U	
BROMODICHLOROMETHANE	1	U	
BROMOFORM	1	U	
BROMOMETHANE	1	U	
CARBON DISULFIDE	1	U	
CARBON TETRACHLORIDE	1	U	
CHLOROBENZENE	1	U	
CHLORODIBROMOMETHANE	1	U	
CHLOROETHANE	1	U	
CHLOROFORM	1	U	
CHLOROMETHANE	1	U	
CIS-1,2-DICHLOROETHENE	1	U	
CIS-1,3-DICHLOROPROPENE	1	U	
CYCLOHEXANE	1	U	
DICHLORODIFLUOROMETHANE	1	U	
ETHYLBENZENE	1	U	
ISOPROPYLBENZENE	1	U	
M+P-XYLENES	2	U	
METHYL ACETATE	2	U	
METHYL CYCLOHEXANE	1	U	
METHYL TERT-BUTYL ETHER	1	U	
METHYLENE CHLORIDE	1	U	
O-XYLENE	1	U	
STYRENE	1	U	
TETRACHLOROETHENE	1	U	
TOLUENE	1	U	
TRANS-1,2-DICHLOROETHENE	1	U	
TRANS-1,3-DICHLOROPROPENE	1	U	
TRICHLOROETHENE	1	U	
TRICHLOROFLUOROMETHANE	1	U	
VINYL CHLORIDE	1	U	
1,1,1-TRICHLOROETHANE	1	U	
1,1,2,2-TETRACHLOROETHANE	1	U	
1,1,2-TRICHLOROETHANE	1	U	
1,1,2-TRICHLOROTRIFLUOROETHANE	1	U	
1,1-DICHLOROETHANE	1	U	
1,1-DICHLOROETHENE	1	U	
1,2,3-TRICHLOROBENZENE	2	U	
1,2,4-TRICHLOROBENZENE	2	U	
1,2-DIBROMO-3-CHLOROPROPANE	7	U	
1,2-DIBROMOETHANE	1	U	
1,2-DICHLOROBENZENE	1	U	
1,2-DICHLOROETHANE	1	U	
1,2-DICHLOROPROPANE	1	U	
1,3-DICHLOROBENZENE	1	U	
1,4-DICHLOROBENZENE	1	U	
2-BUTANONE	10	UR	C
2-HEXANONE	5	U	
4-METHYL-2-PENTANONE	5	U	
ACETONE	10	UR	C
BENZENE	1	U	
BROMOCHLOROMETHANE	1	U	
BROMODICHLOROMETHANE	1	U	
BROMOFORM	1	U	
BROMOMETHANE	1	U	
CARBON DISULFIDE	1	U	
CARBON TETRACHLORIDE	1	U	
CHLOROBENZENE	1	U	
CHLORODIBROMOMETHANE	1	U	
CHLOROETHANE	1	U	
CHLOROFORM	1	U	
CHLOROMETHANE	1	U	
CIS-1,2-DICHLOROETHENE	1	U	

nsample	03DUP0220090401	nsample	03IW0120090401	nsample	03IW0120090401
samp_date	4/1/2009	samp_date	4/1/2009	samp_date	4/1/2009
lab_id	9783420009	lab_id	9783420002	lab_id	9783420002
qc_type	FD	qc_type	NM	qc_type	NM
units	UG/L	units	UG/L	units	UG/L
Pct_Solids		Pct_Solids		Pct_Solids	
DUP_OF:	03MW03S20090401	DUP_OF:		DUP_OF:	

Parameter	Result	Val Qual	Qual Code
CIS-1,3-DICHLOROPROPENE	1	U	
CYCLOHEXANE	1	U	
DICHLORODIFLUOROMETHANE	1	U	
ETHYLBENZENE	1	U	
ISOPROPYLBENZENE	1	U	
M+P-XYLENES	2	U	
METHYL ACETATE	2	U	
METHYL CYCLOHEXANE	1	U	
METHYL TERT-BUTYL ETHER	0.42	J	P
METHYLENE CHLORIDE	1	U	
O-XYLENE	1	U	
STYRENE	1	U	
TETRACHLOROETHENE	3.2		
TOLUENE	1	U	
TRANS-1,2-DICHLOROETHENE	1	U	
TRANS-1,3-DICHLOROPROPENE	1	U	
TRICHLOROETHENE	1	U	
TRICHLOROFLUOROMETHANE	1	U	
VINYL CHLORIDE	1	U	

Parameter	Result	Val Qual	Qual Code
1,1,1-TRICHLOROETHANE	1	U	
1,1,2,2-TETRACHLOROETHANE	1	U	
1,1,2-TRICHLOROETHANE	1	U	
1,1,2-TRICHLOROTRIFLUOROETHANE	0.48	J	P
1,1-DICHLOROETHANE	1	U	
1,1-DICHLOROETHENE	1	U	
1,2,3-TRICHLOROBENZENE	2	U	
1,2,4-TRICHLOROBENZENE	2	U	
1,2-DIBROMO-3-CHLOROPROPANE	7	U	
1,2-DIBROMOETHANE	1	U	
1,2-DICHLOROBENZENE	1	U	
1,2-DICHLOROETHANE	1	U	
1,2-DICHLOROPROPANE	1	U	
1,3-DICHLOROBENZENE	1	U	
1,4-DICHLOROBENZENE	1	U	
2-BUTANONE	10	UR	C
2-HEXANONE	5	U	
4-METHYL-2-PENTANONE	5	U	
ACETONE	10	UR	C
BENZENE	1	U	
BROMOCHLOROMETHANE	1	U	
BROMODICHLOROMETHANE	1	U	
BROMOFORM	1	U	
BROMOMETHANE	1	U	
CARBON DISULFIDE	1	U	
CARBON TETRACHLORIDE	1	U	
CHLOROBENZENE	1	U	
CHLORODIBROMOMETHANE	1	U	
CHLOROETHANE	1	U	
CHLOROFORM	1	U	
CHLOROMETHANE	1	U	
CIS-1,2-DICHLOROETHENE	1	U	

Parameter	Result	Val Qual	Qual Code
CIS-1,3-DICHLOROPROPENE	1	U	
CYCLOHEXANE	1	U	
DICHLORODIFLUOROMETHANE	1	U	
ETHYLBENZENE	1	U	
ISOPROPYLBENZENE	1	U	
M+P-XYLENES	2	U	
METHYL ACETATE	2	U	
METHYL CYCLOHEXANE	1	U	
METHYL TERT-BUTYL ETHER	1	U	
METHYLENE CHLORIDE	1	U	
O-XYLENE	1	U	
STYRENE	1	U	
TETRACHLOROETHENE	4.4		
TOLUENE	1	U	
TRANS-1,2-DICHLOROETHENE	1	U	
TRANS-1,3-DICHLOROPROPENE	1	U	
TRICHLOROETHENE	1	U	
TRICHLOROFLUOROMETHANE	1	U	
VINYL CHLORIDE	1	U	

PROJ_NO: 00845

SDG: TWM-006 MEDIA: WATER DATA FRACTION: OV

nsample	03MW03I200904011	nsample	03MW03I200904011	nsample	03MW03S20090401
samp_date	4/1/2009	samp_date	4/1/2009	samp_date	4/1/2009
lab_id	9783420007	lab_id	9783420007	lab_id	9783420005
qc_type	NM	qc_type	NM	qc_type	NM
units	UG/L	units	UG/L	units	UG/L
Pct_Solids		Pct_Solids		Pct_Solids	
DUP_OF:		DUP_OF:		DUP_OF:	

Parameter	Result	Val Qual	Qual Code
1,1,1-TRICHLOROETHANE	1	U	
1,1,2,2-TETRACHLOROETHANE	1	U	
1,1,2-TRICHLOROETHANE	1	U	
1,1,2-TRICHLOROTRIFLUOROETHANE	1	U	
1,1-DICHLOROETHANE	1	U	
1,1-DICHLOROETHENE	1	U	
1,2,3-TRICHLOROBENZENE	2	U	
1,2,4-TRICHLOROBENZENE	2	U	
1,2-DIBROMO-3-CHLOROPROPANE	7	U	
1,2-DIBROMOETHANE	1	U	
1,2-DICHLOROBENZENE	1	U	
1,2-DICHLOROETHANE	1	U	
1,2-DICHLOROPROPANE	1	U	
1,3-DICHLOROBENZENE	1	U	
1,4-DICHLOROBENZENE	1	U	
2-BUTANONE	10	UR	C
2-HEXANONE	5	U	
4-METHYL-2-PENTANONE	5	U	
ACETONE	10	UR	C
BENZENE	1	U	
BROMOCHLOROMETHANE	1	U	
BROMODICHLOROMETHANE	1	U	
BROMOFORM	1	U	
BROMOMETHANE	1	U	
CARBON DISULFIDE	1	U	
CARBON TETRACHLORIDE	1	U	
CHLOROBENZENE	1	U	
CHLORODIBROMOMETHANE	1	U	
CHLOROETHANE	1	U	
CHLOROFORM	1	U	
CHLOROMETHANE	1	U	
CIS-1,2-DICHLOROETHENE	1	U	
CIS-1,3-DICHLOROPROPENE	1	U	
CYCLOHEXANE	1	U	
DICHLORODIFLUOROMETHANE	1	U	
ETHYLBENZENE	1	U	
ISOPROPYLBENZENE	1	U	
M+P-XYLENES	2	U	
METHYL ACETATE	2	U	
METHYL CYCLOHEXANE	1	U	
METHYL TERT-BUTYL ETHER	1	U	
METHYLENE CHLORIDE	1	U	
O-XYLENE	1	U	
STYRENE	1	U	
TETRACHLOROETHENE	4.3		
TOLUENE	1	U	
TRANS-1,2-DICHLOROETHENE	1	U	
TRANS-1,3-DICHLOROPROPENE	1	U	
TRICHLOROETHENE	1	U	
TRICHLOROFLUOROMETHANE	1	U	
VINYL CHLORIDE	1	U	
1,1,1-TRICHLOROETHANE	1	U	
1,1,2,2-TETRACHLOROETHANE	1	U	
1,1,2-TRICHLOROETHANE	1	U	
1,1,2-TRICHLOROTRIFLUOROETHANE	1	U	
1,1-DICHLOROETHANE	1	U	
1,1-DICHLOROETHENE	1	U	
1,2,3-TRICHLOROBENZENE	2	U	
1,2,4-TRICHLOROBENZENE	2	U	
1,2-DIBROMO-3-CHLOROPROPANE	7	U	
1,2-DIBROMOETHANE	1	U	
1,2-DICHLOROBENZENE	1	U	
1,2-DICHLOROETHANE	1	U	
1,2-DICHLOROPROPANE	1	U	
1,3-DICHLOROBENZENE	1	U	
1,4-DICHLOROBENZENE	1	U	
2-BUTANONE	10	UR	C
2-HEXANONE	5	U	
4-METHYL-2-PENTANONE	5	U	
ACETONE	10	UR	C
BENZENE	1	U	
BROMOCHLOROMETHANE	1	U	
BROMODICHLOROMETHANE	1	U	
BROMOFORM	1	U	
BROMOMETHANE	1	U	
CARBON DISULFIDE	1	U	
CARBON TETRACHLORIDE	1	U	
CHLOROBENZENE	1	U	
CHLORODIBROMOMETHANE	1	U	
CHLOROETHANE	1	U	
CHLOROFORM	1	U	
CHLOROMETHANE	1	U	
CIS-1,2-DICHLOROETHENE	1	U	

PROJ_NO: 00845

SDG: TWM-006 MEDIA: WATER DATA FRACTION: OV

nsample	03MW03S20090401
samp_date	4/1/2009
lab_id	9783420005
qc_type	NM
units	UG/L
Pct_Solids	
DUP_OF:	

Parameter	Result	Val Qual	Qual Code
CIS-1,3-DICHLOROPROPENE	1	U	
CYCLOHEXANE	1	U	
DICHLORODIFLUOROMETHANE	1	U	
ETHYLBENZENE	1	U	
ISOPROPYLBENZENE	1	U	
M+P-XYLENES	2	U	
METHYL ACETATE	2	U	
METHYL CYCLOHEXANE	1	U	
METHYL TERT-BUTYL ETHER	0.63	J	P
METHYLENE CHLORIDE	1	U	
O-XYLENE	1	U	
STYRENE	1	U	
TETRACHLOROETHENE	3		
TOLUENE	1	U	
TRANS-1,2-DICHLOROETHENE	1	U	
TRANS-1,3-DICHLOROPROPENE	1	U	
TRICHLOROETHENE	1	U	
TRICHLOROFLUOROMETHANE	1	U	
VINYL CHLORIDE	1	U	

nsample	03MW03SI20090401
samp_date	4/1/2009
lab_id	9783420006
qc_type	NM
units	UG/L
Pct_Solids	
DUP_OF:	

Parameter	Result	Val Qual	Qual Code
1,1,1-TRICHLOROETHANE	1	U	
1,1,2,2-TETRACHLOROETHANE	1	U	
1,1,2-TRICHLOROETHANE	1	U	
1,1,2-TRICHLOROTRIFLUOROETHANE	1	U	
1,1-DICHLOROETHANE	1	U	
1,1-DICHLOROETHENE	1	U	
1,2,3-TRICHLOROBENZENE	2	U	
1,2,4-TRICHLOROBENZENE	2	U	
1,2-DIBROMO-3-CHLOROPROPANE	7	U	
1,2-DIBROMOETHANE	1	U	
1,2-DICHLOROBENZENE	1	U	
1,2-DICHLOROETHANE	1	U	
1,2-DICHLOROPROPANE	1	U	
1,3-DICHLOROBENZENE	1	U	
1,4-DICHLOROBENZENE	1	U	
2-BUTANONE	10	UR	C
2-HEXANONE	5	U	
4-METHYL-2-PENTANONE	5	U	
ACETONE	10	UR	C
BENZENE	1	U	
BROMOCHLOROMETHANE	1	U	
BROMODICHLOROMETHANE	1	U	
BROMOFORM	1	U	
BROMOMETHANE	1	U	
CARBON DISULFIDE	1	U	
CARBON TETRACHLORIDE	1	U	
CHLOROBENZENE	1	U	
CHLORODIBROMOMETHANE	1	U	
CHLOROETHANE	1	U	
CHLOROFORM	1	U	
CHLOROMETHANE	1	U	
CIS-1,2-DICHLOROETHENE	1	U	

nsample	03MW03SI20090401
samp_date	4/1/2009
lab_id	9783420006
qc_type	NM
units	UG/L
Pct_Solids	
DUP_OF:	

Parameter	Result	Val Qual	Qual Code
CIS-1,3-DICHLOROPROPENE	1	U	
CYCLOHEXANE	1	U	
DICHLORODIFLUOROMETHANE	1	U	
ETHYLBENZENE	1	U	
ISOPROPYLBENZENE	1	U	
M+P-XYLENES	2	U	
METHYL ACETATE	2	U	
METHYL CYCLOHEXANE	1	U	
METHYL TERT-BUTYL ETHER	1	U	
METHYLENE CHLORIDE	1	U	
O-XYLENE	1	U	
STYRENE	1	U	
TETRACHLOROETHENE	10.8		
TOLUENE	1	U	
TRANS-1,2-DICHLOROETHENE	1	U	
TRANS-1,3-DICHLOROPROPENE	1	U	
TRICHLOROETHENE	1	U	
TRICHLOROFLUOROMETHANE	1	U	
VINYL CHLORIDE	1	U	

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SDG: TWM-006 MEDIA: WATER DATA FRACTION: OV

nsample	03MW04I20090402	nsample	03MW04I20090402	nsample	03MW04S20090402
samp_date	4/2/2009	samp_date	4/2/2009	samp_date	4/2/2009
lab_id	9783420012	lab_id	9783420012	lab_id	9783420010
qc_type	NM	qc_type	NM	qc_type	NM
units	UG/L	units	UG/L	units	UG/L
Pct_Solids		Pct_Solids		Pct_Solids	
DUP_OF:		DUP_OF:		DUP_OF:	

Parameter	Result	Val Qual	Qual Code
1,1,1-TRICHLOROETHANE	1	U	
1,1,2,2-TETRACHLOROETHANE	1	U	
1,1,2-TRICHLOROETHANE	1	U	
1,1,2-TRICHLOROTRIFLUOROETHANE	1	U	
1,1-DICHLOROETHANE	1	U	
1,1-DICHLOROETHENE	1	U	
1,2,3-TRICHLOROBENZENE	2	U	
1,2,4-TRICHLOROBENZENE	2	U	
1,2-DIBROMO-3-CHLOROPROPANE	7	U	
1,2-DIBROMOETHANE	1	U	
1,2-DICHLOROBENZENE	1	U	
1,2-DICHLOROETHANE	1	U	
1,2-DICHLOROPROPANE	1	U	
1,3-DICHLOROBENZENE	1	U	
1,4-DICHLOROBENZENE	1	U	
2-BUTANONE	10	UR	C
2-HEXANONE	5	U	
4-METHYL-2-PENTANONE	5	U	
ACETONE	10	UR	C
BENZENE	1	U	
BROMOCHLOROMETHANE	1	U	
BROMODICHLOROMETHANE	1	U	
BROMOFORM	1	U	
BROMOMETHANE	1	U	
CARBON DISULFIDE	1	U	
CARBON TETRACHLORIDE	1	U	
CHLOROBENZENE	1	U	
CHLORODIBROMOMETHANE	1	U	
CHLOROETHANE	1	U	
CHLOROFORM	1	U	
CHLOROMETHANE	1	U	
CIS-1,2-DICHLOROETHENE	1	U	
CIS-1,3-DICHLOROPROPENE	1	U	
CYCLOHEXANE	1	U	
DICHLORODIFLUOROMETHANE	1	U	
ETHYLBENZENE	1	U	
ISOPROPYLBENZENE	1	U	
M+P-XYLENES	2	U	
METHYL ACETATE	2	U	
METHYL CYCLOHEXANE	1	U	
METHYL TERT-BUTYL ETHER	1	U	
METHYLENE CHLORIDE	1	U	
O-XYLENE	1	U	
STYRENE	1	U	
TETRACHLOROETHENE	0.41	J	P
TOLUENE	1	U	
TRANS-1,2-DICHLOROETHENE	1	U	
TRANS-1,3-DICHLOROPROPENE	1	U	
TRICHLOROETHENE	1	U	
TRICHLOROFLUOROMETHANE	1	U	
VINYL CHLORIDE	1	U	
1,1,1-TRICHLOROETHANE	1	U	
1,1,2,2-TETRACHLOROETHANE	1	U	
1,1,2-TRICHLOROETHANE	1	U	
1,1,2-TRICHLOROTRIFLUOROETHANE	1	U	
1,1-DICHLOROETHANE	1	U	
1,1-DICHLOROETHENE	1	U	
1,2,3-TRICHLOROBENZENE	2	U	
1,2,4-TRICHLOROBENZENE	2	U	
1,2-DIBROMO-3-CHLOROPROPANE	7	U	
1,2-DIBROMOETHANE	1	U	
1,2-DICHLOROBENZENE	1	U	
1,2-DICHLOROETHANE	1	U	
1,2-DICHLOROPROPANE	1	U	
1,3-DICHLOROBENZENE	1	U	
1,4-DICHLOROBENZENE	1	U	
2-BUTANONE	10	UR	C
2-HEXANONE	5	U	
4-METHYL-2-PENTANONE	5	U	
ACETONE	10	UR	C
BENZENE	1	U	
BROMOCHLOROMETHANE	1	U	
BROMODICHLOROMETHANE	1	U	
BROMOFORM	1	U	
BROMOMETHANE	1	U	
CARBON DISULFIDE	1	U	
CARBON TETRACHLORIDE	1	U	
CHLOROBENZENE	1	U	
CHLORODIBROMOMETHANE	1	U	
CHLOROETHANE	1	U	
CHLOROFORM	1	U	
CHLOROMETHANE	1	U	
CIS-1,2-DICHLOROETHENE	1	U	

PROJ_NO: 00845

SDG: TWM-006 MEDIA: WATER DATA FRACTION: OV

nsample	03MW04S20090402
samp_date	4/2/2009
lab_id	9783420010
qc_type	NM
units	UG/L
Pct_Solids	
DUP_OF:	

Parameter	Result	Val Qual	Qual Code
CIS-1,3-DICHLOROPROPENE	1	U	
CYCLOHEXANE	1	U	
DICHLORODIFLUOROMETHANE	1	U	
ETHYLBENZENE	1	U	
ISOPROPYLBENZENE	1	U	
M+P-XYLENES	2	U	
METHYL ACETATE	2	U	
METHYL CYCLOHEXANE	1	U	
METHYL TERT-BUTYL ETHER	1	U	
METHYLENE CHLORIDE	1	U	
O-XYLENE	1	U	
STYRENE	1	U	
TETRACHLOROETHENE	3.1		
TOLUENE	1	U	
TRANS-1,2-DICHLOROETHENE	1	U	
TRANS-1,3-DICHLOROPROPENE	1	U	
TRICHLOROETHENE	1	U	
TRICHLOROFLUOROMETHANE	1	U	
VINYL CHLORIDE	1	U	

nsample	03MW04SI20090402
samp_date	4/2/2009
lab_id	9783420011
qc_type	NM
units	UG/L
Pct_Solids	
DUP_OF:	

Parameter	Result	Val Qual	Qual Code
1,1,1-TRICHLOROETHANE	1	U	
1,1,2,2-TETRACHLOROETHANE	1	U	
1,1,2-TRICHLOROETHANE	1	U	
1,1,2-TRICHLOROTRIFLUOROETHANE	1	U	
1,1-DICHLOROETHANE	1	U	
1,1-DICHLOROETHENE	1	U	
1,2,3-TRICHLOROBENZENE	2	U	
1,2,4-TRICHLOROBENZENE	2	U	
1,2-DIBROMO-3-CHLOROPROPANE	7	U	
1,2-DIBROMOETHANE	1	U	
1,2-DICHLOROBENZENE	1	U	
1,2-DICHLOROETHANE	1	U	
1,2-DICHLOROPROPANE	1	U	
1,3-DICHLOROBENZENE	1	U	
1,4-DICHLOROBENZENE	1	U	
2-BUTANONE	10	UR	C
2-HEXANONE	5	U	
4-METHYL-2-PENTANONE	5	U	
ACETONE	10	UR	C
BENZENE	1	U	
BROMOCHLOROMETHANE	1	U	
BROMODICHLOROMETHANE	1	U	
BROMOFORM	1	U	
BROMOMETHANE	1	U	
CARBON DISULFIDE	1	U	
CARBON TETRACHLORIDE	1	U	
CHLOROBENZENE	1	U	
CHLORODIBROMOMETHANE	1	U	
CHLOROETHANE	1	U	
CHLOROFORM	1	U	
CHLOROMETHANE	1	U	
CIS-1,2-DICHLOROETHENE	1	U	

nsample	03MW04SI20090402
samp_date	4/2/2009
lab_id	9783420011
qc_type	NM
units	UG/L
Pct_Solids	
DUP_OF:	

Parameter	Result	Val Qual	Qual Code
CIS-1,3-DICHLOROPROPENE	1	U	
CYCLOHEXANE	1	U	
DICHLORODIFLUOROMETHANE	1	U	
ETHYLBENZENE	1	U	
ISOPROPYLBENZENE	1	U	
M+P-XYLENES	2	U	
METHYL ACETATE	2	U	
METHYL CYCLOHEXANE	1	U	
METHYL TERT-BUTYL ETHER	1	U	
METHYLENE CHLORIDE	1	U	
O-XYLENE	1	U	
STYRENE	1	U	
TETRACHLOROETHENE	5.7		
TOLUENE	1	U	
TRANS-1,2-DICHLOROETHENE	1	U	
TRANS-1,3-DICHLOROPROPENE	1	U	
TRICHLOROETHENE	1	U	
TRICHLOROFLUOROMETHANE	1	U	
VINYL CHLORIDE	1	U	

PROJ_NO: 00845

SDG: TWM-006 MEDIA: WATER DATA FRACTION: OV

nsample	03MW07S20090402		nsample	03MW07S20090402		nsample	03SW1020090401	
samp_date	4/2/2009		samp_date	4/2/2009		samp_date	4/1/2009	
lab_id	9783420013		lab_id	9783420013		lab_id	9783420004	
qc_type	NM		qc_type	NM		qc_type	NM	
units	UG/L		units	UG/L		units	UG/L	
Pct_Solids			Pct_Solids			Pct_Solids		
DUP_OF:			DUP_OF:			DUP_OF:		

Parameter	Result	Val Qual	Qual Code
1,1,1-TRICHLOROETHANE	1	U	
1,1,2,2-TETRACHLOROETHANE	1	U	
1,1,2-TRICHLOROETHANE	1	U	
1,1,2-TRICHLOROTRIFLUOROETHANE	0.34	J	P
1,1-DICHLOROETHANE	1	U	
1,1-DICHLOROETHENE	1	U	
1,2,3-TRICHLOROBENZENE	2	U	
1,2,4-TRICHLOROBENZENE	2	U	
1,2-DIBROMO-3-CHLOROPROPANE	7	U	
1,2-DIBROMOETHANE	1	U	
1,2-DICHLOROBENZENE	1	U	
1,2-DICHLOROETHANE	1	U	
1,2-DICHLOROPROPANE	1	U	
1,3-DICHLOROBENZENE	1	U	
1,4-DICHLOROBENZENE	1	U	
2-BUTANONE	10	UR	C
2-HEXANONE	5	U	
4-METHYL-2-PENTANONE	5	U	
ACETONE	10	UR	C
BENZENE	1	U	
BROMOCHLOROMETHANE	1	U	
BROMODICHLOROMETHANE	1	U	
BROMOFORM	1	U	
BROMOMETHANE	1	U	
CARBON DISULFIDE	1	U	
CARBON TETRACHLORIDE	1	U	
CHLOROBENZENE	1	U	
CHLORODIBROMOMETHANE	1	U	
CHLOROETHANE	1	U	
CHLOROFORM	1	U	
CHLOROMETHANE	1	U	
CIS-1,2-DICHLOROETHENE	1	U	
CIS-1,3-DICHLOROPROPENE	1	U	
CYCLOHEXANE	1	U	
DICHLORODIFLUOROMETHANE	1	U	
ETHYLBENZENE	1	U	
ISOPROPYLBENZENE	1	U	
M+P-XYLENES	2	U	
METHYL ACETATE	2	U	
METHYL CYCLOHEXANE	1	U	
METHYL TERT-BUTYL ETHER	1	U	
METHYLENE CHLORIDE	1	U	
O-XYLENE	1	U	
STYRENE	1	U	
TETRACHLOROETHENE	0.74	J	P
TOLUENE	1	U	
TRANS-1,2-DICHLOROETHENE	1	U	
TRANS-1,3-DICHLOROPROPENE	1	U	
TRICHLOROETHENE	1	U	
TRICHLOROFLUOROMETHANE	1	U	
VINYL CHLORIDE	1	U	
1,1,1-TRICHLOROETHANE	1	U	
1,1,2,2-TETRACHLOROETHANE	1	U	
1,1,2-TRICHLOROETHANE	1	U	
1,1,2-TRICHLOROTRIFLUOROETHANE	1	U	
1,1-DICHLOROETHANE	1	U	
1,1-DICHLOROETHENE	1	U	
1,2,3-TRICHLOROBENZENE	2	U	
1,2,4-TRICHLOROBENZENE	2	U	
1,2-DIBROMO-3-CHLOROPROPANE	7	U	
1,2-DIBROMOETHANE	1	U	
1,2-DICHLOROBENZENE	1	U	
1,2-DICHLOROETHANE	1	U	
1,2-DICHLOROPROPANE	1	U	
1,3-DICHLOROBENZENE	1	U	
1,4-DICHLOROBENZENE	1	U	
2-BUTANONE	10	UR	C
2-HEXANONE	5	U	
4-METHYL-2-PENTANONE	5	U	
ACETONE	10	UR	C
BENZENE	1	U	
BROMOCHLOROMETHANE	1	U	
BROMODICHLOROMETHANE	1	U	
BROMOFORM	1	U	
BROMOMETHANE	1	U	
CARBON DISULFIDE	1	U	
CARBON TETRACHLORIDE	1	U	
CHLOROBENZENE	1	U	
CHLORODIBROMOMETHANE	1	U	
CHLOROETHANE	1	U	
CHLOROFORM	1	U	
CHLOROMETHANE	1	U	
CIS-1,2-DICHLOROETHENE	1	U	

PROJ_NO: 00845

SDG: TWM-006 MEDIA: WATER DATA FRACTION: OV

nsample	03SW1020090401	nsample	03SW1120090401	nsample	03SW1120090401
samp_date	4/1/2009	samp_date	4/1/2009	samp_date	4/1/2009
lab_id	9783420004	lab_id	9783420003	lab_id	9783420003
qc_type	NM	qc_type	NM	qc_type	NM
units	UG/L	units	UG/L	units	UG/L
Pct_Solids		Pct_Solids		Pct_Solids	
DUP_OF:		DUP_OF:		DUP_OF:	

Parameter	Result	Val Qual	Qual Code
CIS-1,3-DICHLOROPROPENE	1	U	
CYCLOHEXANE	1	U	
DICHLORODIFLUOROMETHANE	1	U	
ETHYLBENZENE	1	U	
ISOPROPYLBENZENE	1	U	
M+P-XYLENES	2	U	
METHYL ACETATE	2	U	
METHYL CYCLOHEXANE	1	U	
METHYL TERT-BUTYL ETHER	1	U	
METHYLENE CHLORIDE	1	U	
O-XYLENE	1	U	
STYRENE	1	U	
TETRACHLOROETHENE	1	U	
TOLUENE	1	U	
TRANS-1,2-DICHLOROETHENE	1	U	
TRANS-1,3-DICHLOROPROPENE	1	U	
TRICHLOROETHENE	1	U	
TRICHLOROFLUOROMETHANE	1	U	
VINYL CHLORIDE	1	U	

Parameter	Result	Val Qual	Qual Code
1,1,1-TRICHLOROETHANE	1	U	
1,1,2,2-TETRACHLOROETHANE	1	U	
1,1,2-TRICHLOROETHANE	1	U	
1,1,2-TRICHLOROTRIFLUOROETHANE	1	U	
1,1-DICHLOROETHANE	1	U	
1,1-DICHLOROETHENE	1	U	
1,2,3-TRICHLOROBENZENE	2	U	
1,2,4-TRICHLOROBENZENE	2	U	
1,2-DIBROMO-3-CHLOROPROPANE	7	U	
1,2-DIBROMOETHANE	1	U	
1,2-DICHLOROBENZENE	1	U	
1,2-DICHLOROETHANE	1	U	
1,2-DICHLOROPROPANE	1	U	
1,3-DICHLOROBENZENE	1	U	
1,4-DICHLOROBENZENE	1	U	
2-BUTANONE	10	UR	C
2-HEXANONE	5	U	
4-METHYL-2-PENTANONE	5	U	
ACETONE	10	UR	C
BENZENE	1	U	
BROMOCHLOROMETHANE	1	U	
BROMODICHLOROMETHANE	1	U	
BROMOFORM	1	U	
BROMOMETHANE	1	U	
CARBON DISULFIDE	1	U	
CARBON TETRACHLORIDE	1	U	
CHLOROBENZENE	1	U	
CHLORODIBROMOMETHANE	1	U	
CHLOROETHANE	1	U	
CHLOROFORM	1	U	
CHLOROMETHANE	1	U	
CIS-1,2-DICHLOROETHENE	1	U	

Parameter	Result	Val Qual	Qual Code
CIS-1,3-DICHLOROPROPENE	1	U	
CYCLOHEXANE	1	U	
DICHLORODIFLUOROMETHANE	1	U	
ETHYLBENZENE	1	U	
ISOPROPYLBENZENE	1	U	
M+P-XYLENES	2	U	
METHYL ACETATE	2	U	
METHYL CYCLOHEXANE	1	U	
METHYL TERT-BUTYL ETHER	1	U	
METHYLENE CHLORIDE	1	U	
O-XYLENE	1	U	
STYRENE	1	U	
TETRACHLOROETHENE	1	U	
TOLUENE	1	U	
TRANS-1,2-DICHLOROETHENE	1	U	
TRANS-1,3-DICHLOROPROPENE	1	U	
TRICHLOROETHENE	1	U	
TRICHLOROFLUOROMETHANE	1	U	
VINYL CHLORIDE	1	U	

nsample	TB-20090401
samp_date	4/1/2009
lab_id	9783420001
qc_type	TB
units	UG/L
Pct_Solids	
DUP_OF:	

Parameter	Result	Val Qual	Qual Code
1,1,1-TRICHLOROETHANE	1	U	
1,1,2,2-TETRACHLOROETHANE	1	U	
1,1,2-TRICHLOROETHANE	1	U	
1,1,2-TRICHLOROTRIFLUOROETHANE	1	U	
1,1-DICHLOROETHANE	1	U	
1,1-DICHLOROETHENE	1	U	
1,2,3-TRICHLOROBENZENE	2	U	
1,2,4-TRICHLOROBENZENE	2	U	
1,2-DIBROMO-3-CHLOROPROPANE	7	U	
1,2-DIBROMOETHANE	1	U	
1,2-DICHLOROBENZENE	1	U	
1,2-DICHLOROETHANE	1	U	
1,2-DICHLOROPROPANE	1	U	
1,3-DICHLOROBENZENE	1	U	
1,4-DICHLOROBENZENE	1	U	
2-BUTANONE	10	UR	C
2-HEXANONE	5	U	
4-METHYL-2-PENTANONE	5	U	
ACETONE	10	UR	C
BENZENE	1	U	
BROMOCHLOROMETHANE	1	U	
BROMODICHLOROMETHANE	1	U	
BROMOFORM	1	U	
BROMOMETHANE	1	U	
CARBON DISULFIDE	1	U	
CARBON TETRACHLORIDE	1	U	
CHLOROBENZENE	1	U	
CHLORODIBROMOMETHANE	1	U	
CHLOROETHANE	1	U	
CHLOROFORM	1	U	
CHLOROMETHANE	1	U	
CIS-1,2-DICHLOROETHENE	1	U	

nsample	TB-20090401
samp_date	4/1/2009
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CIS-1,3-DICHLOROPROPENE	1	U	
CYCLOHEXANE	1	U	
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ETHYLBENZENE	1	U	
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METHYLENE CHLORIDE	1	U	
O-XYLENE	1	U	
STYRENE	1	U	
TETRACHLOROETHENE	1	U	
TOLUENE	1	U	
TRANS-1,2-DICHLOROETHENE	1	U	
TRANS-1,3-DICHLOROPROPENE	1	U	
TRICHLOROETHENE	1	U	
TRICHLOROFLUOROMETHANE	1	U	
VINYL CHLORIDE	1	U	

Qualifier Codes:

a	=	Lab Blank Contamination
b	=	Field Blank Contamination
c	=	Calibration (i.e., %RSDs, %Ds, ICVs, CCVs, RPDs, RRFs, etc.) Noncompliance
d	=	MS/MSD Noncompliance
e	=	LSC/LSCD Noncompliance
f	=	Laboratory Duplicate Imprecision
g	=	Field Duplicate Imprecision
h	=	Holding Time Exceedance
i	=	ICP Serial Dilution Noncompliance
j	=	GFAA PDS – GFAA MSA's r<0.995 (correlation coefficient)
k	=	ICP Interference – include ICSAB %Rs
l	=	Instrument Calibration Range Exceedance
m	=	Sample Preservation
n	=	Internal Standard Noncompliance
n01	=	Internal Standard Recovery Noncompliance Dioxins
n02	=	Recovery Standard Noncompliance Dioxins
n03	=	Clean-up Standard Noncompliance Dioxins
o	=	Poor Instrument Performance (i.e. baseline drifting)
p	=	Uncertainty Near Detection Limit (<2 x IDL for inorganics and < CRQL for organics)
q	=	Other Problems (can encompass of number of issues)
r	=	Surrogates Recovery Noncompliance
s	=	Pesticide/PCB Resolution
t	=	% Breakdown Noncompliance for DDT and Endrin
u	=	Pesticide/PCB % Difference Between Columns for Positive Results
v	=	Non-linear Calibrations, Tuning r <0.995 (correlation coefficient)
w	=	Ratios of primary monitored ions outside of theoretical +/-15 %, within +/- 25 %
x	=	Signal to noise response drop
y	=	Percent solids <30%
z	=	Uncertainty at 2 sigma deviation is greater than sample activity

Data Qualifier Key:

B	- Positive result is considered to be an artifact of blank contamination and should not be considered present.
J	- Value is considered estimated due to exceedance of technical quality control or because result is less than the Contract Required Quantitation Limit (CRQL).
K	- Positive result is considered biased high due to exceedance of technical quality control criteria.
L	- Positive result is considered biased low due to exceedance of technical quality control criteria.
U	- Value is a non-detected result as reported by the laboratory.
UL	- Non-detected result is considered biased low due to exceedance of technical quality control criteria.
UR	- Non-detected result is considered unusable due to exceedance of technical quality control criteria.