2014-2015 OU2 GROUNDWATER INVESTIGATION
RE120D1, RE120D2, RE120D3 (VPB 154)
Installation Report
BETHPAGE, NY

Prepared for:

Department of the Navy
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Comprehensive Long-Term Environmental Action Navy
Contract Number N62470-11-D-8013

CTO WE15

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September 2015

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List of Acronyms and Abbreviations

AOC	Area of Concern
bgs	below ground surface
COR	Continuously Operating Reference
EPA	Environmental Protection Agency, United States
ft	feet
GOCO	Government-Owned Contractor-Operated
GPS	Global Positioning System
IDW	Investigation Derived Waste
IR	Installation Restoration
Katahdin	Katahdin Analytical Services, Inc
NAD	North American Datum
NAVD	North American Vertical Datum
NAVFAC	Naval Facilities Engineering Command
NG	Northrop Grumman
NTU	nephlometric turbidity units
NWIRP	Naval Weapons Industrial Reserve Plant
NYSDEC	New York State Department of Environmental Conservation
OU	Operable Unit
PCBs	Polychlorinated Biphenyls
POTW	Publicly Owned Treatment Works
PPE	Personal Protective Equipment
PVC	Polyvinylchloride
SAP	Sampling and analysis plan
SVOC	Semivolatile Organic Compounds
TCE	Trichloroethene
TCL	Target Compound List
TCLP	Toxicity Characteristic Leaching Procedure
TOC	Total Organic Carbon
UFP	United Federal Programs
US	United States
VOC	Volatile Organic Compounds
VPB	Vertical Profile Boring

1.0 PROJECT BACKGROUND

Resolution Consultants has prepared this Data Summary Report for the Naval Facilities Engineering Command (NAVFAC), Mid-Atlantic under contract task order WE15 Contract N62470-11-D-8013. This report describes the installation of three monitoring wells and two quarterly groundwater monitoring events (specifically at the Vertical Profile Boring [VPB] 154 location) in 2014 and 2015 for the Naval Weapons Industrial Reserve Plant (NWIRP) Bethpage Operable Unit (OU) 2 Site 1 offsite plume. NWIRP Bethpage is located in east-central Nassau County, Long Island, New York, approximately 30 miles east of New York City (Figure 1).

1.1 Scope and Objectives

This report provides information on the installation of RE120D1, RE120D2 and RE120D3. The purpose of this investigation was to ascertain subsurface conditions and contaminant levels in the southwestern portion of the plume and define the western and southern extent of the RE108 Hot Spot (defined as an area >1,000 parts per billion [ppb] of total volatile organic compounds [VOCs] north of Hempstead Turnpike). The locations of RE120D1, RE120D2 and RE120D3, VPBs and monitoring well locations are shown in Figure 2.

The field investigation included completing three monitoring wells, well development, soil/groundwater analysis, groundwater grab samples, and surveying. Field tasks were conducted in 2014 and 2015 in accordance with the *United Federal Programs Sampling and Analysis Plan (UFP SAP)*, Bethpage, New York. In addition, the work adhered to the following UFP SAP Addendums: Groundwater Sampling Using Low Stress (Low Flow) Purging and Sampling Protocol (Resolution Consultants, 2013) and Installation of Vertical Profile Borings and Monitoring Wells (Resolution Consultants, 2013).

Documentation of these activities is included in Appendix A of this report.

1.2 Site History

NWIRP Bethpage is in the Hamlet of Bethpage, Town of Oyster Bay, New York. Since its inception in 1941, the plant's primary mission was the research prototyping, testing, design, engineering, fabrication, and primary assembly of military aircraft. The facilities at NWIRP included four plants used for assembly and prototype testing, a group of quality control laboratories, two warehouse complexes (north and south), a salvage storage area, water recharge basins, the Industrial Wastewater Treatment Plant, and several smaller support buildings.

The Navy's property originally totaled 109.5 acres and was formerly a Government-Owned Contractor-Operated (GOCO) facility that was operated by Northrop Grumman (NG) until September 1998. Prior to 2002, the NWIRP property was bordered on the north, west, and south by current or former NG facilities, and on the east by a residential neighborhood. By March 2008, approximately 100 acres of NWIRP property were transferred to Nassau County in three separate actions. The remaining 9 acres and access easements were retained by the Navy to continue remedial efforts at Installation Restoration (IR) Site 1 – Former Drum Marshalling Area and Site 4 – Former Underground Storage Tanks (Area of Concern [AOC] 22). A parcel of land connecting the two sites was also retained. Currently, the 9-acre parcel of NWIRP is bordered on the east by the residential neighborhood and on the north, south, and west by Steel Equities; however, a small portion is still owned by Nassau County. Access to the NWIRP is from South Oyster Bay Road.

1.3 Geology and Hydrogeology

Overburden at the site consists of well over 1,000 feet (ft) of Cretaceous deposits overlying crystalline bedrock of the Hartland Formation. Overburden is divided into four geologic units: the upper Pleistocene deposits, the Magothy Formation, the clay member of the Raritan Formation ("Raritan Clay") and the Lloyd Sand member of the Raritan Formation ("Lloyd Sand") (Geraghty and Miller, 1994).

The upper Pleistocene ranges in thickness from approximately 50 to 100 ft and consists of till and outwash deposits of medium to coarse sand and gravel with lenses of fine sand, silt and clay (Smolensky and Feldman, 1990); these deposits form the Upper Glacial Aquifer. Directly underlying this unit is the Magothy Formation with a thickness of 650 to 900 ft below ground surface (bgs) observed onsite. The Magothy is characterized by fine to medium sands and silts interbedded with zones of clays, silty sands and sandy clays. Sand and gravel lenses are found in some areas between depths of 600 and 880 ft bgs; these deposits form the Magothy Aquifer.

Investigations performed by the Navy since 2012 indicate that the bottom of the Magothy (top of the Raritan Clay) can extend to depths of 700 to greater than 1,000 ft bgs. The top of the Raritan Clay deepens to the south southeast, as evidenced by clay depths of 1,000 ft bgs (or more) in borings installed offsite. The Raritan Clay Unit is of continental origin and consists of clay, silty clay, clayey silt, and fine silty sand. This member acts as a confining layer over the Lloyd Sand Unit. The Lloyd Sand Unit is also of continental origin, having been deposited in a large fresh water lacustrine environment. The material consists of fine to coarse-grained sands, gravel, inter-bedded clay, and silty sand. These deposits form the Lloyd Aquifer.

The Upper Glacial Aquifer and the Magothy Aquifer comprise the aquifers of interest at the NWIRP. Regionally, these formations are generally considered to form a common, interconnected aquifer as the coarse nature of each unit near their contact and the lack of any regionally confining clay unit allows for the unrestricted flow of groundwater between the formations.

The Magothy Aquifer is the major source of public water in Nassau County. The most productive water bearing zones are the discontinuous lenses of sand and gravel that occur within the siltier matrix. The major water-bearing zones are coarse sand and gravel lenses located in the lower portion of the Magothy. The Magothy Aquifer is commonly regarded to function overall as an unconfined aquifer at shallow depths and a confined aquifer at deeper depths. The drilling program at the NWIRP has revealed that clay zones beneath the facility are common but laterally discontinuous. No confining clay units of facility-wide extent have been encountered.

Groundwater is encountered at a depth of approximately 50 ft bgs at the facility. Historically, because of pumping and recharge at the facility, groundwater depths have been measured to range from 40 to 60 ft bgs. The groundwater flow in the area is to the south-southeast.

2.0 FIELD PROGRAM

Three monitoring wells were installed in the vicinity of VPB 154 between October and November 2014. Field investigation activities consisted of drilling, well installation, well development, sampling, soil/groundwater analysis, and surveying. Drilling during this investigation was performed by Delta Well and Pump Company of Ronkonkoma, New York. A description of these tasks is provided below.

2.1 Drilling and Well Construction

Monitoring wells RE120D1, RE120D2 and RE120D3 were installed in the vicinity of VPB154 using mud rotary drilling techniques between October and November 2014 (Figure 2). Depths of monitoring wells RE120D1, RE120D2 and RE120D3 were 655, 713 and 765 respectively. Well construction details are summarized in Table 1. Boring logs with lithologic descriptions of the well screen interval are included in the Appendix A.

Prior to installing each monitoring well, screen intervals were determined from the results of the groundwater samples, the geophysical logs, lithology and field data from the vertical profile borings. Screen intervals were selected to target intervals with the highest VOC concentrations as measured in the hydropunch samples, and coincident intervals with the highest apparent permeability based on the gamma logs. During the monitoring well installation, split spoon samples were collected every 5 ft in the screen interval. One soil sample per monitoring well was analyzed for Total Organic Carbon (TOC) via United States (US) Environmental Protection Agency (EPA) series SW-846 method 9060A by Katahdin Analytical Services (Katahdin). Data validation of TOC data was performed by Resolution Consultants. Data validation packages and analytical data tables are included in Appendix A.

Wells were constructed of 4-inch diameter, Schedule 80, National Sanitation Foundation-approved polyvinylchloride (PVC) riser pipe and .010-slot well screen. Wells were completed at the surface with a 12-inch diameter steel curb box. Well risers were set below grade and fit with lockable J plugs. Detailed monitoring well construction diagrams are included in Appendix A.

2.2 Well Development

Following installation, all monitoring wells were developed to evacuate silts and other fine-grained materials and to establish the filter pack to promote a hydraulic connection between the well and

the surrounding aquifer. Well development was not initiated until at least 24 hours after well installation.

Monitoring well screens were developed using a combination of air lifting, manual surging, and pumping with a submersible pump. Turbidity was monitored during development to determine stabilization. In compliance with New York State Department of Environmental Conservation (NYSDEC) policy, wells were developed until turbidity was less than 50 nephlometric turbidity units (NTUs) if possible. Table 2 summarizes total pumped volume from air and pump development and final turbidity. Well development logs are included in Appendix A.

2.3 Sampling

Following development, wells were allowed to stabilize for at least 2 weeks prior to groundwater sampling in accordance with low flow sampling procedures. Wells were purged using a bladder pump with a drop tube intake placed at the approximate midpoint of the screened interval. The following water quality parameters were continuously measured: water temperature, pH, conductivity, oxidation-reduction potential, dissolved oxygen and turbidity. Groundwater analytical samples were collected when water quality parameters stabilized. Samples were analyzed for VOCs via method 8260B and 1,4-dioxane via Method 8270C by Katahdin. All development and purge water was managed as investigation derived waste (IDW). Groundwater sample logs, data validation packages and analytical data tables are included in Appendix A.

Monitoring wells RE120D1, RE120D2 and RE120D3 are sampled quarterly as part of the Navy's ongoing Environmental Restoration Program. December 2014 and March 2015 quarterly monitoring results are included in Table 3. Stabilized field parameters are summarized in Table 4.

2.4 Decontamination and Investigation Derived Waste (IDW)

Resolution Consultants utilized dedicated and disposable sampling equipment when possible to avoid the potential for cross-contamination of samples. The sampling equipment included dedicated plastic scoops, disposable Teflon or polyethylene tubing, disposable gloves, and laboratory supplied sample bottles. Hand held equipment and split spoons were decontaminated using Liquinox and water wash, a potable water rinse, followed by a distilled water rinse. Water was collected in 5-gallon pails or 55-gallon drums. Non dedicated sampling equipment was decontaminated as outlined in the UFP SAP Addendum - Groundwater Sampling Using Low Stress (Low Flow) Purging and Sampling Protocol (Resolution Consultants, 2013).

As part of the IDW management practices and in accordance with the SAP, the investigation waste (consisting of soil cuttings, drilling muds, IDW fluids, and personal protective equipment [PPE]) generated during the groundwater monitoring well installation and sampling was containerized and staged at NWIRP Bethpage.

IDW solids were containerized in roll offs. Representative samples from each roll off were submitted to Katahdin for analysis of:

- Target Compound List (TCL) VOCs
- TCL Semi-volatile Organic Compounds (SVOCs)
- Toxicity Characteristic Leaching Procedure (TCLP) Metals
- Polychlorinated Biphenyls (PCBs)
- Total petroleum hydrocarbons
- Corrosivity
- Ignitability
- Reactive Cyanide
- Reactive Sulfide
- Paint Filter

IDW fluid generated during well development and purging was containerized in frac tanks and stored at NWIRP Bethpage for characterization and ultimate disposal to the Publicly Owned Treatment Works (POTW), in accordance with the facilities existing discharge permit. A representative water sample was collected from each frac tank and submitted to Katahdin for analysis of VOCs via Method SW 624, pH via Method SW 9040B, PCBs via Method 8082 and Total Metals via Method SW 846 (all waters). All analytical criteria were met for disposal of soil and water.

2.5 Surveying

A survey of the monitoring well locations was conducted at the end of fieldwork by C. T. Male, Inc., of Latham, NY, under the direct supervision of Resolution Consultants. The location was tied into the existing base map developed for this investigation. The survey elevation is referenced to the North American Vertical Datum (NAVD) 1988 and has a vertical accuracy of 0.01 foot. Vertical control is based on observations of the Continuously Operating Reference (COR) Stations Queens

and Central Islip. The horizontal location is referenced to the North American Datum (NAD) 1983 (2011) N.Y. Long Island Zone 3104 and has an accuracy of 0.1 foot. Local horizontal and vertical control is based on Global Positioning System (GPS) observations using the NYS Net Real Time Network.

A table of survey data (latitude/longitude, northing/easting, elevations of ground, rim and PVC) and a survey map is included in Appendix A.

3.0 REFERENCES

Geraghty and Miller, Inc., 1994. *Remedial Investigation Report, Grumman Aerospace Corporation, Bethpage, New York*. Revised September 1994.

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Tables

TABLE 1
MONITORING WELL CONSTRUCTION SUMMARY
2014 OU2 GROUNDWATER INVESTIGATION
NWIRP BETHPAGE, NY

MONITORING WELL	WELL COMPLETION DATE	GROUND ELEVATION (MSL)	PVC (INNER CASING) (MSL)	WELL DEPTH (ft bgs)	CASING DEPTH (ft bgs)	SCREEN INTERVAL (ft bgs)	SUMP DEPTH INTERVAL (ft bgs)	BORING DEPTH (ft bgs)
RE120D1	11/10/2014	86.06	85.58	655	54	630 - 650	650 - 655	667
RE120D2	10/22/2014	86.03	85.54	713	52.5	690 - 710	710 - 713	720
RE120D3	10/7/2014	86.14	85.7	765	54	740 - 760	760 - 765	777

TABLE 2
MONITORING WELL DEVELOPMENT SUMMARY
2014 GROUNDWATER INVESTIGATION
NWIRP BETHPAGE, NY

MONITORING WELL	AIR DEVELOPMENT		PUMP DEVELOPMENT			APPROX. TOTAL DEVELOPMENT VOLUME (GAL)	FINAL TURBIDITY (NTUs)
	DATE	APPROX. VOLUME (GAL)	DATE	FINAL PUMP DEPTH (FT BGS)	APPROX. VOLUME (GAL)		
RE120D1	11/18-11/19/2014	3,500	11/20/2014	635-655	3,500	7,000	0.02
RE120D2	11/17-11/18/14	5,900	11/20-11/21/2014	690-710	2,100	8,000	36.65
RE120D3	11/18/2014	4,000	11/24-11/25/14	740-760	6,000	10,000	45.11

TABLE 3.
ANALYTICAL DATA SUMMARY
2014 GROUNDWATER INVESTIGATION

Location	NYSDEC Groundwater Guidance or Standard Value (Note 1)	RE120D1	RE120D2	RE120D3
Sample Date		12/12/2014	12/12/2014	12/12/2014
Sample ID		RE120D1-GW-121214	RE120D2-GW-121214	RE120D3-GW-121214
Sample type code		N	N	N
VOC 8260C (ug/L)				
1,1,1-TRICHLOROETHANE	5	**1.9 J**	**0.50 J**	< 0.50 U
1,1,2,2-TETRACHLOROETHANE	5	< 1.0 U	< 0.50 U	< 0.50 U
1,1,2-TRICHLORO-1,2,2-TRIFLUOROETHANE	5	**40**	**24**	< 0.50 U
1,1,2-TRICHLOROETHANE	1	**1.2 J**	**0.69 J**	< 0.50 U
1,1-DICHLOROETHANE	5	**3.4**	**1.2**	< 0.50 U
1,1-DICHLOROETHENE	5	**21**	**5.6**	< 0.50 U
1,2,4-TRICHLOROBENZENE	5	< 1.0 U	< 0.50 U	< 0.50 U
1,2-DIBROMO-3-CHLOROPROPANE	0.04	***< 1.5 U***	***< 0.75 U***	***< 0.75 U***
1,2-DIBROMOETHANE	NL	< 1.0 U	< 0.50 U	< 0.50 U
1,2-DICHLOROBENZENE	3	< 1.0 U	< 0.50 U	< 0.50 U
1,2-DICHLOROETHANE	5	< 1.0 U	< 0.50 U	< 0.50 U
1,2-DICHLOROETHENE, TOTAL	5	**4.1**	**3.4**	< 1.0 U
1,2-DICHLOROPROPANE	1	< 1.0 U	< 0.50 U	< 0.50 U
1,3-DICHLOROBENZENE	3	< 1.0 U	< 0.50 U	< 0.50 U
1,4-DICHLOROBENZENE	3	< 1.0 U	< 0.50 U	< 0.50 U
1,4-DIOXANE	NL	**30**	**16**	< 0.17 U
2-BUTANONE	50	< 5.0 U	< 2.5 U	< 2.5 U
2-HEXANONE	50	< 5.0 U	< 2.5 U	< 2.5 U
4-METHYL-2-PENTANONE	NL	< 5.0 U	< 2.5 U	< 2.5 U
ACETONE	50	< 5.0 U	< 2.5 U	< 2.5 U
BENZENE	1	< 1.0 U	< 0.50 U	< 0.50 U
BROMODICHLOROMETHANE	50	< 1.0 U	< 0.50 U	< 0.50 U
BROMOFORM	50	< 1.0 U	< 0.50 U	< 0.50 U
BROMOMETHANE	5	< 2.0 U	< 1.0 U	< 1.0 U
CARBON DISULFIDE	60	< 1.0 U	< 0.50 U	< 0.50 U
CARBON TETRACHLORIDE	5	**0.59 J**	**0.74 J**	< 0.50 U
CHLOROBENZENE	5	< 1.0 U	< 0.50 U	< 0.50 U
CHLOROETHANE	5	< 2.0 U	< 1.0 U	< 1.0 U
CHLOROFORM	7	**0.87 J**	**0.77 J**	< 0.50 U
CHLOROMETHANE	5	< 2.0 U	< 1.0 U	< 1.0 U
CIS-1,2-DICHLOROETHENE	5	**4.1**	**3.4**	< 0.50 U
CIS-1,3-DICHLOROPROPENE	0.4	***< 1.0 U***	***< 0.50 U***	***< 0.50 U***
CYCLOHEXANE	NL	< 1.0 U	< 0.50 U	< 0.50 U
DIBROMOCHLOROMETHANE	5	< 1.0 U	< 0.50 U	< 0.50 U
DICHLORODIFLUOROMETHANE	5	< 2.0 U	**0.30 J**	< 1.0 U
ETHYLBENZENE	5	< 1.0 U	< 0.50 U	< 0.50 U
ISOPROPYLBENZENE	5	< 1.0 U	< 0.50 U	< 0.50 U
M- AND P-XYLENE	NL	< 2.0 U	< 1.0 U	< 1.0 U
METHYL ACETATE	NL	< 1.5 U	< 0.75 U	< 0.75 U
METHYL CYCLOHEXANE	NL	< 1.0 U	< 0.50 U	< 0.50 U
METHYL TERT-BUTYL ETHER	10	< 1.0 U	< 0.50 U	< 0.50 U
METHYLENE CHLORIDE	5	< 5.0 U	< 2.5 U	< 2.5 U
O-XYLENE	NL	< 1.0 U	< 0.50 U	< 0.50 U
STYRENE	5	< 1.0 U	< 0.50 U	< 0.50 U
TETRACHLOROETHENE	5	**1.8 J**	**3.6**	< 0.50 U
TOLUENE	5	**1.4 J**	**0.40 J**	< 0.50 U
TRANS-1,2-DICHLOROETHENE	5	< 1.0 U	< 0.50 U	< 0.50 U
TRANS-1,3-DICHLOROPROPENE	0.4	***< 1.0 U***	***< 0.50 U***	***< 0.50 U***
TRICHLOROETHENE	5	**1300**	**900**	**3.4**
TRICHLOROFLUOROMETHANE	5	< 2.0 UJ	< 1.0 UJ	< 1.0 UJ
VINYL CHLORIDE	2	< 2.0 U	< 1.0 U	< 1.0 U
XYLENES, TOTAL	5	< 3.0 U	< 1.5 U	< 1.5 U

TABLE 3.
ANALYTICAL DATA SUMMARY
2014 GROUNDWATER INVESTIGATION

Location	NYSDEC Groundwater Guidance or Standard Value (Note 1)	RE120D1	RE120D2	RE120D3
Sample Date		3/25/2015	3/25/2015	3/25/2015
Sample ID		RE120D1-GW-032515	RE120D2-GW-032515	RE120D3-GW-032515
Sample type code		N	N	N
VOC 8260C (ug/L)				
1,1,1-TRICHLOROETHANE	5	**2.0**	**0.41 J**	< 0.50 U
1,1,2,2-TETRACHLOROETHANE	5	< 0.50 U	< 0.50 U	< 0.50 U
1,1,2-TRICHLORO-1,2,2-TRIFLUOROETHANE	5	**60**	**33**	< 0.50 U
1,1,2-TRICHLOROETHANE	1	**1.8**	**0.56 J**	< 0.50 U
1,1-DICHLOROETHANE	5	**3.5**	**1.1**	< 0.50 U
1,1-DICHLOROETHENE	5	**23**	**4.9**	< 0.50 U
1,2,4-TRICHLOROBENZENE	5	< 0.50 U	< 0.50 U	< 0.50 U
1,2-DIBROMO-3-CHLOROPROPANE	0.04	***< 0.75 U***	***< 0.75 U***	***< 0.75 U***
1,2-DIBROMOETHANE	NL	< 0.50 U	< 0.50 U	< 0.50 U
1,2-DICHLOROBENZENE	3	< 0.50 U	< 0.50 U	< 0.50 U
1,2-DICHLOROETHANE	5	< 0.50 U	< 0.50 U	< 0.50 U
1,2-DICHLOROETHENE, TOTAL	5	**4.4**	**3.7**	< 1.0 U
1,2-DICHLOROPROPANE	1	< 0.50 U	< 0.50 U	< 0.50 U
1,3-DICHLOROBENZENE	3	< 0.50 U	< 0.50 U	< 0.50 U
1,4-DICHLOROBENZENE	3	< 0.50 U	< 0.50 U	< 0.50 U
1,4-DIOXANE	NL	**19**	**5.8**	< 0.18 U
2-BUTANONE	50	< 2.5 UJ	< 2.5 UJ	< 2.5 UJ
2-HEXANONE	50	< 2.5 UJ	< 2.5 UJ	< 2.5 UJ
4-METHYL-2-PENTANONE	NL	< 2.5 U	< 2.5 U	< 2.5 U
ACETONE	50	< 2.5 UJ	< 2.5 UJ	< 2.5 UJ
BENZENE	1	< 0.50 U	< 0.50 U	< 0.50 U
BROMODICHLOROMETHANE	50	< 0.50 U	< 0.50 U	< 0.50 U
BROMOFORM	50	< 0.50 U	< 0.50 U	< 0.50 U
BROMOMETHANE	5	< 1.0 UJ	< 1.0 UJ	< 1.0 UJ
CARBON DISULFIDE	60	< 0.50 UJ	< 0.50 UJ	< 0.50 UJ
CARBON TETRACHLORIDE	5	< 0.50 U	< 0.50 U	< 0.50 U
CHLOROBENZENE	5	< 0.50 U	< 0.50 U	< 0.50 U
CHLOROETHANE	5	< 1.0 U	< 1.0 U	< 1.0 UJ
CHLOROFORM	7	**1.0**	**0.76 J**	< 0.50 U
CHLOROMETHANE	5	< 1.0 UJ	< 1.0 UJ	< 1.0 UJ
CIS-1,2-DICHLOROETHENE	5	**4.4**	**3.7**	< 0.50 U
CIS-1,3-DICHLOROPROPENE	0.4	***< 0.50 U***	***< 0.50 U***	***< 0.50 U***
CYCLOHEXANE	NL	< 0.50 UJ	< 0.50 UJ	< 0.50 UJ
DIBROMOCHLOROMETHANE	5	< 0.50 U	< 0.50 U	< 0.50 U
DICHLORODIFLUOROMETHANE	5	**0.52 J**	**0.36 J**	< 1.0 UJ
ETHYLBENZENE	5	< 0.50 U	< 0.50 U	< 0.50 U
ISOPROPYLBENZENE	5	< 0.50 U	< 0.50 U	< 0.50 U
M- AND P-XYLENE	NL	< 1.0 U	< 1.0 U	< 1.0 U
METHYL ACETATE	NL	< 0.75 U	< 0.75 U	< 0.75 U
METHYL CYCLOHEXANE	NL	< 0.50 UJ	< 0.50 UJ	< 0.50 U
METHYL TERT-BUTYL ETHER	10	< 0.50 U	< 0.50 U	< 0.50 U
METHYLENE CHLORIDE	5	< 2.5 U	< 2.5 U	< 2.5 U
O-XYLENE	NL	< 0.50 U	< 0.50 U	< 0.50 U
STYRENE	5	< 0.50 U	< 0.50 U	< 0.50 U
TETRACHLOROETHENE	5	**1.8 J**	**1.6 J**	< 0.50 UJ
TOLUENE	5	**0.46 J**	< 0.50 U	< 0.50 U
TRANS-1,2-DICHLOROETHENE	5	< 0.50 U	< 0.50 U	< 0.50 U
TRANS-1,3-DICHLOROPROPENE	0.4	***< 0.50 U***	***< 0.50 U***	***< 0.50 U***
TRICHLOROETHENE	5	**1300 J**	**830 J**	**0.74 J**
TRICHLOROFLUOROMETHANE	5	**0.41 J**	< 1.0 U	< 1.0 U
VINYL CHLORIDE	2	< 1.0 U	< 1.0 U	< 1.0 U
XYLENES, TOTAL	5	< 1.5 U	< 1.5 U	< 1.5 U

TABLE 3.
ANALYTICAL DATA SUMMARY
2014 GROUNDWATER INVESTIGATION
NWIRP BETHPAGE, NY

Notes:

1 New York State Department of Environmental Conservation Division of Water Technical and Operation Guidance series (6 NYCRR 700-706, Part 703.5 summarized in TOGS 1.1.1)
Ambient water quality standards and groundwater effluent limitations, class GA; NL = Not Listed

Bold = Detected; ***Bold and Italics*** =Not detected exceeds NYS Groundwater Standards or guidance value

Yellow highlighted values exceed Groundwater Standards or guidance value

Sample type codes: N - normal environmental sample, FD - field duplicate

U = Nondetected result. The analyte was analyzed for, but was not detected above the reported sample quantitation limit.

UJ = The analyte was not detected above the reported sample quantitation limit. However, the reported quantitation limit is approximate and may or may not represent the actual limit of quantitation necessary to accurately and precisely measure the analyte.

J = The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample.

M = the matrix spike or matrix spike duplicate did not meet recovery or precision requirements.

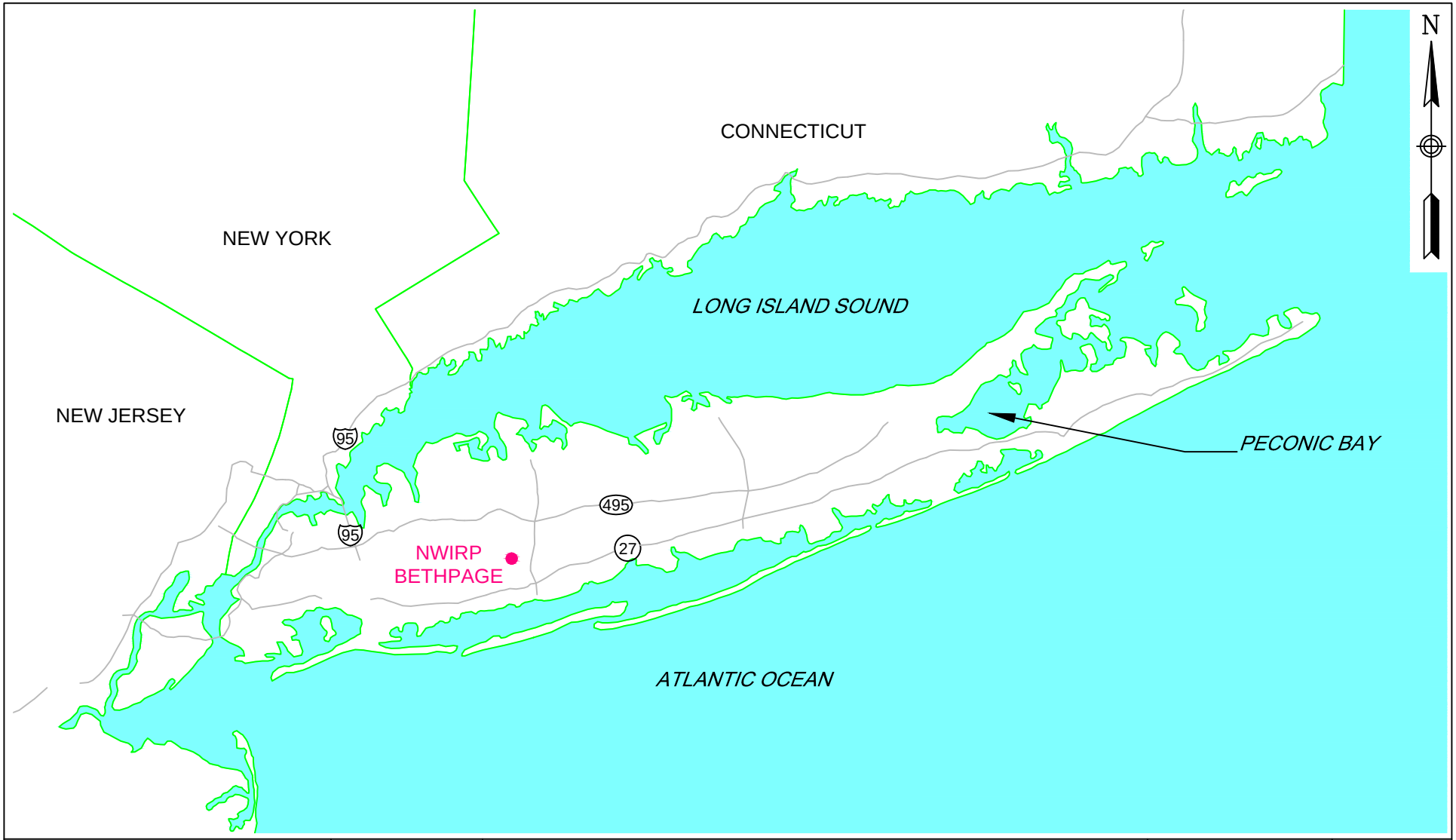
TABLE 4.
STABILIZED FIELD PARAMETERS
2014 GROUNDWATER INVESTIGATION
NWIRP BETHPAGE, NY

Well	Date	Temperature (°C)	pH	Specific Conductance (µS/cm)	DO (mg/L)	ORP (mV)	Turbidity (NTU)	Depth to water (ft bgs)	Flow rate (ml/min)
RE120D1	12/12/2014	14.52	5.78	0.128	1.31	118.6	11.2	35.10	515
RE120D2	12/12/2014	14.32	5.71	0.077	5.53	134.4	2.87	34.98	450
RE120D3	12/12/2014	14.44	4.35	0.028	4.00	247.3	45.3	35.45	450
RE120D1	3/25/2015	14.15	5.49	131	1.48	219.7	1.35	33.52	500
RE120D2	3/25/2015	14.06	5.25	0.077	5.86	1.5	1.95	32.46	450
RE120D3	3/25/2015	14.52	6.69	0.024	3.87	318.1	5.26	33.85	500

* Initial water level not equilibrated due to pump installation; drawdown during sampling not determined.

Figures

112G00622\0510\112G00622CM01.DWG 08/02/10 MKB



0 15 30

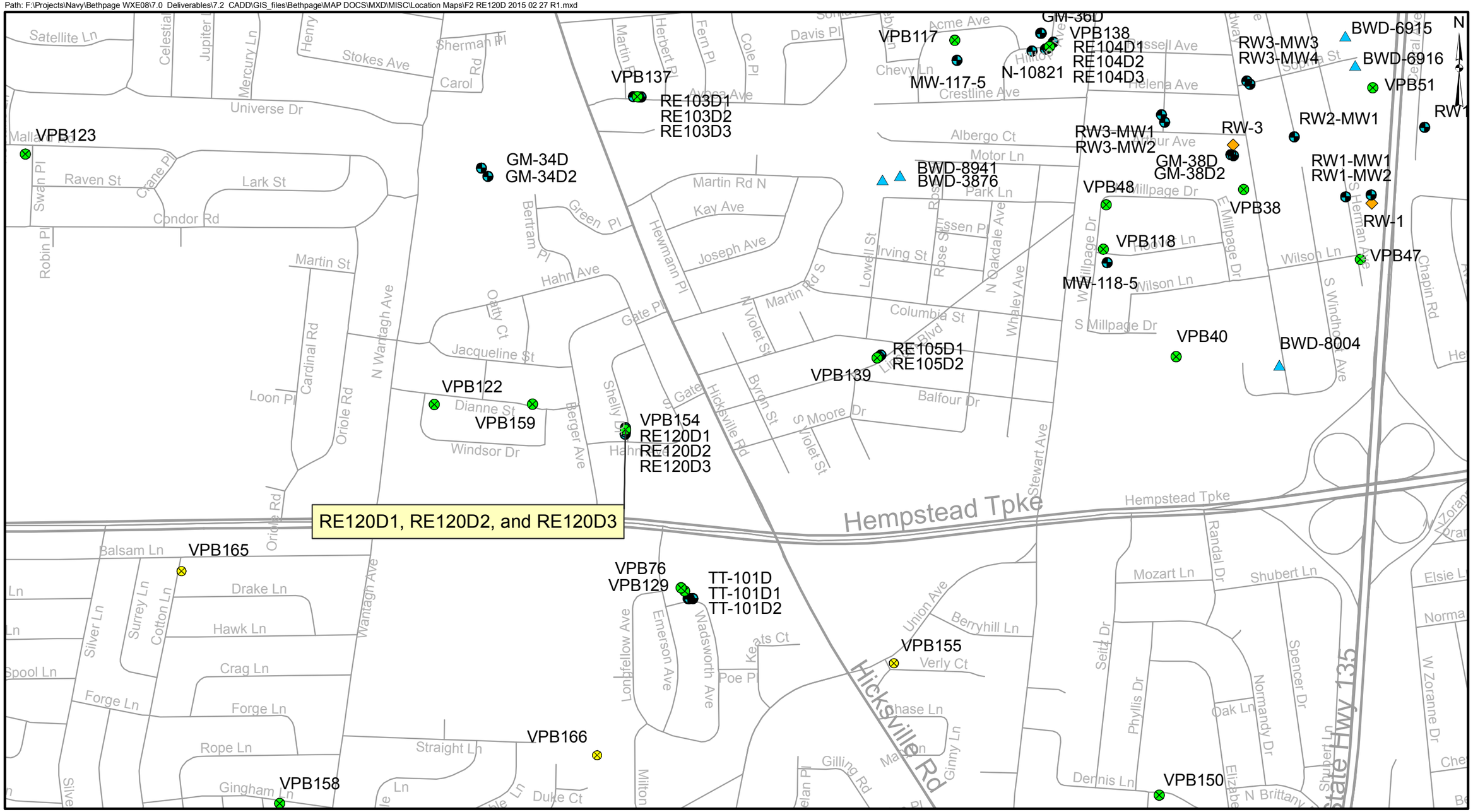
SCALE IN MILES

NAVFAC

GENERAL LOCATION MAP
NWIRP BETHPAGE
BETHPAGE, NEW YORK

CONTRACT NUMBER	CTO NUMBER
N62470-11-D-8013	WE15
APPROVED BY --	DATE --
APPROVED BY --	DATE --
FIGURE NO. 1	REV 0

Path: F:\Projects\Navy\Bethpage WXE08\7.0 Deliverables\7.2 CADD\GIS_files\Bethpage\MAP DOCS\MXD\MISC\Location Maps\F2 RE120D 2015 02 27 R1.mxd



RE120D1, RE120D2, AND RE120D3 LOCATION MAP
OPERABLE UNIT 2 (SITE 1)
NAVAL WEAPONS INDUSTRIAL RESERVE PLANT
BETHPAGE, NEW YORK

CONTRACT NUMBER N62470-11-D-8013	CTO NUMBER WE15
APPROVED BY PS	DATE 8/20/2015
APPROVED BY —	DATE —
FIGURE NO. 2	REV 1

Appendix A

RE120D1, RE120D2, RE120D3

Section 1

Boring Logs

Resolution Consultants

Boring Log

BORING #: RE120D1
Sheet 1 of 2

Client: Department of the Navy, Naval Facilities Engineering Command, Mid-Atlantic		**Logged By:** V. Varricchio
Location: Shelly Dr. and Hahn Ave., Bethpage, NY		**Drilling Company:** DELTA WELL AND PUMP COMPANY
Project #: 60266526	**Ground Elevation (msl):** 86.06	**Well Screen Interval (ft):** 630-650
Start Date: 10/30/2014	**Drilling Method:** Auger (0-50' bgs) Mud Rotary (>50' bgs)	**Water Level (ft):**
Finish Date: 11/10/2014	**Northing:** 204590.37 **Easting:** 1125060.7	**Total Depth (ft):** 667.0

DEPTH (ft)	PID (ppm)	Formation	USCS	GRAPHIC LOG	MATERIAL DESCRIPTION	Well Completion	Well Construction
0 50 100 150 200 250 300 350 400 450 500 550					0-633 ft bgs: See VPB154 for Descriptions		10" Diameter Steel Casing Bentonite Grout 4" Diameter Schedule 80 PVC Riser

Resolution Consultants

Boring Log

BORING #: RE120D1
Sheet 2 of 2

Client: Department of the Navy, Naval Facilities Engineering Command, Mid-Atlantic		**Logged By:** V. Varricchio
Location: Shelly Dr. and Hahn Ave., Bethpage, NY		**Drilling Company:** DELTA WELL AND PUMP COMPANY
Project #: 60266526	**Ground Elevation (msl):** 86.06	**Well Screen Interval (ft):** 630-650
Start Date: 10/30/2014	**Drilling Method:** Auger (0-50' bgs) Mud Rotary (>50' bgs)	**Water Level (ft):**
Finish Date: 11/10/2014	**Northing:** 204590.37 **Easting:** 1125060.7	**Total Depth (ft):** 667.0

DEPTH (ft)	PID (ppm)	Formation	USCS	GRAPHIC LOG	MATERIAL DESCRIPTION	Well Completion	Well Construction
578					0-633 ft bgs: See VPB154 for Descriptions *(continued)*		4" Diameter Schedule 80 PVC Riser *(continued)*
580							
582							
584							
586							
588							
590							
592							#0 Filter Sand
594							
596							
598							
600							
602							
604							
606							
608							
610							
612							
614							
616							
618							#1 Filter Sand
620							
622							
624							
626							
628							
630							
632							
634	0.0		SP		Yellowish brown poorly graded medium SAND, trace subrounded fine Gravel		
636							
638					No recovery		
640							4" Diameter Schedule 80 PVC, 10 Slot Well Screen (630-650 ft bgs)
642							
644	0.0		SP		Light brown poorly graded fine SAND with some iron/lignite banding		
646							
648	0.0		SP		Light brown to yellow poorly graded fine SAND with few subrounded fine to coarse Gravel		
650							
652							Sump
654							
656							
658							
660							
662							#1 Sand to bottom
664							
666							

End of boring at 667.0 ft. bgs.

Resolution Consultants

Well Construction Log

BORING #: RE120D2
Sheet 1 of 2

Client: Department of the Navy, Naval Facilities Engineering Command, Mid-Atlantic		**Logged By:** V. Varricchio
Location: Shelly Dr. and Hahn Ave., Bethpage, NY		**Drilling Company:** DELTA WELL AND PUMP COMPANY
Project #: 60266526	**Ground Elevation (msl):** 86.03	**Well Screen Interval (ft):** 690-710
Start Date: 10/10/2014	**Drilling Method:** Auger (0-50' bgs) Mud Rotary (>50' bgs)	**Water Level (ft):**
Finish Date: 10/22/2014	**Northing:** 204576.78 **Easting:** 1125060.08	**Total Depth (ft):** 720.0

DEPTH (ft)	PID (ppm)	Formation	USCS	GRAPHIC LOG	MATERIAL DESCRIPTION	Well Completion	Well Construction
0		Upper Glacial			0-693 ft bgs: See VPB154 for Descriptions		10" Diameter Steel Casing
50							
100		Magothy					
150							
200							
250							
300							Bentonite Grout
350							
400							
450							
500							
550							
600							4" Diameter Schedule 80 PVC Riser
650							

Resolution Consultants

Well Construction Log

BORING #: RE120D2
Sheet 2 of 2

Client: Department of the Navy, Naval Facilities Engineering Command, Mid-Atlantic		**Logged By:** V. Varricchio
Location: Shelly Dr. and Hahn Ave., Bethpage, NY		**Drilling Company:** DELTA WELL AND PUMP COMPANY
Project #: 60266526	**Ground Elevation (msl):** 86.03	**Well Screen Interval (ft):** 690-710
Start Date: 10/10/2014	**Drilling Method:** Auger (0-50' bgs) Mud Rotary (>50' bgs)	**Water Level (ft):**
Finish Date: 10/22/2014	**Northing:** 204576.78 **Easting:** 1125060.08	**Total Depth (ft):** 720.0

DEPTH (ft)	PID (ppm)	Formation	USCS	GRAPHIC LOG	MATERIAL DESCRIPTION	Well Completion	Well Construction
650		Magothy *(continued)*			0-693 ft bgs: See VPB154 for Descriptions *(continued)*		4" Diameter Schedule 80 PVC Riser *(continued)*
652							
654							
656							
658							#0 Filter Sand
660							
662							
664							
666							
668							
670							
672							
674							
676							
678							#1 Filter Sand
680							
682							
684							
686							
688							
690							
692							
694	0.0		SW		Well graded fine to coarse SAND, trace fine subrounded Gravel		
696							
698							
700	0.0		GP		Poorly graded subangular fine GRAVEL with little poorly graded medium Sand		4" Diameter Schedule 80 PVC, 10 Slot Well Screen (690-710 ft bgs)
702							
704	0.0		GW-SW		Well graded subangular GRAVEL with well graded fine to coarse Sand		
706							
708							
710	0.0		SP		Poorly graded medium SAND with few fine subangular Gravel		Sump
712							
714							
716							#1 Sand to bottom
718							
720					End of boring at 720.0 ft. bgs.		

Resolution Consultants

Well Construction Log

BORING #: RE120D3
Sheet 1 of 2

Client: Department of the Navy, Naval Facilities Engineering Command, Mid-Atlantic		**Logged By:** V. Varricchio
Location: Shelly Dr. and Hahn Ave., Bethpage, NY		**Drilling Company:** DELTA WELL AND PUMP COMPANY
Project #: 60266526	**Ground Elevation (msl):** 86.14	**Well Screen Interval (ft):** 740-760
Start Date: 9/24/2014	**Drilling Method:** Auger (0-50' bgs) Mud Rotary (>50' bgs)	**Water Level (ft):**
Finish Date: 10/7/2014	**Northing:** 204618.12 **Easting:** 1125061.88	**Total Depth (ft):** 777.0

DEPTH (ft)	PID (ppm)	Formation	USCS	GRAPHIC LOG	MATERIAL DESCRIPTION	Well Completion	Well Construction
0		Upper Glacial			0-743 ft bgs: See VPB154 for Descriptions		10" Diameter Steel Casing
50							
100		Magothy					
150							
200							
250							
300							Bentonite Grout
350							
400							
450							
500							
550							
600							
650							4" Diameter Schedule 80 PVC Riser
700							

Resolution Consultants

Well Construction Log

BORING #: RE120D3
Sheet 2 of 2

Client: Department of the Navy, Naval Facilities Engineering Command, Mid-Atlantic		**Logged By:** V. Varricchio
Location: Shelly Dr. and Hahn Ave., Bethpage, NY		**Drilling Company:** DELTA WELL AND PUMP COMPANY
Project #: 60266526	**Ground Elevation (msl):** 86.14	**Well Screen Interval (ft):** 740-760
Start Date: 9/24/2014	**Drilling Method:** Auger (0-50' bgs) Mud Rotary (>50' bgs)	**Water Level (ft):**
Finish Date: 10/7/2014	**Northing:** 204618.12 **Easting:** 1125061.88	**Total Depth (ft):** 777.0

DEPTH (ft)	PID (ppm)	Formation	USCS	GRAPHIC LOG	MATERIAL DESCRIPTION	Well Completion	Well Construction
700		Magothy *(continued)*			0-743 ft bgs: See VPB154 for Descriptions *(continued)*		4" Diameter Schedule 80 PVC Riser *(continued)*
702							
704							
706							
708							
710							
712							
714							
716							
718							
720							#0 Filter Sand
722							
724							
726							
728							
730							
732							
734							
736							#1 Filter Sand
738							
740							
742							
744	0.0		SP		White poorly graded fine SAND		
746							
748	0.0		SP		White poorly graded fine SAND		
750							4" Diameter Schedule 80 PVC, 10 Slot Well Screen (740-760 ft bgs)
752							
754	0.0		SP		White poorly graded fine SAND		
756							
758	0.0		SP		White poorly graded fine SAND		
760							
762							Sump
764							
766							
768							
770							
772							#1 Sand to bottom
774							
776							
					End of boring at 777.0 ft. bgs.		

Section 2

Monitoring Well Construction Log

RESOLUTION CONSULTANTS	Client: NAVFAC	Project Number: 60266526	***WELL ID: RE120D1***
	Site Location: NWIRP BETHPAGE, NY		
	Well Location: Shelly Dr and Hahn Ave, Bethpage, NY		Date Installed: 10/30/2014 - 11/10/2014
	Method: MUD ROTARY		Inspector: V. VARRICCHIO
	Coords: Northing: 204590.37 Easting: 1125060.7		Contractor: DELTA WELL & PUMP

MONITORING WELL CONSTRUCTION DETAIL

	Depth from G.S. (feet)	Elevation(feet) Datum
Top of 12 inch diameter Steel Curb Box and Ground Surface (G.S.)	0.00	86.06
Top of Riser Pipe fit with locking j-plug	0.48	85.58
Riser Pipe:		
Length: 630 feet		
Inside Diameter (ID): 4 inch		
Type of Material: PVC		
Bottom of Steel Surface Casing	54.0	32.1
Bottom of Bentonite Grout	581	-494.9
Bottom of 0 Filter Sand/Top of #1 Filter Sand	605	
Top of Screen	630	-543.9
▲ Stabilized Water Level		
Screen:		
Length: 20 feet		
Inside Diameter (ID): 4 inch		
Slot Size: 10		
Type of Material: PVC		
Type/Size of Sand: #1		
Sand Pack Thickness: 62 feet		
Bottom of Screen	650	-563.9
Bottom of Tail Pipe:	655	-568.9
Bottom of Borehole	667	-580.9

Borehole Diameter: 10 inch

Approved: _____ Signature

Date

Describe Measuring Point:

Ground Surface

RESOLUTION CONSULTANTS	Client: NAVFAC	Project Number: 60266526	***WELL ID: RE120D2***
	Site Location: NWIRP BETHPAGE, NY		
	Well Location: Shelley Dr and Hahn Ave, Bethpage, NY		Date Installed: 10/22/14
	Method: MUD ROTARY		Inspector: V. Varricchio
	Coords: Northing: 204576.78 Easting: 1125060.08		Contractor: DELTA WELL & PUMP

MONITORING WELL CONSTRUCTION DETAIL

	Depth from G.S. (feet)	Elevation(feet) Datum
Top of 12 inch diameter Steel Curb Box and Ground Surface (G.S.)	0.00	86.03
Top of Riser Pipe fit with locking j-plug	0.49	85.54
Riser Pipe:		
Length: 690 feet		
Inside Diameter (ID): 4 inch		
Type of Material: PVC		
Bottom of Steel Surface Casing	52.5	33.5
Bottom of Bentonite Grout	652.0	-566.0
Bottom of 0 Filter Sand/Top of #1 Filter Sand	665	-579.0
Top of Screen	690	-604.0
▲ Stabilized Water Level		
Screen:		
Length: 20 feet		
Inside Diameter (ID): 4 inch		
Slot Size: 10		
Type of Material: PVC		
Type/Size of Sand: #1		
Sand Pack Thickness: 55 feet		
Bottom of Screen	710	-624.0
Bottom of Tail Pipe:	713	-627.0
Bottom of Borehole	720	-634.0

Borehole Diameter: 10 inch

Approved:

Signature

Date

Describe Measuring Point:

Ground Surface

RESOLUTION CONSULTANTS	Client: NAVFAC	Project Number: 60266526	***WELL ID: RE120D3***
	Site Location: NWIRP BETHPAGE, NY		
	Well Location: Shelley Dr and Hahn Ave, Bethpage, NY		Date Installed: 10/7/14
	Method: MUD ROTARY		Inspector: V. Varricchio
	Coords: Northing: 204618.12 Easting: 1125061.88		Contractor: DELTA WELL & PUMP

MONITORING WELL CONSTRUCTION DETAIL

	Depth from G.S. (feet)	Elevation(feet) Datum
Top of 12 inch diameter Steel Curb Box and Ground Surface (G.S.)	0.00	86.14
Top of Riser Pipe fit with locking j-plug	0.44	85.7
Riser Pipe:		
Length: 740 feet		
Inside Diameter (ID): 4 inch		
Type of Material: PVC		
Bottom of Steel Surface Casing	54	32.1
Bottom of Bentonite Grout	711.0	-624.9
Bottom of 0 Filter Sand/Top of #1 Filter Sand	730	-643.9
Top of Screen	740	-653.9
▲ Stabilized Water Level		
Screen:		
Length: 20 feet		
Inside Diameter (ID): 4 inch		
Slot Size: 10		
Type of Material: PVC		
Type/Size of Sand: #1		
Sand Pack Thickness: 47 feet		
Bottom of Screen	760	-673.9
Bottom of Tail Pipe:	765	-678.9
Bottom of Borehole	777	-690.9

Borehole Diameter: 10 inch

Approved:

Signature

Date

Describe Measuring Point:

Ground Surface

Section 3

Groundwater Sample Log Sheets

RESOLUTION CONSULTANTS

Well ID: RE120D1

Low Flow Ground Water Sample Collection Record

Client: Navy NWIRP Bethpage Date: 3 / 25 / 15 Time: Start 800 am/pm
Project No: 60266526 Finish 1200 am/pm
Site Location: Shelley Dr
Weather Conds: 25-40°, sunny Collector(s): SC

1. WATER LEVEL DATA: (measured from Top of Casing)

a. Total Well Length 65.5 c. Length of Water Column _____ (a-b)

Casing Diameter/Material: 4-inch PVC

b. Water Table Depth 33.49 d. Calculated System Volume (see back) 20ft screen 13.15gal

2. WELL PURGE DATA

a. Purge Method: Geotech bladder pump with drop tube assembly

b. Acceptance Criteria defined (see workplan)

- Temperature	± 3%	- D.O.	± 10% (values >0.5 mg/L)	Turbidity	± 10%
- pH	± 0.1 unit	- ORP	± 10mV		
- Sp. Cond.	± 3%	- Drawdown	< 0.3'	Remove a minimum 1 screen volume	

c. Field Testing Equipment used:

	Make	Model	Serial Number
	YSI 556 MPS	U54589X	~~60033614M~~ 79177
	Hanna	98730	~~14121~~ 69177

Time (24hr)	Volume Removed (Liters)	Temp. (°C)	pH	Spec. Cond. (mS/cm)	DO (mg/L)	ORP (mV)	Turbidity (NTU)	Flow Rate (ml/min)	Depth to water (ft)	Color/Odor
0855	ON									
0900		12.08	7.59	135	10.79	144.3	2.18	400	33.51	clear
0905		12.88	6.48	136	5.18	155.0		400	33.52	"
0910		13.42	6.02	131	4.38	164.4	0.79	500	33.52	"
0915		13.48	5.75	130	2.28	184.9		500	33.52	
0920		13.54	5.56	131	1.91	198.2		500	33.52	
0925	5.67	13.58	5.52	132	1.83	206.3	1.74	500	33.52	

(continued on back)

d. Acceptance criteria pass/fail

	Yes	No	N/A
Has required volume been removed	☑	☐	☐
Has required turbidity been reached	☑	☐	☐
Have parameters stabilized	☑	☐	☐

If no or N/A - Explain below.

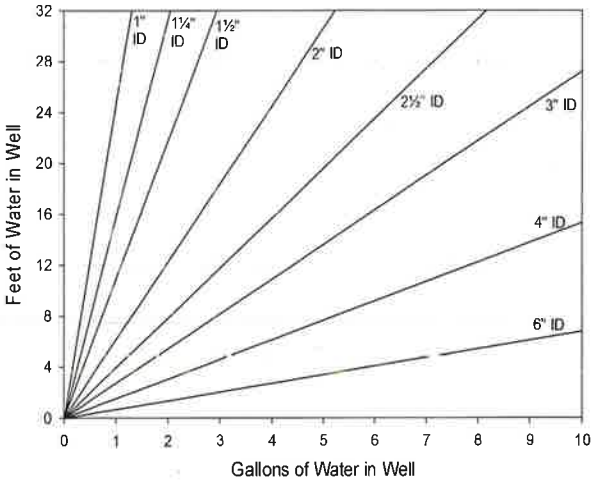
3. SAMPLE COLLECTION: Method: Geotech bladder pump with drop tube assembly

Sample ID	Container Type	No. of Containers	Preservation	Analysis Req.	Time
RE120D1-GW-032515	40-mL vial	3	HCl	VOCs	1050
RE120D1-GW-032515	1-L amber	2	none	1,4-Dioxane	1050

Comments _____

Signature _____ Date 03/25/15

Purge Volume Calculation



Volume / Linear Ft. of Pipe		
ID (in)	Gallon	Liter
0.25	0.0025	0.0097
0.375	0.0057	0.0217
0.5	0.0102	0.0386
0.75	0.0229	0.0869
1	0.0408	0.1544
1.25	0.0637	0.2413
1.5	0.0918	0.3475
2	0.1632	0.6178
2.5	0.2550	0.9653
3	0.3672	1.3900
4	0.6528	2.4711
6	1.4688	5.5600

1 screen volume

15 ft = 56.8 L / 9.8 G
20 ft = 75.7 L / 13.1 G
25 ft = 94.6 L / 16.3 G

Well ID:

(continued from front)

Time (24 hr)	Volume Removed (Liters)	Temp (°C)	pH	Spec. Cond. (mS/cm)	DO (mg/L)	ORP (mV)	Turbidity (NTU)	Flow Rate (ml/min)	Depth to water (ft)	Color/Odor
0930		13.56	5.51	133	1.94	210.3		500	33.52	clear
0935 ~~1420~~		13.56	5.52	132	2.26	215	1.95	500	33.52	"
0940		13.62	5.52	132	2.30	216.9		500	33.52	
0945		13.72	5.52	132	2.20	218.4		500	33.52	
0950		13.83	5.53	133	2.08	218.9	1.75	500	33.52	
0955		13.77	5.53	133	1.87	218.2		500	33.52	
1000	10G	13.95	5.52	133	1.64	218.6		500	33.52	
1005		13.96	5.52	133	1.60	218.7	1.34	500	33.52	
1010		14.06	5.52	133	1.58	218.2		500	33.52	
1015		14.17	5.51	133	1.49	218.8		500	33.52	
1020		14.16	5.51	133	1.51	219.2	1.41	500	33.52	
1025		14.10	5.50	133	1.51	219.1		500	33.52	
1030		14.14	5.50	133	1.49	220.1		~~500~~ 450	33.52	
1035		14.12	5.49	132	1.50	220.1		450	33.52	
1040	4G	14.15	5.49	131	1.48	219.7	1.35	500	33.52	
	STOP									
										Sample time 1050

RESOLUTION CONSULTANTS

Well ID: RE120D2

Low Flow Ground Water Sample Collection Record

Client: Navy NWIRP Bethpage | Date: 3 / 25 / 15 | Time: Start 800 am/pm
Project No: 60266526 | Finish 1200 am/pm
Site Location: Skelley Dr
Weather Conds: sunny 25-40° | Collector(s): Paul Kaveth

1. WATER LEVEL DATA: (measured from Top of Casing)

a. Total Well Length 715 | c. Length of Water Column _____ (a-b) | Casing Diameter/Material: 4-inch PVC

b. Water Table Depth 33.23 | d. Calculated System Volume (see back) 20ft screen 13.1gal

2. WELL PURGE DATA

a. Purge Method: Geotech bladder pump with drop tube assembly

b. Acceptance Criteria defined (see workplan)

- Temperature ± 3% - D.O. ± 10% (values >0.5 mg/L) Turbidity ± 10%
- pH ± 0.1 unit - ORP ± 10mV
- Sp. Cond. ± 3% - Drawdown < 0.3' Remove a minimum 1 screen volume

c. Field Testing Equipment used:

	Make	Model	Serial Number
	YSI	556	7174
	Hanna	98703	69117

Time (24hr)	Volume Removed (Liters)	Temp. (°C)	pH	Spec. Cond. (mS/cm)	DO (mg/L)	ORP (mV)	Turbidity (NTU)	Flow Rate (ml/min)	Depth to water (ft)	Color/Odor
830	ON									
0835		13.52	7.54	0.075	7.43	-54.1	11.94	450	33.39	clear none
0840		13.83	6.38	0.074	5.54	-48.8	6.90	500	33.39	
0845		13.86	6.05	0.074	5.36	-45.3		500	33.39	
0850		13.88	5.70	0.075	5.72	-39.3	1.94	500	33.39	
0855		13.88	5.46	0.076	6.02	-33.1				
900	5gal	13.91		0.077	6.06	-29.5				

d. Acceptance criteria pass/fail

	Yes	No	N/A
Has required volume been removed	☑	☐	☐
Has required turbidity been reached	☑	☐	☐
Have parameters stabilized	☑	☐	☐

If no or N/A - Explain below.

(continued on back)

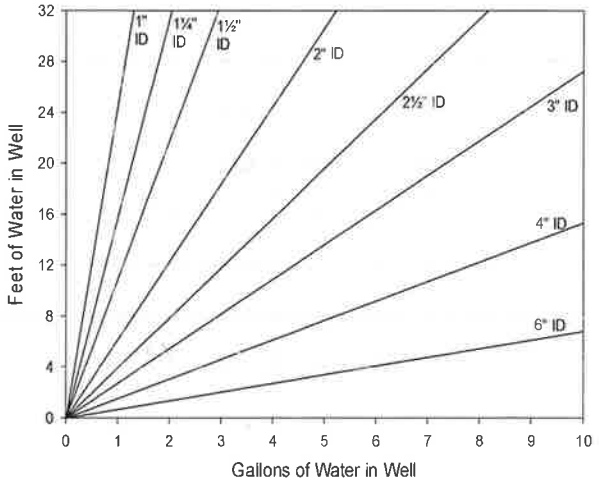
3. SAMPLE COLLECTION: Method: Geotech bladder pump with drop tube assembly

Sample ID	Container Type	No. of Containers	Preservation	Analysis Req.	Time
RE120D2-GW-032515	40-mL vial	3	HCl	VOCs	1010
RE120D2-GW-032515	1-L amber	2	none	1,4-Dioxane	1010

Comments: MS, MSD

Signature: Paul Kaveth | Date: 3/25/15

Purge Volume Calculation



Volume / Linear Ft. of Pipe		
ID (in)	Gallon	Liter
0.25	0.0025	0.0097
0.375	0.0057	0.0217
0.5	0.0102	0.0386
0.75	0.0229	0.0869
1	0.0408	0.1544
1.25	0.0637	0.2413
1.5	0.0918	0.3475
2	0.1632	0.6178
2.5	0.2550	0.9653
3	0.3672	1.3900
4	0.6528	2.4711
6	1.4688	5.5600

1 screen volume

15 ft = 56.8 L / 9.8 G
20 ft = 75.7 L / 13.1 G
25 ft = 94.6 L / 16.3 G

Well ID: RE126DL @ 830

(continued from front)

Time (24 hr)	Volume Removed (Liters)	Temp (°C)	pH	Spec. Cond. (mS/cm)	DO (mg/L) ±10%	ORP (mV) ±10mV	Turbidity (NTU)	Flow Rate (ml/min)	Depth to water (ft)	Color/Odor
905		13.95	5.34	0.077	6.04	-26.0				
910		13.93	5.32	0.077	6.02	-22.6		450	33.38	
915		13.93	5.30	0.076	6.06	-18.7				
920		13.93	5.29	0.076	6.08	-15.5	1.89			
925		13.95	5.26	0.076	6.27	-13.3				
930		13.99	5.27	0.076	6.39	-10.8			33.42	
935	10gal	13.94	5.26	0.076	6.11	-7.9		450		
940		14.01	5.26	0.077	6.04	-5.0				
945		14.00	5.26	0.077	5.97	-3.8	1.95		32.44	
950		14.09	5.25	0.078	5.91	-2.3				
955		14.02	5.25	0.077	5.85	-0.4				
1000		14.06	5.25	0.077	5.86	1.5		450	32.46	
1010										Sample

RESOLUTION CONSULTANTS

Well ID: RE-120 03

Low Flow Ground Water Sample Collection Record

Client: Navy NWIRP Bethpage | Date: 3 / 25 / 15 | Time: Start 810 am/pm | Finish 1100 am/pm
Project No: 60266526
Site Location: Heather Dr
Weather Conds: sunny 25-40° | Collector(s):

1. WATER LEVEL DATA: (measured from Top of Casing)

a. Total Well Length 765' c. Length of Water Column 731.15 (a-b)

Casing Diameter/Material: 4-inch PVC

b. Water Table Depth 33.85 d. Calculated System Volume (see back) 20 ft screen 13.1 gal

2. WELL PURGE DATA

a. Purge Method: Geotech bladder pump with drop tube assembly

b. Acceptance Criteria defined (see workplan)

- Temperature	± 3%	- D.O.	± 10% (values >0.5 mg/L)	Turbidity	± 10%
- pH	± 0.1 unit	- ORP	± 10mV		
- Sp. Cond.	± 3%	- Drawdown	< 0.3'	Remove a minimum 1 screen volume	

c. Field Testing Equipment used:

	Make	Model	Serial Number
	YSI	556 MPS	55474
	Hanna	HI 98703	69177

Time (24hr)	Volume Removed (Liters)	Temp. (°C)	pH	Spec. Cond. (mS/cm)	DO (mg/L)	ORP (mV)	Turbidity (NTU)	Flow Rate (ml/min)	Depth to water (ft)	Color/Odor
0845	ON									
0850		12.25	7.86	0.027	9.70	195	21	500	33.90	clear / "
0855		13.81	6.68	0.025	4.70	198.6		500	33.90	"
0900		14.08	11.11	0.024	4.63	201.9	13.3	500	33.80	"
0905		14.24	7.80	0.024	4.16	225.5		500	33.85	"
0910		14.35	8.19	0.024	4.06	234.8	8.13	500	33.85	"
0915		14.43	7.73	0.024	4.10	249.9		500	33.85	"

(continued on back)

d. Acceptance criteria pass/fail

	Yes	No	N/A
Has required volume been removed	☑	☐	☐
Has required turbidity been reached	☑	☐	☐
Have parameters stabilized	☑	☐	☐

If no or N/A - Explain below.

3. SAMPLE COLLECTION:

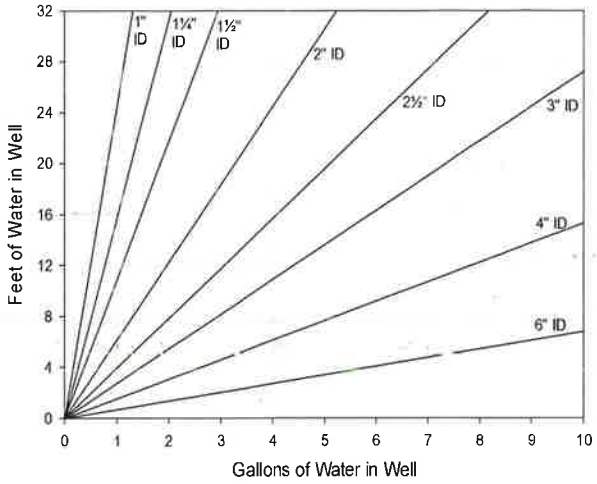
Method: Geotech bladder pump with drop tube assembly

Sample ID	Container Type	No. of Containers	Preservation	Analysis Req.	Time
RE120D3-GW-032515	40-mL vial	3	HCl	VOCs	1025
RE120D3-GW-032515	1-L amber	2	none	1,4-Dioxane	1025
DUPLICATE-GW-032515	40mL VOA	3	HCl	VOCs	1030
DUPLICATE-GW-032515	1L AG	2	none	1,4-Dioxane	1030

Comments

Signature [signature] Date 3/25/15

Purge Volume Calculation



Volume / Linear Ft. of Pipe		
ID (in)	Gallon	Liter
0.25	0.0025	0.0097
0.375	0.0057	0.0217
0.5	0.0102	0.0386
0.75	0.0229	0.0869
1	0.0408	0.1544
1.25	0.0637	0.2413
1.5	0.0918	0.3475
2	0.1632	0.6178
2.5	0.2550	0.9653
3	0.3672	1.3900
4	0.6528	2.4711
6	1.4688	5.5600

1 screen volume

15 ft = 56.8 L / 9.8 G
20 ft = 75.7 L / 13.1 G
25 ft = 94.6 L / 16.3 G

Well ID:

(continued from front)

Time (24 hr)	Volume Removed (Liters)	Temp (°C)	pH	Spec. Cond. (mS/cm)	DO (mg/L)	ORP (mV)	Turbidity (NTU)	Flow Rate (ml/min)	Depth to water (ft)	Color/Odor
920		14.38	7.89	0.024	4.26	262.8	9.74	500	37.85	clear
925		14.42	7.84	0.024	4.18	270.1		500	37.85	"
930		14.34	7.44	0.024	4.08	277.5	9.74	500	37.85	"
935		14.42	7.37	0.024	4.02	282.2		500	37.85	"
940		14.52	7.14	0.024	4.00	286.5	9.86	500	37.85	"
945		14.48	7.05	0.024	3.96	290.16		500	37.85	"
950		14.65	6.94	0.024	3.93	294.3	8.19	500	37.85	"
955		14.62	6.85	0.024	3.92	296.8		500	37.85	"
1000		14.70	6.84	0.024	3.87	302.0	6.14	500	37.85	"
1005		14.60	6.78	0.024	3.86	304.6		500	37.85	"
1010		14.54	6.72	0.024	3.88	310.4	5.54	500	37.85	"
1015		14.57	6.67	0.024	3.85	314.5		500	37.85	"
1020		14.52	6.64	0.024	3.87	318.1	5.26	500	37.85	"

RESOLUTION CONSULTANTS

Well ID: RE120D1

Low Flow Ground Water Sample Collection Record

Client: Navy NWIRP Bethpage | Date: 12 / 12 / 14 | Time: Start 730 am/pm | Finish 1200 am/pm
Project No: 60266526
Site Location: Shelley
Weather Conds: cloudy 33 · 40° | Collector(s):

1. WATER LEVEL DATA: (measured from Top of Casing)

a. Total Well Length 650 c. Length of Water Column _____ (a-b)

Casing Diameter/Material: 4-inch PVC

b. Water Table Depth 35.00 d. Calculated System Volume (see back) 13.1 gal / 49.4 L (20 ft screen length)

2. WELL PURGE DATA

a. Purge Method: Geotech bladder pump with drop tube assembly

b. Acceptance Criteria defined (see workplan)

- Temperature	± 3%	- D.O.	± 10% (values >0.5 mg/L)	Turbidity	± 10%
- pH	± 0.1 unit	- ORP	± 10mV		
- Sp. Cond.	± 3%	- Drawdown	< 0.3'	Remove a minimum 1 screen volume	

c. Field Testing Equipment used:

	Make	Model	Serial Number
	YSI	556	71544X
	HANNA	HI 9863	061526X

Time (24hr)	Volume Removed (Liters)	Temp. (°C)	pH	Spec. Cond. (mS/cm)	DO (mg/L)	ORP (mV)	Turbidity (NTU)	Flow Rate (ml/min)	Depth to water (ft)	Color/Odor
1100		13.81	5.70	0.115	6.04	120.5	22.7	500	35.11	
1105		13.92	5.68	0.116	4.48	119.3				
1110		14.25	5.66	0.118	3.98	121.0				
1115		14.22	5.71	0.125	3.00	121.3	13.2	515	35.09	
1120		14.20	5.72	0.123	2.39	120.0				
1125		14.17	5.71	0.124	1.83	121.5	9.			
1130		14.35	5.74	0.126	1.67	119.8	7.50	515	35.09	

d. Acceptance criteria pass/fail

	Yes	No	N/A
Has required volume been removed	☑	☐	☐
Has required turbidity been reached	☑	☐	☐
Have parameters stabilized	☑	☐	☐

If no or N/A - Explain below.

(continued on back)

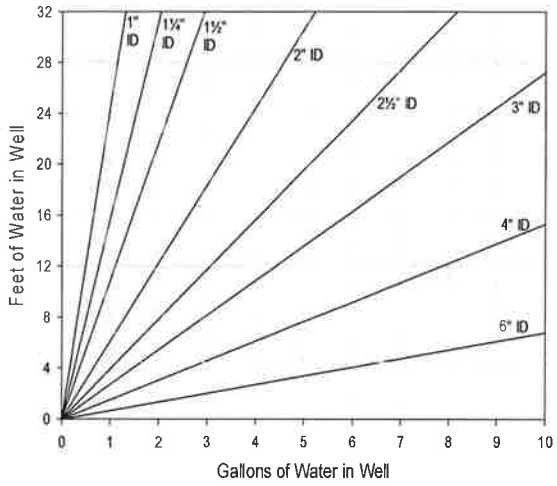
3. SAMPLE COLLECTION: Method: Geotech bladder pump with drop tube assembly

Sample ID	Container Type	No. of Containers	Preservation	Analysis Req.	Time 1230
RE120D1-GW-121214	40-mL vial	3	HCl	VOCs	1230
	1-L amber	2	none	1,4-Dioxane	1230

Comments: Instl pump 8:00, Compressor problems pull pump, Swap out different compressor (All three Broken), Couldnt start until one of the other compressors was available

Signature _____ Date _____

Purge Volume Calculation



Volume / Linear Ft. of Pipe		
ID (in)	Gallon	Liter
0.25	0.0025	0.0097
0.375	0.0057	0.0217
0.5	0.0102	0.0386
0.75	0.0229	0.0869
1	0.0408	0.1544
1.25	0.0637	0.2413
1.5	0.0918	0.3475
2	0.1632	0.6178
2.5	0.2550	0.9653
3	0.3672	1.3900
4	0.6528	2.4711
6	1.4688	5.5600

Well ID:

(continued from front)

Time (24 hr)	Volume Removed (Liters)	Temp (°C)	pH	Spec. Cond. (mS/cm)	DO (mg/L)	ORP (mV)	Turbidity (NTU)	Flow Rate (ml/min)	Depth to water (ft)	Color/Odor
1135		14.31	5.73	0.126	1.61	119.2	7.51	515	35.09	
1140		14.34	5.74	0.125	1.58	119.3			35.09	
1145		14.35	5.75	0.126	1.53	118.7	[illegible]	[illegible]	[illegible]	
1150		14.30	5.77	0.126	1.43	119.2	11.9	515	35.09	
1155		14.40	5.78	0.127	1.41	117.2				
1200		14.41	5.79	0.127	1.39	116.0				
1205		14.40	5.79	0.127	1.35	116.2	10.9	515	35.10	
1210		14.28	5.79	0.127	1.30	116.5	10.0			
1220	13gal	14.52	5.78	0.128	1.31	118.6	11.2			
1230										Samples

RESOLUTION CONSULTANTS

Well ID: RE120 DX2

Low Flow Ground Water Sample Collection Record

Client: Navy NWIRP Bethpage Date: 12 / 12 / 14 Time: Start 730 am/pm
Project No: 60266526 Finish 1200 am/pm
Site Location: Shelley
Weather Conds: cloudy 33-40 Collector(s): Paul Kraeth

1. WATER LEVEL DATA: (measured from Top of Casing)

a. Total Well Length 210 / 760 c. Length of Water Column _____ (a-b)

Casing Diameter/Material: 4-inch PVC

b. Water Table Depth 34.28 / 35.32 d. Calculated System Volume (see back) 13.1 gal / 49.4 L (20 ft screen length)

2. WELL PURGE DATA

a. Purge Method: Geotech bladder pump with drop tube assembly

b. Acceptance Criteria defined (see workplan)

- Temperature	± 3%	- D.O.	± 10% (values >0.5 mg/L)	Turbidity	± 10%
- pH	± 0.1 unit	- ORP	± 10mV		
- Sp. Cond.	± 3%	- Drawdown	< 0.3'	Remove a minimum 1 screen volume	

c. Field Testing Equipment used:

	Make	Model	Serial Number
	YSI	556	17218 X
	Hanna	HI 79803	064526 X

Time (24hr)	Volume Removed (Liters)	Temp. (°C)	pH	Spec. Cond. (mS/cm)	DO (mg/L)	ORP (mV)	Turbidity (NTU)	Flow Rate (ml/min)	Depth to water (ft)	Color/Odor
940										ON
945		13.66	6.20	0.071	8.39	117.0		500		
950		13.81	5.93	0.072	6.60	115.9	35			
955		13.88	5.93	0.072	6.41	117.5		500	35.02	
1000		14.05	5.81	0.075	6.31	120.8	7.46		35.02	
1005		14.02	5.76	0.077	6.12	123.3		500	35.02	
1010	5G	13.94	5.74	0.077	6.06	124.6	9.12		35.01	

(continued on back)

d. Acceptance criteria pass/fail

	Yes	No	N/A
Has required volume been removed	☑	☐	☐
Has required turbidity been reached	☑	☐	☐
Have parameters stabilized	☑	☐	☐

If no or N/A - Explain below.

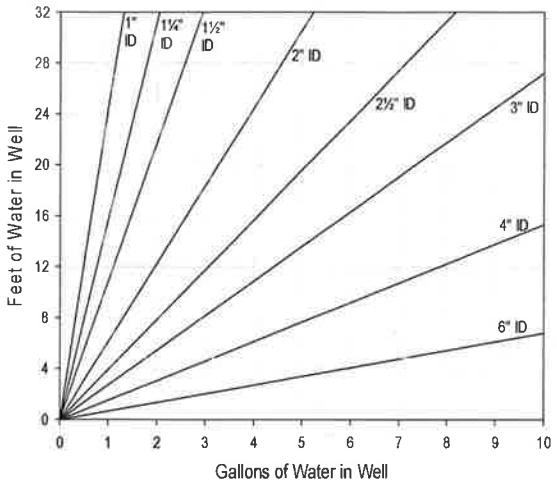
3. SAMPLE COLLECTION: Method: Geotech bladder pump with drop tube assembly

Sample ID	Container Type	No. of Containers	Preservation	Analysis Req.	Time
RE0602-GW-121214	40-mL vial	3	HCl	VOCs	1120
"	1-L amber	2	none	1,4-Dioxane	1120

Comments

Signature _____ Date _____

Purge Volume Calculation



Volume / Linear Ft. of Pipe		
ID (in)	Gallon	Liter
0.25	0.0025	0.0097
0.375	0.0057	0.0217
0.5	0.0102	0.0386
0.75	0.0229	0.0869
1	0.0408	0.1544
1.25	0.0637	0.2413
1.5	0.0918	0.3475
2	0.1632	0.6178
2.5	0.2550	0.9653
3	0.3672	1.3900
4	0.6528	2.4711
6	1.4688	5.5600

Well ID:

(continued from front)

Time (24 hr)	Volume Removed (Liters)	Temp (°C)	pH	Spec. Cond. (mS/cm)	DO (mg/L)	ORP (mV)	Turbidity (NTU)	Flow Rate (ml/min)	Depth to water (ft)	Color/Odor
1020		14.30	5.71	0.077	4.95	127.7		450		
1025		14.20	5.73	0.076	5.01	130.1				
1030		14.07	5.74	0.076	10.59	134.5	5.87		34.94	
1035		14.50	5.72	0.076	6.96	135.1			34.95	
1040		14.29	5.71	0.076	6.63	136.1			34.97	
1045		14.37	5.72	0.077	6.56	135.9				
1050	10gal	14.24	5.72	0.076	6.40	136.2	6.75		34.98	
1055		14.24	5.71	0.077	5.92	137.0				
1100		14.19	5.70	0.077	5.83	137.2	3.09			
1105		14.17	5.70	0.077	5.73	138.4				
1110		14.26	5.71	0.077	5.58	139.6				
1115	13gal	14.32	5.71	0.077	5.33	139.7	2.87	450	34.98	
1120	Sample									

RESOLUTION CONSULTANTS

Well ID: RE120 DL3

Low Flow Ground Water Sample Collection Record

Client: Navy NWIRP Bethpage Date: 12 / 12 / 14 Time: Start 1230 am/pm
Project No: 60266526 Finish 1700 am/pm
Site Location: Shelley
Weather Conds: cloudy 33.40° Collector(s):

1. WATER LEVEL DATA: (measured from Top of Casing)

a. Total Well Length 760 − 724.68 = 35.32 c. Length of Water Column _____ (a-b)

Casing Diameter/Material: 4-inch PVC

b. Water Table Depth 34.78 d. Calculated System Volume (see back) 13.1 gal / 49.4 L (20 ft screen length)

2. WELL PURGE DATA

a. Purge Method: Geotech bladder pump with drop tube assembly

b. Acceptance Criteria defined (see workplan)

- Temperature	± 3%	- D.O.	± 10% (values >0.5 mg/L)	Turbidity	± 10%
- pH	± 0.1 unit	- ORP	± 10mV		
- Sp. Cond.	± 3%	- Drawdown	< 0.3'	Remove a minimum 1 screen volume	

c. Field Testing Equipment used:

	Make	Model	Serial Number
	YSI	556 MPS	U78600X
	Hanna	HI 79803	0645261

Time (24hr)	Volume Removed (Liters)	Temp. (°C)	pH	Spec. Cond. (mS/cm)	DO (mg/L)	ORP (mV)	Turbidity (NTU)	Flow Rate (ml/min)	Depth to water (ft)	Color/Odor
0920		13.32	3.74	0.029	9.45	221	67.1	450	35.45	
0930		13.68	3.98	0.028	7.29	206		450	35.45	cloudy
0935		14.16	4.44	0.027	4.50	198.3				
0945		13.94	4.51	0.029	4.37	203.3				
0950		14.00	4.49	0.028	4.34	208.7				
0955	5gal	14.03	4.47	0.028	4.30	213.3	62		35.45	

d. Acceptance criteria pass/fail

	Yes	No	N/A
Has required volume been removed	☑	☐	☐
Has required turbidity been reached	☑	☐	☐
Have parameters stabilized	☑	☐	☐

If no or N/A - Explain below.

(continued on back)

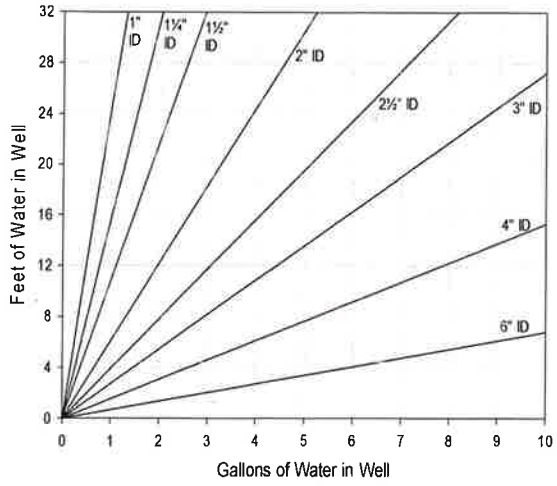
3. SAMPLE COLLECTION: Method: Geotech bladder pump with drop tube assembly

Sample ID	Container Type	No. of Containers	Preservation	Analysis Req.	Time
RE120D3-121214	40-mL vial	3	HCl	VOCs	1140
RE120D3-121214	1-L amber	2	none	1,4-Dioxane	1140

Comments

Signature Date

Purge Volume Calculation



Volume / Linear Ft. of Pipe		
ID (in)	Gallon	Liter
0.25	0.0025	0.0097
0.375	0.0057	0.0217
0.5	0.0102	0.0386
0.75	0.0229	0.0869
1	0.0408	0.1544
1.25	0.0637	0.2413
1.5	0.0918	0.3475
2	0.1632	0.6178
2.5	0.2550	0.9653
3	0.3672	1.3900
4	0.6528	2.4711
6	1.4688	5.5600

Well ID:

(continued from front)

Time (24 hr)	Volume Removed (Liters)	Temp (°C)	pH	Spec. Cond. (mS/cm)	DO (mg/L)	ORP (mV)	Turbidity (NTU)	Flow Rate (ml/min)	Depth to water (ft)	Color/Odor
1000		13.96	4.41	0.028	4.27	222	56.4	450	35.45	
1005		14.18	4.34	0.028	4.23	230		450		
1010		14.13	4.37	0.028	4.11	235.1	53.7	450	35.44	
1015		14.29	4.39	0.028	3.99	237.1	50.1	450	35.44	
1020	10 G	14.36	4.37	0.028	3.96	237.6			35.45	
1025		14.23	4.37	0.028	4.04	240.1	41.2	450	35.45	
1030		14.53	4.35	0028	3.96	241.3	45.5		35.45	
1035		14.53	4.38	0.027	4.03	242.5		450	35.45	
1040		14.39	4.38	0.028	3.99	247	47.3		35.45	
1045		14.45	4.36	0.028	3.98	245	41.2		35.45	
1050	13 gal	14.44	4.35	0.028	4.00	247.3	45.3	450		
1055										

Section 4

Analytical Data Validation

RESOLUTION CONSULTANTS

Resolution Consultants
250 Apollo Drive
Chelmsford, MA 01824

978.905.2100 tel
978.905.2101 fax

Data Validation Report

Project:	Regional Groundwater Investigation - NWIRP Bethpage	
Laboratory:	Katahdin Analytical	
Service Request:	SH8338	
Analyses/Method:	EPA SW-846 Method 9060 for TOC and Standard Method 5310 for Total Organic Carbon by High-Temperature Combustion	
Validation Level:	3	
AECOM Project Number:	60266526.SA.DV	
Prepared by:	Dawn Brule/RESCON	Completed on: 12/29/2014
Reviewed by:	Lori Herberich/RESCON	File Name: SH8338_5310B and 9060

SUMMARY

The samples listed below were collected by Resolution Consultants from the Regional Groundwater Investigation - NWIRP Bethpage site on September 30, 2014.

Sample ID	Matrix/Sample Type
RE120D3-SOIL-093014-743-745	Soil
RE120D3-EB-093014	Equipment Blank

The samples were analyzed in accordance with:

- *Standard Methods for the Examination of Water and Wastewater, Method SM5310B, Total Organic Carbon by High-Temperature Combustion*
- *Test Methods for Evaluating Solid Waste, Physical/Chemical Methods SW-846,* Method 9060A, *Total Organic Carbon* (USEPA, 1996).

Data validation activities were conducted with reference to these methods, *USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Superfund Data Review* (January 2010), and Quality Systems Manual (QSM) for Environmental Laboratories, Version 4.2 (DoD, October 2010) where applicable. In the absence of method-specific information, laboratory quality control (QC) limits, project-specific requirements and/or professional judgment were used as appropriate.

REVIEW ELEMENTS

The data were evaluated based on the following review elements (where applicable to the method):

✓ Data completeness (chain-of-custody [COC])/sample integrity
✓ Holding times and sample preservation
✓ Initial calibration/continuing calibration verification
✓ Laboratory blanks/equipment blanks

✓	Matrix spike (MS)/matrix duplicate (MD) and/or matrix spike duplicate (MSD) results
✓	Laboratory control sample (LCS) results
NA	Field duplicates
✓	Sample results/reporting issues

The symbol (✓) indicates that no validation qualifiers were applied based on this parameter. NA indicates that the parameter was not included as part of this data set or was not applicable to this validation and therefore not reviewed. The symbol (✗) indicates that a QC nonconformance resulted in the qualification of data. Any QC nonconformance that resulted in the qualification of data is discussed below. In addition, nonconformances or other issues that were noted during validation, but did not result in qualification of data, may be discussed for informational purposes only.

The data appear valid as reported and may be used for decision making purposes. There were no data points qualified or rejected on the basis of this data review.

RESULTS

Data Completeness(COC)/Sample Integrity

The data package was reviewed and found to meet acceptance criteria for completeness:

- The COCs were reviewed for completeness of information relevant to the samples and requested analyses, and for signatures indicating transfer of sample custody.
- The laboratory sample login sheet(s) were reviewed for issues potentially affecting sample integrity, including the condition of sample containers upon receipt at the laboratory.
- Completeness of analyses was verified by comparing the reported results to the COC requests.

Due to limitations in the reporting system, the laboratory omitted the "RE120D3-" prefix from a sample ID in the report. The submitted EDD file reflects the full sample ID.

Holding Times and Sample Preservation

Sample preservation and preparation/analysis holding times were reviewed for conformance with the QC acceptance criteria. The QC acceptance criteria were met.

Initial Calibration/Continuing Calibration Verification

Calibration data were reviewed for conformance with the QC acceptance criteria to ensure that:

- all criteria were met for the calibration curves
- the initial calibration verification (ICV) percent recovery (%R) criteria were met; and
- the continuing calibration verification standard (CCV) method %Rs were met

The QC acceptance criteria were met.

Laboratory Blanks/Equipment Blanks

Laboratory method blanks and equipment rinsate blanks were evaluated as to whether there were contaminants detected above the detection limit (DL).

Data validation qualifications for individual samples are based on the maximum contaminant concentration detected in all associated blanks.

Method and equipment rinsate results were reviewed for conformance with the QC acceptance criteria. Detected results in blanks are not discussed in this data validation report if the associated results were nondetect or if qualification of sample results was not required.

The QC acceptance criteria were met and/or qualification of the sample results was not required.

MS/MD and/or MSD Results

All MS/MD/MSD criteria were met and/or qualification of the data was not required.

LCS Results

The LCS %Rs were reviewed for conformance with the QC acceptance criteria. All QC acceptance criteria were met.

Field Duplicate Results

There were no field duplicate samples submitted with this data set. No validation actions were taken on this basis.

Sample Results/Reporting Issues

Compounds that were not detected in the sample are reported as not detected (U) at the Limit of Detection (LOD).

Compounds detected at concentrations less than the LOQ but greater than the detection limit (DL) were qualified by the laboratory as estimated (J). This "J" qualifier was retained during data validation.

Any sample that was analyzed at a dilution due to high concentrations of target or non-target compounds or matrix interferences was checked to ensure that the results and/or sample specific LODs and LOQs were adjusted accordingly by the laboratory.

QUALIFICATION ACTIONS

No sample results were qualified as a result of this data review.

ATTACHMENTS

Attachment A: Qualifier Codes and Explanations

Attachment A

Qualifier Codes and Explanations

Qualifier	Explanation
J	The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample.
UJ	The analyte was not detected above the reported sample quantitation limit. However, the reported quantitation limit is approximate and may or may not represent the actual limit of quantitation necessary to accurately and precisely measure the analyte in the sample.
U	The analyte was analyzed for, but was not detected above the reported sample quantitation limit.
R	The sample results are rejected due to serious deficiencies in the ability to analyze the sample and meet quality control criteria. The presence or absence of the analyte cannot be verified.

Katahdin ANALYTICAL SERVICES

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Scarborough, ME 04074
Tel: (207) 874-2400
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Page ____ of ____

Client: ResCon | Contact: E. Vivacdua | Phone # ( ) | Fax # ( )

Address: 100 Red Schoolhouse Rd. | City: Chestnut Ridge | State: NY | Zip Code

Purchase Order # | Proj. Name / No. 60266526 | Katahdin Quote #

Bill (if different than above) | Address

Sampler (Print / Sign): Vincent Vericchio [signature] | Copies To:

LAB USE ONLY | WORK ORDER #:

KATAHDIN PROJECT NUMBER: SH8338

REMARKS:

SHIPPING INFO: ☐ FED EX ☐ UPS ☐ CLIENT

AIRBILL NO:

TEMP°C ______ ☐ TEMP BLANK ☐ INTACT ☐ NOT INTACT

ANALYSIS AND CONTAINER TYPE PRESERVATIVES

*	Sample Description	Date / Time coll'd	Matrix	No. of Cntrs.	TOC (Filt. ☐Y ☐N)	Filt. ☐Y ☐N	Filt. ☐Y ☐N	Filt. ☐Y ☐N	Filt. ☐Y ☐N	Filt. ☐Y ☐N	Filt. ☐Y ☐N	Filt. ☐Y ☐N	Filt. ☐Y ☐N	Filt. ☐Y ☐N
	RE120D3-EB-093014	9/30/14 / 1330	W	3	3									
	RE120D3-Soil-093014-743-745	9/30/14 / 1000	Soil	1	1									
	~~RE120D3-TripBlank-093014~~	/	~~W~~											
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COMMENTS

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Relinquished By: (Signature)	Date / Time	Received By: (Signature)	Relinquished By: (Signature)	Date / Time	Received By: (Signature)
				10/3/14 0945	[signature]

THE TERMS AND CONDITIONS ON THE REVERSE SIDE HEREOF SHALL GOVERN SERVICES, EXCEPT WHEN A SIGNED CONTRACTUAL AGREEMENT EXISTS.

0000009

ORIGINAL

KAS-COC1

Katahdin
ANALYTICAL SERVICES

Cert No E87604

Report of Analytical Results

Client: Rick Purdy
AECOM
701 Edgewater Drive
Wakefield,MA 01880

Lab Sample ID: SH8338-1
Report Date: 20-OCT-14
Client PO: 16518
Project: Navy Clean WE15-03-0
SDG: SH8338

Sample Description	Matrix	Date Sampled	Date Received
RE120D3-EB-093014	AQ	30-SEP-14 13:30:00	03-OCT-14

Parameter	Result	Adj LOQ	Adj MDL	Adj LOD	Anal. Method	QC.Batch	Anal. Date	Prep. Method	Prep. Date	Footnotes
Total Organic Carbon	J0.24 mg/L	1.0	0.10	.5	SM5310B	WG151770	08-OCT-14 20:15:03	N/A	N/A	

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Report of Analytical Results

Client: Rick Purdy
AECOM
701 Edgewater Drive
Wakefield,MA 01880

Lab Sample ID: SH8338-2
Report Date: 05-NOV-14
Client PO: 16518
Project: Navy Clean WE15-03-0
SDG: SH8338

Sample Description	Matrix	Date Sampled	Date Received
SOIL-093014-743-745	SL	30-SEP-14 10:00:00	03-OCT-14

Parameter	Result	Adj LOQ	Adj MDL	Adj LOD	Anal. Method	QC.Batch	Anal. Date	Prep. Method	Prep. Date	Footnotes
TOC In Soil	J260 ug/gdrywt	490	100	370	SW846 9060A Mod.	WG151721	07-OCT-14 12:15:51	N/A	N/A	
Total Solids	82. %	1		N/A	SM2540G	WG152160	16-OCT-14 08:23:01	SM2540G	15-OCT-14	

Katahdin Analytical Services 0000021

RESOLUTION CONSULTANTS

Resolution Consultants
250 Apollo Drive
Chelmsford, MA 01824

978.905.2100 tel
978.905.2101 fax

Data Validation Report

Project:	Regional Groundwater Investigation - NWIRP Bethpage	
Laboratory:	Katahdin Analytical	
Service Request:	SH9467	
Analyses/Method:	EPA SW-846 Method 9060A for TOC and Standard Method 5310 for Total Organic Carbon by High-Temperature Combustion	
Validation Level:	3	
AECOM Project Number:	60266526.SA.DV	
Prepared by:	Dawn Brule/RESCON	Completed on: 12/31/2014
Reviewed by:	Lori Herberich/RESCON	File Name: SH9467_5310B and 9060A

SUMMARY

The samples listed below were collected by Resolution Consultants from the Regional Groundwater Investigation - NWIRP Bethpage site on November 5, 2014.

Sample ID	Matrix/Sample Type
RE120D1-EB-110514	Equipment blank
RE120D1-SOIL-110514-633-635	Soil

The samples were analyzed in accordance with:

- *Standard Methods for the Examination of Water and Wastewater, Method SM5310B, Total Organic Carbon by High-Temperature Combustion*
- *Test Methods for Evaluating Solid Waste, Physical/Chemical Methods SW-846,* Method 9060A, *Total Organic Carbon* (USEPA, 1996).

Data validation activities were conducted with reference to these methods, *USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Superfund Data Review* (January 2010), and Quality Systems Manual (QSM) for Environmental Laboratories, Version 4.2 (DoD, October 2010) where applicable. In the absence of method-specific information, laboratory quality control (QC) limits, project-specific requirements and/or professional judgment were used as appropriate.

REVIEW ELEMENTS

The data were evaluated based on the following review elements (where applicable to the method):

✓ Data completeness (chain-of-custody [COC])/sample integrity
✓ Holding times and sample preservation
✓ Initial calibration/continuing calibration verification
✗ Laboratory blanks/trip blanks/equipment blanks

✓	Matrix spike (MS)/matrix duplicate (MD) and/or matrix spike duplicate (MSD) results
✓	Laboratory control sample (LCS) results
NA	Field duplicates
✓	Sample results/reporting issues

The symbol (✓) indicates that no validation qualifiers were applied based on this parameter. NA indicates that the parameter was not included as part of this data set or was not applicable to this validation and therefore not reviewed. The symbol (✗) indicates that a QC nonconformance resulted in the qualification of data. Any QC nonconformance that resulted in the qualification of data is discussed below. In addition, nonconformances or other issues that were noted during validation, but did not result in qualification of data, may be discussed for informational purposes only.

The data appear valid as reported and may be used for decision making purposes. Selected data points were negated due to nonconformances of certain QC criteria (see discussion below). Qualified sample results are presented in Table 1.

RESULTS

Data Completeness (COC)/Sample Integrity

The data package was reviewed and found to meet acceptance criteria for completeness:

- The COCs were reviewed for completeness of information relevant to the samples and requested analyses, and for signatures indicating transfer of sample custody.
- The laboratory sample login sheet(s) were reviewed for issues potentially affecting sample integrity, including the condition of sample containers upon receipt at the laboratory.
- Completeness of analyses was verified by comparing the reported results to the COC requests.

Due to limitations in the reporting system, the laboratory omitted the "RE120D1-" prefix from a sample ID in the report. The submitted EDD file reflects the full sample ID.

Holding Times/Sample Preservation

Sample preservation and preparation/analysis holding times were reviewed for conformance with the QC acceptance criteria. The QC acceptance criteria were met.

Initial Calibration/Continuing Calibration Verification

Calibration data were reviewed for conformance with the QC acceptance criteria to ensure that:

- all criteria were met for the calibration curves
- the initial calibration verification (ICV) percent recovery (%R) criteria were met; and
- the continuing calibration verification standard (CCV) method %Rs were met

The QC acceptance criteria were met.

Laboratory Blanks/Equipment Blanks

Laboratory method blanks and equipment rinsate blanks were evaluated as to whether there were contaminants detected above the detection limit (DL).

Data validation qualifications for individual samples are based on the maximum contaminant concentration detected in all associated blanks.

Method and equipment rinsate results were reviewed for conformance with the QC acceptance criteria. Detected results in blanks are not discussed in this data validation report if the associated results were nondetect or if qualification of sample results was not required.

Nonconformances are summarized in Attachment A in Table A-1.

Sample results were qualified as follows:

Blank Type	Blank Result	Sample Result	Action for Samples
ICB/CCB (Positive)	≥DL but ≤ LOQ	Nondetect	No action
		≥DL but ≤LOQ	Qualify as nondetect (U) at the LOQ
		> LOQ	Use professional judgment (see below [1])
	>LOQ	≥DL but ≤LOQ	Qualify as nondetect (U) at the LOQ
		> LOQ but < ICB/CCB Result	Qualify at level of Blank Result with a "U" or Qualify result as unusable
		>ICB/CCB but <10x the ICB/CCB result	Qualify as estimated (J)
		≥10x ICB/CCB	No action is taken based on professional judgment
PB / EB/ FB (Positive)	> LOQ	≥DL but ≤ LOQ	Qualify as nondetect (U) at the LOQ
		>LOQ but < 10x Blank Result	Qualify results as unusable
		≥10x Blank Result	No action
	≥DL but ≤LOQ	Nondetect	No action
		≥DL but ≤LOQ	Qualify as nondetect (U) at the LOQ
		> LOQ	Use professional judgment (see below [1])

[1] Establish an action level (AL) at 5x the blank contamination. If sample result is <AL, qualify the reported result with a U.

LOQ - Limit of Quantitation.

Qualified sample results are shown in Table 1.

MS/MD/MSD Results

The MS/MD/MSD %Rs were reviewed for conformance with the QC acceptance criteria. All QC acceptance criteria were met.

LCS/LCSD Results

The LCS %Rs were reviewed for conformance with the QC acceptance criteria. All QC acceptance criteria were met.

Field Duplicate Results

There were no field duplicate samples submitted with this data set. No validation actions were taken on this basis.

Sample Results/Reporting Issues

Compounds that were not detected in the sample are reported as not detected (U) at the Limit of Detection (LOD).

Compounds detected at concentrations less than the LOQ but greater than the detection limit (DL) were qualified by the laboratory as estimated (J). This "J" qualifier was retained during data validation.

Any sample that was analyzed at a dilution due to high concentrations of target or non-target compounds or matrix interferences was checked to ensure that the results and/or sample specific LODs and LOQs were adjusted accordingly by the laboratory.

QUALIFICATION ACTIONS

Sample results qualified as a result of validation actions are summarized in Table 1. All actions are described above.

ATTACHMENTS

Attachment A: Nonconformance Summary Tables

Attachment B: Qualifier Codes and Explanations

Attachment C: Reason Codes and Explanations

Table 1 - Data Validation Summary of Qualified Data

Sample ID	Matrix	Compound	Result	LOQ	Units	Validation Qualifiers	Validation Reason
RE120D1-SOIL-110514-633-635	SO	TOTAL ORGANIC CARBON		670	UG/G	U	be

Attachment A

Nonconformance Summary Tables

Table A-1 - Field Blanks

Blank ID	Compound	Result	LOD	Units	Associated Samples
RE120D1-EB-110514	TOTAL ORGANIC CARBON	0.28	0.50	MG/L	RE120D1-SOIL-110514-633-635

Attachment B

Qualifier Codes and Explanations

Qualifier	Explanation
J	The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample.
UJ	The analyte was not detected above the reported sample quantitation limit. However, the reported quantitation limit is approximate and may or may not represent the actual limit of quantitation necessary to accurately and precisely measure the analyte in the sample.
U	The analyte was analyzed for, but was not detected above the reported sample quantitation limit.
R	The sample results are rejected due to serious deficiencies in the ability to analyze the sample and meet quality control criteria. The presence or absence of the analyte cannot be verified.

Attachment C

Reason Codes and Explanations

Reason Code	Explanation
be	Equipment blank contamination
bf	Field blank contamination
bl	Laboratory blank contamination
c	Calibration issue
co	Analyte carryover
d	Reporting limit raised due to chromatographic interference
fd	Field duplicate RPDs
h	Holding times
i	Internal standard areas
k	Estimated Maximum Possible Concentration (EMPC)
l	LCS or OPR recoveries
lc	Labeled compound recovery
ld	Laboratory duplicate RPDs
lp	Laboratory control sample/laboratory control sample duplicate RPDs
m	Matrix spike recovery
md	Matrix spike/matrix spike duplicate RPDs
nb	Negative laboratory blank contamination
p	Chemical preservation issue
r	Dual column RPD
q	Quantitation issue
s	Surrogate recovery
su	Ion suppression
t	Temperature preservation issue
x	Percent solids
y	Serial dilution results
z	ICS results

Katahdin ANALYTICAL SERVICES

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Page ____ of ____

Client: Resolution Consultants
Contact: E. Vivandou
Phone #: (845) 425-4180
Fax #: ( )

Address: 100 Red Schoolhouse Rd
City: Chestnut Ridge
State: NY
Zip Code: 10977

Purchase Order #:
Proj. Name / No.: NWIRP Bethpage / 60266526
Katahdin Quote #:

Bill (if different than above):
Address:

Sampler (Print / Sign): Vincent Varricchio / [signature]
Copies To:

LAB USE ONLY
WORK ORDER #: SH4467
KATAHDIN PROJECT NUMBER ____
REMARKS:

SHIPPING INFO: ☐ FED EX ☐ UPS ☐ CLIENT
AIRBILL NO:
TEMP°C ____ ☐ TEMP BLANK ☐ INTACT ☐ NOT INTACT

ANALYSIS AND CONTAINER TYPE PRESERVATIVES

*	Sample Description	Date / Time coll'd	Matrix	No. of Cntrs.	TOC (Filt. ☐Y ☐N)	Filt. ☐Y ☐N	Filt. ☐Y ☐N	Filt. ☐Y ☐N	Filt. ☐Y ☐N	Filt. ☐Y ☐N	Filt. ☐Y ☐N	Filt. ☐Y ☐N	Filt. ☐Y ☐N	Filt. ☐Y ☐N
	RE120D1-Soil-110514-633-635	11/5/14 / 1030	Soil	1	1									
	RE120D1-ED-110514	11/5/14 / 1300	W	3	3									
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ORIGINAL

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ANALYTICAL SERVICES

Cert No E87604

Report of Analytical Results

Client: Rick Purdy
AECOM
701 Edgewater Drive
Wakefield,MA 01880

Lab Sample ID: SH9467-1
Report Date: 26-NOV-14
Client PO: 16518
Project: Navy Clean WE15-03-0
SDG: SH9467

Sample Description	Matrix	Date Sampled	Date Received
SOIL-110514-633-635	SL	05-NOV-14 10:30:00	06-NOV-14

Parameter	Result	Adj LOQ	Adj MDL	Adj LOD	Anal. Method	QC.Batch	Anal. Date	Prep. Method	Prep. Date	Footnotes
TOC In Soil	670 U ~~1490~~ ug/gdrywt	670	140	510	SW846 9060A Mod.	WG154656	21-NOV-14 16:13:19	N/A	N/A	
Total Solids	89. %	1		N/A	SM2540G	WG153820	11-NOV-14 10:31:54	SM2540G	10-NOV-14	

1/12/15

Katahdin Analytical Services 0000019

Katahdin
ANALYTICAL SERVICES

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Cert No E87604

Report of Analytical Results

Client: Rick Purdy
AECOM
701 Edgewater Drive
Wakefield,MA 01880

Lab Sample ID: SH9467-2
Report Date: 26-NOV-14
Client PO: 16518
Project: Navy Clean WE15-03-0
SDG: SH9467

Sample Description	Matrix	Date Sampled	Date Received
RE120D1-EB-110514	AQ	05-NOV-14 13:00:00	06-NOV-14

Parameter	Result	Adj LOQ	Adj MDL	Adj LOD	Anal. Method	QC.Batch	Anal. Date	Prep. Method	Prep. Date	Footnotes
Total Organic Carbon	J0.28 mg/L	1.0	0.10	.5	SM5310B	WG154294	18-NOV-14 00:54:38	N/A	N/A	

Katahdin Analytical Services 0000020

DATA VALIDATION REPORT

Project:	Regional Groundwater Investigation — NWIRP Bethpage	
Laboratory:	Katahdin Analytical	
Sample Delivery Group:	TH0604	
Analyses/Method:	Volatile Organic Compounds (VOCs) by U.S. EPA SW-846 Method 8260C Semivolatile Organic Compounds (SVOCs) by U.S. EPA SW-846 Method 8270D via Selective Ion Monitoring (SIM)	
Validation Level:	3	
Project Number:	0888812477.SA.DV	
Prepared by:	Dana Miller/Resolution Consultants	Completed on: 02/12/2015
Reviewed by:	Tina Cantwell/Resolution Consultants	File Name: TH0604_8260C_8270D

SUMMARY

This report summarizes data review findings for samples listed below, collected by Resolution Consultants from the Regional Groundwater Investigation — NWIRP Bethpage site on 12 December 2014 in accordance with the following Sampling and Analysis Plans:

- *Sampling and Analysis Plan, Bethpage, New York,* April 2013.
- *UFP SAP Addendum, Inclusion of Additional Target Analytes for Volatile Organics Analyses, NWIRP Bethpage OU2, Bethpage, New York, August 2014.*
- *UFP SAP Addendum, Installation of Vertical Profile Borings and Monitoring Wells, Operable Unit 2, NWIRP Bethpage, New York,* November 2013.

Sample ID	Matrix/Sample Type	Analysis
RE108D1-GW-121214	Ground water	8260C/8270D_SIM
RE108D2-GW-121214	Ground water	8260C/8270D_SIM
RE120D1-GW-121214	Ground water	8260C/8270D_SIM
RE120D2-GW-121214	Ground water	8260C/8270D_SIM
RE120D3-GW-121214	Ground water	8260C/8270D_SIM
TRIP BLANK-1_12122014	Trip Blank	8260C
TRIP BLANK-2_12122014	Trip Blank	8260C

Data validation activities were conducted using the following guidance documents: *Test Methods for Evaluating Solid Waste, Physical/Chemical Methods SW-846, specifically Method 8260C, Volatile Organic Compounds by Gas Chromatography/Mass Spectrometry* (U.S. EPA, 2006), *SW-846 Method 8270D, Semivolatile Organic Compounds by Gas Chromatograph/Mass Spectrometry*

(U.S. EPA, 2007), *U.S. Environmental Protection Agency (U.S. EPA) Contract Laboratory Program National Functional Guidelines for Superfund Organic Methods Data Review* (NFG, June 2008), and Department of Defense (DoD) Quality Systems Manual (QSM) for Environmental Laboratories, Version 4.2 (October 2010). In the absence of method-specific information, laboratory quality control (QC) limits, project-specific requirements and/or professional judgment were used as appropriate.

REVIEW ELEMENTS

The data were evaluated based on the following parameters (where applicable to the method):

✓	Data completeness (chain-of-custody (COC)/sample integrity
✓	Holding times and sample preservation
✓	GC/MS performance checks
✗	Initial calibration/continuing calibration verification
✓	Laboratory blanks/trip blanks
✓	Surrogate spike recoveries
NA	Matrix spike (MS) and/or matrix spike duplicate (MSD) results
✓	Laboratory control sample (LCS)/laboratory control sample duplicate (LCSD) results
NA	Field duplicates
✓	Internal standards
✓	Sample results/reporting issues

The symbol (✓) indicates that no validation qualifiers were applied based on this parameter. NA indicates that the parameter was not included as part of this data set or was not applicable to this validation and therefore not reviewed. Acceptable data parameters for which all criteria were met and no qualification was performed and non-conformance or other issues that were noted during validation, but did not result in qualification of data are not discussed further. The symbol (✗) indicates that a QC non-conformance resulted in the qualification of data. Any QC non-conformance that resulted in the qualification of data is discussed below.

RESULTS

Initial Calibration/Continuing Calibration Verification

Calibration data were reviewed for conformance with the QC acceptance criteria to ensure that:

- the initial calibration percent relative standard deviation, correlation coefficient/coefficient of determination, and/or response factor method acceptance criteria were met;

- the initial calibration verification standard percent recovery acceptance criteria were met;

- the continuing calibration verification standard (CCV) method percent difference or percent drift (%Ds) and response factor acceptance criteria were met; and

- the retention time method acceptance criteria were met.

Non-conformances are summarized in Attachment A in Table A-1. Data qualification to the analytes associated with the specific CCV was as follows:

CCV Linearity Non-conformances:

Criteria	Actions	
	Detected Results	**Non-detected Results**
%Difference or %Drift > 20%	J	UJ

Qualifications Actions

The data was reviewed independently from the laboratory to assess data quality. All compounds detected at concentrations less than the limit of quantitation (LOQ) but greater than the method detection limit were qualified by the laboratory as estimated (J). This "J" qualifier was retained during data validation. Any sample that was analyzed at a dilution because of high concentrations of target or non-targets was checked to confirm that the results and/or sample-specific LOQs and limit of detections were adjusted accordingly by the laboratory.

No results were rejected; therefore, analytical completeness was calculated to be 100 percent. Data not qualified during data review are considered usable by the project. The remaining results qualified as estimated may be high or low, but the data are usable for their intended purpose, according to U.S. Environmental Protection Agency and Department of Defense guidelines. Table 1 shows a summary of qualified data as a result of validation actions. Final data review qualifiers used to describe results and how they should be interpreted by the end data user are provided in Attachment B and Attachment C. Attachment D provides final results after data review.

ATTACHMENTS

Attachment A: Nonconformance Summary Table
Attachment B: Qualifier Codes and Explanations
Attachment C: Reason Codes and Explanations
Attachment D: Final Results after Data Review

Table 1
Data Validation Summary of Qualified Data

Sample ID	Compound	Result	LOD	LOQ	Units	Validation Qualifiers	Reason Code
RE120D1-GW-121214	TRICHLOROFLUOROMETHANE	ND	2.0	4.0	UG_L	UJ	c
RE120D2-GW-121214	TRICHLOROFLUOROMETHANE	ND	1.0	2.0	UG_L	UJ	c
RE120D3-GW-121214	TRICHLOROFLUOROMETHANE	ND	1.0	2.0	UG_L	UJ	c

Notes:

ID	=	Identification
LOD	=	Limit of detection
LOQ	=	Limit of quantitation
UG_L	=	Micrograms per liter
Validation Qual	=	Qualifier codes and explanation (Refer to Attachment B)
Reason Code	=	Reason code (Refer to Attachment C)

Attachment A
Non Conformance Summary Table

Table (A-1)
Continuing Calibration Verification

Calibration ID	Analyte	%D	Associated Samples	Qualifier
WG1558964-4	TRICHLOROFLUOROMETHANE	21.26474	RE120D3-GW-121214	UJ
WG1558964-4	TRICHLOROFLUOROMETHANE	21.26474	RE120D1-GW-121214	UJ
WG1558964-4	TRICHLOROFLUOROMETHANE	21.26474	RE120D2-GW-121214	UJ

Notes:
ID = Identification
%D = Percent difference
UJ = Refer to Attachment

Attachment B
Qualifier Codes and Explanations

Qualifier	Explanation
J	The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample.
UJ	The analyte was not detected above the reported sample quantitation limit. However, the reported quantitation limit is approximate and may or may not represent the actual quantitation limit necessary to accurately and precisely measure the analyte in the sample.
U	The analyte was analyzed for, but was not detected above the reported sample quantitation limit.

Attachment C
Reason Codes and Explanations

Reason Code	Explanation
be	Equipment blank contamination
bf	Field blank contamination
bl	Laboratory blank contamination
bt	Trip blank contamination
c	Calibration issue
d	Reporting limit raised due to chromatographic interference
fd	Field duplicate RPDs
h	Holding times
i	Internal standard areas
k	Estimated Maximum Possible Concentration (EMPC)
l	LCS or OPR recoveries
lc	Labeled compound recovery
ld	Laboratory duplicate RPDs
lp	Laboratory control sample/laboratory control sample duplicate RPDs
m	Matrix spike recovery
mc	Method compliance non-conformance
md	Matrix spike/matrix spike duplicate RPDs
nb	Negative laboratory blank contamination
p	Chemical preservation issue
r	Dual column RPD
q	Quantitation issue
s	Surrogate recovery
su	Ion suppression
t	Temperature preservation issue
x	Percent solids
y	Serial dilution results
z	ICS results

Attachment D
Final Results after Data Review

			Lab ID	TH0604-1DL2		
			Sample ID	RE120D1-GW-121214		
			Sample Date	12/12/2014		
			Sample Type	Groundwater		
Method	**Analyte**	**CAS No**	**Units**	Result	Qual	RC
8260C	1,1,1-TRICHLOROETHANE	71-55-6	UG_L	1.9	J	
8260C	1,1,2,2-TETRACHLOROETHANE	79-34-5	UG_L	1	U	
8260C	1,1,2-TRICHLORO-1,2,2-TRIFLUOROETHANE	76-13-1	UG_L	40		
8260C	1,1,2-TRICHLOROETHANE	79-00-5	UG_L	1.2	J	
8260C	1,1-DICHLOROETHANE	75-34-3	UG_L	3.4		
8260C	1,1-DICHLOROETHENE	75-35-4	UG_L	21		
8260C	1,2,4-TRICHLOROBENZENE	120-82-1	UG_L	1	U	
8260C	1,2-DIBROMO-3-CHLOROPROPANE	96-12-8	UG_L	1.5	U	
8260C	1,2-DIBROMOETHANE	106-93-4	UG_L	1	U	
8260C	1,2-DICHLOROBENZENE	95-50-1	UG_L	1	U	
8260C	1,2-DICHLOROETHANE	107-06-2	UG_L	1	U	
8260C	1,2-DICHLOROETHENE, TOTAL	540-59-0	UG_L	4.1		
8260C	1,2-DICHLOROPROPANE	78-87-5	UG_L	1	U	
8260C	1,3-DICHLOROBENZENE	541-73-1	UG_L	1	U	
8260C	1,4-DICHLOROBENZENE	106-46-7	UG_L	1	U	
8260C	2-BUTANONE	78-93-3	UG_L	5	U	
8260C	2-HEXANONE	591-78-6	UG_L	5	U	
8260C	4-METHYL-2-PENTANONE	108-10-1	UG_L	5	U	
8260C	ACETONE	67-64-1	UG_L	5	U	
8260C	BENZENE	71-43-2	UG_L	1	U	
8260C	BROMODICHLOROMETHANE	75-27-4	UG_L	1	U	
8260C	BROMOFORM	75-25-2	UG_L	1	U	
8260C	BROMOMETHANE	74-83-9	UG_L	2	U	
8260C	CARBON DISULFIDE	75-15-0	UG_L	1	U	
8260C	CARBON TETRACHLORIDE	56-23-5	UG_L	0.59	J	
8260C	CHLOROBENZENE	108-90-7	UG_L	1	U	
8260C	CHLOROETHANE	75-00-3	UG_L	2	U	
8260C	CHLOROFORM	67-66-3	UG_L	0.87	J	
8260C	CHLOROMETHANE	74-87-3	UG_L	2	U	
8260C	CIS-1,2-DICHLOROETHENE	156-59-2	UG_L	4.1		
8260C	CIS-1,3-DICHLOROPROPENE	10061-01-5	UG_L	1	U	
8260C	CYCLOHEXANE	110-82-7	UG_L	1	U	
8260C	DIBROMOCHLOROMETHANE	124-48-1	UG_L	1	U	
8260C	DICHLORODIFLUOROMETHANE	75-71-8	UG_L	2	U	
8260C	ETHYLBENZENE	100-41-4	UG_L	1	U	
8260C	ISOPROPYLBENZENE	98-82-8	UG_L	1	U	
8260C	M- AND P-XYLENE	108-38-3/106-42	UG_L	2	U	
8260C	METHYL ACETATE	79-20-9	UG_L	1.5	U	
8260C	METHYL CYCLOHEXANE	108-87-2	UG_L	1	U	
8260C	METHYL TERT-BUTYL ETHER	1634-04-4	UG_L	1	U	
8260C	METHYLENE CHLORIDE	75-09-2	UG_L	5	U	
8260C	O-XYLENE	95-47-6	UG_L	1	U	
8260C	STYRENE	100-42-5	UG_L	1	U	
8260C	TETRACHLOROETHENE	127-18-4	UG_L	1.8	J	
8260C	TOLUENE	108-88-3	UG_L	1.4	J	
8260C	TRANS-1,2-DICHLOROETHENE	156-60-5	UG_L	1	U	
8260C	TRANS-1,3-DICHLOROPROPENE	10061-02-6	UG_L	1	U	
8260C	TRICHLOROETHENE	79-01-6	UG_L	1300		
8260C	TRICHLOROFLUOROMETHANE	75-69-4	UG_L	2	UJ	c
8260C	VINYL CHLORIDE	75-01-4	UG_L	2	U	
8260C	XYLENES, TOTAL	1330-20-7	UG_L	3	U	
8270D_SIM	1,4-DIOXANE	123-91-1	UG_L	30		

			Lab ID	TH0604-2		
			Sample ID	RE120D2-GW-121214		
			Sample Date	12/12/2014		
			Sample Type	Groundwater		
Method	**Analyte**	**CAS No**	**Units**	Result	Qual	RC
8260C	1,1,1-TRICHLOROETHANE	71-55-6	UG_L	0.5	J	
8260C	1,1,2,2-TETRACHLOROETHANE	79-34-5	UG_L	0.5	U	
8260C	1,1,2-TRICHLORO-1,2,2-TRIFLUOROETHANE	76-13-1	UG_L	24		
8260C	1,1,2-TRICHLOROETHANE	79-00-5	UG_L	0.69	J	
8260C	1,1-DICHLOROETHANE	75-34-3	UG_L	1.2		
8260C	1,1-DICHLOROETHENE	75-35-4	UG_L	5.6		
8260C	1,2,4-TRICHLOROBENZENE	120-82-1	UG_L	0.5	U	
8260C	1,2-DIBROMO-3-CHLOROPROPANE	96-12-8	UG_L	0.75	U	
8260C	1,2-DIBROMOETHANE	106-93-4	UG_L	0.5	U	
8260C	1,2-DICHLOROBENZENE	95-50-1	UG_L	0.5	U	
8260C	1,2-DICHLOROETHANE	107-06-2	UG_L	0.5	U	
8260C	1,2-DICHLOROETHENE, TOTAL	540-59-0	UG_L	3.4		
8260C	1,2-DICHLOROPROPANE	78-87-5	UG_L	0.5	U	
8260C	1,3-DICHLOROBENZENE	541-73-1	UG_L	0.5	U	
8260C	1,4-DICHLOROBENZENE	106-46-7	UG_L	0.5	U	
8260C	2-BUTANONE	78-93-3	UG_L	2.5	U	
8260C	2-HEXANONE	591-78-6	UG_L	2.5	U	
8260C	4-METHYL-2-PENTANONE	108-10-1	UG_L	2.5	U	
8260C	ACETONE	67-64-1	UG_L	2.5	U	
8260C	BENZENE	71-43-2	UG_L	0.5	U	
8260C	BROMODICHLOROMETHANE	75-27-4	UG_L	0.5	U	
8260C	BROMOFORM	75-25-2	UG_L	0.5	U	
8260C	BROMOMETHANE	74-83-9	UG_L	1	U	
8260C	CARBON DISULFIDE	75-15-0	UG_L	0.5	U	
8260C	CARBON TETRACHLORIDE	56-23-5	UG_L	0.74	J	
8260C	CHLOROBENZENE	108-90-7	UG_L	0.5	U	
8260C	CHLOROETHANE	75-00-3	UG_L	1	U	
8260C	CHLOROFORM	67-66-3	UG_L	0.77	J	
8260C	CHLOROMETHANE	74-87-3	UG_L	1	U	
8260C	CIS-1,2-DICHLOROETHENE	156-59-2	UG_L	3.4		
8260C	CIS-1,3-DICHLOROPROPENE	10061-01-5	UG_L	0.5	U	
8260C	CYCLOHEXANE	110-82-7	UG_L	0.5	U	
8260C	DIBROMOCHLOROMETHANE	124-48-1	UG_L	0.5	U	
8260C	DICHLORODIFLUOROMETHANE	75-71-8	UG_L	0.3	J	
8260C	ETHYLBENZENE	100-41-4	UG_L	0.5	U	
8260C	ISOPROPYLBENZENE	98-82-8	UG_L	0.5	U	
8260C	M- AND P-XYLENE	108-38-3/106-42	UG_L	1	U	
8260C	METHYL ACETATE	79-20-9	UG_L	0.75	U	
8260C	METHYL CYCLOHEXANE	108-87-2	UG_L	0.5	U	
8260C	METHYL TERT-BUTYL ETHER	1634-04-4	UG_L	0.5	U	
8260C	METHYLENE CHLORIDE	75-09-2	UG_L	2.5	U	
8260C	O-XYLENE	95-47-6	UG_L	0.5	U	
8260C	STYRENE	100-42-5	UG_L	0.5	U	
8260C	TETRACHLOROETHENE	127-18-4	UG_L	3.6		
8260C	TOLUENE	108-88-3	UG_L	0.4	J	
8260C	TRANS-1,2-DICHLOROETHENE	156-60-5	UG_L	0.5	U	
8260C	TRANS-1,3-DICHLOROPROPENE	10061-02-6	UG_L	0.5	U	
8260C	TRICHLOROETHENE	79-01-6	UG_L	900		
8260C	TRICHLOROFLUOROMETHANE	75-69-4	UG_L	1	UJ	c
8260C	VINYL CHLORIDE	75-01-4	UG_L	1	U	
8260C	XYLENES, TOTAL	1330-20-7	UG_L	1.5	U	
8270D_SIM	1,4-DIOXANE	123-91-1	UG_L	16		

			Lab ID	TH0604-3		
			Sample ID	RE120D3-GW-121214		
			Sample Date	12/12/2014		
			Sample Type	Groundwater		
Method	**Analyte**	**CAS No**	**Units**	Result	Qual	RC
8260C	1,1,1-TRICHLOROETHANE	71-55-6	UG_L	0.5	U	
8260C	1,1,2,2-TETRACHLOROETHANE	79-34-5	UG_L	0.5	U	
8260C	1,1,2-TRICHLORO-1,2,2-TRIFLUOROETHANE	76-13-1	UG_L	0.5	U	
8260C	1,1,2-TRICHLOROETHANE	79-00-5	UG_L	0.5	U	
8260C	1,1-DICHLOROETHANE	75-34-3	UG_L	0.5	U	
8260C	1,1-DICHLOROETHENE	75-35-4	UG_L	0.5	U	
8260C	1,2,4-TRICHLOROBENZENE	120-82-1	UG_L	0.5	U	
8260C	1,2-DIBROMO-3-CHLOROPROPANE	96-12-8	UG_L	0.75	U	
8260C	1,2-DIBROMOETHANE	106-93-4	UG_L	0.5	U	
8260C	1,2-DICHLOROBENZENE	95-50-1	UG_L	0.5	U	
8260C	1,2-DICHLOROETHANE	107-06-2	UG_L	0.5	U	
8260C	1,2-DICHLOROETHENE, TOTAL	540-59-0	UG_L	1	U	
8260C	1,2-DICHLOROPROPANE	78-87-5	UG_L	0.5	U	
8260C	1,3-DICHLOROBENZENE	541-73-1	UG_L	0.5	U	
8260C	1,4-DICHLOROBENZENE	106-46-7	UG_L	0.5	U	
8260C	2-BUTANONE	78-93-3	UG_L	2.5	U	
8260C	2-HEXANONE	591-78-6	UG_L	2.5	U	
8260C	4-METHYL-2-PENTANONE	108-10-1	UG_L	2.5	U	
8260C	ACETONE	67-64-1	UG_L	2.5	U	
8260C	BENZENE	71-43-2	UG_L	0.5	U	
8260C	BROMODICHLOROMETHANE	75-27-4	UG_L	0.5	U	
8260C	BROMOFORM	75-25-2	UG_L	0.5	U	
8260C	BROMOMETHANE	74-83-9	UG_L	1	U	
8260C	CARBON DISULFIDE	75-15-0	UG_L	0.5	U	
8260C	CARBON TETRACHLORIDE	56-23-5	UG_L	0.5	U	
8260C	CHLOROBENZENE	108-90-7	UG_L	0.5	U	
8260C	CHLOROETHANE	75-00-3	UG_L	1	U	
8260C	CHLOROFORM	67-66-3	UG_L	0.5	U	
8260C	CHLOROMETHANE	74-87-3	UG_L	1	U	
8260C	CIS-1,2-DICHLOROETHENE	156-59-2	UG_L	0.5	U	
8260C	CIS-1,3-DICHLOROPROPENE	10061-01-5	UG_L	0.5	U	
8260C	CYCLOHEXANE	110-82-7	UG_L	0.5	U	
8260C	DIBROMOCHLOROMETHANE	124-48-1	UG_L	0.5	U	
8260C	DICHLORODIFLUOROMETHANE	75-71-8	UG_L	1	U	
8260C	ETHYLBENZENE	100-41-4	UG_L	0.5	U	
8260C	ISOPROPYLBENZENE	98-82-8	UG_L	0.5	U	
8260C	M- AND P-XYLENE	108-38-3/106-42	UG_L	1	U	
8260C	METHYL ACETATE	79-20-9	UG_L	0.75	U	
8260C	METHYL CYCLOHEXANE	108-87-2	UG_L	0.5	U	
8260C	METHYL TERT-BUTYL ETHER	1634-04-4	UG_L	0.5	U	
8260C	METHYLENE CHLORIDE	75-09-2	UG_L	2.5	U	
8260C	O-XYLENE	95-47-6	UG_L	0.5	U	
8260C	STYRENE	100-42-5	UG_L	0.5	U	
8260C	TETRACHLOROETHENE	127-18-4	UG_L	0.5	U	
8260C	TOLUENE	108-88-3	UG_L	0.5	U	
8260C	TRANS-1,2-DICHLOROETHENE	156-60-5	UG_L	0.5	U	
8260C	TRANS-1,3-DICHLOROPROPENE	10061-02-6	UG_L	0.5	U	
8260C	TRICHLOROETHENE	79-01-6	UG_L	3.4		
8260C	TRICHLOROFLUOROMETHANE	75-69-4	UG_L	1	UJ	c
8260C	VINYL CHLORIDE	75-01-4	UG_L	1	U	
8260C	XYLENES, TOTAL	1330-20-7	UG_L	1.5	U	
8270D_SIM	1,4-DIOXANE	123-91-1	UG_L	0.17	U	

			Lab ID	TH0604-4		
			Sample ID	RE108D1-GW-121214		
			Sample Date	12/12/2014		
			Sample Type	Groundwater		
Method	**Analyte**	**CAS No**	**Units**	Result	Qual	RC
8260C	1,1,1-TRICHLOROETHANE	71-55-6	UG_L	0.5	U	
8260C	1,1,2,2-TETRACHLOROETHANE	79-34-5	UG_L	0.5	U	
8260C	1,1,2-TRICHLORO-1,2,2-TRIFLUOROETHANE	76-13-1	UG_L	1.3		
8260C	1,1,2-TRICHLOROETHANE	79-00-5	UG_L	0.5	U	
8260C	1,1-DICHLOROETHANE	75-34-3	UG_L	0.5	U	
8260C	1,1-DICHLOROETHENE	75-35-4	UG_L	0.5	U	
8260C	1,2,4-TRICHLOROBENZENE	120-82-1	UG_L	0.5	U	
8260C	1,2-DIBROMO-3-CHLOROPROPANE	96-12-8	UG_L	0.75	U	
8260C	1,2-DIBROMOETHANE	106-93-4	UG_L	0.5	U	
8260C	1,2-DICHLOROBENZENE	95-50-1	UG_L	0.5	U	
8260C	1,2-DICHLOROETHANE	107-06-2	UG_L	0.5	U	
8260C	1,2-DICHLOROETHENE, TOTAL	540-59-0	UG_L	0.46	J	
8260C	1,2-DICHLOROPROPANE	78-87-5	UG_L	0.5	U	
8260C	1,3-DICHLOROBENZENE	541-73-1	UG_L	0.5	U	
8260C	1,4-DICHLOROBENZENE	106-46-7	UG_L	0.5	U	
8260C	2-BUTANONE	78-93-3	UG_L	2.5	U	
8260C	2-HEXANONE	591-78-6	UG_L	2.5	U	
8260C	4-METHYL-2-PENTANONE	108-10-1	UG_L	2.5	U	
8260C	ACETONE	67-64-1	UG_L	2.5	U	
8260C	BENZENE	71-43-2	UG_L	0.5	U	
8260C	BROMODICHLOROMETHANE	75-27-4	UG_L	0.5	U	
8260C	BROMOFORM	75-25-2	UG_L	0.5	U	
8260C	BROMOMETHANE	74-83-9	UG_L	1	U	
8260C	CARBON DISULFIDE	75-15-0	UG_L	0.5	U	
8260C	CARBON TETRACHLORIDE	56-23-5	UG_L	0.24	J	
8260C	CHLOROBENZENE	108-90-7	UG_L	0.5	U	
8260C	CHLOROETHANE	75-00-3	UG_L	1	U	
8260C	CHLOROFORM	67-66-3	UG_L	0.5	U	
8260C	CHLOROMETHANE	74-87-3	UG_L	1	U	
8260C	CIS-1,2-DICHLOROETHENE	156-59-2	UG_L	0.46	J	
8260C	CIS-1,3-DICHLOROPROPENE	10061-01-5	UG_L	0.5	U	
8260C	CYCLOHEXANE	110-82-7	UG_L	0.5	U	
8260C	DIBROMOCHLOROMETHANE	124-48-1	UG_L	0.5	U	
8260C	DICHLORODIFLUOROMETHANE	75-71-8	UG_L	1	U	
8260C	ETHYLBENZENE	100-41-4	UG_L	0.5	U	
8260C	ISOPROPYLBENZENE	98-82-8	UG_L	0.5	U	
8260C	M- AND P-XYLENE	108-38-3/106-42	UG_L	1	U	
8260C	METHYL ACETATE	79-20-9	UG_L	0.75	U	
8260C	METHYL CYCLOHEXANE	108-87-2	UG_L	0.5	U	
8260C	METHYL TERT-BUTYL ETHER	1634-04-4	UG_L	0.5	U	
8260C	METHYLENE CHLORIDE	75-09-2	UG_L	2.5	U	
8260C	O-XYLENE	95-47-6	UG_L	0.5	U	
8260C	STYRENE	100-42-5	UG_L	0.5	U	
8260C	TETRACHLOROETHENE	127-18-4	UG_L	1.8		
8260C	TOLUENE	108-88-3	UG_L	0.5	U	
8260C	TRANS-1,2-DICHLOROETHENE	156-60-5	UG_L	0.5	U	
8260C	TRANS-1,3-DICHLOROPROPENE	10061-02-6	UG_L	0.5	U	
8260C	TRICHLOROETHENE	79-01-6	UG_L	140		
8260C	TRICHLOROFLUOROMETHANE	75-69-4	UG_L	1	U	
8260C	VINYL CHLORIDE	75-01-4	UG_L	1	U	
8260C	XYLENES, TOTAL	1330-20-7	UG_L	1.5	U	
8270D_SIM	1,4-DIOXANE	123-91-1	UG_L	13		

			Lab ID	TH0604-5		
			Sample ID	RE108D2-GW-121214		
			Sample Date	12/12/2014		
			Sample Type	Groundwater		
Method	**Analyte**	**CAS No**	**Units**	Result	Qual	RC
8260C	1,1,1-TRICHLOROETHANE	71-55-6	UG_L	1.3		
8260C	1,1,2,2-TETRACHLOROETHANE	79-34-5	UG_L	0.5	U	
8260C	1,1,2-TRICHLORO-1,2,2-TRIFLUOROETHANE	76-13-1	UG_L	6.4		
8260C	1,1,2-TRICHLOROETHANE	79-00-5	UG_L	1.5		
8260C	1,1-DICHLOROETHANE	75-34-3	UG_L	5.2		
8260C	1,1-DICHLOROETHENE	75-35-4	UG_L	7.4		
8260C	1,2,4-TRICHLOROBENZENE	120-82-1	UG_L	0.5	U	
8260C	1,2-DIBROMO-3-CHLOROPROPANE	96-12-8	UG_L	0.75	U	
8260C	1,2-DIBROMOETHANE	106-93-4	UG_L	0.5	U	
8260C	1,2-DICHLOROBENZENE	95-50-1	UG_L	0.5	U	
8260C	1,2-DICHLOROETHANE	107-06-2	UG_L	0.5	U	
8260C	1,2-DICHLOROETHENE, TOTAL	540-59-0	UG_L	9		
8260C	1,2-DICHLOROPROPANE	78-87-5	UG_L	0.5	U	
8260C	1,3-DICHLOROBENZENE	541-73-1	UG_L	0.5	U	
8260C	1,4-DICHLOROBENZENE	106-46-7	UG_L	0.5	U	
8260C	2-BUTANONE	78-93-3	UG_L	2.5	U	
8260C	2-HEXANONE	591-78-6	UG_L	2.5	U	
8260C	4-METHYL-2-PENTANONE	108-10-1	UG_L	2.5	U	
8260C	ACETONE	67-64-1	UG_L	2.5	U	
8260C	BENZENE	71-43-2	UG_L	0.5	U	
8260C	BROMODICHLOROMETHANE	75-27-4	UG_L	0.5	U	
8260C	BROMOFORM	75-25-2	UG_L	0.5	U	
8260C	BROMOMETHANE	74-83-9	UG_L	1	U	
8260C	CARBON DISULFIDE	75-15-0	UG_L	0.5	U	
8260C	CARBON TETRACHLORIDE	56-23-5	UG_L	1.7		
8260C	CHLOROBENZENE	108-90-7	UG_L	0.5	U	
8260C	CHLOROETHANE	75-00-3	UG_L	1	U	
8260C	CHLOROFORM	67-66-3	UG_L	3.5		
8260C	CHLOROMETHANE	74-87-3	UG_L	1	U	
8260C	CIS-1,2-DICHLOROETHENE	156-59-2	UG_L	9		
8260C	CIS-1,3-DICHLOROPROPENE	10061-01-5	UG_L	0.5	U	
8260C	CYCLOHEXANE	110-82-7	UG_L	0.5	U	
8260C	DIBROMOCHLOROMETHANE	124-48-1	UG_L	0.5	U	
8260C	DICHLORODIFLUOROMETHANE	75-71-8	UG_L	1	U	
8260C	ETHYLBENZENE	100-41-4	UG_L	0.5	U	
8260C	ISOPROPYLBENZENE	98-82-8	UG_L	0.5	U	
8260C	M- AND P-XYLENE	108-38-3/106-42	UG_L	1	U	
8260C	METHYL ACETATE	79-20-9	UG_L	0.75	U	
8260C	METHYL CYCLOHEXANE	108-87-2	UG_L	0.5	U	
8260C	METHYL TERT-BUTYL ETHER	1634-04-4	UG_L	0.5	U	
8260C	METHYLENE CHLORIDE	75-09-2	UG_L	2.5	U	
8260C	O-XYLENE	95-47-6	UG_L	0.5	U	
8260C	STYRENE	100-42-5	UG_L	0.5	U	
8260C	TETRACHLOROETHENE	127-18-4	UG_L	1.6		
8260C	TOLUENE	108-88-3	UG_L	0.5	U	
8260C	TRANS-1,2-DICHLOROETHENE	156-60-5	UG_L	0.5	U	
8260C	TRANS-1,3-DICHLOROPROPENE	10061-02-6	UG_L	0.5	U	
8260C	TRICHLOROETHENE	79-01-6	UG_L	3100		
8260C	TRICHLOROFLUOROMETHANE	75-69-4	UG_L	1	U	
8260C	VINYL CHLORIDE	75-01-4	UG_L	1	U	
8260C	XYLENES, TOTAL	1330-20-7	UG_L	1.5	U	
8270D_SIM	1,4-DIOXANE	123-91-1	UG_L	12		

			Lab ID	TH0604-6		
			Sample ID	TRIP BLANK-1_12122014		
			Sample Date	12/12/2014		
			Sample Type	Trip Blank		
Method	**Analyte**	**CAS No**	**Units**	Result	Qual	RC
8260C	1,1,1-TRICHLOROETHANE	71-55-6	UG_L	0.5	U	
8260C	1,1,2,2-TETRACHLOROETHANE	79-34-5	UG_L	0.5	U	
8260C	1,1,2-TRICHLORO-1,2,2-TRIFLUOROETHANE	76-13-1	UG_L	0.5	U	
8260C	1,1,2-TRICHLOROETHANE	79-00-5	UG_L	0.5	U	
8260C	1,1-DICHLOROETHANE	75-34-3	UG_L	0.5	U	
8260C	1,1-DICHLOROETHENE	75-35-4	UG_L	0.5	U	
8260C	1,2,4-TRICHLOROBENZENE	120-82-1	UG_L	0.5	U	
8260C	1,2-DIBROMO-3-CHLOROPROPANE	96-12-8	UG_L	0.75	U	
8260C	1,2-DIBROMOETHANE	106-93-4	UG_L	0.5	U	
8260C	1,2-DICHLOROBENZENE	95-50-1	UG_L	0.5	U	
8260C	1,2-DICHLOROETHANE	107-06-2	UG_L	0.5	U	
8260C	1,2-DICHLOROETHENE, TOTAL	540-59-0	UG_L	1	U	
8260C	1,2-DICHLOROPROPANE	78-87-5	UG_L	0.5	U	
8260C	1,3-DICHLOROBENZENE	541-73-1	UG_L	0.5	U	
8260C	1,4-DICHLOROBENZENE	106-46-7	UG_L	0.5	U	
8260C	2-BUTANONE	78-93-3	UG_L	2.5	U	
8260C	2-HEXANONE	591-78-6	UG_L	2.5	U	
8260C	4-METHYL-2-PENTANONE	108-10-1	UG_L	2.5	U	
8260C	ACETONE	67-64-1	UG_L	11		
8260C	BENZENE	71-43-2	UG_L	0.5	U	
8260C	BROMODICHLOROMETHANE	75-27-4	UG_L	0.5	U	
8260C	BROMOFORM	75-25-2	UG_L	0.5	U	
8260C	BROMOMETHANE	74-83-9	UG_L	1	U	
8260C	CARBON DISULFIDE	75-15-0	UG_L	0.5	U	
8260C	CARBON TETRACHLORIDE	56-23-5	UG_L	0.5	U	
8260C	CHLOROBENZENE	108-90-7	UG_L	0.5	U	
8260C	CHLOROETHANE	75-00-3	UG_L	1	U	
8260C	CHLOROFORM	67-66-3	UG_L	0.5	U	
8260C	CHLOROMETHANE	74-87-3	UG_L	1	U	
8260C	CIS-1,2-DICHLOROETHENE	156-59-2	UG_L	0.5	U	
8260C	CIS-1,3-DICHLOROPROPENE	10061-01-5	UG_L	0.5	U	
8260C	CYCLOHEXANE	110-82-7	UG_L	0.5	U	
8260C	DIBROMOCHLOROMETHANE	124-48-1	UG_L	0.5	U	
8260C	DICHLORODIFLUOROMETHANE	75-71-8	UG_L	1	U	
8260C	ETHYLBENZENE	100-41-4	UG_L	0.5	U	
8260C	ISOPROPYLBENZENE	98-82-8	UG_L	0.5	U	
8260C	M- AND P-XYLENE	108-38-3/106-42	UG_L	1	U	
8260C	METHYL ACETATE	79-20-9	UG_L	0.75	U	
8260C	METHYL CYCLOHEXANE	108-87-2	UG_L	0.5	U	
8260C	METHYL TERT-BUTYL ETHER	1634-04-4	UG_L	0.5	U	
8260C	METHYLENE CHLORIDE	75-09-2	UG_L	2.5	U	
8260C	O-XYLENE	95-47-6	UG_L	0.5	U	
8260C	STYRENE	100-42-5	UG_L	0.5	U	
8260C	TETRACHLOROETHENE	127-18-4	UG_L	0.5	U	
8260C	TOLUENE	108-88-3	UG_L	0.5	U	
8260C	TRANS-1,2-DICHLOROETHENE	156-60-5	UG_L	0.5	U	
8260C	TRANS-1,3-DICHLOROPROPENE	10061-02-6	UG_L	0.5	U	
8260C	TRICHLOROETHENE	79-01-6	UG_L	0.5	U	
8260C	TRICHLOROFLUOROMETHANE	75-69-4	UG_L	1	U	
8260C	VINYL CHLORIDE	75-01-4	UG_L	1	U	
8260C	XYLENES, TOTAL	1330-20-7	UG_L	1.5	U	
8270D_SIM	1,4-DIOXANE	123-91-1	UG_L	NA		

			Lab ID	TH0604-7		
			Sample ID	TRIP BLANK-2_12122014		
			Sample Date	12/12/2014		
			Sample Type	Trip Blank		
Method	**Analyte**	**CAS No**	**Units**	Result	Qual	RC
8260C	1,1,1-TRICHLOROETHANE	71-55-6	UG_L	0.5	U	
8260C	1,1,2,2-TETRACHLOROETHANE	79-34-5	UG_L	0.5	U	
8260C	1,1,2-TRICHLORO-1,2,2-TRIFLUOROETHANE	76-13-1	UG_L	0.5	U	
8260C	1,1,2-TRICHLOROETHANE	79-00-5	UG_L	0.5	U	
8260C	1,1-DICHLOROETHANE	75-34-3	UG_L	0.5	U	
8260C	1,1-DICHLOROETHENE	75-35-4	UG_L	0.5	U	
8260C	1,2,4-TRICHLOROBENZENE	120-82-1	UG_L	0.5	U	
8260C	1,2-DIBROMO-3-CHLOROPROPANE	96-12-8	UG_L	0.75	U	
8260C	1,2-DIBROMOETHANE	106-93-4	UG_L	0.5	U	
8260C	1,2-DICHLOROBENZENE	95-50-1	UG_L	0.5	U	
8260C	1,2-DICHLOROETHANE	107-06-2	UG_L	0.5	U	
8260C	1,2-DICHLOROETHENE, TOTAL	540-59-0	UG_L	1	U	
8260C	1,2-DICHLOROPROPANE	78-87-5	UG_L	0.5	U	
8260C	1,3-DICHLOROBENZENE	541-73-1	UG_L	0.5	U	
8260C	1,4-DICHLOROBENZENE	106-46-7	UG_L	0.5	U	
8260C	2-BUTANONE	78-93-3	UG_L	2.5	U	
8260C	2-HEXANONE	591-78-6	UG_L	2.5	U	
8260C	4-METHYL-2-PENTANONE	108-10-1	UG_L	2.5	U	
8260C	ACETONE	67-64-1	UG_L	2.5	U	
8260C	BENZENE	71-43-2	UG_L	0.5	U	
8260C	BROMODICHLOROMETHANE	75-27-4	UG_L	0.5	U	
8260C	BROMOFORM	75-25-2	UG_L	0.5	U	
8260C	BROMOMETHANE	74-83-9	UG_L	1	U	
8260C	CARBON DISULFIDE	75-15-0	UG_L	0.5	U	
8260C	CARBON TETRACHLORIDE	56-23-5	UG_L	0.5	U	
8260C	CHLOROBENZENE	108-90-7	UG_L	0.5	U	
8260C	CHLOROETHANE	75-00-3	UG_L	1	U	
8260C	CHLOROFORM	67-66-3	UG_L	0.5	U	
8260C	CHLOROMETHANE	74-87-3	UG_L	1	U	
8260C	CIS-1,2-DICHLOROETHENE	156-59-2	UG_L	0.5	U	
8260C	CIS-1,3-DICHLOROPROPENE	10061-01-5	UG_L	0.5	U	
8260C	CYCLOHEXANE	110-82-7	UG_L	0.5	U	
8260C	DIBROMOCHLOROMETHANE	124-48-1	UG_L	0.5	U	
8260C	DICHLORODIFLUOROMETHANE	75-71-8	UG_L	1	U	
8260C	ETHYLBENZENE	100-41-4	UG_L	0.5	U	
8260C	ISOPROPYLBENZENE	98-82-8	UG_L	0.5	U	
8260C	M- AND P-XYLENE	108-38-3/106-42	UG_L	1	U	
8260C	METHYL ACETATE	79-20-9	UG_L	0.75	U	
8260C	METHYL CYCLOHEXANE	108-87-2	UG_L	0.5	U	
8260C	METHYL TERT-BUTYL ETHER	1634-04-4	UG_L	0.5	U	
8260C	METHYLENE CHLORIDE	75-09-2	UG_L	2.5	U	
8260C	O-XYLENE	95-47-6	UG_L	0.5	U	
8260C	STYRENE	100-42-5	UG_L	0.5	U	
8260C	TETRACHLOROETHENE	127-18-4	UG_L	0.5	U	
8260C	TOLUENE	108-88-3	UG_L	0.5	U	
8260C	TRANS-1,2-DICHLOROETHENE	156-60-5	UG_L	0.5	U	
8260C	TRANS-1,3-DICHLOROPROPENE	10061-02-6	UG_L	0.5	U	
8260C	TRICHLOROETHENE	79-01-6	UG_L	0.5	U	
8260C	TRICHLOROFLUOROMETHANE	75-69-4	UG_L	1	U	
8260C	VINYL CHLORIDE	75-01-4	UG_L	1	U	
8260C	XYLENES, TOTAL	1330-20-7	UG_L	1.5	U	
8270D_SIM	1,4-DIOXANE	123-91-1	UG_L	NA		

Attachment D (continued)
Final Results after Data Review

Notes:

ID	=	Identification
UG_L	=	Micrograms per liter
Qual	=	Final qualifier (Refer to Attachment B)
RC	=	Reason code (Refer to Attachment C)
NA	=	Not analyzed

DATA VALIDATION REPORT

Project:	Regional Groundwater Investigation — NWIRP Bethpage	
Laboratory:	Katahdin Analytical	
Sample Delivery Group:	SI1876	
Analyses/Method:	Volatile Organic Compounds by U.S. EPA SW-846 Method 8260C 1,4-Dioxane by U.S. EPA SW-846 Method 8270D via Selective Ion Monitoring (SIM)	
Validation Level:	3	
Project Number:	0888812477.SA.DV	
Prepared by:	Dana Miller/Resolution Consultants	Completed on: 06/08/2015
Reviewed by:	Tina Cantwell/Resolution Consultants	File Name: SI1876_8260C_8270D

SUMMARY

This report summarizes data review findings for samples listed below, collected by Resolution Consultants from the Regional Groundwater Investigation — NWIRP Bethpage site on 25 March 2015 in accordance with the following Sampling and Analysis Plans:

- *Sampling and Analysis Plan, Bethpage, New York.* (Resolution Consultants April 2013).
- *UFP SAP Addendum, Installation of Vertical Profile Borings and Monitoring Wells, Operable Unit 2, NWIRP Bethpage, New York.* (Resolution Consultants November 2013).
- *UFP SAP Addendum, Inclusion of Additional Target Analytes for Volatile Organics Analyses, NWIRP Bethpage OU2, Bethpage, New York*. (Resolution Consultants August 2014).

Sample ID	Matrix/Sample Type	Analysis
RE120D1-GW-032515	Groundwater	8260C / 8270D_SIM
RE120D2-GW-032515	Groundwater	8260C / 8270D_SIM
RE120D3-GW-032515	Groundwater	8260C / 8270D_SIM
DUPLICATE-GW-032515	Field Duplicate	8260C / 8270D_SIM
RE105D1-GW-032515	Groundwater	8260C / 8270D_SIM
RE105D2-GW-032515	Groundwater	8260C / 8270D_SIM
TRIPBLANK041615	Trip Blank	8260C

Data validation activities were conducted using the following guidance documents: *Test Methods for Evaluating Solid Waste, Physical/Chemical Methods SW-846, specifically Method 8260C, Volatile Organic Compounds by Gas Chromatography/Mass Spectrometry* (U.S. EPA, 2006), *SW-846*

Method 8270D, Semivolatile Organic Compounds by Gas Chromatograph/Mass Spectrometry (U.S. EPA, 2007), *U.S. Environmental Protection Agency* (U.S. EPA) *Contract Laboratory Program National Functional Guidelines for Superfund Organic Methods Data Review* (June 2008), and Department of Defense Quality Systems Manual for Environmental Laboratories, Version 4.2 (October 2010). In the absence of method-specific information, laboratory quality control (QC) limits, project-specific requirements and/or professional judgment were used as appropriate.

REVIEW ELEMENTS

The data were evaluated based on the following parameters (where applicable to the method):

- ✓ Data completeness (chain-of-custody)/sample integrity
- ✓ Holding times and sample preservation
- ✓ Gas chromatography/Mass spectrometer performance checks
- ✗ Initial calibration/continuing calibration verification
- ✓ Laboratory blanks/trip blanks
- ✗ Surrogate spike recoveries
- ✓ Matrix spike and/or matrix spike duplicate results
- ✗ Laboratory control sample (LCS)/laboratory control sample duplicate (LCSD) results
- ✓ Field duplicates
- ✓ Internal standards
- ✓ Sample results/reporting issues

The symbol (✓) indicates that no validation qualifiers were applied based on this parameter. NA indicates that the parameter was not included as part of this data set or was not applicable to this validation and therefore not reviewed. Acceptable data parameters for which all criteria were met and no qualification was performed and non-conformance or other issues that were noted during validation, but did not result in qualification of data are not discussed further. The symbol (✗) indicates that a QC non-conformance resulted in the qualification of data. Any QC non-conformance that resulted in the qualification of data is discussed below.

RESULTS

Initial Calibration/Continuing Calibration Verification

Calibration data were reviewed for conformance with the QC acceptance criteria to ensure that:

- the initial calibration percent relative standard deviation, correlation coefficient/coefficient of determination, and/or response factor method acceptance criteria were met;

- the initial calibration verification (ICV) standard percent recovery acceptance criteria were met;

- the continuing calibration verification standard (CCV) method percent difference or percent drift (%Ds) and response factor acceptance criteria were met; and

- the retention time method acceptance criteria were met.

Data qualification to the analytes associated with the specific calibration verification was as follows:

ICV Recovery Non-conformance:

Criteria	Actions	
	Detected Results	Non-detected Results
Recovery >120%	J	UJ
Recovery < 80%	J	UJ

Notes:
J = Estimated
UJ = Undetected and estimated

CCV Linearity Non-conformance:

Criteria	Actions	
	Detected Results	Non-detected Results
%Difference or %Drift > 20%	J	UJ

Notes:
J = Estimated
UJ = Undetected and estimated

ICV and CCV non-conformances are summarized in Attachment A in Table's A-1 and A-2.

Surrogate Spike Recoveries

Surrogates provide information needed to assess the accuracy of analyses. Known amounts of surrogate compounds, or compounds which are not likely to be found in the actual samples, are added to each organic sample to check for accuracy. If surrogate percent recoveries (%Rs) are close to the known concentrations, the reported target compound concentrations are assumed to be accurate. Data qualification on the basis of surrogate recovery was as follows:

Surrogate Recovery Non-conformance Chart:

Criteria	Action	
	Detected	Non-detected
% R > UL	J	No qualification
20%≤ %R < LL	J	UJ
%R < 20%	J	Rejected

Notes:

%R	=	Percent recovery
UL	=	Upper limit
LL	=	Lower limit
J	=	Estimated
UJ	=	Undetected and estimated

Surrogate recovery non-conformance is summarized in Attachment A in Table A-3.

Laboratory Control Samples / Laboratory Control Sample Duplicate

LCS %Rs is used to monitor the overall accuracy and performance of each step during analysis, including sample preparation. The laboratory analyzed LCSs in duplicate when matrix spike/matrix spike duplicates were not reported. In these instances, the laboratory determined precision between the duplicated values. Non-conformance is summarized in Attachment A in Table A-4. Data qualification to the analytes associated with the specific LCS/LCS duplicate was as follows:

Laboratory Control Sample / Laboratory Control Sample Duplicate Non-conformance Chart:

Criteria	Action	
	Detected	Non-detected
% R or RPD > UL	J	No qualification
%R < LL	J	UJ
%R < 20%	J	Rejected

Notes:

%R	=	Percent recovery
RPD	=	Relative percent difference
UL	=	Upper limit
LL	=	Lower limit
J	=	Estimated
UJ	=	Undetected and estimated

Qualifications Actions

The data was reviewed independently from the laboratory to assess data quality. All compounds detected at concentrations less than the limit of quantitation but greater than the method detection limit were qualified by the laboratory as estimated (J). This "J" qualifier was retained during data validation. Any sample that was analyzed at a dilution because of high concentrations of target or

non-target analytes was checked to confirm that the results and/or sample-specific limit of quantitation and limit of detections were adjusted accordingly by the laboratory.

No results were rejected; therefore, analytical completeness was calculated to be 100 percent. Data not qualified during data review are considered usable by the project. The remaining results qualified as estimated may be high or low, but the data are usable for their intended purpose, according to U.S. Environmental Protection Agency and Department of Defense guidelines. Final data review qualifiers used to describe results and how they should be interpreted by the end data user are provided in Attachment B and Attachment C. Attachment D provides final results after data review.

ATTACHMENTS

Attachment A: Non-Conformance Summary Tables
Attachment B: Qualifier Codes and Explanations
Attachment C: Reason Codes and Explanations
Attachment D: Final Results after Data Review

Attachment A
Non-Conformance Summary Table

Table A-1
Initial Calibration Verification Non-Conformance

Method	Analyte	ICV ID	%R	Limit	Associated Samples	Qualifier
8260C	Dichlorodifluoromethane	WG160458-7	132.53	80-120	RE120D1-GW-032515	J
8260C	Dichlorodifluoromethane	WG160458-7	132.53	80-120	RE120D2-GW-032515	J
8260C	Dichlorodifluoromethane	WG160458-7	132.53	80-120	RE120D3-GW-032515	UJ
8260C	Dichlorodifluoromethane	WG160458-7	132.53	80-120	DUPLICATE-GW-032515	UJ
8260C	Dichlorodifluoromethane	WG160458-7	132.53	80-120	RE105D1-GW-032515	J
8260C	Dichlorodifluoromethane	WG160458-7	132.53	80-120	RE105D2-GW-032515	J
8260C	Dichlorodifluoromethane	WG160458-7	132.53	80-120	TRIPBLANK041615	UJ
8260C	Chloromethane	WG160458-7	121.77	80-120	RE120D1-GW-032515	UJ
8260C	Chloromethane	WG160458-7	121.77	80-120	RE120D2-GW-032515	UJ
8260C	Chloromethane	WG160458-7	121.77	80-120	RE120D3-GW-032515	UJ
8260C	Chloromethane	WG160458-7	121.77	80-120	DUPLICATE-GW-032515	UJ
8260C	Chloromethane	WG160458-7	121.77	80-120	RE105D1-GW-032515	UJ
8260C	Chloromethane	WG160458-7	121.77	80-120	RE105D2-GW-032515	UJ
8260C	Chloromethane	WG160458-7	121.77	80-120	TRIPBLANK041615	UJ
8260C	Bromomethane	WG160458-7	130.01	80-120	RE120D1-GW-032515	UJ
8260C	Bromomethane	WG160458-7	130.01	80-120	RE120D2-GW-032515	UJ
8260C	Bromomethane	WG160458-7	130.01	80-120	RE120D3-GW-032515	UJ
8260C	Bromomethane	WG160458-7	130.01	80-120	DUPLICATE-GW-032515	UJ
8260C	Bromomethane	WG160458-7	130.01	80-120	RE105D1-GW-032515	UJ
8260C	Bromomethane	WG160458-7	130.01	80-120	RE105D2-GW-032515	UJ
8260C	Bromomethane	WG160458-7	130.01	80-120	TRIPBLANK041615	UJ
8260C	Carbon Disulfide	WG160458-7	544.89	80-120	RE120D1-GW-032515	UJ
8260C	Carbon Disulfide	WG160458-7	544.89	80-120	RE120D2-GW-032515	UJ
8260C	Carbon Disulfide	WG160458-7	544.89	80-120	RE120D3-GW-032515	UJ
8260C	Carbon Disulfide	WG160458-7	544.89	80-120	DUPLICATE-GW-032515	UJ
8260C	Carbon Disulfide	WG160458-7	544.89	80-120	RE105D1-GW-032515	UJ
8260C	Carbon Disulfide	WG160458-7	544.89	80-120	RE105D2-GW-032515	UJ
8260C	Carbon Disulfide	WG160458-7	544.89	80-120	TRIPBLANK041615	UJ
8260C	Acetone	WG160458-7	137.34	80-120	RE120D1-GW-032515	UJ
8260C	Acetone	WG160458-7	137.34	80-120	RE120D2-GW-032515	UJ
8260C	Acetone	WG160458-7	137.34	80-120	RE120D3-GW-032515	UJ
8260C	Acetone	WG160458-7	137.34	80-120	DUPLICATE-GW-032515	UJ
8260C	Acetone	WG160458-7	137.34	80-120	RE105D1-GW-032515	UJ
8260C	Acetone	WG160458-7	137.34	80-120	RE105D2-GW-032515	UJ
8260C	Acetone	WG160458-7	137.34	80-120	TRIPBLANK041615	UJ
8260C	2-Butanone	WG160458-7	134.65	80-120	RE120D1-GW-032515	UJ
8260C	2-Butanone	WG160458-7	134.65	80-120	RE120D2-GW-032515	UJ
8260C	2-Butanone	WG160458-7	134.65	80-120	RE120D3-GW-032515	UJ
8260C	2-Butanone	WG160458-7	134.65	80-120	DUPLICATE-GW-032515	UJ
8260C	2-Butanone	WG160458-7	134.65	80-120	RE105D1-GW-032515	UJ
8260C	2-Butanone	WG160458-7	134.65	80-120	RE105D2-GW-032515	UJ
8260C	2-Butanone	WG160458-7	134.65	80-120	TRIPBLANK041615	UJ
8260C	Cyclohexane	WG160458-7	193.37	80-120	RE120D1-GW-032515	UJ
8260C	Cyclohexane	WG160458-7	193.37	80-120	RE120D2-GW-032515	UJ
8260C	Cyclohexane	WG160458-7	193.37	80-120	RE120D3-GW-032515	UJ
8260C	Cyclohexane	WG160458-7	193.37	80-120	DUPLICATE-GW-032515	UJ
8260C	Cyclohexane	WG160458-7	193.37	80-120	RE105D1-GW-032515	UJ

Table A-1
Initial Calibration Verification Non-Conformance

Method	Analyte	ICV ID	%R	Limit	Associated Samples	Qualifier
8260C	Cyclohexane	WG160458-7	193.37	80-120	RE105D2-GW-032515	UJ
8260C	Cyclohexane	WG160458-7	193.37	80-120	TRIPBLANK041615	UJ
8260C	Tetrachloroethene	WG160458-7	124.99	80-120	RE120D1-GW-032515	J
8260C	Tetrachloroethene	WG160458-7	124.99	80-120	RE120D2-GW-032515	J
8260C	Tetrachloroethene	WG160458-7	124.99	80-120	RE120D3-GW-032515	UJ
8260C	Tetrachloroethene	WG160458-7	124.99	80-120	DUPLICATE-GW-032515	UJ
8260C	Tetrachloroethene	WG160458-7	124.99	80-120	RE105D1-GW-032515	UJ
8260C	Tetrachloroethene	WG160458-7	124.99	80-120	RE105D2-GW-032515	J
8260C	Tetrachloroethene	WG160458-7	124.99	80-120	TRIPBLANK041615	UJ
8260C	2-Hexanone	WG160458-7	130.94	80-120	RE120D1-GW-032515	UJ
8260C	2-Hexanone	WG160458-7	130.94	80-120	RE120D2-GW-032515	UJ
8260C	2-Hexanone	WG160458-7	130.94	80-120	RE120D3-GW-032515	UJ
8260C	2-Hexanone	WG160458-7	130.94	80-120	DUPLICATE-GW-032515	UJ
8260C	2-Hexanone	WG160458-7	130.94	80-120	RE105D1-GW-032515	UJ
8260C	2-Hexanone	WG160458-7	130.94	80-120	RE105D2-GW-032515	UJ
8260C	2-Hexanone	WG160458-7	130.94	80-120	TRIPBLANK041615	UJ

Notes:
ICV = Initial calibration verification
%R = Percent recovery
J = Detected analyte in associate sample qualified estimated "J" due to potential bias.
UJ = Non-detected analyte in associated sample qualified estimated "UJ" due to potential bias.

Table A-2
Continuing Calibration Verification Non-Conformance

Method	Analyte	CCV ID	%D	Limit	Associated Samples	Qualifier
8260C	Methyl cyclohexane	C2012.D	49.68	20	RE105D1-GW-032515	UJ
8260C	Methyl cyclohexane	C2012.D	49.68	20	RE105D2-GW-032515	UJ
8260C	Methyl cyclohexane	C2012.D	49.68	20	RE120D1-GW-032515	UJ
8260C	Methyl cyclohexane	C2012.D	49.68	20	RE120D2-GW-032515	UJ
8260C	Methyl cyclohexane	C2012.D	49.68	20	TRIPBLANK041615	UJ
8260C	Chloroethane	C0241.D	21.59	20	RE120D3-GW-032515	UJ
8260C	Chloroethane	C0241.D	21.59	20	DUPLICATE-GW-032515	UJ

Notes:
CCV = Continuing calibration verification
%D = Percent difference
UJ = Non-detected analyte in associated sample qualified estimated "UJ" due to potential bias.

Table A-3
Surrogate Non-Conformance

Method	Analyte	%R	Limits	Associated Sample	Qualifier
8260C	1,2-Dichloroethane-d4	125	70-120	DUPLICATE-GW-032515	Trichloroethene qualified J
8260C	1,2-Dichloroethane-d4	130	70-120	RE105D2-GW-032515 (diluted run)	Trichloroethene qualified J
8260C	1,2-Dichloroethane-d4	126	70-120	RE120D1-GW-032515 (diluted run)	Trichloroethene qualified J
8260C	1,2-Dichloroethane-d4	125	70-120	RE120D2-GW-032515 (diluted run)	Trichloroethene qualified J
8260C	1,2-Dichloroethane-d4	123	70-120	RE120D3-GW-032515	Trichloroethene qualified J
8260C	Dibromofluoromethane	118	85-115	RE105D2-GW-032515 (diluted run)	Trichloroethene qualified J
8260C	Dibromofluoromethane	118	85-115	RE120D1-GW-032515 (diluted run)	Trichloroethene qualified J
8260C	Dibromofluoromethane	118	85-115	RE120D2-GW-032515 (diluted run)	Trichloroethene qualified J
8260C	Dibromofluoromethane	116	85-115	RE120D3-GW-032515	Trichloroethene qualified J

Notes:
%R = Percent recovery
J = Detected analyte qualified estimated "J" because %R is greater than the upper control limit in associated sample.

Table A-4
Laboratory Control Sample Non-Conformance

LCS	Batch	Analyte	%R	Limits	Associated Sample	Qualifier
WG160576-1	WG160576	Methyl cyclohexane	50.2	73-125	RE105D1-GW-032515	UJ
WG160576-1	WG160576	Methyl cyclohexane	50.2	73-125	RE105D2-GW-032515	UJ
WG160576-1	WG160576	Methyl cyclohexane	50.2	73-125	RE120D1-GW-032515	UJ
WG160576-1	WG160576	Methyl cyclohexane	50.2	73-125	RE120D2-GW-032515	UJ
WG160576-1	WG160576	Methyl cyclohexane	50.2	73-125	TRIPBLANK041615	UJ

Notes:
LCS = Laboratory control sample
%R = Percent recovery
UJ = Non-detected analyte in associated sample qualified estimated "UJ" because %R is lower than lower control limit.

Attachment B
Qualifier Codes and Explanations

Qualifier	Explanation
J	The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample.
UJ	The analyte was not detected above the reported sample quantitation limit. However, the reported quantitation limit is approximate and may or may not represent the actual quantitation limit necessary to accurately and precisely measure the analyte in the sample.
U	The analyte was analyzed for, but was not detected above the reported sample quantitation limit.

Attachment C
Reason Codes and Explanations

Reason Code	Explanation
be	Equipment blank contamination
bf	Field blank contamination
bl	Laboratory blank contamination
bt	Trip blank contamination
c	Calibration issue
d	Reporting limit raised due to chromatographic interference
fd	Field duplicate relative percent difference
h	Holding times
i	Internal standard areas
k	Estimated Maximum Possible Concentration
l	Laboratory control sample
lc	Labeled compound recovery
ld	Laboratory duplicate relative percent difference
lp	Laboratory control sample/laboratory control sample duplicate relative percent difference
m	Matrix spike recovery
mc	Method compliance non-conformance
md	Matrix spike/matrix spike duplicate relative percent difference
nb	Negative laboratory blank contamination
p	Chemical preservation issue
r	Dual column relative percent difference
q	Quantitation issue
s	Surrogate recovery
su	Ion suppression
t	Temperature preservation issue
x	Percent solids
y	Serial dilution results
z	Interference check sample results (metals)

Attachment D
Final Results after Data Review

		Sample Delivery Group		SI1876		
		Lab ID		SI1876-1		
		Sample ID		RE120D1-GW-032515		
		Sample Date		3/25/2015		
		Sample Type		Groundwater		
Method	**Analyte**	**CAS No**	**Units**	Result	Qual	RC
8260C	1,1,1-TRICHLOROETHANE	71-55-6	UG_L	2		
8260C	1,1,2,2-TETRACHLOROETHANE	79-34-5	UG_L	0.5	U	
8260C	1,1,2-TRICHLORO-1,2,2-TRIFLUOROETHANE	76-13-1	UG_L	60		
8260C	1,1,2-TRICHLOROETHANE	79-00-5	UG_L	1.8		
8260C	1,1-DICHLOROETHANE	75-34-3	UG_L	3.5		
8260C	1,1-DICHLOROETHENE	75-35-4	UG_L	23		
8260C	1,2,4-TRICHLOROBENZENE	120-82-1	UG_L	0.5	U	
8260C	1,2-DIBROMO-3-CHLOROPROPANE	96-12-8	UG_L	0.75	U	
8260C	1,2-DIBROMOETHANE	106-93-4	UG_L	0.5	U	
8260C	1,2-DICHLOROBENZENE	95-50-1	UG_L	0.5	U	
8260C	1,2-DICHLOROETHANE	107-06-2	UG_L	0.5	U	
8260C	1,2-DICHLOROETHENE, TOTAL	540-59-0	UG_L	4.4		
8260C	1,2-DICHLOROPROPANE	78-87-5	UG_L	0.5	U	
8260C	1,3-DICHLOROBENZENE	541-73-1	UG_L	0.5	U	
8260C	1,4-DICHLOROBENZENE	106-46-7	UG_L	0.5	U	
8260C	2-BUTANONE	78-93-3	UG_L	2.5	UJ	c
8260C	2-HEXANONE	591-78-6	UG_L	2.5	UJ	c
8260C	4-METHYL-2-PENTANONE	108-10-1	UG_L	2.5	U	
8260C	ACETONE	67-64-1	UG_L	2.5	UJ	c
8260C	BENZENE	71-43-2	UG_L	0.5	U	
8260C	BROMODICHLOROMETHANE	75-27-4	UG_L	0.5	U	
8260C	BROMOFORM	75-25-2	UG_L	0.5	U	
8260C	BROMOMETHANE	74-83-9	UG_L	1	UJ	c
8260C	CARBON DISULFIDE	75-15-0	UG_L	0.5	UJ	c
8260C	CARBON TETRACHLORIDE	56-23-5	UG_L	0.5	U	
8260C	CHLOROBENZENE	108-90-7	UG_L	0.5	U	
8260C	CHLOROETHANE	75-00-3	UG_L	1	U	
8260C	CHLOROFORM	67-66-3	UG_L	1		
8260C	CHLOROMETHANE	74-87-3	UG_L	1	UJ	c
8260C	CIS-1,2-DICHLOROETHENE	156-59-2	UG_L	4.4		
8260C	CIS-1,3-DICHLOROPROPENE	10061-01-5	UG_L	0.5	U	
8260C	CYCLOHEXANE	110-82-7	UG_L	0.5	UJ	c
8260C	DIBROMOCHLOROMETHANE	124-48-1	UG_L	0.5	U	
8260C	DICHLORODIFLUOROMETHANE	75-71-8	UG_L	0.52	J	c
8260C	ETHYLBENZENE	100-41-4	UG_L	0.5	U	
8260C	ISOPROPYLBENZENE	98-82-8	UG_L	0.5	U	
8260C	M- AND P-XYLENE	108-38-3/106-42	UG_L	1	U	
8260C	METHYL ACETATE	79-20-9	UG_L	0.75	U	
8260C	METHYL CYCLOHEXANE	108-87-2	UG_L	0.5	UJ	l,c
8260C	METHYL TERT-BUTYL ETHER	1634-04-4	UG_L	0.5	U	
8260C	METHYLENE CHLORIDE	75-09-2	UG_L	2.5	U	
8260C	O-XYLENE	95-47-6	UG_L	0.5	U	
8260C	STYRENE	100-42-5	UG_L	0.5	U	
8260C	TETRACHLOROETHENE	127-18-4	UG_L	1.8	J	c
8260C	TOLUENE	108-88-3	UG_L	0.46	J	
8260C	TRANS-1,2-DICHLOROETHENE	156-60-5	UG_L	0.5	U	
8260C	TRANS-1,3-DICHLOROPROPENE	10061-02-6	UG_L	0.5	U	
8260C	TRICHLOROETHENE	79-01-6	UG_L	1300	J	s
8260C	TRICHLOROFLUOROMETHANE	75-69-4	UG_L	0.41	J	
8260C	VINYL CHLORIDE	75-01-4	UG_L	1	U	
8260C	XYLENES, TOTAL	1330-20-7	UG_L	1.5	U	
8270D_SIM	1,4-DIOXANE	123-91-1	UG_L	19		

		Sample Delivery Group		SI1876		
		Lab ID		SI1876-2		
		Sample ID		RE120D2-GW-032515		
		Sample Date		3/25/2015		
		Sample Type		Groundwater		
Method	**Analyte**	**CAS No**	**Units**	Result	Qual	RC
8260C	1,1,1-TRICHLOROETHANE	71-55-6	UG_L	0.41	J	
8260C	1,1,2,2-TETRACHLOROETHANE	79-34-5	UG_L	0.5	U	
8260C	1,1,2-TRICHLORO-1,2,2-TRIFLUOROETHANE	76-13-1	UG_L	33		
8260C	1,1,2-TRICHLOROETHANE	79-00-5	UG_L	0.56	J	
8260C	1,1-DICHLOROETHANE	75-34-3	UG_L	1.1		
8260C	1,1-DICHLOROETHENE	75-35-4	UG_L	4.9		
8260C	1,2,4-TRICHLOROBENZENE	120-82-1	UG_L	0.5	U	
8260C	1,2-DIBROMO-3-CHLOROPROPANE	96-12-8	UG_L	0.75	U	
8260C	1,2-DIBROMOETHANE	106-93-4	UG_L	0.5	U	
8260C	1,2-DICHLOROBENZENE	95-50-1	UG_L	0.5	U	
8260C	1,2-DICHLOROETHANE	107-06-2	UG_L	0.5	U	
8260C	1,2-DICHLOROETHENE, TOTAL	540-59-0	UG_L	3.7		
8260C	1,2-DICHLOROPROPANE	78-87-5	UG_L	0.5	U	
8260C	1,3-DICHLOROBENZENE	541-73-1	UG_L	0.5	U	
8260C	1,4-DICHLOROBENZENE	106-46-7	UG_L	0.5	U	
8260C	2-BUTANONE	78-93-3	UG_L	2.5	UJ	c
8260C	2-HEXANONE	591-78-6	UG_L	2.5	UJ	c
8260C	4-METHYL-2-PENTANONE	108-10-1	UG_L	2.5	U	
8260C	ACETONE	67-64-1	UG_L	2.5	UJ	c
8260C	BENZENE	71-43-2	UG_L	0.5	U	
8260C	BROMODICHLOROMETHANE	75-27-4	UG_L	0.5	U	
8260C	BROMOFORM	75-25-2	UG_L	0.5	U	
8260C	BROMOMETHANE	74-83-9	UG_L	1	UJ	c
8260C	CARBON DISULFIDE	75-15-0	UG_L	0.5	UJ	c
8260C	CARBON TETRACHLORIDE	56-23-5	UG_L	0.5	U	
8260C	CHLOROBENZENE	108-90-7	UG_L	0.5	U	
8260C	CHLOROETHANE	75-00-3	UG_L	1	U	
8260C	CHLOROFORM	67-66-3	UG_L	0.76	J	
8260C	CHLOROMETHANE	74-87-3	UG_L	1	UJ	c
8260C	CIS-1,2-DICHLOROETHENE	156-59-2	UG_L	3.7		
8260C	CIS-1,3-DICHLOROPROPENE	10061-01-5	UG_L	0.5	U	
8260C	CYCLOHEXANE	110-82-7	UG_L	0.5	UJ	c
8260C	DIBROMOCHLOROMETHANE	124-48-1	UG_L	0.5	U	
8260C	DICHLORODIFLUOROMETHANE	75-71-8	UG_L	0.36	J	c
8260C	ETHYLBENZENE	100-41-4	UG_L	0.5	U	
8260C	ISOPROPYLBENZENE	98-82-8	UG_L	0.5	U	
8260C	M- AND P-XYLENE	108-38-3/106-42	UG_L	1	U	
8260C	METHYL ACETATE	79-20-9	UG_L	0.75	U	
8260C	METHYL CYCLOHEXANE	108-87-2	UG_L	0.5	UJ	l,c
8260C	METHYL TERT-BUTYL ETHER	1634-04-4	UG_L	0.5	U	
8260C	METHYLENE CHLORIDE	75-09-2	UG_L	2.5	U	
8260C	O-XYLENE	95-47-6	UG_L	0.5	U	
8260C	STYRENE	100-42-5	UG_L	0.5	U	
8260C	TETRACHLOROETHENE	127-18-4	UG_L	1.6	J	c
8260C	TOLUENE	108-88-3	UG_L	0.5	U	
8260C	TRANS-1,2-DICHLOROETHENE	156-60-5	UG_L	0.5	U	
8260C	TRANS-1,3-DICHLOROPROPENE	10061-02-6	UG_L	0.5	U	
8260C	TRICHLOROETHENE	79-01-6	UG_L	830	J	s
8260C	TRICHLOROFLUOROMETHANE	75-69-4	UG_L	1	U	
8260C	VINYL CHLORIDE	75-01-4	UG_L	1	U	
8260C	XYLENES, TOTAL	1330-20-7	UG_L	1.5	U	
8270D_SIM	1,4-DIOXANE	123-91-1	UG_L	5.8		

		Sample Delivery Group		SI1876		
		Lab ID		SI1876-3		
		Sample ID		RE120D3-GW-032515		
		Sample Date		3/25/2015		
		Sample Type		Groundwater		
Method	**Analyte**	**CAS No**	**Units**	Result	Qual	RC
8260C	1,1,1-TRICHLOROETHANE	71-55-6	UG_L	0.5	U	
8260C	1,1,2,2-TETRACHLOROETHANE	79-34-5	UG_L	0.5	U	
8260C	1,1,2-TRICHLORO-1,2,2-TRIFLUOROETHANE	76-13-1	UG_L	0.5	U	
8260C	1,1,2-TRICHLOROETHANE	79-00-5	UG_L	0.5	U	
8260C	1,1-DICHLOROETHANE	75-34-3	UG_L	0.5	U	
8260C	1,1-DICHLOROETHENE	75-35-4	UG_L	0.5	U	
8260C	1,2,4-TRICHLOROBENZENE	120-82-1	UG_L	0.5	U	
8260C	1,2-DIBROMO-3-CHLOROPROPANE	96-12-8	UG_L	0.75	U	
8260C	1,2-DIBROMOETHANE	106-93-4	UG_L	0.5	U	
8260C	1,2-DICHLOROBENZENE	95-50-1	UG_L	0.5	U	
8260C	1,2-DICHLOROETHANE	107-06-2	UG_L	0.5	U	
8260C	1,2-DICHLOROETHENE, TOTAL	540-59-0	UG_L	1	U	
8260C	1,2-DICHLOROPROPANE	78-87-5	UG_L	0.5	U	
8260C	1,3-DICHLOROBENZENE	541-73-1	UG_L	0.5	U	
8260C	1,4-DICHLOROBENZENE	106-46-7	UG_L	0.5	U	
8260C	2-BUTANONE	78-93-3	UG_L	2.5	UJ	c
8260C	2-HEXANONE	591-78-6	UG_L	2.5	UJ	c
8260C	4-METHYL-2-PENTANONE	108-10-1	UG_L	2.5	U	
8260C	ACETONE	67-64-1	UG_L	2.5	UJ	c
8260C	BENZENE	71-43-2	UG_L	0.5	U	
8260C	BROMODICHLOROMETHANE	75-27-4	UG_L	0.5	U	
8260C	BROMOFORM	75-25-2	UG_L	0.5	U	
8260C	BROMOMETHANE	74-83-9	UG_L	1	UJ	c
8260C	CARBON DISULFIDE	75-15-0	UG_L	0.5	UJ	c
8260C	CARBON TETRACHLORIDE	56-23-5	UG_L	0.5	U	
8260C	CHLOROBENZENE	108-90-7	UG_L	0.5	U	
8260C	CHLOROETHANE	75-00-3	UG_L	1	UJ	c
8260C	CHLOROFORM	67-66-3	UG_L	0.5	U	
8260C	CHLOROMETHANE	74-87-3	UG_L	1	UJ	c
8260C	CIS-1,2-DICHLOROETHENE	156-59-2	UG_L	0.5	U	
8260C	CIS-1,3-DICHLOROPROPENE	10061-01-5	UG_L	0.5	U	
8260C	CYCLOHEXANE	110-82-7	UG_L	0.5	UJ	c
8260C	DIBROMOCHLOROMETHANE	124-48-1	UG_L	0.5	U	
8260C	DICHLORODIFLUOROMETHANE	75-71-8	UG_L	1	UJ	c
8260C	ETHYLBENZENE	100-41-4	UG_L	0.5	U	
8260C	ISOPROPYLBENZENE	98-82-8	UG_L	0.5	U	
8260C	M- AND P-XYLENE	108-38-3/106-42	UG_L	1	U	
8260C	METHYL ACETATE	79-20-9	UG_L	0.75	U	
8260C	METHYL CYCLOHEXANE	108-87-2	UG_L	0.5	U	
8260C	METHYL TERT-BUTYL ETHER	1634-04-4	UG_L	0.5	U	
8260C	METHYLENE CHLORIDE	75-09-2	UG_L	2.5	U	
8260C	O-XYLENE	95-47-6	UG_L	0.5	U	
8260C	STYRENE	100-42-5	UG_L	0.5	U	
8260C	TETRACHLOROETHENE	127-18-4	UG_L	0.5	UJ	c
8260C	TOLUENE	108-88-3	UG_L	0.5	U	
8260C	TRANS-1,2-DICHLOROETHENE	156-60-5	UG_L	0.5	U	
8260C	TRANS-1,3-DICHLOROPROPENE	10061-02-6	UG_L	0.5	U	
8260C	TRICHLOROETHENE	79-01-6	UG_L	0.74	J	s
8260C	TRICHLOROFLUOROMETHANE	75-69-4	UG_L	1	U	
8260C	VINYL CHLORIDE	75-01-4	UG_L	1	U	
8260C	XYLENES, TOTAL	1330-20-7	UG_L	1.5	U	
8270D_SIM	1,4-DIOXANE	123-91-1	UG_L	0.18	U	

		Sample Delivery Group		SI1876		
		Lab ID		SI1876-4		
		Sample ID		DUPLICATE-GW-032515		
		Sample Date		3/25/2015		
		Sample Type		Field Duplicate		
Method	**Analyte**	**CAS No**	**Units**	Result	Qual	RC
8260C	1,1,1-TRICHLOROETHANE	71-55-6	UG_L	0.5	U	
8260C	1,1,2,2-TETRACHLOROETHANE	79-34-5	UG_L	0.5	U	
8260C	1,1,2-TRICHLORO-1,2,2-TRIFLUOROETHANE	76-13-1	UG_L	0.5	U	
8260C	1,1,2-TRICHLOROETHANE	79-00-5	UG_L	0.5	U	
8260C	1,1-DICHLOROETHANE	75-34-3	UG_L	0.5	U	
8260C	1,1-DICHLOROETHENE	75-35-4	UG_L	0.5	U	
8260C	1,2,4-TRICHLOROBENZENE	120-82-1	UG_L	0.5	U	
8260C	1,2-DIBROMO-3-CHLOROPROPANE	96-12-8	UG_L	0.75	U	
8260C	1,2-DIBROMOETHANE	106-93-4	UG_L	0.5	U	
8260C	1,2-DICHLOROBENZENE	95-50-1	UG_L	0.5	U	
8260C	1,2-DICHLOROETHANE	107-06-2	UG_L	0.5	U	
8260C	1,2-DICHLOROETHENE, TOTAL	540-59-0	UG_L	1	U	
8260C	1,2-DICHLOROPROPANE	78-87-5	UG_L	0.5	U	
8260C	1,3-DICHLOROBENZENE	541-73-1	UG_L	0.5	U	
8260C	1,4-DICHLOROBENZENE	106-46-7	UG_L	0.5	U	
8260C	2-BUTANONE	78-93-3	UG_L	2.5	UJ	c
8260C	2-HEXANONE	591-78-6	UG_L	2.5	UJ	c
8260C	4-METHYL-2-PENTANONE	108-10-1	UG_L	2.5	U	
8260C	ACETONE	67-64-1	UG_L	2.5	UJ	c
8260C	BENZENE	71-43-2	UG_L	0.5	U	
8260C	BROMODICHLOROMETHANE	75-27-4	UG_L	0.5	U	
8260C	BROMOFORM	75-25-2	UG_L	0.5	U	
8260C	BROMOMETHANE	74-83-9	UG_L	1	UJ	c
8260C	CARBON DISULFIDE	75-15-0	UG_L	0.5	UJ	c
8260C	CARBON TETRACHLORIDE	56-23-5	UG_L	0.5	U	
8260C	CHLOROBENZENE	108-90-7	UG_L	0.5	U	
8260C	CHLOROETHANE	75-00-3	UG_L	1	UJ	c
8260C	CHLOROFORM	67-66-3	UG_L	0.5	U	
8260C	CHLOROMETHANE	74-87-3	UG_L	1	UJ	c
8260C	CIS-1,2-DICHLOROETHENE	156-59-2	UG_L	0.5	U	
8260C	CIS-1,3-DICHLOROPROPENE	10061-01-5	UG_L	0.5	U	
8260C	CYCLOHEXANE	110-82-7	UG_L	0.5	UJ	c
8260C	DIBROMOCHLOROMETHANE	124-48-1	UG_L	0.5	U	
8260C	DICHLORODIFLUOROMETHANE	75-71-8	UG_L	1	UJ	c
8260C	ETHYLBENZENE	100-41-4	UG_L	0.5	U	
8260C	ISOPROPYLBENZENE	98-82-8	UG_L	0.5	U	
8260C	M- AND P-XYLENE	108-38-3/106-42	UG_L	1	U	
8260C	METHYL ACETATE	79-20-9	UG_L	0.75	U	
8260C	METHYL CYCLOHEXANE	108-87-2	UG_L	0.5	U	
8260C	METHYL TERT-BUTYL ETHER	1634-04-4	UG_L	0.5	U	
8260C	METHYLENE CHLORIDE	75-09-2	UG_L	2.5	U	
8260C	O-XYLENE	95-47-6	UG_L	0.5	U	
8260C	STYRENE	100-42-5	UG_L	0.5	U	
8260C	TETRACHLOROETHENE	127-18-4	UG_L	0.5	UJ	c
8260C	TOLUENE	108-88-3	UG_L	0.5	U	
8260C	TRANS-1,2-DICHLOROETHENE	156-60-5	UG_L	0.5	U	
8260C	TRANS-1,3-DICHLOROPROPENE	10061-02-6	UG_L	0.5	U	
8260C	TRICHLOROETHENE	79-01-6	UG_L	0.83	J	s
8260C	TRICHLOROFLUOROMETHANE	75-69-4	UG_L	1	U	
8260C	VINYL CHLORIDE	75-01-4	UG_L	1	U	
8260C	XYLENES, TOTAL	1330-20-7	UG_L	1.5	U	
8270D_SIM	1,4-DIOXANE	123-91-1	UG_L	0.18	U	

		Sample Delivery Group		SI1876		
		Lab ID		SI1876-5		
		Sample ID		RE105D1-GW-032515		
		Sample Date		3/25/2015		
		Sample Type		Groundwater		
Method	**Analyte**	**CAS No**	**Units**	Result	Qual	RC
8260C	1,1,1-TRICHLOROETHANE	71-55-6	UG_L	0.43	J	
8260C	1,1,2,2-TETRACHLOROETHANE	79-34-5	UG_L	0.5	U	
8260C	1,1,2-TRICHLORO-1,2,2-TRIFLUOROETHANE	76-13-1	UG_L	12		
8260C	1,1,2-TRICHLOROETHANE	79-00-5	UG_L	0.5	U	
8260C	1,1-DICHLOROETHANE	75-34-3	UG_L	0.5	U	
8260C	1,1-DICHLOROETHENE	75-35-4	UG_L	1.2		
8260C	1,2,4-TRICHLOROBENZENE	120-82-1	UG_L	0.5	U	
8260C	1,2-DIBROMO-3-CHLOROPROPANE	96-12-8	UG_L	0.75	U	
8260C	1,2-DIBROMOETHANE	106-93-4	UG_L	0.5	U	
8260C	1,2-DICHLOROBENZENE	95-50-1	UG_L	0.5	U	
8260C	1,2-DICHLOROETHANE	107-06-2	UG_L	0.5	U	
8260C	1,2-DICHLOROETHENE, TOTAL	540-59-0	UG_L	2.2		
8260C	1,2-DICHLOROPROPANE	78-87-5	UG_L	0.5	U	
8260C	1,3-DICHLOROBENZENE	541-73-1	UG_L	0.5	U	
8260C	1,4-DICHLOROBENZENE	106-46-7	UG_L	0.5	U	
8260C	2-BUTANONE	78-93-3	UG_L	2.5	UJ	c
8260C	2-HEXANONE	591-78-6	UG_L	2.5	UJ	c
8260C	4-METHYL-2-PENTANONE	108-10-1	UG_L	2.5	U	
8260C	ACETONE	67-64-1	UG_L	2.5	UJ	c
8260C	BENZENE	71-43-2	UG_L	0.5	U	
8260C	BROMODICHLOROMETHANE	75-27-4	UG_L	0.5	U	
8260C	BROMOFORM	75-25-2	UG_L	0.5	U	
8260C	BROMOMETHANE	74-83-9	UG_L	1	UJ	c
8260C	CARBON DISULFIDE	75-15-0	UG_L	0.5	UJ	c
8260C	CARBON TETRACHLORIDE	56-23-5	UG_L	0.5	U	
8260C	CHLOROBENZENE	108-90-7	UG_L	0.5	U	
8260C	CHLOROETHANE	75-00-3	UG_L	1	U	
8260C	CHLOROFORM	67-66-3	UG_L	0.35	J	
8260C	CHLOROMETHANE	74-87-3	UG_L	1	UJ	c
8260C	CIS-1,2-DICHLOROETHENE	156-59-2	UG_L	2.2		
8260C	CIS-1,3-DICHLOROPROPENE	10061-01-5	UG_L	0.5	U	
8260C	CYCLOHEXANE	110-82-7	UG_L	0.5	UJ	c
8260C	DIBROMOCHLOROMETHANE	124-48-1	UG_L	0.5	U	
8260C	DICHLORODIFLUOROMETHANE	75-71-8	UG_L	0.58	J	c
8260C	ETHYLBENZENE	100-41-4	UG_L	0.5	U	
8260C	ISOPROPYLBENZENE	98-82-8	UG_L	0.5	U	
8260C	M- AND P-XYLENE	108-38-3/106-42	UG_L	1	U	
8260C	METHYL ACETATE	79-20-9	UG_L	0.75	U	
8260C	METHYL CYCLOHEXANE	108-87-2	UG_L	0.5	UJ	l,c
8260C	METHYL TERT-BUTYL ETHER	1634-04-4	UG_L	0.5	U	
8260C	METHYLENE CHLORIDE	75-09-2	UG_L	2.5	U	
8260C	O-XYLENE	95-47-6	UG_L	0.5	U	
8260C	STYRENE	100-42-5	UG_L	0.5	U	
8260C	TETRACHLOROETHENE	127-18-4	UG_L	0.5	UJ	c
8260C	TOLUENE	108-88-3	UG_L	0.5	U	
8260C	TRANS-1,2-DICHLOROETHENE	156-60-5	UG_L	0.5	U	
8260C	TRANS-1,3-DICHLOROPROPENE	10061-02-6	UG_L	0.5	U	
8260C	TRICHLOROETHENE	79-01-6	UG_L	120		
8260C	TRICHLOROFLUOROMETHANE	75-69-4	UG_L	1	U	
8260C	VINYL CHLORIDE	75-01-4	UG_L	1	U	
8260C	XYLENES, TOTAL	1330-20-7	UG_L	1.5	U	
8270D_SIM	1,4-DIOXANE	123-91-1	UG_L	14		

		Sample Delivery Group		SI1876		
		Lab ID		SI1876-6		
		Sample ID		RE105D2-GW-032515		
		Sample Date		3/25/2015		
		Sample Type		Groundwater		
Method	**Analyte**	**CAS No**	**Units**	Result	Qual	RC
8260C	1,1,1-TRICHLOROETHANE	71-55-6	UG_L	0.63	J	
8260C	1,1,2,2-TETRACHLOROETHANE	79-34-5	UG_L	0.5	U	
8260C	1,1,2-TRICHLORO-1,2,2-TRIFLUOROETHANE	76-13-1	UG_L	34		
8260C	1,1,2-TRICHLOROETHANE	79-00-5	UG_L	1.2		
8260C	1,1-DICHLOROETHANE	75-34-3	UG_L	1.5		
8260C	1,1-DICHLOROETHENE	75-35-4	UG_L	5.6		
8260C	1,2,4-TRICHLOROBENZENE	120-82-1	UG_L	0.5	U	
8260C	1,2-DIBROMO-3-CHLOROPROPANE	96-12-8	UG_L	0.75	U	
8260C	1,2-DIBROMOETHANE	106-93-4	UG_L	0.5	U	
8260C	1,2-DICHLOROBENZENE	95-50-1	UG_L	0.5	U	
8260C	1,2-DICHLOROETHANE	107-06-2	UG_L	0.5	U	
8260C	1,2-DICHLOROETHENE, TOTAL	540-59-0	UG_L	3.7		
8260C	1,2-DICHLOROPROPANE	78-87-5	UG_L	0.5	U	
8260C	1,3-DICHLOROBENZENE	541-73-1	UG_L	0.5	U	
8260C	1,4-DICHLOROBENZENE	106-46-7	UG_L	0.5	U	
8260C	2-BUTANONE	78-93-3	UG_L	2.5	UJ	c
8260C	2-HEXANONE	591-78-6	UG_L	2.5	UJ	c
8260C	4-METHYL-2-PENTANONE	108-10-1	UG_L	2.5	U	
8260C	ACETONE	67-64-1	UG_L	2.5	UJ	c
8260C	BENZENE	71-43-2	UG_L	0.5	U	
8260C	BROMODICHLOROMETHANE	75-27-4	UG_L	0.5	U	
8260C	BROMOFORM	75-25-2	UG_L	0.5	U	
8260C	BROMOMETHANE	74-83-9	UG_L	1	UJ	c
8260C	CARBON DISULFIDE	75-15-0	UG_L	0.5	UJ	c
8260C	CARBON TETRACHLORIDE	56-23-5	UG_L	3.1		
8260C	CHLOROBENZENE	108-90-7	UG_L	0.5	U	
8260C	CHLOROETHANE	75-00-3	UG_L	1	U	
8260C	CHLOROFORM	67-66-3	UG_L	2.2		
8260C	CHLOROMETHANE	74-87-3	UG_L	1	UJ	c
8260C	CIS-1,2-DICHLOROETHENE	156-59-2	UG_L	3.7		
8260C	CIS-1,3-DICHLOROPROPENE	10061-01-5	UG_L	0.5	U	
8260C	CYCLOHEXANE	110-82-7	UG_L	0.5	UJ	c
8260C	DIBROMOCHLOROMETHANE	124-48-1	UG_L	0.5	U	
8260C	DICHLORODIFLUOROMETHANE	75-71-8	UG_L	0.33	J	c
8260C	ETHYLBENZENE	100-41-4	UG_L	0.5	U	
8260C	ISOPROPYLBENZENE	98-82-8	UG_L	0.5	U	
8260C	M- AND P-XYLENE	108-38-3/106-42	UG_L	1	U	
8260C	METHYL ACETATE	79-20-9	UG_L	0.75	U	
8260C	METHYL CYCLOHEXANE	108-87-2	UG_L	0.5	UJ	l,c
8260C	METHYL TERT-BUTYL ETHER	1634-04-4	UG_L	0.5	U	
8260C	METHYLENE CHLORIDE	75-09-2	UG_L	2.5	U	
8260C	O-XYLENE	95-47-6	UG_L	0.5	U	
8260C	STYRENE	100-42-5	UG_L	0.5	U	
8260C	TETRACHLOROETHENE	127-18-4	UG_L	1.1	J	c
8260C	TOLUENE	108-88-3	UG_L	0.5	U	
8260C	TRANS-1,2-DICHLOROETHENE	156-60-5	UG_L	0.5	U	
8260C	TRANS-1,3-DICHLOROPROPENE	10061-02-6	UG_L	0.5	U	
8260C	TRICHLOROETHENE	79-01-6	UG_L	1600	J	s
8260C	TRICHLOROFLUOROMETHANE	75-69-4	UG_L	1	U	
8260C	VINYL CHLORIDE	75-01-4	UG_L	1	U	
8260C	XYLENES, TOTAL	1330-20-7	UG_L	1.5	U	
8270D_SIM	1,4-DIOXANE	123-91-1	UG_L	2.7		

		Sample Delivery Group		SI1876		
		Lab ID		SI1876-7		
		Sample ID		TRIPBLANK041615		
		Sample Date		3/25/2015		
		Sample Type		Trip Blank		
Method	**Analyte**	**CAS No**	**Units**	Result	Qual	RC
8260C	1,1,1-TRICHLOROETHANE	71-55-6	UG_L	0.5	U	
8260C	1,1,2,2-TETRACHLOROETHANE	79-34-5	UG_L	0.5	U	
8260C	1,1,2-TRICHLORO-1,2,2-TRIFLUOROETHANE	76-13-1	UG_L	0.5	U	
8260C	1,1,2-TRICHLOROETHANE	79-00-5	UG_L	0.5	U	
8260C	1,1-DICHLOROETHANE	75-34-3	UG_L	0.5	U	
8260C	1,1-DICHLOROETHENE	75-35-4	UG_L	0.5	U	
8260C	1,2,4-TRICHLOROBENZENE	120-82-1	UG_L	0.5	U	
8260C	1,2-DIBROMO-3-CHLOROPROPANE	96-12-8	UG_L	0.75	U	
8260C	1,2-DIBROMOETHANE	106-93-4	UG_L	0.5	U	
8260C	1,2-DICHLOROBENZENE	95-50-1	UG_L	0.5	U	
8260C	1,2-DICHLOROETHANE	107-06-2	UG_L	0.5	U	
8260C	1,2-DICHLOROETHENE, TOTAL	540-59-0	UG_L	1	U	
8260C	1,2-DICHLOROPROPANE	78-87-5	UG_L	0.5	U	
8260C	1,3-DICHLOROBENZENE	541-73-1	UG_L	0.5	U	
8260C	1,4-DICHLOROBENZENE	106-46-7	UG_L	0.5	U	
8260C	2-BUTANONE	78-93-3	UG_L	2.5	UJ	c
8260C	2-HEXANONE	591-78-6	UG_L	2.5	UJ	c
8260C	4-METHYL-2-PENTANONE	108-10-1	UG_L	2.5	U	
8260C	ACETONE	67-64-1	UG_L	2.5	UJ	c
8260C	BENZENE	71-43-2	UG_L	0.5	U	
8260C	BROMODICHLOROMETHANE	75-27-4	UG_L	0.5	U	
8260C	BROMOFORM	75-25-2	UG_L	0.5	U	
8260C	BROMOMETHANE	74-83-9	UG_L	1	UJ	c
8260C	CARBON DISULFIDE	75-15-0	UG_L	0.5	UJ	c
8260C	CARBON TETRACHLORIDE	56-23-5	UG_L	0.5	U	
8260C	CHLOROBENZENE	108-90-7	UG_L	0.5	U	
8260C	CHLOROETHANE	75-00-3	UG_L	1	U	
8260C	CHLOROFORM	67-66-3	UG_L	0.5	U	
8260C	CHLOROMETHANE	74-87-3	UG_L	1	UJ	c
8260C	CIS-1,2-DICHLOROETHENE	156-59-2	UG_L	0.5	U	
8260C	CIS-1,3-DICHLOROPROPENE	10061-01-5	UG_L	0.5	U	
8260C	CYCLOHEXANE	110-82-7	UG_L	0.5	UJ	c
8260C	DIBROMOCHLOROMETHANE	124-48-1	UG_L	0.5	U	
8260C	DICHLORODIFLUOROMETHANE	75-71-8	UG_L	1	UJ	c
8260C	ETHYLBENZENE	100-41-4	UG_L	0.5	U	
8260C	ISOPROPYLBENZENE	98-82-8	UG_L	0.5	U	
8260C	M- AND P-XYLENE	108-38-3/106-42	UG_L	1	U	
8260C	METHYL ACETATE	79-20-9	UG_L	0.75	U	
8260C	METHYL CYCLOHEXANE	108-87-2	UG_L	0.5	UJ	l,c
8260C	METHYL TERT-BUTYL ETHER	1634-04-4	UG_L	0.5	U	
8260C	METHYLENE CHLORIDE	75-09-2	UG_L	2.5	U	
8260C	O-XYLENE	95-47-6	UG_L	0.5	U	
8260C	STYRENE	100-42-5	UG_L	0.5	U	
8260C	TETRACHLOROETHENE	127-18-4	UG_L	0.5	UJ	c
8260C	TOLUENE	108-88-3	UG_L	0.5	U	
8260C	TRANS-1,2-DICHLOROETHENE	156-60-5	UG_L	0.5	U	
8260C	TRANS-1,3-DICHLOROPROPENE	10061-02-6	UG_L	0.5	U	
8260C	TRICHLOROETHENE	79-01-6	UG_L	0.5	U	
8260C	TRICHLOROFLUOROMETHANE	75-69-4	UG_L	1	U	
8260C	VINYL CHLORIDE	75-01-4	UG_L	1	U	
8260C	XYLENES, TOTAL	1330-20-7	UG_L	1.5	U	
8270D_SIM	1,4-DIOXANE	123-91-1	UG_L	NA		

Notes:
UG_L = Micrograms per liter
Qual = Final qualifier (Refer to Attachment B)
RC = Reason code (Refer to Attachment C)

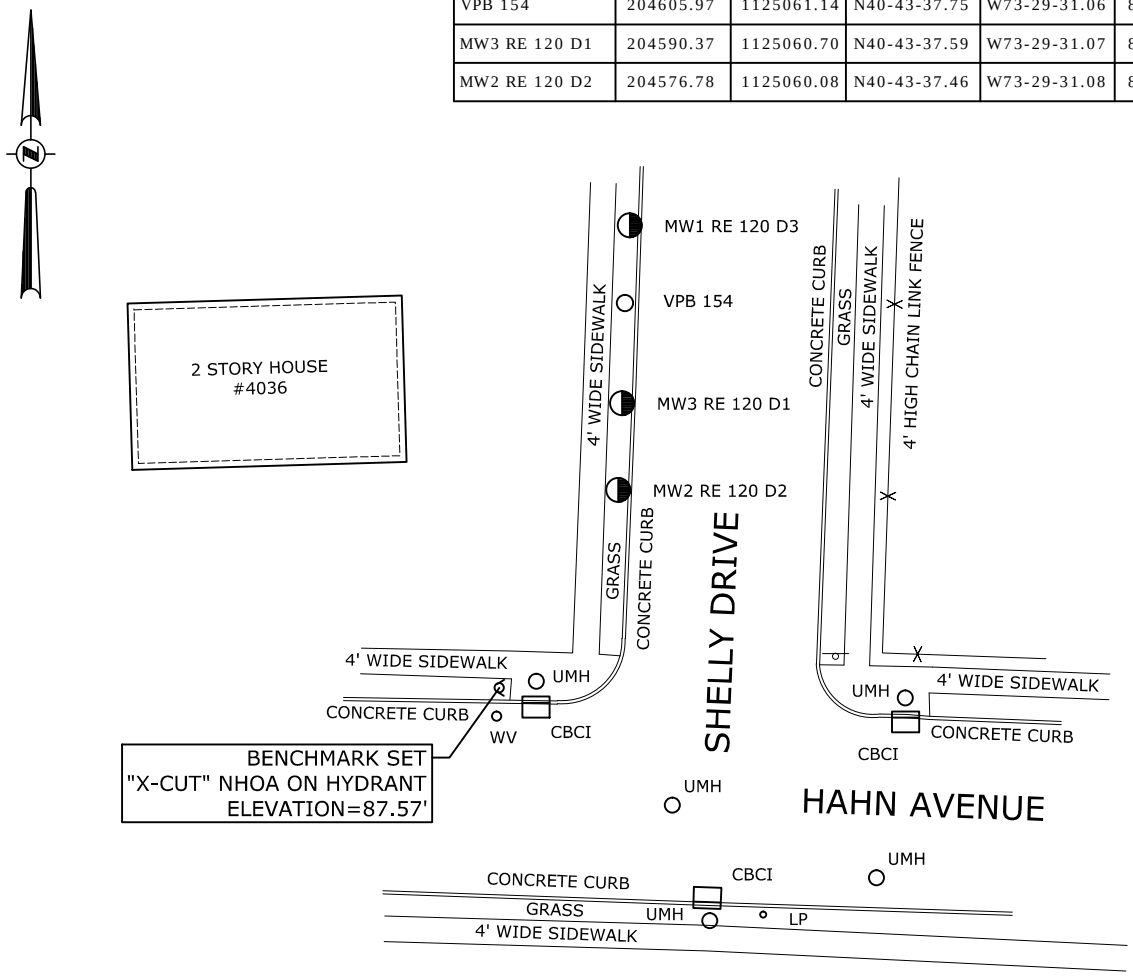
Section 5

Survey

NONE :XREFS

UNAUTHORIZED ALTERATION OR ADDITION TO THIS DOCUMENT IS A VIOLATION OF SECTION 7209 SUBDIVISION 2 OF THE NEW YORK STATE EDUCATION LAW.

Description	Northing	Easting	Latitude	Longitude	Ground	Rim	PVC
MW1 RE 120 D3	204618.12	1125061.88	N40-43-37.87	W73-29-31.05	86.14	86.14	85.70
VPB 154	204605.97	1125061.14	N40-43-37.75	W73-29-31.06	85.86	NA	NA
MW3 RE 120 D1	204590.37	1125060.70	N40-43-37.59	W73-29-31.07	86.06	86.06	85.58
MW2 RE 120 D2	204576.78	1125060.08	N40-43-37.46	W73-29-31.08	86.03	86.03	85.54



Map Notes

1. Information shown hereon was compiled from an actual field survey conducted from December 9, 2014.
2. North orientation is Grid North based on the New York State Plane Coordinate System, Long Island Zone, NAD 83 as obtained from GPS observations.
3. Vertical datum shown hereon is NAVD 88 as obtained from GPS observations.

Legend

▭	CBCI	Catch Basin Curb Inlet
o	GV	Gas Valve
o	LP	Light Post
◑	MW1	Monitoring Well
o–		Sign
O	UMH	Unknown Manhole
O	VPB 149	Vertical Profile Boring
o	WV	Water Valve

BAR SCALE
30 0 15 30 60
1 inch = 30 ft.

DWG NO. 14-644

Date	RECORD OF WORK	Appr.

VERICAL PROFILE BORING 154 SURVEY LOCATION
SHELLY DRIVE

TOWN OF BETHPAGE | NASSAU COUNTY, NEW YORK

C.T. MALE ASSOCIATES
Engineering, Surveying, Architecture & Landscape Architecture, D.P.C.
50 CENTURY HILL DRIVE, LATHAM, NY 12110
518.786.7400 * FAX 518.786.7299

Drafter: LMK	Checker: JFC	SCALE: 1"=30'	DATE: DEC. 09, 2014
Appr. by: JFC	Proj. No. 14.4121		

CAD DWG. FILE NAME: K:\Projects\14412\Survey\Drawings and Maps\Elm Dr._Elbow Ln.dwg