DES Waste Management Division
29 Hazen Drive; PO Box 95
Concord, NH 03302-0095

2016 GROUNDWATER MONITORING SUMMARY REPORT
Auburn Landfill
Chester Turnpike
Auburn, NH 03032

NHDES Site #: 199002015
Project Type: Landfill Closure
Project Number: 1521

Prepared For:
Town of Auburn
47 Chester Road, P.O. Box 309
Auburn, NH 03032
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Stantec

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Prepared By:
Stantec Consulting Services Inc.
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Date of Report: June 22, 2016

Groundwater Monitoring Report Cover Sheet

Site Name: Auburn Landfill

Town: Auburn

Permit #: GWP-199002015-A-003

Type of Submittal (*Check all that apply*)

- ✓ Periodic Summary Report (*year*) : 2016
- ❑ Data Submittal (*month and year per Condition #7 of Permit*):

Check each box where the answer to any of the following questions is "YES"

Sampling Results

- ❑ During the most recent monitoring event, were any new compounds detected at any sampling point?
  Well/Compound:
- ❑ Are there any detections of contamination in drinking water that is untreated prior to use?
  Well/Compound:
  - □ Do compounds detected exceed AGQS?
- ❑ Was free product detected for the first time in any monitoring point?
  - □ Surface Water (*visible sheen*)
  - □ Groundwater (*1/8" or greater thickness*)
    Location/Thickness:

Contaminant Trends

- ✓ Do sampling results show an increasing concentration trend in any source area monitoring well?
  Well/Compound: MW-2/Manganese
- ❑ Do sampling results indicate an AGQS violation in any of the GMZ boundary wells?
  Well/Compound:

Recommendations

- ❑ Does the report include any recommendations requiring DES action? (*Do not check this box if the only recommendation is to continue with existing permit conditions.*)

This form is to be completed for groundwater monitoring data submittals and periodic summary reports submitted to the New Hampshire Department of Environmental Services Waste Management Division.

Stantec Consulting Services Inc.
5 Dartmouth Drive, Suite 101, Auburn NH 03032

June 22, 2016
File: 191710504

Attention: Groundwater Management Permits Coordinator
New Hampshire Department of Environmental Services
29 Hazen Drive; PO Box 95
Concord, NH 03302-0095

Reference: 2016 Periodic Summary Report
Auburn Landfill, Chester Turnpike, Auburn, NH
NHDES Site #199002015, Project #1521

Dear Sir or Madam,

On behalf of the Town of Auburn, Stantec Consulting Services Inc. (Stantec) is pleased to submit the 2016 Periodic Summary Report for the above-referenced site (the "Site"). The Site's location is depicted on Figure 1. This report documents the results for the groundwater and surface water sampling conducted at the Site since submittal of the previous summary report in June 2014. The work described herein was completed in accordance with the Site's Groundwater Management Permit (GMP) No. GWP-199002015-A-003, which was issued on March 24, 2015.

BACKGROUND

From the 1940s until the 1970s, the Site was utilized as a municipal landfill for the Town of Auburn. An open burning dump area was also located at the Site until 1978, when an incinerator was constructed. From that time until 1998, the Site was utilized for recycling activities, ash disposal, burial of construction/demolition debris, and the burning of brush and slash. Since 1998, when the incinerator officially closed, the Site has operated as a transfer station under an agreement with Waste Management of New Hampshire.

In 1989, a *Hydrogeologic Study Report* was prepared by Hoyle, Tanner & Associates, Inc. (HTA) in response to a request from the New Hampshire Department of Environmental Services (NDHES). The investigation included determination of local bedrock and soil characteristics, groundwater flow and surface drainage patterns, and an evaluation of groundwater monitoring requirements. Results of a seismic refraction survey indicated that bedrock was present at a depth of approximately 20 feet to 50 feet below grade. Bedrock reportedly slopes down to the south and is overlain by glacial till and sand deposits. Seven observation wells were installed in test pits excavated throughout the Site. Gauging data collected from these wells and an existing dug well at the Site indicated that shallow groundwater flow was generally directed to the west-southwest towards Little Massabesic Lake. Based on this groundwater flow information, HTA proposed that four permanent monitoring wells be installed at the Site.

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In December 1999, HTA installed the four monitoring wells as a part of the closure and capping of the ash and construction/demolition debris disposal areas. Monitoring well MW-1 was installed upgradient of the ash stockpile. Monitoring well MW-2 was installed downgradient of the ash stockpile, but upgradient of the construction and demolition debris disposal area. Monitoring well MW-3 was installed downgradient from the construction and demolition debris disposal area, but upgradient of the former open burning dump that was closed in 1978. Monitoring well MW-4 was installed downgradient of the former open burning dump. All four of these wells were installed as overburden monitoring points.

Sampling of these four monitoring wells, in addition to two surface water sampling locations, was first conducted on March 19, 2000. Samples were submitted for laboratory analysis of pH, chloride, nitrate, specific conductivity, dissolved Resource Conservation and Recovery Act (RCRA) 8 metals, and volatile organic compounds (VOCs). Results indicated the presence of arsenic, barium, chromium, lead, and/or mercury at concentrations exceeding their respective Ambient Groundwater Quality Standard (AGQS) in the monitoring wells. No other parameters were detected at concentrations above their respective AGQS in the samples. A second round of sampling conducted on July 6, 2001 did not indicate the presence of any of the analyzed parameters at concentrations above AGQS.

On August 31, 2001, HTA submitted a *Solid Waste Facility Phase II Hydrogeologic Study and a Groundwater Management Permit Application* to the NHDES. The first GMP, #GWP-199002015-A-001, was issued on November 27, 2002 and required the sampling of the Site's four monitoring wells (MW-1 through MW-4) and two surface water locations (SW-1 and SW-2) in April, July and November of each year. Analytical parameters included specific conductance, pH, nitrate, sulfate, total Kjeldahl nitrogen (TKN), chloride, iron, and manganese in April, July and November of each year; VOCs in April of each year; and drinking water metals in April 2003, April 2005, and April 2007.

On January 7, 2009, Stantec submitted a *Groundwater Management Permit Renewal Application* to the NHDES. The renewal application recommended that groundwater monitoring be reduced to twice per year. On March 12, 2010, GMP #GWP-199002015-A-002 was issued for the Site. This permit required sampling of the Site's four monitoring wells and two surface water locations in April and November of each year with analysis of specific conductance, pH, nitrate, sulfate, TKN, chloride, iron, manganese, and arsenic (for monitoring wells MW-1 and MW-3 only). In addition, analysis of the NHDES Full List of VOCs (including 1,4-dioxane) and drinking water metals was required in April 2011 and April 2014.

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On February 11, 2015, Stantec submitted a *Groundwater Management Permit Renewal Application* to the NHDES. The renewal application recommended that groundwater monitoring continue with the program being performed at that time. On March 24, 2015, GMP #GWP-199002015-A-003 was issued for the Site. This permit requires sampling of the Site's four monitoring wells and two surface water locations in April of each year with analysis of specific conductance, pH, nitrate, sulfate, TKN, chloride, iron, and manganese. In addition, analysis of the NHDES Full List of VOCs (including 1,4-dioxane) and drinking water metals is required in April 2019. Groundwater sampling in general accordance with the GMP has been conducted since its issuance.

CONCEPTUAL SITE MODEL

The Site, which is located at the northeast corner of the Chester Turnpike and Raymond Road intersection, is currently utilized as a transfer station for Town of Auburn municipal waste. The Site was formerly utilized for disposal of municipal waste, construction and demolition debris, and incinerator ash. The Site is situated in a rural area of northeastern Auburn. Residences are located to the south and east of the Site. The areas to the north and west of the Site are mostly undeveloped and wooded.

Based on their presence in groundwater at concentrations exceeding AGQS, arsenic, manganese, and sulfate are the primary contaminants of concern (COCs) for the Site. The presence of these COCs may be attributable to the historical disposal of materials containing these COCs in the Site's former waste disposal areas. The approximate limits of the waste disposal areas are depicted on Figure 2. Infiltrating rainwater could have mobilized arsenic, manganese, and sulfate from the waste materials and allowed these contaminants to migrate into groundwater.

Since arsenic and manganese are elemental contaminants, they cannot be degraded; they can only be dispersed or transformed. Dispersion would occur through migration of dissolved arsenic and manganese with the flow of groundwater. Transformation of arsenic and manganese between more or less mobile forms can be affected by redox potential. In addition, since these COCs are positively charged, they will be more likely to be bound to soils with higher cation exchange capacities (such as clays or organic materials).

Sulfate is a fully oxidized form of sulfur. Sulfate is stable under aerobic conditions, but is reduced to bisulfide under anaerobic conditions. Sulfides generated from sulfate reduction can form low solubility metal-sulfide compounds that precipitate out of groundwater. Therefore, sulfate reduction may lower dissolved-phase metal concentrations.

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Based on current and historical well gauging data, overburden groundwater flow is generally directed to the southwest. Depth to overburden groundwater is generally within 10 feet of ground surface, except in areas of landfilling where the surface grade has been raised. Overburden materials at the Site primarily consist of sand and gravel. Based on an historical seismic survey, depth to bedrock at the Site ranges from approximately 20 to 50 feet below ground surface. The bedrock surface reportedly slopes down to the south. No bedrock monitoring wells have been installed at the Site.

Potential routes for human exposure to contaminated groundwater include direct contact and ingestion. Direct contact could occur through excavation activities that reach the groundwater table. Ingestion could occur through uptake of contaminated groundwater by water supply wells. Nearby residential properties to the south and east of the Site utilize private water supply wells. The closest known water supply well is located approximately 400 feet south of the Site on an adjoining property across the Raymond Road/Chester Turnpike intersection (Map 11, Lot 14).

Potential environmental receptors include an unnamed brook located immediately east and south of the former waste disposal areas and a perennial stream located northwest of the former waste disposal areas. Both of these surface water features flow in a generally westerly direction towards wetlands associated with Little Massabesic Lake, which is located approximately 3,700 feet west of the Site.

WORK PERFORMED

The sample events addressed as part of this reporting period were conducted on April 15, 2015 and April 19, 2016. During each event, Stantec recorded groundwater elevation data and collected groundwater samples from monitoring wells MW-1, MW-2, MW-3, and MW-4. Surface water samples were also collected from the SW-1 monitoring points. A surface water sample was collected from SW-2 during the April 2015 event, but not during the April 2016 sampling event because the location was observed to be dry. Historically, sample location SW-2 has been observed to be dry quite frequently. Monitoring well and surface water sampling locations are shown on Figure 2.

Groundwater elevations in monitoring wells were gauged using an electronic water level meter. Groundwater elevation data are summarized on Table 1. Prior to collecting groundwater samples, a minimum of three well volumes was purged from each monitoring well using dedicated polyethylene Waterra® foot valves and polyethylene tubing. Samples from the surface water locations were collected using a dedicated polyethylene bailer. Specific conductance and pH were measured in the field using a properly calibrated water quality meter.

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Groundwater samples were collected into laboratory-supplied bottles and submitted under chain of custody to a New Hampshire-certified analytical laboratory for analysis. Samples collected in both April 2015 and April 2016 were analyzed for nitrate, sulfate, TKN, chloride, iron, and manganese. Monitoring well samples for metals analysis were filtered in the field using 0.45-micron in-line disposable filters and analyzed as dissolved metals. Surface water samples for metals analysis were not filtered and, therefore, were analyzed as total metals. The April 2015 laboratory report was previously submitted to the NHDES. The April 2016 laboratory report is attached.

GROUNDWATER FLOW

Depth to groundwater measured during the April 2015 sampling event ranged from 4.90 feet below top of well casing at MW-2, to 25.40 feet below top of well casing at MW-3. Depth to groundwater measured during the April 2016 sampling event ranged from 5.38 feet below top of well casing at MW-1 to 25.38 feet below top of well casing at MW-3. Depth to groundwater measurements were generally within their historical ranges. Current and historical groundwater gauging data are presented on Table 1.

Using the April 2016 groundwater elevation data, Stantec constructed groundwater flow contours depicted on Figure 2. Based on these data, the direction of groundwater flow at the Site is generally to the southwest, which is consistent with historical results.

SAMPLING RESULTS

Summaries of the analytical results collected since sampling of the existing wells and surface water points began in 2000 are presented in Tables 2 and 3, respectively (attached). A discussion of the results of the April 2015 and April 2016 sampling results is provided below.

MW-1

Monitoring well MW-1 is located at the northeastern end of the former waste disposal areas adjacent to an ash disposal area. No AGQS exceedances were observed during either the April 2015 or April 2016 sample events.

MW-2

Monitoring well MW-2 is located southwest (downgradient) from the ash disposal area. Manganese was detected at concentrations exceeding its AGQS of 840 micrograms per liter (µg/L) during both the April 2015 and April 2016 sampling events with concentrations of 29,900 µg/L and 30,400 µg/L, respectively. No other parameters were detected at concentrations exceeding AGQS during either sampling event.

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MW-3

Monitoring well MW-3 is located between a former construction and demolition debris disposal area and the former municipal waste landfill. Manganese was detected at concentrations exceeding AGQS during both the April 2015 and April 2016 sampling events with concentrations of 2,430 µg/L and 3,400 µg/L, respectively. No other parameters were detected at concentrations exceeding AGQS during either sampling event.

MW-4

Monitoring well MW-4 is located in the southwestern portion of the waste disposal areas adjacent to the former municipal waste landfill. No parameters were detected at concentrations exceeding AGQS during either the April 2015 or April 2016 sampling events.

SW-1

Surface water sample point SW-1 is collected in the unnamed brook located south and east of the landfill where it crosses Raymond Road. No parameters were detected at concentrations exceeding Water Quality Criteria (WQC) during either the April 2015 or April 2016 sampling events.

SW-2

Surface water sample SW-2 is collected from the perennial stream located northwest of the landfill. No parameters were detected at concentrations exceeding WQC during the April 2015 sampling event. As previously mentioned, no sample was collected from this location in April 2016 because the stream was observed to be dry.

HISTORICAL TRENDS

INORGANIC PARAMETERS

MW-1

The metals arsenic, chromium, lead, and manganese were detected at concentrations above their AGQS during the well's first sampling event in March 2000. However, only arsenic and manganese were subsequently detected at concentrations exceeding AGQS in this well.

Arsenic was detected at its highest concentration (154 µg/L) in March 2000 and was not detected above its AGQS again until April 2009 (at a concentration of 19 µg/L). Since 2009, the detection of arsenic in the well at concentrations exceeding AGQS has been somewhat sporadic, being detected above its AGQS during 6 of 9 sample events during which it was analyzed. The

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detected concentrations since 2009 have varied significantly, ranging from <8 µg/L in April 2014 to 49.3 µg/L in November 2014.

Since peaking at 3,700 µg/L in July 2008, manganese concentrations have decreased to less than 300 µg/L during the April 2015 and April 2016 sample events. Manganese concentrations have remained below AGQS during the past six sampling events, last exceeding AGQS in November 2012.

Other analyzed metals have not been detected above their AGQS and/or laboratory reporting limits since the well was first sampled in March 2000. MW-1 arsenic and manganese trends are depicted in Figures 3 and 4, respectively. The March 2000 sampling data have been omitted from these figures to more effectively present subsequent data.

MW-2

The metals arsenic, barium, chromium, lead, manganese, and mercury were detected at concentrations above their AGQS during the well's first sampling event in March 2000. However, only manganese has been detected above its AGQS since that time. Since April 2007, the concentration of manganese has exhibited a generally increasing trend. During the April 2013 sampling event, manganese was detected at its highest recorded concentration in this well (33,900 µg/L). Manganese concentration trends for MW-2 are depicted in Figure 4.

MW-3

The metals arsenic, barium, chromium, lead, manganese, and mercury were detected at concentrations above their AGQS during the well's first sampling event in March 2000. Of these metals, only arsenic and manganese have continued to be detected above their AGQS. Arsenic and manganese concentrations appear to exhibit a generally decreasing trend. Arsenic and manganese trends are depicted in Figures 3 and 4, respectively.

In addition to these metals, sulfate has also been repeatedly detected at concentrations above its AGQS. However, the detected concentrations of sulfate have remained below the AGQS of 500,000 µg/L during the past seven sampling events and sulfate concentrations appear to exhibit a generally decreasing trend over time. The sulfate trend in this well is depicted in Figure 5.

MW-4

The metals arsenic, chromium, lead, manganese, and mercury were detected at concentrations above their AGQS during the well's first sampling event in March 2000. However, no analytes have

been detected at concentrations above AGQS in this well since manganese last exceeded its AGQS in April 2004.

SW-1

Iron has been the only analyte detected at a concentration exceeding WQC at this surface water location. Iron exceeded the Fresh Chronic WQC during the July 2000 sampling event only. No other analytes have been detected at concentrations exceeding WQC.

SW-2

Iron and lead have been the only analytes detected at concentrations above WQC at this surface water location. Iron was detected at concentrations exceeding the Fresh Chronic WQC during the August 2006 and April 2007 sampling events, while lead was detected at a concentration exceeding the Fresh Chronic WQC during the April 2007 sampling event only. No other analytes have been detected at concentrations exceeding WQC. This location has been dry during approximately half the GMP-required sampling events.

VOLATILE ORGANIC COMPOUNDS

No analysis for VOCs was required during this reporting period (April 2015 and April 2016). Below is a summary of historical data for VOCs at this site.

Groundwater and surface water samples have been analyzed for VOCs nine times over their monitoring history. Samples were most recently analyzed for VOCs in April 2014. No VOCs have been detected in groundwater or surface water samples at concentrations exceeding AGQS or WQC, respectively. The most notable VOC detections were at MW-1 during the April 2009 sampling event, when several petroleum-related VOCs were detected at concentrations below AGQS. Otherwise, VOC detections have mainly occurred when contaminants were also detected in the laboratory method blanks, suggesting possible laboratory contamination. No VOCs, including low level 1.4-dioxane, were detected above laboratory reporting limits in the samples collected during the April 2014 sampling event.

CONCLUSIONS

Based on the April 2015 and April 2016 sampling results, manganese continues to be detected in monitoring wells MW-2 and MW-3 at concentrations exceeding AGQS. Manganese concentrations at MW-2 exhibit an increasing trend, while MW-3 manganese concentrations are general decreasing.

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None of the analyzed contaminants were detected in surface water samples above Surface Water Quality Criteria for Toxic Substances during the reporting period. In general, contaminant concentrations in surface water samples appear to be relatively stable.

RECOMMENDATIONS

Based on the data summary presented above, Stantec recommends that sampling of the Site's monitoring wells and surface water locations continue in accordance with the GMP to monitor on-going contaminant trends. The next scheduled event in accordance with the GMP is in April 2017.

We trust that this information is sufficient for your needs. If you have any questions or comments, or require any additional information, please call the undersigned.

Regards,

STANTEC CONSULTING SERVICES INC.

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Attachments: Tables 1-3
Figures 1-5
April 2016 Laboratory Analytical Report

c. Bill Herman, Town of Auburn

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Table 1
Groundwater Elevation Data
Auburn Landfill
Chester Turnpike
Auburn, New Hampshire

Well ID	Gauging Date	Top of Well Elevation (feet)	Depth to Water (feet)	Relative Water Table Elevation (feet)
MW-1	03/19/00	303.85	-	-
	07/06/00	303.85	-	-
	04/29/04	303.85	-	-
	04/18/06	303.85	-	-
	08/07/06	303.85	-	-
	12/27/06	303.85	-	-
	04/30/07	303.85	-	-
	07/14/08	303.85	6.81	297.04
	11/06/08	303.85	5.32	298.53
	04/07/09	303.85	4.37	299.48
	11/19/09	303.85	5.32	298.53
	04/21/10	303.85	5.00	298.85
	12/15/10	303.85	5.13	298.72
	04/20/11	303.85	5.59	298.26
	11/03/11	303.85	5.52	298.33
	04/17/12	303.85	5.62	298.23
	11/06/12	303.85	5.32	298.53
	04/16/13	303.85	5.00	298.85
	11/13/13	303.85	5.88	297.97
	04/07/14	303.85	4.62	299.23
	11/05/14	303.85	5.76	298.09
	04/15/15	303.85	5.00	298.85
	04/19/16	303.85	5.38	298.47
MW-2	03/19/00	295.83	-	-
	07/06/00	295.83	-	-
	04/29/04	295.83	-	-
	04/18/06	295.83	-	-
	08/07/06	295.83	-	-
	12/27/06	295.83	-	-
	04/30/07	295.83	-	-
	07/14/08	295.83	6.38	289.45
	11/06/08	295.83	5.40	290.43
	04/07/09	295.83	3.41	292.42
	11/19/09	295.83	5.43	290.40
	04/21/10	295.83	3.36	292.47
	12/15/10	295.83	4.96	290.87
	04/20/11	295.83	4.54	291.29
	11/03/11	295.83	4.72	291.11
	04/17/12	295.83	5.32	290.51
	11/06/12	295.83	5.00	290.83
	04/16/13	295.83	4.31	291.52
	11/13/13	295.83	5.42	290.41
	04/07/14	295.83	3.34	292.49
	11/05/14	295.83	5.35	290.48
	04/15/15	295.83	4.90	290.93
	04/19/16	295.83	5.64	290.19

Table 1
Groundwater Elevation Data
Auburn Landfill
Chester Turnpike
Auburn, New Hampshire

Well ID	Gauging Date	Top of Well Elevation (feet)	Depth to Water (feet)	Relative Water Table Elevation (feet)
MW-3	01/05/00	303.40	-	-
	07/06/00	303.40	-	-
	04/29/04	303.40	-	-
	04/18/06	303.40	-	-
	08/07/06	303.40	-	-
	12/27/06	303.40	-	-
	04/30/07	303.40	-	-
	07/14/08	303.40	26.40	277.00
	11/06/08	303.40	25.58	277.82
	04/07/09	303.40	24.45	278.95
	11/19/09	303.40	26.22	277.18
	04/21/10	303.40	24.82	278.58
	12/15/10	303.40	26.01	277.39
	04/20/11	303.40	25.60	277.80
	11/03/11	303.40	25.44	277.96
	04/17/12	303.40	26.11	277.29
	11/06/12	303.40	26.05	277.35
	04/16/13	303.40	25.25	278.15
	11/13/13	303.40	26.35	277.05
	04/07/14	303.40	25.12	278.28
	11/05/14	303.40	26.59	276.81
	04/15/15	303.40	25.40	278.00
	04/19/16	303.40	25.38	278.02
MW-4	03/19/00	280.03	-	-
	07/06/00	280.03	-	-
	04/29/04	280.03	-	-
	04/18/06	280.03	-	-
	08/07/06	280.03	-	-
	12/27/06	280.03	-	-
	04/30/07	280.03	-	-
	07/14/08	280.03	7.82	272.21
	11/06/08	280.03	6.37	273.66
	04/07/09	280.03	5.19	274.84
	11/19/09	280.03	6.35	273.68
	04/21/10	280.03	4.55	275.48
	12/15/10	280.03	6.26	273.77
	04/20/11	280.03	7.30	272.73
	11/03/11	280.03	6.25	273.78
	04/17/12	280.03	6.91	273.12
	11/06/12	280.03	6.52	273.51
	04/16/13	280.03	5.68	274.35
	11/13/13	280.03	7.50	272.53
	04/07/14	280.03	5.35	274.68
	11/05/14	280.03	7.51	272.52
	04/15/15	280.03	5.73	274.30
	04/19/16	280.03	6.00	274.03

Notes:
1. Data prior to April 2010 collected by Eastern Analytical, Inc.
Checked by: LJC 5/16/16

Table 2
Groundwater Quality Data Summary
Auburn Landfill
Chester Turnpike
Auburn, New Hampshire

Analyte/Method[1]	Units	NHDES AGQS	Sample ID																								
			MW-1																								
Date			03/19/00	07/06/00	09/15/03	04/29/04	04/18/06	08/07/06	12/27/06	04/30/07	07/14/08	11/06/08	04/07/09	11/19/09	04/21/10	12/15/10	04/20/11	11/03/11	04/17/12	11/06/12	04/16/13	11/13/13	04/07/14	11/05/14	04/15/15	04/19/16
Metals by EPA 6000/7000 Series Methods																											
Arsenic	µg/L	10	**154**	<8	NA	NA	<8	<8	<8	<8	NA	NA	**19**	NA	**20.6**	<10	**14.0**	**22**	<16.0	**17.1**	<16.0	**20.0**	<8.0	**49.3**	NA	NA
Barium	µg/L	2,000	546	332	NA	NA	200	NA	NA	77.5	NA	NA	19	NA	NA	NA	35.8	NA	NA	NA	NA	NA	<55.0	NA	NA	NA
Cadmium	µg/L	5	<12	<10	NA	NA	<10	NA	NA	<10	NA	NA	<1	NA	NA	NA	<2.5	NA	NA	NA	NA	NA	<5.0	NA	NA	NA
Chromium	µg/L	100	**108**	<15	NA	NA	<15	NA	NA	<15	NA	NA	<1	NA	NA	NA	<5.0	NA	NA	NA	NA	NA	<10.0	NA	NA	NA
Iron	µg/L	NS	101,000	4,550	NA	<100	<100	4,480	228	<100	61,000	49,000	24,000	35,000	26,600	10,800	19,800	41,800	12,600	17,200	9,270	20,400	4,320	23,400	4,080	8,550
Lead	µg/L	15	**70.2**	5	NA	NA	<5	NA	NA	<5	NA	NA	<1	NA	NA	NA	<7.5	NA	NA	NA	NA	NA	<15.0	NA	NA	NA
Manganese	µg/L	840	**1,260**	336	NA	<50	13	231	73	48	**3,700**	**1,900**	810	**1,300**	672	703	541	**989**	515	**1,120**	360	619	146	875	192	266
Mercury	µg/L	2	<200	<200	NA	NA	<0.2	NA	NA	<0.2	NA	NA	<0.1	NA	NA	NA	<0.2	NA	NA	NA	NA	NA	<0.20	NA	NA	NA
Selenium	µg/L	50	<12	<10	NA	NA	<10	NA	NA	<10	NA	NA	<1	NA	NA	NA	<15.0	NA	NA	NA	NA	NA	<30.0	NA	NA	NA
Silver	µg/L	100	<18	<15	NA	NA	<15	NA	NA	<15	NA	NA	<1	NA	NA	NA	<5.0	NA	NA	NA	NA	NA	<10.0	NA	NA	NA
Other Inorganics																											
Chloride	µg/L	NS	7,400	7,000	NA	<2,000	<2,000	<2,000	2,300	9,100	13,000	9,000	3,000	16,000	12,200	9,140	4,130	32,400	9,200	24,500	25,600	39,200	4,750	64,600	11,300	20,400
Nitrate	µg/L	10,000	<50	<50	NA	<50	<50	50	<50	280	<500	<500	<500	<500	<100	<100	<100	<100	<100	<100	500	160	<100	<500	<100	<100
Sulfate	µg/L	500,000	NA	NA	NA	NA	NA	78,000	19,000	66,000	1,000	21,000	9,000	4,000	1,570	34,800	6,070	5,870	<5,000	8,130	23,700	4,070	7,320	18,900	6,140	4,300
Total Kjeldahl Nitrogen (TKN)	µg/L	NS	NA	NA	NA	<250	<250	<250	<250	<250	3,000	2,600	1,000	1,800	3,780	1,120	2,600	3,700	4,060	980	3,010	1,890	350	4,060	1,330	1,750
Field Parameters																											
Specific Conductivity	µmhos/cm	NS	360	40	NA	29	22	220	67	170	430	320	170	270	130.6	215	172	341	249	230	128	174.1	84	322	200	179.5
pH	S.U.	NS	5.6	5.85	NA	4.6	5.7	6.0	6.0	5.5	5.9	6.2	6.4	6.2	6.2	5.73	6.14	6.01	3.21	5.82	6.17	6.13	6.10	5.78	6.13	6.38
Volatile Organic Compounds by EPA Method 8260B																											
Acetone	µg/L	6,000	4 J	<5	<10	<25	<25	NA	NA	<25	NA	NA	<10	NA	NA	NA	<10.0	NA	NA	NA	NA	NA	<10.0	NA	NA	NA
Chloromethane	µg/L	30	<2.0	<2.0	1 J	<10	<10	NA	NA	<10	NA	NA	<2	NA	NA	NA	<2.0	NA	NA	NA	NA	NA	<2.00	NA	NA	NA
Ethylbenzene	µg/L	700	<1	<1	<5	<5	<5	NA	NA	<5	NA	NA	11	NA	NA	NA	<1.0	NA	NA	NA	NA	NA	<1.00	NA	NA	NA
p-Isopropyltoluene	µg/L	260	NA	NA	<5	<5	<5	NA	NA	<5	NA	NA	28	NA	NA	NA	<1.0	NA	NA	NA	NA	NA	<1.00	NA	NA	NA
Methylene Chloride	µg/L	5	0.5 JB[2]	<1	<5	<5	<5	NA	NA	<5	NA	NA	<5	NA	NA	NA	<2.0	NA	NA	NA	NA	NA	<2.00	NA	NA	NA
Naphthalene	µg/L	20	NA	NA	<5	0.5 JB[4]	<5	NA	NA	<5	NA	NA	<5	NA	NA	NA	<1.0	NA	NA	NA	NA	NA	<1.00	NA	NA	NA
Toluene	µg/L	1,000	<1	<1	<5	<5	<5	NA	NA	<5	NA	NA	260	NA	NA	NA	4.8	NA	NA	NA	NA	NA	<1.00	NA	NA	NA
Total Xylenes	µg/L	10,000	<1	<1	<15	<15	<15	NA	NA	<15	NA	NA	9	NA	NA	NA	<3.0	NA	NA	NA	NA	NA	<3.00	NA	NA	NA
1,4-Dioxane	µg/L	3	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<1	NA	NA	NA	<20.0	NA	NA	NA	NA	NA	<0.20	NA	NA	NA

Notes:
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[1] Only detected VOCs listed (except 1,4-dioxane) - all others below laboratory detection limits
[2] Methylene chloride was detected in the laboratory method blank at 4 µg/L
[3] Methylene chloride was detected in the laboratory method blank at 1 µg/L
[4] Naphthalene was detected in the laboratory method blank at 0.8 µg/L
µg/L = micrograms per liter (parts per billion)
µmhos/cm= micromhos per centimeter
S.U.= standard units
J = Estimated value below the laboratory reporting limit
B = Compound was also detected in the method blank
AGQS = Ambient Groundwater Quality Standards, Env-Or 603.03 (2/1/07)
NS = No standard
NA= Not analyzed
Bold = Concentration exceeds NHDES AGQS
Checked by: LJC 5/16/16

Table 2
Groundwater Quality Data Summary
Auburn Landfill
Chester Turnpike
Auburn, New Hampshire

Analyte/Method[1]	Units	NHDES AGQS	Sample ID																								
			MW-2																								
Date			03/19/00	07/06/00	09/15/03	04/29/04	04/18/06	08/07/06	12/27/06	04/30/07	07/14/08	11/06/08	04/07/09	11/19/09	04/21/10	12/15/10	04/20/11	11/03/11	04/17/12	11/06/12	04/16/13	11/13/13	04/07/14	11/05/14	04/15/15	04/19/16
Metals by EPA 6000/7000 Series Methods																											
Arsenic	µg/L	10	**2,084**	<8	NA	NA	<8	<8	<8	<8	NA	NA	<1	NA	NA	<10	<4.0	NA	NA	NA	NA	NA	<8.0	NA	NA	NA
Barium	µg/L	2,000	**3,500**	492	NA	NA	238	NA	NA	52.2	NA	NA	86	NA	NA	NA	57.4	NA	NA	NA	NA	NA	<55.0	NA	NA	NA
Cadmium	µg/L	5	<56	<10	NA	NA	<10	NA	NA	<10	NA	NA	<1	NA	NA	NA	<2.5	NA	NA	NA	NA	NA	<5.0	NA	NA	NA
Chromium	µg/L	100	**708**	<15	NA	NA	<15	NA	NA	<15	NA	NA	<1	NA	NA	NA	<5.0	NA	NA	NA	NA	NA	<10.0	NA	NA	NA
Iron	µg/L	NS	874,000	138	NA	218	<100	<100	6,210	157	100	130	170	230	1,070	932	1,550	1,190	1,910	1,980	2,310	1,020	3,500	3,080	4,810	12,300
Lead	µg/L	15	**806**	<5	NA	NA	<5	NA	NA	<5	NA	NA	<1	NA	NA	NA	<7.5	NA	NA	NA	NA	NA	<15.0	NA	NA	NA
Manganese	µg/L	840	**21,400**	304	NA	<50	231	120	**6,250**	99	530	**960**	**1,100**	**870**	**4,680**	**3,080**	**10,400**	**16,100**	**17,900**	**14,100**	**33,900**	**13,300**	**33,200**	**16,000**	**29,900**	**30,400**
Mercury	µg/L	2	**400**	<200	NA	NA	<0.2	NA	NA	<0.2	NA	NA	<0.1	NA	NA	NA	<0.2	NA	NA	NA	NA	NA	<0.20	NA	NA	NA
Selenium	µg/L	50	<56	<10	NA	NA	<10	NA	NA	<10	NA	NA	<1	NA	NA	NA	<15.0	NA	NA	NA	NA	NA	<30.0	NA	NA	NA
Silver	µg/L	100	<21	<15	NA	NA	<15	NA	NA	<15	NA	NA	<1	NA	NA	NA	<5.0	NA	NA	NA	NA	NA	<10.0	NA	NA	NA
Other Inorganics																											
Chloride	µg/L	NS	67,000	10,000	NA	<2,000	5,700	17,000	17,000	28,000	55,000	110,000	94,000	26,000	26,300	28,500	53,800	144,000	106,000	50,900	243,000	40,000	204,000	62,700	146,000	221,000
Nitrate	µg/L	10,000	89	100	NA	<50	640	990	160	1,200	<500	9,000	<500	<500	<100	<100	<100	<100	<100	<100	220	102	<100	<100	<100	<100
Sulfate	µg/L	500,000	NA	NA	NA	NA	NA	220,000	440,000	180,000	130,000	100,000	260,000	58,000	340,000	51,600	210,000	43,100	68,100	65,900	71,900	22,900	31,800	10,900	102,000	77,200
Total Kjeldahl Nitrogen (TKN)	µg/L	NS	NA	NA	NA	<250	<250	520	1,300	<250	<500	<500	<500	<500	700	<200	680	1,200	630	350	980	560	490	560	630	840
Field Parameters																											
Specific Conductivity	µmhos/cm	NS	450	170	NA	62	470	680	1,100	520	670	890	1,200	460	676	317	911	809	748	557	1,124	321.1	1,018	399	900	1,129
pH	S.U.	NS	7.3	6.9	NA	6.3	5.6	6.6	7.6	5.9	6.1	6.1	6.2	6.2	6.33	6.26	6.28	6.11	6.00	6.29	6.41	6.93	6.35	6.55	6.52	6.41
Volatile Organic Compounds by EPA Method 8260B																											
Acetone	µg/L	6,000	5	<5	<10	<25	<25	NA	NA	<25	NA	NA	<10	NA	NA	NA	<10.0	NA	NA	NA	NA	NA	<10.0	NA	NA	NA
Chloromethane	µg/L	30	<2.0	<2.0	<10	<10	<10	NA	NA	<10	NA	NA	<2	NA	NA	NA	<2.0	NA	NA	NA	NA	NA	<2.00	NA	NA	NA
Ethylbenzene	µg/L	700	<1	<1	<5	<5	<5	NA	NA	<5	NA	NA	<1	NA	NA	NA	<1.0	NA	NA	NA	NA	NA	<1.00	NA	NA	NA
p-Isopropyltoluene	µg/L	260	NA	NA	<5	<5	<5	NA	NA	<5	NA	NA	<1	NA	NA	NA	<1.0	NA	NA	NA	NA	NA	<1.00	NA	NA	NA
Methylene Chloride	µg/L	5	0.9 JB[2]	<1	<5	<5	<5	NA	NA	<5	NA	NA	<5	NA	NA	NA	<2.0	NA	NA	NA	NA	NA	<2.00	NA	NA	NA
Naphthalene	µg/L	20	NA	NA	<5	0.4 JB[4]	<5	NA	NA	<5	NA	NA	<1	NA	NA	NA	<1.0	NA	NA	NA	NA	NA	<1.00	NA	NA	NA
Toluene	µg/L	1,000	<1	<1	<5	<5	<5	NA	NA	<5	NA	NA	<1	NA	NA	NA	<1.0	NA	NA	NA	NA	NA	<1.00	NA	NA	NA
Total Xylenes	µg/L	10,000	<1	<1	<15	<15	<15	NA	NA	<15	NA	NA	<2	NA	NA	NA	<3.0	NA	NA	NA	NA	NA	<3.00	NA	NA	NA
1,4-Dioxane	µg/L	3	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<1	NA	NA	NA	<20.0	NA	NA	NA	NA	NA	<0.20	NA	NA	NA

Notes:
Data from February 19 and March 24, 2008 were collected by Exeter Environmental, Inc. of Exeter, New Hampshire. After this time, data was collected by Stantec Consulting Services.
[1] Only detected VOCs listed (except 1,4-dioxane) - all others below laboratory detection limits
[2] Methylene chloride was detected in the laboratory method blank at 4 µg/L
[3] Methylene chloride was detected in the laboratory method blank at 1 µg/L
[4] Naphthalene was detected in the laboratory method blank at 0.8 µg/L
µg/L = micrograms per liter (parts per billion)
µmhos/cm= micromhos per centimeter
S.U.= standard units
J = Estimated value below the laboratory reporting limit
B = Compound was also detected in the method blank
AGQS = Ambient Groundwater Quality Standards, Env-Or 603.03 (2/1/07)
NS = No standard
NA= Not analyzed
Bold = Concentration exceeds NHDES AGQS
Checked by: LJC 5/16/16

Table 2
Groundwater Quality Data Summary
Auburn Landfill
Chester Turnpike
Auburn, New Hampshire

Analyte/Method[1]	Units	NHDES AGQS	Sample ID																								
			MW-3																								
Date			03/19/00	07/06/00	09/15/03	04/29/04	04/18/06	08/07/06	12/27/06	04/30/07	07/14/08	11/06/08	04/07/09	11/19/09	04/21/10	12/15/10	04/20/11	11/03/11	04/17/12	11/06/12	04/16/13	11/13/13	04/07/14	11/05/14	04/15/15	04/19/16
Metals by EPA 6000/7000 Series Methods																											
Arsenic	µg/L	10	**3,770**	8	NA	NA	<8	**27.9**	**62**	**18.8**	NA	NA	**14**	NA	<4	<10	4.4	**17**	**13.8**	**13.0**	<16.0	**12.5**	**11.8**	**11.7**	NA	NA
Barium	µg/L	2,000	**2,240**	175	NA	NA	225	NA	NA	36.6	NA	NA	35	NA	NA	NA	45.6	NA	NA	NA	NA	NA	<55.0	NA	NA	NA
Cadmium	µg/L	5	<120	<10	NA	NA	<10	NA	NA	<10	NA	NA	<1	NA	NA	NA	<2.5	NA	NA	NA	NA	NA	<5.0	NA	NA	NA
Chromium	µg/L	100	**696**	<15	NA	NA	<15	NA	NA	<15	NA	NA	<1	NA	NA	NA	<5.0	NA	NA	NA	NA	NA	<10.0	NA	NA	NA
Iron	µg/L	NS	1,680,000	1,780	NA	6,840	3,250	9,280	12,200	5,590	5,700	6,100	6,100	5,000	4,990	3,090	4,290	5,520	4,840	3,700	3,970	3,530	3,180	2,810	2,050	2,810
Lead	µg/L	15	**388**	<5	NA	NA	<5	NA	NA	<5	NA	NA	<1	NA	NA	NA	<7.5	NA	NA	NA	NA	NA	<15.0	NA	NA	NA
Manganese	µg/L	840	**22,000**	**6,040**	NA	**4,750**	**3,500**	**4,520**	**4,010**	**4,360**	**6,200**	**4,500**	**4,200**	**4,100**	**4,410**	**3,650**	**3,260**	**4,490**	**4,490**	**3,440**	**3,160**	**2,940**	**2,600**	**2,240**	**2,430**	**3,400**
Mercury	µg/L	2	**600**	<200	NA	NA	<0.2	NA	NA	<0.2	NA	NA	<0.1	NA	NA	NA	<0.2	NA	NA	NA	NA	NA	<0.20	NA	NA	NA
Selenium	µg/L	50	<120	<10	NA	NA	<10	NA	NA	<10	NA	NA	<1	NA	NA	NA	<15.0	NA	NA	NA	NA	NA	<30.0	NA	NA	NA
Silver	µg/L	100	<90	<15	NA	NA	<15	NA	NA	<15	NA	NA	<1	NA	NA	NA	<5.0	NA	NA	NA	NA	NA	<10.0	NA	NA	NA
Other Inorganics																											
Chloride	µg/L	NS	39,000	38,000	NA	13,000	15,000	17,000	21,000	19,000	22,000	24,000	22,000	25,000	24,600	35,000	38,800	39,400	41,400	50,100	47,400	48,400	48,100	69,400	58,500	67,500
Nitrate	µg/L	10,000	<50	<50	NA	450	170	<50	<50	55	<500	<500	<500	<500	<100	<100	110	<100	<100	<100	<500	<500	<100	<1000	<100	<100
Sulfate	µg/L	500,000	NA	NA	NA	NA	NA	**620,000**	370,000	400,000	**580,000**	450,000	**530,000**	**510,000**	**602,000**	380,000	**516,000**	485,000	**512,000**	387,000	406,000	356,000	260,000	232,000	265,000	308,000
Total Kjeldahl Nitrogen (TKN)	µg/L	NS	NA	NA	NA	4,400	1,500	1,800	3,000	680	900	1,300	800	700	1,330	700	740	840	5,390	630	700	200	420	560	350	420
Field Parameters																											
Specific Conductivity	µmhos/cm	NS	1,100	1,700	NA	1,400	900	1,500	1,000	950	1,500	1,400	1,400	1,300	986	971	1,290	1,236	1,359	1,069	1,034	757	961	842	900	1,131
pH	S.U.	NS	6.75	6.8	NA	6.7	5.3	6.7	7.6	6.4	6.5	6.6	6.6	6.5	6.53	6.3	6.49	6.46	6.71	6.30	6.55	6.54	6.47	6.45	6.47	6.45
Volatile Organic Compounds by EPA Method 8260B																											
Acetone	µg/L	6,000	<5	<5	<10	<25	<25	NA	NA	<25	NA	NA	<10	NA	NA	NA	<10.0	NA	NA	NA	NA	NA	<10.0	NA	NA	NA
Chloromethane	µg/L	30	<2.0	<2.0	<10	<10	<10	NA	NA	<10	NA	NA	<2	NA	NA	NA	<2.0	NA	NA	NA	NA	NA	<2.00	NA	NA	NA
Ethylbenzene	µg/L	700	<1	<1	<5	<5	<5	NA	NA	<5	NA	NA	<1	NA	NA	NA	<1.0	NA	NA	NA	NA	NA	<1.00	NA	NA	NA
p-Isopropyltoluene	µg/L	260	NA	NA	<5	<5	<5	NA	NA	<5	NA	NA	<1	NA	NA	NA	<1.0	NA	NA	NA	NA	NA	<1.00	NA	NA	NA
Methylene Chloride	µg/L	5	<1	<1	<5	<5	<5	NA	NA	<5	NA	NA	<5	NA	NA	NA	<2.0	NA	NA	NA	NA	NA	<2.00	NA	NA	NA
Naphthalene	µg/L	20	NA	NA	<5	0.6 JB[4]	<5	NA	NA	<5	NA	NA	<5	NA	NA	NA	<1.0	NA	NA	NA	NA	NA	<1.00	NA	NA	NA
Toluene	µg/L	1,000	<1	<1	<5	<5	<5	NA	NA	<5	NA	NA	<1	NA	NA	NA	<1.0	NA	NA	NA	NA	NA	<1.00	NA	NA	NA
Total Xylenes	µg/L	10,000	<1	<1	<15	<15	<15	NA	NA	<15	NA	NA	<2	NA	NA	NA	<3.0	NA	NA	NA	NA	NA	<3.00	NA	NA	NA
1,4-Dioxane	µg/L	3	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<1	NA	NA	NA	<20.0	NA	NA	NA	NA	NA	<0.20	NA	NA	NA

Notes:
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Bold = Concentration exceeds NHDES AGQS
Checked by: LJC 5/16/16

Table 2
Groundwater Quality Data Summary
Auburn Landfill
Chester Turnpike
Auburn, New Hampshire

Analyte/Method[1]	Units	NHDES AGQS	Sample ID																								
			MW-4																								
Date			03/19/00	07/06/00	09/15/03	04/29/04	04/18/06	08/07/06	12/27/06	04/30/07	07/14/08	11/06/08	04/07/09	11/19/09	04/21/10	12/15/10	04/20/11	11/03/11	04/17/12	11/06/12	04/16/13	11/13/13	04/07/14	11/05/14	04/15/15	04/19/16
Metals by EPA 6000/7000 Series Methods																											
Arsenic	µg/L	10	**857**	<8	NA	NA	<8	<8	<8	<8	NA	NA	<1	NA	NA	<10	<4.0	NA	NA	NA	NA	NA	<8.0	NA	NA	NA
Barium	µg/L	2,000	837	398	NA	NA	238	NA	NA	25.2	NA	NA	29	NA	NA	NA	28.4	NA	NA	NA	NA	NA	<55.0	NA	NA	NA
Cadmium	µg/L	5	<10	<10	NA	NA	<10	NA	NA	<10	NA	NA	<1	NA	NA	NA	<2.5	NA	NA	NA	NA	NA	<5.0	NA	NA	NA
Chromium	µg/L	100	**132**	<15	NA	NA	<15	NA	NA	<15	NA	NA	<1	NA	NA	NA	<5.0	NA	NA	NA	NA	NA	<10.0	NA	NA	NA
Iron	µg/L	NS	212,000	241,000	NA	<100	<100	241	363	498	120	400	<50	150	119	<30	39,900	132	91.6	<30.0	<80.0	<30	<70.0	33.2	<30	<30
Lead	µg/L	15	**137**	<5	NA	NA	<5	NA	NA	<5	NA	NA	<1	NA	NA	NA	<7.5	NA	NA	NA	NA	NA	<15.0	NA	NA	NA
Manganese	µg/L	840	**4,530**	177	NA	**935**	119	104	165	457	38	63	290	46	260	65.6	247	163	28.9	24.9	226	22.2	76.0	16.4	24.3	192
Mercury	µg/L	2	**210**	<200	NA	NA	<0.2	NA	NA	<0.2	NA	NA	<0.1	NA	NA	NA	<0.2	NA	NA	NA	NA	NA	<0.20	NA	NA	NA
Selenium	µg/L	50	<10	<10	NA	NA	<10	NA	NA	<10	NA	NA	<1	NA	NA	NA	<15.0	NA	NA	NA	NA	NA	<30.0	NA	NA	NA
Silver	µg/L	100	<15	<15	NA	NA	<15	NA	NA	<15	NA	NA	<1	NA	NA	NA	<5.0	NA	NA	NA	NA	NA	<10.0	NA	NA	NA
Other Inorganics																											
Chloride	µg/L	NS	10,000	24,000	NA	14,000	17,000	14,000	18,000	8,000	16,000	13,000	12,000	12,000	13,500	9,870	14,200	12,400	20,200	20,000	22,600	26,000	14,800	55,200	36,100	30,700
Nitrate	µg/L	10,000	<50	540	NA	<50	190	740	300	50	1,800	1,100	<500	700	<100	740	100	190	1,500	280	<500	1,340	159	<1000	129	278
Sulfate	µg/L	500,000	NA	NA	NA	NA	NA	300,000	330,000	67,000	420,000	330,000	140,000	310,000	233,000	240,000	74,000	158,000	404,000	267,000	157,000	325,000	48,600	217,000	78,400	129,000
Total Kjeldahl Nitrogen (TKN)	µg/L	NS	NA	NA	NA	<250	270	310	650	3,100	500	<500	<500	<500	560	420	570	560	2,170	<200	280	350	280	490	350	490
Field Parameters																											
Specific Conductivity	µmhos/cm	NS	500	1,300	NA	820	770	1,000	1,000	350	1,200	1,300	760	1,100	615	806	637	601	1,107	824	546	658	426	804	500	705
pH	S.U.	NS	6.45	6.25	NA	6.3	5.5	6.5	7.5	6.7	6.1	6.4	6.5	6.3	6.47	6.21	6.36	6.28	6.17	6.15	6.34	6.34	6.43	6.31	6.52	6.58
Volatile Organic Compounds by EPA Method 8260B																											
Acetone	µg/L	6,000	<5	<5	<10	<25	<25	NA	NA	4 J	NA	NA	<10	NA	NA	NA	<10.0	NA	NA	NA	NA	NA	<10.0	NA	NA	NA
Chloromethane	µg/L	30	<2.0	<2.0	<10	<10	<10	NA	NA	<10	NA	NA	<2	NA	NA	NA	<2.0	NA	NA	NA	NA	NA	<2.00	NA	NA	NA
Ethylbenzene	µg/L	700	<1	<1	<5	<5	<5	NA	NA	<5	NA	NA	<1	NA	NA	NA	<1.0	NA	NA	NA	NA	NA	<1.00	NA	NA	NA
p-Isopropyltoluene	µg/L	260	NA	NA	<5	<5	<5	NA	NA	<5	NA	NA	<1	NA	NA	NA	<1.0	NA	NA	NA	NA	NA	<1.00	NA	NA	NA
Methylene Chloride	µg/L	5	<1	0.5 JB[3]	<5	<5	<5	NA	NA	<5	NA	NA	<5	NA	NA	NA	<2.0	NA	NA	NA	NA	NA	<2.00	NA	NA	NA
Naphthalene	µg/L	20	NA	NA	<5	0.4 JB[4]	<5	NA	NA	<5	NA	NA	<5	NA	NA	NA	<1.0	NA	NA	NA	NA	NA	<1.00	NA	NA	NA
Toluene	µg/L	1,000	<1	<1	<5	<5	<5	NA	NA	<5	NA	NA	<1	NA	NA	NA	<1.0	NA	NA	NA	NA	NA	<1.00	NA	NA	NA
Total Xylenes	µg/L	10,000	<1	<1	<15	<15	<15	NA	NA	<15	NA	NA	<2	NA	NA	NA	<3.0	NA	NA	NA	NA	NA	<3.00	NA	NA	NA
1,4-Dioxane	µg/L	3	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<1	NA	NA	NA	<20.0	NA	NA	NA	NA	NA	<0.20	NA	NA	NA

Notes:
Data from February 19 and March 24, 2008 were collected by Exeter Environmental, Inc. of Exeter, New Hampshire. After this time, data was collected by Stantec Consulting Services.
[1] Only detected VOCs listed (except 1,4-dioxane) - all others below laboratory detection limits
[2] Methylene chloride was detected in the laboratory method blank at 4 µg/L
[3] Methylene chloride was detected in the laboratory method blank at 1 µg/L
[4] Naphthalene was detected in the laboratory method blank at 0.8 µg/L
µg/L = micrograms per liter (parts per billion)
µmhos/cm= micromhos per centimeter
S.U.= standard units
J = Estimated value below the laboratory reporting limit
B = Compound was also detected in the method blank
AGQS = Ambient Groundwater Quality Standards, Env-Or 603.03 (2/1/07)
NS = No standard
NA= Not analyzed
Bold = Concentration exceeds NHDES AGQS
Checked by: LJC 5/16/16

Table 3
Surface Water Quality Data Summary
Auburn Landfill
Chester Turnpike
Auburn, New Hampshire

Analyte/Method[1]	Units	Fresh Acute WQC	Fresh Chronic WQC	Sample ID																							
				SW-1																							
Date				03/19/00	07/06/00	09/15/03	04/29/04	04/18/06	08/07/06	12/27/06	04/30/07	07/14/08	11/06/08	04/07/09	11/19/09	04/21/10	12/15/10	04/20/11	11/03/11	04/17/12	11/06/12	04/16/13	11/13/13	04/07/14	11/05/14	04/15/15	04/19/16
Metals by EPA 6000/7000 Series Methods																											
Arsenic	µg/L	340	150	<8	<8	NA	NA	<8	<8	<8	<8	NA	NA	<1	NA	NA	<4	<4.0	NA	NA	NA	NA	NA	<8.0	NA	NA	NA
Barium	µg/L	NS	NS	18.4	34.6	NA	NA	20.2	NA	NA	15.4	NA	NA	16	NA	NA	NA	24.8	NA	NA	NA	NA	NA	20.7	NA	NA	NA
Cadmium	µg/L	0.95	0.8	<10	<10	NA	NA	<10	NA	NA	<10	NA	NA	<10	NA	NA	NA	<2.5	NA	NA	NA	NA	NA	<5.0	NA	NA	NA
Chromium	µg/L	183	24	<15	<15	NA	NA	<15	NA	NA	<15	NA	NA	<1	NA	NA	NA	<5.0	NA	NA	NA	NA	NA	<10.0	NA	NA	NA
Iron	µg/L	NS	1,000	87	**1,100**	NA	<100	<100	<100	110	76	<50	70	80	70	90.2	89.5	132	104	80.0	91.8	74.7	<400	101	<490	62.3	53.5
Lead	µg/L	14	0.54	<5	<5	NA	NA	<5	NA	NA	<5	NA	NA	<1	NA	NA	NA	<7.5	NA	NA	NA	NA	NA	<15.0	NA	NA	NA
Manganese	µg/L	NS	NS	8.6	251	NA	8	7	17	19	14	15	9	11	12	8.4	18	11.8	14	12.7	16.2	7.8	5.9	20.1	4.3	7.6	10.3
Mercury	µg/L	1.4	0.77	<200	<200	NA	NA	<0.2	NA	NA	<0.2	NA	NA	<0.1	NA	NA	NA	<0.2	NA	NA	NA	NA	NA	<0.20	NA	NA	NA
Selenium	µg/L	NS	5	<10	<10	NA	NA	<10	NA	NA	<10	NA	NA	<1	NA	NA	NA	<15.0	NA	NA	NA	NA	NA	<30.0	NA	NA	NA
Silver	µg/L	0.32	NS	<15	<15	NA	NA	<15	NA	NA	<15	NA	NA	<1	NA	NA	NA	<5.0	NA	NA	NA	NA	NA	<10.0	NA	NA	NA
Other Inorganics																											
Chloride	µg/L	860,000	230,000	23,000	25,000	NA	28,000	33,000	33,000	25,000	28,000	75,000	52,000	31,000	53,000	40,100	54,100	54,000	55,600	71,400	76,500	65,400	110,000	67,200	136,000	78,000	92,700
Nitrate	µg/L	NS	NS	130	300	NA	160	380	330	260	220	700	<500	<500	<500	260	330	260	240	630	370	260	840	453	570	276	326
Sulfate	µg/L	NS	NS	NA	NA	NA	NA	NA	4,300	6,800	7,200	8,000	7,000	7,000	9,000	7,810	18,800	8,830	7,820	10,200	15,200	10,800	13,200	6,060	11,300	6,840	7,020
Total Kjeldahl Nitrogen (TKN)	µg/L	NS	NS	NA	NA	NA	250	<250	<250	340	<250	<500	<500	<500	<500	280	700	300	330	280	350	210	350	<200	420	210	490
Field Parameters																											
Specific Conductivity	µmhos/cm	NS	NS	100	150	NA	140	140	200	120	130	310	230	140	240	118.4	230	363	258	289	315	254	293.9	364	526	300	361.5
pH	S.U.	NS	NS	7.1	6.95	NA	6.4	5.7	7.1	7.5	6.9	6.8	6.8	6.7	6.8	7.64	4.47	7.73	5.60	4.56	7.05	6.81	7.86	6.93	7.40	7.07	7.47
Volatile Organic Compounds by EPA Method 8260B																											
Acetone	µg/L	NS	NS	<5	<5	<10	<25	<25	NA	NA	<25	NA	NA	<10	NA	NA	NA	<10.0	NA	NA	NA	NA	NA	<10.0	NA	NA	NA
Chloromethane	µg/L	NS	NS	<2.0	<2.0	<10	<10	<10	NA	NA	<10	NA	NA	<2	NA	NA	NA	<2.0	NA	NA	NA	NA	NA	<2.00	NA	NA	NA
Ethylbenzene	µg/L	32,000	NS	<1	<1	<5	<5	<5	NA	NA	<5	NA	NA	<1	NA	NA	NA	<1.0	NA	NA	NA	NA	NA	<1.00	NA	NA	NA
p-Isopropyltoluene	µg/L	NS	NS	NA	NA	<5	<5	<5	NA	NA	<5	NA	NA	<1	NA	NA	NA	<1.0	NA	NA	NA	NA	NA	<1.00	NA	NA	NA
Methylene Chloride	µg/L	11,000	NS	<1	<1	<5	<5	<5	NA	NA	<5	NA	NA	<5	NA	NA	NA	<2.0	NA	NA	NA	NA	NA	<2.00	NA	NA	NA
Naphthalene	µg/L	2,300	620	NA	NA	<5	0.4 JB[2]	<5	NA	NA	<5	NA	NA	<5	NA	NA	NA	<1.0	NA	NA	NA	NA	NA	<1.00	NA	NA	NA
Toluene	µg/L	NS	NS	<1	<1	<5	<5	<5	NA	NA	<5	NA	NA	<1	NA	NA	NA	<1.0	NA	NA	NA	NA	NA	<1.00	NA	NA	NA
Total Xylenes	µg/L	NS	NS	<1	<1	<15	<15	<15	NA	NA	<15	NA	NA	<2	NA	NA	NA	<3.0	NA	NA	NA	NA	NA	<3.00	NA	NA	NA
1,4-Dioxane	µg/L	NS	NS	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<1	NA	NA	NA	<20.0	NA	NA	NA	NA	NA	<0.20	NA	NA	NA

Notes:
Data from February 19 and March 24, 2008 was collected by Exeter Environmental, Inc. of Exeter, New Hampshire. After this time, data was collected by Stantec Consulting Services.
[1] Only detected VOCs are listed (except 1,4-dioxane) - all others below laboratory detection limits
[2] Naphthalene was detected in the laboratory method blank at 0.8 µg/L
µg/L = micrograms per liter (parts per billion)
µmhos/cm= micromhos per centimeter
S.U.= standard units
J = Estimated value below the laboratory reporting limit
B = Compound was also detected in the method blank
WQC = Water Quality Criteria for Toxic Substances from Env-Wq 1700 (Table 1703.1)
NS = No standard
NA= Not analyzed
Bold = Concentration exceeds NHDES WQC
Checked by: LJC 5/16/16

Table 3
Surface Water Quality Data Summary
Auburn Landfill
Chester Turnpike
Auburn, New Hampshire

Analyte/Method[1]	Units	Fresh Acute WQC	Fresh Chronic WQC	Sample ID																							
				SW-2																							
Date				03/19/00	07/06/00	09/15/03	04/29/04	04/18/06	08/07/06	12/27/06	04/30/07	07/14/08	11/06/08	04/07/09	11/19/09	04/21/10	12/15/10	04/20/11	11/03/11	04/17/12	11/06/12	04/16/13	11/13/13	04/07/14	11/05/14	04/15/15	04/19/16
Metals by EPA 6000/7000 Series Methods																											
Arsenic	µg/L	340	150	<8	DRY	Not Sampled	DRY	DRY	<8	<8	<8	DRY	DRY	<1	Not Sampled	NA	DRY	<4.0	NA	DRY	DRY	NA	DRY	<8.0	DRY	NA	DRY
Barium	µg/L	NS	NS	49.9	DRY	Not Sampled	DRY	DRY	NA	NA	71.2	DRY	DRY	52	Not Sampled	NA	DRY	50.2	NA	DRY	DRY	NA	DRY	53.4	DRY	NA	DRY
Cadmium	µg/L	0.95	0.8	<10	DRY	Not Sampled	DRY	DRY	NA	NA	<10	DRY	DRY	<1	Not Sampled	NA	DRY	<2.5	NA	DRY	DRY	NA	DRY	<5.0	DRY	NA	DRY
Chromium	µg/L	183	24	<15	DRY	Not Sampled	DRY	DRY	NA	NA	<15	DRY	DRY	<1	Not Sampled	NA	DRY	<5.0	NA	DRY	DRY	NA	DRY	<10.0	DRY	NA	DRY
Iron	µg/L	NS	1,000	<25	DRY	Not Sampled	DRY	DRY	**1,530**	<100	**6,380**	DRY	DRY	<50	Not Sampled	36	DRY	30.8	13	DRY	DRY	114	DRY	<30.0	DRY	<30	DRY
Lead	µg/L	14	0.54	<5	DRY	Not Sampled	DRY	DRY	NA	NA	**13.6**	DRY	DRY	<1	Not Sampled	NA	DRY	<7.5	NA	DRY	DRY	NA	DRY	<15.0	DRY	NA	DRY
Manganese	µg/L	NS	NS	13.2	DRY	Not Sampled	DRY	DRY	6,440	358	4,380	DRY	DRY	7	Not Sampled	6.6	DRY	7.0	64	DRY	DRY	28.2	DRY	<4.0	DRY	24.6	DRY
Mercury	µg/L	1.4	0.77	<200	DRY	Not Sampled	DRY	DRY	NA	NA	<0.2	DRY	DRY	<0.1	Not Sampled	NA	DRY	<0.2	NA	DRY	DRY	NA	DRY	<0.20	DRY	NA	DRY
Selenium	µg/L	NS	5	<10	DRY	Not Sampled	DRY	DRY	NA	NA	<10	DRY	DRY	<1	Not Sampled	NA	DRY	<15.0	NA	DRY	DRY	NA	DRY	<30.0	DRY	NA	DRY
Silver	µg/L	0.32	NS	<15	DRY	Not Sampled	DRY	DRY	NA	NA	<15	DRY	DRY	<1	Not Sampled	NA	DRY	<5.0	NA	DRY	DRY	NA	DRY	<10.0	DRY	NA	DRY
Other Inorganics																											
Chloride	µg/L	860,000	230,000	24,000	DRY	Not Sampled	DRY	DRY	14,000	57,000	26,000	DRY	DRY	52,000	Not Sampled	32,200	DRY	130,000	78,400	DRY	DRY	193,000	DRY	5,010	DRY	166,000	DRY
Nitrate	µg/L	NS	NS	3,600	DRY	Not Sampled	DRY	DRY	590	1,200	170	DRY	DRY	600	Not Sampled	500	DRY	470	680	DRY	DRY	<500	DRY	<100	DRY	307	DRY
Sulfate	µg/L	NS	NS	NA	DRY	Not Sampled	DRY	DRY	500,000	300,000	410,000	DRY	DRY	340,000	Not Sampled	406,000	DRY	310,000	362,000	DRY	DRY	257,000	DRY	4,920	DRY	181,000	DRY
Total Kjeldahl Nitrogen (TKN)	µg/L	NS	NS	NA	DRY	Not Sampled	DRY	DRY	250	420	<250	DRY	DRY	<500	Not Sampled	280	DRY	270	320	DRY	DRY	350	DRY	210	DRY	700	DRY
Field Parameters																											
Specific Conductivity	µmhos/cm	NS	NS	810	DRY	Not Sampled	DRY	DRY	1,200	820	1,000	DRY	DRY	1,100	Not Sampled	796	DRY	1,300	1,081	DRY	DRY	1,200	DRY	1,304	DRY	1,100	DRY
pH	S.U.	NS	NS	6.85	DRY	Not Sampled	DRY	DRY	6.5	7.1	6.6	DRY	DRY	7.2	Not Sampled	6.7	DRY	6.74	6.60	DRY	DRY	6.56	DRY	6.62	DRY	6.75	DRY
Volatile Organic Compounds by EPA Method 8260B																											
Acetone	µg/L	NS	NS	3 J	DRY	Not Sampled	DRY	DRY	NA	NA	<25	DRY	DRY	<10	Not Sampled	NA	DRY	<10.0	NA	DRY	DRY	NA	DRY	<10.0	DRY	NA	DRY
Chloromethane	µg/L	NS	NS	<2.0	DRY	Not Sampled	DRY	DRY	NA	NA	<10	DRY	DRY	<2	Not Sampled	NA	DRY	<2.0	NA	DRY	DRY	NA	DRY	<2.00	DRY	NA	DRY
Ethylbenzene	µg/L	32,000	NS	<1	DRY	Not Sampled	DRY	DRY	NA	NA	<5	DRY	DRY	<1	Not Sampled	NA	DRY	<1.0	NA	DRY	DRY	NA	DRY	<1.00	DRY	NA	DRY
p-Isopropyltoluene	µg/L	NS	NS	NA	DRY	Not Sampled	DRY	DRY	NA	NA	<5	DRY	DRY	<1	Not Sampled	NA	DRY	<1.0	NA	DRY	DRY	NA	DRY	<1.00	DRY	NA	DRY
Methylene Chloride	µg/L	11,000	NS	<1	DRY	Not Sampled	DRY	DRY	NA	NA	<5	DRY	DRY	<5	Not Sampled	NA	DRY	<2.0	NA	DRY	DRY	NA	DRY	<2.00	DRY	NA	DRY
Naphthalene	µg/L	2,300	620	NA	DRY	Not Sampled	DRY	DRY	NA	NA	<5	DRY	DRY	<5	Not Sampled	NA	DRY	<1.0	NA	DRY	DRY	NA	DRY	<1.00	DRY	NA	DRY
Toluene	µg/L	NS	NS	<1	DRY	Not Sampled	DRY	DRY	NA	NA	<5	DRY	DRY	<1	Not Sampled	NA	DRY	<1.0	NA	DRY	DRY	NA	DRY	<1.00	DRY	NA	DRY
Total Xylenes	µg/L	NS	NS	<1	DRY	Not Sampled	DRY	DRY	NA	NA	<15	DRY	DRY	<2	Not Sampled	NA	DRY	<3.0	NA	DRY	DRY	NA	DRY	<3.00	DRY	NA	DRY
1,4-Dioxane	µg/L	NS	NS	NA	DRY	Not Sampled	DRY	DRY	NA	NA	NA	DRY	DRY	<1	Not Sampled	NA	DRY	<20.0	NA	DRY	DRY	NA	DRY	<0.20	DRY	NA	DRY

Notes:
Data from February 19 and March 24, 2008 was collected by Exeter Environmental, Inc. of Exeter, New Hampshire. After this time, data was collected by Stantec Consulting Services.
[1] Only detected VOCs are listed (except 1,4-dioxane) - all others below laboratory detection limits
[2] Naphthalene was detected in the laboratory method blank at 0.8 µg/L
µg/L = micrograms per liter (parts per billion)
µmhos/cm= micromhos per centimeter
S.U.= standard units
J = Estimated value below the laboratory reporting limit
B = Compound was also detected in the method blank
WQC = Water Quality Criteria for Toxic Substances from Env-Wq 1700 (Table 1703.1)
NS = No standard
NA= Not analyzed
Bold = Concentration exceeds NHDES WQC
Checked by: LJC 5/16/16

MAP SOURCE:

WWW.TRAILS.COM

USGS CANDIA [NH] QUAD
43.015°N, 71.32°W (NAD83/WGS84)

NORTH

2000 0 2000

Scale in feet

Stantec Consulting Services Inc.

Stantec

STANTEC LOCATION: AUBURN, NEW HAMPSHIRE				
DATE PREPARED: 10–20–10	DESIGNED BY: DAA	DRAWN BY: JJW	CHECKED BY: DAA	REVIEWED BY: DAA
REVISION DATE:	REVISION NO:	DRAWN BY:	CHECKED BY:	REVIEWED BY:
PROJECT NAME/FILE NAME: AUBURN LF		PROJECT NUMBER/PHASE: 191710504	SCALE: 1:24000	

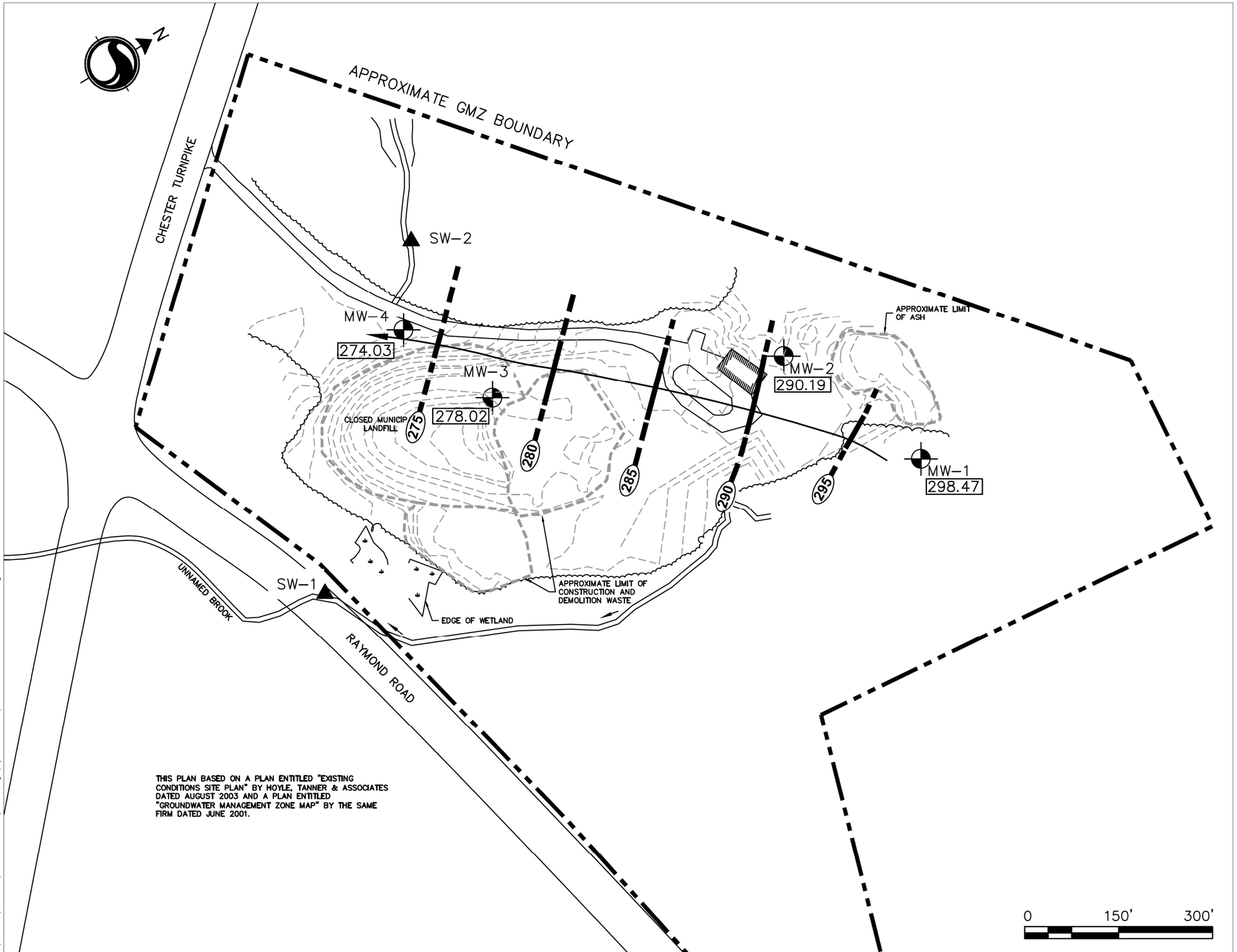
DRAWING TITLE:

SITE LOCATION PLAN

AUBURN LANDFILL
CHESTER TURNPIKE AUBURN NH

PREPARED FOR: TOWN OF AUBURN

FIGURE NO. 1



THIS PLAN BASED ON A PLAN ENTITLED "EXISTING CONDITIONS SITE PLAN" BY HOYLE, TANNER & ASSOCIATES DATED AUGUST 2003 AND A PLAN ENTITLED "GROUNDWATER MANAGEMENT ZONE MAP" BY THE SAME FIRM DATED JUNE 2001.

V:\1917\active\191710504\Drawing\April 2016\AUBURN LF 6-22-16.dwg

Stantec

Stantec Consulting Services Inc.
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Auburn NH 03032 U.S.A.
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www.stantec.com

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Consultants

Legend

- MW-1 Monitoring well location
- SW-2 Surface Water Sample location
- 298.47 Groundwater measurements collected April 19, 2016
- 275 Groundwater Contour
- Inferred Direction of Ground Water Flow
- Woods

Notes

Revision	By	Appd.	YY.MM.DD

Issued	By	Appd.	YY.MM.DD
File Name: AUBURN LF 6-22-16.dwg	DJP Dwn.	Chkd.	Dsgn.	JUN, 2016 YY.MM.DD

Permit-Seal

Client/Project
TOWN OF AUBURN, NH

LANDFILL CLOSURE MONITORING

AUBURN, NEW HAMPSHIRE

Title
SITE PLAN

Project No.	Scale	
191710504	1"=150'	
Drawing No.	Sheet	Revision
2	1 of 1	0

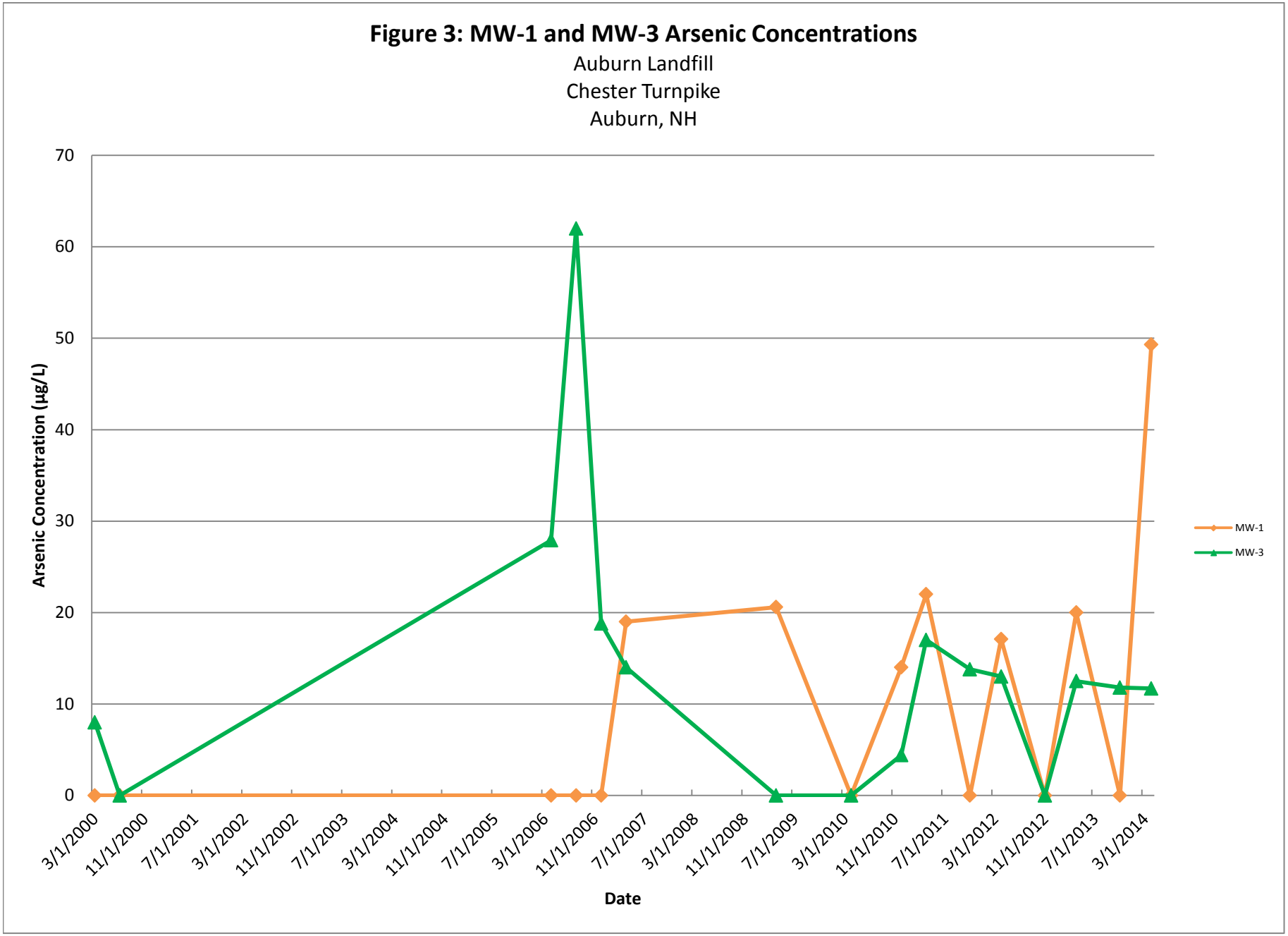
Figure 3: MW-1 and MW-3 Arsenic Concentrations
Auburn Landfill
Chester Turnpike
Auburn, NH
Arsenic Concentration (µg/L)
70
60
50
40
30
20
10
0
3/1/2000
11/1/2000
7/1/2001
3/1/2002
11/1/2002
7/1/2003
3/1/2004
11/1/2004
7/1/2005
3/1/2006
11/1/2006
7/1/2007
3/1/2008
11/1/2008
7/1/2009
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7/1/2013
3/1/2014
Date
MW-1
MW-3

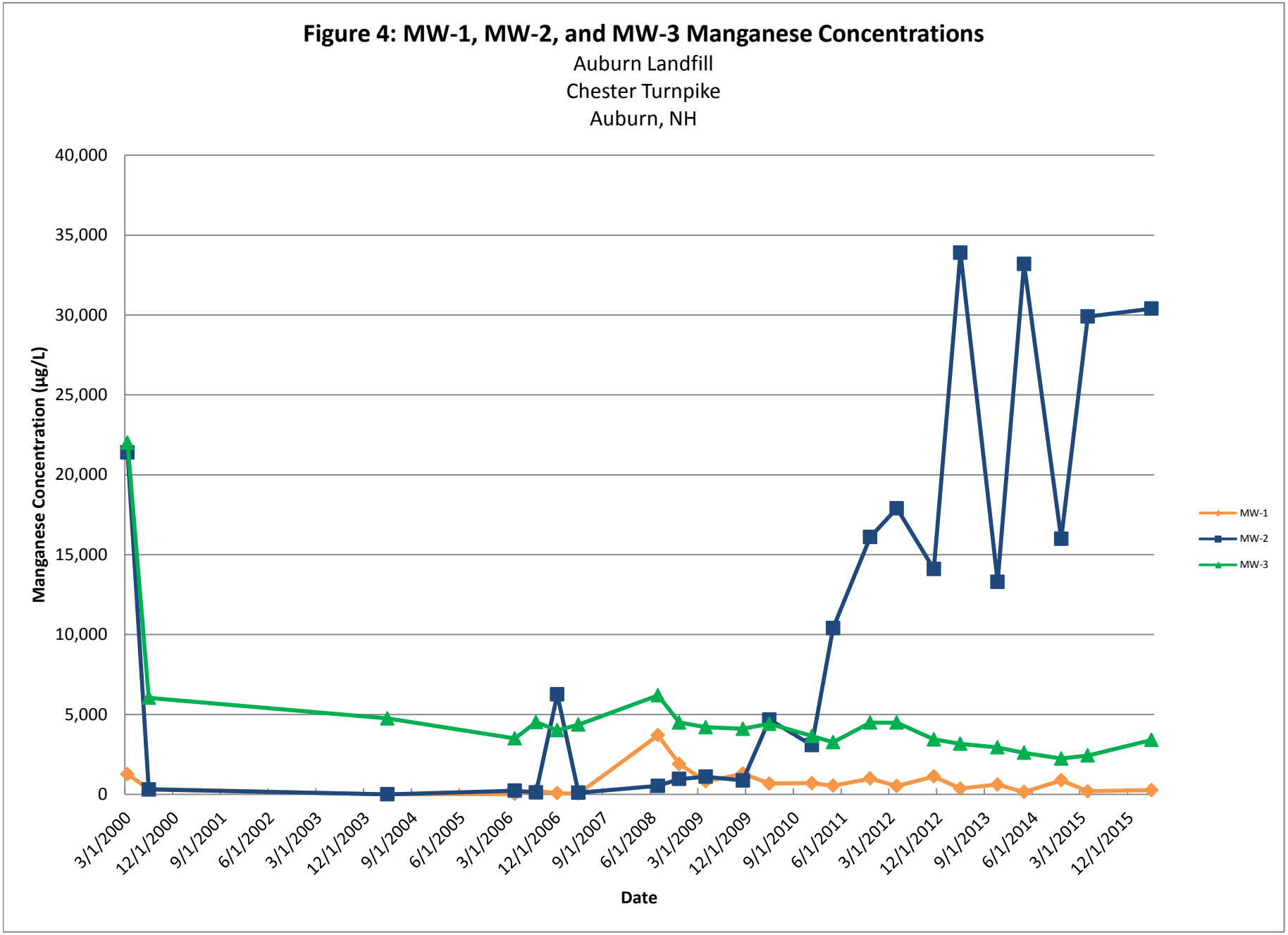
Figure 4: MW-1, MW-2, and MW-3 Manganese Concentrations
Auburn Landfill
Chester Turnpike
Auburn, NH
Manganese Concentration (µg/L)
40,000
35,000
30,000
25,000
20,000
15,000
10,000
5,000
0
3/1/2000
12/1/2000
9/1/2001
6/1/2002
3/1/2003
12/1/2003
9/1/2004
6/1/2005
3/1/2006
12/1/2006
9/1/2007
6/1/2008
3/1/2009
12/1/2009
9/1/2010
6/1/2011
3/1/2012
12/1/2012
9/1/2013
6/1/2014
3/1/2015
12/1/2015
Date
MW-1
MW-2
MW-3

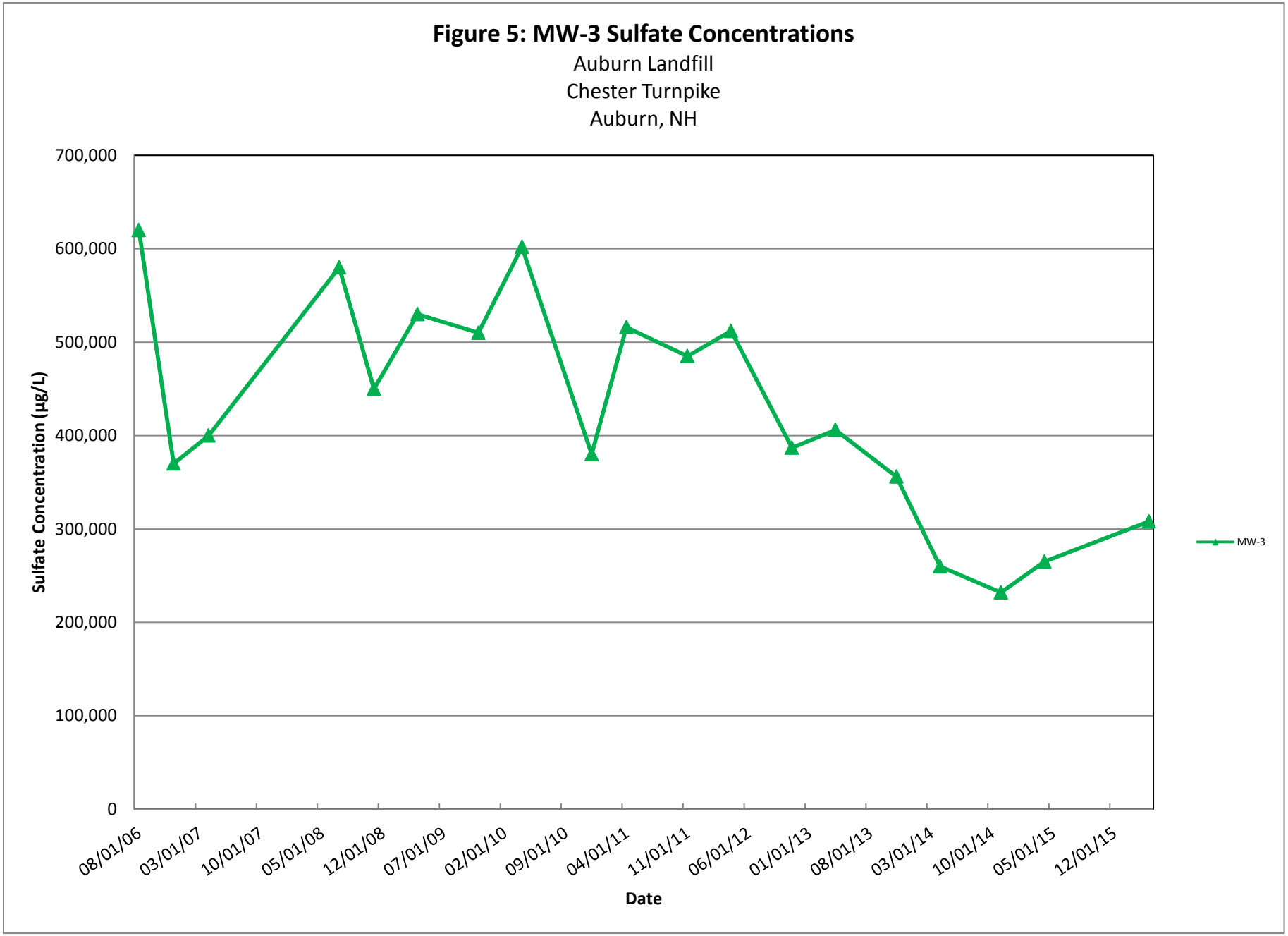
Figure 5: MW-3 Sulfate Concentrations
Auburn Landfill
Chester Turnpike
Auburn, NH
Sulfate Concentration (µg/L)
700,000
600,000
500,000
400,000
300,000
200,000
100,000
0
08/01/06
03/01/07
10/01/07
05/01/08
12/01/08
07/01/09
02/01/10
09/01/10
04/01/11
11/01/11
06/01/12
01/01/13
08/01/13
03/01/14
10/01/14
05/01/15
12/01/15
Date
MW-3

eurofins | Spectrum Analytical

☑ Final Report
☐ Re-Issued Report
☐ Revised Report

Report Date:
03-May-16 11:12

Laboratory Report

Stantec Consulting Services
5 Dartmouth Drive, Suite 101
Auburn, NH 03032
Attn: Dave Allwine

Project: Auburn Landfill - Auburn, NH
Project #: 191710504

Laboratory ID	Client Sample ID	Matrix	Date Sampled	Date Received
SC20386-01	MW-1	Ground Water	19-Apr-16 13:15	20-Apr-16 16:11
SC20386-02	MW-2	Ground Water	19-Apr-16 14:05	20-Apr-16 16:11
SC20386-03	MW-3	Ground Water	19-Apr-16 15:00	20-Apr-16 16:11
SC20386-04	MW-4	Ground Water	19-Apr-16 15:40	20-Apr-16 16:11
SC20386-05	SW-1	Surface Water	19-Apr-16 16:00	20-Apr-16 16:11

I attest that the information contained within the report has been reviewed for accuracy and checked against the quality control requirements for each method. These results relate only to the sample(s) as received.
All applicable NELAC requirements have been met.

Massachusetts # M-MA138/MA1110
Connecticut # PH-0777
Florida # E87936
Maine # MA138
New Hampshire # 2538
New Jersey # MA011
New York # 11393
Pennsylvania # 68-04426/68-02924
Rhode Island # LAO00098
USDA # S-51435

Authorized by:

June O'Connor
Laboratory Director

Eurofins Spectrum Analytical holds certification in the State of New York for the analytes as indicated with an X in the "Cert." column within this report. Please note that the State of New York does not offer certification for all analytes. Please refer to our website for specific certification holdings in each state.
Please note that this report contains 12 pages of analytical data plus Chain of Custody document(s). When the Laboratory Report is indicated as revised, this report supersedes any previously dated reports for the laboratory ID(s) referenced above. Where this report identifies subcontracted analyses, copies of the subcontractor's test report are available upon request. This report may not be reproduced, except in full, without written approval from Eurofins Spectrum Analytical, Inc.

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Please contact the Laboratory or Technical Director at 800-789-9115 with any questions regarding the data contained in this laboratory report.

CASE NARRATIVE:

Data has been reported to the RDL. This report excludes estimated concentrations detected below the RDL and above the MDL (J-Flag).

All non-detects and all results below the reporting limit are reported as "<" (less than) the reporting limit in this report.

The samples were received 1.5 degrees Celsius, please refer to the Chain of Custody for details specific to temperature upon receipt. An infrared thermometer with a tolerance of +/- 1.0 degrees Celsius was used immediately upon receipt of the samples.

If a Matrix Spike (MS), Matrix Spike Duplicate (MSD) or Duplicate (DUP) was not requested on the Chain of Custody, method criteria may have been fulfilled with a source sample not of this Sample Delivery Group.

See below for any non-conformances and issues relating to quality control samples and/or sample analysis/matrix.

EPA 200.7

Spikes:

1607023-MS1 *Source: SC20386-01*

The spike recovery was outside acceptance limits for the MS and/or MSD. The batch was accepted based on acceptable LCS recovery.

Iron

Duplicates:

1606995-DUP1 *Source: SC20386-05*

Analyses are not controlled on RPD values from sample concentrations that are less than 5 times the reporting level. The batch is accepted based upon the difference between the sample and duplicate is less than or equal to the reporting limit.

Iron

Samples:

SC20386-02 *MW-2*

Sample dilution required for high concentration of target analytes to be within the instrument calibration range.

Manganese

EPA 300.0

Spikes:

1606648-MS1 *Source: SC20386-05*

The spike recovery was outside acceptance limits for the MS and/or MSD. The batch was accepted based on acceptable LCS recovery.

Chloride

1606648-MSD1 *Source: SC20386-05*

The spike recovery was outside acceptance limits for the MS and/or MSD. The batch was accepted based on acceptable LCS recovery.

Sulfate as SO4

Duplicates:

1606648-DUP1 *Source: SC20386-05*

Sample dilution required for high concentration of target analytes to be within the instrument calibration range.

Chloride

EPA 300.0

Samples:

SC20386-02 *MW-2*

Sample dilution required for high concentration of target analytes to be within the instrument calibration range.

Chloride
Sulfate as SO4

SC20386-03 *MW-3*

Sample dilution required for high concentration of target analytes to be within the instrument calibration range.

Chloride
Sulfate as SO4

SC20386-04 *MW-4*

Sample dilution required for high concentration of target analytes to be within the instrument calibration range.

Sulfate as SO4

SC20386-05 *SW-1*

Sample dilution required for high concentration of target analytes to be within the instrument calibration range.

Chloride

SM4500-NH3 C.

Laboratory Control Samples:

1606675 SRM

Total Kjeldahl Nitrogen percent recovery 72 (74-124) is outside individual acceptance criteria, but within overall method allowances. All reported results of the following samples are considered to have a potentially low bias:

MW-1
MW-2
MW-3
MW-4
SW-1

Sample Acceptance Check Form

Client:	Stantec Consulting Services - Auburn, NH
Project:	Auburn Landfill - Auburn, NH / 191710504
Work Order:	SC20386
Sample(s) received on:	4/20/2016

The following outlines the condition of samples for the attached Chain of Custody upon receipt.

	Yes	No	N/A
Were custody seals present?	☐	☑	☐
Were custody seals intact?	☐	☐	☑
Were samples received at a temperature of ≤ 6°C?	☑	☐	☐
Were samples cooled on ice upon transfer to laboratory representative?	☑	☐	☐
Were sample containers received intact?	☑	☐	☐
Were samples properly labeled (labels affixed to sample containers and include sample ID, site location, and/or project number and the collection date)?	☑	☐	☐
Were samples accompanied by a Chain of Custody document?	☑	☐	☐
Does Chain of Custody document include proper, full, and complete documentation, which shall include sample ID, site location, and/or project number, date and time of collection, collector's name, preservation type, sample matrix and any special remarks concerning the sample?	☑	☐	☐
Did sample container labels agree with Chain of Custody document?	☑	☐	☐
Were samples received within method-specific holding times?	☑	☐	☐

Summary of Hits

Lab ID: SC20386-01 **Client ID:** MW-1

Parameter	Result	Flag	Reporting Limit	Units	Analytical Method
Iron (dissolved)	8.55		0.0300	mg/l	EPA 200.7
Manganese (dissolved)	0.266		0.0040	mg/l	EPA 200.7
Chloride	20.4		1.00	mg/l	EPA 300.0
Sulfate as SO4	4.30		1.00	mg/l	EPA 300.0
Total Kjeldahl Nitrogen	1.75		0.200	mg/l	SM4500-NH3 C.

Lab ID: SC20386-02 **Client ID:** MW-2

Parameter	Result	Flag	Reporting Limit	Units	Analytical Method
Iron (dissolved)	12.3		0.0300	mg/l	EPA 200.7
Manganese (dissolved)	30.4	D, GS1	0.0400	mg/l	EPA 200.7
Chloride	221	GS1, D	9.00	mg/l	EPA 300.0
Sulfate as SO4	77.2	GS1, D	3.00	mg/l	EPA 300.0
Total Kjeldahl Nitrogen	0.840		0.200	mg/l	SM4500-NH3 C.

Lab ID: SC20386-03 **Client ID:** MW-3

Parameter	Result	Flag	Reporting Limit	Units	Analytical Method
Iron (dissolved)	2.81		0.0300	mg/l	EPA 200.7
Manganese (dissolved)	3.40		0.0040	mg/l	EPA 200.7
Chloride	67.5	GS1, D	3.00	mg/l	EPA 300.0
Sulfate as SO4	308	GS1, D	12.0	mg/l	EPA 300.0
Total Kjeldahl Nitrogen	0.420		0.200	mg/l	SM4500-NH3 C.

Lab ID: SC20386-04 **Client ID:** MW-4

Parameter	Result	Flag	Reporting Limit	Units	Analytical Method
Manganese (dissolved)	0.192		0.0040	mg/l	EPA 200.7
Chloride	30.7		1.00	mg/l	EPA 300.0
Nitrate as N	0.278		0.100	mg/l	EPA 300.0
Sulfate as SO4	129	GS1, D	5.00	mg/l	EPA 300.0
Total Kjeldahl Nitrogen	0.490		0.200	mg/l	SM4500-NH3 C.

Lab ID: SC20386-05 **Client ID:** SW-1

Parameter	Result	Flag	Reporting Limit	Units	Analytical Method
Iron	0.0535		0.0300	mg/l	EPA 200.7
Manganese	0.0103		0.0040	mg/l	EPA 200.7
Chloride	92.7	GS1, D	4.00	mg/l	EPA 300.0
Nitrate as N	0.326		0.100	mg/l	EPA 300.0
Sulfate as SO4	7.02		1.00	mg/l	EPA 300.0
Total Kjeldahl Nitrogen	0.490		0.200	mg/l	SM4500-NH3 C.

Please note that because there are no reporting limits associated with hazardous waste characterizations or micro analyses, this summary does not include hits from these analyses if included in this work order.

Sample Identification	Client Project #	Matrix	Collection Date/Time	Received
MW-1 SC20386-01	191710504	Ground Water	19-Apr-16 13:15	20-Apr-16

CAS No.	Analyte(s)	Result	Flag	Units	*RDL	MDL	Dilution	Method Ref.	Prepared	Analyzed	Analyst	Batch	Cert.
Soluble Metals by EPA 200/6000 Series Methods													
	Filtration	**Field Filtered**		N/A			1	EPA 200.7/3005A/6010			BK	1606938	
Soluble Metals by EPA 200 Series Methods													
7439-89-6	Iron	**8.55**		mg/l	0.0300	0.0159	1	EPA 200.7	27-Apr-16	27-Apr-16	EDT	1607023	X
7439-96-5	Manganese	**0.266**		mg/l	0.0040	0.0010	1	"	"	29-Apr-16	"	"	X
General Chemistry Parameters													
7727-37-9	Total Kjeldahl Nitrogen	**1.75**		mg/l	0.200	0.166	1	SM4500-NH3 C.	21-Apr-16	27-Apr-16	EEM	1606675	X
16887-00-6	Chloride	**20.4**		mg/l	1.00	0.657	1	EPA 300.0	20-Apr-16	21-Apr-16	AHK	1606648	X
14797-55-8	Nitrate as N	< 0.100		mg/l	0.100	0.00870	1	"	20-Apr-16 18:10	21-Apr-16 05:45	"	"	X
14808-79-8	Sulfate as SO4	**4.30**		mg/l	1.00	0.397	1	"	"	"	"	"	X

Sample Identification	Client Project #	Matrix	Collection Date/Time	Received
MW-2 SC20386-02	191710504	Ground Water	19-Apr-16 14:05	20-Apr-16

CAS No.	Analyte(s)	Result	Flag	Units	*RDL	MDL	Dilution	Method Ref.	Prepared	Analyzed	Analyst	Batch	Cert.
Soluble Metals by EPA 200/6000 Series Methods													
	Filtration	**Field Filtered**		N/A			1	EPA 200.7/3005A/6010			BK	1606938	
Soluble Metals by EPA 200 Series Methods													
7439-89-6	Iron	**12.3**		mg/l	0.0300	0.0159	1	EPA 200.7	27-Apr-16	27-Apr-16	EDT	1607023	X
7439-96-5	Manganese	**30.4**	D, GS1	mg/l	0.0400	0.0098	10	"	"	29-Apr-16	"	"	X
General Chemistry Parameters													
7727-37-9	Total Kjeldahl Nitrogen	**0.840**		mg/l	0.200	0.166	1	SM4500-NH3 C.	21-Apr-16	27-Apr-16	EEM	1606675	X
16887-00-6	Chloride	**221**	GS1, D	mg/l	9.00	5.91	9	EPA 300.0	20-Apr-16	21-Apr-16	AHK	1606648	X
14797-55-8	Nitrate as N	< 0.100		mg/l	0.100	0.00870	1	"	20-Apr-16 18:10	21-Apr-16 06:01	"	"	X
14808-79-8	Sulfate as SO4	**77.2**	GS1, D	mg/l	3.00	1.19	3	"	"	21-Apr-16	"	"	X

Sample Identification	Client Project #	Matrix	Collection Date/Time	Received
MW-3 SC20386-03	191710504	Ground Water	19-Apr-16 15:00	20-Apr-16

CAS No.	Analyte(s)	Result	Flag	Units	*RDL	MDL	Dilution	Method Ref.	Prepared	Analyzed	Analyst	Batch	Cert.
Soluble Metals by EPA 200/6000 Series Methods													
	Filtration	**Field Filtered**		N/A			1	EPA 200.7/3005A/6010			BK	1606938	
Soluble Metals by EPA 200 Series Methods													
7439-89-6	Iron	**2.81**		mg/l	0.0300	0.0159	1	EPA 200.7	27-Apr-16	27-Apr-16	EDT	1607023	X
7439-96-5	Manganese	**3.40**		mg/l	0.0040	0.0010	1	"	"	29-Apr-16	"	"	X
General Chemistry Parameters													
7727-37-9	Total Kjeldahl Nitrogen	**0.420**		mg/l	0.200	0.166	1	SM4500-NH3 C.	21-Apr-16	27-Apr-16	EEM	1606675	X
16887-00-6	Chloride	**67.5**	GS1, D	mg/l	3.00	1.97	3	EPA 300.0	20-Apr-16	21-Apr-16	AHK	1606648	X
14797-55-8	Nitrate as N	< 0.100		mg/l	0.100	0.00870	1	"	20-Apr-16 18:10	21-Apr-16 06:17	"	"	X
14808-79-8	Sulfate as SO4	**308**	GS1, D	mg/l	12.0	4.76	12	"	"	21-Apr-16	"	"	X

Sample Identification	Client Project #	Matrix	Collection Date/Time	Received
MW-4 SC20386-04	191710504	Ground Water	19-Apr-16 15:40	20-Apr-16

CAS No.	Analyte(s)	Result	Flag	Units	*RDL	MDL	Dilution	Method Ref.	Prepared	Analyzed	Analyst	Batch	Cert.
Soluble Metals by EPA 200/6000 Series Methods													
	Filtration	**Field Filtered**		N/A			1	EPA 200.7/3005A/6010			BK	1606938	
Soluble Metals by EPA 200 Series Methods													
7439-89-6	Iron	< 0.0300		mg/l	0.0300	0.0159	1	EPA 200.7	27-Apr-16	27-Apr-16	EDT	1607023	X
7439-96-5	Manganese	**0.192**		mg/l	0.0040	0.0010	1	"	"	29-Apr-16	"	"	X
General Chemistry Parameters													
7727-37-9	Total Kjeldahl Nitrogen	**0.490**		mg/l	0.200	0.166	1	SM4500-NH3 C.	21-Apr-16	27-Apr-16	EEM	1606675	X
16887-00-6	Chloride	**30.7**		mg/l	1.00	0.657	1	EPA 300.0	20-Apr-16	21-Apr-16	AHK	1606648	X
14797-55-8	Nitrate as N	**0.278**		mg/l	0.100	0.00870	1	"	20-Apr-16 18:10	21-Apr-16 06:33	"	"	X
14808-79-8	Sulfate as SO4	**129**	GS1, D	mg/l	5.00	1.98	5	"	"	21-Apr-16	"	"	X

Sample Identification	Client Project #	Matrix	Collection Date/Time	Received
SW-1 SC20386-05	191710504	Surface Water	19-Apr-16 16:00	20-Apr-16

CAS No.	Analyte(s)	Result	Flag	Units	*RDL	MDL	Dilution	Method Ref.	Prepared	Analyzed	Analyst	Batch	Cert.
Total Metals by EPA 200/6000 Series Methods													
	Preservation	**Field Preserved**		N/A			1	EPA 200/6000 methods			LNB	1606863	
Total Metals by EPA 200 Series Methods													
7439-89-6	Iron	**0.0535**		mg/l	0.0300	0.0159	1	EPA 200.7	28-Apr-16	29-Apr-16	EDT	1606995	X
7439-96-5	Manganese	**0.0103**		mg/l	0.0040	0.0010	1	"	"	28-Apr-16	"	"	X
General Chemistry Parameters													
7727-37-9	Total Kjeldahl Nitrogen	**0.490**		mg/l	0.200	0.166	1	SM4500-NH3 C.	21-Apr-16	27-Apr-16	EEM	1606675	X
16887-00-6	Chloride	**92.7**	GS1, D	mg/l	4.00	2.63	4	EPA 300.0	20-Apr-16	21-Apr-16	AHK	1606648	X
14797-55-8	Nitrate as N	**0.326**		mg/l	0.100	0.00870	1	"	20-Apr-16 18:10	21-Apr-16 06:49	"	"	X
14808-79-8	Sulfate as SO4	**7.02**		mg/l	1.00	0.397	1	"	"	"	"	"	X

Total Metals by EPA 200 Series Methods - Quality Control

Analyte(s)	Result	Flag	Units	*RDL	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Batch 1606995 - EPA 200 Series										
Blank (1606995-BLK1)					Prepared: 28-Apr-16 Analyzed: 29-Apr-16					
Iron	< 0.0300		mg/l	0.0300						
Manganese	< 0.0040		mg/l	0.0040						
LCS (1606995-BS1)					Prepared: 28-Apr-16 Analyzed: 29-Apr-16					
Iron	**2.66**		mg/l	0.0300	2.50		107	85-115		
Manganese	**2.62**		mg/l	0.0040	2.50		105	85-115		
Duplicate (1606995-DUP1)			**Source: SC20386-05**		Prepared: 28-Apr-16 Analyzed: 29-Apr-16					
Iron	**0.0778**	QR8	mg/l	0.0300		0.0535			37	20
Manganese	**0.0103**		mg/l	0.0040		0.0103			0	20
Matrix Spike (1606995-MS1)			**Source: SC20386-05**		Prepared: 28-Apr-16 Analyzed: 29-Apr-16					
Iron	**2.69**		mg/l	0.0300	2.50	0.0535	106	70-130		
Manganese	**2.55**		mg/l	0.0040	2.50	0.0103	102	70-130		
Post Spike (1606995-PS1)			**Source: SC20386-05**		Prepared & Analyzed: 28-Apr-16					
Manganese	**2.62**		mg/l	0.0040	2.50	0.0103	104	85-115		
Iron	**2.68**		mg/l	0.0300	2.50	0.0535	105	85-115		

Soluble Metals by EPA 200 Series Methods - Quality Control

Analyte(s)	Result	Flag	Units	*RDL	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Batch 1607023 - EPA 200 Series										
Blank (1607023-BLK1)					Prepared: 27-Apr-16 Analyzed: 29-Apr-16					
Manganese	< 0.0040		mg/l	0.0040						
Iron	< 0.0300		mg/l	0.0300						
LCS (1607023-BS1)					Prepared: 27-Apr-16 Analyzed: 29-Apr-16					
Manganese	**5.21**		mg/l	0.0040	5.00		104	85-115		
Iron	**9.11**		mg/l	0.0300	10.0		91	85-115		
Duplicate (1607023-DUP1)			**Source: SC20386-01**		Prepared: 27-Apr-16 Analyzed: 29-Apr-16					
Manganese	**0.265**		mg/l	0.0040		0.266			0.5	20
Iron	**8.36**		mg/l	0.0300		8.55			2	20
Matrix Spike (1607023-MS1)			**Source: SC20386-01**		Prepared & Analyzed: 27-Apr-16					
Iron	**9.90**	QM7	mg/l	0.0300	2.50	8.55	54	70-130		
Manganese	**2.86**		mg/l	0.0040	2.50	0.266	104	70-130		

General Chemistry Parameters - Quality Control

Analyte(s)	Result	Flag	Units	*RDL	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Batch 1606648 - General Preparation										
Blank (1606648-BLK1)						Prepared: 20-Apr-16 Analyzed: 21-Apr-16				
Sulfate as SO4	< 1.00		mg/l	1.00						
Chloride	< 1.00		mg/l	1.00						
Nitrate as N	< 0.100		mg/l	0.100						
LCS (1606648-BS1)						Prepared: 20-Apr-16 Analyzed: 21-Apr-16				
Sulfate as SO4	**19.4**		mg/l	1.00	20.0		97	90-110		
Chloride	**19.9**		mg/l	1.00	20.0		100	90-110		
Nitrate as N	**2.06**		mg/l	0.100	2.00		103	90-110		
Calibration Blank (1606648-CCB1)						Prepared: 20-Apr-16 Analyzed: 21-Apr-16				
Chloride	**0.00**		mg/l							
Sulfate as SO4	**0.0110**		mg/l							
Nitrate as N	**0.00**		mg/l							
Calibration Blank (1606648-CCB2)						Prepared: 20-Apr-16 Analyzed: 21-Apr-16				
Chloride	**0.00**		mg/l							
Sulfate as SO4	**0.00900**		mg/l							
Nitrate as N	**0.00**		mg/l							
Calibration Blank (1606648-CCB3)						Prepared: 20-Apr-16 Analyzed: 21-Apr-16				
Sulfate as SO4	**0.0120**		mg/l							
Chloride	**0.00**		mg/l							
Nitrate as N	**0.00**		mg/l							
Calibration Blank (1606648-CCB4)						Prepared: 20-Apr-16 Analyzed: 21-Apr-16				
Sulfate as SO4	**0.0240**		mg/l							
Chloride	**0.00**		mg/l							
Nitrate as N	**0.00**		mg/l							
Calibration Blank (1606648-CCB5)						Prepared: 20-Apr-16 Analyzed: 21-Apr-16				
Chloride	**0.00**		mg/l							
Sulfate as SO4	**0.00900**		mg/l							
Nitrate as N	**0.00**		mg/l							
Calibration Blank (1606648-CCB6)						Prepared: 20-Apr-16 Analyzed: 21-Apr-16				
Sulfate as SO4	**0.00900**		mg/l							
Chloride	**0.00**		mg/l							
Nitrate as N	**0.00**		mg/l							
Calibration Check (1606648-CCV1)						Prepared: 20-Apr-16 Analyzed: 21-Apr-16				
Sulfate as SO4	**18.6**		mg/l	1.00	20.0		93	90-110		
Chloride	**19.9**		mg/l	1.00	20.0		99	90-110		
Nitrate as N	**2.06**		mg/l	0.100	2.00		103	90-110		
Calibration Check (1606648-CCV2)						Prepared: 20-Apr-16 Analyzed: 21-Apr-16				
Chloride	**19.9**		mg/l	1.00	20.0		100	90-110		
Sulfate as SO4	**18.6**		mg/l	1.00	20.0		93	90-110		
Nitrate as N	**2.06**		mg/l	0.100	2.00		103	90-110		
Calibration Check (1606648-CCV3)						Prepared: 20-Apr-16 Analyzed: 21-Apr-16				
Sulfate as SO4	**18.6**		mg/l	1.00	20.0		93	90-110		
Chloride	**20.0**		mg/l	1.00	20.0		100	90-110		
Nitrate as N	**2.07**		mg/l	0.100	2.00		104	90-110		
Calibration Check (1606648-CCV4)						Prepared: 20-Apr-16 Analyzed: 21-Apr-16				
Chloride	**20.1**		mg/l	1.00	20.0		100	90-110		
Sulfate as SO4	**19.1**		mg/l	1.00	20.0		95	90-110		
Nitrate as N	**2.08**		mg/l	0.100	2.00		104	90-110		
Calibration Check (1606648-CCV5)						Prepared: 20-Apr-16 Analyzed: 21-Apr-16				
Chloride	**20.2**		mg/l	1.00	20.0		101	90-110		
Sulfate as SO4	**18.8**		mg/l	1.00	20.0		94	90-110		

General Chemistry Parameters - Quality Control

Analyte(s)	Result	Flag	Units	*RDL	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Batch 1606648 - General Preparation										
Calibration Check (1606648-CCV5)					Prepared: 20-Apr-16 Analyzed: 21-Apr-16					
Nitrate as N	**2.10**		mg/l	0.100	2.00		105	90-110		
Calibration Check (1606648-CCV6)					Prepared: 20-Apr-16 Analyzed: 21-Apr-16					
Sulfate as SO4	**18.7**		mg/l	1.00	20.0		94	90-110		
Chloride	**20.1**		mg/l	1.00	20.0		100	90-110		
Nitrate as N	**2.08**		mg/l	0.100	2.00		104	90-110		
Duplicate (1606648-DUP1)			**Source: SC20386-05**		Prepared: 20-Apr-16 Analyzed: 21-Apr-16					
Sulfate as SO4	**7.06**		mg/l	1.00		7.02			0.5	20
Chloride	**94.4**	GS1, D	mg/l	4.00		92.7			2	20
Nitrate as N	**0.328**		mg/l	0.100		0.326			0.6	20
Matrix Spike (1606648-MS1)			**Source: SC20386-05**		Prepared: 20-Apr-16 Analyzed: 21-Apr-16					
Chloride	**128**	QM7	mg/l	4.00	32.0	92.7	112	90-110		
Sulfate as SO4	**36.3**		mg/l	4.00	32.0	7.02	92	90-110		
Nitrate as N	**3.44**		mg/l	0.400	3.20	0.326	97	90-110		
Matrix Spike Dup (1606648-MSD1)			**Source: SC20386-05**		Prepared: 20-Apr-16 Analyzed: 21-Apr-16					
Chloride	**126**		mg/l	4.00	32.0	92.7	103	90-110	2	20
Sulfate as SO4	**35.3**	QM7	mg/l	4.00	32.0	7.02	89	90-110	3	20
Nitrate as N	**3.33**		mg/l	0.400	3.20	0.326	94	90-110	3	20
Reference (1606648-SRM1)					Prepared: 20-Apr-16 Analyzed: 21-Apr-16					
Chloride	**25.6**		mg/l	1.00	25.0		102	90-110		
Sulfate as SO4	**25.1**		mg/l	1.00	25.0		100	90-110		
Nitrate as N	**2.44**		mg/l	0.100	2.50		98	90-110		
Batch 1606675 - General Preparation										
Blank (1606675-BLK1)					Prepared: 21-Apr-16 Analyzed: 27-Apr-16					
Total Kjeldahl Nitrogen	< 0.200		mg/l	0.200						
LCS (1606675-BS1)					Prepared: 21-Apr-16 Analyzed: 27-Apr-16					
Total Kjeldahl Nitrogen	**4.90**		mg/l	0.200	5.00		98	90-110		
Reference (1606675-SRM1)					Prepared: 21-Apr-16 Analyzed: 27-Apr-16					
Total Kjeldahl Nitrogen	**0.910**	QM9	mg/l	0.200	1.26		72	74-124		

Notes and Definitions

D	Data reported from a dilution
GS1	Sample dilution required for high concentration of target analytes to be within the instrument calibration range.
QM7	The spike recovery was outside acceptance limits for the MS and/or MSD. The batch was accepted based on acceptable LCS recovery.
QM9	The spike recovery for this QC sample is outside the established control limits. The sample results for the QC batch were accepted based on LCS/LCSD or SRM recoveries within the control limits.
QR8	Analyses are not controlled on RPD values from sample concentrations that are less than 5 times the reporting level. The batch is accepted based upon the difference between the sample and duplicate is less than or equal to the reporting limit.
dry	Sample results reported on a dry weight basis
NR	Not Reported
RPD	Relative Percent Difference

Laboratory Control Sample (LCS): A known matrix spiked with compound(s) representative of the target analytes, which is used to document laboratory performance.

Matrix Duplicate: An intra-laboratory split sample which is used to document the precision of a method in a given sample matrix.

Matrix Spike: An aliquot of a sample spiked with a known concentration of target analyte(s). The spiking occurs prior to sample preparation and analysis. A matrix spike is used to document the bias of a method in a given sample matrix.

Method Blank: An analyte-free matrix to which all reagents are added in the same volumes or proportions as used in sample processing. The method blank should be carried through the complete sample preparation and analytical procedure. The method blank is used to document contamination resulting from the analytical process.

Method Detection Limit (MDL): The minimum concentration of a substance that can be measured and reported with 99% confidence that the analyte concentration is greater than zero and is determined from analysis of a sample in a given matrix type containing the analyte.

Reportable Detection Limit (RDL): The lowest concentration that can be reliably achieved within specified limits of precision and accuracy during routine laboratory operating conditions. For many analytes the RDL analyte concentration is selected as the lowest non-zero standard in the calibration curve. While the RDL is approximately 5 to 10 times the MDL, the RDL for each sample takes into account the sample volume/weight, extract/digestate volume, cleanup procedures and, if applicable, dry weight correction. Sample RDLs are highly matrix-dependent.

Surrogate: An organic compound which is similar to the target analyte(s) in chemical composition and behavior in the analytical process, but which is not normally found in environmental samples. These compounds are spiked into all blanks, standards, and samples prior to analysis. Percent recoveries are calculated for each surrogate.

Continuing Calibration Verification: The calibration relationship established during the initial calibration must be verified at periodic intervals. Concentrations, intervals, and criteria are method specific.

Validated by:
Christina White
Jackie Clement

SC 20386 Dy

eurofins | Spectrum Analytical

CHAIN OF CUSTODY RECORD

Page 1 of 1

Special Handling:

- [x] Standard TAT - 7 to 10 business days
- [ ] Rush TAT - Date Needed: _____

All TATs subject to laboratory approval
Min. 24-hr notification needed for rushes
Samples disposed after 60 days unless otherwise instructed.

Report To: Dave Allwine, Stantec, 5 Dartmouth Drive, Auburn, NH 03032
Telephone #: 603-206-7553
Project Mgr: DAve Allwine

Invoice To: Stantec, 5 Dartmouth Dr, Auburn, NH 03032
P.O No.: _____ Quote #: _____

Project No: 191710504
Site Name: Auburn LF
Location: Auburn State: NH
Sampler(s): DAC

F=Field Filtered 1=$Na_2S_2O_3$ 2=HCl 3=H_2SO_4 4=HNO_3 5=NaOH 6=Ascorbic Acid
7=CH3OH 8=$NaHSO_4$ 9=Deionized Water 10=H_3PO_4 11= _____ 12= _____

List Preservative Code below: 4 3 – –

DW=Dinking Water GW=Groundwater SW=Surface Water WW=Waste Water
O=Oil SO=Soil SL=Sludge A=Indoor/Ambient Air SG=Soil Gas
X1= _____ X2= _____ X3= _____

G= Grab C=Compsite

Lab ID:	Sample ID:	Date:	Time:	Type	Matrix	# of VOA Vials	# of Amber Glass	# of Clear Glass	# of Plastic	Fe, Mn	TKN	Nitrate Sulfate	Chloride	Check if chlorinated	QA/QC Reporting Notes: * additional charges may appply
SC 20386 01	MW-1	4-19-16	13:15	G	Gw				3	X	X	X	X	☐	Dissolved Metals
02	MW-2	4-19-16	14:05	G	Gw				3	X	X	X	X	☐	Field filtered
03	MW-3	4-19-16	15:00	G	Gw				3	X	X	X	X	☐	
04	MW-4	4-19-16	15:40	G	Gw				3	X	X	X	X	☐	
05	SW-1	4-19-16	16:00	G	SW				3	X	X	X	X	☐	Total Metals
														☐	
														☐	
														☐	
														☐	
														☐	

MA DEP MCP CAM Report? ☐ Yes ☑ No
CT DPH RCP Report? ☐ Yes ☑ No
☑ Standard ☐ No QC ☐ DQA*
☐ ASP A* ☐ ASP B*
☐ NJ Reduced* ☐ NJ Full*
☐ Tier II* ☐ Tier IV*
☑ Other: NHDES AGQS
State-specific reporting standards:

Relinquished by:	Received by:	Date:	Time:	Temp °C
[signature]	[signature]	4-20-16	1232	Observed 1.5
[signature]	[signature]	4-20-16	16:11	Correction Factor Ø
				Corrected 1.5
				IR ID # Ø2

☐ EDD format:
☑ E-mail to: Dave.Allwine@Stantec.com

Condition upon receipt: Custody Seals: ☐ Present ☐ Intact ☐ Broken
☐ Ambient ☑ Iced ☐ Refrigerated ☐ DI VOA Frozen ☐ Soil Jar Frozen