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ENVIRONMENT

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

Subject:
Evaluation of Remedy Protectiveness
Spring Water and Surface Water
Colesville Landfill Superfund Site
Colesville, New York

Date:
July 31, 2014

Contact:
Steven M. Feldman

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Our ref:
NY000949.0027.00003

Dear Mr. Jacob:

On behalf of Broome County, ARCADIS has performed a remedy protectiveness evaluation from the perspective of ecological receptors based on spring water and surface water data collected since the U.S. Environmental Protection Agency (USEPA) 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 spring and surface water quality data are collected and, if necessary, additional corrective measures are undertaken.

This conclusion was based on a November 10, 2009 five year review-related Site inspection by USEPA personnel, who observed that potentially contaminated spring water was exfiltrating in areas along the embankment of the North Stream. In response to the FYR Report, ARCADIS submitted an action plan on May 28, 2010 that included the sampling of spring water where it is found to be exfiltrating along the embankment of the North Stream, and sampling of surface water in close proximity to the springs and downstream of the springs. A Site plan showing the spring water and surface water sampling area of interest is presented as Figure 1. A more detailed map showing the co-located spring and surface water sampling locations is provided as Figure 2.

Surface water and spring water samples were collected in June 2010 and analyzed for target compound list (TCL) volatile organic compounds (VOCs) and target analyte

list (TAL) metals. Results were compared to accepted NYSDEC water quality criteria or screening values. No VOCs exceeded any of the water quality criteria or screening values. Only iron and manganese exceeded NYSDEC water quality criteria at one of the springs; however these criteria are set for aesthetic purposes and not for potential effects to aquatic life. All downstream samples collected from the North Stream had concentrations that were well below the criteria. In fact, no downstream samples exceeded any water quality criteria or appropriate screening benchmarks.

A more focused spring water (quarterly) and surface water (semi-annual) sampling program was initiated in December 2012 in conjunction with implementation of the In-Situ Reactive Zone (IRZ) Discontinuation Pilot Test Work Plan (Work Plan). One of the key objectives of the Work Plan was to monitor spring water and surface water quality during implementation of the IRZ Discontinuation Pilot Test to further evaluate Site conditions to ensure that protectiveness of ecological receptors is being maintained.

Background

Springs occur at the Site at locations where the groundwater table intersects the land surface and manifests itself as surface water. Intermittent springs along the embankment of the North Stream have been documented since the mid-1980s during the remedial investigation conducted by Wehran Engineering. The occurrence of springs generally dissipated over time with the exception of a spring in the area designated as SP-4. The reduced rate of recharge to the groundwater system resulting from construction of a multi-media cap on the landfill may be the primary factor that reduced the occurrence of springs.

The remedy for the contaminated spring at SP-4 consisted of the installation of a subsurface stone infiltration bed in the area of the spring to prevent the contaminated spring water from exfiltrating above the land surface. Large boulders were placed between the stream and the infiltration bed to protect the integrity of the infiltration bed during high water conditions. These actions were documented by USEPA in a July 2004 Explanation of Significant Differences (ESD).

This subsurface stone infiltration bed in the area of the SP-4 spring was damaged during a flood event in May 2006. The infiltration bed was repaired and extended by ARCADIS during the second quarter of 2007, and a heavy stone retaining wall was also installed along a larger stretch of the North Stream by a Federal Emergency

Management Agency (FEMA) contractor as an erosion control measure. In addition, the stream channel was realigned as part of this effort. The retaining wall has affected groundwater flow in the vicinity of the North Stream, and the spring water at SP-4 was not completely prevented from exfiltrating above the land surface. Other intermittent springs have also been more evident as a result of the retaining wall's influence on the groundwater/surface water relationship. This occurrence also appears to be exacerbated by periodic high water table conditions associated with periods of above-average precipitation.

Since the 5-year review, there was another major flood event in September of 2011 that collapsed a portion of the stone retaining wall, and repairs were again made to SP-4 and upstream areas. Instead of replacing the retaining wall as previously built, a large section of bank was armored with the large stones. Intermittent springs surfacing between the stones in this area continue to weep across the ground and into the stream.

Approach

As previously discussed, a more focused spring water (quarterly) and surface water (semi-annual) sampling program was initiated in December 2012 in conjunction with implementation of the In-Situ Reactive Zone (IRZ) Discontinuation Pilot Test Work Plan (Work Plan). The following samples were collected for laboratory analysis:

- Spring water samples SP-2, SP-3, and SP-4, along with co-located surface water samples (i.e., SW-2, SW-3, and SW-4) at each of these locations.

- A surface water sample (F-6) from the North Stream at a location downgradient of the spring areas.

All spring water and surface water samples were analyzed for VOCs and total metals and field analyzed for pH, temperature and specific conductance.

The North Stream is a Class C(T) waterway, which is suitable for secondary recreation and fish propagation only (USEPA 2010a). Based on the Water Class and Type designation, surface water and spring water data were compared to the New York Codes, Rules, and Regulations (6 NYCRR) Part 703 Surface Water and Groundwater Quality Standards (WQS) for fish propagation (fresh waters) (Part 703.5, Table 1). Where values protective of aquatic life are not available, values based on human health effects were tabulated.

Results

This section provides the results for the spring water and surface water samples collected at the North Stream.

Springs

Volatile Organic Compounds

Inspection of the springs along the embankment of the North Stream indicate that a potential adverse effect to aquatic organisms is limited, due to lack of aquatic habitat offered at the springs. Furthermore, based on quarterly inspections of the springs, water flow at the springs is slight and does not constitute an actual aquatic habitat. A total of 15 samples were collected during five quarterly rounds of sampling (March, June, September, and December 2013 and March 2014) from the springs along the North Stream. As shown in Table 1, carbon disulfide was the only VOC detected in SP-2 during March 2014, at a concentration well below the NYSDEC Part 703 WQS. Several VOCs were detected in samples from SP-3 and SP-4, with concentrations of 1,1-dichloroethane, 1,2-dichloroethane, chlorobenzene, chloroethane, cis-1,2-dichloroethene, and vinyl chloride exceeding the WQS in two or more samples.

Metals

Most detected metals in springs along the embankment of the North stream were below relevant criteria (Table 1). Exceedances of WQS were mainly noted for aluminum, iron, and manganese.

At SP-2, detected concentrations of aluminum and iron in all five samples and manganese in three of five samples exceeded the WQS. In addition, cobalt was detected in one sample at a concentration (0.0053 mg/L) just above the WQS of 0.005 mg/L and lead was detected in one sample at a concentration (0.00043 mg/L) just above the WQS of 0.0004 mg/L. Essentially these concentrations of cobalt and lead are equal to the WQS. At SP-3, detected concentrations of iron and manganese in all five samples exceeded the WQS. At SP-04, iron and manganese in all five samples and aluminum in two of five samples exceeded the WQS. In addition, silver was detected in one sample at a concentration (0.0019 µg/L) just above the WQS (0.001 µg/L). It should be noted the WQS for silver is for ionic silver not total silver.

There are no WQS for calcium and potassium. However, these are generally regarded as essential to life and are not of concern. In addition, several WQS in Table 1 are actually based on human health or aesthetics for drinking water (i.e., for barium, iron, magnesium, and manganese).

Surface Water

Volatile Organic Compounds

Analysis of VOCs in surface water of the North Stream adjacent to and downstream of the springs demonstrate that a potential adverse effect to aquatic organisms is not present, due to detected concentrations below the WQS protective of aquatic life, where available. A total of 12 samples were collected during three quarterly rounds of sampling (March and September 2013 and March 2014) from locations adjacent to and downstream of the springs along the North Stream and at the downstream location (F-6). As shown in Table 2, the only VOC detected in surface water samples was trace concentrations of 1,2,-dichloroethane in one of three samples collected at SW-3 and two of three samples collected at SW-4. Detected concentrations were well below WQS.

In summary, VOCs in surface water associated with the North Stream do not present any potential adverse effects to aquatic organisms.

Metals

With the exception of minor exceedences of aluminum in six samples, detected concentrations of metals in all surface water samples of the North stream were below WQS (Table 3). Aluminum concentrations (0.11 or 0.13 mg/L) in most of those six samples are just above or essentially equal to the WQS (0.1 mg/L).

In summary, metals in surface water associated with the North Stream do not present the potential for adverse effects to aquatic organisms.

Conclusions

Based on the focused surface water and spring water sampling program that was initiated in December 2012, the following conclusions are offered:

- Comparison of surface water sample analyses with NYSDEC WQS indicates that, with the exception of trace concentrations of 1,1-dichloroethane below WQS, no VOCs were detected in North Stream surface water.

- VOCs in surface water associated with the North Stream do not pose an unacceptable risk for adverse health effects to aquatic organisms.

- With the exception of minor exceedences of aluminum, all detected concentrations of metals in surface water samples of the North Stream were below WQS, and metals in surface water do not pose an unacceptable risk for adverse health effects to aquatic organisms.

- Inspection of the springs along the embankment of the North Stream indicate that a potential adverse effect to aquatic organisms is limited, due to lack of aquatic habitat offered at the springs.

- Several VOCs were detected in samples from SP-3 and SP-4, with concentrations of 1,1-dichloroethane, 1,2-dichloroethane, chlorobenzene, chloroethane, cis-1,2-dichloroethene, and vinyl chloride exceeding the WQS in two or more samples.

- Most detected metals in springs along the embankment of the North stream were below WQS. Exceedances of WQS were mainly noted for aluminum, iron, and manganese.

- Based on a combination of VOC and metals concentrations in surface water below WQS, and lack of aquatic habitat associated with springs, there is no unacceptable risk for adverse health effects for aquatic life in the North Stream area.

References

ARCADIS. 2010. Ecological Screening of Spring Water and Surface Water, Colesville Landfill Superfund Site, Colesville, New York, October 1, 2010.

New York Codes, Rules, and Regulations (6 NYCRR), Part 703 Surface Water and Groundwater Quality Standards and Groundwater Effluent Limitations, Part 703.5, Table 1.

USEPA. 2010a. Third Five-Year Review Report, Colesville Municipal Landfill Superfund Site, Broome County, Town of Colesville, New York, April 2010.

Wehran Engineering. 1988. Colesville Landfill Remedial Investigation Report, Volume 1 – Report, September 1988.

Please do not hesitate to contact us if you have any questions or need additional information.

Sincerely,

ARCADIS of New York, Inc.

Hope Nemickas
Risk Assessor

Steven M. Feldman
Project Manager

Copies:
Payson Long, NYSDEC
Nate Freeman, NYSDOH
Laurie Haskell, Broome County
Dan Schofield, Broome County

Table 1. Concentrations of Volatile Organic Compounds and Selected Metals Detected in Spring Water, Colesville Landfill, Broome County, New York.

Constituents (units in ug/L)	Sample ID: / Date:	SP-2 3/28/2013	SP-2 6/19/2013	SP-2 9/19/2013	SP-2 12/18/2013	SP-2 3/19/2014
	NYSDEC Part 703 WQS					
1,1,1-Trichloroethane	5	<1.0	<1.0	<1.0	<1.0	<1.0
1,1,2,2-Tetrachloroethane	5	<1.0	<1.0	<1.0	<1.0	<1.0
1,1,2-trichloro-1,2,2-trifluoroet	5	<1.0	<1.0	<1.0	<1.0	<1.0
1,1,2-Trichloroethane	1	<1.0	<1.0	<1.0	<1.0	<1.0
1,1-Dichloroethane	5	<1.0	<1.0	<1.0	<1.0	<1.0
1,1-Dichloroethene	5	<1.0	<1.0	<1.0	<1.0	<1.0
1,2,4-Trichlorobenzene	5	<1.0	<1.0	<1.0	<1.0	<1.0
1,2-Dibromo-3-chloropropane	0.04	<1.0	<1.0	<1.0	<1.0	<1.0
1,2-Dibromoethane	0.0006	<1.0	<1.0	<1.0	<1.0	<1.0
1,2-Dichlorobenzene	3	<1.0	<1.0	<1.0	<1.0	<1.0
1,2-Dichloroethane	0.6	<1.0	<1.0	<1.0	<1.0	<1.0
1,2-Dichloropropane	1	<1.0	<1.0	<1.0	<1.0	<1.0
1,3-Dichlorobenzene	3	<1.0	<1.0	<1.0	<1.0	<1.0
1,4-Dichlorobenzene	3	<1.0	<1.0	<1.0	<1.0	<1.0
2-Butanone	50	<10	<10	<10	<10	<10
2-Hexanone	50	<5.0	<5.0	<5.0	<5.0	<5.0
4-Methyl-2-pentanone	NA	<5.0	<5.0	<5.0	<5.0	<5.0
Acetone	50	<10	<10	<10	<10	<10
Benzene	10	<1.0	<1.0	<1.0	<1.0	<1.0
Bromodichloromethane	50	<1.0	<1.0	<1.0	<1.0	<1.0
Bromoform	50	<1.0	<1.0	<1.0	<1.0	<1.0
Bromomethane	5	<1.0	<1.0	<1.0	<1.0	<1.0
Carbon Disulfide	60	<1.0	<1.0	<1.0	<1.0	**0.73 J**
Carbon Tetrachloride	5	<1.0	<1.0	<1.0	<1.0	<1.0
Chlorobenzene	5	<1.0	<1.0	<1.0	<1.0	<1.0
Chloroethane	5	<1.0	<1.0	<1.0	<1.0	<1.0
Chloroform	7	<1.0	<1.0	<1.0	<1.0	<1.0
Chloromethane	5	<1.0	<1.0	<1.0	<1.0	<1.0
cis-1,2-Dichloroethene	5	<1.0	<1.0	<1.0	<1.0	<1.0
cis-1,3-Dichloropropene	0.4	<1.0	<1.0	<1.0	<1.0	<1.0
Cyclohexane	NA	<1.0	<1.0	<1.0	<1.0	<1.0
Dibromochloromethane	50	<1.0	<1.0	<1.0	<1.0	<1.0
Dichlorodifluoromethane	5	<1.0	<1.0	<1.0	<1.0	<1.0
Ethylbenzene	5	<1.0	<1.0	<1.0	<1.0	<1.0
Isopropylbenzene	5	<1.0	<1.0	<1.0	<1.0	<1.0
Methyl acetate	NA	<1.0	<1.0	<1.0	<1.0	<2.5
Methyl tert-butyl ether	10	<1.0	<1.0	<1.0	<1.0	<1.0
Methylcyclohexane	NA	<1.0	<1.0	<1.0	<1.0	<1.0
Methylene Chloride	5	<1.0	<1.0	<1.0	<1.0	<1.0
Styrene	50	<1.0	<1.0	<1.0	<1.0	<1.0
Tetrachloroethene	5	<1.0	<1.0	<1.0	<1.0	<1.0
Toluene	6000	<1.0	<1.0	<1.0	<1.0	<1.0
trans-1,2-Dichloroethene	5	<1.0	<1.0	<1.0	<1.0	<1.0
trans-1,3-Dichloropropene	0.4	<1.0	<1.0	<1.0	<1.0	<1.0
Trichloroethene	5	<1.0	<1.0	<1.0	<1.0	<1.0
Trichlorofluoromethane	0.4	<1.0	<1.0	<1.0	<1.0	<1.0
Vinyl Chloride	2	<1.0	<1.0	<1.0	<1.0	<1.0
Xylenes (total)	5	<2.0	<2.0	<2.0	<2.0	<2.0
Total VOCs	NA	NA	NA	NA	NA	**0.73 J**

See notes on last page.

Table 1. Concentrations of Volatile Organic Compounds and Selected Metals Detected in Spring Water, Colesville Landfill, Broome County, New York.

Constituents (units in ug/L)	Sample ID: Date:	SP-2 3/28/2013	SP-2 6/19/2013	SP-2 9/19/2013	SP-2 12/18/2013	SP-2 3/19/2014
	NYSDEC Part 703 WQS					
Metals (Units in mg/L)						
Aluminum	0.1 [a]	**0.39**	**0.720**	**1.50**	**2.40**	**5.10**
Antimony	0.003 [a]	<0.020	<0.0200	<0.0200	<0.0200	<0.0200
Arsenic	0.15 [a]	<0.010	<0.0100	<0.0100	<0.0100	<0.0150
Barium	1 [b]	**0.0087**	**0.0130**	**0.0190**	**0.0320**	**0.0460**
Beryllium	1.1 [a]	<0.0020	<0.00200	<0.00200	<0.00200	<0.00200
Cadmium	0.002 [a]	<0.0010	<0.00100	<0.00100	<0.00100	<0.00200
Calcium	NA	**7.20**	**7.30**	**7.70**	**7.80**	**8.90**
Chromium	0.074 [a]	<0.0040	<0.00400	**0.00180 J**	**0.00240 J**	**0.00570**
Cobalt	0.005 [a]	<0.0040	**0.000640 J**	**0.00110 J**	**0.00220 J**	**0.00530**
Copper	0.009 [a]	<0.010	<0.0100	**0.00240 J**	**0.00440 J**	**0.00890 J**
Iron	0.3 [b]	**0.51**	**0.930**	**2.30**	**3.60**	**9.00**
Lead	0.004 [a]	<0.0050	<0.00500	<0.00500	**0.00430 J**	**0.0120**
Magnesium	35 [b]	**2.0**	**1.80**	**2.20**	**2.40**	**3.20**
Manganese	0.3 [b]	**0.12**	**0.200**	**0.580**	**0.850**	**1.20**
Mercury	0.00077 [a]	<0.00020	<0.000200	<0.000200	NA	<0.000200
Nickel	0.052 [a]	<0.010	<0.0100	**0.00350 J**	**0.00590 J**	**0.00960 J**
Potassium	NA	**0.75**	**0.410 J**	**1.30**	**1.30**	**1.90**
Selenium	0.0046 [a]	<0.015	<0.0150	<0.0150	<0.0150	<0.0250
Silver	0.0001 [a]	<0.0030	<0.00300	<0.00300	<0.00300	<0.00600
Sodium	20 [b]	**4.5**	**5.00**	**4.20**	**4.10**	**4.20**
Thallium	0.008 [a]	<0.020	<0.0200	<0.0200	<0.0200	<0.0200
Vanadium	0.014 [a]	<0.0050	<0.00500	**0.00200 J**	**0.00320 J**	**0.00770**
Zinc	0.083 [a]	**0.0023 J**	**0.00630 J**	**0.00820 J**	**0.0150**	**0.0250**
Dissolved oxygen						

See notes on last page.

Table 1. Concentrations of Volatile Organic Compounds and Selected Metals Detected in Spring Water, Colesville Landfill, Broome County, New York.

Constituents (units in ug/L)	Sample ID: Date:	SP-3 3/28/2013	SP-3 6/19/2013	SP-3 9/19/2013	SP-3 12/18/2013	SP-3 3/19/2014
	NYSDEC Part 703 WQS					
1,1,1-Trichloroethane	5	<1.0	<1.0	<1.0	<1.0	<1.0
1,1,2,2-Tetrachloroethane	5	<1.0	<1.0	<1.0	<1.0	<1.0
1,1,2-trichloro-1,2,2-trifluoroet	5	<1.0	<1.0	<1.0	<1.0	<1.0
1,1,2-Trichloroethane	1	<1.0	<1.0	<1.0	<1.0	<1.0
1,1-Dichloroethane	5	**41**	**23**	**22**	**26**	**34**
1,1-Dichloroethene	5	<1.0	<1.0	<1.0	<1.0	<1.0
1,2,4-Trichlorobenzene	5	<1.0	<1.0	<1.0	<1.0	<1.0
1,2-Dibromo-3-chloropropane	0.04	<1.0	<1.0	<1.0	<1.0	<1.0
1,2-Dibromoethane	0.0006	<1.0	<1.0	<1.0	<1.0	<1.0
1,2-Dichlorobenzene	3	<1.0	<1.0	<1.0	<1.0	<1.0
1,2-Dichloroethane	0.6	<1.0	<1.0	<1.0	<1.0	<1.0
1,2-Dichloropropane	1	<1.0	<1.0	<1.0	<1.0	<1.0
1,3-Dichlorobenzene	3	<1.0	<1.0	<1.0	<1.0	<1.0
1,4-Dichlorobenzene	3	<1.0	<1.0	<1.0	<1.0	<1.0
2-Butanone	50	<10	<10	<10	<10	<10
2-Hexanone	50	<5.0	<5.0	<5.0	<5.0	<5.0
4-Methyl-2-pentanone	NA	<5.0	<5.0	<5.0	<5.0	<5.0
Acetone	50	<10	<10	<10	<10	<10
Benzene	10	<1.0	<1.0	<1.0	<1.0	<1.0
Bromodichloromethane	50	<1.0	<1.0	<1.0	<1.0	<1.0
Bromoform	50	<1.0	<1.0	<1.0	<1.0	<1.0
Bromomethane	5	<1.0	<1.0	<1.0	<1.0	<1.0
Carbon Disulfide	60	<1.0	<1.0	<1.0	<1.0	<1.0
Carbon Tetrachloride	5	<1.0	<1.0	<1.0	<1.0	<1.0
Chlorobenzene	5	**3.5**	**1.7**	**3.1**	**1.5**	**2.7**
Chloroethane	5	**7.0**	**2.4**	**5**	**4.6**	**5.9**
Chloroform	7	<1.0	<1.0	<1.0	<1.0	<1.0
Chloromethane	5	<1.0	<1.0	<1.0	<1.0	<1.0
cis-1,2-Dichloroethene	5	**14**	**7.8**	**6.5**	**6.1**	**9.8**
cis-1,3-Dichloropropene	0.4	<1.0	<1.0	<1.0	<1.0	<1.0
Cyclohexane	NA	<1.0	<1.0	<1.0	<1.0	<1.0
Dibromochloromethane	50	<1.0	<1.0	<1.0	<1.0	<1.0
Dichlorodifluoromethane	5	<1.0	<1.0	<1.0	<1.0	<1.0
Ethylbenzene	5	<1.0	<1.0	<1.0	<1.0	<1.0
Isopropylbenzene	5	<1.0	<1.0	<1.0	<1.0	<1.0
Methyl acetate	NA	<1.0	<1.0	<1.0	<1.0	<2.5
Methyl tert-butyl ether	10	<1.0	<1.0	<1.0	<1.0	<1.0
Methylcyclohexane	NA	<1.0	<1.0	<1.0	<1.0	<1.0
Methylene Chloride	5	<1.0	<1.0	<1.0	<1.0	<1.0
Styrene	50	<1.0	<1.0	<1.0	<1.0	<1.0
Tetrachloroethene	5	<1.0	<1.0	<1.0	<1.0	<1.0
Toluene	6000	<1.0	<1.0	<1.0	<1.0	<1.0
trans-1,2-Dichloroethene	5	<1.0	<1.0	<1.0	<1.0	<1.0
trans-1,3-Dichloropropene	0.4	<1.0	<1.0	<1.0	<1.0	<1.0
Trichloroethene	5	**4.8**	**4.2**	**3.5**	**3.2**	**3.8**
Trichlorofluoromethane	0.4	<1.0	<1.0	<1.0	<1.0	<1.0
Vinyl Chloride	2	**2.1**	<1.0	**1.5**	**1.7**	**2.4**
Xylenes (total)	5	<2.0	<2.0	<2.0	<2.0	<2.0
Total VOCs	NA	**72**	**39**	**42**	**43**	**59**

See notes on last page.

Table 1. Concentrations of Volatile Organic Compounds and Selected Metals Detected in Spring Water, Colesville Landfill, Broome County, New York.

Constituents (units in ug/L)	Sample ID: Date:	SP-3 3/28/2013	SP-3 6/19/2013	SP-3 9/19/2013	SP-3 12/18/2013	SP-3 3/19/2014
	NYSDEC Part 703 WQS					
Metals (Units in mg/L)						
Aluminum	0.1 [a]	<0.20	<0.200	<0.200	<0.200	<0.200
Antimony	0.003 [a]	<0.020	<0.0200	<0.0200	<0.0200	<0.0200
Arsenic	0.15 [a]	<0.010	<0.0100	<0.0100	<0.0100	<0.0150
Barium	1 [b]	**0.015**	**0.0140**	**0.0170**	**0.0150**	**0.0170**
Beryllium	1.1 [a]	<0.0020	<0.00200	<0.00200	<0.00200	<0.00200
Cadmium	0.002 [a]	<0.0010	<0.00100	<0.00100	<0.00100	<0.00200
Calcium	NA	**21.3**	**22.6**	**24.0**	**22.0**	**21.8**
Chromium	0.074 [a]	<0.0040	<0.00400	<0.00400	<0.00400	<0.00400
Cobalt	0.005 [a]	**0.0013 J**	**0.000650 J**	**0.000870 J**	**0.00110 J**	**0.00130 J**
Copper	0.009 [a]	<0.010	<0.0100	<0.0100	<0.0100	<0.0100
Iron	0.3 [b]	**0.84**	**0.570**	**1.80**	**2.10**	**7.70**
Lead	0.004 [a]	<0.0050	<0.00500	<0.00500	<0.00500	<0.0100
Magnesium	35 [b]	**5.0**	**5.10**	**5.40**	**5.10**	**5.20**
Manganese	0.3 [b]	**1.4**	**0.920**	**1.60**	**1.30**	**1.50**
Mercury	0.00077 [a]	<0.00020	<0.000200	<0.000200	--	<0.000200
Nickel	0.052 [a]	**0.0019 J**	<0.0100	**0.00160 J**	**0.00170 J**	<0.0100
Potassium	NA	**1.1**	**1.40**	**1.20**	**1.10**	**1.20**
Selenium	0.0046 [a]	<0.015	<0.0150	<0.0150	<0.0150	<0.0250
Silver	0.0001 [a]	<0.0030	<0.00300	<0.00300	<0.00300	<0.00600
Sodium	20 [b]	**3.8**	**4.40**	**3.90**	**4.00**	**3.50**
Thallium	0.008 [a]	<0.020	<0.0200	<0.0200	<0.0200	<0.0200
Vanadium	0.014 [a]	<0.0050	<0.00500	<0.00500	<0.00500	<0.00500
Zinc	0.083 [a]	**0.0020 J**	**0.00490 J**	**0.00330 J**	**0.00240 J**	**0.00240 J**
Dissolved oxygen						

See notes on last page.

Table 1. Concentrations of Volatile Organic Compounds and Selected Metals Detected in Spring Water, Colesville Landfill, Broome County, New York.

Constituents (units in ug/L)	Sample ID: Date:	SP-4 3/28/2013	SP-4 6/19/2013	SP-4 9/19/2013	SP-4 12/18/2013	SP-4 3/19/2014
	NYSDEC Part 703 WQS					
1,1,1-Trichloroethane	5	<1.0	<1.0	<1.0	<1.0	<1.0
1,1,2,2-Tetrachloroethane	5	<1.0	<1.0	<1.0	<1.0	<1.0
1,1,2-trichloro-1,2,2-trifluoroet	5	<1.0	<1.0	<1.0	<1.0	<1.0
1,1,2-Trichloroethane	1	<1.0	<1.0	<1.0	<1.0	<1.0
1,1-Dichloroethane	5	**14**	**4.7**	**3.6**	**27**	**40**
1,1-Dichloroethene	5	<1.0	<1.0	<1.0	<1.0	<1.0
1,2,4-Trichlorobenzene	5	<1.0	<1.0	<1.0	<1.0	<1.0
1,2-Dibromo-3-chloropropane	0.04	<1.0	<1.0	<1.0	<1.0	<1.0
1,2-Dibromoethane	0.0006	<1.0	<1.0	<1.0	<1.0	<1.0
1,2-Dichlorobenzene	3	<1.0	<1.0	<1.0	<1.0	<1.0
1,2-Dichloroethane	0.6	**0.51 J**	**0.46 J**	<1.0	**0.97 J**	**0.94 J**
1,2-Dichloropropane	1	<1.0	<1.0	<1.0	<1.0	<1.0
1,3-Dichlorobenzene	3	<1.0	<1.0	<1.0	<1.0	<1.0
1,4-Dichlorobenzene	3	<1.0	<1.0	<1.0	<1.0	<1.0
2-Butanone	50	<10	<10	<10	<10	<10
2-Hexanone	50	<5.0	<5.0	<5.0	<5.0	<5.0
4-Methyl-2-pentanone	NA	<5.0	<5.0	<5.0	<5.0	<5.0
Acetone	50	<10	**4.5 J**	<10	<10	<10
Benzene	10	<1.0	**0.45 J**	**0.85 J**	**1.1**	**0.96 J**
Bromodichloromethane	50	<1.0	<1.0	<1.0	<1.0	<1.0
Bromoform	50	<1.0	<1.0	<1.0	<1.0	<1.0
Bromomethane	5	<1.0	<1.0	<1.0	<1.0	<1.0
Carbon Disulfide	60	<1.0	<1.0	<1.0	<1.0	<1.0
Carbon Tetrachloride	5	<1.0	<1.0	<1.0	<1.0	<1.0
Chlorobenzene	5	**4**	**3.6**	**6.9**	**5.1**	**5.4**
Chloroethane	5	**55**	**35**	**76**	**73**	**43**
Chloroform	7	<1.0	<1.0	<1.0	<1.0	<1.0
Chloromethane	5	<1.0	<1.0	<1.0	<1.0	<1.0
cis-1,2-Dichloroethene	5	**0.88 J**	<1.0	<1.0	**2.7**	**4.9**
cis-1,3-Dichloropropene	0.4	<1.0	<1.0	<1.0	<1.0	<1.0
Cyclohexane	NA	<1.0	<1.0	<1.0	<1.0	<1.0
Dibromochloromethane	50	<1.0	<1.0	<1.0	<1.0	<1.0
Dichlorodifluoromethane	5	<1.0	<1.0	<1.0	<1.0	<1.0
Ethylbenzene	5	<1.0	<1.0	<1.0	<1.0	<1.0
Isopropylbenzene	5	<1.0	<1.0	<1.0	<1.0	<1.0
Methyl acetate	NA	<1.0	<1.0	<1.0	<1.0	<2.5
Methyl tert-butyl ether	10	<1.0	<1.0	<1.0	<1.0	<1.0
Methylcyclohexane	NA	<1.0	<1.0	<1.0	<1.0	<1.0
Methylene Chloride	5	<1.0	<1.0	<1.0	<1.0	**0.48 J**
Styrene	50	<1.0	<1.0	<1.0	<1.0	<1.0
Tetrachloroethene	5	<1.0	<1.0	<1.0	<1.0	<1.0
Toluene	6000	<1.0	<1.0	<1.0	<1.0	<1.0
trans-1,2-Dichloroethene	5	<1.0	<1.0	<1.0	<1.0	<1.0
trans-1,3-Dichloropropene	0.4	<1.0	<1.0	<1.0	<1.0	<1.0
Trichloroethene	5	**0.78 J**	<1.0	<1.0	**1.8**	**4.2**
Trichlorofluoromethane	0.4	<1.0	<1.0	<1.0	<1.0	<1.0
Vinyl Chloride	2	<1.0	<1.0	<1.0	**3.7**	**3.5**
Xylenes (total)	5	<2.0	<2.0	<2.0	<2.0	<2.0
Total VOCs	NA	**75 J**	**49 J**	**87 J**	**115 J**	**103 J**

See notes on last page.

Table 1. Concentrations of Volatile Organic Compounds and Selected Metals Detected in Spring Water, Colesville Landfill, Broome County, New York.

Constituents (units in ug/L)	Sample ID: Date:	SP-4 3/28/2013	SP-4 6/19/2013	SP-4 9/19/2013	SP-4 12/18/2013	SP-4 3/19/2014
	NYSDEC Part 703 WQS					
Metals (Units in mg/L)						
Aluminum	0.1 [a]	<0.20	**1.50**	**0.0970 J**	**0.130 J**	<0.200
Antimony	0.003 [a]	<0.020	<0.0200	<0.0200	<0.0200	<0.0200
Arsenic	0.15 [a]	**0.023**	**0.0470**	**0.120**	**0.0990**	**0.0290**
Barium	1 [b]	**0.065**	**0.120**	**0.100**	**0.0940**	**0.0570**
Beryllium	1.1 [a]	<0.0020	<0.00200	<0.00200	<0.00200	<0.00200
Cadmium	0.002 [a]	<0.0010	<0.00100	<0.00100	<0.00100	<0.00200
Calcium	NA	**61.8**	**70.0**	**66.5**	**67.6**	**56.5**
Chromium	0.074 [a]	<0.0040	**0.00290 J**	**0.00120 J**	<0.00400	<0.00400
Cobalt	0.005 [a]	**0.0012 J**	**0.00250 J**	**0.00110 J**	**0.00130 J**	**0.00110 J**
Copper	0.009 [a]	<0.010	**0.00170 J**	<0.0100	<0.0100	<0.0100
Iron	0.3 [b]	**7.1**	**32.7**	**25.6**	**24.5**	**9.90**
Lead	0.004 [a]	<0.0050	<0.00500	<0.00500	<0.00500	<0.0100
Magnesium	35 [b]	**14.7**	**16.6**	**15.0**	**16.1**	**13.8**
Manganese	0.3 [b]	**4.7**	**6.20**	**5.70**	**6.10**	**4.90**
Mercury	0.00077 [a]	<0.00020	<0.000200	<0.000200	--	<0.000200
Nickel	0.052 [a]	<0.010	**0.00320 J**	<0.0100	<0.0100	<0.0100
Potassium	NA	**1.3**	**2.60**	**1.50**	**1.30**	**1.10**
Selenium	0.0046 [a]	<0.015	<0.0150	<0.0150	<0.0150	<0.0250
Silver	0.0001 [a]	<0.0030	<0.00300	**0.00190 J**	<0.00300	<0.00600
Sodium	20 [b]	**9.4**	**9.70**	**9.40**	**9.20**	**7.30**
Thallium	0.008 [a]	<0.020	<0.0200	<0.0200	<0.0200	<0.0200
Vanadium	0.014 [a]	<0.0050	**0.00270 J**	<0.00500	<0.00500	<0.00500
Zinc	0.083 [a]	<0.010	**0.0210**	<0.0100	**0.00160 J**	<0.0100
Dissolved oxygen						

See notes on last page.

Table 1. Concentrations of Volatile Organic Compounds and Selected Metals Detected in Spring Water, Colesville Landfill, Broome County, New York.

Notes and Abbreviations:

Bold constituent detected above method detection limit.

	Concentration exceeds WQS
a	WQS is based on chronic effects in aquatic life. For those metals where WQS is based on hardness, a default hardness of 100 mg/L was assumed.
b	WQS is based on human health effects or aestetics (i.e., magnesium).
J	Concentration is an estimated value
Q	Outyling QC recoveries were associated with this parameter, as noted in the Upsate Laboratories, Inc. analytical report.
mg/L	milligrams per liter
ug/L	micrograms per liter
NA	not applicable
VOCs	volatile organic compounds
WQS	water quality standard
<	Analyte below detection limit
--	Not analyzed or collected

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Table 2. Concentrations of Volatile Organic Compounds and Selected Metals Detected in Surface Water, Colesville Landfill, Broome County, New York.

Constituents	Sample ID: / Date:	NYSDEC Part 703 WQS	F-6 3/28/2013	F-6 9/19/2013	F-6 3/19/2014	SW-2 3/28/2013	SW-2 9/19/2013	SW-2 3/19/2014
Volatile organic compounds (VOCs) (Units in ug/L)								
1,1,1-Trichloroethane		5	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
1,1,2,2-Tetrachloroethane		5	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
1,1,2-trichloro-1,2,2-trifluoroethane		5	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
1,1,2-Trichloroethane		1	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
1,1-Dichloroethane		5	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
1,1-Dichloroethene		5	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
1,2,4-Trichlorobenzene		5	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
1,2-Dibromo-3-chloropropane		0.04	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
1,2-Dibromoethane		0.0006	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
1,2-Dichlorobenzene		3	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
1,2-Dichloroethane		0.6	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
1,2-Dichloropropane		1	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
1,3-Dichlorobenzene		3	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
1,4-Dichlorobenzene		3	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
2-Butanone		50	<10	<10	<10	<10	<10	<10
2-Hexanone		50	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
4-Methyl-2-pentanone		NA	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
Acetone		50	<10	<10	<10	<10	<10	<10
Benzene		10	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Bromodichloromethane		50	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Bromoform		50	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Bromomethane		5	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Carbon Disulfide		60	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Carbon Tetrachloride		5	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Chlorobenzene		5	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Chloroethane		5	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Chloroform		7	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Chloromethane		5	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
cis-1,2-Dichloroethene		5	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
cis-1,3-Dichloropropene		0.4	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Cyclohexane		NA	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Dibromochloromethane		50	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Dichlorodifluoromethane		5	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Ethylbenzene		5	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Isopropylbenzene		5	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Methyl acetate		NA	<1.0	<1.0	<2.5	<1.0	<1.0	<2.5
Methyl tert-butyl ether		10	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Methylcyclohexane		NA	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Methylene Chloride		5	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Styrene		50	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Tetrachloroethene		5	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Toluene		6000	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
trans-1,2-Dichloroethene		5	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
trans-1,3-Dichloropropene		0.4	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Trichloroethene		5	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Trichlorofluoromethane		0.4	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Vinyl Chloride		2	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Xylenes (total)		5	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
Total VOCs		NA	NA	NA	NA	NA	NA	NA

See notes on last page.

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Table 2. Concentrations of Volatile Organic Compounds and Selected Metals Detected in Surface Water, Colesville Landfill, Broome County, New York.

Constituents	Sample ID: / Date:	NYSDEC Part 703 WQS	F-6 3/28/2013	F-6 9/19/2013	F-6 3/19/2014	SW-2 3/28/2013	SW-2 9/19/2013	SW-2 3/19/2014
Metals (Units in mg/L)								
Aluminum		0.1 [a]	**0.077 J**	<0.200	**0.13 J**	**0.13 J**	<0.200	**0.240**
Antimony		0.003 [a]	<0.020	<0.0200	<0.0200	<0.020	<0.0200	<0.0200
Arsenic		0.15 [a]	<0.010	<0.0100	<0.0150	<0.010	<0.0100	<0.0150
Barium		1 [b]	**0.0066**	**0.00890**	**0.00770**	**0.0067**	**0.00780**	**0.00790**
Beryllium		1.1 [a]	<0.0020	<0.00200	<0.00200	<0.0020	<0.00200	<0.00200
Cadmium		0.002 [a]	<0.0010	<0.00100	<0.00200	<0.0010	<0.00100	<0.00200
Calcium		NA	**8.7**	**20.7**	**9.00**	**5.3**	**14.6**	**5.10**
Chromium		0.074 [a]	<0.0040	<0.00400	<0.00400	<0.0040	<0.00400	<0.00400
Cobalt		0.005 [a]	<0.0040	<0.00400	<0.00400	<0.0040	<0.00400	<0.00400
Copper		0.009 [a]	<0.010	<0.0100	<0.0100	<0.010	<0.0100	<0.0100
Iron		0.3 [b]	**0.16**	**0.0870**	**0.160**	**0.16**	**0.0190 J**	**0.290**
Lead		0.004 [a]	<0.0050	<0.00500	<0.0100	<0.0050	<0.00500	<0.0100
Magnesium		35 [b]	**2.4**	**4.50**	**2.60**	**1.9**	**3.60**	**1.90**
Manganese		0.3 [b]	**0.064**	**0.0900**	**0.0680**	**0.025**	**0.00180 J**	**0.0650**
Mercury		0.00077 [a]	<0.00020	<0.000200	<0.000200	<0.00020	<0.000200	<0.000200
Nickel		0.052 [a]	<0.010	<0.0100	<0.0100	<0.010	<0.0100	<0.0100
Potassium		NA	**0.87**	**0.920**	**1.00**	**0.92**	**0.870**	**0.990**
Selenium		0.0046 [a]	<0.015	<0.0150	<0.0250	<0.015	<0.0150	<0.0250
Silver		0.0001 [a]	<0.0030	<0.00300	<0.00600	<0.0030	<0.00300	<0.00600
Sodium		20 [b]	**5.1**	**6.20**	**5.40**	**4.9**	**6.10**	**4.90**
Thallium		0.008 [a]	<0.020	<0.0200	<0.0200	<0.020	<0.0200	<0.0200
Vanadium		0.014 [a]	<0.0050	<0.00500	<0.00500	<0.0050	<0.00500	<0.00500
Zinc		0.083 [a]	<0.010	<0.0100	<0.0100	**0.0016 J**	<0.0100	**0.00160 J**

See notes on last page.

Table 2. Concentrations of Volatile Organic Compounds and Selected Metals Detected in Surface Water, Colesville Landfill, Broome County, New York.

Constituents	Sample ID: / Date:	NYSDEC Part 703 WQS	SW-3 3/28/2013	SW-3 9/19/2013	SW-3 3/19/2014	SW-4 3/28/2013	SW-4 9/19/2013	SW-4 3/19/2014
Volatile organic compounds (VOCs) (Units in ug/L)								
1,1,1-Trichloroethane		5	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
1,1,2,2-Tetrachloroethane		5	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
1,1,2-trichloro-1,2,2-trifluoroethane		5	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
1,1,2-Trichloroethane		1	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
1,1-Dichloroethane		5	<1.0	**0.72 J**	<1.0	**0.49 J**	**0.82 J**	<1.0
1,1-Dichloroethene		5	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
1,2,4-Trichlorobenzene		5	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
1,2-Dibromo-3-chloropropane		0.04	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
1,2-Dibromoethane		0.0006	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
1,2-Dichlorobenzene		3	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
1,2-Dichloroethane		0.6	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
1,2-Dichloropropane		1	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
1,3-Dichlorobenzene		3	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
1,4-Dichlorobenzene		3	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
2-Butanone		50	<10	<10	<10	<10	<10	<10
2-Hexanone		50	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
4-Methyl-2-pentanone		NA	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
Acetone		50	<10	<10	<10	<10	<10	<10
Benzene		10	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Bromodichloromethane		50	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Bromoform		50	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Bromomethane		5	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Carbon Disulfide		60	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Carbon Tetrachloride		5	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Chlorobenzene		5	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Chloroethane		5	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Chloroform		7	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Chloromethane		5	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
cis-1,2-Dichloroethene		5	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
cis-1,3-Dichloropropene		0.4	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Cyclohexane		NA	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Dibromochloromethane		50	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Dichlorodifluoromethane		5	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Ethylbenzene		5	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Isopropylbenzene		5	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Methyl acetate		NA	<1.0	<1.0	<2.5	<1.0	<1.0	<2.5
Methyl tert-butyl ether		10	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Methylcyclohexane		NA	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Methylene Chloride		5	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Styrene		50	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Tetrachloroethene		5	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Toluene		6000	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
trans-1,2-Dichloroethene		5	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
trans-1,3-Dichloropropene		0.4	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Trichloroethene		5	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Trichlorofluoromethane		0.4	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Vinyl Chloride		2	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Xylenes (total)		5	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
Total VOCs		NA	NA	**0.72 J**	NA	**0.49 J**	**0.82 J**	NA

See notes on last page.

Table 2. Concentrations of Volatile Organic Compounds and Selected Metals Detected in Surface Water, Colesville Landfill, Broome County, New York.

Constituents	Sample ID: / Date:	NYSDEC Part 703 WQS	SW-3 3/28/2013	SW-3 9/19/2013	SW-3 3/19/2014	SW-4 3/28/2013	SW-4 9/19/2013	SW-4 3/19/2014
Metals (Units in mg/L)								
Aluminum		0.1 [a]	**0.11 J**	<0.200	**0.210**	**0.085 J**	<0.200	**0.150 J**
Antimony		0.003 [a]	<0.020	<0.0200	<0.0200	<0.020	<0.0200	<0.0200
Arsenic		0.15 [a]	<0.010	<0.0100	<0.0150	<0.010	<0.0100	<0.0150
Barium		1 [b]	**0.0065**	**0.00810**	**0.00760**	**0.0066**	**0.00830**	**0.00770**
Beryllium		1.1 [a]	<0.0020	<0.00200	<0.00200	<0.0020	<0.00200	<0.00200
Cadmium		0.002 [a]	<0.0010	<0.00100	<0.00200	<0.0010	<0.00100	<0.00200
Calcium		NA	**7.2**	**17.9**	**7.20**	**7.9**	**19.2**	**7.90**
Chromium		0.074 [a]	<0.0040	<0.00400	<0.00400	<0.0040	<0.00400	<0.00400
Cobalt		0.005 [a]	<0.0040	<0.00400	<0.00400	<0.0040	<0.00400	<0.00400
Copper		0.009 [a]	<0.010	<0.0100	<0.0100	<0.010	<0.0100	<0.0100
Iron		0.3 [b]	**0.13**	<0.0500	**0.240**	**0.18**	**0.0670**	**0.210**
Lead		0.004 [a]	<0.0050	<0.00500	<0.0100	<0.0050	<0.00500	<0.0100
Magnesium		35 [b]	**2.2**	**4.00**	**2.30**	**2.3**	**4.20**	**2.40**
Manganese		0.3 [b]	**0.021**	**0.00530**	**0.0530**	**0.061**	**0.0790**	**0.0710**
Mercury		0.00077 [a]	<0.00020	<0.000200	<0.000200	<0.00020	<0.000200	<0.000200
Nickel		0.052 [a]	<0.010	<0.0100	<0.0100	<0.010	<0.0100	<0.0100
Potassium		NA	**0.91**	**0.830**	**0.960**	**0.87**	**0.910**	**0.960**
Selenium		0.0046 [a]	<0.015	<0.0150	<0.0250	<0.015	<0.0150	<0.0250
Silver		0.0001 [a]	<0.0030	<0.00300	<0.00600	<0.0030	<0.00300	<0.00600
Sodium		20 [b]	**5.0**	**6.20**	**5.00**	**5.0**	**6.00**	**5.10**
Thallium		0.008 [a]	<0.020	<0.0200	<0.0200	<0.020	<0.0200	<0.0200
Vanadium		0.014 [a]	<0.0050	<0.00500	<0.00500	<0.0050	<0.00500	<0.00500
Zinc		0.083 [a]	<0.010	<0.0100	**0.00170 J**	<0.010	<0.0100	**0.00180 J**

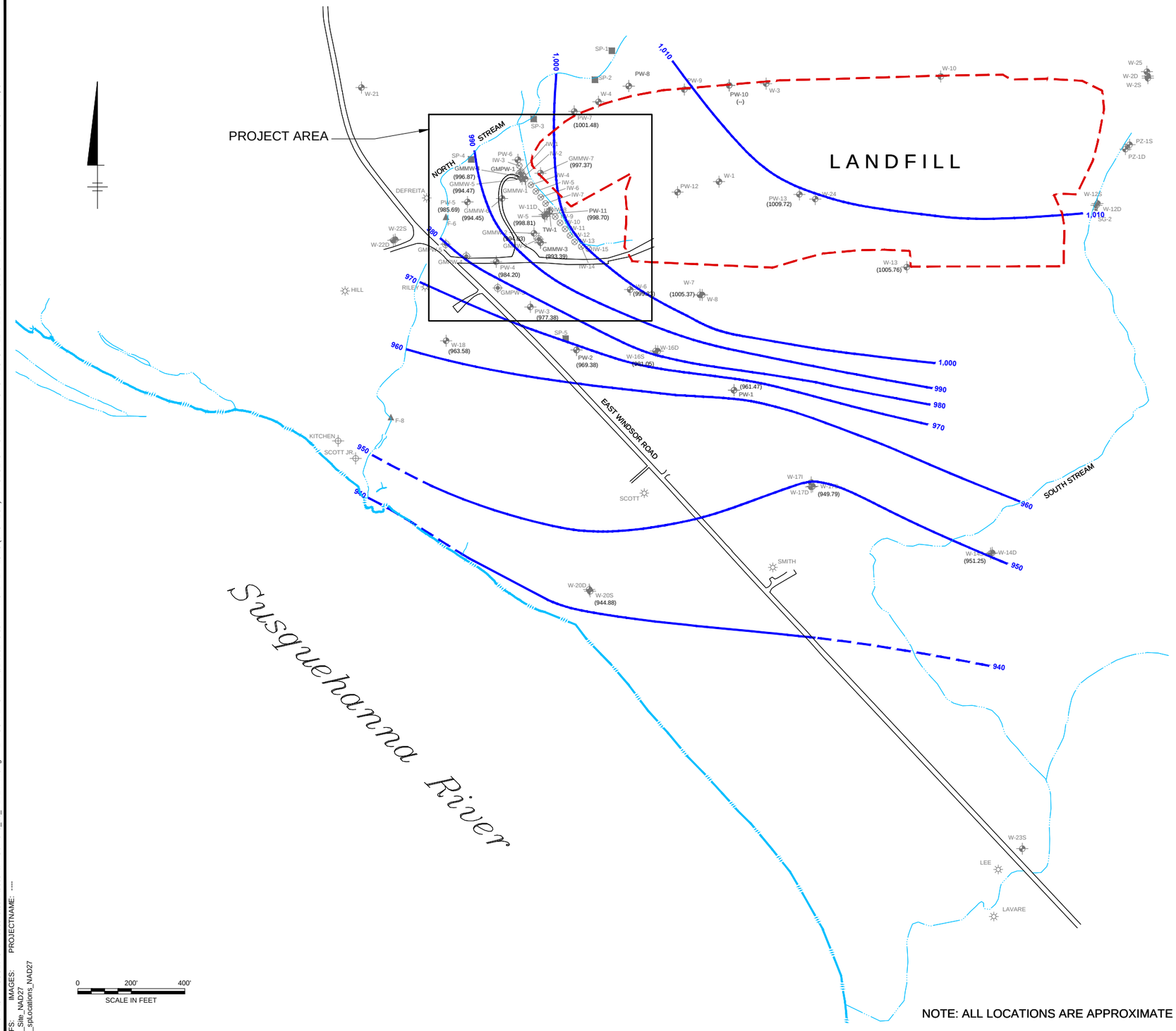
See notes on last page.

Table 2. Concentrations of Volatile Organic Compounds and Selected Metals Detected in Surface Water, Colesville Landfill, Broome County, New York.

Notes and Abbreviations:

Bold constituent detected above method detection limit.

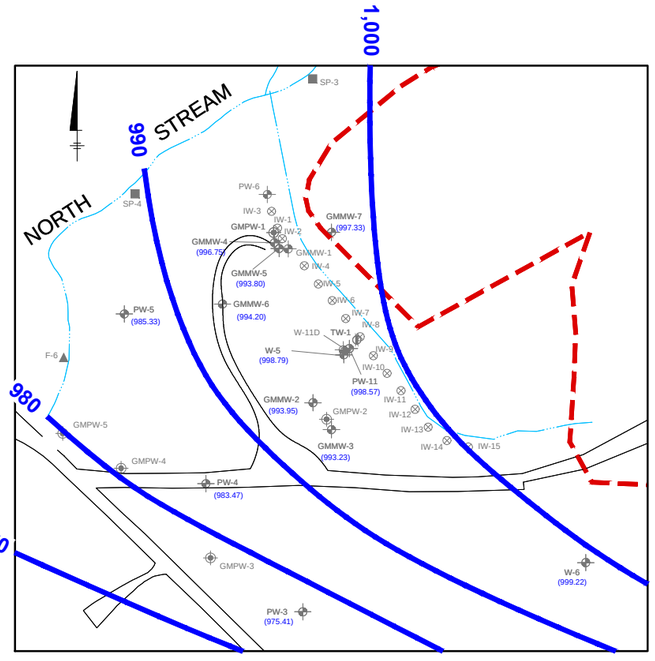
	Concentration exceeds WQS
a	WQS is based on chronic effects in aquatic life. For those metals where WQS is based on hardness, a default hardness of 100 mg/L was assumed.
b	WQS is based on human health effects or aestetics (i.e., magnesium).
J	Concentration is an estimated value
mg/L	milligrams per liter
ug/L	micrograms per liter
NA	not applicable
<	Analyte below detection limit.
--	not analyzed or collected



EXPLANATION

LONG-TERM MONITORING PLAN DESIGNATIONS

- W-24 — LOCATION AND DESIGNATION OF MONITORING WELL
- SCOTT — LOCATION AND DESIGNATION OF EXISTING HOMEOWNER WELL
- HILL — LOCATION AND DESIGNATION OF FORMER HOMEOWNER WELL
- IW-2 — LOCATION AND DESIGNATION OF INJECTION WELL
- GMPW-3 — LOCATION AND DESIGNATION OF PRODUCTION WELL
- TW-1 — LOCATION AND DESIGNATION OF TEST MONITORING WELL
- F-6 — LOCATION AND DESIGNATION OF SURFACE WATER SAMPLE
- SP-2 — LOCATION AND DESIGNATION OF SPRING SAMPLE AND CO-LOCATED SEDIMENT SAMPLE
- GMMW-5 — LOCATION AND DESIGNATION OF QUARTERLY MONITORING WELL
- PW-3 — LOCATION AND DESIGNATION OF ANNUAL MONITORING WELL



SITE PLAN SHOWING PROJECT AREA

0 100' 200'
SCALE IN FEET

0 200' 400'
SCALE IN FEET

NOTE: ALL LOCATIONS ARE APPROXIMATE

COLESVILLE LANDFILL
COLESVILLE, NEW YORK

SITE PLAN SHOWING WATER-LEVEL ELEVATIONS ON MARCH 18, 2014

ARCADIS

FIGURE 1

CITY:MELVILLE DIV/GROUP:ENV DB:A.SANCHEZ LD: PIC:S.FELDMAN PM:S.FELDMAN TM:K.ZEGEL LYR:(Opt)ON=*;OFF=*REF*
G:\ENVCAD\SYRACUSE\ACTIVE\00094\900270\0004\DWG\NY949_26_4 LTE-MW.dwg LAYOUT: 1 SAVED: 6/27/2014 9:00 AM ACADVER: 18.1S (LMS TECH) PAGESETUP: C:\LD28-PDF-GMS PLOTSTYLETABLE: PLTFULL.CTB PLOTTED: 6/27/2014 9:01 AM BY: STOWELL, GARY
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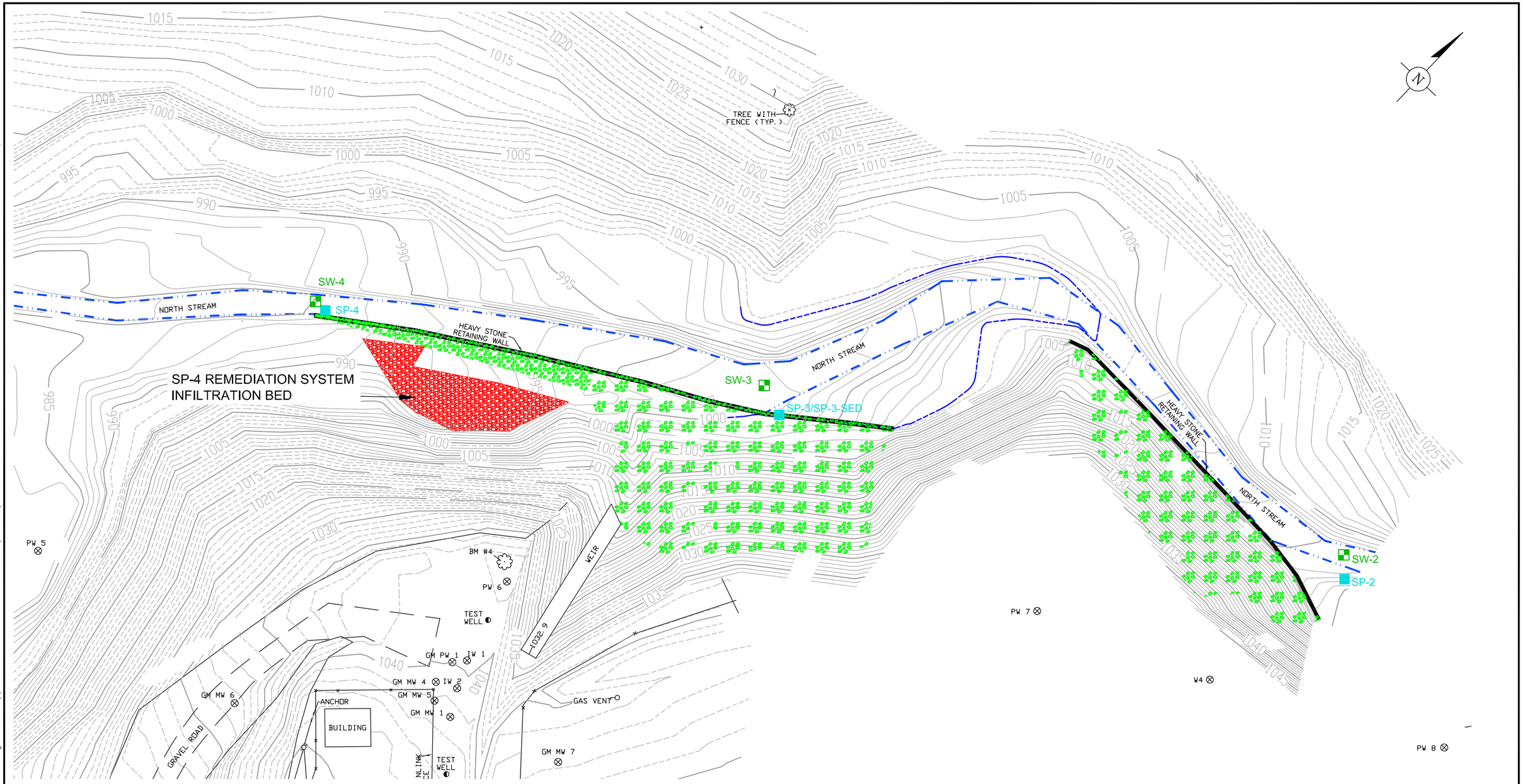

LEGEND:

- SPRING WATER SAMPLING LOCATION (APPROXIMATE)
- SURFACE WATER SAMPLING LOCATION (APPROXIMATE)
- RIP RAP
- RETAINING WALL
- NORTH STREAM

0 50' 100'

SCALE IN FEET

COLESVILLE LANDFILL
COLESVILLE, NEW YORK

SPRING WATER AND SURFACE WATER SAMPLING LOCATIONS ALONG THE NORTH STREAM

ARCADIS

FIGURE 2