ADDENDUM TO:
MARCH 2015 GROUNDWATER SAMPLING DATA SUMMARY REPORT
BETHPAGE, NY

Prepared for:

Department of the Navy
Naval Facilities Engineering Command, Mid-Atlantic
9742 Maryland Ave.
Norfolk, VA 23511-3095

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

CTO WE15

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ED_002631A_00004414-00002

List of Acronyms and Abbreviations

IDW	Investigation Derived Waste
Katahdin	Katahdin Analytical Services, Inc.
NWIRP	Naval Weapons Industrial Reserve Plant
OU	Operable Unit
SAP	Sampling and Analysis Plan
UFP	Uniform Federal Policy
VOC	Volatile Organic Compounds

ED_002631A_00004414-00003

1.0 PROJECT BACKGROUND

Resolution Consultants has prepared this Addendum for the Naval Facilities Engineering Command, Mid-Atlantic under contract task order WE15 Contract N62470-11-D-8013. This is an Addendum to the March 2015 Groundwater Sampling Data Summary Report (Resolution Consultants, June 2015) at 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).

This Addendum documents the resampling of wells TT101D, TT101D1 and TT101D2 by Resolution Consultants on May 21, 2015. The purpose of resampling was to confirm the March 2015 validated volatile organic compounds (VOCs) data for the subject wells. The locations of monitoring wells resampled as part of this effort are shown in Figure 2.

Documentation of field sampling procedures, data validation and results are provided in this Addendum. Additional information is provided in the March 2015 Groundwater Sampling Data Summary Report (Resolution Consultants, June 2015).

ED_002631A_00004414-00004

2.0 MARCH 2015 TT101D, TT101D1, TT101D2 MONITORING RESULTS

Comparison of historic VOC analytical results with March 2015 results suggested that well identifications might have been incorrectly assigned to the sample jars. Examination of the March 2015 chain of custody and field notes indicated that during the March 2015 quarterly monitoring, sample identification for wells TT101D, TT101D1 and TT101D2 were incorrectly assigned in the field. Once the mislabeling was identified, the data was subsequently corrected and the data package (SI1843) was re-issued by the laboratory Katahdin Analytical Services (Katahdin). The data was validated by Resolution Consultants and reported in the March 2015 Groundwater Sampling Data Summary Report (Resolution Consultants, June 2015).

The Navy decided that Resolution Consultants would resample wells TT101D, TT101D1 and TT101D2 for VOCs in May 2015 to confirm the validated March 2015 data for the subject wells.

ED_002631A_00004414-00005

3.0 FIELD PROGRAM

Resolution Consultants resampled wells TT101D, TT101D1 and TT101D2 on May 21, 2015. Samples were analyzed for VOCs via Method 8260C and 1,4-dioxane via Method 8270C by Katahdin. Field tasks were conducted on May 21, 2015 in accordance with the Uniform Federal Policy (UFP) Sampling and Analysis Plan (SAP) Addendum: Groundwater Sampling Using Low Stress (Low Flow) Purging and Sampling Protocol (Resolution Consultants, 2013).

Methods of purging, sampling, decontamination and handling of investigation derived waste (IDW) are consistent with methods described in the March 2015 Groundwater Sampling Data Summary Report (Resolution Consultants, June 2015).

Well construction information is summarized in Table 1; analytical data is summarized in Table 2; stabilized field water quality parameters are summarized in Table 3. Groundwater sample forms and data validation packages are included in Appendix A and B, respectively.

ED_002631A_00004414-00006

4.0 SUMMARY

Results at TT101D, TT101D1 and TT101D2 for the May 21, 2015 sampling event are consistent with both historic data and the March 2015 sampling event. This confirms that the March 2015 results reported in the March 2015 Groundwater Sampling Data Summary Report (Resolution Consultants, June 2015) are correctly attributed to TT101D, TT101D1 and TT101D2.

ED_002631A_00004414-00007

5.0 REFERENCES

Resolution Consultants, 2013. UFP SAP Addendum, *Groundwater Sampling Using Low Stress (Low Flow) Purging and Sampling* Protocol. November.

Resolution Consultants, 2015. *Groundwater Sampling Data Summary Report, Bethpage, NY*. June.

ED_002631A_00004414-00008

Tables

Addendum to March 2015
Groundwater Sampling Report
Naval Weapons Industrial
Reserve Plant, Bethpage, NY

Table 1.
Monitoring Well
Construction Summary

Well	Total Depth (ft bgs)	Top of Screen (ft bgs)	Bottom of Screen (ft bgs)	Mid-screen (ft bgs)	Sump Length (ft)	VPB affiliation
TT101D	350	325	345	335	5	VPB129
TT101D1	595	570	590	580	5	
TT101D2	765	740	760	750	5	

Table 2. Analytical Data Summary

Location	NYSDEC Groundwater Guidance or Standard Value (Note 1)	TT101D	TT101D1	TT101D1	TT101D2
Sample Date		5/21/2015	5/21/2015	5/21/2015	5/21/2015
Sample ID		TT101D-GW-052115	TT101D1-GW-052115	DUP-GW-052115	TT101D2-GW-052115
Sample type code		N	N	FD	N
VOC 8260C (ug/L)					
1,1,1-TRICHLOROETHANE	5	**0.36 J**	**0.58 J**	**0.64 J**	**0.44 J**
1,1,2,2-TETRACHLOROETHANE	5	< 0.50 U	< 0.50 U	< 0.50 U	< 0.50 U
1,1,2-TRICHLORO-1,2,2-TRIFLUOROETHANE	5	**16**	**14**	**15**	**20**
1,1,2-TRICHLOROETHANE	1	< 0.5 U	**0.5 J**	**0.53 J**	**0.58 J**
1,1-DICHLOROETHANE	5	**0.8 J**	**0.79 J**	**0.79 J**	**0.93 J**
1,1-DICHLOROETHENE	5	**3.9**	**4.8**	**4.8**	**5.2**
1,2,4-TRICHLOROBENZENE	5	< 0.50 U	< 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***	***< 0.75 U***
1,2-DIBROMOETHANE	NL	< 0.50 U	< 0.50 U	< 0.50 U	< 0.50 U
1,2-DICHLOROBENZENE	3	< 0.50 U	< 0.50 U	< 0.50 U	< 0.50 U
1,2-DICHLOROETHANE	5	< 0.50 U	< 0.50 U	< 0.50 U	< 0.50 U
1,2-DICHLOROETHENE, TOTAL	5	**3.2**	**2.0**	**2.0**	**2.2**
1,2-DICHLOROPROPANE	1	< 0.50 U	< 0.50 U	< 0.50 U	< 0.50 U
1,3-DICHLOROBENZENE	3	< 0.50 U	< 0.50 U	< 0.50 U	< 0.50 U
1,4-DICHLOROBENZENE	3	< 0.50 U	< 0.50 U	< 0.50 U	< 0.50 U
1,4-DIOXANE (Method 8270D_SIM)	NL	**9.7 J**	**6.6**	**8.4**	**3.6**
2-BUTANONE	50	< 2.5 U	< 2.5 U	< 2.5 U	< 2.5 U
2-HEXANONE	50	< 2.5 U	< 2.5 U	< 2.5 U	< 2.5 UJ
4-METHYL-2-PENTANONE	NL	< 2.5 U	< 2.5 U	< 2.5 U	< 2.5 UJ
ACETONE	50	< 2.5 U	< 2.5 U	< 2.5 U	< 2.5 U
BENZENE	1	< 0.50 U	< 0.50 U	< 0.50 U	< 0.50 U
BROMODICHLOROMETHANE	50	< 0.50 U	< 0.50 U	< 0.50 U	< 0.50 U
BROMOFORM	50	< 0.50 U	< 0.50 U	< 0.50 U	< 0.50 U
BROMOMETHANE	5	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U
CARBON DISULFIDE	60	< 0.50 U	< 0.50 U	< 0.50 U	< 0.50 U
CARBON TETRACHLORIDE	5	< 0.50 U	**1.7**	**1.9**	**1.3**
CHLOROBENZENE	5	< 0.50 U	< 0.50 U	< 0.50 U	< 0.50 U
CHLOROETHANE	5	< 1 UJ	< 1 UJ	< 1 UJ	< 1 UJ
CHLOROFORM	7	**0.52 J**	**0.91 J**	**0.9 J**	**0.8 J**
CHLOROMETHANE	5	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U
CIS-1,2-DICHLOROETHENE	5	**3.2**	**2.0**	**2.0**	**2.2**
CIS-1,3-DICHLOROPROPENE	0.4	***< 0.50 U***	***< 0.50 U***	***< 0.50 U***	***< 0.50 U***
CYCLOHEXANE	NL	< 0.50 U	< 0.50 U	< 0.50 U	< 0.50 U
DIBROMOCHLOROMETHANE	5	< 0.50 U	< 0.50 U	< 0.50 U	< 0.50 U
DICHLORODIFLUOROMETHANE	5	**2.5**	**1.9 J**	**1.9 J**	< 1.0 U
ETHYLBENZENE	5	< 0.50 U	< 0.50 U	< 0.50 U	< 0.50 U
ISOPROPYLBENZENE	5	< 0.50 U	< 0.50 U	< 0.50 U	< 0.50 U
M- AND P-XYLENE	NL	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U
METHYL ACETATE	NL	< 0.75 U	< 0.75 U	< 0.75 U	< 0.75 U
METHYL CYCLOHEXANE	NL	< 0.50 U	< 0.50 U	< 0.50 U	< 0.50 U
METHYL TERT-BUTYL ETHER	10	< 0.50 U	< 0.50 U	< 0.50 U	< 0.50 U
METHYLENE CHLORIDE	5	< 2.5 U	< 2.5 U	< 2.5 U	< 2.5 U
O-XYLENE	NL	< 0.50 U	< 0.50 U	< 0.50 U	< 0.50 U
STYRENE	5	< 0.50 U	< 0.50 U	< 0.50 U	< 0.50 U
TETRACHLOROETHENE	5	< 0.50 U	< 0.50 U	< 0.50 U	**0.63 J**
TOLUENE	5	< 0.50 U	< 0.50 U	< 0.50 U	< 0.50 U
TRANS-1,2-DICHLOROETHENE	5	< 0.50 U	< 0.50 U	< 0.50 U	< 0.50 U
TRANS-1,3-DICHLOROPROPENE	0.4	***< 0.50 U***	***< 0.50 U***	***< 0.50 U***	***< 0.50 U***
TRICHLOROETHENE	5	**68**	**170**	**180**	**620 J**
TRICHLOROFLUOROMETHANE	5	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U
VINYL CHLORIDE	2	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U
XYLENES, TOTAL	5	< 1.5 U	< 1.5 U	< 1.5 U	< 1.5 U

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.

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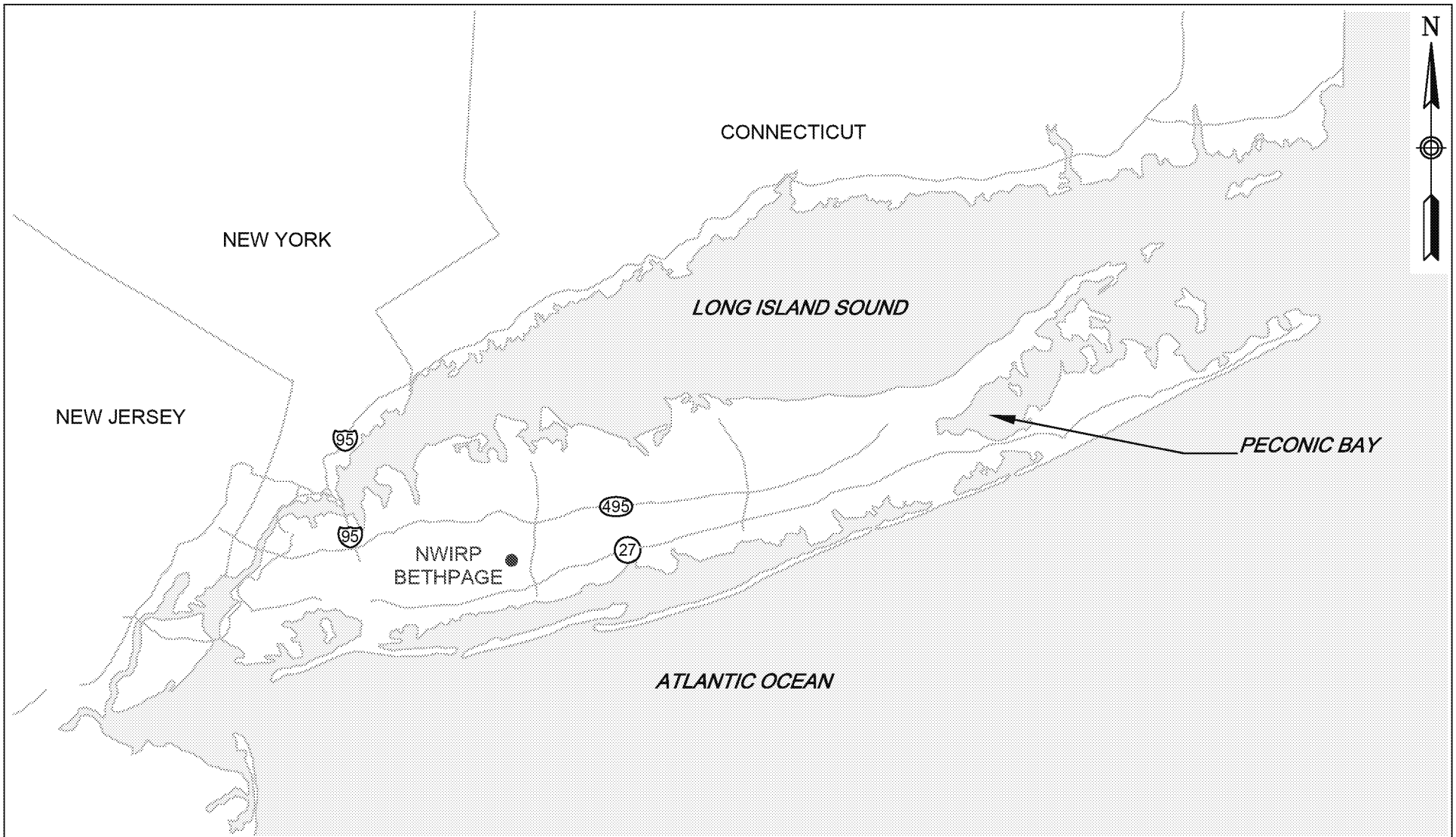
Groundwater Sampling Report
Naval Weapons Industrial
Reserve Plant, Bethpage, NY

Table 3.
Stabilized Field Parameters

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)
TT101D	5/21/2015	15.20	4.48	0.080	0.34	223.2	1.72	31.60	700
TT101D1	5/21/2015	15.03	4.92	0.080	1.14	196.2	1.56	33.70	700
TT101D2	5/21/2015	15.29	5.01	0.037	6.95	228.5	1.15	34.22	800

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

Figures

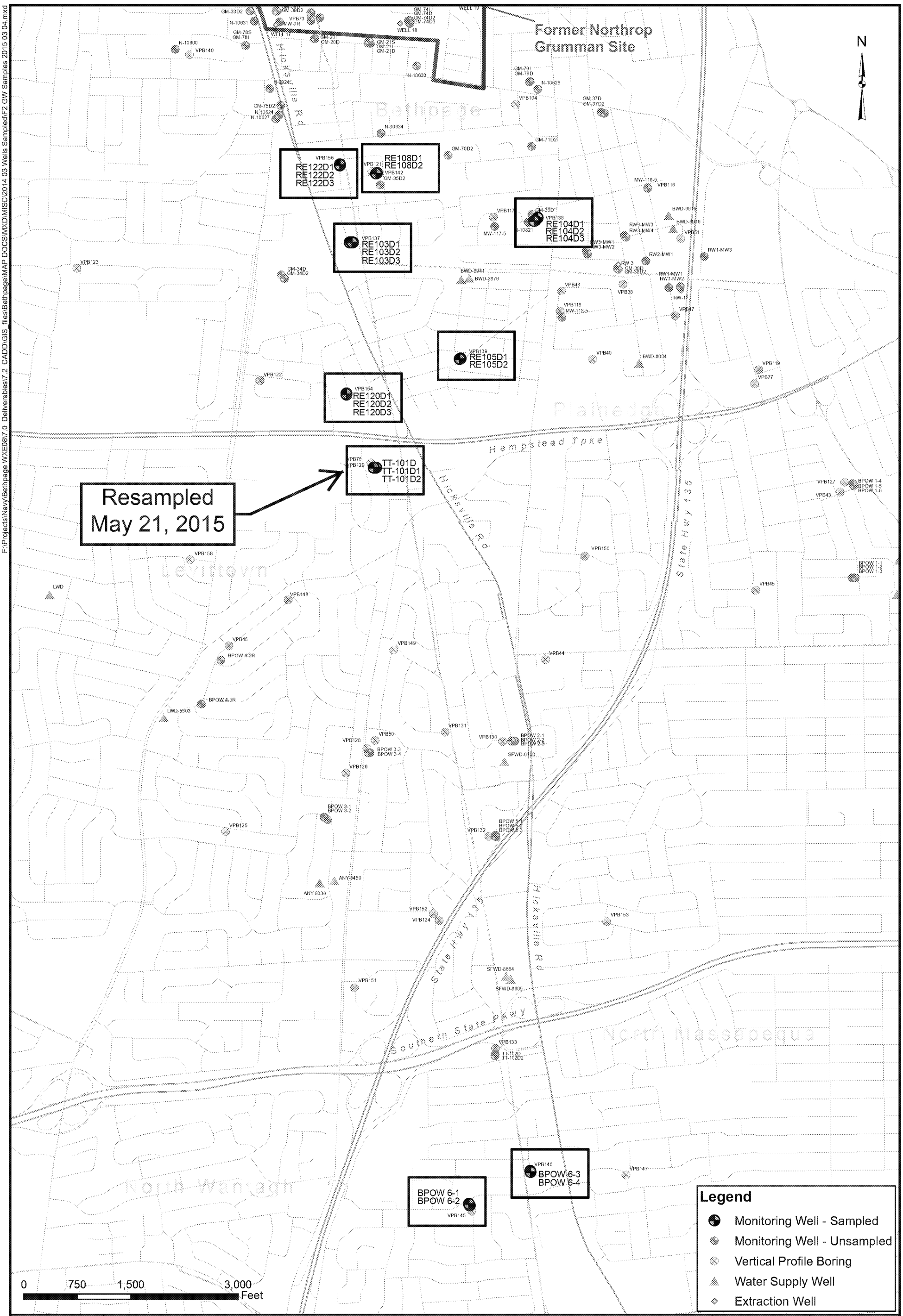


0 15 30
SCALE IN MILES

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.	REV
1	0



F:\Projects\Navy\Bethpage WXE0817.0 Deliverables\7.2 CADD\GIS_files\Bethpage\MAP DOCS\MXD\MISC\2014 03 Wells Sampled\F2 GW Samples 2015 03 04.mxd

NAVFAC

LOCATION MAP

MAY 2015 RESAMPLING WELLS
TT101D, TT101D1, TT101D2
NAVAL WEAPONS INDUSTRIAL RESERVE PLANT
BETHPAGE, NEW YORK

CONTRACT NUMBER	CTO NUMBER
N62470-11-D8013	WE15
APPROVED BY: EV	DATE: 3/4/2015
APPROVED BY: —	DATE: —
FIGURE NO. 2	REV 0

Appendices

Appendix A

Groundwater Sampling Forms

RESOLUTION CONSULTANTS

Well ID: TT1010

BPOW1-4

Low Flow Ground Water Sample Collection Record

Client: Navy NWIRP Bethpage Date: / 21 / 15 Time: Start 830 am/pm
Project No: 60266526 Finish 1030 am/pm
Site Location: Wadsworth
Weather Conds: partly sunny 60-70° Collector(s): Paul Kareth Jessica Ehlen

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

a. Total Well Length 350 c. Length of Water Column _____ (a-b) Casing Diameter/Material 4-inch PVC

b. Water Table Depth 31.53 d. Calculated System Volume (see back) 20 ft screen, 4966 / 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	479788X
Hanna	HI 98703	48024X

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
855								1200		on
900								700		adjust flow
905		15.16	4.21	0.080	0.56	190.3	1.43		31.63	
910		15.20	4.30	0.080	1.41	192.6			31.60	
915		15.19	4.37	0.079	1.48	195.6		700	31.61	
920	18.92	15.19	4.40	0.080	0.73	200.4	2.62			
925		15.20	4.43	0.080	0.59	204.5			31.60	

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

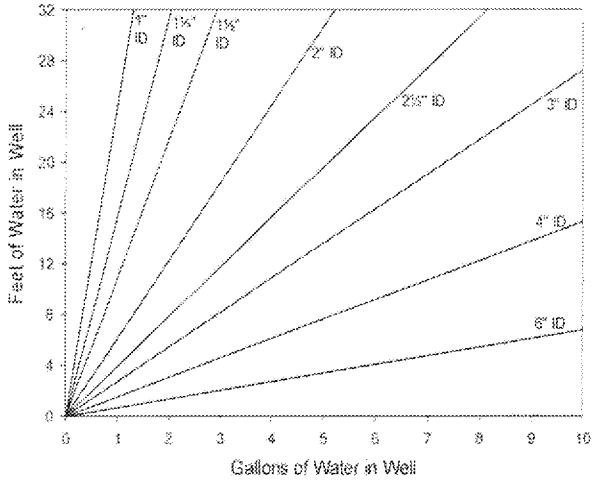
Sample ID	Container Type	No. of Containers	Preservation	Analysis Req.	Time
TT1010-GW-052015	40-mL vial	3	HCl	VOCs	1010
	1-L amber	2	none	1,4-Dioxane	1010
					MS/MSD

Comments

Signature Paul Kareth Date 5/21/15

LowFlow-GWa - May 2015.xls

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 = 37.1 L / 9.8 G
20 ft = 49.6 L / 13.1 G
25 ft = 61.7 L / 16.3 G

Well ID: TT101D1 @ 855

(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
930		15.19	4.45	0.079	0.50	207.9	1.62	700	31.61	
935		15.18	4.46	0.079	0.45	211.2				
940		15.18	4.47	0.079	0.44	213.6				
945	37.86	15.19	4.49	0.079	0.37	217.6	1.21			
950		15.21	4.48	0.079	0.36	220.0				
955	50L	15.20	4.49	0.080	0.34	221.9				
1000		15.20	4.49	0.080	0.34	223.2	1.72	700	31.60	
1010										Sample

LowFlow-GWa - May 2015.xls

RESOLUTION CONSULTANTS

Well ID: TT101D1

BROW 1-6

pg 1 of 2

Low Flow Ground Water Sample Collection Record

Client: Navy NWIRP Bethpage Date: 5 / 21 / 15 Time: Start 830 am/pm
Project No: 60266526 Finish 1020 am/pm
Site Location: Wadsworth
Weather Conds: partly sunny 60-70° Collector(s): Jessica Ehlen & Paul Kareth

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

a. Total Well Length 595 c. Length of Water Column _____ (a-b) Casing Diameter/Material 4-inch PVC

b. Water Table Depth 32.61 d. Calculated System Volume (see back) 20ft screen 49.66 / 131 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	13G100881
Hanna	HI 98703	U80211X

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
855	→							→	33.70	Start pumping
900	~3	15.06	4.85	0.079	1.24	208.0		33.70	700	clear / none
905	~7	14.77	4.93	0.079	1.10	201.5	2.54	700	33.65	" "
910	~10.5	14.99	4.91	0.079	1.00	203.7		700	33.65	" "
915	~14	14.98	4.89	"	0.93	204.0	2.10	700	33.68	" "
920	~17.5	14.96	4.92	"	"	193.6		"	33.70	" "
925	~21	14.93	4.88	0.080	1.97	199.2	4.33	"	33.70	" "

(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
TT101D1-GW-052115	40-mL vial	3	HCl	VOCs	1015
TT101D1-GW-052115	1-L amber	2	none	1,4-Dioxane	1015

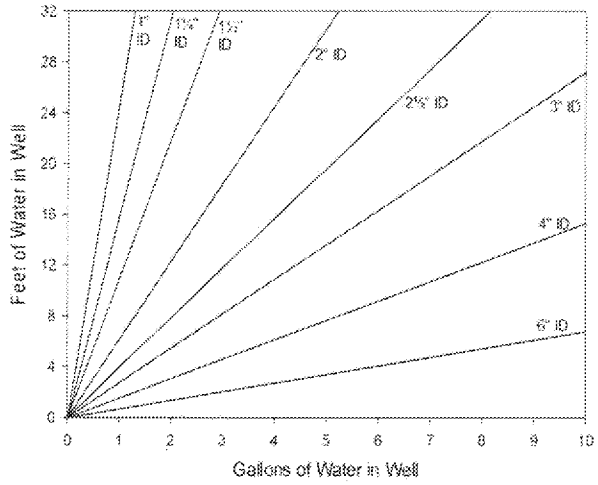
Comments Collected Duplicate at this location, wrote sample time as 1045

Signature [signature] Date 5/21/15

LowFlow-GWa - May 2015.xls

Purge Volume Calculation

TT101D1
pg 2 of 2



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 = 37.1 L / 9.8 G
20 ft = 49.6 L / 13.1 G
25 ft = 61.7 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	
930	~24.5	15.01	4.90	0.081	1.24	200.8		700	33.70	clear	none
935	~28	14.99	4.89	"	1.15	200.4	1.99	"	"	"	"
940	~31.5	14.98	4.90	0.080	1.11	199.5		"	"	"	"
945	~35	14.98	4.90	0.080	1.06	198.7	2.01	"	33.70	"	"
950	~38.5	15.03	4.91	"	1.08	198.2		"	"	"	"
955	~42	15.02	4.92	"	1.07	198.3	1.32	"	"	"	"
1000	~45.5	15.01	4.91	"	1.08	197.6		"	"	"	"
1005	~49	15.03	4.91	"	1.06	"	1.14	"	"	"	"
1010	~52.5	15.03	4.92	"	1.14	196.2	1.56	"	"	"	"

RESOLUTION CONSULTANTS

Well ID: TT101D2
BPOW1-5

Low Flow Ground Water Sample Collection Record

Client: Navy NWIRP Bethpage Date: 5 / 21 / 15 Time: Start 830 am/pm
Project No: 60266526 Finish 1200 am/pm
Site Location: Wadsworth
Weather Conds: partly sunny 60-70° Collector(s): Paul Kaneth

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

a. Total Well Length 765 c. Length of Water Column _____ (a-b) Casing Diameter/Material 4-inch PVC

b. Water Table Depth 34.16 d. Calculated System Volume (see back) 20ft screen 49.6L/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	U79788X
Hanna	HI 98703	U80211X

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
1025										pump on
1030		14.51	5.04	0.036	6.89	217.2		800		
1035		15.32	4.97	0.035	1.30	215.0			34.22	
1040		15.32	4.99	0.035	2.37	215.8	0.69			
1045	18.92	15.31	5.00	0.035	3.70	217.3		800	34.23	
1050		15.31	5.00	0.036	4.62	219.1				
1055		15.32	5.01	0.035	6.02	221.2				

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
TT101D2-GW-052115	40-mL vial	3	HCl	VOCs	1130
	1-L amber	2	none	1,4-Dioxane	1130

Comments

Signature Paul Kaneth Date 5/21/15

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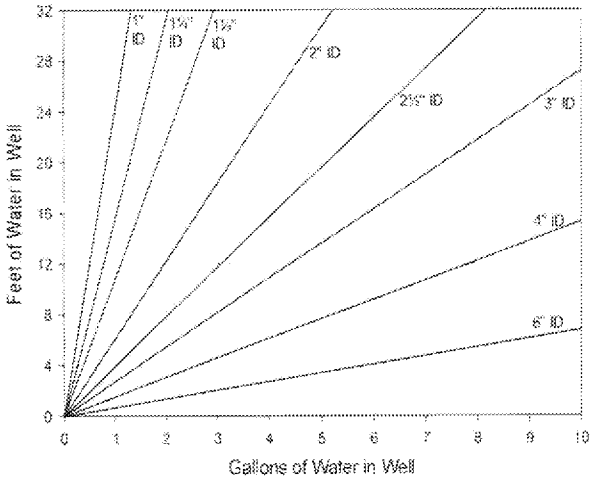
Purge Volume Calculation



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 = 37.1 L / 9.8 G
20 ft = 49.6 L / 13.1 G
25 ft = 61.7 L / 16.3 G

Well ID: TT101 07 D 1050

(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
1100		15.31	5.00	0.032	6.55	225.0	2.01	900	34.25	
1105	37.8 L	15.30	5.00	0.037	6.90	225.1				
1110		15.30	5.00	0.037	6.86	225.9				
1115		15.29	5.01	0.037	6.99	226.5	1.15	800	34.22	
1120		15.29	5.01	0.037	6.95	228.5				
1130										Sample

LowFlow-GWa - rev March 2015.xls

RESOLUTION CONSULTANTS

CHAIN OF CUSTODY AND ANALYTICAL REQUEST RECORD

COC No.: | Page 1 of 1

Project Name: NWLK Rhinos | PO No.: | Project No. 602662 | Phase:

Site Location: Bethpage NY

CTO No.: | RC Project Manager: Shane Brandon

Sampler/Site Phone#: Paul Kanth

Lab Name: Katahdin | Turnaround Time(specify):

Sample Analysis Requested (*Enter number of containers for each test*)

Lab ID	Sample ID (sys_samp_code)	Location ID (sys_loc_code)	Date (mm/dd/yy)	Time (Military) (hhmm)	Matrix Code (1)	Sample Type (2)	Field Filtered (Y/N)	Total No. of Containers	VOCs	1,4-Dioxane										Extra Volume for MS/MSD	HOLD
								(3)→	HA												
	TT101-GW-05215		5/4/15	1015	WQ	N		5	X	X											
	DUP-GW-05215		5/4/15	1015	WQ	N		5	X	X											
	TT102-GW-05215		5/4/15	1130	WQ	N		5	X	X											
	TT103-GW-05215		5/4/15	1010	WQ	N		15	X	X										X	
	Trip Blank 2-05215		5/4/15	1000	WR	TB		3	X												

Field **Comments:**

Lab **Comments:**

Sample Shipment and Delivery Details

Number of coolers in shipment: 2

Samples Iced?(check) Yes ✓ No ____

Method of Shipment: FedEx

Airbill No:

Date Shipped:

Relinquished by (signature)	Date	Time	Received by (signature)	Date	Time
1 [signature]	5/4/15	1400	1		
2			2		
3			3		

(1) **AA**=Ambient air, **AQ**=Air quality control, **ASB**=Asbestos, **CK**=Caulk, **DS**=Storm drain sediment, **GS**=Soil gas, **IC**=IDW Concrete, **IDD**=IDW Solid, **IDS**=IDW soil, **IDW**=IDW Water, **LF**=Free Product, **MA**=Mastic, **PC**=Paint Chips, **SC**=Cement/Concrete, **SE**=Sediment, **SL**=Sludge, **SO**=Soil, **SQ**=Soil/Solid quality control, **SSD**=Subsurface sediment, **SU**=Surface soil (<6 in), **SW**=Swab or wipe, **TA**=Animal tissue, **TP**=Plant tissue, **TQ**=Tissue quality control, **WG**=Ground water, **WL**=Leachate, **WO**=Ocean water, **WP**=Drinking water, **WQ**=Water quality control, **WR**=Ground water effluent, **WS**=Surface water, **WU**=Storm water, **WW**=Waste water

(2) **Sample Type: AB**=Ambient Blk, **EB**=Equipment Blk, **FB**=Field Blk, **FD**=Field Duplicate Sample, **IDW**=Investigative-Derived Waste, **MIS**=Incremental Sampling Methodology, **N**=Normal Environmental Sample, **TB**=Trip Blk

(3) **Preservative added**: **HA**=Hydrochloric Acid, **NI**=Nitric Acid, **SH**=Sodium Hydroxide, **SA**=Sulfuric Acid, **ME**=Methanol, **SB**=sodium bisulfate, **ST**=Sodium Thiosulfate, If **NO preservative** added leave blank

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Appendix B

Data Validation

DATA VALIDATION REPORT

Project:	Regional Groundwater Investigation — NWIRP Bethpage	
Laboratory:	Katahdin Analytical	
Sample Delivery Group:	SI3454	
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: 06/19/2015
Reviewed by:	Tina Cantwell/Resolution Consultants	File Name: SI3454_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 21 May 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
DUP--GW-052115	Field Duplicate	8260C / 8270D_SIM
TT101D1-GW-052115	Groundwater	8260C / 8270D_SIM
TT101D2-GW-052115	Groundwater	8260C / 8270D_SIM
TT101D-GW-052115	Groundwater	8260C / 8270D_SIM
TRIPBLANK 2-052115	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. 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:

ICAL Linearity Non-conformance:

Criteria	Actions	
	Detected Results	**Non-detected Results**
%RSD >15% and quantitation based on mean response factor	J	UJ

Notes:
%RSD = Relative standard deviation
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

ICAL 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 > Upper Limit	J	No qualification
20%≤ %R < Lower Limit	J	UJ
%R < 20%	J	Rejected

Notes:

%R = Percent recovery
J = Estimated
UJ = Undetected and estimated

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

Matrix Spike/Matrix Spike Duplicate (MS/MSD) Results

MS/MSDs are generated to provide information about the effect of each sample matrix on the sample preparation and the measurement methodology. MS/MSD percent recoveries (%Rs) assess the effect of the sample matrix on the accuracy of the analytical results and %Rs above the laboratory control limit could indicate a potential high result bias while %Rs below QC limits could indicate a potential low result bias. The relative percent differences (RPDs) between the MS and MSD results are evaluated to assess sample precision. The MS/MSD %Rs and RPDs were reviewed for conformance with the QC acceptance criteria. Non-conformances are summarized in Attachment A in Table A-4. Data qualification to the analytes associated with the specific MS/MSD non-conformances were as follows:

MS/MSD Non-conformances Chart:

Criteria	Action	
	Detected Compounds	**Non-detected Compounds**
%R>Upper Limit	J	No qualification
20% ≤ %R < Lower Limit	J	UJ
%R <20%	J	Rejected

Notes:

%R = Percent recovery
RPD = Relative percent difference
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 Linearity Non-Conformance						
Method	**Analyte**	**Instrument ID / Date**	**%RSD**	**Limit**	**Associated Samples**	**Qualifier**
8260C	Chloroethane	GCMS 05/21/2015	32.49915	≤15%	DUP-GW-052115 TRIP BLANK 2-052115 TT101D-GW-052115 TT101D1-GW-052115 TT101D2-GW-052115	UJ

Notes:
GCMS = Gas chromatography/Mass spectrometer
%RSD = Relative standard deviation
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	Chloroethane	P1061.D	20.84107	20	TT101D1-GW-052115	UJ
8260C	Chloroethane	P1061.D	20.84107	20	DUP-GW-052115	UJ
8260C	Chloroethane	P1061.D	20.84107	20	TT101D2-GW-052115	UJ
8260C	Chloroethane	P1061.D	20.84107	20	TT101D-GW-052115	UJ
8260C	Chloroethane	P1128.D	20.74386	20	TRIP BLANK 2-052115	UJ
8260C	4-Methyl-2-pentanone	P1128.D	-23.12811	20	TRIP BLANK 2-052115	UJ
8260C	2-Hexanone	P1128.D	-27.51606	20	TRIP BLANK 2-052115	UJ

Notes:
CCV ID = Continuing calibration verification identification
%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	Dibromofluoromethane	116	85-115	TT101D2-GW-052115 (diluted run)	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) Matrix Spike/Matrix Spike Duplicate									
Spiked Sample	**Analyte**	**Sample Result (µg/L)**	**Spike Added (µg/L)**	**MS Result (µg/L)**	**MSD Result (µg/L)**	**MS %R**	**MSD %R**	**%R Limits**	**Qualifer**
TT101D-GW-052115	1,4-Dioxane	9.7	1.89	6.9	7.8	0	0	10-93	J

Notes:
µg/L = Micrograms per liter
MS = Matrix spike
MSD = Matrix spike duplicate
%R = Percent recovery
J = Detected analyte qualified estimated "J" because %R is lower than 20% in associated sample

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	SI3454		
			Lab ID	SI3454-1		
			Sample ID	TT101D1-GW-052115		
			Sample Date	5/21/2015		
			Sample Type	Groundwater		
Method	**Analyte**	**CAS No**	**Units**	Result	Qual	RC
8260C	1,1,1-TRICHLOROETHANE	71-55-6	UG_L	0.58	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	14		
8260C	1,1,2-TRICHLOROETHANE	79-00-5	UG_L	0.5	J	
8260C	1,1-DICHLOROETHANE	75-34-3	UG_L	0.79	J	
8260C	1,1-DICHLOROETHENE	75-35-4	UG_L	4.8		
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		
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	UJ	c
8260C	CHLOROFORM	67-66-3	UG_L	0.91	J	
8260C	CHLOROMETHANE	74-87-3	UG_L	1	U	
8260C	CIS-1,2-DICHLOROETHENE	156-59-2	UG_L	2		
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	1.9	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	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	170		
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	6.6		

			Sample Delivery Group Lab ID Sample ID Sample Date Sample Type	SI3454 SI3454-2 DUP-GW-052115 5/21/2015 Field Duplicate		
Method	**Analyte**	**CAS No**	**Units**	Result	Qual	RC
8260C	1,1,1-TRICHLOROETHANE	71-55-6	UG_L	0.64	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	15		
8260C	1,1,2-TRICHLOROETHANE	79-00-5	UG_L	0.53	J	
8260C	1,1-DICHLOROETHANE	75-34-3	UG_L	0.79	J	
8260C	1,1-DICHLOROETHENE	75-35-4	UG_L	4.8		
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		
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	1.9		
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	0.9	J	
8260C	CHLOROMETHANE	74-87-3	UG_L	1	U	
8260C	CIS-1,2-DICHLOROETHENE	156-59-2	UG_L	2		
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	1.9	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	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	180		
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	8.4		

			Sample Delivery Group Lab ID Sample ID Sample Date Sample Type	SI3454 SI3454-3 TT101D2-GW-052115 5/21/2015 Groundwater		
Method	**Analyte**	**CAS No**	**Units**	Result	Qual	RC
8260C	1,1,1-TRICHLOROETHANE	71-55-6	UG_L	0.44	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	20		
8260C	1,1,2-TRICHLOROETHANE	79-00-5	UG_L	0.58	J	
8260C	1,1-DICHLOROETHANE	75-34-3	UG_L	0.93	J	
8260C	1,1-DICHLOROETHENE	75-35-4	UG_L	5.2		
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	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	1.3		
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	0.8	J	
8260C	CHLOROMETHANE	74-87-3	UG_L	1	U	
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	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	0.63	J	
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	620	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	3.6		

			Sample Delivery Group	SI3454		
			Lab ID	SI3454-4		
			Sample ID	TT101D-GW-052115		
			Sample Date	5/21/2015		
			Sample Type	Groundwater		
Method	**Analyte**	**CAS No**	**Units**	Result	Qual	RC
8260C	1,1,1-TRICHLOROETHANE	71-55-6	UG_L	0.36	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	16		
8260C	1,1,2-TRICHLOROETHANE	79-00-5	UG_L	0.5	U	
8260C	1,1-DICHLOROETHANE	75-34-3	UG_L	0.8	J	
8260C	1,1-DICHLOROETHENE	75-35-4	UG_L	3.9		
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	3.2		
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	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	UJ	c
8260C	CHLOROFORM	67-66-3	UG_L	0.52	J	
8260C	CHLOROMETHANE	74-87-3	UG_L	1	U	
8260C	CIS-1,2-DICHLOROETHENE	156-59-2	UG_L	3.2		
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	2.5		
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	68		
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	9.7	J	m

			Sample Delivery Group	SI3454		
			Lab ID	SI3454-5RA2		
			Sample ID	TRIP BLANK 2-052115		
			Sample Date	5/21/2015		
			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	U	
8260C	2-HEXANONE	591-78-6	UG_L	2.5	UJ	c
8260C	4-METHYL-2-PENTANONE	108-10-1	UG_L	2.5	UJ	c
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	UJ	c
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		

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