2015 Operations and Maintenance Report

Stauffer Management Company LLC Site

Town of Lewiston New York

285 Delaware Avenue Buffalo New York 14202

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Executive Summary

This report summarizes the operation and maintenance (O&M) activities performed at the Stauffer Management Company LLC (SMC) Site (Site) in Lewiston, New York for the reporting period of January 1, 2015 through December 31, 2015. This report also summarizes significant modifications to remedial operations during the reporting period and presents data that can be used to evaluate the effectiveness of the remedial systems, provides conclusions about the data, and offers recommendations for 2016 operations.

The SMC Site is located in the Town of Lewiston, New York, immediately north of the forebay of the Robert Moses Power Plant and is a former chemical manufacturing facility owned and operated by Stauffer Chemical Company. All structures associated with the former plant were demolished in the early 1980s. Stauffer Management Company LLC (SMC) manages the overall Site remediation and GHD Services, Inc. (GHD) provides day-to-day operation of the remedial operations. The remedial work is being done in accordance with New York State Department of Environmental Conservation (NYSDEC) Consent Order (CO) #B9-0137-86-04 effective July 19, 1993.

Currently, the active remedial operations consist of a bedrock groundwater extraction and treatment system, including deep bedrock and shallow bedrock extraction wells. A soil vapor extraction (SVE) treatment system for Area A of the Site has been shut off with the approval of NYSDEC, but remains operable. Two other SVE systems were decommissioned in 2001 and 2004.

The major chemicals of concern in the groundwater at the Site have been identified in the Site-Specific Parameter List (SSPL) as follows:

1. carbon disulfide
2. carbon tetrachloride
3. chloroform
4. methylene chloride
5. tetrachloroethene
6. benzene
7. chlorobenzene
8. toluene
9. trichloroethene

The groundwater extraction network consists of two deep bedrock groundwater extraction wells, three intermediate/deep bedrock extraction wells, three shallow bedrock extraction wells, and three overburden/shallow bedrock wells in Area A. The locations of the extraction wells are shown on Figure 1.5. Underground force mains with secondary containment convey recovered groundwater from the extraction wells to the treatment building.

Extracted groundwater is treated in two granular activated carbon (GAC) beds located in the treatment building. The treated water from the GAC units is discharged through the outfall to the New York Power Authority (NYPA) Forebay, located south of the Site. Treated water is discharged in accordance with effluent limits and sampling requirements set by NYSDEC. Due to the Site being

operated under the CO, a State Pollutant Discharge Elimination System (SPDES) permit is not required.

Approximately 16.3 million gallons of groundwater were recovered from the Site in 2015 for subsequent treatment and discharge. This volume was approximately 23 percent higher than the amount extracted in 2014. Significant increases in extraction rates from EW-5 and EW-6 were responsible for the higher system total in 2015. The total mass removed by the groundwater extraction system in 2015 was 1,580 pounds, which is 6 percent higher than that of 2014 (1,486 pounds). Figures presenting groundwater potentiometric contours and chemical isocontours are presented in text Section 7.0 for each water-bearing zone (WBZ) present at the Site, and are discussed in some detail in text Sections 7.2 through 7.5. The figures indicate that the Site extraction wells are properly placed to contain, capture, and recover SSPLs present in the groundwater at the Site. The current configuration provides hydraulic capture across the Site and indicates that the extraction system continues to be effective at both hydraulic containment and mass removal.

No major updates were made to the groundwater treatment system in 2015.

Note that the two original Calgon Corporation 20,000-pound GAC vessels were replaced in the middle of 2014 with two 10,000-pound GAC units. Therefore, 2015 was the first full year of operation with the replacement carbon vessels.

A well rehabilitation program was completed in November 2015 at extraction wells EW-1, EW-2, and EW-3. The pumps were pulled and cleaned and any accumulated solids were cleaned out of the boreholes. In addition, a liquid acid descaler was added to each of the three deep extraction wells to treat biofilm deposits caused by sulfate-reducing bacteria and to dissolve mineral deposits that may be present. The last, similar well rehabilitation program had been performed in 2012.

For 2016, SMC will focus remedial efforts on increased mass removal and removal efficiency (pound of VOC recovered per 1,000 gallons of groundwater extracted).

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1. Introduction

This report summarizes the operation and maintenance (O&M) activities performed at the Stauffer Management Company LLC (SMC) Site (Site) in Lewiston, New York for the reporting period of January 1, 2015 through December 31, 2015. This report also summarizes significant modifications to remedial operations during the reporting period. Finally, this report presents data that can be used to evaluate the effectiveness of the remedial systems, provides conclusions about the data, and offers recommendations for 2016 operations.

The O&M services were provided by GHD Services, Inc. (GHD) under contract to SMC. The O&M activities were performed in accordance with the "Operations and Maintenance Manual, Stauffer Management Company, Town of Lewiston, New York" (O&M Manual), dated August 2015.

1.1 Site Background

The SMC Site is located in the Town of Lewiston, New York, immediately north of the forebay of the Robert Moses Power Plant. Figure 1.1 presents the location of the Site, and Figure 1.2 presents the layout of the Site.

The Site is a former chemical manufacturing facility owned and operated by Stauffer Chemical Company. All structures associated with the former plant were demolished in the early 1980s. Stauffer Chemical Company was divested in 1987, and Atkemix Thirty Seven, a subsidiary of Stauffer Management Company, became the Site owner. In 2000, Stauffer Management Company and Atkemix Thirty Seven restructured into a limited liability company that is now known as Stauffer Management Company LLC.

In 1995, in accordance with Consent Order (CO) #B9-0137-86-04, SMC initiated remedial construction for soil and groundwater. At that time, the Treatment Building was erected to house the Site groundwater treatment system and the soil vapor extraction (SVE) treatment system for Area A. A second SVE treatment system, Area C, was mounted in a trailer located off-Site, beyond the southeast corner of the Site property. SVE operations at Area C were discontinued in May 2004, and the Area C treatment system was decommissioned in July 2004. A third SVE system at Area T-4 was also installed in 1995, operated until 2000, and decommissioned in September 2001.

The major chemicals of concern in the groundwater at the Site have been identified in the Site-Specific Parameter List (SSPL) as follows:

1. carbon disulfide
2. carbon tetrachloride
3. chloroform
4. methylene chloride
5. tetrachloroethene
6. benzene

7. chlorobenzene
8. toluene
9. trichloroethene

These chemicals have historically been detected at varying concentrations in the groundwater, subsurface soils, seeps, and surface water run-off in the immediate vicinity of the Site.

1.2 Remedial Systems Descriptions

The remedial systems currently operable at the Site include:

1. Area A SVE system (Note that the Area A remedial system is currently turned off, but remains operable – see Section 2.1 below)
2. Bedrock groundwater extraction and treatment system, consisting of deep bedrock and shallow bedrock extraction wells

The SVE system located in Area T-4 was decommissioned in 2001, and the SVE system located in Area C was decommissioned in 2004.

The remedial systems are briefly described in the following sections.

1.2.1 Area A

Area A occupies approximately 136,500 square feet near the center of the property as shown on Figures 1.2 and 1.3. The remedial system at Area A is a combination of soil vapor and groundwater extraction and includes 39 SVE wells, 3 dual-phase groundwater/SVE wells, and a cover comprised of a polyvinyl chloride (PVC) geomembrane liner, a geotextile cushion, and stone.

Each SVE well is connected to one of four header pipes that each enter the Treatment Building and are connected to the vacuum blower housed in the north side of the building. The SVE piping is mounted on a uni-strut/pipe strap support system. The Area A SVE treatment system is comprised of a skid with a moisture separator tank, an in-line filter, a vacuum blower, a discharge silencer, and a condensate removal pump, all located in the Treatment Building. The heat exchanger and granular activated carbon (GAC) adsorption units are mounted separately on the concrete floor in the building.

1.2.2 Area C

Area C occupies approximately 19,350 square feet beyond the southeast corner of the Site property, as shown on Figures 1.2 and 1.4. Area C is the location of one of the landfills previously used by Stauffer Chemical Company.

Due to the success of the system and with the approval of New York State Department of Environmental Conservation (NYSDEC), operations at Area C were discontinued in May 2004, and the SVE system was decommissioned in July 2004. The SVE wells were plugged and abandoned in accordance with NYSDEC regulations in December 2004.

1.2.3 Area T-4

Area T-4 occupies approximately 11,500 square feet and is located southwest of the Treatment Building, as shown on Figure 1.2. The Area T-4 SVE system was decommissioned in September 2001 based on the success of the system and with the approval of NYSDEC.

1.2.4 Groundwater Extraction and Treatment System

The groundwater extraction network consists of two deep bedrock groundwater extraction wells (LR-66 and OW-3), three intermediate/deep bedrock extraction wells (EW-1, EW-2, EW-3), three shallow bedrock extraction wells (EW-4, EW-5, and EW-6), and three shallow dual-phase wells in Area A (DPA-201, DPA-202, and DPA-203). The locations of the extraction wells are shown on Figure 1.5.

Underground force mains with secondary containment convey recovered groundwater from the extraction wells to the Treatment Building. The groundwater treatment system is currently housed in the south side of the original Treatment Building and in the northwest addition to the building.

All groundwater from each of the extraction wells is pumped into the on-Site treatment system. The major components of the treatment system are listed below:

1. Solids Settling Tank: a 1,500-gallon cone-bottom tank installed in 2009 to provide solids settling prior to the influent water entering the carbon treatment system. This tank replaced a Non-Aqueous Phase Liquid (NAPL) Separator tank that had deteriorated. Phase separation is not required at the Site, as no NAPL has been observed since beginning system operation.
2. Carbon Feed Tank: a process tank used to accumulate water from the solids settling tank.
3. Carbon Feed Pump: pumps water from the carbon feed tank through the rest of the treatment system.
4. Bag Filters: groundwater is pumped through thirteen 10-micron bag filters (consisting of an eight-bag round filter vessel and a separate five-bag unit) operated in parallel to prevent solids from plugging the GAC.
5. GAC Beds: after the bag filters, the groundwater passes through two 10,000-pound GAC adsorption vessels operated in series. Note that the 10,000-pound GAC vessels were installed in 2014 as replacements for two 20,000-pound GAC adsorption vessels.

The treated water from the GAC units is discharged through the outfall to the New York Power Authority (NYPA) Forebay, located south of the Site. Treated water is discharged in accordance with effluent limits and sampling requirements set by NYSDEC. Due to the Site being operated under the CO, a State Pollutant Discharge Elimination System (SPDES) permit is not required.

2. Area A Remedial System O&M Activities

2.1 Summary of Area A Operations For 2015

The Area A SVE system was turned off and did not operate in 2015.

As discussed in the 2013 Annual Operations & Maintenance Report, in 2013 – early 2014 SMC performed an evaluation of historic and current Area A performance. The evaluation concluded that

the operation of the SVE system had achieved the maximum amount of soil vapor removal reasonably attainable, and that any residual vapor-phase volatile organic compounds (VOCs) are being contributed from the contaminated groundwater that exists within and below the Area A treatment field.

A letter report summarizing the evaluation and a recommendation to discontinue operation of the Area A SVE system was submitted to NYSDEC on June 6, 2014. The agency responded to the request in a June 19, 2014 letter to SMC indicating that preparation and submittal of an Environmental Easement (EE) would first be required. On August 4, 2014, NYSDEC visited the Site to discuss Area A and other remedial operations. During the visit, NYSDEC agreed that the Area A blower could be kept off while the EE process was pending. Therefore, the system has been turned off since August 2014.

The final EE was signed by SMC on April 28, 2015 and by NYSDEC on August 24, 2015. The EE was filed in Niagara County on September 4, 2015. Upon submittal and approval of a Site Management Plan (SMP), the Area A SVE system will be decommissioned. Note the SVE system is being maintained in operable condition.

2.2 Mass Removal – 2015

Since it was not operating, there was no contaminant mass removed from the Area A SVE system in 2015.

3. Area C Remedial System

Due to the success of the system, the former Area C SVE system was decommissioned in July 2004 with the approval of NYSDEC. The SVE wells were plugged and abandoned in accordance with NYSDEC regulations in December 2004.

4. Area T-4 Remedial System

Due to the success of the system, the former Area T-4 SVE system was decommissioned in September 2001 with the approval of NYSDEC.

Dual phase well T-4 (also known as DPT-261) was taken out of service as a SVE well in 2001. It remains as a monitoring well.

5. Groundwater Extraction System O&M Activities

5.1 2015 Extraction System Modifications

There were no extraction system modifications of note in 2015. Maintenance issues associated with each of the extraction wells are discussed in the sections that follow.

5.2 Summary of Operations – 2015

The bedrock groundwater extraction system operated in automatic mode throughout the reporting period, with visits to the Site two to three times per week to confirm pump operation, perform piping inspections, and complete other routine O&M activities.

A number of pump replacements and operational improvements were made to the groundwater extraction system in 2015:

- The pumps and motors were replaced in EW-1 and EW-2.
- The OW-3 pump was rebuilt on two occasions.
- Extraction wells DPA-201 and DPA-203 were pulled and accumulated sand was pumped from the well casings. New 4-inch PVC well casings were installed at both locations due to deterioration of the former steel well casings.
- A well rehabilitation program was completed in November 2015 at extraction wells EW-1, EW-2, and EW-3. The pumps were pulled and cleaned and any accumulated solids were cleaned out of the boreholes. In addition, a liquid acid descaler was added to each of the three deep extraction wells to treat biofilm deposits caused by sulfate reducing bacteria and to dissolve mineral deposits that may be present. The last, similar well rehabilitation program had been performed in 2012.

In addition to the above, routine pump cleaning was performed on several other extraction wells throughout the course of the year.

5.3 Mass Removal –2015

5.3.1 Extraction Wells EW-1 through EW-6

Mass removal calculations for extraction wells EW-1 through EW-6 are summarized in Tables 5.1 through 5.6, respectively.

The mass removal of VOCs from groundwater for each extraction well was calculated on a quarterly basis using flow volumes and analytical data for the quarter. The volume of groundwater pumped from the six extraction wells is summarized below.

Total Volume of Groundwater Extracted (Gallons)
2015 EW-1 through EW-6

Extraction Well	***First Quarter***	***Second Quarter***	***Third Quarter***	***Fourth Quarter***	***2015 Total***
EW-1	150,927	236,821	309,992	290,289	988,029
EW-2	856,563	1,023,146	817,183	806,368	3,503,260
EW-3	437,059	483,050	373,551	335,450	1,629,110
EW-4*	75,000	75,000	75,000	75,000	300,000
EW-5	1,696,980	1,697,864	1,615,302	1,825,238	6,835,384
EW-6*	600,000	600,000	630,019	661,543	2,491,562
Total gallons pumped	3,816,529	4,115,881	3,821,047	3,993,888	15,747,345

*Extracted volumes are estimated based on historical flow rates

The total mass, in pounds, removed by the six extraction wells in 2015 is summarized below.

Total VOCs Removed (Pounds) 2015 EW-1 through EW-6					
Extraction Well	***First Quarter***	***Second Quarter***	***Third Quarter***	***Fourth Quarter***	***2015 Total***
EW-1	1	16	136	148	300
EW-2	63	120	16	15	213
EW-3	35	20	13	20	88
EW-4	1	0.9	0.2	0.1	2
EW-5	28.5	22.2	8.9	27.7	87
EW-6	45.9	68.2	32.6	63.3	210
Total Pounds of VOCs Removed					900

The 900 pounds of VOCs removed from groundwater by EW-1 through EW-6 in 2015 is an increase of 58 pounds compared with 2014 (842 pounds of VOCs removed). The volume of groundwater extracted by EW-1 through EW-6 in 2015 (15.7 million gallons) was 23 percent higher than in 2014 (12.1 million gallons). The removal efficiency (pound of VOC recovered per 1,000 gallons of groundwater extracted) of the six extraction wells as a group decreased slightly from 0.07 to 0.06 between 2014 and 2015. See Section 9.2 for a summary of mass removal by groundwater extraction on a year-to-year basis.

The three extraction wells responsible for the majority of the VOCs removed by the group are EW-1, EW-2 and EW-6. The mass of VOCs extracted by EW-1 in 2015 decreased from 494 pounds in 2014 to 300 pounds in 2015, a decrease of 40 percent. Some of this mass decrease can be explained by the fact that 2015 groundwater extraction from EW-1 decreased by 405,162 gallons compared with 2014, a decrease of 29 percent. The removal efficiency of EW-1 decreased slightly to 0.30 pound VOC/1,000 gallons extracted in 2015 versus 0.35 pound VOC/1,000 gallons extracted in 2014.

The mass of VOCs extracted by EW-2 increased from 138 pounds in 2014 to 213 pounds in 2015, an increase of 65 percent. EW-2 extracted approximately 305,090 fewer gallons of groundwater in 2015 compared with 2014. The removal efficiency of EW-2 increased between 2014 and 2015, from 0.04 pound VOC/1,000 gallons extracted in 2014 to 0.06 in 2015.

At EW-3, the removal efficiency decreased between 2014 and 2015 (from 0.08 to 0.05 pound VOC/1,000 gallons extracted).

At EW-4, the removal efficiency remained about the same between 2014 and 2015 (at 0.02 and 0.01 pound VOC/1,000 gallons extracted).

The removal efficiency also remained the same between 2014 and 2015 at EW-5, at 0.01 pound VOC/1,000 gallons extracted.

The removal efficiency of EW-6 remained the same between 2014 and 2015, at 0.08 pound VOC/1,000 gallons extracted.

Compounds removed by EW-1 through EW-6 in 2015 consisted of carbon disulfide (418 pounds, 46 percent of the total), carbon tetrachloride (305 pounds, 34 percent of the total removed), chloroform (156 pounds, 17 percent of the total), tetrachloroethene (6 pounds), methylene chloride (11 pounds), and trichloroethene (5 pounds). The final three SSPLs make up approximately

3 percent of the total compounds removed by EW-1 through EW-6. Section 9.2 provides historical breakdowns of the compounds removed by groundwater extraction since 1999.

For the group of six extraction wells, the mass of carbon disulfide removed in 2015 decreased by 15 pounds compared with 2014, the mass of carbon tetrachloride removed in 2015 increased by 62 pounds compared with 2014, and the mass of chloroform removed increased by 14 pounds. The cumulative mass of chlorobenzene, tetrachloroethene, trichloroethene, and methylene chloride removed in 2015 remained about the same as in 2014.

5.3.2 Area A Dual Phase Wells DPA-201, DPA-202, and DPA-203

Mass removal calculations for VOCs removed from shallow groundwater by DPA-201, DPA-202, and DPA-203 are summarized in Tables 5.7 through 5.9, respectively.

The mass removal estimate for the dual wells is based on quarterly flow data and quarterly analytical results. Note that the flow data for dual phase well DPA-201 was estimated for 2015 based upon previous years' results and technician observations that the pump is operating normally (i.e., removing all of the available groundwater). The approximate volume of groundwater pumped from the three Area A dual wells is summarized below.

Total Volume of Groundwater Extracted (Gallons)
2015 DPA-201 through DPA-203

Well No.	***1st Quarter***	***2nd Quarter***	***3rd Quarter***	***4th Quarter***	***System Total-2015***
DPA-201*	20,000	20,000	20,000	20,000	80,000
DPA-202*	38,325	45,678	24,261	15,124	123,388
DPA-203	2,705	10,414	6,940	3,907	23,966
				Total Gallons Pumped	227,354

*Extracted volumes are estimated based on observations and previous years' flows

The above represents a 91 percent increase in recovered groundwater by the dual phase wells between 2014 (118,912 gallons) and 2015. DPA-202 was mainly responsible for the increase, as the volume extracted by the well in 2015 was approximately 270 percent higher than that removed in 2014 (33,010 gallons). All three of the DPA wells appear to be operating normally and removing the groundwater available to them.

The approximate total mass removed by the three dual wells is summarized below.

Total VOCs Removed (Pounds) 2015 DPA-201 through DPA-203					
Well No.	***1st Quarter***	***2nd Quarter***	***3rd Quarter***	***4th Quarter***	***Total***
DPA-201	0.4	1.5	2.0	0.1	4.0
DPA-202	39.5	26.1	20.3	12.2	98
DPA-203	8.8	28.4	15.1	6.1	58
Total VOCs Removed in 2015 (Pounds)					160

The 160 pounds of total VOCs recovered by DPA-201, DPA-202, and DPA-203 in 2015 represent a 238 percent increase from 2014 (47.4 pounds recovered). The estimated removal efficiency of the three dual phase extraction wells as a group increased, from 0.40 pounds VOC/1,000 gallons extracted in 2014 to 0.7 pounds VOC/1,000 gallons extracted in 2015.

The major compounds removed from groundwater by the three dual wells were carbon tetrachloride (129 pounds, 81 percent of the total recovered) and chloroform (28 pounds, 17 percent of total). Trace amounts of carbon disulfide, methylene chloride, tetrachloroethene and trichlorothene made up the last 3 percent of VOCs removed.

5.3.3 Area T-4 Extraction Well DPT-261 (T-4)

Extraction well DPT-261 (T-4) did not operate during 2015 due to a lack of recoverable water. Although there was sufficient water to sample T-4 during all of the quarterly groundwater sampling events, the automatic air-driven pump did not recover any measurable amounts of water for the year. Well T-4 recovers less than 0.1 gallons per minute (GPM) when it operates.

5.3.4 Extraction Well OW-3

The mass of SSPL compounds removed from groundwater by OW-3 is summarized in Table 5.10. The estimated volume of groundwater pumped from OW-3 in 2015 was 74,863 gallons, a decrease of about 26 percent from 2014. A total of approximately 514 pounds of VOCs were removed from groundwater by OW-3 in 2015, a decrease of 80 pounds compared with 2014 (594 pounds).

The 2015 removal efficiency of OW-3 was 6.9 pounds VOC/1,000 gallons extracted, compared with a removal efficiency of 5.9 pounds VOC/1,000 gallons extracted in 2014. The compounds removed were carbon disulfide (462 pounds, 90 percent of the total recovered), carbon tetrachloride (43 pounds, 8 percent of total), and chloroform (9 pounds, 2 percent of total).

5.3.5 Extraction Well LR-66

Former Lockport-Rochester monitoring well LR-66 was converted into a permanent groundwater extraction well in June 2005 and became operable on July 1, 2005.

The mass removal calculations for organic compounds removed from groundwater by LR-66 are summarized in Table 5.11. The volume of groundwater pumped from LR-66 in 2015 was 248,070 gallons, up 19 percent from 2014 (208,822 gallons). A total of 4.6 pounds of VOCs was removed from groundwater by LR-66 in 2015, approximately the same amount removed in 2014 (3.3 pounds). The removal efficiency of LR-66 was about the same between 2014 and 2015 at 0.02 pound VOC/1,000 gallons extracted. The main compounds removed in 2015 were carbon

tetrachloride (3.4 pounds, 74 percent of total), chloroform (1.0 pounds, 22 percent of total), methylene chloride, tetrachloroethene and carbon disulfide (0.3 pounds, 4 percent of total).

5.3.6 Area A Knockout Pot and Sump

Although not specifically part of the groundwater extraction system, when it is running, the Area A SVE system air/water separator (i.e., knockout pot) and the 10-foot long PVC "sump" collects groundwater that is present in the SVE air stream (as entrained moisture in the soil gas) and groundwater that is removed by the drop tube assemblies and the blower. The sump is a 12-inch-diameter, 10-foot-long PVC pipe located at one end of the Area A header assembly, just inside the Treatment Building.

SMC historically measured the flow and VOC concentrations of the groundwater that was collected in the knockout pot and sump. However, in 2015, due to the Area A system being turned off the entire year, no measurements were recorded. Historically, the knockout pot and sump collected a fraction of a pound of VOCs annually.

5.4 Routine Maintenance

The operational status of the extraction and dual phase wells is monitored during the weekly visits to the Site. The flows from each of the wells are recorded weekly in the O&M logbook. If the submersible pumps are not maintaining the desired drawdown, or if the dual pumps are not cycling properly, pump maintenance is performed.

All of the extraction wells have been tied into one of two leak detection systems. A leak in the force main of any well on either system will shut off all of the pumping associated with the system. In 2015, no leaks were detected in any force mains.

6. Groundwater Treatment System

6.1 Summary of Operations – 2015

The groundwater treatment system operated in the automatic mode in 2015 with at least weekly visits to the Site to perform system monitoring, inspections, and other routine O&M activities.

No major updates were made to the groundwater treatment system in 2015.

Note that the two original Calgon Corporation 20,000-pound GAC vessels were replaced in the middle of 2014 with two 10,000-pound GAC units manufactured by ChemTrade International. Therefore, 2015 was the first full year of operation with the replacement carbon vessels.

6.2 Maintenance, Inspection, and Monitoring Activities

6.2.1 Routine Treatment System Maintenance

Routine inspection and maintenance of the groundwater treatment system is performed weekly during visits to the Site. Routine weekly inspections and maintenance include:

1. General visual inspection of the treatment equipment for leaks, overflows, or malfunctions
2. Inspection of process-indicating instruments

3. Inspection of aboveground SVE piping
4. Recording operating conditions in logbook
5. Correction of operational problems
6. Replacement of bag filters, as indicated by differential pressure across the filters
7. Repair or replacement of damaged parts

All inspections are recorded in the O&M logbook.

The treatment system is shut down periodically to perform routine maintenance on the system components. The periodic maintenance shutdowns involved cleaning and inspection of the following:

1. Cone bottom tank
2. Carbon feed tank
3. Carbon feed pump
4. Bag filter housings

The carbon vessels are cleaned and inspected during routine carbon changeouts.

6.2.2 Treatment System Modifications

As discussed in Section 6.1, following the replacement of the original Calgon Corporation carbon vessels in mid-2014, there were no treatment system modifications in 2015.

6.2.3 Groundwater Treatment System Process Monitoring

Samples for chemical analysis are collected routinely from the groundwater treatment system. Samples are collected weekly from the carbon interstage sampling point. The groundwater influent and system effluent are sampled monthly, at a minimum. Process monitoring sample analytical results are presented in Appendix A. Influent, carbon interstage, and effluent data are summarized in Tables A-1 to A-3, respectively.

The 2015 analytical data for the monthly influent groundwater samples are presented in Table A-1. The data indicate that typically only carbon tetrachloride, carbon disulfide, and chloroform are detected in high concentrations in the influent.

The 2015 analytical data for the weekly carbon interstage groundwater samples are presented in Table A-2. The data indicate that the results are generally non-detect or indicate low (< 50 ppb) total SSPLs except when breakthrough occurred.

Five carbon exchanges were performed in 2015, with one 10,000-pound bed exchanged each time, on the following dates:

- March 12, 2015
- May 20, 2015

- August 12, 2015
- October 2, 2015
- December 29, 2015

Note that for each of the five carbon exchanges performed in 2015, the lead carbon bed was exchanged and the former lag bed became the lead bed.

The 2015 analytical data for effluent samples collected from the groundwater treatment system are presented in Table A-3. Effluent samples are collected and analyzed monthly for SSPLs (VOCs), at a minimum, except when SSPLs indicative of breakthrough are detected in the weekly interstage samples. When that occurs, effluent samples are collected weekly as a conservative measure. Note that there were no SSPLs detected in any of the effluent samples collected during 2015.

6.2.4 Additional Monitoring of Treated Effluent

In addition to the monthly effluent sampling and analysis for SSPLs, groundwater treatment system effluent samples are also collected on a quarterly basis. The list of quarterly parameters and associated discharge limits were originally established in a SPDES permit issued by the NYSDEC Division of Water (DOW) in 1995 when Facility groundwater treatment operations were beginning.

Since that time, Facility operations have been conducted in accordance with a July 19, 1993 Order on Consent (AOC) issued by NYSDEC as part of the New York State Superfund program, with oversight by the agency's Division of Environmental Remediation (DER). With respect to Facility effluent discharge, the DOW does not have regulatory authority over discharge from a State Superfund Site. Instead, the DER is responsible for ensuring compliance with Facility effluent criteria and for approval of all submittals. For the SMC facility, DER requires monthly effluent sampling for SSPL compounds and quarterly effluent sampling for a combined list of SSPL compounds and other SPDES parameters. To differentiate it from the Facility's monthly effluent sampling, the quarterly sampling event is known as the "SPDES sampling" event.

Appendix B presents the quarterly SPDES sample results for 2015. Note that since the monthly effluent samples include analyses of the SPDES SSPLs (the required list of VOCs) on a more frequent basis than quarterly, the VOC component of the SPDES requirements is met by the monthly results shown on Appendix A-3. As noted above, all VOC results were non-detect for 2015.

Appendix B presents the list of SPDES semi-volatile, metals and wet chemistry parameters, the associated discharge limits, and the analytical laboratory results of the 2015 quarterly SPDES sampling events for the Facility. Discharge limits are concentration-based with the exception of metals, for which mass limits have been established. To calculate average daily mass discharge rates, laboratory concentrations can be multiplied by the daily average effluent flow for the treatment system (reported using Table 9.2 of this Report) and converted into pounds per day. However, for 2015, all of the metals results for the Facility SPDES sampling were non-detect. Therefore, the mass for each quarterly event is shown as "<" (less than) the calculated number, which was determined using the reported detection limit for each metal.

As noted in Appendix B, there were no parameters detected in excess of the established discharge limitations, and the vast majority of the quarterly effluent analyses were non-detect throughout 2015.

6.2.5 Groundwater Treatment System Performance Monitoring – 2015

In 2015, all extraction wells were sampled on a quarterly basis and sampling of the Site-wide monitoring well network was performed on an annual basis. The purpose of the groundwater monitoring is to evaluate progress of the groundwater extraction system in removing the SSPL compounds from the groundwater. The groundwater sampling data are used to develop concentration trends over time.

Groundwater samples are collected in accordance with established procedures and protocols in the Site Operations and Maintenance Manual. The samples are shipped to Columbia Analytical Services for analysis following Chain of Custody procedures. The laboratory sends the analytical results to GHD. The results are reviewed, collated, put into tabular form, sent to SMC for review, and included in the quarterly status reports to NYSDEC.

Groundwater sampling events were performed at the Site in 2015 as follows:

1. February/April 2015 (extraction wells only)
2. June 2015 (monitoring well network and extraction wells)
3. August 2015 (extraction wells only)
4. November 2015 (extraction wells only)

The analytical results for the groundwater samples are presented in Appendix C, Tables C-1 through C-4.

6.2.6 Groundwater Treatment System Performance Monitoring – 2016

The currently scheduled semiannual and annual sampling programs for 2016 are as follows:

1. Semiannual Extraction Well Sampling: Two sampling events of the extraction wells are scheduled to be performed in May and November 2016. A total of 12 extraction wells will be sampled including:
   - Bedrock extraction wells – EW-1 through EW-6, LR-66, and OW-3
   - Dual wells – DPA-201, DPA-202, and DPA-203
   - T-4 (as long as sufficient water is present)
2. Annual Sampling: During 2016, an annual sampling is scheduled to be performed in May. Wells to be sampled include the 12 extraction wells plus the following 47 monitoring wells:

Site Monitoring Wells			
Upper Lockport Wells	***Lower Lockport Wells***	***Lockport/ Rochester Wells***	***Rochester Wells***
OW-11	W-18L	W-19B	B-02
W-11	W-19A	LR-2	R-16
W-16	W-23B	LR-16	R-19
W-16L	W-48E	LR-67	R-68
W-17	W-50L	LR-20	R-48
W-18R	W-60L	LR-48	R-50
W-19D	W-65	LR-49	R-51

Site Monitoring Wells			
Upper Lockport Wells	***Lower Lockport Wells***	***Lockport/ Rochester Wells***	***Rochester Wells***
W-20	W-66L	LR-50	R-60
W-22	W-67L	LR-51	R-61
W-23C	W-70L	LR-61	R-62
W-66		LR-62	R-66
W-67		LR-69	R-67
		OW-5	

6.2.7 Facilities, Structures, and Grounds Maintenance

The facilities, structures, and grounds are inspected and maintained regularly as specified in the O&M Manual. These inspections are carried out during routine Site visits. These routine inspection tasks include checking the appearance of the grass, driveways, walkways, fencing, and lighting and containment areas. Inspections and maintenance tasks inside the Treatment Building include checking the appearance of walls, floors, ceiling, doors, walkways, emergency equipment, lights, sumps, and equipment support structures. Any problems or deficiencies are noted in the O&M logbook.

6.2.8 Unscheduled Maintenance

Unscheduled maintenance was performed at the Site as required in 2015. Examples of unscheduled maintenance activities performed are:

1. Pump maintenance or replacement
2. Extraction well riser pipe replacement
3. Equipment repair or replacement

Section 5.2 provides an overview of the 2015 unscheduled maintenance related to the extraction wells.

6.2.9 Monitoring Well Inventory

An inventory/inspection of the Site monitoring wells was performed in conjunction with the November 2015 groundwater sampling event. A copy of the well inventory is included as Appendix D. The well inventory indicates that the wells are in generally good condition. Three monitoring wells (B-02, R-51 and W-17) require minor repairs that will be performed in spring 2016.

7. Groundwater Level Monitoring and Chemistry – 2015

Depth-to-groundwater measurements were recorded for all wells in conjunction with the February/April, June, August, and November 2015 quarterly sampling events. Table 7.1 presents the measured groundwater levels for the four events. The June 2015 data were used to prepare potentiometric surface contour maps for each of the four water-bearing zones (WBZs). The WBZs

include the Upper Lockport, the Lower Lockport, the Lockport/Rochester, and the Rochester. In addition to the potentiometric surface contours, chemical isocontour figures were prepared for each WBZ using groundwater data obtained during the June 2015 event.

The potentiometric surface contour maps and chemical isocontour figures are discussed in the following sections.

7.1 General

7.1.1 Groundwater Potentiometric Contours

Potentiometric surface contours were prepared for each WBZ based on the measured depths to groundwater in the June 2015 sampling event. Hydraulic containment was determined by evaluating the potentiometric contours, as well as considering the results of a detailed hydraulic monitoring program performed in 2000. The 2000 hydraulic monitoring program assessed the relationship between groundwater elevations in individual wells and their responses to pumping activity in the various Site WBZs using transducers installed in individual wells. The results of that program, including individual well hydrographs, were presented in the 2000 Annual Operations and Maintenance Report, March 2001.

Table 7.2 presents a summary of the monitoring wells and extraction wells classified by WBZ. The wells are classified under a specific WBZ if they are screened across or have open intervals in the specific WBZ. This classification was used to prepare the potentiometric surface contour maps for the June 2015 event.

During the preparation of potentiometric surface contours for the various WBZs, GHD noted that several monitoring wells did not appear to be hydraulically connected to the monitored WBZ. For example, well W-17 in the Upper Lockport formation, well W-23B in the Lower Lockport formation, well LR-69 in the Lockport/Rochester formation, and well R-66 in the Rochester formation exhibited anomalous water levels and, therefore, were not used to create groundwater contours. Well W-23B showed hydraulic response to Lower Lockport pumping in the 2000 hydraulic monitoring program, while W-17, LR-69, and R-66 did not show response to pumping in their respective WBZs. A review of the stratigraphic logs for the latter two wells indicates that the Rochester WBZ at R-66 and the Lockport-Rochester WBZ at LR-69 are generally less fractured than in other areas of the Site; hence, hydraulic interconnection is lower at these two deep monitoring wells. The wells that are not used for contouring are noted on the various potentiometric contour figures.

In addition, water levels for the deep bedrock extraction wells (EW-1, EW-2, and EW-3, whose open intervals span the Lower Lockport, Lockport/Rochester, and Rochester WBZs) were adjusted to levels representative of the specific WBZ. This was done when the measured water level for the deep extraction well was significantly below the base of the designated WBZ (i.e. the Lower Lockport and Lockport/Rochester WBZs) or significantly below the water level elevations of the surrounding wells in a particular WBZ (i.e. the Rochester WBZ). The groundwater elevations in the immediate vicinity of the deep extraction wells are assumed to be at or near the base of the respective WBZ, since the WBZs at the extraction wells are essentially dewatered. However, for generating groundwater contours, these water levels were conservatively assumed to be lower than the lowest measured water level from the respective WBZs (but not lower than the base of the WBZ). This allows meaningful water level contours to be created for each WBZ in the regions around the deep extraction wells, while accounting for potential influences from extraction well operations and well and fracture efficiencies. These assigned values for EW-1, EW-2, and EW-3

have historically been assigned as indicated below. For 2015, no significant changes were observed in the aquifer levels (i.e., water level elevations in observation wells near an extraction well were not significantly lower than in previous years), so the historical values have again been used. The assigned values are:

Lower Lockport	545 feet mean sea level (MSL)
Lockport/Rochester	545 feet MSL
Rochester	490 feet MSL

Note that the assigned EW-1, EW-2, and EW-3 water level value for both the Lower Lockport and the Lockport/Rochester WBZs for purposes of plotting potentiometric contours is 545 feet MSL. This value reflects the fact that the lowest measured water level in both Lower Lockport and Lockport/Rochester WBZ hydraulically-connected monitoring wells was approximately 545 to 550 feet MSL.

For the Upper Lockport potentiometric contour maps, extraction wells EW-1, EW-2, and EW-3 were not used to generate contours, as these wells are not open in the Upper Lockport. Groundwater elevations for combined Upper and Lower Lockport extraction wells EW-4, EW-5, and EW-6 were adjusted to 570 feet MSL for contouring the Upper Lockport WBZ. The 570 feet MSL is a level very near the lowest measured water level in the Upper Lockport WBZ on Site. Actual water level elevations for EW-4, EW-5, and EW-6 were used for contouring the Lower Lockport WBZ.

7.1.2 Chemical Isocontours

Chemical isocontours for each WBZ were prepared using analytical data from the June 2015 semiannual groundwater monitoring event. Two figures were prepared for the May data: one for carbon disulfide concentrations, and a second for the sum of carbon tetrachloride and chloroform concentrations[1]. A logarithmic scale was utilized for the isocontour plots.

Note that the June 2015 groundwater analytical results for carbon disulfide and for the sum of carbon tetrachloride and chloroform are also shown on the Groundwater Potentiometric Surface Contour figures for the four WBZs. The analytical results are listed below each well that is monitored in the specific WBZ.

7.2 Upper Lockport Water-Bearing Zone

The Upper Lockport WBZ is the shallowest water-bearing fracture zone at the Site. The Upper Lockport WBZ consists of the base of the overburden and approximately the top 25 feet of the Lockport bedrock. This zone is generally highly fractured. Existing Site information indicates that the Upper Lockport WBZ pinches out and is not present on the western portion of the Site. DPA-201, DPA-202, DPA-203, EW-4, EW-5, and EW-6 extract groundwater from the Upper Lockport WBZ.

7.2.1 Groundwater Potentiometric Contours

Figure 7.1 presents the Groundwater Potentiometric Surface Contours for the Upper Lockport WBZ for the June 2015 event. Based upon the groundwater potentiometric surface contours, Upper

[1] Chemical concentrations of carbon tetrachloride and chloroform are combined (summed) for preparation of isocontour figures because chloroform is a breakdown (daughter) product of carbon tetrachloride.

Lockport groundwater flow is generally east to west through the middle of the Site. There is a very localized response to pumping from extraction wells EW-4, EW-5, and EW-6, which are completed in both the Upper and Lower Lockport WBZ. The 2015 potentiometric surface contours for the Upper Lockport WBZ are generally consistent with historical conditions.

7.2.2 Chemical Isocontours

The chemical isocontour plots for the Upper Lockport WBZ for June 2015 are presented on Figures 7.2 and 7.3. A review of these contours indicates that the only elevated carbon disulfide concentrations exist in the groundwater around DPA-203 (Figure 7.2) located within Area A. Elevated levels of carbon tetrachloride and chloroform are present at both DPA-202 and DPA-203 and at W-18R, DPA-201, W-17 and W-67 (Figure 7.3). The mass loading calculations indicate that DPA-202 and DPA-203 were responsible for removing approximately 156 pounds of VOCs in 2015, primarily carbon tetrachloride and chloroform.

Note that there were only two low-level detections of carbon disulfide in Upper Lockport wells west of Area A. Only three Upper Lockport monitoring wells had detectable levels of carbon tetrachloride and chloroform west of Area A. The highest of the three (W-66) had a concentration of 5,100 ppb (sum of carbon tetrachloride and chloroform) and the other two had much lower concentrations.

The chemical isocontour plots for the Upper Lockport WBZ illustrate that DPA-202 and DPA-203 are well-placed to address the areas of elevated concentrations of the two main Site contaminants. The mass loading data indicate that these pumping wells are effective in recovering VOCs from the Upper Lockport WBZ.

A comparison of the 2015 Upper Lockport carbon disulfide isocontours (Figure 7.2) with those of 2014 indicates that the area of carbon disulfide-impacted groundwater stayed approximately the same with the exception of a low concentration western lobe of carbon disulfide due to an isolated detection near EW-4. However, the concentrations in the center of the impacted area (specifically DPA-203) increased slightly, and the concentration at DPA-202 went from 3,300 ppb to non-detect. A comparison of the 2015 Upper Lockport carbon tetrachloride plus chloroform (CTET+CHL) isocontours (Figure 7.3) with those of 2014 also indicates that the size of the impacted groundwater was nearly identical for both years; however, concentrations in DPA-203, in the center of the impacted area, increased in 2015. Concentrations also generally increased in monitoring wells located just outside of the impacted area's center. Note that with the maintenance and casing replacements performed at both DPA-202 and 203 in 2015, the volumes of extracted groundwater increased at both locations, which led to increased SSPL removal. Over time, this is expected to lower the SSPL concentrations at these locations.

7.3 Lower Lockport Water-Bearing Zone

The Lower Lockport WBZ is the second bedrock WBZ identified at the Site. The Lower Lockport WBZ generally includes groundwater in the fractured bedrock from about 50 to 75 feet below top of rock.

EW-1 through EW-6 extract groundwater from the Lower Lockport WBZ.

7.3.1 Potentiometric Surface Contours

Potentiometric surface contours for the Lower Lockport WBZ for June 2015 are presented as Figure 7.4.

The groundwater potentiometric contours indicate that the VOCs in the Lower Lockport WBZ are being contained, captured on Site, and recovered by the groundwater extraction system. There are very pronounced cones of depression around EW-4/EW-2 and around EW-6/EW-3.

7.3.2 Chemical Isocontours

Chemical isocontours were prepared for the Lower Lockport WBZ for carbon disulfide (Figure 7.5) and carbon tetrachloride and chloroform combined (Figure 7.6). The chemical isocontour maps for carbon disulfide indicate areas of elevated concentrations in the Lower Lockport WBZ around monitoring well W-16L and extraction wells EW-5 and EW-6. Hydraulic monitoring data indicate that W-16L is within the capture zone of combined Upper and Lower Lockport extraction well EW-5 and deep extraction well EW-3. EW-6 is near the center of the Lower Lockport capture zone at the Site.

The chemical isocontour map for carbon tetrachloride and chloroform combined indicates an area of elevated concentrations around EW-6, and to a lesser extent around W-18L. Other nearby wells with elevated concentrations include: EW-4, W-23B, W-67L, and W-70L. Mass loading concentrations for EW-4, EW-5, and EW-6 indicate that nearly 250 pounds of carbon tetrachloride and chloroform were recovered from these wells in 2015. The 2000 hydraulic monitoring data indicate that Lower Lockport monitoring wells W-18L, W-23B, W-67L and W-70L respond to pumping activity at the Site. The June 2015 surface contours and chemical isocontours illustrate that the existing groundwater extraction system is effective in containing and recovering SSPLs from the Lower Lockport WBZ.

A comparison of the 2015 Lower Lockport carbon disulfide isocontours (Figure 7.5) with that of 2014 indicates that the area of impacted groundwater stayed approximately the same in 2015, but that the concentrations in the center and northern edges of the area increased slightly. A comparison of the 2015 Lower Lockport CTET+CHL isocontours (Figure 7.6) with that of 2014 indicates that 2015 CTET and CHL concentrations decreased significantly in several of the extraction wells; however, there was no significant change in the size and shape of the impacted area.

7.4 Lockport/Rochester Water-Bearing Zone

The Lockport/Rochester WBZ is the third WBZ encountered in the bedrock at the Site. The Lockport/Rochester WBZ is a slightly fractured WBZ at the base of the Lockport bedrock, and is at or near the contact with the Rochester shale. EW-1 through EW-3 and LR-66 extract groundwater from the Lockport/Rochester WBZ.

7.4.1 Potentiometric Surface Contours

Potentiometric surface contours were prepared for the Lockport/Rochester WBZ for June 2015 (Figure 7.7). A review of the contours under pumping conditions indicates that EW-1, EW-2, and EW-3 have a dramatic effect on the groundwater in this WBZ. In addition, the effect of LR-66 on

groundwater recovery is evident. The direction of flow is from the Site perimeter inward toward the extraction wells. The pumping contours indicate hydraulic capture across the entire Site.

7.4.2 Chemical Isocontours

Chemical isocontour maps of the Lockport/Rochester WBZ were prepared from the June 2015 groundwater sampling data. Chemical isocontours for carbon disulfide are presented on Figure 7.8. Chemical isocontours for carbon tetrachloride and chloroform combined are presented on Figure 7.9.

The chemical isocontour plot for carbon disulfide indicates an area of high concentration in groundwater around LR-67 and adjacent wells LR-62 and OW-5. Hydraulic monitoring has shown that there is a strong inward gradient from these wells toward the middle of the Site. Previous hydraulic monitoring activities indicate that both wells respond to pumping activity.

The chemical isocontour plot for carbon tetrachloride and chloroform indicates that an area of high concentrations exists around monitoring wells LR-61, LR-2, LR-16, and W-19B. Extraction well LR-66 also exhibits elevated CTET+CHL concentrations. Previous hydraulic monitoring has shown that LR-2, LR-61, LR-16, and W-19B all respond to pumping activity, and are situated within the cone of depression of extraction wells EW-2 and EW-3.

The chemical isocontour maps confirm that the existing groundwater treatment system is effective at containing and recovering VOCs from the Lockport/Rochester WBZ.

A comparison of the 2015 Lockport/Rochester carbon disulfide isocontours (Figure 7.8) with that of 2014 indicates that carbon disulfide concentrations generally increased to the east of Area A at LR-67 and LR-62, but decreased dramatically in the same area at OW-5. In addition, the concentrations generally decreased to the west of Area A due to a decrease of carbon disulfide in LR-2. A comparison of the 2015 Lockport/Rochester CTET+CHL isocontours (Figure 7.9) with that of 2014 indicates that the concentrations of these two SSPLs decreased at LR-2 and at LR-61 near the center of the impacted area and at W-19B. The overall extent of the CTET+CHL impacted area increased slightly in 2015.

7.5 Rochester Water-Bearing Zone

The Rochester WBZ is the fourth and deepest bedrock WBZ being remediated at the Site. EW-1 through EW-3 and OW-3 extract groundwater from the Rochester WBZ.

7.5.1 Potentiometric Surface Contours

The potentiometric surface contour for the Rochester WBZ is presented on Figure 7.10.

The potentiometric contours show a dramatic response to pumping with a strong inward gradient toward EW-1, EW-2, and EW-3. The pumping contours indicate that there is hydraulic containment within the Rochester WBZ across the Site.

7.5.2 Chemical Isocontours

Chemical isocontour maps of the Rochester WBZ were prepared from the June 2015 groundwater sampling data.

The carbon disulfide chemical isocontour map (Figure 7.11) shows two distinct areas of significantly elevated carbon disulfide in the Rochester WBZ Zone. The first area is around extraction well OW-3, which removed 462 pounds of carbon disulfide in 2015. Monitoring wells nearby OW-3 with elevated carbon disulfide concentrations are R-68, R-66, R-50, and B-02. All of these wells showed a response to pumping during the 2000 hydraulic monitoring program. The second area of elevated carbon disulfide is centered on monitoring wells R-67, R-61, and R-62 at the center and eastern side of the Site. These wells are all located relatively close to extraction well EW-3 and show a strong response to Rochester WBZ pumping.

As shown on Figure 7.12, carbon tetrachloride and chloroform are also found in very high concentrations around OW-3. OW-3 removed approximately 52 pounds of these two constituents during 2015. Other wells with high concentrations are R-66, R-68, R-50, B-02, and R-19. Each of these wells is in the capture zone, and the existing groundwater extraction has been demonstrated to be effective in removing VOCs from groundwater in the Rochester WBZ.

A comparison of the 2015 Rochester carbon disulfide isocontours (Figure 7.11) with that of 2014 indicates no significant changes in the size and shape of the impacted groundwater area, however the concentration trends at wells adjacent to the center of the carbon disulfide plume showed fluctuating trends. A comparison of the 2015 Rochester CTET+CHL isocontours (Figure 7.12) with those of 2014 indicates no significant changes in the concentrations of these two SSPLs at Rochester WBZ extraction and monitoring wells. The general size and shape of the impacted groundwater area was also unchanged.

8. North Side Well Gas and Groundwater Sampling

As approved by NYSDEC, the North Side well sampling program was discontinued in June 2004. However, in order to confirm that there are no groundwater impacts in this area, Upper Lockport bedrock monitoring well OW-11 continues to be sampled annually as part of the routine groundwater monitoring program. The results for OW-11 were non-detect for all SSPLs in 2015 (see Appendix C-2). OW-11 has not had detected levels of SSPLs since monitoring began in 1995. Figure 8.1 presents the locations of the North Side wells.

9. Summary of Mass Removal

Mass removals from groundwater have been reported for individual wells in previous sections of this report. This section presents combined mass removal estimates for the groundwater and SVE systems at the Site. It also compares the total estimated mass removed for soil vapor and groundwater extraction in previous years with that of 2015.

9.1 Summary of Mass Removal by Soil Vapor Extraction

Since the SVE system in Area A was shut down for calendar year 2015, there was no mass removed by the system.

SMC anticipates that the Area A remedial system will remain shut down and be permanently decommissioned following submission and approval of the updated SMP that accompanies the Environmental Easement that was approved and filed in 2015.

As a point of reference, Table 9.1 compares the compound-specific removal of SSPLs by the Area A SVE system between 2003 and 2014. Carbon tetrachloride and chloroform combined have comprised between 92 and 100 percent of the total vapor mass removed from Area A during this time. Tetrachloroethene has typically comprised the remainder of the mass removed.

9.2 Summary of Mass Removal by Groundwater Extraction

The mass removal of VOCs from groundwater by the eight bedrock groundwater extraction wells (EW-1 through EW-6, LR-66, and OW-3), and the dual wells (DPA-201, DPA-202, and DPA-203) was discussed in Section 5.0 of this report. The total volume of groundwater pumped from the Site in 2015 is summarized in Table 9.2. The total mass of VOCs removed from groundwater at the Site in 2015 is summarized in Table 9.3.

As Table 9.2 indicates, approximately 16.3 million gallons of groundwater were pumped from the Site and treated through the on-Site treatment system. This volume represents a 23 percent increase compared to 2014 (12.5 million gallons).

Of the 16.3 million gallons extracted by the groundwater system in 2015, the bedrock extraction wells accounted for nearly 99 percent of the total, and the overburden dual phase extraction wells accounted for 1 percent of the total. EW-2 and EW-5 accounted for 21 and 42 percent, respectively, of the recovered groundwater. Other significant extraction wells included EW-6 (15 percent of the total recovered), EW-3 (10 percent), EW-1 (6 percent), and EW-4 (2 percent).

As Table 9.3 indicates, the total number of pounds of VOCs recovered through groundwater extraction in 2015 was approximately 1,580 pounds. Of this mass removed, 56 percent was carbon disulfide, 30 percent was carbon tetrachloride, and 12 percent was chloroform. Tetrachloroethene, methylene chloride, and trichloroethene combined were approximately 2 percent of the total mass removed from groundwater in 2015.

Extraction well OW-3 accounted for 33 percent of the total VOC mass removed from groundwater in 2015, EW-1 accounted for 19 percent, EW-2 accounted for 13.5 percent, EW-6 accounted for 13.3 percent, EW-3 and EW-5 accounted for 5.6 percent each, DPA-202 accounted for 6.2 percent, and DPA-203 accounted for 3.7 percent. The other three extraction wells accounted for the remaining 0.7 percent of the total mass recovered from groundwater on Site.

The 1,580 pounds of total mass removed by groundwater extraction in 2015, compared to 1,486 pounds removed in 2014, represents a 6 percent increase in the total mass removed.

The removal efficiency (pound VOCs recovered/1,000 gallons of groundwater extracted) of the groundwater extraction system at the Site over the past 16 years is shown below:

Yearly Performance of Groundwater Extraction System

Year	***Pounds of VOC Recovered***	***Groundwater Extracted (1,000 gallons)***	***Removal Efficiency (pounds VOC recovered per 1000 gallons extracted)***
1999	4,250	10,310	0.41
2000	6,197	14,906	0.42
2001	10,270	17,327	0.59

Yearly Performance of Groundwater Extraction System			
Year	***Pounds of VOC Recovered***	***Groundwater Extracted (1,000 gallons)***	***Removal Efficiency (pounds VOC recovered per 1000 gallons extracted)***
2002	6,374	17,515	0.36
2003	6,710	19,276	0.35
2004	4,953	15,951	0.31
2005	4,898	15,496	0.32
2006	3,517	15,370	0.23
2007	3,672	16,545	0.22
2008	4,790	17,289	0.28
2009	2,754	14,416	0.19
2010	2,575	14,360	0.18
2011	2,502	13,310	0.19
2012	2,511	15,311	0.16
2013	1,801	16,200	0.11
2014	1,486	12,519	0.12
2015	**1,580**	**16,297**	**0.10**
Total	**70,840**	**262,398**	
Annual Average	**4,167**	**15,435**	**0.27**

The above table illustrates that the removal efficiency of the groundwater extraction system has decreased from a high of 0.59 pound VOC recovered/1,000 gallons extracted in 2001 to its current removal efficiency of 0.10 The overall decrease is due to a general decline in groundwater concentrations over time, which indicates that the extraction system is remediating Site groundwater.

Table 9.4 compares the compound-specific removal of SSPLs by groundwater extraction for the past twelve years. In 2004, carbon tetrachloride and chloroform combined comprised 53 percent of the total mass removed in groundwater, while carbon disulfide comprised 47 percent of the total.

However, between 2004 and 2015, the percentage of carbon tetrachloride and chloroform combined has dropped to between 33 and 56 percent of the total mass removed by groundwater extraction, and the percentage of carbon disulfide has risen to between 43 and 66 percent. The amount of tetrachloroethene extracted in groundwater has remained constant at about 1 percent or less of the total mass recovered.

9.3 Summary of Mass Removal for the Site

The total mass removed by operation of the remedial systems at the Site in 2015 is summarized below:

Mass Removal by Remedial System - 2015			
Compound	***SVE***	***Groundwater Extraction***	***Site Total***
	(pounds per year)		
Benzene	0	0	0
Carbon Disulfide	0	881	881
Carbon Tetrachloride	0	480	480
Chlorobenzene	0	0	0
Chloroform	0	193	193
Methylene chloride	0	10	10
Tetrachloroethene	0	10	10
Toluene	0	0	0
Trichloroethene	0	5	5
Total VOC Removal:	**0**	**1,580**	**1,580**

The 1,580 pounds of VOCs removed from soil and groundwater at the Site is a 6 percent increase from 2014. This increase is due solely to a 94-pound increase in mass removed by the groundwater extraction system.

Of the 1,580 pounds of VOCs removed from soil and groundwater at the Site, 56 percent was carbon disulfide, 30 percent was carbon tetrachloride, and 12 percent was chloroform. These three compounds account for 98 percent of the total mass of VOCs removed from the Site in 2015.

The total mass of VOCs removed by the operation of the remedial systems at the Site over the past 17 years is summarized below:

Yearly Mass Removed by Remedial Systems			
Year	***Pounds of VOC Removed by SVE***	***Pounds of VOC Removed in Groundwater***	***Total Pounds of VOC Removed per Year***
1999	1,221	4,294	5,515
2000	165	6,197	6,362
2001	154	10,269	10,423
2002	1,207	6,374	7,581
2003	937	6,710	7,647
2004	228	4,954	5,182
2005	1,954	4,899	6,853
2006	1,712	3,517	5,229
2007	2,348	3,672	6,020
2008	507	4,790	5,297
2009	108	2,754	2,862
2010	251	2,575	2,826
2011	289	2,502	2,791
2012	250	2,511	2,761
2013	152	1,801	1,953
2014	22	1,486	1,508
2015	0	1,580	1,580
Totals	**11,505**	**70,885**	**82,390**

Table 9.5 presents a breakdown of the compound-specific SSPL removal (in pounds per year) for the combined Site remedial systems (SVE and groundwater extraction). The table indicates that carbon tetrachloride and chloroform combined have accounted for 55 percent of the Site-wide recovered mass between 2005 and 2015, with carbon disulfide comprising another 43 percent.

10. Conclusions and Recommendations

This section presents conclusions regarding the 2015 O&M of the Site and presents recommendations for O&M in 2016. The conclusions and recommendations are presented for both of the active remediation systems at the Site.

10.1 Area A SVE Remedial System

The Area A SVE system was shut down and did not operate in 2015. The blower has been shut down since August 4, 2014.

SMC anticipates that the Area A remedial system will remain shut down and be permanently decommissioned following submission and approval of the updated SMP associated with the Environmental Easement that was approved and filed in 2015.

Therefore, once the updated SMP is approved, SMC will request that the Area A SVE wells and associated piping be decommissioned and demolished, such that the Area A remediation can be fully focused on groundwater extraction and treatment.

10.2 Bedrock Groundwater Extraction and Treatment System

10.2.1 Groundwater Extraction System

As noted in Section 5.2, there were a number of pump replacements and operational improvements made to the groundwater extraction system in 2015.

By far the most significant improvement was the performance of a well rehabilitation program completed in November 2015 at extraction wells EW-1, EW-2, and EW-3. The pumps were pulled from each extraction well and cleaned, and any accumulated solids were cleaned out of the boreholes. The last previous well rehabilitation program was performed in 2012.

As discussed in Section 9.2, approximately 16.3 million gallons of groundwater were pumped from the Site for subsequent treatment and discharge. This volume was approximately 23 percent higher than the amount extracted in 2014. Significant increases in extraction rates fromEW-5 and EW-6 were responsible for the higher system total in 2015.

The total mass removed by the groundwater extraction system in 2015 was 1,580 pounds, which is 6 percent higher than that of 2014 (1,486 pounds). Significant increases in mass removal in extraction well EW-6 more than offset slight decreases in mass removal in a number of the other extraction wells.

SMC expects that the 2015 well rehabilitation program will continue to have a positive effect on the groundwater extraction rates and overall mass removal.

10.2.2 Groundwater Treatment System

Following the replacement of the two original 20,000-pound GAC vessels in mid-2014 with two 10,000-pound GAC units, no significant changes or updates were made to the treatment system in 2015. The treatment system operated normally in 2015 and was shut down only briefly to perform routine maintenance and carbon changes.

Five carbon exchanges were performed in 2015, with one 10,000-pound bed exchanged each time, on the following dates:

- March 12, 2015
- May 20, 2015
- August 12, 2015
- October 2, 2015
- December 29, 2015

The carbon exchanges were prompted by breakthrough of SSPLs from the lead carbon bed to the lag carbon bed. Concentrations of SSPLs in the interstage samples returned to non-detect following each carbon exchange.

No significant treatment system changes are planned for 2016.

10.2.3 Groundwater Treatment System Performance Monitoring

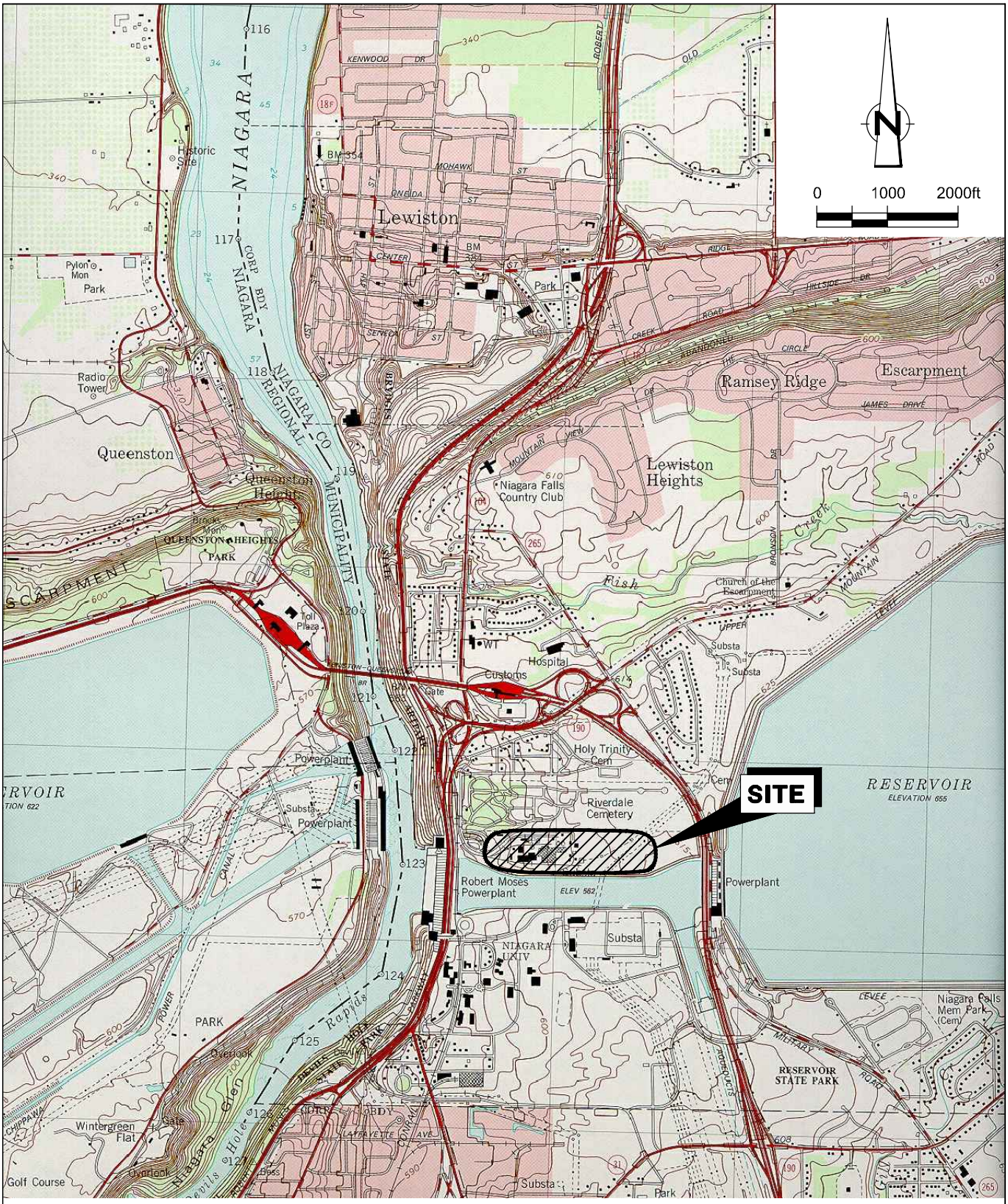
System performance monitoring includes routine sampling of Site extraction and monitoring wells. As discussed in Section 6.2.5, all extraction wells are sampled twice per year, and a Site-wide monitoring well sampling event is performed on an annual basis. The purpose of the groundwater monitoring is to evaluate progress of the groundwater extraction system in removing SSPL compounds from the groundwater.

Figures presenting groundwater potentiometric contours and chemical isocontours are presented in Section 7.0 for each WBZ present at the Site, and are discussed in some detail in Sections 7.2 through 7.5. The figures indicate that the Site extraction wells are properly placed to contain, capture, and recover SSPLs present in the groundwater at the Site. The current configuration provides hydraulic capture across the Site.

A comparison of 2015 isocontours for carbon disulfide and carbon tetrachloride/chloroform for each of the four water-bearing zones is discussed in Sections 7.2 through 7.5, and indicates that the size of the groundwater plume generally stayed the same for the four WBZs. Note that the size of the impacted groundwater plume generally decreased between 2012 and 2013 for each of the four WBZs. This is a strong indication that the extraction system continues to be effective.

However, increases in carbon disulfide and carbon tetrachloride/chloroform concentrations were noted at several wells near the center of the impacted areas. SMC expects that the 2015 well rehabilitation program will continue to increase both groundwater extraction and mass removal rates and have a positive effect on overall well SSPL concentrations.

Figures



SOURCE: USGS

figure 1.1

SITE LOCATION
STAUFFER MANAGEMENT COMPANY LLC
Lewiston, New York

OW-10

TO OW–8
(350')

GROUNDWATER EXTRACTION WELL EW-1

GROUNDWATER EXTRACTON WELL OW-3

GROUNDWATER EXTRACTION WELL LR-66

TREATMENT BUILDING

GROUNDWATER
EXTRACTION WELL
EW-5

AREA A SVE SYSTEM

FORMER LANDFILL
AREA B

N

0 100 200ft

OW-9

OW-11

OLD LEWISTON ROAD (66' R.O.W.)

GRAVEL DRIVE

HEADER

APPROX. LOCATION OF 8" DIA. HYDROGEN
LINE PERMANENT EASEMENT TO HOOKER
CHEMICAL CORP., NEW YORK POWER AUTHORITY
204C, SEC. 1 FILED IN N.C.C.O.
L.4468, P.25.

PERMANENT EASEMENT TO
NIAGARA MOHAWK
POWER CORPORATION

PERMANENT EASEMENT TO
NIAGARA MOHAWK
POWER CORPORATION

APPROXIMATE ALIGNMENT OF
EXISTING GROUT CURTAIN

GROUNDWATER
EXTRACTION WELL
EW-2

OUTFALL

FOREBAY

GROUNDWATER
EXTRACTION WELL
EW-3

FORMER LANDFILL
AREA C
(DECOMMISSIONED)

GROUNDWATER
EXTRACTION WELL
EW-4

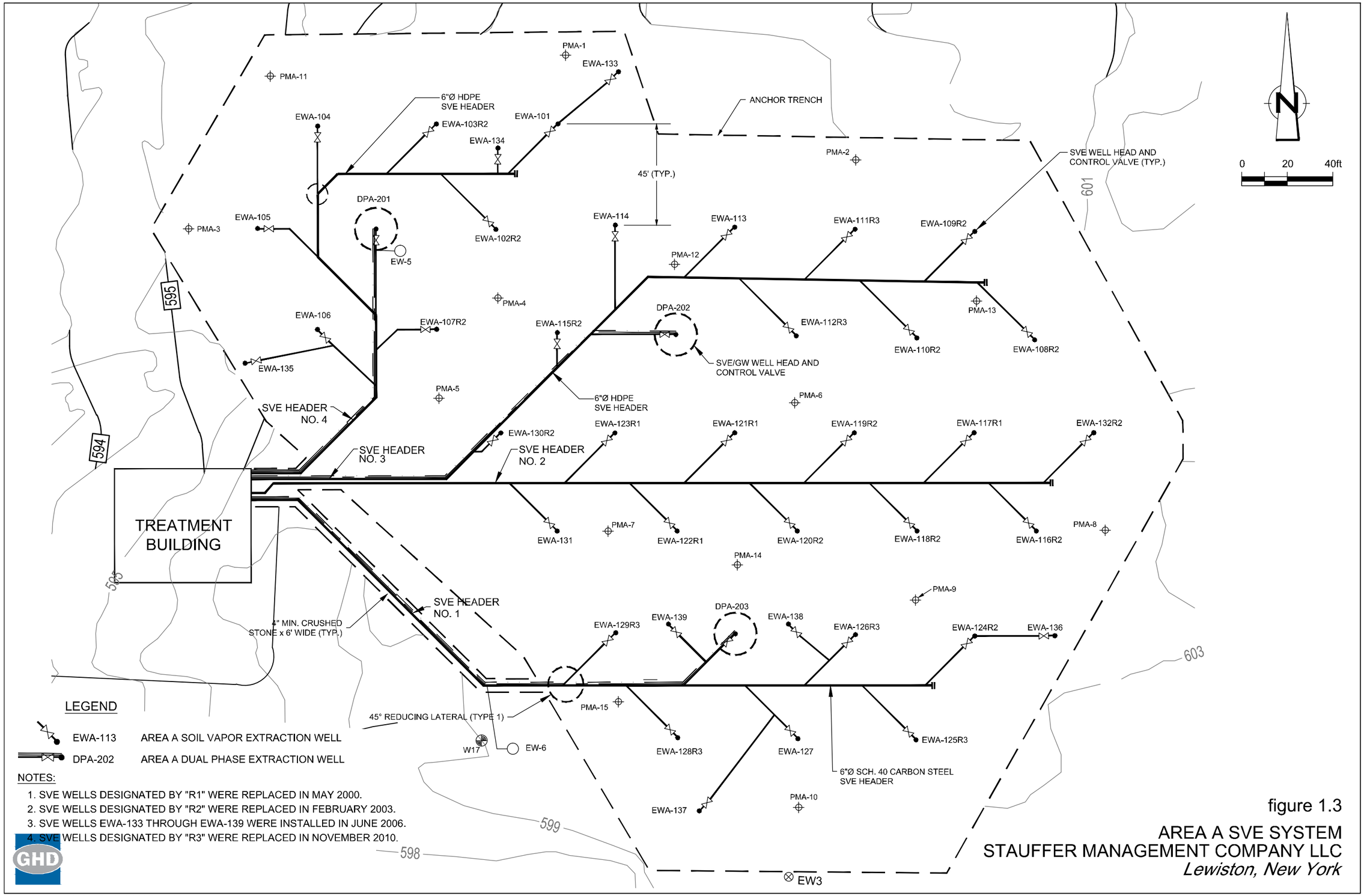
GROUNDWATER
EXTRACTION WELL
EW-6

AREA T-4
(DECOMMISSIONED)

figure 1.2

SITE LAYOUT
STAUFFER MANAGEMENT COMPANY LLC
Lewiston, New York

GHD



LEGEND

EWA-113 AREA A SOIL VAPOR EXTRACTION WELL

DPA-202 AREA A DUAL PHASE EXTRACTION WELL

NOTES:

1. SVE WELLS DESIGNATED BY "R1" WERE REPLACED IN MAY 2000.
2. SVE WELLS DESIGNATED BY "R2" WERE REPLACED IN FEBRUARY 2003.
3. SVE WELLS EWA-133 THROUGH EWA-139 WERE INSTALLED IN JUNE 2006.
4. SVE WELLS DESIGNATED BY "R3" WERE REPLACED IN NOVEMBER 2010.

GHD

figure 1.3

AREA A SVE SYSTEM
STAUFFER MANAGEMENT COMPANY LLC
Lewiston, New York

06488-20(029)GN-BU003 MAR 11/2016

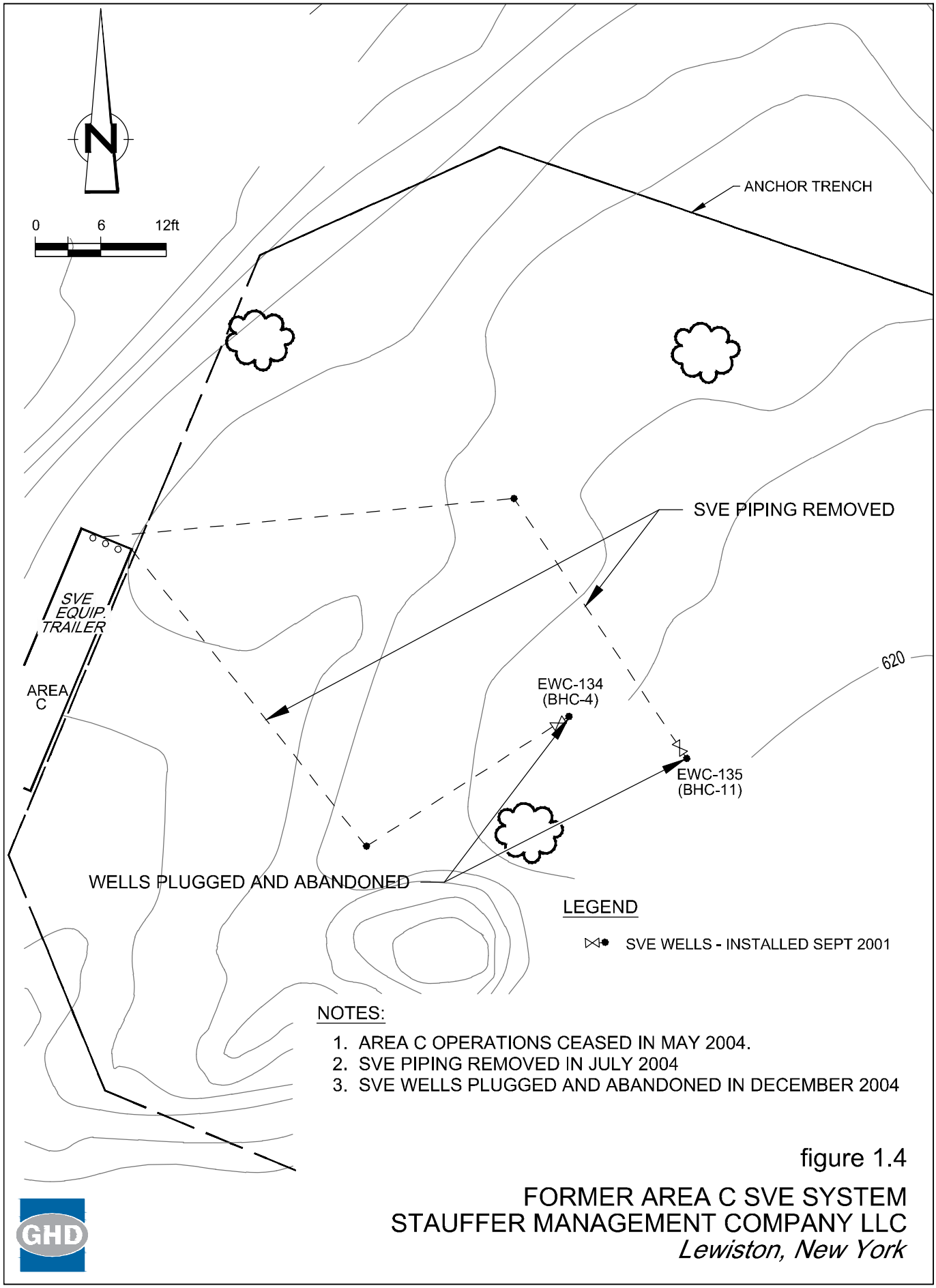


figure 1.4

FORMER AREA C SVE SYSTEM
STAUFFER MANAGEMENT COMPANY LLC
Lewiston, New York

ASPHALT DRIVE
GUIDE RAIL
ASPHALT DRIVE
NYPA CONSTRUCTION TRAILER
CONSTRUCTION TRAILERS
GATE
DITCH
GRAVEL DRIVE
GRAVEL DRIVE
ROADWAY
HEADER
HEADER
HEADER
HEADER
METAL BLDG.
STONE AREA
STONE AREA
SVE SHELTER
6" P.V.C. EFFLUENT PIPE
VAULT
6' CHAIN LINK FENCE
24" C.M.P.
DISCHARGE TO FOREBAY
FOREBAY
TO W-11
APPROXIMATE ALIGNMENT OF EXISTING GROUT CURTAIN

R-68
LR-50
W-50
R50-95
W-20
OW-3
LR-20
B-02
EW-1
R-51
LR-51
W-66L
LR-66
W-66
R-66
LR-49
W-60L
R60-95
LR-69
EW-2
LR-2
W-23B
W-23C
EW-4
T-4
W-70L
W-22A
W65-95
R48-95
W-48E
LR-48
LR61-95
R61-95
W-16
LR-16
R-16
W-16L
DPA-201
EW-5
DPA-202
DPA-203
EW-6
W-17
EW-3
W-18R
W-18L
R62-95
LR62-95
W-67L
W-67
R-67
LR-67
OW5-89
W-19D
W-19B
W-19A
R19-95

0 50 100ft

LEGEND

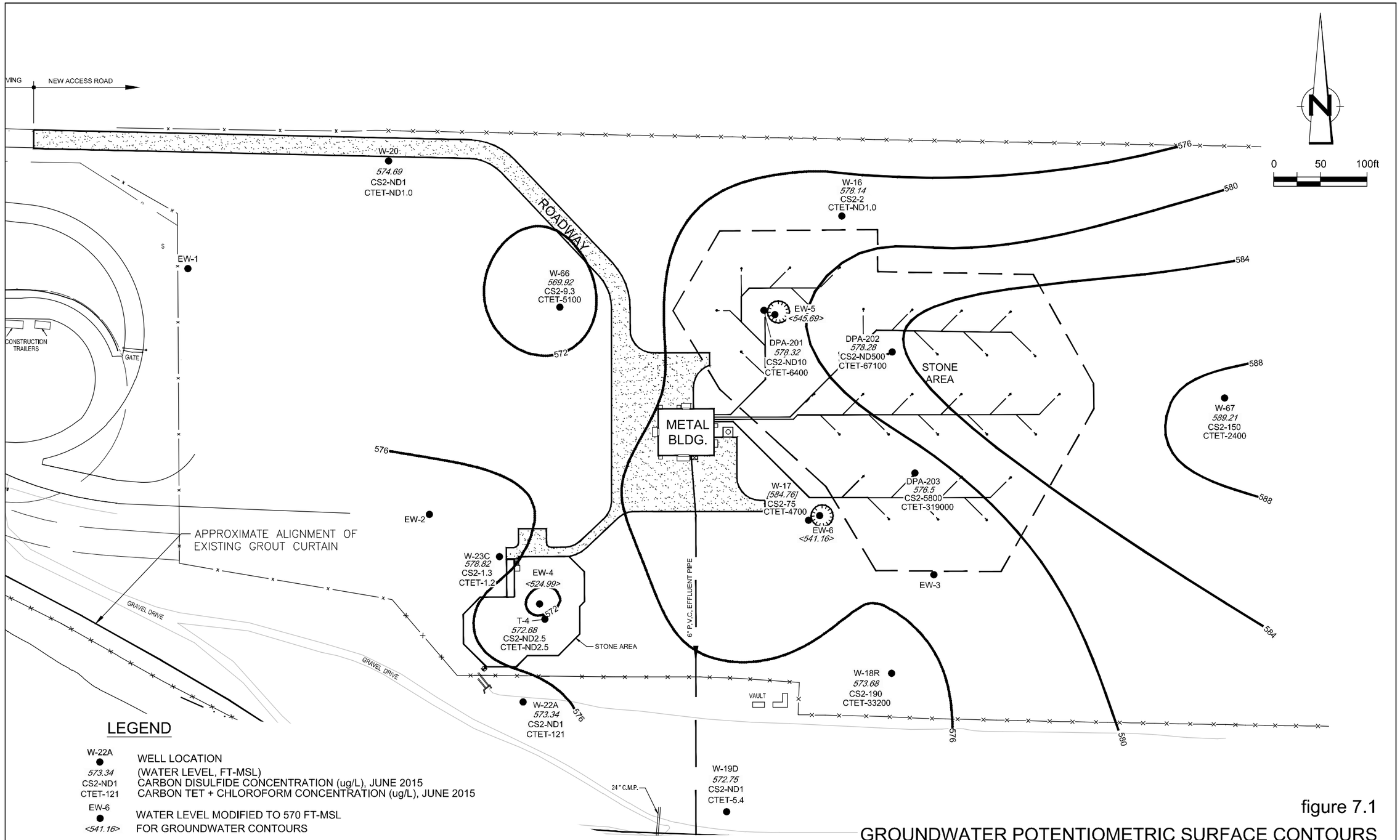
W-66 ● MONITORING WELL
EW-2 ◪ GROUNDWATER EXTRACTION WELL
DPA-201 ◭ DUAL PHASE EXTRACTION WELLS

figure 1.5

EXTRACTION AND MONITORING WELLS
STAUFFER MANAGEMENT COMPANY LLC
Lewiston, New York

GHD

06488-20(029)GN-BU005 MAR 11/2016



LEGEND

W-22A	WELL LOCATION
573.34	(WATER LEVEL, FT-MSL)
CS2-ND1	CARBON DISULFIDE CONCENTRATION (ug/L), JUNE 2015
CTET-121	CARBON TET + CHLOROFORM CONCENTRATION (ug/L), JUNE 2015
EW-6	WATER LEVEL MODIFIED TO 570 FT-MSL
<541.16>	FOR GROUNDWATER CONTOURS
W-17	WATER LEVEL NOT USED FOR GROUNDWATER CONTOURS
[584.76]	

NOTE: EW-1, EW-2 AND EW-3 NOT USED FOR CONTOURING.
THESE EXTRACTION WELLS ARE NOT OPEN IN
THE UPPER LOCKPORT FORMATION

figure 7.1

GROUNDWATER POTENTIOMETRIC SURFACE CONTOURS JUNE 2015 UPPER LOCKPORT WATER BEARING ZONE

Stauffer Management Company LLC

06488-20(029)GN-BU006 APR 27/2016

NG NEW ACCESS ROAD

W-20
(ND1.0)

ROADWAY

EW-1

W-66
(9.3)

W-16
(2)

0 50 100ft

10

DPA-201
(ND10)

EW-5

DPA-202
(ND500)

100

W-67
(150)

STONE AREA

METAL BLDG.

DPA-203
(5800)

EW-6

W-17
(75)

EW-3

1000

ONSTRUCTION TRAILERS

GATE

EW-2

W-23C
(1.3)

EW-4

T-4
(ND2.5)

STONE AREA

6" P.V.C. EFFLUENT PIPE

GRAVEL DRIVE

GRAVEL DRIVE

W-18R
(190)

W-22A
(ND1.0)

VAULT

6' CHAIN LINK FENCE

APPROXIMATE ALIGNMENT OF EXISTING GROUT CURTAIN

100

24" C.M.P.

W-19D
(ND1.0)

10

DISCHARGE TO FOREBAY

LEGEND

W-67
(150)
WELL LOCATION
(CONCENTRATION - µg/L)

GHD

figure 7.2

CHEMICAL ISOCONTOURS
JUNE 2015 CARBON DISULFIDE
UPPER LOCKPORT WATER BEARING ZONE
Stauffer Management Company LLC

06488-20(029)GN-BU007 MAR 22/2016

NEW ACCESS ROAD

W-20
(ND1.0)

ROADWAY

EW-1

GATE

W-66
(5100)

(ND1.0)
W-16

DPA-201
(6400)

EW-5

DPA-202
(67100)

STONE AREA

W-67
(2400)

METAL BLDG.

DPA-203
(319000)

EW-2

EW-6

W-17
(4700)

W-23C
(1.2)

EW-3

100000

EW-4

T-4
(ND2.5)

STONE AREA

6" P.V.C. EFFLUENT PIPE

GRAVEL DRIVE

GRAVEL DRIVE

W-18R
(33200)

W-22A
(121)

VAULT

6' CHAIN LINK FENCE

APPROXIMATE ALIGNMENT OF EXISTING GROUT CURTAIN

24" C.M.P.

W-19D
(5.4)

10

100

1000

10000

N

0 50 100ft

W-67
(2400)
WELL LOCATION
(CONCENTRATION - µg/L)

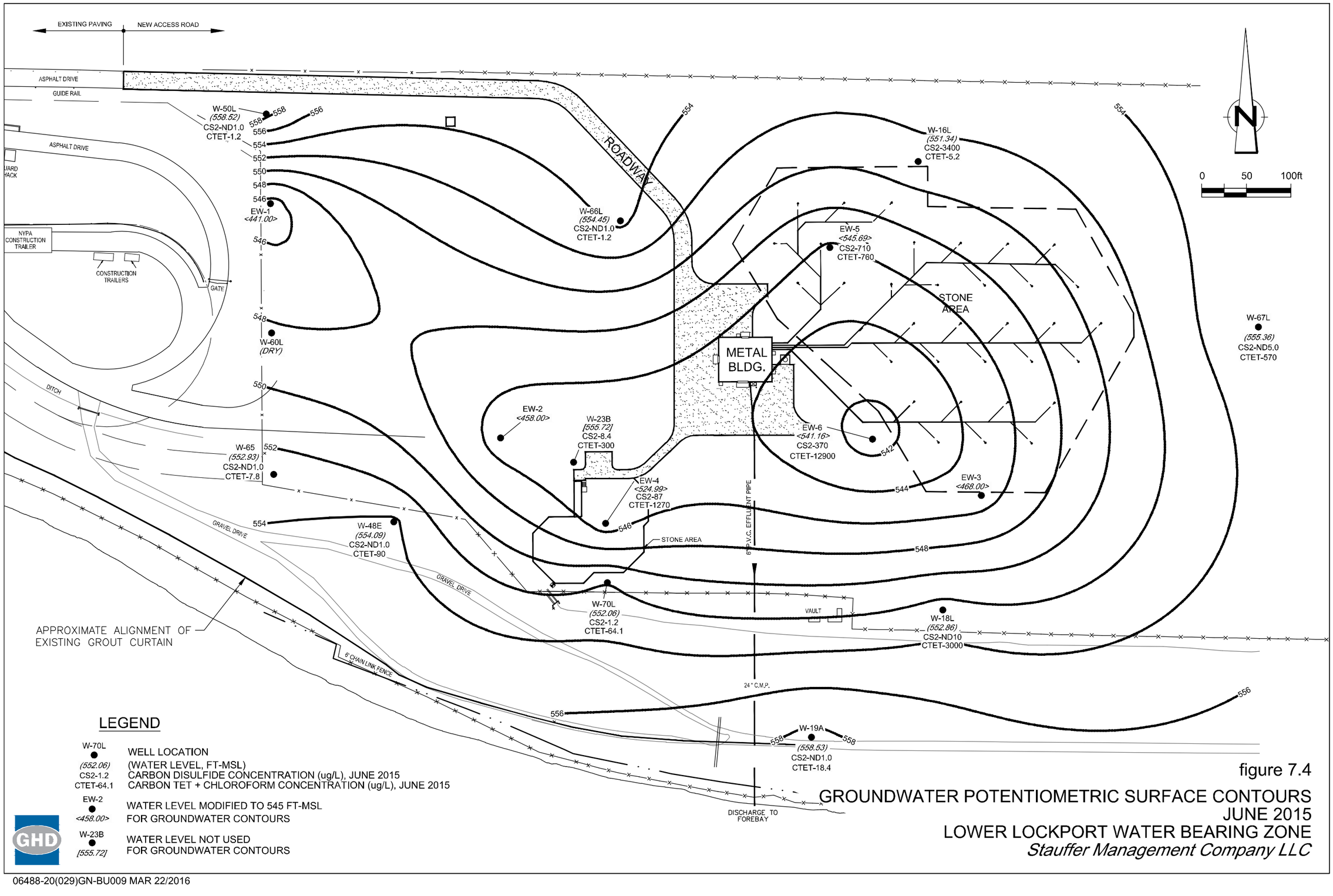
DISCHARGE TO FOREBAY

figure 7.3

CHEMICAL ISOCONTOURS
JUNE 2015 CARBON TETRACHLORIDE AND CHLOROFORM
UPPER LOCKPORT WATER BEARING ZONE
Stauffer Management Company LLC

GHD

06488-20(029)GN-BU008 MAR 22/2016



LEGEND

W-70L ●	WELL LOCATION
(552.06)	(WATER LEVEL, FT-MSL)
CS2-1.2	CARBON DISULFIDE CONCENTRATION (ug/L), JUNE 2015
CTET-64.1	CARBON TET + CHLOROFORM CONCENTRATION (ug/L), JUNE 2015
EW-2 ●	WATER LEVEL MODIFIED TO 545 FT-MSL
<458.00>	FOR GROUNDWATER CONTOURS
W-23B ●	WATER LEVEL NOT USED
[555.72]	FOR GROUNDWATER CONTOURS

figure 7.4

GROUNDWATER POTENTIOMETRIC SURFACE CONTOURS JUNE 2015 LOWER LOCKPORT WATER BEARING ZONE

Stauffer Management Company LLC

EXISTING PAVING
NEW ACCESS ROAD
ASPHALT DRIVE
GUIDE RAIL
ASPHALT DRIVE
W-50L
(ND1.0)
EW-1
CONSTRUCTION TRAILERS
GATE
DITCH
W-65
(ND1.0)
W-48E
(ND1.0)
GRAVEL DRIVE
GRAVEL DRIVE
6' CHAIN LINK FENCE
APPROXIMATE ALIGNMENT OF EXISTING GROUT CURTAIN
ROADWAY
W-66L
(ND1.0)
EW-2
W-23B
(8.4)
SVE SHELTER
(87)
EW-4
W-70L
(1.2)
STONE AREA
6" P.V.C. EFFLUENT PIPE
METAL BLDG.
W-16L
(3400)
EW-5
(710)
STONE AREA
EW-6
(370)
EW-3
VAULT
W-18L
(ND10)
24" C.M.P.
W-19A
(ND1.0)
W-67L
(ND5.0)
1000
100
10
0 50 100ft
N

LEGEND

W-16L
(3400) WELL LOCATION (CONCENTRATION - µg/L)

GHD

figure 7.5

CHEMICAL ISOCONTOURS
JUNE 2015 CARBON DISULFIDE
LOWER LOCKPORT WATER BEARING ZONE
Stauffer Management Company LLC

06488-20(029)GN-BU010 MAR 30/2016

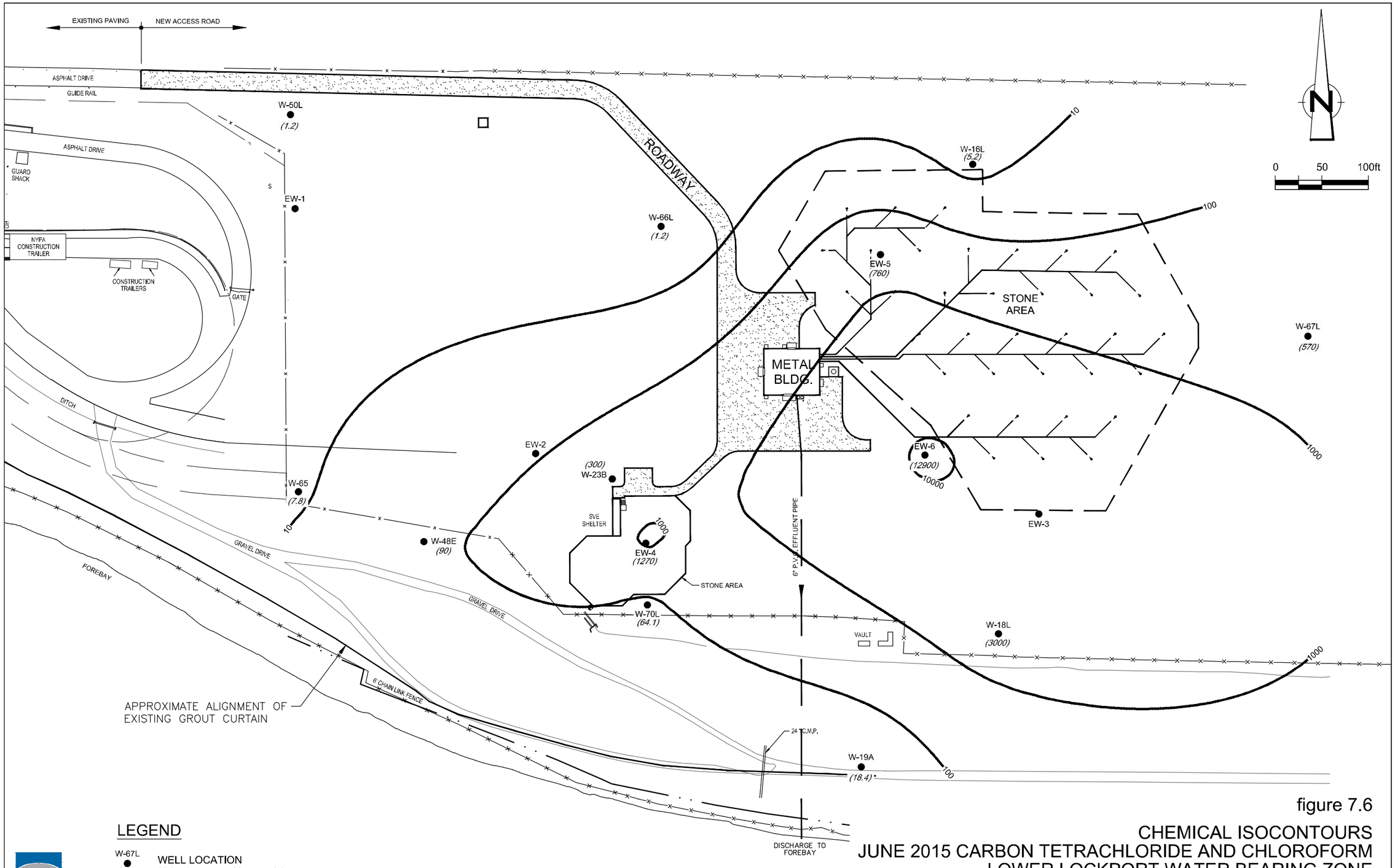


figure 7.6

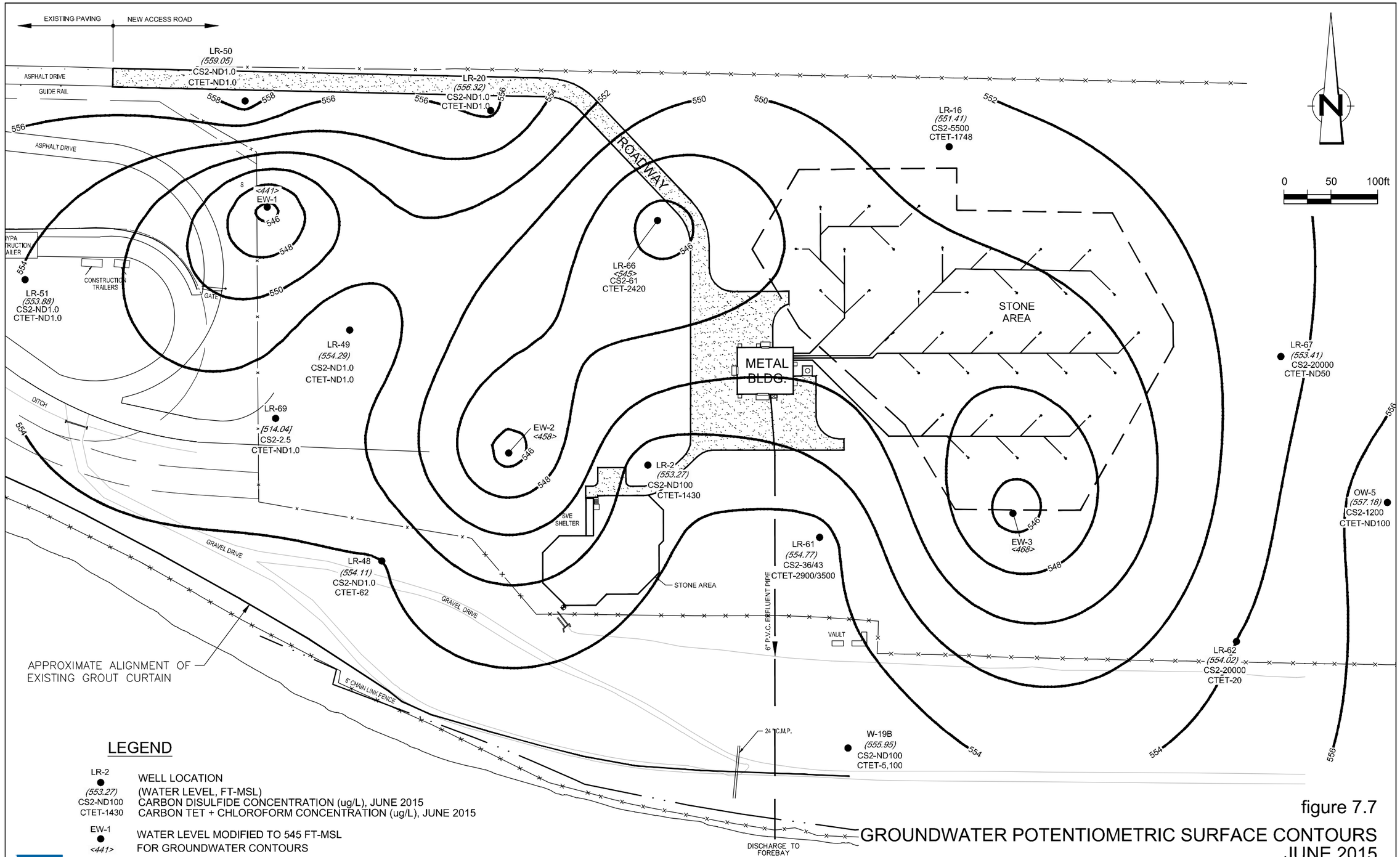
CHEMICAL ISOCONTOURS
JUNE 2015 CARBON TETRACHLORIDE AND CHLOROFORM
LOWER LOCKPORT WATER BEARING ZONE
Stauffer Management Company LLC

LEGEND

W-67L
(570)
WELL LOCATION
(CONCENTRATION - µg/L)

GHD

06488-20(029)GN-BU011 MAR 23/2016



LEGEND

LR-2 ● (553.27) CS2-ND100 CTET-1430	WELL LOCATION (WATER LEVEL, FT-MSL) CARBON DISULFIDE CONCENTRATION (ug/L), JUNE 2015 CARBON TET + CHLOROFORM CONCENTRATION (ug/L), JUNE 2015
EW-1 ● <441>	WATER LEVEL MODIFIED TO 545 FT-MSL FOR GROUNDWATER CONTOURS
LR-69 ● [514.04] CS2-2.5	WATER LEVEL NOT USED FOR GROUNDWATER CONTOURS

figure 7.7

GROUNDWATER POTENTIOMETRIC SURFACE CONTOURS JUNE 2015 LOCKPORT/ROCHESTER WATER BEARING ZONE

Stauffer Management Company LLC

06488-20(029)GN-BU012 MAR 28/2016

EXISTING PAVING
NEW ACCESS ROAD
ASPHALT DRIVE
GUIDE RAIL
ASPHALT DRIVE
LR-50
(ND1.0)
LR-20
(ND1.0)
ROADWAY
10
100
1000
10000
LR-16
(5500)
N
0 50 100ft
EW-1
LR-66
(61)
LR-51
(ND1.0)
CONSTRUCTION TRAILERS
GATE
LR-49
(ND1.0)
STONE AREA
METAL BLDG.
LR-67
(20000)
100
DITCH
LR-69
(2.5)
EW-2
LR-2
(ND100)
SVE SHELTER
6" P.V.C. EFFLUENT PIPE
LR-61
(36/43)
EW-3
(1200)
OW-5
GRAVEL DRIVE
LR-48
(ND1.0)
FOREBAY
GRAVEL DRIVE
STONE AREA
VAULT
LR-62
(20000)
10000
6' CHAIN LINK FENCE
APPROXIMATE ALIGNMENT OF EXISTING GROUT CURTAIN
24" C.M.P.
W-19B
(ND100)
10
100
1000
DISCHARGE TO FOREBAY

LEGEND

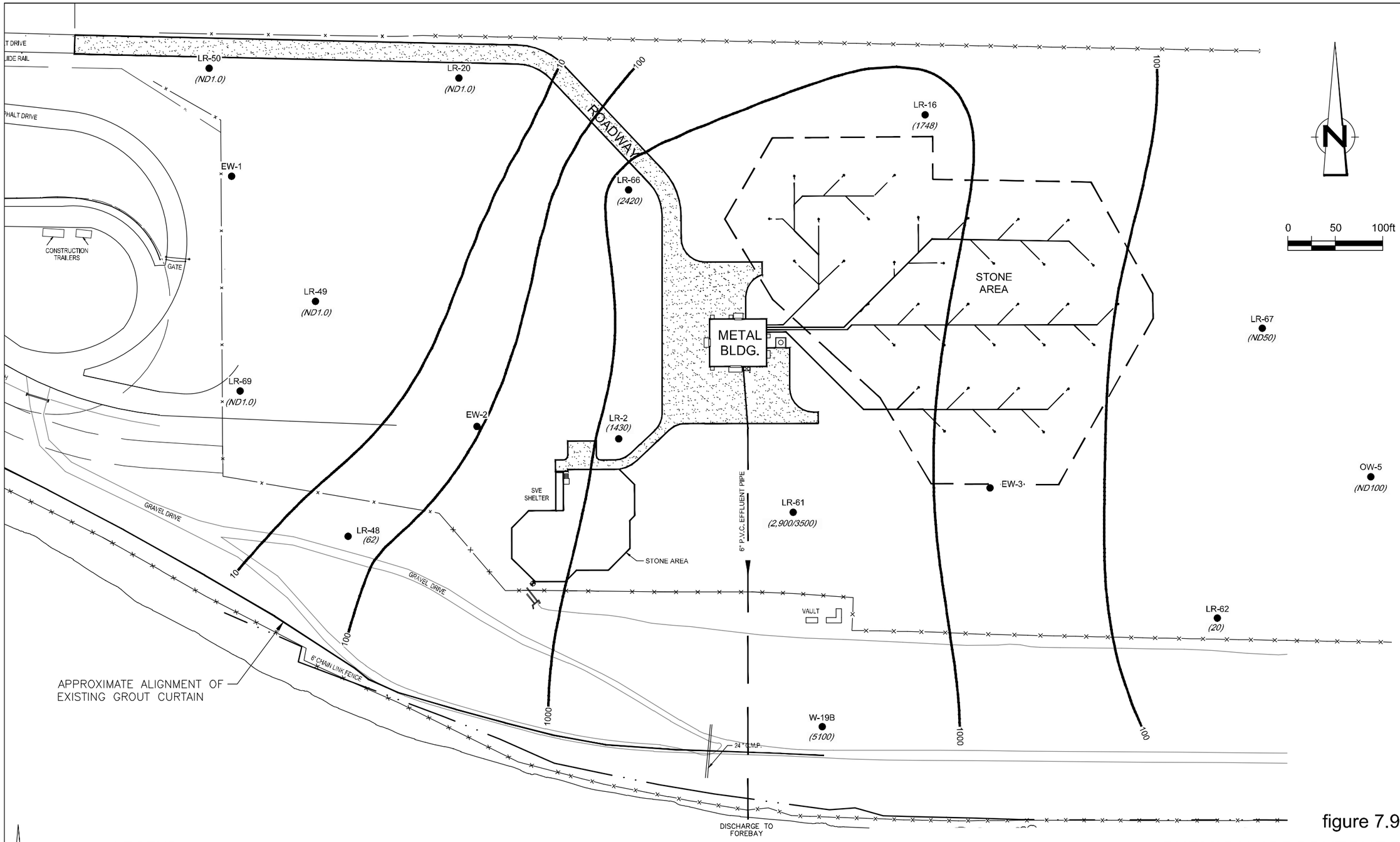
LR-67 (20000) WELL LOCATION (CONCENTRATION - µg/L)

GHD

figure 7.8

CHEMICAL ISOCONTOURS
JUNE 2015 CARBON DISULFIDE
LOCKPORT/ROCHESTER WATER BEARING ZONE
Stauffer Management Company LLC

06488-20(029)GN-BU013 MAR 23/2016



LEGEND

LR-61 (2900/3500) WELL LOCATION (CONCENTRATION - µg/L)

figure 7.9

CHEMICAL ISOCONTOURS
JUNE 2015 CARBON TETRACHLORIDE AND CHLOROFORM
LOCKPORT/ROCHESTER WATER BEARING ZONE
Stauffer Management Company LLC

06488-20(029)GN-BU014 MAR 23/2016

R-68
(513.75)
CS2-190000
CTET-116000

R-50
(514.63)
CS2-1800/1600
CTET-5700/5200

OW-3
(515.98)
CS2-1100000
CTET-150000

ROADWAY

R-16
(532.78)
CS2-ND1.0
CTET-ND1.0

N

0 50 100ft

DRIVE

DE RAIL

HALT DRIVE

EW-1
<441.00>
CS2-6000
CTET-1930

R-66
[455.44]
CS2-19000
CTET-26000

CONSTRUCTION TRAILERS

GATE

STONE AREA

R-60
(521.83)
CS2-20
CTET-97.7

METAL BLDG.

R-67
(539.39)
CS2-100000
CTET-ND1000

EW-2
<458.00>
CS2-9100
CTET-4800

EW-3
<468.00>
CS2-1200
CTET-3400

SVE SHELTER

GRAVEL DRIVE

R-48
(528.19)
CS2-8.8
CTET-104

6" P.V.C. EFFLUENT PIPE

R-61
(536.38)
CS2-23000
CTET-ND100

STONE AREA

GRAVEL DRIVE

6' CHAIN LINK FENCE

VAULT

R-62
(545.82)
CS2-25000
CTET-ND500

APPROXIMATE ALIGNMENT OF EXISTING GROUT CURTAIN

24" C.M.P.

R-19
(544.5)
CS2-18000
CTET-4700

DISCHARGE TO FOREBAY

LEGEND

R-60 (521.83) CS2-20 CTET-97.7 — WELL LOCATION (WATER LEVEL, FT-MSL) CARBON DISULFIDE CONCENTRATION (ug/L), JUNE 2015 CARBON TET + CHLOROFORM CONCENTRATION (ug/L), JUNE 2015

EW-1 <441.00> CS2-6000 CTET-1930 — WATER LEVEL MODIFIED TO 490 FT-MSL FOR GROUNDWATER CONTOURS

R-66 [455.44] CS2-19000 CTET-26000 — WATER LEVEL NOT USED FOR GROUNDWATER CONTOURS

GHD

figure 7.10

GROUNDWATER POTENTIOMETRIC SURFACE CONTOURS JUNE 2015 ROCHESTER WATER BEARING ZONE

Stauffer Management Company LLC

06488-20(029)GN-BU015 MAR 23/2016

EXISTING PAVING
NEW ACCESS ROAD
PHALT DRIVE
GUIDE RAIL
ASPHALT DRIVE
GUARD SHACK
NYPA CONSTRUCTION TRAILER
CONSTRUCTION TRAILERS
GATE
DITCH
GRAVEL DRIVE
GRAVEL DRIVE
6' CHAIN LINK FENCE
ROADWAY
STONE AREA
METAL BLDG.
STONE AREA
SVE SHELTER
6" P.V.C. EFFLUENT PIPE
VAULT
24" C.M.P.
DISCHARGE TO FOREBAY
APPROXIMATE ALIGNMENT OF EXISTING GROUT CURTAIN

R-68 (190000)
R-50 (1800/1600)
OW-3 (1100000)
B-02 (1100)
EW-1 (6000)
R-60 (20)
R-66 (19000)
R-16 (ND1.0)
EW-2 (9100)
R-48 (8.8)
R-61 (23000)
EW-3 (1200)
R-62 (25000)
R-19 (18000)
R-67 (100000)

100000 10000 1000 100 10

N

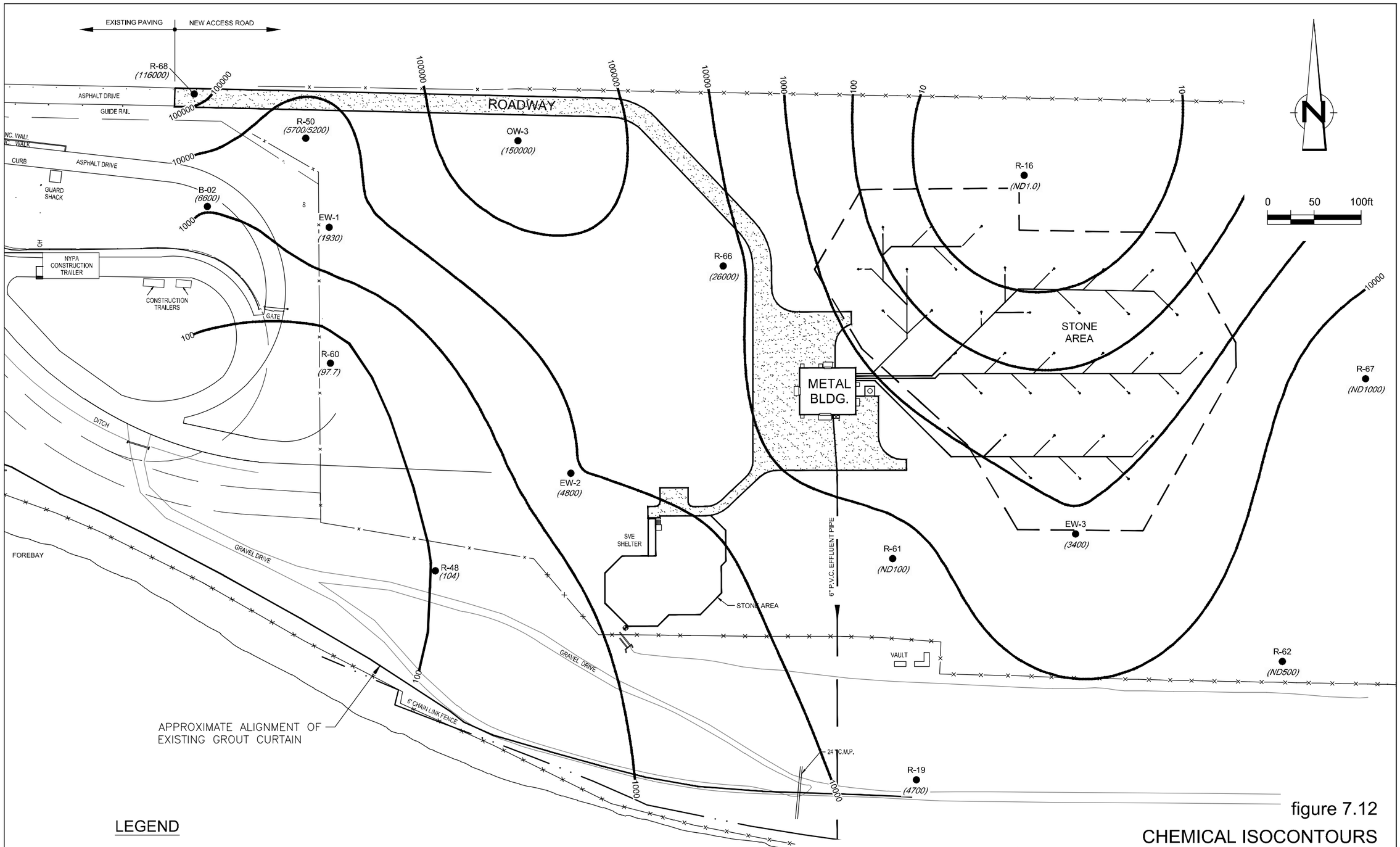
0 50 100ft

LEGEND

R-48 (8.8) WELL LOCATION (CONCENTRATION - µg/L)

figure 7.11

CHEMICAL ISOCONTOURS
JUNE 2015 CARBON DISULFIDE
ROCHESTER WATER BEARING ZONE
Stauffer Management Company LLC



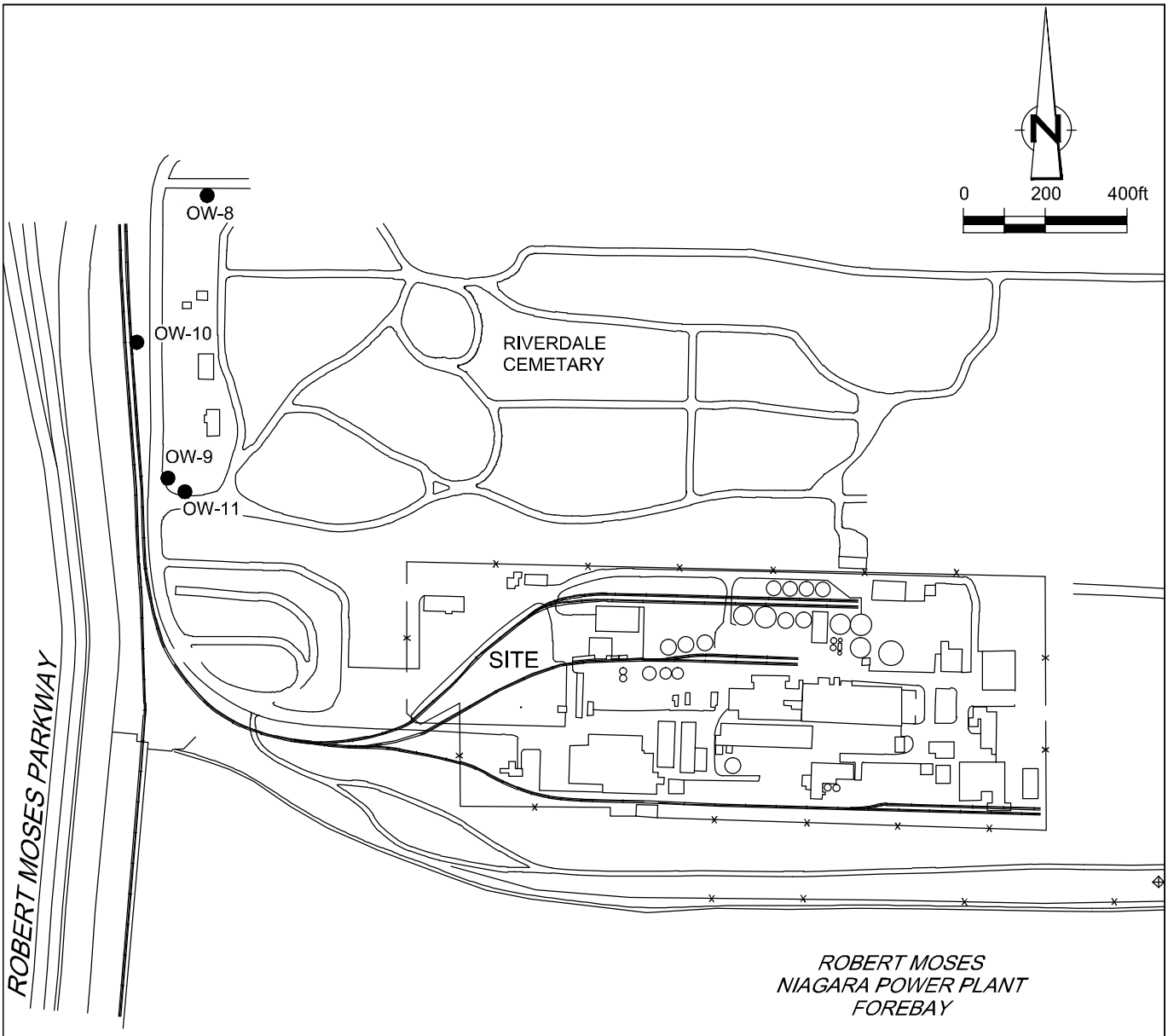
LEGEND

R-66 (26000) WELL LOCATION (CONCENTRATION - µg/L)

figure 7.12

CHEMICAL ISOCONTOURS
JUNE 2015 CARBON TETRACHLORIDE AND CHLOROFORM
ROCHESTER WATER BEARING ZONE
Stauffer Management Company LLC

06488-20(029)GN-BU017 MAR 23/2016



LEGEND

OW-11 ● NORTH SIDE GROUNDWATER MONITORING WELL LOCATIONS

NOTE:
SAMPLING OF OVERBURDEN WELLS OW-8, OW-9 AND OW-10 WAS DISCONTINUED IN MAY 2004. BEDROCK WELL OW-11 CONTINUES TO BE SAMPLED SEMIANNUALLY.

figure 8.1

NORTH SIDE WELL LOCATIONS
STAUFFER MANAGEMENT COMPANY LLC
Lewiston, New York

Tables

TABLE 5.1

EXTRACTION WELL EW-1
LIQUID-PHASE MASS LOADINGS
STAUFFER MANAGEMENT COMPANY LLC
LEWISTON, NEW YORK
2015

Flow Rates:

1st Quarter	150,927	gallons
2nd Quarter	236,821	gallons
3rd Quarter	309,992	gallons
4th Quarter	290,289	gallons
Total	**988,029**	**gallons**

	1st Quarter		*2nd Quarter*		*3rd Quarter*		*4th Quarter*		*Total Mass*
Compound	***Conc. (ug/L)***	***Mass (lbs)***	***Conc. (ug/L)***	***Mass (lbs)***	***Conc. (ug/L)***	***Mass (lbs)***	***Conc. (ug/L)***	***Mass (lbs)***	***Removal (lbs/yr)***
Benzene	0	0.0	0	0.0	0	0.0	0	0.0	0
Carbon disulfide	290	0.4	6,000	11.9	43,000	111.2	50,000	121.1	244
Carbon tetrachloride	87	0.1	1,000	2.0	5,700	14.7	7,900	19.1	36
Chlorobenzene	0	0.0	0	0.0	0	0.0	0	0.0	0
Chloroform	170	0.2	930	1.8	3,400	8.8	3,100	7.5	18
Methylene chloride	0	0.0	99	0.2	300	0.8	230	0.6	2
Tetrachloroethene	0	0.0	0	0.0	60	0.2	0	0.0	0
Toluene	0	0.0	0	0.0	0	0.0	0	0.0	0
Trichloroethene	0	0.0	0	0.0	0	0.0	0	0.0	0
Total VOC Removal		**1**		**16**		**136**		**148**	**300**

Notes:
VOC Volatile Organic Compound.

TABLE 5.2

EXTRACTION WELL EW-2
LIQUID-PHASE MASS LOADINGS
STAUFFER MANAGEMENT COMPANY LLC
LEWISTON, NEW YORK
2015

Flow Rates:

1st Quarter	856,563	gallons
2nd Quarter	1,023,146	gallons
3rd Quarter	817,183	gallons
4th Quarter	806,368	gallons
Total	**3,503,260**	**gallons**

	1st Quarter		***2nd Quarter***		***3rd Quarter***		***4th Quarter***		***Total Mass***
Compound	***Conc. (ug/L)***	***Mass (lbs)***	***Conc. (ug/L)***	***Mass (lbs)***	***Conc. (ug/L)***	***Mass (lbs)***	***Conc. (ug/L)***	***Mass (lbs)***	***Removal (lbs/yr)***
Benzene	0	0.0	0	0.0	0	0.0	0	0.0	0
Carbon disulfide	4,800	34.3	9,100	77.7	83	0.6	150	1.0	114
Carbon tetrachloride	3,100	22.1	3,400	29.0	1,700	11.6	1,500	10.1	73
Chlorobenzene	0	0.0	0	0.0	0	0.0	0	0.0	0
Chloroform	840	6.0	1,400	11.9	470	3.2	490	3.3	24
Methylene chloride	55	0.4	96	0.8	38	0.3	33	0.2	2
Tetrachloroethene	0	0.0	50	0.4	22	0.1	21	0.1	1
Toluene	0	0.0	0	0.0	0	0.0	0	0.0	0
Trichloroethene	0	0.0	0	0.0	0	0.0	0	0.0	0
Total VOC Removal		**63**		**120**		**16**		**15**	**213**

Notes:
VOC Volatile Organic Compound.

TABLE 5.3

EXTRACTION WELL EW-3
LIQUID-PHASE MASS LOADINGS
STAUFFER MANAGEMENT COMPANY LLC
LEWISTON, NEW YORK
2015

Flow Rates:

1st Quarter	437,059	gallons
2nd Quarter	483,050	gallons
3rd Quarter	373,551	gallons
4th Quarter	335,450	gallons
Total	**1,629,110**	**gallons**

	1st Quarter		*2nd Quarter*		*3rd Quarter*		*4th Quarter*		*Total Mass*
Compound	***Conc. (ug/L)***	***Mass (lbs)***	***Conc. (ug/L)***	***Mass (lbs)***	***Conc. (ug/L)***	***Mass (lbs)***	***Conc. (ug/L)***	***Mass (lbs)***	***Removal (lbs/yr)***
Benzene	11	0.0	0	0.0	13	0.0	0	0.0	0
Carbon disulfide	2,900	10.6	1,200	4.8	0	0.0	860	2.4	18
Carbon tetrachloride	2,800	10.2	1,400	5.6	1,500	4.7	2,600	7.3	28
Chlorobenzene	0	0.0	0	0.0	0	0.0	0	0.0	0
Chloroform	3,400	12.4	2,000	8.1	2,400	7.5	3,200	9.0	37
Methylene chloride	240	0.9	150	0.6	190	0.6	250	0.7	3
Tetrachloroethene	100	0.4	49	0.2	61	0.2	66	0.2	1
Toluene	0	0.0	0	0.0	0	0.0	0	0.0	0
Trichloroethene	230	0.8	97	0.4	140	0.4	170	0.5	2
Total VOC Removal		**35**		**20**		**13**		**20**	**88**

Notes:
VOC Volatile Organic Compound.

TABLE 5.4

EXTRACTION WELL EW-4
LIQUID-PHASE MASS LOADINGS
STAUFFER MANAGEMENT COMPANY LLC
LEWISTON, NEW YORK
2015

Flow Rates:

1st Quarter	75,000	gallons
2nd Quarter	75,000	gallons
3rd Quarter	75,000	gallons
4th Quarter	75,000	gallons
Total	**300,000**	**gallons**

	1st Quarter		*2nd Quarter*		*3rd Quarter*		*4th Quarter*		*Total Mass*
Compound	***Conc. (ug/L)***	***Mass (lbs)***	***Conc. (ug/L)***	***Mass (lbs)***	***Conc. (ug/L)***	***Mass (lbs)***	***Conc. (ug/L)***	***Mass (lbs)***	***Removal (lbs/yr)***
Benzene	0	0.0	0	0.0	0	0.0	0	0.0	0
Carbon disulfide	0	0.0	87	0.1	0	0.0	16	0.0	0
Carbon tetrachloride	470	0.3	170	0.1	11	0.0	0	0.0	0
Chlorobenzene	0	0.0	0	0.0	0	0.0	0	0.0	0
Chloroform	890	0.6	1,100	0.7	230	0.1	90	0.1	1
Methylene chloride	0	0.0	14	0.0	0	0.0	0	0.0	0
Tetrachloroethene	200	0.1	61	0.0	17	0.0	0	0.0	0
Toluene	0	0.0	0	0.0	0	0.0	0	0.0	0
Trichloroethene	53	0.0	25	0.0	0	0.0	0	0.0	0
Total VOC Removal		**1.0**		**0.9**		**0.2**		**0.1**	**2**

Notes:
VOC Volatile Organic Compound.

TABLE 5.5

EXTRACTION WELL EW-5
LIQUID-PHASE MASS LOADINGS
STAUFFER MANAGEMENT COMPANY LLC
LEWISTON, NEW YORK
2015

Flow Rates:

1st Quarter	1,696,980	gallons
2nd Quarter	1,697,864	gallons
3rd Quarter	1,615,302	gallons
4th Quarter	1,825,238	gallons
Total	**6,835,384**	**gallons**

	1st Quarter		***2nd Quarter***		***3rd Quarter***		***4th Quarter***		***Total Mass***
Compound	***Conc. (ug/L)***	***Mass (lbs)***	***Conc. (ug/L)***	***Mass (lbs)***	***Conc. (ug/L)***	***Mass (lbs)***	***Conc. (ug/L)***	***Mass (lbs)***	***Removal (lbs/yr)***
Benzene	0	0.0	0	0.0	0	0.0	0	0.0	0
Carbon disulfide	520	7.4	710	10.1	370	5.0	900	13.7	36
Carbon tetrachloride	860	12.2	570	8.1	130	1.8	480	7.3	29
Chlorobenzene	0	0.0	0	0.0	0	0.0	0	0.0	0
Chloroform	530	7.5	190	2.7	120	1.6	380	5.8	18
Methylene chloride	28	0.4	7	0.1	12	0.2	25	0.4	1
Tetrachloroethene	53	0.8	73	1.0	18	0.2	19	0.3	2
Toluene	0	0.0	0	0.0	0	0.0	0	0.0	0
Trichloroethene	22	0.3	17	0.2	10	0.1	13	0.2	1
Total VOC Removal		**28.5**		**22.2**		**8.9**		**27.7**	**87**

Notes:
VOC Volatile Organic Compound.

TABLE 5.6

EXTRACTION WELL EW-6
LIQUID-PHASE MASS LOADINGS
STAUFFER MANAGEMENT COMPANY LLC
LEWISTON, NEW YORK
2015

Flow Rates:

1st Quarter	600,000	gallons
2nd Quarter	600,000	gallons
3rd Quarter	630,019	gallons
4th Quarter	661,543	gallons
Total	**2,491,562**	**gallons**

	1st Quarter		***2nd Quarter***		***3rd Quarter***		***4th Quarter***		***Total Mass***
Compound	***Conc. (ug/L)***	***Mass (lbs)***	***Conc. (ug/L)***	***Mass (lbs)***	***Conc. (ug/L)***	***Mass (lbs)***	***Conc. (ug/L)***	***Mass (lbs)***	***Removal (lbs/yr)***
Benzene	0	0.0	0	0.0	0	0.0	0	0.0	0
Carbon disulfide	200	1.0	370	1.9	180	0.9	380	2.1	6
Carbon tetrachloride	6,200	31.0	9,500	47.5	3,700	19.4	7,500	41.4	139
Chlorobenzene	0	0.0	0	0.0	0	0.0	0	0.0	0
Chloroform	2,500	12.5	3,400	17.0	2,000	10.5	3,200	17.7	58
Methylene chloride	120	0.6	140	0.7	140	0.7	160	0.9	3
Tetrachloroethene	100	0.5	150	0.8	93	0.5	130	0.7	2
Toluene	0	0.0	0	0.0	0	0.0	0	0.0	0
Trichloroethene	56	0.3	77	0.4	95	0.5	100	0.6	2
Total VOC Removal		**45.9**		**68.2**		**32.6**		**63.3**	**210**

Notes:
VOC Volatile Organic Compound.

TABLE 5.7

DUAL-PHASE AREA A WELL DPA-201
LIQUID-PHASE MASS LOADINGS
STAUFFER MANAGEMENT COMPANY LLC
LEWISTON, NEW YORK
2015

Flow Rates:

1st Quarter	20,000	gallons
2nd Quarter	20,000	gallons
3rd Quarter	20,000	gallons
4th Quarter	20,000	gallons
Total	**80,000**	**gallons**

	1st Quarter		*2nd Quarter*		*3rd Quarter*		*4th Quarter*		*Total Mass*
Compound	***Conc. (ug/L)***	***Mass (lbs)***	***Conc. (ug/L)***	***Mass (lbs)***	***Conc. (ug/L)***	***Mass (lbs)***	***Conc. (ug/L)***	***Mass (lbs)***	***Removal (lbs/yr)***
Benzene	0	0.0	12	0.0	0	0.0	0	0.0	0.0
Carbon disulfide	10	0.0	0	0.0	0	0.0	0	0.0	0.0
Carbon tetrachloride	1,300	0.2	5,000	0.8	5,300	0.9	170	0.0	2.0
Chlorobenzene	0	0.0	0	0.0	0	0.0	0	0.0	0.0
Chloroform	450	0.1	1,400	0.2	2,400	0.4	140	0.0	0.7
Methylene chloride	12	0.0	58	0.0	0	0.0	0	0.0	0.0
Tetrachloroethene	220	0.0	2,100	0.4	3,200	0.5	120	0.0	0.9
Toluene	0	0.0	0	0.0	0	0.0	0	0.0	0.0
Trichloroethene	230	0.0	600	0.1	1,200	0.2	81	0.0	0.4
Total VOC Removal		**0.4**		**1.5**		**2.0**		**0.1**	**4.0**

Notes:

VOC Volatile Organic Compound.

TABLE 5.8

DUAL-PHASE AREA A WELL DPA-202
LIQUID-PHASE MASS LOADINGS
STAUFFER MANAGEMENT COMPANY LLC
LEWISTON, NEW YORK
2015

Flow Rates:

1st Quarter	38,325	gallons
2nd Quarter	45,678	gallons
3rd Quarter	24,261	gallons
4th Quarter	15,124	gallons
Total	**123,388**	**gallons**

	1st Quarter		*2nd Quarter*		*3rd Quarter*		*4th Quarter*		*Total Mass*
Compound	***Conc. (ug/L)***	***Mass (lbs)***	***Conc. (ug/L)***	***Mass (lbs)***	***Conc. (ug/L)***	***Mass (lbs)***	***Conc. (ug/L)***	***Mass (lbs)***	***Removal (lbs/yr)***
Benzene	0	0.0	0	0.0	0	0.0	0	0.0	0
Carbon disulfide	2,500	0.8	0	0.0	930	0.2	740	0.1	1
Carbon tetrachloride	100,000	32.0	58,000	22.1	83,000	16.8	78,000	9.8	81
Chlorobenzene	0	0.0	0	0.0	0	0.0	0	0.0	0
Chloroform	19,000	6.1	9,100	3.5	15,000	3.0	16,000	2.0	15
Methylene chloride	0	0.0	0	0.0	0	0.0	0	0.0	0
Tetrachloroethene	2,000	0.6	1,400	0.5	1,600	0.3	1,600	0.2	2
Toluene	0	0.0	0	0.0	0	0.0	0	0.0	0
Trichloroethene	0	0.0	0	0.0	0	0.0	0	0.0	0
Total VOC Removal		**39.5**		**26.1**		**20.3**		**12.2**	**98**

Notes:
VOC Volatile Organic Compound.

TABLE 5.9

DUAL-PHASE AREA A WELL DPA-203
LIQUID-PHASE MASS LOADINGS
STAUFFER MANAGEMENT COMPANY LLC
LEWISTON, NEW YORK
2015

Flow Rates:

1st Quarter	2,705	gallons
2nd Quarter	10,414	gallons
3rd Quarter	6,940	gallons
4th Quarter	3,907	gallons
Total	**23,966**	**gallons**

	1st Quarter		*2nd Quarter*		*3rd Quarter*		*4th Quarter*		*Total Mass*
Compound	***Conc. (ug/L)***	***Mass (lbs)***	***Conc. (ug/L)***	***Mass (lbs)***	***Conc. (ug/L)***	***Mass (lbs)***	***Conc. (ug/L)***	***Mass (lbs)***	***Removal (lbs/yr)***
Benzene	0	0.0	0	0.0	0	0.0	0	0.0	0
Carbon disulfide	5,600	0.1	5,800	0.5	1,800	0.1	1,400	0.0	1
Carbon tetrachloride	320,000	7.2	260,000	22.6	200,000	11.6	130,000	4.2	46
Chlorobenzene	0	0.0	0	0.0	0	0.0	0	0.0	0
Chloroform	64,000	1.4	59,000	5.1	58,000	3.4	53,000	1.7	12
Methylene chloride	700	0.0	620	0.1	610	0.0	600	0.0	0
Tetrachloroethene	1,800	0.0	1,600	0.1	1,300	0.1	1,300	0.0	0
Toluene	0	0.0	0	0.0	0	0.0	0	0.0	0
Trichloroethene	0	0.0	0	0.0	0	0.0	0	0.0	0
Total VOC Removal		**8.8**		**28.4**		**15.1**		**6.1**	**58**

Notes:
VOC Volatile Organic Compound.
Dry Well dry, no sample collected

TABLE 5.10

EXTRACTION WELL OW-3
LIQUID-PHASE MASS LOADINGS
STAUFFER MANAGEMENT COMPANY LLC
LEWISTON, NEW YORK
2015

Flow Rates:

1st Quarter	18,000	gallons
2nd Quarter	26,794	gallons
3rd Quarter	17,881	gallons
4th Quarter	12,188	gallons
Total	**74,863**	**gallons**

	1st Quarter		*2nd Quarter*		*3rd Quarter*		*4th Quarter*		*Total Mass*
Compound	***Conc. (ug/L)***	***Mass (lbs)***	***Conc. (ug/L)***	***Mass (lbs)***	***Conc. (ug/L)***	***Mass (lbs)***	***Conc. (ug/L)***	***Mass (lbs)***	***Removal (lbs/yr)***
Benzene	0	0.0	0	0.0	0	0.0	0	0.0	0
Carbon disulfide	420,000	63.1	1,100,000	245.8	520,000	77.5	740,000	75.2	462
Carbon tetrachloride	34,000	5.1	130,000	29.0	34,000	5.1	35,000	3.6	43
Chlorobenzene	0	0.0	0	0.0	0	0.0	0	0.0	0
Chloroform	11,000	1.7	20,000	4.5	12,000	1.8	13,000	1.3	9
Methylene chloride	0	0.0	0	0.0	0	0.0	0	0.0	0
Tetrachloroethene	0	0.0	0	0.0	0	0.0	0	0.0	0
Toluene	0	0.0	0	0.0	0	0.0	0	0.0	0
Trichloroethene	0	0.0	0	0.0	0	0.0	0	0.0	0
Total VOC Removal		**69.8**		**279.3**		**84.4**		**80.1**	**514**

Notes:
VOC Volatile Organic Compound.

TABLE 5.11

EXTRACTION WELL LR-66
LIQUID-PHASE MASS LOADINGS
STAUFFER MANAGEMENT COMPANY LLC
LEWISTON, NEW YORK
2015

Flow Rates:

1st Quarter	68,170	gallons
2nd Quarter	70,432	gallons
3rd Quarter	60,173	gallons
4th Quarter	49,295	gallons
Total	**248,070**	**gallons**

	1st Quarter		*2nd Quarter*		*3rd Quarter*		*4th Quarter*		*Total Mass*
Compound	***Conc. (ug/L)***	***Mass (lbs)***	***Conc. (ug/L)***	***Mass (lbs)***	***Conc. (ug/L)***	***Mass (lbs)***	***Conc. (ug/L)***	***Mass (lbs)***	***Removal (lbs/yr)***
Benzene	0	0.0	0	0.0	0	0.0	0	0.0	0.0
Carbon disulfide	0	0.0	61	0.0	34	0.0	0	0.0	0.1
Carbon tetrachloride	410	0.2	2,000	1.2	1,800	0.9	2,600	1.1	3.4
Chlorobenzene	0	0.0	0	0.0	0	0.0	0	0.0	0.0
Chloroform	130	0.1	420	0.2	970	0.5	420	0.2	1.0
Methylene chloride	10	0.0	44	0.0	60	0.0	64	0.0	0.1
Tetrachloroethene	0	0.0	94	0.1	39	0.0	97	0.0	0.1
Toluene	0	0.0	0	0.0	0	0.0	0	0.0	0.0
Trichloroethene	0	0.0	0	0.0	38	0.0	0	0.0	0.0
Total VOC Removal		**0.3**		**1.5**		**1.5**		**1.3**	**4.6**

Notes:
VOC Volatile Organic Compound.

TABLE 7.1

2015 MEASURED GROUNDWATER ELEVATIONS
STAUFFER MANAGEMENT COMPANY LLC
LEWISTON, NEW YORK

Well I.D.	***April 2015***	***June 2015***	***August 2015***	***November 2015***
Extraction Wells				
DPA-201	-	578.32	581.78	578.38
DPA-202	578.89	587.28	581.05	580.91
DPA-203	577.2	576.5	577.1	576.83
T-4	575.14	572.68	570.25	570.63
EW-1	441	493	441	468
EW-2	459	458	458	466
EW-3	482	468	468	473
EW-4	524.97	524.99	524.97	524.62
EW-5	555.99	545.69	579.44	539
EW-6	547.28	541.16	538.87	532.32
OW-3	484.88	515.98	<583.80	496.78
LR-66	-	-	-	-
Upper Lockport Wells				
W-16	578.34	578.14	577.55	578.84
W-17	585.8	584.79	584	584.07
W-18R	574.24	573.68	573.63	573.5
W-19D	582.47	572.75	572.23	571.3
W-20	576.11	574.69	572.01	570.32
W-22A	Dry	573.34	Dry	Dry
W-23C	579.77	578.82	577.67	578.59
W-66	570.62	569.92	569.4	569.34
W-67	595.49	589.21	587.42	587.75
OW-11	559.74	558.9	552.98	551.26

TABLE 7.1

2015 MEASURED GROUNDWATER ELEVATIONS
STAUFFER MANAGEMENT COMPANY LLC
LEWISTON, NEW YORK

Well I.D.	*April 2015*	*June 2015*	*August 2015*	*November 2015*
Lower Lockport Wells				
W-16L	558.44	551.34	547.05	541
W-18L	556.35	552.86	548.42	543.23
W-19A	558.58	558.53	558.47	558.4
W-23B	557.94	555.72	555.77	555.74
W-48E	555.82	554.09	549.67	Dry
W-50	561.72	558.52	556.21	556.24
W-60L	556.27	Dry	Dry	Dry
W-65	552.97	552.93	546.83	546.98
W-66L	558.68	554.45	549.86	544.54
W-67L	559.59	555.36	551.27	550.19
W-70L	551.16	552.06	544.98	547.61
Lockport/Rochester Wells				
W-19B	557.36	555.95	551.33	546.74
LR-2	556.24	553.27	548.48	543.58
LR-16	558.45	551.41	547.22	541.16
LR-20	560.52	556.32	552.84	549.24
LR-48	555.84	554.11	549.73	545.07
LR-49	556.5	554.29	550.03	545.19
LR-50	562.22	559.05	555.66	553.73
LR-51	555.37	553.88	549.71	545.49
LR-61	558.35	554.77	550.16	541.75
LR-62	556.96	554.02	548.95	544.92
LR-67	558.35	553.41	549.42	544.17
LR-69	512.68	514.04	504.75	507.1
OW-5	560.56	557.18	552.45	549.57

TABLE 7.1

2015 MEASURED GROUNDWATER ELEVATIONS
STAUFFER MANAGEMENT COMPANY LLC
LEWISTON, NEW YORK

Well I.D.	***April 2015***	***June 2015***	***August 2015***	***November 2015***
Rochester Wells				
R-16	531.55	532.78	523.48	530.46
R-19	546.77	544.5	541.34	539.54
R-48	533.19	528.19	525.89	514.59
R-50	518.33	514.63	508.44	508.99
R-60	528.27	521.83	521.24	505.06
R-61	544.01	536.38	532.03	519.87
R-62	545.12	545.82	541.51	543.2
R-66	454.61	455.44	451.36	452.27
R-67	539.3	539.39	538.52	538.68
R-68	524.54	513.75	514.26	496.69

Notes:

Ft. msl	Feet, Mean Sea Level
NM	Not measured

TABLE 7.2

MONITORING AND EXTRACTION WELLS BY WATER BEARING ZONE
STAUFFER MANAGEMENT COMPANY LLC
LEWISTON, NEW YORK

Upper Lockport	***Lower Lockport***	***Lockport/Rochester***	***Rochester***
Well ID	***Well ID***	***Well ID***	***Well ID***
OW-11	W-16L	LR-2	B-02
T-4	W-18L	LR-16	R-16
W-16	W-19A	LR-20	R-19
W-17	W-23B	LR-48	R-48
W-18R	W-48E	LR-49	R-50
W-19D	W-50	LR-50	R-51
W-20	W-60L	LR-51	R-60
W-22A	W-65	LR-61	R-61
W-23C	W-66L	LR-62	R-62
W-66	W-67L	LR-67	R-66
W-67	W-70L	LR-69	R-67
DPA-201	EW-1	OW-5	R-68
DPA-202	EW-2	W-19B	EW-1
DPA-203	EW-3	LR-66	EW-2
EW-4	EW-4	EW-1	EW-3
EW-5	EW-5	EW-2	OW-3
EW-6	EW-6	EW-3	

TABLE 9.1
COMPOUND-SPECIFIC SSPL REMOVAL
AREA A SVE SYSTEM
STAUFFER MANAGEMENT COMPANY LLC
LEWISTON, NEW YORK
2003-2014

SSPL Compound	*2003*		*2004*		*2005*		*2006*		*2007*		*2008*	
	Lbs. Removed	*% of Total*	*Lbs. Removed*	*% of Total*	*Lbs. Removed*	*% of Total*	*Lbs. Removed*	*% of Total*	*Lbs. Removed*	*% of Total*	*Lbs. Removed*	*% of Total*
Benzene	0	0	0	0	0	0	0	0	0	0	0	0
Carbon disulfide	0	0	1	0	1	0	3	0	0	0	0	0
Carbon tetrachloride	801	85	198	87	1,782	91	1,536	90	2,132	91	442	87
Chlorobenzene	0	0	0	0	0	0	0	0	0	0	0	0
Chloroform	68	7	18	8	95	5	98	6	93	4	32	6
Methylene chloride	0	0	0	0	0	0	2	0	0	0	0	0
Tetrachloroethene	68	7	8	4	75	4	62	4	110	5	28	6
Toluene	0	0	0	0	0	0	0	0	0	0	0	0
Trichloroethene	0	0	3	1	1	0	11	0	13	1	4	1
Total:	**937**		**228**		**1,954**		**1,712**		**2,349**		**507**	

SSPL Compound	*2009*		*2010*		*2011*		*2012*		*2013*		*2014*	
	Lbs. Removed	*% of Total*	*Lbs. Removed*	*% of Total*	*Lbs. Removed*	*% of Total*	*Lbs. Removed*	*% of Total*	*Lbs. Removed*	*% of Total*	*Lbs. Removed*	*% of Total*
Benzene	0	0	0	0	0	0	0	0	0	0	0.0	0
Carbon disulfide	1	1	2	1	0	0	0	0	0	0	0.0	0
Carbon tetrachloride	94	87	227	90	240	83	215	86	130	85	17.8	81
Chlorobenzene	0	0	0	0	0	0	0	0	0	0	0.0	0
Chloroform	7	7	14	6	33	11	20	8	13	9	2.4	11
Methylene chloride	0	0	0	0	0	0	0	0	0	0	0.0	0
Tetrachloroethene	5	5	7	3	10	4	13	5	8	5	1.5	7
Toluene	0	0	0	0	0	0	0	0	0	0	0.0	0
Trichloroethene	1	1	1	0	6	2	2	1	1	1	0.2	1
Total:	**108**		**251**		**289**		**250**		**152**		22.0	

TABLE 9.2

EXTRACTION WELL SUMMARY
TOTAL VOLUME OF GROUNDWATER EXTRACTED
STAUFFER MANAGEMENT COMPANY LLC
LEWISTON, NEW YORK
2015

Volume Pumped by Extraction Wells (Gallons/Year)

Period	*EW-1*	*EW-2*	*EW-3*	*EW-4*	*EW-5*	*EW-6*	*DPA-201*	*DPA-202*	*DPA-203*	*OW-3*	*LR-66*	*Site Total*
First Quarter	150,927	856,563	437,059	75,000	1,696,980	600,000	20,000	38,325	2,705	18,000	68,170	3,963,729
Second Quarter	236,821	1,023,146	483,050	75,000	1,697,864	600,000	20,000	45,678	10,414	26,794	70,432	4,289,199
Third Quarter	309,992	817,183	373,551	75,000	1,615,302	630,019	20,000	24,261	6,940	17,881	60,173	3,950,302
Fourth Quarter	290,289	806,368	335,450	75,000	1,825,238	661,543	20,000	15,124	3,907	12,188	49,295	4,094,402
Total Gallons:	**988,029**	**3,503,260**	**1,629,110**	**300,000**	**6,835,384**	**2,491,562**	**80,000**	**123,388**	**23,966**	**74,863**	**248,070**	**16,297,632**

TABLE 9.3

EXTRACTION WELL SUMMARY
TOTAL MASS REMOVAL BY GROUNDWATER EXTRACTION
STAUFFER MANAGEMENT COMPANY LLC
LEWISTON, NEW YORK
2015

	Total Mass Removal (Lbs/Year)											
Compound	***EW-1***	***EW-2***	***EW-3***	***EW-4***	***EW-5***	***EW-6***	***DPA-201***	***DPA-202***	***DPA-203***	***OW-3***	***LR-66***	***Site Total***
Benzene	0	0	0	0	0	0	0	0	0	0	0	0
Carbon disulfide	244	114	18	0	36	6	0	1	1	462	0	881
Carbon tetrachloride	36	73	28	0	29	139	2	81	46	43	3	480
Chlorobenzene	0	0	0	0	0	0	0	0	0	0	0	0
Chloroform	18	24	37	1	18	58	1	15	12	9	1	194
Methylene chloride	2	2	3	0	1	3	0	0	0	0	0	10
Tetrachloroethene	0	1	1	0	2	2	1	2	0	0	0	10
Toluene	0	0	0	0	0	0	0	0	0	0	0	0
Trichloroethene	0	0	2	0	1	2	0	0	0	0	0	5
Total VOC Removal	**300**	**213**	**88**	**2**	**87**	**210**	**4**	**98**	**58**	**514**	**5**	**1,580**

Notes:
VOC Volatile Organic Compound.

TABLE 9.4

COMPOUND-SPECIFIC SSPL REMOVAL
GROUNDWATER EXTRACTION SYSTEM
STAUFFER MANAGEMENT COMPANY LLC
LEWISTON, NEW YORK
2004-2015

SSPL Compound	*2004*		*2005*		*2006*		*2007*		*2008*		*2009*	
	Lbs. Removed	*% of Total*	*Lbs. Removed*	*% of Total*	*Lbs. Removed*	*% of Total*	*Lbs. Removed*	*% of Total*	*Lbs. Removed*	*% of Total*	*Lbs. Removed*	*% of Total*
Benzene	0	0	0	0	0	0	0	0	0	0	0	0
Carbon disulfide	2,311	47	2,611	53	1,664	47	1,954	53	2,109	44	1,182	80
Carbon tetrachloride	2,113	43	1,771	36	1,420	40	1,278	35	1,998	42	1,147	77
Chlorobenzene	1	0	2	0	1	0	1	0	2	0	7	0
Chloroform	482	10	461	9	401	11	400	11	605	13	387	26
Methylene chloride	6	0	14	0	11	0	14	0	15	0	10	1
Tetrachloroethene	36	1	33	1	17	1	20	1	42	1	18	1
Toluene	0	0	0	0	0	0	0	0	0	0	0	0
Trichloroethene	5	0	7	0	3	0	5	0	19	0	3	0
Total:	**4,899**		**3,517**		**3,672**		**3,672**		**4,790**		**2,754**	

SSPL Compound	*2010*		*2011*		*2012*		*2013*		*2014*		*2015*	
	Lbs. Removed	*% of Total*	*Lbs. Removed*	*% of Total*	*Lbs. Removed*	*% of Total*	*Lbs. Removed*	*% of Total*	*Lbs. Removed*	*% of Total*	*Lbs. Removed*	*% of Total*
Benzene	0	0	0	0	0	0	0	0	0	0	0	0
Carbon disulfide	1,554	60	1,510	60	1,665	66	938	52	956	64	881	56
Carbon tetrachloride	731	28	753	30	626	25	636	35	346	23	480	30
Chlorobenzene	2	0	2	0	2	0	1	0	1	0	0	0
Chloroform	257	10	216	9	195	8	197	11	161	11	193	12
Methylene chloride	9	0	7	0	9	0	11	1	8	1	10	1
Tetrachloroethene	20	1	12	0	11	0	11	1	9	1	10	1
Toluene	0	0	0	0	0	0	0	0	0	0	0	0
Trichloroethene	3	0	2	0	4	0	5	0	5	0	5	0
Total:	**2,575**		**2,501**		**2,511**		**1,801**		**1,486**		**1,580**	

TABLE 9.5

COMPOUND-SPECIFIC SSPL REMOVAL
SITE REMEDIAL SYSTEMS
STAUFFER MANAGEMENT COMPANY LLC
LEWISTON, NEW YORK
2005-2015

Pounds Removed Per Year

SSPL Compound	*2005*		*2006*		*2007*		*2008*		*2009*		*2010*	
	SVE Systems	*GW*	*SVE Systems*	*GW*	*SVE Systems*	*GW*	*SVE Systems*	*GW*	*SVE Systems*	*GW*	*SVE Systems*	*GW*
Benzene	0	0	0	0	0	0	0	0	0	0	0	0
Carbon disulfide	1	2,611	3	1,664	0	1,954	0	2,109	1	1182	2	1554
Carbon tetrachloride	1,782	1,771	1,536	1,420	2,132	1,278	442	1,998	94	1147	227	731
Chlorobenzene	0	2	0	1	0	1	0	2	0	7	0	2
Chloroform	95	461	98	401	93	400	32	605	7	387	14	257
Methylene chloride	0	14	2	11	0	14	0	15	0	10	0	9
Tetrachloroethene	75	33	62	17	110	20	28	42	5	18	7	20
Toluene	0	0	0	0	0	0	0	0	0	0	0	0
Trichloroethene	1	7	11	3	13	5	4	19	1	3	1	3
Total:	**1,954**	**4,899**	**1,712**	**3,517**	**2,349**	**3,672**	**507**	**4,790**	**108**	**2,754**	**251**	**2,575**

SSPL Compound	*2011*		*2012*		*2013*		*2014*		*2015*			
	SVE Systems	*GW*	*SVE Systems*	*GW*	*SVE Systems*	*GW*	*SVE Systems*	*GW*	*SVE Systems*	*GW*	*Cumulative Compound Total*	*% of Total*
Benzene	0	0	0	0	0	0	0	0	0	0	**0**	0
Carbon disulfide	0	1510	0	1665	0	938	0	956	0	881	**17,032**	43
Carbon tetrachloride	240	753	215	626	130	636	18	346	0	480	**18,002**	45
Chlorobenzene	0	2	0	2	0	1	0	1	0	0	**21**	0
Chloroform	33	216	20	195	13	197	2	161	0	193	**3,881**	10
Methylene chloride	0	7	0	9	0	11	0	8	0	10	**119**	0
Tetrachloroethene	10	12	13	11	8	11	1	9	0	10	**523**	1
Toluene	0	0	0	0	0	0	0	0	0	0	**0**	0
Trichloroethene	6	2	2	4	1	5	0	5	0	5	**100**	0
Total:	**289**	**2,501**	**250**	**2,511**	**152**	**1,801**	**22**	**1,486**	**0**	**1,580**	**39,679**	100

Notes:
GW Groundwater extraction system.

Appendices

Appendix A
Soil Vapor Extraction System
2015 Process Monitoring Data

APPENDIX A-1
GROUNDWATER INFLUENT DATA
2015 ANALYTICAL RESULTS
STAUFFER MANAGEMENT COMPANY LLC
LEWISTON, NEW YORK

	Sample ID:	INF-010515-SG	INF-020215-SG	INF-030215-SG	INF-040615-SG
	Collection Date:	01/05/15	02/02/15	03/02/15	04/06/15
Parameters	**Units**				
Volatiles					
Benzene	mg/L	ND 25	ND 50	ND 50	ND 50
Carbon disulfide	mg/L	4400	3000	740	6000
Carbon tetrachloride	mg/L	2100	4600	6200	7000
Chlorobenzene	mg/L	ND 25	ND 50	ND 50	ND 50
Chloroform	mg/L	1200	1700	2500	2200
Methylene chloride	mg/L	65	78	110	85
Tetrachloroethene	mg/L	78	120	150	200
Toluene	mg/L	ND 25	ND 50	ND 50	ND 50
Trichloroethene	mg/L	34	60	71	64

	Sample ID:	INF-050315-SG	INF-060115-SG	INF-070615-SG	INF-080315-SG
	Collection Date:	05/03/15	06/01/15	07/06/15	08/03/15
Parameters	**Units**				
Volatiles					
Benzene	mg/L	ND 50	ND 50	ND 50	ND 50
Carbon disulfide	mg/L	3400	7700	5000	4000
Carbon tetrachloride	mg/L	5500	5500	4500	2800
Chlorobenzene	mg/L	ND 50	ND 50	ND 50	ND 50
Chloroform	mg/L	1900	2100	1800	1600
Methylene chloride	mg/L	100	100	82	80
Tetrachloroethene	mg/L	110	110	95	ND 50
Toluene	mg/L	ND 50	ND 50	ND 50	ND 50
Trichloroethene	mg/L	ND 50	55	ND 50	ND 50

Notes:
ND Non-detect at the associated value.

APPENDIX A-1
GROUNDWATER INFLUENT DATA
2015 ANALYTICAL RESULTS
STAUFFER MANAGEMENT COMPANY LLC
LEWISTON, NEW YORK

	Sample ID:	INF-090815-SG	INF-100615-SG	INF-110215-SG	INF-120715-SG
	Collection Date:	09/08/15	10/06/15	11/02/15	12/07/15
Parameters	**Units**				
Volatiles					
Benzene	mg/L	ND 50	ND 50	ND 10	ND 25
Carbon disulfide	mg/L	6600	4800	710	1600
Carbon tetrachloride	mg/L	4500	2700	1300	2900
Chlorobenzene	mg/L	ND 50	ND 50	ND 10	ND 25
Chloroform	mg/L	2100	1200	630	1500
Methylene chloride	mg/L	110	63	34	93
Tetrachloroethene	mg/L	54	ND 50	21	56
Toluene	mg/L	ND 50	ND 50	ND 10	ND 25
Trichloroethene	mg/L	ND 50	ND 50	14	46

	Sample ID:
	Collection Date:
Parameters	**Units**
Volatiles	
Benzene	mg/L
Carbon disulfide	mg/L
Carbon tetrachloride	mg/L
Chlorobenzene	mg/L
Chloroform	mg/L
Methylene chloride	mg/L
Tetrachloroethene	mg/L
Toluene	mg/L
Trichloroethene	mg/L

Notes:
ND Non-detect at the associated value.

APPENDIX A-2
GROUNDWATER INTERSTAGE DATA
2015 ANALYTICAL RESULTS
STAUFFER MANAGEMENT COMPANY LLC
LEWISTON, NEW YORK

	Sample ID:	CBT-010515-SG	CBT-011215-SG	CBT-011915-SG	CBT-012615-SG
	Collection Date:	01/05/15	01/12/15	01/19/15	01/26/15
Parameters	**Units**				
Volatiles					
Benzene	mg/L	ND 1.0	ND 1.0	ND 1.0	ND 1.0
Carbon disulfide	mg/L	ND 1.0	ND 1.0	ND 1.0	ND 1.0
Carbon tetrachloride	mg/L	ND 1.0	ND 1.0	ND 1.0	ND 1.0
Chlorobenzene	mg/L	ND 1.0	ND 1.0	ND 1.0	ND 1.0
Chloroform	mg/L	ND 1.0	ND 1.0	ND 1.0	3.5
Methylene chloride	mg/L	ND 1.0	ND 1.0	ND 1.0	1.2
Tetrachloroethene	mg/L	ND 1.0	ND 1.0	ND 1.0	ND 1.0
Toluene	mg/L	ND 1.0	ND 1.0	ND 1.0	ND 1.0
Trichloroethene	mg/L	ND 1.0	ND 1.0	ND 1.0	ND 1.0

	Sample ID:	CBT-020215-SG	CBT-020815-SG	CBT-021715-SG	CBT-022315-SG
	Collection Date:	02/02/15	02/08/15	02/17/15	02/23/15
Parameters	**Units**				
Volatiles					
Benzene	mg/L	ND 1.0	ND 1.0	ND 1.0	ND 1.0
Carbon disulfide	mg/L	ND 1.0	2.5	13	25
Carbon tetrachloride	mg/L	ND 1.0	ND 1.0	ND 1.0	ND 1.0
Chlorobenzene	mg/L	ND 1.0	ND 1.0	ND 1.0	ND 1.0
Chloroform	mg/L	17	56	180	300
Methylene chloride	mg/L	2.6	6.5	13	20
Tetrachloroethene	mg/L	ND 1.0	ND 1.0	ND 1.0	ND 1.0
Toluene	mg/L	ND 1.0	ND 1.0	ND 1.0	ND 1.0
Trichloroethene	mg/L	ND 1.0	ND 1.0	ND 1.0	ND 1.0

Notes:
ND Non-detect at the associated value.

APPENDIX A-2
GROUNDWATER INTERSTAGE DATA
2015 ANALYTICAL RESULTS
STAUFFER MANAGEMENT COMPANY LLC
LEWISTON, NEW YORK

	Sample ID:	CBT-030215-SG	CBT-030915-SG	CBT-031515-SG	CBT-032215-DJT
	Collection Date:	03/02/15	03/09/15	03/15/15	03/22/15
Parameters	**Units**				
Volatiles					
Benzene	mg/L	ND 1.0	ND 2.5	ND 1.0	ND 1.0
Carbon disulfide	mg/L	41	37	ND 1.0	ND 1.0
Carbon tetrachloride	mg/L	ND 1.0	ND 2.5	ND 1.0	ND 1.0
Chlorobenzene	mg/L	ND 1.0	ND 2.5	ND 1.0	ND 1.0
Chloroform	mg/L	340	490	ND 1.0	ND 1.0
Methylene chloride	mg/L	22	28	ND 1.0	ND 1.0
Tetrachloroethene	mg/L	ND 1.0	ND 2.5	ND 1.0	ND 1.0
Toluene	mg/L	ND 1.0	ND 2.5	ND 1.0	ND 1.0
Trichloroethene	mg/L	ND 1.0	ND 2.5	ND 1.0	ND 1.0

	Sample ID:	CBT-032915-DJT	CBT-040615-DJT	CBT-041315-DJT	CBT-042015-SG
	Collection Date:	03/29/15	04/06/15	04/13/15	04/20/15
Parameters	**Units**				
Volatiles					
Benzene	mg/L	ND 1.0	ND 1.0	ND 1.0	ND 1.0
Carbon disulfide	mg/L	ND 1.0	ND 1.0	ND 1.0	ND 1.0
Carbon tetrachloride	mg/L	ND 1.0	ND 1.0	ND 1.0	ND 1.0
Chlorobenzene	mg/L	ND 1.0	ND 1.0	ND 1.0	ND 1.0
Chloroform	mg/L	ND 1.0	ND 1.0	ND 1.0	ND 1.0
Methylene chloride	mg/L	ND 1.0	ND 1.0	ND 1.0	ND 1.0
Tetrachloroethene	mg/L	ND 1.0	ND 1.0	ND 1.0	ND 1.0
Toluene	mg/L	ND 1.0	ND 1.0	ND 1.0	ND 1.0
Trichloroethene	mg/L	ND 1.0	ND 1.0	ND 1.0	ND 1.0

Notes:
ND Non-detect at the associated value.

APPENDIX A-2
GROUNDWATER INTERSTAGE DATA
2015 ANALYTICAL RESULTS
STAUFFER MANAGEMENT COMPANY LLC
LEWISTON, NEW YORK

	Sample ID:	CBT-042615-DJT	CBT-050315-DJT	CBT-051115-SG	CBT-051115-SG
	Collection Date:	04/26/15	05/03/15	05/11/15	05/14/15
Parameters	**Units**				
Volatiles					
Benzene	mg/L	ND 1.0	ND 1.0	ND 2.5	ND 1.0
Carbon disulfide	mg/L	ND 1.0	ND 1.0	270	250
Carbon tetrachloride	mg/L	ND 1.0	ND 1.0	11	9.9
Chlorobenzene	mg/L	ND 1.0	ND 1.0	ND 2.5	ND 1.0
Chloroform	mg/L	ND 1.0	ND 1.0	320	300
Methylene chloride	mg/L	ND 1.0	ND 1.0	9.8	9.8
Tetrachloroethene	mg/L	ND 1.0	ND 1.0	ND 2.5	ND 1.0
Toluene	mg/L	ND 1.0	ND 1.0	ND 2.5	ND 1.0
Trichloroethene	mg/L	ND 1.0	ND 1.0	ND 2.5	ND 1.0

	Sample ID:	CBT-052415-DJT	CBT-060115-SG	CBT-060715-DJT	CBT-061515-DJT
	Collection Date:	05/24/15	06/01/15	06/07/15	06/15/15
Parameters	**Units**				
Volatiles					
Benzene	mg/L	ND 1.0	ND 1.0	ND 1.0	ND 1.0
Carbon disulfide	mg/L	ND 1.0	ND 1.0	ND 1.0	ND 1.0
Carbon tetrachloride	mg/L	ND 1.0	ND 1.0	ND 1.0	ND 1.0
Chlorobenzene	mg/L	ND 1.0	ND 1.0	ND 1.0	ND 1.0
Chloroform	mg/L	ND 1.0	ND 1.0	ND 1.0	ND 1.0
Methylene chloride	mg/L	ND 1.0	ND 1.0	ND 1.0	ND 1.0
Tetrachloroethene	mg/L	1.6	ND 1.0	ND 1.0	ND 1.0
Toluene	mg/L	ND 1.0	ND 1.0	ND 1.0	ND 1.0
Trichloroethene	mg/L	ND 1.0	ND 1.0	ND 1.0	ND 1.0

Notes:
ND Non-detect at the associated value.

APPENDIX A-2
GROUNDWATER INTERSTAGE DATA
2015 ANALYTICAL RESULTS
STAUFFER MANAGEMENT COMPANY LLC
LEWISTON, NEW YORK

	Sample ID:	CBT-062215-DJT	CBT-062915-DJT	CBT-070615-SG	CBT-071315-SG
	Collection Date:	06/22/15	06/29/15	07/06/15	07/13/15
Parameters	**Units**				
Volatiles					
Benzene	mg/L	ND 1.0	ND 1.0	ND 1.0	ND 1.0
Carbon disulfide	mg/L	ND 1.0	ND 1.0	ND 1.0	2.6
Carbon tetrachloride	mg/L	ND 1.0	ND 1.0	ND 1.0	ND 1.0
Chlorobenzene	mg/L	ND 1.0	ND 1.0	ND 1.0	ND 1.0
Chloroform	mg/L	ND 1.0	ND 1.0	1.9	15
Methylene chloride	mg/L	ND 1.0	1.8	2.4	3.2
Tetrachloroethene	mg/L	ND 1.0	ND 1.0	ND 1.0	ND 1.0
Toluene	mg/L	ND 1.0	ND 1.0	ND 1.0	ND 1.0
Trichloroethene	mg/L	ND 1.0	ND 1.0	ND 1.0	ND 1.0

	Sample ID:	CBT-072015-SG	CBT-072715-SG	CBT-080315-SG	CBT-081015-SG
	Collection Date:	07/20/15	07/27/15	08/03/15	08/10/15
Parameters	**Units**				
Volatiles					
Benzene	mg/L	ND 1.0	ND 1.0	ND 1.0	ND 1.0
Carbon disulfide	mg/L	28	55	130	310
Carbon tetrachloride	mg/L	ND 1.0	ND 1.0	ND 1.0	2.7
Chlorobenzene	mg/L	ND 1.0	ND 1.0	ND 1.0	ND 1.0
Chloroform	mg/L	54	130	280	510
Methylene chloride	mg/L	6.5	9.4	16	32
Tetrachloroethene	mg/L	ND 1.0	ND 1.0	ND 1.0	ND 1.0
Toluene	mg/L	ND 1.0	ND 1.0	ND 1.0	ND 1.0
Trichloroethene	mg/L	ND 1.0	ND 1.0	ND 1.0	ND 1.0

Notes:
ND Non-detect at the associated value.

APPENDIX A-2
GROUNDWATER INTERSTAGE DATA
2015 ANALYTICAL RESULTS
STAUFFER MANAGEMENT COMPANY LLC
LEWISTON, NEW YORK

	Sample ID:	CBT-081615-DJT	CBT-082415-SG	CBT-083115-SG	CBT-090815-SG
	Collection Date:	08/16/15	08/24/15	08/31/15	09/08/15
Parameters	**Units**				
Volatiles					
Benzene	mg/L	ND 1.0	ND 1.0	ND 1.0	ND 1.0
Carbon disulfide	mg/L	ND 1.0	ND 1.0	ND 1.0	ND 1.0
Carbon tetrachloride	mg/L	ND 1.0	ND 1.0	ND 1.0	ND 1.0
Chlorobenzene	mg/L	ND 1.0	ND 1.0	ND 1.0	ND 1.0
Chloroform	mg/L	ND 1.0	ND 1.0	ND 1.0	ND 1.0
Methylene chloride	mg/L	ND 1.0	ND 1.0	ND 1.0	ND 1.0
Tetrachloroethene	mg/L	ND 1.0	ND 1.0	ND 1.0	ND 1.0
Toluene	mg/L	ND 1.0	ND 1.0	ND 1.0	ND 1.0
Trichloroethene	mg/L	ND 1.0	ND 1.0	ND 1.0	ND 1.0

	Sample ID:	CBT-091315-DJT	CBT-092115-SG	CBT-092815-SG	CBT-100615-SG
	Collection Date:	09/13/15	09/21/15	09/28/15	10/06/15
Parameters	**Units**				
Volatiles					
Benzene	mg/L	ND 1.0	ND 1.0	ND 1.0	ND 1.0
Carbon disulfide	mg/L	1.4	1.5	5.4	ND 1.0
Carbon tetrachloride	mg/L	ND 1.0	ND 1.0	3.7	ND 1.0
Chlorobenzene	mg/L	ND 1.0	ND 1.0	ND 1.0	ND 1.0
Chloroform	mg/L	ND 1.0	ND 1.0	7.3	ND 1.0
Methylene chloride	mg/L	ND 1.0	ND 1.0	11	ND 1.0
Tetrachloroethene	mg/L	ND 1.0	ND 1.0	ND 1.0	ND 1.0
Toluene	mg/L	ND 1.0	ND 1.0	ND 1.0	ND 1.0
Trichloroethene	mg/L	ND 1.0	ND 1.0	ND 1.0	ND 1.0

Notes:
ND Non-detect at the associated value.

APPENDIX A-2
GROUNDWATER INTERSTAGE DATA
2015 ANALYTICAL RESULTS
STAUFFER MANAGEMENT COMPANY LLC
LEWISTON, NEW YORK

	Sample ID:	CBT-101215-SG	CBT-101915-DJT	CBT-102615-SG	CBT-110215-SG
	Collection Date:	10/12/15	10/19/15	10/26/15	11/02/15
Parameters	**Units**				
Volatiles					
Benzene	mg/L	ND 1.0	ND 1.0	ND 1.0	ND 1.0
Carbon disulfide	mg/L	ND 1.0	ND 1.0	ND 1.0	ND 1.0
Carbon tetrachloride	mg/L	ND 1.0	ND 1.0	ND 1.0	ND 1.0
Chlorobenzene	mg/L	ND 1.0	ND 1.0	ND 1.0	ND 1.0
Chloroform	mg/L	ND 1.0	ND 1.0	ND 1.0	ND 1.0
Methylene chloride	mg/L	ND 1.0	ND 1.0	ND 1.0	ND 1.0
Tetrachloroethene	mg/L	ND 1.0	ND 1.0	ND 1.0	ND 1.0
Toluene	mg/L	ND 1.0	ND 1.0	ND 1.0	ND 1.0
Trichloroethene	mg/L	ND 1.0	ND 1.0	ND 1.0	ND 1.0

	Sample ID:	CBT-110915-DJT	CBT-111615-SG	CBT-112315-SG	CBT-113015-SG
	Collection Date:	11/09/15	11/16/15	11/23/15	11/30/15
Parameters	**Units**				
Volatiles					
Benzene	mg/L	ND 1.0	ND 1.0	ND 1.0	ND 1.0
Carbon disulfide	mg/L	ND 1.0	ND 1.0	ND 1.0	ND 1.0
Carbon tetrachloride	mg/L	ND 1.0	ND 1.0	ND 1.0	ND 1.0
Chlorobenzene	mg/L	ND 1.0	ND 1.0	ND 1.0	ND 1.0
Chloroform	mg/L	ND 1.0	ND 1.0	ND 1.0	ND 1.0
Methylene chloride	mg/L	ND 1.0	ND 1.0	ND 1.0	ND 1.0
Tetrachloroethene	mg/L	ND 1.0	ND 1.0	ND 1.0	ND 1.0
Toluene	mg/L	ND 1.0	ND 1.0	ND 1.0	ND 1.0
Trichloroethene	mg/L	ND 1.0	ND 1.0	ND 1.0	ND 1.0

Notes:
ND Non-detect at the associated value.

APPENDIX A-2
GROUNDWATER INTERSTAGE DATA
2015 ANALYTICAL RESULTS
STAUFFER MANAGEMENT COMPANY LLC
LEWISTON, NEW YORK

	Sample ID:	***CBT-120715-SG***	***CBT-121415-DJT***	***CBT-122115-DJT***	***CBT-122815-SG***
	Collection Date:	***12/07/15***	***12/14/15***	***12/21/15***	***12/28/15***
Parameters	***Units***				
Volatiles					
Benzene	mg/L	ND 1.0	ND 1.0	ND 2.5	ND 1.0
Carbon disulfide	mg/L	110	140	140	100
Carbon tetrachloride	mg/L	13	56	170	94
Chlorobenzene	mg/L	ND 1.0	ND 1.0	ND 2.5	ND 1.0
Chloroform	mg/L	270	310	320	310
Methylene chloride	mg/L	24	32	31	32
Tetrachloroethene	mg/L	ND 1.0	ND 1.0	ND 2.5	ND 1.0
Toluene	mg/L	ND 1.0	ND 1.0	ND 2.5	ND 1.0
Trichloroethene	mg/L	ND 1.0	ND 1.0	ND 2.5	ND 1.0

	Sample ID:
	Collection Date:
Parameters	***Units***
Volatiles	
Benzene	mg/L
Carbon disulfide	mg/L
Carbon tetrachloride	mg/L
Chlorobenzene	mg/L
Chloroform	mg/L
Methylene chloride	mg/L
Tetrachloroethene	mg/L
Toluene	mg/L
Trichloroethene	mg/L

Notes:
ND Non-detect at the associated value.

APPENDIX A-3
GROUNDWATER EFFLUENT DATA
2015 ANALYTICAL RESULTS
STAUFFER MANAGEMENT COMPANY LLC
LEWISTON, NEW YORK

	Sample ID:	EFF-010515-SG	EFF-020215-SG	EFF-030215-SG	EFF-030915-SG
	Collection Date:	01/05/15	02/02/15	03/02/15	03/09/15
Parameters	**Units**				
Volatiles					
Benzene	µg/L	ND 1.0	ND 1.0	ND 1.0	ND 1.0
Carbon disulfide	µg/L	ND 1.0	ND 1.0	ND 1.0	ND 1.0
Carbon tetrachloride	µg/L	ND 1.0	ND 1.0	ND 1.0	ND 1.0
Chlorobenzene	µg/L	ND 1.0	ND 1.0	ND 1.0	ND 1.0
Chloroform	µg/L	ND 1.0	ND 1.0	ND 1.0	ND 1.0
Methylene chloride	µg/L	ND 1.0	ND 1.0	ND 1.0	ND 1.0
Tetrachloroethene	µg/L	ND 1.0	ND 1.0	ND 1.0	ND 1.0
Toluene	µg/L	ND 1.0	ND 1.0	ND 1.0	ND 1.0
Trichloroethene	µg/L	ND 1.0	ND 1.0	ND 1.0	ND 1.0

	Sample ID:	EFF-031515-DJT	EFF-040615-DJT	EFF-050315-DJT	EFF-051415-DJT
	Collection Date:	03/15/15	04/06/15	05/03/15	05/14/15
Parameters	**Units**				
Volatiles					
Benzene	µg/L	ND 1.0	ND 1.0	ND 1.0	ND 1.0
Carbon disulfide	µg/L	ND 1.0	ND 1.0	ND 1.0	ND 1.0
Carbon tetrachloride	µg/L	ND 1.0	ND 1.0	ND 1.0	ND 1.0
Chlorobenzene	µg/L	ND 1.0	ND 1.0	ND 1.0	ND 1.0
Chloroform	µg/L	ND 1.0	ND 1.0	ND 1.0	ND 1.0
Methylene chloride	µg/L	ND 1.0	ND 1.0	ND 1.0	ND 1.0
Tetrachloroethene	µg/L	ND 1.0	ND 1.0	ND 1.0	ND 1.0
Toluene	µg/L	ND 1.0	ND 1.0	ND 1.0	ND 1.0
Trichloroethene	µg/L	ND 1.0	ND 1.0	ND 1.0	ND 1.0

Notes:
ND Non-detect at the associated value.

APPENDIX A-3
GROUNDWATER EFFLUENT DATA
2015 ANALYTICAL RESULTS
STAUFFER MANAGEMENT COMPANY LLC
LEWISTON, NEW YORK

	Sample ID:	***EFF-051715-DJT***	***EFF-060115-SG***	***EFF-070615-SG***	***EFF-072015-SG***
	Collection Date:	***05/17/15***	***06/01/15***	***07/06/15***	***07/20/15***
Parameters	***Units***				
Volatiles					
Benzene	µg/L	ND 1.0	ND 1.0	ND 1.0	ND 1.0
Carbon disulfide	µg/L	ND 1.0	ND 1.0	ND 1.0	ND 1.0
Carbon tetrachloride	µg/L	ND 1.0	ND 1.0	ND 1.0	ND 1.0
Chlorobenzene	µg/L	ND 1.0	ND 1.0	ND 1.0	ND 1.0
Chloroform	µg/L	ND 1.0	ND 1.0	ND 1.0	ND 1.0
Methylene chloride	µg/L	ND 1.0	ND 1.0	ND 1.0	ND 1.0
Tetrachloroethene	µg/L	ND 1.0	ND 1.0	ND 1.0	ND 1.0
Toluene	µg/L	ND 1.0	ND 1.0	ND 1.0	ND 1.0
Trichloroethene	µg/L	ND 1.0	ND 1.0	ND 1.0	ND 1.0

	Sample ID:	***EFF-072715-SG***	***EFF-080315-SG***	***EFF-081015-SG***	***EFF-081615-DJT***
	Collection Date:	***07/27/15***	***08/03/15***	***08/10/15***	***08/16/15***
Parameters	***Units***				
Volatiles					
Benzene	µg/L	ND 1.0	ND 1.0	ND 1.0	ND 1.0
Carbon disulfide	µg/L	ND 1.0	ND 1.0	ND 1.0	ND 1.0
Carbon tetrachloride	µg/L	ND 1.0	ND 1.0	ND 1.0	ND 1.0
Chlorobenzene	µg/L	ND 1.0	ND 1.0	ND 1.0	ND 1.0
Chloroform	µg/L	ND 1.0	ND 1.0	ND 1.0	ND 1.0
Methylene chloride	µg/L	ND 1.0	ND 1.0	ND 1.0	ND 1.0
Tetrachloroethene	µg/L	ND 1.0	ND 1.0	ND 1.0	ND 1.0
Toluene	µg/L	ND 1.0	ND 1.0	ND 1.0	ND 1.0
Trichloroethene	µg/L	ND 1.0	ND 1.0	ND 1.0	ND 1.0

Notes:
ND Non-detect at the associated value.

APPENDIX A-3
GROUNDWATER EFFLUENT DATA
2015 ANALYTICAL RESULTS
STAUFFER MANAGEMENT COMPANY LLC
LEWISTON, NEW YORK

	Sample ID:	***EFF-090815-DJT***	***EFF-100615-SG***	***EFF-110215-SG***	***EFF-120715-SG***
	Collection Date:	***09/08/15***	***10/06/15***	***11/02/15***	***12/07/15***
Parameters	***Units***				
Volatiles					
Benzene	µg/L	ND 1.0	ND 1.0	ND 1.0	ND 1.0
Carbon disulfide	µg/L	ND 1.0	ND 1.0	ND 1.0	ND 1.0
Carbon tetrachloride	µg/L	ND 1.0	ND 1.0	ND 1.0	ND 1.0
Chlorobenzene	µg/L	ND 1.0	ND 1.0	ND 1.0	ND 1.0
Chloroform	µg/L	ND 1.0	ND 1.0	ND 1.0	ND 1.0
Methylene chloride	µg/L	ND 1.0	ND 1.0	ND 1.0	ND 1.0
Tetrachloroethene	µg/L	ND 1.0	ND 1.0	ND 1.0	ND 1.0
Toluene	µg/L	ND 1.0	ND 1.0	ND 1.0	ND 1.0
Trichloroethene	µg/L	ND 1.0	ND 1.0	ND 1.0	ND 1.0

	Sample ID:	***EFF-121415-SG***	***EFF-122115-SG***	***EFF-122815-SG***
	Collection Date:	***12/14/15***	***12/21/15***	***12/28/15***
Parameters	***Units***			
Volatiles				
Benzene	µg/L	ND 1.0	ND 1.0	ND 1.0
Carbon disulfide	µg/L	ND 1.0	ND 1.0	ND 1.0
Carbon tetrachloride	µg/L	ND 1.0	ND 1.0	ND 1.0
Chlorobenzene	µg/L	ND 1.0	ND 1.0	ND 1.0
Chloroform	µg/L	ND 1.0	ND 1.0	ND 1.0
Methylene chloride	µg/L	ND 1.0	ND 1.0	ND 1.0
Tetrachloroethene	µg/L	ND 1.0	ND 1.0	ND 1.0
Toluene	µg/L	ND 1.0	ND 1.0	ND 1.0
Trichloroethene	µg/L	ND 1.0	ND 1.0	ND 1.0

Notes:
ND Non-detect at the associated value.

Appendix B
Groundwater Treatment System
2015 Process Monitoring Data

APPENDIX B
ANALYTICAL RESULTS SUMMARY
2015 SPDES SAMPLING
STAUFFER MANAGEMENT COMPANY LLC
LEWISTON, NEW YORK

	Sample ID:		***SPDES-040615***	***SPDES-061115***	***SPDES-082415***	***SPDES-112415***
	Sample Type:		***Effluent***	***Effluent***	***Effluent***	***Effluent***
	Collection Date:		***04/06/15***	***06/11/15***	***08/24/15***	***11/24/15***
Semi-Volatiles	***Units***	***Discharge Limitation***				
2,4-Dichlorophenol	µg/L	10	ND 1.3	ND 1.3	ND 1.3	ND 1.3
Hexachloroethane	µg/L	10	ND 1.2	ND 1.2	ND 1.2	ND 1.2
Naphthalene	µg/L	10	ND 1.0	ND 1.0	ND 1.0	ND 1.0
Metals						
Total Arsenic	lb/day	0.036	< 0.003	< 0.003	< 0.003	< 0.003
Total Chromium	lb/day	0.072	< 0.003	< 0.003	< 0.003	< 0.003
Total Copper	lb/day	0.1	< 0.006	< 0.005	< 0.006	< 0.006
Total Lead	lb/day	0.16	< 0.015	< 0.013	< 0.015	< 0.015
Total Nickel	lb/day	0.072	< 0.012	< 0.010	< 0.012	< 0.012
Total Selenium	lb/day	0.48	< 0.003	< 0.003	< 0.003	< 0.003
Total Zinc	lb/day	0.86	< 0.006	< 0.005	< 0.006	< 0.006
Wet Chemistry						
Total Recoverable Phenolics	mg/L	ND 0.0020	ND 0.0020	ND 0.0026	ND 0.0020	0.0020

Notes:
NDx Not detected at or above x.
J Estimated value
Mass discharge rates for metals were calculated utilizing laboratory results and average daily quarterly flow rates. All metals results were non-detect, therefore the results are shown as less than the calculated result.

Appendix C
Groundwater Treatment System
2015 Performance Monitoring Data

APPENDIX C-1
ANALYTICAL RESULTS SUMMARY
QUARTERLY GROUNDWATER PROGRAM
STAUFFER MANAGEMENT COMPANY LLC
LEWISTON, NEW YORK
MARCH 2015

Parameter:	Benzene	Carbon disulfide	Carbon tetrachloride	Chlorobenzene	Chloroform	Methylene chloride	Tetrachloroethene	Toluene	Trichloroethene
Units:	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
Sample Location	**Collection Date**								
Extraction Wells									
DPA-201	2/23/2015	ND 10	10	1300	ND 10	450	12	220	ND 10	230
DPA-202	4/6/2015	ND 500	2500	100000	ND 500	19000	ND 500	2000	ND 500	ND 500
DPA-203	2/23/2015	ND 500	5600	320000	ND 500	64000	700	1800	ND 500	ND 500
EW-1	4/6/2015	ND 50	290	87	ND 50	170	ND 50	ND 50	ND 50	ND 50
EW-2	2/23/2015	ND 50	4800	3100	ND 50	840	55	ND 50	ND 50	ND 50
EW-3	2/23/2015	11	2900	2800	ND 10	3400	240	100	ND 10	230
EW-4	4/6/2015	ND 10	ND 10	470	ND 10	890	ND 10	200	ND 10	53
EW-5	2/23/2015	ND 5.0	520	860	ND 5.0	530	28	53	ND 5.0	22
EW-6	2/23/2015	ND 50	200	6200	ND 50	2500	120	100	ND 50	56
EW-6 (Dup.)	2/23/2015	ND 50	230	7700	ND 50	3100	140	120	ND 50	73
LR-66	2/23/2015	ND 10	ND 10	410	ND 10	130	10	ND 10	ND 10	ND 10
OW-3	4/6/2015	ND 5000	420000	34000	ND 5000	11000	ND 5000	ND 5000	ND 5000	ND 5000
T-4	2/23/2015	ND 2.5	ND 2.5	ND 2.5	ND 2.5	ND 2.5	ND 2.5	3.4	ND 2.5	ND 2.5
QA/QC										
Trip Blank (other)	2/23/2015	ND 1.0	ND 1.0	ND 1.0	ND 1.0	ND 1.0	ND 1.0	ND 1.0	ND 1.0	ND 1.0
Trip Blank (other)	4/6/2015	ND 1.0	ND 1.0	ND 1.0	ND 1.0	ND 1.0	ND 1.0	ND 1.0	ND 1.0	ND 1.0

Notes:
ND - Not present at or above the associated value.

APPENDIX C-2
ANALYTICAL RESULTS SUMMARY
QUARTERLY GROUNDWATER PROGRAM
STAUFFER MANAGEMENT COMPANY LLC
LEWISTON, NEW YORK
JUNE 2015

Parameter:		Benzene	Carbon disulfide	Carbon tetrachloride	Chlorobenzene	Chloroform	Methylene chloride	Tetrachloroethene	Toluene	Trichloroethene
Units:		ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
Sample Location	Collection Date									
Extraction Wells										
DPA-201	6/10/2015	12	ND 10	5000	ND 10	1400	58	2100	ND 10	600
DPA-202	6/10/2015	ND 500	ND 500	58000	ND 500	9100	ND 500	1400	ND 500	ND 500
DPA-203	6/10/2015	ND 500	5800	260000	ND 500	59000	620	1600	ND 500	ND 500
EW-1	6/25/2015	ND 50	6000	1000	ND 50	930	99	ND 50	ND 50	ND 50
EW-2	6/11/2015	ND 20	9100	3400	ND 20	1400	96	50	ND 20	ND 20
EW-3	6/11/2015	ND 10	1200	1400	ND 10	2000	150	49	ND 10	97
EW-4	6/12/2015	ND 10	87	170	ND 10	1100	14	61	ND 10	25
EW-5	6/11/2015	ND 5	710	570	ND 5	190	7.2	73	ND 5	17
EW-6	6/11/2015	ND 50	370	9500	ND 50	3400	140	150	ND 50	77
LR-66	6/11/2015	ND 10	61	2000	ND 10	420	44	94	ND 10	ND 10
OW-3	6/16/2015	ND 5000	1100000	130000	ND 5000	20000	ND 5000	ND 5000	ND 5000	ND 5000
T-4	6/11/2015	ND 2.5	ND 2.5	ND 2.5	5	ND 2.5	ND 2.5	15	ND 2.5	8.4
Upper Lockport Wells										
OW-11	6/11/2015	ND 1	ND 1	ND 1	ND 1	ND 1	ND 1	ND 1	ND 1	ND 1
W-11	6/11/2015	ND 1	ND 1	ND 1	ND 1	ND 1	ND 1	3.6	ND 1	5.3
W-16	6/11/2015	ND 1	2	ND 1	ND 1	ND 1	ND 1	2.7	ND 1	3.9
W-17	6/10/2015	ND 10	75	3200	ND 10	1500	73	100	ND 10	320
W-18R	6/11/2015	ND 50	190	27000	ND 50	6200	130	130	ND 50	ND 50
W-19D	6/11/2015	ND 1	ND 1	1.7	ND 1	3.7	ND 1	16	ND 1	ND 1
W-20	6/11/2015	ND 1	ND 1	ND 1	ND 1	ND 1	ND 1	ND 1	ND 1	ND 1
W-20 (Dup.)	6/11/2015	ND 1	ND 1	ND 1	ND 1	ND 1	ND 1	ND 1	ND 1	ND 1
W-22A	6/11/2015	ND 1	ND 1	73	200	48	1.2	16	ND 1	5
W-23C	6/11/2015	ND 1	1.3	ND 1	ND 1	1.2	ND 1	1.6	ND 1	ND 1
W-66	6/12/2015	1.1	9.3	3300	ND 1	1800	11	120	ND 1	37
W-67	6/12/2015	2.5	150	1300	13	1100	46	75	ND 2	46

Notes:
ND - Not present at or above the associated value.

APPENDIX C-2
ANALYTICAL RESULTS SUMMARY
QUARTERLY GROUNDWATER PROGRAM
STAUFFER MANAGEMENT COMPANY LLC
LEWISTON, NEW YORK
JUNE 2015

Sample Location	Collection Date	Benzene ug/L	Carbon disulfide ug/L	Carbon tetrachloride ug/L	Chlorobenzene ug/L	Chloroform ug/L	Methylene chloride ug/L	Tetrachloroethene ug/L	Toluene ug/L	Trichloroethene ug/L
Lower Lockport Well										
W-16L	6/11/2015	ND 1	3400	1.2	ND 1	4	1	2.5	ND 1	7.9
W-18L	6/15/2015	ND 10	ND 10	1200	ND 10	1800	26	110	ND 10	25
W-19A	6/11/2015	ND 1	ND 1	3.4	ND 1	15	ND 1	11	ND 1	1.4
W-23B	6/11/2015	ND 5	8.4	170	ND 5	130	ND 5	300	ND 5	56
W-48E	6/10/2015	ND 1	ND 1	52	9.1	38	ND 1	21	ND 1	4.5
W-50L	6/11/2015	ND 1	ND 1	1.2	ND 1	ND 1	ND 1	ND 1	ND 1	ND 1
W-65	6/11/2015	ND 1	ND 1	3	ND 1	4.8	ND 1	1.9	ND 1	1.1
W-66L	6/11/2015	ND 1	ND 1	1.2	ND 1	ND 1	ND 1	ND 1	ND 1	ND 1
W-67L	6/12/2015	ND 5	ND 5	130	ND 5	440	ND 5	28	ND 5	36
W-70L	6/11/2015	1.6	1.2	ND 1	71	64	ND 1	ND 1	ND 1	5.8
Lockport/Rochester Wells										
LR-2	6/12/2015	ND 100	ND 100	700	ND 100	730	110	ND 100	ND 100	ND 100
LR-16	6/12/2015	ND 2	5500	48	ND 2	1700	880	150	ND 2	67
LR-20	6/11/2015	ND 1	ND 1	ND 1	ND 1	ND 1	ND 1	ND 1	ND 1	ND 1
LR-48	6/12/2015	ND 1	ND 1	33	1.6	29	ND 1	4.2	ND 1	2.2
LR-49	6/11/2015	ND 1	ND 1	ND 1	2.5	ND 1	ND 1	ND 1	ND 1	ND 1
LR-50	6/11/2015	ND 1	ND 1	ND 1	ND 1	ND 1	ND 1	ND 1	ND 1	ND 1
LR-51	6/11/2015	ND 1	ND 1	ND 1	4.9	ND 1	ND 1	ND 1	ND 1	ND 1
LR-61	6/15/2015	ND 10	36	1700	21	1200	74	59	ND 10	60
LR-61 (Dup.)	6/15/2015	ND 20	43	2000	25	1500	87	70	ND 20	81
LR-62	6/11/2015	190	20000	ND 1	ND 1	20	ND 1	ND 1	21	16
LR-67	6/15/2015	ND 50	20000	ND 50	ND 50	ND 50	ND 50	250	ND 50	ND 50
LR-69	6/11/2015	190	2.5	ND 1	ND 1	ND 1	ND 1	ND 1	28	ND 1

Notes:
ND - Not present at or above the associated value.

APPENDIX C-2
ANALYTICAL RESULTS SUMMARY
QUARTERLY GROUNDWATER PROGRAM
STAUFFER MANAGEMENT COMPANY LLC
LEWISTON, NEW YORK
JUNE 2015

Sample Location	Collection Date	Benzene ug/L	Carbon disulfide ug/L	Carbon tetrachloride ug/L	Chlorobenzene ug/L	Chloroform ug/L	Methylene chloride ug/L	Tetrachloroethene ug/L	Toluene ug/L	Trichloroethene ug/L
OW-5	6/16/2015	ND 100	1200	ND 100	ND 100	ND 100	ND 100	ND 100	ND 100	ND 100
W-19B	6/12/2015	ND 100	ND 100	1500	190	3600	420	ND 100	ND 100	350
Rochester Wells										
B-02	6/16/2015	61	1100	1600	ND 50	5000	640	ND 50	ND 50	ND 50
R-16	6/11/2015	79	ND 1	ND 1	ND 1	ND 1	ND 1	ND 1	31	ND 1
R-19	6/17/2015	88	18000	2600	ND 25	2100	290	ND 25	78	ND 25
R-48	6/11/2015	2	8.8	83	1.4	21	2	2.8	ND 1	ND 1
R-50	6/16/2015	110	1800	1800	ND 2.5	3900	380	43	71	3
R-50 (Dup.)	6/16/2015	120	1600	1600	1.3	3600	360	44	75	2.8
R-51	6/16/2015	55	12	ND 1	ND 1	11	32	ND 1	17	ND 1
R-60	6/16/2015	28	20	6.7	ND 1	91	28	1.7	ND 1	1
R-61	6/16/2015	ND 100	23000	ND 100	ND 100	ND 100	ND 100	ND 100	ND 100	ND 100
R-62	6/16/2015	ND 500	25000	ND 500	ND 500	ND 500	ND 500	ND 500	ND 500	ND 500
R-66	6/17/2015	ND 100	19000	9000	ND 100	17000	3900	ND 100	ND 100	ND 100
R-67	6/16/2015	ND 1000	100000	ND 1000	ND 1000	ND 1000	ND 1000	ND 1000	ND 1000	ND 1000
R-68	6/16/2015	190	190000	69000	ND 50	47000	2100	600	160	ND 50
QA/QC										
RINSEBLANK	6/11/2015	ND 1	ND 1	ND 1	ND 1	ND 1	1.3	ND 1	ND 1	ND 1
RINSEBLANK	6/12/2015	ND 1	ND 1	ND 1	ND 1	ND 1	1.7	ND 1	ND 1	ND 1
RINSEBLANK	6/15/2015	ND 1	ND 1	2.8	ND 1	1.5	1.6	ND 1	ND 1	ND 1
RINSEBLANK	6/16/2015	ND 1	1.2	2.1	ND 1	ND 1	1.6	ND 1	ND 1	ND 1
Trip Blank	6/10/2015	ND 1	ND 1	ND 1	ND 1	ND 1	ND 1	ND 1	ND 1	ND 1
Trip Blank	6/11/2015	ND 1	ND 1	ND 1	ND 1	ND 1	ND 1	ND 1	ND 1	ND 1
Trip Blank	6/12/2015	ND 1	ND 1	ND 1	ND 1	ND 1	ND 1	ND 1	ND 1	ND 1

Notes:
ND - Not present at or above the associated value.

APPENDIX C-2
ANALYTICAL RESULTS SUMMARY
QUARTERLY GROUNDWATER PROGRAM
STAUFFER MANAGEMENT COMPANY LLC
LEWISTON, NEW YORK
JUNE 2015

	Parameter:	*Benzene*	*Carbon disulfide*	*Carbon tetrachloride*	*Chlorobenzene*	*Chloroform*	*Methylene chloride*	*Tetrachloroethene*	*Toluene*	*Trichloroethene*
	Units:	*ug/L*	*ug/L*	*ug/L*	*ug/L*	*ug/L*	*ug/L*	*ug/L*	*ug/L*	*ug/L*
Sample Location	***Collection Date***									
Trip Blank	6/15/2015	ND 1	ND 1	ND 1	ND 1	ND 1	ND 1	ND 1	ND 1	ND 1
Trip Blank	6/16/2015	ND 1	ND 1	ND 1	ND 1	ND 1	ND 1	ND 1	ND 1	ND 1
Trip Blank	6/25/2015	ND 1	ND 1	ND 1	ND 1	ND 1	ND 1	ND 1	ND 1	ND 1

Notes:
ND - Not present at or above the associated value.

APPENDIX C-3
ANALYTICAL RESULTS SUMMARY
QUARTERLY GROUNDWATER PROGRAM
STAUFFER MANAGEMENT COMPANY LLC
LEWISTON, NEW YORK
AUGUST 2015

Sample Location	Collection Date	Benzene ug/L	Carbon disulfide ug/L	Carbon tetrachloride ug/L	Chlorobenzene ug/L	Chloroform ug/L	Methylene chloride ug/L	Tetrachloroethene ug/L	Toluene ug/L	Trichloroethene ug/L
Extraction Wells										
DPA-201	8/24/2015	ND 10	ND 10	5300	ND 10	2400	ND 10	3200	ND 10	1200
DPA-202	8/24/2015	ND 500	930	83000	ND 500	15000	ND 500	1600	ND 500	ND 500
DPA-203	8/24/2015	ND 500	1800	200000	ND 500	58000	610	1300	ND 500	ND 500
EW-1	8/24/2015	ND 50	43000	5700	ND 50	3400	300	60	ND 50	ND 50
EW-2	8/24/2015	ND 20	83	1700	ND 20	470	38	22	ND 20	ND 20
EW-3	8/24/2015	- 13	ND 10	1500	ND 10	2400	190	61	ND 10	140
EW-4	8/24/2015	ND 10	ND 10	11	ND 10	230	ND 10	17	ND 10	ND 10
EW-5	8/24/2015	ND 5.0	370	130	ND 5.0	120	12	18	ND 5.0	10
EW-5 (Dup.)	8/24/2015	ND 2.0	240	130	ND 2.0	120	11	18	ND 2.0	9.4
EW-6	8/24/2015	ND 50	180	3700	ND 50	2000	140	93	ND 50	95
LR-66	8/24/2015	ND 10	34	1800	ND 10	970	60	39	ND 10	38
OW-3	8/24/2015	ND 5000	520000	34000	ND 5000	12000	ND 5000	ND 5000	ND 5000	ND 5000
T-4	8/24/2015	ND 2.5	ND 2.5	ND 2.5	19	ND 2.5	ND 2.5	30	ND 2.5	6.8
QA/QC										
Trip Blank (other)	8/24/2015	ND 1.0	ND 1.0	ND 1.0	ND 1.0	ND 1.0	ND 1.0	ND 1.0	ND 1.0	ND 1.0

Notes:
ND - Not present at or above the associated value.

APPENDIX C-4
ANALYTICAL RESULTS SUMMARY
QUARTERLY GROUNDWATER PROGRAM
STAUFFER MANAGEMENT COMPANY LLC
LEWISTON, NEW YORK
NOVEMBER 2015

Sample Location		Collection Date	Benzene ug/L	Carbon ug/L	Carbon ug/L	Chlorobenzene ug/L	Chloroform ug/L	Methylene ug/L	Tetrachloroethe ug/L	Toluene ug/L	Trichloroethene ug/L
Extraction Wells											
DPA-201		11/24/2015	ND 10	ND 10	170	ND 10	140	ND 10	120	ND 10	81
DPA-202		11/24/2015	ND 500	740	78000	ND 500	16000	ND 500	1600	ND 500	ND 500
DPA-203		11/24/2015	ND 500	1400	130000	ND 500	53000	600	1300	ND 500	ND 500
EW-1		11/24/2015	ND 50	50000	7900	ND 50	3100	230	ND 50	ND 50	ND 50
EW-2		11/24/2015	ND 20	150	1500	ND 20	490	33	21	ND 20	ND 20
EW-3		11/24/2015	ND 10	860	2600	ND 10	3200	250	66	ND 10	170
EW-4		11/24/2015	ND 10	16	ND 10	ND 10	90	ND 10	ND 10	ND 10	ND 10
EW-5		11/24/2015	ND 5.0	900	480	ND 5.0	380	25	19	ND 5.0	13
EW-6		11/24/2015	ND 50	380	7500	ND 50	3200	160	130	ND 50	100
EW-6	(Dup.)	11/24/2015	ND 50	340	6300	ND 50	2800	140	100	ND 50	84
LR-66		11/24/2015	ND 10	ND 10	2600	ND 10	420	64	97	ND 10	ND 10
OW-3		12/2/2015	ND 5000	740000	35000	ND 5000	13000	ND 5000	ND 5000	ND 5000	ND 5000
T-4		11/24/2015	ND 2.5	ND 2.5	ND 2.5	52	ND 2.5	ND 2.5	14	ND 2.5	3.9
QA/QC											
Trip Blank	(other)	11/24/2015	ND 1.0	ND 1.0	ND 1.0	ND 1.0	ND 1.0	ND 1.0	ND 1.0	ND 1.0	ND 1.0

Notes:
ND - Not present at or above the associated value.

Appendix D
Monitoring Well Inventory

APPENDIX D
MONITORING WELL INVENTORY
STAUFFER MANAGEMENT COMPANY LLC
LEWISTON, NEW YORK
2015

11/24/2015

Well No.	*Sounded Depth (Ft. BTOC)*	*Pro-Casing*	*Lock*	*Concrete Collar*
B02	NA	G	YES	P
OW-3	107.77	G	NA	G
OW-5	102.96	G	YES	G
OW-8	9.74	G	NA	G
OW-9	13.92	G	NA	G
OW-10	13.17	G	NA	G
OW-11	29.12	G	NA	G
W-11	32.60	G	YES	G
W-16	31.62	G	YES	G
W-16L	67.09	G	YES	G
W-17	29.30	G	YES	P
W-18R	31.75	G	YES	G
W-18L	74.01	G	YES	G
W-19A	40.06	G	YES	G
W-19B	82.64	G	YES	G
W-19D	24.50	G	YES	G
W-20	28.81	G	YES	G
W-22A	22.71	G	YES	G
W-23B	43.77	G	YES	G
W-23C	23.09	G	YES	G
W-48E	40.29	G	YES	G
W-50	37.88	G	YES	G
W-60L	33.88	G	YES	G
W-65	57.52	G	YES	G
W-66	48.01	G	YES	G
W-66L	66.45	G	YES	G
W-67	42.54	G	YES	G
W-67L	71.83	G	YES	G
W-70L	73.63	G	YES	G
LR-2	90.25	G	YES	G
LR-16	92.97	G	YES	G
LR-20	87.00	G	YES	G

Notes:
Ft. BTOC = Feet Below Top of Casing
PW = Pumping Well
EW = Extraction Well
NA = Not Available
G = Good Condition
P = Poor Condition

APPENDIX D
MONITORING WELL INVENTORY
STAUFFER MANAGEMENT COMPANY LLC
LEWISTON, NEW YORK
2015

11/24/2015

Well No.	*Sounded Depth (Ft. BTOC)*	*Pro-Casing*	*Lock*	*Concrete Collar*
LR-48	68.57	G	YES	G
LR-49	75.73	G	YES	G
LR-50	76.58	G	YES	G
LR-51	65.92	G	YES	G
LR-61	97.71	G	YES	G
LR-62	103.81	G	YES	G
LR-66	NM	G	NA	G
LR-67	102.84	G	YES	G
LR-69	87.45	G	YES	G
R-16	132.83	G	YES	G
R-19	146.70	G	YES	G
R-48	139.27	G	YES	G
R-50	140.54	G	YES	G
R-51	NA	P	YES	G
R-60	138.54	G	YES	G
R-61	153.25	G	YES	G
R-62	158.19	G	YES	G
R-66	151.68	G	YES	G
R-67	142.12	G	YES	G
R-68	122.09	G	YES	G
EW-4	NM	G	NA	G
EW-5	NM	G	NA	G
EW-6	NM	G	NA	G
DPA-201	23.21	G	NA	G
DPA-202	NM	G	NA	G
DPA-203	30.28	G	NA	G
EW-1	NM	G	NA	G
EW-2	NM	G	NA	G
EW-3	NM	G	NA	G
T4	27.98	G	NA	G

Notes:
Ft. BTOC = Feet Below Top of Casing
PW = Pumping Well
EW = Extraction Well
NA = Not Available
G = Good Condition
P = Poor Condition