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ENVIRONMENT

Mr. George Jacob, Remedial Project Manager
U.S. Environmental Protection Agency
Central New York Remediation Section
Emergency and Remedial Response Division
290 Broadway, 20th Floor
New York, NY 10007-1866

Subject:
Volatile Organic Compound Plume Delineation Work Plan
Colesville Landfill Superfund Site
Colesville, New York

Date:
March 18, 2011

Contact:
Steven M. Feldman

Phone:
(631) 391-5244

Email:
Steven.Feldman@arcadis-us.com

Our ref:
NY000949.0023.00005

Dear Mr. Jacob:

The United States Environmental Protection Agency (EPA) issued the Third Five-Year Review Report (FYR Report) for the Colesville Landfill Superfund Site (Site) on April 5, 2010. One of the conclusions of the FYR Report was that a protectiveness determination relative to ecological receptors could not be made until additional investigatory work is performed and, if necessary, additional corrective measures are undertaken. The investigatory work needs to be performed to determine whether or not the groundwater plume discharges to surface water and, if such a discharge is occurring, whether it poses an ecological risk.

This conclusion was based on a technical assessment by EPA personnel during the Five-Year Review. Specifically, the EPA concluded the following: "*It should be noted that the downgradient extent of the volatile organic compound (VOC) plume has not been fully delineated at the Site. While it is known that the plume extends to monitoring well W-18, which is located about 700 feet downgradient from the landfill, it is unknown if the plume reaches the North Stream, which is about 200 feet from W-18 or the Susquehanna River, which is about 600 feet from W-18. While it is believed that contaminant concentrations diminish with distance from the landfill, it is not known whether the plume reaches the surface water. It is recommended that the extent of the plume be delineated downgradient of the reactive zone and that surface water samples be collected*."

Based on this conclusion, the EPA recommended the following: "*To determine whether VOCs are reaching the surface water, which could pose an ecological risk,*

the extent of plume downgradient of the reactive zone needs to be delineated and surface water samples need to be collected."

In response to the FYR Report, and on behalf of the Broome County Division of Solid Waste Management, ARCADIS has developed this Volatile Organic Compound Plume Delineation Work Plan (Work Plan) to delineate the downgradient extent of the VOC plume (i.e., downgradient of monitoring well W-18).

Environmental Conditions

The following subsections of this Work Plan describe the recent environmental conditions as they relate to groundwater flow conditions and groundwater quality at monitoring well W-18.

Groundwater Flow Conditions

Water-level elevations and the groundwater flow direction for the September 2010 monitoring event are shown on Figure 1. As shown on Figure 1, the groundwater flow direction in the vicinity of monitoring well W-18 is generally to the south/southwest, toward the Susquehanna River and the mouth of the North Stream. The groundwater flow direction was consistent with previous rounds.

Groundwater Quality

As shown in Table 1, the total VOC (TVOC) concentration detected in a groundwater sample collected from monitoring well W-18 in September 2010 was 64.2 micrograms per liter (µg/L). The VOCs detected in monitoring well W-18 were trichloroethene (TCE), cis-1,2-dichloroethene (cis-1,2-DCE), 1,1,1-trichloroethane (1,1,1-TCA), 1,1-dichloroethane (1,1-DCA), and chloroethane.

VOC Plume Delineation

This Work Plan focuses on delineating the downgradient extent of the VOC plume (i.e., downgradient of monitoring well W-18). To meet this objective, investigatory work will be performed through the installation of four (4) temporary monitoring wells (borings DPGW-1 through DPGW-4) and the collection of groundwater samples from the temporary monitoring wells. The proposed temporary monitoring well locations are shown on Figures 1 and 2.

To determine whether VOCs are reaching the North Stream at a concentration that could pose an ecological risk, a surface water sample (F-8) was collected downgradient of monitoring well W-18 in June 2010 and analyzed for VOCs. VOCs were not detected in the F-8 surface water sample, located downgradient of monitoring well W-18, indicating that VOCs in groundwater are likely attenuating prior to reaching the North Stream, or in a worst case are attenuating in the North Stream through mixing and volatilization. Nonetheless, based on the findings of the VOC plume delineation work, additional surface water samples may be collected, if warranted. If additional surface water samples need to be collected, the proposed surface water sample locations would be based on the findings of the scope of work described in this Work Plan and would be provided in a separate letter work plan.

Investigation Approach and Methodology

The specific activities of the proposed investigation program are as follows:

- Drill four (4) temporary monitoring wells (DPGW-1 through DPGW-4) downgradient of monitoring well W-18, as shown on Figures 1 and 2, to delineate the downgradient extent of the VOC plume. The temporary monitoring wells will be drilled using direct push drilling techniques. The depth-to-water in monitoring well W-18 in 2010 was approximately 7.5 to 8 feet below land surface (ft bls); monitoring well W-18 is screened from 7 to 22 ft bls and annual groundwater samples are collected using a 2-foot long passive diffusion bag (PDB) sampler that is deployed in W-18 at an approximate depth of 16.5 to 18.5 ft bls.

- Drill two (2) soil borings (one adjacent to DPGW-2 and one adjacent to DPGW-4) using direct push drilling techniques to characterize the soil lithology in these areas. Soil recovered from each soil core interval will be visually characterized for color, texture, and moisture content. The soil borings will be drilled to a depth of 20 ft bls.

- Determine the location of the temporary monitoring wells relative to the New York State Plane Coordinate System using a global positioning system (GPS).

- Collect groundwater samples from the four (4) proposed temporary monitoring wells using the Geoprobe® Screen Point Groundwater Sampling

System and submit the groundwater samples to a laboratory for the analysis of VOCs.

Temporary Monitoring Well Drilling and Groundwater Sample Collection Methodology

Temporary monitoring wells DPGW-1 through DPGW-4 will be completed to a depth of 22 ft bls (based on the construction of monitoring well W-18 and the depth at which the annual groundwater sample is collected). The temporary monitoring wells will be drilled and groundwater samples will be collected at each location using the protocols described in this section of the Work Plan. The groundwater samples will be submitted to the laboratory for the analysis of VOCs using SW-846 Method 8260.

The temporary monitoring well groundwater samples will be collected from three (3) depth intervals as follows:

- 10 to 12 ft bls (approximately 2 to 3 feet below the water table), which corresponds with the upper section of the monitoring well W-18 screen interval (7 to 22 ft bls).

- 15 to 17 ft bls, which corresponds with the general midpoint of the monitoring well W-18 screen interval.

- 20 to 22 ft bls, which corresponds with the lower section of the monitoring well W-18 screen interval.

The three (3) groundwater samples collected from DPGW-1 will be analyzed by the laboratory under a 24-hour turnaround time. The groundwater samples collected from DPGW-2 through DPGW-4 will be held for analysis at the laboratory until the DPGW-1 groundwater quality data are available. One (1) groundwater sample from each boring (DPGW-2 through DPGW-4) will then be analyzed based on the DPGW-1 groundwater sampling interval that exhibits the highest TVOC concentration. For example, if the DPGW-1 (15 to17 ft bls) interval exhibits the highest TVOC concentration, then the 15 to 17 ft bls sample from each of the other three borings (DPGW-2 through DPGW-4) will be analyzed. Therefore, a total of six (6) groundwater samples will be analyzed by the laboratory. In addition, one (1) duplicate sample and one (1) equipment blank sample will be collected. Trip blank samples will be submitted with each cooler that is shipped to the laboratory.

The direct push temporary monitoring well groundwater samples will be collected using the Geoprobe® Screen Point Groundwater Sampling System. The assembled Geoprobe® Screen Point Groundwater Sampler will be driven to the target sampling depth. Extension rods will be used to hold the temporary screen in position while the probe rods and sampler sheath are retracted to expose the screen. The sample sheath will be retracted to expose a two-foot screen interval. The sampler sheath will form a mechanical annular seal above the screen interval. Polyethylene tubing will be fitted with a check valve assembly (check valve and check ball) and lowered into the screen interval. The tubing and check valve assembly will be oscillated up and down to pump groundwater to the surface. Once groundwater has been pumped to the surface, the tubing and check valve assembly will be withdrawn from the screen interval and probe rods, and groundwater will be decanted from the tubing to allow for the collection of the groundwater sample. The assembled Geoprobe® Screen Point Groundwater Sampler will then be decontaminated and driven to the next groundwater sampling interval. After the last groundwater sample (20 to 22 ft bls) has been collected, the drilling and sampling equipment will be removed from the boring and the formation will be allowed to collapse. Clean sand will be used to backfill any portion of the boring that does not naturally collapse.

Water generated by temporary monitoring well purging and equipment decontamination will be containerized, transported back to the Site, and discharged to land surface on top of the landfill capped area.

Data Evaluation and Reporting

After the scope of work described in this Work Plan has been completed, a summary report will be prepared that describes the investigation work and data evaluation, and provides conclusions and recommendations. If it is determined that additional temporary monitoring wells need to be installed to delineate the downgradient extent of the VOC plume, then up to two (2) additional temporary monitoring wells will be drilled downgradient of temporary monitoring wells DPGW-3 and DPGW-4 (i.e., between the locations and the Susquehanna River). The proposed additional temporary monitoring well locations would be based on the findings of the scope of work described in this Work Plan and would be provided in a separate letter work plan.

Pending resolution of issues with the property owner to gain access to the proposed boring locations, ARCADIS intends to start the field work on April 5, 2011 and will provide the EPA with advance notification prior to commencing the work. If there are any questions, please do not hesitate to contact me at (631) 391-5244.

Sincerely,

ARCADIS of New York, Inc.

Steven M. Feldman
Project Manager

Copies:
Payson Long, NYSDEC
Julia Kenney, NYSDOH
Laurie Haskell, Broome County
Dan Schofield, Broome County

Table 1. Concentrations of Volatile Organic Compounds Detected in Well W-18 in September 2010, Colesville Landfill, Broome County, New York.

Constituents (units in ug/L)	Sample ID: W-18 Date: 9/22/2010
1,1,1,2-Tetrachloroethane	<5.0
1,1,2,2-Tetrachloroethane	<5.0
1,1,1-Trichloroethane	**11**
1,1,2-Trichloroethane	<5.0
1,2,3-Trichlorobenzene	<5.0
1,2,3-Trichloropropane	<5.0
1,2,4-Trichlorobenzene	<5.0
1,2,4-Trimethylbenzene	<5.0
1,3,5-Trimethylbenzene	<5.0
1,2-Dibromo-3-chloropropane	<5.0
1,1-Dichloroethane	**16**
1,1-Dichloroethene	<5.0
1,1-Dichloropropene	<5.0
1,2-Dibromoethane	<5.0
1,2-Dichlorobenzene	<5.0
1,2-Dichloroethane	<5.0
1,2-Dichloropropane	<5.0
1,3-Dichlorobenzene	<5.0
1,3-Dichloropropane	<5.0
1,4-Dichlorobenzene	<5.0
2-Chlorotoluene	<5.0
2,2-Dichloropropane	<5.0
4-Chlorotoluene	<5.0
Benzene	<5.0
Bromobenzene	<5.0
Bromochloromethane	<5.0
Bromodichloromethane	<5.0
Bromoform	<5.0
Bromomethane	<5.0
n-Butylbenzene	<5.0
Carbon Tetrachloride	<5.0
Chlorobenzene	<5.0
Chloroethane	**1.2 J**
Chloroform	<5.0
Chloromethane	<5.0
cis-1,2-Dichloroethene	**16**
cis-1,3-Dichloropropene	<5.0
Dibromochloromethane	<5.0
Dibromomethane	<5.0
Dichlorodifluoromethane	<5.0
Ethylbenzene	<5.0
Hexachlorobutadiene	<5.0
Isopropylbenzene	<5.0
p-Isopropyltoluene	<5.0
Methylene chloride	<5.0
Methyl tert-butyl ether	<5.0
Naphthalene	<5.0
o-Xylene	<5.0
m,p-Xylene	<5.0

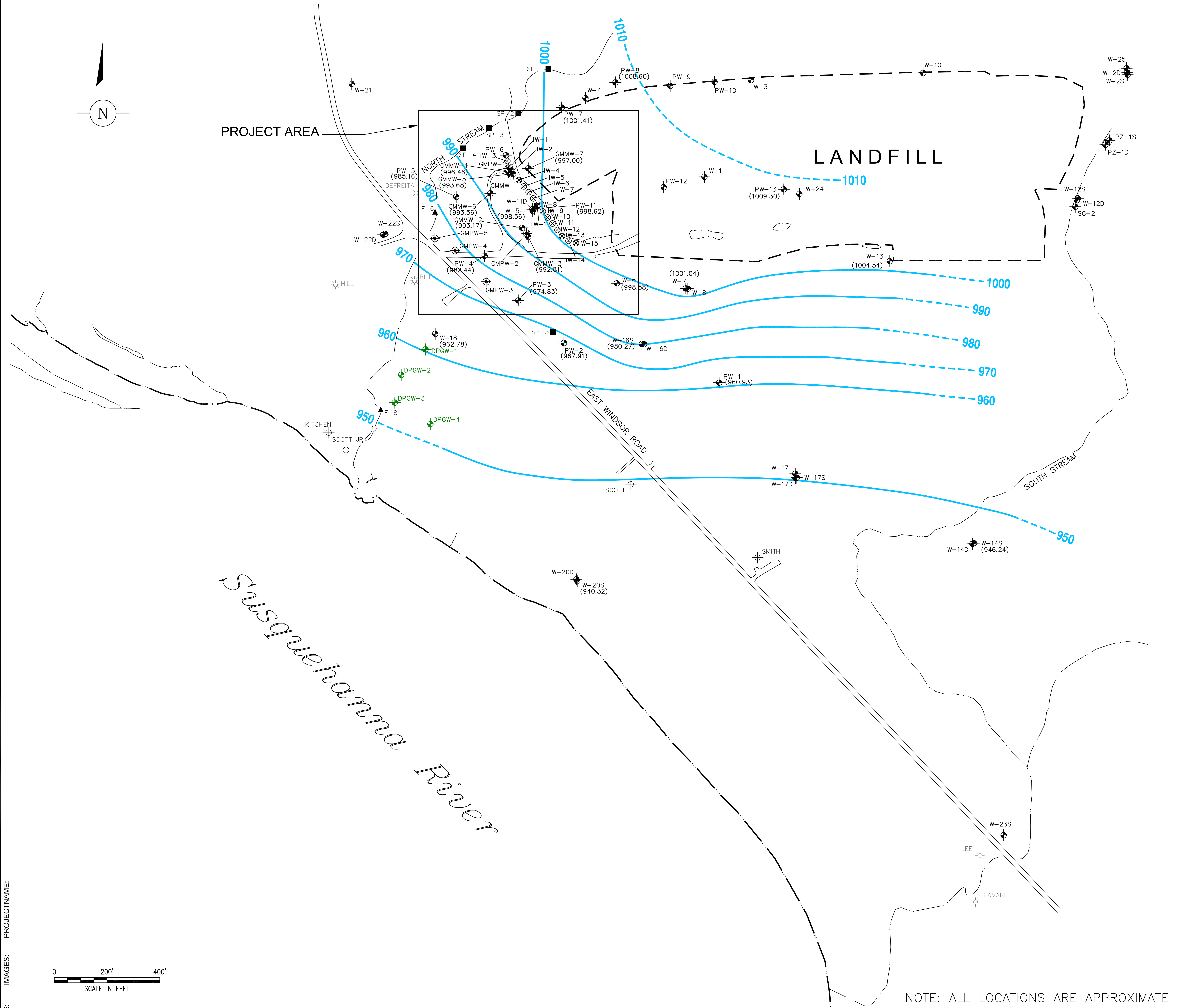
See notes on next page.

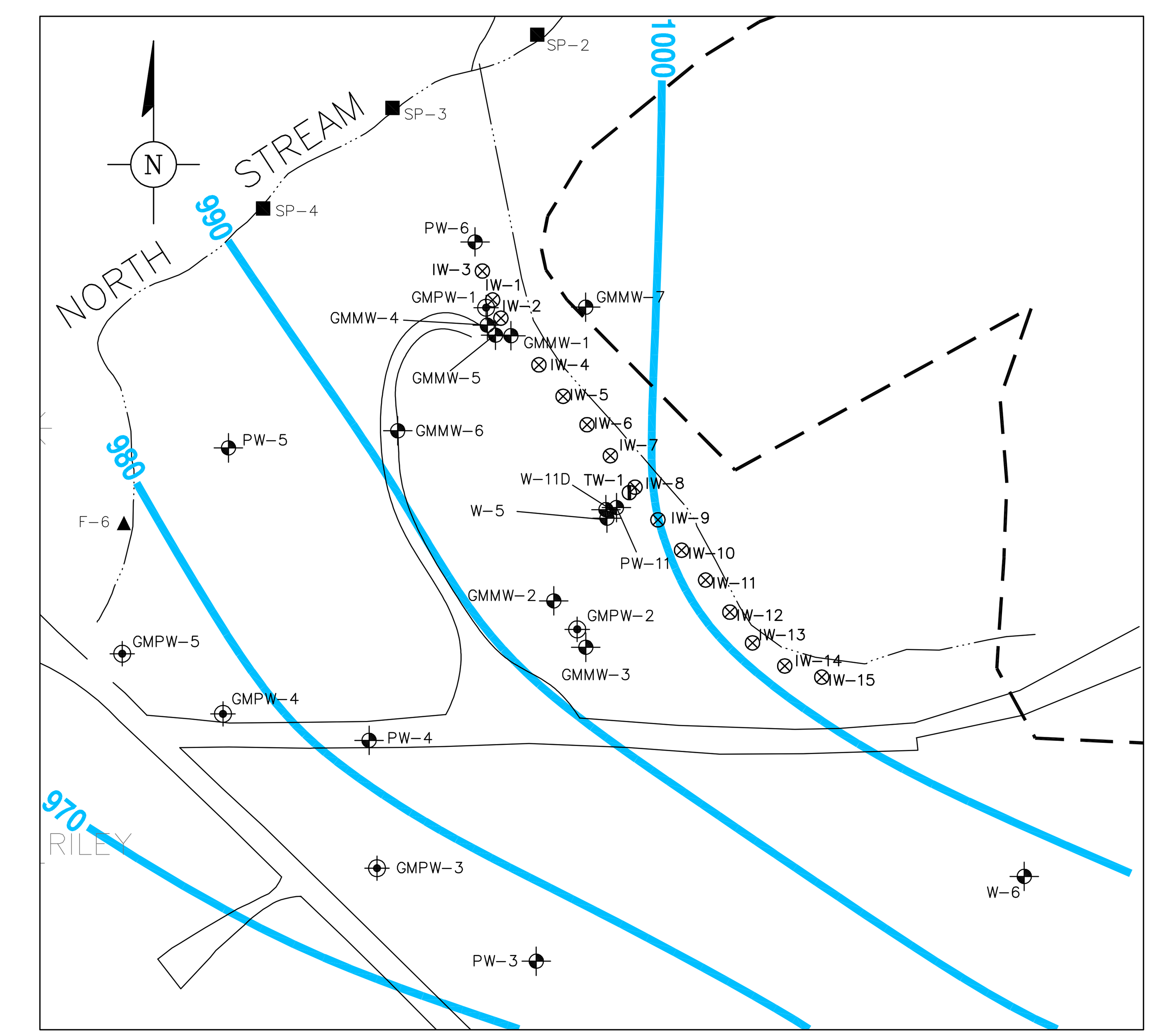
Table 1. Concentrations of Volatile Organic Compounds Detected in Well W-18 in September 2010, Colesville Landfill, Broome County, New York.

Constituents (units in ug/L)	Sample ID: W-18 Date: 9/22/2010
n-Propylbenzene	<5.0
sec-Butylbenzene	<5.0
Styrene	<5.0
tert-Butylbenzene	<5.0
trans-1,3-Dichloropropene	<5.0
Trichlorofluoromethane	<5.0
Tetrachloroethene	<5.0
Toluene	<5.0
trans-1,2-Dichloroethene	<5.0
Trichloroethene	**20**
Vinyl chloride	<5.0
Total VOCs	**64.2 J**

Bold constituent detected above method detection limit.

VOCs	Volatile organic compounds.
ug/L	Micrograms per liter.
J	Estimated value.





SITE PLAN SHOWING PROJECT AREA

0 100' 200'
SCALE IN FEET

EXPLANATION

LONG-TERM MONITORING PLAN DESIGNATIONS

Symbol	Description	Symbol	Description
W-24	LOCATION AND DESIGNATION OF MONITORING WELL	F-6 ▲	LOCATION AND DESIGNATION OF SURFACE WATER SAMPLE
SCOTT	LOCATION AND DESIGNATION OF EXISTING HOMEOWNER WELL	SP-2 ■	LOCATION AND DESIGNATION OF SPRING SAMPLE
HILL	LOCATION AND DESIGNATION OF FORMER HOMEOWNER WELL	TW-1	LOCATION AND DESIGNATION OF TEST MONITORING WELL
IW-2 ⊗	LOCATION AND DESIGNATION OF INJECTION WELL	1000	WATER LEVEL ELEVATION CONTOUR IN FT MSL; CONTOUR INTERVAL IS TEN (10) FEET (DASHED WHERE INFERRED)
GMPW-3	LOCATION AND DESIGNATION OF PRODUCTION WELL	(1009.30)	WATER LEVEL ELEVATION IN FT MSL
		DPGW-1	PROPOSED TEMPORARY MONITORING WELL LOCATION AND DESIGNATION

NOTE: ALL LOCATIONS ARE APPROXIMATE

COLESVILLE LANDFILL
COLESVILLE, NEW YORK
VOC PLUME DELINEATION WORK PLAN

SITE PLAN SHOWING WATER-LEVEL ELEVATIONS ON SEPTEMBER 22, 2010 AND PROPOSED TEMPORARY MONITORING WELL LOCATIONS

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FIGURE
1

CITY:MELVILLE DIV/GROUP: DB:ALS LD: PIC: PM:SF TM: LYR:ON=*;OFF=*REF*
G:\ENVCAD\Melville-NY\ACT\NY000949\0023\00005\F01 VOC_WP.dwg LAYOUT: 1 SAVED: 3/15/2011 3:57 PM ACADVER: 18.0S (LMS TECH) PAGESETUP: PDF PLOTSTYLETABLE: ARCADIS_MELVILLE.CTB PLOTTED: 3/15/2011 3:57 PM BY: SANCHEZ, ADRIAN
XREFS: IMAGES: PROJECTNAME: ----

DPGW-1 PROPOSED TEMPORARY MONITORING WELL LOCATION AND DESIGNATION

N

0 200' 400'

SCALE IN FEET

COLESVILLE LANDFILL
COLESVILLE, NEW YORK

VOC PLUME DELINEATION WORK PLAN

PROPOSED TEMPORARY MONITORING WELL LOCATIONS

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FIGURE **2**

CITY:MELVILLE-NY DIV/GROUP:ENR1 DBA:SANCHEZ LD:(Opt) PIC: PM:S.FELDMAN TM:C.KEEN LYR:(Opt)ON=*;OFF=*REF*
G:\ENVCAD\Melville-NY\ACTIVITY\00949\00230\0005\F02 AERIAL.dwg LAYOUT: 2 SAVED: 3/15/2011 3:44 PM ACADVER: 18.0S (LMS TECH) PAGESETUP: PDF PLOTSTYLETABLE: ARCADIS_MELVILLE.CTB PLOTTED: 3/15/2011 3:45 PM BY: SANCHEZ, ADRIAN

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COLESVILLE.jpg