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Date:
February 20, 2014

Subject:
2013 Annual Groundwater Collection and Treatment System Operation, Maintenance & Monitoring Report

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2013 Annual Groundwater Collection and Treatment System Operation, Maintenance, and Monitoring Report

Former Lockheed Martin French Road Facility Utica, New York

February 2014

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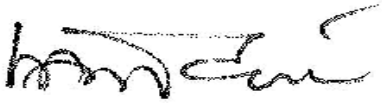

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2013 Annual Groundwater Collection and Treatment System Operation, Maintenance, and Monitoring Report

Former Lockheed Martin French Road Facility, Utica, New York

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Acronyms

CB	catch-basin
cfm	cubic feet per minute
CVOCs	chlorinated volatile organic compounds
DAR	Division of Air Resources
ft	feet
GCTS	groundwater collection and treatment system
gpm	gallons per minute
HDPE	high-density polyethylene
HOA	hand-off-auto
hp	horsepower
in	inch
lb	pound
MH	manhole
mL	milliliters
NYSDEC	New York State Department of Environmental Conservation
NYSDOH	New York State Department of Health
O&M	operations and maintenance
OM&M	operation, maintenance, and monitoring
PLC	programmable logic controller
PVC	polyvinyl chloride
QAPP	Quality Assurance Project Plan
RCP	Reinforced-concrete pipe
RL	reporting limits
SCFM	standard cubic feet per minute
SCH	schedule
SOP	standard operating procedure
SPDES	State Pollutant Discharge Elimination System
USEPA	United States Environmental Protection Agency
VOA	volatile organic analysis
VOCs	volatile organic compounds
WTC	water treatment chemical

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1. Introduction

This *Groundwater Collection and Treatment System Operation, Maintenance, and Monitoring Report* was prepared by ARCADIS for Lockheed Martin Corporation (Lockheed Martin), in accordance with the DRAFT *Site Management Plan for the Solvent Dock Area* (ARCADIS 2009) at the Former Lockheed Martin French Road Facility (herein referred to as the "site") in Utica, New York (Figure 1). All work was performed in accordance with the October 3, 2008 "Order on Consent" (CO 6-20080321-5) issued by the New York State Department of Environmental Conservation (NYSDEC). This report summarizes the operation, maintenance, and monitoring (OM&M) of the groundwater collection and treatment system (GCTS) from January 1 through December 31, 2013. The data summary includes a review of influent and effluent system sampling, analysis of key operating parameters (e.g., flow rates, pressures, system run-time, and maintenance activities), and any modifications and recommendations related to continued system operation and monitoring.

2. Groundwater Collection and Treatment System Description

The GCTS is designed to collect groundwater contaminated with chlorinated volatile organic compounds (CVOCs) from the former Solvent Dock Area and former northern-perimeter ditch area and transport it to a treatment building where the CVOCs are removed by a low-profile air stripper. Following treatment, groundwater is discharged via gravity to the local municipal storm drain under a NYSDEC "State Pollutant Discharge Elimination System" (SPDES) permit (permit No. NY-0121894). The system is designed to operate automatically and requires only periodic inspections and maintenance. An automated system operation log is sent daily via e-mail to the project engineer to verify operation. A more detailed explanation of the GCTS appears below.

Groundwater in the former Solvent Dock Area (MH-2 and MH-3) and former northern-perimeter ditch area (MH-1) is captured by separate perforated-pipelines and flows via gravity to collection manholes. Groundwater is then pumped (batch mode) from each manhole through subsurface double-walled pipelines to the GCTS building for treatment before being discharged to the local municipal stormwater collection system. The groundwater is treated with a low-profile air stripper, which removes the dissolved-phase CVOCs.

During air stripping, contaminated water enters the air stripper at the top and ambient air enters from the bottom. The groundwater flows over four trays in series where CVOCs are transferred from the aqueous phase (i.e., water) to the vapor phase (i.e.,

counter-current air stream). The air stream (off-gas) is treated using granular activated carbon before discharge to the atmosphere. A GCTS site plan is illustrated in Figure 2, and the GCTS process and instrumentation diagram record drawing showing sampling locations is provided in Appendix A.

2.1 Major System Components

Major components of the system are as follows:

- MH-1: 6-ft diameter and 13-ft deep pre-cast concrete pumping-manhole equipped with the following components:
  - Two ¾ horsepower (hp) submersible pumps;
  - Five associated float-switches;
  - 2-in/4-in diameter double walled high-density polyethylene (HDPE) discharge-piping; and
  - Gravity Collection Drain - 670 feet (ft) of 8-inch (in) diameter perforated HDPE pipe installed in a 4–6-ft deep, stone-filled collection trench located parallel to the former northern-perimeter ditch.
- MH-2: 6-ft diameter and 18-ft deep pre-cast concrete pumping-manhole equipped with the following components:
  - Two ¾ hp submersible pumps;
  - Five associated float-switches;
  - 2-in/4-in diameter double wall HDPE discharge piping; and
  - Gravity Collection Drain - 70 ft of 6-in diameter perforated HDPE-pipe installed in a 16-ft deep, stone-filled collection trench located adjacent to the former Solvent Dock area.
- MH-3: 6-ft diameter and 17-ft deep pre-cast concrete pumping-manhole equipped with the following components:
  - Two ¾ hp submersible pumps;
  - Five associated float-switches;
  - 2-in/4-in diameter double wall HDPE discharge piping; and

  - Gravity Collection Drain - 173 ft of 6-in diameter perforated HDPE-pipe installed in a 9–11-ft deep, stone-filled collection trench located adjacent to the facility stormwater drainage line within the former Solvent Dock area.

- Pre-Engineered Metal Building: A 24-ft 8-in by 20-ft pre-engineered metal treatment-building set on a concrete foundation and slab equipped with a secondary containment- dike and floor sump;

- Programmable Logic Controller (PLC) and motor control panels for the air stripper, duct heater, and manhole pumps;

- Air Stripper: Low profile, stainless steel air stripper rated for a maximum flowrate of 120 gallons per minute (gpm);

- Liquid Phase Discharge: 60-ft of 4-in diameter schedule (SCH)-40 polyvinyl chloride (PVC) gravity-discharge pipe from the air stripper effluent to the local municipal stormwater collection and drainage system (30-in diameter reinforced-concrete pipe [RCP]);

- Duct Heater: Inline duct heater rated at 600 standard cubic feet per minute (SCFM);

- Vapor Phase Treatment Vessels: two 1000-pound (lb) activated carbon vessels operated in series that discharge the treated air stripper off-gas through an exhaust-duct made of PVC (interior) and stainless steel (exterior) that extends approximately 28-ft above the ground surface; and

- Chemical Feed System: Aries Chemical sequestering agent 2908 is injected into the influent groundwater stream for mineral deposit control using a LMI chemical feed pump model AA941-353 BI, equipped with a LMI Digi-Pulse Meter model FM-200 rated for 0.05-5.0 milliliter (ml) per stroke. (Note: Approval for the water treatment chemical [WTC] was received from NYSDEC on April 13, 2011. Usage of the WTC began on April 20, 2011.)

Record drawings for the GCTS are included in Appendix A. System components are described in more detail in the *Operational, Maintenance, and Monitoring Manual* (ARCADIS 2011).

3. 2013 Remedial Operational Objectives

The GCTS' overall remedial goal is to reduce the potential for groundwater contaminated with CVOCs to infiltrate the facility's storm drainage system (Figure 2)

before its contents eventually discharge to Nail Creek. The GCTS' operational objectives are to:

- Maintain and operate the system continuously without significant downtime;
- Demonstrate the GCTS' effectiveness in preventing infiltration of CVOC contaminated groundwater into the site facility's storm drain;
- Demonstrate that the air stripper is removing CVOCs from the influent groundwater streams before being discharged into the local county storm drain system, in compliance with the site's SPDES permit;
- Demonstrate that vapor phase discharge from the air stripper complies with NYSDEC Division of Air Resources (DAR-1); and
- Achieve the site specific goal of 95 percent (%) mass removal of target CVOCs, which include Tetrachloroethene (PCE), Trichloroethene (TCE), 1,1-Dichloroethane (1,1-DCA), cis-1,2-Dichloroethene (cis-1,2-DCE), and trans-1,2,-Dichloroethene (trans-1,2-DCE), in the system vapor effluent.

The operational goals, as recommended in the 2012 OM&M annual report, were successfully achieved during the 2013 reporting period by performing the following activities:

- Monitored the GCTS operation remotely on a daily basis to ensure continuous operation;
- Performed monthly physical system inspections to verify proper operation, and to perform any required maintenance;
- Performed monthly system compliance sampling to ensure that the Site-related CVOCs were being removed from the groundwater prior to discharge through the system effluent; and
- Performed quarterly system OM&M, which included the following:
    - Collected stormwater samples from the onsite catch basins (CB) to monitor for the presence of CVOCs.
    - Collected system pre-carbon (influent), mid-carbon, and effluent vapor samples during each quarter to calculate mass removal

efficiencies and to monitor the effluent discharge concentrations of Site- related CVOCs.

4. Operation and Maintenance Activities

The GCTS operated nearly continuously between January 1 - December 31, 2013 (run time was approximately 99%, or 360 of 366 days), with minor scheduled routine maintenance and/or operational interruptions due to system alarm conditions.

The system was inspected either by physical site inspections, remote computer monitoring, and/or via review of the daily system operation e-mails during the reporting period. System operating-parameters are recorded during monthly site inspections and compliance sampling events. The GCTS operational summary is provided in Table 1.

4.1 Daily Routine System Inspections

Daily remote system monitoring of the system was performed during 2013. Monitoring included review of the daily system operational e-mails to confirm that the system was operational, that all system variables were within their allowable ranges, and that no alarm conditions were present.

4.2 Monthly Routine System Inspections

This section summarizes the activities completed during the operations and maintenance (O&M) monthly site visits. These activities were recorded on the “Monthly O&M Checklists” (attached as Appendix B).

Air Stripper:

- Observe the air stripper for any visible leaks;
- Clean air stripper aeration trays and sump (as required);
- Observe the blower for proper operation;
- Inspect the air stripper trays via the glass door and record and note deposits; and
- Record the gauge pressure and level readings on the log sheet for the following:
    - Air stripper sump; and

- Air stripper-sump water level.

Flow Meters:

- Observe the flow meters to ensure they are operating properly and clean them, as necessary; and
- Record the monthly and permanent totalizer readings.

Vapor Phase Equipment:

- Inspect the duct heater for proper operation;
- Record pre-duct heater and carbon vessel temperatures;
- Inspect the carbon vessels for any signs of leaks; and
- Record pressures before the lead vessel, and between the lead and lag vessels.

Control Panels:

- Test hand-off-auto (HOA) switches for proper operation; and
- Test power and pump-run lights.

Water Treatment Chemical:

- Inspect chemical feed pump and associated tubing for any signs of leaks;
- Record and date remaining chemical level in drum on a monthly basis; and
- Track chemical consumption and dosing rates on a monthly basis.

Pumping Manhole Inspections:

- Check the HDPE double-walled pipe for flow entering the manhole from the outer containment pipe, which could indicate a discharge pipe leak;
- Check the floats to ensure they are hanging properly and unobstructed;
- Observe groundwater in the manhole for any unusual odors, water clarity, etc.; and
- If the pump(s) are running, listen for unusual sounds and inspect the discharge piping in the manhole for leaks.

Miscellaneous O&M:

- Observe all treatment-building piping for signs of leaks;
- Exercise MH-1, MH-2, and MH-3 influent ball valves to clean any mineral deposits in order to maintain full operational range of the valve;
- Check the building unit heaters and thermostats, adjust as necessary; and
- Inspect all health and safety related equipment and replace as necessary.

4.3 Quarterly System O&M and Inspections

This section describes activities completed during the O&M quarterly critical device testing. These activities were recorded on the "Monthly/Quarterly O&M Checklists" (attached as Appendix B). The system was temporarily turned on and off for several hours, per event in January, April, July, and October 2013 to perform critical-device testing. These devices were tested for proper operation as described in the *OM&M Manual* (ARCADIS 2011) standard operating procedures (SOPs). Below is a summary of each event:

- January 17, 2013 – All critical devices passed.
- April 25, 2013 – All critical devices passed.
- July 11-12, 2013 – All critical devices passed.
- October 23-24, 2013 – All critical devices passed.

4.4 Non-Routine Operation and Maintenance Activities

The following non-routine system O&M activities were performed between January 1 and December 31, 2013:

- The carbon in both vapor phase carbon vessels were replaced with virgin Siemens VC36C carbon on May 29, 2013. Approximately 1,000 lbs of carbon was placed into each vessel. (Note: Prior to the changeout a sample of the spent carbon was collected and analyzed for VOCs by Siemens. The analytical data was used to prepare a waste characterization/regeneration profile which was subsequently approved by the carbon vendor [Siemens, Darlington, PA], and the local regulatory agency [PADEP] where the carbon will be regenerated.)

4.5 Alarm Conditions and System Modifications

Several fatal alarm conditions occurred between January 1 and December 31, 2013. The cause of each system alarm and corresponding corrective action are summarized in Table 1. Alarm logs and response sheets are provided in Appendix C. Below is a summary of fatal alarms and corrective actions including any system modifications that were made during the reporting period:

- On November 30 and December 17 and 25, 2013, the air stripper sump low liquid level alarm (Process 32) was observed. The cause of these alarms was a function of the low level switch and the blower damper set point, which controls the gravity discharge via the pressure that is induced in the air stripper sump by the blower. The corrective action included inspecting the datalogger and confirming the low level condition in the sump and restarting the system. Due to the sensitivity of the blower damper set point no adjustments were made.

Several non-fatal alarms (e.g., failed daily communication logs, building wet floor sensor, low flow liquid flow alarms from the manholes) were observed during the 2013 reporting period. These non-fatal alarms and the associated corrective actions (if applicable) are documented in Appendix C.

Due to the unreliable landline communication service, as noted during the 2012 reporting period, the PLC was upgraded with a cellular wireless modem, manufactured by MultiTech, on February 7, 2013. In addition to the cellular modem hardware upgrade, the PLC was also updated with firmware in order to provide a wireless internet protocol (IP) connection so that the unit could transmit daily system operation status emails, as well as alarm notification emails.

4.6 Whole Effluent Toxicity (WET) Testing

Whole Effluent Toxicity (WET) testing was requested by the NYSDEC in a letter dated January 11, 2012. The 7-day WET testing was completed on March 6, 2012, and submitted to the NYSDEC on April 3, 2012. A NYSDEC review of the results is still pending.

5. Analytical Monitoring Activities

This section summarizes the monthly GCTS compliance sampling and monitoring activities completed during the reporting period.

5.1 System-Effluent Monitoring

The treatment system discharges to an Oneida County storm drain under the terms of an SPDES permit (permit No. NY-0121894). As required by the SPDES permit, effluent grab-water samples were collected monthly from the treatment system. One effluent grab-sample was collected monthly from the treatment-system-effluent sampling-port SP-100 (designated by NYSDEC as "Outfall #2"), located on the 4-in diameter air stripper liquid phase effluent line. The location of sampling port SP-100 is shown on drawing M-1 in Appendix A.

Samples were collected in 40-ml volatile organic analysis (VOA) vials supplied by a New York State Department of Health (NYSDOH)-certified laboratory. The sampling protocol for the effluent sample is included in the *Site-Specific Quality Assurance Project Plan* (QAPP) (ARCADIS 2009b). The samples were shipped on the day of collection via overnight delivery to TestAmerica Laboratories, Inc. in Amherst, New York. One laboratory trip-blank accompanied each water sample. All samples were analyzed for volatile organic compounds (VOCs) by United States Environmental Protection Agency (USEPA) Method 8260. The SPDES permit also requires monthly collection and analysis of a grab sample for pH. The pH is measured locally using a site-dedicated pH meter.

The system-effluent samples contained no detectable concentrations of VOCs above their respective laboratory reporting limits (RL) (as shown in Table 2) during the entire reporting period.

The SPDES permit limits the system's effluent average daily discharge flow (over the course of a monthly reporting period) to 45 gpm. Effluent flow did not exceed this average during the reporting period. In addition, the pH recorded during the 2013 reporting period ranged from 7.9 to 8.2 standard units, and remained within the SPDES effluent limits of 6.5 to 8.5 standard units.

5.2 System-Influent Monitoring

Influent-water samples were collected as part of quarterly monitoring activities in January, April, July, and October 2013. Influent samples were collected from each influent-line (MH-1, MH-2, and MH-3) sampling-tap on the 2-in diameter influent lines before the influent water entered the air stripper. The sampling protocol and delivery method followed were identical to those for the SPDES compliance sampling.

The primary site-related CVOCs detected for MH-1 were:

- 1,1-DCA (3.5 μg/L in January, 5.4 μg/L in April, 4.2 μg/L in July, and 5.9 μg/L in October);
- cis-1,2-DCE (21 μg/L in January, 28 μg/L in April, 24 μg/L in July, and 36 μg/L in October);
- PCE (16 μg/L in January, 21 μg/L in April, 16 μg/L in July, and 24 μg/L in October); and
- TCE (23 μg/L in January, 36 μg/L in April, 24 μg/L in July, and 32 μg/L in October).

The primary site-related CVOCs detected for MH-2 were:

- 1,1-DCA (1.3 μg/L in January, 1.4 μg/L in July, 2.0 μg/L, and 2.5 μg/L in October);
- cis-1,2-DCE (7.8 μg/L in January, 8.2 μg/L in April, 16 μg/L in July and 14 μg/L in October);
- PCE (2.5 μg/L in January, 2.0 μg/L in April, 3.9 μg/L in July and 2.5 μg/L in October);
- TCE (5.2 μg/L in January, 4.6 μg/L in April, 9.8 μg/L in July and 5.1 μg/L in October); and
- VC (1.2 μg/L in April, 1.7 μg/L in July and 3.1 μg/L in October).

The primary site-related CVOCs detected for MH-3 were:

- cis-1,2-DCE (2.1 μg/L in January, 2.3 μg/L in April, 1.7 μg/L in July and 2.7 μg/L in October);
- PCE (44 μg/L in January, 48 μg/L in April, 32 μg/L in July and 35 μg/L in October); and

- TCE (14 μg/L in January, 14 μg/L in April, 13 μg/L in July and 16 μg/L in October).

System influent analytical sampling results are summarized in Table 3.

5.3 Stormwater Monitoring

As outlined in the *Operational, Maintenance, and Monitoring Manual* (ARCADIS 2011), quarterly stormwater samples were collected from 3 CB locations at the site (identified as CB-1, CB-2, and CB-3; as shown on Figure 2). The quarterly stormwater samples collected from the CBs contained no detectable concentrations of VOCs above their respective laboratory RLs (as shown in Table 4), with the exception of the April 2013 sample from stormwater sampling location CB-3. This sample exhibited detectable concentrations of Trichloroethene (0.47 μg/L) and 1,1-Dichloroethane (0.64 μg/L). Although detected above laboratory RLs, these detections were below the applicable SPDES effluent limitations. All samples were analyzed for volatile organic compounds (VOCs) by United States Environmental Protection Agency (USEPA) Method 8260.

6. System Performance Results

Operational data collected during monthly system-operation inspections are summarized in the following sections.

6.1 Groundwater Recovery/Extracted Liquid Flowrate

The groundwater recovery/extraction-liquid flowrates for the 2013 reporting period are summarized in Table 5. These data include the average and cumulative recovered-groundwater and manhole-pump run-times. Total extracted-groundwater flow readings were collected from the flow-meters FT 101 (MH-1), FT 102 (MH-2) and FT 103 (MH-3). The average monthly system groundwater extraction flowrates from January to December 2013 are included in Table 5. The total flow recorded for manhole MH-1 was approximately 3,189,643 gallons, with a corresponding average recovery rate of 6.1 gpm. The total flow recorded for manhole MH-2 was approximately 564,368 gallons, with a corresponding average recovery rate of 1.1 gpm. The total flow recorded for manhole MH-3 was approximately 1,406,660 gallons, with a corresponding average recovery rate of 2.7 gpm. The resulting total annual flow for the GCTS was approximately 5,160,671 gallons of groundwater. The total flows recorded correspond to an average recovery rate of approximately 9.9 gpm over the entire 2013 reporting period. This average recovery rate corresponds to an approximate 36 percent (%)

increase when compared to the 2012 rate of 7.1 gpm. The increase in flow is likely attributable to an increase of annual precipitation in the area, as recorded from local weather data station (Syracuse Hancock International Airport) located in Syracuse, New York. The total annual precipitation amounts recorded for 2012 and 2013 were 35 in. and 40 in., respectively.

6.2 Air Stripper Performance

The air stripper effluent vapor flowrate was recorded during each monthly sampling event. This flowrate is calculated by converting the differential pressure measurement recorded by flow transmitter FT-106 (located post carbon vessels VPGAC-401 and 402) into a volumetric flow. The vapor flowrate ranged from 602 to 894 standard cubic feet per minute (scfm) during the 2013 reporting period. These flow ranges correspond to an average of approximately 735 scfm over the entire 2013 reporting period. The air stripper sump pressures ranged from 25 to 31 inches of water column (in.W.C.) during the 2013 reporting period. Monthly air stripper performance data are summarized in Table 5.

6.3 Air Stripper Emissions

GCTS pre-carbon, mid-carbon and effluent samples were collected quarterly. The January 2013 samples were analyzed by Centek Laboratories, LLC, in Syracuse, NY, and the April, July, and October 2013 were analyzed by TestAmerica Laboratories of Burlington, Vermont. Samples were collected in Summa® canisters and analyzed per USEPA “Method TO-15” for VOCs.

The GCTS removed an estimated 5.9 lbs of total VOCs from groundwater during the 2013 reporting period. This value was calculated using the quarterly pre-carbon vapor analytical data, the average monthly air stripper effluent vapor flowrate, and an average system runtime of 37%. The estimated total VOC mass removal is most likely overestimated due to the fact that manhole MH-1, which has the highest influent concentration of VOCs, is always online during the time of the quarterly sample collection. Quarterly estimated mass removal rate data are summarized in Table 6.

VOC removal efficiency of the carbon vessels was tracked throughout the 2013 reporting period. Both cumulative and target VOC percent removal was calculated by comparing the quarterly vapor influent, mid-carbon, and post-carbon analytical results. As noted in Section 3.0, the site specific goal for vapor phase treatment is a 95% mass removal of target VOCs. Percent removals calculated based on effluent results

exceeded 96% for the 2013 reporting period. It should be noted that a reduction in mass removal (57%) was calculated for the fourth quarter 2012 sampling event. As noted above in Section 4.4, and as a precautionary measure, a carbon change-out was conducted on May 29, 2013.

The VOC concentrations emitted in the air stripper (pre-carbon, mid-carbon, and post-carbon) were below the allowable annual-guideline concentration (AGC) values (as provided in NYSDEC DAR 1 tables) for each detectable compound. Short-term guideline concentration (SGC) values are not applicable as performance samples are only collected quarterly. Individual VOCs emitted and their estimated maximum allowable-mass flow-concentrations, as per NYSDEC DAR 1 guidance, are shown in Table 7.

6.4 Water Treatment Chemical Monitoring

As required under the terms of an SPDES permit (permit no. NY0121894), the volume WTC discharged on an annual basis is reported to NYSDEC in the December Monthly Discharge Monitoring Report. The total amount of WTC (i.e., Sequestering Agent - Aries 2908) discharged through the site Outfall 002 during the 2013 reporting was approximately 540.6 lbs. The total amount of WTC discharged corresponds to an average dosing rate of 16.3 ppm over the entire 2013 reporting period. Monthly WTC consumption, dosing rates, and date of recording are summarized in Table 8.

6.5 Stormwater Monitoring

As presented in Section 5.3, the quarterly stormwater samples contained no detectable concentrations of VOCs above their respective laboratory RLs (as shown in Table 4), with the exception of CB-3 during the April 2013 sample event. As noted above in Section 5.3, the detections were below the applicable SPDES effluent limitations.

The general absence of constituents detected in the stormwater samples collected at the site continues to indicate that the GCTS is operating as designed and preventing the migration of impacted groundwater into the stormwater system at the locations sampled.

6.6 Groundwater Elevation Measurements

Groundwater elevation measurements are collected from site monitoring wells and piezometers as part of the quarterly O&M program. Quarterly groundwater contour maps are provided on Figures 3, 4, 5, and 6.

Groundwater elevations are generally consistent with historical measurements at the site and identify the influence of the GCTS at the three collection trenches. Localized fluctuations exist, attributable to variations in subsurface conditions, including building construction, utility corridors, and operation of the GCTS. Measurements indicate general flow toward the south-southeast.

7. 2014 Goals and Recommendations

The information presented in this report indicates that the systems will continue to operate as designed and outlined within the NYSDEC approved *Groundwater Collection and Treatment System 100% Design Work Plan* (ARCADIS 2010), and *Operational, Maintenance, and Monitoring Manual* (ARCADIS 2011). The recommendations and action items planned for during the 2014 reporting period are described in the sections below.

7.1 Goals

The GCTS 2014 remedial and operational goals will be unchanged from those noted in section 3.0. The operational data to be collected includes:

- GCTS influent-water samples will be collected quarterly during a routine monthly SPDES sampling event;
- Quarterly groundwater-elevation measurements will be collected at all accessible site monitoring-wells and piezometers;
- Quarterly storm-water samples will be collected from the pipe running beneath the manufacturing building and traversing east towards the public storm-drain pipe. These samples will be collected at catch-basin (CB) locations CB-1, CB-2, and CB-3. Samples will be analyzed for VOCs by USEPA Method 8260 and collected and submitted to the laboratory in accordance with procedures outlined in the QAPP;

- Monthly effluent SPDES compliance samples, including tracking the WTC dosing rates;
- Continued demonstration that VOCs concentrations in the GCTS air stripper exhaust (i.e., post-carbon) remain below the NYSDEC DAR 1 guidance values before being discharged to the atmosphere;
- Continued to track the carbon performance in order to maintain the minimum 95% removal goal for target VOCs in the vapor effluent; and
- Daily review of GCTS operation email logs and prompt response to system alarms.

7.2 Recommendations

The following recommendations and action items are planned for implementation during the next reporting period (January through December 2014):

- Continued operation of the GCTS;
- Continued system compliance sampling, including monitoring the pH of the system effluent;
- Continued preventive maintenance and failure-mode-effects analyses to improve system reliability;
- A request to increase the upper pH limit from 8.5 to 9.0 was submitted to NYSDEC on April 3, 2012 along with the WET testing results. However, NYSDEC's review and approval of this request is still pending; and
- Update the *OM&M Manual* as needed to include new system enhancements and/or modifications.

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ARCADIS

Tables

Table 1. Groundwater Collection and Treatment System Operation Summary, Former Lockheed Martin French Road Facility, Utica, NY.

Date	Date/Time			Process	Description	Suspected Cause of Alarm	Corrective Action
	Shutdown	Online	Off (days)				
June 1996	Historical data (pre- 2009) has not been included in this table.						
1/17/2009	1/17/09 8:25	1/17/09 9:34	0.05	45	High/low air temperature.	Low ambient air temperature.	Adjusted low temperature alarm setting from 40 to 32 F to account for low ambient temperature.
8/3/2009	7/31/09 9:58	8/3/09 14:38	3.2	40	Wall louver fault.	Power outage due to inclement weather.	Restart system and observe proper operation following storm event.
9/4/2009	9/1/09 15:09	9/4/09 12:47	2.9	NA	Power outage	Power outage due to inclement weather.	Restart system and observe proper operation following storm event.
2009 % Run Time Summary		**Days Offline**	**Days Online**	**% Run Time**			
		6.1	357.86	98%			
1/25/2010	1/25/10 17:53	1/27/10 7:57	1.6	46/Other	Low Air Flow/System PLC left in manual mode accidentally	Blower influent damper/tray and/or demister pad fouled	Adjust blower damper/Restart system remotely
3/2/2010	3/2/10 17:55	3/3/10 11:31	0.7	42	High level air stripper sump.	Blower influent damper in need of adjustment following air stripper tray cleaning.	Damper adjusted to allow more air flow.
4/7/2010	4/7/10 12:00	4/7/10 18:00	0.3	NA	Quarterly System Testing	NA	NA
4/15/2010	4/15/10 8:00	4/15/10 19:30	0.5	NA	Annual Stripper Cleaning	NA	NA
4/22/2010	4/22/10 6:20	4/22/10 11:08	0.2	42	High Air Stripper Sump Level	Low back pressure due to recent stripper cleaning which results in gravity discharge issues.	Adjust blower damper to increase air flow/sump pressure.
4/25/2010	4/25/10 19:08	4/26/10 9:39	0.6	42	High Air Stripper Sump Level	Low back pressure due to recent stripper cleaning which results in gravity discharge issues.	Adjust blower damper to increase air flow/sump pressure.
4/27/2010	4/27/10 8:53	4/27/10 14:58	0.3	42	High Air Stripper Sump Level	Low back pressure due to recent stripper cleaning which results in gravity discharge issues.	Adjust blower damper to increase air flow/sump pressure.
4/29/2010	4/29/10 16:35	4/30/10 7:41	0.6	42	High Air Stripper Sump Level	Low back pressure due to recent stripper cleaning which results in gravity discharge issues.	Adjust blower damper to increase air flow/sump pressure.
5/28/2010	5/28/10 16:35	5/31/10 9:40	2.7	NA	Power outage	Power outage due to inclement weather. Electric meter damaged as a result.	Inspect system, temporarily bypass faulty E-meter, perform critical device inspection, restart system and monitor for proper operation.
6/1/2010	6/1/10 14:42	6/2/10 8:55	0.8	42	High Air Stripper Sump Level	Low back pressure due to recent stripper cleaning which results in gravity discharge issues.	Adjust blower damper to increase air flow/sump pressure.
7/12/2010	7/12/10 16:00	7/16/10 14:31	3.9	0	MH-1 offline for testing phase, air stripper left in auto with MH-2 online.	NA	NA
11/2/2010	11/2/10 22:22	11/3/10 13:45	0.6	41	High Pressure in Air Stripper Sump.	Blower damper adjustment.	Adjust air stripper blower damper.
11/10/2010	11/10/10 11:42	11/10/10 20:23	0.4	48	Manual system shutdown/LOTO	Implementing GCTS system upgrades.	Restart system after completing work.
11/11/2010	11/11/10 9:52	11/11/10 16:21	0.3	48	Manual system shutdown/LOTO	Implementing GCTS system upgrades.	Restart system after completing work.
11/11/2010	11/11/10 16:37	11/11/10 18:49	0.1	41	High Pressure in Air Stripper Sump.	Blower damper adjustment.	Adjust air stripper blower damper.
11/11/2010	11/11/10 19:18	11/12/10 9:08	0.6	41	High Pressure in Air Stripper Sump.	Blower damper adjustment.	Adjust air stripper blower damper.
11/12/2010	11/12/10 9:18	11/12/10 12:43	0.1	41	High Pressure in Air Stripper Sump.	Blower damper adjustment.	Adjust air stripper blower damper.
11/12/2010	11/12/10 12:55	11/12/10 13:04	0.0	41	High Pressure in Air Stripper Sump.	Fouled air stripper trays.	Clean air stripper trays and adjust air stripper blower damper.
11/18/2010	11/18/10 10:23	11/18/10 19:22	0.4	48	Manual system shutdown/LOTO	Implementing GCTS system upgrades.	Restart system after completing work.
11/19/2010	11/19/10 9:44	11/19/10 17:06	0.3	40	Wall louver damper motor fault.	Power failure due to a system shutdown for system inspection during construction phase.	Restart system after inspection.
11/29/2010[3]	11/29/10 12:53	12/31/10 23:59	23.5	NA	Air Stripper taken permanently offline.	Implementing GCTS system upgrades.	Install temporary air stripper.
2010 % Run Time Summary		**Days Offline**	**Days Online**	**% Run Time**			
		38.4	326.6	89%			
1/1/2011[4]	1/1/11 0:00	1/24/11 23:59	22.7	NA	Air Stripper taken permanently offline.	Implementing GCTS system upgrades.	Periodically operated system.
1/31/2011	1/31/11 4:30	1/31/11 16:02	0.5	32	Low Air Stripper Sump Level	Narrow sump elevation operating range.	Restarted system remotely.
2/2/2011	2/2/11 7:09	2/2/11 11:21	0.2	42	High Air Stripper Sump Level	Narrow sump elevation operating range.	Adjusted blower damper and/or liquid effluent pipe elevation.

Table 1. Groundwater Collection and Treatment System Operation Summary, Former Lockheed Martin French Road Facility, Utica, NY.

Date	Date/Time			Process	Description	Suspected Cause of Alarm	Corrective Action
	Shutdown	Online	Off (days)				
2/8/2011	2/8/11 2:53	2/8/11 8:52	0.2	42	High Air Stripper Sump Level	Narrow sump elevation operating range.	Adjusted blower damper and/or liquid effluent pipe elevation.
2/8/2011	2/8/11 13:59	2/8/11 19:11	0.2	46	High Pre-Carbon Temperature	Residual heat in duct heater raising pre-carbon temperature following blower/duct heater shutdown.	Modified programming so that duct heater shuts off 2 minutes prior to blower.
2/8/2011	2/8/11 19:51	2/9/11 8:17	0.5	32	Low Air Stripper Sump Level	Narrow sump elevation operating range.	Adjusted blower damper and/or liquid effluent pipe elevation.
2/11/2011	2/11/11 5:06	2/11/11 11:46	0.3	32	Low Air Stripper Sump Level	Narrow sump elevation operating range.	Adjusted blower damper and/or liquid effluent pipe elevation.
2/13/2011	2/13/11 18:01	2/17/11 16:03	3.9	32	Low Air Stripper Sump Level	Narrow sump elevation operating range.	Adjusted blower damper and/or liquid effluent pipe elevation.
2/19/2011	2/19/11 10:31	2/21/11 9:42	2.0	32	Low Air Stripper Sump Level	Narrow sump elevation operating range.	Adjusted blower damper and/or liquid effluent pipe elevation.
2/24/2011	2/24/11 0:08	2/24/11 8:47	0.4	47	Low Pre-Carbon Temperature	Following end-cycle of manhole pump down and 10 minute continuation of blower operation, air stream generated by blower with duct heater off causing pre-carbon temperature to drop.	Restart system.
2/26/2011	2/26/11 3:23	2/26/11 10:58	0.3	47	Low Pre-Carbon Temperature	Following end-cycle of manhole pump down and 10 minute continuation of blower operation, air stream generated by blower with duct heater off causing pre-carbon temperature to drop.	Restart system.
2/26/2011	2/26/11 13:46	2/28/11 10:22	1.9	47	Low Pre-Carbon Temperature	Following end-cycle of manhole pump down and 10 minute continuation of blower operation, air stream generated by blower with duct heater off causing pre-carbon temperature to drop.	Modified programming so that duct heater shuts off in parallel with blower and pre-carbon temperature alarms are ignored when blower is not operating.
3/14/2011	3/14/11 0:33	3/14/11 10:31	0.4	32	Low Air Stripper Sump Level	Narrow sump elevation operating range.	Adjusted blower damper and/or liquid effluent pipe elevation.
3/14/2011	3/14/11 23:53	3/15/11 9:14	0.4	32	Low Air Stripper Sump Level	Narrow sump elevation operating range.	Adjusted blower damper and/or liquid effluent pipe elevation.
3/20/2011	3/20/11 7:16	3/20/11 12:35	0.2	32	Low Air Stripper Sump Level	Narrow sump elevation operating range.	Adjusted blower damper and/or liquid effluent pipe elevation.
3/23/2011	3/23/11 6:47	3/23/11 11:42	0.2	42	High Air Stripper Sump Level	Narrow sump elevation operating range.	Adjusted blower damper and/or liquid effluent pipe elevation.
3/26/2011	3/26/11 3:21	3/26/11 9:37	0.3	32	Low Air Stripper Sump Level	Narrow sump elevation operating range.	Adjusted blower damper and/or liquid effluent pipe elevation.
3/26/2011	3/26/11 21:38	3/29/11 9:52	2.5	32	Low Air Stripper Sump Level	Narrow sump elevation operating range.	Adjusted blower damper and/or liquid effluent pipe elevation. Will replace existing high level sensor with tethered float to allow wider operating range in sump.
6/11/2011	6/11/11 16:53	6/12/11 11:40	0.8	NA	Power outage	Power outage due to inclement weather.	Restart system after inspection.
6/12/2011	6/12/11 23:00	6/13/11 7:15	0.3	47	Low Pre-Carbon Temperature	Duct heater requires local reset following power outage therefore not operating.	Low temperature setpoint temporarily lowered until local restart could be initiated on 6/13/11.
7/9/2011	7/9/11 6:58	7/11/11 8:56	2.1	NA	Power outage	Power outage.	Restart system.
7/12/2011	7/12/11 22:13	7/13/11 12:53	0.6	47	Low Pre-Carbon Temperature	Duct heater requires local reset following power outage therefore not operating.	Duct heater locally reset.
11/21/2011	11/21/11 16:23	11/23/11 12:00	1.8	NA	PLC Reset to "Manual" for unknown reason, identified during remote login following no daily fax receipt.	System reset automatically, exact cause unknown. Suspect cause due to bad remote system reconfiguration due to faulty/interrupted remote connection.	Log into the system remotely and reconfigures the PLC with the latest GCTS File #17.
12/8/2011	12/8/11 10:06	12/9/11 21:00	1.5	46	High Pre-Carbon Temperature	Unknown	Monitor system and temperatures remotely.
12/11/2011	12/11/11 20:06	12/11/11 20:13	0.0	46	High Pre-Carbon Temperature	Unknown	Review datalogger file/site inspection to verify transmitter readings versus field gauge.
12/14/2011	12/12/11 1:17	12/12/11 9:49	0.4	45	High Air Flowrate	Potential drifting associated with transmitter calibration.	Adjust high flow alarm setpoint
12/13/2011	12/13/11 3:50	12/13/11 8:06	0.2	46	High Pre-Carbon Temperature	Potential drifting associated with transmitter calibration.	Adjust high temperature alarm setpoint
2011 % Run Time Summary		**Days Offline**	**Days Online**	**% Run Time**			
		47	**348**	**88%**			
1/14/2012	1/14/12 19:46	1/15/12 8:10	0.5	32	Low water level in air stripper sump	Increased back pressure from air stripper trays	Temporarily adjust air stripper damper on 1/16/12. Clean air stripper on 1/26/12.
1/26/2012	1/25/12 11:06	1/26/12 13:54	1.1	NA	Annual Stripper Cleaning and float replacement	NA - Scheduled maintenance	NA
1/30/2012	1/30/12 20:03	1/31/12 8:59	0.5	32	Low water level in air stripper sump	Increased back pressure due to air stripper damper being left open too much.	Re-adjust air stripper blower damper on 2/2/12

Table 1. Groundwater Collection and Treatment System Operation Summary, Former Lockheed Martin French Road Facility, Utica, NY.

Date	Date/Time			Process	Description	Suspected Cause of Alarm	Corrective Action
	Shutdown	Online	Off (days)				
2/6/2012	2/6/12 16:45	2/7/12 11:00	0.8	42	High water level in air stripper sump	The LSH-100 was tripped during a automated startup when MH-1 was called to pumped. The data logger indicated that the LSH-100 went into alarm several seconds after one of the pumps turned on. The high level alarm is most likely a result of the new level float being set with too short of tether during the initial install.	Manually drained enough water from the air stripper sump in order to clear (un-latch) the high level alarm. The length of the high level float tether was increased 3-inches.
3/7/2012	3/7/12 9:06	3/7/12 16:55	0.3	NA	System temporarily taken offline to complete the arc flash study field reconnaissance	NA	NA
4/16/2012	4/16/12 9:18	4/17/12 12:45	1.1	NA	System PLC/building power outage.	Power outage due to inclement weather.	Manually reset PLC UPS/battery backup and restart system. Will test alarm dial-out sequence in the event of a power outage.
4/23/2012	4/23/12 12:27	4/23/12 16:39	0.2	NA	Chris Davern onsite making modification to GCTS cfg file and to test UPS battery	GCTS cfg file was modified to make LSH-100 in the up position be a fatal alarm condition regardless of blower status. UPS battery backup tested successfully, UPS provided power to PLC for approx. 60 minutes.	NA
7/16/2012	7/16/12 5:57	7/16/12 12:12	0.3	47	Low temperature alarm for pre-VPGAC air stream.	Critical device testing activities conducted 7/13/12 resulted in occurrence of internal high temperature alarm for duct heater. Alarm requires local resetting of duct heater, which was not done on 7/13/12.	Mobilize field staff to site and manually reset duct heater high temperature alarm. Restart system.
7/17/2012	7/17/12 18:06	7/18/12 12:16	0.8	42	High water level in air stripper sump	The LSH-100 was tripped following an automated ending of a manhole pumping cycle (i.e., batch). No system adjustments (e.g., damper adjustment) made or observed drift in operational parameters (e.g., air stripper sump pressure).	Mobilize field staff and manually drop liquid level of air stripper sump so that tethered high float LSH-100 will drop into off position. Done by manually partially closing pre-VPGAC butterfly valve to raise air stripper sump pressure and lower air stripper sump elevation. Restart system. Opened damper slightly.
10/11/2012	10/11/12 6:15	10/11/12 13:49	0.3	45	Low/High Air Flowrate	Potential drifting associated with transmitter calibration.	Restart system.
10/12/2012	10/12/12 12:10	10/12/12 14:51	0.1	45	Low/High Air Flowrate	Potential drifting associated with transmitter calibration.	Inspect transmitter and pitot tube, restart system.
10/13/2012	10/13/12 5:37	10/14/12 18:01	1.5	45	Low/High Air Flowrate	Potential drifting associated with transmitter calibration.	Inspect transmitter and pitot tube, restart system.
10/16/2012	10/16/12 8:40	10/17/12 8:35	1.0	NA	Replacement of air stripper gaskets	NA	NA
10/30/2012	10/30/12 12:28	10/30/12 18:50	0.3	NA	Critical Device Testing	NA	NA
11/4/2012	11/4/12 3:37	11/5/12 20:44	1.7	45	Low and High air stripper air flow rates, FT-106.	4-20 mA signal drift from the pressure transmitter FT-106 to the PLC.	Log into system remotely on 11/5/12 at 20:44. Following an inspection of the PLC data logger files the system was restarted and monitored for proper operation. The air flow rate was noted at approximately 550-600 cfm with all three manholes online pumping at a total flow rate of 70 gpm with a corresponding air stripper sump pressure of ~32 in.W.C., which confirmed that sufficient air flow was flowing through the air stripper.
11/7/2012	11/7/12 5:03	11/7/12 9:23	0.2	45	Low and High air stripper air flow rates, FT-106.	4-20 mA signal drift from the pressure transmitter FT-106 to the PLC.	Following receiving the alarm again on 11/7/12 at 5:03 ARCADIS mobilized to site that morning at 9:08 to inspect the system. Following an inspection of the PLC and other major system components, and confirming that the system was operating as intended the Process 45 alarm was changed from a fatal to non-fatal. The system was restarted at 9:23.
12/26/2012	12/26/12 4:24	12/26/12 12:24	0.3	32	Low water level in air stripper sump	Increased back pressure due to air stripper damper being left open too much.	Restart system remotely, monitor for proper operation including flows, pressures, float levels, etc.
2012 % Run Time Summary		**Days Offline**	**Days Online**	**% Run Time**			
		11.0	355.0	97%			
2/4/2013	2/4/13 9:00	2/6/13 18:00	2.4	NA	System taken offline to upgrade PLC with cellular modem.	NA	NA

Table 1. Groundwater Collection and Treatment System Operation Summary, Former Lockheed Martin French Road Facility, Utica, NY.

Date	Date/Time			Process	Description	Suspected Cause of Alarm	Corrective Action
	Shutdown	Online	Off (days)				
2/11/2013	2/11/13 9:00	2/11/13 18:59	0.4	NA	System temporarily taken offline to complete the cellular modem upgrade.	NA	NA
11/30/2013	11/30/13 5:50	11/30/13 20:21	0.6	32	Low water level in air stripper sump	The LSL-100 was tripped during a automated system shutdown. The data logger indicated that the LSL-100 was toggling back and forth during the 10 minute blower shutdown mode and latched long enough (5 second set point) in the off position to trigger the alarm.	Restart system and monitor for normal operation.
12/17/2013	12/17/13 4:40	12/17/13 8:07	0.1	32	Low water level in air stripper sump	The LSL-100 was tripped during a automated system shutdown. The data logger indicated that the LSL-100 was toggling back and forth during the 10 minute blower shutdown mode and latched long enough (5 second set point) in the off position to trigger the alarm.	Restart system and monitor for normal operation.
12/25/2013	12/25/13 5:07	12/25/13 21:08	0.7	32	Low water level in air stripper sump	The LSL-100 was tripped during a automated system shutdown. The data logger indicated that the LSL-100 was toggling back and forth during the 10 minute blower shutdown mode and latched long enough (5 second set point) in the off position to trigger the alarm.	Restart system and monitor for normal operation.
2013 % Run Time Summary (through December 31)		**Days Offline**	**Days Online**	**% Run Time**			
		4.2	360.8	99%			

Notes:

1. Table does not include brief (less than 3 hours [0.1 days]) system shutdowns for routine operation and maintenance activities.

2. Table does not include non-fatal alarms (i.e. low liquid flow, low air flow, etc.) observed during the reporting period.

3. Between 11/29/10 and 12/31/10, temporary system was operational approximately 10 hours (7AM to 5PM) per weekday excluding 12/24/10, 12/30/10, and 12/31/10. System offline for nights and weekends due to lack of safety controls/interlocks and freezing weather conditions.

4. Between 1/1/11 and 1/24/11, the upgraded system was operated on the following dates: 1/13, 1/14, 1/17, 1/18 and 1/20. An average daily run time of 6 hours has been estimated for those dates.

Table 2. Groundwater Collection and Treatment System Effluent Analytical Sampling Results, Former Lockheed Martin French Road Facility, Utica, NY.

Volatile Organic[1] Compounds (µg/L)	SPDES Effluent Limitations (ug/L)	1/8/2009	2/5/2009	3/4/2009	4/1/2009	5/5/2009	6/2/2009	7/1/2009	8/14/2009	9/4/2009	10/9/2009	11/4/2009	12/11/2009	1/12/2010	2/3/2010	3/3/2010	4/7/2010	5/5/2010	6/3/2010	7/8/2010	8/5/2010	9/7/2010	10/6/2010	11/10/2010	12/22/2010	2/9/2012	3/1/2012	4/5/2012	5/1/2012	6/7/2012	7/12/2012
1,1,1-Trichloroethane	10	< 1.0	< 0.40	< 0.40	< 0.40	< 0.40	< 0.40	< 0.40	< 0.40	< 0.40	< 0.40	< 0.40	< 0.40	< 0.40	< 0.40	< 0.40	< 0.40	< 0.40	< 0.40	< 0.82	< 0.82	< 0.82	< 0.82	< 0.82	< 0.82	< 0.82	< 0.82	< 0.82	< 0.82	< 0.82	< 0.82
1,1-Dichloroethane	10	< 1.0	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.38	< 0.38	< 0.38	< 0.38	< 0.38	< 0.38
1,2-Dichlorobenzene	10	< 1.0	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.79	< 0.79	< 0.79	< 0.79	< 0.79	< 0.79	< 0.79	< 0.79	< 0.79	< 0.79	< 0.79	< 0.79
1,3-Dichlorobenzene	-	< 1.0	< 0.40	< 0.40	< 0.40	< 0.40	< 0.40	< 0.40	< 0.40	< 0.40	< 0.40	< 0.40	< 0.40	< 0.40	< 0.40	< 0.40	< 0.40	< 0.40	< 0.40	< 0.78	< 0.78	< 0.78	< 0.78	< 0.78	< 0.78	< 0.78	< 0.78	< 0.78	< 0.78	< 0.78	< 0.78
1,4-Dichlorobenzene	-	< 1.0	< 0.40	< 0.40	< 0.40	< 0.40	< 0.40	< 0.40	< 0.40	< 0.40	< 0.40	< 0.40	< 0.40	< 0.40	< 0.40	< 0.40	< 0.40	< 0.40	< 0.40	< 0.84	< 0.84	< 0.84	< 0.84	< 0.84	< 0.84	< 0.84	< 0.84	< 0.84	< 0.84	< 0.84	< 0.84
Benzene	-	< 1.0	< 0.40	< 0.40	< 0.40	< 0.40	< 0.40	< 0.40	< 0.41	< 0.41	< 0.41	< 0.41	< 0.41	< 0.41	< 0.41	< 0.41	< 0.41	< 0.41	< 0.41	< 0.41	< 0.41	< 0.41	< 0.41	< 0.41	< 0.41	< 0.41	< 0.41	< 0.41	< 0.41	< 0.41	< 0.41
Chlorobenzene	-	< 1.0	< 0.40	< 0.40	< 0.40	< 0.40	< 0.40	< 0.40	< 0.40	< 0.40	< 0.40	< 0.40	< 0.40	< 0.40	< 0.40	< 0.40	< 0.40	< 0.40	< 0.40	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75
Chloroethane	10	< 1.0	< 0.40	< 0.40	< 0.40	< 0.40	< 0.40	< 0.40	< 0.40	< 0.40	< 0.40	< 0.40	< 0.40	< 0.40	< 0.40	< 0.40	< 0.40	< 0.40	< 0.40	< 0.40	< 0.40	< 0.40	< 0.40	< 0.40	< 0.40	< 0.32	< 0.32	< 0.32	< 0.32	< 0.32	< 0.32
cis-1,2-Dichloroethene	10	< 1.0	< 0.40	< 0.40	< 0.40	< 0.40	< 0.40	< 0.40	< 0.40	< 0.40	< 0.40	< 0.40	< 0.40	< 0.40	< 0.40	< 0.40	< 0.40	< 0.40	< 0.40	< 0.81	< 0.81	< 0.81	< 0.81	< 0.81	< 0.81	< 0.81	< 0.81	< 0.81	< 0.81	< 0.81	< 0.81
Ethylbenzene	5	< 1.0	< 0.40	< 0.40	< 0.40	< 0.40	< 0.40	< 0.40	< 0.40	< 0.40	< 0.40	< 0.40	< 0.40	< 0.40	< 0.40	< 0.40	< 0.40	< 0.40	< 0.40	< 0.74	< 0.74	< 0.74	< 0.74	< 0.74	< 0.74	< 0.74	< 0.74	< 0.74	< 0.74	< 0.74	< 0.74
m-Xylene & p-Xylene	-	< 2.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 0.66
o-Xylene	-	< 1.0	< 0.40	< 0.40	< 0.40	< 0.40	< 0.40	< 0.40	< 0.40	< 0.40	< 0.40	< 0.40	< 0.40	< 0.40	< 0.40	< 0.40	< 0.40	< 0.40	< 0.40	< 0.76	< 0.76	< 0.76	< 0.76	< 0.76	< 0.76	< 0.76	< 0.76	< 0.76	< 0.76	< 0.76	< 0.76
Tetrachloroethene	10	< 1.0	< 0.40	< 0.40	< 0.40	< 0.40	< 0.40	< 0.40	< 0.40	< 0.40	< 0.40	< 0.40	< 0.40	< 0.40	< 0.40	< 0.40	< 0.40	< 0.40	< 0.40	< 0.40	< 0.40	< 0.40	< 0.40	< 0.40	< 0.40	< 0.36	< 0.36	< 0.36	< 0.36	< 0.36	< 0.36
Toluene	5	< 1.0	< 0.60	< 0.60	< 0.60	< 0.60	< 0.60	< 0.60	< 0.60	< 0.60	< 0.60	< 0.60	< 0.60	< 0.60	< 0.60	< 0.60	< 0.60	< 0.60	< 0.60	< 0.60	< 0.60	< 0.60	< 0.60	< 0.60	< 0.60	< 0.51	< 0.51	< 0.51	< 0.51	< 0.51	< 0.51
trans-1,2-Dichloroethene	10	< 1.0	< 0.40	< 0.40	< 0.40	< 0.40	< 0.40	< 0.40	< 0.42	< 0.42	< 0.42	< 0.42	< 0.42	< 0.42	< 0.42	< 0.42	< 0.42	< 0.42	< 0.42	< 0.90	< 0.90	< 0.90	< 0.90	< 0.90	< 0.90	< 0.90	< 0.90	< 0.90	< 0.90	< 0.90	< 0.90
Trichloroethene	10	< 1.0	< 0.40	< 0.40	< 0.40	< 0.40	< 0.40	< 0.40	< 0.46	< 0.46	< 0.46	< 0.46	< 0.46	< 0.46	< 0.46	< 0.46	< 0.46	< 0.46	**0.69**	< 0.46	< 0.46	< 0.46	< 0.46	< 0.46	< 0.46	< 0.46	< 0.46	< 0.46	< 0.46	< 0.46	< 0.46
Vinyl Chloride	10	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 0.90
Xylenes, total	15	< 3.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 0.66
pH (S.U.)[2]	**8.5**	**8.36**	**7.31**	**7.10**	**7.47**	**7.61**	**7.43**	**7.00**	**7.08**	**7.84**	**7.07**	**7.04**	**7.13**	**8.13**	**8.51**	**8.51**	**8.53**	**8.62[4]**	**7.19**	**8.5**	**8.1**	**8.3**	**7.8**	**8.1**	**8.0**	**7.9**	**7.9**	**7.1**	**7.9**	**8.2**	**7.8**
Volatile Organic[1] Compounds (µg/L)	**SPDES Effluent Limitations (ug/L)**	**1/28/11**	**2/23/11**	**3/22/11**	**4/5/11**	**5/12/11**	**6/2/11**	**7/7/11**	**8/11/11**	**9/8/11**	**10/11/11**	**11/1/11**	**12/1/11**	**1/26/12**	**8/15/12**	**9/11/12**	**10/17/12**	**11/8/12**	**12/6/12**	**1/16/2013**	**2/7/2013**	**3/5/2013**	**4/24/2013**	**5/9/2013**	**6/12/2013**	**7/11/2013**	**8/8/2013**	**9/10/2013**	**10/22/2013**	**11/5/2013**	**12/3/2013**
1,1,1-Trichloroethane	10	< 0.82	< 0.82	< 0.82	< 0.82	< 0.82	< 0.82	< 0.82	< 0.82	< 0.82	< 0.82	< 0.82	< 0.82	< 0.82	< 0.82	< 0.82	< 0.82	< 0.82	< 0.82	< 0.82	< 0.82	< 0.82	< 0.82	< 0.82	< 0.82	< 0.82	< 0.82	< 0.82	< 0.82	< 0.82	< 0.82
1,1-Dichloroethane	10	< 0.38	< 0.38	< 0.38	< 0.38	< 0.38	< 0.38	< 0.38	< 0.38	< 0.38	< 0.38	< 0.38	< 0.38	< 0.38	< 0.38	< 0.38	< 0.38	< 0.38	< 0.38	< 0.38	< 0.38	< 0.38	< 0.38	< 0.38	< 0.38	< 0.38	< 0.38	< 0.38	< 0.38	< 0.38	< 0.38
1,2-Dichlorobenzene	10	< 0.79	< 0.79	< 0.79	< 0.79	< 0.79	< 0.79	< 0.79	< 0.79	< 0.79	< 0.79	< 0.79	< 0.79	< 0.79	< 0.79	< 0.79	< 0.79	< 0.79	< 0.79	< 0.79	< 0.79	< 0.79	< 0.79	< 0.79	< 0.79	< 0.79	< 0.79	< 0.79	< 0.79	< 0.79	< 0.79
1,3-Dichlorobenzene	-	< 0.78	< 0.78	< 0.78	< 0.78	< 0.78	< 0.78	< 0.78	< 0.78	< 0.78	< 0.78	< 0.78	< 0.78	< 0.78	< 0.78	< 0.78	< 0.78	< 0.78	< 0.78	< 0.78	< 0.78	< 0.78	< 0.78	< 0.78	< 0.78	< 0.78	< 0.78	< 0.78	< 0.78	< 0.78	< 0.78
1,4-Dichlorobenzene	-	< 0.84	< 0.84	< 0.84	< 0.84	< 0.84	< 0.84	< 0.84	< 0.84	< 0.84	< 0.84	< 0.84	< 0.84	< 0.84	< 0.84	< 0.84	< 0.84	< 0.84	< 0.84	< 0.84	< 0.84	< 0.84	< 0.84	< 0.84	< 0.84	< 0.84	< 0.84	< 0.84	< 0.84	< 0.84	< 0.84
Benzene	-	< 0.41	< 0.41	< 0.41	< 0.41	< 0.41	< 0.41	< 0.41	< 0.41	< 0.41	< 0.41	< 0.41	< 0.41	< 0.41	< 0.41	< 0.41	< 0.41	< 0.41	< 0.41	< 0.41	< 0.41	< 0.41	< 0.41	< 0.41	< 0.41	< 0.41	< 0.41	< 0.41	< 0.41	< 0.41	< 0.41
Chlorobenzene	-	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75
Chloroethane	10	< 0.32	< 0.32	< 0.32	< 0.32	< 0.32	< 0.32	< 0.32	< 0.32	< 0.32	< 0.32	< 0.32	< 0.32	< 0.32	< 0.32	< 0.32	< 0.32	< 0.32	< 0.32	< 0.32	< 0.32	< 0.32	< 0.32	< 0.32	< 0.32	< 0.32	< 0.32	< 0.32	< 0.32	< 0.32	< 0.32
cis-1,2-Dichloroethene	10	< 0.81	< 0.81	< 0.81	< 0.81	< 0.81	< 0.81	< 0.81	< 0.81	< 0.81	< 0.81	< 0.81	< 0.81	< 0.81	< 0.81	< 0.81	< 0.81	< 0.81	< 0.81	< 0.81	< 0.81	< 0.81	< 0.81	< 0.81	< 0.81	< 0.81	< 0.81	< 0.81	< 0.81	< 0.81	< 0.81
Ethylbenzene	5	< 0.74	< 0.74	< 0.74	< 0.74	< 0.74	< 0.74	< 0.74	< 0.74	< 0.74	< 0.74	< 0.74	< 0.74	< 0.74	< 0.74	< 0.74	< 0.74	< 0.74	< 0.74	< 0.74	< 0.74	< 0.74	< 0.74	< 0.74	< 0.74	< 0.74	< 0.74	< 0.74	< 0.74	< 0.74	< 0.74
m-Xylene & p-Xylene	-	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.1	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 0.66	< 0.66	< 0.66	< 1.0	< 1.0	< 0.66	< 0.66	< 0.66	< 0.66	< 0.66	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
o-Xylene	-	< 0.76	< 0.76	< 0.76	< 0.76	< 0.76	< 0.76	< 0.76	< 0.76	< 0.76	< 0.76	< 0.76	< 0.76	< 0.76	< 0.76	< 0.76	< 0.76	< 0.76	< 0.76	< 0.76	< 0.76	< 0.76	< 0.76	< 0.76	< 0.76	< 0.76	< 0.76	< 0.76	< 0.76	< 0.76	< 0.76
Tetrachloroethene	10	< 0.36	< 0.36	< 0.36	< 0.36	< 0.36	< 0.36	< 0.36	< 0.36	< 0.36	< 0.36	< 0.36	< 0.36	< 0.36	< 0.36	< 0.36	< 0.36	< 0.36	< 0.36	< 0.36	< 0.36	< 0.36	< 0.36	< 0.36	< 0.36	< 0.36	< 0.36	< 0.36	< 0.36	< 0.36	< 0.36
Toluene	5	< 0.51	< 0.51	< 0.51	< 0.51	< 0.51	< 0.51	< 0.51	< 0.51	< 0.51	< 0.51	< 0.51	< 0.51	< 0.51	< 0.51	< 0.51	< 0.51	< 0.51	< 0.51	< 0.51	< 0.51	< 0.51	< 0.51	< 0.51	< 0.51	< 0.51	< 0.51	< 0.51	< 0.51	< 0.51	< 0.51
trans-1,2-Dichloroethene	10	< 0.90	< 0.90	< 0.90	< 0.90	< 0.90	< 0.90	< 0.90	< 0.90	< 0.90	< 0.90	< 0.90	< 0.90	< 0.90	< 0.90	< 0.90	< 0.90	< 0.90	< 0.90	< 0.90	< 0.90	< 0.90	< 0.90	< 0.90	< 0.90	< 0.90	< 0.90	< 0.90	< 0.9	< 0.9	< 0.9
Trichloroethene	10	< 0.46	**0.47**	< 0.46	< 0.46	< 0.46	< 0.46	< 0.46	< 0.46	< 0.46	< 0.46	< 0.46	< 0.46	< 0.46	< 0.46	< 0.46	< 0.46	< 0.46	< 0.46	< 0.46	< 0.46	< 0.46	< 0.46	< 0.46	< 0.46	< 0.46	< 0.46	< 0.46	< 0.46	< 0.46	< 0.46
Vinyl Chloride	10	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 0.90	< 0.90	< 0.90	< 1.0	< 1.0	< 0.90	< 0.90	< 0.90	< 0.90	< 0.90	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Xylenes, total	15	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 0.66	< 0.66	< 0.66	< 1.0	< 1.0	< 0.66	< 0.66	< 0.66	< 0.66	< 0.66	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
pH (S.U.)[2]	**8.5**	8.1	**8.2**	**8.1**	**8.1**	**6.9**	**6.8**	**8.1**	**8.2**	**7.9**	**7.8**	**7.8**	**7.7**	**7.9**	**8.1**	**8.1**	**8.4**	**8.2**	**8.2**	**7.9**	**8.2**	**8.2**	**8.0**	**8.2**	**8.0**	**8.0**	**8.1**	**8.1**	**8.0**	**8.1**	**8.1**

Notes:

1. Analyzed using United States Environmental Protection Agency (USEPA) Method 8260.
2. Analyzed in field.

BOLD indicates detected concentrations.

Definitions:

< - less than laboratory detection limit listed
 - No Standard
NS - Not Sampled For
mg/L - milligrams per liter
S.U. - Standard Units
µg/L - micrograms per liter

Table 3. Groundwater Collection and Treatment System Influent Groundwater Concentrations, Former Lockheed Martin French Road Facility, Utica, NY.

Volatile Organic[1] Compounds (µg/L)	MH-1																	
	2/4/2009	1/12/2010	4/7/2010	7/8/2010	10/6/2010	12/22/2010	2/23/2011	4/5/2011	7/7/2011	10/11/2011	1/26/2012	4/5/2012	7/12/2012	10/17/2012	1/15/2013	4/24/2013	7/11/2013	10/22/2013
1,1,1-Trichloroethane	< 1.0	< 0.40	< 0.40	< 0.82	< 0.82	< 0.82	< 0.82	< 0.82	< 0.82	< 0.82	< 0.82	< 0.82	< 0.82	< 0.82	< 0.82	< 0.82	< 0.82	< 0.82
1,1-Dichloroethane	**8.4**	**9**	**6**	**6**	**6.2**	**3.6**	**4.2**	**2.7**	**8.5**	**5.9**	**4.9**	**8.5**	**10**	**8**	**3.5**	**5.4**	**4.2**	**5.9**
1,2-Dichlorobenzene	< 1.0	< 0.50	< 0.50	< 0.79	< 0.79	< 0.79	< 0.79	< 0.79	< 0.79	< 0.79	< 0.79	< 0.79	< 0.79	< 0.79	< 0.79	< 0.79	< 0.79	< 0.79
1,3-Dichlorobenzene	< 1.0	< 0.40	< 0.40	< 0.78	< 0.78	< 0.78	< 0.78	< 0.78	< 0.78	< 0.78	< 0.78	< 0.78	< 0.78	< 0.78	< 0.78	< 0.78	< 0.78	< 0.78
1,4-Dichlorobenzene	< 1.0	< 0.40	< 0.40	< 0.84	< 0.84	< 0.84	< 0.84	< 0.84	< 0.84	< 0.84	< 0.84	< 0.84	< 0.84	< 0.84	< 0.84	< 0.84	< 0.84	< 0.84
Benzene	< 1.0	< 0.41	< 0.41	< 0.41	< 0.41	< 0.41	< 0.41	< 0.41	< 0.41	< 0.41	< 0.41	< 0.41	< 0.41	< 0.41	< 0.41	< 0.41	< 0.41	< 0.41
Chlorobenzene	< 1.0	< 0.40	< 0.40	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75
Chloroethane	**0.70 J**	< 0.40	< 0.40	< 0.40	< 0.40	< 0.40	< 0.32	< 0.32	< 0.32	< 0.32	< 0.32	< 0.32	< 0.32	< 0.32	< 0.32	< 0.32	< 0.32	< 0.32
cis-1,2-Dichloroethene	**39**	**44**	**28**	**42**	**35**	**21**	**30**	**19**	**43**	**33**	**28**	**39**	**56**	**43**	**21**	**28**	**24**	**36**
Ethylbenzene	< 1.0	< 0.40	< 0.40	< 0.74	< 0.74	< 0.74	< 0.74	< 0.74	< 0.74	< 0.74	< 0.74	< 0.74	< 0.74	< 0.74	< 0.74	< 0.74	< 0.74	< 0.74
m-Xylene & p-Xylene	-	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 0.66	< 0.66	< 0.66	< 0.66	< 0.66	< 1
o-Xylene	-	< 0.40	< 0.40	< 0.76	< 0.76	< 0.76	< 0.76	< 0.76	< 0.76	< 0.76	< 0.76	< 0.76	< 0.76	< 0.76	< 0.76	< 0.76	< 0.76	< 0.76
Tetrachloroethene	**31**	**31**	**27**	**29**	**21**	**8.4**	**23**	**18**	**26**	**19**	**16**	**23**	**36**	**28**	**16**	**21**	**16**	**24**
Toluene	< 1.0	< 0.60	< 0.60	< 0.60	< 0.60	< 0.60	< 0.51	< 0.51	< 0.51	< 0.51	< 0.51	< 0.51	< 0.51	< 0.51	< 0.51	< 0.51	< 0.51	< 0.51
trans-1,2-Dichloroethene	< 1.0	< 0.42	< 0.42	< 0.90	< 0.90	< 0.90	< 0.90	< 0.90	< 0.90	< 0.90	< 0.90	< 0.90	< 0.90	< 0.90	< 0.90	< 0.90	< 0.90	< 0.9
Trichloroethene	**64**	**51**	**55**	**49**	**33**	**11**	**57**	**27**	**57**	**29**	**26**	**52**	**66**	**41**	**23**	**36**	**24**	**32**
Vinyl Chloride	**0.50 J**	**0.41 J**	< 1.0	< 1.0	< 1.0	**0.99 J**	**1.3**	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 0.90	< 1.0	< 0.90	< 0.90	< 0.90	< 1
Xylenes, total	< 3.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 0.66	< 1.0	< 0.66	< 0.66	< 0.66	< 1

Volatile Organic[1] Compounds (µg/L)	MH-2																	
	2/4/2009	1/12/2010	4/7/2010	7/8/2010	10/6/2010	12/22/2010	2/23/2011	4/5/2011[2]	7/7/2011	10/11/2011	1/26/2012	4/5/2012	7/12/2012	10/17/2012	1/15/2013	4/24/2013	7/11/2013	10/22/2013
1,1,1-Trichloroethane	< 1.0	< 0.40	< 0.40	< 0.82	< 0.82	< 0.82	< 0.82	-	< 0.82	< 0.82	< 0.82	< 0.82	< 0.82	< 0.82	< 0.82	< 0.82	< 0.82	< 0.82
1,1-Dichloroethane	**1.6**	**11**	**2**	**2.4**	**2.6**	**1.9**	**1.5**	**-**	**3.5**	**3**	**1.5**	**1.8**	**2.5**	**2.4**	**1.3**	**1.4**	**2**	**2.5**
1,2-Dichlorobenzene	< 1.0	< 0.50	< 0.50	< 0.79	< 0.79	< 0.79	< 0.79	-	< 0.79	< 0.79	< 0.79	< 0.79	< 0.79	< 0.79	< 0.79	< 0.79	< 0.79	< 0.79
1,3-Dichlorobenzene	< 1.0	< 0.40	< 0.40	< 0.78	< 0.78	< 0.78	< 0.78	-	< 0.78	< 0.78	< 0.78	< 0.78	< 0.78	< 0.78	< 0.78	< 0.78	< 0.78	< 0.78
1,4-Dichlorobenzene	< 1.0	< 0.40	< 0.40	< 0.84	< 0.84	< 0.84	< 0.84	-	< 0.84	< 0.84	< 0.84	< 0.84	< 0.84	< 0.84	< 0.84	< 0.84	< 0.84	< 0.84
Benzene	< 1.0	< 0.41	< 0.41	< 0.41	< 0.41	< 0.41	< 0.41	-	< 0.41	< 0.41	< 0.41	< 0.41	< 0.41	< 0.41	< 0.41	< 0.41	< 0.41	< 0.41
Chlorobenzene	< 1.0	< 0.40	< 0.40	< 0.75	< 0.75	< 0.75	< 0.75	-	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75
Chloroethane	< 1.0	< 0.40	< 0.40	< 0.40	< 0.40	< 0.40	< 0.32	-	< 0.32	< 0.32	< 0.32	< 0.32	< 0.35	< 0.35	< 0.32	< 0.32	< 0.32	< 0.32
cis-1,2-Dichloroethene	**10**	**47**	**12**	**14**	**13**	**12**	**7.6**	**-**	**12**	**16**	**5.4**	**8.3**	**22**	**13**	**7.8**	**8.2**	**16**	**14**
Ethylbenzene	< 1.0	< 0.40	< 0.40	< 0.74	< 0.74	< 0.74	< 0.74	-	< 0.74	< 0.74	< 0.74	< 0.74	< 0.74	< 0.74	< 0.74	< 0.74	< 0.74	< 0.74
m-Xylene & p-Xylene	-	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	-	< 1.0	< 1.0	< 1.0	< 1.0	< 0.66	< 0.66	< 0.66	< 0.66	< 0.66	< 1
o-Xylene	-	< 0.40	< 0.40	< 0.76	< 0.76	< 0.76	< 0.76	-	< 0.76	< 0.76	< 0.76	< 0.76	< 0.76	< 0.76	< 0.76	< 0.76	< 0.76	< 0.76
Tetrachloroethene	**3.8**	**28**	**3.5**	**9.3**	**7.5**	**4.5**	**2.6**	**-**	**2.8**	**3.6**	**1.6**	**1.7**	< 0.36	**0.76**	**2.5**	**2**	**3.9**	**2.5**
Toluene	< 1.0	< 0.60	< 0.60	< 0.60	< 0.60	< 0.60	< 0.51	-	< 0.51	< 0.51	< 0.51	< 0.51	< 0.51	< 0.51	< 0.51	< 0.51	< 0.51	< 0.51
trans-1,2-Dichloroethene	**0.22 J**	< 0.42	< 0.42	< 0.90	< 0.90	< 0.90	< 0.90	-	< 0.90	< 0.90	< 0.90	< 0.90	**4.9**	**1.6**	< 0.90	< 0.90	< 0.90	< 0.9
Trichloroethene	**6.7**	**53**	**7.5**	**18**	**14**	**8.4**	**4.6**	**-**	**7.7**	**7.5**	**2.8**	**4.8**	**1.6**	**6.7**	**5.2**	**4.6**	**9.8**	**5.1**
Vinyl Chloride	**1.0 J**	< 1.0	**1.4**	**2.3**	**1.8**	**1.5**	**1.5**	**-**	**6.1**	**4.5**	**1.2**	**1.6**	**2.4**	**3.3**	< 0.90	**1.2**	**1.7**	**3.1**
Xylenes, total	< 3.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	-	< 1.0	< 1.0	< 1.0	< 1.0	< 0.66	< 1.0	< 0.66	< 0.66	< 0.66	< 1

Volatile Organic[1] Compounds (µg/L)	MH-3													
	1/28/2011	2/23/2011	4/5/2011	7/7/2011	10/11/2011	1/26/2012	4/5/2012	7/12/2012	10/17/2012	1/15/2013	4/24/2013	7/11/2013	10/22/2013	
1,1,1-Trichloroethane	< 0.82	< 0.82	< 0.82	< 0.82	< 0.82	< 0.82	< 0.82	< 0.82	< 0.82	< 0.82	< 0.82	< 0.82	< 0.82	
1,1-Dichloroethane	< 0.38	< 0.38	< 0.38	< 0.38	< 0.38	< 0.38	< 0.38	< 0.38	< 0.38	< 0.38	< 0.38	< 0.38	< 0.38	
1,2-Dichlorobenzene	< 0.79	< 0.79	< 0.79	< 0.79	< 0.79	< 0.79	< 0.79	< 0.79	< 0.79	< 0.79	< 0.79	< 0.79	< 0.79	
1,3-Dichlorobenzene	< 0.78	< 0.78	< 0.78	< 0.78	< 0.78	< 0.78	< 0.78	< 0.78	< 0.78	< 0.78	< 0.78	< 0.78	< 0.78	
1,4-Dichlorobenzene	< 0.84	< 0.84	< 0.84	< 0.84	< 0.84	< 0.84	< 0.84	< 0.84	< 0.84	< 0.84	< 0.84	< 0.84	< 0.84	
Benzene	< 0.41	< 0.41	< 0.41	< 0.41	< 0.41	< 0.41	< 0.41	< 0.41	< 0.41	< 0.41	< 0.41	< 0.41	< 0.41	
Chlorobenzene	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	
Chloroethane	< 0.32	< 0.32	< 0.32	< 0.32	< 0.32	< 0.32	< 0.32	< 0.32	< 0.32	< 0.32	< 0.32	< 0.32	< 0.32	
cis-1,2-Dichloroethene	**3.7**	**2.3**	**3.5**	**3.8**	**3.1**	**2.5**	**2.7**	**3.2**	< 0.81	**2.4**	**2.3**	**1.7**	**2.7**	
Ethylbenzene	< 0.74	< 0.74	< 0.74	< 0.74	< 0.74	< 0.74	< 0.74	< 0.74	< 0.74	< 0.74	< 0.74	< 0.74	< 0.74	
m-Xylene & p-Xylene	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 0.66	< 0.66	< 0.66	< 0.66	< 0.66	< 1	
o-Xylene	< 0.76	< 0.76	< 0.76	< 0.76	< 0.76	< 0.76	< 0.76	< 0.76	< 0.76	< 0.76	< 0.76	< 0.76	< 0.76	
Tetrachloroethene	**1.2**	**1.1**	**12**	**21**	**23**	**33**	**49**	**49**	< 0.36	**44**	**48**	**32**	**35**	
Toluene	< 0.51	< 0.51	< 0.51	< 0.51	< 0.51	< 0.51	< 0.51	< 0.51	< 0.51	< 0.51	< 0.51	< 0.51	< 0.51	
trans-1,2-Dichloroethene	< 0.90	< 0.90	< 0.90	< 0.90	< 0.90	< 0.90	< 0.90	< 0.90	< 0.90	< 0.90	< 0.90	< 0.90	< 0.9	
Trichloroethene	**4.2**	**5.6**	**9**	**19**	**13**	**16**	**17**	**22**	< 0.46	**14**	**14**	**13**	**16**	
Vinyl Chloride	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 0.90	< 0.90	< 0.90	< 0.90	< 0.90	< 1	
Xylenes, total	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 0.66	< 0.66	< 0.66	< 0.66	< 0.66	< 1	

Notes:

1. Analyzed using United States Environmental Protection Agency (USEPA) Method 8260.

2. Manhole MH-2 not sampled during Second Quarter 2011 event due to manhole being offline for pump replacement.

BOLD indicates detected concentrations.

Definitions:

< - less than laboratory detection limit listed

"-" - Analyte Not Analyzed For

J - Indicates concentration is estimated

µg/L - micrograms per liter

Table 4. Stormwater Analytical Sampling Results, Former Lockheed Martin French Road Facility, Utica, NY.

Volatile Organic[1] Compounds (µg/L)	SPDES Effluent Limitations (µg/L)	CB-1															
		1/12/2010	4/7/2010	7/8/2010	12/22/2010	2/23/2011	4/5/2011	7/7/2011	10/11/2011	1/26/2012	4/5/2012	7/12/2012	10/16/2012	1/15/2013	4/24/2013	7/11/2013	10/22/2013
1,1,1-Trichloroethane	10	< 0.40	< 0.40	< 0.82	< 0.82	< 0.82	< 0.82	< 0.82	< 0.82	< 0.82	< 0.82	< 0.82	< 0.82	< 0.82	< 0.82	< 0.82	< 0.82
1,1-Dichloroethane	10	< 0.75	< 0.75	< 0.75	< 0.75	< 0.38	< 0.38	< 0.38	< 0.38	< 0.38	< 0.38	< 0.38	< 0.38	< 0.38	< 0.38	< 0.38	< 0.38
1,2-Dichlorobenzene	10	< 0.50	< 0.50	< 0.79	< 0.79	< 0.79	< 0.79	< 0.79	< 0.79	< 0.79	< 0.79	< 0.79	< 0.79	< 0.79	< 0.79	< 0.79	< 0.79
1,3-Dichlorobenzene	-	< 0.40	< 0.40	< 0.78	< 0.78	< 0.78	< 0.78	< 0.78	< 0.78	< 0.78	< 0.78	< 0.78	< 0.78	< 0.78	< 0.78	< 0.78	< 0.78
1,4-Dichlorobenzene	-	< 0.40	< 0.40	< 0.84	< 0.84	< 0.84	< 0.84	< 0.84	< 0.84	< 0.84	< 0.84	< 0.84	< 0.84	< 0.84	< 0.84	< 0.84	< 0.84
Benzene	-	< 0.41	< 0.41	< 0.41	< 0.41	< 0.41	< 0.41	< 0.41	< 0.41	< 0.41	< 0.41	< 0.41	< 0.41	< 0.41	< 0.41	< 0.41	< 0.41
Chlorobenzene	-	< 0.40	< 0.40	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75
Chloroethane	10	< 0.40	< 0.40	< 0.40	< 0.40	< 0.32	< 0.32	< 0.32	< 0.32	< 0.32	< 0.32	< 0.32	< 0.32	< 0.32	< 0.32	< 0.32	< 0.32
cis-1,2-Dichloroethene	10	< 0.40	< 0.40	< 0.81	< 0.81	< 0.81	< 0.81	< 0.81	< 0.81	< 0.81	< 0.81	< 0.81	< 0.81	< 0.81	< 0.81	< 0.81	< 0.81
Ethylbenzene	5	< 0.40	< 0.40	< 0.74	< 0.74	< 0.74	< 0.74	< 0.74	< 0.74	< 0.74	< 0.74	< 0.74	< 0.74	< 0.74	< 0.74	< 0.74	< 0.74
m-Xylene & p-Xylene	-	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 0.66	< 0.66	< 0.66	< 0.66	< 0.66	< 1
o-Xylene	-	< 0.40	< 0.40	< 0.76	< 0.76	< 0.76	< 0.76	< 0.76	< 0.76	< 0.76	< 0.76	< 0.76	< 0.76	< 0.76	< 0.76	< 0.76	< 0.76
Tetrachloroethene	10	< 0.40	< 0.40	< 0.40	< 0.40	< 0.36	< 0.36	< 0.36	< 0.36	< 0.36	< 0.36	< 0.36	< 0.36	< 0.36	< 0.36	< 0.36	< 0.36
Toluene	5	< 0.60	< 0.60	< 0.60	< 0.60	< 0.51	< 0.51	< 0.51	< 0.51	< 0.51	< 0.51	< 0.51	< 0.51	< 0.51	< 0.51	< 0.51	< 0.51
trans-1,2-Dichloroethene	10	< 0.42	< 0.42	< 0.90	< 0.90	< 0.90	< 0.90	< 0.90	< 0.90	< 0.90	< 0.90	< 0.90	< 0.90	< 0.90	< 0.90	< 0.90	< 0.9
Trichloroethene	10	< 0.46	< 0.46	< 0.46	< 0.46	< 0.46	< 0.46	< 0.46	< 0.46	< 0.46	< 0.46	< 0.46	< 0.46	< 0.46	< 0.46	< 0.46	< 0.46
Vinyl Chloride	10	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 0.90	< 0.90	< 0.90	< 0.90	< 0.90	< 1
Xylenes, total	15	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 0.66	< 0.66	< 0.66	< 0.66	< 0.66	< 1
Volatile Organic[1] Compounds (µg/L)	**SPDES Effluent Limitations (µg/L)**	**CB-2**															
		1/12/2010	**4/7/2010**	**7/8/2010**	**12/22/2010**	**2/23/2011**	**4/5/2011**	**7/7/2011**	**10/11/2011**	**1/26/2012**	**4/5/2012**	**7/12/2012**	**10/16/2012**	**1/15/2013**	**4/24/2013**	**7/11/2013**	**10/22/2013**
1,1,1-Trichloroethane	10	< 0.40	< 0.40	< 0.82	< 0.82	< 0.82	< 0.82	< 0.82	< 0.82	< 0.82	< 0.82	< 0.82	< 0.82	< 0.82	< 0.82	< 0.82	< 0.82
1,1-Dichloroethane	10	< 0.75	< 0.75	< 0.75	< 0.75	< 0.38	< 0.38	< 0.38	< 0.38	< 0.38	< 0.38	< 0.38	< 0.38	< 0.38	< 0.38	< 0.38	< 0.38
1,2-Dichlorobenzene	10	< 0.50	< 0.50	< 0.79	< 0.79	< 0.79	< 0.79	< 0.79	< 0.79	< 0.79	< 0.79	< 0.79	< 0.79	< 0.79	< 0.79	< 0.79	< 0.79
1,3-Dichlorobenzene	-	< 0.40	< 0.40	< 0.78	< 0.78	< 0.78	< 0.78	< 0.78	< 0.78	< 0.78	< 0.78	< 0.78	< 0.78	< 0.78	< 0.78	< 0.78	< 0.78
1,4-Dichlorobenzene	-	< 0.40	< 0.40	< 0.84	< 0.84	< 0.84	< 0.84	< 0.84	< 0.84	< 0.84	< 0.84	< 0.84	< 0.84	< 0.84	< 0.84	< 0.84	< 0.84
Benzene	-	< 0.41	< 0.41	< 0.41	< 0.41	< 0.41	< 0.41	< 0.41	< 0.41	< 0.41	< 0.41	< 0.41	< 0.41	< 0.41	< 0.41	< 0.41	< 0.41
Chlorobenzene	-	< 0.40	< 0.40	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75
Chloroethane	10	< 0.40	< 0.40	< 0.40	< 0.40	< 0.32	< 0.32	< 0.32	< 0.32	< 0.32	< 0.32	< 0.32	< 0.32	< 0.32	< 0.32	< 0.32	< 0.32
cis-1,2-Dichloroethene	10	< 0.40	< 0.40	< 0.81	< 0.81	< 0.81	< 0.81	< 0.81	< 0.81	< 0.81	< 0.81	< 0.81	< 0.81	< 0.81	< 0.81	< 0.81	< 0.81
Ethylbenzene	5	< 0.40	< 0.40	< 0.74	< 0.74	< 0.74	< 0.74	< 0.74	< 0.74	< 0.74	< 0.74	< 0.74	< 0.74	< 0.74	< 0.74	< 0.74	< 0.74
m-Xylene & p-Xylene	-	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 0.66	< 0.66	< 0.66	< 0.66	< 0.66	< 1
o-Xylene	-	< 0.40	< 0.40	< 0.76	< 0.76	< 0.76	< 0.76	< 0.76	< 0.76	< 0.76	< 0.76	< 0.76	< 0.76	< 0.76	< 0.76	< 0.76	< 0.76
Tetrachloroethene	10	< 0.40	< 0.40	< 0.40	< 0.40	< 0.36	< 0.36	< 0.36	< 0.36	< 0.36	< 0.36	< 0.36	< 0.36	< 0.36	< 0.36	< 0.36	< 0.36
Toluene	5	< 0.60	< 0.60	< 0.60	< 0.60	< 0.51	< 0.51	< 0.51	< 0.51	< 0.51	< 0.51	< 0.51	< 0.51	< 0.51	< 0.51	< 0.51	< 0.51
trans-1,2-Dichloroethene	10	< 0.42	< 0.42	< 0.90	< 0.90	< 0.90	< 0.90	< 0.90	< 0.90	< 0.90	< 0.90	< 0.90	< 0.90	< 0.90	< 0.90	< 0.90	< 0.9
Trichloroethene	10	< 0.46	< 0.46	< 0.46	< 0.46	< 0.46	< 0.46	< 0.46	< 0.46	< 0.46	< 0.46	< 0.46	< 0.46	< 0.46	< 0.46	< 0.46	< 0.46
Vinyl Chloride	10	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 0.90	< 0.90	< 0.90	< 0.90	< 0.90	< 1
Xylenes, total	15	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 0.66	< 0.66	< 0.66	< 0.66	< 0.66	< 1
Volatile Organic[1] Compounds (µg/L)	**SPDES Effluent Limitations (µg/L)**	**CB-3**															
		1/12/2010	**4/7/2010**	**7/8/2010**	**12/22/2010**	**2/23/2011**	**4/5/2011**	**7/7/2011**	**10/11/2011**	**1/26/2012**	**4/5/2012**	**7/12/2012**	**10/16/2012**	**1/15/2013**	**4/24/2013**	**7/11/2013**	**10/22/2013**
1,1,1-Trichloroethane	10	< 0.40	< 0.40	< 0.82	< 0.82	< 0.82	< 0.82	< 0.82	< 0.82	< 0.82	< 0.82	< 0.82	< 0.82	< 0.82	< 0.82	< 0.82	< 0.82
1,1-Dichloroethane	10	< 0.75	< 0.75	**0.85**	< 0.75	< 0.38	< 0.38	< 0.38	< 0.38	< 0.38	< 0.38	< 0.38	< 0.38	< 0.38	**0.64**	< 0.38	< 0.38
1,2-Dichlorobenzene	10	< 0.50	< 0.50	< 0.79	< 0.79	< 0.79	< 0.79	< 0.79	< 0.79	< 0.79	< 0.79	< 0.79	< 0.79	< 0.79	< 0.79	< 0.79	< 0.79
1,3-Dichlorobenzene	-	< 0.40	< 0.40	< 0.78	< 0.78	< 0.78	< 0.78	< 0.78	< 0.78	< 0.78	< 0.78	< 0.78	< 0.78	< 0.78	< 0.78	< 0.78	< 0.78
1,4-Dichlorobenzene	-	< 0.40	< 0.40	< 0.84	< 0.84	< 0.84	< 0.84	< 0.84	< 0.84	< 0.84	< 0.84	< 0.84	< 0.84	< 0.84	< 0.84	< 0.84	< 0.84
Benzene	-	< 0.41	< 0.41	< 0.41	< 0.41	< 0.41	< 0.41	< 0.41	< 0.41	< 0.41	< 0.41	< 0.41	< 0.41	< 0.41	< 0.41	< 0.41	< 0.41
Chlorobenzene	-	< 0.40	< 0.40	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75
Chloroethane	10	< 0.40	< 0.40	< 0.40	< 0.40	< 0.32	< 0.32	< 0.32	< 0.32	< 0.32	< 0.32	< 0.32	< 0.32	< 0.32	< 0.32	< 0.32	< 0.32
cis-1,2-Dichloroethene	10	< 0.40	< 0.40	**1.9**	< 0.81	< 0.81	< 0.81	< 0.81	< 0.81	< 0.81	< 0.81	< 0.81	< 0.81	< 0.81	< 0.81	< 0.81	< 0.81
Ethylbenzene	5	< 0.40	< 0.40	< 0.74	< 0.74	< 0.74	< 0.74	< 0.74	< 0.74	< 0.74	< 0.74	< 0.74	< 0.74	< 0.74	< 0.74	< 0.74	< 0.74
m-Xylene & p-Xylene	-	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 0.66	< 0.66	< 0.66	< 0.66	< 0.66	< 1
o-Xylene	-	< 0.40	< 0.40	< 0.76	< 0.76	< 0.76	< 0.76	< 0.76	< 0.76	< 0.76	< 0.76	< 0.76	< 0.76	< 0.76	< 0.76	< 0.76	< 0.76
Tetrachloroethene	10	< 0.40	< 0.40	< 0.40	< 0.40	< 0.36	**0.51**	< 0.36	< 0.36	< 0.36	< 0.36	< 0.36	< 0.36	< 0.36	< 0.36	< 0.36	< 0.36
Toluene	5	< 0.60	< 0.60	< 0.60	< 0.60	< 0.51	< 0.51	< 0.51	< 0.51	< 0.51	< 0.51	< 0.51	< 0.51	< 0.51	< 0.51	< 0.51	< 0.51
trans-1,2-Dichloroethene	10	< 0.42	< 0.42	< 0.90	< 0.90	< 0.90	< 0.90	< 0.90	< 0.90	< 0.90	< 0.90	< 0.90	< 0.90	< 0.90	< 0.90	< 0.90	< 0.9
Trichloroethene	10	< 0.46	< 0.46	**0.69**	< 0.46	< 0.46	< 0.46	< 0.46	< 0.46	< 0.46	< 0.46	< 0.46	< 0.46	< 0.46	**0.47**	< 0.46	< 0.46
Vinyl Chloride	10	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 0.90	< 0.90	< 0.90	< 0.90	< 0.90	< 1
Xylenes, total	15	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 0.66	< 0.66	< 0.66	< 0.66	< 0.66	< 1

Notes:

1. Analyzed using United States Environmental Protection Agency (USEPA) Method 8260.

BOLD indicates detected concentrations.

Definitions:

< - less than laboratory detection limit listed

µg/L - micrograms per liter

Table 5. Groundwater Collection and Treatment System Flowrates, Former Lockheed Martin French Road Facility, Utica, NY.

Date	Cumulative			MH-1			MH-2			MH-3			Air Stripper Parameters		
	Permanent Flow (gallons)	Flow Per Reporting Period (gallons)	Monthly Flowrate (gpm)	Permanent Flow (gallons)	Flow Per Reporting Period (gallons)	Monthly Flowrate (gpm)	Permanent Flow (gallons)	Flow Per Reporting Period (gallons)	Monthly Flowrate (gpm)	Permanent Flow (gallons)	Flow Per Reporting Period (gallons)	Monthly Flowrate (gpm)	Sump Pressure (In. W.C.)	Differential Pressure (In. W.C.)	Vapor Phase Flowrate (scfm)[3]
1/8/2009	51,642,496	547,845	10.3	43,857,473	468,600	8.8	7,785,023	79,245	1.5	-	-	-	14.0	1.0	1,398
2/5/2009	51,882,819	240,323	6.0	44,074,280	216,807	5.4	7,808,539	23,516	0.6	-	-	-	14.0	1.0	1,398
3/4/2009	52,290,566	407,747	10.5	44,426,462	352,182	9.1	7,864,104	55,565	1.4	-	-	-	15.0	1.0	1,398
4/1/2009	52,820,498	529,932	13.1	44,879,781	453,319	11.2	7,940,717	76,613	1.9	-	-	-	14.0	1.0	1,398
5/5/2009	53,224,271	403,773	8.2	45,236,249	356,468	7.3	7,988,022	47,305	1.0	-	-	-	14.0	1.0	1,398
6/2/2009	53,499,861	275,590	6.8	45,470,774	234,525	5.8	8,029,087	41,065	1.0	-	-	-	15.0	1.5	1,712
7/1/2009	53,736,159	236,298	5.7	45,666,782	196,008	4.7	8,069,377	40,290	1.0	-	-	-	15.0	1.5	1,712
8/14/2009	54,078,743	342,584	5.4	45,940,852	274,070	4.3	8,137,891	68,514	1.1	-	-	-	14.0	1.5	1,712
9/4/2009	54,230,373	151,630	5.0	46,060,707	119,855	4.0	8,169,666	31,775	1.1	-	-	-	14.0	1.5	1,712
10/9/2009	54,512,663	282,290	5.6	46,289,841	229,134	4.5	8,222,822	53,156	1.1	-	-	-	14.5	1.0	1,398
11/4/2009	54,750,788	238,125	6.4	46,494,959	205,118	5.5	8,255,829	33,007	0.9	-	-	-	14.5	1.0	1,398
12/11/2009	55,029,188	278,400	5.2	46,722,959	228,000	4.3	8,306,229	50,400	0.9	-	-	-	14.0	1.3	1,594
2009 Totals[1]	**-**	**3,934,537**	**7.3**	**-**	**3,334,086**	**6.2**	**-**	**600,451**	**1.1**	-	-	-	**14.3**	**1.2**	**1,519**
1/12/2010	55,368,138	338,950	7.4	47,041,049	318,090	6.9	8,327,089	20,860	0.5	-	-	-	18.0	1.2	1,531
2/3/2010	55,615,048	246,910	7.8	47,254,345	213,296	6.7	8,360,703	33,614	1.1	-	-	-	24.0	1.0	1,398
3/3/2010	55,830,985	215,937	5.4	47,442,614	188,269	4.7	8,388,371	27,668	0.7	-	-	-	11.0	1.7	1,823
4/7/2010	56,443,357	612,372	12.2	47,970,713	528,099	10.5	8,472,644	84,273	1.7	-	-	-	12.0	1.5	1,712
5/5/2010	56,705,454	262,097	6.5	48,202,863	232,150	5.8	8,502,591	29,947	0.7	-	-	-	17.5	2.7	2,297
6/3/2010	56,921,019	215,565	5.2	48,388,351	185,488	4.4	8,532,668	30,077	0.7	-	-	-	16.1	2.7	2,297
7/7/2010	57,256,158	335,139	6.8	48,646,601	258,250	5.3	8,609,557	76,889	1.6	-	-	-	15.5	2.4	2,166
8/5/2010	57,518,041	261,883	6.3	48,863,064	216,463	5.2	8,654,977	45,420	1.1	-	-	-	15.9	2.2	2,073
9/7/2010	57,797,649	279,608	5.9	49,095,255	232,191	4.9	8,702,394	47,417	1.0	-	-	-	18.5	1.9	1,927
10/5/2010	58,082,548	284,899	7.1	49,327,736	232,481	5.8	8,754,812	52,418	1.3	-	-	-	17.0	2.0	1,977
11/2/2010	58,456,895	374,347	9.3	49,643,060	315,324	7.8	8,813,835	59,023	1.5	-	-	-	22.0	0.9	1,289
12/22/2010	59,009,574	552,679	7.7	50,101,316	458,256	6.4	8,908,258	94,423	1.3	-	-	-	17.0	NA[2]	NA[2]
2010 Totals[2]	**-**	**3,980,386**	**7.4**	**-**	**3,378,357**	**6.2**	**-**	**602,029**	**1.1**	**-**	**-**	**-**	**17.0**	**1.8**	**1,863**
1/28/2011	59,088,966	79,392	1.5	50,142,913	41,597	0.8	8,930,851	22,593	0.4	15,202	-	-	25.9	-	718
2/23/2011	59,483,460	394,494	10.5	50,432,263	289,350	7.7	8,976,813	45,962	1.2	74,384	59182.0	1.6	26.0	-	742
3/22/2011	60,118,863	635,403	16.3	50,940,888	508,625	13.1	9,102,550	125,737	3.2	75,425	1041.0	0.0	26.2	-	681
4/5/2011	60,264,174	145,311	7.2	51,085,909	145,021	7.2	9,102,790	240	0.0	75,475	50	0.0	29.0	-	663
5/12/2011	61,189,715	925,541	17.4	51,609,588	523,679	9.8	9,161,683	58,893	1.1	418,444	342,969	9.2	26.5	-	553
6/2/2011	61,557,472	367,757	12.2	51,834,699	225,111	7.4	9,189,679	27,996	0.9	533,094	114,650	2.9	26.5	-	618
7/7/2011	61,975,516	418,044	8.3	52,075,707	241,008	4.8	9,227,668	37,989	0.8	672,141	139,047	2.8	25.2	-	636
8/11/2011	62,296,730	321,214	6.4	52,243,445	167,738	3.3	9,265,879	38,211	0.8	787,406	115,265	2.3	26.5	-	651
9/8/2011	62,817,398	520,668	12.9	52,508,569	265,124	6.6	9,342,539	76,660	1.9	966,290	178,884	4.4	28.5	-	609
10/11/2011	63,444,585	627,187	13.2	52,883,146	374,577	7.9	9,400,121	57,582	1.2	1,161,318	195,028	4.1	27.0	-	715
11/1/2011	63,764,975	320,390	10.6	53,071,145	187,999	6.2	9,435,095	34,974	1.2	1,258,735	97,417	3.2	27.0	-	784
12/1/2011	64,185,589	420,614	9.7	53,345,456	274,311	6.3	9,469,773	34,678	0.8	1,370,360	111,625	2.6	27.0	-	739
2011 Totals[2][5]	-	**5,176,015**	**10.4**	-	**3,244,140**	**6.5**	-	**561,515**	**1.1**	-	**1,355,158**	**2.7**	**26.8**	-	**676**
1/27/2012	64,972,202	786,613	9.6	53,871,038	525,582	6.4	9,542,467	72,694	0.9	1,558,697	188,337	2.3	32.2	-	745
2/9/2012	65,195,486	223,284	11.9	54,009,006	137,968	7.4	9,573,810	31,343	1.7	1,612,670	53,973	2.9	29.0	-	787
3/1/2012	65,448,455	252,969	8.4	54,180,412	171,406	5.7	9,596,526	22,716	0.8	1,671,517	58,847	1.9	29.0	-	766
First Quarter 2012	-	**1,262,866**	**9.6**	-	**834,956**	**6.4**	-	**126,753**	**1.0**	-	**301,157**	**2.3**	**30.1**	-	**766**
4/5/2012	65,853,255	404,800	8.0	54,447,552	267,140	5.3	9,635,004	38,478	0.8	1,770,699	99,182	2.0	27.0	-	740
5/1/2012	66,090,367	237,112	6.3	54,595,683	148,131	4.0	9,661,648	26,644	0.7	1,833,036	62,337	1.7	26.6	-	805
6/7/2012	66,591,098	500,731	9.4	54,904,479	308,796	5.8	9,710,985	49,337	0.9	1,975,634	142,598	2.7	27.4	-	752
Second Quarter 2012	-	**1,142,643**	**8.1**	-	**724,067**	**5.1**	-	**114,459**	**0.8**	-	**304,117**	**2.2**	**27.0**	-	**766**
7/12/2012	66,828,112	237,014	4.7	55,041,035	136,556	2.7	9,738,010	27,025	0.5	2,049,067	73,433	1.5	25.0	-	630
8/15/2012	67,068,471	240,359	4.9	55,163,445	122,410	2.5	9,766,492	28,482	0.6	2,138,534	89,467	1.8	27.7	-	701
9/11/2012	67,259,158	190,687	4.9	55,259,345	95,900	2.5	9,790,891	24,399	0.6	2,208,922	70,388	1.8	27.7	-	761
Third Quarter 2012	-	**668,060**	**4.8**	-	**354,866**	**2.6**	-	**79,906**	**0.6**	-	**233,288**	**1.7**	**26.8**	-	**697**
10/17/2012	67,568,957	309,799	6.0	55,424,161	164,816	3.2	9,830,240	39,349	0.8	2,314,556	105,634	2.0	26.2	-	677
11/8/2012	67,777,512	208,555	6.6	55,542,079	117,918	3.7	9,852,388	22,148	0.7	2,383,045	68,489	2.2	30.8	-	778
12/6/2012	67,979,019	201,507	5.0	55,665,689	123,610	3.1	9,874,745	22,357	0.6	2,438,585	55,540	1.4	29.3	-	934
Fourth Quarter 2012	-	**719,861**	**5.8**	-	**406,344**	**3.3**	-	**83,854**	**0.7**	-	**229,663**	**1.9**	**28.8**	-	**796**
2012 Totals	-	**3,793,430**	**7.1**	-	**2,320,233**	**4.3**	-	**404,972**	**0.8**	-	**1,068,225**	**2.0**	**28.2**	-	**756**
1/15/2013	68,601,819	622,800	10.8	56,064,192	398,503	6.9	9,937,367	62,622	1.1	2,600,260	161,675	2.8	29.6	-	830
2/7/2013	68,933,628	331,809	10.0	56,285,230	221,038	6.7	9,972,998	35,631	1.1	2,675,400	75,140	2.3	31.1	-	894
3/5/2013	69,250,256	316,628	8.5	56,490,599	205,369	5.5	10,000,253	27,255	0.7	2,759,404	84,004	2.2	28.7	-	836
First Quarter 2013	-	**1,271,237**	**9.9**	-	**824,910**	**6.4**	-	**125,508**	**1.0**	-	**320,819**	**2.5**	**29.8**	-	**853**
4/24/2013	69,990,978	**740,722**	10.3	56,960,249	469,650	6.5	10,083,948	83,695	1.2	2,946,781	187,377	2.6	27.7	-	715
5/9/2013	70,150,855	**159,877**	7.4	57,063,303	103,054	4.8	10,097,769	13,821	0.6	2,989,783	43,002	2.0	26.0	-	718
6/12/2013	70,634,036	**483,181**	9.9	57,352,931	289,628	5.9	10,154,228	56,459	1.2	3,126,877	137,094	2.8	25.5	-	635
Second Quarter 2013	-	**1,383,780**	**9.7**	-	**862,332**	**6.0**	-	**153,975**	**1.1**	-	**367,473**	**2.6**	**26.4**	-	**689**
7/11/2013	71,537,658	**903,622**	21.6	57,910,436	557,505	13.4	10,242,031	87,803	2.1	3,385,191	258,314	6.2	27.9	-	602
8/8/2013	71,875,374	**337,716**	8.4	58,109,657	199,221	4.9	10,279,795	37,764	0.9	3,485,922	100,731	2.5	28.0	-	633
9/10/2013	72,237,550	**362,176**	7.6	58,313,137	203,480	4.3	10,332,018	52,223	1.1	3,592,395	106,473	2.2	27.2	-	695
Third Quarter 2013	-	**1,603,514**	**12.4**	-	**960,206**	**7.4**	-	**177,790**	**1.4**	-	**465,518**	**3.6**	**27.7**	-	**643**
10/22/2013	72,683,219	**445,669**	7.4	58,574,976	261,839	4.3	10,387,447	55,429	0.9	3,720,796	128,401	2.1	28.0	-	763
11/5/2013	72,809,855	**126,636**	6.3	58,651,023	76,047	3.8	10,402,542	15,095	0.7	3,756,290	35,494	1.8	30.5	-	799
12/3/2013	73,139,690	**329,835**	8.2	58,855,332	204,309	5.1	10,439,113	36,571	0.9	3,845,245	88,955	2.2	31.0	-	702
Fourth Quarter 2013	-	**902,140**	**7.5**	-	**542,195**	**4.5**	-	**107,095**	**0.9**	-	**252,850**	**2.1**	**29.8**	-	**755**
2013 Totals	-	**5,160,671**	**9.9**	-	**3,189,643**	**6.1**	-	**564,368**	**1.1**	-	**1,406,660**	**2.7**	**28.4**	-	**735**

Notes:

1. 2009 Totals include data between 12/8/2008 and 12/11/2009.

2. Existing air stripper taken offline on 11/29/10 and temporary air stripper in operation through end of 2010 while system upgrades were being implemented. Current air stripper operated intermittently in January 2011 on the dates of 1/13, 1/14, 1/17, 1/18 and 1/20. Current air stripper brought online permanently in February 2011.

3. Prior to 2011, vapor phase flowrate calculated using the Air Velocity Measurement formula as provided in the Dwyer Instruments catalog. Differential pressure used in the blower intake pipe, and constants for temperature (70°F) and barometric pressure (29.92 in.Hg.) were assumed. Following the beginning of 2011, the vapor phase flowrate has been obtained from flow transmitter FT-106.

5. Manhole MH-2 offline for pump replacement from 3/22/11 to 4/20/11.

Definitions:

gpm - gallons per minute

In. W.C. - Inches of Water Column

cfm - cubic feet per minute

NA - Not applicable

Table 6. Vapor Phase Analytical Sampling Results, Former Lockheed Martin French Road Facility, Utica, NY.

Volatile Organic[1] Compounds (µg/m^3)	Pre-Carbon																															
	1/28/2011	Q	2/23/2011	Q	4/5/2011	Q	Value used for calcs	Reporting Limit	7/7/2011	Q	10/12/2011	Q	1/26/2012	Q	4/5/2012	Q	7/12/2012	Q	10/17/2012	Q	1/15/2013	Q	4/24/2013	Q	7/11/2013	Q	10/23/2013	
1,1,1-Trichloroethane	< 0.83		< 0.83		< 0.83		0	0.83	< 0.83		< 0.83		< 0.83		< 0.83		< 0.83		< 0.83		< 0.83		< 1.6		< 11.00		< 2.20	
1,1,2,2-Tetrachloroethane	< 1.00		< 1.0		< 1.00		0	1	< 1.00		< 1.00		< 1.00		< 1.00		< 1.00		< 1.00		< 1.00		< 2.1		< 14.00		< 2.70	
1,1,2-Trichloroethane	< 0.83		< 0.83		< 0.83		0	0.83	< 0.83		< 0.83		< 0.83		< 0.83		< 0.83		< 0.83		< 0.83		< 1.6		< 11.00		< 2.20	
1,1-Dichloroethane	< 0.62		**18**		**19**		19		**71**		**41**		**38**		**49**		**150**		**44**		**46**		**36**		**28**		**44**	
1,1-Dichloroethene	< 0.60		< 0.60		< 0.60		0	0.6	**0.81**		**0.48**	**J**	<0.60		**0.97**		**1.2**		**0.87**		< 0.60		< 1.2		< 7.90		< 1.60	
1,2,4-Trichlorobenzene	< 1.10		< 1.1		< 1.10		0	1.1	< 1.10		< 1.10		< 1.10		< 1.10		< 1.10		< 1.10		< 1.10		< 5.6		< 37.00		< 7.40	
1,2,4-Trimethylbenzene	**1**		**4.6**		**1.6**		1.6		**1.3**		< 0.75		**0.5**	**J**	< 0.75		**1.8**		**0.9**		< 0.75		< 1.5		< 9.80		< 2.00	
1,2-Dibromoethane	< 1.20		< 1.2		< 1.20		0	1.2	< 1.20		< 1.20		< 1.20		< 1.20		< 1.20		< 1.20		< 1.20		< 2.3		< 15.00		< 3.10	
1,2-Dichlorobenzene	< 0.92		< 0.92		< 0.92		0	0.92	< 0.92		< 0.92		< 0.92		< 0.92		< 0.92		< 0.92		< 0.92		< 1.8		< 12.00		< 2.40	
1,2-Dichloroethane	< 0.62		< 0.62		< 0.62		0	0.62	< 0.62		< 0.62		< 0.62		< 0.62		< 0.62		< 0.62		< 0.62		< 1.2		< 8.10		< 1.60	
1,2-Dichloropropane	< 0.70		< 0.70		< 0.70		0	0.7	< 0.70		< 0.70		< 0.70		< 0.70		< 0.70		< 0.70		< 0.70		< 1.4		< 9.20		< 1.80	
1,3,5-Trimethylbenzene	< 0.75		**1.5**		< 0.75		0	0.75	< 0.75		< 0.75		< 0.75		< 0.75		**0.65**	**J**	< 0.75		< 0.75		< 1.5		< 9.80		< 2.00	
1,3-butadiene	< 0.34		< 0.34		< 0.34		0	0.34	< 0.34		< 0.34		< 0.34		< 0.34		< 0.34		< 0.34		< 0.34		< 0.66		< 4.40		< 0.88	
1,3-Dichlorobenzene	< 0.92		< 0.92		< 0.92		0	0.92	< 0.92		< 0.92		< 0.92		< 0.92		< 0.92		< 0.92		< 0.92		< 1.8		< 12.00		< 2.40	
1,4-Dichlorobenzene	< 0.92		< 0.92		< 0.92		0	0.92	< 0.92		< 0.92		< 0.92		< 0.92		< 0.92		< 0.92		< 0.92		< 1.8		< 12.00		< 2.40	
1,4-Dioxane	< 1.10		< 1.1		< 1.10		0	1.1	< 1.10		< 1.10		< 1.10		< 1.10		< 1.10		< 1.10		< 1.10		< 27		< 180.00		< 36.00	
2-Chlorotoluene	NS		NS		NS				NS		NS		NS		NS		NS		NS		NS		< 1.6		< 10.00		< 2.10	
2,2,4-trimethylpentane	< 0.71		**0.76**		< 0.71		0	0.71	< 0.71		< 0.71		< 0.71		< 0.71		< 0.71		< 0.71		< 0.71		**0.31**	**J**	< 9.30		< 1.90	
4-ethyltoluene	**0.6**	**J**	**1.1**		< 0.75		0	0.75	< 0.75		< 0.75		< 0.75		< 0.75		**0.5**	**J**	< 0.75		< 0.75		< 1.5		< 9.80		< 2.00	
4-Isopropyltoluene	NS		NS		NS				NS		NS		NS		NS		NS		NS		NS		< 1.6		< 11.00		< 2.20	
Acetone	**29**		**21**		**10**		10		**14**		**3.7**		**81**		**3.7**		**16**		**21**		**3.6**		**11**	**J**	**11**	**J**	**3.9**	**J B**
Allyl chloride	< 0.48		< 0.48		< 0.48		0	0.48	< 0.48		< 0.48		< 0.48		< 0.48		< 0.48		< 0.48		< 0.48		< 2.3		< 16.00		< 3.10	
Benzene	< 0.49		**1.5**		**0.91**		0.91		**0.39**	**J**	**0.75**		**1.2**		**0.42**	**J**	**0.65**		**0.32**	**J**	< 0.49		**0.62**	**J**	< 6.40		< 1.30	
Benzyl chloride	< 0.88		< 0.88		< 0.88		0	0.88	< 0.88		< 0.88		< 0.88		< 0.88		< 0.88		< 0.88		< 0.88		< 1.6		< 10.00		< 2.10	
Bromodichloromethane	< 1.00		< 1.0		< 1.00		0	1	< 1.00		< 1.00		< 1.00		< 1.00		< 1.00		< 1.00		< 1.00		< 2.0		< 13.00		< 2.70	
Bromoform	< 1.60		< 1.6		< 1.60		0	1.6	< 1.60		< 1.60		< 1.60		< 1.60		< 1.60		< 1.60		< 1.60		< 3.1		< 21.00		< 4.10	
Bromomethane	< 0.59		< 0.59		< 0.59		0	0.59	< 0.59		< 0.59		< 0.59		< 0.59		< 0.59		< 0.59		< 0.59		< 1.2		< 7.80		< 1.60	
Carbon disulfide	< 0.47		< 0.47		< 0.47		0	0.47	**0.32**	**J**	< 0.47		< 0.47		< 0.47		**1.3**		< 0.47		< 0.47		< 2.3		< 16.00		**0.47**	**J**
Carbon tetrachloride	< 0.96		**0.77**	**J**	< 0.96		0	0.96	**0.9**	**J**	**0.38**	**J**	**0.38**	**J**	< 0.96		< 0.96		< 0.96		< 0.96		**0.49**		< 2.50		< 0.50	
Chlorobenzene	< 0.70		**0.66**	**J**	< 0.70		0	0.7	< 0.70		< 0.70		< 0.70		< 0.70		< 0.70		< 0.70		< 0.70		< 1.4		< 9.20		< 1.80	
Chloroethane	< 0.40		**1.2**		< 0.40		0	0.4	< 0.40		**0.86**		<0.40		**1.3**		**1.2**		< 0.40		**0.64**		**0.94**	**J**	< 13.00		**1.5**	**J**
Chloroform	< 0.74		**5.7**		**10**		10		**8.5**		**1.3**		**1.8**		**0.94**		**1.9**		**1**		**0.55**	**J**	**0.41**	**J**	**1.8**	**J**	**0.57**	**J**
Chloromethane	**1.2**		**0.84**		< 0.31		0	0.31	< 0.31		**0.57**		< 0.31		**0.9**		< 0.31		< 0.31		< 0.31		**1.4**	**J**	**5.9**	**J**	**1.1**	**J**
cis-1,2-Dichloroethene	< 0.60		**220**		**140**		140		**840**		**210**		**200**		**510**		**430**		**200**		**310**		**180**		**160**		**270**	
cis-1,3-Dichloropropene	< 0.69		< 0.69		< 0.69		0	0.69	< 0.69		< 0.69		< 0.69		< 0.69		< 0.69		< 0.69		< 0.69		< 1.4		< 9.10		< 1.80	
Cyclohexane	< 0.52		< 0.52		< 0.52		0	0.52	< 0.52		< 0.52		< 0.52		< 0.52		< 0.52		< 0.52		< 0.52		**3.2**		< 6.90		< 1.40	
Dibromochloromethane	< 1.30		< 1.3		< 1.30		0	1.3	< 1.30		< 1.30		< 1.30		< 1.30		< 1.30		< 1.30		< 1.30		< 2.6		< 17.00		< 3.40	
Ethyl acetate	< 0.92		< 0.92		< 0.92		0	0.92	< 0.92		< 0.92		< 0.92		< 0.92		< 0.92		< 0.92		< 0.92		NS		NS		NS	
Ethylbenzene	**2.8**		**2.3**		**0.71**		0.71		< 0.66		< 0.66		**0.49**	**J**	< 0.66		**1.3**		< 0.66		< 0.66		**0.69**	**J**	< 8.70		< 1.70	
Freon 11	< 0.86		**1.7**		**6**		6		**1.8**		**1.1**		**2**		**1.5**		**2.5**		**1.7**		**1.5**		< 1.3		< 11.00		**2.2**	**J**
Freon 113	< 1.20		**110**		**60**		60		**170**		**83**		**30**		**130**		**380**		**110**		**54**		**70**		**45**		**81**	
Freon 114	< 1.10		< 1.1		< 1.10		0	1.1	< 1.10		< 1.10		< 1.10		< 1.10		< 1.10		< 1.10		< 1.10		< 2.1		< 14.00		< 2.80	
Freon 12	**0.65**	**J**	**2.8**		**3.4**		3.4		**2.7**		**1.6**		**2.6**		**5.8**		< 0.75		**2.8**		**5.4**		**2.9**	**J**	**2.5**	**J**	**2.4**	**J**
Freon 22	NS		NS		NS				NS		NS		NS		NS		NS		NS		NS		**2.1**	**J**	< 18.00		< 3.50	
Heptane	< 0.62		**0.92**		< 0.62		0	0.62	< 0.62		< 0.62		< 0.62		< 0.62		**0.5**	**J**	< 0.62		< 0.62		**1.2**		< 8.20		< 1.60	
Hexachloro-1,3-butadiene	< 1.60		< 1.6		< 1.60		0	1.6	< 1.60		< 1.60		< 1.60		< 1.60		< 1.60		< 1.60		< 1.60		< 3.2		< 21.00		< 4.30	
Hexane	< 0.54		< 0.54		< 0.54		0	0.54	< 0.54		**0.75**		**0.75**		< 0.54		**0.64**		< 0.54		< 0.54		**2.1**		< 7.00		**0.2**	**J**
Isopropyl alcohol	< 0.37		**4.3**		**5.4**		5.4		< 0.37		< 0.37		**3.5**		< 0.37		**2**		< 0.37		**2.1**		**3.2**	**J**	< 120.00		< 25.00	
m&p-Xylene	**7.9**		**8.5**		**2.3**		2.3		**1.6**		**0.75**	**J**	**1.3**		< 1.30		**4.7**		< 1.30		**0.44**	**J**	**2.5**	**J**	< 22.00		< 4.30	
Methyl Butyl Ketone	< 1.20		< 1.2		< 1.20		0	1.2	< 1.20		< 1.20		< 1.20		< 1.20		< 1.20		< 1.20		< 1.20		< 3.1		< 20.00		4.1	
Methyl Ethyl Ketone	**10**		**2.7**		**2.5**		2.5		< 0.90		**1.2**		**4**		**0.42**	**J**	**1.6**		**1.1**		< 0.90		**2.6**		< 15.00		**1.2**	**J B**
Methyl Isobutyl Ketone	< 1.20		< 1.2		< 1.20		0	1.2	< 1.20		< 1.20		< 1.20		< 1.20		< 1.20		< 1.20		< 1.20		< 3.1		< 20.00		< 4.10	
Methyl methacrylate	NS		NS		NS				NS		NS		NS		NS		NS		NS		NS		< 3.1		< 20.00		< 4.10	
Methyl tert-butyl ether	< 0.55		< 0.55		< 0.55		0	0.55	< 0.55		< 0.55		< 0.55		**0.66**		**1.6**		< 0.55		< 0.55		< 1.1		< 7.20		< 1.40	
Methylene chloride	< 0.53		**1.8**		**1.8**		1.8		**1.8**		**0.56**		**1.2**		**2**		**2.6**		**1**		**1.4**		**3.2**	**B**	**2.3**	**J B**	**0.95**	**J B**
n-Butane	NS		NS		NS				NS		NS		NS		NS		NS		NS		NS		**3.5**		< 12.00		**1.5**	**J**
n-Butylbenzene	NS		NS		NS				NS		NS		NS		NS		NS		NS		NS		< 1.6		< 11.00		< 2.20	
n-Propylbenzene	NS		NS		NS				NS		NS		NS		NS		NS		NS		NS		< 1.5		< 9.80		< 2.00	
Naphthalene	NS		NS		NS				NS		NS		NS		NS		NS		NS		NS		< 3.9		< 26.00		< 5.20	
o-Xylene	**1.4**		**3.1**		**0.66**		0.66		**0.62**	**J**	< 0.66		**0.49**	**J**	< 0.66		**1.7**		< 0.66		< 0.66		**0.85**	**J**	< 8.70		< 1.70	
Propylene	< 0.26		< 0.26		< 0.26		0	0.26	< 0.26		< 0.26		< 0.26		< 0.26		< 0.26		< 0.26		< 0.26		NS		NS		NS	
sec-Butylbenzene	NS		NS		NS				NS		NS		NS		NS		NS		NS		NS		< 1.6		< 11.00		< 2.20	
Styrene	**0.52**	**J**	< 0.65		< 0.65		0	0.65	< 0.65		< 0.65		< 0.65		< 0.65		< 0.65		< 0.65		< 0.65		< 1.3		< 8.50		< 1.70	
tert-Butyl Alcohol	NS		NS		NS				NS		NS		NS		NS		NS		NS		NS		< 23		< 150.00		< 30.00	
tert-Butylbenzene	NS		NS		NS				NS		NS		NS		NS		NS		NS		NS		< 1.6		< 11.00		< 2.20	
Tetrachloroethylene	**0.83**	**J**	**110**		**180**		180		**460**		**140**		**290**		< 97.00		**470**		**240**		**380**		**120**		**170**		**23**	
Tetrahydrofuran	**72**		**2.4**		**5.1**		5.1		< 0.45		**0.96**		< 0.45		< 0.45		**1.8**		< 0.45		< 0.45		**0.68**	**J**	< 150.00		< 29.00	
Toluene	**5.7**		**7.2**		**2.3**		2.3		**1.5**		**1.9**		**2.3**		< 0.57		**6.1**		**2.1**		**0.84**		**4.1**		**0.79**	**J**	< 1.50	
trans-1,2-Dichloroethene	< 0.60		**0.64**		**1.5**		1.5		**1.1**		**1.4**		**1.7**		< 0.60		**3.2**		< 0.60		**1.3**		**0.45**	**J**	< 7.90		**1.1**	**J**
trans-1,3-Dichloropropene	< 0.69		< 0.69		< 0.69		0	0.69	< 0.69		< 0.69		< 0.69		< 0.69		< 0.69		< 0.69		< 0.69		< 1.4		< 9.10		< 1.80	
Trichloroethene	**0.71**	**J**	**350**		**220**		220		**1,200**		**180**		**210**		< 76.00		**480**		**250**		**470**		**220**		**170**		**160**	
Vinyl acetate	< 0.54		< 0.54		< 0.54		0	0.54	< 0.54		< 0.54		< 0.54		< 0.54		< 0.54		< 0.54		< 0.54		NS		NS		NS	
Vinyl Bromide	< 0.67		< 0.67		< 0.67		0	0.67	< 0.67		< 0.67		< 0.67		< 0.67		< 0.67		< 0.67		< 0.67		< 1.3		< 8.70		< 1.70	
Vinyl chloride	< 0.39		**4.7**		**2.3**		2.3		**3**		**1.7**		**3.9**		< 0.39		**2.3**		**2.6**		**1.4**		**1.8**		< 1.00		**2.1**	
Cumulative VOCs (µg/m^3)[2]	134.31		890.69		675.48				2,781.34		673.96		877.11		707.61		1,967.74		879.39		1,279.17		676.24		597.29		601.29	
Cum % Removal	NA		NA		NA				NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
Target VOCs (µg/m^3)[3]	1.54		680.64		541.50				2,501.10		531.40		701.70		510.00		1,383.20		690.00		1,161.30		520.45		500.00		454.10	
Target % Removal	NA		NA		NA				NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
Manholes Online[4]	MH-3[A]		MH-1[A]		MH-1, 3[A]				MH-1[M]		MH-1[A]		MH-1, 2, 3[M]		MH-1[M]		MH-1[M]		MH-1[A]		MH-1[A]		MH-1[A]		MH-1, 2[A]		MH-2[A]	

Table 6. Vapor Phase Analytical Sampling Results, Former Lockheed Martin French Road Facility, Utica, NY.

Volatile Organic[1] Compounds (µg/m^3)	Mid-Carbon																									
	1/28/2011	Q	2/23/2011	Q	4/5/2011	Q	7/7/2011	Q	10/12/2011	Q	1/26/2012	Q	4/5/2012	Q	7/12/2012	Q	10/17/2012	Q	1/15/2013	Q	4/24/2013	Q	7/11/2013	Q	10/23/2013	Q
1,1,1-Trichloroethane	< 0.83		< 0.83		< 0.83		< 0.83		< 0.83		< 0.83		< 0.83		< 0.83		< 0.83		< 0.83		< 1.1		< 1.10		< 1.10	
1,1,2,2-Tetrachloroethane	< 1.00		< 1.00		< 1.00		< 1.00		< 1.00		< 1.00		< 1.00		< 1.00		< 1.00		< 1.00		< 1.4		< 0.76		< 1.40	
1,1,2-Trichloroethane	< 0.83		< 0.83		< 0.83		< 0.83		< 0.83		< 0.83		< 0.83		< 0.83		< 0.83		< 0.83		< 1.1		< 0.87		< 1.10	
1,1-Dichloroethane	**0.49**	**J**	< 0.62		< 0.62		**0.66**		**10**		**2.5**		**0.82**		**46**		**6.2**		**2.8**		**1.3**		< 0.93		**16**	
1,1-Dichloroethene	< 0.60		< 0.60		< 0.60		< 0.60		< 0.60		< 0.60		< 0.60		**1.7**		< 0.60		< 0.60		< 0.79		< 3.40		< 0.79	
1,2,4-Trichlorobenzene	< 1.10		< 1.10		< 1.10		< 1.10		< 1.10		< 1.10		< 1.10		< 1.10		< 1.10		< 1.10		< 3.7		< 2.20		< 3.70	
1,2,4-Trimethylbenzene	**1.9**		**2.1**		**3**		**14**	**J**	< 0.75		**5.9**		**0.65**	**J**	**1.2**		**0.6**	**J**	**0.5**	**J**	**0.79**	**J**	< 1.00		< 0.98	
1,2-Dibromoethane	< 1.20		< 1.20		< 1.20		< 1.20		< 1.20		< 1.20		< 1.20		< 1.20		< 1.20		< 1.20		< 1.5		< 1.10		< 1.50	
1,2-Dichlorobenzene	< 0.92		< 0.92		< 0.92		< 0.92		< 0.92		< 0.92		< 0.92		< 0.92		< 0.92		< 0.92		< 1.2		< 1.60		< 1.20	
1,2-Dichloroethane	< 0.62		< 0.62		< 0.62		< 0.62		< 0.62		< 0.62		< 0.62		< 0.62		< 0.62		< 0.62		< 0.81		< 0.73		< 0.81	
1,2-Dichloropropane	< 0.70		< 0.70		< 0.70		< 0.70		< 0.70		< 0.70		< 0.70		< 0.70		< 0.70		< 0.70		< 0.92		< 1.10		< 0.92	
1,3,5-Trimethylbenzene	**0.8**		**0.8**		**1**		**4.4**		< 0.75		**1.4**		< 0.75		< 0.75		< 0.75		< 0.75		**0.27**	**J**	< 0.93		< 0.98	
1,3-butadiene	< 0.34		< 0.34		<0.34		< 0.34		< 0.34		< 0.34		< 0.34		< 0.34		< 0.34		< 0.34		< 0.44		< 0.55		< 0.44	
1,3-Dichlorobenzene	< 0.92		< 0.92		< 0.92		< 0.92		< 0.92		< 0.92		< 0.92		< 0.92		< 0.92		< 0.92		< 1.2		< 1.10		< 1.20	
1,4-Dichlorobenzene	< 0.92		< 0.92		< 0.92		< 0.92		< 0.92		< 0.92		< 0.92		< 0.92		< 0.92		< 0.92		< 1.2		< 1.10		< 1.20	
1,4-Dioxane	**2.3**		< 1.10		< 1.10		**1.3**		< 1.10		< 1.10		< 1.10		< 1.10		< 1.10		< 1.10		< 18		< 2.50		< 18.00	
2-Chlorotoluene	NS		NS		NS		NS		NS		NS		NS		NS		NS		NS		< 1.0		< 0.67		< 1.00	
2,2,4-trimethylpentane	< 0.71		**0.66**	**J**	< 0.71		< 0.71		< 0.71		< 0.71		< 0.71		< 0.71		< 0.71		< 0.71		**0.31**	**J**	< 0.70		**0.47**	**J**
4-ethyltoluene	**0.6**	**J**	**0.95**		**2.2**		**3.5**		< 0.75		**0.9**		< 0.75		< 0.75		< 0.75		< 0.75		< 0.98		< 0.74		< 0.98	
4-Isopropyltoluene	NS		NS		NS		NS		NS		NS		NS		NS		NS		NS		< 1.1		< 1.10		< 1.10	
Acetone	**20**		**37**		**7.5**		**25**		**3.5**		**4.3**		**1.9**		**4.2**		**4.4**		**10**		**21**		< 9.50		**14**	**B**
Allyl chloride	< 0.48		< 0.48		< 0.48		< 0.48		< 0.48		< 0.48		< 0.48		< 0.48		< 0.48		< 0.48		< 1.6		< 1.50		< 1.60	
Benzene	**2**		**0.81**		< 0.49		< 0.49		< 0.49		< 0.49		< 0.49		< 0.49		< 0.49		< 0.49		**0.63**		< 0.58		**0.28**	**J**
Benzyl chloride	< 0.88		< 0.88		< 0.88		< 0.88		< 0.88		< 0.88		< 0.88		< 0.88		< 0.88		< 0.88		< 1.0		< 1.10		< 1.00	
Bromodichloromethane	< 1.00		< 1.00		< 1.00		< 1.00		< 1.00		< 1.00		< 1.00		< 1.00		< 1.00		< 1.00		< 1.3		< 0.80		< 1.30	
Bromoform	< 1.60		< 1.60		< 1.60		< 1.60		< 1.60		< 1.60		< 1.60		< 1.60		< 1.60		< 1.60		< 2.1		< 0.74		< 2.10	
Bromomethane	< 0.59		< 0.59		< 0.59		< 0.59		< 0.59		< 0.59		< 0.59		< 0.59		< 0.59		< 0.59		< 0.78		< 1.00		< 0.78	
Carbon disulfide	< 0.47		< 0.47		< 0.47		**0.32**	**J**	**0.85**		< 0.47		< 0.47		**1.4**		< 0.47		< 0.47		< 1.6		< 0.62		**30**	
Carbon tetrachloride	**0.77**	**J**	< 0.96		< 0.96		< 0.96		< 0.96		< 0.96		< 0.96		< 0.96		< 0.96		< 0.96		< 0.25		< 0.82		< 0.25	
Chlorobenzene	< 0.70		< 0.70		< 0.70		< 0.70		< 0.70		< 0.70		< 0.70		< 0.70		< 0.70		< 0.70		< 0.92		< 0.60		< 0.92	
Chloroethane	< 0.40		< 0.40		< 0.40		< 0.40		**0.46**		**0.8**		**0.54**		< 0.40		< 0.40		< 0.40		**1.5**		< 0.87		**0.52**	**J**
Chloroform	**8.9**		< 0.74		< 0.74		< 0.74		**3.7**		**0.5**	**J**	< 0.74		**2.7**		**2.2**		< 0.74		**0.16**	**J**	< 1.20		**0.96**	
Chloromethane	**1.2**		**0.57**		< 0.31		< 0.31		**0.59**		< 0.31		**0.76**		< 0.31		**0.78**		< 0.31		**3.1**		< 0.70		**1.1**	
cis-1,2-Dichloroethene	**24**		< 0.60		< 0.60		**0.44**	**J**	**63**		**25**		**8.5**		**110**		**190**		**44**		**23**		< 3.30		**83**	
cis-1,3-Dichloropropene	< 0.69		< 0.69		< 0.69		< 0.69		< 0.69		< 0.69		< 0.69		< 0.69		< 0.69		< 0.69		< 0.91		< 0.59		< 0.91	
Cyclohexane	< 0.52		< 0.52		< 0.52		< 0.52		< 0.52		< 0.52		< 0.52		< 0.52		< 0.52		< 0.52		**1.7**		< 0.65		< 0.69	
Dibromochloromethane	< 1.30		< 1.30		< 1.30		< 1.30		< 1.30		< 1.30		< 1.30		< 1.30		< 1.30		< 1.30		< 1.7		< 0.94		< 1.70	
Ethyl acetate	< 0.92		< 0.92		< 0.92		< 0.92		< 0.92		< 0.92		< 0.92		< 0.92		< 0.92		< 0.92		NS		NS		NS	
Ethylbenzene	**0.97**		**4.5**		**8.2**		**7.5**		**0.71**		< 0.66		< 0.66		**0.66**		< 0.66		< 0.66		**0.76**	**J**	< 0.65		**0.2**	**J**
Freon 11	**3.1**		< 0.86		< 0.86		**9.9**		**1.5**		**0.86**		< 0.86		**8.5**		**1**		**0.63**	**J**	**1.3**		**3.1**	**J**	**5.9**	
Freon 113	**1.2**		< 1.20		< 1.20		< 1.20		**16**		**0.93**		< 1.20		**66**		**12**		**0.78**	**J**	**0.72**	**J**	**4.6**	**J**	**21**	
Freon 114	< 1.10		< 1.10		< 1.10		< 1.10		< 1.10		< 1.10		< 1.10		< 1.10		< 1.10		< 1.10		< 1.4		< 1.50		**0.23**	**J**
Freon 12	**3.6**		**4.2**		**4**		**5.7**		**3.8**		**2.6**		**1.6**		< 0.75		**2.5**		**2.9**		**3.1**		**2.4**	**J**	**2.5**	
Freon 22	NS		NS		NS		NS		NS		NS		NS		NS		NS		NS		4.4		< 0.81		**1.5**	**J**
Heptane	**0.62**		**0.79**		< 0.62		< 0.62		< 0.62		< 0.62		< 0.62		< 0.62		< 0.62		< 0.62		**2.3**		< 0.70		**0.83**	
Hexachloro-1,3-butadiene	< 1.60		< 1.60		< 1.60		< 1.60		< 1.60		< 1.60		< 1.60		< 1.60		< 1.60		< 1.60		< 2.1		< 3.10		< 2.10	
Hexane	**0.9**		< 0.54		< 0.54		< 0.54		< 0.54		< 0.54		< 0.54		< 0.54		< 0.54		< 0.54		**1.1**		< 0.70		**0.78**	
Isopropyl alcohol	< 0.37		**5.3**		< 0.37		< 0.37		< 0.37		< 0.37		**0.52**		< 0.37		**0.52**		< 0.37		**6.2**	**J**	< 1.90		**2**	**J**
m&p-Xylene	**2.4**		**34**	**J**	**20**		**75**		**3.1**		**1.9**		**1.2**	**J**	**3**		< 1.30		**0.62**	**J**	**2.8**		< 0.96		**0.55**	**J**
Methyl Butyl Ketone	< 1.20		< 1.20		< 1.20		< 1.20		< 1.20		< 1.20		< 1.20		< 1.20		< 1.20		< 1.20		**0.71**	**J**	< 1.60		< 2.00	
Methyl Ethyl Ketone	**3.1**		< 0.90		**1.9**		**1.7**		**0.87**	**J**	**0.9**		< 0.90		**0.9**		< 0.90		< 0.90		**4.5**		< 0.74		**4.9**	**B**
Methyl Isobutyl Ketone	< 1.20		< 1.20		< 1.20		< 1.20		< 1.20		< 1.20		< 1.20		< 1.20		< 1.20		< 1.20		< 2.0		< 1.40		< 2.00	
Methyl methacrylate	NS		NS		NS		NS		NS		NS		NS		NS		NS		NS		< 2.0		< 0.66		< 2.00	
Methyl tert-butyl ether	< 0.55		< 0.55		< 0.55		< 0.55		< 0.55		< 0.55		< 0.55		< 0.55		< 0.55		< 0.55		< 0.72		< 0.54		< 0.72	
Methylene chloride	**0.6**		**0.6**		< 0.53		**1.4**		**1.3**		**0.81**		**1.2**		**3.5**		**0.78**		**3.6**		**1.8**	**B**	**2.9**	**J B**	**1.2**	**J B**
n-Butane	NS		NS		NS		NS		NS		NS		NS		NS		NS		NS		**6.1**		< 2.00		**7**	
n-Butylbenzene	NS		NS		NS		NS		NS		NS		NS		NS		NS		NS		< 1.1		< 0.52		< 1.10	
n-Propylbenzene	NS		NS		NS		NS		NS		NS		NS		NS		NS		NS		< 0.98		< 1.20		< 0.98	
Naphthalene	NS		NS		NS		NS		NS		NS		NS		NS		NS		NS		< 2.6		< 0.64		< 2.60	
o-Xylene	**0.71**		**5.2**		**5.7**		**30**		**1.6**		**0.88**		**0.62**	**J**	**1.2**		< 0.66		< 0.66		**1**		< 0.69		**0.25**	**J**
Propylene	< 0.26		< 0.26		< 0.26		< 0.26		< 0.26		< 0.26		< 0.26		< 0.26		< 0.26		< 0.26		NS		NS		NS	
sec-Butylbenzene	NS		NS		NS		NS		NS		NS		NS		NS		NS		NS		< 1.1		< 0.82		< 1.10	
Styrene	**0.48**	**J**	< 0.65		< 0.65		< 0.65		< 0.65		< 0.65		< 0.65		< 0.65		< 0.65		< 0.65		**0.46**	**J**	< 0.47		< 0.85	
tert-Butyl Alcohol	NS		NS		NS		NS		NS		NS		NS		NS		NS		NS		**1.4**	**J**	< 1.20		**0.23**	**J**
tert-Butylbenzene	NS		NS		NS		NS		NS		NS		NS		NS		NS		NS		< 1.1		< 0.60		1.1	
Tetrachloroethylene	**8.8**		< 1.00		< 1.00		**1.5**		< 1.00		< 1.00		< 1.00		< 1.00		< 1.00		< 1.00		< 1.4		< 1.00		**3.1**	
Tetrahydrofuran	**12**		**5.5**		**8.4**		**4.2**		**6.5**		**1.8**		< 0.45		**5.8**		**2.7**		**1**		**2.1**	**J**	< 0.86		**1.1**	**J**
Toluene	**4**		**21**	**J**	**21**		**39**		**2.2**		**0.69**		**4.9**		**3.3**		**0.69**		< 0.57		**3.7**		< 0.53		**4**	
trans-1,2-Dichloroethene	**1**		< 0.60		< 0.60		< 0.60		**1.1**		< 0.60		< 0.60		**1.2**		< 0.60		< 0.60		**0.14**	**J**	< 0.91		**0.64**	**J**
trans-1,3-Dichloropropene	< 0.69		< 0.69		< 0.69		< 0.69		< 0.69		< 0.69		< 0.69		< 0.69		< 0.69		< 0.69		< 0.91		< 0.68		< 0.91	
Trichloroethene	**32**		< 0.82		< 0.82		**3.2**		**0.49**	**J**	< 0.82		< 0.82		< 0.82		**0.66**	**J**	< 0.82		**0.21**		< 0.49		**0.46**	
Vinyl acetate	< 0.54		< 0.54		< 0.54		< 0.54		< 0.54		< 0.54		< 0.54		< 0.54		< 0.54		< 0.54		NS		NS		NS	
Vinyl Bromide	< 0.67		< 0.67		< 0.67		< 0.67		< 0.67		< 0.67		< 0.67		< 0.67		< 0.67		< 0.67		< 0.87		< 0.83		< 0.87	
Vinyl chloride	< 0.39		**2.3**		**1.6**		**2.6**		**2.3**		**2.1**		**1**		**2.1**		**1.6**		**1.1**		**1.1**		< 0.23		**1.9**	
Cumulative VOCs (µg/m^3)[2]	138.44		126.28		84.50		231.32		123.57		54.77		24.21		263.36		226.63		67.93		99.66		13.00		207.70	
Cum % Removal	NA		86%		87%		92%		82%		94%		97%		87%		74%		95%		85%		98%		65%	
Target VOCs (µg/m^3)[3]	65.80		0.00		0.00		5.14		64.59		25.00		8.50		111.20		190.66		44.00		23.35		0.00		87.20	
Target % Removal	NA		100%		100%		100%		88%		96%		98%		92%		72%		96%		96%		100%		81%	
Manholes Online[4]	MH-3^A		MH-1^A		MH-1, 3^A		MH-1^M		MH-1^A		MH-1, 2, 3^M		MH-1^M		MH-1^M		MH-1^A		MH-1^A		MH-1^A		MH-1, 2^A		MH-2^A	

Table 6. Vapor Phase Analytical Sampling Results, Former Lockheed Martin French Road Facility, Utica, NY.

Volatile Organic[1] Compounds (µg/m^3)	Effluent																									
	1/28/2011	Q	2/23/2011	Q	4/5/2011	Q	7/7/2011	Q	10/12/2011	Q	1/26/2012	Q	4/5/2012	Q	7/12/2012	Q	10/17/2012	Q	1/15/2013	Q	4/24/2013	Q	7/11/2013	Q	10/23/2013	Q
1,1,1-Trichloroethane	< 0.83		< 0.83		< 0.83		< 0.83		< 0.83		< 0.83		< 0.83		< 0.83		**0.72**	**J**	< 0.83		< 1.1		< 1.10		< 1.10	
1,1,2,2-Tetrachloroethane	< 1.00		< 1.00		< 1.00		< 1.00		< 1.00		< 1.00		< 1.00		< 1.00		< 1.00		< 1.00		< 1.4		< 0.76		< 1.40	
1,1,2-Trichloroethane	< 0.83		< 0.83		< 0.83		< 0.83		< 0.83		< 0.83		< 0.83		< 0.83		< 0.83		< 0.83		< 1.1		< 0.87		< 1.10	
1,1-Dichloroethane	< 0.62		< 0.62		< 0.62		< 0.62		**17**		**2.4**		**0.82**		**12**		**35**		**4.6**		**1.7**		< 0.93		**7.8**	
1,1-Dichloroethene	< 0.60		< 0.60		< 0.60		< 0.60		**0.48**	**J**	< 0.60		< 0.60		**0.64**		**0.69**		< 0.60		< 0.79		< 3.40		< 0.79	
1,2,4-Trichlorobenzene	< 1.10		< 1.10		< 1.10		< 1.10		< 1.10		< 1.10		< 1.10		< 1.10		< 1.10		< 1.10		< 3.7		< 2.20		< 3.70	
1,2,4-Trimethylbenzene	**1.5**		**3.7**		**1.3**		**3.3**		< 0.75		< 0.75		< 0.75		**2.1**		**1.2**		**0.7**	**J**	**0.53**	**J**	< 1.00		< 0.98	
1,2-Dibromoethane	< 1.20		< 1.20		< 1.20		< 1.20		< 1.20		< 1.20		< 1.20		< 1.20		< 1.20		< 1.20		< 1.5		< 1.10		< 1.50	
1,2-Dichlorobenzene	< 0.92		< 0.92		< 0.92		< 0.92		< 0.92		< 0.92		< 0.92		< 0.92		< 0.92		< 0.92		< 1.2		< 1.60		< 1.20	
1,2-Dichloroethane	< 0.62		< 0.62		< 0.62		< 0.62		< 0.62		< 0.62		< 0.62		< 0.62		< 0.62		< 0.62		< 0.81		< 0.73		< 0.81	
1,2-Dichloropropane	< 0.70		< 0.70		< 0.70		< 0.70		< 0.70		< 0.70		< 0.70		< 0.70		< 0.70		< 0.70		< 0.92		< 1.10		< 0.92	
1,3,5-Trimethylbenzene	**0.65**	**J**	**1.4**		**0.65**	**J**	**1.3**		< 0.75		< 0.75		< 0.75		**0.95**		**0.75**		< 0.75		< 0.98		< 0.93		< 0.98	
1,3-butadiene	< 0.34		< 0.34		< 0.34		< 0.34		< 0.34		< 0.34		< 0.34		< 0.34		< 0.34		< 0.34		< 0.44		< 0.55		< 0.44	
1,3-Dichlorobenzene	< 0.92		< 0.92		< 0.92		< 0.92		< 0.92		< 0.92		< 0.92		< 0.92		< 0.92		< 0.92		< 1.2		< 1.10		< 1.20	
1,4-Dichlorobenzene	< 0.92		< 0.92		< 0.92		< 0.92		< 0.92		< 0.92		< 0.92		< 0.92		< 0.92		< 0.92		< 1.2		< 1.10		< 1.20	
1,4-Dioxane	**1.6**		< 1.10		< 1.10		< 1.10		< 1.10		< 1.10		< 1.10		< 1.10		< 1.10		< 1.10		< 18		< 2.50		**0.5**	**J**
2-Chlorotoluene	NS		NS		NS		NS		NS		NS		NS		NS		NS		NS		< 1.0		< 0.67		< 1.00	
2,2,4-trimethylpentane	< 0.71		**0.81**		< 0.71		< 0.71		< 0.71		< 0.71		< 0.71		< 0.71		< 0.71		< 0.71		**0.3**	**J**	< 0.70		**0.23**	**J**
4-ethyltoluene	< 0.75		**0.95**		**0.8**		**0.95**		< 0.75		< 0.75		< 0.75		**0.6**	**J**	< 0.75		< 0.75		< 0.98		< 0.74		< 0.98	
4-Isopropyltoluene	NS		NS		NS		NS		NS		NS		NS		NS		NS		NS		< 1.1		< 1.10		< 1.10	
Acetone	**100**		**27**		**8.5**		**6.2**		**4.4**		**5**		**3.9**		< 0.72		**140**		**4**		**18**		< 9.50		**15**	**B**
Allyl chloride	< 0.48		< 0.48		< 0.48		< 0.48		< 0.48		< 0.48		< 0.48		< 0.48		< 0.48		< 0.48		< 1.6		< 1.50		< 1.60	
Benzene	**1.1**		**1.2**		< 0.49		< 0.49		< 0.49		< 0.49		< 0.49		**0.49**		**0.36**	**J**	< 0.49		**0.57**	**J**	< 0.58		**0.33**	**J**
Benzyl chloride	< 0.88		< 0.88		< 0.88		< 0.88		< 0.88		< 0.88		< 0.88		< 0.88		< 0.88		< 0.88		< 1.0		< 1.10		< 1.00	
Bromodichloromethane	< 1.00		< 1.00		< 1.00		< 1.00		< 1.00		< 1.00		< 1.00		< 1.00		< 1.00		< 1.00		< 1.3		< 0.80		< 1.30	
Bromoform	< 1.60		< 1.60		< 1.60		< 1.60		< 1.60		< 1.60		< 1.60		< 1.60		< 1.60		< 1.60		< 2.1		< 0.74		< 2.10	
Bromomethane	< 0.59		< 0.59		< 0.59		< 0.59		< 0.59		< 0.59		< 0.59		< 0.59		< 0.59		< 0.59		< 0.78		< 1.00		< 0.78	
Carbon disulfide	< 0.47		< 0.47		< 0.47		**0.47**		**0.38**	**J**	< 0.47		< 0.47		**1.1**		**1.6**		< 0.47		< 1.6		< 0.62		**0.41**	**J**
Carbon tetrachloride	< 0.96		< 0.96		< 0.96		< 0.96		< 0.96		< 0.96		< 0.96		< 0.96		< 0.96		< 0.96		< 0.25		< 0.82		< 0.25	
Chlorobenzene	< 0.70		< 0.70		< 0.70		< 0.70		< 0.70		< 0.70		< 0.70		< 0.70		< 0.70		< 0.70		< 0.92		< 0.60		< 0.92	
Chloroethane	< 0.40		< 0.40		< 0.40		< 0.40		**0.54**		< 0.40		< 0.40		< 0.40		< 0.40		< 0.40		< 1.3		< 0.87		**0.47**	**J**
Chloroform	< 0.74		< 0.74		< 0.74		< 0.74		**4.2**		**0.55**	**J**	< 0.74		**2.9**		**6**		< 0.74		**0.26**	**J**	< 1.20		**0.16**	**J**
Chloromethane	**1.3**		**0.8**		**0.94**		**1.2**		**0.92**		< 0.31		**0.76**		< 0.31		< 0.31		< 0.31		1.4		< 0.70		**1.2**	
cis-1,2-Dichloroethene	**9.7**	**J**	< 0.60		< 0.60		< 0.60		**32**		**12**		**5**		**54**		**290**		**34**		**23**		< 3.30		**1.8**	
cis-1,3-Dichloropropene	< 0.69		< 0.69		< 0.69		< 0.69		< 0.69		< 0.69		< 0.69		< 0.69		< 0.69		< 0.69		< 0.91		< 0.59		< 0.91	
Cyclohexane	< 0.52		< 0.52		< 0.52		**0.66**		< 0.52		< 0.52		< 0.52		< 0.52		< 0.52		< 0.52		**2.1**		< 0.65		**0.17**	**J**
Dibromochloromethane	< 1.30		< 1.30		< 1.30		< 1.30		< 1.30		< 1.30		< 1.30		< 1.30		< 1.30		< 1.30		< 1.7		< 0.94		< 1.70	
Ethyl acetate	< 0.92		< 0.92		< 0.92		< 0.92		< 0.92		< 0.92		< 0.92		< 0.92		< 0.92		< 0.92		NS		NS			
Ethylbenzene	**0.97**		**2.4**		**1.5**		**1.8**		< 0.66		< 0.66		< 0.66		**1.3**		< 0.66		< 0.66		**0.67**	**J**	< 0.65		**0.18**	**J**
Freon 11	< 0.86		< 0.86		< 0.86		< 0.86		**1.9**		**1.4**		**0.63**	**J**	**12**		**3.2**		< 0.86		**0.5**	**J**	< 1.20		**2.5**	
Freon 113	< 1.20		< 1.20		< 1.20		< 1.20		**22**		**22**		< 1.20		**9.7**		**83**		**1**	**J**	**0.63**	**J**	< 1.50		**13**	
Freon 114	**0.85**	**J**	< 1.10		< 1.10		< 1.10		< 1.10		< 1.10		< 1.10		< 1.10		< 1.10		< 1.10		< 1.4		< 1.40		< 1.40	
Freon 12	**4.3**		**2.9**		**2.5**		**3.7**		**4.3**		**3.7**		**1.6**		< 0.75		**3.2**		**2.7**		**3.1**		**2.4**	**J**	**2.3**	**J**
Freon 22	NS		NS		NS		NS		NS		NS		NS		NS		NS		NS		**4**		< 0.81		**1.9**	
Heptane	< 0.62		< 0.62		< 0.62		< 0.62		< 0.62		< 0.62		< 0.62		< 0.62		< 0.62		< 0.62		**0.99**		< 0.70		**0.52**	**J**
Hexachloro-1,3-butadiene	< 1.60		< 1.60		< 1.60		< 1.60		< 1.60		< 1.60		< 1.60		< 1.60		< 1.60		< 1.60		< 2.1		< 3.10		< 2.10	
Hexane	< 0.54		< 0.54		< 0.54		< 0.54		< 0.54		< 0.54		< 0.54		< 0.54		< 0.54		< 0.54		**0.95**		< 0.70		**0.58**	**J**
Isopropyl alcohol	< 0.37		**6.7**		**4.2**		< 0.37		< 0.37		< 0.37		**1.3**		< 0.37		**20**		**1.5**		**7.2**	**J**	< 1.90		**6.7**	**J**
m&p-Xylene	**2.7**		**9.9**		**7.2**		**8.4**		< 1.30		**1.3**		< 1.30		**6**		**0.71**	**J**	**0.44**	**J**	**2.1**	**J**	< 0.96		**0.57**	**J**
Methyl Butyl Ketone	< 1.20		< 1.20		< 1.20		< 1.20		< 1.20		< 1.20		< 1.20		< 1.20		< 1.20		< 1.20		**0.23**	**J**	< 1.60		< 2.00	
Methyl Ethyl Ketone	**22**		< 0.90		**2**		**1.9**		**1.5**		< 0.90		< 0.90		**0.99**		**0.72**	**J**	**0.63**	**J**	< 1.5		< 0.74		**7.4**	**B**
Methyl Isobutyl Ketone	< 1.20		< 1.20		< 1.20		< 1.20		< 1.20		< 1.20		< 1.20		< 1.20		< 1.20		< 1.20		< 2.0		< 1.40		**0.18**	**J**
Methyl methacrylate	NS		NS		NS		NS		NS		NS		NS		NS		NS		NS		< 2.0		< 0.66		< 2.00	
Methyl tert-butyl ether	< 0.55		< 0.55		< 0.55		< 0.55		< 0.55		< 0.55		< 0.55		< 0.55		< 0.55		< 0.55		< 0.72		< 0.54		< 0.72	
Methylene chloride	< 0.53		**0.64**		**1.2**		**2.4**		**0.95**		**0.74**		**3.5**		**4.2**		**16**		**0.81**		**2.1**	**B**	**3.2**	**J B**	< 1.70	**J B**
n-Butane	NS		NS		NS		NS		NS		NS		NS		NS		NS		NS		**4.6**		< 2.00		**4.4**	
n-Butylbenzene	NS		NS		NS		NS		NS		NS		NS		NS		NS		NS		< 1.1		< 0.52		< 1.10	
n-Propylbenzene	NS		NS		NS		NS		NS		NS		NS		NS		NS		NS		< 0.98		< 1.20		< 0.98	
Naphthalene	NS		NS		NS		NS		NS		NS		NS		NS		NS		NS		< 2.6		< 0.64		**0.92**	**J**
o-Xylene	**0.88**		**3.8**		**1.8**		**2.5**		< 0.66		< 0.66		< 0.66		**2.2**		< 0.66		< 0.66		**0.63**	**J**	< 0.69		**0.21**	**J**
Propylene	< 0.26		< 0.26		< 0.26		< 0.26		< 0.26		< 0.26		< 0.26		< 0.26		< 0.26		< 0.26		NS		NS		NS	
sec-Butylbenzene	NS		NS		NS		NS		NS		NS		NS		NS		NS		NS		< 1.1		< 0.82		< 1.10	
Styrene	**0.65**		< 0.65		< 0.65		< 0.65		< 0.65		< 0.65		< 0.65		< 0.65		< 0.65		< 0.65		**0.45**	**J**	< 0.47		< 0.85	
tert-Butyl Alcohol	NS		NS		NS		NS		NS		NS		NS		NS		NS		NS		< 15		< 1.20		< 15.00	
tert-Butylbenzene	NS		NS		NS		NS		NS		NS		NS		NS		NS		NS		< 1.1		< 0.60		< 1.10	
Tetrachloroethylene	**1.9**		**0.83**	**J**	< 1.00		< 1.00		**1.2**		< 0.10		**1**		< 1.00		< 1.00		< 1.00		< 1.4		< 1.00		**0.16**	**J**
Tetrahydrofuran	**110**		**6.3**		**6**		**3.7**		**9.7**		**2.8**		**2.9**		**12**		**16**		**1.7**		**1.7**	**J**	< 0.86		**6**	**J**
Toluene	**2.1**		**8.1**		**1.4**		**2.5**		**0.69**		**0.73**		**0.57**		**6.9**		**2.4**		< 0.57		**4.1**		< 0.53		**1.8**	
trans-1,2-Dichloroethene	< 0.60		< 0.60		< 0.60		< 0.60		**0.44**	**J**	< 0.60		< 0.60		< 0.60		**1.3**		< 0.60		**0.16**	**J**	< 0.91		< 0.79	
trans-1,3-Dichloropropene	< 0.69		< 0.69		< 0.69		< 0.69		< 0.69		< 0.69		< 0.69		< 0.69		< 0.69		< 0.69		< 0.91		< 0.68		< 0.91	
Trichloroethene	**21**		< 0.82		< 0.82		< 0.82		< 0.82		< 0.82		**1.4**		< 0.82		**3.7**		< 0.82		< 0.21		< 0.49		**0.35**	
Vinyl acetate	< 0.54		< 0.54		< 0.54		< 0.54		< 0.54		< 0.54		< 0.54		< 0.54		< 0.54		< 0.54		NS		NS		NS	
Vinyl Bromide	< 0.67		< 0.67		< 0.67		< 0.67		< 0.67		< 0.67		< 0.67		< 0.67		< 0.67		< 0.67		< 0.87		< 0.83		< 0.87	
Vinyl chloride	< 0.39		**2.1**		**1**		**3.2**		**3.7**		**2.7**		**1.1**		**3.5**		**2.2**		**1.6**		**1.1**		< 0.23		**1.8**	
Cumulative VOCs (µg/m^3)[2]	283.20		79.53		40.99		44.18		106.30		55.32		24.48		133.57		628.75		53.68		83.07		5.60		79.54	
Cum % Removal	NA		91%		94%		98%		84%		94%		97%		93%		29%		96%		88%		99%		87%	
Target VOCs (µg/m^3)[3]	32.60		0.83		0.00		0.00		33.64		12.00		7.40		54.00		295.00		34.00		23.16		0.00		2.31	
Target % Removal	NA		100%		100%		100%		94%		98%		99%		96%		57%		97%		96%		100%		99%	
Manholes Online[4]	MH-3^A		MH-1^A		MH-1, 3^A		MH-1^M		MH-1^A		MH-1, 2, 3^M		MH-1^M		MH-1^M		MH-1^A		MH-1^A		MH-1^A		MH-1, 2^A		MH-2^A	

Notes:

1. Samples analyzed for VOCs using USEPA Method TO-15.
2. Cumulative VOCs calculated using only detected concentrations.
3. Target VOCs calculated using only detected concentrations of the following compounds: 1,1-dichloroethene, cis-1,2-dichloroethene, tetrachloroethylene, trans-1,2-dichloroethene, and trichloroethene.
4. Indicates which manhole(s) were online during the sampling event.

BOLD indicates detected concentrations.

Definitions:

< - less than reporting limit listed

J - Indicates that the result was less than the RL, but greater than or equal to the MDL and the concentration is an estimate.

B - Indicates that the compound was also identified in the method blank and sample.

$\mu g/m^3$ - micrograms per cubic meter

U - Indicates that compound was analyzed for but was not detected.

A - indicates that the system/manhole(s) was batching automatically during the sampling event

M - indicates that the air stripper/manhole(s) was turned on manually in order to collect a vapor sample.

NA - not applicable

NS - compound not sampled for

Table 7. Summary of Estimated Air Stripper Emissions, Former Lockheed Martin French Road Facility, Utica, NY.

Volatile Organic Compounds[1]	AGC[2] (µg/m^3)	SGC[2] (µg/m^3)	Maximum Effluent Concentration (µg/m^3)[3]	1/28/2011	2/23/2011	4/4/2011	7/7/2011	10/12/2011	1/26/2012	4/5/2012	7/12/2012	10/17/2012	1/15/2013	4/24/2013	7/11/2013	10/23/2013	Maximum Emission Rate (lb/day)[4]	Actual Annual Impact (µg/m^3)[5]	Actual Annual Impact Percentage of AGC (%)
				Result (µg/m3)	Result (µg/m3)	Result (µg/m3)	Result (µg/m3)	Result (µg/m3)	Result (µg/m3)	Result (µg/m3)	Result (µg/m3)	Result (µg/m3)	Result (µg/m3)	Result (µg/m3)	Result (µg/m3)	Result (µg/m3)			
1,1,1-Trichloroethane	5,000	9,000	0.72	ND	ND	ND	ND	ND	ND	ND	ND	**0.72**	ND	ND	ND	ND	4.88E-05	5.70E-05	0.00
1,1-Dichloroethane	0.63	-	35	ND	ND	ND	ND	**17**	**2.4**	**0.82**	**12**	**35**	**4.6**	**1.7**	ND	**7.8**	2.37E-03	2.77E-03	0.44
1,1-Dichloroethene	70	-	0.69	ND	ND	ND	ND	ND	ND	ND	**0.64**	**0.69**	ND	ND	ND	ND	4.68E-05	5.46E-05	0.00
1,2,4-Trimethylbenzene	290	-	3.7	**1.5**	**3.7**	**1.3**	**3.3**	ND	ND	ND	**2.1**	**1.2**	**0.7**	**0.53**	ND	ND	2.51E-04	3.05E-04	0.00
1,3,5-Trimethylbenzene	290	-	1.4	**0.65 J**	**1.4**	**0.65 J**	**1.3**	ND	ND	ND	**0.95**	**0.75**	ND	ND	ND	ND	9.49E-05	1.15E-04	0.00
1,4-Dioxane	0.13	3,000	1.6	**1.6**	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	**0.5**	1.08E-04	1.32E-04	0.10
2,2,4-trimethylpentane	3,300	-	0.81	ND	**0.81**	ND	ND	ND	ND	ND	ND	ND	ND	**0.3**	ND	**0.23**	5.49E-05	6.67E-05	0.00
4-ethyltoluene	-	-	0.95	ND	**0.95**	**0.8**	**0.95**	ND	ND	ND	**0.6**	ND	ND	ND	ND	ND	6.44E-05	7.82E-05	-
Acetone	28,000	180,000	140	**100**	**27**	**8.5**	**6.2**	**4.4**	**5**	**3.9**	ND	**140**	**4**	**18**	ND	**15**	9.49E-03	1.15E-02	0.00
Benzene	0.13	1,300	1.2	**1.1**	**1.2**	ND	ND	ND	ND	ND	**0.49**	**0.36**	ND	**0.57**	ND	**0.33**	8.14E-05	9.88E-05	0.08
Carbon disulfide	700	6,200	1.6	ND	ND	ND	**0.47**	ND	ND	ND	**1.1**	**1.6**	ND	ND	ND	**0.41**	1.08E-04	1.32E-04	0.00
Chloroform	0.043	150	6	ND	ND	ND	ND	ND	ND	ND	**2.9**	**6**	ND	**0.26**	ND	**0.16**	4.07E-04	4.94E-04	1.15
Chloromethane	90	22,000	1.4	**1.3**	**0.8**	**0.94**	**1.2**	**0.92**	ND	**0.76**	ND	ND	ND	1.4	ND	**1.2**	9.49E-05	1.15E-04	0.00
cis-1,2-Dichloroethene	63	-	290	**9.7 J**	ND	ND	ND	**32**	**12**	**5**	**54**	**290**	**34**	**23**	ND	**1.8**	1.97E-02	2.39E-02	0.04
Cyclohexane	6,000	-	2.1	ND	ND	ND	**0.66**	ND	ND	ND	ND	ND	ND	**2.1**	ND	**0.17**	1.42E-04	1.73E-04	0.00
Ethylbenzene	1,000	54,000	2.4	**0.97**	**2.4**	**1.5**	**1.8**	ND	ND	ND	**1.3**	ND	ND	**0.67**	ND	**0.18**	1.63E-04	1.98E-04	0.00
Freon 11	1,000	68,000	12	ND	ND	ND	ND	ND	**1.4**	**0.63 J**	**12**	**3.2**	ND	**0.5**	ND	**2.5**	8.14E-04	9.88E-04	0.00
Freon 113	180,000	960,000	83	ND	ND	ND	ND	ND	**22**	ND	**9.7**	**83**	**1**	**0.63**	ND	**13**	5.63E-03	6.83E-03	0.00
Freon 12	12,000	-	4.3	**4.3**	**2.9**	**2.5**	**3.7**	**4.3**	**3.7**	**1.6**	ND	**3.2**	**2.7**	**3.1**	**2.4**	**2.3**	2.92E-04	3.54E-04	0.00
Freon 22	50,000	-	4	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	**4**	ND	**1.9**	2.71E-04	3.29E-04	0.00
Heptane	3,900	210,000	0.99	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	**0.99**	ND	**0.52**	6.71E-05	8.15E-05	0.00
Hexane	700	-	0.95	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	**0.95**	ND	**0.58**	6.44E-05	7.82E-05	0.00
Isopropyl alcohol	7,000	98,000	20	ND	**6.7**	**4.2**	ND	ND	ND	**1.3**	ND	**20**	**1.5**	**7.2**	ND	**6.7**	1.36E-03	1.65E-03	0.00
m&p-Xylene	100	4,300	9.9	**2.7**	**9.9**	**7.2**	**8.4**	ND	**1.3**	ND	**6**	**0.71**	**0.44**	**2.1**	ND	**0.57**	6.71E-04	8.15E-04	0.00
Methyl Butyl Ketone	30	4,000	0.23	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	**0.23**	ND	ND	1.56E-05	1.89E-05	0.00
Methyl Ethyl Ketone	5,000	13,000	22	**22**	ND	**2**	**1.9**	**1.5**	ND	ND	**0.99**	**0.72**	**0.63**	ND	ND	**7.4**	1.49E-03	1.81E-03	0.00
Methylene chloride	2.1	14,000	16	ND	**0.64**	**1.2**	**2.4**	**0.95**	**0.74**	**3.5**	**4.2**	**16**	**0.81**	**2.1**	**3.2**	ND	1.08E-03	1.32E-03	0.06
n-Butane	57,000	-	4.6	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	**4.6**	ND	ND	3.12E-04	3.79E-04	0.00
o-Xylene	100	4,300	3.8	**0.88**	**3.8**	**1.8**	**2.5**	ND	ND	ND	**2.2**	ND	ND	**0.63**	ND	**0.21**	2.58E-04	3.13E-04	0.00
Styrene	1,000	17,000	0.65	**0.65**	ND	ND	ND	ND	ND	ND	ND	ND	ND	**0.45**	ND	ND	4.41E-05	5.35E-05	0.00
Tetrachloroethylene	1	1,000	1.9	**1.9**	**0.83 J**	ND	ND	1.2	ND	**1**	ND	ND	ND	ND	ND	**0.16**	1.29E-04	1.56E-04	0.02
Tetrahydrofuran	350	30,000	110	**110**	**6.3**	**6**	**3.7**	**9.7**	**2.8**	**2.9**	**12**	**16**	**1.7**	**1.7**	ND	**6**	7.46E-03	9.06E-03	0.00
Toluene	5,000	37,000	8.1	**2.1**	**8.1**	**1.4**	**2.5**	**0.69**	**0.73**	**0.57**	**6.9**	**2.4**	ND	**4.1**	ND	**1.8**	5.49E-04	6.67E-04	0.00
trans-1,2-Dichloroethene	63	-	1.3	ND	ND	ND	ND	ND	ND	ND	ND	**1.3**	ND	**0.16**	ND	ND	8.81E-05	1.07E-04	0.00
Trichloroethene	0.5	14,000	21	**21**	ND	ND	ND	ND	ND	**1.4**	ND	**3.7**	ND	ND	ND	**0.35**	1.42E-03	1.73E-03	0.35
Vinyl chloride	0.1	180,000	37	ND	**2.1**	**1**	**3.2**	**37**	**2.7**	**1.1**	**3.5**	**2.2**	**1.6**	**1.1**	ND	**1.8**	2.51E-03	3.05E-03	3.05

Notes:

1. Volatile organic compounds shown are only those detected in effluent samples during 2011 through 2013
2. AGC and SGC values obtained from NYSDEC DAR-1 AGC/SGC Tables, dated 9/10/07.
3. Concentrations shown for each volatile organic compound are the maximum concentrations detected from 2011 through 2013.
4. Maximum emission rate calculated using the maximum vapor phase concentrations for each volatile organic compound and the average instantaneous vapor phase effluent flow rate (756 scfm) during 2012. Note that the system is not operated continuously, so the actual annual impact estimated in this table is calculated using a significantly higher volume of air than in actually emitted by the system.
5. Actual annual impact calculated by following procedures described in NYSDEC DAR-1 Guidelines for the Control of Toxic Ambient Air Contaminants (NYSDEC 1991). Note effective stack height of 28 feet.

Definitions:

< - less than laboratory detection limit listed
"-" - indicates no guideline as been established
AGC - Annual Guideline Concentration
J - Indicates concentration is estimated
lb/day - pounds per day
ND - non-detect
Q - data qualifier
SGC - Short-term Guideline Concentration
µg/m^3 - micrograms per cubic meter

Table 8. Sequestering Agent Consumption Summary, Former Lockheed Martin French Road Facility, Utica, NY.

Chemical Name - ARIES 2908
Chemical Specific Gravity - 1.04 to 1.09 1.065
Specific Weight of Water @ 60°F 8.3378 (lb/gallon)
Specific Weight of Chemical @ 60°F 8.8798 (lb/gallon)

Date	Drum #	Days	Volume in 30 Gallon Drum (gal.)	% Full	Δ Volume (gal.)	Δ Lbs	Consumption Rate (lbs/day)[1]	MH-1 Total Flow (gallons)	MH-2 Total Flow (gallons)	MH-3 Total Flow (gallons)	∑ Total Flows (gallons)	Δ Total Flow	Dose Rate This Period (ppm)[2]	Notes
4/20/2011	1	-	30	100%	-	-	-	51,271,950	9,102,881	224,649	60,599,480	-	-	Brought sequestering agent online for first time.
5/19/2011	1	29	18.5	62%	11.5	102.1	3.5	51,670,347	9,169,542	455,374	61,295,263	695,783	16.5	
6/2/2011	1	14	14.1	47%	4.4	39.1	2.8	51,837,640	9,189,887	534,242	61,561,769	266,506	16.5	
7/7/2011	1	35	12	40%	2.1	18.6	0.5	52,075,707	9,227,668	672,141	61,975,516	413,747	5.1	Under dosing due to CFP being offline due to noted past alarms.
8/11/2011	1	35	7	23%	5	44.4	1.3	52,243,445	9,265,879	787,928	62,297,252	321,736	15.5	
9/8/2011	1	28	0	0%	7	62.2	2.2	52,508,569	9,342,539	966,290	62,817,398	520,146	13.5	Drum #1 empty.
NEW DRUM ONLINE														
9/9/2011	2	-	30	100%	-	-	-	52,552,901	9,347,402	986,141	62,886,444	-	-	Brought Drum #2 online.
9/26/2011	2	17	26	87%	4	35.5	2.1	52,717,931	9,374,727	1,081,024	63,173,682	287,238	13.9	Low sequestering agent flow alarm occurs due to solidified chemical. See noted 3.
10/6/2011	2	10	26	87%	0	0.0	0.0	52,842,625	9,395,515	1,142,812	63,380,952	207,270	0.0	See Note 3.
NEW DRUM ONLINE														
10/6/2011	3	-	30	100%	-	-	-	52,842,625	9,395,515	1,142,812	63,380,952	-	-	Cleaned and inspected fittings/tubing; brought Drum #3 online.
11/1/2011	3	26	26	87%	4	35.5	1.4	53,071,145	9,435,095	1,258,735	63,764,975	384,023	10.4	Continue using 3rd drum.
12/1/2011	3	30	0	0%	26	230.9	7.7	53,349,688	9,469,794	1,371,989	64,191,471	426,496	61.0	3rd drum empty, reuse 2nd drum that was taken offline on 10/6/11
NEW/OLD DRUM ONLINE														
12/1/2011	2	-	26	87%	-	-	-	53,349,688	9,469,794	1,371,989	64,191,471	-	-	3rd drum empty, reuse 2nd drum that was taken offline on 10/6/11
12/22/2011	2		22	73%	4	35.5	1.7	53,525,286	9,491,900	1,437,180	64,454,366	262,895	15.2	
2011 Total	**-**	**246**	**-**	**-**	**68**	**603.8**	**-**	**-**	**-**	**-**	**-**	**3,854,886**	**17.6**	Through 12/22/2011
1/27/2012	2	36	15	50%	7	62.2	1.7	53,871,038	9,542,467	1,558,697	64,972,202	517,836	13.5	
2/9/2012	2	13	10	33%	5	44.4	3.4	54,009,006	9,573,810	1,612,670	65,195,486	223,284	22.4	
3/1/2012	2	21	7.5	25%	2.5	22.2	1.1	54,180,412	9,596,526	1,671,517	65,448,455	252,969	9.9	
4/5/2012	2	35	0	0%	7.5	66.6	1.9	54,447,552	9,635,004	1,770,699	65,853,255	404,800	18.5	Drum # 2 empty. Unmeasured volume of solidified chemical in bottom of drum; actual volume remaining greater than 0. Calculated dose rate assumes volume remaining of 0.
NEW DRUM OLINE														
4/5/2012	4	-	30	100%	-	-	-	54,447,552	9,635,004	1,770,699	65,853,255	-	-	Brought Drum #4 online.
5/1/2012	4	26	27.5	92%	2.5	22.2	0.9	54,595,683	9,661,648	1,833,036	66,090,367	237,112	10.5	Drum noted to be under vacuum due to changes in temperatures and not properly vented.
6/7/2012	4	37	18	60%	9.5	84.4	2.3	54,904,479	9,710,985	1,975,634	66,591,098	500,731	19.0	
7/12/2012	4	35	13.7	46%	4.3	38.2	1.1	55,041,035	9,738,010	2,049,067	66,828,112	237,014	18.1	
8/15/2012	4	34	9	30%	4.7	41.7	1.2	55,163,445	9,766,492	2,138,534	67,068,471	240,359	19.6	
9/11/2012	4	27	6	20%	3	26.6	1.0	55,259,345	9,790,891	2,208,922	67,259,158	190,687	15.7	
10/17/2012	4	36	0.5	2%	5.5	48.8	1.4	55,424,161	9,830,240	2,314,556	67,568,957	309,799	17.8	
10/19/2012	4	2	0	0%	0.5	4.4	2.2	55,441,907	9,832,600	2,326,244	67,600,751	31,794	15.7	
NEW DRUM OLINE														
10/19/2012	5	-	30	100%	-	-	-	55,441,907	9,832,600	2,326,244	67,600,751	-	-	Brought Drum #5 online.
11/8/2012	5	20	27	90%	3	26.6	1.3	55,542,079	9,852,388	2,383,045	67,777,512	176,761	17.0	
12/6/2012	5	28	23	77%	4	35.5	1.3	55,665,689	9,874,745	2,438,585	67,979,019	201,507	19.9	
2012 Total	**-**	**350**	**-**	**-**	**59**	**523.9**	**-**	**-**	**-**	**-**	**-**	**3,524,653**	**16.7**	Through 12/6/2012
1/15/2013	5	40	12.5	42%	10.5	93.2	2.3	56,064,192	9,937,367	2,600,260	68,601,819	622,800	16.9	
2/7/2013	5	23	6	20%	6.5	57.7	2.5	56,285,230	9,972,998	2,675,400	68,933,628	331,809	19.6	Includes flow totals from loaner PLC from 2/6 through 2/11.
3/5/2013	5	26	0	0%	6	53.3	2.0	56,492,292	10,000,253	2,759,940	69,252,485	318,857	18.8	
NEW DRUM OLINE														
3/5/2013	6	-	29	97%	-	-	-	56,490,599	10,000,253	2,759,940	69,250,792	-	-	Brought Drum #6 online. New drum starting only with 29 gallons. Flow monitoring device in fault mode (FA-200), which turns off the CFP.
3/22/2013	6	17	29	97%	0	0.0	0.0	56,582,710	10,017,495	2,798,316	69,398,521	147,729	0.0	FA-200 fault cleared locally, CFP resumed sequestering agent dosing.
4/24/2013	6	33	18.7	62%	10.3	91.5	2.8	56,960,249	10,083,948	2,946,781	69,990,978	592,457	17.4	
5/9/2013	6	15	15	50%	3.7	32.9	2.2	57,068,038	10,097,769	2,991,283	70,157,090	166,112	22.3	
6/7/2013	6	29	7	23%	8	71.0	2.4	57,299,819	10,144,690	3,098,532	70,543,041	385,951	20.7	Stroke length on CFP reduced from 100% to 85%
6/12/2013	6	5	5	17%	2	17.8	3.6	57,352,931	10,154,228	3,126,877	70,634,036	90,995	22.0	
6/25/2013	6	13	0	0%	5	44.4	3.4	57,552,196	10,187,599	3,219,750	70,959,545	325,509	15.4	
NEW DRUM OLINE														
6/26/2013	7	-	29	97%	-	-	-	57,584,303	10,192,884	3,234,698	71,011,885	-	-	Drum #7 (29 gallons) put into service.
7/11/2013	7	15	20.9	70%	8.1	72.0	4.8	57,900,710	10,241,119	3,380,560	71,522,389	510,504	15.9	
8/8/2013	7	28	15.5	52%	5.4	47.6	1.7	58,109,657	10,279,795	3,485,922	71,875,374	352,985	15.2	
9/10/2013	7	33	9.6	32%	5.9	52.3	1.6	58,313,137	10,332,018	3,592,395	72,237,550	362,176	16.3	
10/22/2013	7	42	3.2	11%	6.4	57.1	1.4	58,574,976	10,387,447	3,720,796	72,683,219	445,669	14.4	
11/5/2013	7	14	1.6	5%	1.6	14.3	1.0	58,651,023	10,402,542	3,756,290	72,809,855	126,636	12.7	
11/14/2013	7	9	0.0	0%	1.6	14.3	1.6	58,715,549	10,412,625	3,785,392	72,913,566	103,711	15.5	
NEW DRUM OLINE														
11/14/2013	8	-	30	100%	-	-	-	58,715,549	10,412,625	3,785,392	72,913,566	-	-	Drum #8 (30 gallons) put into service.
12/3/2013	8	19	27.1	90%	2.9	25.5	1.3	58,855,332	10,439,113	3,845,245	73,139,690	226,124	12.7	
2013 Total	**-**	**362**	**-**	**-**	**83.875**	**540.6**	**-**	**-**	**-**	**-**	**-**	**5,160,671**	**16.3**	Through 12/3/2013

Notes:

1) Maximum allowable daily loading rate of 12.5 lbs/day per WTC Usage Form dated 4/11/11.

2) Sequestering agent dosing rate is setup to be proportional to the aggregate flow transmitter value (not shown). However, this table utilizes the sum of the three individual pumping manhole flow transmitter values to calculate dose rate.

3) Sequestering agent low flow alarm occurred on 9/26/11 due to partial solidification of chemical within suction/injection fittings and tubing. Inspection not conducted until 10/6/11, during which time the fittings and tubing were cleaned. Drum #2 was taken offline until vendor could troubleshoot observation, in the interim Drum #3 was brought online.

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Figures

CITY:(MAHWAH) DIV/GROUP:(ENRI- 1) DB:(JG LD:(Opt) PIC:(Opt) PM:(CM) TM:(BM) LYR:(Opt)ON=*;OFF=*REF*
G:\ENVCAD\Ma□wa□\ACT\NJ001000\0001\00001\2012-02\FIG 1- SITE LOCATION.dwg LAYOUT: 1 SAVED: 2/20/2012 3:3□PM ACADVER: 18.1S (LMS TECH) PAGESETUP: ---- PLOTSTYLETABLE: ---- PLOTTED: 2/20/2012 3:3□PM BY: GONZALEZ, JAMES
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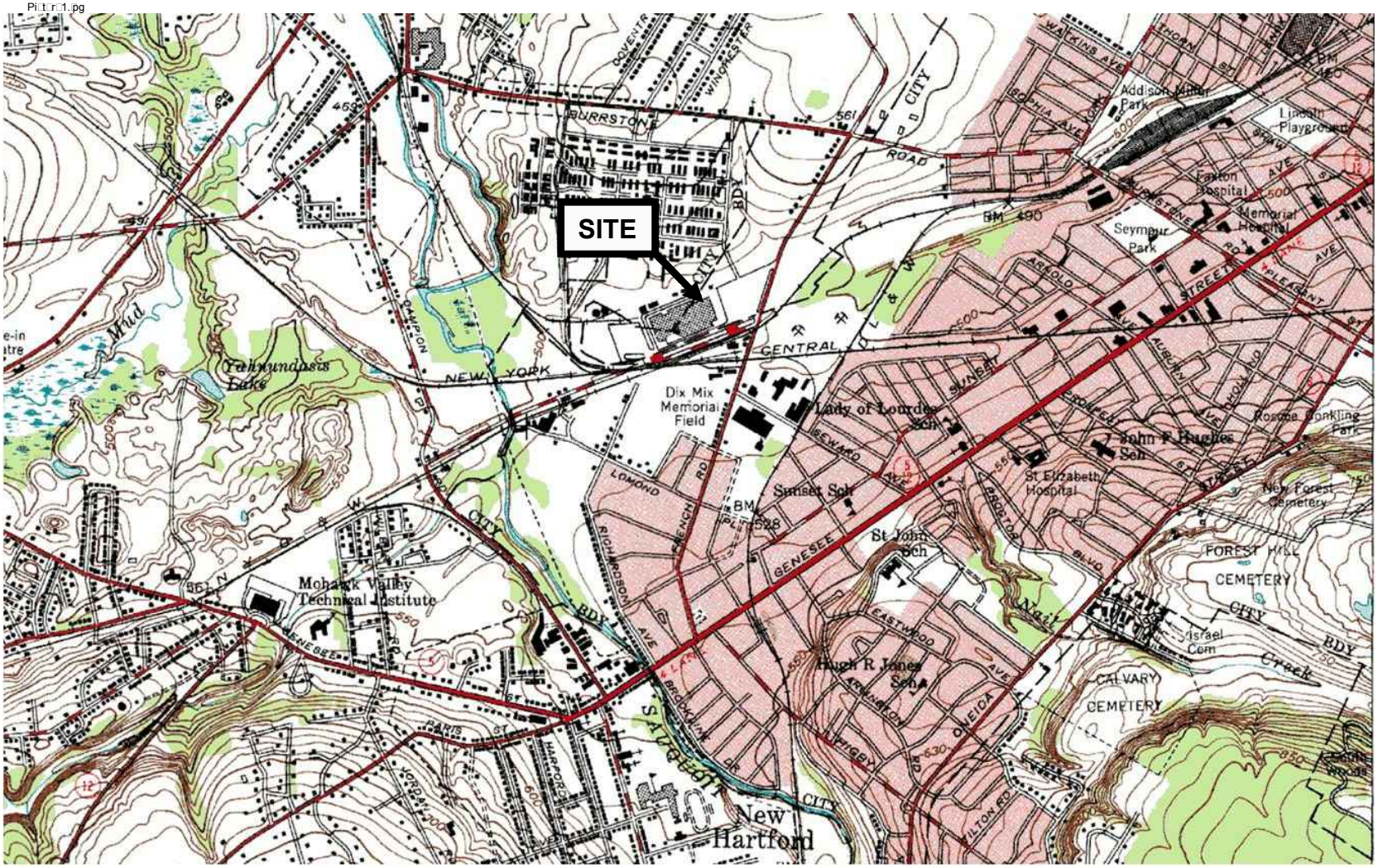


0 12000 24000
SCALE IN FEET

GROUNDWATER COLLECTION AND TREATMENT SYSTEM ANNUAL REPORT
FORMER LOCKHEED MARTIN, FRENCH ROAD PROPERTY
UTICA, NEW YORK

SITE LOCATION MAP

ARCADIS

FIGURE
1

LEGEND:

BUILDING	MW-9 MONITORING WELL LOCATION
EDGE OF PAVEMENT	IW-1 INJECTION WELL
STORMWATER DRAINAGE SYSTEM	PZ-9 PIEZOMETER LOCATION
GROUNDWATER COLLECTION SYSTEM AND PIPING	SG-22 SOIL GAS PROBE LOCATION
MH-4 MANHOLE	QUARTERLY MONITORING
	SEMI ANNUAL MONITORING
	ANNUAL MONITORING

FORMER LOCKHEED MARTIN FRENCH ROAD FACILITY
UTICA, NEW YORK

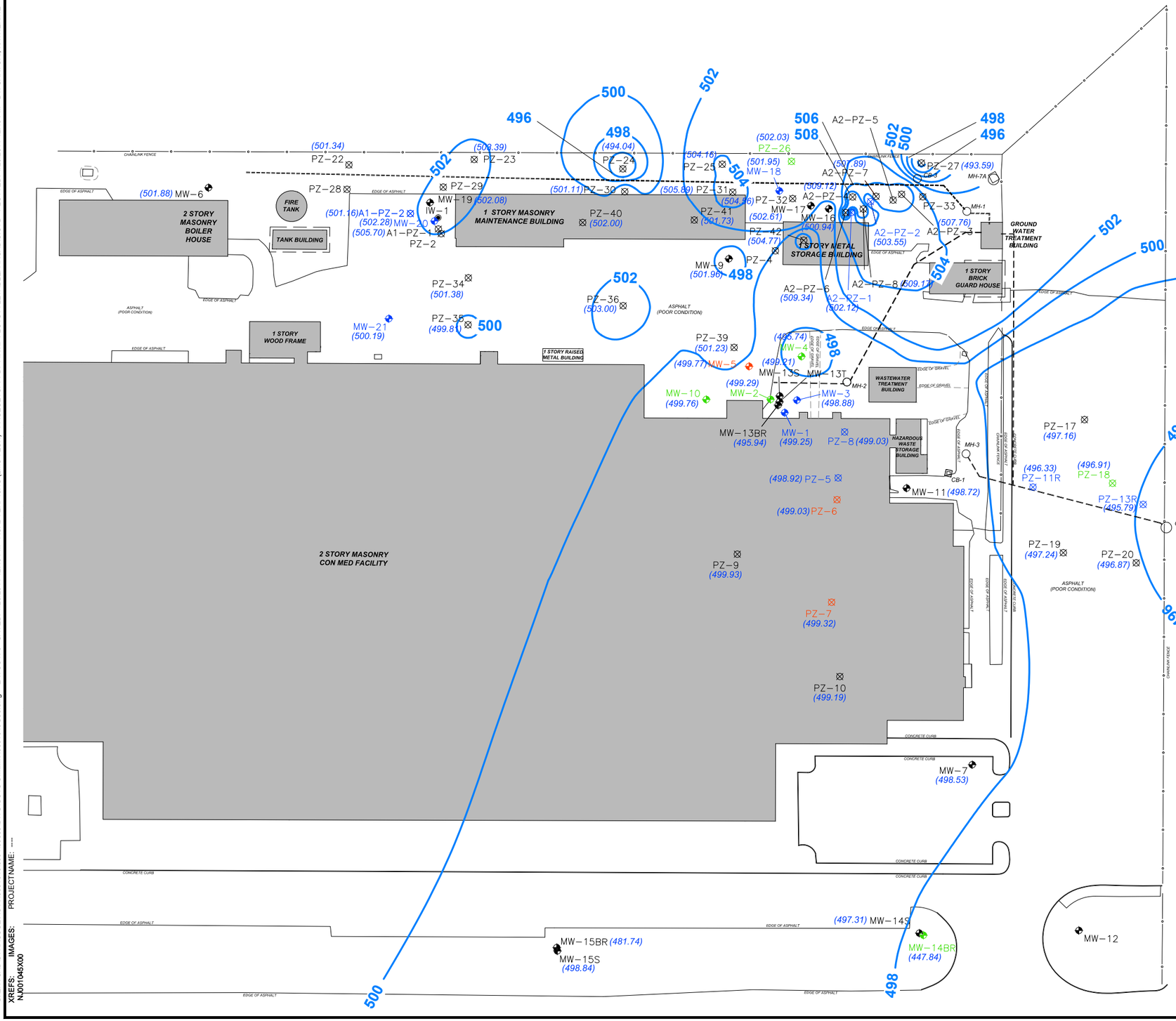
GROUNDWATER COLLECTION AND TREATMENT SYSTEM ANNUAL REPORT

SITE PLAN AND GROUNDWATER COLLECTION AND TREATMENT SYSTEM LAYOUT

ARCADIS

FIGURE

2



LEGEND:

- IW–1 — INJECTION WELL LOCATION
- MW–10 — MONITORING WELL LOCATION
- PZ–9 — PIEZOMETER LOCATION
- QUARTERLY SAMPLING LOCATION
- SEMI ANNUAL SAMPLING LOCATION
- ANNUAL SAMPLING LOCATION
- (496.38) — QUARTERLY GROUNDWATER ELEVATION POINT (AMSL)
- 500 — GROUNDWATER ELEVATION CONTOUR (DASHED WHERE INFERRED)
- GROUNDWATER COLLECTION TRENCH
- FENCE LINE
- MH-2 — MANHOLE LOCATION

NOTES:

1. ALL WELLS AND PIEZOMETERS SHOWN ARE UTILIZED FOR QUARTERLY GROUND WATER ELEVATION MONITORING EXCEPT IW–1, MW–13BR, MW–14BR, AND MW–15BR.
2. WELLS MW–12, PZ–2, PZ–4, PZ–28 AND PZ–29 WERE UNABLE TO BE ACCESSED DUE TO SITE CONIDITIONS IN JANUARY 2013.
3. WELLS A2–PZ–5, PZ–21 AND PZ–33 WERE NOTED TO HAVE BEEN DRY IN JANUARY 2013.
4. THIS DRAWING IS REFERENCED HORIZONTALLY TO THE NORTH AMERICAN DATUM OF 1983 (NAD83) AND PROJECTED ON THE NEW YORK STATE PLAN COORDINATE SYSTEM (CENTRAL ZONE).
5. THE REFERENCED HORIZONTAL CONTROL STATION IS A GPS CONTINUOUSLY OPERATING REFERENCE STATION (CORS) DESIGNATED AS "ROME CORS ARP" (NYRM). NYRM IS A SPECIAL HORIZONTAL AND VERTICAL CONTROL STATION ESTABLISHED BY NATIONAL GEODETIC SURVEY IN JULY 1997.

0 50' 100'
GRAPHIC SCALE

FORMER LOCKHEED MARTIN, FRENCH ROAD FACILITY
UTICA, NEW YORK
2013 ANNUAL GCTS OM&M REPORT

JANUARY 2013 GROUNDWATER CONTOURS

ARCADIS

FIGURE 3

CITY:SYRACUSE_NY DIV/GROUP:ENVIRONMENTAL DB:J.GONZALEZ_K.SARTORI LD:J.BONSTEEL PIC:L.MCBURNEY PM:C.MOTTA TM:J.BONSTEEL LYR:(Opt)ON=*;OFF=*REF*
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XREFS: IMAGES: PROJECTNAME: ----
NJ001045X00

CITY OF UTICA

TOWN OF NEW HARTFORD

2 STORY MASONRY BOILER HOUSE

FIRE TANK

TANK BUILDING

1 STORY MASONRY MAINTENANCE BUILDING

1 STORY METAL STORAGE BUILDING

GROUND WATER TREATMENT BUILDING

1 STORY BRICK GUARD HOUSE

1 STORY WOOD FRAME

1 STORY RAISED METAL BUILDING

WASTEWATER TREATMENT BUILDING

HAZARDOUS WASTE STORAGE BUILDING

2 STORY MASONRY CON MED FACILITY

ASPHALT (POOR CONDITION)

CHAIN LINK FENCE

EDGE OF ASPHALT

EDGE OF GRAVEL

CONCRETE CURB

(502.00) MW-6

(500.67) PZ-28

PZ-22 (508.27)

PZ-23 (503.51)

PZ-29 (501.75)

MW-19 (501.98)

IW-1

(501.58) A1-PZ-2

(501.48) MW-20

(503.07) A1-PZ-1

(503.39) PZ-2

PZ-24 (464.12)

PZ-30 (500.90)

PZ-40 (502.08)

PZ-25 (504.03)

PZ-31 (505.12)

PZ-41 (501.99)

PZ-26 (501.69)

MW-18 (501.63)

PZ-32 (508.92)

MW-17 (504.68)

MW-16 (501.58)

(499.25)

A2-PZ-5 (502.61)

A2-PZ-7 (503.88)

A2-PZ-4

PZ-27 (493.51)

PZ-33 (DRY)

MH-7A

MH-1

A2-PZ-2 (503.10)

A2-PZ-3 (506.78)

PZ-42 (504.78)

PZ-4 (505.04)

MW-9 (502.43)

PZ-34 (501.47)

PZ-36 (503.83)

PZ-35 (503.98)

MW-21 (501.14)

A2-PZ-6 (509.35)

A2-PZ-8 (509.05)

A2-PZ-1 (505.10)

PZ-39 (501.82)

(500.76) MW-5

(496.28) MW-4

(499.40) MW-13S

MW-13T

MH-2

(NM) MW-2

MW-10 (500.13)

MW-3 (498.94)

MW-13BR (496.27)

MW-1 (499.45)

PZ-8 (498.65)

(498.52) PZ-5

(498.97) PZ-6

MW-11 (498.77)

PZ-9 (499.93)

PZ-7 (499.28)

PZ-10 (499.10)

MW-7 (498.58)

(497.42) MW-14S

MW-15BR (482.49)

MW-15S (499.01)

MW-14BR (452.60)

MW-12 (NM)

PZ-17 (497.47)

(495.45) PZ-11R

(497.03) PZ-18

PZ-13R (495.91)

PZ-19 (497.34)

PZ-20 (497.11)

PZ-21 (DRY)

MH-3

CB-1

CB-2

500

502

504

506

508

496

498

LEGEND:

- IW-1 — INJECTION WELL LOCATION
- MW-10 — MONITORING WELL LOCATION
- PZ-9 — PIEZOMETER LOCATION
- QUARTERLY SAMPLING LOCATION
- SEMI ANNUAL SAMPLING LOCATION
- ANNUAL SAMPLING LOCATION
- (496.38) — QUARTERLY GROUNDWATER ELEVATION POINT
- 500 — GROUNDWATER ELEVATION CONTOUR (DASHED WHERE INFERRED)
- GROUNDWATER COLLECTION TRENCH
- FENCE LINE
- MH-2 — MANHOLE LOCATION

NOTES:

1. ALL WELLS AND PIEZOMETERS SHOWN ARE UTILIZED FOR QUARTERLY GROUND WATER ELEVATION MONITORING EXCEPT IW-1, MW-13BR, MW-14BR, AND MW-15BR.
2. WELLS MW-2 AND MW-12 WERE UNABLE TO BE ACCESSED DUE TO SITE CONDITIONS IN APRIL 2013.
3. WELL PZ-21 WAS NOTED TO HAVE BEEN DRY IN APRIL 2013.

0 50' 100'

GRAPHIC SCALE

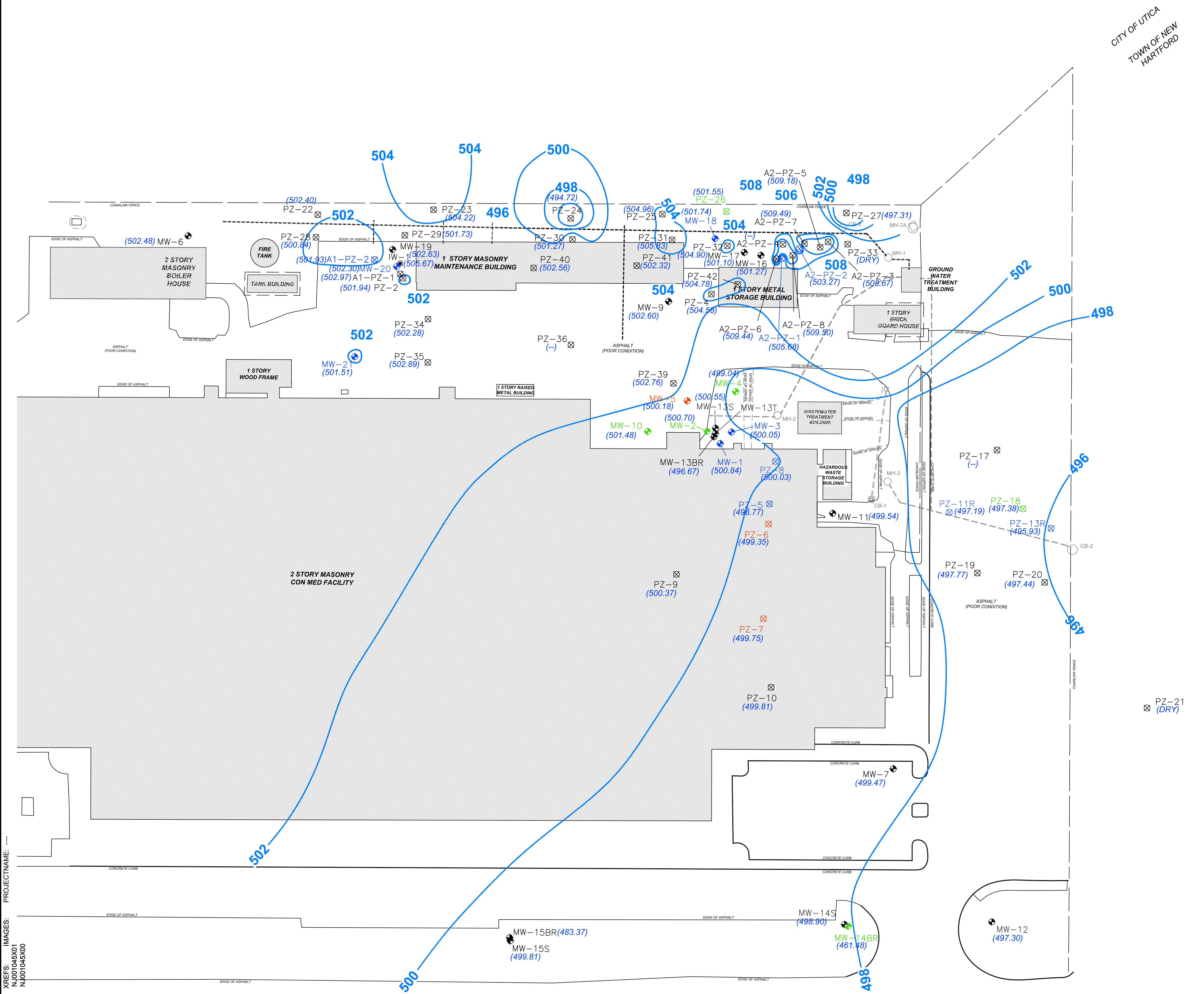
FORMER LOCKHEED MARTIN, FRENCH ROAD FACILITY
UTICA, NEW YORK

2013 ANNUAL GCTS OM&M REPORT

APRIL 2013 GROUNDWATER CONTOURS

ARCADIS

FIGURE 4



LEGEND:

- - - - -	GROUNDWATER COLLECTION TRENCH
— — —	FENCE LINE
MH-2 ○	MANHOLE LOCATION
IW-1 ◉	INJECTION WELL LOCATION
MW-10	MONITORING WELL LOCATION
PZ-9 ⊠	PIEZOMETER LOCATION
(blue)	QUARTERLY SAMPLING LOCATION
(red)	SEMI ANNUAL SAMPLING LOCATION
(green)	ANNUAL SAMPLING LOCATION
(495.93)	QUARTERLY GROUNDWATER ELEVATION POINT
500 ——	GROUNDWATER ELEVATION CONTOUR (DASHED WHERE INFERRED)
(--)	NOT MONITORED
(DRY)	NO MEASURABLE WATER

NOTES:

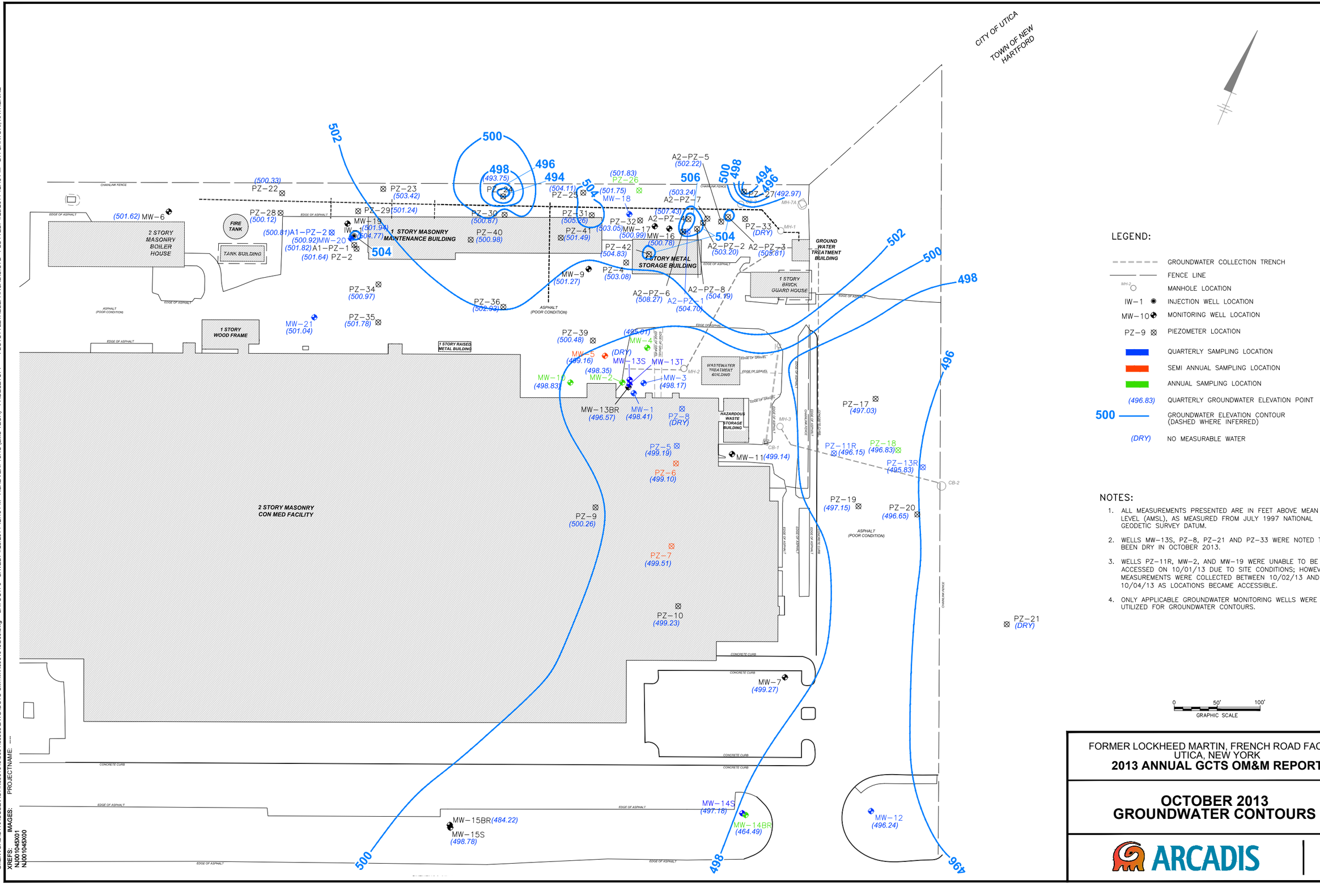
1. ALL MEASUREMENTS PRESENTED ARE IN FEET ABOVE MEAN SEA LEVEL (AMSL), AS MEASURED FROM JULY 1997 NATIONAL GEODETIC SURVEY DATUM.
2. WELLS PZ-21 AND PZ-33 WERE NOTED TO HAVE BEEN DRY IN JULY 2013.
3. WELLS PZ-17, PZ-36, AND A2-PZ-4 WERE UNABLE TO BE ACCESSED DUE TO SITE CONDITIONS IN JULY 2013.
4. ONLY APPLICABLE GROUNDWATER MONITORING WELLS WERE UTILIZED FOR GROUNDWATER CONTOURS.

FORMER LOCKHEED MARTIN, FRENCH ROAD FACILITY
UTICA, NEW YORK
2013 ANNUAL GCTS OM&M REPORT

JULY 2013 GROUNDWATER CONTOURS

ARCADIS

FIGURE
5



CITY:SYRACUSE_NY DIV/GROUP:ENVIRONMENTAL DB:J.GONZALEZ K.SARTORI LD:J.BONSTEEL PIC:L.MCBURNEY PM:C.MOTTA TM:J.BONSTEEL LYR:(On)ON=*;OFF=*REF*
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XREFS: PROJECTNAME: ----
IMAGES:
NJ001045X01
NJ001045X00

FORMER LOCKHEED MARTIN, FRENCH ROAD FACILITY
UTICA, NEW YORK
2013 ANNUAL GCTS OM&M REPORT

OCTOBER 2013 GROUNDWATER CONTOURS

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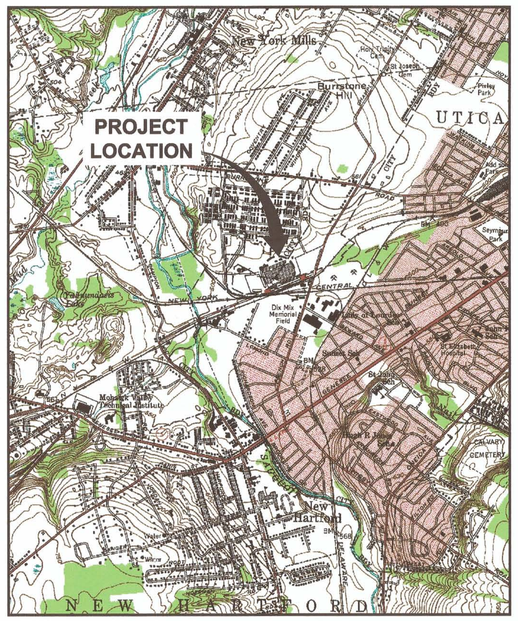
FIGURE
6

Appendix A

Record Drawings

RECORD DRAWINGS

GROUNDWATER COLLECTION AND TREATMENT SYSTEM AT FORMER LOCKHEED MARTIN FRENCH ROAD FACILITY



REFERENCE: BASE MAP USGS 7.5 MINUTE QUADRANGLE., UTICA WEST, 1955

LOCATION MAP

0 2000' 4000'

GRAPHIC SCALE

NEW YORK

DATE ISSUED
MARCH 2011

LOCKHEED MARTIN CORPORATION
UTICA, NEW YORK

ARCADIS

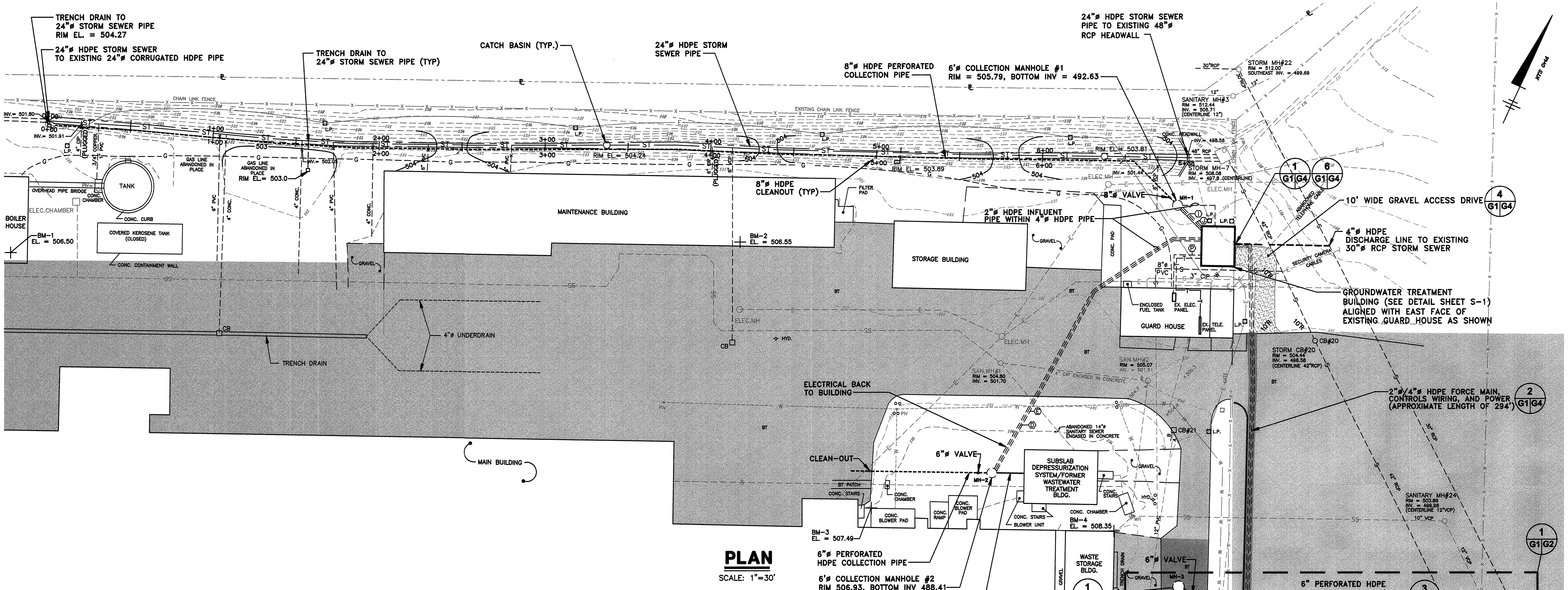
ARCADIS OF NEW YORK, INC.

INDEX TO DRAWINGS

RECORD DRAWINGS

TO THE BEST OUR KNOWLEDGE, INFORMATION AND BELIEF, THESE RECORD DRAWINGS SUBSTANTIALLY REPRESENT THE PROJECT AS CONSTRUCTED.

DATE: 06/13/2011 BY: _____



PLAN

SCALE: 1"=30'

GENERAL NOTES:

1. PROPERTY LINE IS SHOWN ON THE PLAN FOR REFERENCE PURPOSES ONLY.
2. THE LOCATION OF UNDERGROUND UTILITIES AND OTHER UNDERGROUND STRUCTURES WERE OBTAINED BY FIELD MEASUREMENT WHERE POSSIBLE, OTHERWISE OBTAINED FROM OTHER SOURCES AND ARE APPROXIMATE ONLY. OTHER UNDERGROUND UTILITIES MAY EXIST, THE LOCATION OF WHICH AT THIS TIME ARE UNKNOWN.
3. BASE MAP PREPARED FROM SURVEY INFORMATION GENERATED BY BLASLAND, BOUCK & LEE, INC. DATED 8/30/95. ELEVATIONS BASED ON BOILER HOUSE FIRST FLOOR ELEVATION OF 506.50 FROM A MAP BY O'BRIEN & GERE ENGINEERS ENTITLED "PAVEMENT AND DRAINAGE REHABILITATION PLAN" DATED 6/23/94. CONTOUR INTERVAL = 1 FOOT.
4. THE ELEVATION DATUM SHOWN IS BASED ON SURVEY COMPLETED ON OCTOBER 28, 2009 BY THEW ASSOCIATES, LPS.

LEGEND

- DISCHARGE WATER LINE
- GROUNDWATER COLLECTION LINE
- STORM SEWER PIPE
- ELECTRICAL CIRCUIT
- WATER LINE
- TELEPHONE LINE
- EXISTING SANITARY SEWER
- EXISTING STORM SEWER
- EXISTING WATER LINE
- EXISTING GAS LINE
- EXISTING ELECTRIC LINE
- EXISTING CHAIN LINK FENCE
- EXISTING PROPERTY LINE
- ACCESS DRIVE
- EXISTING BITUMINOUS PAVEMENT
- REPLACED ASPHALT
- HYD. EXISTING HYDRANT
- PIV EXISTING POSITION INDICATOR VALVE
- L.P. EXISTING LIGHT POLE
- MH-22 EXISTING MANHOLE
- CB#21 EXISTING CATCH BASIN

CITY: DIV/GROUP: DB: LD: PIC: PM: TM: LYR:ON=*;OFF=*REF*
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XREFS: X00-2 IMAGES: PROJECTNAME: —

GRAPHIC SCALE: 0 30' 60'

THIS BAR REPRESENTS ONE INCH ON THE ORIGINAL DRAWING: USE TO VERIFY FIGURE REPRODUCTION SCALE

No.	Date	Revisions	By	Ckd
3	03/23/11	AS-BUILT RECORD DRAWINGS	CM	MM
2	02/11/10	FINAL 100% REMEDIAL DESIGN SUBMITTAL TO NYSDEC	CM	MM
1	01/06/10	DRAFT 100% DESIGN WORK PLAN	CM	MM
0	12/02/09	DRAFT 60% DESIGN WORK PLAN	CM	MM

Professional Engineer's Name: MOH MOHIUDDIN PhD, PE, DEE
Professional Engineer's No.: 074527
State: NY | Date Signed: 06/13/2011 | Project Mgr.: P.MILIONIS
Designed by: T.CARIGNAN | Drawn by: J.GONZALEZ | Checked by: E.PANHORST

STATE OF NEW YORK · MOH MOHIUDDIN · 074527 · LICENSED PROFESSIONAL ENGINEER

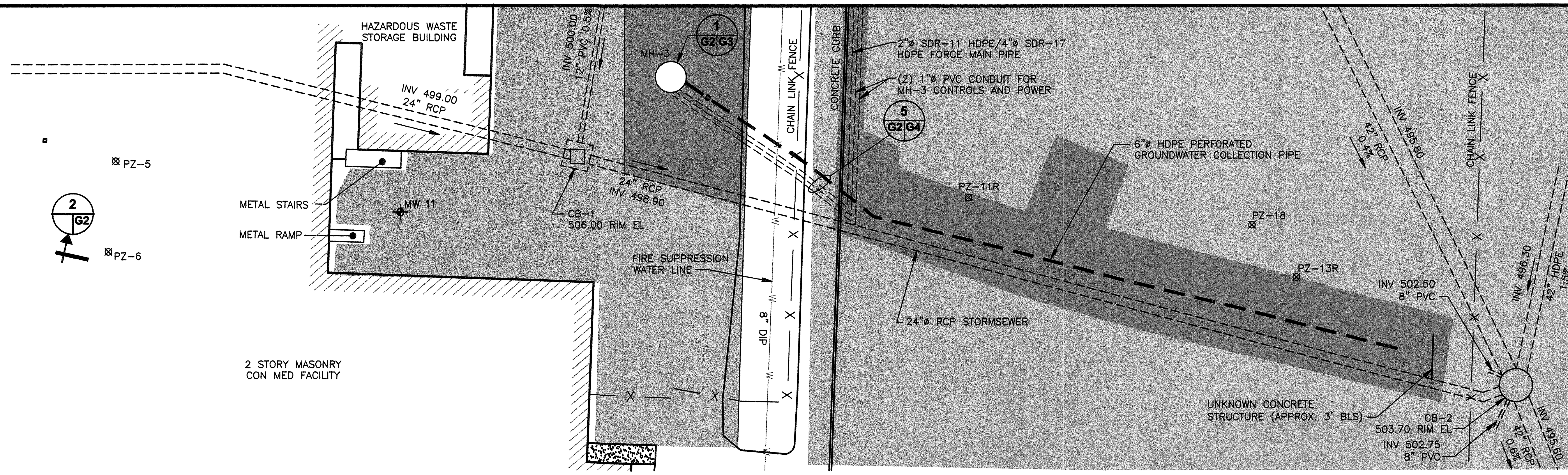
ARCADIS
ARCADIS OF NEW YORK, INC.

FORMER LOCKHEED MARTIN FRENCH ROAD FACILITY • UTICA, NEW YORK
GROUNDWATER COLLECTION AND TREATMENT SYSTEM

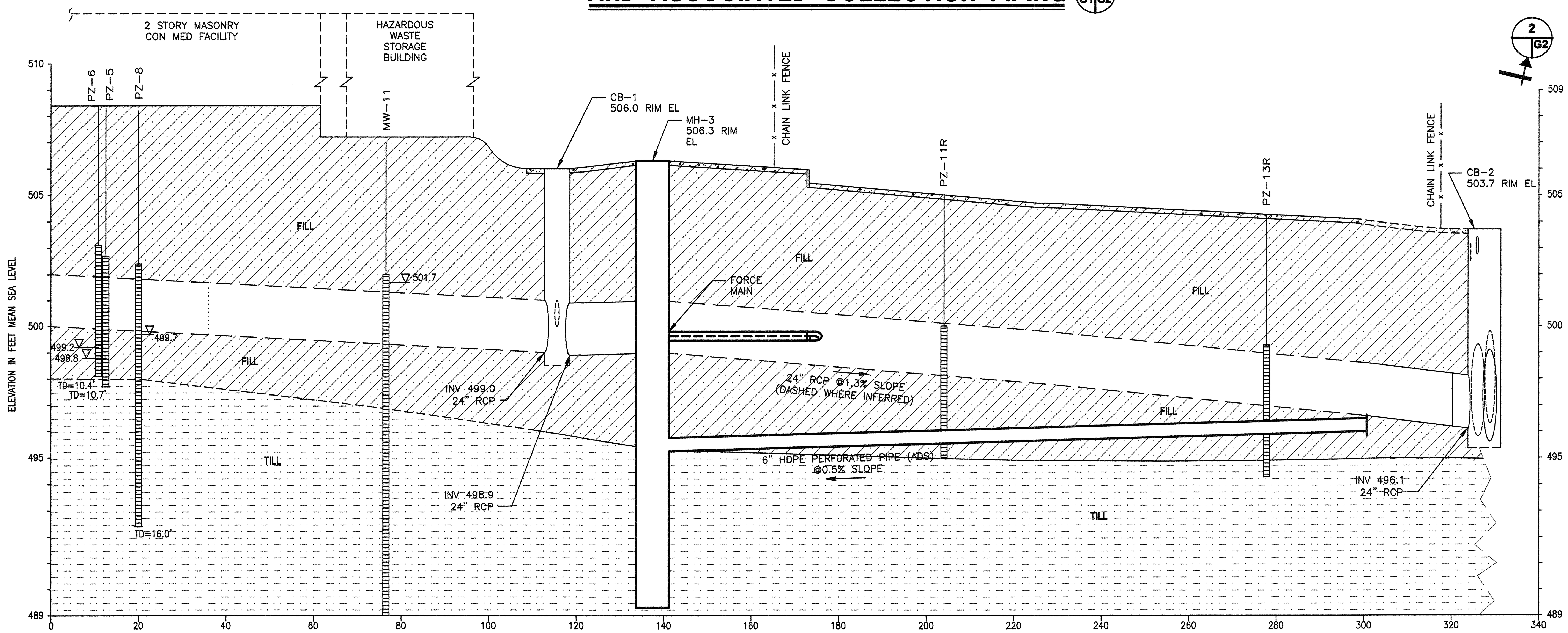
SITE PLAN AND DETAILS

ARCADIS Project No. NJ001024.0001.00005
Date: MARCH 2011
ARCADIS OF NEW YORK, INC.
465 NEW KARNER ROAD
ALBANY, NEW YORK
TEL. 518.452.7826

G-1



PLAN VIEW OF MANHOLE NO.3 AND ASSOCIATED COLLECTION PIPING (1 / G1 G2)



ELEVATION VIEW OF MANHOLE NO.3 AND ASSOCIATED COLLECTION PIPING (2 / G2)

LEGEND:

- MW 11 — MONITORING WELL LOCATION
- PZ-5 — PIEZOMETER LOCATION
- PZ-16 — FORMER PIEZOMETER LOCATION
- ▽ 501.7 — GROUNDWATER LEVEL, 11/18/08
- FILL
- TILL
- WELL DESIGNATION
- EXISTING LAND SURFACE (DASHED WHERE INFERRED)
- GEOLOGIC CONTACT (DASHED WHERE INFERRED)
- SCREENED INTERVAL
- END OF BOREHOLE

HORIZONTAL SCALE 0 15' 30'

VERTICAL SCALE 0 2.5' 5'

THIS BAR REPRESENTS ONE INCH ON THE ORIGINAL DRAWING: USE TO VERIFY FIGURE REPRODUCTION SCALE

No.	Date	Revisions	By	Ckd
3	03/23/11	AS-BUILT RECORD DRAWINGS	CM	MM
2	02/11/10	FINAL 100% REMEDIAL DESIGN SUBMITTAL TO NYSDEC	CM	MM
1	01/06/10	DRAFT 100% DESIGN WORK PLAN	CM	MM
0	12/02/09	DRAFT 60% DESIGN WORK PLAN	CM	MM

Professional Engineer's Name: MOH MOHIUDDIN PhD, PE, DEE
Professional Engineer's No.: 074527
State: NY | Date Signed: 06/13/2011 | Project Mgr.: P.MILIONIS
Designed by: T.CARIGNAN | Drawn by: J.GONZALEZ | Checked by: E.PANHORST

STATE OF NEW YORK — MOH MOHIUDDIN — 074527 — LICENSED PROFESSIONAL ENGINEER

ARCADIS

ARCADIS OF NEW YORK, INC.

FORMER LOCKHEED MARTIN FRENCH ROAD FACILITY • UTICA, NEW YORK
GROUNDWATER COLLECTION AND TREATMENT SYSTEM

PLAN & PROFILE OF MH-3 AND GROUNDWATER COLLECTION TRENCH

ARCADIS Project No. NJ001024.0001.00005
Date MARCH 2011
ARCADIS OF NEW YORK, INC.
465 NEW KARNER ROAD
ALBANY, NEW YORK
TEL. 518.452.7826

G-2

LAYOUT: G-2 SAVED: 4/1/2011 2:32 PM ACADVER: 18.0S (LMS TECH) PAGESETUP: — PLOTSTYLETABLE: — PLOTTED: 4/1/2011 2:33 PM BY: SAMIOS, ALEX

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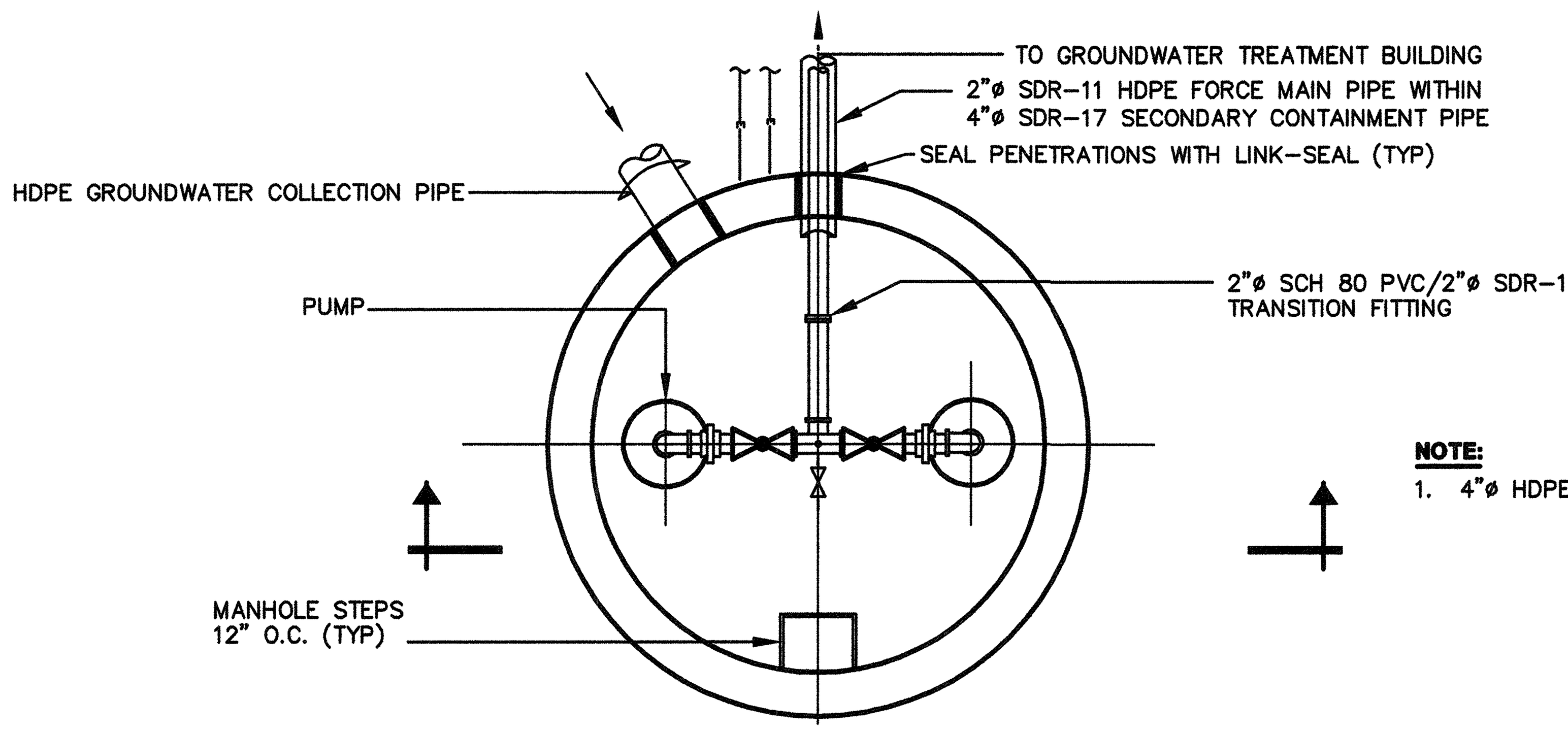
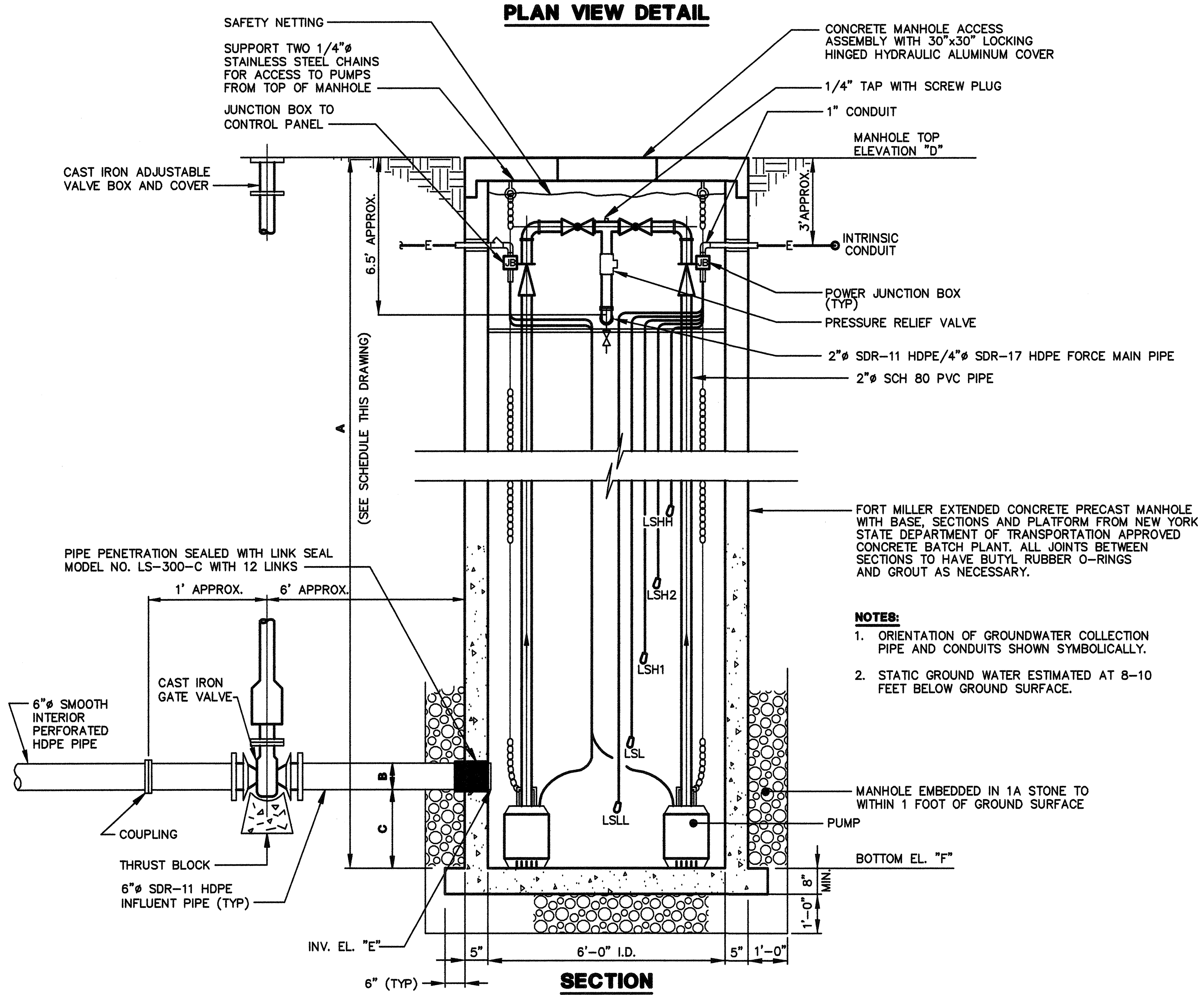


PLAN VIEW DETAIL

NOTE:
1. 4"ø HDPE PIPE OPEN TO INSIDE OF MANHOLE.



NOTES:
1. ORIENTATION OF GROUNDWATER COLLECTION PIPE AND CONDUITS SHOWN SYMBOLICALLY.
2. STATIC GROUND WATER ESTIMATED AT 8-10 FEET BELOW GROUND SURFACE.

SECTION

PUMPING MANHOLE NO. 3 DETAIL

1 G2 G3

NOT TO SCALE

LEGEND
- BALL VALVE
- CHECK VALVE
- NUT UNION
- SAMPLE/DRAIN TAP
- —E— POWER WIRING
- PRESSURE RELIEF VALVE

COLLECTION MANHOLE SCHEDULE	
DESCRIPTION	MH-3
DIST. A	17'-0"
DIST. B	0'-6"
DIST. C	6'-0"
TOP EL. D	506.3'
INV. EL. E	503.3'
BOT. EL. F	489.3'
LSLL	490.8'
LSL	491.8'
LSH1	494.3'
LSH2	496.3'
LSHH	498.8'

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2	2/11/10	FINAL 100% REMEDIAL DESIGN SUBMITTAL TO NYSDEC	CM	MM
1	1/6/10	DRAFT 100% DESIGN WORK PLAN	CM	MM
0	12/2/09	DRAFT 60% DESIGN WORK PLAN	CM	MM

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Professional Engineer's Name: MOH MOHIUDDIN PhD, PE, DEE
Professional Engineer's No.: 074527
State: NY | Date Signed: 6/13/2011 | Project Mgr.: P.MILIONIS
Designed by: T.CARIGNAN | Drawn by: J.GONZALEZ | Checked by: E.PANHORST

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ARCADIS

ARCADIS OF NEW YORK, INC.

FORMER LOCKHEED MARTIN FRENCH ROAD FACILITY • UTICA, NEW YORK
GROUNDWATER COLLECTION AND TREATMENT SYSTEM

PUMPING MANHOLE DETAILS AND SPECIFICATIONS

ARCADIS Project No. NJ001024.0001.00005

Date: MARCH 2011

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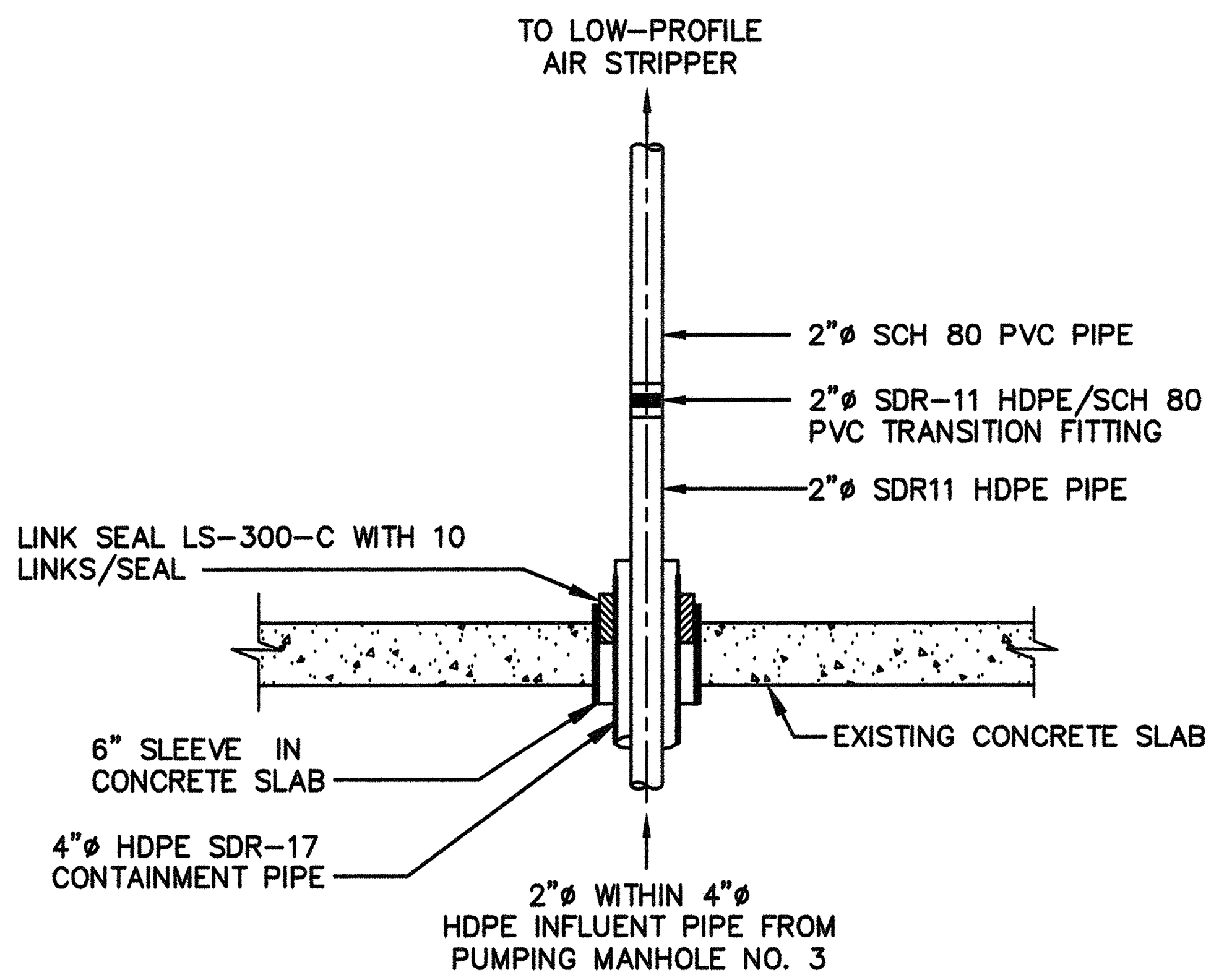
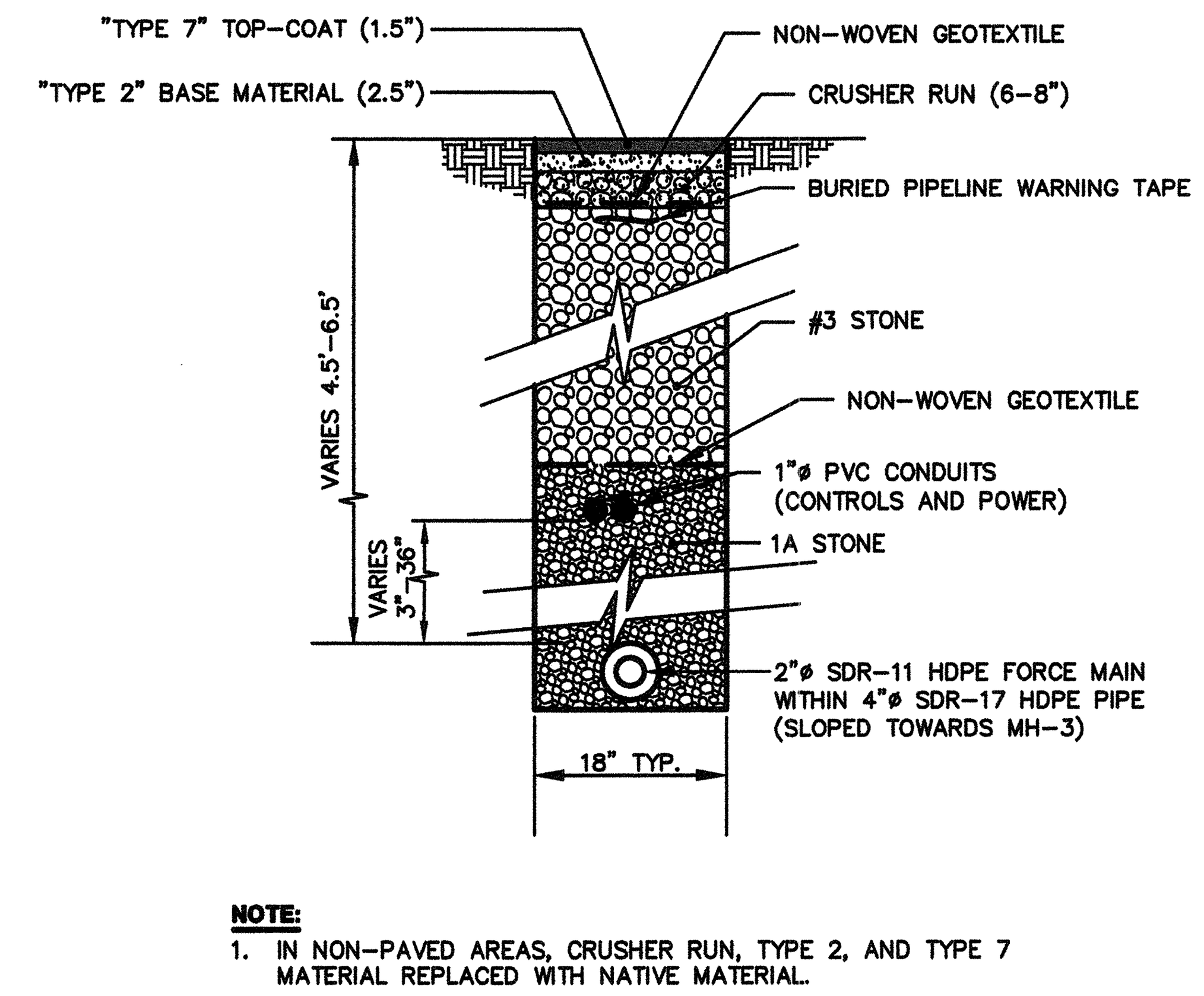
G-3



MANHOLE NO. 3 DISCHARGE PIPE FLOOR PENETRATION DETAIL (1 / G1 G4)

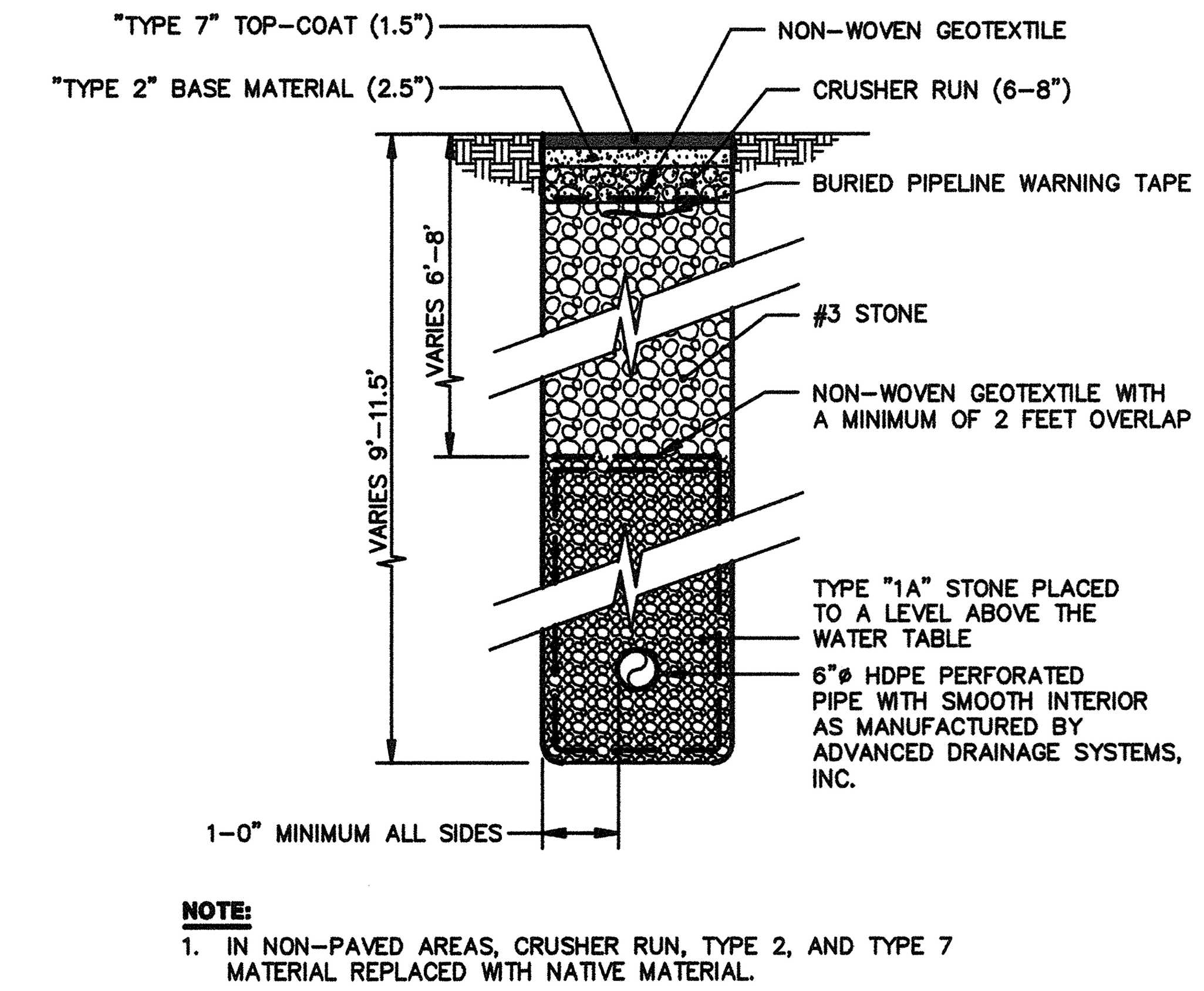
NOT TO SCALE



NOTE:
1. IN NON-PAVED AREAS, CRUSHER RUN, TYPE 2, AND TYPE 7 MATERIAL REPLACED WITH NATIVE MATERIAL.

MANHOLE NO. 3 DISCHARGE TRENCH DETAIL (TYPICAL) (2 / G1 G4)

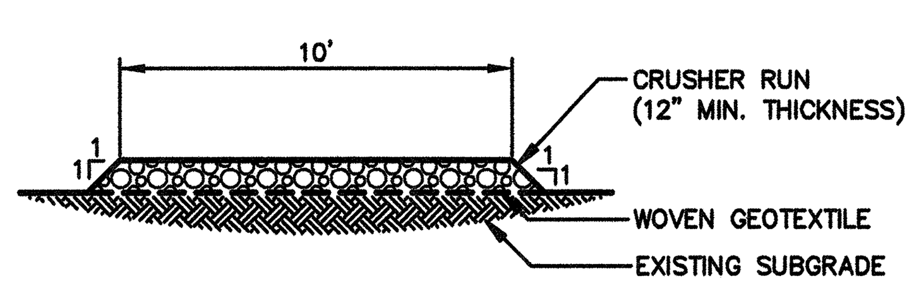
NOT TO SCALE



NOTE:
1. IN NON-PAVED AREAS, CRUSHER RUN, TYPE 2, AND TYPE 7 MATERIAL REPLACED WITH NATIVE MATERIAL.

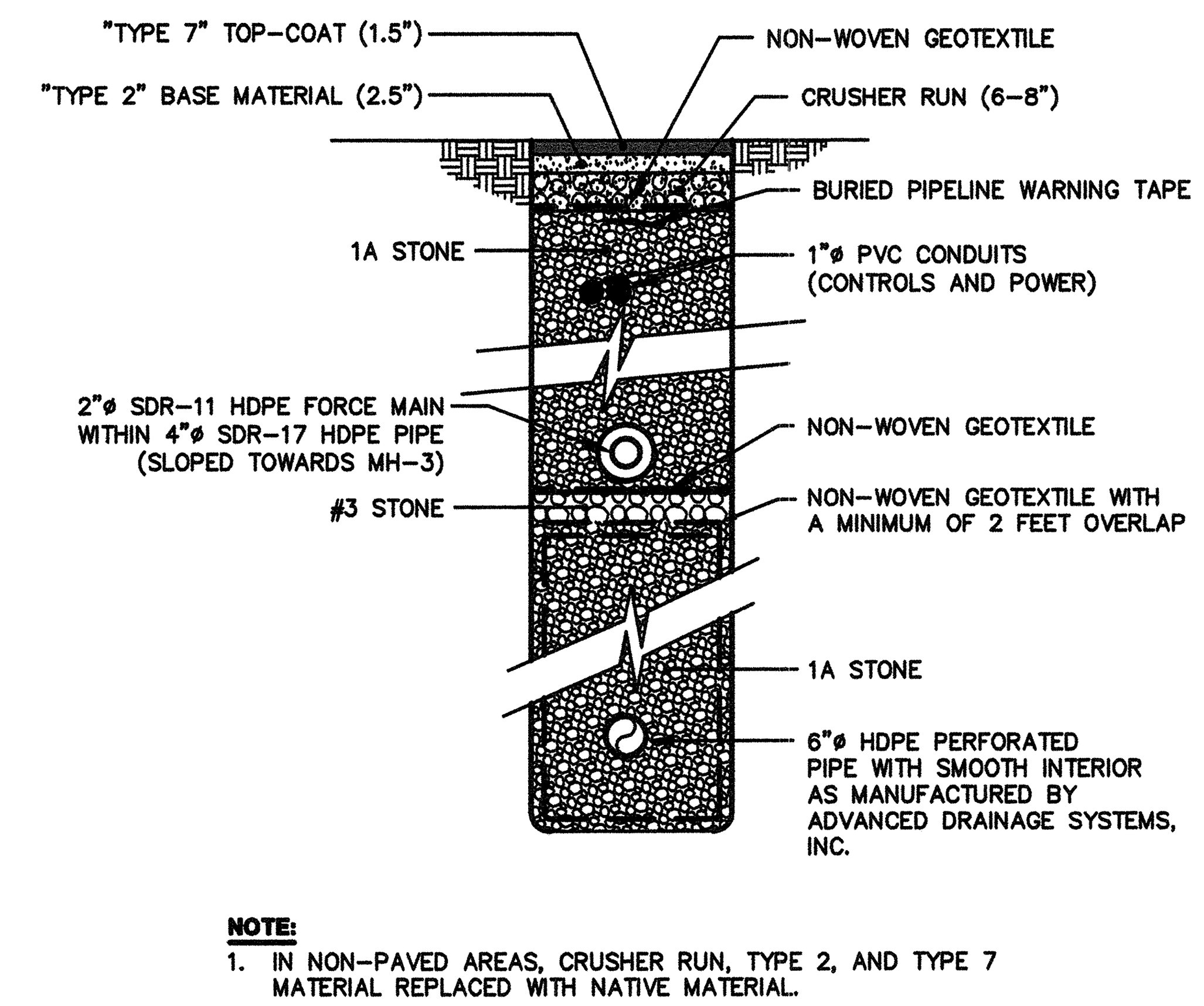
MANHOLE NO. 3 COLLECTION TRENCH DETAIL (TYPICAL) (3 / G1 G4)

NOT TO SCALE



GRAVEL ACCESS DRIVE DETAIL (4 / G1 G4)

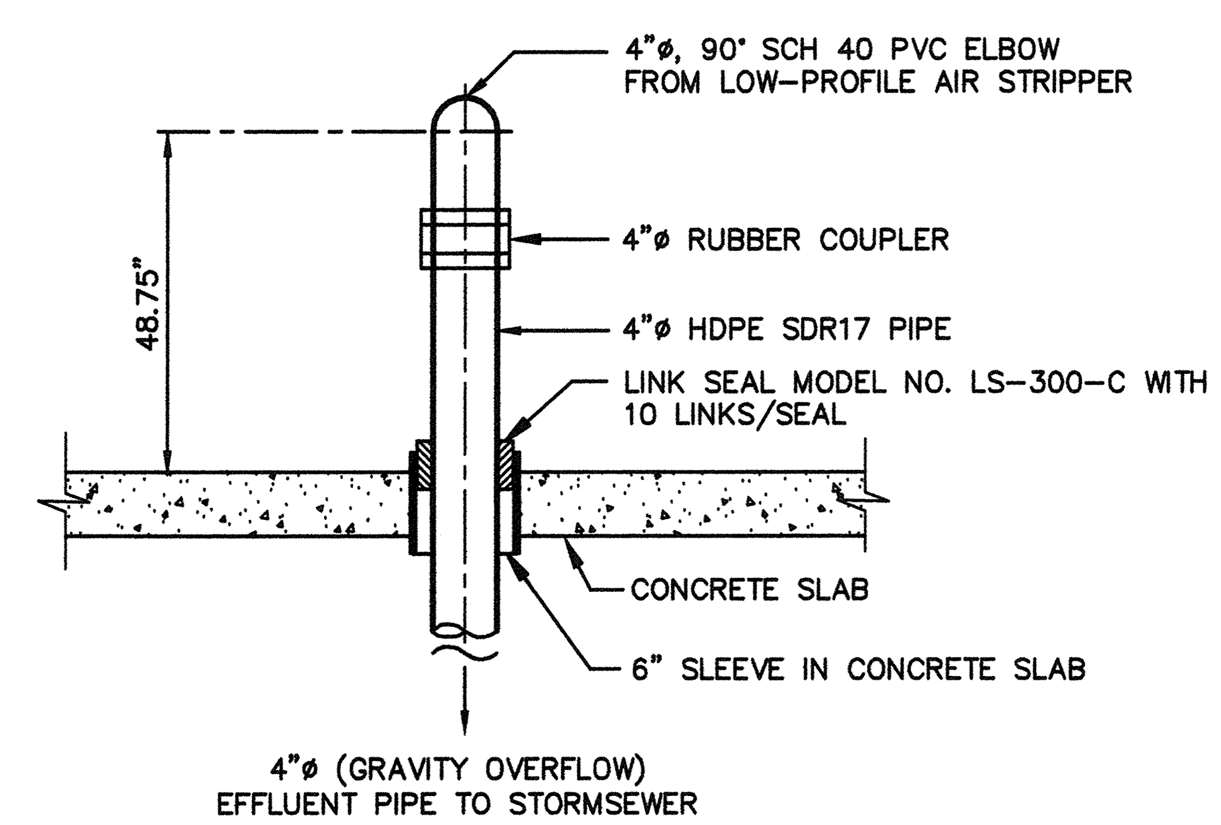
NOT TO SCALE



NOTE:
1. IN NON-PAVED AREAS, CRUSHER RUN, TYPE 2, AND TYPE 7 MATERIAL REPLACED WITH NATIVE MATERIAL.

COMBINED MANHOLE NO. 3 DISCHARGE AND COLLECTION TRENCH DETAIL (TYPICAL) (5 / G2 G4)

NOT TO SCALE



EFFLUENT PIPE FLOOR PENETRATION DETAIL (6 / G1 G4)

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Professional Engineer's Name		
MOH MOHIUDDIN PhD, PE, DEE		
Professional Engineer's No. 074527		
State: NY	Date Signed: 06/13/2011	Project Mgr.: P.MILIONIS
Designed by: T.CARIGNAN	Drawn by: J.GONZALEZ	Checked by: E.PANHORST

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ARCADIS

ARCADIS OF NEW YORK, INC.

FORMER LOCKHEED MARTIN FRENCH ROAD FACILITY • UTICA, NEW YORK

GROUNDWATER COLLECTION AND TREATMENT SYSTEM

PIPING AND TRENCHING DETAILS

ARCADIS Project No. NJ001024.0001.00005

Date MARCH 2011

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465 NEW KARNER ROAD
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G-4

GENERAL NOTES:

1. AIR STRIPPER SYSTEM MANUFACTURED BY QED MODEL EZ-TRAY 12.4 STAINLESS STEEL FABRICATION.

2. ALL PIPING AND MANIFOLDS LABELED WITH STENCIL OR ADHESIVE. FLOW ARROWS LABELED AT INLET AND DISCHARGE CONNECTIONS, PIPING AND DESCRIPTION (E.G., MANHOLE NO. 3 INFLUENT) CLEARLY LABELED AT ALL VALVE AND APPURTENANCE LOCATIONS.

3. FLOW TRANSMITTERS ARE SIGNET ANALOG FLOW TOTALIZER, WHICH DISPLAYS FLOW RATE AND TOTALIZED FLOW VOLUME OR EQUAL. SIGNET INDICATOR ARE A MODEL 8511. ASSOCIATED SIGNET SENSORS ARE MODEL 3-2536-PO. FITTINGS AND DIAL RANGES ARE AS FOLLOWS:

   A. MANHOLE NO. 1, 2 INCH DIAMETER INFLUENT LINE
      SENSOR FITTING – PV8T020 (SALVAGED FROM DEMOLITION)
      DIAL RANGE – 3-180 GPM

   B. MANHOLE NO. 2, 2 INCH DIAMETER INFLUENT LINE
      SENSOR FITTING – PV8T020 (SALVAGED FROM DEMOLITION)
      DIAL RANGE – 3-180 GPM

   C. MANHOLE NO. 3, 2 INCH DIAMETER INFLUENT LINE
      SENSOR FITTING – PV8T020 (NEW)
      DIAL RANGE – 3-180 GPM

   D. COMBINED FLOW, 3 INCH DIAMETER INFLUENT LINE
      SENSOR FITTING – PV8T020 (NEW)
      DIAL RANGE – 7-400 GPM

   E. SUMP PUMP 1-INCH DIAMETER INFLUENT LINE
      SENSOR FITTING – PV8T012 (EXISTING)
      DIAL RANGE – 3-180 GPM

4. ALL FLOW METERS HAVE STRAIGHT PIPE PRECEDING (10 TIMES PIPE DIAMETER) AND FOLLOWING (5 TIMES PIPE DIAMETER) THEM.

5. MANHOLE NO. 3 PUMPS ARE GOULDS PUMPS MODEL 3887 WITH VITON SEALS AND CAST IRON IMPELLER (3/4 HP, 230 VOLTS, 1,750 RPM, 1 PHASE) CAPABLE OF 50 GPM @ 25 FEET TDH (ONE PUMP) OR EQUAL.

6. DUCT HEATER IS HEAT EXCHANGE AND TRANSFER, INC. MODEL ADH-12-483 (12KW, 480V, 3 PHASE).

7. ALL SURFACES AT RECENTLY POURED CONCRETE RECEIVING NEW CONCRETE SHALL BE PREPARED BY CLEANING, WETTING AND TREATMENT WITH A NEAT CEMENT GROUT.

8. VAPOR PHASE CARBON VESSELS SIEMENS FB-1000 1,000 LB VESSELS. VESSELS UTILIZE SIEMENS VOCARB 36C VAPOR PHASE GRANULAR ACTIVATED CARBON.

ABBREVIATIONS:

A.F.F	ABOVE FINISHED FLOOR
BV	BALL VALVE
BFV	BUTTERFLY VALVE
CMP	CHEMICAL METERING PUMP
FS	FLOW SENSOR
FT	FLOW TRANSMITTER
HS	HAND SWITCH
LI	LEVEL INDICATOR
LSH	LEVEL SENSOR HIGH
LSL	LEVEL SENSOR LOW
LV	LOUVER
MIN.	MINIMUM
PI	PRESSURE INDICATOR
PT	PRESSURE TRANSMITTER
SP	SAMPLE PORT
TE	TEMPERATURE ELEMENT
TI	TEMPERATURE INDICATOR
TT	TEMPERATURE TRANSMITTER
UH	UNIT HEATER

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0	12/2/09	DRAFT 60% DESIGN WORK PLAN	CM	MM

Professional Engineer's Name: MOH MOHIUDDIN PhD, PE, DEE
Professional Engineer's No.: 074527
State: NY | Date Signed: 06/13/2011 | Project Mgr.: P.MILIONIS
Designed by: T.CARIGNAN | Drawn by: J.GONZALEZ | Checked by: E.PANHORST

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FORMER LOCKHEED MARTIN FRENCH ROAD FACILITY • UTICA, NEW YORK
GROUNDWATER COLLECTION AND TREATMENT SYSTEM

GENERAL NOTES AND ABBREVIATIONS

ARCADIS Project No. NJ001024.0001.00005
Date MARCH 2011

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G-5

ELECTRICAL LEGEND

- 2 LAMP FLUORESCENT LIGHT FIXTURE, LETTER DENOTES FIXTURE TYPE
- WL — EXTERIOR WALL PACK LIGHT FIXTURE
- ELU — EMERGENCY LIGHT FIXTURE
- S — SINGLE POLE SWITCH
- DUPLEX RECEPTACLE
- GFI — GROUND FAULT CIRCUIT INTERRUPTER DUPLEX RECEPTACLE
- JB — JUNCTION BOX
- MOTOR
- CIRCUIT HOMERUN
- TELEPHONE OUTLET
- LS — LIMIT SWITCH
- CIRCUIT BREAKER
- DISCONNECTED, UNFUSED

SECTION AND DETAIL LEGEND

SECTION CUT

- SECTION IDENTIFICATION
- DRAWING WHERE DETAIL IS LOCATED
- DRAWING WHERE DETAIL IS CALLED OUT

MECHANICAL LEGEND

INSTRUMENTATION SYMBOLS

- LOCALLY MOUNTED
- PANEL MOUNTED
- HOA — ON-OFF HAND SWITCH
- PLC (INTERLOCK)

MOTORIZED EQUIPMENT

- MANHOLE PUMP
- BLOWER
- METERING PUMP

PIPING COMPONENTS

- REDUCER
- SAMPLING/PRESSURE ASSEMBLY
- FM — FLOW METER
- E — POWER WIRING
- PI — PRESSURE INDICATOR
- SAMPLE/DRAIN TAP
- CHECK VALVE
- BALL VALVE
- BUTTERFLY VALVE
- FLOW DIRECTION
- PRESSURE RELIEF VALVE
- VACUUM RELIEF VALVE
- AIR FLOW
- HOSE BIBB
- UNION
- WM — WATER METER

OTHER EQUIPMENT

- VAPOR-PHASE GAC VESSEL
- AIR STRIPPER
- SEQUESTERING AGENT

CIVIL LEGEND

SITE PLAN LEGEND

- MANHOLE DISCHARGE WATER LINE
- GROUNDWATER COLLECTION LINE
- ST — STORM SEWER PIPE
- ELECTRICAL CIRCUIT
- W — WATER LINE
- T — TELEPHONE LINE
- SS — EXISTING SANITARY SEWER
- S — EXISTING STORM SEWER
- W — EXISTING WATER LINE
- G — EXISTING GAS LINE
- G — EXISTING ELECTRIC LINE
- x — EXISTING CHAIN LINK FENCE
- EXISTING PROPERTY LINE
- ACCESS DRIVE
- EXISTING BITUMINOUS PAVEMENT
- HYD. — EXISTING HYDRANT
- PIV — EXISTING POSITION INDICATOR VALVE
- L.P. — EXISTING LIGHT POLE
- MH #22 — EXISTING MANHOLE
- CB#21 — EXISTING CATCH BASIN
- MW 11 — MONITORING WELL LOCATION
- PZ-5 — PIEZOMETER LOCATION
- TEST PIT LOCATION

PROFILE LEGEND

- 501.7 — GROUNDWATER LEVEL, 11/18/08
- OUTLINE OF TEST PIT PROFILE
- FILL
- TILL
- MW-11 — WELL DESIGNATION
- EXISTING LAND SURFACE (DASHED WHERE INFERRED)
- GEOLOGIC CONTACT (DASHED WHERE INFERRED)
- SCREENED INTERVAL
- END OF BOREHOLE

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Professional Engineer's Name: MOH MOHIUDDIN PhD, PE, DEE
Professional Engineer's No.: 074527
State: NY | Date Signed: 06/13/2011 | Project Mgr.: P.MILIONIS
Designed by: T.CARIGNAN | Drawn by: J.GONZALEZ | Checked by: E.PANHORST

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GROUNDWATER COLLECTION AND TREATMENT SYSTEM

LEGEND AND SYMBOLS

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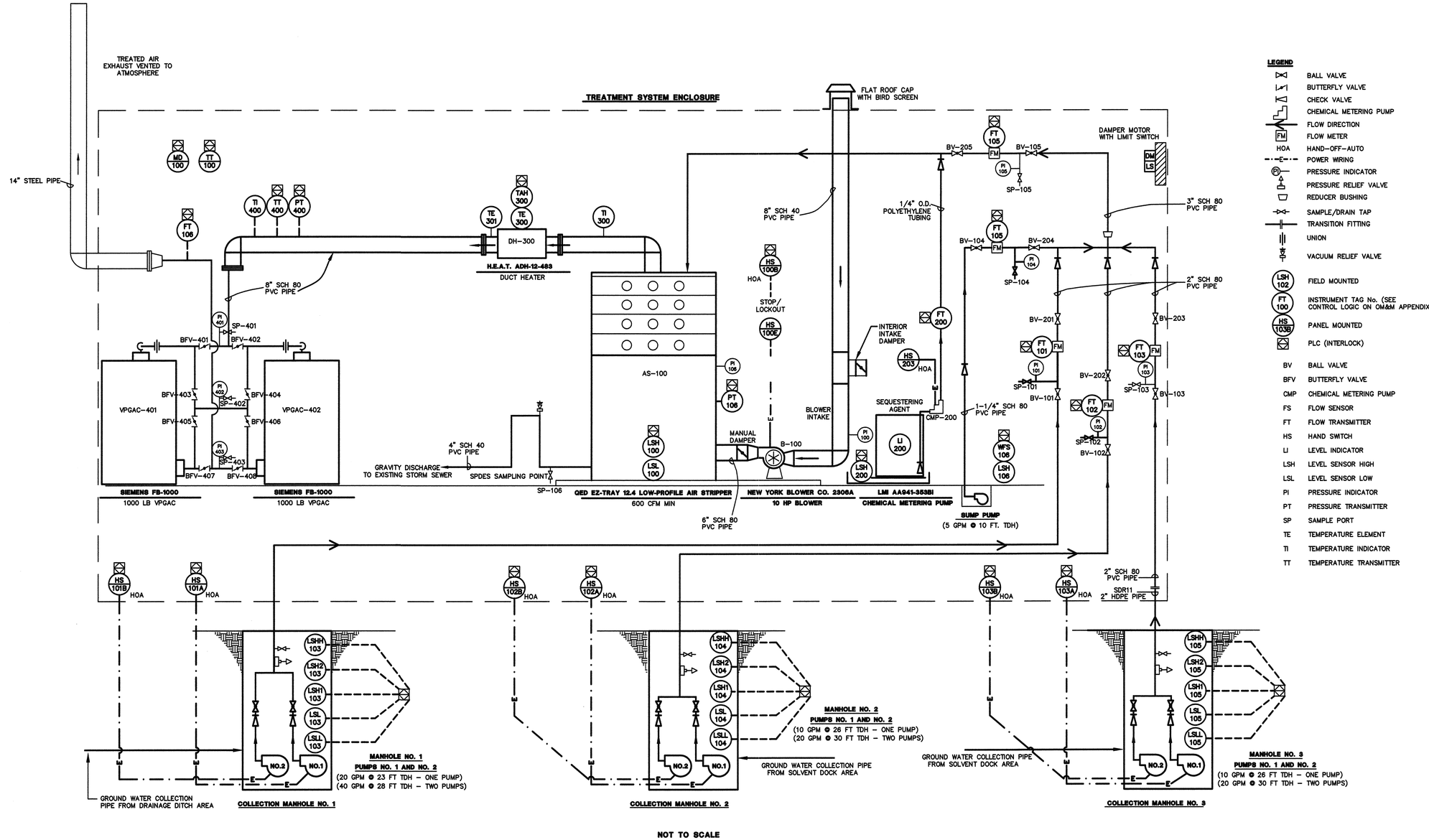

NOT TO SCALE

LEGEND

- BALL VALVE
- BUTTERFLY VALVE
- CHECK VALVE
- CHEMICAL METERING PUMP
- FLOW DIRECTION
- FM — FLOW METER
- HOA — HAND-OFF-AUTO
- POWER WIRING
- PI — PRESSURE INDICATOR
- PRESSURE RELIEF VALVE
- REDUCER BUSHING
- SAMPLE/DRAIN TAP
- TRANSITION FITTING
- UNION
- VACUUM RELIEF VALVE
- LSH 102 — FIELD MOUNTED
- FT 100 — INSTRUMENT TAG No. (SEE CONTROL LOGIC ON OM&M APPENDIX)
- HS 103B — PANEL MOUNTED
- PLC (INTERLOCK)

BV	BALL VALVE
BFV	BUTTERFLY VALVE
CMP	CHEMICAL METERING PUMP
FS	FLOW SENSOR
FT	FLOW TRANSMITTER
HS	HAND SWITCH
LI	LEVEL INDICATOR
LSH	LEVEL SENSOR HIGH
LSL	LEVEL SENSOR LOW
PI	PRESSURE INDICATOR
PT	PRESSURE TRANSMITTER
SP	SAMPLE PORT
TE	TEMPERATURE ELEMENT
TI	TEMPERATURE INDICATOR
TT	TEMPERATURE TRANSMITTER

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Professional Engineer's Name: MOH MOHIUDDIN PhD, PE, DEE
Professional Engineer's No.: 074527
State: NY | Date Signed: 04/13/2011 | Project Mgr.: P.MILIONIS
Designed by: C.MCLAUGHLIN | Drawn by: J.GONZALEZ | Checked by: E.PANHORST

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GROUNDWATER COLLECTION AND TREATMENT SYSTEM

PIPING AND INSTRUMENTATION DIAGRAM

ARCADIS Project No.: NJ001024.0001.00005
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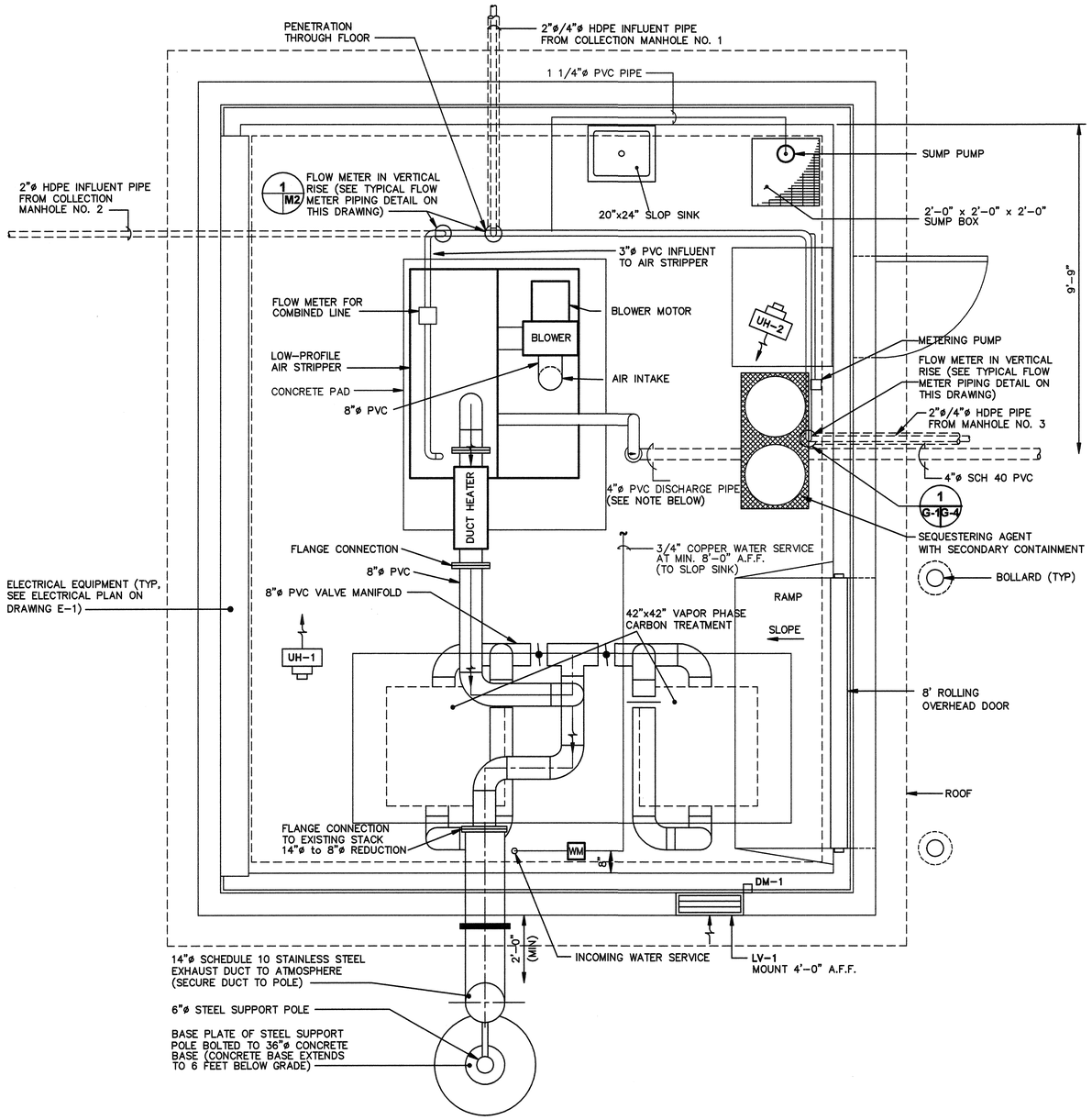


FLOOR PLAN

SCALE: 1/2"=1'-0"

1/2"=1'-0" 2' 0 2' 4'

NTS 0404

LEGEND

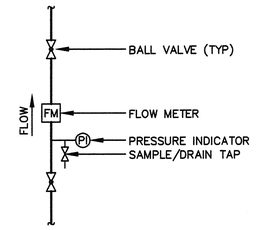
- DIRECTION OF FLOW
- AIR FLOW
- HOSE BIBB
- WM WATER METER

ABBREVIATIONS:

A.F.F.	ABOVE FINISHED FLOOR
MIN.	MINIMUM
DM	DAMPER MOTOR
LV	LOUVER
UH	UNIT HEATER

GENERAL NOTES:

1. REFER TO DRAWING G-5 FOR SPECIFICATIONS AND NOTES.



TYPICAL FLOW METER PIPING DETAIL

1 M2

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FLOOR PLAN AND DETAILS

ARCADIS Project No.: NJ001024.0001.00005
Date: MARCH 2011

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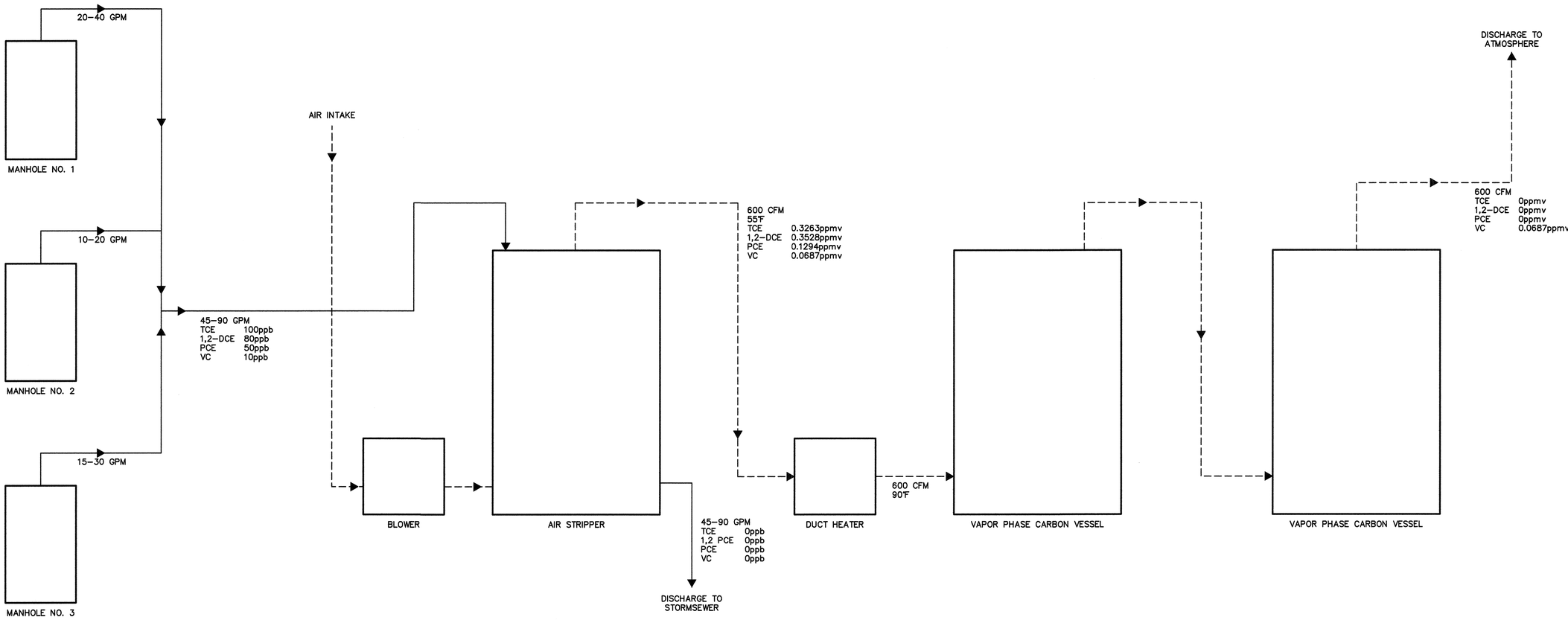

LEGEND

——— WATER

– – – – VAPOR

NOTES

1. OFF GAS CONCENTRATIONS BASED ON QED AIR STRIPPER MODEL VERSION 2.01 AT 90 GPM PROVIDED IN APPENDIX A OF GROUNDWATER COLLECTION AND TREATMENT SYSTEM 100% DESIGN WORKPLAN.

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2	2/11/10	FINAL 100% REMEDIAL DESIGN SUBMITTAL TO NYSDEC	CM	MM
1	1/6/10	DRAFT 100% DESIGN WORK PLAN	CM	MM
0	12/2/09	DRAFT 60% DESIGN WORK PLAN	CM	MM

Professional Engineer's Name: MOH MOHIUDDIN PhD, PE, DEE
Professional Engineer's No.: 074527
State: NY | Date Signed: 04/13/2011 | Project Mgr.: P.MILIONIS
Designed by: C.MCLAUGHLIN | Drawn by: J.GONZALEZ | Checked by: E.PANHORST

STATE OF NEW YORK · MOH MOHIUDDIN · 074527 · LICENSED PROFESSIONAL ENGINEER

ARCADIS

ARCADIS OF NEW YORK, INC.

FORMER LOCKHEED MARTIN FRENCH ROAD FACILITY • UTICA, NEW YORK
GROUNDWATER COLLECTION AND TREATMENT SYSTEM

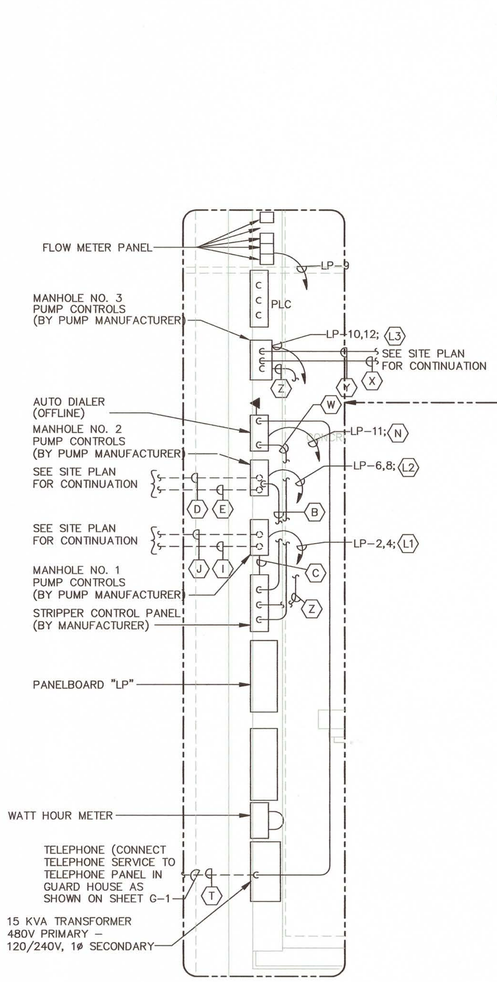
PROCESS FLOW DIAGRAM

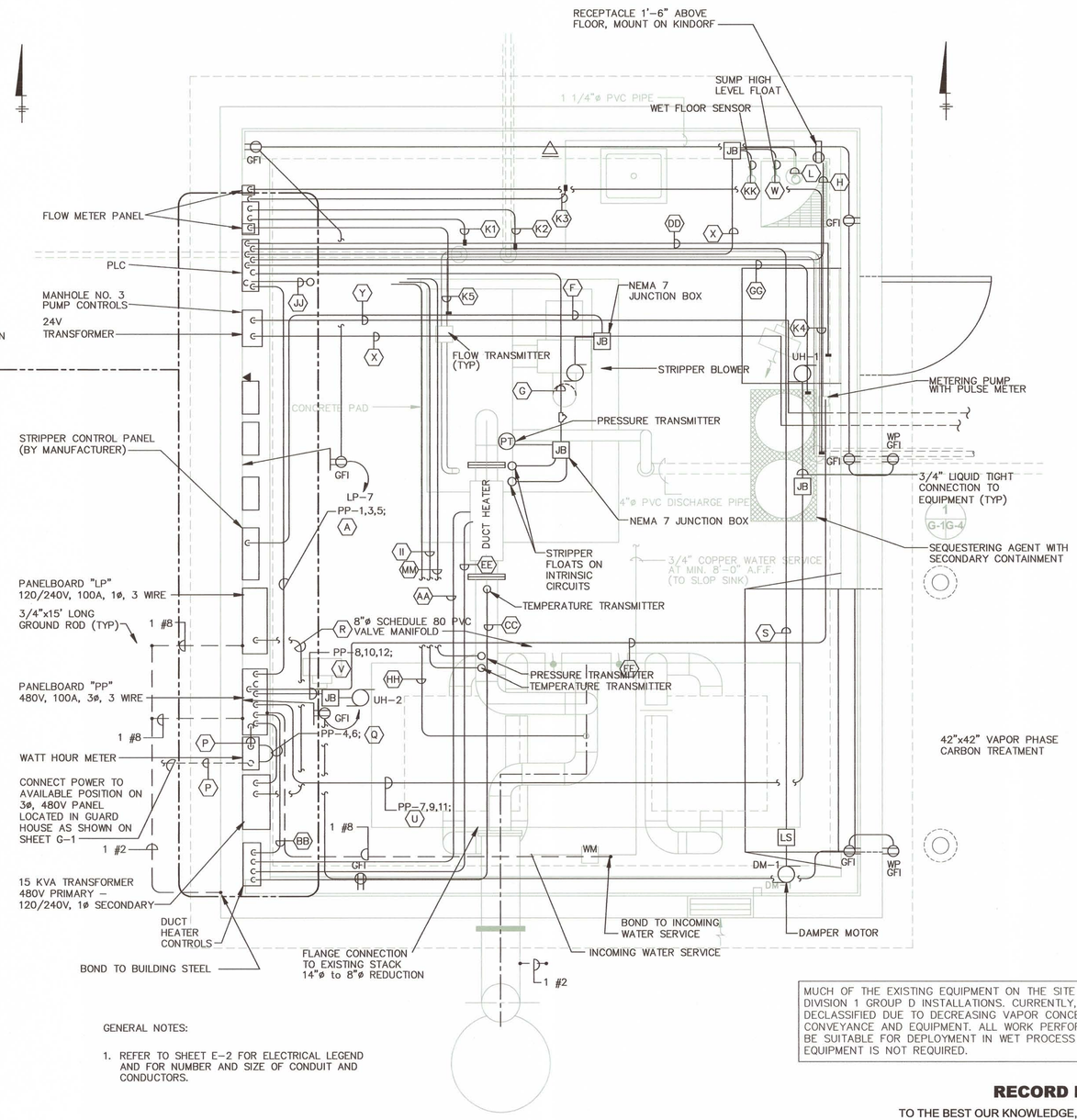
ARCADIS Project No.
NJ001024.0001.00005

Date
MARCH 2011

ARCADIS OF NEW YORK, INC.
465 NEW KARNER ROAD
ALBANY, NEW YORK
TEL. 518.452.7826

M-3





GENERAL NOTES:

1. REFER TO SHEET E-2 FOR ELECTRICAL LEGEND AND FOR NUMBER AND SIZE OF CONDUIT AND CONDUCTORS.

MUCH OF THE EXISTING EQUIPMENT ON THE SITE IS SUITABLE FOR CLASS 1, DIVISION 1 GROUP D INSTALLATIONS. CURRENTLY, THE SITE HAS BEEN DECLASSIFIED DUE TO DECREASING VAPOR CONCENTRATIONS IN PROCESS CONVEYANCE AND EQUIPMENT. ALL WORK PERFORMED IN THIS PHASE SHALL BE SUITABLE FOR DEPLOYMENT IN WET PROCESS LOCATIONS, AND NEMA 7 EQUIPMENT IS NOT REQUIRED.

RECORD DRAWINGS

TO THE BEST OUR KNOWLEDGE, INFORMATION AND BELIEF, THESE RECORD DRAWINGS SUBSTANTIALLY REPRESENT THE PROJECT AS CONSTRUCTED.

DATE: 6/13/11 BY: Michael E. Currie

CITY: DIV/GROUP: DB: LD: PIC: PM: TM: LYR:ON=*;OFF=*REF*
\\N12FP1\Data\-DATA\WIPLM\Utica\final as builts\GCS\01024E01.DWG LAYOUT: E-1 SAVED: 6/11/2011 7:52 PM ACADVER: 18.0S (LMS TECH) PAGESETUP: ---- PLOTSTYLETABLE: 6030FULL.CTB PLOTTED: 6/13/2011 7:24 AM BY: CURRIE, MIKE

XREFS: 01024X00 01024M02
IMAGES:
PROJECTNAME: ----

1/2"=1'-0" (2' 0 2' 4')

THIS BAR REPRESENTS ONE INCH ON THE ORIGINAL DRAWING:

USE TO VERIFY FIGURE REPRODUCTION SCALE

No.	Date	Revisions	By	Ckd
4	6/12/11	AS-BUILT RECORD DRAWINGS	MEC	MEC
3	3/14/11	AS-BUILT RECORD DRAWINGS	CD	CM
2	2/11/10	FINAL 100% REMEDIAL DESIGN SUBMITTAL TO NYSDEC	CM	MM
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0	12/2/09	DRAFT 60% DESIGN WORK PLAN	CM	MM

Professional Engineer's Name		
MICHAEL E. CURRE		
Professional Engineer's No.		
082521		
State	Date Signed	Project Mgr.
NY	6/13/11	P.MILIONIS
Designed by	Drawn by	Checked by
C.MCLAUGHLIN	J.GONZALEZ	M.CURRIE

STATE OF NEW YORK MICHAEL E. CURRE NO. 082521 LICENSED PROFESSIONAL ENGINEER

ARCADIS

ARCADIS OF NEW YORK, INC.

FORMER LOCKHEED MARTIN FRENCH ROAD FACILITY • UTICA, NEW YORK

GROUNDWATER COLLECTION AND TREATMENT SYSTEM

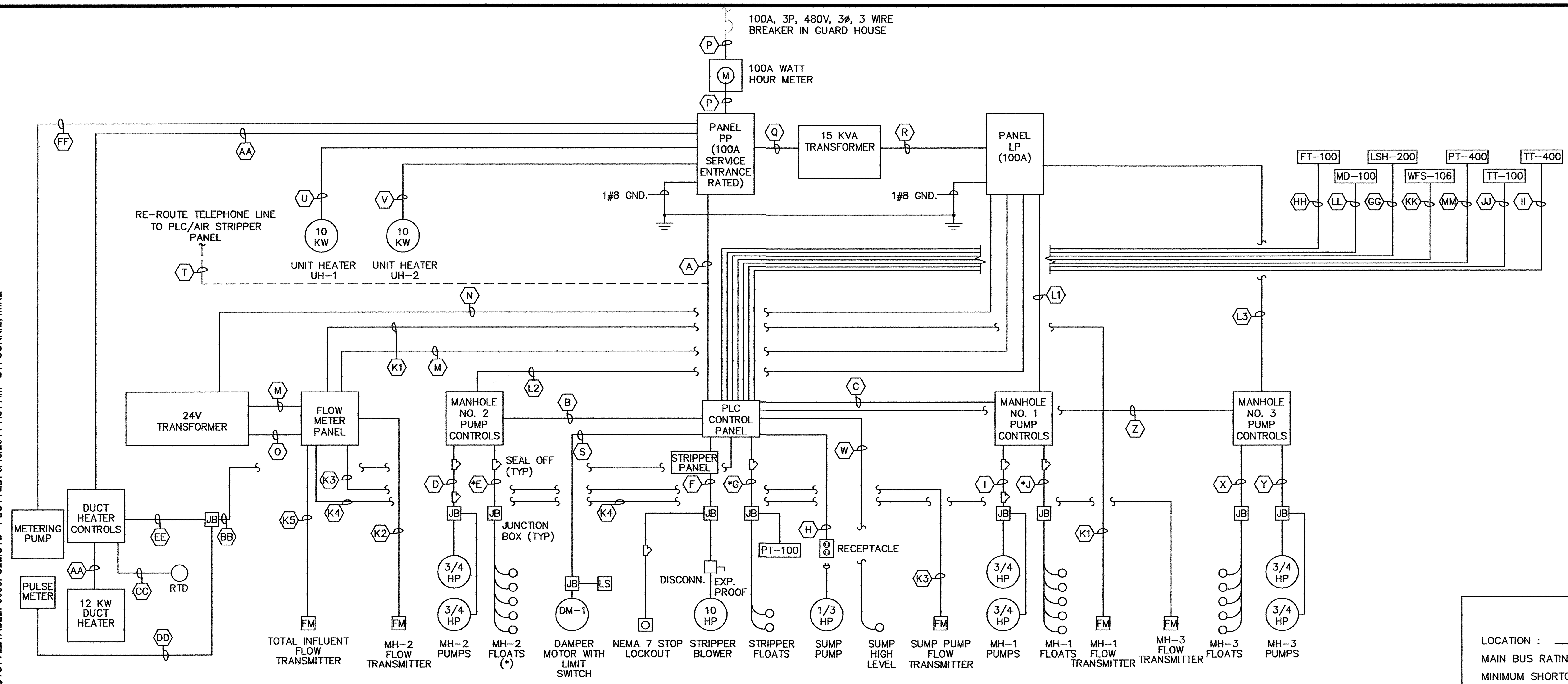
ELECTRICAL FLOOR PLANS

ARCADIS Project No. NJ001024.0001.00005

Date MARCH 2011

ARCADIS OF NEW YORK, INC.
465 NEW KARNER ROAD
ALBANY, NEW YORK
TEL. 518.452.7826

E-1



ONE-LINE DIAGRAM

NOT TO SCALE

LEGEND

- 2 LAMP FLUORESCENT LIGHT FIXTURE, LETTER n DENOTES FIXTURE TYPE
- WL — EXTERIOR WALL PACK LIGHT FIXTURE
- ELU — EMERGENCY LIGHT FIXTURE
- S — SINGLE POLE SWITCH
- DUPLEX RECEPTACLE
- GFI — GROUND FAULT CIRCUIT INTERRUPTER DUPLEX RECEPTACLE
- JB — JUNCTION BOX
- MOTOR
- CIRCUIT HOMERUN
- TELEPHONE OUTLET
- LS — LIMIT SWITCH
- CIRCUIT BREAKER
- DISCONNECTED, UNFUSED

LOAD SERVICE – 480V CONNECTED LOADS					
LOAD/ITEM DESCRIPTION	LOAD (KW)	LOAD (HP)	LOAD (F.L.A.)	CB	SERVICE FACTOR
DUCT HEATER (12 KW)	12.0	--	67.7	30	50%
A/S BLOWER (NEW)	--	10	14.0	30	100%
UNIT HEATER (UH-1)	10.0	--	12.1	20	50%
UNIT HEATER (UH-2)	10.0	--	12.1	20	50%
WELL PUMPS (6)	--	3/4 (EA)	20.7	10	50%
MISC 1ø LOADS	--	--	4.6	20	50%
TOTAL	--	--	81.2A	--	--

CONDUIT/CONDUCTOR SCHEDULE

CIRCUIT	CONDUCTOR SIZE	CONDUIT SIZE	NAME
A	3 #10, #10G	3/4" EMT	BLOWER, SUMP PUMP, AND STRIPPER CONTROL POWER FEED
B	8 #14	3/4" EMT	CONTROL PANEL TO MANHOLE NO. 2 PUMP CONTROLS
C	8 #14	3/4" EMT	CONTROL PANEL TO MANHOLE NO. 1 PUMP CONTROLS
D	6 #12, 2 #12G	1-1/2" EMT (INDOORS) 1" RGS (OUTDOORS)	MANHOLE NO. 2 PUMP POWER
E*	10 #12	1-1/2" EMT (INDOORS) 1" RGS (OUTDOORS)	MANHOLE NO. 2 LEVEL SWITCHES
F	3 #8, 1 #12G 2 #14	1-1/2" RGS	BLOWER POWER AND CONTROL
G*	8 #14	3/4" RGS	BLOWER PRESSURE SWITCH & LEVEL SWITCHES
H	2 #12, 1 #12G	3/4" RGS	SUMP PUMP RECEPTACLE POWER
I	6 #12, 2 #12G	1" RGS	MANHOLE NO. 1 PUMP POWER
J*	10 #14	1" RGS	MANHOLE NO. 1 LEVEL SWITCHES
K1 K2 K3 K4 K5	MANUFACTURER'S CABLES	3/4" RGS	MANHOLE NO. 1 FLOW METER, MANHOLE NO. 2 FLOW METER, & SUMP PUMP FLOW METER MANHOLE NO. 3 FLOW METER TOTAL INFLUENT FLOW METER
L1 L2 L3	3 #10, 1 #10G 3 #10, 1 #10G	3/4" EMT	PUMP CONTROL PANEL POWER FEEDS
M	2 #12, 1 #12G	3/4" EMT	FLOW METER & CHART REC. POWER FEED
N	2 #12, 1 #12G	3/4" EMT	24V TRANSFORMER POWER FEED

CIRCUIT	CONDUCTOR SIZE	CONDUIT SIZE	NAME
O	3 TSP #16	3/4" EMT	FLOW SIGNALS (SEE NOTE 1)
P	3 #2, 1 #6G	1-1/2" EMT (RGS OUTDOORS)	BUILDING POWER
Q	3 #8, 1 10G	1" SEAL TITE	TRANSFORMER FEED
R	3 #6, 1 #8G	1" SEAL TITE	PANEL LP FEED
S	2 #12, 1 #12G 2 #14	3/4" EMT	DAMPER MOTOR AND LIMIT SWITCH
T	6 #22	1-1/2" RGS	TELEPHONE SERVICE
U	3 #10, 1 #10G	3/4" EMT	UNIT HEATER (UH-1)
V	3 #10, 1 #10G	3/4" EMT	UNIT HEATER (UH-2)
W	10 #14	3/4" EMT	SUMP HIGH LEVEL
X	10 #14 1 #14G	1" RGS (SEE NOTE 9)	MANHOLE NO. 3 LEVEL SWITCHES
Y	6 #10 2 #10G	1" RGS (SEE NOTE 9)	MANHOLE NO. 3 PUMP POWER
Z	8 #14 1 #14G	3/4" EMT	CONTROL PANEL TO MANHOLE NO. 3 PUMP CONTROLS
AA	3 #8 1 #8G	1" RGS	DUCT HEATER POWER
BB	6 #14 1 #14G	3/4" RGS	DUCT HEATER HOMERUN
CC	#18 SHIELDED TWISTED PAIR	1" RGS	DUCT HEATER TEMP SENSOR
DD	2 #14 1 #14G	1" RGS	METERING PUMP CONTROLS AND PULSE METER
EE	4 #14 1 #14G	3/4" RGS	DUCT HEATER CONTROLS

CIRCUIT	CONDUCTOR SIZE	CONDUIT SIZE	NAME
FF	2 #14 1 #14G	3/4" RGS	METERING PUMP POWER
GG	2 #22	3/4" EMT	WET PALLET SENSOR
HH	1 #18	3/4" EMT	AIR FLOW TRANSMITTER
II	1 #18	3/4" EMT	TEMPERATURE TRANSMITTER
JJ	1 #20	3/4" EMT	TEMPERATURE TRANSMITTER
KK	1 #18 1 #18G	3/4" EMT	WET FLOOR SENSOR
LL	1 #22	3/4" EMT	MOTION DETECTOR
MM	1 #18	3/4" EMT	PRESSURE TRANSMITTER

* INDICATES INTRINSICALLY SAFE SYSTEM PER NEC-504

NOT TO SCALE

PANELBOARD LP SCHEDULE

LOCATION : GROUND WATER TREATMENT BUILDING
MAIN BUS RATINGS : 100 AMPS , 240/120 VOLTS , 1 PHASE , 3 WIRE
MINIMUM SHORTCIRCUIT INTERUPTING RATING : 10,000 RMS. SYMM. AMPS
FED FROM : PANEL "PP" CIRCUITS 4 & 6
TYPE : NQOD
MAIN BREAKER TRIP : 60 AMPS ,
INCOMING FEED : 3#6, 1#8 GND., 1"C
ESTIMATED CONNECTED LOAD : 7.1 KVA
ENCLOSURE : SURFACE MOUNTED NEMA 1

	DESCRIPTION	LOAD W-KW-HP	CB AMPS	CIR.	B C	CIR.	CB AMPS	LOAD W-KW-HP	DESCRIPTION	
	INDOOR/OUTDOOR LIGHTING	480W	20/1	1		2	30/2	1.5 HP	MANHOLE NO.1 PUMP CONTROLS	L1
	SPARE		20/1	3		4				
	A RECEPTS (SOUTH)	720W	20/1	5		6	30/2	1.5 HP	MANHOLE NO.2 PUMP CONTROLS	L2
	B RECEPTS & MTRG PMPS (NORTH)	900W	20/1	7		8				
		–	20/1	9		10	30/2	1.5 HP	MANHOLE NO.3 PUMP CONTROLS	L3
	FLOW METER & CHART RECORDER	–	20/1	11		12				
	SPARE	–	20/1	13		14	20/1	–	MANHOLE NO.3 FLOW METER	K4
	UPS & CONTROLS IN ASMCP	–	15/1	15		16	20/1	–	C RECEPTS	K5
	SPARE	–	20/1	17		18	20/1	–	SPARE	
	SPACE	–		19		20	20/1	–	SPARE	
	MAIN	–	60/2							

PANELBOARD PP SCHEDULE

LOCATION : GROUND WATER TREATMENT BUILDING
MAIN BUS RATINGS : 100 AMPS , 480 VOLTS , 3 PHASE , 3 WIRE
MINIMUM SHORTCIRCUIT INTERUPTING RATING : 10,000 RMS. SYMM. AMPS
FED FROM : GUARD HOUSE PANEL CIRCUIT
TYPE : I-LINE HCN
MAIN BREAKER TRIP : 100 (SERVICE ENTRANCE RATED) AMPS ,
INCOMING FEED : 3#2, 1#6 GND., 1-1/2"C
ESTIMATED CONNECTED LOAD : –
ENCLOSURE : SURFACE MOUNTED NEMA 1

	DESCRIPTION	LOAD W-KW-HP	CB AMPS	CIR.	A B C	CIR.	CB AMPS	LOAD W-KW-HP	DESCRIPTION	
AA	DUCT HEATER	12KW	40	1		2				
				3		4	20		WELL PUMP TRANSFORMER FEED	
			3	5		6				
A	BLOWER, STRIPPER CONTROLS	15HP	45	7		8	3			
				9		10	35	15KVA	TRANSFORMER FEED	Q
			3	11		12	2			
U	UNIT HEATER (UH-1)	10KW	30	13		14	30	10 KW	UNIT HEATER (UH-2)	V
				15		16				
			3	17		18	3			

RECORD DRAWINGS

TO THE BEST OUR KNOWLEDGE, INFORMATION AND BELIEF, THESE RECORD DRAWINGS SUBSTANTIALLY REPRESENT THE PROJECT AS CONSTRUCTED.

DATE: 6/13/11 BY: [signature]

No.	Date	Revisions	By	Ckd
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1	1/6/10	DRAFT 100% DESIGN WORK PLAN	CM	MM
0	12/2/09	DRAFT 60% DESIGN WORK PLAN	CM	MM

SCALE(S) AS INDICATED

THIS BAR REPRESENTS ONE INCH ON THE ORIGINAL DRAWING: USE TO VERIFY FIGURE REPRODUCTION SCALE

Professional Engineer's Name: MICHAEL E. CURRE
Professional Engineer's No.: 082521
State: NY | Date Signed: 6/13/11 | Project Mgr.: P.MILIONIS
Designed by: C.MCLAUGHLIN | Drawn by: J.GONZALEZ | Checked by: M.CURRIE

ARCADIS

ARCADIS OF NEW YORK, INC.

FORMER LOCKHEED MARTIN FRENCH ROAD FACILITY • UTICA, NEW YORK
GROUNDWATER COLLECTION AND TREATMENT SYSTEM

ONE LINE DIAGRAM, CONDUCTOR AND PANELBOARD SCHEDULES

ARCADIS Project No. NJ001024.0001.00005
Date: MARCH 2011

ARCADIS OF NEW YORK, INC.
465 NEW KARNER ROAD
ALBANY, NEW YORK
TEL. 518.452.7826

E-2

LOGIC FOR MANHOLE NO. 1

PUMP NO. 1 SHALL NOT OPERATE IF:

1. PUMP NO. 1 HOA SWITCH (HS-101A) IS IN AUTO POSITION, AND FATAL ALARMS (SHOWN BELOW) ARE INDICATED AT PLC
2. PUMP NO. 1 HOA SWITCH (HS-101A) IS IN OFF POSITION
3. MANHOLE NO. 1 LEVEL IS BELOW LOW LEVEL FLOAT (LSL-103)
4. MANHOLE NO. 1 LEVEL IS BELOW LOW-LOW LEVEL FLOAT (LSLL-103)

PUMP NO. 1 SHALL OPERATE IF:

1. PUMP NO. 1 HOA SWITCH (HS-101A) IS IN AUTO POSITION AND MANHOLE NO. 1 LEVEL IS ABOVE HIGH-1 LEVEL FLOAT (LSH1-103) AND PUMP NO. 1 IS DESIGNATED BY PLC AS LEAD PUMP AND NO FATAL ALARMS (SHOWN BELOW) ARE INDICATED AT PLC
2. PUMP NO. 1 HOA SWITCH (HS-101A) IS IN AUTO POSITION AND MANHOLE NO. 1 LEVEL IS ABOVE HIGH-2 LEVEL FLOAT (LSH2-103) AND PUMP NO. 1 IS DESIGNATED BY PLC AS LAG PUMP AND NO FATAL ALARMS (SHOWN BELOW) ARE INDICATED AT PLC
3. PUMP NO. 1 HOA SWITCH (HS-102A) IS IN HAND POSITION

PUMP NO. 2 SHALL NOT OPERATE IF:

1. PUMP NO. 2 HOA SWITCH (HS-101B) IS IN AUTO POSITION, AND FATAL ALARMS (SHOWN BELOW) ARE INDICATED AT PLC
2. PUMP NO. 2 HOA SWITCH (HS-101B) IS IN OFF POSITION
3. MANHOLE NO. 1 LEVEL IS BELOW LOW LEVEL FLOAT (LSL-103)
4. MANHOLE NO. 1 LEVEL IS BELOW LOW-LOW LEVEL FLOAT (LSLL-103)

PUMP NO. 2 SHALL OPERATE IF:

1. PUMP NO. 2 HOA SWITCH (HS-101B) IS IN AUTO POSITION AND MANHOLE NO. 1 LEVEL IS ABOVE HIGH-1 LEVEL FLOAT (LSH1-103) AND PUMP NO. 2 IS DESIGNATED BY PLC AS LEAD PUMP AND NO FATAL ALARMS (SHOWN BELOW) ARE INDICATED AT PLC
2. PUMP NO. 2 HOA SWITCH (HS-101B) IS IN AUTO POSITION AND MANHOLE NO. 1 LEVEL IS ABOVE HIGH-2 LEVEL FLOAT (LSH2-103) AND PUMP NO. 2 IS DESIGNATED BY PLC AS LAG PUMP AND NO FATAL ALARMS (SHOWN BELOW) ARE INDICATED AT PLC
3. PUMP NO. 2 HOA SWITCH (HS-101B) IS IN HAND POSITION

LOGIC FOR MANHOLE NO. 2

PUMP NO. 1 SHALL NOT OPERATE IF:

1. PUMP NO. 1 HOA SWITCH (HS-102A) IS IN AUTO POSITION, AND FATAL ALARMS (SHOWN BELOW) ARE INDICATED AT PLC
2. PUMP NO. 1 HOA SWITCH (HS-102A) IS IN OFF POSITION
3. MANHOLE NO. 2 LEVEL IS BELOW LOW LEVEL FLOAT (LSL-104)
4. MANHOLE NO. 2 LEVEL IS BELOW LOW-LOW LEVEL FLOAT (LSLL-104)

PUMP NO. 1 SHALL OPERATE IF:

1. PUMP NO. 1 HOA SWITCH (HS-102A) IS IN AUTO POSITION AND MANHOLE NO. 2 LEVEL IS ABOVE HIGH-1 LEVEL FLOAT (LSH1-104) AND PUMP NO. 1 IS DESIGNATED BY PLC AS LEAD PUMP AND NO FATAL ALARMS (SHOWN BELOW) ARE INDICATED AT PLC
2. PUMP NO. 1 HOA SWITCH (HS-102A) IS IN AUTO POSITION AND MANHOLE NO. 2 LEVEL IS ABOVE HIGH-2 LEVEL FLOAT (LSH2-104) AND PUMP NO. 1 IS DESIGNATED BY PLC AS LAG PUMP AND NO FATAL ALARMS (SHOWN BELOW) ARE INDICATED AT PLC
3. PUMP NO. 1 HOA SWITCH (HS-102A) IS IN HAND POSITION

PUMP NO. 2 SHALL NOT OPERATE IF:

1. PUMP NO. 2 HOA SWITCH (HS-102B) IS IN AUTO POSITION, AND FATAL ALARMS (SHOWN BELOW) ARE INDICATED AT PLC
2. PUMP NO. 2 HOA SWITCH (HS-102B) IS IN OFF POSITION
3. MANHOLE NO. 2 LEVEL IS BELOW LOW LEVEL FLOAT (LSL-104)
4. MANHOLE NO. 2 LEVEL IS BELOW LOW-LOW LEVEL FLOAT (LSLL-104)

PUMP NO. 2 SHALL OPERATE IF:

1. PUMP NO. 2 HOA SWITCH (HS-102B) IS IN AUTO POSITION AND MANHOLE NO. 2 LEVEL IS ABOVE HIGH-1 LEVEL FLOAT (LSH1-104) AND PUMP NO. 2 IS DESIGNATED BY PLC AS LEAD PUMP AND NO FATAL ALARMS (SHOWN BELOW) ARE INDICATED AT PLC
2. PUMP NO. 2 HOA SWITCH (HS-102B) IS IN AUTO POSITION AND MANHOLE NO. 2 LEVEL IS ABOVE HIGH-2 LEVEL FLOAT (LSH2-104) AND PUMP NO. 2 IS DESIGNATED BY PLC AS LAG PUMP AND NO FATAL ALARMS (SHOWN BELOW) ARE INDICATED AT PLC
3. PUMP NO. 2 HOA SWITCH (HS-102B) IS IN HAND POSITION

LOGIC FOR MANHOLE NO. 3

PUMP NO. 1 SHALL NOT OPERATE IF:

1. PUMP NO. 1 HOA SWITCH (HS-103A) IS IN AUTO POSITION, AND FATAL ALARMS (SHOWN BELOW) ARE INDICATED AT PLC
2. PUMP NO. 1 HOA SWITCH (HS-103A) IS IN OFF POSITION
3. MANHOLE NO. 3 LEVEL IS BELOW LOW LEVEL FLOAT (LSL-105)
4. MANHOLE NO. 3 LEVEL IS BELOW LOW-LOW LEVEL FLOAT (LSLL-105)

PUMP NO. 1 SHALL OPERATE IF:

1. PUMP NO. 1 HOA SWITCH (HS-103A) IS IN AUTO POSITION AND MANHOLE NO. 3 LEVEL IS ABOVE HIGH-1 LEVEL FLOAT (LSH1-105) AND PUMP NO. 1 IS DESIGNATED BY PLC AS LEAD PUMP AND NO FATAL ALARMS (SHOWN BELOW) ARE INDICATED AT PLC
2. PUMP NO. 1 HOA SWITCH (HS-103A) IS IN AUTO POSITION AND MANHOLE NO. 3 LEVEL IS ABOVE HIGH-2 LEVEL FLOAT (LSH2-105) AND PUMP NO. 1 IS DESIGNATED BY PLC AS LAG PUMP AND NO FATAL ALARMS (SHOWN BELOW) ARE INDICATED AT PLC
3. PUMP NO. 1 HOA SWITCH (HS-103A) IS IN HAND POSITION

PUMP NO. 2 SHALL NOT OPERATE IF:

1. PUMP NO. 2 HOA SWITCH (HS-103B) IS IN AUTO POSITION, AND FATAL ALARMS (SHOWN BELOW) ARE INDICATED AT PLC
2. PUMP NO. 2 HOA SWITCH (HS-103B) IS IN OFF POSITION
3. MANHOLE NO. 3 LEVEL IS BELOW LOW LEVEL FLOAT (LSL-105)
4. MANHOLE NO. 3 LEVEL IS BELOW LOW-LOW LEVEL FLOAT (LSLL-105)

PUMP NO. 2 SHALL OPERATE IF:

1. PUMP NO. 2 HOA SWITCH (HS-103B) IS IN AUTO POSITION AND MANHOLE NO. 3 LEVEL IS ABOVE HIGH-1 LEVEL FLOAT (LSH1-105) AND PUMP NO. 2 IS DESIGNATED BY PLC AS LEAD PUMP AND NO FATAL ALARMS (SHOWN BELOW) ARE INDICATED AT PLC
2. PUMP NO. 2 HOA SWITCH (HS-103B) IS IN AUTO POSITION AND MANHOLE NO. 3 LEVEL IS ABOVE HIGH-2 LEVEL FLOAT (LSH2-105) AND PUMP NO. 2 IS DESIGNATED BY PLC AS LAG PUMP AND NO FATAL ALARMS (SHOWN BELOW) ARE INDICATED AT PLC
3. PUMP NO. 2 HOA SWITCH (HS-103B) IS IN HAND POSITION

LOGIC FOR AIR STRIPPER BLOWER (B-100)

BLOWER SHALL OPERATE IF:

1. BLOWER HOA SWITCH (HS-100) IS IN HAND POSITION
2. BLOWER HOA SWITCH (HS-100) IS IN AUTO POSITION AND [MANHOLE NO. 1 PUMP NO. 1 HOA SWITCH (HS-101A) IS IN AUTO POSITION AND MANHOLE NO. 1 PUMP NO. 1 HAS BEEN RUNNING WITHIN LAST TEN MINUTES]
3. BLOWER HOA SWITCH (HS-100) IS IN AUTO POSITION AND [MANHOLE NO. 1 PUMP NO. 2 HOA SWITCH (HS-101B) IS IN AUTO POSITION AND MANHOLE NO. 1 PUMP NO. 2 HAS BEEN RUNNING WITHIN LAST TEN MINUTES]
4. BLOWER HOA SWITCH (HS-100) IS IN AUTO POSITION AND [MANHOLE NO. 2 PUMP NO. 1 HOA SWITCH (HS-102A) IS IN AUTO POSITION AND MANHOLE NO. 2 PUMP NO. 1 HAS BEEN RUNNING WITHIN LAST TEN MINUTES]
5. BLOWER HOA SWITCH (HS-100) IS IN AUTO POSITION AND [MANHOLE NO. 2 PUMP NO. 2 HOA SWITCH (HS-102B) IS IN AUTO POSITION AND MANHOLE NO. 2 PUMP NO. 2 HAS BEEN RUNNING WITHIN LAST TEN MINUTES]
6. BLOWER HOA SWITCH (HS-100) IS IN AUTO POSITION AND [MANHOLE NO. 3 PUMP NO. 1 HOA SWITCH (HS-103A) IS IN AUTO POSITION AND MANHOLE NO. 3 PUMP NO. 1 HAS BEEN RUNNING WITHIN LAST TEN MINUTES]
7. BLOWER HOA SWITCH (HS-100) IS IN AUTO POSITION AND [MANHOLE NO. 3 PUMP NO. 2 HOA SWITCH (HS-103B) IS IN AUTO POSITION AND MANHOLE NO. 3 PUMP NO. 2 HAS BEEN RUNNING WITHIN LAST TEN MINUTES]

BLOWER SHALL NOT OPERATE IF:

1. BLOWER HOA SWITCH (HS-100) IS IN OFF POSITION
2. BLOWER HOA SWITCH (HS-100) IS IN AUTO POSITION AND FATAL ALARMS (SHOWN ON THIS DRAWING) HAVE BEEN INDICATED AT PLC FOR GREATER THAN TEN MINUTES
3. BLOWER HOA SWITCH (HS-100) IS IN AUTO POSITION AND NONE OF THE STATEMENTS LISTED ABOVE ARE TRUE

LOGIC FOR DUCT HEATER (DH-300)

DUCT HEATER SHALL OPERATE IF:

1. DUCT HEATER HEAT ON/OFF SWITCH IS IN ON POSITION AND BLOWER HOA SWITCH (HS-100) IS IN AUTO POSITION AND BLOWER (B-100) IS RUNNING

DUCT HEATER SHALL NOT OPERATE IF:

1. DUCT HEATER HEAT ON/OFF SWITCH IS IN OFF POSITION
2. DUCT HEATER HEAT ON/OFF SWITCH IS IN ON POSITION AND BLOWER HOA SWITCH (HS-100) IS IN AUTO POSITION AND BLOWER (B-100) IS NOT RUNNING

LOGIC FOR CHEMICAL METERING PUMP (CMP-200)

CHEMICAL METERING PUMP SHALL OPERATE IF:

1. AGGREGATE FLOW TRANSMITTER (FT-105) IS REGISTERING AN INSTANTANEOUS FLOWRATE

CHEMICAL METERING PUMP SHALL NOT OPERATE IF:

1. AGGREGATE FLOW TRANSMITTER (FT-105) IS NOT REGISTERING AN INSTANTANEOUS FLOWRATE

FATAL ALARMS:

1. HIGH AIR STRIPPER SUMP PRESSURE (PT-106)
2. LOW AIR STRIPPER SUMP PRESSURE (PT-106)
3. HIGH AIR STRIPPER SUMP LEVEL (LSH-100)
4. LOW AIR STRIPPER SUMP LEVEL (LSL-100)
5. HIGH AIR FLOWRATE (FT-106)
6. LOW AIR FLOWRATE (FT-106)
7. PRE-CARBON HIGH TEMPERATURE (TT-400)
8. PRE-CARBON LOW TEMPERATURE (TT-400)
9. PRE-CARBON HIGH PRESSURE (PT-400)
10. PRE-CARBON LOW PRESSURE (PT-400)
11. BUILDING WET FLOOR SENSOR ALARM (WFS-106)

NOTES:

1. CONTROLS WERE MODIFIED FROM AN ELECTRICAL CIRCUIT RELAY. BASED CONTROL SYSTEM TO A MICROPROCESSOR BASED (PROGRAMMABLE LOGIC CONTROLLER) CONTROLS BY AZTECH TECHNOLOGIES, INC, IN DECEMBER 2007.
2. MODIFIED CONTROL DETAILS AND LINE DRAWINGS/SCHEMATIC ARE PROVIDED IN THE APPENDIX OF OM&M MANUAL.
3. PLC PROGRAMMING WILL BE PERFORMED BY ARCADIS.

RECORD DRAWINGS

TO THE BEST OUR KNOWLEDGE, INFORMATION AND BELIEF, THESE RECORD DRAWINGS SUBSTANTIALLY REPRESENT THE PROJECT AS CONSTRUCTED.

DATE: 6/13/11 BY: [signature]

SCALE(S) AS INDICATED

THIS BAR REPRESENTS ONE INCH ON THE ORIGINAL DRAWING: USE TO VERIFY FIGURE REPRODUCTION SCALE

No.	Date	Revisions	By	Ckd
4	6/12/11	AS-BUILT RECORD DRAWINGS	MEC	MEC
3	3/14/11	AS-BUILT RECORD DRAWINGS	CD	CM
2	2/11/10	FINAL 100% REMEDIAL DESIGN SUBMITTAL TO NYSDEC	CM	MM
1	1/6/10	DRAFT 100% DESIGN WORK PLAN	CM	MM
0	12/2/09	DRAFT 60% DESIGN WORK PLAN	CM	MM

Professional Engineer's Name: MICHAEL E. CURRE
Professional Engineer's No.: 082521

State	Date Signed	Project Mgr.
NY	6/13/11	P.MILIONIS
Designed by	Drawn by	Checked by
C.MCLAUGHLIN	J.GONZALEZ	M.CURRIE

STATE OF NEW YORK · MICHAEL E. CURRIE · LICENSED PROFESSIONAL ENGINEER · NO. 082521

ARCADIS

ARCADIS OF NEW YORK, INC.

FORMER LOCKHEED MARTIN FRENCH ROAD FACILITY • UTICA, NEW YORK
GROUNDWATER COLLECTION AND TREATMENT SYSTEM

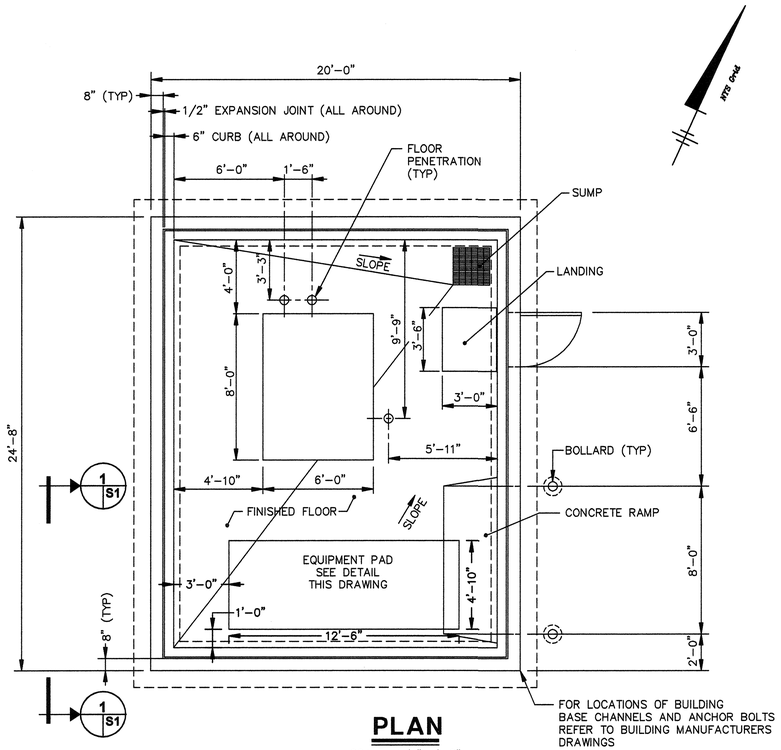
CONTROL LOGIC

ARCADIS Project No. NJ001024.0001.00005

Date MARCH 2011

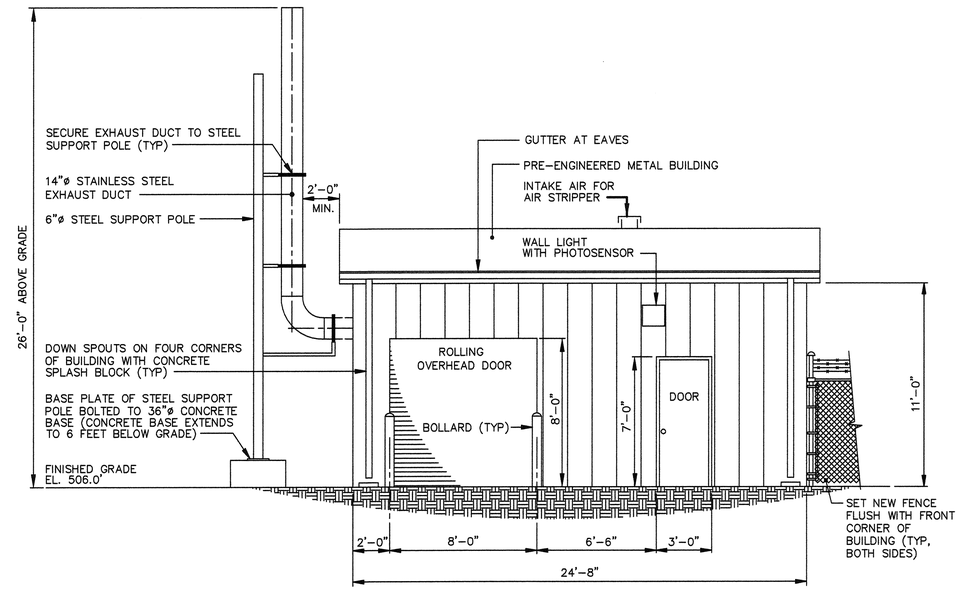
ARCADIS OF NEW YORK, INC.
465 NEW KARNER ROAD
ALBANY, NEW YORK
TEL. 518.452.7826

E-3



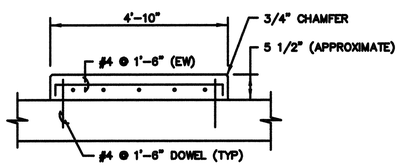
PLAN

SCALE: 1/4"=1'-0"



EAST ELEVATION

SCALE: 1/4"=1'-0"



EQUIPMENT PAD DETAIL 1 S1

NOT TO SCALE

SCALE: 1/4"=1'-0" 4' 2' 0 4' 8'

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XREFS: IMAGES: PROJECTNAME: ---
01024X00

SCALE(S) AS INDICATED

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0	12/2/09	DRAFT 60% DESIGN WORK PLAN	CM	MM

Professional Engineer's Name	MOH MOHIUDDIN PhD, PE, DEE	
Professional Engineer's No.	074527	
State	Date Signed	Project Mgr.
NY	06/13/2011	P.MILIONIS
Designed by	Drawn by	Checked by
C.MCLAUGHLIN	J.GONZALEZ	E.PANHORST

STATE OF NEW YORK · MOH MOHIUDDIN · 074527 · LICENSED PROFESSIONAL ENGINEER

ARCADIS

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GROUNDWATER COLLECTION AND TREATMENT SYSTEM

BUILDING ELEVATION, SECTION AND DETAILS

ARCADIS Project No. NJ001024.0001.00005

Date MARCH 2011

ARCADIS OF NEW YORK, INC.
465 NEW KARNER ROAD
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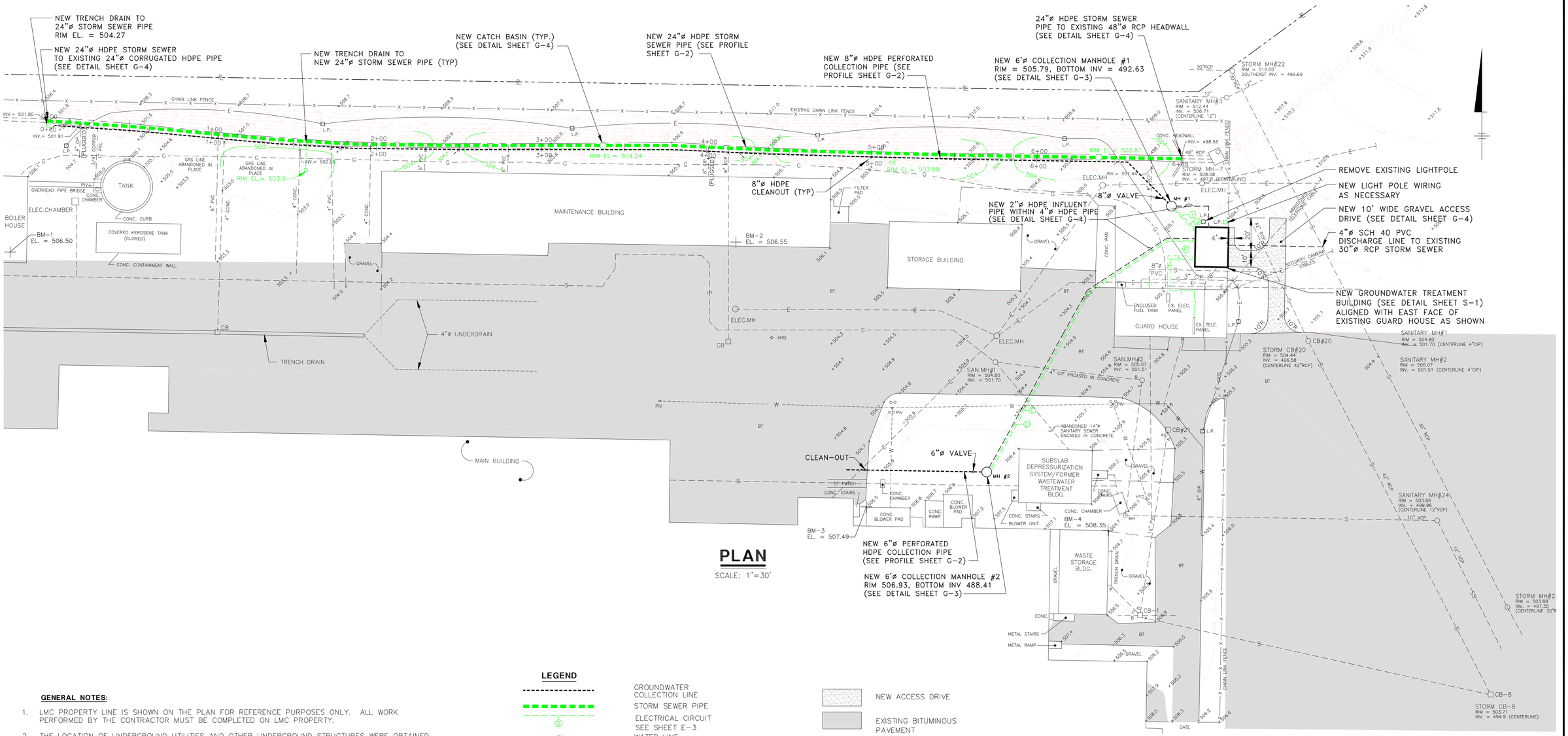
S-1



PLAN

SCALE: 1"=30'

GENERAL NOTES:

1. LMC PROPERTY LINE IS SHOWN ON THE PLAN FOR REFERENCE PURPOSES ONLY. ALL WORK PERFORMED BY THE CONTRACTOR MUST BE COMPLETED ON LMC PROPERTY.
2. THE LOCATION OF UNDERGROUND UTILITIES AND OTHER UNDERGROUND STRUCTURES WERE OBTAINED BY FIELD MEASUREMENT WHERE POSSIBLE, OTHERWISE OBTAINED FROM OTHER SOURCES AND ARE APPROXIMATE ONLY. OTHER UNDERGROUND UTILITIES MAY EXIST, THE LOCATION OF WHICH AT THIS TIME ARE UNKNOWN. THE CONTRACTOR SHALL VERIFY THE LOCATION OF UTILITIES IN THE FIELD PRIOR TO INITIATING WORK UNDER THIS CONTRACT.
3. BASE MAP PREPARED FROM SURVEY INFORMATION GENERATED BY BLASLAND, BOUCK & LEE, INC. DATED 8/30/95. ELEVATIONS BASED ON BOILER HOUSE FIRST FLOOR ELEVATION OF 506.50 FROM A MAP BY O'BRIEN & GERE ENGINEERS ENTITLED "PAVEMENT AND DRAINAGE REHABILITATION PLAN" DATED 6/23/94. CONTOUR INTERVAL = 1 FOOT.

LEGEND

- GROUNDWATER COLLECTION LINE
- STORM SEWER PIPE
- ELECTRICAL CIRCUIT SEE SHEET E-3
- WATER LINE
- TELEPHONE LINE
- EXISTING SANITARY SEWER
- EXISTING STORM SEWER
- EXISTING WATER LINE
- EXISTING GAS LINE
- EXISTING ELECTRIC LINE
- EXISTING CHAIN LINK FENCE
- EXISTING PROPERTY LINE
- NEW ACCESS DRIVE
- EXISTING BITUMINOUS PAVEMENT
- HYD. EXISTING HYDRANT
- PIV EXISTING POSITION INDICATOR VALVE
- L.P. EXISTING LIGHT POLE
- MH #22 EXISTING MANHOLE
- CB#21 EXISTING CATCH BASIN

1"=30' 30' 0 30' 60'

RECORD DRAWING: MADE FROM BBL DRAWING G-1, FILE NUMBER 380.92.01F, DATED OCTOBER 13, 1995

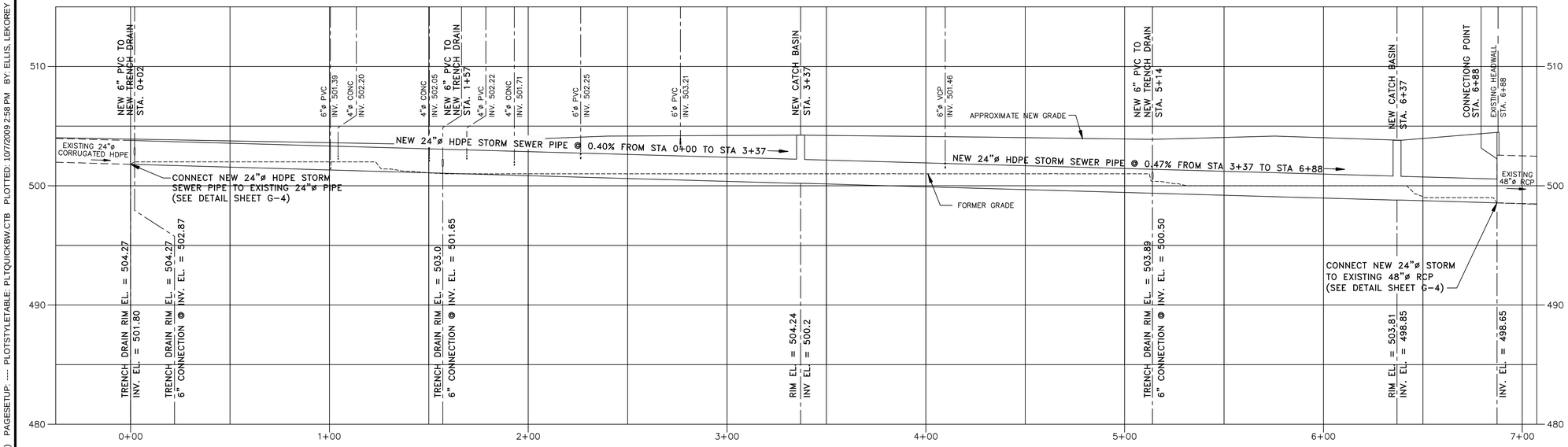
LOCKHEED MARTIN CORPORATION
UTICA, NEW YORK

GROUNDWATER COLLECTION AND TREATMENT SYSTEM

SITE PLAN

ARCADIS

FIGURE
G-1

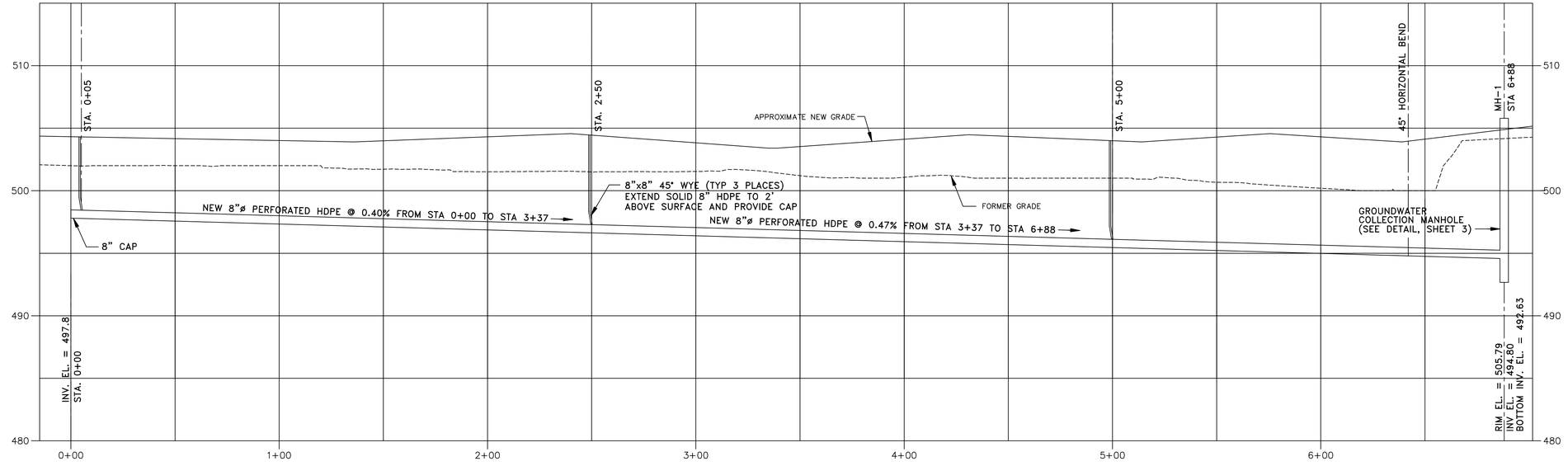


NOTES:

1. NEW GRADE ELEVATIONS ARE SHOWN AS REFERENCE ONLY. ACTUAL AS-BUILT GRADES MAY VARY.

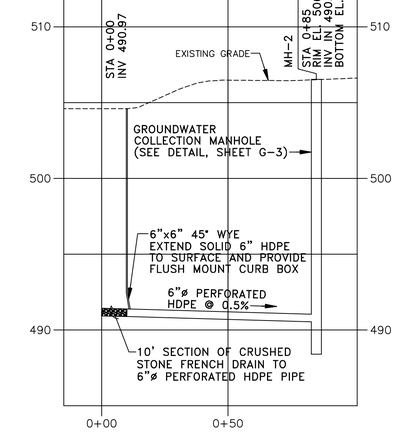
DRAINAGE DITCH AREA STORM SEWER PROFILE

SCALE: HORIZ. 1" = 30'
VERT. 1" = 5'



DRAINAGE DITCH AREA GROUND-WATER COLLECTION SYSTEM PROFILE

SCALE: HORIZ. 1" = 30'
VERT. 1" = 5'



SOLVENT DOCK AREA GROUND-WATER COLLECTION SYSTEM PROFILE

SCALE: HORIZ. 1" = 30'
VERT. 1" = 5'

SCALE: 1"=30' 0 30' 60'

SCALE: 1"=5' 0 5' 10'

RECORD DRAWING: MADE FROM BBL DRAWING G-2, FILE NUMBER 380.92.02F, DATED OCTOBER 13, 1995

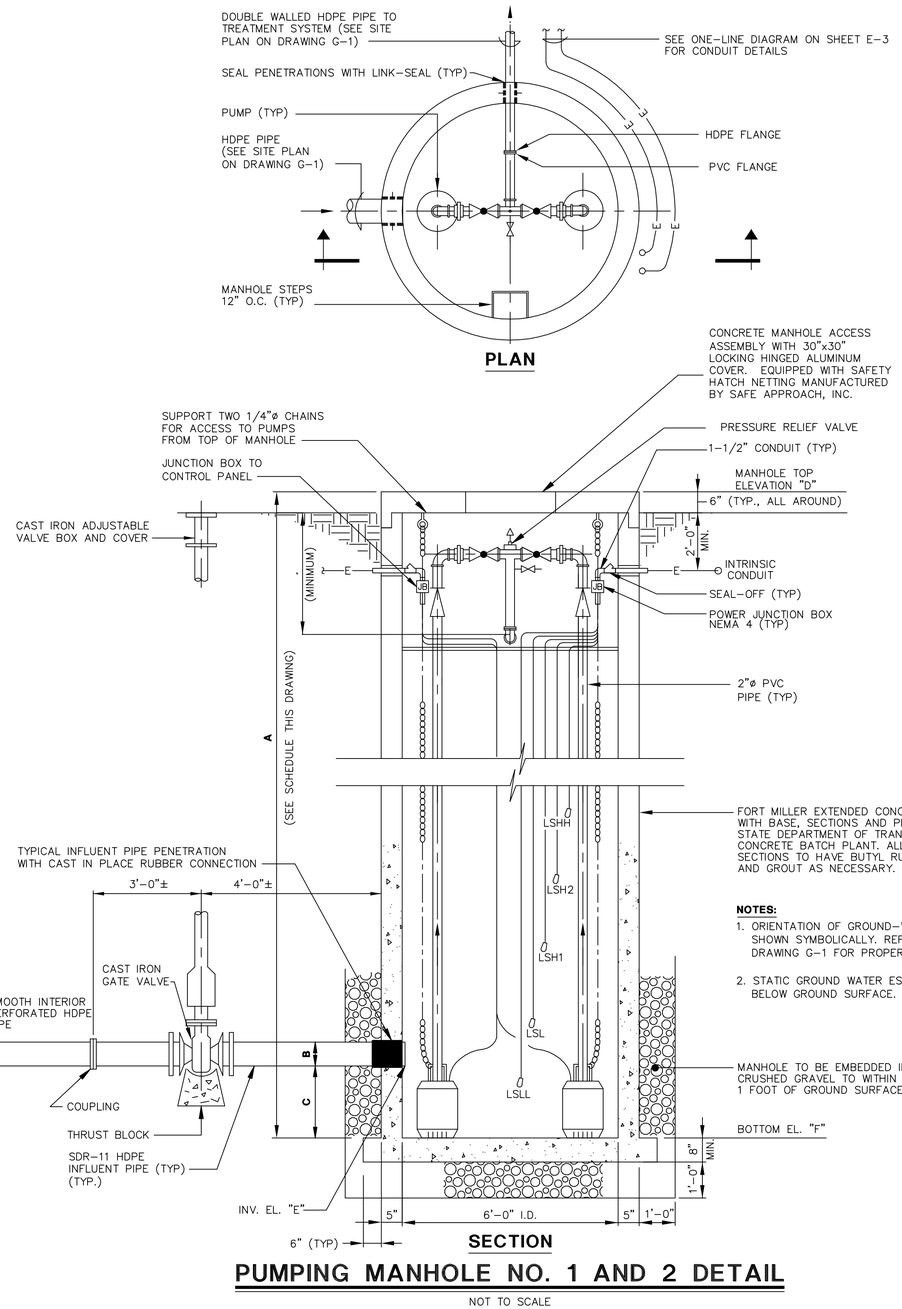
LOCKHEED MARTIN CORPORATION
UTICA, NEW YORK
GROUNDWATER COLLECTION AND TREATMENT SYSTEM

PROFILES

ARCADIS

FIGURE
G-2

CITY:CARY DIV/GROUP:41 DB:LELLIS LD:(Opt) PIC:(Opt) PM:(Reqd) TM:(Opt) LYR:(Opt)ON=*;OFF=*REF*
G:\ENVCAD\Cary\RETURN-TO\Newtown-NY\NJ001\00\000110\0002\MAP\REPORT\NONE\380975\01\380975G02.DWG LAYOUT: G-2 SAVED: 8/20/2009 6:55 PM ACADVER: 17.1S (LMS TECH) PAGESETUP: ---- PLOTSTYLETABLE: PLTQUICKBW.CTB PLOTTED: 10/7/2009 2:58 PM BY: ELLIS, LEKOREY
XREFS: 38097X00 IMAGES: PROJECTNAME: ----



PUMPING MANHOLE NO. 1 AND 2 DETAIL

NOT TO SCALE

NOTES:

1. ORIENTATION OF GROUND-WATER COLLECTION PIPE SHOWN SYMBOLICALLY. REFER TO SITE PLAN ON DRAWING G-1 FOR PROPER ORIENTATION.
2. STATIC GROUND WATER ESTIMATED AT 3-6 FEET BELOW GROUND SURFACE.

NOT TO SCALE

SPECIFICATIONS AND NOTES (APPLICABLE TO DRAWINGS G-1 THROUGH E-3)

1. AIR STRIPPER SYSTEM TO BE MANUFACTURED BY SHALLOWTRAY MODEL 3631, 316 AS SPECIFIED IN MATERIAL AND PERFORMANCE SPECIFICATION MP-04006.
2. ALL PVC PIPES SHALL BE SCHEDULE 80 TYPE II UNLESS OTHERWISE SPECIFIED.
3. ALL PVC JOINTS TO BE SOLVENT WELDED.
4. ALL PVC PIPES SHALL BE SUPPORTED EVERY 5'-0" AND LOCATED 2'-0" (MAX) FROM JOINT LOCATIONS.
5. ALL CORRUGATED HDPE PIPE SHALL BE ADS N-12 SMOOTH INTERIOR OR EQUAL. ALL OTHER HDPE PIPE TO BE SDR-11 OR SDR-17 AS INDICATED.
6. ALL HDPE JOINTS TO BE BUTT FUSED.
7. ALL PIPE AND HOSE TO BE INSTALLED AND PRESSURE-TESTED AS PER MANUFACTURER'S SPECIFICATIONS. ZERO LEAKAGE IS ALLOWED FOR ALL JOINTS.
8. ALL PIPING AND MANIFOLDS TO BE LABELED WITH STENCIL OR ADHESIVE. FLOW ARROWS TO BE LABELED AT INLET AND DISCHARGE CONNECTIONS, PIPING AND DESCRIPTION (E.G., MANHOLE NO. 1 INFLUENT) SHALL ALSO BE CLEARLY LABELED AT ALL VALVE AND APPURTENANCE LOCATIONS.
9. FLOW METERS SHALL BE SIGNET ANALOG FLOW TOTALIZER, WHICH DISPLAYS FLOW RATE AND TOTALIZED FLOW VOLUME OR EQUAL. SIGNET INDICATOR SHALL BE A MODEL P57540. ASSOCIATED SIGNET SENSOR SHALL BE MODEL P51530-PO. FITTINGS AND DIAL RANGES ARE AS FOLLOWS:
   A. MANHOLE NO. 1, 2 INCH DIAMETER INFLUENT LINE
      SENSOR FITTING – PV8T020
      DIAL RANGE – 0-60 GPM
   B. MANHOLE NO. 2, 2 INCH DIAMETER INFLUENT LINE
      SENSOR FITTING – PV8T020
      DIAL RANGE – 0-30 GPM
   C. SUMP PUMP 1-INCH DIAMETER INFLUENT LINE
      SENSOR FITTING – PV8T012
      DIAL RANGE – 0-30 GPM
10. ALL FLOW METERS SHALL HAVE STRAIGHT PIPE PRECEDING (10 TIMES PIPE DIAMETER) AND FOLLOWING (5 TIMES PIPE DIAMETER) THEM.
11. ALL SAMPLE TAPS AND DRAIN VALVES SHALL CONSIST OF A 1/2"ø PIPE EXTENSION AND BALL VALVE OR EQUAL. SAMPLE TAPS AND DRAIN VALVES SHALL BE LOCATED AT LOCATIONS SHOWN ON THE DRAWINGS AND AT ALL LOW ELEVATIONS IN PROCESS PIPING.
12. ALL BALL VALVES TO BE PVC TRUE UNION TYPE WITH VITON SEALS BY TRUE BLUE OR EQUAL.
13. ALL BALL CHECK VALVES TO BE PVC, TRUE UNION TYPE WITH VITON SEALS BY PLASTO-MATIC OR EQUAL.
14. ALL PRESSURE GAUGES TO BE TRERICE MODEL NO. 450 LFB (WET) SILICONE-FILLED OR EQUAL. DIAL RANGES ARE AS FOLLOWS:
   A. MANHOLE NO. 1 INFLUENT LINE – (0-30 PSI)
   B. MANHOLE NO. 2 INFLUENT LINE – (0-30 PSI)
   C. SUMP PUMP INFLUENT LINE – (0-15 PSI)
15. SUMP PUMP SHALL BE A GRUNDFOG MODEL BOSS 210-A STAINLESS STEEL TOP-DISCHARGE SUBMERSIBLE SUMP PUMP WITH AUTOMATIC FLOAT SWITCH.
16. MANHOLE NO. 1 PUMPS SHALL BE GOULDS PUMPS MODEL 3887 WITH VITON SEALS AND CAST IRON IMPELLER (3/4 HP, 230 VOLTS, 1,750 RPM, 1 PHASE) CAPABLE OF 20 GPM @ 23 FEET TDH (ONE PUMP) AND 40 GPM @ 28 FEET TDH (TWO PUMPS) OR EQUAL.
17. MANHOLE NO. 2 PUMPS SHALL BE GOULDS PUMPS MODEL 3887 WITH VITON SEALS AND CAST IRON IMPELLER (3/4 HP, 230 VOLTS, 1,750 RPM, 1 PHASE) CAPABLE OF 10 GPM @ 26 FEET TDH (ONE PUMP) AND 20 GPM @ 30 FEET TDH (TWO PUMPS) OR EQUAL.
18. DUCTWORK
   A. UNLESS SPECIFICALLY SHOWN OTHERWISE, DUCTWORK SHALL BE FABRICATED OF ASTM AA167 TYPE 316 STAINLESS STEEL, SCHEDULE 10.
   B. DUCTWORK JOINTS, FABRICATION, AND SUPPORTS SHALL BE IN ACCORDANCE WITH SMACNA DUCT CONSTRUCTION STANDARDS.
   C. ALL DUCTWORK TO BE AIR TIGHT.
19. POTABLE WATER LINE PIPING SHALL BE ASTM B88 TYPE L COPPER WITH ANSI/ASME B16.29 WROUGHT COPPER FITTINGS. JOINTS SHALL BE SOLDERED WITH GRADE 95TA SOLDER.
20. ITEMS OF SPECIFIC MANUFACTURERS SHALL BE INSTALLED IN STRICT ACCORDANCE WITH THE PRINTED INSTRUCTIONS AND/OR THE MANUFACTURERS REPRESENTATIVES DIRECTIONS.
21. ALL WALL PENETRATIONS SHALL BE SEALED WITH SILICONE AND COORDINATED WITH BUILDING MANUFACTURER SO AS NOT TO VOID BUILDING WARRANTEE.
22. ALL EXPOSED METALLIC SURFACES SHALL BE CORROSION RESISTANT OR CORROSION RESISTANT PAINTED.
23. ALL EQUIPMENT SHALL BE SUPPLIED AS SHOWN ON THE DRAWINGS. ANY PROPOSED DEVIATION FROM THE DRAWING MUST BE APPROVED BY LMC'S REPRESENTATIVE.
24. CONCRETE COATING SYSTEM TO BE PROVIDED AS PER SPECIFICATION MP-03002.
25. CONTRACTOR TO PROVIDE AND MOUNT ON WALL A FULLY-CHARGED DRY CHEMICAL TYPE FIRE EXTINGUISHER WITH AN A, B, C, RATING KIDDE OR EQUAL.
26. ALL WORK SHALL BE IN ACCORDANCE WITH LOCAL BUILDING CODES AND LOCAL HEALTH DEPARTMENT REGULATIONS.
27. SLOP SINK SHALL BE MUSTEE UTILATUB MODEL 18F OR EQUAL. PROVIDE WITH MANUFACTURERS FAUCET WITH SWING SPOUT 1-1/2" BASKET STRAINER AND P-TRAP.
28. NEW MANHOLES SHALL BE EXFILTRATION TESTED AS FOLLOWS: THE MANHOLE SHALL BE FILLED WITH POTABLE WATER FOR 8 HOURS AND WILL BE ACCEPTABLE IF, FOR A TWO-HOUR OBSERVATION PERIOD THE LEAKAGE RATE IN THE STRUCTURE IS BELOW ONE GALLON PER VERTICAL FOOT OF DEPTH OVER A CALCULATED 24-HOUR PERIOD, NO VISIBLE LEAKAGE OF ANY AMOUNT IS ACCEPTABLE.
29. DESIGN LOADS: ALL STRUCTURAL LOADS AND LOAD COMBINATIONS SHALL BE IN ACCORDANCE WITH THE NEW YORK STATE BUILDING CODE.
30. SEE MECHANICAL DRAWINGS FOR LOCATION OF ALL OPENINGS IN FLOOR AND WALLS NOT SHOWN ON STRUCTURAL DRAWINGS. THE CONTRACTOR SHALL VERIFY THE NUMBER, SIZE AND LOCATION OF ALL OPENINGS BEFORE POURING ANY CONCRETE.
31. ALL BACKFILL REQUIRED AS THE RESULT OF OVER EXCAVATION, UNLESS DIRECTED BY REPRESENTATIVES OF LMC, SHALL BE MADE WITH COMPACTED SPECIAL BACKFILL OR LEAN CONCRETE FILL.
32. BACKFILL AT WALLS SHALL BE PLACED AND COMPACTED SIMULTANEOUSLY ON BOTH SIDES.
33. BACKFILL SHALL NOT BE PLACED AGAINST FOUNDATION WALLS UNTIL 28-DAY DESIGN STRENGTH IS REACHED OR THE WALLS ARE ADEQUATELY BRACED.
34. ALL STEEL REINFORCING SHALL BE SECURELY WIRED TOGETHER IN THE FORMS.
35. ALL EXPOSED EDGES OF CONCRETE SHALL BE CHAMFERED 3/4-INCH.
36. ALL SURFACES AT RECENTLY POURED CONCRETE RECEIVING NEW CONCRETE SHALL BE PREPARED BY CLEANING, WETTING AND TREATMENT WITH A NEAT CEMENT GROUT.
37. TRENCH DRAIN SHALL CONSIST OF A 24" WIDE , 11" DEEP AND 39" LONG PRECAST CONCRETE DRAIN WITH CAST IRON GRATING, AND 6"ø OUTLET.
38. PUMPING MANHOLES NO.1 AND NO.2 ARE ELECTRICALLY CLASSIFIED AS CLASS 1, DIVISION 1, GROUP D ATMOSPHERES.

LEGEND

- BALL VALVE
- CHECK VALVE
- NUT UNION
- SAMPLE/DRAIN TAP
- E — POWER WIRING
- PRESSURE RELIEF VALVE

COLLECTION MANHOLE SCHEDULE

DESCRIPTION	MH-1	MH-2
DIST. A	13'-1"	18'-5"
DIST. B	0'-8"	0'-6"
DIST. C	2'-0"	2'-0"
TOP EL. D	505.79'	506.93'
INV. EL. E	494.66'	490.44'
BOT. EL. F	492.63'	488.41'
LSLL	494.13'	489.91'
LSL	495.13'	491.41'
LSH1	497.63'	493.41'
LSH2	499.63'	496.41'
LSHH	502.13'	499.41'

RECORD DRAWING: MADE FROM BBL DRAWING G-3, FILE NUMBER 380.92.03F, DATED OCTOBER 13, 1995

LOCKHEED MARTIN CORPORATION
UTICA, NEW YORK
GROUNDWATER COLLECTION AND TREATMENT SYSTEM

PUMPING MANHOLE DETAILS AND SPECIFICATIONS

ARCADIS

FIGURE
G-3

CITY:CARY DIV/GROUP:41 DB:LELLIS LD:(Opt) PIC:(Opt) PM:(Reqd) TM:(Opt) LYR:(Opt)ON=*OFF=*REF*
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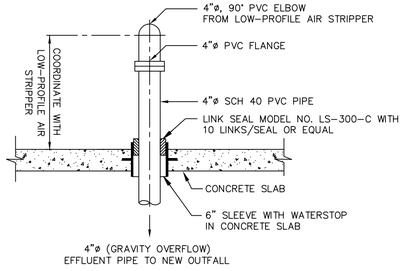
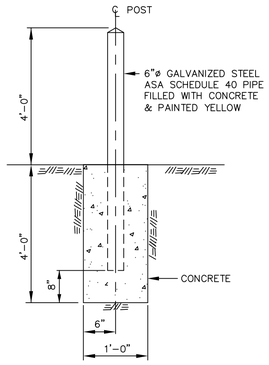


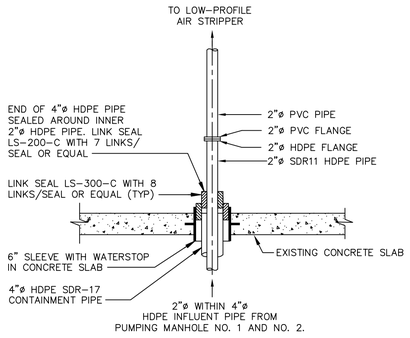
EFFLUENT PIPE DETAIL

NOT TO SCALE



BOLLARD DETAIL

NOT TO SCALE



INFLUENT PIPE DETAIL

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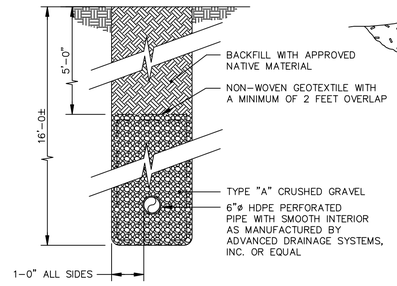
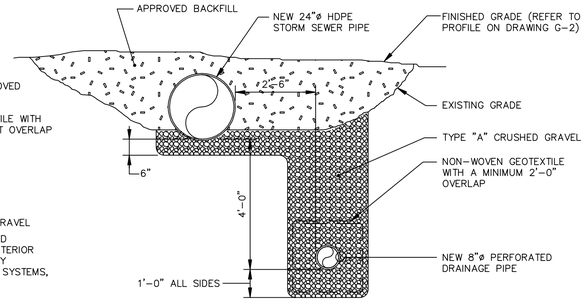


SOLVENT DOCK AREA TRENCH DETAIL

NOT TO SCALE



DRAINAGE DITCH AREA TRENCH DETAIL

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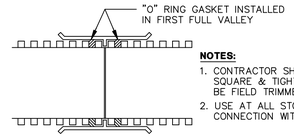
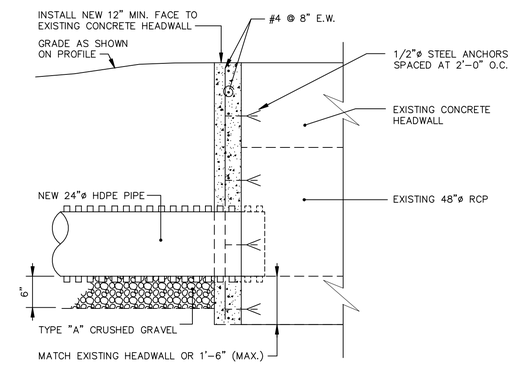


NOTES:

1. CONTRACTOR SHALL MAKE ALL JOINTS SQUARE & TIGHT. DAMAGED ENDS SHALL BE FIELD TRIMMED.
2. USE AT ALL STORM SEWER PIPE JOINTS & CONNECTION WITH EXISTING 24"ø STORM SEWER.

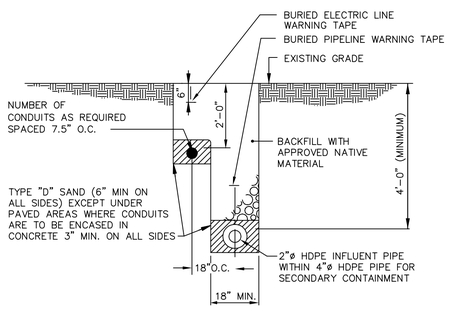
STORM SEWER PIPE COUPLING DETAIL

NOT TO SCALE



STORM SEWER CONNECTION TO EXISTING CONCRETE HEADWALL DETAIL

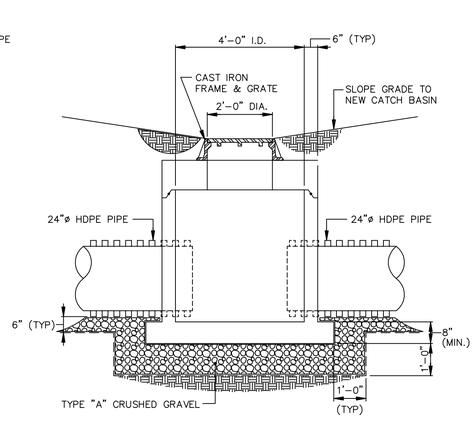
NOT TO SCALE



TYPICAL TRENCH DETAIL

NOT TO SCALE

NOT TO SCALE



CATCH BASIN DETAIL

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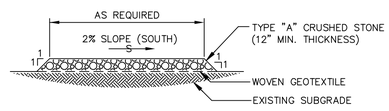


NOTES:

1. ROAD SUBGRADE SHALL BE STRIPPED OF NATIVE VEGETATION TO THE BOTTOM OF ROOT ZONE. THE SUBGRADE WILL THEN BE PROOF ROLLED WITH A SMOOTH DRUM VIBRATORY ROLLER WITH A MINIMUM STATIC WEIGHT OF 10 TONS.
2. AREAS THAT DO NOT PASS PROOF ROLLING WILL BE OVER EXCAVATED AND REPLACED WITH CRUSHED STONE AS DIRECTED BY LMC'S REPRESENTATIVE.
3. WOVEN GEOTEXTILE SHALL BE PLACED OVER THE PROPOSED ROAD SUBGRADE SO THAT IT IS FREE OF FOLD AND WRINKLES. MINIMUM OVERLAPS BETWEEN ROLLS OF GEOTEXTILE SHALL BE 3 FEET.
4. CRUSHED STONE WILL BE PLACED FROM TRUCKS ONTO EXISTING CRUSHED STONE AND THEN SPREAD ONTO THE GEOTEXTILE WITH A DOZER. UNDER NO CIRCUMSTANCE IS CONSTRUCTION EQUIPMENT TO DRIVE DIRECTLY ON THE GEOTEXTILE OR WITH LESS THAN 6-INCHES OF CRUSHED STONE OVER THE GEOTEXTILE.
5. AFTER COMPLETION OF FINISH GRADING ALL POINTS ON THE ROAD SURFACE SHALL BE ROLLED AT LEAST 4 TIMES WITH A SMOOTH DRUM VIBRATORY ROLLER WITH A MINIMUM STATIC WEIGHT OF AT LEAST 10 TONS.

GRAVEL ACCESS DRIVE DETAIL

NOT TO SCALE

RECORD DRAWING: MADE FROM BBL DRAWING G-4, FILE NUMBER 380.92.04F, DATED OCTOBER 13, 1995

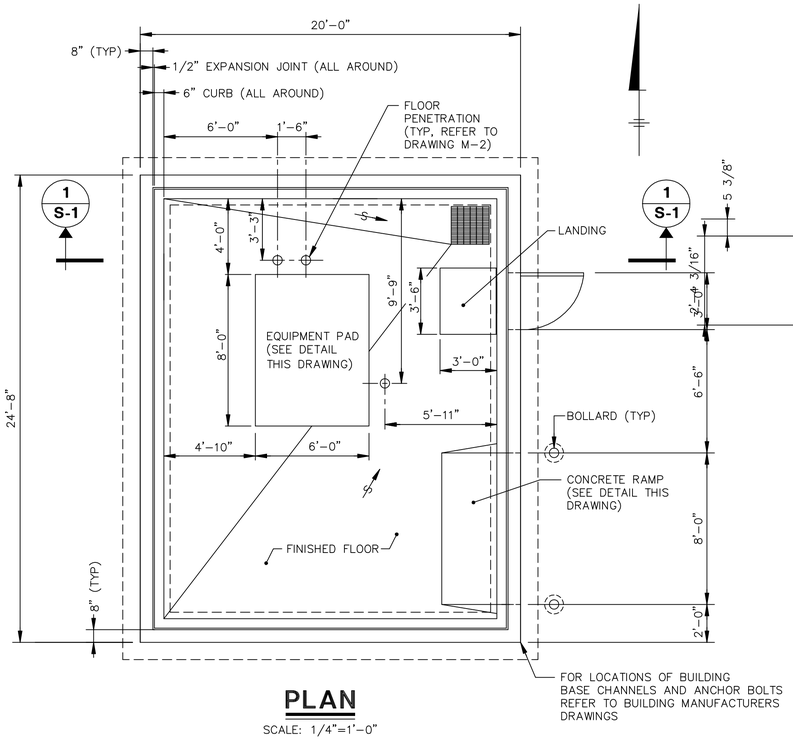
LOCKHEED MARTIN CORPORATION
UTICA, NEW YORK

GROUNDWATER COLLECTION AND TREATMENT SYSTEM

MISCELLANEOUS DETAILS

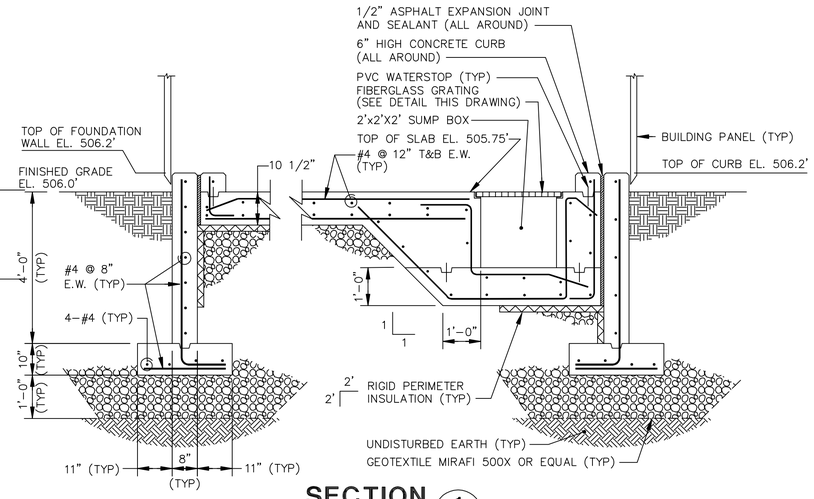
ARCADIS

FIGURE
G-4



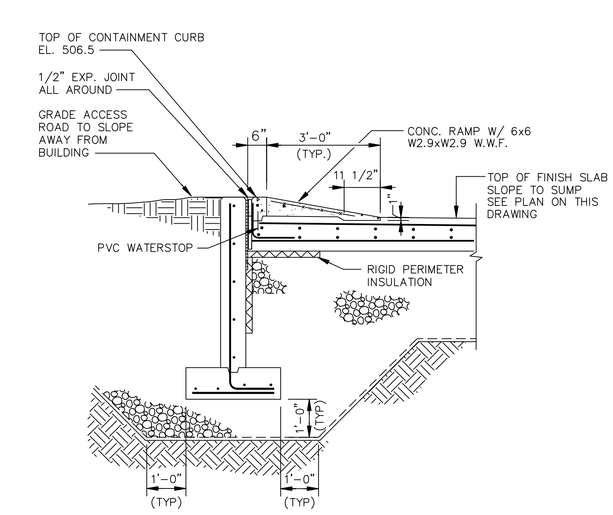
PLAN

SCALE: 1/4"=1'-0"



SECTION 1/S-1

SCALE: 1/2"=1'-0"

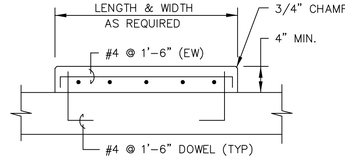


NOTES:

1. SEE SECTION 1 ON THIS DRAWING FOR REINFORCING, BAR SIZE & SPACING.
2. SLOPE SIDES OF RAMP DOWN TO BASE SLAB.

TYPICAL RAMP DETAIL

SCALE: 1/2" = 1'-0"

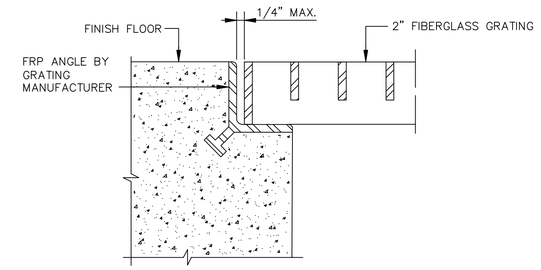


NOTE:

ANCHOR BOLTS FOR EQUIPMENT AND PAD SIZES SHALL BE IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS.

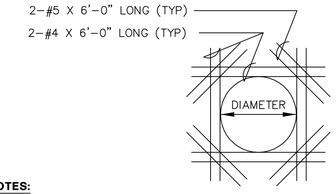
EQUIPMENT PAD DETAIL

NOT TO SCALE



GRATING DETAIL

NOT TO SCALE



NOTES:

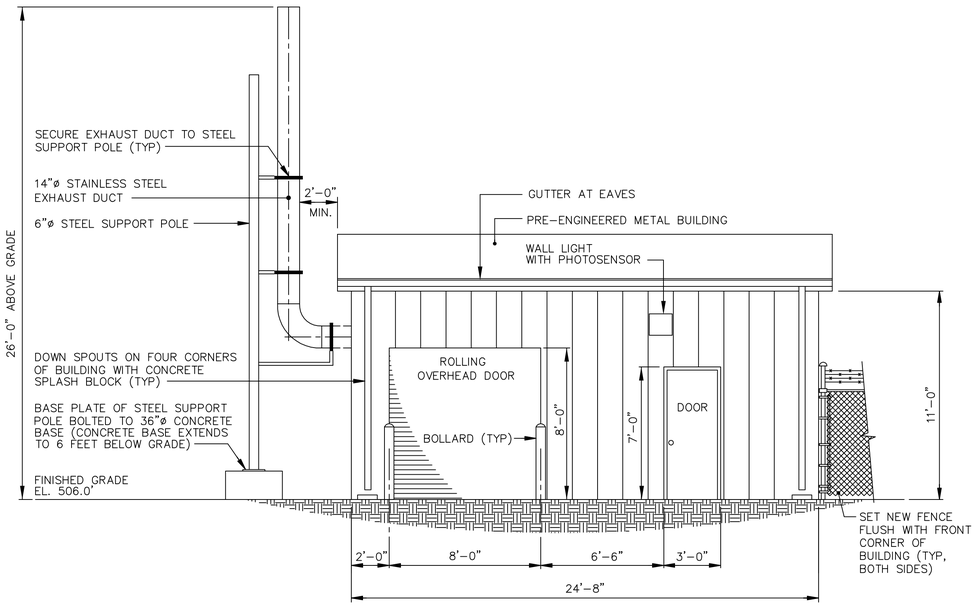
1. PROVIDE ADDITIONAL REINFORCEMENT WHEN OPENING SIZE OR DIAMETER IS EQUAL TO OR GREATER THAN SPECIFIED BAR SPACING.
2. PROVIDE ONE HALF THE AREA OF CUT BARS EACH SIDE, MINIMUM (2)-#4 @ 6" E.F.
3. EXTEND REINFORCEMENT A MINIMUM OF 48 BAR DIAMETERS BEYOND THE FACE OF THE OPENING. WHEN EMBEDMENT CAN NOT BE OBTAINED EXTEND BARS AS FAR AS POSSIBLE AND PROVIDE STANDARD HOOK.
4. ADDITIONAL DIAGONAL REINFORCEMENT FOR ALL OPENINGS GREATER THAN 4'-0", PROVIDE ONE HALF AREA OF CUT BARS EACH CORNER MINIMUM (2)-#6 @ 6" E.F.

ADDITIONAL REINFORCING DETAIL AT SLAB OPENINGS

NOT TO SCALE

GENERAL NOTE:

FOR STRUCTURAL NOTES REFER TO DRAWING G-3



EAST ELEVATION

SCALE: 1/4"=1'-0"

SCALE:
1/4"=1'-0" 4' 2' 0 4' 8'
1/2"=1'-0" 2' 0 2' 4'

LOCKHEED MARTIN CORPORATION
UTICA, NEW YORK

GROUNDWATER COLLECTION AND TREATMENT SYSTEM

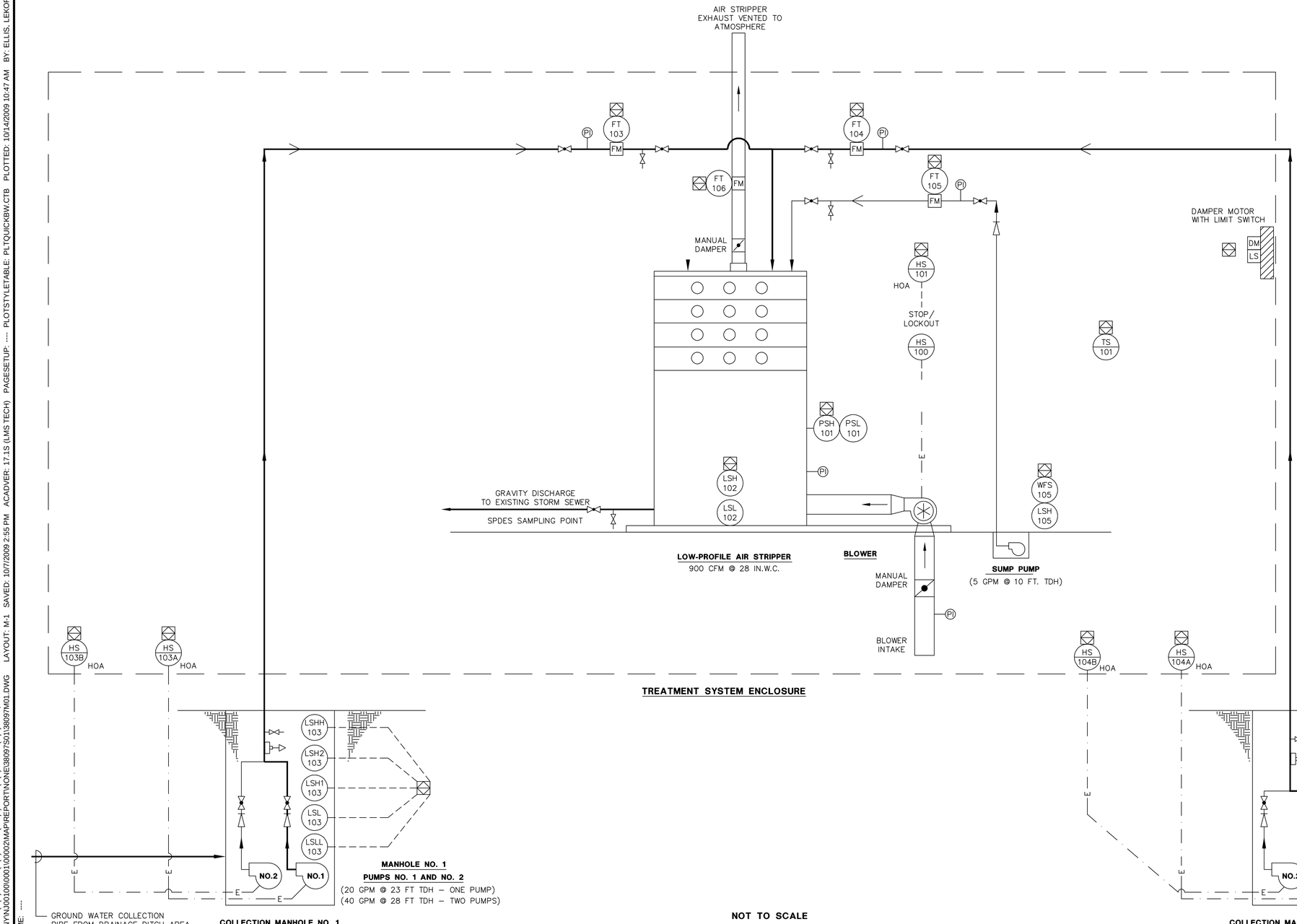
BUILDING ELEVATION, SECTION AND DETAILS

ARCADIS

FIGURE
S-1

RECORD DRAWING: MADE FROM BBL DRAWING S-1, FILE NUMBER 380.92.05F, DATED OCTOBER 13, 1995

CITY:CARY DIV/GROUP:41 DB:LELLIS LD:(Opt) PIC:(Opt) PM:(Read) TM:(Opt) LYR:(Opt)ON=*;OFF=*REF* G:\ENVCAD\Cary\RETURN-TON\newtown-NY\NJ001001000100002\MAP\REPORT\NONE\380973S01\380973S01.DWG LAYOUT: S-1 SAVED: 8/21/2009 1:55 PM ACADVER: 17.1S (LMS TECH) PAGESETUP: ---- PLOTSTYLETABLE: PLTQUICKBW.CTB PLOTTED: 10/7/2009 2:57 PM BY: ELLIS, LEKOREY
XREFS: 380973X00 IMAGES: PROJECTNAME: ----



LEGEND

- PI — PRESSURE INDICATOR
- SAMPLE/DRAIN TAP
- CHECK VALVE
- BALL VALVE
- FM — FLOW METER
- -E- — POWER WIRING
- HOA — HAND–OFF–AUTO
- FT 100 — INSTRUMENT TAG No. (SEE CONTROL LOGIC ON OM&N APPENDIX)
- PLC (INTERLOCK)
- LSH 102 — FIELD MOUNTED
- HS 103B — PANEL MOUNTED
- FLOW DIRECTION
- PRESSURE RELIEF VALVE
- HS — HAND SWITCH
- LSH — LEVEL SENSOR HIGH
- LSHH — LEVEL SENSOR HIGH HIGH
- LSL — LEVEL SENSOR LOW
- LSLL — LEVEL SENSOR LOW LOW
- PSL — PRESSURE SENSOR LOW
- PSH — PRESSURE SENSOR HIGH
- TS — TEMPERATURE SENSOR
- PI — PRESSURE INDICATOR

RECORD DRAWING: MADE FROM BBL DRAWING M-1, FILE NUMBER 380.92.02F, DATED OCTOBER 13, 1995

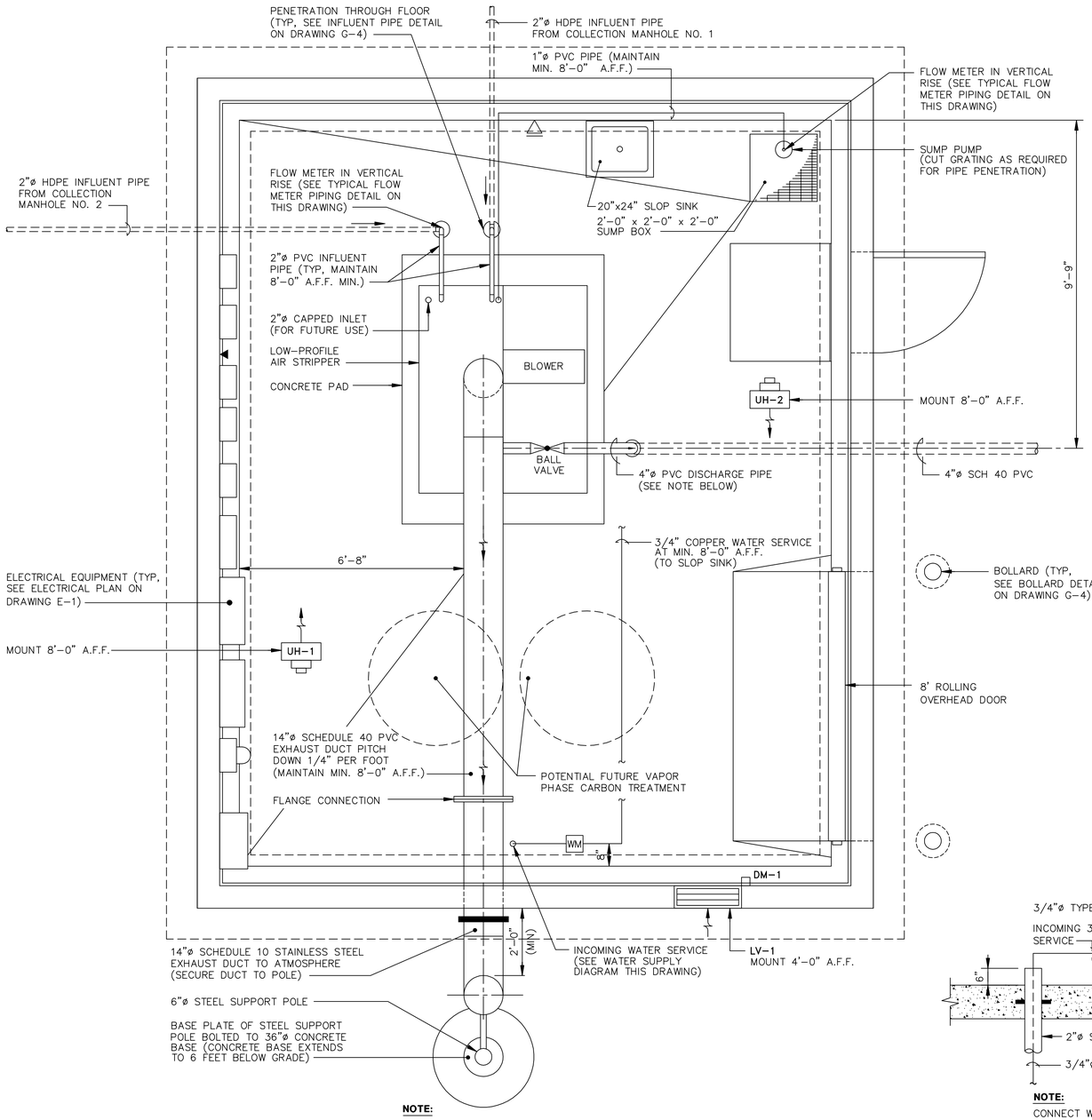
LOCKHEED MARTIN CORPORATION
UTICA, NEW YORK

GROUNDWATER COLLECTION AND TREATMENT SYSTEM

PROCESS AND INSTRUMENTATION DIAGRAM

ARCADIS

FIGURE
M-1



NOTE:

CONTRACTOR SHALL VERIFY ALIGNMENT OF 4"ø DISCHARGE PIPE PENETRATION WITH AIR STRIPPER MANUFACTURER.

FLOOR PLAN

SCALE: 1/2"=1'-0"

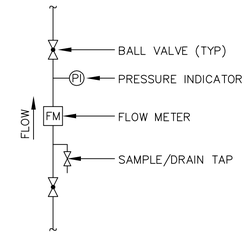
1/2"=1'-0" 1' 0 1' 2'

LEGEND

- DIRECTION OF FLOW
- AIR FLOW
- HOSE BIBB
- WM — WATER METER

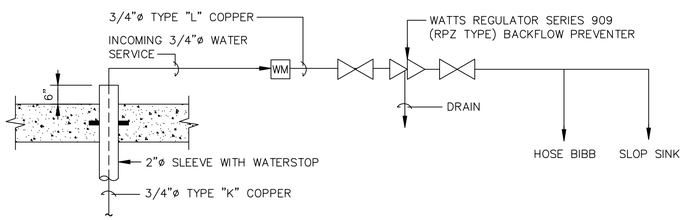
ABBREVIATIONS:

A.F.F.	ABOVE FINISHED FLOOR
MIN.	MINIMUM
DM	DAMPER MOTOR
LV	LOUVER
UH	UNIT HEATER
B.V.	BALL VALVE



TYPICAL FLOW METER PIPING DETAIL

NOT TO SCALE



NOTE:

CONNECT WATER SUPPLY SERVICE TO EXISTING GUARD HOUSE WATER SUPPLY LINE TO SPIGOT.

WATER SUPPLY DIAGRAM

NOT TO SCALE

HEATING AND VENTILATING EQUIPMENT SPECIFICATIONS:

A. UNIT HEATERS

UNIT HEATER (UH-2)

1. HEATER SHALL BE CHROMOLAX CATALOG NO. LUH-10-43 OR EQUAL
2. HEATER SHALL BE 10 kW, 460 VAC, THREE PHASE, CAPABLE OF 750 CFM 47° RISE AND 27° THROW.
3. PROVIDE WITH MANUFACTURER'S INTEGRAL THERMOSTAT AND HANGER KIT.

B. LOUVERS

LOUVER (LV-1)

1. LOUVER SHALL BE ARROW UNITED MODEL NO. 690, RUSKIN MODEL NO. ELC6375 D, OR EQUAL.
2. LOUVER SHALL BE ALUMINUM, COMBINATION TYPE WITH DRAINABLE BLADES.
3. LOUVER LV-1 SHALL HANDLE 900 CFM AT APPROXIMATELY 650 FPM FREE AREA VELOCITY AND A MAXIMUM PRESSURE DROP OF 0.05" W.C.

C. DAMPER MOTORS

DAMPER MOTOR (DM-1)

1. DAMPER MOTORS SHALL BE 120 VAC, 2 POSITION SPRING RETURN, 60-INCH POUNDS TORQUE WITH AUXILIARY SWITCH TO MAKE OR BREAK A CIRCUIT AT THE POWERED END OF STROKE.
2. DAMPER MOTORS SHALL BE BARBER COLEMAN MODEL NO. MA418-500.

GENERAL NOTES:

1. ALL WORK SHALL CONFORM TO ALL APPLICABLE RULES, REGULATIONS AND CODES INCLUDING, BUT NOT LIMITED TO, NEW YORK STATE BUILDING CODES AND LOCAL HEALTH DEPARTMENT REGULATIONS.
2. ITEMS OF SPECIFIC MANUFACTURERS SHALL BE INSTALLED IN STRICT ACCORDANCE WITH THE PRINTED INSTRUCTIONS AND/OR THE MANUFACTURER'S REPRESENTATIVES DIRECTIONS.
3. ALL ELECTRICAL EQUIPMENT SHALL BE U.L. LISTED AND LABELED.
4. THE CONTRACTOR SHALL FIELD VERIFY ALL DIMENSIONS.
5. ALL THERMOSTATS SHALL BE MOUNTED 5'-0" AFF.
6. DIMENSIONS SHOWN "AFF" INDICATE THE ACTUAL CLEAR DIMENSION FROM THE FINISHED FLOOR ELEVATION TO THE BOTTOM OF THE UNIT.
7. ALL INDOOR PROCESS EQUIPMENT EXHAUST DUCTS SHALL BE PVC. ALL OUTDOOR EXHAUST DUCTS SHALL BE STAINLESS STEEL.
8. PROTECT ALL HEATING AND VENTILATING EQUIPMENT FROM DAMAGE DURING CONSTRUCTION. DAMAGED UNITS SHALL BE REPLACED AT NO ADDITIONAL COST TO THE OWNER.
9. INTERIOR OF AIR STRIPPER AND AREA WITHIN 3-FEET OF BLOWER ARE ELECTRICALLY CLASSIFIED AS CLASS 1, DIVISION 1, GROUP D ATMOSPHERE.

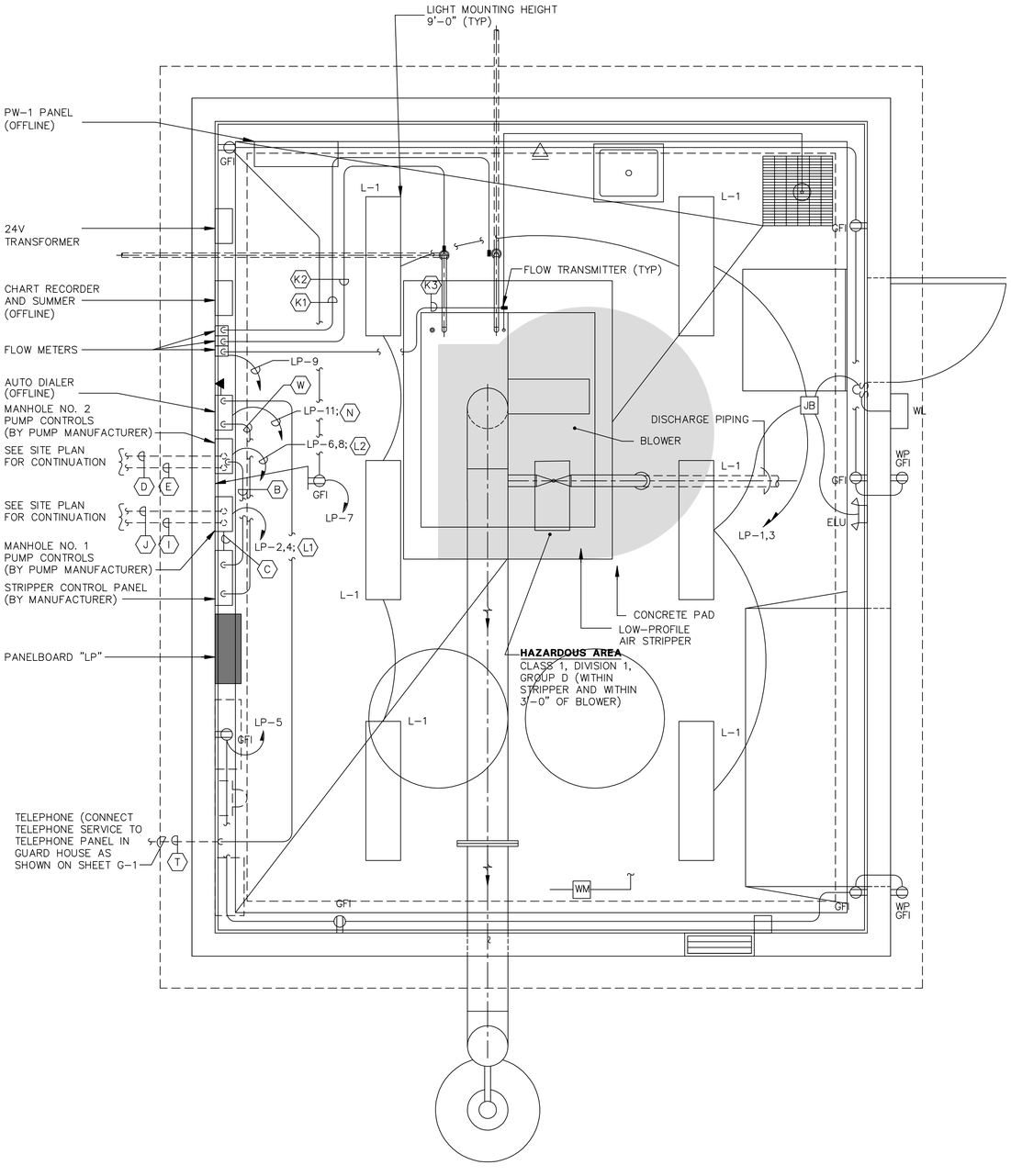
RECORD DRAWING: MADE FROM BBL DRAWING M-2, FILE NUMBER 380.92.07F, DATED OCTOBER 13, 1995

LOCKHEED MARTIN CORPORATION
UTICA, NEW YORK
GROUNDWATER COLLECTION AND TREATMENT SYSTEM

FLOOR PLAN AND DETAILS

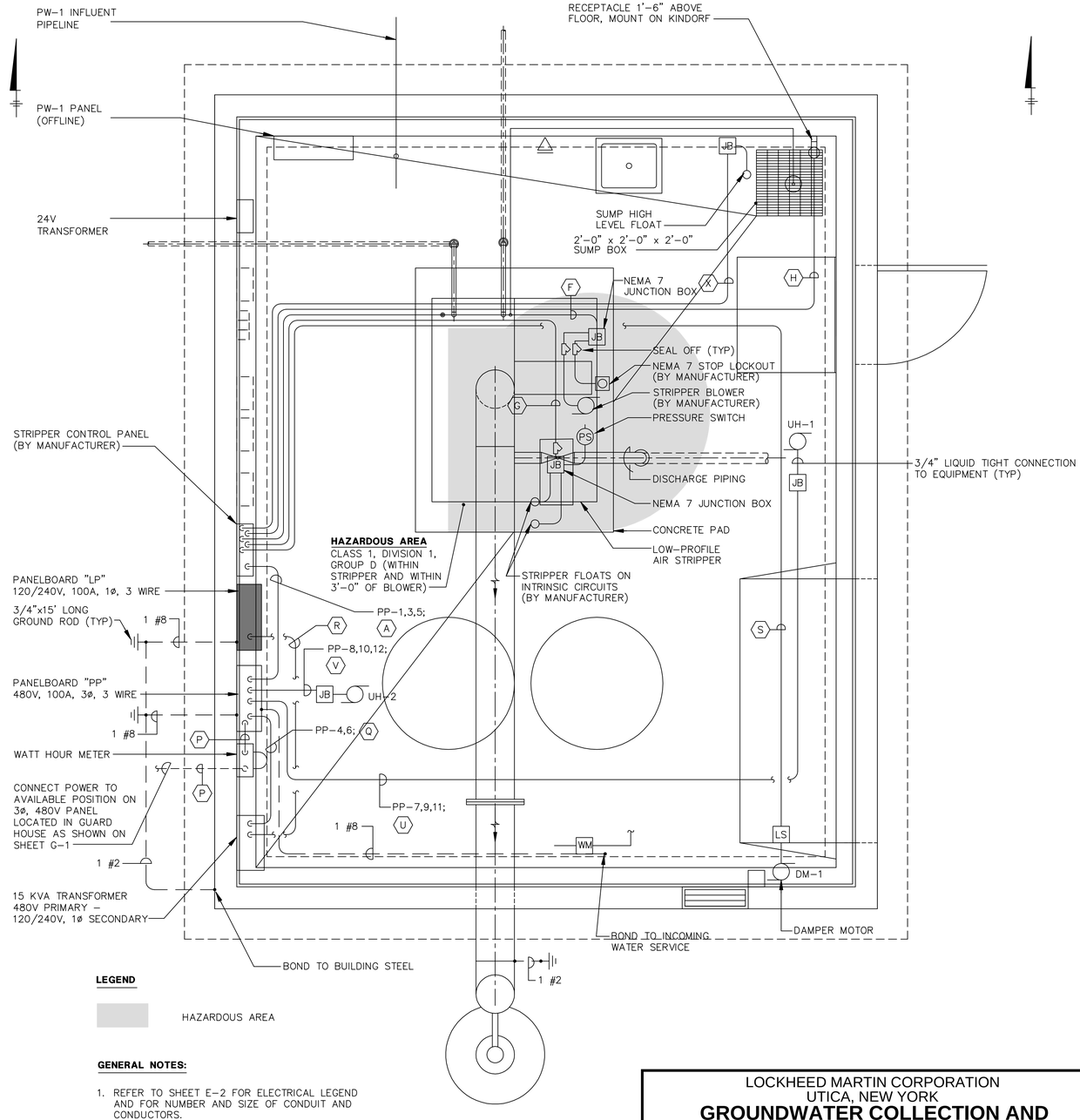
ARCADIS

FIGURE
M-2



LIGHTING PLAN

SCALE: 1/2" = 1'-0"



POWER PLAN

SCALE: 1/2" = 1'-0"

LEGEND

HAZARDOUS AREA

GENERAL NOTES:

1. REFER TO SHEET E-2 FOR ELECTRICAL LEGEND AND FOR NUMBER AND SIZE OF CONDUIT AND CONDUCTORS.

SCALE:

1/2"=1'-0" 2' 0 2' 4'

RECORD DRAWING: MADE FROM BBL DRAWING E-1, FILE NUMBER 380.92.08F, DATED OCTOBER 13, 1995

LOCKHEED MARTIN CORPORATION
UTICA, NEW YORK

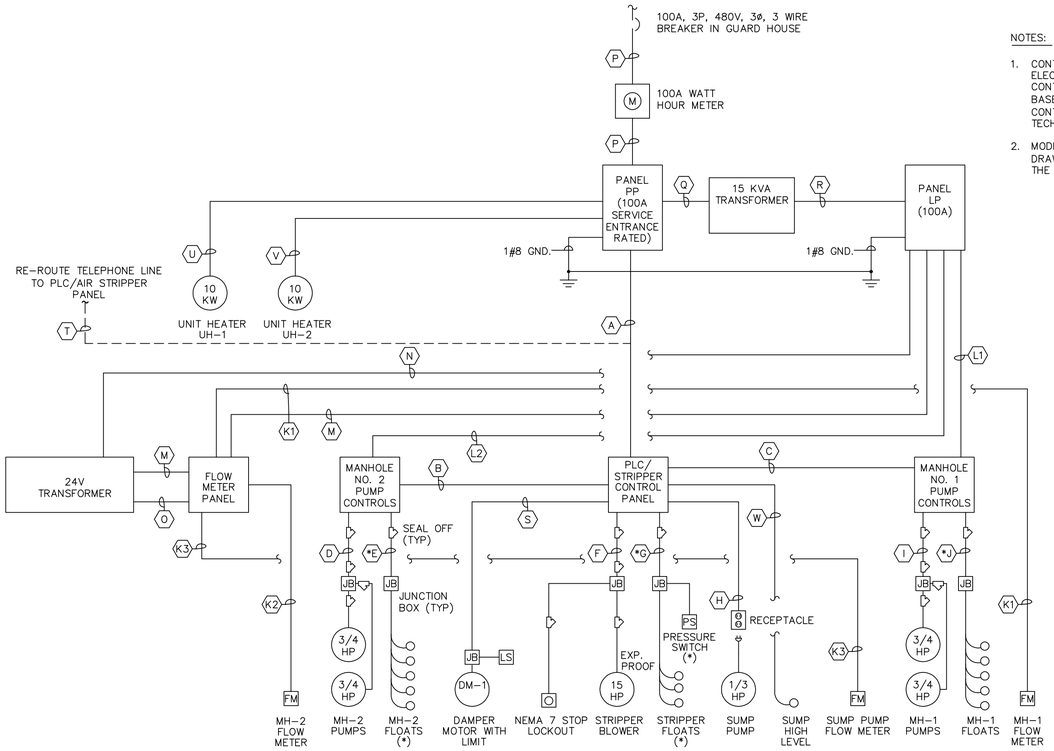
GROUNDWATER COLLECTION AND TREATMENT SYSTEM

ELECTRICAL FLOOR PLANS

ARCADIS

FIGURE
E-1

CITY:CARY DIV/GROUP:41 DB:LELLIS LD:(Opt) PIC:(Opt) PM:(Reqd) TM:(Opt) LYR:(Opt)ON=*;OFF=*REF*
G:\ENVCAD\Cary\RETURN-TO\Newtown-NY\NJ00100\0001\100002\MAP\REPORT\NONE\38097S01\38097E01.DWG LAYOUT: E-1 SAVED: 8/21/2009 2:17 PM ACADVER: 17.1S (LMS TECH) PAGESETUP: ---- PLOTSTYLETABLE: PLTQUICKBW.CTB PLOTTED: 10/7/2009 2:56 PM BY: ELLIS, LEKOREY
XREFS:
38097X00
IMAGES:
PROJECTNAME: ----



ONE-LINE DIAGRAM

NOT TO SCALE

NOTES:

1. CONTROLS WERE MODIFIED FROM A ELECTRICAL CIRCUIT RELAY. BASED CONTROL SYSTEM TO A MICROPROCESSOR BASED (PROGRAMMABLE LOGIC CONTROLLER) CONTROLS BY AZTECH TECHNOLOGIES, INC, IN DECEMEBR 2007.
2. MODIFIED CONTROL DETAILS AND LINE DRAWING/SCHEMATIC ARE PROVIDED IN THE APPENDIX OF OM&N MANUAL.

SWITCH

CIRCUIT ○	CONDUCTOR SIZE	CONDUIT SIZE	NAME
A	3 #10, #10G	3/4" EMT	BLOWER, SUMP PUMP, AND STRIPPER CONTROL POWER FEED
B	8 #14	3/4" EMT	CONTROL PANEL TO MANHOLE NO. 2 PUMP CONTROLS
C	8 #14	3/4" EMT	CONTROL PANEL TO MANHOLE NO. 1 PUMP CONTROLS
D	6 #12, 2 #12G	1-1/2" EMT (INDOORS) 1" RGS (OUTDOORS)	MANHOLE NO. 2 PUMP POWER
E*	10 #12	1-1/2" EMT (INDOORS) 1" RGS (OUTDOORS)	MANHOLE NO. 2 LEVEL SWITCHES
F	3 #8, 1 #12G 2 #14	1-1/2" RGS	BLOWER POWER AND CONTROL
G*	8 #14	3/4" RGS	BLOWER PRESSURE SWITCH & LEVEL SWITCHES
H	2 #12, 1 #12G	3/4" RGS	SUMP PUMP RECEPTACLE POWER
I	6 #12, 2 #12G	1" RGS	MANHOLE NO. 1 PUMP POWER
J*	10 #14	1" RGS	MANHOLE NO. 1 LEVEL SWITCHES
K1 K2 K3	MANUFACTURER'S CABLES	3/4" RGS	MANHOLE NO. 1 FLOW METER, MANHOLE NO. 2 FLOW METER, & SUMP PUMP FLOW METER

CIRCUIT ○	CONDUCTOR SIZE	CONDUIT SIZE	NAME
L1 L2	3 #10, 1 #10G	3/4" EMT	PUMP CONTROL PANEL POWER FEEDS
M	2 #12, 1 #12G	3/4" EMT	FLOW METER & CHART REC. POWER FEED
N	2 #12, 1 #12G	3/4" EMT	24V TRANSFORMER POWER FEED
O	3 TSP #16	3/4" EMT	FLOW SIGNALS
P	3 #2, 1 #6G	1-1/2" EMT (RGS OUTDOORS)	BUILDING POWER
Q	3 #8, 1 10G	1" SEAL TITE	TRANSFORMER FEED
R	3 #6, 1 #8G	1" SEAL TITE	PANEL LP FEED
S	2 #12, 1 #12G 2 #14	3/4" EMT	DAMPER MOTOR AND LIMIT SWITCH
T	6 #22	1-1/2" RGS	TELEPHONE SERVICE
U	3 #10, 1 #10G	3/4" EMT	UNIT HEATER (UH-1)
V	3 #10, 1 #10G	3/4" EMT	UNIT HEATER (UH-2)
W	10 #14	3/4" EMT	SUMP HIGH LEVEL

* INDICATES INTRINSICALLY SAFE SYSTEM PER NEC-504

CONDUCTOR SCHEDULE

NOT TO SCALE

NOT TO SCALE

PANELBOARD LP SCHEDULE

LOCATION : GROUND WATER TREATMENT BUILDING
MAIN BUS RATINGS : 100 AMPS , 240/120
MINIMUM SHORTCIRCUIT INTERUPTING RATING : 10,000
MAIN BREAKER TRIP : 60 AMPS ,
ESTIMATED CONNECTED LOAD : 7.1 KVA

FED FROM : PANEL "PP" CIRCUITS 4 & 6
VOLTS , 1 PHASE , 3 WIRE
RMS. SYMM. AMPS NQOD TYPE
INCOMING FEED : 3#6, 1#8 GND., 1"C
ENCLOSURE : SURFACE MOUNTED NEMA 1

DESCRIPTION	LOAD W-KW-HP	CB AMPS	CIR.	CIR.	CB AMPS	LOAD W-KW-HP	DESCRIPTION	
INDOOR LIGHTING	480W	20/1	1	2	30/2	1.5 HP	MANHOLE NO.1 PUMP CONTROLS	L1
OUTDOOR LIGHTING	300W	20/1	3	4				
RECEPTACLES (SOUTH)	720W	20/1	5	6	30/2	1.5 HP	MANHOLE NO.2 PUMP CONTROLS	L2
RECEPTACLES (NORTH)	900W	20/1	7	8				
FLOW METER & CHART RECORDER	–	20/1	9	10	20/1	–	SPARE	
SPARE	–	20/1	11	12	20/1	–	SPARE	
SPARE	–	20/1	13	14	20/1	–	SPARE	
SPARE	–	20/1	15	16	20/1	–	SPARE	
SPARE	–	20/1	17	18	20/1	–	SPARE	
SPARE	–	20/1	19	20	20/1	–	SPARE	

PANELBOARD PP SCHEDULE

LOCATION : GROUND WATER TREATMENT BUILDING
MAIN BUS RATINGS : 100 AMPS , 480
MINIMUM SHORTCIRCUIT INTERUPTING RATING : 10,000
MAIN BREAKER TRIP : 100 (SERVICE ENTRANCE RATED) AMPS ,
ESTIMATED CONNECTED LOAD : –

FED FROM : GUARD HOUSE PANEL CIRCUIT
VOLTS , 3 PHASE , 3 WIRE
RMS. SYMM. AMPS I-LINE HCN TYPE
INCOMING FEED : 3#2, 1#6 GND., 1-1/2"C
ENCLOSURE : SURFACE MOUNTED NEMA 1

	DESCRIPTION	LOAD W-KW-HP	CB AMPS	CIR.	CIR.	CB AMPS	LOAD W-KW-HP	DESCRIPTION	
A	BLOWER, STRIPPER CONTROLS	15HP	45/3	1	2			SPACE	
	SUMP PUMP, & DAMPER MOTOR			3	4	35/2	15KVA	TRANSFORMER FEED	Q
				5	6				
U	UNIT HEATER (UH-1)	10KW	30/3	7	8	30/3	10KW	UNIT HEATER (UH-2)	V
				9	10				
				11	12				

LEGEND

n	2 LAMP FLUORESCENT LIGHT FIXTURE, LETTER DENOTES FIXTURE TYPE
WL	EXTERIOR WALL PACK LIGHT FIXTURE
ELU	EMERGENCY LIGHT FIXTURE
S	SINGLE POLE SWITCH
	DUPLEX RECEPTACLE
GFI	GROUND FAULT CIRCUIT INTERRUPTER DUPLEX RECEPTACLE
JB	JUNCTION BOX
	MOTOR
	CIRCUIT HOMERUN
	TELEPHONE OUTLET
LS	LIMIT SWITCH
	CIRCUIT BREAKER

RECORD DRAWING: MADE FROM BBL DRAWING E-2, FILE NUMBER 380.92.09F, DATED OCTOBER 13, 1995
DRAWING E-3, FILE NUMBER 380.92.10F, DATED OCTOBER 13, 1995

LOCKHEED MARTIN CORPORATION
UTICA, NEW YORK
GROUNDWATER COLLECTION AND TREATMENT SYSTEM

ONE LINE DIAGRAM, CONDUCTOR AND PANELBOARD SCHEDULES

ARCADIS

FIGURE
E-2

ARCADIS

Appendix B

Monthly O&M Checklists

Monthly OM&M Log Sheet, Groundwater Collection and Treatment System, Solvent Dock Area, Former Lockheed Martin French Road Facility, Utica, New York

Date: 1/15/13
Time: 8:30
Technician: CD/JG

SYSTEM STATUS

System operational? *(PLC screen indicating system in "AUTO" or "MANUAL")* AUTO
System currently cycling? Yes, MH-3
Alarms? (list) None

Electrical Meter Reading (kWh): 134953

AIR STRIPPER PARAMETERS (record while air stripper is running)

Parameter	Value	Units
Air stripper sump pressure [PI-106]	27.0	(in. W.C.)
Air stripper sump water elevation *(record from site gauge)*	15.625	(inches)
Blower intake line vacuum [PI-100]	2.1	(in. W.C.)
Main damper position *(record distance from center of wingnut to outside of blower housing)*	$2\frac{5}{16}$	(inches)
Interior dilution damper position *(0° is shut, 90° is open)*	0	(°)

Is white "POWER ON" light on air stripper control panel lit? Light bulb should be replaced
Is air stripper hand-off-auto switch [HS-100B] in "AUTO" position? Yes
Note scaling inside liquid effluent pipe from access port Very little
Note scaling observed inside air stripper via clear tray access door Very little.

FLOWMETER / PUMP PARAMETERS

Are white power lights lit on MH-1, MH-2, and MH-3 control panels? (Y/N) Yes
Are pump hand-off-auto switches [HS-101A, HS-101B, HS-102A, HS-102B, HS-103A, and HS-103B] in "auto" position? (Y/N) Yes

Parameter	MH-1 [FT-101]	MH-2 [FT-102]	MH-3 [FT-103]	Sump [FT-104]	Cumulative [FT-105]
Date/Time	1/15/13 9:22	→	→	→	→
Instantaneous Flowrate [gpm]	31.6-32.1	16.4-16.9	15.3-15.5	—	55.9-57.2
"Total" Flow (resettable, gal)	—	—	—	—	—
"Perm" Flow (gal)	16442788	2791636	2730579	1652	8973358
Pump 1 Running (Y/N)?	Y	Y	Y	N	NA
Pump 2 Running (Y/N)?	N	N	N	NA	NA

- Flowrate and Permanent Flow can be viewed locally from wall-mounted flow transmitters FT-101 through FT-105 using up/down arrows.

VAPOR PHASE PARAMETERS (record while air stripper is running)

Is duct heater "HEAT ON/OFF" light lit? (Y/N) Yes *(located on duct heater control panel door)*
Is duct heater "HI TEMP" alarm light on? (Y/N) No *(located on duct heater control panel door)*

Monthly OM&M Log Sheet, Groundwater Collection and Treatment System, Solvent Dock Area, Former Lockheed Martin French Road Facility, Utica, New York

Date: 1/15/13
Time: 8:40
Technician: CD/JG

VAPOR PHASE PARAMETERS (continued)

Parameter	PID Tag	Value	Units	Notes
Pre-Duct Heater Temperature	TI-300	62	(°F)	
Pre-Carbon Temperature	TI-400	88	(°F)	
Duct Heater Temperature Setpoint	-	85	(°F)	*(located in green on duct heat control panel)*
Duct Heater Temperature Transmitter	-	85	(°F)	*(located in red on duct heat control panel)*
Pre-Carbon Pressure	PI-401	11.9	(in. W.C.)	
Mid-Carbon Pressure	PI-402	4.2	(in. W.C.)	
Effluent Pressure	PI-403	< 1	(in. W.C.)	

TRANSMITTER READINGS (record from ProControl)

Parameter	PID Tag	Value	Units	Notes
Air Stripper Sump Pressure	PT-106	29.6	(in. W.C.)	
Vapor Flowrate	FT-106	735-830	(cfm)	
Pre-Carbon Temperature	TT-400	86.6	(°F)	
Pre-Carbon Pressure	PT-400	8.9	(in. W.C.)	
Building Temperature	TT-100	68.9	(°F)	

- Press the "I/O" up/down arrows on the ProControl screen until the desired transmitter value is displayed.

SEQUESTERING AGENT (record while air stripper is running)

Parameter	Status	Notes
Is pump operating? (Y/N)	Yes	
Is low flow alarm present? (Y/N)	No	
Is pump in external mode? (Y/N)	Yes	
If in external mode, record one set of mA and stroke speed values	4.8 (mA) 5 (spm)	*(display screen should automatically be switching back and forth between mA and stroke speed)*
Stroke length	100	*(record from local stroke length knob on pump)*
Sequestering agent drum level [LI-200]	12.4	~ 1/4" below 12.5 gal tick mark
Quantity of additional full drums	two	

Inspect sequestering agent components for signs of leaking or wear (tubing [suction, injection, bleed return], injection check valve fitting, spill pallet, etc.): OK

MONTHLY OM&M TASKS

Note: MH-1 must be online during sample collection, if necessary wait for MH-1 Pump 1 or 2 to turn on automatically (MH-1 typically batches every 1.5 hours). 8:55

Task	Notes
Monthly liquid effluent sample collected? (Y/N)	Yes
pH of effluent sample	7.86
Model of pH meter	Hanna HI991001
Calibration notes / method used	two-point cal
Are MH-2 or MH-3 online in auto during sampling collection?	No

Monthly OM&M Log Sheet, Groundwater Collection and Treatment System, Solvent Dock Area, Former Lockheed Martin French Road Facility, Utica, New York

Date: 1/15/13
Time: 9:30
Technician: CD

MONTHLY OM&M TASKS (continued)

Task	Notes
Liquid flow sensors cleaned? (Y/N) (*only as needed*)	No
Monthly manhole inspections conducted? (Y/N)	Yes
Leaking/dripping of water observed from double-walled HDPE discharge pipe located inside manhole? (Y/N)	No, none of 3
Do level floats appear to be in good condition and hanging freely? (Y/N)	Yes, all 3 (15 floats)
Observe groundwater inside each manhole and note odor and appearance	MH-1 → No odor, no sheen, clear MH-3; odor, clear MH-2→ no odor, clear, no visible sheen.
Is confined space entry signage present at each manhole? (Y/N)	Yes, all 3 MH's
With pump(s) running, visually inspect discharge piping, pipe fittings, and pressure relief valve for leaks	MH-1 OK MH-2 →
With pump(s) running, listen for any unusual sounds	MH-1; when pump 2 turns off line in MH-1 shakes. MH-2→
Inspect condition of collection line gate valve protection flush-mount covers for each manhole	MH-1 Good MH-2 Good MH-3 Good
With system running, visually inspect all piping within the treatment system for leaks, signs of distress, or any other notable observations	OK
Treatment system valves exercised? (Y/N) *(should be conducted with system in-between batch cycles)*	Yes
List any notable observations	MH-1 + MH-2 in-line ball valves tough
Are both building heaters working properly? (Y/N) *(adjust respective wall-mounted thermostats for both heaters and confirm proper heater response)*	Yes

HEALTH AND SAFETY

Item	Status
Is fire extinguisher charged, unobstructed, and possessing an inspection tag? (Y/N)	Yes
Is eyewash/shower station operational and unobstructed? (Y/N)	Yes
Is interior emergency lighting operational? (Y/N)	Yes
Is first aid kit present and in good condition? (Y/N)	Yes
Is lockout/tagout equipment available? (Y/N)	Yes
Have electrical GFIs been tested and reset? (Y/N)	Yes
Do all electrical panels have 36" of open floor space in front of them? (Y/N)	Yes
Are both the OM&M Manual and HASP onsite? (Y/N) *(note dates for each)*	HASP → March 2012, OMM March 2011 Addendum Nov 2012 OM&M
Is emergency spill kit available? (Y/N)	Yes, in SSDS
Is H&S signage including emergency contact list, eye protection hearing protection, and automatic equipment present? (Y/N)	Yes
Is current SPDES permit onsite? (Y/N) (note date)	Yes, April 2011

Quarterly OM&M Log Sheet, Groundwater Collection and Treatment System, Solvent Dock Area, Former Lockheed Martin French Road Facility, Utica, New York

Date: 1/15/13
Time: 9:45
Technician: CD/JG

QUARTERLY OM&M TASKS

Quarterly liquid influent samples collected for MH-1, MH-2, and MH-3? (Y/N) Yes

MH-1 influent pH 7.35
MH-2 influent pH 7.98
MH-3 influent pH 8.10

Note: MH-1 must be online during sample collection, if necessary wait for MH-1 Pump 1 or 2 to turn on automatically (MH-1 typically batches every 1.5 hours).

Quarterly vapor samples collected pre-carbon, mid-carbon, and effluent? (Y/N) Yes

Are MH-2 or MH-3 online in auto during sampling collection? No

Quarterly catch basin samples collected for CB-1, CB-2, and CB-3? (Y/N) Yes

Quarterly groundwater elevation levels collected? (Y/N) Yes

Blower bearings greased? (Y/N) No

Indicate air velocity measurement collected from 8" effluent pipe (*plug located on wall side of vertical portion of effluent pipe, 1 fpm = 0.317 cfm*) 2450 (fpm) 775 (cfm)

FT-106 → ~740

QUARTERLY CRITICAL DEVICE / ALARM TESTING

Liquid flow transmitters FT-101, FT-102, FT-103, and FT-105 calibrated? (Y/N) *(should be done after flow sensor cleaning)* Yes

If yes, document testing and note any changes in sensor calibration factors: FT-101 → MH-1 pumpdown test w/ gate valve closed, Δgal per DTW = 514 gal, Δgal per FT-101 = 490 [-4.7% → OK]. FT-102 → MH-2 pumpdown test, Δ gal per DTW = 324 gal, Δ gal per FT-102 = 308 [-4.9% → OK]. FT-103 → MH-3 pumpdown test. Δ gal per DTW = 321 gal, Δ gal per FT-103 = 313 [-2.5%] → OK.
FT-105 → For FT-101 test → [+3.9 %] (vs. actual MH-1 DTW Δ)
FT-102 test → [-8.4 %] — due to FT-105 being both above AND below actual volumes,
FT-103 test → [-2.8 %] plus MH-1 accounting for most flow, we'll keep it as currently calibrated.

Manhole floats tested? (Y/N) No

Test the following critical alarms *(note that system must be in AUTO to observe proper alarm response)*:

Begin 1/17/13

Alarm	Corresponding Transmitter / Sensor	PLC Alarm Output Name	Alarm Type	Caused PLC Alarm Output State Change? (Y/N)	Caused System Shutdown? (Y/N)	Passed (Y/N)
Air Stripper Sump High Pressure	PT-106	PA_106	fatal	Y	Y	Y
	Notes: Current setpoint ~~8~~ 34 inW.C. Closed BFV-401. short delay. shutdown.					
Air Stripper Sump Low Pressure	PT-106	PA_106	fatal	Y	Y	Y
	Notes: Current setpoint 8 inW.C. During cycle, turned air stripper HOA to off. (also had MH-pump HOA's in off). Short delay - shutdown.					
Air Stripper High Liquid Level	LSH-100	LA_100	fatal	Y	Y	Y
	Notes: Filled with building sump water [while no MH's online]					

Quarterly OM&M Log Sheet, Groundwater Collection and Treatment System, Solvent Dock Area, Former Lockheed Martin French Road Facility, Utica, New York

Date: 1/17/13
Time: 12:00
Technician: CD/AS

QUARTERLY CRITICAL DEVICE / ALARM TESTING (continued)

Alarm	Corresponding Transmitter / Sensor	PLC Alarm Output Name	Alarm Type	Caused PLC Alarm Output State Change? (Y/N)	Caused System Shutdown? (Y/N)	Passed (Y/N)
Air Stripper Low Liquid Level	LSL-100	LA_100	fatal	Y	Y	Y
	Notes: Closed BFV-401. Triggered low. ~~Caused a delay~~ Did this with blower on in auto, but MH's HOAs off. PT-106 held just below current high setpoint at 34.0 in w.c.					
High Air Flowrate	FT-106	FA_106	fatal	Y	Y	Y
	Notes: Setpoint = 1200 cfm. Change setpoint to 555. 5 min delay then shutdown.					
Low Air Flowrate	FT-106	FA_106	fatal	Y	Y	Y
	Notes: Current setpoint = 300. Unplugged high tube from port. 5 min delay					
Pre-Carbon High Temperature	TT-400	TAH400	fatal	Y	Y	Y
	Notes: Current setpoint 110°F. Change to 80°F. 1 minute delay. shutdown.					
Pre-Carbon Low Temperature	TT-400	TAL400	fatal	Y	Y	Y
	Notes: ~~Turn~~ Setpoint @ 60. Turned duct heater off. 3 min delay. Shutdown.					
Pre-Carbon High Pressure	PT-400	PA_400	fatal	Y	Y	Y
	Notes: Current setpoint 25 inW.C. Change to 8 inWC. 45 sec delay, shutdown.					
Pre-Carbon Low Pressure	PT-400	PA_400	fatal	Y	Y	Y
	Notes: Current setpoint 1. Change to 20. 45 sec delay, shutdown.					
MH-1 Low Flowrate	FT-101	FA_101	warning	Y	N	Y
	Notes: HOA in ~~off~~ while MH-1 floats calling for pumping.					
MH-2 Low Flowrate	FT-102	FA_102	warning	Y	N	Y
	Notes: MH-2 HOA in ~~off~~ when high float up. Non-fatal.					
MH-3 Low Flowrate	FT-103	FA_103	warning	Y	N	Y
	Notes: Both MH-3 HOA switches in off position while pumps being called for and system in AUTO.					

Quarterly OM&M Log Sheet, Groundwater Collection and Treatment System, Solvent Dock Area, Former Lockheed Martin French Road Facility, Utica, New York

Date: 1/17/13
Time: 12:00
Technician: CD/AS

QUARTERLY CRITICAL DEVICE / ALARM TESTING (continued)

Alarm	Corresponding Transmitter / Sensor	PLC Alarm Output Name	Alarm Type	Caused PLC Alarm Output State Change? (Y/N)	Caused System Shutdown? (Y/N)	Passed (Y/N)
Aggregate Low Flowrate	FT-105	FA_105	warning	Y	N	Y
	Notes: Tested/observed during MH-1 low Q test.					
Building Wet Floor Sensor Alarm	WFS-106	WFS106	fatal	Y	Y	Y
	Notes: Overflowed sump. Triggered alarm. shutdown.					
Building Sump High Level	LSH-106	LSH106	warning	Y	N	Y
	Notes: Filled sump. Triggered alarm.					
Sequestering Agent Low Flow	FT-200	FA_200	warning	Y	N	Y
	Notes: Pulled suction tubing out. Got alarm.					
Spill Pallet Wet Sensor Alarm	LSH-200	LSH200	warning	Y	N	Y
	Notes: Put sensor in water.					
MH-1 High Level	LSHH-103	LA_MH1	warning			
	Notes: N					
MH-1 Low Level	LSLL-103	LA_MH1	warning			
	Notes: Should force off both MH-1 pumps N					
MH-2 High Level	LSHH-104	LA_MH2	warning			
	Notes: N					
MH-2 Low Level	LSLL-104	LA_MH2	warning			
	Notes: Should force off both MH-2 pumps N					
MH-3 High Level	LSHH-105	LA_MH3	warning			
	Notes: N					

Quarterly OM&M Log Sheet, Groundwater Collection and Treatment System, Solvent Dock Area, Former Lockheed Martin French Road Facility, Utica, New York

Date: 1/17/13
Time: 12:00
Technician: CD/AS

QUARTERLY CRITICAL DEVICE / ALARM TESTING (continued)

Alarm	Corresponding Transmitter / Sensor	PLC Alarm Output Name	Alarm Type	Caused PLC Alarm Output State Change? (Y/N)	Caused System Shutdown? (Y/N)	Passed (Y/N)
MH-3 Low Level	LSLL-105	LA_MH3	warning			
	Notes: Should force off both MH-3 pumps N					
Building High Temperature	TT-100	TA_100	shutdown	Y	Y	Y
	Notes: Current setpoint 110°F, Change to 50. Shutdown					
Building Low Temperature	TT-100	TA_100	shutdown	Y	Y	Y
	Notes: Held snow up to probe. 2 minutes, shutdown					

Monthly OM&M Log Sheet, Groundwater Collection and Treatment System, Solvent Dock Area, Former Lockheed Martin French Road Facility, Utica, New York

Date: 2/7/13
Time: 1030
Technician: J. Gutkowski

VAPOR PHASE PARAMETERS (continued)

Parameter	PID Tag	Value	Units	Notes
Pre-Duct Heater Temperature	TI-300	62	(°F)	
Pre-Carbon Temperature	TI-400	101	(°F)	
Duct Heater Temperature Setpoint	-	85	(°F)	*(located in green on duct heat control panel)*
Duct Heater Temperature Transmitter	-	75	(°F)	*(located in red on duct heat control panel)*
Pre-Carbon Pressure	PI-401	12.0	(in. W.C.)	
Mid-Carbon Pressure	PI-402	4.0	(in. W.C.)	
Effluent Pressure	PI-403	1.0	(in. W.C.)	

TRANSMITTER READINGS (record from ProControl)

Parameter	PID Tag	Value	Units	Notes
Air Stripper Sump Pressure	PT-106	31.14	(in. W.C.)	
Vapor Flowrate	FT-106	780 to 894	(cfm)	
Pre-Carbon Temperature	TT-400	100.4	(°F)	
Pre-Carbon Pressure	PT-400	9.1	(in. W.C.)	
Building Temperature	TT-100	63.9	(°F)	

- Press the "I/O" up/down arrows on the ProControl screen until the desired transmitter value is displayed.

SEQUESTERING AGENT (record while air stripper is running)

Parameter	Status	Notes
Is pump operating? (Y/N)	yes	
Is low flow alarm present? (Y/N)	NO	
Is pump in external mode? (Y/N)	yes	
If in external mode, record one set of mA and stroke speed values	4.8 (mA) 5 (spm)	*(display screen should automatically be switching back and forth between mA and stroke speed)*
Stroke length	100	*(record from local stroke length knob on pump)*
Sequestering agent drum level [LI-200]	6 gal.	
Quantity of additional full drums	2 Full	

Inspect sequestering agent components for signs of leaking or wear (tubing [suction, injection, bleed return], injection check valve fitting, spill pallet, etc.) All Good, NO Leaks or Wear

MONTHLY OM&M TASKS

Note: MH-1 must be online during sample collection, if necessary wait for MH-1 Pump 1 or 2 to turn on automatically (MH-1 typically batches every 1.5 hours).

Task	Notes
Monthly liquid effluent sample collected? (Y/N)	Yes @ 1040 on 2/7/13
pH of effluent sample	8.21
Model of pH meter	Hanna HI 991001
Calibration notes / method used	2 point calibration
Are MH-2 or MH-3 online in auto during sampling collection?	NO

Monthly OM&M Log Sheet, Groundwater Collection and Treatment System, Solvent Dock Area, Former Lockheed Martin French Road Facility, Utica, New York

Date: 2/7/13
Time: 1200
Technician: Jason Guthowski

MONTHLY OM&M TASKS (continued)

Task	Notes
Liquid flow sensors cleaned? (Y/N) (*only as needed*)	NO
Monthly manhole inspections conducted? (Y/N)	Yes
Leaking/dripping of water observed from double-walled HDPE discharge pipe located inside manhole? (Y/N)	MH-1: No Leaking MH-2: No Leaking MH-3: No Leaking
Do level floats appear to be in good condition and hanging freely? (Y/N)	Yes In All Three
Observe groundwater inside each manhole and note odor and appearance	Clear, w/ NO odor
Is confined space entry signage present at each manhole? (Y/N)	yes
With pump(s) running, visually inspect discharge piping, pipe fittings, and pressure relief valve for leaks	All Good, No leaks
With pump(s) running, listen for any unusual sounds	NO Unusual Sounds
Inspect condition of collection line gate valve protection flush-mount covers for each manhole	Good, All Three
With system running, visually inspect all piping within the treatment system for leaks, signs of distress, or any other notable observations	All Good
Treatment system valves exercised? (Y/N) *(should be conducted with system in-between batch cycles)*	yes
List any notable observations	none
Are both building heaters working properly? (Y/N) *(adjust respective wall-mounted thermostats for both heaters and confirm proper heater response)*	yes

HEALTH AND SAFETY

Item	Status
Is fire extinguisher charged, unobstructed, and possessing an inspection tag? (Y/N)	Yes
Is eyewash/shower station operational and unobstructed? (Y/N)	Yes
Is interior emergency lighting operational? (Y/N)	yes
Is first aid kit present and in good condition? (Y/N)	Yes
Is lockout/tagout equipment available? (Y/N)	yes
Have electrical GFIs been tested and reset? (Y/N)	Yes
Do all electrical panels have 36" of open floor space in front of them? (Y/N)	yes
Are both the OM&M Manual and HASP onsite? (Y/N) *(note dates for each)*	yes OMM - 11/21/12 HASP - 3/28/12
Is emergency spill kit available? (Y/N)	Yes in SSDS, 11/12/13
Is H&S signage including emergency contact list, eye protection hearing protection, and automatic equipment present? (Y/N)	yes
Is current SPDES permit onsite? (Y/N) (note date)	Yes Posted on Wall 4/1/11

Monthly OM&M Log Sheet, Groundwater Collection and Treatment System, Solvent Dock Area, Former Lockheed Martin French Road Facility, Utica, New York

Date: 2/7/13
Time: 1100
Technician: J. Gutkowski

SYSTEM STATUS

System operational? *(PLC screen indicating system in "AUTO" or "MANUAL")* Auto
System currently cycling? Yes
Alarms? (list) None

Electrical Meter Reading (kWh): 141046

AIR STRIPPER PARAMETERS (record while air stripper is running)

Parameter	Value	Units
Air stripper sump pressure [PI-106]	29.0	(in. W.C.)
Air stripper sump water elevation *(record from site gauge)*	15.0	(inches)
Blower intake line vacuum [PI-100]	-2	(in. W.C.)
Main damper position *(record distance from center of wingnut to outside of blower housing)*	2.25	(inches)
Interior dilution damper position *(0° is shut, 90° is open)*	0.1	(°)

Is white "POWER ON" light on air stripper control panel lit? Yes
Is air stripper hand-off-auto switch [HS-100B] in "AUTO" position? Yes Auto
Note scaling inside liquid effluent pipe from access port None
Note scaling observed inside air stripper via clear tray access door None

FLOWMETER / PUMP PARAMETERS

Are white power lights lit on MH-1, MH-2, and MH-3 control panels? (Y/N) Yes
Are pump hand-off-auto switches [HS-101A, HS-101B, HS-102A, HS-102B, HS-103A, and HS-103B] in "auto" position? (Y/N) Yes

Parameter	MH-1 [FT-101]	MH-2 [FT-102]	MH-3 [FT-103]	Sump [FT-104]	Cumulative [FT-105]
Date/Time	2/7/13	→	→	→	→
Instantaneous Flowrate [gpm]	35.1	16.22	16.51	N/A	59.58
"Total" Flow (resettable, gal)	4,219,071	744,057	1,494,939	90	6,643,460
"Perm" Flow (gal)	16,666,159	2,824,071	2,810,065	1692	9,318,937
Pump 1 Running (Y/N)?	NO	Yes	Yes	NO	NA
Pump 2 Running (Y/N)?	Yes	NO	NO	NA	NA

- Flowrate and Permanent Flow can be viewed locally from wall-mounted flow transmitters FT-101 through FT-105 using up/down arrows.

VAPOR PHASE PARAMETERS (record while air stripper is running)

Is duct heater "HEAT ON/OFF" light lit? (Y/N) Yes *(located on duct heater control panel door)*
Is duct heater "HI TEMP" alarm light on? (Y/N) NO *(located on duct heater control panel door)*

French Road Facility, Utica, New York

3/5/2013 11:00

Technician: J. Gutkowski

SYSTEM STATUS

System operational? *(PLC screen indicating system in "AUTO" or "MANUAL")* Auto

System currently cycling? yes

Alarms? (list) Flow Alarm on Sequestering Agent Pump

Electrical Meter Reading (kWh): 147490

AIR STRIPPER PARAMETERS (record while air stripper is running)

Parameter	Value	Units
Air stripper sump pressure [PI-106]	27.75	(in. W.C.)
Air stripper sump water elevation *(record from site gauge)*	16.5	(inches)
Blower intake line vacuum [PI-100]	2	(in. W.C.)
Main damper position *(record distance from center of wingnut to outside of blower housing)*	2.25	(inches)
Interior dilution damper position *(0° is shut, 90° is open)*	0.1	(°)

Is white "POWER ON" light on air stripper control panel lit? yes

Is air stripper hand-off-auto switch [HS-100B] in "AUTO" position? yes

Note scaling inside liquid effluent pipe from access port None

Note scaling observed inside air stripper via clear tray access door Very little

FLOWMETER / PUMP PARAMETERS

Are white power lights lit on MH-1, MH-2, and MH-3 control panels? (Y/N) yes

Are pump hand-off-auto switches [HS-101A, HS-101B, HS-102A, HS-102B, HS-103A, and HS-103B] in "auto" position? (Y/N) yes All six

Parameter	MH-1 [FT-101]	MH-2 [FT-102]	MH-3 [FT-103]	Sump [FT-104]	Cumulative [FT-105]
Date/Time	3/5/13/1110	→	→	→	→
Instantaneous Flowrate [gpm]	33.15	14.16	16.07	N/A	59.02
"Total" Flow (resettable, gal)	4,429,787	771,490	1,580,267	50	6,968,675
"Perm" Flow (gal)	16,876,877	2,851,504	2,895,391	1652	9,644,155
Pump 1 Running (Y/N)?	Yes	Yes	Yes	NO	NA
Pump 2 Running (Y/N)?	NO	NO	NO	NA	NA

- Flowrate and Permanent Flow can be viewed locally from wall-mounted flow transmitters FT-101 through FT-105 using up/down arrows.

VAPOR PHASE PARAMETERS (record while air stripper is running)

Is duct heater "HEAT ON/OFF" light lit? (Y/N) yes *(located on duct heater control panel door)*

Is duct heater "HI TEMP" alarm light on? (Y/N) NO *(located on duct heater control panel door)*

Monthly OM&M Log Sheet, Groundwater Collection and Treatment System, Solvent Dock Area, Former Lockheed Martin French Road Facility, Utica, New York

Date: 3/5/13
Time: 1120
Technician: Jason Gutkowski

VAPOR PHASE PARAMETERS (continued)

Parameter	PID Tag	Value	Units	Notes
Pre-Duct Heater Temperature	TI-300	64	(°F)	
Pre-Carbon Temperature	TI-400	83	(°F)	
Duct Heater Temperature Setpoint	-	85	(°F)	*(located in green on duct heat control panel)*
Duct Heater Temperature Transmitter	-	85	(°F)	*(located in red on duct heat control panel)*
Pre-Carbon Pressure	PI-401	10	(in. W.C.)	
Mid-Carbon Pressure	PI-402	3.5	(in. W.C.)	
Effluent Pressure	PI-403	0	(in. W.C.)	

TRANSMITTER READINGS (record from ProControl)

Parameter	PID Tag	Value	Units	Notes
Air Stripper Sump Pressure	PT-106	28.66	(in. W.C.)	
Vapor Flowrate	FT-106	755 TO 836	(cfm)	
Pre-Carbon Temperature	TT-400	89.7	(°F)	
Pre-Carbon Pressure	PT-400	8.4	(in. W.C.)	
Building Temperature	TT-100	67.6	(°F)	

- Press the "I/O" up/down arrows on the ProControl screen until the desired transmitter value is displayed.

SEQUESTERING AGENT (record while air stripper is running)

Parameter	Status	Notes
Is pump operating? (Y/N)	Yes	
Is low flow alarm present? (Y/N)	→	Intermittent
Is pump in external mode? (Y/N)	Yes	
If in external mode, record one set of mA and stroke speed values	5.0 (mA) 6 (spm)	*(display screen should automatically be switching back and forth between mA and stroke speed)*
Stroke length	90	*(record from local stroke length knob on pump)*
Sequestering agent drum level [LI-200]	29gal.	New Drum, started @ 29gal.
Quantity of additional full drums	1 Full Drum	

Inspect sequestering agent components for signs of leaking or wear (tubing [suction, injection, bleed return], injection check valve fitting, spill pallet, etc.) All Good, NO Leaks or Wear

MONTHLY OM&M TASKS

Note: MH-1 must be online during sample collection, if necessary wait for MH-1 Pump 1 or 2 to turn on automatically (MH-1 typically batches every 1.5 hours).

Task	Notes
Monthly liquid effluent sample collected? (Y/N)	Yes
pH of effluent sample	8.21
Model of pH meter	Hanna HI 991001
Calibration notes / method used	2 Point Calibration
Are MH-2 or MH-3 online in auto during sampling collection?	NO

Monthly OM&M Log Sheet, Groundwater Collection and Treatment System, Solvent Dock Area, Former Lockheed Martin French Road Facility, Utica, New York

Date: 3/5/13
Time: 1115
Technician: Jason Gutkowski

MONTHLY OM&M TASKS (continued)

Task	Notes
Liquid flow sensors cleaned? (Y/N) (*only as needed*)	NO
Monthly manhole inspections conducted? (Y/N)	yes
Leaking/dripping of water observed from double-walled HDPE discharge pipe located inside manhole? (Y/N)	MH1: No leaks MH2: No leaks MH3: No leaks
Do level floats appear to be in good condition and hanging freely? (Y/N)	yes, All in All Three Wells
Observe groundwater inside each manhole and note odor and appearance	Clear No Odors
Is confined space entry signage present at each manhole? (Y/N)	yes
With pump(s) running, visually inspect discharge piping, pipe fittings, and pressure relief valve for leaks	All Good, No Leaks
With pump(s) running, listen for any unusual sounds	No Unusual Sounds
Inspect condition of collection line gate valve protection flush-mount covers for each manhole	Good All Three
With system running, visually inspect all piping within the treatment system for leaks, signs of distress, or any other notable observations	Good No Leaks
Treatment system valves exercised? (Y/N) *(should be conducted with system in-between batch cycles)*	yes
List any notable observations	None
Are both building heaters working properly? (Y/N) *(adjust respective wall-mounted thermostats for both heaters and confirm proper heater response)*	yes

HEALTH AND SAFETY

Item	Status
Is fire extinguisher charged, unobstructed, and possessing an inspection tag? (Y/N)	yes
Is eyewash/shower station operational and unobstructed? (Y/N)	yes
Is interior emergency lighting operational? (Y/N)	yes
Is first aid kit present and in good condition? (Y/N)	yes
Is lockout/tagout equipment available? (Y/N)	yes
Have electrical GFIs been tested and reset? (Y/N)	yes
Do all electrical panels have 36" of open floor space in front of them? (Y/N)	yes
Are both the OM&M Manual and HASP onsite? (Y/N) *(note dates for each)*	yes OM&M Manual: 11/21/12 Hasp: 3/28/12
Is emergency spill kit available? (Y/N)	yes in SSDS
Is H&S signage including emergency contact list, eye protection hearing protection, and automatic equipment present? (Y/N)	yes
Is current SPDES permit onsite? (Y/N) (note date)	yes Posted On Wall 4/1/11

Monthly OM&M Log Sheet, Groundwater Collection and Treatment System, Solvent Dock Area, Former Lockheed Martin French Road Facility, Utica, New York

Date: 4/24/13
Time: 12:36
Technician: CD/CE/JG

SYSTEM STATUS

System operational? *(PLC screen indicating system in "AUTO" or "MANUAL")* Auto
System currently cycling? Yes
Alarms? (list) No

Electrical Meter Reading (kWh): 159304

AIR STRIPPER PARAMETERS (record while air stripper is running)

Parameter	Value	Units
Air stripper sump pressure [PI-106]	25.5	(in. W.C.)
Air stripper sump water elevation *(record from site gauge)*	18.5	(inches)
Blower intake line vacuum [PI-100]	1.8	(in. W.C.)
Main damper position *(record distance from center of wingnut to outside of blower housing)*	2.4	(inches)
Interior dilution damper position *(0° is shut, 90° is open)*	0	(°)

Is white "POWER ON" light on air stripper control panel lit? Yes
Is air stripper hand-off-auto switch [HS-100B] in "AUTO" position? Yes
Note scaling inside liquid effluent pipe from access port Thin layer
Note scaling observed inside air stripper via clear tray access door None present; inspected by removing door

FLOWMETER / PUMP PARAMETERS

Are white power lights lit on MH-1, MH-2, and MH-3 control panels? (Y/N) Y
Are pump hand-off-auto switches [HS-101A, HS-101B, HS-102A, HS-102B, HS-103A, and HS-103B] in "auto" position? (Y/N) Y

Parameter	MH-1 [FT-101]	MH-2 [FT-102]	MH-3 [FT-103]	Sump [FT-104]	Cumulative [FT-105]
Date/Time	4/24/13	12:46 →	→	→	→
Instantaneous Flowrate [gpm]	34-35	0	0	0	39-41
"Total" Flow (resettable, gal)	—	—	—	—	—
"Perm" Flow (gal)	17752397	2935914	3085028	1711	10400966
Pump 1 Running (Y/N)?	N	N	N	N	NA
Pump 2 Running (Y/N)?	Y	N	N	NA	NA

- Flowrate and Permanent Flow can be viewed locally from wall-mounted flow transmitters FT-101 through FT-105 using up/down arrows.

VAPOR PHASE PARAMETERS (record while air stripper is running)

Is duct heater "HEAT ON/OFF" light lit? (Y/N) Y *(located on duct heater control panel door)*
Is duct heater "HI TEMP" alarm light on? (Y/N) N *(located on duct heater control panel door)*

Monthly OM&M Log Sheet, Groundwater Collection and Treatment System, Solvent Dock Area, Former Lockheed Martin French Road Facility, Utica, New York

Date: 4/24/13
Time: 12:36
Technician: CD/CE/JG

VAPOR PHASE PARAMETERS (continued)

Parameter	PID Tag	Value	Units	Notes
Pre-Duct Heater Temperature	TI-300	56	(°F)	
Pre-Carbon Temperature	TI-400	80	(°F)	
Duct Heater Temperature Setpoint	-	85	(°F)	*(located in green on duct heat control panel)*
Duct Heater Temperature Transmitter	-	85	(°F)	*(located in red on duct heat control panel)*
Pre-Carbon Pressure	PI-401	10	(in. W.C.)	
Mid-Carbon Pressure	PI-402	3.2	(in. W.C.)	
Effluent Pressure	PI-403	<1	(in. W.C.)	

TRANSMITTER READINGS (record from ProControl)

Parameter	PID Tag	Value	Units	Notes
Air Stripper Sump Pressure	PT-106	27.72	(in. W.C.)	
Vapor Flowrate	FT-106	670-760	(cfm)	
Pre-Carbon Temperature	TT-400	79.2	(°F)	
Pre-Carbon Pressure	PT-400	7.6	(in. W.C.)	
Building Temperature	TT-100	70.1	(°F)	

- Press the "I/O" up/down arrows on the ProControl screen until the desired transmitter value is displayed.

SEQUESTERING AGENT (record while air stripper is running)

Parameter	Status	Notes
Is pump operating? (Y/N)	Y	
Is low flow alarm present? (Y/N)	N	
Is pump in external mode? (Y/N)	Y	
If in external mode, record one set of mA and stroke speed values	5 (mA) 6 (spm)	*(display screen should automatically be switching back and forth between mA and stroke speed)*
Stroke length	100	*(record from local stroke length knob on pump)*
Sequestering agent drum level [LI-200]	18.7	
Quantity of additional full drums	1	

Inspect sequestering agent components for signs of leaking or wear (tubing [suction, injection, bleed return], injection check valve fitting, spill pallet, etc.): OK

MONTHLY OM&M TASKS

Note: MH-1 must be online during sample collection, if necessary wait for MH-1 Pump 1 or 2 to turn on automatically (MH-1 typically batches every 1.5 hours).

Task	Notes
Monthly liquid effluent sample collected? (Y/N)	Y
pH of effluent sample	7.98
Model of pH meter	Hanna HI 991001
Calibration notes / method used	2 pT cal.
Are MH-2 or MH-3 online in auto during sampling collection?	No

Monthly OM&M Log Sheet, Groundwater Collection and Treatment System, Solvent Dock Area, Former Lockheed Martin French Road Facility, Utica, New York

Date: 4/24/13
Time: 12:36
Technician: CE / CD / JG

MONTHLY OM&M TASKS (continued)

Task	Notes
Liquid flow sensors cleaned? (Y/N) (*only as needed*)	N; all fine
Monthly manhole inspections conducted? (Y/N)	Y
Leaking/dripping of water observed from double-walled HDPE discharge pipe located inside manhole? (Y/N)	MH-1 → N 2 → N 3 → N
Do level floats appear to be in good condition and hanging freely? (Y/N)	MH-1 → OK MH-2 → OK MH-3 → OK
Observe groundwater inside each manhole and note odor and appearance	MH-1 → clear, no odor MH-3 → clear, no odor MH-2 → clear w/ slight odor
Is confined space entry signage present at each manhole? (Y/N)	Yes, all 3
With pump(s) running, visually inspect discharge piping, pipe fittings, and pressure relief valve for leaks	MH-1 → shakes when pump No. 1 shuts off MH-2 → shakes when Pump No. 2 shuts off MH-3 → OK
With pump(s) running, listen for any unusual sounds	OK
Inspect condition of collection line gate valve protection flush-mount covers for each manhole	No signs of distress
With system running, visually inspect all piping within the treatment system for leaks, signs of distress, or any other notable observations	Yes, OK
Treatment system valves exercised? (Y/N) *(should be conducted with system in-between batch cycles)*	Yes
List any notable observations	
Are both building heaters working properly? (Y/N) *(adjust respective wall-mounted thermostats for both heaters and confirm proper heater response)*	Yes

HEALTH AND SAFETY

Item	Status
Is fire extinguisher charged, unobstructed, and possessing an inspection tag? (Y/N)	Yes
Is eyewash/shower station operational and unobstructed? (Y/N)	Y
Is interior emergency lighting operational? (Y/N)	Y
Is first aid kit present and in good condition? (Y/N)	Y
Is lockout/tagout equipment available? (Y/N)	Y
Have electrical GFIs been tested and reset? (Y/N)	Y
Do all electrical panels have 36" of open floor space in front of them? (Y/N)	Y
Are both the OM&M Manual and HASP onsite? (Y/N) *(note dates for each)*	Y OMM → Original March 2011, addendums up to Nov. 2012 HASP → Jan 2013
Is emergency spill kit available? (Y/N)	Yes
Is H&S signage including emergency contact list, eye protection hearing protection, and automatic equipment present? (Y/N)	Need ear protection
Is current SPDES permit onsite? (Y/N) (note date)	April 2011

Quarterly OM&M Log Sheet, Groundwater Collection and Treatment System, Solvent Dock Area, Former Lockheed Martin French Road Facility, Utica, New York

Date: 4/24/13
Time: 12:36
Technician: CD/EE/JG

QUARTERLY OM&M TASKS

Quarterly liquid influent samples collected for MH-1, MH-2, and MH-3? (Y/N) Y

MH-1 influent pH 8.01
MH-2 influent pH 7.87
MH-3 influent pH 7.76

Note: MH-1 must be online during sample collection, if necessary wait for MH-1 Pump 1 or 2 to turn on automatically (MH-1 typically batches every 1.5 hours).

Quarterly vapor samples collected pre-carbon, mid-carbon, and effluent? (Y/N) Y

Are MH-2 or MH-3 online in auto during sampling collection? N

Quarterly catch basin samples collected for CB-1, CB-2, and CB-3? (Y/N) Y

Quarterly groundwater elevation levels collected? (Y/N) Y

Blower bearings greased? (Y/N) Y

Indicate air velocity measurement collected from 8" effluent pipe (*plug located on wall side of vertical portion of effluent pipe, 1 fpm = 0.317 cfm*) 1987-2104 (fpm) 630-667 (cfm)

QUARTERLY CRITICAL DEVICE / ALARM TESTING

Liquid flow transmitters FT-101, FT-102, FT-103, and FT-105 calibrated? (Y/N) *(should be done after flow sensor cleaning)* Yes

If yes, document testing and note any changes in sensor calibration factors

FT-101 MH-1 Pumpdown test (w/ coll. line valve shut) → ΔDTW = 26" = 457 gallons (6' ø manhole)
ΔFT-101 = 443 gallons → −3% error = OK
FT-103 MH-3 test: ΔDTW = 19.25" = 338 gallons; ΔFT-103 = 324 → −4% error → OK
FT-102 MH-2 test → ΔDTW = 14.75" = 259 gallons. ΔFT-102 = 262 gallons → +1% error = OK.
FT-105 Comparison of FT-105 vs. respective DTW Δ's → FT-101, 102, & 103 = +11.6%, −4.6%, & −3.6%. Will adjust K factor for FT-105 so that FT-101 to FT-105 error is +6.6% (decreasing FT-105 by 5%, so expected % errors for FT-105 per FT-102 & 103 would be −9.6% & −8.6%.

Manhole floats tested? (Y/N) No. Over-accounting for MH-1 (FT-01) error correction due to MH-1 being majority of flow.

Test the following critical alarms *(note that system must be in AUTO to observe proper alarm response)*:

Alarm	Corresponding Transmitter / Sensor	PLC Alarm Output Name	Alarm Type	Caused PLC Alarm Output State Change? (Y/N)	Caused System Shutdown? (Y/N)	Passed (Y/N)
Air Stripper Sump High Pressure	PT-106	PA_106	fatal	Y	Y	Y
	Notes: Changed high setpoint from 34 to 26. Short delay, shutdown.					
Air Stripper Sump Low Pressure	PT-106	PA_106	fatal	Y	Y	Y
	Notes: Changed low setpoint from 8 to 32. Short delay. Shutdown.					
Air Stripper High Liquid Level	LSH-100	LA_100	fatal	Y	Y	Y
	Notes: Filled w/ bldg sump water during off-cycle.					

	Old K's	New
101	81.4	"
102	76.6	"
103	66.7	"
105	67.9	71.5

Quarterly OM&M Log Sheet, Groundwater Collection and Treatment System, Solvent Dock Area, Former Lockheed Martin French Road Facility, Utica, New York

Date: 4/25/13
Time: 10:00
Technician: CD/CE

QUARTERLY CRITICAL DEVICE / ALARM TESTING (continued)

Alarm	Corresponding Transmitter / Sensor	PLC Alarm Output Name	Alarm Type	Caused PLC Alarm Output State Change? (Y/N)	Caused System Shutdown? (Y/N)	Passed (Y/N)
Air Stripper Low Liquid Level	LSL-100	LA_100	fatal	Y	Y	Y
	Notes: Closed pre-VP6AC butt. valve 75-80%. Evacuated air stripper sump. Shutdown.					
High Air Flowrate	FT-106	FA_106	fatal	Y	Y	Y
	Notes: Changed high from 1200 to 500. 5 min delay. Shut.					
Low Air Flowrate	FT-106	FA_106	fatal	Y	Y	Y
	Notes: Changed low from 300 to 900. Shut.					
Pre-Carbon High Temperature	TT-400	TAH400	fatal	Y	Y	Y
	Notes: Current setpoint is 110. Changed to 80. Shutdown					
Pre-Carbon Low Temperature	TT-400	TAL400	fatal	Y	Y	Y
	Notes: Turned duct heater off. Delay. Shutdown.					
Pre-Carbon High Pressure	PT-400	PA_400	fatal	Y	Y	Y
	Notes: Changed setpoint from 25 to 10. Shutdown.					
Pre-Carbon Low Pressure	PT-400	PA_400	fatal	Y	Y	Y
	Notes: Changed setpoint from 1 to 20. Shutdown.					
MH-1 Low Flowrate	FT-101	FA_101	warning	Y	N	Y
	Notes: HOA in off while H float up					
MH-2 Low Flowrate	FT-102	FA_102	warning	Y	N	Y
	Notes: HOA in off while called for.					
MH-3 Low Flowrate	FT-103	FA_103	warning	Y	N	Y
	Notes: HOA switch in off position w/ pumps called for					

Quarterly OM&M Log Sheet, Groundwater Collection and Treatment System, Solvent Dock Area, Former Lockheed Martin French Road Facility, Utica, New York

Date: 4/25/13
Time: 16:10
Technician: CD/CE

QUARTERLY CRITICAL DEVICE / ALARM TESTING (continued)

Alarm	Corresponding Transmitter / Sensor	PLC Alarm Output Name	Alarm Type	Caused PLC Alarm Output State Change? (Y/N)	Caused System Shutdown? (Y/N)	Passed (Y/N)
Aggregate Low Flowrate	FT-105	FA_105	warning	Y	N	Y
	Notes: Tested during MH-1 low flow test.					
Building Wet Floor Sensor Alarm	WFS-106	WFS106	fatal	Y	Y	Y
	Notes: Filled sump w/ water; overflowed. Shutdown.					
Building Sump High Level	LSH-106	LSH106	warning	Y	N	Y
	Notes: Filled w/ sink water. Non-fatal.					
Sequestering Agent Low Flow	FT-200	FA_200	warning	Y	N	Y
	Notes: Pulled suction tubing out. FT-200 alarm.					
Spill Pallet Wet Sensor Alarm	LSH-200	LSH200	warning	Y	N	Y
	Notes: Put sensor in water.					
MH-1 High Level	LSHH-103	LA_MH1	warning			
	Notes: No					
MH-1 Low Level	LSLL-103	LA_MH1	warning			
	Notes: Should force off both MH-1 pumps No					
MH-2 High Level	LSHH-104	LA_MH2	warning			
	Notes: No					
MH-2 Low Level	LSLL-104	LA_MH2	warning			
	Notes: Should force off both MH-2 pumps No					
MH-3 High Level	LSHH-105	LA_MH3	warning			
	Notes: No					

Quarterly OM&M Log Sheet, Groundwater Collection and Treatment System, Solvent Dock Area, Former Lockheed Martin French Road Facility, Utica, New York

Date: 4/25/13
Time: 16:10
Technician: CD/CE

QUARTERLY CRITICAL DEVICE / ALARM TESTING (continued)

Alarm	Corresponding Transmitter / Sensor	PLC Alarm Output Name	Alarm Type	Caused PLC Alarm Output State Change? (Y/N)	Caused System Shutdown? (Y/N)	Passed (Y/N)
MH-3 Low Level	LSLL-105	LA_MH3	warning			
	Notes: Should force off both MH-3 pumps No					
Building High Temperature	TT-100	TA_100	shutdown	Y	Y	Y
	Notes: Changed setpoint from 110 to 40. Shutdown					
Building Low Temperature	TT-100	TA_100	shutdown	Y	Y	Y
	Notes: Changed setpoint from 40 to 100. Shutdown					

Monthly OM&M Log Sheet, Groundwater Collection and Treatment System, Solvent Dock Area, Former Lockheed Martin French Road Facility, Utica, New York

Date: 5/9/13
Time: 0940
Technician: J. Gutkowski

SYSTEM STATUS

System operational? *(PLC screen indicating system in "AUTO" or "MANUAL")* Auto
System currently cycling? yes
Alarms? (list) None

Electrical Meter Reading (kWh): 161381

AIR STRIPPER PARAMETERS (record while air stripper is running)

Parameter	Value	Units
Air stripper sump pressure [PI-106]	~~10.5~~ 26.0	(in. W.C.)
Air stripper sump water elevation *(record from site gauge)*	18.5	(inches)
Blower intake line vacuum [PI-100]	-2	(in. W.C.)
Main damper position *(record distance from center of wingnut to outside of blower housing)*	2.0	(inches)
Interior dilution damper position *(0° is shut, 90° is open)*	0.7	(°)

Is white "POWER ON" light on air stripper control panel lit? yes
Is air stripper hand-off-auto switch [HS-100B] in "AUTO" position? yes
Note scaling inside liquid effluent pipe from access port None
Note scaling observed inside air stripper via clear tray access door None

FLOWMETER / PUMP PARAMETERS

Are white power lights lit on MH-1, MH-2, and MH-3 control panels? (Y/N) yes
Are pump hand-off-auto switches [HS-101A, HS-101B, HS-102A, HS-102B, HS-103A, and HS-103B] in "auto" position? (Y/N) yes All six

Parameter	MH-1 [FT-101]	MH-2 [FT-102]	MH-3 [FT-103]	Sump [FT-104]	Cumulative [FT-105]
Date/Time	5/9/13/				
Instantaneous Flowrate [gpm]	36.19	N/A	N/A	N/A	36.90
"Total" Flow (resettable, gal)	5,005,548	869,778	1,812,098	206	7,881,575
"Perm" Flow (gal)	17,452,639	2,949,789	3,127,219	1808	10,557,051
Pump 1 Running (Y/N)?	yes	NO	NO	NO	NA
Pump 2 Running (Y/N)?	NO	NO	NO	NA	NA

- Flowrate and Permanent Flow can be viewed locally from wall-mounted flow transmitters FT-101 through FT-105 using up/down arrows.

VAPOR PHASE PARAMETERS (record while air stripper is running)

Is duct heater "HEAT ON/OFF" light lit? (Y/N) yes *(located on duct heater control panel door)*
Is duct heater "HI TEMP" alarm light on? (Y/N) NO *(located on duct heater control panel door)*

Monthly OM&M Log Sheet, Groundwater Collection and Treatment System, Solvent Dock Area, Former Lockheed Martin French Road Facility, Utica, New York

Date: 5/9/13
Time: 0900
Technician: J. Gutkowski

VAPOR PHASE PARAMETERS (continued)

Parameter	PID Tag	Value	Units	Notes
Pre-Duct Heater Temperature	TI-300	64	(°F)	
Pre-Carbon Temperature	TI-400	81	(°F)	
Duct Heater Temperature Setpoint	-	85	(°F)	*(located in green on duct heat control panel)*
Duct Heater Temperature Transmitter	-	85	(°F)	*(located in red on duct heat control panel)*
Pre-Carbon Pressure	PI-401	10	(in. W.C.)	
Mid-Carbon Pressure	PI-402	2.5	(in. W.C.)	
Effluent Pressure	PI-403	0	(in. W.C.)	

TRANSMITTER READINGS (record from ProControl)

Parameter	PID Tag	Value	Units	Notes
Air Stripper Sump Pressure	PT-106	27.87	(in. W.C.)	
Vapor Flowrate	FT-106	655 To 718	(cfm)	
Pre-Carbon Temperature	TT-400	85.1	(°F)	
Pre-Carbon Pressure	PT-400	7.3	(in. W.C.)	
Building Temperature	TT-100	68.9	(°F)	

- Press the "I/O" up/down arrows on the ProControl screen until the desired transmitter value is displayed.

SEQUESTERING AGENT (record while air stripper is running)

Parameter	Status	Notes
Is pump operating? (Y/N)	Yes	
Is low flow alarm present? (Y/N)	NO	
Is pump in external mode? (Y/N)	Yes	
If in external mode, record one set of mA and stroke speed values	5.0 (mA) 6 (spm)	*(display screen should automatically be switching back and forth between mA and stroke speed)*
Stroke length	100	*(record from local stroke length knob on pump)*
Sequestering agent drum level [LI-200]	153gal	
Quantity of additional full drums	1 Full Drum	

Inspect sequestering agent components for signs of leaking or wear (tubing [suction, injection, bleed return], injection check valve fitting, spill pallet, etc.) Good, NO Leaks Or Wear

MONTHLY OM&M TASKS

Note: MH-1 must be online during sample collection, if necessary wait for MH-1 Pump 1 or 2 to turn on automatically (MH-1 typically batches every 1.5 hours).

Task	Notes
Monthly liquid effluent sample collected? (Y/N)	Yes, @ 0925 on 5/9/13
pH of effluent sample	8.19
Model of pH meter	Hanna HI 99100
Calibration notes / method used	2 Point Calibration
Are MH-2 or MH-3 online in auto during sampling collection?	NO

Monthly OM&M Log Sheet, Groundwater Collection and Treatment System, Solvent Dock Area, Former Lockheed Martin French Road Facility, Utica, New York

Date: 5/9/13
Time: 1030
Technician: J. Gutkowski

MONTHLY OM&M TASKS (continued)

Task	Notes
Liquid flow sensors cleaned? (Y/N) (*only as needed*)	NO
Monthly manhole inspections conducted? (Y/N)	yes
Leaking/dripping of water observed from double-walled HDPE discharge pipe located inside manhole? (Y/N)	MH1 - NO Dripping / Leaks MH2 - NO Dripping / Leaks MH3 - NO Dripping / Leaks
Do level floats appear to be in good condition and hanging freely? (Y/N)	MH1 - yes MH2 - yes MH3: yes
Observe groundwater inside each manhole and note odor and appearance	Clear No Odors
Is confined space entry signage present at each manhole? (Y/N)	yes
With pump(s) running, visually inspect discharge piping, pipe fittings, and pressure relief valve for leaks	MH1 - NO Leaks MH2 - NO Leaks MH3 - NO Leaks
With pump(s) running, listen for any unusual sounds	NO Unusual Sounds In All Three
Inspect condition of collection line gate valve protection flush-mount covers for each manhole	Good All Three
With system running, visually inspect all piping within the treatment system for leaks, signs of distress, or any other notable observations	Good, NO Notable observation In All Three
Treatment system valves exercised? (Y/N) *(should be conducted with system in-between batch cycles)*	yes
List any notable observations	None
Are both building heaters working properly? (Y/N) *(adjust respective wall-mounted thermostats for both heaters and confirm proper heater response)*	yes

HEALTH AND SAFETY

Item	Status
Is fire extinguisher charged, unobstructed, and possessing an inspection tag? (Y/N)	yes
Is eyewash/shower station operational and unobstructed? (Y/N)	yes
Is interior emergency lighting operational? (Y/N)	yes
Is first aid kit present and in good condition? (Y/N)	yes
Is lockout/tagout equipment available? (Y/N)	yes
Have electrical GFIs been tested and reset? (Y/N)	yes
Do all electrical panels have 36" of open floor space in front of them? (Y/N)	yes
Are both the OM&M Manual and HASP onsite? (Y/N) *(note dates for each)*	yes OM&M - 11/21/12 Hasp 3/28/12
Is emergency spill kit available? (Y/N)	yes in SSDS
Is H&S signage including emergency contact list, eye protection hearing protection, and automatic equipment present? (Y/N)	yes
Is current SPDES permit onsite? (Y/N) (note date)	yes Posted on Wall 4/1/11

Monthly OM&M Log Sheet, Groundwater Collection and Treatment System, Solvent Dock Area, Former Lockheed Martin French Road Facility, Utica, New York

Date: 6/12/13
Time: 1020
Technician: J. Gutkowski

SYSTEM STATUS

System operational? *(PLC screen indicating system in "AUTO" or "MANUAL")* Auto
System currently cycling? Yes
Alarms? (list) None

Electrical Meter Reading (kWh): 166027

AIR STRIPPER PARAMETERS (record while air stripper is running)

Parameter	Value	Units
Air stripper sump pressure [PI-106]	25.5	(in. W.C.)
Air stripper sump water elevation *(record from site gauge)*	17.5	(inches)
Blower intake line vacuum [PI-100]	-2	(in. W.C.)
Main damper position *(record distance from center of wingnut to outside of blower housing)*	2.1	(inches)
Interior dilution damper position *(0° is shut, 90° is open)*	0.7	(°)

Is white "POWER ON" light on air stripper control panel lit? Yes
Is air stripper hand-off-auto switch [HS-100B] in "AUTO" position? Yes
Note scaling inside liquid effluent pipe from access port None
Note scaling observed inside air stripper via clear tray access door Very Little

FLOWMETER / PUMP PARAMETERS

Are white power lights lit on MH-1, MH-2, and MH-3 control panels? (Y/N) Yes All Three
Are pump hand-off-auto switches [HS-101A, HS-101B, HS-102A, HS-102B, HS-103A, and HS-103B] in "auto" position? (Y/N) Yes All Six

Parameter	MH-1 [FT-101]	MH-2 [FT-102]	MH-3 [FT-103]	Sump [FT-104]	Cumulative [FT-105]
Date/Time	6/12/13/1020				
Instantaneous Flowrate [gpm]	38.51	N/A	16.21	N/A	48.82
"Total" Flow (resettable, gal)	5,298,314	926,713	1,951,901	237	8,344,256
"Perm" Flow (gal)	17,745,406	3,006,724	3,267,038	1,839	11,019,734
Pump 1 Running (Y/N)?	NO	NO	NO	NO	NA
Pump 2 Running (Y/N)?	Yes	NO	Yes	NA	NA

- Flowrate and Permanent Flow can be viewed locally from wall-mounted flow transmitters FT-101 through FT-105 using up/down arrows.

VAPOR PHASE PARAMETERS (record while air stripper is running)

Is duct heater "HEAT ON/OFF" light lit? (Y/N) Yes *(located on duct heater control panel door)*
Is duct heater "HI TEMP" alarm light on? (Y/N) NO *(located on duct heater control panel door)*

Monthly OM&M Log Sheet, Groundwater Collection and Treatment System, Solvent Dock Area, Former Lockheed Martin French Road Facility, Utica, New York

Date: 6/12/13
Time: 1030
Technician: J. Gutkowski

VAPOR PHASE PARAMETERS (continued)

Parameter	PID Tag	Value	Units	Notes
Pre-Duct Heater Temperature	TI-300	62	(°F)	
Pre-Carbon Temperature	TI-400	80	(°F)	
Duct Heater Temperature Setpoint	-	85	(°F)	*(located in green on duct heat control panel)*
Duct Heater Temperature Transmitter	-	85	(°F)	*(located in red on duct heat control panel)*
Pre-Carbon Pressure	PI-401	10	(in. W.C.)	
Mid-Carbon Pressure	PI-402	3.5	(in. W.C.)	
Effluent Pressure	PI-403	0	(in. W.C.)	

TRANSMITTER READINGS (record from ProControl)

Parameter	PID Tag	Value	Units	Notes
Air Stripper Sump Pressure	PT-106	29.37	(in. W.C.)	
Vapor Flowrate	FT-106	598 To 635	(cfm)	
Pre-Carbon Temperature	TT-400	80.1	(°F)	
Pre-Carbon Pressure	PT-400	7.5	(in. W.C.)	
Building Temperature	TT-100	70.5	(°F)	

- Press the "I/O" up/down arrows on the ProControl screen until the desired transmitter value is displayed.

SEQUESTERING AGENT (record while air stripper is running)

Parameter	Status	Notes
Is pump operating? (Y/N)	Yes	
Is low flow alarm present? (Y/N)	NO	
Is pump in external mode? (Y/N)	Yes	
If in external mode, record one set of mA and stroke speed values	5.3 (mA) 8 (spm)	*(display screen should automatically be switching back and forth between mA and stroke speed)*
Stroke length	85	*(record from local stroke length knob on pump)*
Sequestering agent drum level [LI-200]	5 gal.	
Quantity of additional full drums	1 Full Drum	

Inspect sequestering agent components for signs of leaking or wear (tubing [suction, injection, bleed return], injection check valve fitting, spill pallet, etc.): Good, No Leaks or Wear

MONTHLY OM&M TASKS

Note: MH-1 must be online during sample collection, if necessary wait for MH-1 Pump 1 or 2 to turn on automatically (MH-1 typically batches every 1.5 hours).

Task	Notes
Monthly liquid effluent sample collected? (Y/N)	Yes @ 1030 on 6/12/13
pH of effluent sample	8.04
Model of pH meter	Hanna HI 991001
Calibration notes / method used	2 point Calibration
Are MH-2 or MH-3 online in auto during sampling collection?	Yes MH-3

Monthly OM&M Log Sheet, Groundwater Collection and Treatment System, Solvent Dock Area, Former Lockheed Martin French Road Facility, Utica, New York

Date: 6/12/13
Time: 1200
Technician: Jason Gutkowski

MONTHLY OM&M TASKS (continued)

Task	Notes
Liquid flow sensors cleaned? (Y/N) (*only as needed*)	NO
Monthly manhole inspections conducted? (Y/N)	Yes
Leaking/dripping of water observed from double-walled HDPE discharge pipe located inside manhole? (Y/N)	MH-1 MH-2 : All Good, NO Dripping or Leaks MH-3
Do level floats appear to be in good condition and hanging freely? (Y/N)	MH-1: yes MH-3: yes MH-2: yes
Observe groundwater inside each manhole and note odor and appearance	Clear, NO Odor
Is confined space entry signage present at each manhole? (Y/N)	Yes All Three
With pump(s) running, visually inspect discharge piping, pipe fittings, and pressure relief valve for leaks	MH-1 MH-2 : NO Leaks @ All Three MH-3
With pump(s) running, listen for any unusual sounds	NO Unusual Sounds @ All Three
Inspect condition of collection line gate valve protection flush-mount covers for each manhole	Good NO Issues @ All Three
With system running, visually inspect all piping within the treatment system for leaks, signs of distress, or any other notable observations	All Good, NO Leaks or Distress
Treatment system valves exercised? (Y/N) *(should be conducted with system in-between batch cycles)*	yes
List any notable observations	None
Are both building heaters working properly? (Y/N) *(adjust respective wall-mounted thermostats for both heaters and confirm proper heater response)*	yes, Both Working Properly

HEALTH AND SAFETY

Item	Status
Is fire extinguisher charged, unobstructed, and possessing an inspection tag? (Y/N)	yes
Is eyewash/shower station operational and unobstructed? (Y/N)	Yes
Is interior emergency lighting operational? (Y/N)	yes
Is first aid kit present and in good condition? (Y/N)	yes
Is lockout/tagout equipment available? (Y/N)	yes
Have electrical GFIs been tested and reset? (Y/N)	yes Good/Working
Do all electrical panels have 36" of open floor space in front of them? (Y/N)	yes
Are both the OM&M Manual and HASP onsite? (Y/N) *(note dates for each)*	yes OM&M 11/21/12 HASP 3/28/12
Is emergency spill kit available? (Y/N)	yes in SSDS
Is H&S signage including emergency contact list, eye protection hearing protection, and automatic equipment present? (Y/N)	yes
Is current SPDES permit onsite? (Y/N) (note date)	yes Posted on Wall 4/1/11

Monthly OM&M Log Sheet, Groundwater Collection and Treatment System, Solvent Dock Area, Former Lockheed Martin French Road Facility, Utica, New York

Date: 7/11/13
Time: 0830
Technician: TAC, JV

SYSTEM STATUS

System operational? *(PLC screen indicating system in "AUTO" or "MANUAL")* _____
System currently cycling? _____
Alarms? (list) FA-102 from 7/2/13

Electrical Meter Reading (kWh): 170904

AIR STRIPPER PARAMETERS (record while air stripper is running)

Parameter	Value	Units
Air stripper sump pressure [PI-106]	27	(in. W.C.)
Air stripper sump water elevation *(record from site gauge)*	17	(inches)
Blower intake line vacuum [PI-100]	2	(in. W.C.)
Main damper position *(record distance from center of wingnut to outside of blower housing)*	0	(inches)
Interior dilution damper position *(0° is shut, 90° is open)*		(°)

Is white "POWER ON" light on air stripper control panel lit? Y
Is air stripper hand-off-auto switch [HS-100B] in "AUTO" position? Y
Note scaling inside liquid effluent pipe from access port Trace
Note scaling observed inside air stripper via clear tray access door Trace noted through glass door.

FLOWMETER / PUMP PARAMETERS

Are white power lights lit on MH-1, MH-2, and MH-3 control panels? (Y/N) Y
Are pump hand-off-auto switches [HS-101A, HS-101B, HS-102A, HS-102B, HS-103A, and HS-103B] in "auto" position? (Y/N) Y

Parameter	MH-1 [FT-101]	MH-2 [FT-102]	MH-3 [FT-103]	Sump [FT-104]	Cumulative [FT-105]
Date/Time	7/11/13 10:00	"	"	"	"
Instantaneous Flowrate [gpm]	36.0	14.5	16.0	0	54.0
"Total" Flow (resettable, gal)	5,857,980	1,014,585	2,209,938	237	9,160,660
"Perm" Flow (gal)	18,305,047	3,094,591	3,525,059	1839	11,836,133
Pump 1 Running (Y/N)?	Y, manual	N	Y, manual	N	NA
Pump 2 Running (Y/N)?	N	Y	N	NA	NA

Reset all tot

- Flowrate and Permanent Flow can be viewed locally from wall-mounted flow transmitters FT-101 through FT-105 using up/down arrows.

VAPOR PHASE PARAMETERS (record while air stripper is running)

Is duct heater "HEAT ON/OFF" light lit? (Y/N) Y *(located on duct heater control panel door)*
Is duct heater "HI TEMP" alarm light on? (Y/N) N *(located on duct heater control panel door)*

Monthly OM&M Log Sheet, Groundwater Collection and Treatment System, Solvent Dock Area, Former Lockheed Martin French Road Facility, Utica, New York

Date: 7/11/13
Time:
Technician: JMC

VAPOR PHASE PARAMETERS (continued)

Parameter	PID Tag	Value	Units	Notes
Pre-Duct Heater Temperature	TI-300	65	(°F)	
Pre-Carbon Temperature	TI-400	79	(°F)	
Duct Heater Temperature Setpoint	-	85	(°F)	*(located in green on duct heat control panel)*
Duct Heater Temperature Transmitter	-	85	(°F)	*(located in red on duct heat control panel)*
Pre-Carbon Pressure	PI-401	11	(in. W.C.)	
Mid-Carbon Pressure	PI-402	3	(in. W.C.)	
Effluent Pressure	PI-403	0	(in. W.C.)	

TRANSMITTER READINGS (record from ProControl)

Parameter	PID Tag	Value	Units	Notes
Air Stripper Sump Pressure	PT-106	27.9	(in. W.C.)	
Vapor Flowrate	FT-106	602	(cfm)	
Pre-Carbon Temperature	TT-400	74	(°F)	
Pre-Carbon Pressure	PT-400	8.4	(in. W.C.)	MH-3 online
Building Temperature	TT-100	76	(°F)	

- Press the "I/O" up/down arrows on the ProControl screen until the desired transmitter value is displayed.

SEQUESTERING AGENT (record while air stripper is running)

Parameter	Status	Notes
Is pump operating? (Y/N)	Y	
Is low flow alarm present? (Y/N)	N	
Is pump in external mode? (Y/N)	Y	
If in external mode, record one set of mA and stroke speed values	5.4 (mA) 8 (spm)	*(display screen should automatically be switching back and forth between mA and stroke speed)*
Stroke length	85	*(record from local stroke length knob on pump)*
Sequestering agent drum level [LI-200]	19.5"/28"	
Quantity of additional full drums	0	Need to order a new drum

Inspect sequestering agent components for signs of leaking or wear (tubing [suction, injection, bleed return], injection check valve fitting, spill pallet, etc.): OK

MONTHLY OM&M TASKS

Note: MH-1 must be online during sample collection, if necessary wait for MH-1 Pump 1 or 2 to turn on automatically (MH-1 typically batches every 1.5 hours).

Task	Notes
Monthly liquid effluent sample collected? (Y/N)	Y
pH of effluent sample	7.98
Model of pH meter	Hanna HI 991001
Calibration notes / method used	2 point 4 & 7
Are MH-2 or MH-3 online in auto during sampling collection?	Yes, MH-2

Monthly OM&M Log Sheet, Groundwater Collection and Treatment System, Solvent Dock Area, Former Lockheed Martin French Road Facility, Utica, New York

Date: 7/11/13
Time:
Technician: TMC

MONTHLY OM&M TASKS (continued)

Task	Notes
Liquid flow sensors cleaned? (Y/N) (*only as needed*)	Y, MH-2
Monthly manhole inspections conducted? (Y/N)	Y
Leaking/dripping of water observed from double-walled HDPE discharge pipe located inside manhole? (Y/N)	NO leaks
Do level floats appear to be in good condition and hanging freely? (Y/N)	Yes, OK
Observe groundwater inside each manhole and note odor and appearance	Clear, no odors
Is confined space entry signage present at each manhole? (Y/N)	Y
With pump(s) running, visually inspect discharge piping, pipe fittings, and pressure relief valve for leaks	Y, no leaks
With pump(s) running, listen for any unusual sounds	Y, no unusual sounds
Inspect condition of collection line gate valve protection flush-mount covers for each manhole	OK
With system running, visually inspect all piping within the treatment system for leaks, signs of distress, or any other notable observations	OK
Treatment system valves exercised? (Y/N) *(should be conducted with system in-between batch cycles)*	Yes
List any notable observations	
Are both building heaters working properly? (Y/N) *(adjust respective wall-mounted thermostats for both heaters and confirm proper heater response)*	Yes, offline for summer

HEALTH AND SAFETY

Item	Status
Is fire extinguisher charged, unobstructed, and possessing an inspection tag? (Y/N)	Y
Is eyewash/shower station operational and unobstructed? (Y/N)	Y
Is interior emergency lighting operational? (Y/N)	Y
Is first aid kit present and in good condition? (Y/N)	Y
Is lockout/tagout equipment available? (Y/N)	Y
Have electrical GFIs been tested and reset? (Y/N)	Y
Do all electrical panels have 36" of open floor space in front of them? (Y/N)	Y
Are both the OM&M Manual and HASP onsite? (Y/N) *(note dates for each)*	Y, OM&M Addendum 11/21/12 HASP 1/13
Is emergency spill kit available? (Y/N)	Y
Is H&S signage including emergency contact list, eye protection hearing protection, and automatic equipment present? (Y/N)	Y
Is current SPDES permit onsite? (Y/N) (note date)	Y, April 2013

Quarterly OM&M Log Sheet, Groundwater Collection and Treatment System, Solvent Dock Area, Former Lockheed Martin French Road Facility, Utica, New York

Date: 7/11/13 - 7/12/13
Time: 1345
Technician: TMC

QUARTERLY OM&M TASKS

Quarterly liquid influent samples collected for MH-1, MH-2, and MH-3? (Y/N) Y

MH-1 influent pH 8.14
MH-2 influent pH 8.09
MH-3 influent pH 8.22

Note: MH-1 must be online during sample collection, if necessary manually turn on MH-1 Pump 1 or 2 (and blower if not already running in Auto).

Quarterly vapor samples collected pre-carbon, mid-carbon, and effluent? (Y/N) Y

Are MH-2 or MH-3 online in auto during sampling collection? Y, MH-2

Quarterly catch basin samples collected for CB-1, CB-2, and CB-3? (Y/N) Y

Quarterly groundwater elevation levels collected? (Y/N) Y

Blower bearings greased? (Y/N) Y

Indicate air velocity measurement collected from 8" effluent pipe (*plug located on wall side of vertical portion of effluent pipe, 1 fpm = 0.317 cfm*) 2076 - 2113 (fpm) ____ (cfm)

QUARTERLY CRITICAL DEVICE / ALARM TESTING

Liquid flow transmitters FT-101, FT-102, FT-103, and FT-105 calibrated? (Y/N) *(should be done after flow sensor cleaning)*

If yes, document testing and note any changes in sensor calibration factors

MH-1/FT-101, DTW 10.70 @ T=0, Totalizer = 12700 gal
11.70 @ T= 6:20 = 12905 gal
<3% V_{MH} = 211 gal Δ 205 gal

MH-2/FT-102, T=0 DTW = 14.45 Totalizer = 6488 MH-3/FT-103 T=0 DTW = 15.09 Totalizer = 6481
=15:06 = 15.50 9/5 =7.52 15.61 = 6588
V_{MH} = 222 gal Δ 227 gal V_{MH} = 109 gal Δ 107 gal
<3% <2%

Manhole floats tested? (Y/N) NA

Test the following critical alarms *(note that system must be in AUTO to observe proper alarm response)*:

Alarm	Corresponding Transmitter/ Sensor	PLC Alarm Output Name	Alarm Type	Caused PLC Alarm Output State Change? (Y/N)	Caused System Shutdown? (Y/N)	Passed (Y/N)
Air Stripper Sump High Pressure	PT-106	PA_106	fatal	Y	Y	Y
	Notes: Change set point from 35 to 25 mwc.					
Air Stripper Sump Low Pressure	PT-106	PA_106	fatal	Y	Y	Y
	Notes: Change set point from 8 to 30 mwc.					
Air Stripper High Liquid Level	LSH-100	LA_100	fatal	Y	Y	Y
	Notes: Flood sump with clean water.					

NO change versus 4/30/12

Quarterly OM&M Log Sheet, Groundwater Collection and Treatment System, Solvent Dock Area, Former Lockheed Martin French Road Facility, Utica, New York

Date: 7/11/13 – 7/12/13
Time:
Technician: JMC

QUARTERLY CRITICAL DEVICE / ALARM TESTING (continued)

Alarm	Corresponding Transmitter / Sensor	PLC Alarm Output Name	Alarm Type	Caused PLC Alarm Output State Change? (Y/N)	Caused System Shutdown? (Y/N)	Passed (Y/N)
Air Stripper Low Liquid Level	LSL-100	LA_100	fatal	Y	Y	Y
	Notes: close pre VPGAC valve BFV-401 75% to increase pump pressure which evacuated the water from sump.					
High Air Flowrate	FT-106	FA_106	fatal	Y	Y	Y
	Notes: Change setpoint from 1200 to 500 CFM					
Low Air Flowrate	FT-106	FA_106	fatal	Y	Y	Y
	Notes: changed setpoint from 300 to 900 CFM					
Pre-Carbon High Temperature	TT-400	TAH400	fatal	Y	Y	Y
	Notes: Change setpoint from 110 to 80 F					
Pre-Carbon Low Temperature	TT-400	TAL400	fatal	Y	Y	Y
	Notes: Turn off duct heater					
Pre-Carbon High Pressure	PT-400	PA_400	fatal	Y	Y	Y
	Notes: Change current setpoint from 25 inWC to 8, System shutdown after 45 second time delay.					
Pre-Carbon Low Pressure	PT-400	PA_400	fatal	Y	Y	Y
	Notes: Change setpoint from 1 to 20 inWC					
MH-1 Low Flowrate	FT-101	FA_101	warning	Y	N	Y
	Notes: HOA in off while pump being called to run					
MH-2 Low Flowrate	FT-102	FA_102	warning	Y	N	Y
	Notes: HOA in off while pump being called to run					
MH-3 Low Flowrate	FT-103	FA_103	warning	Y	N	Y
	Notes: HOA in off while pump being called to run					

No change versus 4/30/13

Quarterly OM&M Log Sheet, Groundwater Collection and Treatment System, Solvent Dock Area, Former Lockheed Martin French Road Facility, Utica, New York

Date: 7/12/13
Time: 0830
Technician: TMC

QUARTERLY CRITICAL DEVICE / ALARM TESTING (continued)

Alarm	Corresponding Transmitter / Sensor	PLC Alarm Output Name	Alarm Type	Caused PLC Alarm Output State Change? (Y/N)	Caused System Shutdown? (Y/N)	Passed (Y/N)
Aggregate Low Flowrate	FT-105	FA_105	warning	Y	N	Y
	Notes: Tested with MH-3 / flow meter calibration					
Building Wet Floor Sensor Alarm	WFS-106	WFS106	fatal	Y	Y	Y
	Notes: Overflow sump slightly to submerge sensor.					
Building Sump High Level	LSH-106	LSH106	warning	Y	N	Y
	Notes: Fill sump with potable water					
Sequestering Agent Low Flow	FT-200	FA_200	warning	Y	N	Y
	Notes: Pull tubing from drum					
Spill Pallet Wet Sensor Alarm	LSH-200	LSH200	warning	Y	N	Y
	Notes: Place sensor in potable water					
X MH-1 High Level	LSHH-103	LA_MH1	warning			
	Notes:					
X MH-1 Low Level	LSLL-103	LA_MH1	warning			
	Notes: Should force off both MH-1 pumps					
X MH-2 High Level	LSHH-104	LA_MH2	warning			
	Notes:					
X MH-2 Low Level	LSLL-104	LA_MH2	warning			
	Notes: Should force off both MH-2 pumps					
X MH-3 High Level	LSHH-105	LA_MH3	warning			
	Notes:					

No change versus 4/30/12

Quarterly OM&M Log Sheet, Groundwater Collection and Treatment System, Solvent Dock Area, Former Lockheed Martin French Road Facility, Utica, New York

Date: 7/12/13
Time: 0830
Technician: TMC

QUARTERLY CRITICAL DEVICE / ALARM TESTING (continued)

Alarm	Corresponding Transmitter / Sensor	PLC Alarm Output Name	Alarm Type	Caused PLC Alarm Output State Change? (Y/N)	Caused System Shutdown? (Y/N)	Passed (Y/N)
MH-3 Low Level	LSLL-105	LA_MH3	warning			
	Notes: Should force off both MH-3 pumps					
Building High Temperature	TT-100	TA_100	shutdown	Y	Y	Y
	Notes: Change setpoint from 110 to 70 F					
Building Low Temperature	TT-100	TA_100	shutdown	Y	Y	Y
	Notes: Change setpoint from 40 to 75 F					

X

No change versus 4/30/12

Monthly OM&M Log Sheet, Groundwater Collection and Treatment System, Solvent Dock Area, Former Lockheed Martin French Road Facility, Utica, New York

Date: 8/8/13
Time: 1015
Technician: J. Gutkowski

SYSTEM STATUS

System operational? *(PLC screen indicating system in "AUTO" or "MANUAL")* Auto
System currently cycling? yes
Alarms? (list) None

Electrical Meter Reading (kWh): 173393

AIR STRIPPER PARAMETERS (record while air stripper is running)

Parameter	Value	Units
Air stripper sump pressure [PI-106]	26.5 ~~18.5~~	(in. W.C.)
Air stripper sump water elevation *(record from site gauge)*	18.5	(inches)
Blower intake line vacuum [PI-100]	2	(in. W.C.)
Main damper position *(record distance from center of wingnut to outside of blower housing)*	2.1	(inches)
Interior dilution damper position *(0° is shut, 90° is open)*	0.2	(°)

Is white "POWER ON" light on air stripper control panel lit? Yes
Is air stripper hand-off-auto switch [HS-100B] in "AUTO" position? Yes
Note scaling inside liquid effluent pipe from access port None
Note scaling observed inside air stripper via clear tray access door Very little

FLOWMETER / PUMP PARAMETERS

Are white power lights lit on MH-1, MH-2, and MH-3 control panels? (Y/N) Yes All Three
Are pump hand-off-auto switches [HS-101A, HS-101B, HS-102A, HS-102B, HS-103A, and HS-103B] in "auto" position? (Y/N) yes All six

Parameter	MH-1 [FT-101]	MH-2 [FT-102]	MH-3 [FT-103]	Sump [FT-104]	Cumulative [FT-105]
Date/Time	8/8/13/0945	→	→	→	→
Instantaneous Flowrate [gpm]	33.91	0	13.97	0	43.65
"Total" Flow (resettable, gal)	206010	38763	104468	0	322551
"Perm" Flow (gal)	18571180	3133363	3629532	1839	12158695
Pump 1 Running (Y/N)?	yes	NO	yes	NO	NA
Pump 2 Running (Y/N)?	NO	NO	NO	NA	NA

- Flowrate and Permanent Flow can be viewed locally from wall-mounted flow transmitters FT-101 through FT-105 using up/down arrows.

VAPOR PHASE PARAMETERS (record while air stripper is running)

Is duct heater "HEAT ON/OFF" light lit? (Y/N) yes *(located on duct heater control panel door)*
Is duct heater "HI TEMP" alarm light on? (Y/N) NO *(located on duct heater control panel door)*

Monthly OM&M Log Sheet, Groundwater Collection and Treatment System, Solvent Dock Area, Former Lockheed Martin French Road Facility, Utica, New York

Date: 8/8/13
Time: 1000
Technician: J. Gutkowski

VAPOR PHASE PARAMETERS (continued)

Parameter	PID Tag	Value	Units	Notes
Pre-Duct Heater Temperature	TI-300	69	(°F)	
Pre-Carbon Temperature	TI-400	80	(°F)	
Duct Heater Temperature Setpoint	-	85	(°F)	*(located in green on duct heat control panel)*
Duct Heater Temperature Transmitter	-	85	(°F)	*(located in red on duct heat control panel)*
Pre-Carbon Pressure	PI-401	10	(in. W.C.)	
Mid-Carbon Pressure	PI-402	3.5	(in. W.C.)	
Effluent Pressure	PI-403	0	(in. W.C.)	

TRANSMITTER READINGS (record from ProControl)

Parameter	PID Tag	Value	Units	Notes
Air Stripper Sump Pressure	PT-106	27.96	(in. W.C.)	
Vapor Flowrate	FT-106	599 To 633	(cfm)	
Pre-Carbon Temperature	TT-400	77.3	(°F)	
Pre-Carbon Pressure	PT-400	7.7	(in. W.C.)	
Building Temperature	TT-100	73.1	(°F)	

- Press the "I/O" up/down arrows on the ProControl screen until the desired transmitter value is displayed.

SEQUESTERING AGENT (record while air stripper is running)

Parameter	Status	Notes
Is pump operating? (Y/N)	yes	
Is low flow alarm present? (Y/N)	NO	
Is pump in external mode? (Y/N)	yes	
If in external mode, record one set of mA and stroke speed values	5 (mA) 4.9 (spm)	*(display screen should automatically be switching back and forth between mA and stroke speed)*
Stroke length	85	*(record from local stroke length knob on pump)*
Sequestering agent drum level [LI-200]	1'2½"	From Bottom of Drum (16.25 gal.)
Quantity of additional full drums	None	

Inspect sequestering agent components for signs of leaking or wear (tubing [suction, injection, bleed return], injection check valve fitting, spill pallet, etc.) No leaking or wear, All Good

MONTHLY OM&M TASKS

Note: MH-1 must be online during sample collection, if necessary wait for MH-1 Pump 1 or 2 to turn on automatically (MH-1 typically batches every 1.5 hours).

Task	Notes
Monthly liquid effluent sample collected? (Y/N)	yes @ 0935 on 8/8/13
pH of effluent sample	8.10
Model of pH meter	Hanna, HI 99001
Calibration notes / method used	2 point Cal.
Are MH-2 or MH-3 online in auto during sampling collection?	yes MH-3

Monthly OM&M Log Sheet, Groundwater Collection and Treatment System, Solvent Dock Area, Former Lockheed Martin French Road Facility, Utica, New York

Date: 8/8/13
Time: 1030
Technician: Jason Gutkowski

MONTHLY OM&M TASKS (continued)

Task	Notes
Liquid flow sensors cleaned? (Y/N) (*only as needed*)	NO
Monthly manhole inspections conducted? (Y/N)	Yes
Leaking/dripping of water observed from double-walled HDPE discharge pipe located inside manhole? (Y/N)	All Good, No Leaking / Dripping In All Three
Do level floats appear to be in good condition and hanging freely? (Y/N)	Yes in All Three
Observe groundwater inside each manhole and note odor and appearance	Clear, No Odor in All Three
Is confined space entry signage present at each manhole? (Y/N)	Yes, All Three
With pump(s) running, visually inspect discharge piping, pipe fittings, and pressure relief valve for leaks	No Leaks in All Three
With pump(s) running, listen for any unusual sounds	No Unusual Sound, All Three
Inspect condition of collection line gate valve protection flush-mount covers for each manhole	Good / No Issues @ All Three
With system running, visually inspect all piping within the treatment system for leaks, signs of distress, or any other notable observations	All Good
Treatment system valves exercised? (Y/N) *(should be conducted with system in-between batch cycles)*	Yes
List any notable observations	None
Are both building heaters working properly? (Y/N) *(adjust respective wall-mounted thermostats for both heaters and confirm proper heater response)*	Yes

HEALTH AND SAFETY

Item	Status
Is fire extinguisher charged, unobstructed, and possessing an inspection tag? (Y/N)	Yes
Is eyewash/shower station operational and unobstructed? (Y/N)	Yes
Is interior emergency lighting operational? (Y/N)	Yes
Is first aid kit present and in good condition? (Y/N)	Yes
Is lockout/tagout equipment available? (Y/N)	Yes
Have electrical GFIs been tested and reset? (Y/N)	Yes, Operational
Do all electrical panels have 36" of open floor space in front of them? (Y/N)	Yes
Are both the OM&M Manual and HASP onsite? (Y/N) *(note dates for each)*	Yes OM&M 11/21/12 Hasp ~~Sept 12~~ 1/13 (JY)
Is emergency spill kit available? (Y/N)	Yes in SSDS
Is H&S signage including emergency contact list, eye protection hearing protection, and automatic equipment present? (Y/N)	Yes
Is current SPDES permit onsite? (Y/N) (note date)	Yes, Posted on Wall 4/1/11

Monthly OM&M Log Sheet, Groundwater Collection and Treatment System, Solvent Dock Area, Former Lockheed Martin French Road Facility, Utica, New York

Date: 9/10/13
Time: 0930
Technician: J. Gutkowski

SYSTEM STATUS

System operational? *(PLC screen indicating system in "AUTO" or "MANUAL")* Auto
System currently cycling? Yes
Alarms? (list) None

Electrical Meter Reading (kWh): 176063

AIR STRIPPER PARAMETERS (record while air stripper is running)

Parameter	Value	Units
Air stripper sump pressure [PI-106]	25.0	(in. W.C.)
Air stripper sump water elevation *(record from site gauge)*	18.5	(inches)
Blower intake line vacuum [PI-100]	2	(in. W.C.)
Main damper position *(record distance from center of wingnut to outside of blower housing)*	2.1	(inches)
Interior dilution damper position *(0° is shut, 90° is open)*	0.2	(°)

Is white "POWER ON" light on air stripper control panel lit? Yes
Is air stripper hand-off-auto switch [HS-100B] in "AUTO" position? Yes
Note scaling inside liquid effluent pipe from access port Very little
Note scaling observed inside air stripper via clear tray access door Very little

FLOWMETER / PUMP PARAMETERS

Are white power lights lit on MH-1, MH-2, and MH-3 control panels? (Y/N) Yes All Three
Are pump hand-off-auto switches [HS-101A, HS-101B, HS-102A, HS-102B, HS-103A, and HS-103B] in "auto" position? (Y/N) Yes All Six

Parameter	MH-1 [FT-101]	MH-2 [FT-102]	MH-3 [FT-103]	Sump [FT-104]	Cumulative [FT-105]
Date/Time	9/10/13/1105	9/10/13/0936	9/10/13/0934	9/10/13/0935	9/10/13/0934
Instantaneous Flowrate [gpm]	35.76	0	17.59	0	14.90
"Total" Flow (resettable, gal)	413529	91417	212298	0	657078
"Perm" Flow (gal)	1571870	3186017	3737373	1839	12493229
Pump 1 Running (Y/N)?	NO	NO	yes	NO	NA
Pump 2 Running (Y/N)?	Yes	NO	NO	NA	NA

- Flowrate and Permanent Flow can be viewed locally from wall-mounted flow transmitters FT-101 through FT-105 using up/down arrows.

VAPOR PHASE PARAMETERS (record while air stripper is running)

Is duct heater "HEAT ON/OFF" light lit? (Y/N) Yes *(located on duct heater control panel door)*
Is duct heater "HI TEMP" alarm light on? (Y/N) NO *(located on duct heater control panel door)*

Monthly OM&M Log Sheet, Groundwater Collection and Treatment System, Solvent Dock Area, Former Lockheed Martin French Road Facility, Utica, New York

Date: 9/6/13
Time: 1100
Technician: J. Gutkowski

VAPOR PHASE PARAMETERS (continued)

Parameter	PID Tag	Value	Units	Notes
Pre-Duct Heater Temperature	TI-300	71	(°F)	
Pre-Carbon Temperature	TI-400	80	(°F)	
Duct Heater Temperature Setpoint	-	85	(°F)	*(located in green on duct heat control panel)*
Duct Heater Temperature Transmitter	-	87	(°F)	*(located in red on duct heat control panel)*
Pre-Carbon Pressure	PI-401	11	(in. W.C.)	
Mid-Carbon Pressure	PI-402	4	(in. W.C.)	
Effluent Pressure	PI-403	0	(in. W.C.)	

TRANSMITTER READINGS (record from ProControl)

Parameter	PID Tag	Value	Units	Notes
Air Stripper Sump Pressure	PT-106	27.23	(in. W.C.)	
Vapor Flowrate	FT-106	643 TO 695	(cfm)	
Pre-Carbon Temperature	TT-400	78.5	(°F)	
Pre-Carbon Pressure	PT-400	9.1	(in. W.C.)	
Building Temperature	TT-100	70.6	(°F)	

- Press the "I/O" up/down arrows on the ProControl screen until the desired transmitter value is displayed.

SEQUESTERING AGENT (record while air stripper is running)

Parameter	Status	Notes
Is pump operating? (Y/N)	Yes	
Is low flow alarm present? (Y/N)	NO	
Is pump in external mode? (Y/N)	Yes	
If in external mode, record one set of mA and stroke speed values	4 (mA) 4.5 (spm)	*(display screen should automatically be switching back and forth between mA and stroke speed)*
Stroke length	85	*(record from local stroke length knob on pump)*
Sequestering agent drum level [LI-200]	9"	Up From Bottom of Drum
Quantity of additional full drums	1	

Inspect sequestering agent components for signs of leaking or wear (tubing [suction, injection, bleed return], injection check valve fitting, spill pallet, etc.) All Good, No Leaking or Wear

MONTHLY OM&M TASKS

Note: MH-1 must be online during sample collection, if necessary wait for MH-1 Pump 1 or 2 to turn on automatically (MH-1 typically batches every 1.5 hours).

Task	Notes
Monthly liquid effluent sample collected? (Y/N)	Yes @ 1100
pH of effluent sample	8.14
Model of pH meter	Hanna HI 991001
Calibration notes / method used	2 Point Cal.
Are MH-2 or MH-3 online in auto during sampling collection?	NO

Monthly OM&M Log Sheet, Groundwater Collection and Treatment System, Solvent Dock Area, Former Lockheed Martin French Road Facility, Utica, New York

Date: 9/10/13
Time: 1300
Technician: J. Gutkowski

MONTHLY OM&M TASKS (continued)

Task	Notes
Liquid flow sensors cleaned? (Y/N) (*only as needed*)	NO
Monthly manhole inspections conducted? (Y/N)	Yes
Leaking/dripping of water observed from double-walled HDPE discharge pipe located inside manhole? (Y/N)	All Good
Do level floats appear to be in good condition and hanging freely? (Y/N)	Yes All Three
Observe groundwater inside each manhole and note odor and appearance	Clear w/ NO Odor
Is confined space entry signage present at each manhole? (Y/N)	Yes, All Three
With pump(s) running, visually inspect discharge piping, pipe fittings, and pressure relief valve for leaks	NO Leaks
With pump(s) running, listen for any unusual sounds	NO Unusual Sounds
Inspect condition of collection line gate valve protection flush-mount covers for each manhole	All Good
With system running, visually inspect all piping within the treatment system for leaks, signs of distress, or any other notable observations	All Good
Treatment system valves exercised? (Y/N) *(should be conducted with system in-between batch cycles)*	Yes
List any notable observations	None
Are both building heaters working properly? (Y/N) *(adjust respective wall-mounted thermostats for both heaters and confirm proper heater response)*	Yes

HEALTH AND SAFETY

Item	Status
Is fire extinguisher charged, unobstructed, and possessing an inspection tag? (Y/N)	Yes
Is eyewash/shower station operational and unobstructed? (Y/N)	Yes
Is interior emergency lighting operational? (Y/N)	Yes
Is first aid kit present and in good condition? (Y/N)	Yes
Is lockout/tagout equipment available? (Y/N)	Yes
Have electrical GFIs been tested and reset? (Y/N)	Yes working
Do all electrical panels have 36" of open floor space in front of them? (Y/N)	Yes
Are both the OM&M Manual and HASP onsite? (Y/N) *(note dates for each)*	OM&M: 11/2/12 Hasp 1/13
Is emergency spill kit available? (Y/N)	Yes in SSDS
Is H&S signage including emergency contact list, eye protection hearing protection, and automatic equipment present? (Y/N)	Yes
Is current SPDES permit onsite? (Y/N) (note date)	Yes Posted On Wall 4/1/13

Monthly OM&M Log Sheet, Groundwater Collection and Treatment System, Solvent Dock Area, Former Lockheed Martin French Road Facility, Utica, New York

Date: 10/22/13
Time: 1020
Technician: Jason Gotkowski

SYSTEM STATUS

System operational? *(PLC screen indicating system in "AUTO" or "MANUAL")* Auto
System currently cycling? yes
Alarms? (list) None

Electrical Meter Reading (kWh): 179690

AIR STRIPPER PARAMETERS (record while air stripper is running)

Parameter	Value	Units
Air stripper sump pressure [PI-106]	26	(in. W.C.)
Air stripper sump water elevation *(record from site gauge)*	16.75	(inches)
Blower intake line vacuum [PI-100]	-1 to -2	(in. W.C.)
Main damper position *(record distance from center of wingnut to outside of blower housing)*	2.1	(inches)
Interior dilution damper position *(0° is shut, 90° is open)*	.0.2	(°)

Is white "POWER ON" light on air stripper control panel lit? yes
Is air stripper hand-off-auto switch [HS-100B] in "AUTO" position? yes
Note scaling inside liquid effluent pipe from access port little
Note scaling observed inside air stripper via clear tray access door little

FLOWMETER / PUMP PARAMETERS

Are white power lights lit on MH-1, MH-2, and MH-3 control panels? (Y/N) Yes All Three
Are pump hand-off-auto switches [HS-101A, HS-101B, HS-102A, HS-102B, HS-103A, and HS-103B] in "auto" position? (Y/N) yes All six

Parameter	MH-1 [FT-101]	MH-2 [FT-102]	MH-3 [FT-103]	Sump [FT-104]	Cumulative [FT-105]
Date/Time	10/22/1032	10/22/1025	10/22/1030	10/22/13/1027	10/22/13/1026
Instantaneous Flowrate [gpm]	0	17.47	0	0	13.07
"Total" Flow (resettable, gal)	676,444	149,011	342,078	0	1069,583
"Perm" Flow (gal)	18,981,613	3243,615	3,867,137	1,839	12,905,724
Pump 1 Running (Y/N)?	N	N	N	N	NA
Pump 2 Running (Y/N)?	N	Y	N	NA	NA

- Flowrate and Permanent Flow can be viewed locally from wall-mounted flow transmitters FT-101 through FT-105 using up/down arrows.

VAPOR PHASE PARAMETERS (record while air stripper is running)

Is duct heater "HEAT ON/OFF" light lit? (Y/N) yes *(located on duct heater control panel door)*
Is duct heater "HI TEMP" alarm light on? (Y/N) NO *(located on duct heater control panel door)*

Monthly OM&M Log Sheet, Groundwater Collection and Treatment System, Solvent Dock Area, Former Lockheed Martin French Road Facility, Utica, New York

Date: 10/22/13
Time: 1020
Technician: Jason Gotkowski

VAPOR PHASE PARAMETERS (continued)

Parameter	PID Tag	Value	Units	Notes
Pre-Duct Heater Temperature	TI-300	67	(°F)	
Pre-Carbon Temperature	TI-400	77	(°F)	
Duct Heater Temperature Setpoint	-	85	(°F)	*(located in green on duct heat control panel)*
Duct Heater Temperature Transmitter	-	85	(°F)	*(located in red on duct heat control panel)*
Pre-Carbon Pressure	PI-401	11	(in. W.C.)	
Mid-Carbon Pressure	PI-402	4.25	(in. W.C.)	
Effluent Pressure	PI-403	0	(in. W.C.)	

TRANSMITTER READINGS (record from ProControl)

Parameter	PID Tag	Value	Units	Notes
Air Stripper Sump Pressure	PT-106	27.96	(in. W.C.)	
Vapor Flowrate	FT-106	717 To 763	(cfm)	
Pre-Carbon Temperature	TT-400	~~77 To 763~~	(°F)	(77.7) (OK)
Pre-Carbon Pressure	PT-400	9.9	(in. W.C.)	
Building Temperature	TT-100	66.1	(°F)	

- Press the "I/O" up/down arrows on the ProControl screen until the desired transmitter value is displayed.

SEQUESTERING AGENT (record while air stripper is running)

Parameter	Status	Notes
Is pump operating? (Y/N)	Yes	
Is low flow alarm present? (Y/N)	No	
Is pump in external mode? (Y/N)	Yes	
If in external mode, record one set of mA and stroke speed values	3 (mA) / 4.5 (spm)	*(display screen should automatically be switching back and forth between mA and stroke speed)*
Stroke length	85	*(record from local stroke length knob on pump)*
Sequestering agent drum level [LI-200]	2"	Up From Bottom of Drum
Quantity of additional full drums	1	

Inspect sequestering agent components for signs of leaking or wear (tubing [suction, injection, bleed return], injection check valve fitting, spill pallet, etc.): All Good, No Leaks or Wear

MONTHLY OM&M TASKS

Note: MH-1 must be online during sample collection, if necessary wait for MH-1 Pump 1 or 2 to turn on automatically (MH-1 typically batches every 1.5 hours).

Task	Notes
Monthly liquid effluent sample collected? (Y/N)	Yes @ 0915
pH of effluent sample	8.01
Model of pH meter	Hanna HI 991001
Calibration notes / method used	2 Point Cal.
Are MH-2 or MH-3 online in auto during sampling collection?	Yes MH-2

Monthly OM&M Log Sheet, Groundwater Collection and Treatment System, Solvent Dock Area, Former Lockheed Martin French Road Facility, Utica, New York

Date: 10/22/13
Time: 14:00
Technician: CD

MONTHLY OM&M TASKS (continued)

Task	Notes
Liquid flow sensors cleaned? (Y/N) (*only as needed*)	N
Monthly manhole inspections conducted? (Y/N)	
Leaking/dripping of water observed from double-walled HDPE discharge pipe located inside manhole? (Y/N)	N
Do level floats appear to be in good condition and hanging freely? (Y/N)	Y
Observe groundwater inside each manhole and note odor and appearance	MH-1 → clear/no odor MH-3 → clear/no odor MH-2 → clear/slight odor
Is confined space entry signage present at each manhole? (Y/N)	Y
With pump(s) running, visually inspect discharge piping, pipe fittings, and pressure relief valve for leaks	OK
With pump(s) running, listen for any unusual sounds	OK
Inspect condition of collection line gate valve protection flush-mount covers for each manhole	OK
With system running, visually inspect all piping within the treatment system for leaks, signs of distress, or any other notable observations	No issues
Treatment system valves exercised? (Y/N) *(should be conducted with system in-between batch cycles)*	Y
List any notable observations	
Are both building heaters working properly? (Y/N) *(adjust respective wall-mounted thermostats for both heaters and confirm proper heater response)*	Y

HEALTH AND SAFETY

Item	Status
Is fire extinguisher charged, unobstructed, and possessing an inspection tag? (Y/N)	Y
Is eyewash/shower station operational and unobstructed? (Y/N)	Y
Is interior emergency lighting operational? (Y/N)	Y
Is first aid kit present and in good condition? (Y/N)	Y
Is lockout/tagout equipment available? (Y/N)	Y
Have electrical GFIs been tested and reset? (Y/N)	Y
Do all electrical panels have 36" of open floor space in front of them? (Y/N)	Y
Are both the OM&M Manual and HASP onsite? (Y/N) *(note dates for each)*	Yes HASP → Jan 2013 OMM → Nov 2012
Is emergency spill kit available? (Y/N)	Y
Is H&S signage including emergency contact list, eye protection hearing protection, and automatic equipment present? (Y/N)	Y
Is current SPDES permit onsite? (Y/N) (note date)	Y

Quarterly OM&M Log Sheet, Groundwater Collection and Treatment System, Solvent Dock Area, Former Lockheed Martin French Road Facility, Utica, New York

Date: 10/23/13
Time: 14:20
Technician: CD/KF

QUARTERLY OM&M TASKS

Quarterly liquid influent samples collected for MH-1, MH-2, and MH-3? (Y/N) Y

MH-1 influent pH 7.08
MH-2 influent pH 7.79
MH-3 influent pH 7.71

Note: MH-1 must be online during sample collection, if necessary manually turn on MH-1 Pump 1 or 2 (and blower if not already running in Auto).

Quarterly vapor samples collected pre-carbon, mid-carbon, and effluent? (Y/N) Y

Are MH-2 or MH-3 online in auto during sampling collection? Yes MH-3 & MH-1

Quarterly catch basin samples collected for CB-1, CB-2, and CB-3? (Y/N) Y

Quarterly groundwater elevation levels collected? (Y/N) Y

Blower bearings greased? (Y/N) Y

Indicate air velocity measurement collected from 8" effluent pipe (*plug located on wall side of vertical portion of effluent pipe, 1 fpm = 0.317 cfm*) 1950 (fpm) 618 (cfm)

QUARTERLY CRITICAL DEVICE / ALARM TESTING

Liquid flow transmitters FT-101, FT-102, FT-103, and FT-105 calibrated? (Y/N) *(should be done after flow sensor cleaning)*

If yes, document testing and note any changes in sensor calibration factors

Conducted pumpdown tests individually on each manhole.
MH-1 Test → FT-101 = -6% (compared to DTW meas.)
FT-105 = -9% (" ")

MH-2 Test → FT-102 → +3.5%
FT-105 → -16.3%

MH-3 Test → FT-103 → -1.6%
FT-105 → -12.7%

10/24/13

K Factors for Tests
FT-101 → 81.4
102 → 76.6
103 → 66.739
105 → 71.5

FT-101 → decrease K by 6% → New K = 76.5
FT-102 → Keep same
FT-103 → Keep same

FT-105 → Read low for all three tests, will make K change based on middle of 3 %-errors (12.7 %)
New K for FT-105 → 62.4

Manhole floats tested? (Y/N)

Test the following critical alarms *(note that system must be in AUTO to observe proper alarm response)*:

Alarm	Corresponding Transmitter / Sensor	PLC Alarm Output Name	Alarm Type	Caused PLC Alarm Output State Change? (Y/N)	Caused System Shutdown? (Y/N)	Passed (Y/N)
Air Stripper Sump High Pressure	PT-106	PA_106	fatal	Y	Y	Y
	Notes: Changed high setpoint from 24 to 34 "w.c.					
Air Stripper Sump Low Pressure	PT-106	PA_106	fatal	Y	Y	Y
	Notes: ~~blower~~ Put blower HOA into off (& all pumps in off)					
Air Stripper High Liquid Level	LSH-100	LA_100	fatal	Y	Y	Y
	Notes: Filled with clean water					

Quarterly OM&M Log Sheet, Groundwater Collection and Treatment System, Solvent Dock Area, Former Lockheed Martin French Road Facility, Utica, New York

Date: 10/24/13
Time: 17:55
Technician: CD

QUARTERLY CRITICAL DEVICE / ALARM TESTING (continued)

Alarm	Corresponding Transmitter / Sensor	PLC Alarm Output Name	Alarm Type	Caused PLC Alarm Output State Change? (Y/N)	Caused System Shutdown? (Y/N)	Passed (Y/N)
Air Stripper Low Liquid Level	LSL-100	LA_100	fatal	Y	Y	Y
	Notes: Closed pre-VP6AC butterfly valve to increase sump pressure.					
High Air Flowrate	FT-106	FA_106	fatal	Y	Y	Y
	Notes: Changed high setpoint					
Low Air Flowrate	FT-106	FA_106	fatal	Y	Y	Y
	Notes: Changed low setpoint, 5 min delay					
Pre-Carbon High Temperature	TT-400	TAH400	fatal	Y	Y	Y
	Notes: Changed high setpoint, 1 min, shut					
Pre-Carbon Low Temperature	TT-400	TAL400	fatal	Y	Y	Y
	Notes: Changed ~~high~~ setpoint, 3 min delay, shutdown low					
Pre-Carbon High Pressure	PT-400	PA_400	fatal	Y	Y	Y
	Notes: Changed high to 5.0,					
Pre-Carbon Low Pressure	PT-400	PA_400	fatal	Y	Y	Y
	Notes: Changed to 11, shutdown					
MH-1 Low Flowrate	FT-101	FA_101	warning	Y	N	Y
	Notes: Kept MH-1 HOA's in off, MH level rises above H,					
MH-2 Low Flowrate	FT-102	FA_102	warning	Y	N	Y
	Notes: MH-2 pump HOA's off → level above H					
MH-3 Low Flowrate	FT-103	FA_103	warning	Y	N	Y
	Notes: Kept MH-3 HOA's in off, MH-3 level rises above H					

Quarterly OM&M Log Sheet, Groundwater Collection and Treatment System, Solvent Dock Area, Former Lockheed Martin French Road Facility, Utica, New York

Date: 10/24/13
Time: 17:55
Technician: CD

QUARTERLY CRITICAL DEVICE / ALARM TESTING (continued)

Alarm	Corresponding Transmitter / Sensor	PLC Alarm Output Name	Alarm Type	Caused PLC Alarm Output State Change? (Y/N)	Caused System Shutdown? (Y/N)	Passed (Y/N)
Aggregate Low Flowrate	FT-105	FA_105	warning	Y	N	Y
	Notes: All pumps in OFF, received alarm					
Building Wet Floor Sensor Alarm	WFS-106	WFS106	fatal	Y	Y	Y
	Notes: Filled sump w/ sink water.					
Building Sump High Level	LSH-106	LSH106	warning	Y	N	Y
	Notes: Filled sump w/ sink water. Had to adjust float wire due to hanging up on grate.					
Sequestering Agent Low Flow	FT-200	FA_200	warning	Y	N	Y
	Notes: Pulled suction from drum					
Spill Pallet Wet Sensor Alarm	LSH-200	LSH200	warning	Y	N	Y
	Notes: Dipped sensor in water					
MH-1 High Level	LSHH-103	LA_MH1	warning	—	—	—
	Notes:					
MH-1 Low Level	LSLL-103	LA_MH1	warning	—	—	—
	Notes: Should force off both MH-1 pumps					
MH-2 High Level	LSHH-104	LA_MH2	warning	—	—	—
	Notes:					
MH-2 Low Level	LSLL-104	LA_MH2	warning	—	—	—
	Notes: Should force off both MH-2 pumps					
MH-3 High Level	LSHH-105	LA_MH3	warning	—	—	—
	Notes:					

Quarterly OM&M Log Sheet, Groundwater Collection and Treatment System, Solvent Dock Area, Former Lockheed Martin French Road Facility, Utica, New York

Date: 10/24/13
Time: 17:55
Technician: CD

QUARTERLY CRITICAL DEVICE / ALARM TESTING (continued)

Alarm	Corresponding Transmitter / Sensor	PLC Alarm Output Name	Alarm Type	Caused PLC Alarm Output State Change? (Y/N)	Caused System Shutdown? (Y/N)	Passed (Y/N)
MH-3 Low Level	LSLL-105	LA_MH3	warning	—	—	—
	Notes: Should force off both MH-3 pumps					
Building High Temperature	TT-100	TA_100	shutdown	Y	Y	Y
	Notes: Changed setpoint to 60.					
Building Low Temperature	TT-100	TA_100	shutdown	Y	Y	Y
	Notes: Changed setpoint to 75					

Monthly OM&M Log Sheet, Groundwater Collection and Treatment System, Solvent Dock Area, Former Lockheed Martin French Road Facility, Utica, New York

Date: 11/5/13
Time: 0730
Technician: Jason Gutkowski

SYSTEM STATUS

System operational? *(PLC screen indicating system in "AUTO" or "MANUAL")* Yes Auto
System currently cycling? Yes
Alarms? (list) None

Electrical Meter Reading (kWh): 181317

AIR STRIPPER PARAMETERS (record while air stripper is running)

Parameter	Value	Units
Air stripper sump pressure [PI-106]	29	(in. W.C.)
Air stripper sump water elevation *(record from site gauge)*	15.75	(inches)
Blower intake line vacuum [PI-100]	2	(in. W.C.)
Main damper position *(record distance from center of wingnut to outside of blower housing)*	2.1	(inches)
Interior dilution damper position *(0° is shut, 90° is open)*	0.2	(°)

Is white "POWER ON" light on air stripper control panel lit? Yes
Is air stripper hand-off-auto switch [HS-100B] in "AUTO" position? Yes
Note scaling inside liquid effluent pipe from access port Very little
Note scaling observed inside air stripper via clear tray access door Little

FLOWMETER / PUMP PARAMETERS

Are white power lights lit on MH-1, MH-2, and MH-3 control panels? (Y/N) Yes on MH-2 & MH-3 light is out on MH-1
Are pump hand-off-auto switches [HS-101A, HS-101B, HS-102A, HS-102B, HS-103A, and HS-103B] in "auto" position? (Y/N) Yes All Six

Parameter	MH-1 [FT-101]	MH-2 [FT-102]	MH-3 [FT-103]	Sump [FT-104]	Cumulative [FT-105]
Date/Time	11/5/13 / 0740	11/5/13 / 0742	11/5/13 / 0742	11/5/13 / 0743	11/5/13 / 0741
Instantaneous Flowrate [gpm]	34.97	0	0	0	35.10
"Total" Flow (resettable, gal)	755035	162,518	378,073	0	1197,957
"Perm" Flow (gal)	19060213	3,257,118	3,903,132	1,839	13,034,101
Pump 1 Running (Y/N)?	Yes	NO	NO	NO	NA
Pump 2 Running (Y/N)?	NO	NO	NO	NA	NA

- Flowrate and Permanent Flow can be viewed locally from wall-mounted flow transmitters FT-101 through FT-105 using up/down arrows.

VAPOR PHASE PARAMETERS (record while air stripper is running)

Is duct heater "HEAT ON/OFF" light lit? (Y/N) Yes *(located on duct heater control panel door)*
Is duct heater "HI TEMP" alarm light on? (Y/N) NO *(located on duct heater control panel door)*

Monthly OM&M Log Sheet, Groundwater Collection and Treatment System, Solvent Dock Area, Former Lockheed Martin French Road Facility, Utica, New York

Date: 11/5/13
Time: 0750
Technician: Jason Gutkowski

VAPOR PHASE PARAMETERS (continued)

Parameter	PID Tag	Value	Units	Notes
Pre-Duct Heater Temperature	TI-300	70	(°F)	
Pre-Carbon Temperature	TI-400	85	(°F)	
Duct Heater Temperature Setpoint	-	85	(°F)	*(located in green on duct heat control panel)*
Duct Heater Temperature Transmitter	-	84	(°F)	*(located in red on duct heat control panel)*
Pre-Carbon Pressure	PI-401	12	(in. W.C.)	
Mid-Carbon Pressure	PI-402	4.75	(in. W.C.)	
Effluent Pressure	PI-403	0	(in. W.C.)	

TRANSMITTER READINGS (record from ProControl)

Parameter	PID Tag	Value	Units	Notes
Air Stripper Sump Pressure	PT-106	30.46	(in. W.C.)	
Vapor Flowrate	FT-106	728 TO 799	(cfm)	
Pre-Carbon Temperature	TT-400	89.9	(°F)	
Pre-Carbon Pressure	PT-400	9.5	(in. W.C.)	
Building Temperature	TT-100	64.8	(°F)	

- Press the "I/O" up/down arrows on the ProControl screen until the desired transmitter value is displayed.

SEQUESTERING AGENT (record while air stripper is running)

Parameter	Status	Notes
Is pump operating? (Y/N)	Yes	
Is low flow alarm present? (Y/N)	NO	
Is pump in external mode? (Y/N)	Yes	
If in external mode, record one set of mA and stroke speed values	6 (mA) 5.0 (spm)	*(display screen should automatically be switching back and forth between mA and stroke speed)*
Stroke length	85	*(record from local stroke length knob on pump)*
Sequestering agent drum level [LI-200]	1½"	From Bottom of Drum
Quantity of additional full drums	1 Full Drum	

Inspect sequestering agent components for signs of leaking or wear (tubing [suction, injection, bleed return], injection check valve fitting, spill pallet, etc.) All Good, NO Leaks or Wear

MONTHLY OM&M TASKS

Note: MH-1 must be online during sample collection, if necessary wait for MH-1 Pump 1 or 2 to turn on automatically (MH-1 typically batches every 1.5 hours).

Task	Notes
Monthly liquid effluent sample collected? (Y/N)	Yes @ 0743
pH of effluent sample	8.11
Model of pH meter	8.11 Hanna HI 991001
Calibration notes / method used	2 Point Cal.
Are MH-2 or MH-3 online in auto during sampling collection?	NO

Monthly OM&M Log Sheet, Groundwater Collection and Treatment System, Solvent Dock Area, Former Lockheed Martin French Road Facility, Utica, New York

Date: 11/5/13
Time: 0800
Technician: J. Gutkowski

MONTHLY OM&M TASKS (continued)

Task	Notes
Liquid flow sensors cleaned? (Y/N) (*only as needed*)	NO
Monthly manhole inspections conducted? (Y/N)	Yes
Leaking/dripping of water observed from double-walled HDPE discharge pipe located inside manhole? (Y/N)	All Good NO Leaks
Do level floats appear to be in good condition and hanging freely? (Y/N)	yes Hanging Free in All Three
Observe groundwater inside each manhole and note odor and appearance	Clear With No Odor
Is confined space entry signage present at each manhole? (Y/N)	Yes All Three
With pump(s) running, visually inspect discharge piping, pipe fittings, and pressure relief valve for leaks	All Good No Leaks In All Three
With pump(s) running, listen for any unusual sounds	NO Unusual Sounds
Inspect condition of collection line gate valve protection flush-mount covers for each manhole	All Good
With system running, visually inspect all piping within the treatment system for leaks, signs of distress, or any other notable observations	All Good NO Leaks or Distress
Treatment system valves exercised? (Y/N) *(should be conducted with system in-between batch cycles)*	Yes All Valves Free
List any notable observations	None
Are both building heaters working properly? (Y/N) *(adjust respective wall-mounted thermostats for both heaters and confirm proper heater response)*	yes

HEALTH AND SAFETY

Item	Status
Is fire extinguisher charged, unobstructed, and possessing an inspection tag? (Y/N)	Yes
Is eyewash/shower station operational and unobstructed? (Y/N)	Yes
Is interior emergency lighting operational? (Y/N)	Yes
Is first aid kit present and in good condition? (Y/N)	Yes
Is lockout/tagout equipment available? (Y/N)	Yes
Have electrical GFIs been tested and reset? (Y/N)	Yes
Do all electrical panels have 36" of open floor space in front of them? (Y/N)	Yes
Are both the OM&M Manual and HASP onsite? (Y/N) *(note dates for each)*	Yes OM & M: 11/12 Hasp: 1/13
Is emergency spill kit available? (Y/N)	Yes In SSDS
Is H&S signage including emergency contact list, eye protection hearing protection, and automatic equipment present? (Y/N)	Yes
Is current SPDES permit onsite? (Y/N) (note date)	Yes Posted On Wall 4/11/11

Monthly OM&M Log Sheet, Groundwater Collection and Treatment System, Solvent Dock Area, Former Lockheed Martin French Road Facility, Utica, New York

Date: 12/3/13
Time: 0730
Technician: J. Gutkowski

SYSTEM STATUS

System operational? *(PLC screen indicating system in "AUTO" or "MANUAL")* Auto, Yes
System currently cycling? Yes
Alarms? (list) None

Electrical Meter Reading (kWh): 185809

AIR STRIPPER PARAMETERS (record while air stripper is running)

Parameter	Value	Units
Air stripper sump pressure [PI-106]	29	(in. W.C.)
Air stripper sump water elevation *(record from site gauge)*	16.25	(inches)
Blower intake line vacuum [PI-100]	3.5	(in. W.C.)
Main damper position *(record distance from center of wingnut to outside of blower housing)*	2.1	(inches)
Interior dilution damper position *(0° is shut, 90° is open)*	0.2	(°)

Is white "POWER ON" light on air stripper control panel lit? Yes
Is air stripper hand-off-auto switch [HS-100B] in "AUTO" position? Yes
Note scaling inside liquid effluent pipe from access port Very little
Note scaling observed inside air stripper via clear tray access door Little, Windows Cloudy

FLOWMETER / PUMP PARAMETERS

Are white power lights lit on MH-1, MH-2, and MH-3 control panels? (Y/N) Light Out for MH-1 Pump 1
Are pump hand-off-auto switches [HS-101A, HS-101B, HS-102A, HS-102B, HS-103A, and HS-103B] in "auto" position? (Y/N) Yes All Six

Parameter	MH-1 [FT-101]	MH-2 [FT-102]	MH-3 [FT-103]	Sump [FT-104]	Cumulative [FT-105]
Date/Time	0731	0733	0734	0734	0732
Instantaneous Flowrate [gpm]	36.70	16.09	0	0	51.33
"Total" Flow (resettable, gal)	962543	20152	468644	0	1533138
"Perm" Flow (gal)	19267721	3296126	3993703	1839	13369292
Pump 1 Running (Y/N)?	NO	NO	NO	NO	NA
Pump 2 Running (Y/N)?	Yes	Yes	NO	NA	NA

- Flowrate and Permanent Flow can be viewed locally from wall-mounted flow transmitters FT-101 through FT-105 using up/down arrows.

VAPOR PHASE PARAMETERS (record while air stripper is running)

Is duct heater "HEAT ON/OFF" light lit? (Y/N) Yes *(located on duct heater control panel door)*
Is duct heater "HI TEMP" alarm light on? (Y/N) NO *(located on duct heater control panel door)*

Monthly OM&M Log Sheet, Groundwater Collection and Treatment System, Solvent Dock Area, Former Lockheed Martin French Road Facility, Utica, New York

Date: 12/3/13
Time: 0800
Technician: J. Gutkowski

VAPOR PHASE PARAMETERS (continued)

Parameter	PID Tag	Value	Units	Notes
Pre-Duct Heater Temperature	TI-300	61	(°F)	
Pre-Carbon Temperature	TI-400	78	(°F)	
Duct Heater Temperature Setpoint	-	85	(°F)	*(located in green on duct heat control panel)*
Duct Heater Temperature Transmitter	-	85	(°F)	*(located in red on duct heat control panel)*
Pre-Carbon Pressure	PI-401	12	(in. W.C.)	
Mid-Carbon Pressure	PI-402	8	(in. W.C.)	
Effluent Pressure	PI-403	0	(in. W.C.)	

TRANSMITTER READINGS (record from ProControl)

Parameter	PID Tag	Value	Units	Notes
Air Stripper Sump Pressure	PT-106	31.14	(in. W.C.)	
Vapor Flowrate	FT-106	650 TO 702	(cfm)	
Pre-Carbon Temperature	TT-400	78.0	(°F)	
Pre-Carbon Pressure	PT-400	9.1	(in. W.C.)	
Building Temperature	TT-100	65.1	(°F)	

- Press the "I/O" up/down arrows on the ProControl screen until the desired transmitter value is displayed.

SEQUESTERING AGENT (record while air stripper is running)

Parameter	Status	Notes
Is pump operating? (Y/N)	Yes	
Is low flow alarm present? (Y/N)	NO	
Is pump in external mode? (Y/N)	Yes	
If in external mode, record one set of mA and stroke speed values	8 (mA) 5.4 (spm)	*(display screen should automatically be switching back and forth between mA and stroke speed)*
Stroke length	85	*(record from local stroke length knob on pump)*
Sequestering agent drum level [LI-200]	27 1/8	From Bottom of Drum
Quantity of additional full drums	None	

Inspect sequestering agent components for signs of leaking or wear (tubing [suction, injection, bleed return], injection check valve fitting, spill pallet, etc.): Good, No Leaks or Wear

MONTHLY OM&M TASKS

Note: MH-1 must be online during sample collection, if necessary wait for MH-1 Pump 1 or 2 to turn on automatically (MH-1 typically batches every 1.5 hours).

Task	Notes
Monthly liquid effluent sample collected? (Y/N)	Yes @ 0745
pH of effluent sample	8.14
Model of pH meter	Hanna HI 99100
Calibration notes / method used	2 Point Cal.
Are MH-2 or MH-3 online in auto during sampling collection?	Yes MH-2

Monthly OM&M Log Sheet, Groundwater Collection and Treatment System, Solvent Dock Area, Former Lockheed Martin French Road Facility, Utica, New York

Date: 12/3/13
Time: 0830
Technician: J. Gutkowski

MONTHLY OM&M TASKS (continued)

Task	Notes
Liquid flow sensors cleaned? (Y/N) (*only as needed*)	NO
Monthly manhole inspections conducted? (Y/N)	yes
Leaking/dripping of water observed from double-walled HDPE discharge pipe located inside manhole? (Y/N)	NO Leaking or D
Do level floats appear to be in good condition and hanging freely? (Y/N)	Yes Hanging Freely in All Three
Observe groundwater inside each manhole and note odor and appearance	Clear / No Odor
Is confined space entry signage present at each manhole? (Y/N)	
With pump(s) running, visually inspect discharge piping, pipe fittings, and pressure relief valve for leaks	Good, No leaks In All Three
With pump(s) running, listen for any unusual sounds	No Unusual Sounds
Inspect condition of collection line gate valve protection flush-mount covers for each manhole	All Good
With system running, visually inspect all piping within the treatment system for leaks, signs of distress, or any other notable observations	All Good, No Leaks or Distress
Treatment system valves exercised? (Y/N) *(should be conducted with system in-between batch cycles)*	yes
List any notable observations	None
Are both building heaters working properly? (Y/N) *(adjust respective wall-mounted thermostats for both heaters and confirm proper heater response)*	yes

HEALTH AND SAFETY

Item	Status
Is fire extinguisher charged, unobstructed, and possessing an inspection tag? (Y/N)	yes
Is eyewash/shower station operational and unobstructed? (Y/N)	yes
Is interior emergency lighting operational? (Y/N)	yes
Is first aid kit present and in good condition? (Y/N)	yes
Is lockout/tagout equipment available? (Y/N)	yes
Have electrical GFIs been tested and reset? (Y/N)	yes
Do all electrical panels have 36" of open floor space in front of them? (Y/N)	yes
Are both the OM&M Manual and HASP onsite? (Y/N) *(note dates for each)*	yes OM&M 11/12 Hasp 1/13
Is emergency spill kit available? (Y/N)	yes In SSDS
Is H&S signage including emergency contact list, eye protection hearing protection, and automatic equipment present? (Y/N)	yes
Is current SPDES permit onsite? (Y/N) (note date)	yes Posted On Wall 4/11/11

ARCADIS

Appendix C

Alarm-Response Log Sheets

Alarm Response Log Sheet, Groundwater Collection and Treatment System, Solvent Dock Area, Former Lockheed Martin French Road Facility, Utica, New York

Date: 1/23/2013
Time: 15:30
Technician: Todd Carignan

ALARM RESPONSE / CORRECTIVE ACTION LOG SHEET

Date:	Time:
1/19/2013	6:30
1/23/2013	6:30

Alarm Condition:

Daily scheduled fax Log not received at 6:30.

Cause of Alarm:

Unknown - Faulty phone line connection resulting a "fax fail".

Corrective Action:

1/20/13 - Received daily on schedule indicating that the system was online and in auto.

1/23/13 - Dan Zuck performed a site inspection on 1/23/2013 at approximately 11:45 and confirmed that the system was online in auto. A "fax now" was successfully initiated locally from the PLC.

Approved RFA for installing a wireless cellular auto dialer is pending final Lockheed authorization.

ALARM Fax Report

EOS Research Ltd. — ProControl Series II+

To:

TODD CARIGNAN

From:

THE ARCADIS GCTS SYSTEM IN UTICA_NEW YORK @ 11:42:02 ON 01/23/2013
SER NO 9539 : SETUP VER 1 : ROM 2.1996 : MODEL A2

System Status:

AUTO P06 : LAST SHUTDOWN @ 13:52:03 ON 01/18/2013 BY KEYPAD
FAX REPORT INITIATED BY KEYPAD

Discrete Inputs:

MH1_HH is OFF	MH1_H2 is OFF	MH1_H1 is OFF	MH1_LO is ON
MH1_LL is ON	MH2_HH is OFF	MH2_H2 is OFF	MH2_H1 is OFF
MH2_LO is OFF	MH2_LL is ON	MH3_HH is OFF	MH3_H2 is OFF
MH3_H1 is OFF	MH3_LO is ON	MH3_LL is ON	WFS106 is OFF
MOTION is OFF	LSH106 is OFF	LSH100 is OFF	LSL100 is ON
FT_200 is OFF	LSH200 is OFF		

Discrete Outputs:

MH1_P1 is OFF	MH1_P2 is OFF	MH2_P1 is OFF	MH2_P2 is OFF
MH3_P1 is OFF	MH3_P2 is OFF	B_100 is OFF	DH_300 is OFF
LA_MH1 is OFF	FA_101 is OFF	LA_MH2 is OFF	FA_102 is OFF
LA_MH3 is OFF	FA_103 is OFF	PA_106 is OFF	LA_100 is OFF
LSH106 is OFF	WFS106 is OFF	TA_100 is OFF	FA_105 is OFF
FA_106 is OFF	FA_200 is OFF	MOTION is OFF	TAH400 is OFF
TAL400 is OFF	PA_400 is OFF	LSH200 is OFF	

Analog Inputs:

FT_101 is 0.00	GPM	TOTAL FLOW is	56124173	GAL				
FT_102 is 0.00	GPM	TOTAL FLOW is	9946554	GAL				
FT_103 is 0.00	GPM	TOTAL FLOW is	2627156	GAL				
FT_105 is 0.00	GPM	TOTAL FLOW is	8984645	GAL				
PT_106 is 0.09	IWC	LIMITS are	L: 8.00	IWC	H:	34.00	IWC	
TT_400 is 89.0	DEG	LIMITS are	L: 60.0	DEG	H:	110.0	DEG	
PT_400 is 0.0	IWC	LIMITS are	L: 1.0	IWC	H:	25.0	IWC	
TT_100 is 64.9	DEG	LIMITS are	L: 40.0	DEG	H:	110.0	DEG	
FT_106 is 0.0	CFM	LIMITS are	L: 300.0	CFM	H:	.....	CFM	

Analog Outputs:

INJSPD 0.0 PCT PRO

Alarm Response Log Sheet, Groundwater Collection and Treatment System, Solvent Dock Area, Former Lockheed Martin French Road Facility, Utica, New York

Date: 2/3/2013
Time: 15:30
Technician: Todd Carignan

ALARM RESPONSE / CORRECTIVE ACTION LOG SHEET

Date: 2/2/2013 Time: 6:30

Alarm Condition:

Daily scheduled fax Log not received at 6:30.

Cause of Alarm:

Unknown - Faulty phone line connection resulting a "fax fail".

Corrective Action:

2/2/13 - Several unsuccessful attempted were made to log into the PLC remotely. It should be noted that a voicemail system (ConMed?) was picking up the line while attempting to log into the PLC.

2/3/13 - The daily Fax Log was received on schedule indicating that the system was online in "Auto". Additionally, ARCADIS successfully logged into the PLC remotely and downloaded logged data files.

ARCADIS scheduled to install new wireless cellular auto dialer the week of 2/4/13.

ProControl Series II+

EOS Research Ltd.

Fax Report

To:

TODD CARIGNAN

From:

THE ARCADIS GCTS SYSTEM IN UTICA_NEW YORK @ 06:30:00 ON 02/03/2013
SER NO 9539 : SETUP VER 1 : ROM 2.1996 : MODEL A2

System Status:

AUTO P06 : LAST SHUTDOWN @ 13:52:03 ON 01/18/2013 BY KEYPAD

Discrete Inputs:

MH1_HH is OFF	MH1_H2 is OFF	MH1_H1 is OFF	MH1_LO is ON
MH1_LL is ON	MH2_HH is OFF	MH2_H2 is OFF	MH2_H1 is OFF
MH2_LO is ON	MH2_LL is ON	MH3_HH is OFF	MH3_H2 is OFF
MH3_H1 is OFF	MH3_LO is ON	MH3_LL is ON	WFS106 is OFF
MOTION is OFF	LSH106 is OFF	LSH100 is OFF	LSL100 is ON
FT_200 is OFF	LSH200 is OFF		

Discrete Outputs:

MH1_P1 is OFF	MH1_P2 is OFF	MH2_P1 is OFF	MH2_P2 is OFF
MH3_P1 is OFF	MH3_P2 is OFF	B_100 is OFF	DH_300 is OFF
LA_MH1 is OFF	FA_101 is OFF	LA_MH2 is OFF	FA_102 is OFF
LA_MH3 is OFF	FA_103 is ON	PA_106 is OFF	LA_100 is OFF
LSH106 is OFF	WFS106 is OFF	TA_100 is OFF	FA_105 is OFF
FA_106 is OFF	FA_200 is OFF	MOTION is OFF	TAH400 is OFF
TAL400 is OFF	PA_400 is OFF	LSH200 is OFF	

Analog Inputs:

FT_101 is 0.00	GPM	TOTAL FLOW is	56247185	GAL				
FT_102 is 0.00	GPM	TOTAL FLOW is	9967055	GAL				
FT_103 is 0.00	GPM	TOTAL FLOW is	2663622	GAL				
FT_105 is 0.00	GPM	TOTAL FLOW is	9175189	GAL				
PT_106 is 0.15	IWC	LIMITS are	L: 8.00	IWC	H:	34.00	IWC	
TT_400 is 108.6	DEG	LIMITS are	L: 60.0	DEG	H:	110.0	DEG	
PT_400 is 0.0	IWC	LIMITS are	L: 1.0	IWC	H:	25.0	IWC	
TT_100 is 66.8	DEG	LIMITS are	L: 40.0	DEG	H:	110.0	DEG	
FT_106 is 0.0	CFM	LIMITS are	L: 300.0	CFM	H:	.....	CFM	

Analog Outputs:

INJSPD 0.0 PCT PRO

Alarm Response Log Sheet, Groundwater Collection and Treatment System, Solvent Dock Area, Former Lockheed Martin French Road Facility, Utica, New York

Date:	3/6/2013
Time:	17:30
Technician:	TMC

ALARM RESPONSE / CORRECTIVE ACTION LOG SHEET

Date: 3/5/13 Time: 3:35

Alarm Condition:

Process 53

Low Flow Sequestering Agent - FA-200.

Non-Fatal Alarm

Cause of Alarm:

Sequestering agent drum #5 ran out of solution.

Corrective Action:

ARCADIS onsite the day of the alarm to perform monthly O&M. The drum was found to be empty, as expected based on tracking log. A new full drum (Drum #6) of sequestering agent was placed into service at approximately 12:00 on 3/5/13.

However, FA-200 was unable to be cleared following bringing the new drum online and successfully priming the pump.

The following corrective actions were performed:

1. Re-prime pump and visually confirm flow through tubing.

2. Remove and clean the injection port location on the manifold.

3. Operate pump with tubing and injection port removed and placed in bucket to confirm flow.

4. Re-start pump to clear alarm.

5. Check wiring to/from the flow sensor.

6. Remove flow sensor and clean with hot water.

ARCADIS plans on performing another site inspection on March 14 to further inspect the FA-200 and its output to the PLC.

Carignan, Todd

From: The ARCADIS GCTS system {#9539} in UTICA_NEW YORK <procontrol@eosresearch.com> <procontrol@eosresearch.com>
Sent: Tuesday, March 05, 2013 3:37 AM
To: Carignan, Todd; Davern, Christopher; Bonsteel, Jeffrey; zigmontjh@cdmsmith.com; Zuck, Daniel
Subject: ProControl ALARM Report

ProControl Series 2plus ALARM Report

Email generated from WAN IP address: 166.149.174.142
Both HTML and plain text reports are attached. Enable plain text alternative mode to view only text.

ALARM generated at 03:35:00 on 03/05/2013
ALARM was triggered by PROCESS 53. Process specific message follows:

This system uses ROM version 2.217 and is a MODEL A2.
The system is currently in AUTO mode and the last process to run was AUTO process #53.
This system last shut down at 16:30:47 on 02/13/2013 and the cause was PT_106.

DISCRETE INPUT STATUS:

Tagname	*State*	*Tagname*	*State*	*Tagname*	*State*	*Tagname*	*State*
MH1_HH	OFF	MH1_H2	OFF	MH1_H1	OFF	MH1_LO	ON
MH1_LL	ON	MH2_HH	OFF	MH2_H2	OFF	MH2_H1	OFF
MH2_LO	ON	MH2_LL	ON	MH3_HH	OFF	MH3_H2	OFF
MH3_H1	OFF	MH3_LO	ON	MH3_LL	ON	WFS106	OFF
MOTION	OFF	LSH106	OFF	LSH100	OFF	LSL100	ON
FT_200	ON	LSH200	OFF				

DISCRETE OUTPUT STATUS:

Tagname	*State*	*Tagname*	*State*	*Tagname*	*State*	*Tagname*	*State*
MH1_P1	OFF	MH1_P2	ON	MH2_P1	OFF	MH2_P2	OFF
MH3_P1	OFF	MH3_P2	OFF	B_100	ON	DH_300	ON
LA_MH1	OFF	FA_101	OFF	LA_MH2	OFF	FA_102	OFF
LA_MH3	OFF	FA_103	OFF	PA_106	OFF	LA_100	OFF
LSH106	OFF	WFS106	OFF	TA_100	OFF	FA_105	OFF

FA_106	OFF	FA_200	ON	MOTION	OFF	TAH400	OFF
TAL400	OFF	PA_400	OFF	LSH200	OFF		

ANALOG INPUT STATUS:								
Tagname	***Value***	***Units***	***Totalizer***	***Total Units***	***Alarm Setpoints***			
					Low	***High***	***Low-Low***	***High-High***
FT_101	35.75	GPM	56490599	GAL	10.00	80.00	0.00	20.00
FT_102	0.00	GPM	10000253	GAL	10.00	80.00	0.00	20.00
FT_103	0.00	GPM	2759404	GAL	10.00	80.00	0.00	20.00
FT_105	38.64	GPM	9540639	GAL	3.00	80.00	0.00	20.00
PT_106	30.16	IWC			8.00	34.00	0.00	20.00
TT_400	84.6	DEG			60.0	110.0	0.0	20.0
PT_400	8.9	IWC			1.0	25.0	0.0	20.0
TT_100	66.1	DEG			40.0	110.0	0.0	20.0
FT_106	829.2	CFM			300.0	*****	0.0	20.0

ANALOG OUTPUT STATUS:					
Tagname	***Percentage Full Scale***	***Operational Mode***	***Tagname***	***Percentage Full Scale***	***Operational Mode***
INJSPD	5.8%	Open Loop Proportional			

Alarm Response Log Sheet, Groundwater Collection and Treatment System, Solvent Dock Area, Former Lockheed Martin French Road Facility, Utica, New York

Date: 3/27/2013
Time: 12:50
Technician: TMC

ALARM RESPONSE / CORRECTIVE ACTION LOG SHEET

Date: 3/5/13 Time: 3:35

Alarm Condition:

Process 53

Low Flow Sequestering Agent - FA-200.

Non-Fatal Alarm

Cause of Alarm:

Sequestering agent drum #5 ran out of solution.

Corrective Action:

ARCADIS onsite the day of the alarm to perform monthly O&M. The drum was found to be empty, as expected based on tracking log. A new full drum (Drum #6) of sequestering agent was placed into service at approximately 12:00 on 3/5/13.

However, FA-200 was unable to be cleared following bringing the new drum online and successfully priming the pump.

The following corrective actions were performed:

1. Re-prime pump and visually confirm flow through tubing.

2. Remove and clean the injection port location on the manifold.

3. Operate pump with tubing and injection port removed and placed in bucket to confirm flow.

4. Re-start pump to clear alarm.

5. Check wiring to/from the flow sensor.

6. Remove flow sensor and clean with hot water.

An ARCADIS site visit on 3/22/13 (15:00) determined the following: The pump itself is functioning properly and transferring chemical when on. The flow sensor is not detecting flow as it should with each pump pulse. Adjustment of the flow-range setpoint knob on the side of the flow sensor was performed. Proper flow sensor operation was then observed for both normal operation (i.e., sensing flow when chemical is indeed being transferred) and dry operation (i.e., not sensing flow when suction tubing removed from chemical drum). It should noted that the volume sequestering agent remained relatively unchanged while this alarm was present due to the fact that the low flow alarm sent by the flow sensor turns off the chemical feed pump automatically, and when this occurs the pump requires a local restart.

ARCADIS will re-inspect the pump during the April monthly OM&M event to confirm that the in-use chemical drum is being consumed and that the current setpoint for the flow sensor is working properly.

Alarm Response Log Sheet, Groundwater Collection and Treatment System, Solvent Dock Area, Former Lockheed Martin French Road Facility, Utica, New York

Date: 6/27/2013
Time: 8:30
Technician: TMC

ALARM RESPONSE / CORRECTIVE ACTION LOG SHEET

Date: 6/25/13 Time: 23:30

Alarm Condition:

Process 53

Low Flow Sequestering Agent - FA-200.

Non-Fatal Alarm

Cause of Alarm:

Sequestering agent drum #6 ran out of solution.

Corrective Action:

ARCADIS onsite 6/26/13 at approximately 16:00. The sequestering agent drum was found to be empty, as expected based on tracking log. A new full drum (Drum #7) of sequestering agent was placed into service.

ARCADIS logged into the system remotely on 6/27/13, at approximately 8:00, and cleared the alarm FA-200.

Carignan, Todd

From: The ARCADIS GCTS system {#9539} in UTICA_NEW YORK <procontrol@eosresearch.com> <procontrol@eosresearch.com>
Sent: Tuesday, June 25, 2013 11:32 PM
To: Carignan, Todd; Davern, Christopher; Bonsteel, Jeffrey; zigmontjh@cdmsmith.com; Zuck, Daniel
Subject: ProControl ALARM Report

ProControl Series 2plus ALARM Report

Email generated from WAN IP address: 166.149.174.142
Both HTML and plain text reports are attached. Enable plain text alternative mode to view only text.

ALARM generated at 23:30:45 on 06/25/2013
ALARM was triggered by PROCESS 53. Process specific message follows:

This system uses ROM version 2.217 and is a MODEL A2.
The system is currently in AUTO mode and the last process to run was AUTO process #53.
This system last shut down at 12:28:45 on 05/29/2013 and the cause was B_100 .

DISCRETE INPUT STATUS:

Tagname	*State*	*Tagname*	*State*	*Tagname*	*State*	*Tagname*	*State*
MH1_HH	OFF	MH1_H2	OFF	MH1_H1	OFF	MH1_LO	ON
MH1_LL	ON	MH2_HH	OFF	MH2_H2	OFF	MH2_H1	OFF
MH2_LO	ON	MH2_LL	ON	MH3_HH	OFF	MH3_H2	OFF
MH3_H1	OFF	MH3_LO	ON	MH3_LL	ON	WFS106	OFF
MOTION	OFF	LSH106	OFF	LSH100	OFF	LSL100	ON
FT_200	ON	LSH200	OFF				

DISCRETE OUTPUT STATUS:

Tagname	*State*	*Tagname*	*State*	*Tagname*	*State*	*Tagname*	*State*
MH1_P1	OFF	MH1_P2	OFF	MH2_P1	OFF	MH2_P2	OFF
MH3_P1	ON	MH3_P2	OFF	B_100	ON	DH_300	ON
LA_MH1	OFF	FA_101	OFF	LA_MH2	OFF	FA_102	OFF
LA_MH3	OFF	FA_103	OFF	PA_106	OFF	LA_100	OFF
LSH106	OFF	WFS106	OFF	TA_100	OFF	FA_105	OFF

FA_106	OFF	FA_200	ON	MOTION	OFF	TAH400	OFF
TAL400	OFF	PA_4--ProControl_Outer--					

Alarm Response Log Sheet, Groundwater Collection and Treatment System, Solvent Dock Area, Former Lockheed Martin French Road Facility, Utica, New York

Date: 7/1/2013
Time: 16:30
Technician: TMC

ALARM RESPONSE / CORRECTIVE ACTION LOG SHEET

Date: 6/29/2013 Time: 5:50-5:53

Alarm Condition:

Processes 29 and 55.

Low flow alarms for FT-101 (manhole MH-1) and FT-105 (aggregate flow), respectively.

Non-fatal alarms.

Cause of Alarm:

Flow transmitters FT-101 and FT-105 not recording flow despite MH-1-pump-2 being called to run. Suspected cause is check valve on MH-1-pump-1 leg of MH-1 piping being stuck in open position, allowing flow from pump-2 to recirculate back into manhole.

Corrective Action:

Todd Carignan logged into the system remotely on 6/29/13 at approximately 11:39 to inspect the alarm condition. Reviewed the events and discrete logs to confirm that MH-1 Pump-2 had not cycled off, thereby indicating a recirculating condition at the MH. The MH-1-pump-1 was then manually cycled on/off remotely several times to exercise the inline check ball valve. Pump-1 was placed back into "Auto" (which was currently off), at which point flow was then registered at both FT-101 and FT-105 with only Pump-2 online.

FA-101 was cleared and the system was monitored for a short period to confirm the proper operation of the flowmeter. Will monitor for low flow alarm at FT-101 and consider replacement of check valve on MH-1-pump-1 if needed, or during next confined space manhole inspection.

Carignan, Todd

From: The ARCADIS GCTS system {#9539} in UTICA_NEW YORK <procontrol@eosresearch.com> <procontrol@eosresearch.com>
Sent: Saturday, June 29, 2013 5:52 AM
To: Carignan, Todd; Davern, Christopher; Bonsteel, Jeffrey; zigmontjh@cdmsmith.com; Zuck, Daniel
Subject: ProControl ALARM Report

ProControl Series 2plus ALARM Report

Email generated from WAN IP address: 166.149.174.142
Both HTML and plain text reports are attached. Enable plain text alternative mode to view only text.

ALARM generated at 05:50:50 on 06/29/2013
ALARM was triggered by PROCESS 29. Process specific message follows:

This system uses ROM version 2.217 and is a MODEL A2.
The system is currently in AUTO mode and the last process to run was AUTO process #55.
This system last shut down at 14:16:16 on 06/27/2013 and the cause was KEYPAD.

DISCRETE INPUT STATUS:

Tagname	*State*	*Tagname*	*State*	*Tagname*	*State*	*Tagname*	*State*
MH1_HH	OFF	MH1_H2	OFF	MH1_H1	ON	MH1_LO	ON
MH1_LL	ON	MH2_HH	OFF	MH2_H2	OFF	MH2_H1	OFF
MH2_LO	ON	MH2_LL	ON	MH3_HH	OFF	MH3_H2	OFF
MH3_H1	OFF	MH3_LO	ON	MH3_LL	ON	WFS106	OFF
MOTION	OFF	LSH106	OFF	LSH100	OFF	LSL100	ON
FT_200	OFF	LSH200	OFF				

DISCRETE OUTPUT STATUS:

Tagname	*State*	*Tagname*	*State*	*Tagname*	*State*	*Tagname*	*State*
MH1_P1	OFF	MH1_P2	ON	MH2_P1	OFF	MH2_P2	OFF
MH3_P1	OFF	MH3_P2	OFF	B_100	ON	DH_300	ON
LA_MH1	OFF	FA_101	ON	LA_MH2	OFF	FA_102	OFF
LA_MH3	OFF	FA_103	OFF	PA_106	OFF	LA_100	OFF
LSH106	OFF	WFS106	OFF	TA_100	OFF	FA_105	ON

FA_106	OFF	FA_200	OFF	MOTION	OFF	TAH400	OFF
TAL400	OFF	PA_400	OFF	LSH200	OFF		

ANALOG INPUT STATUS:

Tagname	*Value*	*Units*	*Totalizer*	*Total Units*	*Alarm Setpoints*			
					Low	*High*	*Low-Low*	*High-High*
FT_101	0.00	GPM	57661672	GAL	10.00	80.00	0.00	20.00
FT_102	0.00	GPM	10206008	GAL	10.00	80.00	0.00	20.00
FT_103	0.00	GPM	3268031	GAL	10.00	80.00	0.00	20.00
FT_105	0.00	GPM	11351719	GAL	3.00	80.00	0.00	20.00
PT_106	22.95	IWC			8.00	34.00	0.00	20.00
TT_400	73.5	DEG			60.0	110.0	0.0	20.0
PT_400	11.3	IWC			1.0	25.0	0.0	20.0
TT_100	72.0	DEG			40.0	110.0	0.0	20.0
FT_106	781.3	CFM			300.0	*****	0.0	20.0

ANALOG OUTPUT STATUS:

Tagname	*Percentage Full Scale*	*Operational Mode*	*Tagname*	*Percentage Full Scale*	*Operational Mode*
INJSPD	0.0%	Open Loop Proportional			

Carignan, Todd

From: The ARCADIS GCTS system {#9539} in UTICA_NEW YORK <procontrol@eosresearch.com> <procontrol@eosresearch.com>
Sent: Saturday, June 29, 2013 5:54 AM
To: Carignan, Todd; Davern, Christopher; Bonsteel, Jeffrey; zigmontjh@cdmsmith.com; Zuck, Daniel
Subject: ProControl ALARM Report

ProControl Series 2plus ALARM Report

Email generated from WAN IP address: 166.149.174.142
Both HTML and plain text reports are attached. Enable plain text alternative mode to view only text.

ALARM generated at 05:53:00 on 06/29/2013
ALARM was triggered by PROCESS 55. Process specific message follows:

This system uses ROM version 2.217 and is a MODEL A2.
The system is currently in AUTO mode and the last process to run was AUTO process #55.
This system last shut down at 14:16:16 on 06/27/2013 and the cause was KEYPAD.

DISCRETE INPUT STATUS:							
Tagname	*State*	*Tagname*	*State*	*Tagname*	*State*	*Tagname*	*State*
MH1_HH	OFF	MH1_H2	OFF	MH1_H1	ON	MH1_LO	ON
MH1_LL	ON	MH2_HH	OFF	MH2_H2	OFF	MH2_H1	OFF
MH2_LO	ON	MH2_LL	ON	MH3_HH	OFF	MH3_H2	OFF
MH3_H1	OFF	MH3_LO	ON	MH3_LL	ON	WFS106	OFF
MOTION	OFF	L--ProControl_Outer--					

Alarm Response Log Sheet, Groundwater Collection and Treatment System, Solvent Dock Area, Former Lockheed Martin French Road Facility, Utica, New York

Date: 7/2/2013
Time: 9:50
Technician: TMC

ALARM RESPONSE / CORRECTIVE ACTION LOG SHEET

Date:	6/30/2013	Time:	17:06
	7/2/2013		8:29

Alarm Condition:

Processes 30.

Low flow alarm for FT-102 (manhole MH-2).

Non-fatal alarm.

Cause of Alarm:

Flow transmitter FT-102 not recording flow despite MH-2-pump-2 being called to run.

Corrective Action:

Todd Carignan logged into the system remotely on 7/1/13 at approximately 11:58 to inspect the alarm condition. Upon review of the events, analog, and discrete logs it was confirmed that the low flow alarm occurs with Pump-2 only. Based on the data loggers MH-2 Pump-1 registers flow immediately upon pump startup, however, Pump-2 takes approximately 60 seconds to start registering flow (Note, alarm delay is set at 30 seconds). Based on this data the suspected flow alarm is being caused by a faulty Pump-1 inline check ball valve which is allowing for partial recirculation at startup before sealing it self with the pressure induced by the operation of Pump-2. FA-102 was cleared and the system was monitored for a short period to confirm the proper operation of the flowmeter.

Todd Carignan logged into the system remotely on 7/2/13 at approximately 9:43 to inspect the alarm condition. Further review of the data logger files indicated that the FA-102 alarm only occurs with Pump-2 online. Due to the reoccurrence of this alarm FA-102 was not cleared on 7/2/13. ARCADIS recommends that the FA-102 remained un-cleared in order to eliminate the nuisance alarms until the quarterly critical device inspection/testing is performed next week. During this event the manhole can be pumped all the way down in order to inspected the pump and piping for leaks. The check valve would also be visually inspected for any leaks or any noise indicating that the ball valve may not be reseating properly.

Following the inspection of the manhole and determining the cause of the alarm a permanent solution can be recommended. This may include the cleaning and/or replacement of a faulty check valve and/or modifying the programming to increase the time delay for FA-102.

Carignan, Todd

From: The ARCADIS GCTS system {#9539} in UTICA_NEW YORK <procontrol@eosresearch.com> <procontrol@eosresearch.com>
Sent: Sunday, June 30, 2013 5:08 PM
To: Carignan, Todd; Davern, Christopher; Bonsteel, Jeffrey; zigmontjh@cdmsmith.com; Zuck, Daniel
Subject: ProControl ALARM Report

ProControl Series 2plus ALARM Report

Email generated from WAN IP address: 166.149.174.142
Both HTML and plain text reports are attached. Enable plain text alternative mode to view only text.

ALARM generated at 17:06:48 on 06/30/2013
ALARM was triggered by PROCESS 30. Process specific message follows:

This system uses ROM version 2.217 and is a MODEL A2.
The system is currently in AUTO mode and the last process to run was AUTO process #30.
This system last shut down at 14:16:16 on 06/27/2013 and the cause was KEYPAD.

DISCRETE INPUT STATUS:

Tagname	*State*	*Tagname*	*State*	*Tagname*	*State*	*Tagname*	*State*
MH1_HH	OFF	MH1_H2	OFF	MH1_H1	OFF	MH1_LO	ON
MH1_LL	ON	MH2_HH	OFF	MH2_H2	OFF	MH2_H1	ON
MH2_LO	ON	MH2_LL	ON	MH3_HH	OFF	MH3_H2	OFF
MH3_H1	OFF	MH3_LO	ON	MH3_LL	ON	WFS106	OFF
MOTION	OFF	LSH106	OFF	LSH100	OFF	LSL100	ON
FT_200	OFF	LSH200	OFF				

DISCRETE OUTPUT STATUS:

Tagname	*State*	*Tagname*	*State*	*Tagname*	*State*	*Tagname*	*State*
MH1_P1	OFF	MH1_P2	OFF	MH2_P1	OFF	MH2_P2	ON
MH3_P1	OFF	MH3_P2	OFF	B_100	ON	DH_300	ON
LA_MH1	OFF	FA_101	OFF	LA_MH2	OFF	FA_102	ON
LA_MH3	OFF	FA_103	OFF	PA_106	OFF	LA_100	OFF
LSH106	OFF	WFS106	OFF	TA_100	OFF	FA_105	OFF

FA_106	OFF	FA_200	OFF	MOTION	OFF	TAH400	OFF
TAL400	OFF	PA_400	OFF	LSH200	OFF		

ANALOG INPUT STATUS:								
Tagname	***Value***	***Units***	***Totalizer***	***Total Units***	***Alarm Setpoints***			
					Low	***High***	***Low-Low***	***High-High***
FT_101	0.00	GPM	57692540	GAL	10.00	80.00	0.00	20.00
FT_102	0.00	GPM	10208420	GAL	10.00	80.00	0.00	20.00
FT_103	0.00	GPM	3282285	GAL	10.00	80.00	0.00	20.00
FT_105	14.50	GPM	11394775	GAL	3.00	80.00	0.00	20.00
PT_106	23.78	IWC			8.00	34.00	0.00	20.00
TT_400	71.8	DEG			60.0	110.0	0.0	20.0
PT_400	9.6	IWC			1.0	25.0	0.0	20.0
TT_100	75.6	DEG			40.0	110.0	0.0	20.0
FT_106	732.2	CFM			300.0	*****	0.0	20.0

ANALOG OUTPUT STATUS:					
Tagname	***Percentage Full Scale***	***Operational Mode***	***Tagname***	***Percentage Full Scale***	***Operational Mode***
INJSPD	2.2%	Open Loop Proportional			

Carignan, Todd

From: The ARCADIS GCTS system {#9539} in UTICA_NEW YORK <procontrol@eosresearch.com> <procontrol@eosresearch.com>
Sent: Tuesday, July 02, 2013 8:31 AM
To: Carignan, Todd; Davern, Christopher; Bonsteel, Jeffrey; zigmontjh@cdmsmith.com; Zuck, Daniel
Subject: ProControl ALARM Report

ProControl Series 2plus ALARM Report

Email generated from WAN IP address: 166.149.174.142
Both HTML and plain text reports are attached. Enable plain text alternative mode to view only text.

ALARM generated at 08:29:13 on 07/02/2013
ALARM was triggered by PROCESS 30. Process specific message follows:

This system uses ROM version 2.217 and is a MODEL A2.
The system is currently in AUTO mode and the last process to run was AUTO process #30.
This system last shut down at 14:16:16 on 06/27/2013 and the cause was KEYPAD.

DISCRETE INPUT STATUS:

Tagname	*State*	*Tagname*	*State*	*Tagname*	*State*	*Tagname*	*State*
MH1_HH	OFF	MH1_H2	OFF	MH1_H1	OFF	MH1_LO	ON
MH1_LL	ON	MH2_HH	OFF	MH2_H2	OFF	MH2_H1	ON
MH2_LO	ON	MH2_LL	ON	MH3_HH	OFF	MH3_H2	OFF
MH3_H1	OFF	MH3_LO	ON	MH3_LL	ON	WFS106	OFF
MOTION	OFF	LSH106	OFF	LSH100	OFF	LSL100	ON
FT_200	OFF	LSH200	OFF				

DISCRETE OUTPUT STATUS:

Tagname	*State*	*Tagname*	*State*	*Tagname*	*State*	*Tagname*	*State*
MH1_P1	OFF	MH1_P2	OFF	MH2_P1	OFF	MH2_P2	ON
MH3_P1	OFF	MH3_P2	ON	B_100	ON	DH_300	ON
LA_MH1	OFF	FA_101	OFF	LA_MH2	OFF	FA_102	ON
LA_MH3	OFF	FA_103	OFF	PA_106	OFF	LA_100	OFF
LSH106	OFF	WFS106	OFF	TA_100	OFF	FA_105	OFF

FA_106	OFF	FA_200	OFF	MOTION	OFF	TAH400	OFF
TAL400	OFF	PA_4--ProControl_Outer--					

Alarm Response Log Sheet, Groundwater Collection and Treatment System, Solvent Dock Area, Former Lockheed Martin French Road Facility, Utica, New York

Date: 10/11/2013
Time: 7:45
Technician: TC

ALARM RESPONSE / CORRECTIVE ACTION LOG SHEET

Date: 10/9/13 Time: 12:40

Alarm Condition:

Process 43, LSH-106.

Building sump high liquid level.

Non-Fatal Alarm

Cause of Alarm:

Building sump being used for groundwater generated during monitoring activities and possible slight leak from air stripper glass door gasket and/or leaking faucet in slop sink.

Corrective Action:

Todd Carignan logged into system remotely at 6:30 on 10/10/13 to review alarm condition.

Confirm with Dan Zuck on 10/10/13 that purge water from the groundwater sampling event was placed in the sump earlier that day prior to the alarm. Dan indicated that he observed a slight water leak within the GCTS building, possibly from the air stripper door gasket earlier that day.

Dan inspected the air stripper on 10/11/13 to see if he could identify the source of the previously observed water leak. However, at the time of his inspection the air stripper was not operating and no leaks were observed.

ARCADIS will inspect the air stripper again on 10/11/13 while onsite to document any possible leaks from the air stripper and/or piping. If any leaks are identified they will be accessed and repaired appropriately.

Carignan, Todd

From: The ARCADIS GCTS system {#9539} in UTICA_NEW YORK <procontrol@eosresearch.com> <procontrol@eosresearch.com>
Sent: Wednesday, October 09, 2013 12:40 AM
To: Carignan, Todd; Davern, Christopher; Bonsteel, Jeffrey; zigmontjh@cdmsmith.com; Zuck, Daniel
Subject: ProControl ALARM Report

ProControl Series 2plus ALARM Report

Email generated from WAN IP address: 166.149.174.142
Both HTML and plain text reports are attached. Enable plain text alternative mode to view only text.

ALARM generated at 00:37:00 on 10/09/2013
ALARM was triggered by PROCESS 43. Process specific message follows:

This system uses ROM version 2.217 and is a MODEL A2.
The system is currently in AUTO mode and the last process to run was AUTO process #24.
This system last shut down at 19:55:56 on 07/11/2013 and the cause was LSH100.

DISCRETE INPUT STATUS:

Tagname	*State*	*Tagname*	*State*	*Tagname*	*State*	*Tagname*	*State*
MH1_HH	OFF	MH1_H2	OFF	MH1_H1	OFF	MH1_LO	ON
MH1_LL	ON	MH2_HH	OFF	MH2_H2	OFF	MH2_H1	OFF
MH2_LO	ON	MH2_LL	ON	MH3_HH	OFF	MH3_H2	OFF
MH3_H1	OFF	MH3_LO	OFF	MH3_LL	ON	WFS106	OFF
MOTION	OFF	LSH106	ON	LSH100	OFF	LSL100	ON
FT_200	OFF	LSH200	OFF				

DISCRETE OUTPUT STATUS:

Tagname	*State*	*Tagname*	*State*	*Tagname*	*State*	*Tagname*	*State*
MH1_P1	OFF	MH1_P2	OFF	MH2_P1	OFF	MH2_P2	OFF
MH3_P1	OFF	MH3_P2	OFF	B_100	ON	DH_300	ON
LA_MH1	OFF	FA_101	OFF	LA_MH2	OFF	FA_102	OFF
LA_MH3	OFF	FA_103	OFF	PA_106	OFF	LA_100	OFF
LSH106	ON	WFS106	OFF	TA_100	OFF	FA_105	OFF

FA_106	OFF	FA_200	OFF	MOTION	OFF	TAH400	OFF
TAL400	OFF	PA_400	OFF	LSH200	OFF		

ANALOG INPUT STATUS:								
Tagname	***Value***	***Units***	***Totalizer***	***Total Units***	***Alarm Setpoints***			
					Low	***High***	***Low-Low***	***High-High***
FT_101	0.00	GPM	58495178	GAL	10.00	80.00	0.00	20.00
FT_102	0.00	GPM	10372472	GAL	10.00	80.00	0.00	20.00
FT_103	0.00	GPM	3683475	GAL	10.00	80.00	0.00	20.00
FT_105	0.00	GPM	12639969	GAL	3.00	80.00	0.00	20.00
PT_106	27.35	IWC			8.00	34.00	0.00	20.00
TT_400	76.6	DEG			60.0	110.0	0.0	20.0
PT_400	11.3	IWC			1.0	25.0	0.0	20.0
TT_100	65.4	DEG			40.0	110.0	0.0	20.0
FT_106	819.6	CFM			300.0	*****	0.0	20.0

ANALOG OUTPUT STATUS:					
Tagname	***Percentage Full Scale***	***Operational Mode***	***Tagname***	***Percentage Full Scale***	***Operational Mode***
INJSPD	0.0%	Open Loop Proportional			

Alarm Response Log Sheet, Groundwater Collection and Treatment System, Solvent Dock Area, Former Lockheed Martin French Road Facility, Utica, New York

Date: 12/2/2013
Time: 12:00
Technician: TMC

ALARM RESPONSE / CORRECTIVE ACTION LOG SHEET

Date: 11/30/2013 Time: 5:50:00

Alarm Condition:

Process - 32 (Low level alarm via LSL-100) - Fatal Alarm

Cause of Alarm:
The LSL-100 was tripped during a automated system shutdown. The data logger indicated that the LSL-100 was toggling back and forth during the 10 minute blower shutdown mode and latched long enough (5 second set point) in the off position to trigger the alarm.

Corrective Action:
TMC logged in remotely on 11/30/2013 to review alarm condition, after review of alarm condition the alarm condition was cleared and remained cleared. The system was restarted at 20:21.

Upon further review of the datalogger Events file it appears that following the previous automated batch sequence where MH-3 cycled that the water level in the air stripper sump was evacuated very close to the LSL-100 set point elevation during the 8 minute automated air stripper shutdown period. As such during the next pump cycle (MH-1 at 5:50) the alarm latched after 5 seconds of operation due to the fact that it takes greater than 5 seconds for any water generated during the next batch cycle to drain into the sump. During this time frame the back pressure from the blower most likely evacuated enough water to latch the LSL-100 alarm. Additionally, the volume of water that was pumped by MH-1 for the short duration it was on was enough to re-latch LSL-100, thus allowing the alarm to be cleared remotely and system restarted.

It should be noted that the air stripper sump pressure appears slightly higher than normal with a single pump online, this is most likely due to the seasonal drop in air temperature (~3 F at time of alarm) which subsequently increases the density of the ambient air stream. This operational condition has been noted before during extreme cold weather events.

Jason Gutkowski will be onsite on 12/3 to perform the monthly O&M event and will visually inspect the automated operation if the air stripper to verify proper operation set points (e.g., sump pressure).

Carignan, Todd

From: The ARCADIS GCTS system {#9539} in UTICA_NEW YORK <procontrol@eosresearch.com> <procontrol@eosresearch.com>
Sent: Saturday, November 30, 2013 4:54 AM
To: Carignan, Todd; Davern, Christopher; Bonsteel, Jeffrey; zigmontjh@cdmsmith.com; Zuck, Daniel
Subject: ProControl ALARM Report

ProControl Series 2plus ALARM Report

Email generated from WAN IP address: 166.149.174.142
Both HTML and plain text reports are attached. Enable plain text alternative mode to view only text.

ALARM generated at 05:50:05 on 11/30/2013
ALARM was triggered by PROCESS 32. Process specific message follows:

This system uses ROM version 2.217 and is a MODEL A2.
The system is currently in SHUTD mode and the last process to run was SHUTD process #02.
This system last shut down at 18:11:42 on 10/24/2013 and the cause was LSL100.

DISCRETE INPUT STATUS:

Tagname	*State*	*Tagname*	*State*	*Tagname*	*State*	*Tagname*	*State*
MH1_HH	OFF	MH1_H2	OFF	MH1_H1	ON	MH1_LO	ON
MH1_LL	ON	MH2_HH	OFF	MH2_H2	OFF	MH2_H1	OFF
MH2_LO	ON	MH2_LL	ON	MH3_HH	OFF	MH3_H2	OFF
MH3_H1	OFF	MH3_LO	ON	MH3_LL	ON	WFS106	OFF
MOTION	OFF	LSH106	OFF	LSH100	OFF	LSL100	ON
FT_200	OFF	LSH200	OFF				

DISCRETE OUTPUT STATUS:

Tagname	*State*	*Tagname*	*State*	*Tagname*	*State*	*Tagname*	*State*
MH1_P1	OFF	MH1_P2	OFF	MH2_P1	OFF	MH2_P2	OFF
MH3_P1	OFF	MH3_P2	OFF	B_100	ON	DH_300	ON
LA_MH1	OFF	FA_101	OFF	LA_MH2	OFF	FA_102	OFF
LA_MH3	OFF	FA_103	OFF	PA_106	OFF	LA_100	ON
LSH106	OFF	WFS106	OFF	TA_100	OFF	FA_105	OFF

FA_106	OFF	FA_200	OFF	MOTION	OFF	TAH400	OFF
TAL400	OFF	PA_4--ProControl_Outer--					

Alarm Response Log Sheet, Groundwater Collection and Treatment System, Solvent Dock Area, Former Lockheed Martin French Road Facility, Utica, New York

Date: 12/19/2013
Time: 6:00
Technician: TMC

ALARM RESPONSE / CORRECTIVE ACTION LOG SHEET

Date: 12/17/2013 Time: 10:31

Alarm Condition:

Processes 30.

Low flow alarm for FT-102 (Pump 1, Manhole MH-2).

Non-fatal alarm.

Cause of Alarm:

Flow transmitter FT-102 not recording flow despite MH-2-pump-2 being called to run.

Corrective Action:

Todd Carignan logged into the system remotely on 12/18/2013 at approximately to inspect the alarm condition. Upon review of the events, analog, and discrete logs it was confirmed that the low flow alarm occurred within the first few minutes of operation. Based on the data loggers MH-2 Pump-1 was called to run at 10:31:21 and the Process 30 alarm occurred at 10:31:51 (Note, alarm delay is set at 30 seconds). The next "analog in" logged flow measurement was at 10:40 which indicated that MH-2 Pump-1 was pumping at approx. 17 gpm for the remainder of the pump cycle. Based on this data the noted delay in registering flow may have been to due to a dirty paddlewheel sensor and/or a leaking inline check ball valve which allowed all of the water in the forcemain to drain back into the sump since the previous pump cycle (approx. 1 day prior), thus causing a slight delay of flow. FA-102 alarm was cleared and the system was monitored for a short period to confirm the proper operation of the flowmeter.

The manhole will be inspected during the January monthly O&M event. Corrective actions may include, if deemed necessary, the cleaning of MH-2's paddlewheel sensor and/or increasing the alarm time delay for FA-102 from 30 seconds to 60 seconds.

Carignan, Todd

From: The ARCADIS GCTS system {#9539} in UTICA_NEW YORK <procontrol@eosresearch.com> <procontrol@eosresearch.com>
Sent: Tuesday, December 17, 2013 9:36 AM
To: Carignan, Todd; Davern, Christopher; Bonsteel, Jeffrey; zigmontjh@cdmsmith.com; Zuck, Daniel
Subject: ProControl ALARM Report

ProControl Series 2plus ALARM Report

Email generated from WAN IP address: 166.149.174.142
Both HTML and plain text reports are attached. Enable plain text alternative mode to view only text.

ALARM generated at 10:31:51 on 12/17/2013
ALARM was triggered by PROCESS 30. Process specific message follows:

This system uses ROM version 2.217 and is a MODEL A2.
The system is currently in AUTO mode and the last process to run was AUTO process #30.
This system last shut down at 04:50:41 on 12/17/2013 and the cause was LSL100.

DISCRETE INPUT STATUS:

Tagname	*State*	*Tagname*	*State*	*Tagname*	*State*	*Tagname*	*State*
MH1_HH	OFF	MH1_H2	OFF	MH1_H1	OFF	MH1_LO	ON
MH1_LL	ON	MH2_HH	OFF	MH2_H2	OFF	MH2_H1	ON
MH2_LO	ON	MH2_LL	ON	MH3_HH	OFF	MH3_H2	OFF
MH3_H1	OFF	MH3_LO	ON	MH3_LL	ON	WFS106	OFF
MOTION	OFF	LSH106	OFF	LSH100	OFF	LSL100	ON
FT_200	OFF	LSH200	OFF				

DISCRETE OUTPUT STATUS:

Tagname	*State*	*Tagname*	*State*	*Tagname*	*State*	*Tagname*	*State*
MH1_P1	ON	MH1_P2	OFF	MH2_P1	ON	MH2_P2	OFF
MH3_P1	OFF	MH3_P2	OFF	B_100	ON	DH_300	ON
LA_MH1	OFF	FA_101	OFF	LA_MH2	OFF	FA_102	ON
LA_MH3	OFF	FA_103	OFF	PA_106	OFF	LA_100	OFF
LSH106	OFF	WFS106	OFF	TA_100	OFF	FA_105	OFF

FA_106	OFF	FA_200	OFF	MOTION	OFF	TAH400	OFF
TAL400	OFF	PA_400	OFF	LSH200	OFF		

ANALOG INPUT STATUS:								
Tagname	***Value***	***Units***	***Totalizer***	***Total Units***	***Alarm Setpoints***			
					Low	***High***	***Low-Low***	***High-High***
FT_101	34.31	GPM	58958084	GAL	10.00	80.00	0.00	20.00
FT_102	0.00	GPM	10454269	GAL	10.00	80.00	0.00	20.00
FT_103	0.00	GPM	3885880	GAL	10.00	80.00	0.00	20.00
FT_105	49.33	GPM	13372855	GAL	3.00	80.00	0.00	20.00
PT_106	33.06	IWC			8.00	34.00	0.00	20.00
TT_400	96.8	DEG			60.0	110.0	0.0	20.0
PT_400	9.5	IWC			1.0	25.0	0.0	20.0
TT_100	60.1	DEG			40.0	110.0	0.0	20.0
FT_106	774.5	CFM			300.0	*****	0.0	20.0

ANALOG OUTPUT STATUS:					
Tagname	***Percentage Full Scale***	***Operational Mode***	***Tagname***	***Percentage Full Scale***	***Operational Mode***
INJSPD	7.4%	Open Loop Proportional			

Alarm Response Log Sheet, Groundwater Collection and Treatment System, Solvent Dock Area, Former Lockheed Martin French Road Facility, Utica, New York

Date: 12/19/2013
Time: 1:20
Technician: TMC

ALARM RESPONSE / CORRECTIVE ACTION LOG SHEET

Date: 12/17/2013 Time: 4:40:00

Alarm Condition:

Process - 32 (Low level alarm via LSL-100) - Fatal Alarm

Cause of Alarm:

The LSL-100 was tripped during a automated system shutdown. The data logger indicated that the LSL-100 was toggling back and forth during the 10 minute blower shutdown mode and latched long enough (5 second set point) in the off position to trigger the alarm.

Corrective Action:

TMC logged in remotely on 12/17/2013 at 8:05 to review alarm condition, after review of alarm condition the alarm condition was cleared and remained cleared. The system was restarted at 8:07.

Upon further review of the datalogger Events file it appears that following the current automated batch sequence during the alarm event was MH-3. Based on the logged discrete data the water level in the air stripper sump was toggling back and forth at the LSL-100 switch/set point during steady state operation of MH-3. Approx. 18 minutes into the cycle alarm latched long enough to trip the alarm (5 second alarm delay). Upon logging into the system approx. 3.5 hours after the alarm the volume of water that was stored in the air stripper trays, which completely drained after the blower run sequence stopped was enough to re-latch LSL-100, thus allowing the alarm to be cleared remotely and system restarted.

It should be noted that the air stripper sump pressure appears slightly higher than normal with a single pump online, this is most likely due to the seasonal drop in air temperature (~0 F at time of alarm) which subsequently increases the density of the ambient air stream. This operational condition has been noted before during extreme cold weather events.

ARCADIS would recommend increasing the time delay for this alarm from 5 seconds to 60 seconds.

12/16/2013	23:58:59	MH1_H1	ON
12/16/2013	23:59:00	MH1_P2	ON
12/16/2013	23:59:01	DH_300	ON
12/16/2013	23:59:01	B_100	ON
12/17/2013	0:04:28	MH1_H1	OFF
12/17/2013	0:59:23	MH1_LO	OFF
12/17/2013	0:59:24	MH1_P2	OFF
12/17/2013	1:07:26	DH_300	OFF
12/17/2013	1:07:27	B_100	OFF
12/17/2013	1:21:49	MH1_LO	ON
12/17/2013	4:22:12	MH3_H1	ON
12/17/2013	4:22:14	DH_300	ON
12/17/2013	4:22:14	B_100	ON
12/17/2013	4:22:16	MH3_P2	ON
12/17/2013	4:23:47	MH3_H1	OFF
12/17/2013	4:36:45	LSL100	OFF
12/17/2013	4:36:45	LSL100	ON
12/17/2013	4:37:46	LSL100	OFF
12/17/2013	4:37:46	LSL100	ON
12/17/2013	4:37:54	LSL100	OFF
12/17/2013	4:37:54	LSL100	ON
12/17/2013	4:37:56	LSL100	OFF
12/17/2013	4:37:57	LSL100	ON
12/17/2013	4:37:59	LSL100	OFF
12/17/2013	4:37:59	LSL100	ON
12/17/2013	4:38:04	LSL100	OFF
12/17/2013	4:38:05	LSL100	ON
12/17/2013	4:38:07	LSL100	OFF
12/17/2013	4:38:08	LSL100	ON
12/17/2013	4:38:09	LSL100	OFF
12/17/2013	4:38:10	LSL100	ON
12/17/2013	4:38:12	LSL100	OFF
12/17/2013	4:38:14	LSL100	ON
12/17/2013	4:38:15	LSL100	OFF
12/17/2013	4:38:15	LSL100	ON
12/17/2013	4:38:20	LSL100	OFF
12/17/2013	4:38:23	LSL100	ON
12/17/2013	4:38:24	LSL100	OFF
12/17/2013	4:38:25	LSL100	ON
12/17/2013	4:38:30	LSL100	OFF
12/17/2013	4:38:31	LSL100	ON
12/17/2013	4:38:33	LSL100	OFF
12/17/2013	4:38:35	LSL100	ON
12/17/2013	4:38:42	LSL100	OFF
12/17/2013	4:38:42	LSL100	ON
12/17/2013	4:38:43	LSL100	OFF
12/17/2013	4:38:43	LSL100	ON

12/17/2013	4:38:45	LSL100	OFF
12/17/2013	4:38:46	LSL100	ON
12/17/2013	4:38:47	LSL100	OFF
12/17/2013	4:38:48	LSL100	ON
12/17/2013	4:38:49	LSL100	OFF
12/17/2013	4:38:49	LSL100	ON
12/17/2013	4:38:50	LSL100	OFF
12/17/2013	4:38:52	LSL100	ON
12/17/2013	4:38:53	LSL100	OFF
12/17/2013	4:38:56	LSL100	ON
12/17/2013	4:38:57	LSL100	OFF
12/17/2013	4:38:57	LSL100	ON
12/17/2013	4:39:00	LSL100	OFF
12/17/2013	4:39:04	LSL100	ON
12/17/2013	4:39:05	LSL100	OFF
12/17/2013	4:39:07	LSL100	ON
12/17/2013	4:39:09	LSL100	OFF
12/17/2013	4:39:09	LSL100	ON
12/17/2013	4:39:13	LSL100	OFF
12/17/2013	4:39:14	LSL100	ON
12/17/2013	4:39:15	LSL100	OFF
12/17/2013	4:39:16	LSL100	ON
12/17/2013	4:39:18	LSL100	OFF
12/17/2013	4:39:21	LSL100	ON
12/17/2013	4:39:22	LSL100	OFF
12/17/2013	4:39:25	LSL100	ON
12/17/2013	4:39:25	LSL100	OFF
12/17/2013	4:39:27	LSL100	ON
12/17/2013	4:39:28	LSL100	OFF
12/17/2013	4:39:29	LSL100	ON
12/17/2013	4:39:34	LSL100	OFF
12/17/2013	4:39:34	LSL100	ON
12/17/2013	4:39:35	LSL100	OFF
12/17/2013	4:39:37	LSL100	ON
12/17/2013	4:39:40	LSL100	OFF
12/17/2013	4:39:43	LSL100	ON
12/17/2013	4:39:44	LSL100	OFF
12/17/2013	4:39:46	LSL100	ON
12/17/2013	4:39:47	LSL100	OFF
12/17/2013	4:39:48	LSL100	ON
12/17/2013	4:39:49	LSL100	OFF
12/17/2013	4:39:52	LSL100	ON
12/17/2013	4:39:53	LSL100	OFF
12/17/2013	4:39:53	LSL100	ON
12/17/2013	4:39:55	LSL100	OFF
12/17/2013	4:39:55	LSL100	ON
12/17/2013	4:39:57	LSL100	OFF

12/17/2013	4:39:57	LSL100	ON
12/17/2013	4:40:03	LSL100	OFF
12/17/2013	4:40:04	LSL100	ON
12/17/2013	4:40:07	LSL100	OFF
12/17/2013	4:40:10	LSL100	ON
12/17/2013	4:40:12	LSL100	OFF
12/17/2013	4:40:13	LSL100	ON
12/17/2013	4:40:15	LSL100	OFF
12/17/2013	4:40:16	LSL100	ON
12/17/2013	4:40:17	LSL100	OFF
12/17/2013	4:40:17	LSL100	ON
12/17/2013	4:40:19	LSL100	OFF
12/17/2013	4:40:20	LSL100	ON
12/17/2013	4:40:21	LSL100	OFF
12/17/2013	4:40:22	LSL100	ON
12/17/2013	4:40:24	LSL100	OFF
12/17/2013	4:40:27	LSL100	ON
12/17/2013	4:40:28	LSL100	OFF
12/17/2013	4:40:30	LSL100	ON
12/17/2013	4:40:31	LSL100	OFF
12/17/2013	4:40:33	LSL100	ON
12/17/2013	4:40:34	LSL100	OFF
12/17/2013	4:40:34	LSL100	ON
12/17/2013	4:40:35	LSL100	OFF
12/17/2013	4:40:40	LA_100	ON
12/17/2013	4:40:41	LSL100	ON
12/17/2013	4:40:41	MH3_P2	OFF
12/17/2013	4:40:41	LSL100	OFF
12/17/2013	4:40:49	LSL100	ON
12/17/2013	4:40:51	LSL100	OFF
12/17/2013	4:40:52	LSL100	ON
12/17/2013	4:42:38	LSL100	OFF
12/17/2013	4:42:39	LSL100	ON
12/17/2013	4:42:49	LSL100	OFF
12/17/2013	4:42:49	LSL100	ON

Carignan, Todd

From: The ARCADIS GCTS system {#9539} in UTICA_NEW YORK <procontrol@eosresearch.com> <procontrol@eosresearch.com>
Sent: Tuesday, December 17, 2013 3:45 AM
To: Carignan, Todd; Davern, Christopher; Bonsteel, Jeffrey; zigmontjh@cdmsmith.com; Zuck, Daniel
Subject: ProControl ALARM Report

ProControl Series 2plus ALARM Report

Email generated from WAN IP address: 166.149.174.142
Both HTML and plain text reports are attached. Enable plain text alternative mode to view only text.

ALARM generated at 04:40:40 on 12/17/2013
ALARM was triggered by PROCESS 32. Process specific message follows:

This system uses ROM version 2.217 and is a MODEL A2.
The system is currently in SHUTD mode and the last process to run was SHUTD process #02.
This system last shut down at 06:00:05 on 11/30/2013 and the cause was LSL100.

DISCRETE INPUT STATUS:

Tagname	*State*	*Tagname*	*State*	*Tagname*	*State*	*Tagname*	*State*
MH1_HH	OFF	MH1_H2	OFF	MH1_H1	OFF	MH1_LO	ON
MH1_LL	ON	MH2_HH	OFF	MH2_H2	OFF	MH2_H1	OFF
MH2_LO	ON	MH2_LL	ON	MH3_HH	OFF	MH3_H2	OFF
MH3_H1	OFF	MH3_LO	ON	MH3_LL	ON	WFS106	OFF
MOTION	OFF	LSH106	OFF	LSH100	OFF	LSL100	ON
FT_200	OFF	LSH200	OFF				

DISCRETE OUTPUT STATUS:

Tagname	*State*	*Tagname*	*State*	*Tagname*	*State*	*Tagname*	*State*
MH1_P1	OFF	MH1_P2	OFF	MH2_P1	OFF	MH2_P2	OFF
MH3_P1	OFF	MH3_P2	OFF	B_100	ON	DH_300	ON
LA_MH1	OFF	FA_101	OFF	LA_MH2	OFF	FA_102	OFF
LA_MH3	OFF	FA_103	OFF	PA_106	OFF	LA_100	ON
LSH106	OFF	WFS106	OFF	TA_100	OFF	FA_105	OFF

FA_106	OFF	FA_200	OFF	MOTION	OFF	TAH400	OFF
TAL400	OFF	PA_400	OFF	LSH200	OFF		

ANALOG INPUT STATUS:								
Tagname	***Value***	***Units***	***Totalizer***	***Total Units***	***Alarm Setpoints***			
					Low	***High***	***Low-Low***	***High-High***
FT_101	0.00	GPM	58957004	GAL	10.00	80.00	0.00	20.00
FT_102	0.00	GPM	10454269	GAL	10.00	80.00	0.00	20.00
FT_103	0.00	GPM	3885370	GAL	10.00	80.00	0.00	20.00
FT_105	0.00	GPM	13371231	GAL	3.00	80.00	0.00	20.00
PT_106	30.98	IWC			8.00	34.00	0.00	20.00
TT_400	106.0	DEG			60.0	110.0	0.0	20.0
PT_400	11.1	IWC			1.0	25.0	0.0	20.0
TT_100	60.1	DEG			40.0	110.0	0.0	20.0
FT_106	907.0	CFM			300.0	*****	0.0	20.0

ANALOG OUTPUT STATUS:					
Tagname	***Percentage Full Scale***	***Operational Mode***	***Tagname***	***Percentage Full Scale***	***Operational Mode***
INJSPD	0.0%	Open Loop Proportional			

Alarm Response Log Sheet, Groundwater Collection and Treatment System, Solvent Dock Area, Former Lockheed Martin French Road Facility, Utica, New York

Date: 1/2/2014
Time: 13:15
Technician: TMC

ALARM RESPONSE / CORRECTIVE ACTION LOG SHEET

Date:	12/17/2013	Time:	4:40:00
	12/25/2013		5:07:00

Alarm Condition:

Process - 32 (Low level alarm via LSL-100) - Fatal Alarm

Cause of Alarm:
The LSL-100 was tripped during a automated system shutdown. The data logger indicated that the LSL-100 was toggling back and forth during the 10 minute blower shutdown mode and latched long enough (5 second set point) in the off position to trigger the alarm.

Corrective Action:
TMC logged in remotely on 12/17/2013 at 8:05 to review alarm condition, after review of alarm condition the alarm condition was cleared and remained cleared. The system was restarted at 8:07.

Upon further review of the datalogger Events file it appears that following the current automated batch sequence during the alarm event was MH-3. Based on the logged discrete data the water level in the air stripper sump was toggling back and forth at the LSL-100 switch/set point during steady state operation of MH-3. Approx. 18 minutes into the cycle alarm latched long enough to trip the alarm (5 second alarm delay). Upon logging into the system approx. 3.5 hours after the alarm the volume of water that was stored in the air stripper trays, which completely drained after the blower run sequence stopped was enough to re-latch LSL-100, thus allowing the alarm to be cleared remotely and system restarted.

It should be noted that the air stripper sump pressure appears slightly higher than normal with a single pump online, this is most likely due to the seasonal drop in air temperature (~0 F at time of alarm) which subsequently increases the density of the ambient air stream. This operational condition has been noted before during extreme cold weather events.

ARCADIS would recommend increasing the time delay for this alarm from 5 seconds to 60 seconds.

TMC logged in remotely on 12/25/2013 at 21:08 to review alarm condition. The condition was similar to the one observed on 12/17. After review of alarm condition the alarm condition was cleared and remained cleared. The system was restarted and resumed normal operation.

ARCADIS plans on increasing the time delay for this alarm from 5 seconds to 10 minutes. By increasing this alarm setpoint to 10 minutes this will eliminate any nuisance alarms associated with the low level sensor in the AS sump which may occur during a automated system shutdown or startup. The system is also equipped with low air flow alarm which is another redundant alarm which would shutdown the system and notify the operator that the minimum air flow wasn't passing through the air stripper in order to efficiently remove the VOCs from the liquid phase.

Carignan, Todd

From: The ARCADIS GCTS system {#9539} in UTICA_NEW YORK <procontrol@eosresearch.com> <procontrol@eosresearch.com>
Sent: Wednesday, December 25, 2013 5:08 AM
To: Carignan, Todd; Davern, Christopher; Bonsteel, Jeffrey; zigmontjh@cdmsmith.com; Zuck, Daniel
Subject: ProControl ALARM Report

ProControl Series 2plus ALARM Report

Email generated from WAN IP address: 166.149.174.142
Both HTML and plain text reports are attached. Enable plain text alternative mode to view only text.

ALARM generated at 05:07:14 on 12/25/2013
ALARM was triggered by PROCESS 32. Process specific message follows:

This system uses ROM version 2.217 and is a MODEL A2.
The system is currently in SHUTD mode and the last process to run was SHUTD process #02.
This system last shut down at 04:50:41 on 12/17/2013 and the cause was LSL100.

DISCRETE INPUT STATUS:

Tagname	*State*	*Tagname*	*State*	*Tagname*	*State*	*Tagname*	*State*
MH1_HH	OFF	MH1_H2	OFF	MH1_H1	OFF	MH1_LO	ON
MH1_LL	ON	MH2_HH	OFF	MH2_H2	OFF	MH2_H1	OFF
MH2_LO	ON	MH2_LL	ON	MH3_HH	OFF	MH3_H2	OFF
MH3_H1	ON	MH3_LO	ON	MH3_LL	ON	WFS106	OFF
MOTION	OFF	LSH106	OFF	LSH100	OFF	LSL100	ON
FT_200	OFF	LSH200	OFF				

DISCRETE OUTPUT STATUS:

Tagname	*State*	*Tagname*	*State*	*Tagname*	*State*	*Tagname*	*State*
MH1_P1	OFF	MH1_P2	OFF	MH2_P1	OFF	MH2_P2	OFF
MH3_P1	OFF	MH3_P2	OFF	B_100	ON	DH_300	ON
LA_MH1	OFF	FA_101	OFF	LA_MH2	OFF	FA_102	ON
LA_MH3	OFF	FA_103	OFF	PA_106	OFF	LA_100	ON
LSH106	OFF	WFS106	OFF	TA_100	OFF	FA_105	OFF

FA_106	OFF	FA_200	OFF	MOTION	OFF	TAH400	OFF
TAL400	OFF	PA_4--ProControl_Outer--					