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NAS WILLOW GROVE
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Interim Groundwater Monitoring Report
Round 2
Site 3 - Ninth Street Landfill

Naval Air Station
Joint Reserve Base
Willow Grove, Pennsylvania

Naval Facilities Engineering Command
Mid-Atlantic

Contract No. N62467-04-D-0055
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TETRA TECH

SITE 3 - NINTH STREET LANDFILL
INTERIM GROUNDWATER MONITORING REPORT
ROUND 2

INTRODUCTION

Tetra Tech NUS, Inc. (Tetra Tech) has performed Round 2 of Interim Groundwater Monitoring (IGWM) at Site 3 –Ninth Street Landfill at the Naval Air Station Joint Reserve Base (NAS JRB) Willow Grove, Pennsylvania. 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. The Navy and regulatory agencies are currently studying the extent of landfill cells discovered at Site 3 in 2007. IGWM Round 2 field work, consisting of groundwater level measurements, groundwater sampling and surface water sampling at Site 3 was performed from October 13 to October 20, 2008 in accordance with the approved Uniform Federal Procurement (UFP) Sampling and Analysis Plan (SAP) for Interim Groundwater Monitoring; Site 3- Ninth Street Landfill (Tetra Tech, March 2008). This report presents a summary of IGWM Round 2 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 biphenyls (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, and storm water retention basin located approximately 200 feet from the northern limit 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 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 the screening levels. 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 exceeding the RBC. 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.

SCOPE OF THE ROUND 2 GROUNDWATER INVESTIGATION

Groundwater samples were collected from the all of the Site 3 monitoring wells (a total of twenty wells) 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 Round 1, 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 collected for TCL VOCs analysis.

Groundwater elevation measurements were obtained from the twenty site 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). 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 such as 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.

In order to analyze the difference in the results of groundwater samples obtained from the same monitoring well by different sampling methods, EPA requested that both the low-flow sampling and three to five well volumes purging methods be used to collect samples at five well locations: 03MW01SI, 03MW02I, 03MW03S, 03MW04SI and 03MW06I. Table 4 presents the comparison of groundwater PCE concentrations obtained by the different sampling methods.

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 the 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 October 14, 2008. 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.

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 14 October 2008. 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

The 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 October 2008 sampling event included three duplicate samples, one matrix spike (MS), one matrix spike duplicate (MSD), two rinsate blank, one field blank, and four trip blanks. 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, 1998) 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 with the exception of the field quality control (QC) blanks. A low level of contaminant methylene chloride, Chloroform and 1,4-Dioxane was detected in the trip blank. Toluene was detected in the field and rinsate blank. No action was taken because there were no detections in the associated samples. If an analyte was within the action level it was qualified "B" for blank contamination and should be considered unusable.

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

The samples from all 20 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 RBCs Tap Water. Table 5 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 RBCs Tap Water screening levels. Chloroform, 1,1-Dichloroethane, Trichloroethene and tetrachloroethene (PCE) were identified at concentrations above the screening levels. Appendix A presents a summary of groundwater analytical results.

PCE was detected in 03MW01S (2.6 ug/l), 03MW01SI (9.7 ug/l), 03MW02I (9.1 ug/l), 03MW02SI (3.3 ug/l), 03MW03I (10.4 ug/l), 03MW03SI (12.4 ug/l), 03MW03S (2.6 ug/l), 03MW04S (2.7 ug/l), 03MW04SI (3.9 ug/l), 03MW05S (0.49J ug/l), 03MW06S (1.8 ug/l), 03MW07S (0.41J ug/l), 03MW08D (1.3 ug/l) and 03IW01 (5.8 ug/l) exceeding Region 3 RBC.

Chloroform was detected in 03MW03SI (0.57J ug/l), 03MW04S (1.6 ug/l), 03MW04SI (1.6 ug/l) and 03MW07S (1.6 ug/l) exceeding the RBC. 1,1-Dichloroethane (8.2 ug/l) and trichloroethene (3.1 ug/l) were detected in 03MW08D exceeding the RBC. Several other VOCs were also detected in 03MW08D at concentrations below the RBC.

CONCLUSIONS

The October 2008 IGWM Round 2 groundwater sampling results resemble the February 2006 sampling results and the March 2008 IGWM Round 1 sampling results. Bromodichloromethane and dibromochloromethane were not detected at 03MW04S in IGWM Round 2 sampling, but Chloroform was detected in 03MW03I, 03MW04S, 03MW04SI and 03MW07S. Several VOCs were also detected in 03MW08D. It would be difficult to point to a verifiable trend based on these sampling events. However, when the entire data set from 1991 through 2008 (see Table 5) is examined, the concentrations of PCE indicate a decreasing trend over time.

Analytical results indicate that the PCE contamination has migrated off-Base to the adjacent golf course property. PCE was detected in the off-Base Lot 1 irrigation well at 5.8 ug/l. However, 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	D	Redi-Flo2 Pump
03MS01SI	2	60 - 80	346.98	L + V	Peristaltic Pump
03MW02S	4	4.5 - 22.5	326.15	V	Redi-Flo2 Pump
03MW03S	4	5 - 20	312.96	L + V	Redi-Flo2 Pump
03MW03SI	2	60 - 80	313.75	V	Redi-Flo2 Pump
03MW04S	4	5 - 35	324.49	V	Redi-Flo2 Pump
03MW04SI	2	60 - 80	323.87	L + V	Redi-Flo2 Pump
03MW01I	4	159 - 179	347.50	D	Redi-Flo2 Pump
03MW03I	4	148.5 - 168.5	315.00	V	Redi-Flo2 Pump
03MW04I	4	148 - 168	324.85	V	Redi-Flo2 Pump
03MW05S	4	17 - 37	362.90	V	Redi-Flo2 Pump
03MW02SI	2	55 - 65	326.33	L	Redi-Flo2 Pump
03MW02I	2	134 - 144	326.38	L + V	Redi-Flo2 Pump
03MW05I	2	82 - 92	362.93	L	Redi-Flo2 Pump
03MW06S	2	26 - 36	367.00	L	Redi-Flo2 Pump
03MW06SI	2	75 - 85	366.86	L	Redi-Flo2 Pump
03MW06I	2	140 - 150	366.82	L + D	Redi-Flo2 Pump
03MW07S	2	34 - 44	324.90	L	Redi-Flo2 Pump
03MW08S	2	38 - 68	365.59	V	Redi-Flo2 Pump
03MW08D	2	163 - 173	365.63	L	Redi-Flo2 Pump
03IW 01				Bottle Ware	
03SW10				Bottle Ware	
03SW11				Bottle Ware	

Notes:
L = Low-Flow Purging and Sampling. V = Three Well Volumes Purging and Sampling.
D = Pumping to Dry and Sampling the Recharged Groundwater.

TABLE 3
DATA SUMMARY OF POSITIVE ANALYTICAL RESULTS
SITE 3 IGWM - ROUND 2 GROUNDWATER SAMPLES - OCTOBER 2008
NAS JRB WILLOW GROVE, WILLOW GROVE, PENNSYLVANIA

Sample ID:	Project Action Limit	03IW01-20081013		03IW01-20081013-D		03MW01I-20081017		03MW01S-20081016		03MW01SI-20081017		03MW01SIL-20081017		03MW01SIL-20081017-D	
Sample Date:	Region 3 RBC	10/13/08		10/13/08		10/17/08		10/16/08		10/17/08		10/17/08		10/17/08	
Dup Of:	Tap Water			03IW01-20081013										03MW01SIL-20081017	
VOLATILES	ug/L	ug/L		ug/L		ug/L		ug/L		ug/L		ug/L		ug/L	
1,1,1-Trichloroethane	9,100	1	U	1	U	1	U	1	U	1	U	1	U	1	U
1,1,2-Trichlorotrifluoroethane	59,000	0.68	J	0.46	J	1	U	1	U	1	U	1	U	1	U
1,1-Dichloroethane	2.4	1	U	1	U	1	U	1	U	1	U	1	U	1	U
1,1-Dichloroethene	340	1	U	1	U	1	U	1	U	1	U	1	U	1	U
1,2-Dichloroethene (cis)	370	1	U	1	U	1	U	1	U	1	U	1	U	1	U
Chloroform	0.19	0.98	B	1	B	1	U	1	U	1	U	1	U	1	U
Tetrachloroethene	0.11	5.6		6		1	U	2.6		9.7		7.7		7.4	
Trichloroethene	1.7	1	U	1	U	1	U	1	U	1	U	1	U	1	U

TABLE 3
DATA SUMMARY OF POSITIVE ANALYTICAL RESULTS
SITE 3 IGWM - ROUND 2 GROUNDWATER SAMPLES - OCTOBER 2008
NAS JRB WILLOW GROVE, WILLOW GROVE, PENNSYLVANIA

Sample ID:	Project Action Limit	03MW02I-20081020		03MW02IL-20081020		03MW02IL-20081020-D		03MW02S-20081016		03MW02SI-20081017		03MW03I-20081021		03MW03S-20081020	
Sample Date:	Region 3 RBC	10/20/08		10/20/08		10/20/08		10/16/08		10/17/08		10/21/08		10/20/08	
Dup Of:	Tap Water					03MW02IL-20081020									
VOLATILES	ug/L	ug/L		ug/L		ug/L		ug/L		ug/L		ug/L		ug/L	
1,1,1-Trichloroethane	9,100	1	U	1	U	1	U	1	U	1	U	1	U	1	U
1,1,2-Trichlorotrifluoroethane	59,000	1	U	1	U	1	U	1	U	1	U	1	U	1	U
1,1-Dichloroethane	2.4	1	U	1	U	1	U	1	U	1	U	1	U	1	U
1,1-Dichloroethene	340	1	U	1	U	1	U	1	U	1	U	1	U	1	U
1,2-Dichloroethene (cis)	370	1	U	1	U	1	U	1	U	1	U	1	U	1	U
Chloroform	0.19	1	U	1	U	1	U	1	U	1	U	1	U	1	U
Tetrachloroethene	0.11	9.1		7.3		7.6		1	U	3.3		10.4		2.6	
Trichloroethene	1.7	1	U	1	U	1	U	1	U	1	U	1	U	1	U

TABLE 3
DATA SUMMARY OF POSITIVE ANALYTICAL RESULTS
SITE 3 IGWM - ROUND 2 GROUNDWATER SAMPLES - OCTOBER 2008
NAS JRB WILLOW GROVE, WILLOW GROVE, PENNSYLVANIA

Sample ID:	Project Action Limit	03MW03SI-20081021		03MW03SL-20081020		03MW04I-20081014		03MW04S-20081016		03MW04SI-20081014		03MW04SIL-20081014		03MW05I-20081016	
Sample Date:	Region 3 RBC	10/21/08		10/20/08		10/14/08		10/16/08		10/14/08		10/14/08		10/16/08	
Dup Of:	Tap Water														
VOLATILES	ug/L	ug/L		ug/L		ug/L		ug/L		ug/L		ug/L		ug/L	
1,1,1-Trichloroethane	9,100	1	U	1	U	1	U	1	U	1	U	1	U	1	U
1,1,2-Trichlorotrifluoroethane	59,000	1	U	1	U	1	U	1	U	1	U	1	U	1	U
1,1-Dichloroethane	2.4	1	U	1	U	1	U	1	U	1	U	1	U	1	U
1,1-Dichloroethene	340	1	U	1	U	1	U	1	U	1	U	1	U	1	U
1,2-Dichloroethene (cis)	370	1	U	1	U	1	U	1	U	1	U	1	U	1	U
Chloroform	0.19	0.57	J	1	U	1	U	1.6		1.6		1.5		1	U
Tetrachloroethene	0.11	12.4		2.1		1	U	2.7		3.9		4		1	U
Trichloroethene	1.7	1	U	1	U	1	U	1	U	1	U	1	U	1	U

TABLE 3
DATA SUMMARY OF POSITIVE ANALYTICAL RESULTS
SITE 3 IGWM - ROUND 2 GROUNDWATER SAMPLES - OCTOBER 2008
NAS JRB WILLOW GROVE, WILLOW GROVE, PENNSYLVANIA

Sample ID:	Project Action Limit	03MW05S-20081016		03MW06I-20081015		03MW06IL-20081015		03MW06S-20081015		03MW06SI-20081015		03MW07S-20081021		03MW08D-20081015	
Sample Date:	Region 3 RBC	10/16/08		10/15/08		10/15/08		10/15/08		10/15/08		10/21/08		10/15/08	
Dup Of:	Tap Water														
VOLATILES	ug/L	ug/L		ug/L		ug/L		ug/L		ug/L		ug/L		ug/L	
1,1,1-Trichloroethane	9,100	1	U	1	U	1	U	1	U	1	U	1	U	4.1	
1,1,2-Trichlorotrifluoroethane	59,000	1	U	1	U	1	U	1	U	1	U	1	U	1	U
1,1-Dichloroethane	2.4	1	U	1	U	1	U	1	U	1	U	1	U	8.2	
1,1-Dichloroethene	340	1	U	1	U	1	U	1	U	1	U	1	U	5.1	
1,2-Dichloroethene (cis)	370	1	U	1	U	1	U	1	U	1	U	1	U	1.5	
Chloroform	0.19	1	U	1	U	1	U	1	U	1	U	1.6		1	U
Tetrachloroethene	0.11	0.49	J	1	U	1	U	1.8		1	U	0.41	J	1.3	
Trichloroethene	1.7	1	U	1	U	1	U	1	U	1	U	1	U	3.1	

TABLE 3
DATA SUMMARY OF POSITIVE ANALYTICAL RESULTS
SITE 3 IGWM - ROUND 2 GROUNDWATER SAMPLES - OCTOBER 2008
NAS JRB WILLOW GROVE, WILLOW GROVE, PENNSYLVANIA

Sample ID:	Project Action Limit	03MW08S-20081015	
Sample Date:	Region 3 RBC	10/15/08	
Dup Of:	Tap Water		
VOLATILES	ug/L	ug/L	
1,1,1-Trichloroethane	9,100	1	U
1,1,2-Trichlorotrifluoroethane	59,000	1	U
1,1-Dichloroethane	2.4	1	U
1,1-Dichloroethene	340	1	U
1,2-Dichloroethene (cis)	370	1	U
Chloroform	0.19	1	U
Tetrachloroethene	0.11	1	U
Trichloroethene	1.7	1	U

DATA SUMMARY OF POSITIVE VOLATILE ORGANIC COMPOUND RESULTS
SITE 3 GROUNDWATER SAMPLES - OCTOBER 2008
NAS JRB WILLOW GROVE, WILLOW GROVE, PENNSYLVANIA

Data Qualifiers:
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 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.

Shaded cells indicate that the values exceed the Region 3 RBC Screeening Criteria for Tapwater, September 2008.

Database source file: H:\WILLOWGROVE\SITE 3 GW\DATA SUMMARIES\ROUND 2 - OCTOBER 2008\NOV2808N.DBF data retrieved on: 12/01/08

TABLE 4
COMPARISON OF GROUNDWATER PCE CONCENTRATIONS
OBTAINED BY DIFFERENT SAMPLING METHODS
IGWM ROUND 2
SITE 3 – NINTH STREET LANDFILL
NAS JRB WILLOW GROVE, PENNSYLVANIA

WELL	PCE CONCENTRATION (ug/L)	
	Low Flow Sampling Method	Well Volume Sampling Method
03MW01SI	7.6	9.7
03MW02I	7.5	9.1
03MW03S	2.1	2.6
03MW04SI	4	3.9
03MW06I	ND	ND

Notes:

ND = Non-Detected.

TABLE 5
HISTORICAL PCE CONCENTRATIONS IN GROUNDWATER
NINTH STREET LANDFILL
NAS JRB WILLOW GROVE, PENNSYLVANIA

WELL	SAMPLING DATE				
	SEPTEMBER 1991	JUNE 1997	FEBRUARY 2006	MARCH 2008	OCTOBER 2008
SHALLOW WELLS					
03MW01S	15	6J	0.9	1.9	2.6
03MW02S	ND	ND	ND	ND	ND
03MW03S	8	5J	14	2.5	2.6
03MW04S	61	21	9.1	4.5	2.7
03MW05S	7	2J	0.67J	ND	0.49J
03MW06S	NA	29	1.3	0.76J	1.8
03MW07S	NA	ND	1.4	1.1	0.41J
SHALLOW-INTERMEDIATE DEPTH WELLS					
03MW01SI	29	---	4.9	8.8	9.7
03MW02SI	NA	6J	1.9	3.3	3.3
03MW03SI	35	18	12	12	12.4
03MW04SI	56	20	10	4.6	3.9
03MW05I	NA	ND	0.70J	0.46J	ND
03MW06SI	NA	ND	ND	ND	ND
03MW08S	NA	NA	ND	ND	ND
INTERMEDIATE DEPTH WELLS					
03MW01I	ND	ND	0.23J	ND	ND
03MW02I	NA	8J	2.4	7.8	9.1
03MW03I	5	6J	---	6.9	10.4
03MW04I	ND	ND	0.52J	0.45J	ND
03MW06I	NA	39	0.79J	ND	ND
03MW08D	NA	NA	0.78J	1	1.3
OFF-BASE LOT 1 IRRIGATION WELL					
03IW01	25	15 *	---	6.3	5.8

Notes:

The unit of concentrations is ug/L.

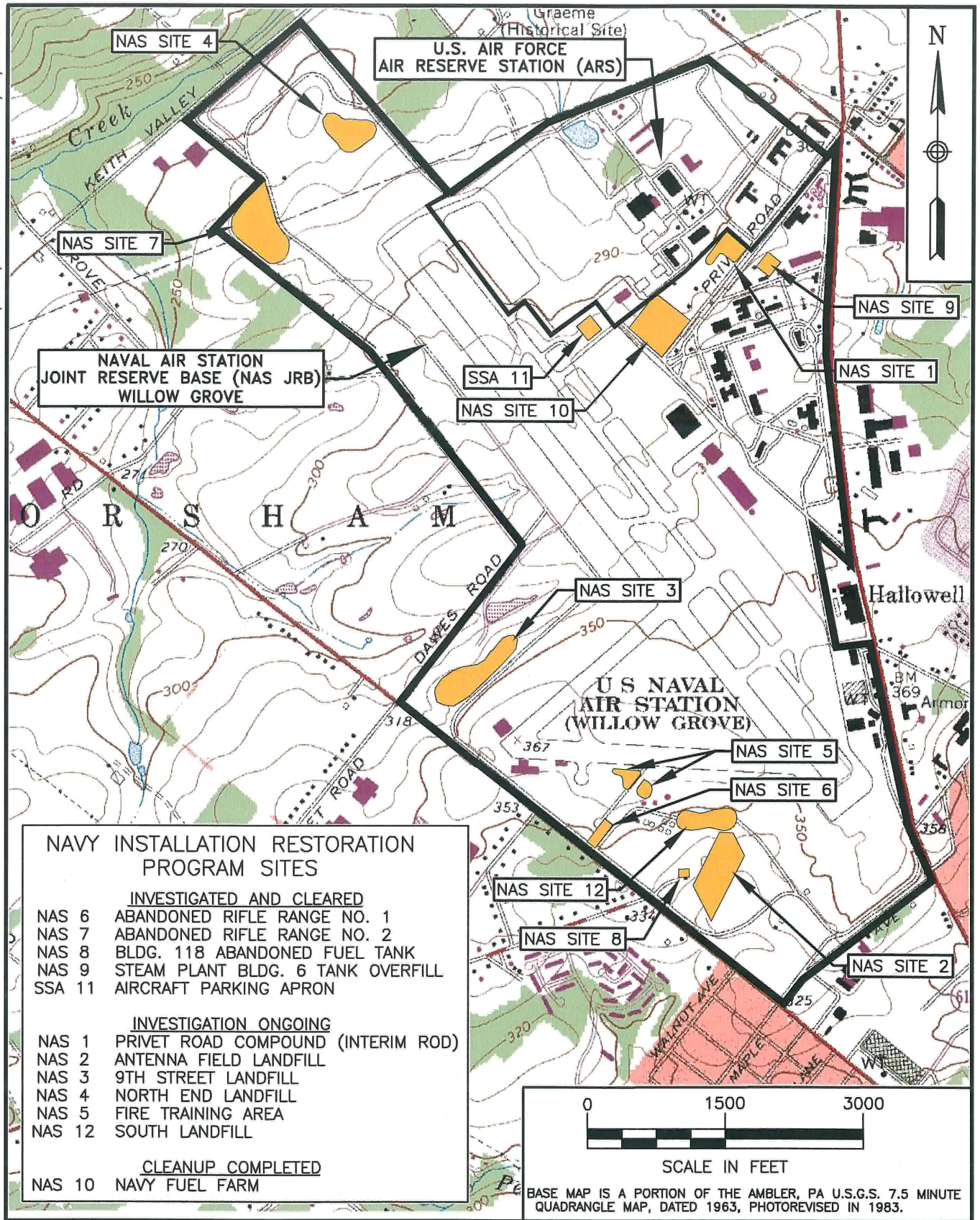
NA = Not Available. Well had not been installed at time of sampling round.

ND = Non-Detected.

* = Sampled March 1998

FIGURES

112G00845\0533\112G00845CM01.DWG 12/31/08 MKB



NAVY INSTALLATION RESTORATION PROGRAM SITES

INVESTIGATED AND CLEARED

NAS 6	ABANDONED RIFLE RANGE NO. 1
NAS 7	ABANDONED RIFLE RANGE NO. 2
NAS 8	BLDG. 118 ABANDONED FUEL TANK
NAS 9	STEAM PLANT BLDG. 6 TANK OVERFILL
SSA 11	AIRCRAFT PARKING APRON

INVESTIGATION ONGOING

NAS 1	PRIVET ROAD COMPOUND (INTERIM ROD)
NAS 2	ANTENNA FIELD LANDFILL
NAS 3	9TH STREET LANDFILL
NAS 4	NORTH END LANDFILL
NAS 5	FIRE TRAINING AREA
NAS 12	SOUTH LANDFILL

CLEANUP COMPLETED

NAS 10	NAVY FUEL FARM

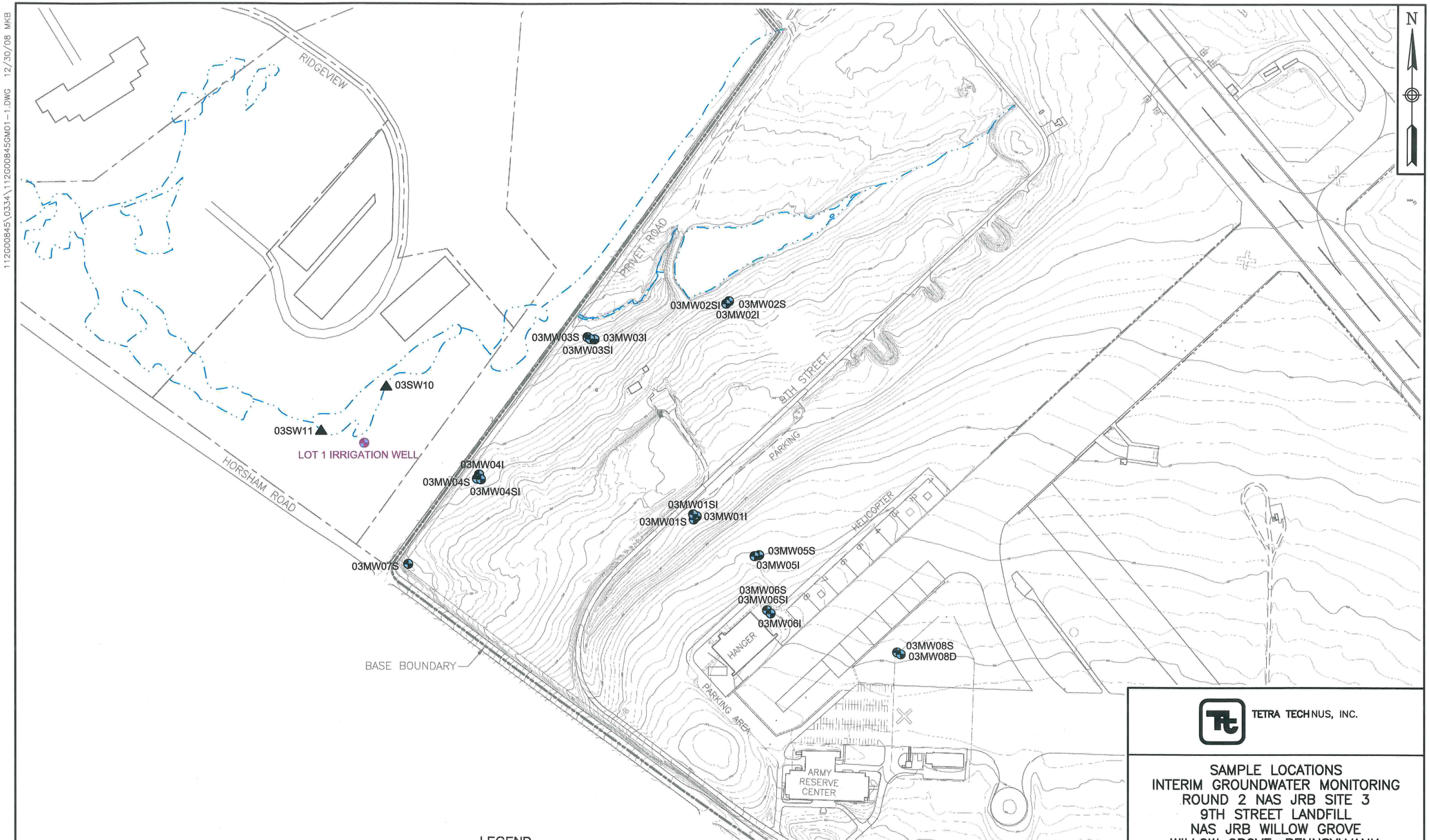
BASE MAP IS A PORTION OF THE AMBLER, PA U.S.G.S. 7.5 MINUTE QUADRANGLE MAP, DATED 1963, PHOTOREVISED IN 1983.

TETRA TECH NUS, INC.

SITE LOCATION MAP
NAS JRB WILLOW GROVE
WILLOW GROVE, PENNSYLVANIA

SCALE	AS NOTED
FILE	112G00845CM01
REV	0
DATE	12/31/08
FIGURE NUMBER	FIGURE 1

112G00845\0334\112G00845GM01-1.DWG 12/30/08 MKB

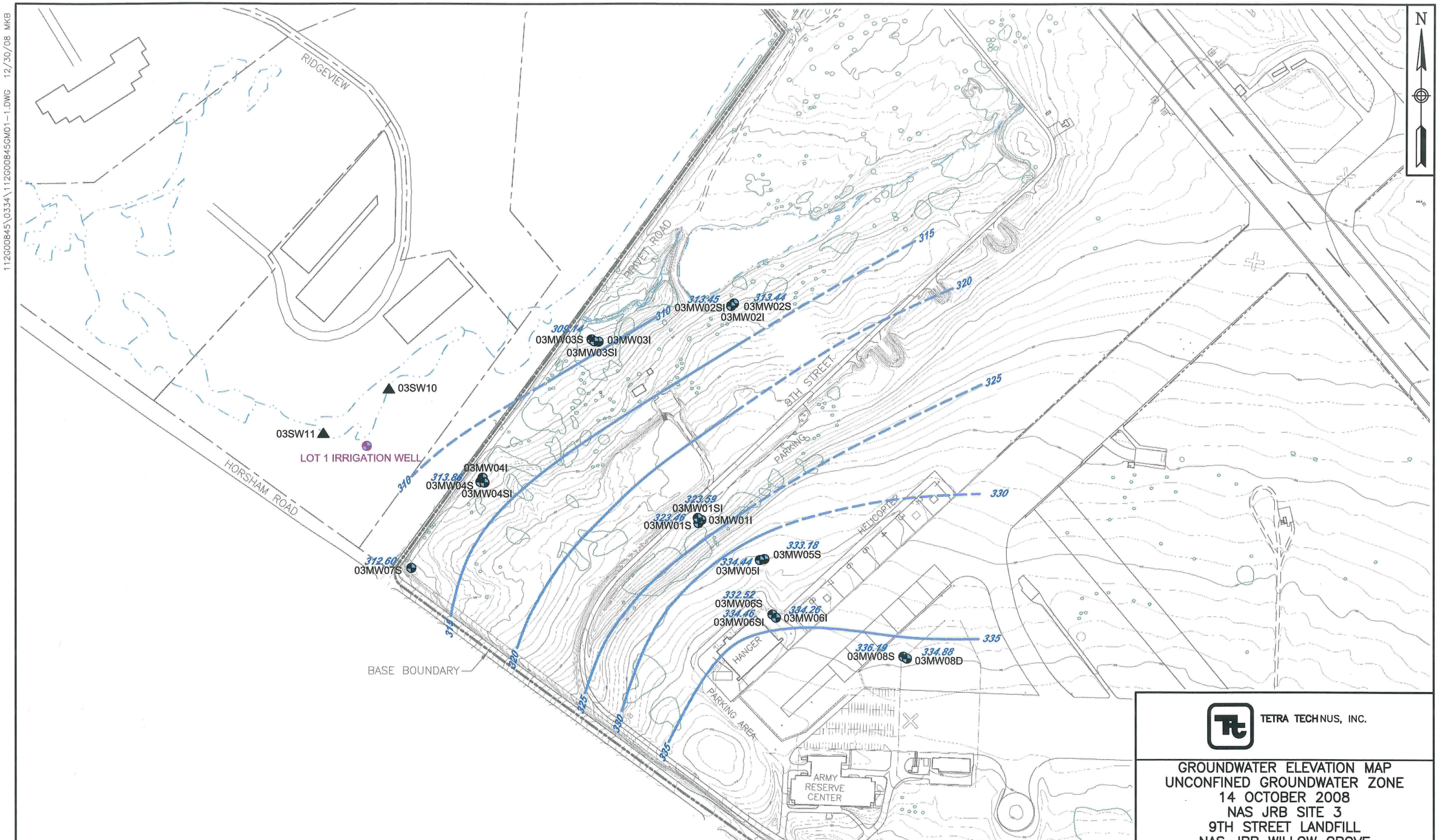


TETRA TECH NUS, INC.

SAMPLE 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: FIGURE 2	REV: 0 / DATE: 12/30/08

112G00845\0334\112G00845GM01-1.DWG 12/30/08 MKB



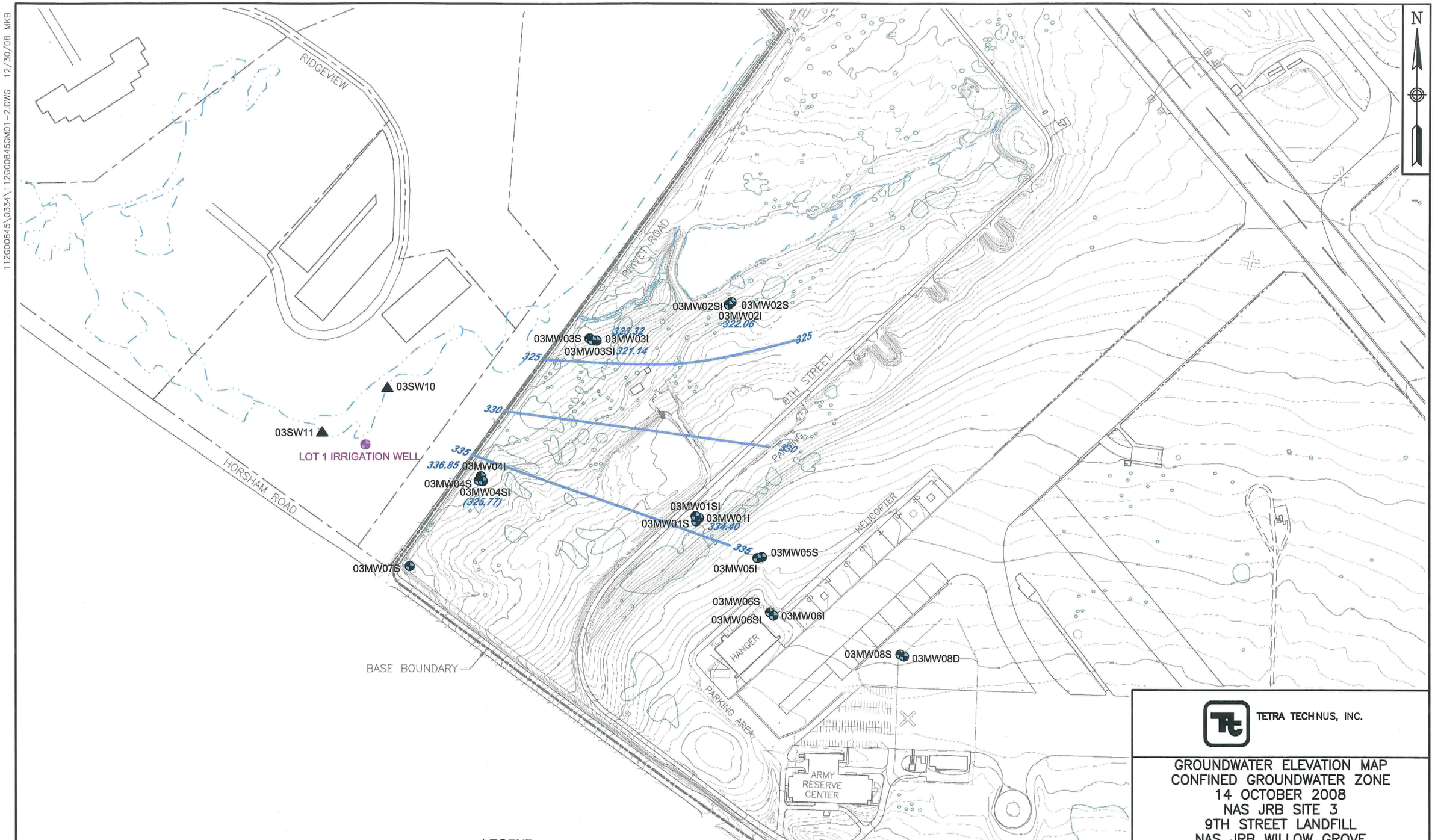
TETRA TECH NUS, INC.

GROUNDWATER ELEVATION MAP
UNCONFINED GROUNDWATER ZONE
14 OCTOBER 2008
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 3	0	12/30/08

112G00845\0334\112G00845GM01-2.DWG 12/30/08 MKB

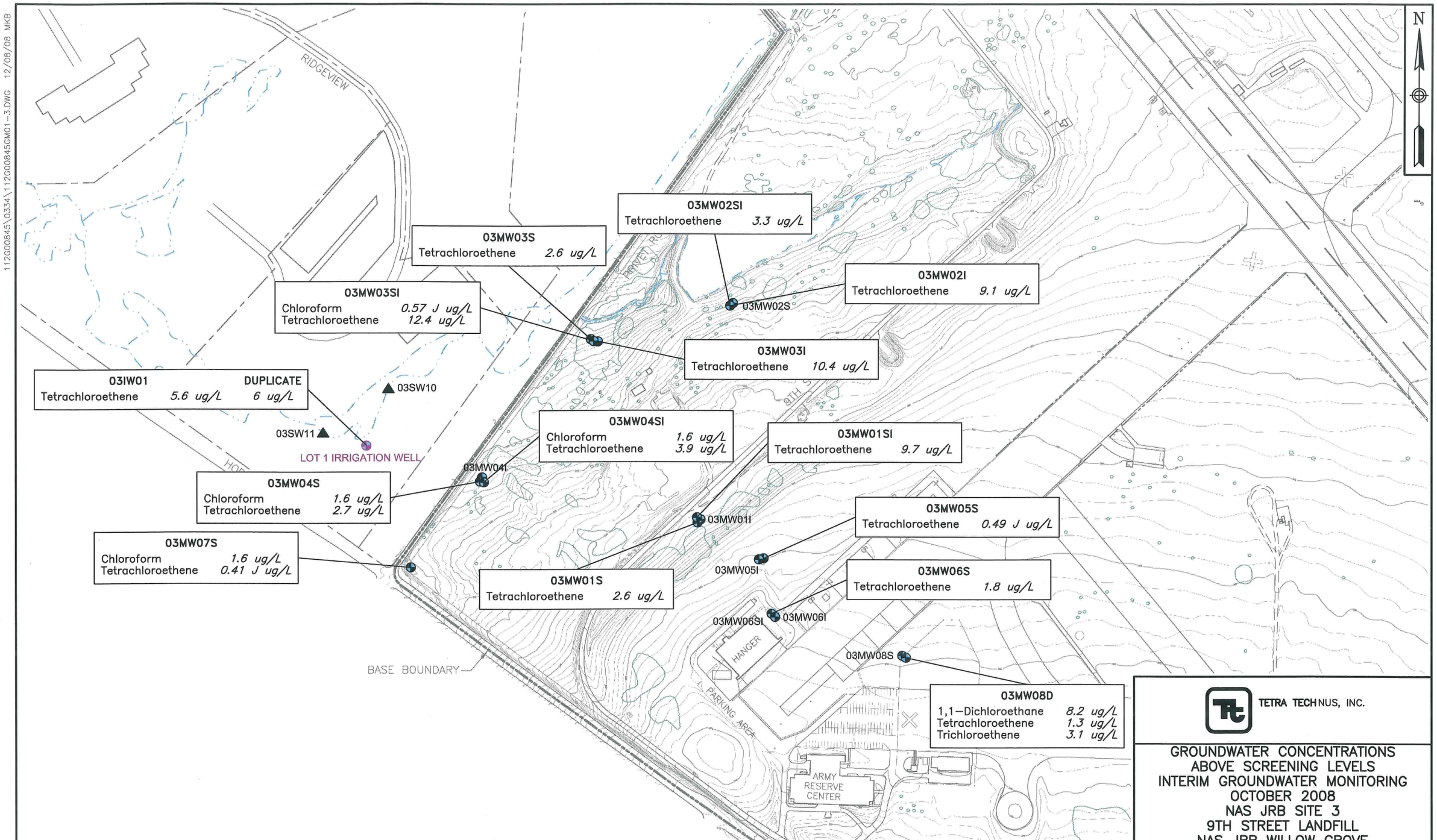


TETRA TECH NUS, INC.

GROUNDWATER ELEVATION MAP
CONFINED GROUNDWATER ZONE
14 OCTOBER 2008
NAS JRB SITE 3
9TH STREET LANDFILL
NAS JRB WILLOW GROVE
WILLOW GROVE, PENNSYLVANIA

FILE	SCALE
112G00845GM01-2	AS NOTED
FIGURE NUMBER	REV / DATE
FIGURE 4	0 / 12/30/08

112G00845\0334\112G00845GM01-3.DWG 12/08/08 MKB



TETRA TECH NUS, INC.

GROUNDWATER CONCENTRATIONS
ABOVE SCREENING LEVELS
INTERIM GROUNDWATER MONITORING
OCTOBER 2008
NAS JRB SITE 3
9TH STREET LANDFILL
NAS JRB WILLOW GROVE
WILLOW GROVE, PENNSYLVANIA

FILE	SCALE
112G00845GM01-3	AS NOTED

FIGURE NUMBER	REV	DATE
FIGURE 5	0	12/08/08

APPENDIX A

ANALYTICAL RESULTS

DATA SUMMARY OF VOLATILE ORGANIC COMPOUND RESULTS
SITE 3 GROUNDWATER SAMPLES - OCTOBER 2008
NAS JRB WILLOW GROVE, WILLOW GROVE, PENNSYLVANIA

Sample ID:	03IW01-20081013		03IW01-20081013-D		03MW01I-20081017		03MW01S-20081016		03MW01SI-20081017		03MW01SIL-20081017		03MW01SIL-20081017-D	
Sample Date:	10/13/08		10/13/08		10/17/08		10/16/08		10/17/08		10/17/08		10/17/08	
Dup Of:			03IW01-20081013										03MW01SIL-20081017	
VOLATILES	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
1,1,2,2-Tetrachloroethane	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
1,1,2-Trichlorotrifluoroethane	0.68	J	0.46	J	1	U	1	U	1	U	1	U	1	U
1,1-Dichloroethane	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
1,2,3-Trichlorobenzene	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
1,2-Dibromo-3-chloropropane	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
1,2-Dichlorobenzene	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
1,2-Dichloroethene (cis)	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
1,2-Dichloropropane	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
1,4-Dichlorobenzene	1	U	1	U	1	U	1	U	1	U	1	U	1	U
1,4-Dioxane	320	U	320	U	320	U	320	U	320	U	320	U	320	U
2-Butanone	10	U	10	U	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
4-Methyl-2-pentanone	5	U	5	U	5	U	5	U	5	U	5	U	5	U
Acetone	10	U	10	U	10	U	10	U	10	U	10	U	10	U
Benzene	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
Bromodichloromethane	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
Bromomethane	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
Carbon Tetrachloride	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
Chloroethane	1	U	1	U	1	U	1	U	1	U	1	U	1	U
Chloroform	0.98	B	1	B	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
cis-1,3-Dichloropropene	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
Dibromochloromethane	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
Ethylbenzene	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
M+p-xylenes	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
Methyl Cyclohexane	1	U	1	U	1	U	1	U	1	U	1	U	1	U
Methyl Tert-butyl Ether	1	U	1	U	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
O-xylene	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
Tetrachloroethene	5.6		6		1	U	2.6		9.7		7.7		7.4	
Toluene	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
Trichloroethene	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
Vinyl Chloride	1	U	1	U	1	U	1	U	1	U	1	U	1	U

DATA SUMMARY OF VOLATILE ORGANIC COMPOUND RESULTS
SITE 3 GROUNDWATER SAMPLES - OCTOBER 2008
NAS JRB WILLOW GROVE, WILLOW GROVE, PENNSYLVANIA

Sample ID:	03MW02I-20081020		03MW02IL-20081020		03MW02IL-20081020-D		03MW02S-20081016		03MW02SI-20081017		03MW03I-20081021		03MW03S-20081020	
Sample Date:	10/20/08		10/20/08		10/20/08		10/16/08		10/17/08		10/21/08		10/20/08	
Dup Of:					03MW02IL-20081020									
VOLATILES	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
1,1,2,2-Tetrachloroethane	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
1,1,2-Trichlorotrifluoroethane	1	U	1	U	1	U	1	U	1	U	1	U	1	U
1,1-Dichloroethane	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
1,2,3-Trichlorobenzene	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
1,2-Dibromo-3-chloropropane	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
1,2-Dichlorobenzene	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
1,2-Dichloroethene (cis)	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
1,2-Dichloropropane	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
1,4-Dichlorobenzene	1	U	1	U	1	U	1	U	1	U	1	U	1	U
1,4-Dioxane	320	U	320	U	320	U	320	U	320	U	320	U	320	U
2-Butanone	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
4-Methyl-2-pentanone	5	U	5	U	5	U	5	U	5	U	5	U	5	U
Acetone	10	U	10	U	10	U	10	U	10	U	10	U	10	U
Benzene	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
Bromodichloromethane	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
Bromomethane	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
Carbon Tetrachloride	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
Chloroethane	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
Chloromethane	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
Cyclohexane	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
Dichlorodifluoromethane	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
Isopropylbenzene	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
Methyl Acetate	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
Methyl Tert-butyl Ether	1	U	1	U	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
O-xylene	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
Tetrachloroethene	9.1		7.3		7.6		1	U	3.3		10.4		2.6	
Toluene	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
Trichloroethene	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
Vinyl Chloride	1	U	1	U	1	U	1	U	1	U	1	U	1	U

DATA SUMMARY OF VOLATILE ORGANIC COMPOUND RESULTS
SITE 3 GROUNDWATER SAMPLES - OCTOBER 2008
NAS JRB WILLOW GROVE, WILLOW GROVE, PENNSYLVANIA

Sample ID:	03MW03SI-20081021		03MW03SL-20081020		03MW04I-20081014		03MW04S-20081016		03MW04SI-20081014		03MW04SIL-20081014		03MW05I-20081016	
Sample Date:	10/21/08		10/20/08		10/14/08		10/16/08		10/14/08		10/14/08		10/16/08	
Dup Of:														
VOLATILES	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
1,1,2,2-Tetrachloroethane	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
1,1,2-Trichlorotrifluoroethane	1	U	1	U	1	U	1	U	1	U	1	U	1	U
1,1-Dichloroethane	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
1,2,3-Trichlorobenzene	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
1,2-Dibromo-3-chloropropane	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
1,2-Dichlorobenzene	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
1,2-Dichloroethene (cis)	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
1,2-Dichloropropane	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
1,4-Dichlorobenzene	1	U	1	U	1	U	1	U	1	U	1	U	1	U
1,4-Dioxane	320	U	320	U	320	U	320	U	320	U	320	U	320	U
2-Butanone	10	UR	10	UR	10	U	10	UR	10	U	10	U	10	UR
2-Hexanone	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
Acetone	10	U	10	U	10	U	10	U	10	U	10	U	10	U
Benzene	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
Bromodichloromethane	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
Bromomethane	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
Carbon Tetrachloride	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
Chloroethane	1	U	1	U	1	U	1	U	1	U	1	U	1	U
Chloroform	0.57	J	1	U	1	U	1.6		1.6		1.5		1	U
Chloromethane	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
Cyclohexane	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
Dichlorodifluoromethane	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
Isopropylbenzene	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
Methyl Acetate	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
Methyl Tert-butyl Ether	1	U	1	U	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
O-xylene	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
Tetrachloroethene	12.4		2.1		1	U	2.7		3.9		4		1	U
Toluene	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
Trichloroethene	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
Vinyl Chloride	1	U	1	U	1	U	1	U	1	U	1	U	1	U

DATA SUMMARY OF VOLATILE ORGANIC COMPOUND RESULTS
SITE 3 GROUNDWATER SAMPLES - OCTOBER 2008
NAS JRB WILLOW GROVE, WILLOW GROVE, PENNSYLVANIA

Sample ID:	03MW05S-20081016		03MW06I-20081015		03MW06IL-20081015		03MW06S-20081015		03MW06SI-20081015		03MW07S-20081021		03MW08D-20081015	
Sample Date:	10/16/08		10/15/08		10/15/08		10/15/08		10/15/08		10/21/08		10/15/08	
Dup Of:														
VOLATILES	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	4.1	
1,1,2,2-Tetrachloroethane	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
1,1,2-Trichlorotrifluoroethane	1	U	1	U	1	U	1	U	1	U	1	U	1	U
1,1-Dichloroethane	1	U	1	U	1	U	1	U	1	U	1	U	8.2	
1,1-Dichloroethene	1	U	1	U	1	U	1	U	1	U	1	U	5.1	
1,2,3-Trichlorobenzene	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
1,2-Dibromo-3-chloropropane	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
1,2-Dichlorobenzene	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
1,2-Dichloroethene (cis)	1	U	1	U	1	U	1	U	1	U	1	U	1.5	
1,2-Dichloroethene (trans)	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
1,3-Dichlorobenzene	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
1,4-Dioxane	320	U	320	U	320	U	320	U	320	U	320	U	320	U
2-Butanone	10	UR	10	U	10	U	10	U	10	U	10	UR	10	U
2-Hexanone	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
Acetone	10	U	10	U	10	U	10	U	10	U	10	U	10	U
Benzene	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
Bromodichloromethane	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
Bromomethane	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
Carbon Tetrachloride	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
Chloroethane	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	1.6		1	U
Chloromethane	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
Cyclohexane	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
Dichlorodifluoromethane	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
Isopropylbenzene	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
Methyl Acetate	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
Methyl Tert-butyl Ether	1	U	1	U	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
O-xylene	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
Tetrachloroethene	0.49	J	1	U	1	U	1.8		1	U	0.41	J	1.3	
Toluene	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
Trichloroethene	1	U	1	U	1	U	1	U	1	U	1	U	3.1	
Trichlorofluoromethane	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

DATA SUMMARY OF VOLATILE ORGANIC COMPOUND RESULTS
SITE 3 GROUNDWATER SAMPLES - OCTOBER 2008
NAS JRB WILLOW GROVE, WILLOW GROVE, PENNSYLVANIA

Sample ID:	**03MW08S-20081015**	
Sample Date:	**10/15/08**	
Dup Of:		
VOLATILES	**ug/L**	
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-Dichloroethene (cis)	1	U
1,2-Dichloroethene (trans)	1	U
1,2-Dichloropropane	1	U
1,3-Dichlorobenzene	1	U
1,4-Dichlorobenzene	1	U
1,4-Dioxane	320	U
2-Butanone	10	U
2-Hexanone	5	U
4-Methyl-2-pentanone	5	U
Acetone	10	U
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
Chloroethane	1	U
Chloroform	1	U
Chloromethane	1	U
cis-1,3-Dichloropropene	1	U
Cyclohexane	1	U
Dibromochloromethane	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-1,3-Dichloropropene	1	U
Trichloroethene	1	U
Trichlorofluoromethane	1	U
Vinyl Chloride	1	U

DATA SUMMARY OF VOLATILE ORGANIC COMPOUND RESULTS
SITE 3 GROUNDWATER SAMPLES - OCTOBER 2008
NAS JRB WILLOW GROVE, WILLOW GROVE, PENNSYLVANIA

Data Qualifiers:
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 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 GW\DATA SUMMARIES\ROUND 2 - OCTOBER 2008\NOV2808N.DBF data retrieved on: 12/01/08

DATA SUMMARY OF VOLATILE ORGANIC COMPOUND RESULTS
SITE 3 SURFACE WATER SAMPLES - OCTOBER 2008
NAS JRB WILLOW GROVE, WILLOW GROVE, PENNSYLVANIA

Sample ID:	03SW10-20081013		03SW11-20081013	
Sample Date:	10/13/08		10/13/08	
Dup Of:				
VOLATILES	ug/L		ug/L	
1,1,1-Trichloroethane	1	U	1	U
1,1,2,2-Tetrachloroethane	1	U	1	U
1,1,2-Trichloroethane	1	U	1	U
1,1,2-Trichlorotrifluoroethane	1	U	1	U
1,1-Dichloroethane	1	U	1	U
1,1-Dichloroethene	1	U	1	U
1,2,3-Trichlorobenzene	2	U	2	U
1,2,4-Trichlorobenzene	2	U	2	U
1,2-Dibromo-3-chloropropane	7	U	7	U
1,2-Dibromoethane	1	U	1	U
1,2-Dichlorobenzene	1	U	1	U
1,2-Dichloroethane	1	U	1	U
1,2-Dichloroethene (cis)	1	U	1	U
1,2-Dichloroethene (trans)	1	U	1	U
1,2-Dichloropropane	1	U	1	U
1,3-Dichlorobenzene	1	U	1	U
1,4-Dichlorobenzene	1	U	1	U
1,4-Dioxane	320	U	320	U
2-Butanone	10	U	10	U
2-Hexanone	5	U	5	U
4-Methyl-2-pentanone	5	U	5	U
Acetone	10	U	10	U
Benzene	1	U	1	U
Bromochloromethane	1	U	1	U
Bromodichloromethane	1	U	1	U
Bromoform	1	U	1	U
Bromomethane	1	U	1	U
Carbon Disulfide	1	U	1	U
Carbon Tetrachloride	1	U	1	U
Chlorobenzene	1	U	1	U
Chloroethane	1	U	1	U
Chloroform	1	U	1	U
Chloromethane	1	U	1	U
cis-1,3-Dichloropropene	1	U	1	U
Cyclohexane	1	U	1	U
Dibromochloromethane	1	U	1	U
Dichlorodifluoromethane	1	U	1	U
Ethylbenzene	1	U	1	U
Isopropylbenzene	1	U	1	U
M+p-xylenes	2	U	2	U
Methyl Acetate	2	U	2	U
Methyl Cyclohexane	1	U	1	U
Methyl Tert-butyl Ether	1	U	1	U
Methylene Chloride	1	U	1	U
O-xylene	1	U	1	U
Styrene	1	U	1	U
Tetrachloroethene	1	U	1	U
Toluene	1	U	1	U
trans-1,3-Dichloropropene	1	U	1	U
Trichloroethene	1	U	1	U
Trichlorofluoromethane	1	U	1	U
Vinyl Chloride	1	U	1	U

DATA SUMMARY OF VOLATILE ORGANIC COMPOUND RESULTS
SITE 3 SURFACE WATER SAMPLES - OCTOBER 2008
NAS JRB WILLOW GROVE, WILLOW GROVE, PENNSYLVANIA

Data Qualifiers:
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 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.

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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.: 03MW01I-20081017
Sample Location: 03MW01I
Sampled By: DW/CM
C.O.C. No.:
Type of Sample:
[X] Low Concentration
[] High Concentration

SAMPLING DATA:

	Color	pH	S.C.	Temp.	Turbidity	DO	ORP	TBD
Date: 10-17-08	Visual	Standard	mS/cm	^{0}C	NTU	mg/l	mV	
Time: 1625								
Method:	clear	7.32	.255	12.4	3.4	.484	202	

PURGE DATA:

	Volume	pH	S.C.	Temp. (C)	Turbidity	DO	ORP	TBD
Date: 10/17/08								
Method: RediFlo2	0	5.25	.270	13.03	2.6	6.05	262	clear
Monitor Reading (ppm): 0	55	7.32	.252	13.74	2.4	6.25	206	"
Well Casing Diameter & Material	110	7.70	.250	14.32	2.1	5.53	189	"
Type: @ 4" PVC	130	7.82	.248	14.79	1.8	5.20	181	"
Total Well Depth (TD): 180.6								
Static Water Level (WL): 13.34			purged DRY					
One Casing Volume(gal/L): 109								
Start Purge (hrs): 0937								
End Purge (hrs): 1123								
Total Purge Time (min): 106								
Total Vol. Purged (gal/L): 130								

SAMPLE COLLECTION INFORMATION:

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

OBSERVATIONS / NOTES:

initial purge rate 2.5 gpm screen interval 159'-179'
1024 flow = 1.5 gpm wl = 97'
1337 wl = 89'
1046 turn up flow to 1.25 gpm wl = 125'
1100 flow = 1 gpm wl = 143'
1123 purged dry wl = 159'

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.: 03MW01S-20080016
Sample Location: 03MW01S
Sampled By: CM/DW
C.O.C. No.:
Type of Sample:
[X] Low Concentration
[] High Concentration

SAMPLING DATA:

Date: 10/16/08	Color	pH	S.C.	Temp.	Turbidity	DO	ORP	TBD
Time: 1405	Visual	Standard	mS/cm	°C	NTU	mg/l	mV	
Method: Rediflo-2 Pump	Lt Brown	5.24	0.159	13.0	11.26	5.84	230	25.50

PURGE DATA:

Date: 10/16/08	Volume	pH	S.C.	Temp. (C)	Turbidity	DO	ORP	TBD
Method: Rediflow-2 Pump	Initial	5.37	0.160	14.1	16.1	5.41	202	
Monitor Reading (ppm): 0.0	0.5 vol	5.33	0.160	16.0	9.4	5.50	202	25.82
Well Casing Diameter & Material	1.0 vol	5.31	0.160	14.2	2.7	4.62	223	26.62
Type: 4" PVC	1.5 vol	5.25	0.162	13.3	5.9	5.17	226	27.60
Total Well Depth (TD): 32.00	2.0 vol	5.26	0.162	13.2	2.3	5.21	230	28.00
Static Water Level (WL): 23.91	2.5 vol	5.21	0.157	12.4	42	5.80	236	30.00
One Casing Volume(gal/L): 5.28	3.0 vol	5.21	0.156	13.6	53	5.70	228	31.10
Start Purge (hrs): 1220	3.5 vol	5.20	0.155	13.9	37	5.74	229	31.72
End Purge (hrs): 1330								
Total Purge Time (min): 70								
Total Vol. Purged (gal/L): 24								

SAMPLE COLLECTION INFORMATION:

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

OBSERVATIONS / NOTES:

1330 purged the well dry will wait for recovery to sample to 75% initial volume or 25.85

1400 Recovered to 25.50 feet will take reading and sample

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

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

Sample ID No.: 03MW01SIL-20081017
Sample Location: 03MW15I
Sampled By: CMJDW
C.O.C. No.:
Type of Sample:
[X] Low Concentration
[] High Concentration

SAMPLING DATA:

	Color Visual	pH Standard	S.C. mS/cm	Temp. °C	Turbidity NTU	DO mg/l	ORP mV	TBD
Date: 10/17/08								
Time: 1145								
Method: Straw Method	clear	5.98	0.170	12.8	1.9	5.44	211	23.65'

PURGE DATA:

	Volume	pH	S.C.	Temp. (C)	Turbidity	DO	ORP	TBD
Date: 10/17/08								
Method: Peristaltic Pump								
Monitor Reading (ppm): 0.0								
Well Casing Diameter & Material		(See	Low	Flow	Purge	Data	Sheet)	
Type: 2" PVC								
Total Well Depth (TD): 80.85'								
Static Water Level (WL): 23.28								
Two Screen Vol's (gal/L): 6.52								
Start Purge (hrs): 1000								
End Purge (hrs): 1140								
Total Purge Time (min): 100								
Total Vol. Purged (gal/L): 7.0								

SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Collected
VOC	HCL	40 ml VOA Vials	4

OBSERVATIONS / NOTES:

Vertical Pump Placement = 70'

Circle if Applicable:

MS/MSD	Duplicate ID No.: DUP-04

Signature(s):

TBD: To Be Determined

Tetra Tech NUS, Inc.

LOW FLOW PURGE DATA SHEET

PROJECT SITE NAME: Willow Grove JRB Site 3
PROJECT NUMBER: 112G00845

WELL ID.: 03MW015C
DATE: 10/17/08

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
1000	23.26	200	5.69	0.197	3.5	4.76	13.4	264	
1005	23.62	200	5.89	0.209	2.7	6.83	13.1	243	
1010	23.62	200	6.04	0.192	1.5	6.00	13.1	215	
1015	23.62	200	6.18	0.185	0.0	5.42	13.0	208	
1020	23.62	200	6.23	0.185	0.0	5.79	13.0	209	
1025	23.65	200	6.26	0.186	0.0	5.47	12.9	210	
1030	23.65	200	6.26	0.185	1.8	5.35	12.9	205	
1035	23.65	200	6.26	0.185	2.5	5.30	12.9	205	
1040	23.65	200	6.22	0.179	2.6	5.33	12.9	205	
1045	23.65	200	6.19	0.177	2.0	5.39	12.9	206	
1050	23.65	200	6.15	0.174	2.0	5.45	13.0	207	
1055	23.65	200	6.13	0.173	1.7	5.44	13.0	208	
1100	23.65	200	6.13	0.173	1.7	5.45	13.0	209	
1105	23.65	200	6.15	0.173	1.7	5.42	13.0	208	
1110	23.65	200	6.12	0.173	1.7	5.45	13.0	208	
1115	23.65	200	6.09	0.171	1.5	5.47	12.9	209	
1120	23.65	200	6.01	0.171	1.3	5.45	12.9	209	
1125	23.65	200	5.98	0.171	1.5	5.45	12.8	210	
1130	23.65	200	6.04	0.170	1.9	5.45	12.7	209	
1135	23.65	200	5.98	0.170	1.5	5.47	12.8	211	
1140	23.65	200	5.98	0.170	1.9	5.44	12.8	211	

CALCULATIONS

SIGNATURE(S): [illegible]

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.: 03MW015I-20081017
Sample Location: 03MW015I
Sampled By: CM/DW
C.O.C. No.:
Type of Sample:
[X] Low Concentration
[] High Concentration

SAMPLING DATA:

Date: 10/17/08	Color	pH	S.C.	Temp.	Turbidity	DO	ORP	TBD
Time: 1410	Visual	Standard	mS/cm	^{0}C	NTU	mg/l	mV	
Method: Straw Method	Clear	6.00	0.166	12.8	1.1	5.95	226	

PURGE DATA:

Date: 10/17/08	Volume	pH	S.C.	Temp. (C)	Turbidity	DO	ORP	TBD
Method: Peristaltic Pump	Initial	5.69	0.397	13.4	3.5	9.76	264	23.26'
Monitor Reading (ppm): 0.0	0.5 Vol	6.11	0.173	12.9	1.5	5.45	209	23.65'
Well Casing Diameter & Material	1.0 Vol	6.15	0.172	14.1	3.7	7.65	211	23.65'
Type: 2" PVC	1.5 Vol	6.08	0.170	13.2	4.8	5.77	210	24.12'
Total Well Depth (TD): 80.85'	2.0 Vol	6.01	0.165	13.3	2.0	6.16	220	24.15'
Static Water Level (WL): 23.28'	2.5 Vol	6.02	0.166	13.5	2.8	6.16	222	24.13'
One Casing Volume(gal/L): 9.38	3.0 Vol	6.00	0.166	12.8	1.1	5.95	226	24.10'
Start Purge (hrs): 1000								
End Purge (hrs): 1405								
Total Purge Time (min): 245								
Total Vol. Purged (gal/L): 30								

SAMPLE COLLECTION INFORMATION:

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

OBSERVATIONS / NOTES:

60' = pump depth

Circle if Applicable:

MS/MSD	Duplicate ID No.:

Signature(s): Daniel Whalen

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.: 03MW02S-20081016
Sample Location: 03MW02S
Sampled By: CM/DW
C.O.C. No.:
Type of Sample:
[X] Low Concentration
[] High Concentration

SAMPLING DATA:

Date: 10/16/08	Color	pH	S.C.	Temp.	Turbidity	DO	ORP	TBD
Time: 1625	Visual	Standard	mS/cm	^{0}C	NTU	mg/l	mV	
Method: Rediflo-2 Pump	clear	5.17	0.140	17.22	0.10	4.35	244	

PURGE DATA:

Date: 10/16/08	Volume	pH	S.C.	Temp. (C)	Turbidity	DO	ORP	TBD
Method: Rediflo-2 Pump	Initial	6.63	0.143	17.23		6.46	221	
Monitor Reading (ppm): 0.0	0.5 vol	5.81	0.150	17.15	9.2	4.48	229	
Well Casing Diameter & Material	1.0 vol	5.29	0.147	17.32	2.5	4.08	236	
Type: 4" PVC	1.5 vol	5.21	0.142	17.25	0.55	4.49	239	
Total Well Depth (TD): 24.00	2.0 vol	5.17	0.141	17.25	0.30	4.13	240	
Static Water Level (WL): 12.56	2.5 vol	5.17	0.140	17.24	0.35	4.20	240	
One Casing Volume(gal/L): 7.41	3.0 vol	5.16	0.139	17.22	0.10	4.28	242	
Start Purge (hrs): 1555	3.5 vol	5.17	0.140	17.22	0.10	4.35	244	
End Purge (hrs): 1620								
Total Purge Time (min): 25								
Total Vol. Purged (gal/L): 30								

SAMPLE COLLECTION INFORMATION:

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

OBSERVATIONS / NOTES:

pump depth = 16'

Circle if Applicable:

MS/MSD	Duplicate ID No.:

Signature(s):

TBD: To Be Determined

Tetra Tech NUS, Inc.

GROUNDWATER SAMPLE LOG SHEET

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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.: 03MW02SI-20081017
Sample Location: 03MW02SI
Sampled By: CM/DW
C.O.C. No.:
Type of Sample:
[X] Low Concentration
[] High Concentration

SAMPLING DATA:

	Color	pH	S.C.	Temp.	Turbidity	DO	ORP	TBD
Date: 10/17/08	Visual	Standard	mS/cm	^{0}C	NTU	mg/l	mV	
Time: 1555								
Method: Rediflo 2	clear	6.86	.249	14.2	0.30	6.34	184	

PURGE DATA:

	Volume	pH	S.C.	Temp. (C)	Turbidity	DO	ORP	TBD
Date: 10/17/08								
Method: Rediflo-2 Pump								
Monitor Reading (ppm): 0.0	—	SEE	LOW	FLOW	PURGE	DATA	SHEET	—
Well Casing Diameter & Material								
Type: 2" PVC								
Total Well Depth (TD): 67.00								
Static Water Level (WL): 12.99								
Two Screen Vol's (gal/L): 3.26								
Start Purge (hrs): 1455								
End Purge (hrs): 1555								
Total Purge Time (min): 60								
Total Vol. Purged (gal/L): 3.5								

SAMPLE COLLECTION INFORMATION:

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

OBSERVATIONS / NOTES:

Vertical Pump Placement = 62'

Circle if Applicable:

MS/MSD	Duplicate ID No.:

Signature(s): Donald Whalen

TBD: To Be Determined

Tetra Tech NUS, Inc.

LOW FLOW PURGE DATA SHEET

PROJECT SITE NAME: Willow Grove JRB Site 3
PROJECT NUMBER: 112G00845

WELL ID.: 03MW02SF
DATE: 10/17/08

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
1455	12.93	225							START
1500	12.94	225	6.65	.251	3.2	5.06	14.3	222	clear
1505	12.96	225	6.71	.252	2.1	5.61	14.2	212	
1510	12.97	225	6.79	.252	1.2	6.10	14.0	207	
1515	12.98	225	6.86	.252	0.95	6.25	14.5	209	
1520	13.01	225	6.85	.253	0.85	7.02	14.4	199	
1525	13.01	225	6.86	.252	0.75	6.73	14.3	194	
1530	13.01	225	6.86	.252	0.65	6.51	14.2	188	
1535	13.01	225	6.86	.251	0.60	6.45	14.2	187	
1540	13.01	225	6.86	.250	0.40	6.34	14.2	186	
1545	13.01	225	6.86	.250	0.35	6.31	14.2	186	
1550	13.01	225	6.86	.250	0.30	6.26	14.2	184	
1555	13.01	225	6.86	.249	0.30	6.34	14.2	184	

CALCULATIONS

SIGNATURE(S): Donald Whalen **PAGE** ___ **OF**

Tetra Tech NUS, Inc.

GROUNDWATER SAMPLE LOG SHEET

Page___ of ___

Project Site Name: Willow Grove Site 3
Project No.: 00845

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

Sample ID No.: 03MW02IL
Sample Location: 03MW02I
Sampled By: DW / XC
C.O.C. No.:
Type of Sample:
[X] Low Concentration
[] High Concentration

SAMPLING DATA:

	Color	pH	S.C.	Temp.	Turbidity	DO	ORP	Other
Date: 10/20/08	Visual	Standard	mS/cm	^{0}C	NTU	mg/l	mV	NA
Time: 1105								
Method: RediFlo2	Clear	7.22	0.229	14.27	0.30	7.86	164	

PURGE DATA:

	Volume	pH	S.C.	Temp. (C)	Turbidity	DO	ORP	Other
Date: 10/20/08								
Method: RediFlo2		See	Low	Flow	Purge	Data	Sheet	
Monitor Reading (ppm): 0								
Well Casing Diameter & Material								
Type: 2" PVC								
Total Well Depth (TD): 146.1								
Static Water Level (WL): 4.22								
One Casing Volume(gal/L):								
Start Purge (hrs): 0947								
End Purge (hrs): 1100								
Total Purge Time (min):								
Total Vol. Purged (gal/L):								

SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Collected
TCL VOC	HCL	2 x 40 ml	✓

OBSERVATIONS / NOTES:

Vertical pump placement: 141'

Circle if Applicable:

MS/MSD

Duplicate ID No.: DUP-05

Signature(s): Donald Whalen

Tetra Tech NUS, Inc.

LOW FLOW PURGE DATA SHEET

PROJECT SITE NAME: NASJRB Willow Grove Site 3
PROJECT NUMBER: 00845

WELL ID.: 03MW02I
DATE: 10/20/08

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)	Comments
0947	4.22	175							START
0950	4.28	~~4.28~~ 175	5.60	0.230	3.8	6.69	13.66	291	clear
0955	4.28	200	5.92	.231	4.2	7.48	13.87	281	
1000	4.28	200	6.16	.230	2.4	7.65	13.97	259	
1005	4.28	200	6.37	.230	1.8	7.73	14.01	233	
1010	4.28	200	6.54	.229	1.2	7.64	14.04	220	
1015	4.28	200	6.71	.228	0.75	7.58	14.11	204	
1020	4.28	200	6.82	.228	0.55	7.48	14.14	196	
1025	4.28	200	6.94	.227	0.50	8.13	14.17	189	
1030	4.28	200	6.94	.227	0.45	8.13	14.17	185	
1035	4.28	200	7.00	.227	0.40	8.10	14.16	180	
1040	4.28	200	7.06	0.227	0.40	8.03	14.20	175	
1045	4.28	200	7.10	.226	0.40	7.98	14.21	173	
1050	4.28	200	7.14	.227	0.40	7.91	14.21	170	
1055	4.28	200	7.17	.227	0.40	7.89	14.23	168	
1100	4.28	200	7.22	.229	0.30	7.86	14.27	164	

SIGNATURE(S): Daniel Whalen

Tetra Tech NUS, Inc.

GROUNDWATER SAMPLE LOG SHEET

Page___ of ___

Project Site Name: Willow Grove Site 3
Project No.: 00845

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

Sample ID No.: 03MW02I
Sample Location: 03MW02I
Sampled By: DW/xc
C.O.C. No.:
Type of Sample:
[X] Low Concentration
[] High Concentration

SAMPLING DATA:

Date: 10/20/2008	Color	pH	S.C.	Temp.	Turbidity	DO	ORP	Other
Time: 1225	Visual	Standard	mS/cm	^{0}C	NTU	mg/l	mV	NA
Method: Redi-Flo2 pump	Clear	7.45	0.227	13.08	0.10	7.52	183	

PURGE DATA:

Date: 10/20/2008	Volume	pH	S.C.	Temp. (C)	Turbidity	DO	ORP	Other
Method: Redi-Flo2 pump	Initial	7.31	0.235	13.36	0.15	7.57	182	
Monitor Reading (ppm): 0	12	7.31	0.231	13.19	0.10	7.82	189	
Well Casing Diameter & Material	23	7.35	0.228	13.04	0.10	7.65	177	
Type: 2" PVC	35	7.38	0.228	13.05	0.05	8.00	174	
Total Well Depth (TD): 146.10	46	7.39	0.227	13.13	0.05	7.39	167	
Static Water Level (WL): 4.22	58	7.41	0.227	13.12	0.05	7.53	167	
One Casing Volume(gal/L): 23.13	69	7.45	0.227	13.08	0.10	7.52	183	
Start Purge (hrs): 1114								
End Purge (hrs): 12:25								
Total Purge Time (min): 71								
Total Vol. Purged (gal/L): 69								

SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Collected
TCL VOC	HCL	2 x 40 ml	✓

OBSERVATIONS / NOTES:

Vertical pump placement: 141 feet

Circle if Applicable:

MS/MSD	Duplicate ID No.:

Signature(s): Donald Wheeler

Tetra Tech NUS, Inc.

GROUNDWATER SAMPLE LOG SHEET

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Project Site Name: Willow Grove Site 3
Project No.: 00845

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

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

SAMPLING DATA:

	Color	pH	S.C.	Temp.	Turbidity	DO	ORP	Other
Date: 10/20/08	Visual	Standard	mS/cm	^{0}C	NTU	mg/l	mV	NA
Time: 1600								
Method: RediFlo 2 Pump	CLEAR	6.65	.291	14.20	0.00	2.14	46	

PURGE DATA:

	Volume	pH	S.C.	Temp. (C)	Turbidity	DO	ORP	Other
Date: 10/20/2008								
Method: Redi-Flo2 Pump	0 gal.	6.86	0.324	14.07	0.25	2.89	75	clear
Monitor Reading (ppm): 0	~~10~~ 5	6.82	.316	14.07	0.20	3.50	69	"
Well Casing Diameter & Material	10	6.80	.313	14.10	0.25	4.65	58	"
Type: 4" PVC	15	6.69	.310	14.11	0.25	2.00	46	"
Total Well Depth (TD): 10.2 (20)	20	6.72	.306	14.12	0.25	2.21	38	"
Static Water Level (WL): 3.62	25	6.70	.301	14.17	0.25	1.96	38	"
One Casing Volume(gal/L): 4.3 (10.6)	30	6.67	.293	14.22	0.25	2.22	43	"
Start Purge (hrs): 1515	35	6.65	.291	14.20	0.00	2.14	46	"
End Purge (hrs): 1600								
Total Purge Time (min): 45								
Total Vol. Purged (gal/L): 35								

SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Collected
TCL VOC	HCL	2 x 40 ml	✓

OBSERVATIONS / NOTES:

Vertical pump placement: 7'
purge rate = 1.25 gpm
wl = 4.40' TOC (constant)

Circle if Applicable:

MS/MSD	Duplicate ID No.:

Signature(s): Donald Wheeler

Tetra Tech NUS, Inc.

GROUNDWATER SAMPLE LOG SHEET

Page___ of ___

Project Site Name: Willow Grove Site 3
Project No.: 00845

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

Sample ID No.: 03MW03SL
Sample Location: 03MW03S
Sampled By: DW/KC
C.O.C. No.:
Type of Sample:
[X] Low Concentration
[] High Concentration

SAMPLING DATA:

	Color	pH	S.C.	Temp.	Turbidity	DO	ORP	Other
Date: 10/20/08	Visual	Standard	mS/cm	^{0}C	NTU	mg/l	mV	NA
Time: 1500								
Method: Low Flow	clear	6.70	0.350	14.52	0.25	0.85	-33	

PURGE DATA:

	Volume	pH	S.C.	Temp. (C)	Turbidity	DO	ORP	Other
Date: 10/20/2008								
Method: Redi-Flo2 pump								
Monitor Reading (ppm): 0	—	SEE LOW FLOW PURGE DATA SHEET						—
Well Casing Diameter & Material								
Type: 4" PVC								
Total Well Depth (TD): 10.2								
Static Water Level (WL): 3.62								
One Casing Volume(gal/L):								
Start Purge (hrs): 1330								
End Purge (hrs): 1455								
Total Purge Time (min): 85								
Total Vol. Purged (gal/L):								

SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Collected
TCL VOC	HCL	2 x 40 ml	✓

OBSERVATIONS / NOTES:

Vertical pump placement: 8'

total depth of well (10.2') does not match original depth (20')

Circle if Applicable:

MS/MSD

Duplicate ID No.:

Signature(s): Donald Whaler

Tetra Tech NUS, Inc.

LOW FLOW PURGE DATA SHEET

PROJECT SITE NAME: NASJRB Willow Grove Site 3
PROJECT NUMBER: 00845

WELL ID.: 03MW035
DATE: 10/20/08

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)	Comments
1330	3.62	400							START
1335	3.70	350	7.15	.292	1.8	1.29	13.77	71	
1340	3.69	400	6.76	.298	1.0	1.01	14.25	4	
1345	3.69	400	6.71	0.307	0.91	0.99	14.32	-5	
1350	3.69	400	6.69	0.312	0.80	0.95	14.32	-8	
1355	3.69	400	6.68	0.317	0.70	0.95	14.32	-13	
1400	3.69	400	6.68	0.320	0.50	0.91	14.37	-12	
1405	3.69	450	6.67	0.320	0.50	0.91	14.55	-15	
1410	3.70	450	6.68	0.325	0.45	0.89	14.45	-19	
1415	3.70	450	6.68	0.329	0.40	0.88	14.41	-22	
1420	3.70	450	6.68	0.331	0.35	0.88	14.41	-24	
1425	3.70	450	6.69	0.335	0.30	0.88	14.42	-26	
1430	3.70	450	6.69	0.339	0.30	0.88	14.49	-27	
1435	3.70	450	6.69	0.343	0.25	0.87	14.50	-29	
1440	3.70	450	6.70	0.345	0.25	0.88	14.52	-31	
1445	3.70	450	6.70	0.348	0.25	0.86	14.57	-31	
1450	3.70	450	6.70	0.349	0.25	0.86	14.54	-32	
1455	3.70	450	6.70	0.350	0.25	0.85	14.52	-33	

SIGNATURE(S): _____

PAGE___OF___

Tetra Tech NUS, Inc.

GROUNDWATER SAMPLE LOG SHEET

Page___ of ___

Project Site Name: Willow Grove Site 3
Project No.: 00845

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

Sample ID No.: 03MW035I-20081021
Sample Location: 03MW035I
Sampled By:
C.O.C. No.:
Type of Sample:
[X] Low Concentration
[] High Concentration

SAMPLING DATA:

Date: 10/21/2008	Color	pH	S.C.	Temp.	Turbidity	DO	ORP	Other
Time: 10:10	Visual	Standard	mS/cm	^{0}C	NTU	mg/l	mV	NA
Method: Redi-Flo2 Pump	Clear	6.46	0.306	12.1	0.0	9.36	328	

PURGE DATA:

Date: 10/21/2008	Volume	pH	S.C.	Temp. (C)	Turbidity	DO	ORP	Other
Method: Redi-Flo2 Pump	0	6.51	0.300	11.8	0.0	8.92	331	
Monitor Reading (ppm): 0	0.5 Vol	6.47	0.303	12.0	0.0	9.02	332	
Well Casing Diameter & Material	1.0 Vol	6.47	0.305	12.1	0.0	10.49	331	
Type: 2" PVC	1.5 Vol	6.40	0.305	12.1	0.0	9.44	329	
Total Well Depth (TD): 80'	2.0 Vol	6.46	0.306	12.1	0.0	9.60	328	
Static Water Level (WL): Flowing	2.5 Vol	6.45	0.306	12.1	0.0	9.40	328	
One Casing Volume(gal/L): 13	3.0 Vol	6.46	0.306	12.1	0.0	9.36	328	
Start Purge (hrs): 0947								
End Purge (hrs): 10:10								
Total Purge Time (min): 23								
Total Vol. Purged (gal/L): 46								

SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Collected
TCL VOC	HCL	2 x 40 ml	✓

OBSERVATIONS / NOTES:

Vertical pump placement: 10 ft

Purge Flow Rate: 2 gal/min

Circle if Applicable:

MS/MSD	Duplicate ID No.:

Signature(s): Donald Whalen

Tetra Tech NUS, Inc.

GROUNDWATER SAMPLE LOG SHEET

Page___ of ___

Project Site Name: Willow Grove Site 3
Project No.: 00845

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

Sample ID No.: 03MW03I
Sample Location: 03MW03I
Sampled By: DW / XC
C.O.C. No.:
Type of Sample:
[X] Low Concentration
[] High Concentration

SAMPLING DATA:

Date: 10/21/2008	Color	pH	S.C.	Temp.	Turbidity	DO	ORP	Other
Time: 12:05	Visual	Standard	mS/cm	^{0}C	NTU	mg/l	mV	NA
Method: Redi-Flo2 pump	Clear	7.52	0.266	12.1	0.0	8.26	314	

PURGE DATA:

Date: 10/21/08	Volume	pH	S.C.	Temp. (C)	Turbidity	DO	ORP	Other
Method: Redi-Flo2 Pump	Initial	5.24	0.341	10.6	0.0	9.19	345	
Monitor Reading (ppm): 0	0.5 Vol	6.43	0.267	12.1	0.0	9.29	322	
Well Casing Diameter & Material	1.0 Vol	6.64	0.274	12.1	0.0	8.31	317	
Type: 4" PVC	1.5 Vol	7.25	0.271	12.1	0.0	8.30	314	
Total Well Depth (TD): 168.5	2.0 Vol	7.41	0.268	12.0	0.0	8.77	316	
Static Water Level (WL): 0	2.5 Vol	7.49	0.268	12.0	0.0	8.13	319	
One Casing Volume(gal/L): 110	3.0 Vol	7.52	0.266	12.1	0.0	8.26	314	
Start Purge (hrs): 0916								
End Purge (hrs): 12:05								
Total Purge Time (min): 169								
Total Vol. Purged (gal/L): 330								

SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Collected
TCL VOC	HCL	2 x 40 ml	✓

OBSERVATIONS / NOTES:

Vertical pump placement: Flowing artesian well.

Purge Flow Rate: 2 gal/min.

Circle if Applicable:

MS/MSD	Duplicate ID No.:

Signature(s): Donald Wheler

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.: 03MW04 S-20081016
Sample Location: 03MW04S
Sampled By: DW
C.O.C. No.:
Type of Sample:
[X] Low Concentration
[] High Concentration

SAMPLING DATA:

	Color Visual	pH Standard	S.C. mS/cm	Temp. °C	Turbidity NTU	DO mg/l	ORP mV	TBD
Date: 10/16/08								
Time: 1435								
Method: Redi Flo 2 Pump	clear	6.28	.474	15.36	9	6.18	134	

PURGE DATA:

	Volume	pH	S.C.	Temp. (C)	Turbidity	DO	ORP	TBD
Date: 10/16/08								
Method: Redi Flo 2	0	5.75	.588	16.79	412	6.42	222	Brown
Monitor Reading (ppm): 0	8.5	6.27	.565	16.30	>1000	5.35	225	Brown
Well Casing Diameter & Material	17	6.34	.523	16.02	820	6.98	221	"
Type: 4" PVC	25.5	6.42	.516	15.66	443	7.23	222	"
Total Well Depth (TD): 36.5 TOC	34	6.27	.499	15.32	80	6.49	177	lt. Brown
Static Water Level (WL): 10.53	42.5	6.29	.487	15.26	24	6.32	137	"
One Casing Volume (gal/L): 17	51	6.26	.484	15.14	14	6.03	135	clear
Start Purge (hrs): 1315	60	6.27	.477	15.16	10	6.21	126	"
End Purge (hrs): 1435	68	6.28	.475	15.22	10	6.13	131	"
Total Purge Time (min): 80	76	6.28	.474	15.36	9	6.18	134	"
Total Vol. Purged (gal/L): 76								

SAMPLE COLLECTION INFORMATION:

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

OBSERVATIONS / NOTES:

initial flow = 1 gpm pump depth = 14'
1324 wl = 13.6' water very turbid; sediment is very light, coagulated (organic?)
1355 wl = 13.83

Circle if Applicable:

MS/MSD	Duplicate ID No.:

Signature(s): Donald Whalen

TBD: To Be Determined

Tetra Tech NUS, Inc.

GROUNDWATER SAMPLE LOG SHEET

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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.: 03MW4SI-20081014
Sample Location: 03MW4SI
Sampled By:
C.O.C. No.:
Type of Sample:
[X] Low Concentration
[] High Concentration

SAMPLING DATA:

Date: 10/14/08	Color	pH	S.C.	Temp.	Turbidity	DO	ORP	TBD
Time: 1515	Visual	Standard	mS/cm	^{0}C	NTU	mg/l	mV	
Method: Redi-flo-2 Pump	Clear	5.94	0.424	12.1	1.6	8.06	270	

PURGE DATA:

Date: 10-14-08	Volume	pH	S.C.	Temp. (C)	Turbidity	DO	ORP	TBD
Method: Redi-Flo2 Pump	0	6.82	0.423	15.0	11.42	6.27	247	
Monitor Reading (ppm): 0	0.5 vol	6.18	0.426	12.3	11.2	8.28	260	
Well Casing Diameter & Material	1.0 vol	6.05	0.420	12.1	2.9	8.05	267	
Type: 2" PVC	1.5 vol	6.01	0.425	12.1	2.7	8.35	270	
Total Well Depth (TD): 80'	2.0 vol	5.97	0.424	12.1	2.0	7.97	272	
Static Water Level (WL): 1.90	2.5 vol	5.95	0.424	12.1	2.1	8.07	272	
~~Two Screen~~ one well Vol's (gal/L): 12.7	3.0 vol	5.93	0.423	12.1	2.0	8.02	270	
Start Purge (hrs): 1450	3.5 vol	5.94	0.424	12.1	1.6	8.06	270	
End Purge (hrs): 1513								
Total Purge Time (min): 23								
Total Vol. Purged (gal/L): 50								

SAMPLE COLLECTION INFORMATION:

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

OBSERVATIONS / NOTES:

Vertical Pump Placement = 70'

Circle if Applicable:

MS/MSD	Duplicate ID No.:

Signature(s): David W Haber

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.: 03MW4SIL-20081014
Sample Location: 03MW4SE
Sampled By: CM/DW
C.O.C. No.:
Type of Sample:
[X] Low Concentration
[] High Concentration

SAMPLING DATA:

Date: 10/14/08	Color	pH	S.C.	Temp.	Turbidity	DO	ORP	TBD
Time: 1715	Visual	Standard	mS/cm	^{0}C	NTU	mg/l	mV	
Method: Rediflow 2 Pump	clear	5.92	.424	13.9	2.3	7.46	178	

PURGE DATA:

Date: 10/14/08	Volume	pH	S.C.	Temp. (C)	Turbidity	DO	ORP	TBD
Method: Redi-Flo2 Pump								
Monitor Reading (ppm): 0.0	—	SEE	Low	Flow	PURGE	DATA	SHEET	—
Well Casing Diameter & Material								
Type: 2" PVC								
Total Well Depth (TD): 80.								
Static Water Level (WL): 2.25								
Two Screen Vol's (gal/L): 6.4								
Start Purge (hrs): 1550								
End Purge (hrs): 1710								
Total Purge Time (min): 80								
Total Vol. Purged (gal/L): 7.0								

SAMPLE COLLECTION INFORMATION:

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

OBSERVATIONS / NOTES:

Vertical Pump Placement = 70'

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
PROJECT NUMBER: 112G00845

WELL ID.: 03MW45I
DATE: 10/14/08

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
1550	2.25	350	6.05	0.428	22.2	7.79	13.0	199	
1555	2.25	350	5.96	0.420	1.5	7.31	14.4	201	
1600	2.25	350	5.93	0.414	0.5	7.17	15.8	201	
1605	2.25	350	5.93	0.427	1.7	8.11	13.4	194	
1610	2.25	350	5.93	0.425	0.9	7.93	13.4	196	
1615	2.25	350	5.92	0.424	2.0	7.68	13.3	197	
1620	2.25	350	5.92	0.424	2.2	7.50	13.3	198	
1625	2.25	350	5.93	0.424	3.1	7.49	13.3	199	
1630	2.25	350	5.92	0.424	3.3	7.49	13.4	197	
1635	2.25	350	5.92	0.424	3.1	7.46	13.7	191	
1640	2.25	350	5.92	0.424	3.9	7.45	13.9	184	
1645	2.25	350	5.92	0.424	3.7	7.43	14.0	185	
1650	2.25	350	5.92	0.424	2.9	7.44	14.0	181	
1655	2.25	350	5.92	0.424	2.5	7.44	14.0	179	
1700	2.25	350	5.92	0.424	2.1	7.44	14.0	179	
1705	2.25	350	5.92	0.424	3.0	7.46	13.9	178	
1710	2.25	350	5.92	0.424	2.3	7.46	13.9	178	

CALCULATIONS

SIGNATURE(S): Donald Haber

Tetra Tech NUS, Inc.

GROUNDWATER SAMPLE LOG SHEET

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.: 03MW4E-20081014
Sample Location: 03MW4E
Sampled By: CM/DW
C.O.C. No.:
Type of Sample:
[X] Low Concentration
[] High Concentration

SAMPLING DATA:

	Color	pH	S.C.	Temp.	Turbidity	DO	ORP	TBD
	Visual	Standard	mS/cm	°C	NTU	mg/l	mV	
Date: 10/14/08								
Time: 1410								
Method: Bailer Bottle	clear	6.56	0.318	12.6	2.5	6.79	300	

PURGE DATA:

	Volume	pH	S.C.	Temp. (C)	Turbidity	DO	ORP	TBD
Date: 10/14/08								
Method: Redi-Flo2 Pump	Initial	5.87	0.323	12.4	3.3	7.16	340	
Monitor Reading (ppm): 0.0	0.5 vol	6.11	0.314	11.9	2.5	7.82	338	
Well Casing Diameter & Material	1.0 vol	6.31	0.311	12.0	1.1	6.75	332	
Type: 4" PVC	1.5 vol	6.47	.316	12.8	1.6	8.07	306	
Total Well Depth (TD): 168	2.0 vol	6.56	0.318	12.7	1.9	6.73	306	
Static Water Level (WL): 0	2.5 vol	6.55	0.316	12.5	1.6	6.87	304	
Two Screen Vol's (gal/L): 110	3.0 vol	6.57	0.318	12.4	2.1	6.56	302	
Start Purge (hrs): 1130	3.5 vol	6.56	0.318	12.6	2.5	6.79	300	
End Purge (hrs): 1410								
Total Purge Time (min): 160								
Total Vol. Purged (gal/L): 390								

SAMPLE COLLECTION INFORMATION:

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

OBSERVATIONS / NOTES:

Vertical Pump Placement =
168
x0.653
109.72 gal

Flow rate = 2.5 gal/per min
1 volume is 45 minutes
1/2 volume is 23 minutes

Well was Flowing.

Circle if Applicable:

MS/MSD	Duplicate ID No.:

Signature(s): Daniel Wheeler

TBD: To Be Determined

Tetra Tech NUS, Inc.

GROUNDWATER SAMPLE LOG SHEET

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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.: 03MW055-20081016
Sample Location: 03MW055
Sampled By: DW
C.O.C. No.:
Type of Sample:
[X] Low Concentration
[] High Concentration

SAMPLING DATA:

	Color	pH	S.C.	Temp.	Turbidity	DO	ORP	TBD
Date: 10-16-08	Visual	Standard	mS/cm	°C	NTU	mg/l	mV	
Time: 1015								
Method: Redi Flo 2 Pump	clear	4.47	.187	14.63	0.85	7.30	294	

PURGE DATA:

	Volume	pH	S.C.	Temp. (C)	Turbidity	DO	ORP	TBD
Date: 10-16-08								
Method: Redi Flo 2	0	4.49	.251	14.85	11	8.62	275	clear
Monitor Reading (ppm): 0	3.5	4.52	.193	14.96	8.9	8.13	281	
Well Casing Diameter & Material	7	4.51	.191	14.97	5.4	7.64	284	
Type: 4" PVC	10.5	4.51	.191	14.67	1.6	7.27	287	
Total Well Depth (TD): 40.4	14	4.50	.189	14.60	1.5	7.30	291	
Static Water Level (WL): 29.35	17.5	4.48	.187	14.57	1.9	7.37	295	
One Casing Volume (gal/L): 7.2	21	4.48	.187	14.60	1.6	7.38	295	
Start Purge (hrs): 0940	24.5	4.48	.189	14.62	1.5	7.39	297	
End Purge (hrs): 1010	28	4.47	.187	14.63	0.85	7.30	294	✓
Total Purge Time (min): 30								
Total Vol. Purged (gal/L): 28								

SAMPLE COLLECTION INFORMATION:

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

OBSERVATIONS / NOTES:

pump depth = 25 ft.
purge rate ≅ 1 gpm

Circle if Applicable:

MS/MSD	Duplicate ID No.:

Signature(s): Donald Whalen

TBD: To Be Determined

Tetra Tech NUS, Inc.

GROUNDWATER SAMPLE LOG SHEET

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.: 03MW05I-20081016
Sample Location: 03MW05I
Sampled By: CMIDW
C.O.C. No.:
Type of Sample:
[X] Low Concentration
[] High Concentration

SAMPLING DATA:

	Color	pH	S.C.	Temp.	Turbidity	DO	ORP	TBD
Date: 10/16/08	Visual	Standard	mS/cm	^{0}C	NTU	mg/l	mV	
Time: 1050								
Method: Rediflo-2 Pump	Clear	5.90	0.152	15.2	1.1	7.73	164	

PURGE DATA:

Date: 10/16/08	Volume	pH	S.C.	Temp. (C)	Turbidity	DO	ORP	TBD
Method: Rediflo-2 Pump								
Monitor Reading (ppm): 0.0								
Well Casing Diameter & Material								
Type: 2" PVC		(See Low Flow Purge Data Sheet)						
Total Well Depth (TD): 94.00								
Static Water Level (WL): 28.55								
Two Screen Vol's (gal/L): 3.26								
Start Purge (hrs): 0940								
End Purge (hrs): 1045								
Total Purge Time (min): 65								
Total Vol. Purged (gal/L): 3.5								

SAMPLE COLLECTION INFORMATION:

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

OBSERVATIONS / NOTES:

Vertical Pump Placement = 89'

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
PROJECT NUMBER: 112G00845

WELL ID.: 03MW05I
DATE: 10/16/08

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
0940	28.85	250	5.68	0.161	65	7.38	14.2	172	
0945	29.00	250	5.77	0.159	16	7.92	14.4	151	
0950	28.87	250	5.84	0.158	9.2	7.70	14.9	155	
0955	28.86	150	5.85	0.157	5.1	7.71	15.0	159	
1000	28.86	150	5.86	0.156	2.6	7.55	15.0	160	
1005	28.85	150	5.87	0.154	2.6	7.58	15.0	161	
1010	28.85	200	5.88	0.154	2.8	7.53	15.1	162	
1015	28.85	200	5.88	0.153	2.4	7.55	15.1	162	
1020	28.85	200	5.89	0.153	4.3	7.75	15.1	153	
1025	28.85	200	5.88	0.152	3.0	7.73	15.2	155	
1030	28.85	200	5.89	0.152	2.0	7.74	15.2	158	
1035	28.85	200	5.90	0.152	1.7	7.73	15.2	161	
1040	28.85	200	5.91	0.152	1.2	7.75	15.2	163	
1045	28.85	200	5.90	0.152	1.1	7.73	15.2	164	
1050	sample	03MW05I-20	081016	was	collected				

CALCULATIONS

SIGNATURE(S): [signature]

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.: 03MW06S-20081015
Sample Location: 03MW06S
Sampled By: RW
C.O.C. No.:
Type of Sample:
[X] Low Concentration
[] High Concentration

SAMPLING DATA:

	Color	pH	S.C.	Temp.	Turbidity	DO	ORP	TBD
Date: 10/15/08	Visual	Standard	mS/cm	°C	NTU	mg/l	mV	
Time: 1725								
Method: Redi-Flo2 Pump	clear	4.67	.239	17.89	0.80	8.43	297	

PURGE DATA:

Date: 10/15/08	Volume	pH	S.C.	Temp. (C)	Turbidity	DO	ORP	TBD
Method: Redi-Flo2 Pump								
Monitor Reading (ppm): 0	—	SEE	LOW	FLOW	PURGE	DATA	SHEET	—
Well Casing Diameter & Material								
Type: 2" PVC								
Total Well Depth (TD): 38.5								
Static Water Level (WL): 34.49								
Two Screen Vol's (gal/L): 3.2								
Start Purge (hrs): 1615								
End Purge (hrs): 1720								
Total Purge Time (min): 65								
Total Vol. Purged (gal/L): 6								

SAMPLE COLLECTION INFORMATION:

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

OBSERVATIONS / NOTES:

Vertical Pump Placement = 31'

Circle if Applicable:

MS/MSD	Duplicate ID No.:

Signature(s): Donald Wholer

TBD: To Be Determined

Tetra Tech NUS, Inc.

LOW FLOW PURGE DATA SHEET

PROJECT SITE NAME: Willow Grove JRB Site 3
PROJECT NUMBER: 112G00845

WELL ID.: 03MW065
DATE: 10-15-08

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
1615	34.49	200							START
1620	34.55	200	4.54	.224	56	9.53	17.10	254	
1625	34.65	400	4.67	.233	44	8.45	19.87	248	
1630	34.63	400	4.42	.239	34	8.72	19.22	274	
1635	34.60	400	4.46	.240	27	8.53	19.60	278	
1640	34.63	350	4.48	.238	19	8.58	19.67	281	
1645	34.63	300	4.53	.243	15	8.16	19.09	279	
1650	34.63	300	4.57	.242	11	8.59	19.74	271	
1655	34.63	300	4.56	.243	6.3	8.78	17.96	289	
1700	34.63	300	4.59	.239	2.8	8.70	18.10	294	
1705	34.63	300	4.62	.239	2.3	8.65	17.47	296	
1710	34.63	300	4.63	.238	1.8	8.62	17.49	296	
1715	34.63	300	4.65	.238	1.2	8.56	17.49	296	
1720	34.63	300	4.67	.239	0.80	8.43	17.49	297	

CALCULATIONS

SIGNATURE(S): Donald Whalen

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.: 03MW06SI-20081015
Sample Location: 03MW06SI
Sampled By: DW
C.O.C. No.:
Type of Sample:
[X] Low Concentration
[] High Concentration

SAMPLING DATA:

	Color	pH	S.C.	Temp.	Turbidity	DO	ORP	TBD
Date: 10/15/08								
Time: 1535	Visual	Standard	mS/cm	^{0}C	NTU	mg/l	mV	
Method: RediFlo2	clear	4.59	.127	16.79	0.70	8.52	266	

PURGE DATA:

Date: 10/15/08	Volume	pH	S.C.	Temp. (C)	Turbidity	DO	ORP	TBD
Method: Redi-Flo2 Pump								
Monitor Reading (ppm): 0	—	SEE	LOW	FLOW	PURGE	DATA	SHEET	—
Well Casing Diameter & Material								
Type: 2" PVC								
Total Well Depth (TD): 86.3								
Static Water Level (WL): 32.49								
Two Screen Vol's (gal/L): 3.2								
Start Purge (hrs): 1435								
End Purge (hrs): 1530								
Total Purge Time (min): 55								
Total Vol. Purged (gal/L): 5								

SAMPLE COLLECTION INFORMATION:

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

OBSERVATIONS / NOTES:

Vertical Pump Placement = 81'

Circle if Applicable:

MS/MSD	Duplicate ID No.:

Signature(s): Donald Whalen

TBD: To Be Determined

Tetra Tech NUS, Inc.

LOW FLOW PURGE DATA SHEET

PROJECT SITE NAME: Willow Grove JRB Site 3
PROJECT NUMBER: 112G00845

WELL ID.: 03MW065I
DATE: 10-15-08

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
1435									START
1440	32.53	250	4.94	.192	9.0	8.15	16.15	257	
1445	32.53	250	4.74	.146	5.0	8.73	16.28	236	
1450	32.53	250	4.70	.138	4.7	8.76	16.56	243	
1455	32.53	250	4.68	.138	3.6	8.59	16.64	248	
1500	32.53	250	4.66	.139	2.9	8.55	16.64	252	
1505	32.53	250	4.62	.139	2.3	8.51	16.69	257	
1510	32.53	250	4.60	.134	1.45	8.57	16.76	260	
1515	32.53	250	4.58	.130	1.10	8.54	16.81	262	
1520	32.53	250	4.57	.129	0.90	8.52	16.88	264	
1525	32.53	250	4.58	.127	0.85	8.61	16.88	266	
1530	32.53	250	4.59	.127	0.70	8.52	16.89	266	

CALCULATIONS

SIGNATURE(S): Daniel Schaber

PAGE 2 **OF** 2

Tetra Tech NUS, Inc.

GROUNDWATER SAMPLE LOG SHEET

Page___ of ___

Project Site Name: NASJRB Willow Grove
Project No.: 112G00845
CM 10/15/08
[X] Domestic Well Data
[ ] Monitoring Well Data
[] Other Well Type:
[] QA Sample Type:

Sample ID No.: 03MW06I-20081015
Sample Location: 03MW06I
Sampled By: CM/DW
C.O.C. No.:
Type of Sample:
[X] Low Concentration
[] High Concentration

SAMPLING DATA:

Date: 10/15/08	Color	pH	S.C.	Temp.	Turbidity	DO	ORP	TBD
Time: 1705	Visual	Standard	mS/cm	^{0}C	NTU	mg/l	mV	
Method: Redi flo 2 Pump	Clear	7.76	0.269	14.5	14	5.04	198	44.20'

PURGE DATA:

Date: 10/15/08	Volume	pH	S.C.	Temp. (C)	Turbidity	DO	ORP	TBD
Method: Redi flo 2 Pump	Initial	7.77	0.267	15.7	80	9.04	187	33.90'
Monitor Reading (ppm):	0.5 vol	7.83	0.264	15.7	35	4.57	176	64.10'
Well Casing Diameter & Material	1.0 vol	7.93	0.263	15.6	25	5.26	175	98.40'
Type: 2" PVC	1.5 vol	7.87	0.263	15.9	21	4.92	174	122.50'
Total Well Depth (TD): 150.00	2.0 vol	7.91	0.264	15.9	21	5.84	175	143.70'
Static Water Level (WL): 33.90								
One Casing Volume(gal/L): 18.4								
Start Purge (hrs): 1500								
End Purge (hrs): 1545								
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:

Pump Placement = 145'
1545 purged the well dry will wait for recovery to 75% of former volume or 62.90 feet
1700 water level back to 44.20 feet will sample

Circle if Applicable:

MS/MSD	Duplicate ID No.:

Signature(s): David Whaler

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.: 03MW06F-20081015
Sample Location: 03MW06F
Sampled By: CM/DW
C.O.C. No.:
Type of Sample:
[X] Low Concentration
[] High Concentration

SAMPLING DATA:

	Color	pH	S.C.	Temp.	Turbidity	DO	ORP	TBD
Date: 10/15/08	Visual	Standard	mS/cm	^{0}C	NTU	mg/l	mV	
Time: 1450								
Method: Redi-Flo2 Pump	Clear	7.86	0.257	15.9	45	3.87	169	

PURGE DATA:

Date: 10/15/08	Volume	pH	S.C.	Temp. (C)	Turbidity	DO	ORP	TBD
Method: Redi-Flo2 Pump								
Monitor Reading (ppm): 0.0								
Well Casing Diameter & Material								
Type: 2" PVC		(See	Low	Flow	Purge	Data	Sheet)	
Total Well Depth (TD): 150.00								
Static Water Level (WL): 32.68								
Two Screen Vol's (gal/L): 3.26								
Start Purge (hrs): 1315								
End Purge (hrs): 1445								
Total Purge Time (min): 90								
Total Vol. Purged (gal/L): 4.0								

SAMPLE COLLECTION INFORMATION:

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

OBSERVATIONS / NOTES:

Vertical Pump Placement = 145'

Circle if Applicable:

MS/MSD	Duplicate ID No.:

Signature(s): Dwell Whalen

TBD: To Be Determined

Tetra Tech NUS, Inc.

LOW FLOW PURGE DATA SHEET

PROJECT SITE NAME: Willow Grove JRB Site 3
PROJECT NUMBER: 112G00845

WELL ID.: 03MW06I
DATE: 10/15/08

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
1315	31.20	150	7.74	0.263	17	6.81	16.8	183	Clear No odor or Sheen
1320	33.49	150	7.83	0.262	12	6.06	17.8	184	
1325	33.80	150	7.88	0.262	10	5.59	18.4	183	
1330	34.04	150	7.92	0.264	500	5.43	16.9	187	Red Brown silty No odor or Sheen
1335	34.43	150	7.91	0.262	500	4.56	17.0	184	
1340	34.76	150	7.92	0.261	500	4.37	16.8	179	
1345	34.89	150	7.91	0.261	500	4.30	16.9	178	
1350	35.02	150	7.92	0.260	500	4.17	16.6	177	
1355	35.09	150	7.91	0.259	400	4.10	16.9	176	
1400	35.10	150	7.90	0.259	180	4.02	16.7	175	
1405	35.12	150	7.88	0.259	120	3.96	16.5	174	
1410	35.14	150	7.87	0.258	85	3.92	16.3	173	
1415	35.15	150	7.86	0.258	74	3.89	16.2	172	
1420	35.15	150	7.86	0.258	68	3.85	16.2	171	
1425	35.16	150	7.86	0.257	60	3.84	16.4	170	
1430	35.15	150	7.86	0.257	60	3.86	15.9	169	
1435	35.16	150	7.86	0.257	55	3.88	15.9	167	
1440	35.16	150	7.86	0.257	48	3.90	16.0	169	
1445	35.16	150	7.86	0.257	45	3.87	15.9	169	
1450	Sample	03MW06IL-20081015 was collected							

CALCULATIONS

SIGNATURE(S): Donald W Lahn

Tetra Tech NUS, Inc.

GROUNDWATER SAMPLE LOG SHEET

Page___ of ___

Project Site Name: Willow Grove Site 3
Project No.: 00845

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

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

SAMPLING DATA:

Date: 10/21/2008	Color	pH	S.C.	Temp.	Turbidity	DO	ORP	Other
Time: 14:30	Visual	Standard	mS/cm	^{0}C	NTU	mg/l	mV	NA
Method: Redi-Flo2 Pump	Clear	6.04	0.510	16.37	0.40	5.73	171	

PURGE DATA:

Date: 10/21/08	Volume	pH	S.C.	Temp. (C)	Turbidity	DO	ORP	Other
Method: Redi-Flo2 Pump								
Monitor Reading (ppm): 0	—	SEE	LOW	FLOW	PURGE	DATA	SHEET	—
Well Casing Diameter & Material								
Type: 2" PVC								
Total Well Depth (TD): 46.3								
Static Water Level (WL): 12.41'								
One Casing Volume(gal/L):								
Start Purge (hrs): 1310								
End Purge (hrs): 1425								
Total Purge Time (min): 80								
Total Vol. Purged (gal/L): 4.2								

SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Collected
TCL VOC	HCL	2 x 40 ml	✓

OBSERVATIONS / NOTES:

Vertical pump placement: 40 ft depth.

Circle if Applicable:

MS/MSD	Duplicate ID No.:

Signature(s): Donald Whalen

Tetra Tech NUS, Inc.

LOW FLOW PURGE DATA SHEET

PROJECT SITE NAME: NASJRB Willow Grove Site 3
PROJECT NUMBER: 00845

WELL ID.: 03 MW 07S
DATE: 10/21/08

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)	Comments
13:10	12.48	350	5.74	0.538	43	6.29	14.74	222	start
13:15	12.50	350	5.77	0.525	40	5.99	15.36	187	
13:20	12.46	210	5.84	0.512	31	6.32	15.91	177	
13:25	12.46	220	5.86	0.518	20	5.89	15.63	167	
13:30	12.46	220	5.88	0.513	11	5.85	16.00	163	
13:35	12.46	220	5.90	0.513	5.5	5.81	16.05	164	
13:40	12.46	220	5.92	0.513	4.0	5.80	16.05	164	
13:45	12.46	220	5.94	0.513	2.2	5.84	15.99	165	
13:50	12.46	220	5.96	0.509	1.8	5.79	16.30	166	
13:55	12.46	220	5.97	0.510	1.3	5.79	16.29	167	
14:00	12.46	220	5.99	0.515	1.2	5.92	15.91	170	
14:05	12.46	220	6.00	0.510	0.90	5.89	15.98	170	
14:10	12.46	220	6.01	0.510	0.75	5.86	16.04	170	
14:15	12.46	220	6.03	0.509	0.65	5.74	16.29	171	
14:20	12.46	220	6.03	0.510	0.55	5.72	16.33	170	
14:25	12.46	220	6.04	0.510	0.40	5.73	16.37	171	

SIGNATURE(S): Xujin Chen

PAGE___OF___

Tetra Tech NUS, Inc.

GROUNDWATER SAMPLE LOG SHEET

Page___ of ___

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

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

Sample ID No.: 03MW085
Sample Location:
Sampled By: DW/CM
C.O.C. No.:
Type of Sample:
[X] Low Concentration
[] High Concentration

SAMPLING DATA:

Date: 10/15/08	Color	pH	S.C.	Temp.	Turbidity	DO	ORP	TBD
Time: 1030	Visual	Standard	mS/cm	^{0}C	NTU	mg/l	mV	
Method: 2" Redi Flo pump	clear	5.20	.289	15.7	0.84	10.62	261	

PURGE DATA:

Date: 10/15/08	Volume	pH	S.C.	Temp. (C)	Turbidity	DO	ORP	TBD
Method: 2" Redi Flo	0	4.64	.381	15.1	58	10.82	268	cloudy
Monitor Reading (ppm): 0	3 gal	5.32	.262	15.0	18	10.73	219	
Well Casing Diameter & Material	6.5	5.36	.272	15.3	8.8	10.64	210	clear
Type: 2" PVC	10	5.30	.287	15.4	7.1	10.42	217	
Total Well Depth (TD): 69.55	13	5.23	.290	15.5	4.2	10.41	238	
Static Water Level (WL): 29.52	16	5.22	.289	15.6	3.2	10.42	247	
One Casing Volume(gal/L): 6.5	19.5	5.24	.290	15.6	1.9	10.42	252	
Start Purge (hrs): 0931	23	5.20	.289	15.8	1.3	10.46	257	
End Purge (hrs): 1030	26	5.20	.289	15.7	0.84	10.62	261	
Total Purge Time (min): 59								
Total Vol. Purged (gal/L): 26								

SAMPLE COLLECTION INFORMATION:

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

OBSERVATIONS / NOTES:

pump depth = 50'

Circle if Applicable:

MS/MSD	Duplicate ID No.:

Signature(s): Donald Whaler

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.: 03MW08D
Sample Location:
Sampled By: DW/CM
C.O.C. No.:
Type of Sample:
[X] Low Concentration
[] High Concentration

SAMPLING DATA:

	Color	pH	S.C.	Temp.	Turbidity	DO	ORP	TBD
Date: 10-15-08	Visual	Standard	mS/cm	°C	NTU	mg/l	mV	
Time: 1235								
Method: Redi-Flo pump	Clear	6.92	.365	15.7	8.7	2.52	131	

PURGE DATA:

Date: 10/15/08	Volume	pH	S.C.	Temp. (C)	Turbidity	DO	ORP	TBD
Method: Redi-Flo2 Pump								
Monitor Reading (ppm): 0	—	SEE LOW FLOW PURGE DATA SHEET —						
Well Casing Diameter & Material								
Type: 2" PVC								
Total Well Depth (TD): 173								
Static Water Level (WL): 30.80								
Two Screen Vol's (gal/L): 3.2								
Start Purge (hrs): 1100								
End Purge (hrs): 1230								
Total Purge Time (min): 90								
Total Vol. Purged (gal/L): 4								

SAMPLE COLLECTION INFORMATION:

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

OBSERVATIONS / NOTES:

Vertical Pump Placement = 160'

Circle if Applicable:

MS/MSD	Duplicate ID No.:

Signature(s): Donald W Kaler

TBD: To Be Determined

Tetra Tech NUS, Inc.

LOW FLOW PURGE DATA SHEET

PROJECT SITE NAME: Willow Grove JRB Site 3
PROJECT NUMBER: 112G00845

WELL ID.: 03MW08D
DATE: 10-15-08

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
1100	30.80	150							START PURGING
1105	30.82	150	6.45	.362	120	4.46	15.9	243	
1110	30.82	150	6.76	.376	800	2.69	14.5	224	
1115	30.82	150	6.78	.374	550	2.37	14.8	215	
1120	30.82	150	6.81	.372	220	2.27	15.3	203	
1125	30.82	150	6.85	.370	175	2.38	15.3	192	
1130	30.82	150	6.86	.369	140	2.45	15.2	187	
1135	30.82	150	6.87	.367	100	2.49	15.2	179	
1140	30.82	150	6.88	.367	70	2.53	15.2	173	
1145	30.82	150	6.89	.366	50	2.57	15.2	166	
1150	30.82	150	6.90	.365	31	2.58	15.3	160	
1155	30.82	150	6.90	.365	22	2.58	15.3	156	
1200	30.82	150	6.90	.364	17	2.58	15.3	152	
1205	30.82	150	6.91	.363	15	2.58	15.4	148	
1210	30.82	150	6.91	.363	12.3	2.60	15.4	142	
1215	30.82	150	6.91	.364	10	2.59	15.5	138	
1220	30.82	150	6.91	.364	9.6	2.58	15.5	135	
1225	30.82	150	6.92	.365	8.7	2.52	15.7	131	

CALCULATIONS

SIGNATURE(S): Donald Whaley **PAGE** ___ **OF**

Tetra Tech NUS, Inc.

GROUNDWATER SAMPLE LOG SHEET

Page___ of ___

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

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

Sample ID No.: 03IW01-20081013
Sample Location: IW01
Sampled By: CM/DW
C.O.C. No.:
Type of Sample:
[X] Low Concentration
[] High Concentration

SAMPLING DATA:

	Color	pH	S.C.	Temp.	Turbidity	DO	ORP	TBD
Date: 10/13/08								
Time: 1015	Visual	Standard	mS/cm	^{0}C	NTU	mg/l	mV	sal
Method: Sample Bottles	clear	6.25	0.575	13.1	3.3	9.03	287	0.0

PURGE DATA:

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

NA

SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Collected
VOC	HCL	40 ml VOA Vials	4

OBSERVATIONS / NOTES:

Vertical Pump Placement = N/A

Circle if Applicable:

MS/MSD

Duplicate ID No.: Assigned Time: 0000
DUP-03

Signature(s): Donald Whalen

TBD: To Be Determined

Tetra Tech NUS, Inc.

SURFACE WATER SAMPLE LOG SHEET

Project Site Name: NASJRB Willow Grove
Project No.: 112G000845

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

Sample ID No.: 03SW10-20081013
Sample Location: SW10
Sampled By: DW/CM
C.O.C. No.:

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

SAMPLING DATA:

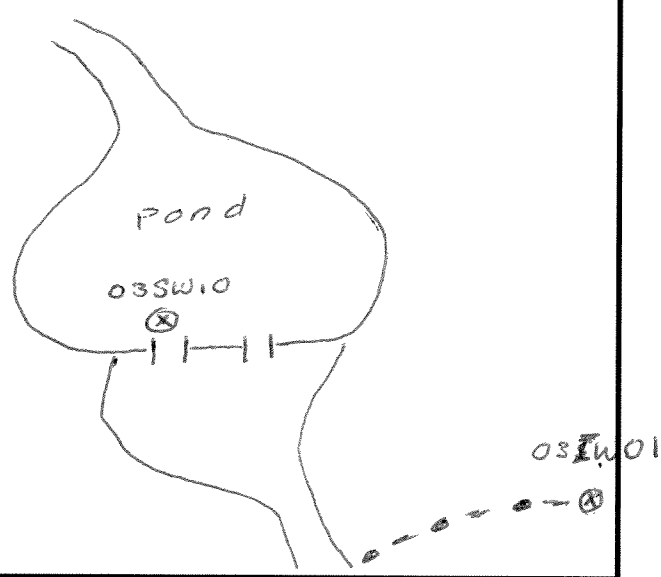
	Color Visual	pH Standard	S.C. mS/cm	Temp. Degrees C	Turbidity NTU	DO mg/l	ORP Mv	Other NAC
Date: 10/13/08								
Time: 1055								
Depth: 0-3"								
Method: Sample Bottles	Clear	6.78	0.406	16.1	2.7	12.83	235	0.0

SAMPLE COLLECTION INFORMATION:

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

OBSERVATIONS / NOTES:

MAP:



Circle if Applicable:

MS/MSD	Duplicate ID No.:

Signature(s): Donald Whalen

Tetra Tech NUS, Inc.

SURFACE WATER SAMPLE LOG SHEET

Project Site Name: NASJRB Willow Grove
Project No.: 112G000845

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

Sample ID No.: 035W11-20081013
Sample Location: SW11
Sampled By: DW/CM
C.O.C. No.:

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

SAMPLING DATA:

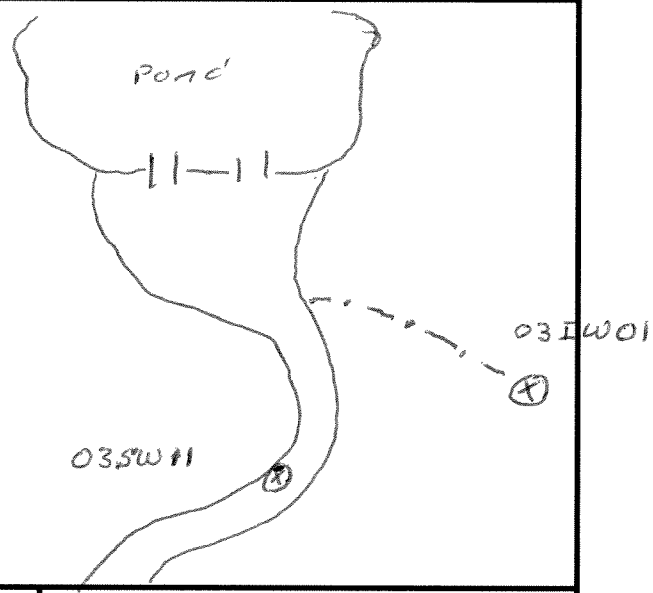
	Color Visual	pH Standard	S.C. mS/cm	Temp. Degrees C	Turbidity NTU	DO mg/l	ORP Mv	Other NAC
Date: 10/13/08 Time: 1040 Depth: 0-3" Method: Sample Bottles	Clear	6.55	0.415	15.9	5.8	10.14	205	0.0

SAMPLE COLLECTION INFORMATION:

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

OBSERVATIONS / NOTES:

MAP:



Circle if Applicable:

MS/MSD	Duplicate ID No.:

Signature(s): Donald Whalen

APPENDIX C

GROUNDWATER LEVEL DATA

Tetra Tech NUS, Inc.

GROUNDWATER LEVEL MEASUREMENT SHEET

Project Name: NAS JRB Willow Grove Site3
Project No.: G00845
Location: Willow Grove JRB
Personnel: Donald Whalen
Weather Conditions: Sunny, Cool
Measuring Device: Herron Dipper T
Tidally Influence 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	10/14/2008	10:16	347.49	33.93	24.03	323.46	PID: 0.5
03MS01SI	10/14/2008	10:08	346.98	80.85	23.39	323.59	PID: 1.8
03MW02S	10/14/2008	10:37	326.15	24.26	12.71	313.44	PID: 0.0
03MW03S	10/14/2008	10:09	312.96	9.15	3.82	309.14	PID: 6.4
03MW03SI	10/14/2008	13:22	313.75	80.00	7.44 ATOC	321.19	PID: 0.0
03MW04S	10/14/2008	11:01	324.49	36.47	10.63	313.86	PID: 0.0
03MW04SI	10/14/2008	10:56	323.87	80.00	1.90 ATOC	325.77	PID: 0.0
03MW01I	10/14/2008	10:10	347.50	180.61	13.10	334.40	PID: 0.0
03MW03I	10/14/2008	12:45	315.00	168.50	8.32 ATOC	323.32	PID: 0.0
03MW04I	10/14/2008	11:25	324.85	168.00	6.31 ATOC	336.85	PID: 0.0
03MW05S	10/14/2008	9:47	362.90	40.44	29.72	333.18	PID: 0.0
03MW02SI	10/14/2008	10:39	326.33	66.95	12.88	313.45	PID: 0.0
03MW02I	10/14/2008	10:40	326.38	146.05	4.32	322.06	PID: 0.0
03MW05I	10/14/2008	9:43	362.93	93.98	28.49	334.44	PID: 0.0
03MW06S	10/14/2008	9:39	367.00	38.27	34.48	332.52	PID: 0.0
03MW06SI	10/14/2008	9:37	366.86	86.35	32.40	334.46	PID: 0.0
03MW06I	10/14/2008	9:35	366.82	148.82	32.56	334.26	PID: 0.0
03MW07S	10/14/2008	0:00	324.90	46.33	12.30	312.60	PID: 0.0
03MW08S	10/14/2008	9:31	365.59	69.47	29.40	336.19	PID: 0.0
03MW08D	10/14/2008	9:32	365.63	175.05	30.75	334.88	PID: 0.0

* All measurements to the nearest 0.01 foot

APPENDIX D

DATA VALIDATION REPORT SUMMARIES

TETRA TECH NUS

PHIL- 22553

TO:	**RUSS TURNER**	**DATE:**	**NOVEMBER 18, 2008**
FROM:	**MEGAN RITCHIE**	**COPIES:**	**FILE**

SUBJECT: **ORGANIC DATA VALIDATION – VOC**
NAS JRB WILLOW GROVE SITE 3, WILLOW GROVE, PENNSYLVANIA
SDG NO. TWM002

SAMPLES: **5/Aqueous/**

03IW01-20081013	03SW10-20081013	TB-101308
DUP-03	03SW11-20081013	

OVERVIEW

The sample set for the NAS JRB Willow Grove Site 3 Interim Groundwater Monitoring (IGWM) – Willow Grove, PA, SDG TWM002 consists of four (4) aqueous environmental samples (designated 03IW-, 03SW, and DUP-) and one (1) field quality control (QC) trip blank (designated TB-). No samples were designated as the matrix spike and matrix spike duplicate (MS/MSD) for this sample set. One field duplicate pair (03IW01 / DUP-03) was included in this sample set. All samples were analyzed for Volatile Organic Compounds (VOCs).

The samples were collected by Tetra Tech NUS on October 13, 2008 and analyzed by Analytical Laboratory Services, Inc. (ALSI) of Middletown, Pennsylvania.

VOC analysis was conducted using EPA SW-846 Method 8260B.

SUMMARY

All 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, laboratory control spike (LCS) results, internal standards performance, compound identification, compound quantitation, and field duplicate results.

MINOR PROBLEMS

- The following table summarizes the analytes detected as contaminants in the laboratory blanks at the maximum concentration indicated:

Compound	Maximum Concentration	Action Level
1,4-Dioxane	227 µg/L	1135 µg/L
Chloroform*	0.28 µg/L	1.4 µg/L
Methylene chloride*	0.4 µg/L	4 µg/L

* Indicates compound was detected in the trip blank.

Samples affected: The action levels apply to all aqueous samples.

Adjustments were made for the samples aliquot size and dilution factors. Results reported at concentrations within the action level are qualified (B) and are considered to be false positives (artifacts of blank contamination). No qualifications were made for 1,4-dioxane nor methylene chloride because there were no positive results of these compounds in the associated samples.

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

Notes

The laboratory reported 1,4-dioxane as a target compound. 1,4-Dioxane was not requested as a target compound for VOC analysis by Tetra Tech. However, the 1,4-dioxane was validated and reported in this data set.

The continuing calibration %Ds exceeded the QC criteria of 25% for dichlorodifluoromethane and 1,4-dioxane. No action was taken because there were no detections of these compounds in the associated samples.

EXECUTIVE SUMMARY

Laboratory Performance: 1,4-Dioxane was detected in the laboratory method blank. Two compounds exceeded the continuing calibration %D criteria.

Other Factors Affecting Data Quality: Two compounds were detected in the trip blank.

The data for these analyses were reviewed with reference to the Tetra Tech NUS Standard Operating Procedure DV-02 (8/01) "Data Validation for Non-CLP Organics for Solid Matrices" and 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 N. Ritchie

Megan N. Ritchie
Chemist

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-002 MEDIA: WATER DATA FRACTION: OV

nsample	03IW01-20081013
samp_date	10/13/2008
lab_id	9758894002
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	0.68	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	
1,4-DIOXANE	320	U	
2-BUTANONE	10	U	
2-HEXANONE	5	U	
4-METHYL-2-PENTANONE	5	U	
ACETONE	10	U	
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	0.98	B	B
CHLOROMETHANE	1	U	

nsample	03IW01-20081013
samp_date	10/13/2008
lab_id	9758894002
qc_type	NM
units	UG/L
Pct_Solids	
DUP_OF:	

Parameter	Result	Val Qual	Qual Code
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	5.6		
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	03SW10-20081013
samp_date	10/13/2008
lab_id	9758894003
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	
1,4-DIOXANE	320	U	
2-BUTANONE	10	U	
2-HEXANONE	5	U	
4-METHYL-2-PENTANONE	5	U	
ACETONE	10	U	
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	

PROJ_NO: 00845

SDG: TWM-002 MEDIA: WATER DATA FRACTION: OV

nsample	03SW10-20081013
samp_date	10/13/2008
lab_id	9758894003
qc_type	NM
units	UG/L
Pct_Solids	
DUP_OF:	

Parameter	Result	Val Qual	Qual Code
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	

nsample	03SW11-20081013
samp_date	10/13/2008
lab_id	9758894004
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	
1,4-DIOXANE	320	U	
2-BUTANONE	10	U	
2-HEXANONE	5	U	
4-METHYL-2-PENTANONE	5	U	
ACETONE	10	U	
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	

nsample	03SW11-20081013
samp_date	10/13/2008
lab_id	9758894004
qc_type	NM
units	UG/L
Pct_Solids	
DUP_OF:	

Parameter	Result	Val Qual	Qual Code
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	

PROJ_NO: 00845

SDG: TWM-002 MEDIA: WATER DATA FRACTION: OV

nsample	DUP-03
samp_date	10/13/2008
lab_id	9758894005
qc_type	FD
units	UG/L
Pct_Solids	
DUP_OF:	03IW01-20081013

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	0.46	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	
1,4-DIOXANE	320	U	
2-BUTANONE	10	U	
2-HEXANONE	5	U	
4-METHYL-2-PENTANONE	5	U	
ACETONE	10	U	
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	B	B
CHLOROMETHANE	1	U	

nsample	DUP-03
samp_date	10/13/2008
lab_id	9758894005
qc_type	FD
units	UG/L
Pct_Solids	
DUP_OF:	03IW01-20081013

Parameter	Result	Val Qual	Qual Code
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	6		
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-101308
samp_date	10/13/2008
lab_id	9758894001
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	
1,4-DIOXANE	320	U	
2-BUTANONE	10	U	
2-HEXANONE	5	U	
4-METHYL-2-PENTANONE	5	U	
ACETONE	10	U	
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	0.28	J	P
CHLOROMETHANE	1	U	

PROJ_NO: 00845

SDG: TWM-002 MEDIA: WATER DATA FRACTION: OV

nsample	TB-101308
samp_date	10/13/2008
lab_id	9758894001
qc_type	TB
units	UG/L
Pct_Solids	
DUP_OF:	

Parameter	Result	Val Qual	Qual Code
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	0.4	J	P
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	

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.

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

TETRA TECH NUS

PHIL- 22554

TO:	**RUSS TURNER**	**DATE:**	**NOVEMBER 18, 2008**
FROM:	**MEGAN RITCHIE**	**COPIES:**	**FILE**

SUBJECT: **ORGANIC DATA VALIDATION – VOC**
NAS JRB WILLOW GROVE SITE 3, WILLOW GROVE, PENNSYLVANIA
SDG NO. TWM003

SAMPLES: **10/Aqueous/**

03MW04I-20081014	03MW08D-20081015	03MW06IL-20081015	TB101408
03MW04SI-20081014	03MW08S-20081015	03MW06SI-20081015	
03MW04SIL-20081014	03MW06I-20081015	03MW06S-20081015	

OVERVIEW

The sample set for the NAS JRB Willow Grove Site 3 Interim Groundwater Monitoring (IGWM) – Willow Grove, PA, SDG TWM003 consists of nine (9) aqueous environmental samples (designated 03MW-) and one (1) field quality control (QC) trip blank (designated TB-). No samples were designated as the matrix spike and matrix spike duplicate (MS/MSD) for this sample set. No field duplicate pairs were included in this sample set. All samples were analyzed for Volatile Organic Compounds (VOCs).

The samples were collected by Tetra Tech NUS on October 14 and 15, 2008 and analyzed by Analytical Laboratory Services, Inc. (ALSI) of Middletown, Pennsylvania.

VOC analysis was conducted using EPA SW-846 Method 8260B.

SUMMARY

All 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, laboratory control spike (LCS) results, internal standards performance, compound identification, compound quantitation, and field duplicate results.

MINOR PROBLEMS

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

Notes

The laboratory reported 1,4-dioxane as a target compound. 1,4-Dioxane was not requested as a target compound for VOC analysis by Tetra Tech. However, the 1,4-dioxane was validated and reported in this data set.

1,4-Dioxane was detected in the laboratory method blank. No action was taken because there were no detections of 1,4-dioxane in the associated samples.

Methylene chloride was detected in the trip blank. No action was taken because there were no positive detections of methylene chloride in the associated samples.

The continuing calibration %Ds exceeded the QC criteria of 25% for dichlorodifluoromethane and 1,4-dioxane. No action was taken because there were no detections of these compounds in the associated samples.

EXECUTIVE SUMMARY

Laboratory Performance: 1,4-Dioxane was detected in the laboratory method blank. Two compounds exceeded the continuing calibration %D criteria.

Other Factors Affecting Data Quality: Methylene chloride was detected in the trip blank.

The data for these analyses were reviewed with reference to the Tetra Tech NUS Standard Operating Procedure DV-02 (8/01) "Data Validation for Non-CLP Organics for Solid Matrices" and 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 N. Ritchie

Megan N. Ritchie
Chemist

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-003 MEDIA: WATER DATA FRACTION: OV

nsample	03MW04I-20081014
samp_date	10/14/2008
lab_id	9759344002
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	
1,4-DIOXANE	320	U	
2-BUTANONE	10	U	
2-HEXANONE	5	U	
4-METHYL-2-PENTANONE	5	U	
ACETONE	10	U	
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	

nsample	03MW04I-20081014
samp_date	10/14/2008
lab_id	9759344002
qc_type	NM
units	UG/L
Pct_Solids	
DUP_OF:	

Parameter	Result	Val Qual	Qual Code
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	

nsample	03MW04SI-20081014
samp_date	10/14/2008
lab_id	9759344003
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	
1,4-DIOXANE	320	U	
2-BUTANONE	10	U	
2-HEXANONE	5	U	
4-METHYL-2-PENTANONE	5	U	
ACETONE	10	U	
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	1.6		
CHLOROMETHANE	1	U	

PROJ_NO: 00845

SDG: TWM-003 MEDIA: WATER DATA FRACTION: OV

nsample	03MW04SI-20081014
samp_date	10/14/2008
lab_id	9759344003
qc_type	NM
units	UG/L
Pct_Solids	
DUP_OF:	

Parameter	Result	Val Qual	Qual Code
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	3.9		
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	03MW04SIL-20081014
samp_date	10/14/2008
lab_id	9759344004
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	
1,4-DIOXANE	320	U	
2-BUTANONE	10	U	
2-HEXANONE	5	U	
4-METHYL-2-PENTANONE	5	U	
ACETONE	10	U	
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	1.5		
CHLOROMETHANE	1	U	

nsample	03MW04SIL-20081014
samp_date	10/14/2008
lab_id	9759344004
qc_type	NM
units	UG/L
Pct_Solids	
DUP_OF:	

Parameter	Result	Val Qual	Qual Code
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		
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-003 MEDIA: WATER DATA FRACTION: OV

nsample	03MW06I-20081015
samp_date	10/15/2008
lab_id	9759344007
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	
1,4-DIOXANE	320	U	
2-BUTANONE	10	U	
2-HEXANONE	5	U	
4-METHYL-2-PENTANONE	5	U	
ACETONE	10	U	
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	

nsample	03MW06I-20081015
samp_date	10/15/2008
lab_id	9759344007
qc_type	NM
units	UG/L
Pct_Solids	
DUP_OF:	

Parameter	Result	Val Qual	Qual Code
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	

nsample	03MW06IL-20081015
samp_date	10/15/2008
lab_id	9759344008
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	
1,4-DIOXANE	320	U	
2-BUTANONE	10	U	
2-HEXANONE	5	U	
4-METHYL-2-PENTANONE	5	U	
ACETONE	10	U	
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	

PROJ_NO: 00845

SDG: TWM-003 MEDIA: WATER DATA FRACTION: OV

nsample	03MW06IL-20081015
samp_date	10/15/2008
lab_id	9759344008
qc_type	NM
units	UG/L
Pct_Solids	
DUP_OF:	

Parameter	Result	Val Qual	Qual Code
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	

nsample	03MW06S-20081015
samp_date	10/15/2008
lab_id	9759344010
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	
1,4-DIOXANE	320	U	
2-BUTANONE	10	U	
2-HEXANONE	5	U	
4-METHYL-2-PENTANONE	5	U	
ACETONE	10	U	
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	

nsample	03MW06S-20081015
samp_date	10/15/2008
lab_id	9759344010
qc_type	NM
units	UG/L
Pct_Solids	
DUP_OF:	

Parameter	Result	Val Qual	Qual Code
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	1.8		
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	

PROJ_NO: 00845

SDG: TWM-003 MEDIA: WATER DATA FRACTION: OV

nsample	03MW06SI-20081015
samp_date	10/15/2008
lab_id	9759344009
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	
1,4-DIOXANE	320	U	
2-BUTANONE	10	U	
2-HEXANONE	5	U	
4-METHYL-2-PENTANONE	5	U	
ACETONE	10	U	
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	

nsample	03MW06SI-20081015
samp_date	10/15/2008
lab_id	9759344009
qc_type	NM
units	UG/L
Pct_Solids	
DUP_OF:	

Parameter	Result	Val Qual	Qual Code
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	

nsample	03MW08D-20081015
samp_date	10/15/2008
lab_id	9759344005
qc_type	NM
units	UG/L
Pct_Solids	
DUP_OF:	

Parameter	Result	Val Qual	Qual Code
1,1,1-TRICHLOROETHANE	4.1		
1,1,2,2-TETRACHLOROETHANE	1	U	
1,1,2-TRICHLOROETHANE	1	U	
1,1,2-TRICHLOROTRIFLUOROETHANE	1	U	
1,1-DICHLOROETHANE	8.2		
1,1-DICHLOROETHENE	5.1		
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	
1,4-DIOXANE	320	U	
2-BUTANONE	10	U	
2-HEXANONE	5	U	
4-METHYL-2-PENTANONE	5	U	
ACETONE	10	U	
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	

PROJ_NO: 00845

SDG: TWM-003 MEDIA: WATER DATA FRACTION: OV

nsample	03MW08D-20081015
samp_date	10/15/2008
lab_id	9759344005
qc_type	NM
units	UG/L
Pct_Solids	
DUP_OF:	

Parameter	Result	Val Qual	Qual Code
CIS-1,2-DICHLOROETHENE	1.5		
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	1.3		
TOLUENE	1	U	
TRANS-1,2-DICHLOROETHENE	1	U	
TRANS-1,3-DICHLOROPROPENE	1	U	
TRICHLOROETHENE	3.1		
TRICHLOROFLUOROMETHANE	1	U	
VINYL CHLORIDE	1	U	

nsample	03MW08S-20081015
samp_date	10/15/2008
lab_id	9759344006
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	
1,4-DIOXANE	320	U	
2-BUTANONE	10	U	
2-HEXANONE	5	U	
4-METHYL-2-PENTANONE	5	U	
ACETONE	10	U	
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	

nsample	03MW08S-20081015
samp_date	10/15/2008
lab_id	9759344006
qc_type	NM
units	UG/L
Pct_Solids	
DUP_OF:	

Parameter	Result	Val Qual	Qual Code
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	

PROJ_NO: 00845

SDG: TWM-003 MEDIA: WATER DATA FRACTION: OV

nsample	TB-101408	nsample	TB-101408
samp_date	10/14/2008	samp_date	10/14/2008
lab_id	9759344001	lab_id	9759344001
qc_type	TB	qc_type	TB
units	UG/L	units	UG/L
Pct_Solids		Pct_Solids	
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	
1,4-DIOXANE	320	U	
2-BUTANONE	10	U	
2-HEXANONE	5	U	
4-METHYL-2-PENTANONE	5	U	
ACETONE	10	U	
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	

Parameter	Result	Val Qual	Qual Code
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	0.27	J	P
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	

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.

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

TETRA TECH NUS

PHIL- 22555

TO:	RUSS TURNER	DATE:	NOVEMBER 19, 2008
FROM:	MEGAN RITCHIE	COPIES:	FILE

SUBJECT: ORGANIC DATA VALIDATION – VOC
NAS JRB WILLOW GROVE SITE 3, WILLOW GROVE, PENNSYLVANIA
SDG NO. TWM004

SAMPLES: 12/Aqueous/

03MW01S-20081016	03MW01I-20081017	03MW04S-20081016	DUP-04
03MW01SIL-20081017	03MW02S-20081016	03MW05S-20081016	TB-101608
03MW01SI-20081017	03MW02SI-20081017	03MW05I-20081016	RB-101608

OVERVIEW

The sample set for the NAS JRB Willow Grove Site 3 Interim Groundwater Monitoring (IGWM) – Willow Grove, PA, SDG TWM004 consists of ten (10) aqueous environmental samples (designated 03MW-) and two (2) field quality control (QC) trip blanks (designated TB- and RB-). One sample (03MW02SI-20081017) was designated the matrix spike and matrix spike duplicate (MS/MSD) for this sample set. One field duplicate pair (DUP-04 / 03MW01SIL-20081017) was included in this sample set. All samples were analyzed for Volatile Organic Compounds (VOCs).

The samples were collected by Tetra Tech NUS on October 16 and 17, 2008 and analyzed by Analytical Laboratory Services, Inc. (ALSI) of Middletown, Pennsylvania.

VOC analysis was 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, laboratory control spike (LCS) results, MS/MSD results, internal standards performance, compound identification, compound quantitation, and field duplicate results.

MAJOR PROBLEMS

- The initial calibration relative response factors (RRFs) for 2-butanone was below the QC criterion of 0.05. The non-detected results for 2-butanone were qualified as unusable (UR).

MINOR PROBLEMS

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

Notes

The laboratory reported 1,4-dioxane as a target compound. 1,4-Dioxane was not requested as a target compound for VOC analysis by Tetra Tech. However, the 1,4-dioxane was validated and reported in this data set.

1,4-Dioxane was detected in the laboratory method blank. No action was taken because there were no detections of 1,4-dioxane in the associated samples.

The continuing calibration %Ds exceeded the QC criterion of 25% for 1,4-dioxane. No action was taken because there were no detections of 1,4-dioxane in the associated samples.

The LCS percent recoveries (%Rs) for 1,1-dichloroethene exceeded the upper QC limits of 128% and 130% in two LCS samples. No action was taken because there were no positive results for 1,1-dichloroethene in the associated samples.

The MS/MSD %Rs exceeded the upper QC limits for several compounds. No action was taken because there were no positive detections of these compounds in the associated samples.

The Relative Percent Difference (RPD) for 1,4-dioxane exceeded the criterion of 40% in one of the MS/MSD sets. No action was taken on MS/MSD alone.

EXECUTIVE SUMMARY

Laboratory Performance: The RRF for 2-butanone was below the criterion of 0.05 in the initial calibration. 1,4-Dioxane was detected in the laboratory method blank. The %D for 1,4-dioxane exceeded the continuing calibration criteria. The %Rs for 1,1-dichloroethene exceeded the LCS criteria.

Other Factors Affecting Data Quality: The %Rs for several compounds exceeded the MS/MSD criteria. The RPD for 1,4-dioxane exceeded the MS/MSD precision criterion.

The data for these analyses were reviewed with reference to the Tetra Tech NUS Standard Operating Procedure DV-02 (8/01) "Data Validation for Non-CLP Organics for Solid Matrices" and 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 N. Ritchie

Megan N. Ritchie
Chemist

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-004 MEDIA: WATER DATA FRACTION: OV

nsample	03MW01I-20081017
samp_date	10/17/2008
lab_id	9759753012
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	
1,4-DIOXANE	320	U	
2-BUTANONE	10	UR	C
2-HEXANONE	5	U	
4-METHYL-2-PENTANONE	5	U	
ACETONE	10	U	
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	

nsample	03MW01I-20081017
samp_date	10/17/2008
lab_id	9759753012
qc_type	NM
units	UG/L
Pct_Solids	
DUP_OF:	

Parameter	Result	Val Qual	Qual Code
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	

nsample	03MW01S-20081016
samp_date	10/16/2008
lab_id	9759753005
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	
1,4-DIOXANE	320	U	
2-BUTANONE	10	UR	C
2-HEXANONE	5	U	
4-METHYL-2-PENTANONE	5	U	
ACETONE	10	U	
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	

PROJ_NO: 00845

SDG: TWM-004 MEDIA: WATER DATA FRACTION: OV

nsample	03MW01S-20081016
samp_date	10/16/2008
lab_id	9759753005
qc_type	NM
units	UG/L
Pct_Solids	
DUP_OF:	

Parameter	Result	Val Qual	Qual Code
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	2.6		
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	03MW01SI-20081017
samp_date	10/17/2008
lab_id	9759753010
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	
1,4-DIOXANE	320	U	
2-BUTANONE	10	UR	C
2-HEXANONE	5	U	
4-METHYL-2-PENTANONE	5	U	
ACETONE	10	U	
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	

nsample	03MW01SI-20081017
samp_date	10/17/2008
lab_id	9759753010
qc_type	NM
units	UG/L
Pct_Solids	
DUP_OF:	

Parameter	Result	Val Qual	Qual Code
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	9.7		
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-004 MEDIA: WATER DATA FRACTION: OV

nsample	03MW01SIL-20081017
samp_date	10/17/2008
lab_id	9759753008
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	
1,4-DIOXANE	320	U	
2-BUTANONE	10	UR	C
2-HEXANONE	5	U	
4-METHYL-2-PENTANONE	5	U	
ACETONE	10	U	
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	

nsample	03MW01SIL-20081017
samp_date	10/17/2008
lab_id	9759753008
qc_type	NM
units	UG/L
Pct_Solids	
DUP_OF:	

Parameter	Result	Val Qual	Qual Code
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	7.7		
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	

nsample	03MW02S-20081016
samp_date	10/16/2008
lab_id	9759753007
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	
1,4-DIOXANE	320	U	
2-BUTANONE	10	UR	C
2-HEXANONE	5	U	
4-METHYL-2-PENTANONE	5	U	
ACETONE	10	U	
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	

PROJ_NO: 00845

SDG: TWM-004 MEDIA: WATER DATA FRACTION: OV

nsample	03MW02S-20081016
samp_date	10/16/2008
lab_id	9759753007
qc_type	NM
units	UG/L
Pct_Solids	
DUP_OF:	

Parameter	Result	Val Qual	Qual Code
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	

nsample	03MW02SI-20081017
samp_date	10/17/2008
lab_id	9759753011
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	
1,4-DIOXANE	320	U	
2-BUTANONE	10	UR	C
2-HEXANONE	5	U	
4-METHYL-2-PENTANONE	5	U	
ACETONE	10	U	
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	

nsample	03MW02SI-20081017
samp_date	10/17/2008
lab_id	9759753011
qc_type	NM
units	UG/L
Pct_Solids	
DUP_OF:	

Parameter	Result	Val Qual	Qual Code
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	3.3		
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	

PROJ_NO: 00845

SDG: TWM-004 MEDIA: WATER DATA FRACTION: OV

nsample	03MW04S-20081016
samp_date	10/16/2008
lab_id	9759753006
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	
1,4-DIOXANE	320	U	
2-BUTANONE	10	UR	C
2-HEXANONE	5	U	
4-METHYL-2-PENTANONE	5	U	
ACETONE	10	U	
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	1.6		
CHLOROMETHANE	1	U	

nsample	03MW04S-20081016
samp_date	10/16/2008
lab_id	9759753006
qc_type	NM
units	UG/L
Pct_Solids	
DUP_OF:	

Parameter	Result	Val Qual	Qual Code
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	2.7		
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	

nsample	03MW05I-20081016
samp_date	10/16/2008
lab_id	9759753004
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	
1,4-DIOXANE	320	U	
2-BUTANONE	10	UR	C
2-HEXANONE	5	U	
4-METHYL-2-PENTANONE	5	U	
ACETONE	10	U	
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	

PROJ_NO: 00845

SDG: TWM-004 MEDIA: WATER DATA FRACTION: OV

nsample	03MW05I-20081016
samp_date	10/16/2008
lab_id	9759753004
qc_type	NM
units	UG/L
Pct_Solids	
DUP_OF:	

Parameter	Result	Val Qual	Qual Code
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	

nsample	03MW05S-20081016
samp_date	10/16/2008
lab_id	9759753003
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	
1,4-DIOXANE	320	U	
2-BUTANONE	10	UR	C
2-HEXANONE	5	U	
4-METHYL-2-PENTANONE	5	U	
ACETONE	10	U	
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	

nsample	03MW05S-20081016
samp_date	10/16/2008
lab_id	9759753003
qc_type	NM
units	UG/L
Pct_Solids	
DUP_OF:	

Parameter	Result	Val Qual	Qual Code
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	0.49	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	

PROJ_NO: 00845

SDG: TWM-004 MEDIA: WATER DATA FRACTION: OV

nsample	DUP-04	nsample	DUP-04	nsample	RB-101608
samp_date	10/17/2008	samp_date	10/17/2008	samp_date	10/16/2008
lab_id	9759753009	lab_id	9759753009	lab_id	9759753002
qc_type	FD	qc_type	FD	qc_type	RB
units	UG/L	units	UG/L	units	UG/L
Pct_Solids		Pct_Solids		Pct_Solids	
DUP_OF:	03MW01SIL-20081017	DUP_OF:	03MW01SIL-20081017	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	
1,4-DIOXANE	320	U	
2-BUTANONE	10	UR	C
2-HEXANONE	5	U	
4-METHYL-2-PENTANONE	5	U	
ACETONE	10	U	
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	

Parameter	Result	Val Qual	Qual Code
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	7.4		
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	

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	
1,4-DIOXANE	320	U	
2-BUTANONE	10	UR	C
2-HEXANONE	5	U	
4-METHYL-2-PENTANONE	5	U	
ACETONE	10	U	
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	

PROJ_NO: 00845

SDG: TWM-004 MEDIA: WATER DATA FRACTION: OV

nsample	RB-101608
samp_date	10/16/2008
lab_id	9759753002
qc_type	RB
units	UG/L
Pct_Solids	
DUP_OF:	

Parameter	Result	Val Qual	Qual Code
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	

nsample	TB-101608
samp_date	10/16/2008
lab_id	9759753001
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	
1,4-DIOXANE	320	U	
2-BUTANONE	10	UR	C
2-HEXANONE	5	U	
4-METHYL-2-PENTANONE	5	U	
ACETONE	10	U	
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	

nsample	TB-101608
samp_date	10/16/2008
lab_id	9759753001
qc_type	TB
units	UG/L
Pct_Solids	
DUP_OF:	

Parameter	Result	Val Qual	Qual Code
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	

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.

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

TETRA TECH NUS

PHIL- 22556

TO:	**RUSS TURNER**	**DATE:**	**NOVEMBER 19, 2008**
FROM:	**MEGAN RITCHIE**	**COPIES:**	**FILE**

SUBJECT: **ORGANIC DATA VALIDATION – VOC**
NAS JRB WILLOW GROVE SITE 3, WILLOW GROVE, PENNSYLVANIA
SDG NO. TWM005

SAMPLES: **11/Aqueous/**

03MW02IL-20081020	03MW03SL-20081020	03MW07S-20081021	FB-102108
03MW02I-20081020	03MW03SI-20081020	DUP-05	RB-102108
03MW03S-20081020	03MW03I-20081020	TB-102008	

OVERVIEW

The sample set for the NAS JRB Willow Grove Site 3 Interim Groundwater Monitoring (IGWM) – Willow Grove, PA, SDG TWM005 consists of eight (8) aqueous environmental samples (designated 03MW-) and three (3) field quality control (QC) blanks (designated TB-, FB-, and RB-). One sample (03MW03SL-20081020) was designated the matrix spike and matrix spike duplicate (MS/MSD) for this sample set. One field duplicate pair (DUP-05 / 03MW02IL-20081017) was included in this sample set. All samples were analyzed for Volatile Organic Compounds (VOCs).

The samples were collected by Tetra Tech NUS on October 20 and 21, 2008 and analyzed by Analytical Laboratory Services, Inc. (ALSI) of Middletown, Pennsylvania.

VOC analysis was 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, laboratory control spike (LCS) results, MS/MSD results, internal standards performance, compound identification, compound quantitation, and field duplicate results.

MAJOR PROBLEMS

- The initial calibration relative response factors (RRFs) for 2-butanone was below the QC criterion of 0.05. The non-detected results for 2-butanone were qualified as unusable (UR).

MINOR PROBLEMS

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

Notes

The laboratory reported 1,4-dioxane as a target compound. 1,4-Dioxane was not requested as a target compound for VOC analysis by Tetra Tech. However, the 1,4-dioxane was validated and reported in this data set.

1,4-Dioxane was detected in the trip blank. No action was taken because there were no detections of 1,4-dioxane in the associated samples.

Toluene was detected in the field and rinsate blank. No action was taken because there were no detections of toluene in the associated samples.

The continuing calibration %Ds exceeded the QC criterion of 25% for 1,4-dioxane. No action was taken because there were no detections of 1,4-dioxane in the associated samples.

An LCS percent recovery (%R) for 1,1-dichloroethene exceeded the upper QC limit of 130%. No action was taken because there were no positive results for 1,1-dichloroethene in the associated samples.

The MS/MSD %Rs exceeded the upper QC limits for several compounds. No action was taken because there were no positive detections of these compounds in the associated samples.

EXECUTIVE SUMMARY

Laboratory Performance: The RRF for 2-butanone was below the criterion of 0.05 in the initial calibration. The %D for 1,4-dioxane exceeded the continuing calibration criteria. The %Rs for 1,1-dichloroethene exceeded the LCS criteria.

Other Factors Affecting Data Quality: 1,4-Dioxane was detected in the trip blank. Toluene was detected in the field and rinsate blank. The %Rs for several compounds exceeded the MS/MSD criteria.

The data for these analyses were reviewed with reference to the Tetra Tech NUS Standard Operating Procedure DV-02 (8/01) "Data Validation for Non-CLP Organics for Solid Matrices" and 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 (QAPP)."

Megan N. Ritchie

Megan N. Ritchie
Chemist

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-005 MEDIA: WATER DATA FRACTION: OV

nsample	03MW02I-20081020
samp_date	10/20/2008
lab_id	9760073002
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	
1,4-DIOXANE	320	U	
2-BUTANONE	10	UR	C
2-HEXANONE	5	U	
4-METHYL-2-PENTANONE	5	U	
ACETONE	10	U	
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	

nsample	03MW02I-20081020
samp_date	10/20/2008
lab_id	9760073002
qc_type	NM
units	UG/L
Pct_Solids	
DUP_OF:	

Parameter	Result	Val Qual	Qual Code
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	9.1		
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	03MW02IL-20081020
samp_date	10/20/2008
lab_id	9760073001
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	
1,4-DIOXANE	320	U	
2-BUTANONE	10	UR	C
2-HEXANONE	5	U	
4-METHYL-2-PENTANONE	5	U	
ACETONE	10	U	
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	

PROJ_NO: 00845

SDG: TWM-005 MEDIA: WATER DATA FRACTION: OV

nsample	03MW02IL-20081020
samp_date	10/20/2008
lab_id	9760073001
qc_type	NM
units	UG/L
Pct_Solids	
DUP_OF:	

Parameter	Result	Val Qual	Qual Code
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	7.3		
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	03MW03I-20081021
samp_date	10/21/2008
lab_id	9760073008
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	
1,4-DIOXANE	320	U	
2-BUTANONE	10	UR	C
2-HEXANONE	5	U	
4-METHYL-2-PENTANONE	5	U	
ACETONE	10	U	
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	

nsample	03MW03I-20081021
samp_date	10/21/2008
lab_id	9760073008
qc_type	NM
units	UG/L
Pct_Solids	
DUP_OF:	

Parameter	Result	Val Qual	Qual Code
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	10.4		
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-005 MEDIA: WATER DATA FRACTION: OV

nsample	03MW03S-20081020	nsample	03MW03S-20081020	nsample	03MW03SI-20081021
samp_date	10/20/2008	samp_date	10/20/2008	samp_date	10/21/2008
lab_id	9760073005	lab_id	9760073005	lab_id	9760073007
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	
1,4-DIOXANE	320	U	
2-BUTANONE	10	UR	C
2-HEXANONE	5	U	
4-METHYL-2-PENTANONE	5	U	
ACETONE	10	U	
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	

Parameter	Result	Val Qual	Qual Code
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	2.6		
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	
1,4-DIOXANE	320	U	
2-BUTANONE	10	UR	C
2-HEXANONE	5	U	
4-METHYL-2-PENTANONE	5	U	
ACETONE	10	U	
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	0.57	J	P
CHLOROMETHANE	1	U	

PROJ_NO: 00845

SDG: TWM-005 MEDIA: WATER DATA FRACTION: OV

nsample	03MW03SI-20081021
samp_date	10/21/2008
lab_id	9760073007
qc_type	NM
units	UG/L
Pct_Solids	
DUP_OF:	

Parameter	Result	Val Qual	Qual Code
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	12.4		
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	

nsample	03MW03SL-20081020
samp_date	10/20/2008
lab_id	9760073004
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	
1,4-DIOXANE	320	U	
2-BUTANONE	10	UR	C
2-HEXANONE	5	U	
4-METHYL-2-PENTANONE	5	U	
ACETONE	10	U	
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	

nsample	03MW03SL-20081020
samp_date	10/20/2008
lab_id	9760073004
qc_type	NM
units	UG/L
Pct_Solids	
DUP_OF:	

Parameter	Result	Val Qual	Qual Code
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	2.1		
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	

PROJ_NO: 00845

SDG: TWM-005 MEDIA: WATER DATA FRACTION: OV

nsample	03MW07S-20081021	nsample	03MW07S-20081021	nsample	DUP-05
samp_date	10/21/2008	samp_date	10/21/2008	samp_date	10/20/2008
lab_id	9760073010	lab_id	9760073010	lab_id	9760073003
qc_type	NM	qc_type	NM	qc_type	FD
units	UG/L	units	UG/L	units	UG/L
Pct_Solids		Pct_Solids		Pct_Solids	
DUP_OF:		DUP_OF:		DUP_OF:	03MW02IL-20081020

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	
1,4-DIOXANE	320	U	
2-BUTANONE	10	UR	C
2-HEXANONE	5	U	
4-METHYL-2-PENTANONE	5	U	
ACETONE	10	U	
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	1.6		
CHLOROMETHANE	1	U	

Parameter	Result	Val Qual	Qual Code
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	

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	
1,4-DIOXANE	320	U	
2-BUTANONE	10	UR	C
2-HEXANONE	5	U	
4-METHYL-2-PENTANONE	5	U	
ACETONE	10	U	
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	

PROJ_NO: 00845

SDG: TWM-005 MEDIA: WATER DATA FRACTION: OV

nsample	DUP-05
samp_date	10/20/2008
lab_id	9760073003
qc_type	FD
units	UG/L
Pct_Solids	
DUP_OF:	03MW02IL-20081020

Parameter	Result	Val Qual	Qual Code
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	7.6		
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	FB-102108
samp_date	10/21/2008
lab_id	9760073009
qc_type	FB
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	
1,4-DIOXANE	320	U	
2-BUTANONE	10	UR	C
2-HEXANONE	5	U	
4-METHYL-2-PENTANONE	5	U	
ACETONE	10	U	
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	

nsample	FB-102108
samp_date	10/21/2008
lab_id	9760073009
qc_type	FB
units	UG/L
Pct_Solids	
DUP_OF:	

Parameter	Result	Val Qual	Qual Code
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	0.69	J	P
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-005 MEDIA: WATER DATA FRACTION: OV

nsample	RB-102108	nsample	RB-102108	nsample	TB-102008
samp_date	10/21/2008	samp_date	10/21/2008	samp_date	10/20/2008
lab_id	9760073011	lab_id	9760073011	lab_id	9760073006
qc_type	RB	qc_type	RB	qc_type	TB
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	
1,4-DIOXANE	320	U	
2-BUTANONE	10	UR	C
2-HEXANONE	5	U	
4-METHYL-2-PENTANONE	5	U	
ACETONE	10	U	
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	

Parameter	Result	Val Qual	Qual Code
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	0.4	J	P
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	
1,4-DIOXANE	221	J	P
2-BUTANONE	10	UR	C
2-HEXANONE	5	U	
4-METHYL-2-PENTANONE	5	U	
ACETONE	10	U	
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	

PROJ_NO: 00845

SDG: TWM-005 MEDIA: WATER DATA FRACTION: OV

nsample	TB-102008
samp_date	10/20/2008
lab_id	9760073006
qc_type	TB
units	UG/L
Pct_Solids	
DUP_OF:	

Parameter	Result	Val Qual	Qual Code
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	

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.

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