Construction Completion Report

Interim Remedial Measure
Air Sparging and Soil Vapor Extraction System
Former Huck Manufacturing Facility

March 5, 2015

WSP

CONSTRUCTION COMPLETION REPORT

Interim Remedial Measure
Air Sparging and Soil Vapor Extraction System
Former Huck Manufacturing Facility
Kingston, New York

March 5, 2015

Client

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Certification

I, Todd M. Musterait, P.E., hereby certify, as a Professional Engineer registered in the State of New York, that based on WSP USA Corporation's observations of the remedial construction activities conducted by the remedial contractor, Remediation Services, Inc. (RSI), and their subcontractors, the remedial construction activities were completed in substantial conformance with the requirements presented in the NYSDEC-approved Interim Remedial Measure Work Plan for Air Sparging and Soil Vapor Extraction System Design and Installation, NYSDEC Site No. V00171-3, dated August 22, 2013.

2/27/15

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1 Introduction

WSP, on behalf of Federal-Mogul Corporation (Federal-Mogul), has prepared this Construction Completion Report to document the Interim Remedial Measure (IRM) completed at the former Huck manufacturing facility in Kingston, New York (Figure 1). The IRM activities were completed in substantial conformance with the Interim Remedial Measure Work Plan for Air Sparging and Soil Vapor Extraction System Design and Installation, dated August 22, 2013, which was approved by the New York State Department of Environmental Conservation (NYSDEC) in correspondence, dated September 3, 20131. Field changes to the approved design are documented in this report. All work was performed in accordance with a site-specific health and safety plan (HASP).

Construction of the IRM was initiated in October of 2013. The majority of the work was completed by early February of 2014, including drilling and installation of 9 nine air sparge (AS) wells and 12 twelve soil vapor extraction (SVE) wells, installation of the AS and SVE piping networks, and installation of the AS and SVE manifolds. However, due to unexpected delays in the fabrication of the air compressor skid, work was halted on February 4, 2014, until the air compressor skid could be delivered to the site. Installation of the air compressor skid commenced on April 10, 2014, and IRM startup activities were completed from April 17 through 19, 2014. Following startup, the IRM was placed in full-time operation.

As stated in the approved work plan, the IRM was implemented to reduce volatile organic compound (VOC) mass in groundwater in two areas of the site that exhibit the highest aqueous VOC concentrations, while addressing VOCs that may be present in vadose zone soils within these areas. One area with the highest VOC concentrations in groundwater is located in the Former Degreaser Area and is designated Area 1. The second area is located in the Former Metal Finish and Chemical Storage Area and is designated Area 2. The locations of Areas 1 and 2 are shown on Figure 2. In addition, the IRM addresses four areas of the site where VOCs are present in soil at concentrations above the Restricted Use Soil Cleanup Objectives for Protection of Groundwater presented in Title 6, New York Code of Rules and Regulations Part 375-6.8 (b). These areas are illustrated on Figure 2 and listed below:

- Area 3 – the Former 10,000-Gallon Fuel Oil Underground Storage Tank Area
- Area 4 – the southern portion of the Suspected Disposal Area
- Area 5 – the northern portion of the Suspected Disposal Area
- Area 6 – the Southern Parking Lot Area

The remaining area of affected soil at the site, Area 7, consists of VOCs in shallow soil in the parking lot east of the former manufacturing building. In March 2004, a SVE system was installed primarily along the eastern and southern property lines as an IRM to address the VOCs from 1 to 3 feet below ground surface (bgs), and to prevent the offsite migration of VOCs in soil gas. Treatment of soils in the eastern parking lot is ongoing.

1.1 Report Organization

The remainder of this report consists of four sections. Section 2 presents the site background. Section 3 details the IRM work completed, including mobilization, well installation, piping and mechanical installation, AS skid installation and testing, management of waste materials, implementation of the community air monitoring program (CAMP), and site restoration. Section 4 provides a summary of the IRM testing and startup activities. Section 5 summarizes the Operation, Maintenance, and Monitoring (OM&M) program. As-built drawings for the IRM are provided in Appendix A.

[1] In an email to WSP, dated April 24, 2013, the NYSDEC requested that Federal-Mogul install one additional air sparging well and one additional soil vapor extraction well in the Former Metal Finish and Chemical Storage Area. WSP, on behalf of Federal-Mogul Corporation, agreed to install the additional wells in an email, dated April 29, 2013. However, in accordance with the April 24, 2013, email from the NYSDEC, the IRM Work Plan design drawings were not revised to reflect this change.

2 Background

The former Huck manufacturing facility is located at 85 Grand Street in Kingston, New York, and consists of two buildings occupying 105,000-square feet on 4.5-acres (Figures 1 and 2). The remainder of the site consists of asphalt parking areas, access roads, and a small grass-covered area near the southeast corner of the main manufacturing building. A chain-link fence controls access to the western portion of the facility. The property is owned by Allways Moving and Storage, which uses the facility for indoor self-storage and leases portions of the onsite buildings to other entities.

The property is in a mixed light industrial, commercial, and residential area. Tenbroeck Avenue borders the site to the northeast. Northeast of Tenbroeck Avenue are mixed residential and commercial properties. Grand Street and a residential neighborhood border the site to the southeast. West of the site are CSX Transportation, Inc., railroad tracks and further west are light industrial and commercial properties.

3 IRM Activities

This section provides a description of the IRM construction activities. During construction, WSP provided full-time oversight for the work performed by the remedial contractor, Remediation Services, Inc. (RSI), of Independence, Kansas, and their subcontractors, and ensured substantial conformance with the NYSDEC-approved work plan. Photographs of the construction activities are provided in Appendix B.

WSP performed the following tasks during IRM construction:

- reviewed contractor submittals for compliance with the contract specifications
- coordinated the system construction with Allways Moving, Federal-Mogul, the NYSDEC, and RSI
- approved well locations, well depths, conveyance piping routes and supports, and manifold configurations
- maintained detailed written and photographic records of the construction work, including documentation of field conditions that required deviation from the approved work plan
- reviewed and witnessed construction quality control testing, including pipe pressure testing, to ensure compliance with project specifications
- documented as-constructed lines and grades of the AS and SVE piping and the materials and equipment installed
- implemented the CAMP during ground intrusive activities, including air monitoring for dust and VOCs
- characterized the waste material generated during the construction activities and coordinated the transportation and offsite disposal of the materials

The primary IRM construction phases included:

- locating and marking all utilities within the anticipated work areas
- installing SVE wells, AS wells, and vacuum monitoring points (MPs)
- installing well vaults and subsurface conveyance piping
- installing SVE and AS equipment, including the air compressor skid, programmable logic controller (PLC), and master control panel
- backfilling and site restoration
- managing the disposal of waste materials generated during the construction activities in accordance with state and federal requirements

A general introduction to the design and layout of the system as well as a detailed description of each phase of work is presented below.

3.1 IRM Design and Layout

The IRM consists of an AS component designed to target VOC-affected groundwater and a SVE component designed to remove VOCs from the vadose zone, as well as collect VOCs partitioned from the groundwater due to AS operation. The network of AS and SVE wells is divided into two cycle groups to provide for pulsed, or cycled, operation of the system. The AS and SVE wells comprising each cycle group are presented below:

Cycle Group 1	Cycle Group 2

Area	*SVE Wells*	*AS Wells*	*Area*	*SVE Wells*	*AS Wells*
Area 1	SV-1	AS-1	**Area 3**	SV-8	AS-8
	SV-2	AS-2	**Area 4**	SV-12	AS-9
	SV-3	AS-3	**Area 5**	SV-9	
	SV-4	AS-4		SV-10	
		AS-5		SV-11	
Area 2	SV-5	AS-6	**Area 6**	SV-7	
	SV-6	AS-7			

As-built drawings detailing the completed construction of the IRM are provided as Sheets 1 through 9 in Appendix A. The layout of the AS/SVE well network is illustrated in Sheet 2. A process and instrumentation diagram is provided in Sheet 3. The layout of the Cycle Group 1 and Cycle Group 2 conveyance pipe networks is provided in Sheets 4 and 5, respectively. The SVE wells were arranged to satisfy two objectives: (1) encompass the estimated radius of influence (ROI) of 20 feet for each AS well in areas where groundwater impacts are present; and (2) encompass the estimated area of affected vadose zone soils in areas where groundwater impacts are not present. All SVE wells were arranged based on an estimated ROI of 28 feet and to encompass AS well ROIs.

A 2,000-pound vapor-phase granular activated carbon (VGAC) unit will be used to treat the extracted vapor stream prior to discharge to the atmosphere via a discharge stack. The AS/SVE equipment layout and manifold connection detail are provided in Sheets 6 and 7, respectively (Appendix A).

3.2 Site Preparation

Mobilization for the well installation activities occurred on September 30, 2013. Mobilization for the installation of conveyance piping and all remaining IRM components occurred on November 1, 2013. Underground utilities were cleared in the vicinity of all areas proposed for ground intrusive activities. Utility clearances on the site and within the public rights-of-way were the responsibility of the drilling and remediation subcontractors. Utilities within the public rights-of-way were located by contacting Dig Safely New York. The proposed well locations were cleared by SoftDig of West Chester, Pennsylvania. The proposed trench areas were cleared by Protek Locating, Inc., of Poughkeepsie, New York.

Backfill material and conveyance piping were stockpiled along the fence west of the former manufacturing building and construction equipment was staged near the covered storage areas and in the northwest corner of the facility. The CAMP equipment was configured and deployed and control perimeters were established in accordance with the site-specific HASP. A building permit for IRM construction was issued by the City of Kingston on November 4, 2013, and was posted onsite for the duration of construction.

3.3 Installation of SVE and AS Wells and Vacuum Monitoring Points

The SVE wells, AS wells, and MPs were installed from October 1-9, 2013, by Parratt-Wolff, Inc., of East Syracuse, New York. The outdoor wells were installed using hollow stem augers (HSAs), while the interior wells were “driven” to the target depth using a portable direct-push rig due to access limitations. With the exception of AS-8, which was installed in the former Heating Oil Underground Storage Tank Area, the wells and vacuum monitoring points

were constructed of 2-inch inside-diameter (ID), flush-threaded, stainless steel Johnson V-wire screen and blank casing. Well AS-8 was constructed of 2-inch ID polyvinyl chloride (PVC) riser and screen. Table 1 presents the construction details for the SVE, AS, and MP wells, including installation date and method, length of well screen and riser, and construction materials. Sheets 8 and 9 of Appendix A illustrate typical AS well and SVE well construction details, respectively. A concrete core drill was used to penetrate the floor slab and access the underlying soils at each of the indoor well locations. The following subsections discuss the installation details for each well type.

3.3.1 Soil Vapor Extraction Well Installation

Eleven SVE wells were installed at the locations designated SV-1 through SV-3 and SV-5 through SV-12 on Sheet 2 (Appendix A). Well SV-4 was originally installed for the pilot test in 2010. In general, the SVE wells were installed to a depth of approximately 11 feet bgs and consisted of 8 feet of stainless steel well screen attached to a 3-foot-long section of stainless steel riser. Well SV-5 was installed to a depth of 12 feet bgs using a 4-foot-long section of blank casing (Table 1). The interior SVE wells were installed by driving the well screen and riser into the undisturbed formation using a direct-push rig. The process of driving the well casings enlarged the diameter of the upper portion of the boreholes. On completion of the well installation, this annulus was filled with #0 morie sand up to the base of the concrete slab to prevent flowable fill from migrating down the casing and fouling the screen (see Section 3.7). Exterior SVE wells SV-2 and SV-7 through SV-12 were installed using HSA techniques. In general, an 8.25-inch auger was used to create a borehole down to the design well depth. A well casing consisting of 8 feet of stainless steel well screen and 3 feet of stainless steel blank casing was installed through the augers and a #2 sand filter pack was installed to a depth of 0.5 foot above the top of the screen. Hydrated bentonite chips were installed on top of the sand pack to a depth of 1.5 feet bgs. At the conclusion of the well installation activities, each SVE well location was temporarily covered with a steel plate.

3.3.2 Air Sparge Well Installation

Nine AS wells were installed at the locations designated AS-1 through AS-9 on Sheet 2 of Appendix A. The AS wells were installed to depths from 28 to 29 feet bgs and were constructed with a 4-foot-long section of flush-threaded, stainless steel Johnson V-wire screen connected to a sufficient length of stainless steel riser to reach the ground surface. Interior AS wells (AS-1 and AS-3 through AS-7) were installed by first creating a “pilot” hole down to the planned well depth using a 2.25-inch outside-diameter (OD) dual-tube sampling device with an expendable point. On reaching the target depth, the rods were filled with a biodegradable drilling mud to prevent the borehole from collapsing. When the rods were retracted from the hole, the drive point detached from the dual-tube sampler and the drilling mud filled the borehole. The screen and riser were driven into the pilot hole in 4-foot-long sections using the direct-push rig. Once the top of the screen was approximately 1 foot below the top of the concrete slab, the remainder of the well casing was “dry grouted”. Dry grouting involves placing a mound of dry granular bentonite and cement mixture on the floor around the casing. As the casing is advanced, the bentonite and cement mixture is pulled down along the casing.

Exterior AS wells AS-2, AS-8, and AS-9 were installed using HSA techniques. In general, an 8.25-inch auger was used to create a borehole down to the design well depth. A well casing consisting of 4 feet of stainless steel, flush-threaded Johnson V-wire screen and up to 25 feet of stainless steel blank casing was installed through the augers. A #2 sand filter pack was installed to a depth of approximately 1 foot above the top of the screen. Each well was completed by placing hydrated bentonite chips from the top of the filter pack to the surface. At the conclusion of the well installation activities, each AS well was developed to remove drilling mud from the sand pack and screen and temporarily covered with a steel plate.

3.3.3 Monitoring Point Installation

Four MPs were installed during the well drilling program: two exterior MPs (MP-5 and MP-8) installed using HSA techniques, and two interior MPs (MP-6 and MP-7) installed using the direct-drive technique. Each of the

monitoring points was installed to a depth of 11 feet bgs and consisted of 8 feet of stainless steel, flush-threaded Johnson V-wire screen and 3 feet of stainless steel blank casing. MPs were installed using the same procedures described above for SVE wells.

3.4 Vapor Extraction Equipment

The IRM uses existing SVE blower B-101, which was originally installed in 2004 to operate Line 3 of the Area 7 trench SVE system. The Area 7 trench SVE system is currently pulsed for 24 hours each month. The pulse event is performed after the operating cycle group is turned off and before the dormant cycle group is activated. The SVE B-101 blower is a positive displacement Roots® RAI Series Model 615 blower, powered by a 40 hp electric motor, capable of approximately 900-standard cubic feet per minute (scfm) at 9 inches mercury vacuum.

The IRM is equipped with an inlet air filter, a 120 gallon vapor liquid separator (VLS; T-101) with a float switch-operated transfer pump (TP-101), and a 2,000-pound VGAC unit (GAC-101). Liquids collected in the VLS are automatically pumped to an existing 400 gallon polyethylene condensate tank (T-201) for temporary storage. After the condensate and particulates are removed, the vapor stream passes through the GAC unit where VOCs are removed from the influent vapor before discharge.

The header pipe between SVE blower B-101 and the SVE manifold is equipped with a 6-inch ID schedule 40 (SCH 40) PVC three-way ball valve (ASAHI/America, Inc.) used to control the flow between Cycle Group 1 (SV-1 through SV-6) and Cycle Group 2 (SV-7 through SV-12). The SVE manifold contains a series of branches and isolation valves to control the vacuum level and vapor flow for each SVE well (Appendix A, Sheet 7).

Each cycle group contains 6 SVE branches. Each SVE branch contains the following:

- isolation/flow controlling ball valve (MATCO-NORCA; 770T11)
- sample port (McMaster-Carr, 45975K26)
- vacuum indicator (McMaster-Carr; 4106k1)
- temperature indicator (WIKA; TI.30)
- inline flow sensor (Dwyer DS-300)

The Dwyer DS-300 in-line flow sensor is connected by ¼-inch tubing to a minihelic differential pressure gauge (Dwyer 2-5000, Minihelic II). The ball valve and inline flow sensor are used to balance flows between SVE wells in each cycle group.

The header pipe runs through the west wall of the Manifold Room and into the SVE Treatment Room (Sheets 4 and 5; Appendix A). A 6-inch ID, SCH 40 PVC tee was installed in the 6-inch ID SCH 40 PVC inlet pipe in the SVE Treatment Room, prior to the inlet air filter, to connect SVE blower B-101 and the SVE manifold.

3.5 Air Sparge Compressor Skid

Installation of the AS equipment was completed on April 16, 2014. The AS equipment was provided by Bisco Environmental/NEEP Systems and consists of an air compressor (AC-301), heat exchanger (HE-301), and control panel installed on a steel skid in the SVE Treatment Room (Appendix A, Sheet 6). Air Compressor AC-301 is a model DTLF 2.2000 manufactured by Becker Pumps Corporation capable of providing 100 scfm at 10 pounds per square inch (psi) to allow for the operation of at least 7 AS wells simultaneously. The compressor is powered by an 8.9 hp motor. Complementary to the SVE portion of the IRM, the AS wells have been divided into two cycle groups. Cycle Group 1 includes 7 AS wells (AS-1 through AS-7) to operate with SVE Cycle Group 1 (SV-1 through SV-6). Cycle Group 2 includes two AS wells (AS-8 and AS-9) to operate with SVE Cycle Group 2 (SV-7 through SV-12). The PLC has been equipped with the logic to interlock the operation of the AS and SVE systems. Under this interlock, the AS system will not run unless the SVE system is running, and will shut down automatically if the SVE system shuts down. The SVE system may operate independently of the AS System.

Compressed air is delivered to the AS manifold using a 3-inch ID SCH 40 steel AS header pipe. The header pipe is equipped with a temperature sensor (TSH-301; WIKA, TI.30), which is designed to shut down the AS system if the air temperature rises above 140 degrees Fahrenheit (operational limit for PVC pipe). The header pipe is also equipped with a pressure sensor (PSH-301; ASHCROFT; 35W1005 H 02L), which will shut down the AS system if the air pressure in the header pipe exceeds 10 psi. To prevent excessive buildup of condensate in the AS piping network, a condensate drain valve was installed on the 3-inch AS header pipe (Appendix A, Sheet 7).

Once in the Manifold Room, the compressed air piping branches are segregated into two cycle groups, each with a main ball valve to isolate or activate all wells in the cycle group. The compressed air pipes then split further into a single branch servicing each AS well. Each branch is equipped with a Dwyer Ratemaster flow meter (RMC-107), a 1½ -inch ball valve (IPEX; VXE 353009), and a pressure indicator (ASHCROFT; 1490). Downstream of the pressure indicator, the compressed air branch transitions from SCH 40 steel to Duratec Compressed Air Piping (SCH 40 acrylonitrile butadiene styrene). The ball valves and flow meters are used to balance air flow between AS wells.

3.6 Transfer Piping Network

The transfer of vapor from the SVE wells and the transfer of compressed air to the AS wells is accomplished using a transfer piping network, with individual piping runs from the AS and SVE manifolds to each well. As-built piping routes for each cycle group are depicted on Sheets 4 and 5 of Appendix A.

Each AS and SVE well casing was cut approximately 16 to 20 inches bgs and then capped with a 2-inch ID steel-to-PVC adapter, a 2-inch ID x 2-inch ID x 1.5-inch ID reducing PVC tee, a 2-inch ID PVC threaded adapter, and a 2-inch threaded PVC cap (Appendix A, Sheet 9). The transfer piping was connected to the tee branch (horizontal) and then trenched underground to the building for exterior wells, or to a vertical riser pipe location for wells installed inside the building. Piping for SV-8 through SV-12 and AS-8 and AS-9 was placed in a common trench to the west wall of the facility and then entered the building through an abandoned window above storage unit 993. To reach the window, the pipes were affixed to the exterior wall of the storage unit and then suspended across the roof to the abandoned window. All above ground exterior piping was insulated to minimize the potential for condensate to freeze. Piping installed across the roof of the storage unit was supported using a double-sided unistrut frame with anchored suspension cables to eliminate unnecessary penetrations into the roof. The wall penetration was completed using flashing and a sealant.

The SV-7 pipe was installed in a trench from the well to the south wall of the facility. The piping penetrated the building wall approximately 5-inches above ground level. A bollard was installed to protect the SV-7 piping from vehicle traffic. The wall penetration was completed using flashing and a sealant.

The piping for SV-2 and AS-2 was trenched to the east wall of the building and penetrated the building wall approximately 7 feet above ground level. A bollard was installed with a guard to protect the piping from vehicle traffic. The wall penetration was completed using flashing and a sealant.

Overhead SVE piping inside the building was supported from the roof rafters and trusses using unistrut and threaded rod hardware. Exterior piping was installed with a slope toward the extraction wells to promote condensate drainage back to the well (and back into the ground). Piping installed inside the building continued to slope upward toward the Manifold Room until an upward slope became impractical to maintain. The slope was then reversed allowing condensate to drain toward the SVE Treatment Room. The AS piping was fastened to the SVE pipe supports and generally followed the same piping routes.

3.7 Backfilling and Restoration

Backfilling was completed using the following materials:

- Flowable fill: installed to backfill the piping trenches within the estimated ROI of the AS and SVE wells. Flowable fill was also used to backfill areas outside the estimated ROIs in areas where sloping the SVE piping

toward the wellhead resulted in an insufficient thickness of backfill above the piping for the specified compaction. Surface materials were placed directly over the cured flowable fill. Flowable fill used as backfill was supplied by Cranesville Block Company, Inc., and consisted of the following mix:

- Cement 100-lbs Holcim/Lafarge Cement Type I/II, ASTM C-150
- Flyash 2,273-lbs Headwaters Resources Inc.(Brayton Pt), Class F, ASTM C-618
- Water 50-gallons

The slump of the flowable fill was maintained between 5-inches and 10-inches per the design specification

- Concrete: concrete mix design (3,000 psi mix) was revised during construction to provide for a 5,000 psi fibermesh concrete mix. This modification was made to provide faster concrete cure time in an attempt to avoid limiting the access of Allways Moving to locations on the site where trenches with curing concrete were present. Cast-in-place concrete was used to restore the top 6 inches of all trenches (interior and exterior). The 5,000 psi concrete mix design was as follows:
  - Cement 430-lbs Holcim/Lafarge Cement, Type I/II, ASTM C-150
  - Flyash 70-lbs Headwaters Resources Inc. (Brayton Pt), Class F, ASTM C-618
  - Fine Aggregates 1,290-lbs Poland Sand & Gravel, ASTM C-33
  - Coarse Aggregates 1,850 lbs #57's, Peckham Stone, ASTM C-33
  - Water Reducer 10-gallons Sika Plastocrete – 10N
  - Water 30-gallons

The slump of the concrete was maintained between 2 inches and 4 inches per the design specification

- Excavated material: due to the limited depth of the trenches and the specified minimum thickness for the bedding material (and flowable fill), excavated materials could not be reused as backfill.
- Sand backfill: this material was used for pipe bedding at locations outside of the estimated ROIs. Sand backfill was placed and compacted to the underside of the surface material (asphalt or concrete). Surface materials were then placed directly on the compacted sand bed. The sand backfill gradation consisted of the following:

Sand Backfill Gradation (A. Calorusso Sand & Gravel, Hudson, New York)

SIEVE SIZE	WEIGHT	% RETAINED	% PASSING	SIEVE SIZE	WEIGHT	% RETAINED	% PASSING
1.5" (37.5MM)	0	0.00	100.00	10 (2MM)	41.7	4.30	86.29
1.0" (25MM)	0	0.00	100.00	16 (1.18MM)	165.7	17.09	69.21
3/4" (19MM)	0	0.00	100.00	20 (.85MM)	110.3	11.37	57.83
9/16" (14MM)	0	0.00	100.00	30 (0.6MM)	112.2	11.57	46.26
1/2" (12.5MM)	0	0.00	100.00	40 (.425MM)	119.6	12.33	33.93
3/8" (9.5MM)	0	0.00	100.00	50 (0.3MM)	133.5	13.77	20.16
1/4" (6.3MM)	0	0.00	100.00	80 (0.180MM)	143.1	14.76	5.40
4 (4.75MM)	1.9	0.20	99.80	100 (.150MM)	21.2	2.19	3.22
1/8" (3.17MM)	24.2	2.50	97.31	200 (.075MM)	17.8	1.84	1.38
8 (2.36MM)	65.1	6.71	90.60	PAN	13.4	1.38	
TOTAL	969.7						

3.8 Control Panel

A master control panel and PLC were installed to allow for the remote operation and monitoring of the IRM. Appendix C presents the approved control panel and AS equipment shop drawings and process and instrumentation diagrams. The control panel is equipped with a MicroLogix 1400 PLC (1766-L32AWA) manufactured by Allen Bradley, and a C-More Operator Interface, model number EA7-T8CL. The remaining principal components of the control panel (motor controllers, motor contactors, blocks, switches) were manufactured by Allen Bradley, with control relays manufactured by Idec. The master control panel was received at the site on April 10, 2014, and installation of the control panel was completed on April 16, 2014.

The control panel provides the following alarm functionality:

- Alarm 1 – High Level Alarm in Vapor Liquid Separator T-101. This alarm will cause SVE blower B-101 and AS compressor ASC-301 to shut down.
- Alarm 2 – Low Vacuum in SVE Blower B-101 Inlet Piping. This alarm will cause blower B-101 and AS compressor ASC-301 to shut down.
- Alarm 3 – High Level Alarm in Condensate Tank (T-201). This alarm will cause all systems to shut down.
- Alarm 6 – High Pressure Alarm in AS Discharge Header. This alarm will cause the AS compressor ASC-301 to shut down, but will not affect SVE blower B-101 operation.
- Alarm 7 – High Temperature Alarm in AS Discharge Header. This alarm will cause AS compressor ASC-301 to shut down, but will not affect SVE blower B-101 operation.

The control panel operator interface illustrates a graphic of the AS and SVE systems, and provides the following controls:

- SVE Blower B-101 – Hand/Off/Auto switch with run indicator.
- Transfer Pump TP-101 – Hand/Off/Auto switch with run indicator.
- AS Compressor ASC-301 – Hand/Off/Auto switch with run indicator.
- Heat Exchanger HE-301 – Hand/Off/Auto switch with run indicator.
- Alarm indicators with an alarm screen and alarm details.
- Alarm Acknowledgement and Reset.

The PLC and system software provides remote monitoring capabilities (via wireless connectivity) and start/stop/reset functionality, including:

- Remote monitoring of liquid levels in Vapor Liquid Separator T-101 and water discharge flow rate into T-201 (condensate tank).
- Remote monitoring of vacuum level and temperature in B-101 inlet piping.
- Remote monitoring of air flow rate into B-101.
- Remote monitoring of air pressure from ASC-301.
- Remote alarm acknowledgement, system reset, and starting and stopping of any equipment when positioned in “Auto”.

3.9 Waste Management

Non-hazardous waste streams generated during AS/SVE trenching activities included excavated soils and debris, asphalt, and concrete. These waste streams were temporarily stockpiled west of the facility and in the southwest parking lot. All stockpiles were lined and covered with poly-sheeting and maintained by RSI throughout

construction. Periodic air monitoring was conducted around the perimeter of the stockpiles. Non-hazardous waste streams generated during well installation activities included development water, soil cuttings, decontamination pad materials, and decontamination rinsate. These waste streams were placed in 55-gallon steel drums and stored temporarily onsite within the SVE Treatment Room. Each waste stream was classified and managed as described in the following sections.

3.9.1 Concrete and Asphalt Debris

On April 14, 2014, 19.7 tons of asphalt and concrete debris associated with the trenching activities were transported to Recycling Crushing Technology, Inc., in Poughkeepsie, New York, for recycling. A non-hazardous waste profile and transportation and disposal documentation are provided in Appendix D.

3.9.2 Excavated Soil

On April 15, 2014, three loads of non-hazardous soil totaling 41.27 tons were transported to the City of Albany Solid Waste Management Facility in Albany, New York, for use as alternative daily cover. A non-hazardous waste profile and transportation and disposal documentation are provided in Appendix D.

3.9.3 Soil Cuttings and Decontamination Pad

Soil cuttings and other debris from well installation were stored in 55-gallon steel drums and placed in the SVE Treatment Room for temporary storage. On April 18, 2014, the following wastes associated with well installation were transported to Spring Grove Resource Recovery, Inc., in Cincinnati, Ohio, for disposal:

- One (1) 55-gallon steel drum - asphalt and concrete
- One (1) 55-gallon steel drum - decontamination pad materials
- Eleven (11) 55-gallon steel drums – soil cuttings

A non-hazardous waste profile and transportation and disposal documentation for these wastes are provided in Appendix D.

3.9.4 Development Water and Decontamination Rinsate

All development water and decontamination rinsate from well installation activities was placed in 55-gallon steel drums and temporarily staged in the SVE Treatment Room. These wastes were transported off-site on April 18, 2014, to Spring Grove Resource Recovery, Inc., in Cincinnati, Ohio, for disposal.

3.10 Community Air Monitoring Program

A site-specific CAMP was implemented during construction of the IRM. In general, the CAMP included the following air monitoring activities:

- VOC Air Monitoring: continuous monitoring of total VOCs was performed using a photoionization detector (PID) equipped with a 10.6-eV lamp (MiniRAE 2000) upwind and downwind of work areas during ground intrusive activities. Periodic air monitoring was also performed during the management of waste stockpiles.
- Particulate Air Monitoring: Continuous monitoring of total airborne dust (PM-10) using a TSI DustTrak 8520 was performed at monitoring stations located upwind and downwind of work areas. Periodic particulate monitoring was completed during the management of waste stockpiles.

In accordance with the CAMP, air monitoring readings were recorded in the field log book throughout the project and continuous datalogs were produced during construction activities. The lowest action level for VOCs (5 parts per million) was not exceeded during any of the IRM work tasks. In addition, the action level for dust (0.10-milligrams per cubic meter above background) was not exceeded during any of the IRM work tasks.

4 Startup and Testing Activities

4.1 General

IRM startup and commissioning activities were performed from April 17-19, 2014. The PLC was tested prior to full system startup to ensure system operability and functionality. Operability and functionality testing ranged from checking electric motor rotations to physically triggering each of the system switches (high level shutoffs, etc.) to confirm that the system safety features were operating properly. Once each check was satisfactorily completed, AS compressor ASC-301 and SVE blower B-101 were started and the air flow to SVE Cycle Group 1 and Cycle Group 2 were balanced. Balancing was completed to equalize air flow from each well in each cycle group independently. Following balancing, initial startup and monitoring activities were initiated.

4.2 Initial Startup and Monitoring

Initial startup and monitoring was completed separately for Cycle Group 1 and Cycle Group 2, with startup activities lasting approximately 24 hours for each cycle group. Initial startup activities were performed beginning with Cycle Group 2. Below are the startup activities performed on each cycle group:

- Monitoring of influent VOC concentrations using a PID, including the individual SVE well branches and the combined flow into SVE blower B-101. The monitoring was conducted at approximately 1 hour intervals for the first 8 hours of operation and again at the end of the 24-hour startup period.
- Monitoring of vacuum, temperature, pressure, and air flow in each SVE branch.
- Collection of vapor samples from the influent to SVE blower B-101 at 2, 4, 8, and 24 hours after initiating startup activities.
- Collection of effluent vapor samples at the beginning and end of the startup period.

The PID readings and differential pressure and flow measurements collected from each SVE well in Cycle Group 1 and 2 during the initial startup periods are presented in Tables 2 and 3, respectively. The influent and effluent samples were collected for laboratory analysis using evacuated 1-liter Entech Instruments, Inc., canisters and the samples were shipped to a New York State Department of Health Environmental Laboratory Approval Program-certified laboratory for analysis of trichloroethene, tetrachloroethene, and cis-1,2-dichloroethene by U.S. Environmental Protection Agency Method TO-15. The influent and effluent analytical results for Cycle Group 1 and Cycle Group 2 are presented in Tables 4 and 5, respectively.

The influent VOC concentrations for Cycle Group 1 ranged from 42,500 micrograms per cubic meter (µg/m3) after 2 hours of operation to 17,500 µg/m3 after 24 hours of operation. The influent VOC concentrations for Cycle Group 2 ranged from 103,500 µg/m3 after 2 hours of operation to 41,650 µg/m3 after 24 hours of operation. The data from Cycle Group 1 indicates an approximately 59% decrease in VOC concentrations during the 24-hour startup period. Similarly, the influent data from Cycle Group 2 showed an approximately 60% decline during the 24-hour monitoring period.

The effluent concentrations from Cycle Group 1 ranged from 2,340 µg/m3 (at startup) to 12,450 µg/m3 (after 24 hours. The effluent concentrations for Cycle Group 2 ranged from 2,730 µg/m3 (at startup) to 1,660 µg/m3 (after 24 hours). The effluent concentrations associated with Cycle Groups 1 and 2 during the initial startup were below the NYSDEC's DAR-1 guidelines for these compounds. The VGAC was subsequently replaced on June 25, 2014.

5 Operation, Maintenance, and Monitoring

Following completion of the initial IRM startup and commissioning activities on April 19, 2014, the system was considered operational and Cycle Group 1 remained in operation. OM&M visits were performed on a bi-weekly basis during the first 2 months of operation, followed by monthly site visits. The specific tasks performed during the OM&M visits are detailed below and in the OM&M Plan provided in Appendix E.

5.1 Bi-Weekly Performance Monitoring

Four bi-weekly monitoring events were completed from May 6 through August 13, 2014. During this time, it was necessary to suspend the bi-weekly monitoring schedule to address a ventilation issue that caused high-temperature shutdowns at the air compressor and to replace the VGAC. During each event, influent and effluent analytical samples were collected from the cycle group that was in operation on arrival at the site, and from the cycle group placed into operation during the site visit. Performance monitoring activities completed during each event included recording AS and SVE system flow, pressure, and vacuum measurements. System sampling results, maintenance activities, and shut down periods were documented in the bi-monthly progress reports for the site.

5.2 Continued Monitoring

OM&M visits will continue to be performed on a monthly basis by WSP or its subcontractor, as detailed in the OM&M Plan (Appendix E). The operation of Cycle Group 1 and Cycle Group 2 will be alternated on a monthly basis. Influent and effluent vapor samples will be collected quarterly for the remainder of the first year of operation and semi-annually thereafter. Groundwater samples will be collected from monitoring wells MW-1 through MW-9 and MW-14 though MW-18 on a quarterly basis and from all monitoring wells on an annual basis to evaluate changes in dissolved VOC concentrations as a result of the AS operation. Subsurface vacuum and pressure measurements will be collected from MP-1 through MP-9 (Sheet 2, Appendix A) on a quarterly basis.

6 Acronyms and Abbreviations

AS	Air Sparging
bgs	Below ground surface
CAMP	Community Air Monitoring Program
HSA	Hollow Stem Auger
HASP	Health and Safety Plan
ID	Inside Diameter
IRM	Interim Remedial Measure
MPs	Vacuum Monitoring Points
NYSDEC	New York State Department of Environmental Conservation
OD	Outside Diameter
OM&M	Operation, Maintenance, and Monitoring
PID	Photoionization Detector
PLC	Programmable Logic Controller
PSI	Per Square Inch
SCFM	Standard Cubic Feet per Minute
SCH 40 PVC	Schedule 40 Poly Vinyl Chloride
SVE	Soil Vapor Extraction
VOCs	Volatile Organic Compounds

.

Figures

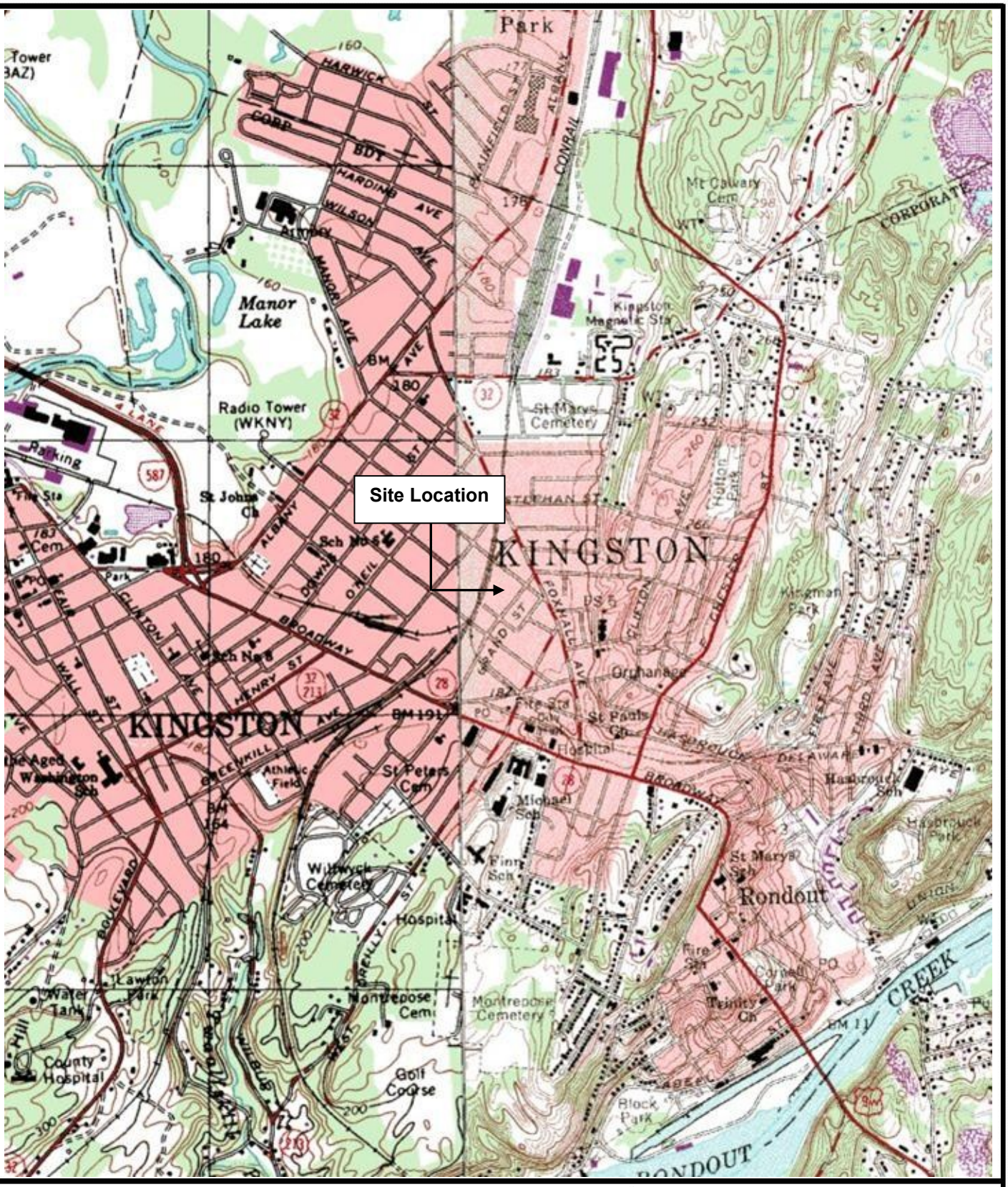
DWG Name:

Checked:

Approved:

Drawn By:

A



REFERENCE:
7.5 MINUTE SERIES TOPOGRAPHIC QUADRANGLE
KINGSTON EAST, NEW YORK
PHOTOREVISED 1980 SCALE 1:24,000

WSP USA Corp.
2360 Sweet Home Road, Suite 3
Amherst, New York 14228
(716) 691-5232

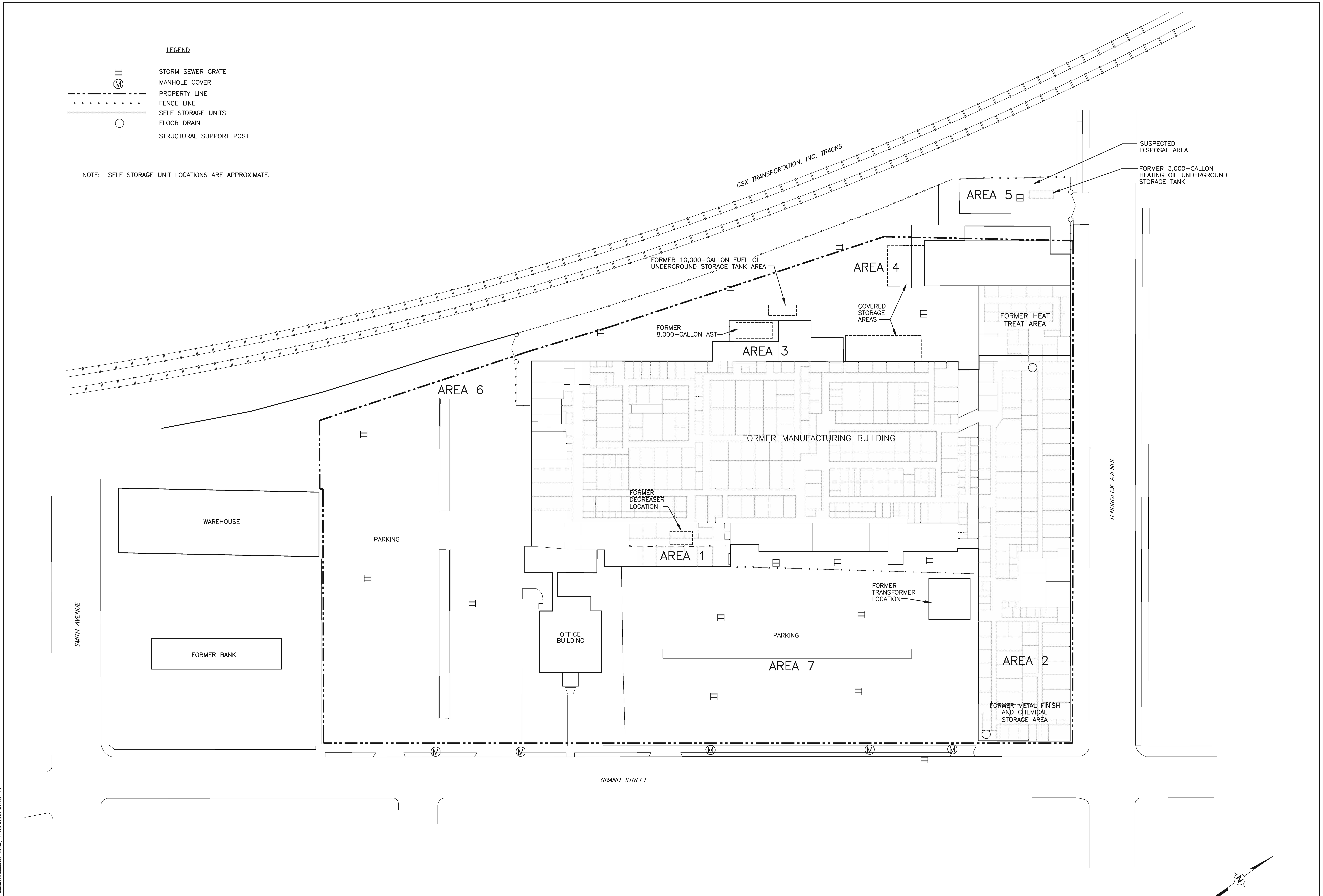
FIGURE 1

SITE LOCATION MAP

HUCK MANUFACTURING FACILITY
KINGSTON, NEW YORK

PREPARED FOR

FEDERAL-MOGUL CORPORATION
SOUTHFIELD, MICHIGAN



D

REFERENCE: BASE SURVEY FROM SURVEY-ABD2000.DWG AND MODIFIED WITH FACILITY DRAWINGS AND AERIAL PHOTOGRAPHS.

REV	DESCRIPTION		
1		Revised: / Chkd:	Appr.:
2		Revised: / Chkd:	Appr.:
3		Revised: / Chkd:	Appr.:

REVISIONS

SEAL

DATE

DRAWN BY	EGC
CHECKED	SBP 08232012
APPROVED	KDS 08232012

SITE LAYOUT

FORMER HUCK MANUFACTURING FACILITY
KINGSTON, NEW YORK

PREPARED FOR
FEDERAL-MOGUL CORPORATION
SOUTHFIELD, MICHIGAN

WSP
WSP USA Corp.
5 Sullivan Street
Cazenovia, New York 13035
(315) 655-3900
www.wspgroup.com/usa

FIGURE 2

Drawing Number
00005609-047

Tables

Table 1

SVE and Air Sparge Well Construction Details
Former Huck Manufacturing Facility
Kingston, New York (a)

Well ID (b)	Completion Date	Construction	TD (ft bgs) (c)	Installation Method	Borehole Diameter (inches)	Screen Length (feet)	Annular Seal	Annular Seal Interval (ft bgs)	Filter pack	Filter Pack Interval (ft bgs)
AS-1	10/7/2013	Stainless steel	29	DD	2.25	4	Granular bentonite "dry grout"	1-20 (d)	Native sand formation	20-29 (d)
AS-2	10/1/2013	Stainless steel	29	HSA	8.25	4	Hydrated bentonite chips & bentonite-cement grout	20.8-24 (e)	#2 Filter sand	24-29
AS-3	10/4/2013	Stainless steel	28	DD	2.25	4	Granular bentonite "dry grout"	1-8 (d)	Native sand formation	8-28 (d)
AS-4	10/8/2013	Stainless steel	28.5	DD	2.25	4	Granular bentonite "dry grout"	1-8 (d)	Native sand formation	8-28.5 (d)
AS-5	10/3/2013	Stainless steel	28	DD	2.25	4	Granular bentonite "dry grout"	1-8 (d)	Native sand formation	8-28 (d)
AS-6	10/9/2013	Stainless steel	28.5	DD	2.25	4	Granular bentonite "dry grout"	1-8 (d)	Native sand formation	8-28.5 (d)
AS-7	10/8/2013	Stainless steel	28.5	DD	2.25	4	Granular bentonite "dry grout"	1-8 (d)	Native sand formation	8-28.5 (d)
AS-8	10/1/2013	PVC	29	HSA	8.25	4	Hydrated bentonite chips & bentonite-cement grout	21-24 (e)	#2 Filter sand	24-29
AS-9	10/4/2013	Stainless steel	28.5	HSA	8.25	4	Hydrated bentonite chips & bentonite-cement grout	20-23.5 (e)	#2 Filter sand	23.5-28.5
MP-5	10/1/2013	Stainless steel	11	HSA	8.25	8	Hydrated bentonite chips & bentonite-cement grout	1.5-2.5 (e)	#2 Filter sand	2.5-11
MP-6	10/2/2013	Stainless steel	11	DD	2.25	8	#0 Sand	1-2 (d)	Native sand formation	2-11 (d)
MP-7	10/2/2013	Stainless steel	11	DD	2.25	8	#0 Sand	1-2 (d)	Native sand formation	2-11 (d)
MP-8	10/3/2013	Stainless steel	11	HSA	8.25	8	Hydrated bentonite chips	1.5-2.5	#2 Filter sand	2.5-11
SV-1	10/3/2013	Stainless steel	11	DD	2.25	8	#0 Sand	1-2 (d)	Native sand formation	2-11 (d)
SV-2	10/1/2013	Stainless steel	11	HSA	8.25	8	Hydrated bentonite chips	1.5-2.5	#2 Filter sand	2.5-11
SV-3	10/8/2013	Stainless steel	11	DD	2.25	8	#0 Sand	1-2 (d)	Native sand formation	2-11 (d)
SV-5	10/1/2013	Stainless steel	12	DD	2.25	8	#0 Sand	1-2 (d)	Native sand formation	2-11 (d)
SV-6	10/2/2013	Stainless steel	11	DD	2.25	8	#0 Sand	1-2 (d)	Native sand formation	2-11 (d)
SV-7	10/2/2013	Stainless steel	11	HSA	8.25	8	Hydrated bentonite chips	1.5-2.5	#2 Filter sand	2.5-11
SV-8	10/2/2013	Stainless steel	11	HSA	8.25	8	Hydrated bentonite chips	1.5-2.5	#2 Filter sand	2.5-11
SV-9	10/3/2013	Stainless steel	11	HSA	8.25	8	Hydrated bentonite chips	1.5-2.5	#2 Filter sand	2.5-11
SV-10	10/3/2013	Stainless steel	11	HSA	8.25	8	Hydrated bentonite chips	1.5-2.5	#2 Filter sand	2.5-11
SV-11	10/2/2013	Stainless steel	11	HSA	8.25	8	Hydrated bentonite chips	1.5-2.5	#2 Filter sand	2.5-11
SV-12	10/4/2013	Stainless steel	11	HSA	8.25	8	Hydrated bentonite chips	1.5-2.5	#2 Filter sand	2.5-11

a/ SVE = soil vapor extraction; ID = identification; ft bgs = feet below ground surface; TD = total depth; PVC = polyvinyl chloride; DD = direct drive; HSA = hollow stem auger.
b/ AS = air sparging well; MP = vacuum monitoring point; SV = soil vapor extraction well.
c/ Total depths omit 0.5-foot-long drive point at bottom of stainless-steel wells.
d/ Depth intervals of annular seals and natural filter material are approximate in direct-drive wells due to the nature of installation.
e/ Annular seal depths in air sparge wells installed using HSA are for bentonite seal only. Grout seals extend to surface.

Table 2

Monitoring Results - Cycle Group 1
Former Huck Manufacturing Facility
Kingston, New York (a)

	PID Readings (ppm)									
Date and Time:	4/18/14 11:02	4/18/14 12:02	4/18/14 13:02	4/18/14 14:02	4/18/14 15:02	4/18/14 16:02	4/18/14 17:02	4/18/14 18:02	4/18/14 19:02	4/19/14 10:02
Monitoring Location										
SV-1	-	8.65	7.13	8.34	8.23	7.31	7.05	8.01	8.00	6.43
SV-2	-	7.84	3.01	3.92	3.13	2.48	2.55	3.01	2.87	2.01
SV-3	-	7.22	2.26	3.18	7.17	6.83	5.61	6.58	5.96	5.12
SV-4	-	32.77	39.10	41.75	32.83	37.39	34.64	32.16	31.29	27.43
SV-5	-	6.16	2.72	2.26	4.21	3.43	2.47	3.12	3.02	2.03
SV-6	-	7.64	5.19	4.32	7.92	5.48	2.78	2.82	2.90	1.80
System Influent	-	12.25	13.09	14.68	12.56	14.69	9.38	16.84	15.21	11.86
System Effluent	-	1.60	1.64	1.96	1.70	1.83	1.76	2.76	1.90	5.43

	Differential Pressure (in H_2O)									
Date and Time:	4/18/14 11:02	4/18/14 12:02	4/18/14 13:02	4/18/14 14:02	4/18/14 15:02	4/18/14 16:02	4/18/14 17:02	4/18/14 18:02	4/18/14 19:02	4/19/14 10:02
Monitoring Location										
SV-1	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20
SV-2	0.45	0.40	0.40	0.40	0.40	0.40	0.40	0.40	0.40	0.42
SV-3	0.25	0.20	0.20	0.30	0.35	0.30	0.30	0.30	0.30	0.40
SV-4	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20
SV-5	0.15	0.20	0.20	0.15	0.10	0.15	0.15	0.15	0.15	0.18
SV-6	0.40	0.40	0.40	0.40	0.40	0.40	0.40	0.40	0.40	0.40

	Calculated Flows (scfm)									
Date and Time:	4/18/14 11:02	4/18/14 12:02	4/18/14 13:02	4/18/14 14:02	4/18/14 15:02	4/18/14 16:02	4/18/14 17:02	4/18/14 18:02	4/18/14 19:02	4/19/14 10:02
Monitoring Location										
SV-1	114.51	114.51	114.51	114.51	114.51	114.51	114.51	114.51	114.51	114.51
SV-2	171.77	161.94	161.94	161.94	161.94	161.94	161.94	161.94	161.94	165.94
SV-3	128.03	114.51	114.51	140.25	151.49	140.25	140.25	140.25	140.25	161.94
SV-4	114.51	114.51	114.51	114.51	114.51	114.51	114.51	114.51	114.51	114.51
SV-5	99.17	114.51	114.51	99.17	80.97	99.17	99.17	99.17	99.17	108.64
SV-6	161.94	161.94	161.94	161.94	161.94	161.94	161.94	161.94	161.94	161.94
Total	***789.94***	***781.94***	***781.94***	***792.33***	***785.37***	***792.33***	***792.33***	***792.33***	***792.33***	***827.49***

a/ PID = photoionization detector; ppm = parts per million; - = not sampled; in H_2O = inches water; scfm = standard cubic feet per minute.

Table 3

Monitoring Results - Cycle Group 2
Former Huck Manufacturing Facility
Kingston, New York (a)

	PID Readings (ppm)									
Date and Time:	4/18/14 11:02	4/18/14 12:02	4/18/14 13:02	4/18/14 14:02	4/18/14 15:02	4/18/14 16:02	4/18/14 17:02	4/18/14 18:02	4/18/14 19:02	4/19/14 10:02
Monitoring Location										
SV-7	-	-	2.84	3.50	3.55	5.15	4.29	6.25	5.27	1.17
SV-8	-	-	21.40	24.77	23.16	24.61	22.84	24.72	21.28	5.82
SV-9	-	-	3.43	4.00	4.27	4.56	5.03	4.84	-	4.07
SV-10	-	-	6.83	6.66	5.04	6.02	6.34	6.71	6.60	1.57
SV-11	-	-	4.66	5.30	4.43	4.83	4.06	4.99	4.52	1.09
SV-12	-	-	211.30	177.60	239.40	207.40	141.80	148.90	-	2.88
System Influent	-	-	-	76.31	69.86	58.76	64.84	45.69	48.56	32.48
System Effluent	-	-	-	2.25	2.15	3.15	2.69	2.55	1.79	1.37

	Differential Pressure (in H_2O)									
Date and Time:	4/18/14 11:02	4/18/14 12:02	4/18/14 13:02	4/18/14 14:02	4/18/14 15:02	4/18/14 16:02	4/18/14 17:02	4/18/14 18:02	4/18/14 19:02	4/19/14 10:02
Monitoring Location										
SV-7	0.50	0.50	0.55	0.50	0.50	0.50	0.45	0.45	0.50	0.60
SV-8	0.25	0.12	0.29	0.20	0.25	0.20	0.40	0.40	0.20	0.20
SV-9	0.25	0.10	0.12	0.10	0.20	0.20	0.20	0.22	0.20	0.20
SV-10	0.25	0.30	0.52	0.49	0.50	0.45	0.40	0.40	0.45	0.50
SV-11	0.25	0.30	0.51	0.51	0.50	0.30	0.40	0.40	0.40	0.50
SV-12	0.05	0.05	0.10	0.10	0.20	0.20	0.15	0.15	0.20	0.15

	Calculated Flows (scfm)									
Date and Time:	4/18/14 11:02	4/18/14 12:02	4/18/14 13:02	4/18/14 14:02	4/18/14 15:02	4/18/14 16:02	4/18/14 17:02	4/18/14 18:02	4/18/14 19:02	4/19/14 10:02
Monitoring Location										
SV-7	181.06	181.06	189.90	181.06	181.06	181.06	171.77	171.77	181.06	198.34
SV-8	128.03	88.70	137.89	114.51	128.03	114.51	161.94	161.94	114.51	114.51
SV-9	128.03	80.97	88.70	80.97	114.51	114.51	114.51	120.10	114.51	114.51
SV-10	128.03	140.25	184.65	179.24	181.06	171.77	161.94	161.94	171.77	181.06
SV-11	128.03	140.25	182.86	182.86	181.06	140.25	161.94	161.94	161.94	181.06
SV-12	57.26	57.26	80.97	80.97	114.51	114.51	99.17	99.17	114.51	99.17
Total	***750.43***	***688.48***	***864.97***	***819.62***	***900.23***	***836.61***	***871.28***	***876.87***	***858.31***	***888.65***

a/ PID = photoionization detector; ppm = parts per million; - = not sampled; in H_2O = inches water; scfm = standard cubic feet per minute.

Table 4

AS/SVE Influent VOC Results - Cycle Groups 1 and 2
Former Huck Manufacturing Facility
Kingston, New York (a)

	Cycle Group 1				Cycle Group 2			
Sample ID	**GP01INF02**	**GP01INF04**	**GP01INF08**	**GP01INF24**	**GP02INF02**	**GP02INF04**	**GP02INF08**	**GP02INF24**
Date	**4/18/2014**	**4/18/2014**	**4/18/2014**	**4/19/2014**	**4/17/2014**	**4/17/2014**	**4/17/2014**	**4/18/2014**
Elapsed Time (hours)	**2**	**4**	**8**	**24**	**2**	**4**	**8**	**24**
Parameter (µg/m3)								
cis-1,2-Dichloroethene	1,500	1,500	1,400	1,400	85,000	66,000	61,000	37,000
Tetrachloroethylene	18,000	17,000	15,000	8,000	2,500	3,000	2,400	250
Trichloroethene	23,000	19,000	16,000	8,100	16,000	15,000	16,000	4,400
Total VOCs	42,500	37,500	32,400	17,500	103,500	84,000	79,400	41,650

a/ AS/SVE = air sparging/soil vapor extraction; VOC = volatile organic compound; ID = identification; µg/m3 = micrograms per cubic meter.

Table 5

AS/SVE Effluent VOC Results - Cycle Groups 1 and 2
Former Huck Manufacturing Facility
Kingston, New York (a)

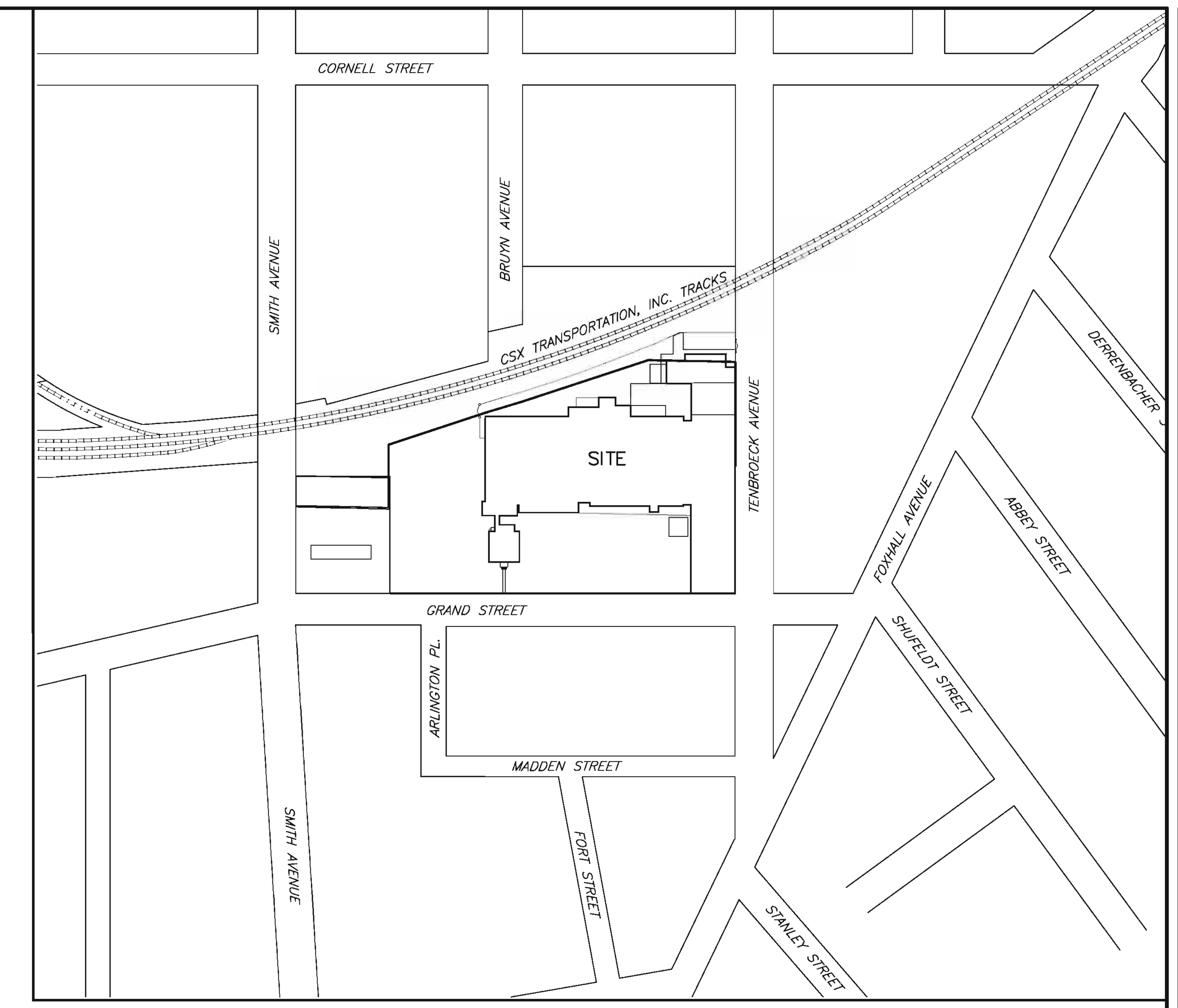
	Cycle Group 1		Cycle Group 2	
Sample ID	**GP01EFF00**	**GP01EFF24**	**GP02EFF00**	**GP02EFF024**
Date	**4/18/2014**	**4/19/2014**	**4/17/2014**	**4/18/2014**
Elapsed Time (hours)	**0**	**24**	**0**	**24**
Parameter (µg/m3)				
cis-1,2-Dichloroethene	390	9,200	50	240
Tetrachloroethylene	350	650	480	220
Trichloroethene	1,600	2,600	2,200	1,200
Total VOCs	2,340	12,450	2,730	1,660

a/ AS/SVE = air sparging, soil vapor extraction; VOC = volatile organic compound; ID = identification; µg/m3 = micrograms per cubic meter.

Appendix A – As-Built Drawing Package

INDEX OF DRAWINGS

DRAWING NUMBER	SHEET NUMBER	DESCRIPTION
00005609-064	1	TITLE SHEET
00005609-065	2	IRM SITE PLAN
00005609-066	3	PROCESS AND INSTRUMENTATION DIAGRAM
00005609-068	4	WELL LOCATIONS AND PIPING ROUTES - CYCLE GROUP 1
00005609-067	5	WELL LOCATIONS AND PIPING ROUTES - CYCLE GROUP 2
00005609-069	6	SOIL VAPOR EXTRACTION AND AIR SPARGING EQUIPMENT LAYOUT AND MANIFOLD CONNECTION LAYOUT
00005609-070	7	SOIL VAPOR EXTRACTION AND AIR SPARGING MANIFOLD DETAILS
00005609-071	8	AIR SPARGING WELLHEAD COMPLETION DETAILS
00005609-072	9	SOIL VAPOR EXTRACTION WELLHEAD COMPLETION AND PIPE HANGER DETAILS



LOCATION MAP
SCALE: 1"=200'

INTERIM REMEDIAL MEASURE
AIR SPARGING/SOIL VAPOR EXTRACTION SYSTEM

AS-BUILT DRAWING PACKAGE

FORMER HUCK MANUFACTURING FACILITY
KINGSTON, NEW YORK

PREPARED FOR

FEDERAL-MOGUL CORPORATION

D

REVISIONS

REV	DESCRIPTION	Revised:	Chkd:	Appr.:

SEAL

DATE

DRAWN BY	EGC
CHECKED	DL 2/3/2015
APPROVED	TMM 2/24/2015

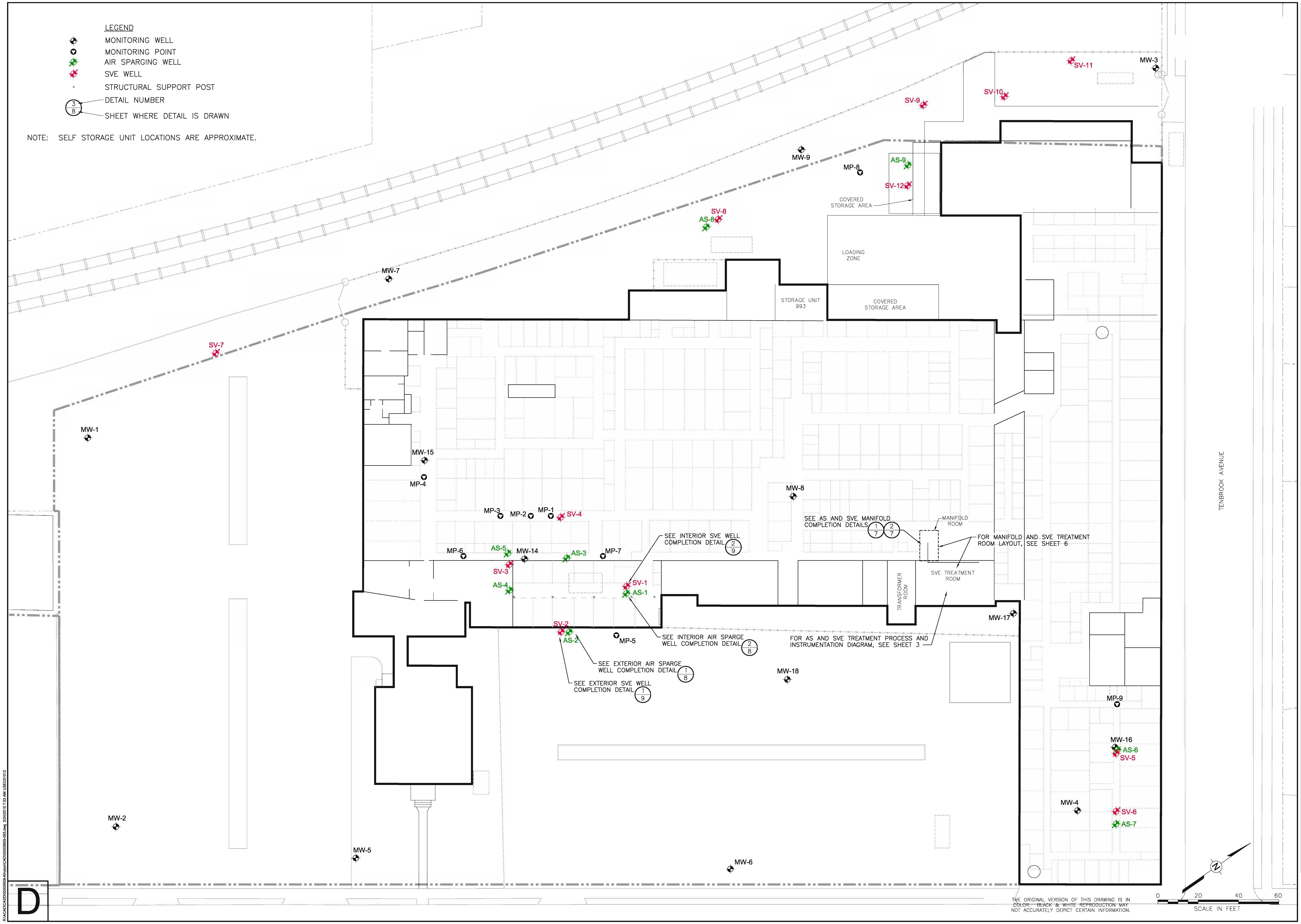
TITLE SHEET

AS-BUILT DRAWING PACKAGE
FORMER HUCK MANUFACTURING FACILITY
KINGSTON, NEW YORK
PREPARED FOR
FEDERAL-MOGUL CORPORATION

WSP
WSP USA Corp.
11190 Sunrise Valley Drive, Suite 300
Reston, Virginia 20191
(703) 709-6500
www.wspgroup.com/usa

SHEET 1

Drawing Number
00005609-064



REVISIONS

REV	DESCRIPTION

DRAWN BY	EGC	
CHECKED	DL	2/9/2015
APPROVED	TMM	2/24/2015

IRM SITE PLAN

AS-BUILT DRAWING PACKAGE
FORMER HUCK MANUFACTURING FACILITY
KINGSTON, NEW YORK

PREPARED FOR
FEDERAL-MOGUL CORPORATION

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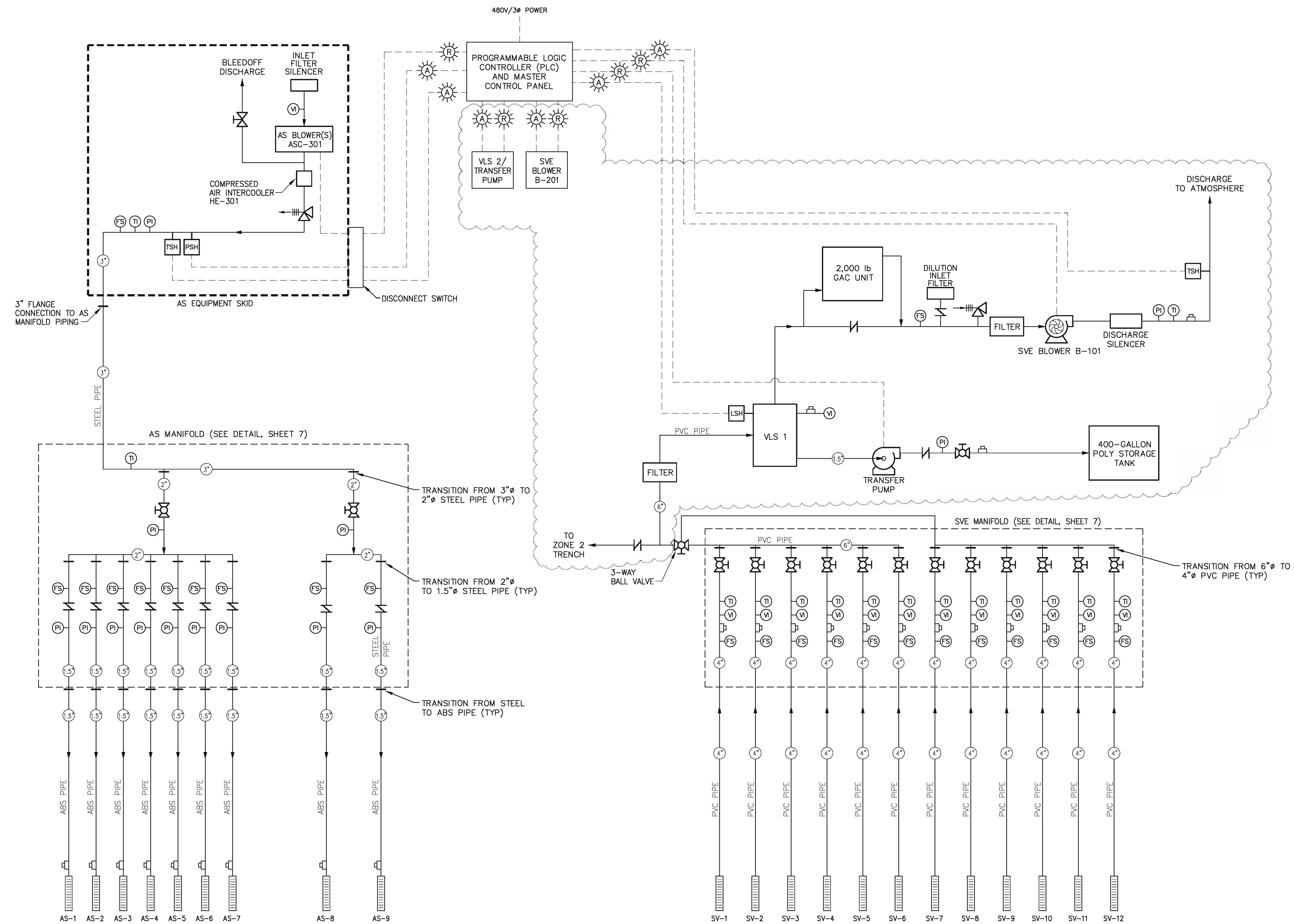
SHEET 2

Drawing Number
00005609-065



MASTER CONTROL PANEL

1. THE MASTER CONTROL PANEL AND PROGRAMMABLE LOGIC CONTROLLER SUPPLIED BY BISCO ENVIRONMENTAL PROVIDES THE FOLLOWING ALARM FUNCTIONALITY:
   a. ALARM 1 – HIGH LEVEL ALARM IN VLS 1 WILL CAUSE SVE BLOWER B-101 TO SHUTDOWN. THIS ALARM WILL ALSO TRIGGER THE AS BLOWER TO SHUTDOWN.
   b. ALARM 2 – HIGH TEMPERATURE ALARM IN SVE BLOWER B-101 DISCHARGE PIPING WILL CAUSE SVE BLOWER B-101 TO SHUTDOWN. THIS ALARM WILL ALSO TRIGGER THE AS BLOWER TO SHUTDOWN.
   c. ALARM 5 – HIGH PRESSURE ALARM IN THE AS DISCHARGE HEADER WILL CAUSE THE AS BLOWER TO SHUTDOWN. SVE SYSTEMS WILL NOT BE AFFECTED BY THIS ALARM
   d. ALARM 6 – HIGH TEMPERATURE ALARM IN THE AS DISCHARGE HEADER WILL CAUSE THE AS BLOWER TO SHUT DOWN. SVE SYSTEMS WILL NOT BE AFFECTED BY THIS ALARM
   e. ALARM 7 – SPARE
   f. REMOTE EMERGENCY STOP (MOUNTED IN AS EQUIPMENT ROOM)
   g. SPARE – HAND/OFF/AUTO SWITCH WITH RUN INDICATOR LIGHT
2. THE CONTROL PANEL INCLUDES THE FOLLOWING PHYSICAL CONTROLS:
   a. SVE BLOWER 1 – HAND/OFF/AUTO SWITCH WITH RUN INDICATOR LIGHT
   b. AS BLOWER – HAND/OFF/AUTO SWITCH WITH RUN INDICATOR LIGHT
   c. VLS 1 TRANSFER PUMP – HAND/OFF/AUTO SWITCH WITH RUN INDICATOR LIGHT
   d. VLS 2 TRANSFER PUMP – HAND/OFF/AUTO SWITCH WITH RUN INDICATOR LIGHT
   e. ALARM 1 THROUGH ALARM 7 – INDICATOR LIGHTS
   f. EMERGENCY STOP (ALL SYSTEMS STOP)
3. THE CONTROL PANEL AND SYSTEM SOFTWARE PROVIDES THE FOLLOWING CAPABILITIES:
   a. WIRELESS (WI-FI) CONNECTIVITY
   b. REMOTE STARTING AND STOPPING OF ANY EQUIPMENT WHEN POSITIONED IN "AUTO"
   c. ONSITE PROGRAMMABLE USER INTERFACE WITH KEYPAD OR TOUCH SCREEN

LEGEND

CONVEYANCE PIPING AND DIRECTION OF FLOW
CONTROL CIRCUIT
FS – FLOW SENSOR WITH DIFFERENTIAL PRESSURE GAGE
PI – PRESSURE INDICATOR
TI – TEMPERATURE INDICATOR
VI – VACUUM INDICATOR
PSH – PRESSURE SWITCH HIGH
TSH – TEMPERATURE SWITCH HIGH
LSH – LIQUID SENSOR HIGH
SAMPLE PORT WITH STOPCOCK
BUTTERFLY VALVE
BALL VALVE
GATE VALVE
VACUUM RELIEF VALVE
PRESSURE RELIEVE VALVE
VLS – VAPOR LIQUID SEPARATOR
GAC – GRANULAR ACTIVATED CARBON
R – RUN INDICATOR
A – ALARM CONDITION INDICATOR
PREVIOUSLY EXISTING EQUIPMENT AT SVE TREATMENT ROOM

REVISIONS

REV	DESCRIPTION

DRAWN BY EGC
CHECKED DL
APPROVED TMM

PROCESS AND INSTRUMENTATION DIAGRAM

AS-BUILT DRAWING PACKAGE
FORMER HUCK MANUFACTURING FACILITY
KINGSTON, NEW YORK
PREPARED FOR
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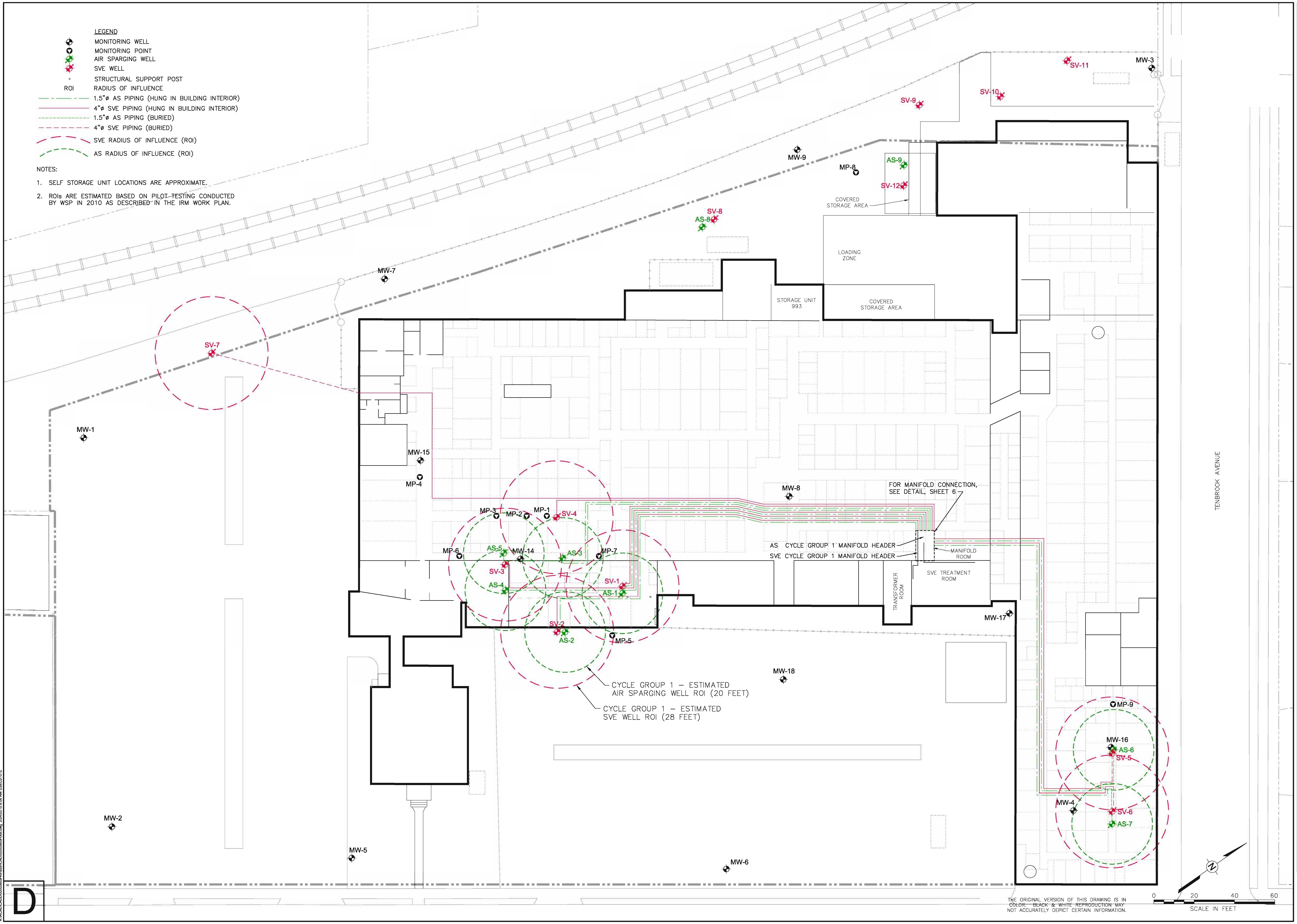
SHEET 3

Drawing Number
00005609-066

D


LEGEND
MONITORING WELL
MONITORING POINT
AIR SPARGING WELL
SVE WELL
STRUCTURAL SUPPORT POST
ROI RADIUS OF INFLUENCE
1.5"ø AS PIPING (HUNG IN BUILDING INTERIOR)
4"ø SVE PIPING (HUNG IN BUILDING INTERIOR)
1.5"ø AS PIPING (BURIED)
4"ø SVE PIPING (BURIED)
SVE RADIUS OF INFLUENCE (ROI)
AS RADIUS OF INFLUENCE (ROI)
NOTES:
1. SELF STORAGE UNIT LOCATIONS ARE APPROXIMATE.
2. ROIs ARE ESTIMATED BASED ON PILOT TESTING CONDUCTED BY WSP IN 2010 AS DESCRIBED IN THE IRM WORK PLAN.
MW-1
MW-2
MW-3
MW-4
MW-5
MW-6
MW-7
MW-8
MW-9
MW-14
MW-15
MW-16
MW-17
MW-18
MP-1
MP-2
MP-3
MP-4
MP-5
MP-6
MP-7
MP-8
MP-9
SV-1
SV-2
SV-3
SV-4
SV-5
SV-6
SV-7
SV-8
SV-9
SV-10
SV-11
SV-12
AS-1
AS-2
AS-3
AS-4
AS-5
AS-6
AS-7
AS-8
AS-9
COVERED STORAGE AREA
LOADING ZONE
STORAGE UNIT 993
COVERED STORAGE AREA
FOR MANIFOLD CONNECTION, SEE DETAIL, SHEET 6
AS CYCLE GROUP 1 MANIFOLD HEADER
SVE CYCLE GROUP 1 MANIFOLD HEADER
MANIFOLD ROOM
SVE TREATMENT ROOM
TRANSFORMER ROOM
CYCLE GROUP 1 – ESTIMATED AIR SPARGING WELL ROI (20 FEET)
CYCLE GROUP 1 – ESTIMATED SVE WELL ROI (28 FEET)
TENBROOK AVENUE
N
0 20 40 60
SCALE IN FEET
THE ORIGINAL VERSION OF THIS DRAWING IS IN COLOR. BLACK & WHITE REPRODUCTION MAY NOT ACCURATELY DEPICT CERTAIN INFORMATION.
D

REVISIONS

REV | DESCRIPTION

SEAL

DATE

DRAWN BY EGC

CHECKED DL

APPROVED TMM

WELL LOCATIONS AND PIPING ROUTES – CYCLE GROUP 1

AS-BUILT DRAWING PACKAGE
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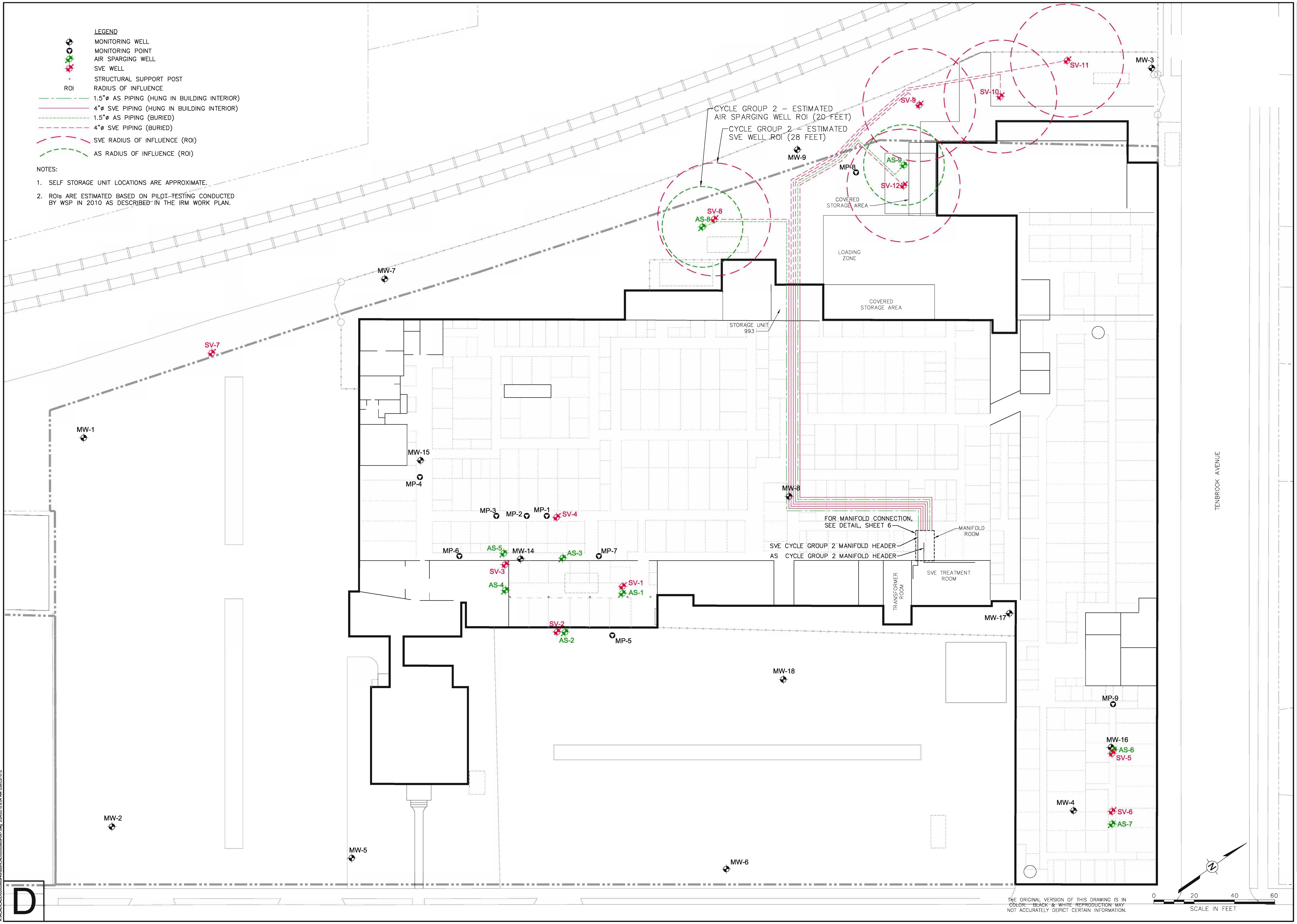
SHEET 4

Drawing Number
00005609-068


LEGEND
MONITORING WELL
MONITORING POINT
AIR SPARGING WELL
SVE WELL
STRUCTURAL SUPPORT POST
ROI RADIUS OF INFLUENCE
1.5"ø AS PIPING (HUNG IN BUILDING INTERIOR)
4"ø SVE PIPING (HUNG IN BUILDING INTERIOR)
1.5"ø AS PIPING (BURIED)
4"ø SVE PIPING (BURIED)
SVE RADIUS OF INFLUENCE (ROI)
AS RADIUS OF INFLUENCE (ROI)
NOTES:
1. SELF STORAGE UNIT LOCATIONS ARE APPROXIMATE.
2. ROIs ARE ESTIMATED BASED ON PILOT TESTING CONDUCTED BY WSP IN 2010 AS DESCRIBED IN THE IRM WORK PLAN.
CYCLE GROUP 2 - ESTIMATED AIR SPARGING WELL ROI (20 FEET)
CYCLE GROUP 2 - ESTIMATED SVE WELL ROI (28 FEET)
MW-1
MW-2
MW-3
MW-4
MW-5
MW-6
MW-7
MW-8
MW-9
MW-14
MW-15
MW-16
MW-17
MW-18
MP-1
MP-2
MP-3
MP-4
MP-5
MP-6
MP-7
MP-8
MP-9
SV-1
SV-2
SV-3
SV-4
SV-5
SV-6
SV-7
SV-8
SV-9
SV-10
SV-11
SV-12
AS-1
AS-2
AS-3
AS-4
AS-5
AS-6
AS-7
AS-8
AS-9
COVERED STORAGE AREA
LOADING ZONE
COVERED STORAGE AREA
STORAGE UNIT 993
FOR MANIFOLD CONNECTION, SEE DETAIL, SHEET 6
MANIFOLD ROOM
SVE CYCLE GROUP 2 MANIFOLD HEADER
AS CYCLE GROUP 2 MANIFOLD HEADER
TRANSFORMER ROOM
SVE TREATMENT ROOM
TENBROOK AVENUE
THE ORIGINAL VERSION OF THIS DRAWING IS IN COLOR. BLACK & WHITE REPRODUCTION MAY NOT ACCURATELY DEPICT CERTAIN INFORMATION.
0 20 40 60
SCALE IN FEET
D

REVISIONS

REV	DESCRIPTION

SEAL

DATE

DRAWN BY	EGC	
CHECKED	DL	1/29/2015
APPROVED	TMM	2/24/2015

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WELL LOCATIONS AND PIPING ROUTES – CYCLE GROUP 2

AS-BUILT DRAWING PACKAGE
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KINGSTON, NEW YORK

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SHEET 5

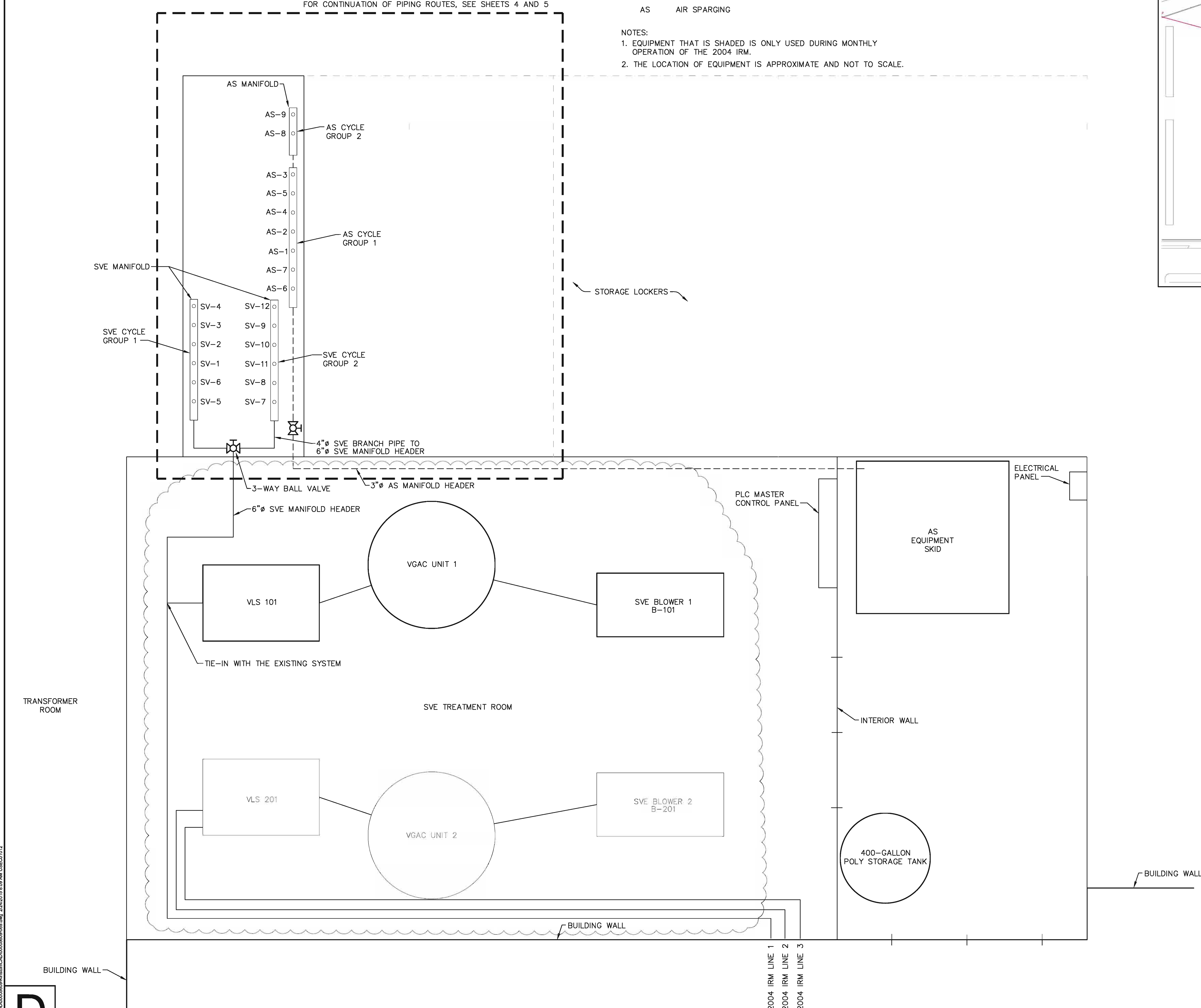
Drawing Number
00005609-067

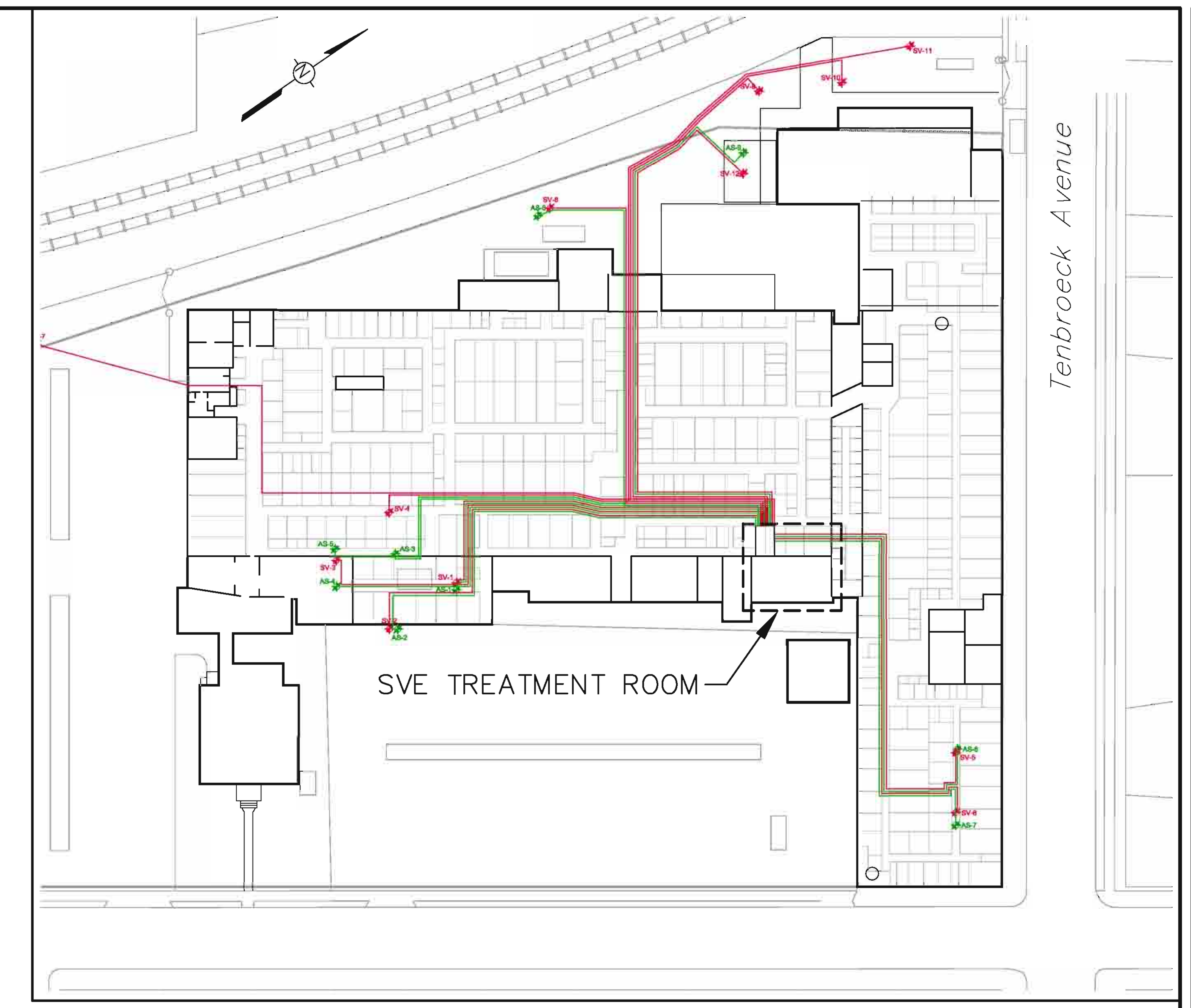
LEGEND

- 1.5" DIAMETER AS PIPING (HUNG IN BUILDING INTERIOR)
- 4" DIAMETER SVE PIPING (HUNG IN BUILDING INTERIOR)
- EXISTING EQUIPMENT
- BALL VALVE
- VLS VAPOR LIQUID SEPARATOR
- VGAC VAPOR PHASE GRANULAR ACTIVATED CARBON
- SVE SOIL VAPOR EXTRACTION
- AS AIR SPARGING

NOTES:
1. EQUIPMENT THAT IS SHADED IS ONLY USED DURING MONTHLY OPERATION OF THE 2004 IRM.
2. THE LOCATION OF EQUIPMENT IS APPROXIMATE AND NOT TO SCALE.

FOR CONTINUATION OF PIPING ROUTES, SEE SHEETS 4 AND 5





LOCATION MAP
SCALE: 1"=60'

REVISIONS

REV	DESCRIPTION

DRAWN BY EGC
CHECKED DL 2/9/2016
APPROVED TMM 2/24/2016

SOIL VAPOR EXTRACTION AND AIR SPARGING EQUIPMENT LAYOUT AND MANIFOLD CONNECTION LAYOUT
AS-BUILT DRAWING PACKAGE
FORMER HUCK MANUFACTURING FACILITY
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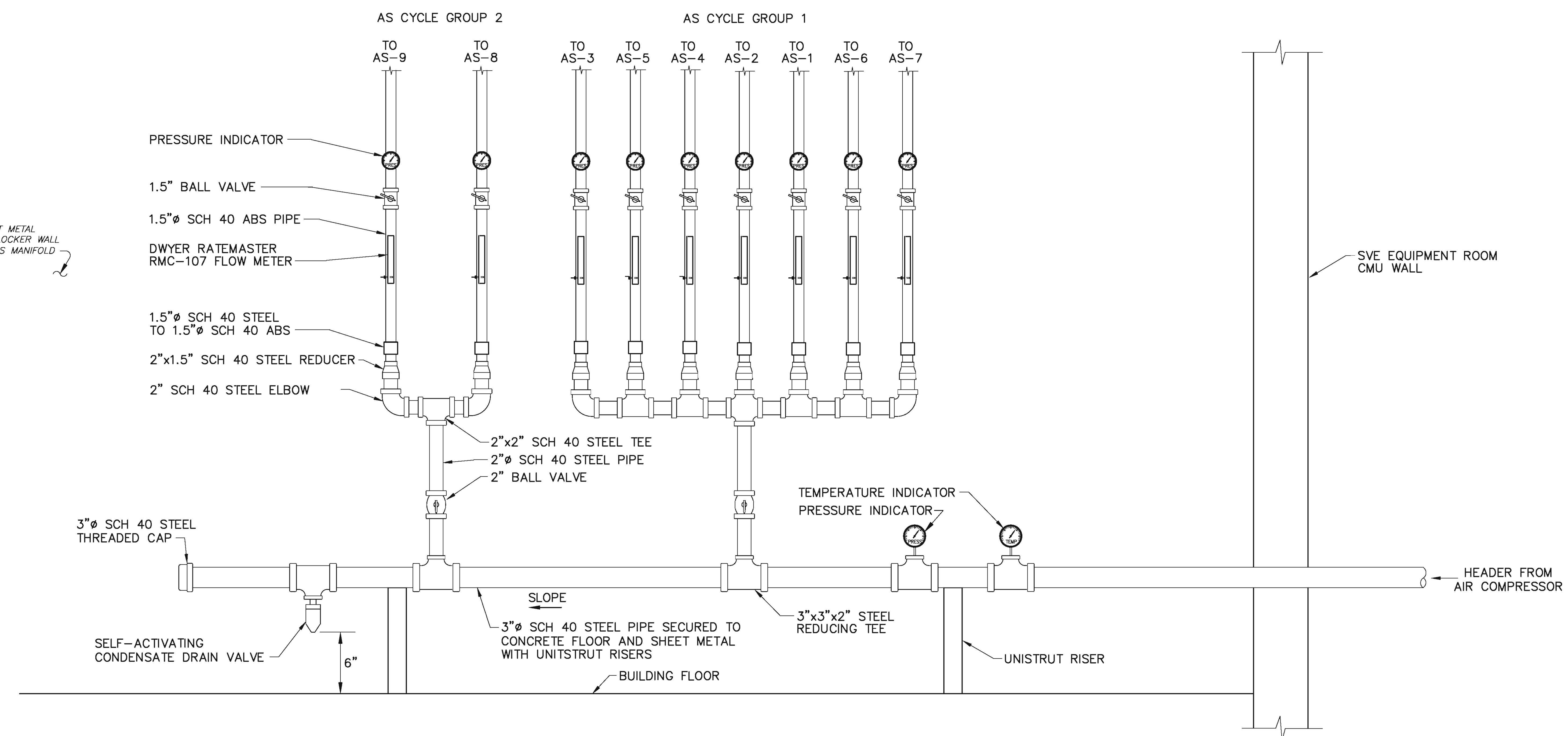
SHEET 6

Drawing Number
00005609-069

D


AS CYCLE GROUP 2
AS CYCLE GROUP 1
TO AS-9
TO AS-8
TO AS-3
TO AS-5
TO AS-4
TO AS-2
TO AS-1
TO AS-6
TO AS-7
PRESSURE INDICATOR
1.5" BALL VALVE
1.5"ø SCH 40 ABS PIPE
DWYER RATEMASTER RMC-107 FLOW METER
1.5"ø SCH 40 STEEL TO 1.5"ø SCH 40 ABS
2"x1.5" SCH 40 STEEL REDUCER
2" SCH 40 STEEL ELBOW
SHEET METAL STORAGE LOCKER WALL BEHIND AS MANIFOLD
2"x2" SCH 40 STEEL TEE
2"ø SCH 40 STEEL PIPE
2" BALL VALVE
3"ø SCH 40 STEEL THREADED CAP
TEMPERATURE INDICATOR
PRESSURE INDICATOR
SVE EQUIPMENT ROOM CMU WALL
HEADER FROM AIR COMPRESSOR
SLOPE
SELF-ACTIVATING CONDENSATE DRAIN VALVE
6"
3"ø SCH 40 STEEL PIPE SECURED TO CONCRETE FLOOR AND SHEET METAL WITH UNISTRUT RISERS
3"x3"x2" STEEL REDUCING TEE
UNISTRUT RISER
BUILDING FLOOR

2/2 AIR SPARGING MANIFOLD DETAIL
NOT TO SCALE

LABELING:

1. PRINTED LABEL ON EACH SVE PIPELINE AT THE SVE MANIFOLD IDENTIFYING THE TERMINATION SVE WELL:

   SOIL VAPOR – SVE WELL ##

2. PRINTED LABEL ON EACH SVE PIPELINE AT EVERY 50 FT INTERVAL IDENTIFYING THE PIPE CONTENTS AND THE TERMINATION SVE WELL AS FOLLOWS:

   SOIL VAPOR – SVE WELL ##
   CONTACT WSP USA CORP AT (315) 655–3900
   FOR EMERGENCIES OR ADDITIONAL INFORMATION.

3. PRINTED LABEL ON EACH AS PIPELINE AT THE AS MANIFOLD IDENTIFYING THE TERMINATION AS WELL:

   PRESSURIZED AIR – AS WELL ##

4. PRINTED LABEL ON EACH AS PILELINE AT EVERY 50 FT INTERVAL IDENTIFYING THE PIPE CONTENTS AND THE TERMINATION AS WELL AS FOLLOWS:

   PRESSURIZED AIR – AS WELL ##
   CONTACT WSP USA CORP AT (315) 655–3900
   FOR EMERGENCIES OR ADDITIONAL INFORMATION.

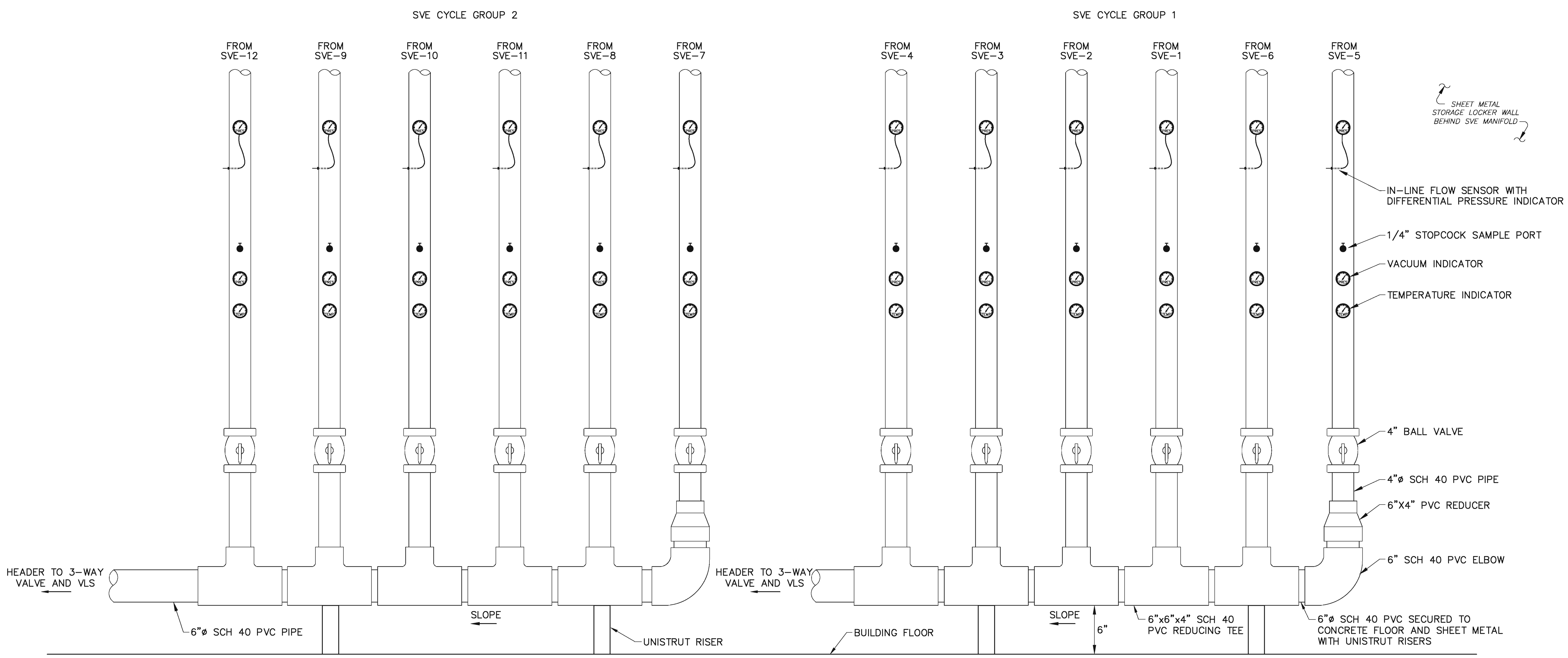
5. PRINTED LABEL TO EACH CIRCUIT PANEL POWERING THE CONTROL PANEL AND EQUIPMENT STATES:

   ENVIRONMENTAL EQUIPMENT – DO NOT TURN OFF
   REMEDIATION SYSTEM IN OPERATION
   CONTACT WSP USA CORP AT (315) 655–3900
   FOR ADDITIONAL INFORMATION
   AND PERMISSION TO POWER DOWN

LEGEND

1/2 – DETAIL NUMBER / SHEET REFERENCED FROM

NOTE:
ALL STEEL, PVC, AND ABS PIPE AND FITTINGS ARE SCHEDULE 40.


SVE CYCLE GROUP 2
SVE CYCLE GROUP 1
FROM SVE-12
FROM SVE-9
FROM SVE-10
FROM SVE-11
FROM SVE-8
FROM SVE-7
FROM SVE-4
FROM SVE-3
FROM SVE-2
FROM SVE-1
FROM SVE-6
FROM SVE-5
SHEET METAL STORAGE LOCKER WALL BEHIND SVE MANIFOLD
IN-LINE FLOW SENSOR WITH DIFFERENTIAL PRESSURE INDICATOR
1/4" STOPCOCK SAMPLE PORT
VACUUM INDICATOR
TEMPERATURE INDICATOR
4" BALL VALVE
4"ø SCH 40 PVC PIPE
6"X4" PVC REDUCER
6" SCH 40 PVC ELBOW
HEADER TO 3-WAY VALVE AND VLS
HEADER TO 3-WAY VALVE AND VLS
SLOPE
SLOPE
6"
6"ø SCH 40 PVC PIPE
UNISTRUT RISER
BUILDING FLOOR
6"x6"x4" SCH 40 PVC REDUCING TEE
6"ø SCH 40 PVC SECURED TO CONCRETE FLOOR AND SHEET METAL WITH UNISTRUT RISERS

1/2 SOIL VAPOR EXTRACTION MANIFOLD DETAIL
NOT TO SCALE

D

REVISIONS
REV | DESCRIPTION

DRAWN BY EGC
CHECKED DL 2/9/2015
APPROVED TMM 2/24/2015

SOIL VAPOR EXTRACTION AND AIR SPARGING MANIFOLD DETAILS
AS-BUILT DRAWING PACKAGE
FORMER HUCK MANUFACTURING FACILITY
KINGSTON, NEW YORK
PREPARED FOR
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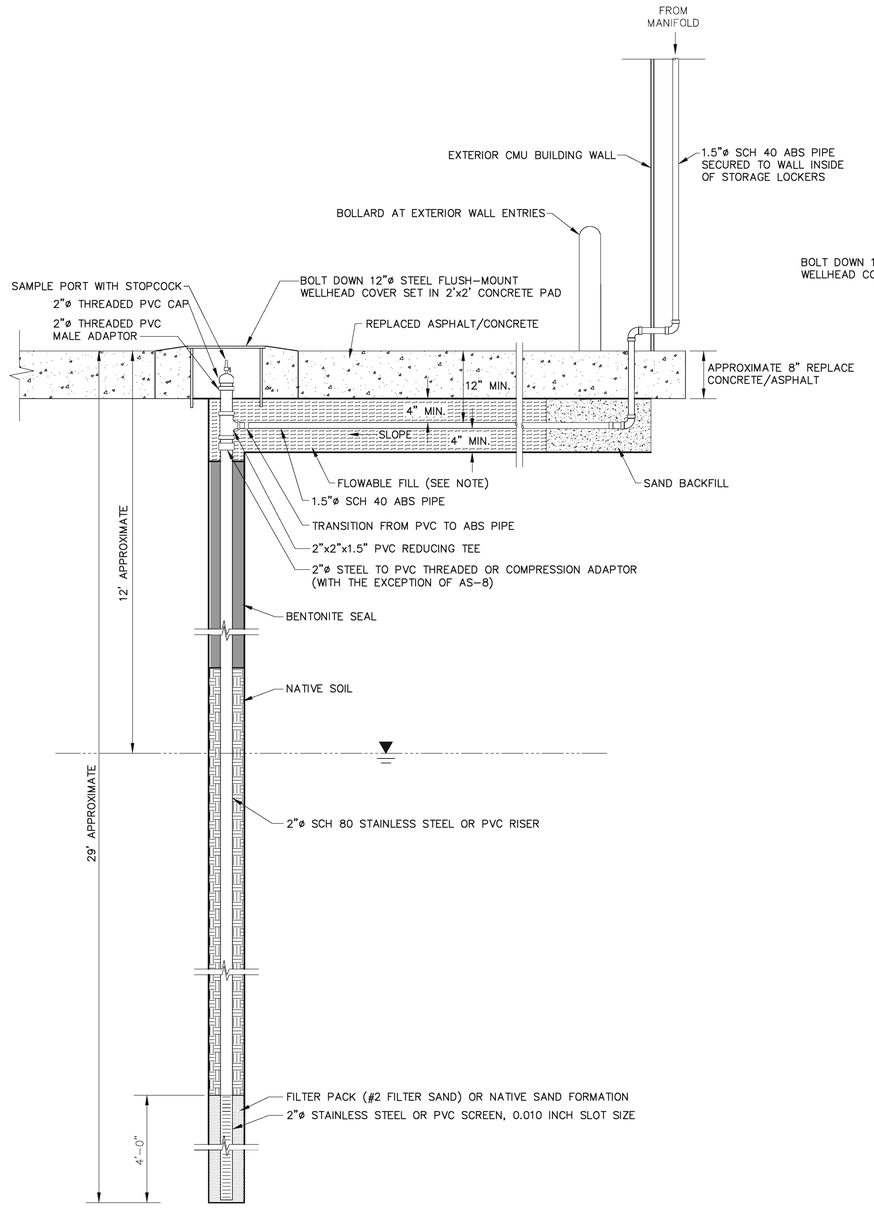
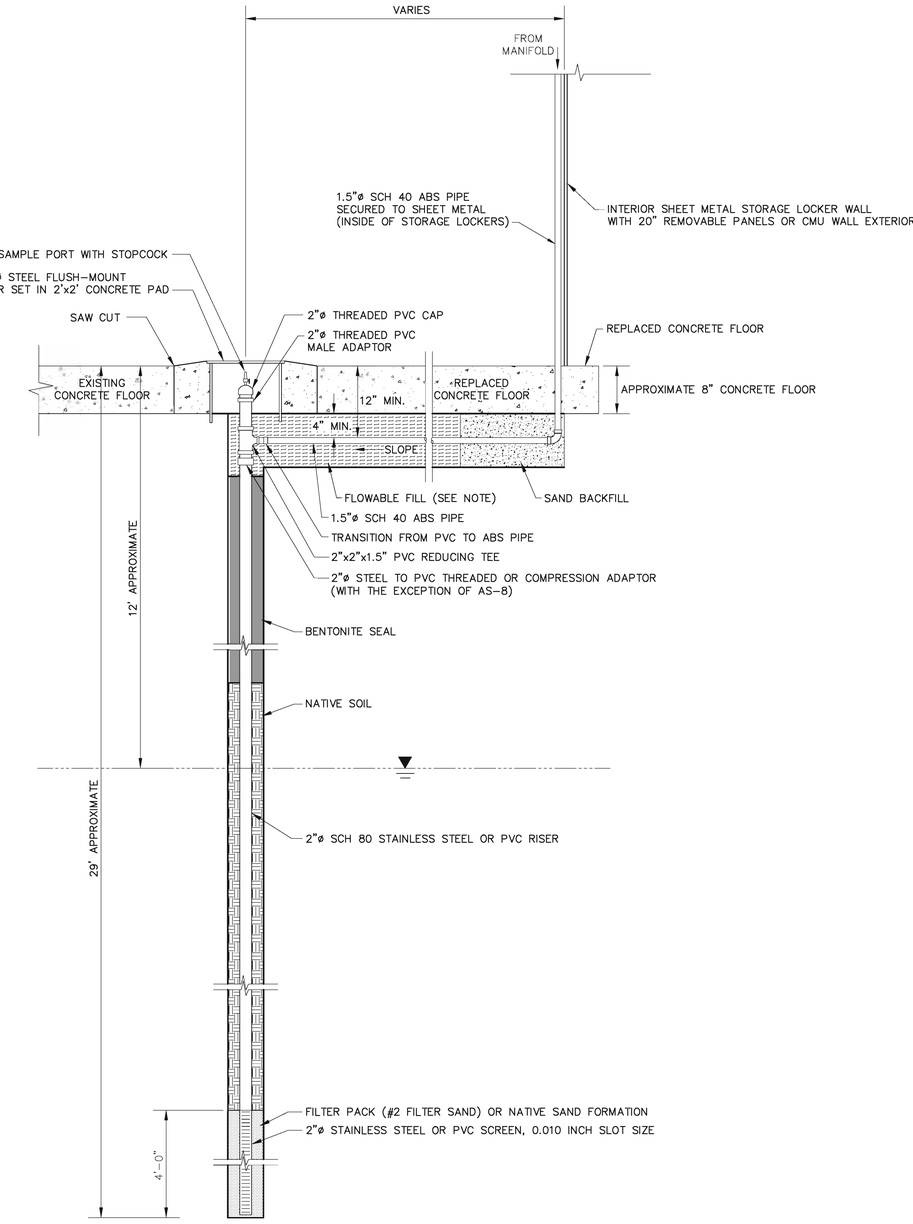
SHEET 7
Drawing Number
00005609–070



1/2 TYPICAL EXTERIOR AIR SPARGING WELL DETAIL (IN ASPHALT/CONCRETE)
SCALE: 1"=1'-0"



2/2 TYPICAL INTERIOR AIR SPARGING WELL DETAIL
SCALE: 1"=1'-0"

LEGEND

1/2 DETAIL NUMBER
SHEET REFERENCED FROM

NOTE:
FLOWABLE FILL INSTALLED IN CONVEYANCE TRENCH WITHIN 28 FEET OF EACH SVE WELL. FLOWABLE FILL INSTALLED IN CONVEYANCE TRENCH WITHIN 20 FEET OF EACH AS WELL.

AS Wells AS-1 through AS-9 Well Construction

Well	Interior/Exterior Location	Completion Date	Construction	TD (ft bgs) (b)	Installation Method	Borehole Diameter (inches)	Screen Length (feet)	Annular Seal	Annular Seal Interval (ft bgs)	Filter pack	Filter Pack Interval (ft bgs)	Note
AS-1	Interior	10/7/2013	Stainless steel	29	DD	2.25	4	Granular Bentonite "dry grout"	1-20	Native sand formation	20-29	(d)
AS-2	Exterior	10/1/2013	Stainless steel	29	HSA	8.25	4	hydrated bentonite chips & bentonite-cement grout	20.8-24	#2 Filter Sand	24-29	
AS-3	Interior	10/4/2013	Stainless steel	28	DD	2.25	4	Granular Bentonite "dry grout"	1-8	Native sand formation	8-28	(d)
AS-4	Interior	10/8/2013	Stainless steel	28.5	DD	2.25	4	Granular Bentonite "dry grout"	1-8	Native sand formation	8-28.5	(d)
AS-5	Interior	10/3/2013	Stainless steel	28	DD	2.25	4	Granular Bentonite "dry grout"	1-8	Native sand formation	8-28	(d)
AS-6	Interior	10/9/2013	Stainless steel	28.5	DD	2.25	4	Granular Bentonite "dry grout"	1-8	Native sand formation	8-28.5	(d)
AS-7	Interior	10/8/2013	Stainless steel	28.5	DD	2.25	4	Granular Bentonite "dry grout"	1-8	Native sand formation	8-28.5	(d)
AS-8	Exterior	10/1/2013	PVC	29	HSA	8.25	4	hydrated bentonite chips & bentonite-cement grout	21-24	#2 Filter Sand	24-29	
AS-9	Exterior	10/4/2013	Stainless steel	28.5	HSA	8.25	4	hydrated bentonite chips & bentonite-cement grout	20-23.5	#2 Filter Sand	23.5-28.5	

a/ ft bgs = feet below ground surface; TD = total depth; PVC = polyvinyl chloride; DD = direct drive; HSA = Hollow Stem Augers
b/ Total depths omit 0.5-foot-long drive point at bottom of stainless-steel wells.
c/ Annular seal depths in air sparge wells installed using HSA are for bentonite seal only. Grout seals extend to surface.
d/ Depth intervals of annular seals and natural filter material are approximate in direct-drive wells due to the nature of installation.

REVISIONS

REV	DESCRIPTION	Appr.	Date
1	Revised:	Appr.:	Date:
2	Revised:	Appr.:	Date:
3	Revised:	Appr.:	Date:

SEAL

DATE

DRAWN BY	ECC	1/9/2015
CHECKED	DL	1/14/2015
APPROVED	TMM	1/14/2015

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AIR SPARGING WELLHEAD COMPLETION DETAILS

AS-BUILT DRAWING PACKAGE
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SHEET 8

Drawing Number
00005609-071

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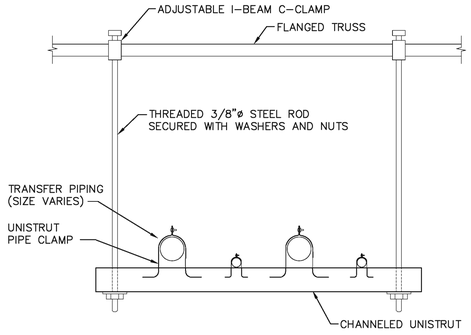


TYPICAL PIPE HANGER DETAIL
NOT TO SCALE

LEGEND

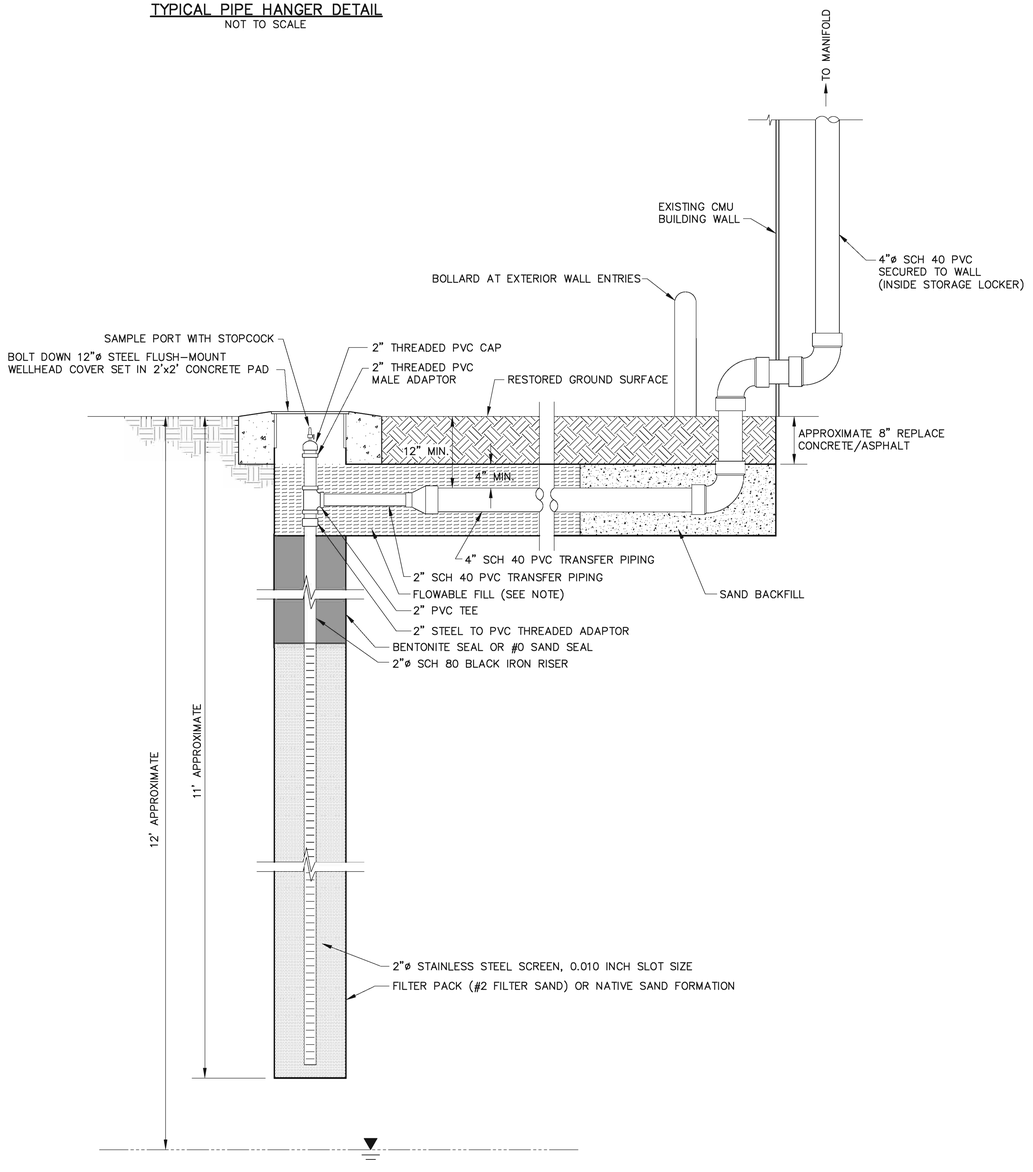
1/2 DETAIL NUMBER
SHEET REFERENCED FROM

NOTE:
FLOWABLE FILL INSTALLED IN CONVEYANCE TRENCH WITHIN 28 FEET OF EACH SVE WELL. FLOWABLE FILL INSTALLED IN CONVEYANCE TRENCH WITHIN 20 FEET OF EACH AS WELL.

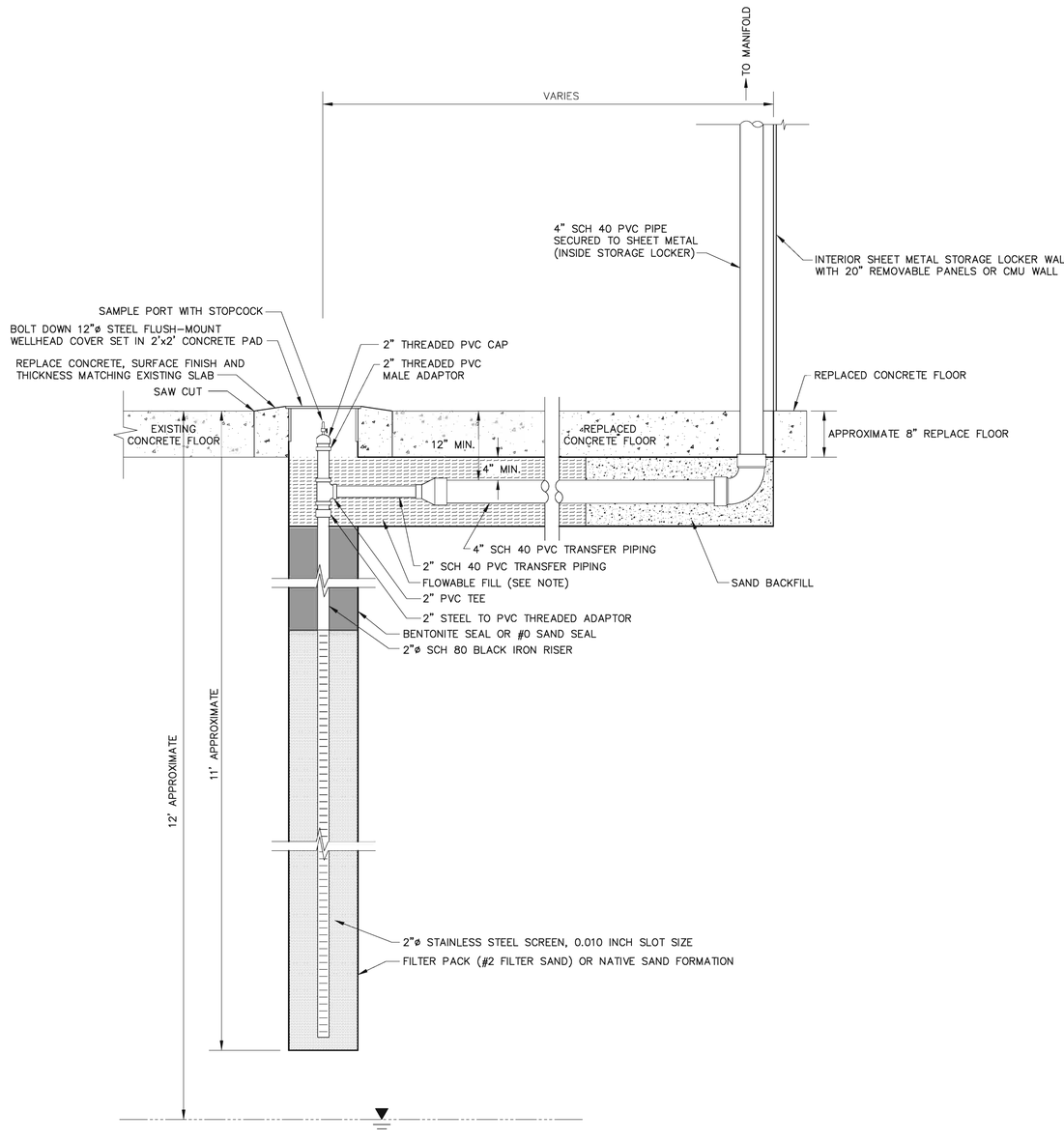
SVE Wells SV-1 through SV-12 Well Construction

Well	Interior/Exterior Location	Completion Date	Construction	TD (ft bgs) (b)	Installation Method	Borehole Diameter (inches)	Screen Length (feet)	Annular Seal	Annular Seal Interval (ft bgs)	Filter pack	Filter Pack Interval (ft bgs)	Note
SV-1	Interior	10/3/2013	Stainless steel	11	DD	2.25	8	#0 Sand Seal	1-2	Native sand formation	2-11	(d)
SV-2	Exterior	10/1/2013	Stainless steel	11	HSA	8.25	8	hydrated bentonite chips	1.5-2.5	#2 Filter Sand	2.5-11	
SV-3	Interior	10/8/2013	Stainless steel	11	DD	2.25	8	#0 Sand	1-2	Native sand formation	2-11	(d)
SV-5	Interior	10/1/2013	Stainless steel	12	DD	2.25	8	#0 Sand	1-2	Native sand formation	2-11	(d)
SV-6	Interior	10/2/2013	Stainless steel	11	DD	2.25	8	#0 Sand	1-2	Native sand formation	2-11	(d)
SV-7	Exterior	10/2/2013	Stainless steel	11	HSA	8.25	8	hydrated bentonite chips	1.5-2.5	#2 Filter Sand	2.5-11	
SV-8	Exterior	10/2/2013	Stainless steel	11	HSA	8.25	8	hydrated bentonite chips	1.5-2.5	#2 Filter Sand	2.5-11	
SV-9	Exterior	10/3/2013	Stainless steel	11	HSA	8.25	8	hydrated bentonite chips	1.5-2.5	#2 Filter Sand	2.5-11	
SV-10	Exterior	10/3/2013	Stainless steel	11	HSA	8.25	8	hydrated bentonite chips	1.5-2.5	#2 Filter Sand	2.5-11	
SV-11	Exterior	10/2/2013	Stainless steel	11	HSA	8.25	8	hydrated bentonite chips	1.5-2.5	#2 Filter Sand	2.5-11	
SV-12	Exterior	10/4/2013	Stainless steel	11	HSA	8.25	8	hydrated bentonite chips	1.5-2.5	#2 Filter Sand	2.5-11	

a/ ft bgs = feet below ground surface; TD = total depth; PVC = polyvinyl chloride; DD = direct drive; HSA = Hollow Stem Augers
b/ Total depths omit 0.5-foot-long drive point at bottom of stainless-steel wells.
c/ Annular seal depths in air sparge wells installed using HSA are for bentonite seal only. Grout seals extend to surface.
d/ Depth intervals of annular seals and natural filter material are approximate in direct-drive wells due to the nature of installation.



1/2 TYPICAL EXTERIOR SOIL VAPOR EXTRACTION WELL COMPLETION DETAIL
SCALE: 1"=1'-0"



2/2 TYPICAL INTERIOR SOIL VAPOR EXTRACTION WELL COMPLETION DETAIL
SCALE: 1"=1'-0"

D

R:\ACAD\CAD\00005609\Kristen\CAD\00005609-072.dwg 2/24/2016 11:08 AM USEO1012

REVISIONS

REV	DESCRIPTION	Appr./ Check/
1	Revised:	Appr./ Check/
2	Revised:	Appr./ Check/
3	Revised:	Appr./ Check/

SEAL

DATE

DRAWN BY	EGC	1/19/2016
CHECKED	DL	1/24/2016
APPROVED	TMM	

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SOIL VAPOR EXTRACTION WELLHEAD COMPLETION AND PIPE HANGER DETAILS

AS-BUILT DRAWING PACKAGE
FORMER HUCK MANUFACTURING FACILITY
KINGSTON, NEW YORK
PREPARED FOR
FEDERAL-MOGUL CORPORATION

WSP USA Corp.
11190 Sunrise Valley Drive, Suite 300
Reston, Virginia 20191
(703) 709-6500
www.wspgroup.com/usa

SHEET 9

Drawing Number
00005609-072

Appendix B – Construction Photographic Log

PHOTOGRAPHIC LOG		
Federal-Mogul Corporation	**Former Huck Manufacturing Facility – Kingston, New York**	**E0005609.000**

Photo No.	**Date**
1	November 04, 2013

Cycle Group 2 Exterior Trench Excavation

Photo No.	**Date**
2	November 04, 2013

Cycle Group 2 Excavated Soil Stockpile

PHOTOGRAPHIC LOG		
Federal-Mogul Corporation	**Former Huck Manufacturing Facility – Kingston, New York**	**E0005609.000**

Photo No.	**Date**
3	November 04, 2013

CAMP Monitoring Station

Photo No.	**Date**
4	November 05, 2013

Cycle Group 2 Trench Compaction and Grading

PHOTOGRAPHIC LOG		
Federal-Mogul Corporation	**Former Huck Manufacturing Facility – Kingston, New York**	**E0005609.000**

Photo No.	**Date**
5	November 05, 2013

Cycle Group 2 Transfer Pipe Installation

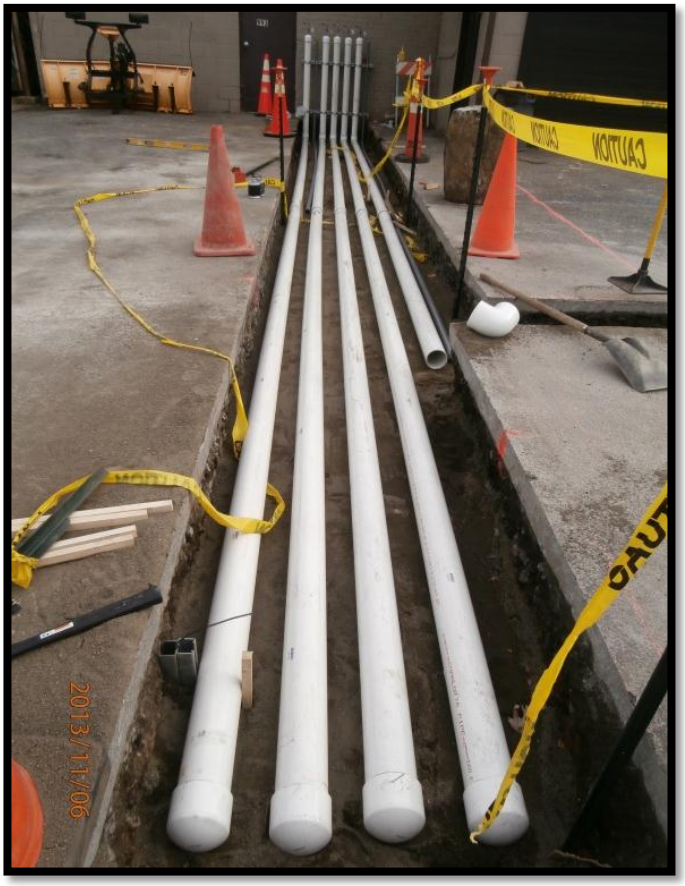
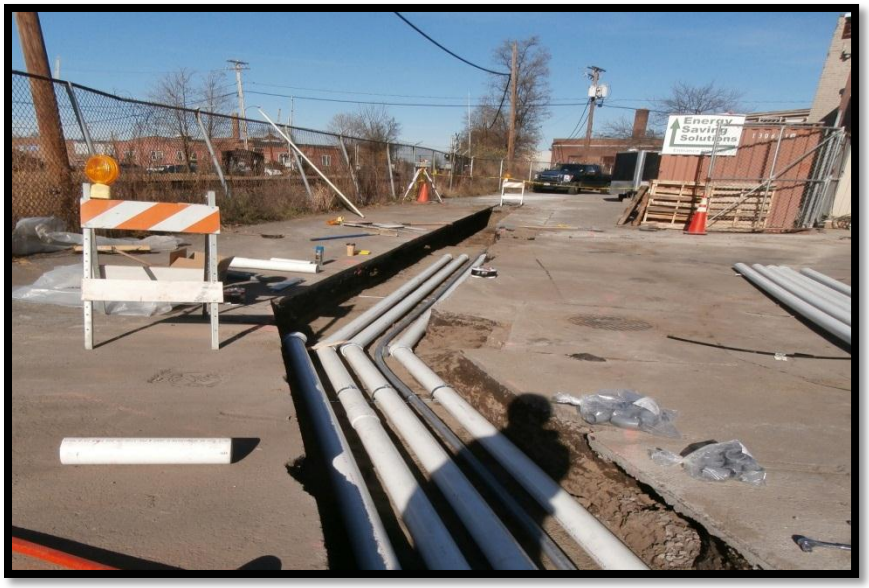


Photo No.	**Date**
6	November 05-10, 2013

Cycle Group 2 Transfer Pipe Installation



PHOTOGRAPHIC LOG		
Federal-Mogul Corporation	**Former Huck Manufacturing Facility – Kingston, New York**	**E0005609.000**

Photo No.	**Date**
7	November 05-10, 2013

Cycle Group 2 Transfer Piping Raised in Preparation for Flowable Fill Installation

Photo No.	**Date**
8	November 11, 2013

Flowable Fill Installation in Trench for Cycle Group 2

PHOTOGRAPHIC LOG		
Federal-Mogul Corporation	**Former Huck Manufacturing Facility – Kingston, New York**	**E0005609.000**

Photo No.	**Date**
9	November 16, 2013

Cycle Group 2 Trench Gravel Base Installation

Photo No.	**Date**
10	November 22, 2013

Cycle Group 2 Trench Concrete Installation

PHOTOGRAPHIC LOG		
Federal-Mogul Corporation	**Former Huck Manufacturing Facility – Kingston, New York**	**E0005609.000**

Photo No.	**Date**
11	November 22, 2013

Cycle Group 1 Transfer Piping for SV-7

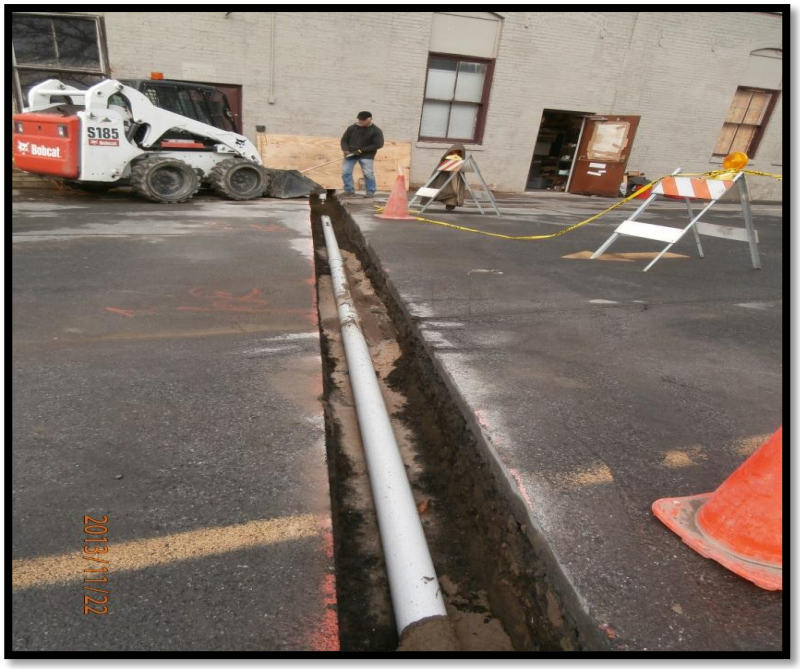


Photo No.	**Date**
12	November 22-25, 2013

Cycle Group 1 Interior Trench Excavation for AS-1 and SV-1

PHOTOGRAPHIC LOG		
Federal-Mogul Corporation	**Former Huck Manufacturing Facility – Kingston, New York**	**E0005609.000**

Photo No.	**Date**
13	November 22-25, 2013

Cycle Group 1 Trench Excavation for AS-7, SV-6, SV-5, and AS-6

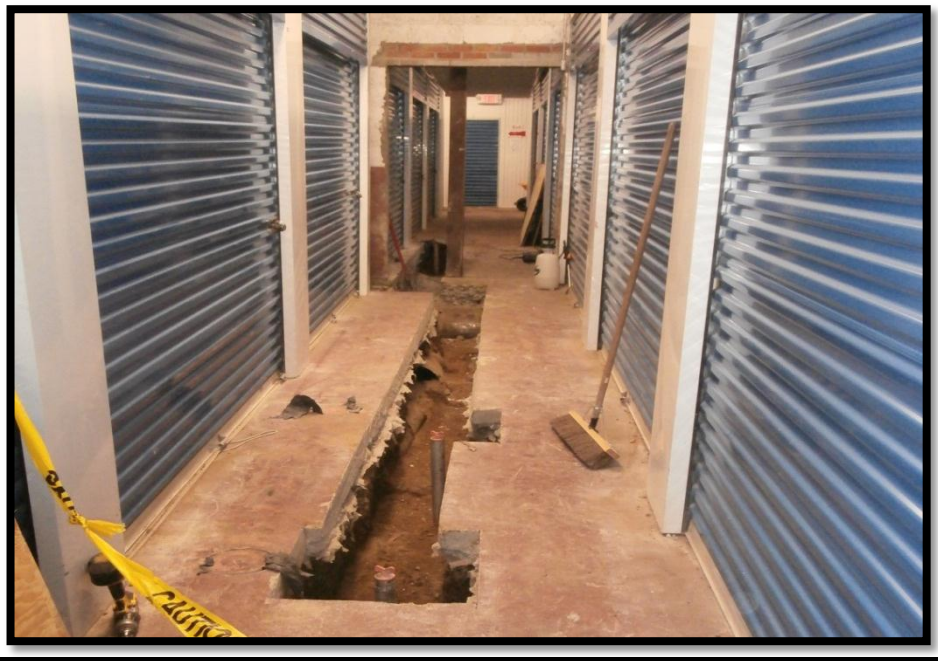


Photo No.	**Date**
14	November 22-25, 2013

SV-4 Construction (Cycle Group 1)

PHOTOGRAPHIC LOG		
Federal-Mogul Corporation	**Former Huck Manufacturing Facility – Kingston, New York**	**E0005609.000**

Photo No.	**Date**
15	November 22-25, 2013

AS-3 Construction (Cycle Group 1)

Photo No.	**Date**
16	December 10, 2013

Flowable Fill Installation at AS-5 (Cycle Group 1)

PHOTOGRAPHIC LOG		
Federal-Mogul Corporation	**Former Huck Manufacturing Facility – Kingston, New York**	**E0005609.000**

Photo No.	**Date**
17	December 16, 2013

Concrete Installation at Cycle Group 1 Trench for AS-7, SV-6, SV-5 and AS-6

Photo No.	**Date**
18	December 16-20, 2013

Cycle Group 1 and Cycle Group 2 Pipe Header

PHOTOGRAPHIC LOG		
Federal-Mogul Corporation	**Former Huck Manufacturing Facility – Kingston, New York**	**E0005609.000**

Photo No.	**Date**
19	December 16-20, 2013

Completed AS & SVE Manifolds

Photo No.	**Date**
20	December 16-20, 2013

Cycle Group 2 Exterior Roof Pipe Support

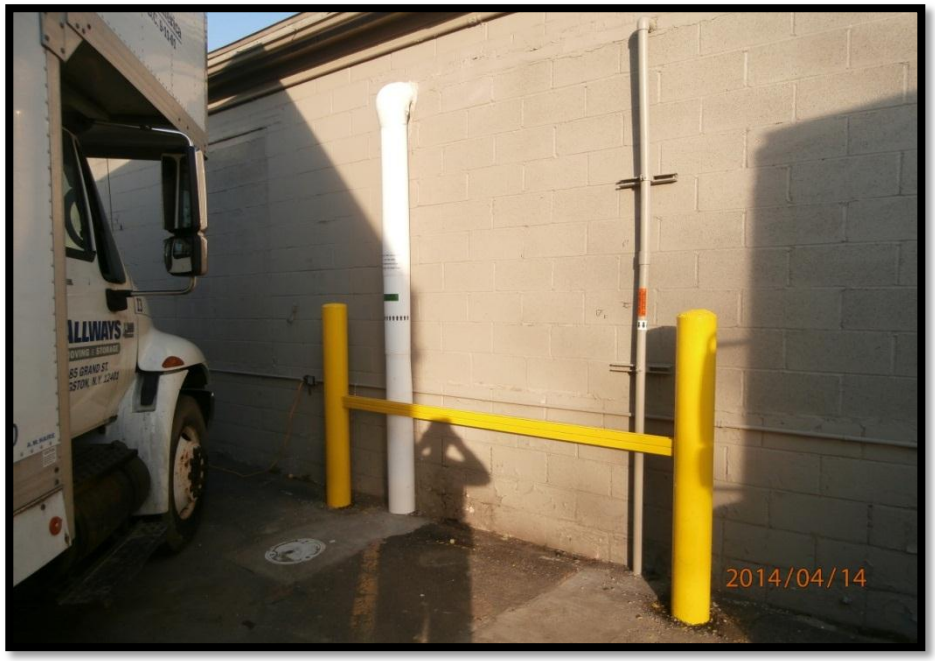
PHOTOGRAPHIC LOG		
Federal-Mogul Corporation	**Former Huck Manufacturing Facility – Kingston, New York**	**E0005609.000**

Photo No.	**Date**
21	April 10, 2014

Air Compressor Skid at SVE Treatment Room

Photo No.	**Date**
22	April 14, 2014

Bollards for AS-2 and SV-2 Piping (Cycle Group 1)



PHOTOGRAPHIC LOG		
Federal-Mogul Corporation	**Former Huck Manufacturing Facility – Kingston, New York**	**E0005609.000**

Photo No.	**Date**
23	April 15, 2014

Excavated Soil Stockpiles

Photo No.	**Date**
24	April 15, 2014

Loading Excavated Soil For Offsite Disposal

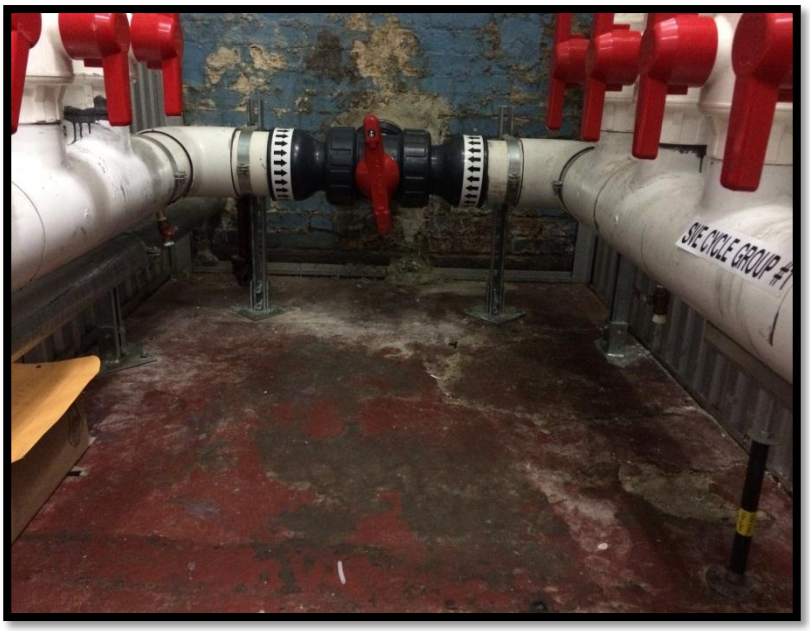
PHOTOGRAPHIC LOG		
Federal-Mogul Corporation	**Former Huck Manufacturing Facility – Kingston, New York**	**E0005609.000**

Photo No.	**Date**
25	April 15, 2014

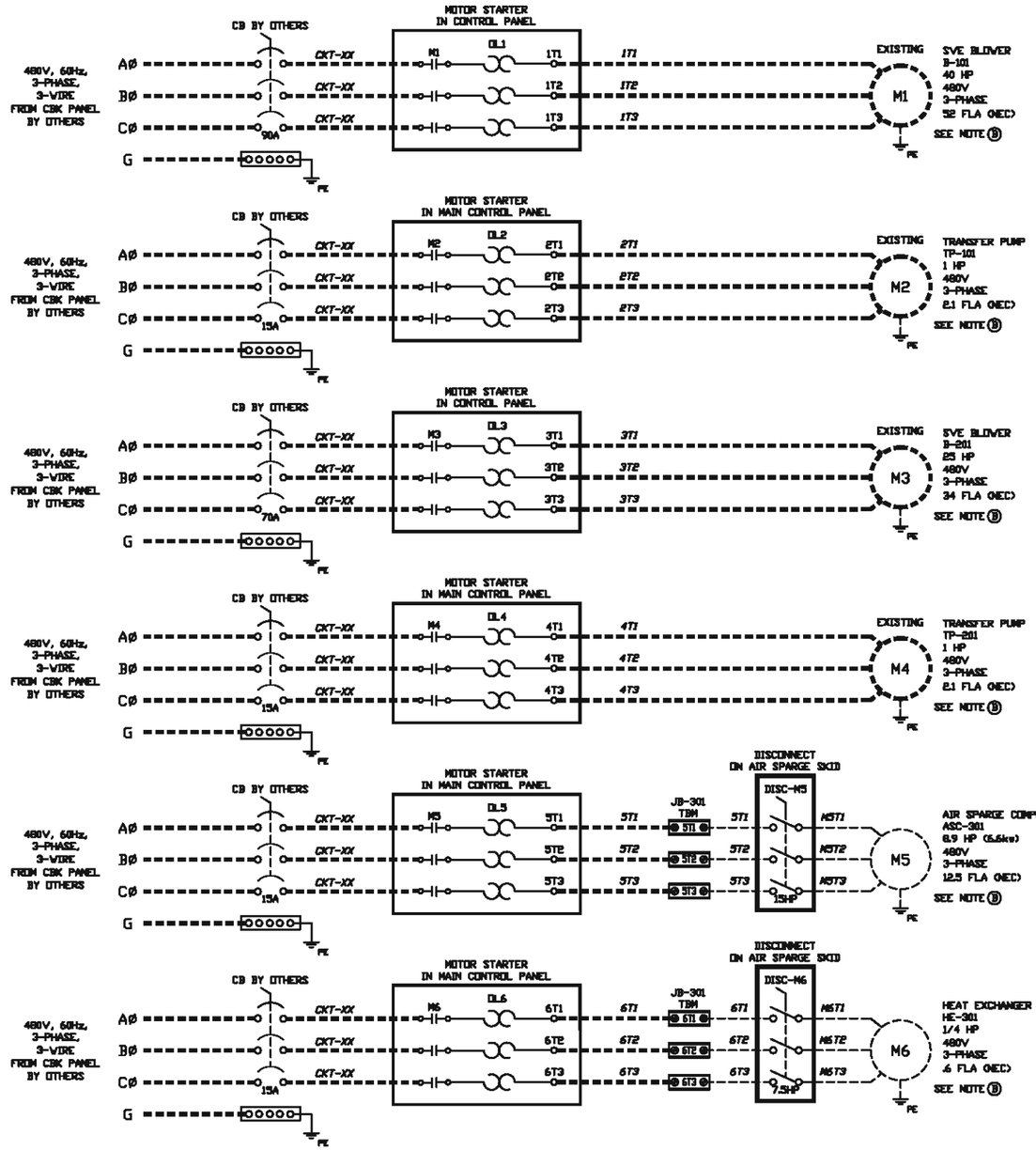
SVE Header Connection at Inlet Filter to SVE Blower B-101

Photo No.	**Date**
26	April 15, 2014

SVE Common Header Three-Way Valve



Appendix C – Control Panel and Air Sparge Compressor Schematics



COMPONENT	QTY	TYPE	MODEL #	DESCRIPTION
Control Enclosure (MCP)	1	Hammond	EN4SD423612GY	NEMA 12, Single Door, 42"H x 36"W x 12"D
Control Enclosure (MCP)	1	Hammond	EP4236	42"H x 36"W Sub Panel
Filter Fan	1	Phannenberg	116 2215 4055	PF 22000 Type 12 Exhaust Filter Fan
Exhaust Filter	1	Phannenberg	117 2000 4055	PFA 20000 Type 12 Intake Air Filter
Thermostat (TH1)	1	Phannenberg	17121000010	FLZ 530 32-140 F Thermostat
Ground Bar	1	Sq D Co	PK12GTA	Ground Bar, 12 Points
Contactor (M1)	1	Allen Bradley	100-C60D10	Contactor for 40HP at 480V, 3-Phase
OL Block (OL1)	1	Allen Bradley	193-EEGE	18A to 90A OL Block
Contactor (M2,4,5,6)	4	Allen Bradley	100-C09D10	Contactor for 5HP at 480V, 3-Phase
OL Block (OL2,4)	2	Allen Bradley	193-ED1CB	1.0A to 5.0A OL Block
OL Block (OL5)	1	Allen Bradley	193-ED1DB	3.2A to 16.0A OL Block
OL Block (OL6)	1	Allen Bradley	193-ED1BB	.2A to 1.0A OL Block
Contactor (M3)	1	Allen Bradley	100-C37D10	Contactor for 25HP at 480V, 3-Phase
OL Block (OL3)	1	Allen Bradley	193-EEFD	9A to 45A OL Block
Selector Switch (SS1)	1	Allen Bradley	800FM-SM22	Selector Switch Operator, 2-Pos-Maintained, Black
Selector Switch (SS1)	1	Allen Bradley	800F-ALM	Latch
Selector Switch (SS1)	2	Allen Bradley	800F-X10	Normally Open Contact
Pilot Light (PL1)	1	Allen Bradley	800FP-P7	Pilot light, LED, White
Pilot Light (PL1)	1	Allen Bradley	800F-PN5W	Pilot light, LED, White, Latch & Module
Control Relay (CR1)	2	Idec	RU4S-A110	Control Relay, 120V, 4-Pole
Control Relay (CR1)	2	Idec	SY4S-05	Control Relay Socket, 4-Pole
UPS	1	Sola Hevi-Duty	SDU500	UPS 500 VA
24VDC Power Supply (PS)	1	Phoenix Contact	2902992	24VDC, 2.5A Power Supply
Programmable Controller	1	Allen Bradley	1766-L32AWA	PLC BASE UNIT, MicroLogix 1400
Programmable Controller	1	Allen Bradley	1762-IA8	120Vac Input Module, 8 Point
Programmable Controller	2	Allen Bradley	1762-IF4	Analog Input Module, 4 Point
Operator Interface	1	C-More	EA7-T8CL	Operator Interface Terminal
Operator Interface Cable	1	C-More	EA-MLOGIX-CBL	Operator Interface Terminal Cable
Cellular Modem	1	Get Wireless	1101525	Sierra GX400 Cellular Modem
Antenna	1	Get Wireless	AP-CW-Q-S22-RP2-BL	Antenna for Cellular Modem
Cat 5 Patch Cable	1	Monoprice	9805	Ethernet Cable, Black, 5 Ft Long
Componets Located on Air Sparge Skid				
Enclosure (JB-301)	1	Hammond	1414N4PHL6	NEMA 4, Single Door, 12"H x 12"W x 6"D
Disconnect (M-5)	1	Elektra	ED2-3BY-4X-RG	Disconnect, 480Vac, 3P, 15HP, Type 4X
Disconnect (M-6)	1	Elektra	ED05-3BY-4X-RG	Disconnect, 480Vac, 3P, 7.5HP, Type 4X

NOTE (A): REMOVE JUMPER AND CONNECT MOTOR THERMISTER IF PRESENT.

NOTE (B): BASED ON NFPA 70 NEC 2011 SET OVERLOAD RELAYS ACCORDING TO ACTUAL FLA AT INSTALLATION.

NOTE (C): UL LISTED 508A, TYPE 12, CONTROL PANEL.

NOTE (D): ——— WIRING BY BISCO WITHIN THIS PANEL.

NOTE (E): - - - - - - - - - WIRING BY BISCO REMOTE TO THIS PANEL.

NOTE (F): ▪ ▪ ▪ ▪ ▪ ▪ ▪ ▪ REMOTE / FIELD WIRING BY OTHERS.

REV.	DESCRIPTION	DATE	APPR.
	REVISIONS		

DRAWN BY LPC DATE 10-11-13

CHK BY DATE

APPR BY DATE

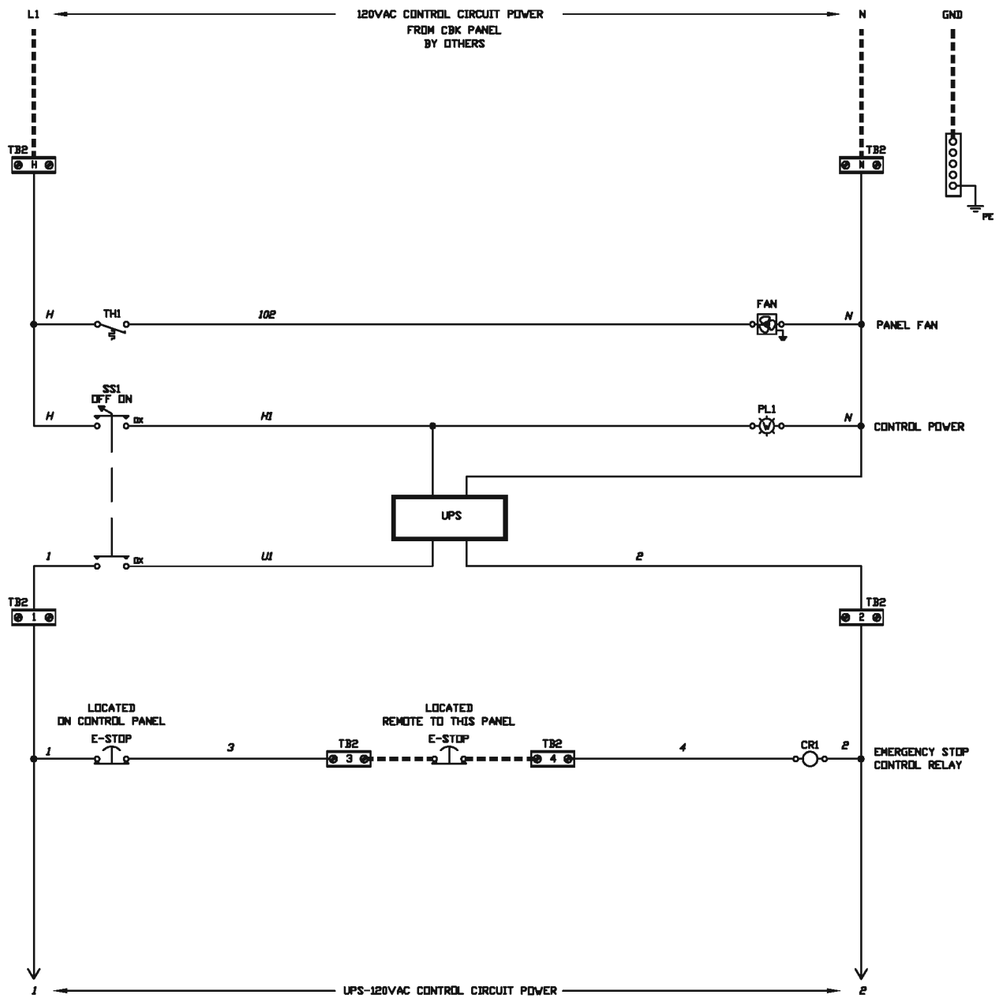
BISCO Environmental
Soil & Groundwater Remediation Equipment
Taunton, Massachusetts 02780

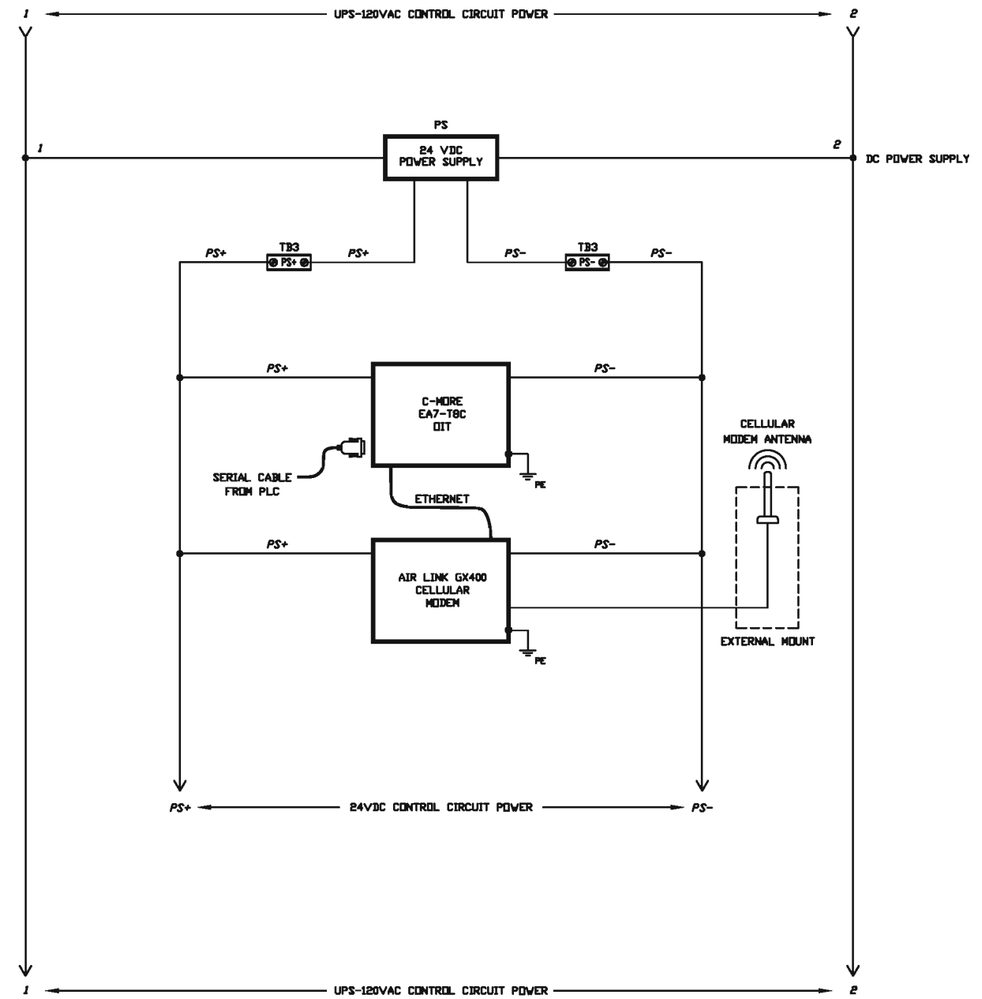
TITLE: CONTROL PANEL

WSP
FORMER HUCK MANUFACTURING, KINGSTON, NY

JOB NO. 13050

SCALE	SIZE	DWG NO.	SHEET	REV
N/A	B	13050RSS	1 OF 8	PRELIM





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REV.	DESCRIPTION	DATE	APPR.
REVISIONS			

DRAWN BY	LPC
DATE	10-11-13
CHK BY	
DATE	
APPR BY	
DATE	

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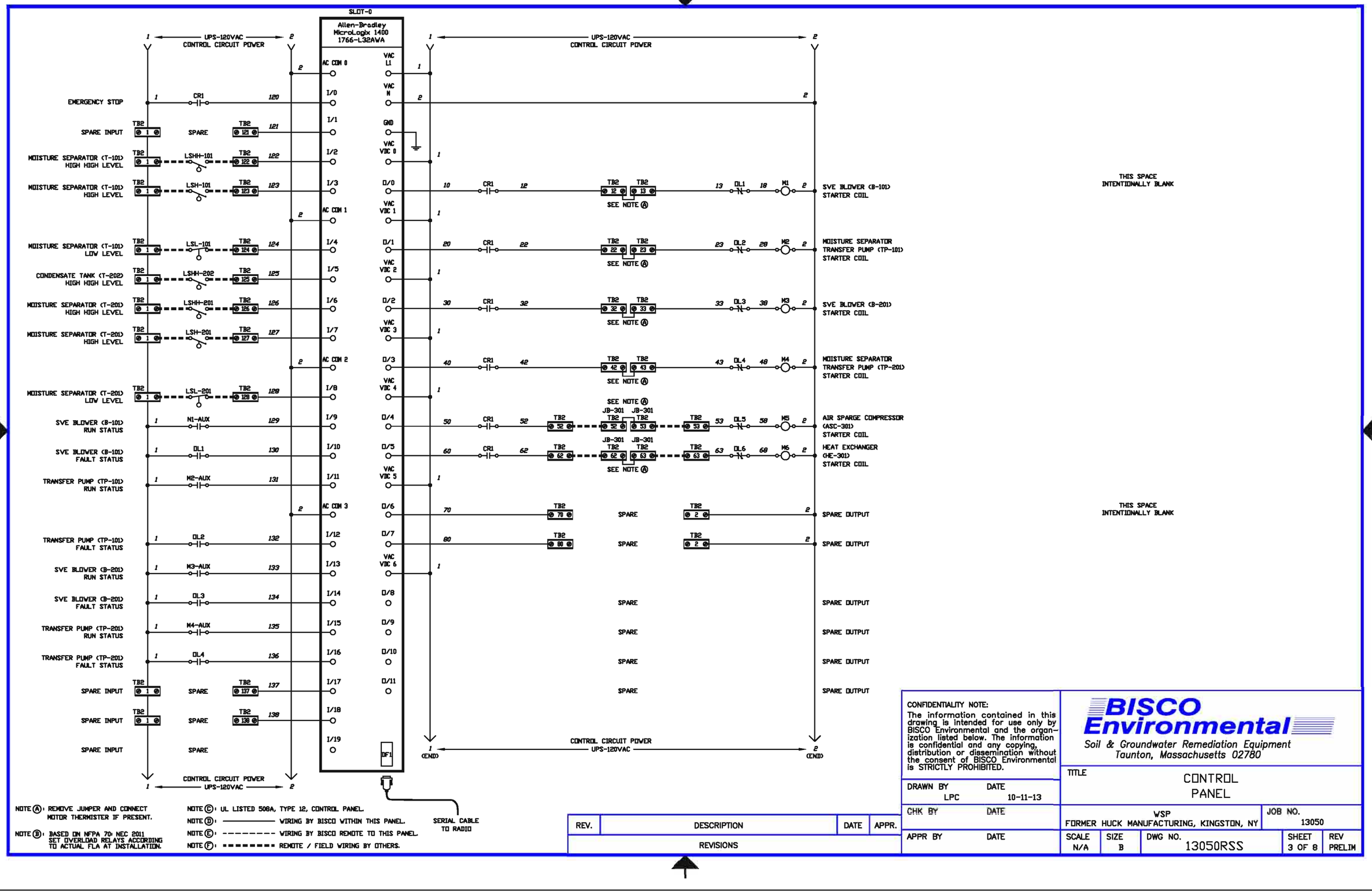
Soil & Groundwater Remediation Equipment
Taunton, Massachusetts 02780

TITLE: CONTROL PANEL

WSP
FORMER HUCK MANUFACTURING, KINGSTON, NY

JOB NO.	SCALE	SIZE	DWG NO.	SHEET	REV
13050	N/A	B	13050RSS	2 OF 8	PRELIM


SLOT-0
Allen-Bradley
MicroLogix 1400
1766-L32AWA
UPS-120VAC
CONTROL CIRCUIT POWER
AC COM 0
AC COM 1
AC COM 2
AC COM 3
VAC L1
VAC N
GND
VAC VDC 0
VAC VDC 1
VAC VDC 2
VAC VDC 3
VAC VDC 4
VAC VDC 5
VAC VDC 6
I/0
I/1
I/2
I/3
I/4
I/5
I/6
I/7
I/8
I/9
I/10
I/11
I/12
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O/0
O/1
O/2
O/3
O/4
O/5
O/6
O/7
O/8
O/9
O/10
O/11
DF1
EMERGENCY STOP
SPARE INPUT
MOISTURE SEPARATOR (T-101) HIGH HIGH LEVEL
MOISTURE SEPARATOR (T-101) HIGH LEVEL
MOISTURE SEPARATOR (T-101) LOW LEVEL
CONDENSATE TANK (T-202) HIGH HIGH LEVEL
MOISTURE SEPARATOR (T-201) HIGH HIGH LEVEL
MOISTURE SEPARATOR (T-201) HIGH LEVEL
MOISTURE SEPARATOR (T-201) LOW LEVEL
SVE BLOWER (B-101) RUN STATUS
SVE BLOWER (B-101) FAULT STATUS
TRANSFER PUMP (TP-101) RUN STATUS
TRANSFER PUMP (TP-101) FAULT STATUS
SVE BLOWER (B-201) RUN STATUS
SVE BLOWER (B-201) FAULT STATUS
TRANSFER PUMP (TP-201) RUN STATUS
TRANSFER PUMP (TP-201) FAULT STATUS
SPARE INPUT
SPARE INPUT
SPARE INPUT
CR1
LSHH-101
LSH-101
LSL-101
LSHH-202
LSHH-201
LSH-201
LSL-201
M1-AUX
DL1
M2-AUX
M3-AUX
DL3
M4-AUX
DL4
SPARE
TB2
SEE NOTE A
JB-301
DL2
DL5
DL6
M1
M2
M3
M4
M5
M6
SVE BLOWER (B-101) STARTER COIL
MOISTURE SEPARATOR TRANSFER PUMP (TP-101) STARTER COIL
SVE BLOWER (B-201) STARTER COIL
MOISTURE SEPARATOR TRANSFER PUMP (TP-201) STARTER COIL
AIR SPARGE COMPRESSOR (ASC-301) STARTER COIL
HEAT EXCHANGER (HE-301) STARTER COIL
SPARE OUTPUT
SPARE
CONTROL CIRCUIT POWER
UPS-120VAC
(END)
SERIAL CABLE TO RADIO
THIS SPACE INTENTIONALLY BLANK
NOTE (A): REMOVE JUMPER AND CONNECT MOTOR THERMISTER IF PRESENT.
NOTE (B): BASED ON NFPA 70: NEC 2011 SET OVERLOAD RELAYS ACCORDING TO ACTUAL FLA AT INSTALLATION.
NOTE (C): UL LISTED 508A, TYPE 12, CONTROL PANEL.
NOTE (D): ——— WIRING BY BISCO WITHIN THIS PANEL.
NOTE (E): - - - - - - - - WIRING BY BISCO REMOTE TO THIS PANEL.
NOTE (F): ▬ ▬ ▬ ▬ REMOTE / FIELD WIRING BY OTHERS.
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DESCRIPTION
DATE
APPR.
REVISIONS
CONFIDENTIALITY NOTE:
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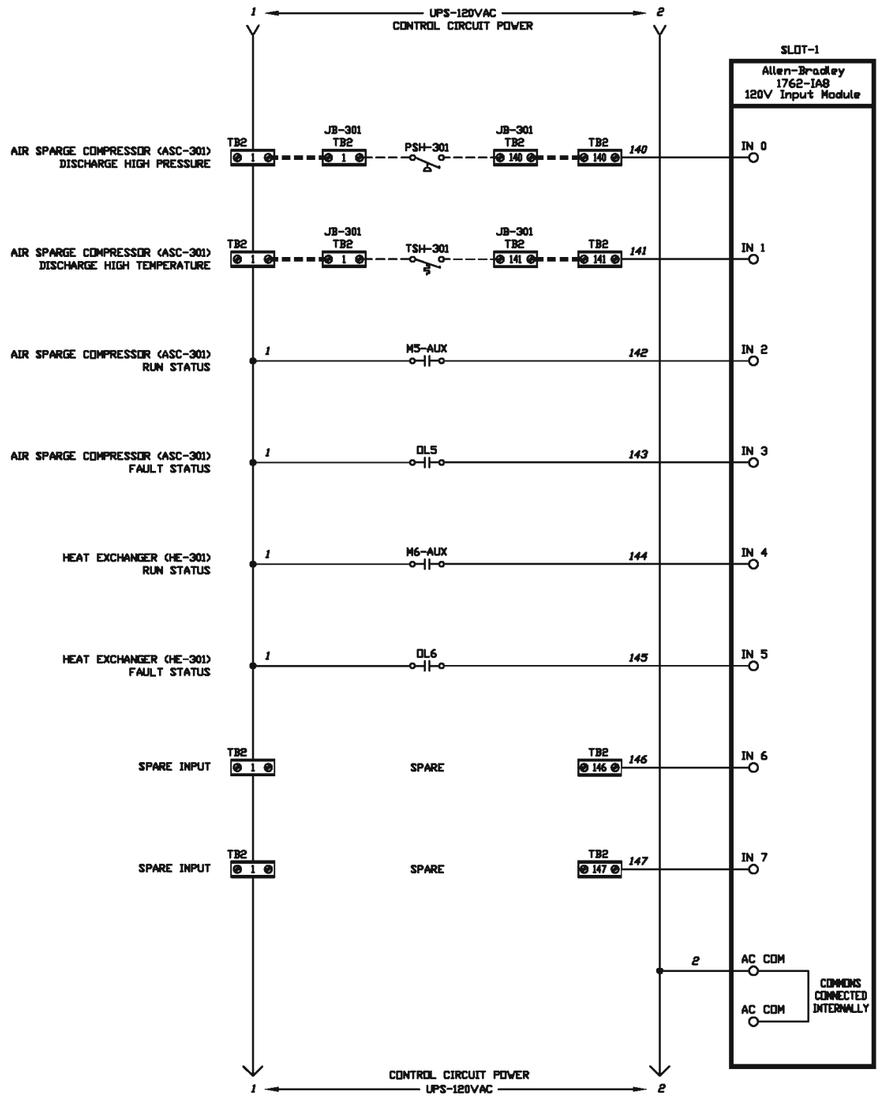
DATE 10-11-13
CHK BY
DATE
APPR BY
DATE
BISCO Environmental
Soil & Groundwater Remediation Equipment
Taunton, Massachusetts 02780
TITLE
CONTROL PANEL
WSP
FORMER HUCK MANUFACTURING, KINGSTON, NY
JOB NO. 13050
SCALE N/A
SIZE B
DWG NO. 13050RSS
SHEET 3 OF 8
REV PRELIM



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CHK BY — DATE

APPR BY — DATE

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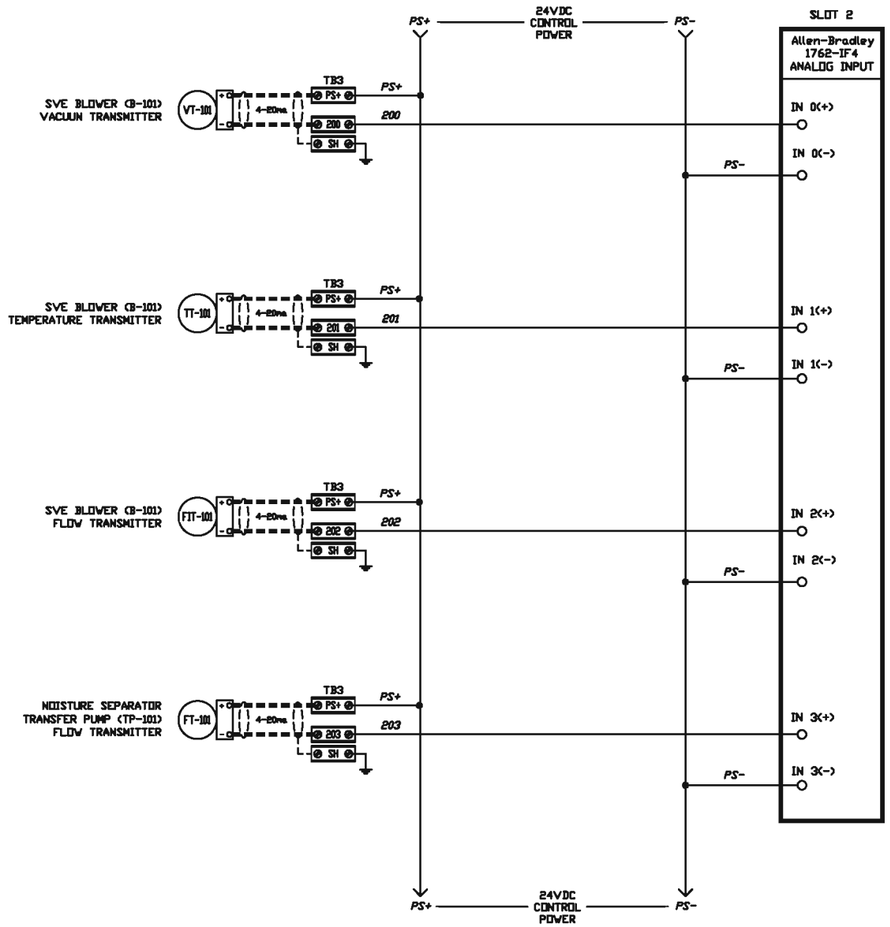
Soil & Groundwater Remediation Equipment
Taunton, Massachusetts 02780

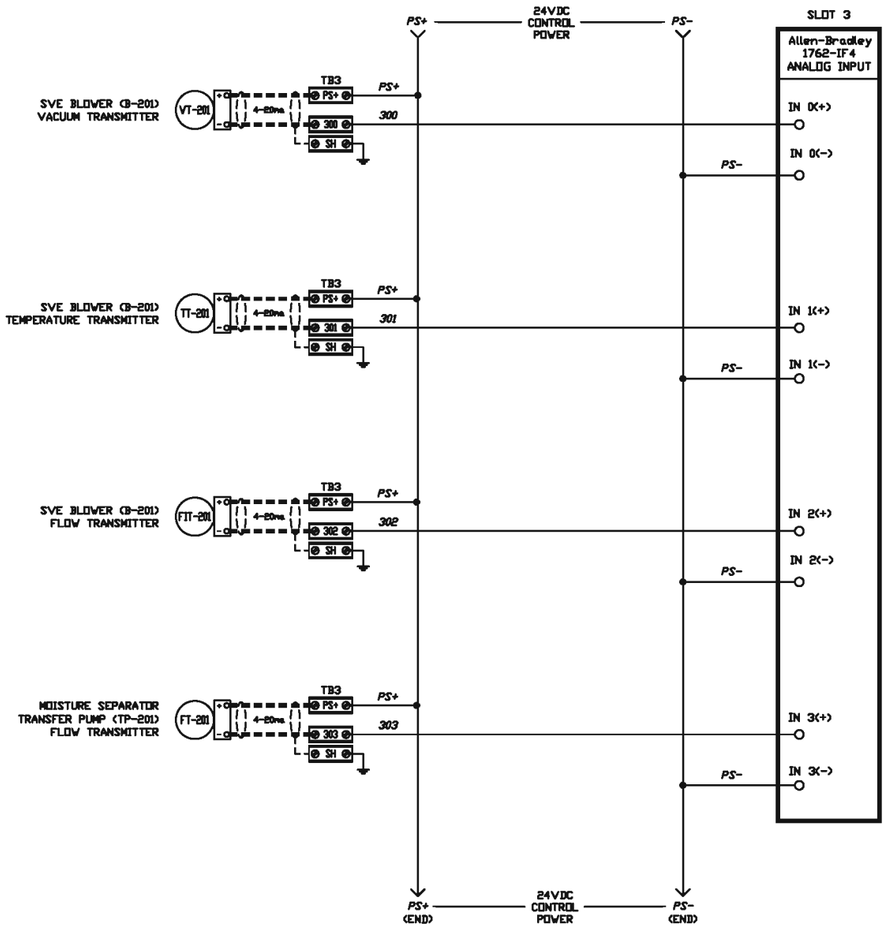
TITLE: CONTROL PANEL

WSP
FORMER HUCK MANUFACTURING, KINGSTON, NY

JOB NO. 13050

SCALE	SIZE	DWG NO.	SHEET	REV
N/A	B	13050RSS	4 OF 8	PRELIM





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Taunton, Massachusetts 02780

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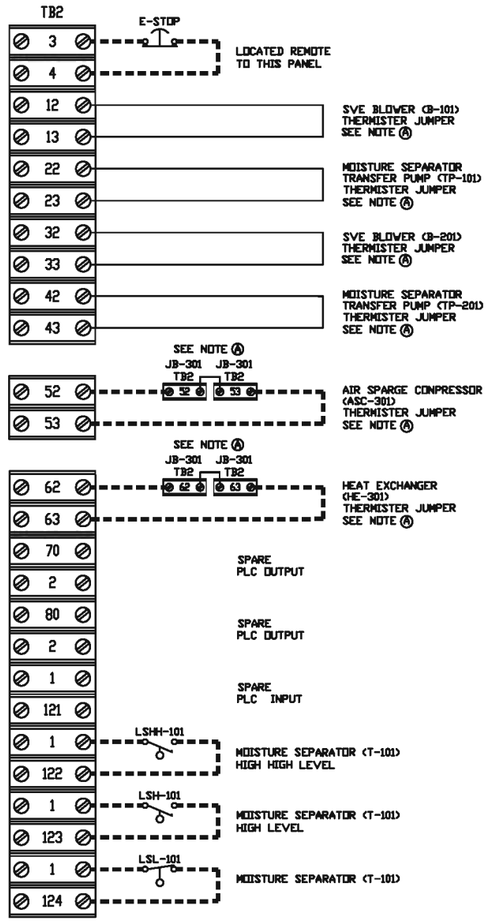
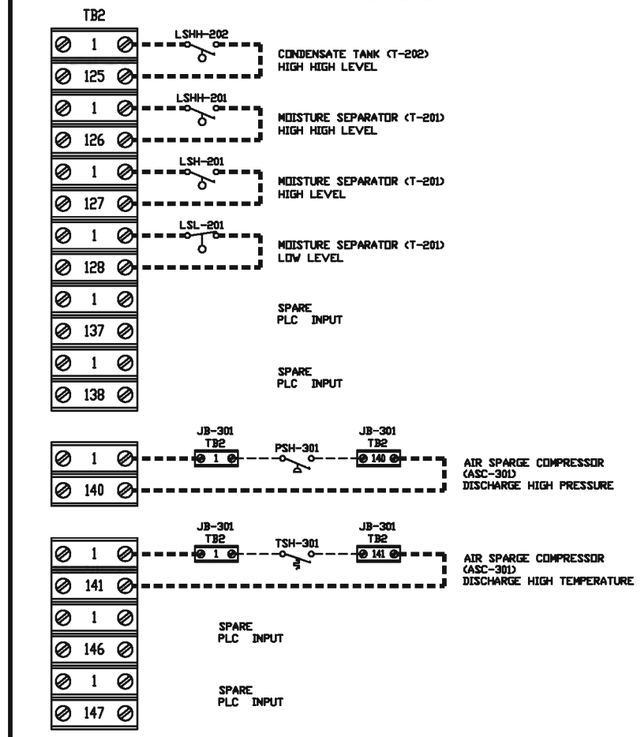
FORMER HUCK MANUFACTURING, KINGSTON, NY

JOB NO.	SCALE	SIZE	DWG NO.	SHEET	REV
13050	N/A	B	13050RSS	5 OF 8	PRELIM

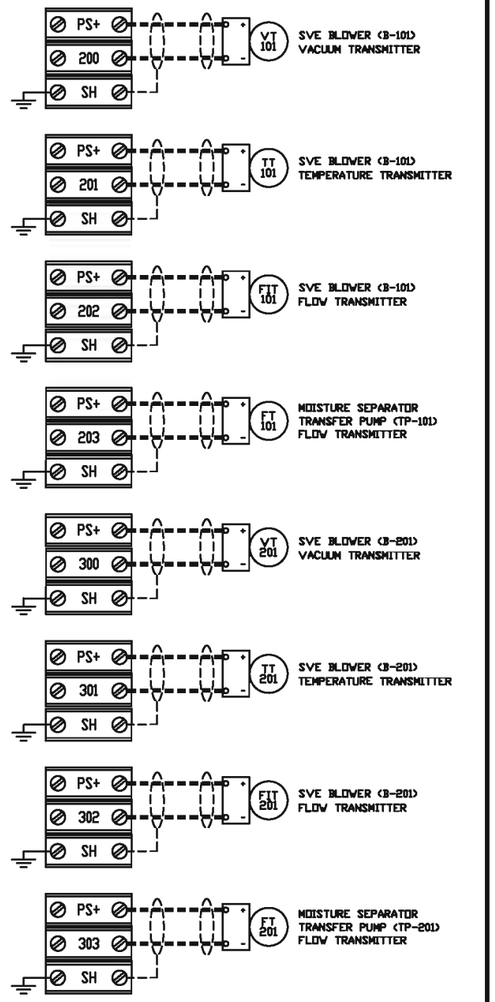
NON-IS TERMINAL CONNECTIONS - 120VAC



NON-IS TERMINAL CONNECTIONS - 120VAC LOW LEVEL



NON-IS TERMINAL CONNECTIONS - ANALOG WIRING



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DATE	
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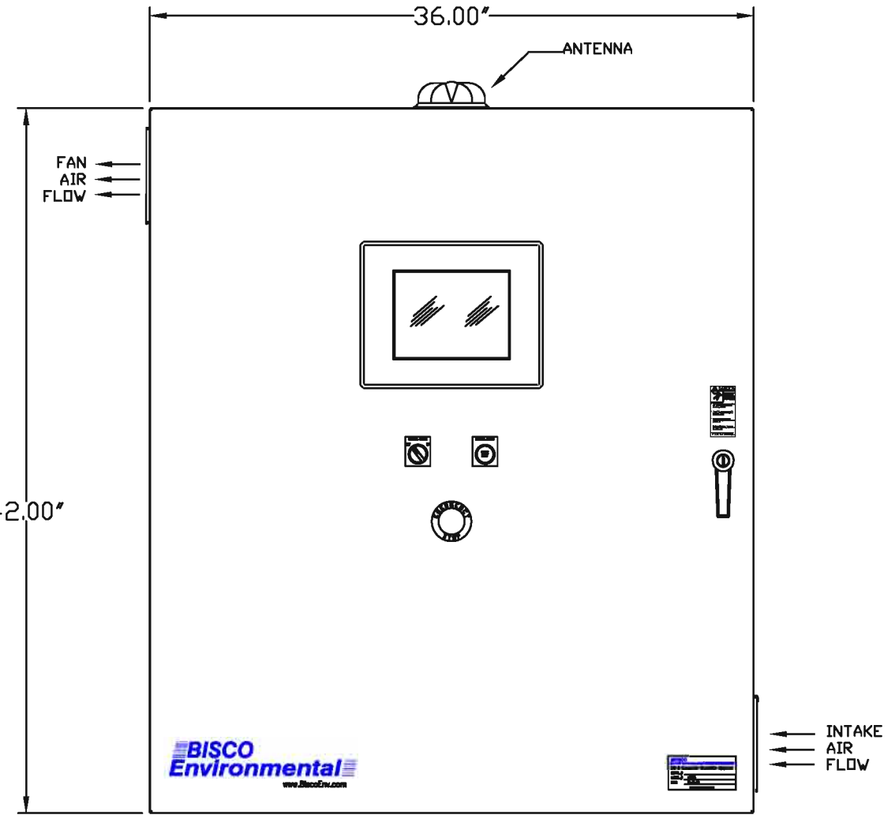
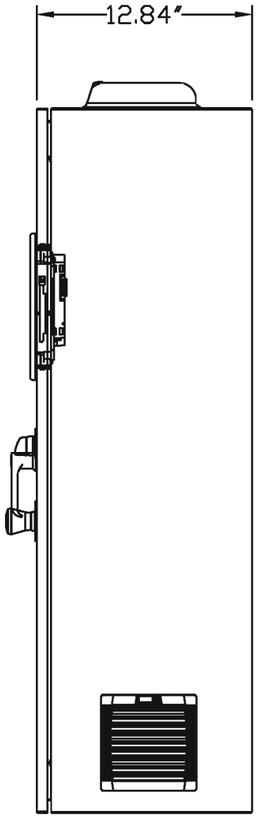
BISCO Environmental
Soil & Groundwater Remediation Equipment
Taunton, Massachusetts 02780

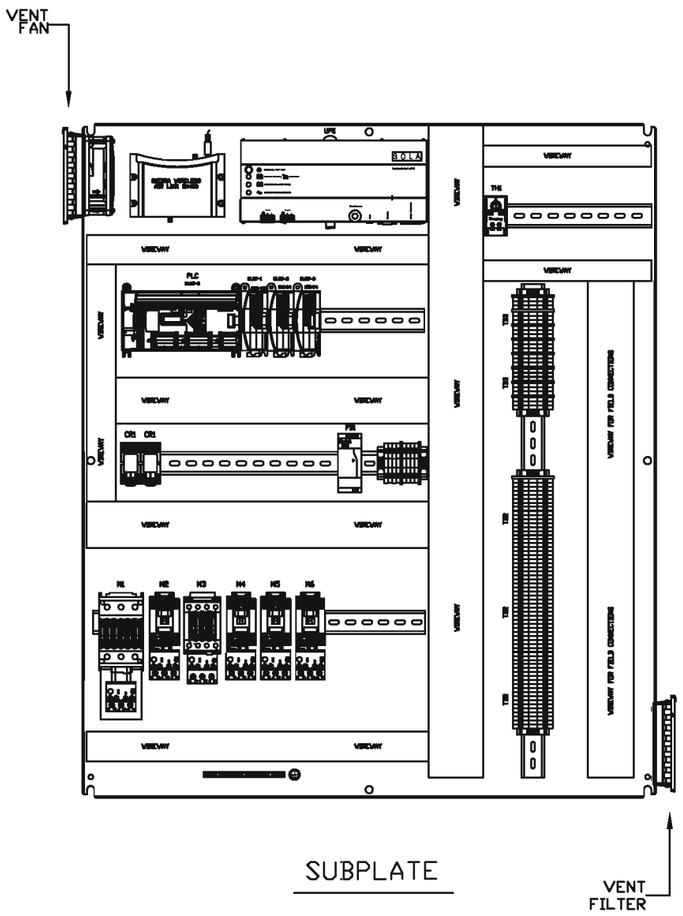
TITLE	CONTROL PANEL
WSP FORMER HUCK MANUFACTURING, KINGSTON, NY	JOB NO. 13050
SCALE N/A	SIZE B
DWG NO. 13050RSS	SHEET 6 OF 8
REV PRELIM	



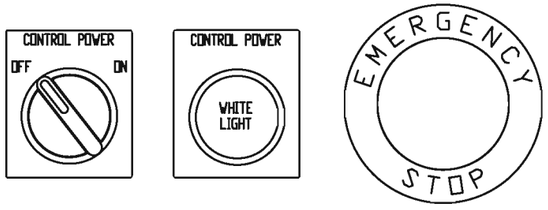
FRONT VIEW



SIDE VIEW



SUBPLATE



OPERATOR LEGENDS

ENLARGED - NO SCALE

NOTE Ⓐ: REMOVE JUMPER AND CONNECT MOTOR THERMISTER IF PRESENT.

NOTE Ⓑ: BASED ON NFPA 70, NEC 2011 SET OVERLOAD RELAYS ACCORDING TO ACTUAL FLA AT INSTALLATION.

NOTE Ⓒ: UL LISTED 508A, TYPE 12, CONTROL PANEL.

NOTE Ⓓ: ———— WIRING BY BISCO WITHIN THIS PANEL.

NOTE Ⓔ: — — — — — WIRING BY BISCO REMOTE TO THIS PANEL.

NOTE Ⓕ: ▬ ▬ ▬ ▬ ▬ REMOTE / FIELD WIRING BY OTHERS.

REV.	DESCRIPTION	DATE	APPR.
REVISIONS			

CONFIDENTIALITY NOTE:
The information contained in this drawing is intended for use only by BISCO Environmental and the organization listed below. The information is confidential and any copying, distribution or dissemination without the consent of BISCO Environmental is STRICTLY PROHIBITED.

DRAWN BY: LPC	DATE: 10-11-13
CHK BY	DATE
APPR BY	DATE

BISCO Environmental

Soil & Groundwater Remediation Equipment
Taunton, Massachusetts 02780

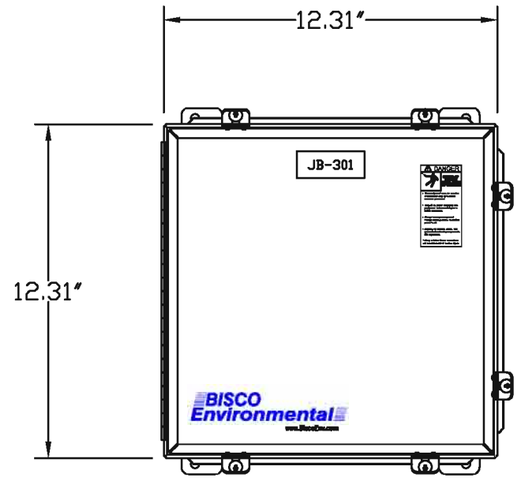
TITLE: CONTROL PANEL

WSP
FORMER HUCK MANUFACTURING, KINGSTON, NY

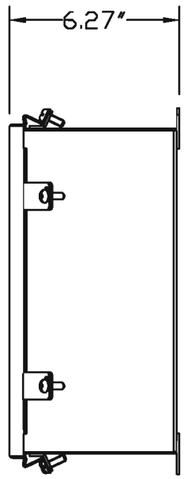
JOB NO. 13050

SCALE	SIZE	DWG NO.	SHEET	REV
N/A	B	13050RSS	7 OF 8	PRELIM

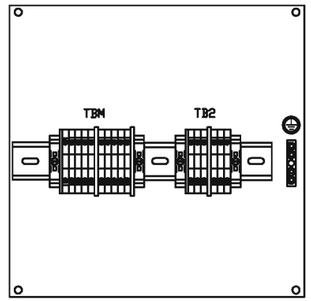
AIR SPARGE SKID
JUNCTION BOX



FRONT VIEW



SIDE VIEW



INNER PANEL

NOTE Ⓐ: REMOVE JUMPER AND CONNECT MOTOR THERMISTER IF PRESENT.

NOTE Ⓑ: BASED ON NFPA 70, NEC 2011 SET OVERLOAD RELAYS ACCORDING TO ACTUAL FLA AT INSTALLATION.

NOTE Ⓒ: UL LISTED 508A, TYPE 12, CONTROL PANEL.

NOTE Ⓓ: ——— WIRING BY BISCO WITHIN THIS PANEL.

NOTE Ⓔ: — — — — WIRING BY BISCO REMOTE TO THIS PANEL.

NOTE Ⓕ: ▬ ▬ ▬ ▬ REMOTE / FIELD WIRING BY OTHERS.

REV.	DESCRIPTION	DATE	APPR.
	REVISIONS		

DRAWN BY	DATE
LPC	10-11-13
CHK BY	DATE
APPR BY	DATE

BISCO Environmental
Soil & Groundwater Remediation Equipment
Taunton, Massachusetts 02780

TITLE: CONTROL PANEL					
WSP FORMER HUCK MANUFACTURING, KINGSTON, NY			JOB NO. 13050		
SCALE N/A	SIZE B	DWG NO. 13050RSS		SHEET 8 OF 8	REV PRELIM

Appendix D – Non-Hazardous Waste Shipping Documents

Table D-1

Non-Hazardous Waste Shipping Information
Former Huck Manufacturing Facility
Kingston, New York

Date	Time	Bill of Lading/Non-Hazardous Manifest Number	Material Description	Quantity (Tons)	Transporter	Generator	Disposal/Recycling destination
4/14/2014	8:42:38 AM	1	Concrete and Asphalt Debris	13.22	Blacktop Maintenance Corp., Poughkeepsie, N.Y.	Federal-Mogul, 85 Grand Street, Kingston, N.Y	Recycling Crushing Technology Inc. Poughkeepsue, N.Y.
4/14/2014	10:34:07 AM	2	Concrete and Asphalt Debris	6.65	Blacktop Maintenance Corp., Poughkeepsie, N.Y.	Federal-Mogul, 85 Grand Street, Kingston, N.Y	Recycling Crushing Technology Inc. Poughkeepsue, N.Y.
4/15/2014	9:26:42 AM	02-00536814	Contaminated Soil	41.27	Goulet Trucking South Deerfield, M.A.	Federal-Mogul, 85 Grand Street, Kingston, N.Y	Department of General Services, City of Albany 525 Rapp Road Waste Management, Albany, N.Y. 12205
4/15/2014	10:08:18 AM	02-00536833	Contaminated Soil	41.71	Goulet Trucking South Deerfield, M.A.	Federal-Mogul, 85 Grand Street, Kingston, N.Y	Department of General Services, City of Albany 525 Rapp Road Waste Management, Albany, N.Y. 12206
4/15/2014	11:37:19 AM	02-00536879	Contaminated Soil	25.64	Goulet Trucking South Deerfield, M.A.	Federal-Mogul, 85 Grand Street, Kingston, N.Y	Department of General Services, City of Albany 525 Rapp Road Waste Management, Albany, N.Y. 12206

BLACKTOP MAINTENANCE CORP.

Commerce Street
POUGHKEEPSIE, NEW YORK 12603
(845) 471-8700

CUSTOMER'S ORDER NUMBER	PHONE	DATE
		04-14-14

NAME Rendrate Services

ADDRESS Kingston - Always Moving. 85 Grand St.

SOLD BY	CASH	C.O.D.	CHARGE	ON ACCT.	MDSE. RET'D	PAID OUT

QTY.	DESCRIPTION	PRICE	AMOUNT
	Hrs. Cat Loader		
	Hrs. Dozer		
	Hrs. Backhoe		
	Hrs. Dump Truck 0700 - 1045		
	Hrs. Grader		
	Hrs. Roller		
	Hrs. Paver		
	Hrs. Excavator		
	Hrs. Hydraulic hammer		
	Hrs. Labor		
13.22	tn 1ST/LOAD 2ND/LOAD - Guess 6-5 tn.		
	Cu. Yd. Topsoil		
	Cu. Yd. Fill In For Processing		
	Cu. Yd. ROB Gravel		
	Cu. Yd. Sand		
	Tons Stone		
	Tons Blacktop	TAX	
RECEIVED BY Jodi Dirden		TOTAL	

62430

All claims and returned goods MUST be accompanied by this bill.

Thank You

Recycling Crushing Technology Inc.

27 Commerce Street

Poughkeepsie, N.Y. 12603

Weighing Ticket (Duplicate Copy)

Transaction ID	: TRAN17192	**Vehicle Ops.Name**	:
Account ID	: BTMC04	**Account Name**	: Blacktop Maintenance Corp.
Commodity ID	: TIP	**Commodity Name**	: Tipping Fee

Veh. / Trailer / Cont. ID	Max Gross Weight	Tare Weight	Tare Type	Date Time	Weigher ID	Consec Number
BTM-8	79,000 lb	29,160 lb	Stored Tare	09-Dec-2013 08:40:50AM	SMA	
First Weight :	55,600 lb 27.80 ton			14-Apr-2014 08:42:38AM	SMA	15523
Second Weight :	29,160 lb 14.58 ton		Stored Tare			
Net Weight :	26,440 lb 13.22 ton					

Ticket Notes : REMEDIATION SERVICES—ALLWAYS MOVING KINGSTON NY

Weighmaster George Fells ID # 130199

Recycling Crushing Technology Inc.

27 Commerce Street

Poughkeepsie, N.Y. 12603

Weighing Ticket (Duplicate Copy)

Transaction ID	: TRAN17203	**Vehicle Ops.Name**	:
Account ID	: BTMC04	**Account Name**	: Blacktop Maintenance Corp.
Commodity ID	: TIP	**Commodity Name**	: Tipping Fee

Veh. / Trailer / Cont. ID	Max Gross Weight	Tare Weight	Tare Type	Date Time	Weigher ID	Consec Number
BTM-8	79,000 lb	29,160 lb	Stored Tare	09-Dec-2013 08:40:50AM	SMA	
First Weight :	42,460 lb 21.23 ton			14-Apr-2014 10:34:07AM	SMA	15533
Second Weight :	29,160 lb 14.58 ton		Stored Tare			
Net Weight :	13,300 lb 6.65 ton					

Ty C

Remediation Services

Ticket Notes : ~~NDR~~

Always moving along soon

Weighmaster George Falls ID #130199

STRAIGHT BILL OF LADING

ORIGINAL — NOT NEGOTIABLE

Shipper No. 12

Carrier No. _____

Page 1 of 1

Blacktop Maintenance Corp., Poughkeepsie, NY 12603

(Name of carrier) (SCAC)

Date 4/14/14

On Collect on Delivery shipments, the letters "COD" must appear before consignee's name or as otherwise provided in Item 430, Sec 1

TO: Consignee: Blacktop Maintenance Corp

Street: 27 Commerce Street

City: Poughkeepsie State: NY Zip Code: 12603

FROM: Shipper: Federal-Mogul

Street: 85 Grand Street

City: Kingston State: NY Zip Code: 12401

24 hr. Emergency Contact Tel. No. _____

Route

Vehicle Number

No. of Units & Container Type	HM	BASIC DESCRIPTION Proper Shipping Name, Hazard Class UN or NA Number, Packing Group or UN or NA Number, Proper Shipping Name, Hazard Class, Packing Group	TOTAL QUANTITY (Weight, Volume, Gallons, etc.)	WEIGHT (Subject to Correction)	RATE	CHARGES (For Carrier Use Only)
1		Concrete and Asphalt Debris	Estimated Tons	6		

PLACARDS TENDERED: YES ☐ NO ☒

Note — (1) Where the rate is dependent on value, shippers are required to state specifically in writing the agreed or declared value of the property, as follows: "The agreed or declared value of the property is hereby specifically stated by the shipper to be not exceeding _____ per _____."
(2) Where the applicable tariff provisions specify a limitation of the carrier's liability absent a release or a value declaration by the shipper and the shipper does not release the carrier's liability or declare a value, the carrier's liability shall be limited to the extent provided by such provisions. See NMFC Item 172.
(3) Commodities requiring special or additional care or attention in handling or stowing must be so marked and packaged as to ensure safe transportation. See Section 2(a) of Item 360, Bills of Lading, Freight Bills and Statements of Charges and Section 1(a) of the Contract Terms and Conditions for a list of such articles.

I hereby declare that the contents of this consignment are fully and accurately described above by the proper shipping name and are classified, packaged, marked and labeled/placarded, and are in all respects in proper condition for transport according to applicable international and national governmental regulations.

N/A

_____ Signature

REMIT C.O.D. TO ADDRESS: N/A

COD Amt: $ N/A

C.O.D. FEE: N/A
PREPAID ☐
COLLECT ☐ $

Subject to Section 7 of the conditions, if this shipment is to be delivered to the consignee without recourse on the consignor, the consignor shall sign the following statement:
The carrier shall not make delivery of this shipment without payment of freight and all other lawful charges.

_____ (Signature of Consignor)

TOTAL CHARGES $

FREIGHT CHARGES
FREIGHT PREPAID except when box at right is checked ☐ Check box if charges are to be collect

RECEIVED, subject to the classifications and tariffs in effect on the date of the issue of this Bill of Lading, the property described above in apparent good order, except as noted (contents and condition of contents of packages unknown), marked, consigned, and destined as indicated above which said carrier (the word carrier being understood throughout this contract) as meaning any person or corporation in possession of the property under the contract) agrees to carry to its usual place of delivery at said destination, if on its route, otherwise to deliver to another carrier on the route to said destination. It is mutually agreed as to each carrier of all or any of said property over all or any portion of said route to destination and as to each party at any time interested in all or any said property, that every service to be performed hereunder shall be subject to all the bill of lading terms and conditions in the governing classification on the date of shipment.

Shipper hereby certifies that he is familiar with all the lading terms and conditions in the governing classification and the said terms and conditions are hereby agreed to by the shipper and accepted for himself and his assigns.

SHIPPER On Behalf of Federal-Mogul

PER Daniel Liwicki

CARRIER Blacktop Maintenance Corp.

PER _____

DATE 04-14-14

1

Permanent post-office address of shipper.

STRAIGHT BILL OF LADING

ORIGINAL — NOT NEGOTIABLE

Shipper No. 11

Carrier No. _____

Page 1 of 1

Blacktop Maintenance Corp., Poughkeepsie, NY 12603

(Name of carrier) (SCAC)

Date _____

On Collect on Delivery shipments, the letters "COD" must appear before consignee's name or as otherwise provided in Item 430, Sec 1.

TO: Consignee: **Blacktop Maintenance Corp**

Street: **27 Commerce Street**

City: **Poughkeepsie** State: **NY** Zip Code: **12603**

FROM: Shipper: **Federal-Mogul**

Street: **85 Grand Street**

City: **Kingston** State: **NY** Zip Code: **12401**

24 hr. Emergency Contact Tel. No. _____

Route

Vehicle Number

No. of Units & Container Type	HM	BASIC DESCRIPTION: Proper Shipping Name, Hazard Class UN or NA Number, Packing Group or UN or NA Number, Proper Shipping Name, Hazard Class, Packing Group	TOTAL QUANTITY (Weight, Volume, Gallons, etc.)	WEIGHT (Subject to Correction)	RATE	CHARGES (For Carrier Use Only)
1		**Concrete and Asphalt Debris**	Estimated Tons	12		

PLACARDS TENDERED: YES ☐ NO ☒

Note — (1) Where the rate is dependent on value, shippers are required to state specifically in writing the agreed or declared value of the property, as follows: "The agreed (or declared value of the property is hereby specifically stated by the shipper to be not exceeding _____ per _____."
(2) Where the applicable tariff provisions specify a limitation of the carrier's liability absent a release or a value declaration by the shipper and the shipper does not release the carrier's liability or declare a value, the carrier's liability shall be limited to the extent provided by such provisions. See NMFC Item 172.
(3) Commodities requiring special or additional care or attention in handling or stowing must be so marked and packaged as to ensure safe transportation. See Section 2(a) of Item 360, Bills of Lading, Freight Bills and Statements of Charges and Section 1(a) of the Contract Terms and Conditions for a list of such articles.

I hereby declare that the contents of this consignment are fully and accurately described above by the proper shipping name and are classified, packaged, marked and labeled/placarded, and are in all respects in proper condition for transport according to applicable international and national governmental regulations.

N/A

_____ Signature

REMIT C.O.D. TO: ADDRESS: **N/A**

COD Amt: $ **N/A**

C.O.D. FEE: **N/A**
PREPAID ☐
COLLECT ☐ $

Subject to Section 7 of the conditions, if this shipment is to be delivered to the consignee without recourse on the consignor, the consignor shall sign the following statement:
The carrier shall not make delivery of this shipment without payment of freight and all other lawful charges.

_____ (Signature of Consignor)

TOTAL CHARGES $

FREIGHT CHARGES
FREIGHT PREPAID except when box at right is checked ☐ Check box if charges are to be collected

RECEIVED, subject to the classifications and tariffs in effect on the date of the issue of this Bill of Lading, the property described above in apparent good order, except as noted (contents and condition of contents of packages unknown), marked, consigned, and destined as indicated above which said carrier (the word carrier being understood throughout this contract as meaning any person or corporation in possession of the property under the contract) agrees to carry to its usual place of delivery at said destination, if on its route, otherwise to deliver to another carrier on the route to said destination. It is mutually agreed, as to each carrier of all or any of said property over all or any portion of said route to destination and as to each party at any time interested in all or any said property, that every service to be performed hereunder shall be subject to all the bill of lading terms and conditions in the governing classification on the date of shipment.

Shipper hereby certifies that he is familiar with all the lading terms and conditions in the governing classification and the said terms and conditions are hereby agreed to by the shipper and accepted for himself and his assigns.

SHIPPER **On Behalf of Federal-Mogul** DANIEL LIWICKI

PER _____

CARRIER **Blacktop Maintenance Corp.**

PER _____

DATE 6/4/14

1

Permanent post-office address of shipper.

Department of General Services
CITY OF ALBANY
525 Rapp Road Waste Management
Albany, NY, 12205

Weighed: MIKE KELLOGG
Deposit: MIKE KELLOGG
BILL TO: 6025
Capitol Environmental Services
200 Biddle Avenue, Suite 205
Newark DE 19702

HAULER: Cash Customer
Vehicle ID: 7003
Reference: 3426
Grid: NON SHRED
NOTE:: 85 GRAND ST/KINGSTON
LOT #: 3426

Origin: KINGSTON
DATE IN: 04/15/2014 TIME IN: 09:26:42
DATE OUT: 04/15/2014 TIME OUT: 09:54:43

INBOUND TICKET Number: 02-00536814

SCALE 1 GROSS WT.	122100	LB
SCALE 2 TARE WT.	39560	LB
NET WEIGHT	82540	LB

Qty	Description	Amount
41.27	CONTAMINATED SOIL	

TICKET AMOUNT:

X

NON-HAZARDOUS WASTE MANIFEST	1. Generator ID Number: NOT REQUIRED	2. Page 1 of: 1	3. Emergency Response Phone: 315-374-6574	4. Waste Tracking Number:

5. Generator's Name and Mailing Address: [redacted]
[redacted] Northwestern Highway, Southfield, MI 48034

Generator's Site Address (if different than mailing address): 85 Grand Street, Kingston, NY 12401

Generator's Phone:

6. Transporter 1 Company Name: Gould Trucking — U.S. EPA ID Number: MAC300 008 038

7. Transporter 2 Company Name — U.S. EPA ID Number:

8. Designated Facility Name and Site Address: City of Albany Solid Waste Management Facility
[redacted] Road, Albany, NY 12205 — U.S. EPA ID Number: NOT REQUIRED

Facility's Phone: (518) [redacted]

9. Waste Shipping Name and Description	10. Containers No.	10. Containers Type	11. Total Quantity	12. Unit Wt./Vol.
1. Non RCRA, Non DOT Regulated Waste Solid (Soil)	001	DT	[redacted]	T
2.				
3.				

13. Special Handling Instructions and Additional Information

[redacted]

14. GENERATOR'S/OFFICER'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by the proper shipping name, and are classified, packaged, marked and labeled/placarded, and are in all respects in proper condition for transport according to applicable international and national governmental regulations.

Generator's/Officer's Printed/Typed Name: [redacted] Mary Daniel Kovacs — Signature: [signature] — Month: 4 — Day: 15 — Year: 14

15. International Shipments: ☐ Import to U.S. ☑ Export from U.S. — Port of Entry/Exit: — Date leaving U.S.:

16. Transporter Acknowledgment of Receipt of Materials

Transporter 1 Printed/Typed Name: [redacted] — Signature: [signature] — Month: 4 — Day: 15 — Year: 14

Transporter 2 Printed/Typed Name: — Signature: — Month: — Day: — Year:

17. Discrepancy

17a. Discrepancy Indication Space: ☐ Quantity ☐ Type ☐ Residue ☐ Partial Rejection ☐ Full Rejection

Manifest Reference Number:

18. Alternate Facility (or Generator) — U.S. EPA ID Number:

Facility's Phone:

18b. Alternate Facility (or Generator) — Month: — Day: — Year:

[redacted] — Month: — Day: — Year:

DESIGNATED FACILITY'S [redacted]

Department of General Services
CITY OF ALBANY
525 Rapp Road Waste Management
Albany, NY. 12205

Weighed: MIKE KELLOGG
Deposit: MIKE KELLOGG
BILL TO: 8025
Capitol Environmental Services
200 Biddle Avenue, Suite 205
Newark DE 19702

HAULER: Cash Customer
Vehicle ID: 7001
Reference: 3428
Grid: NON SHRED
NOTE:: 85 GRAND ST/KINGSTON
LOT #: 3426

Origin: KINGSTON
DATE IN: 04/15/2014 TIME IN: 10:08:18
DATE OUT: 04/15/2014 TIME OUT: 10:27:40

INBOUND TICKET Number: 02-00536833

SCALE 1 GROSS WT.	120760	LB
SCALE 2 TARE WT.	37340	LB
NET WEIGHT	83420	LB

Qty	Description	Amount
41.71	CONTAMINATED SOIL	

TICKET AMOUNT:

X_____

NON-HAZARDOUS WASTE MANIFEST	1. Generator ID Number: NOT REQUIRED	2. Page 1 of: 1	3. Emergency Response Phone: 315-374-6574	4. Waste Tracking Number

5. Generator's Name and Mailing Address: Federal Mogul, 26555 Northwestern Highway, Southfield, MI 48034

Generator's Site Address (if different than mailing address): 85 Grand Street, Kingston, NY 12401

Generator's Phone:

6. Transporter 1 Company Name: Goulet Trucking — U.S. EPA ID Number: MAC 300 026 036

7. Transporter 2 Company Name — U.S. EPA ID Number:

8. Designated Facility Name and Site Address: City of Albany Solid Waste Management Facility, 625 Rapp Road, Albany, NY 12205 — U.S. EPA ID Number: NOT REQUIRED

Facility's Phone: (518) 869-3951

	9. Waste Shipping Name and Description	10. Containers No.	10. Containers Type	11. Total Quantity	12. Unit Wt./Vol.
1.	Non RCRA, Non DOT Regulated Waste Solid (Ash)	001	DT	est	T
2.					
3.					
4.					

13. Special Handling Instructions and Additional Information

1: Ash Load 3438

Job# DAN-ONIL-

14. GENERATOR'S/OFFEROR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by the proper shipping name, and are classified, packaged, marked and labeled/placarded, and are in all respects in proper condition for transport according to applicable international and national governmental regulations.

Generator's/Offeror's Printed/Typed Name: ON BEHALF OF FEDERAL MOGUL DANIEL LEWICKI — Signature: Daniel Lewicki — Month: 4 — Day: 15 — Year: 14

15. International Shipments: ☐ Import to U.S. ☐ Export from U.S. — Port of entry/exit: — Transporter Signature (for exports only): — Date leaving U.S.:

16. Transporter Acknowledgment of Receipt of Materials

Transporter 1 Printed/Typed Name: Richard Pierce JR — Signature: Richard Pierce JR — Month: 4 — Day: 15 — Year: 14

Transporter 2 Printed/Typed Name — Signature — Month — Day — Year

17. Discrepancy

17a. Discrepancy Indication Space: ☐ Quantity ☐ Type ☐ Residue ☐ Partial Rejection ☐ Full Rejection

Manifest Reference Number:

17b. Alternate Facility (or Generator) — U.S. EPA ID Number

Facility's Phone:

17c. Signature of Alternate Facility (or Generator) — Month — Day — Year

18. Designated Facility Owner or Operator: Certification of receipt of materials covered by the manifest except as noted in Item 17a

Printed/Typed Name — Signature — Month — Day — Year

GENERATOR | TRANSPORTER | DESIGNATED FACILITY

169-BLC-O 6 10498 (Rev. 9/09) — DESIGNATED FACILITY'S COPY

Department of General Services
CITY OF ALBANY
525 Rapp Road Waste Management
Albany, NY, 12205

Weighed: MIKE KELLOGG
Deposit: MIKE KELLOGG
BILL TO: 8025
Capitol Environmental Services
200 Biddle Avenue, Suite 205
Newark DE 19702

HAULER: Cash Customer
Vehicle ID: 7001
Reference: 3426
Grid: NON SHRED
NOTE:: 85 GRAND ST/KINGSTON
LOT #: 3426

Origin: KINGSTON
DATE IN: 04/15/2014 TIME IN: 11:37:19
DATE OUT: 04/15/2014 TIME OUT: 12:01:03

INBOUND TICKET Number: 02-00536879

SCALE 1 GROSS WT.	88840	LB
SCALE 2 TARE WT.	37560	LB
NET WEIGHT	51280	LB

Qty	Description	Amount
25.64	CONTAMINATED SOIL	

TICKET AMOUNT:

x Marcel Barrowcliff

NON-HAZARDOUS WASTE MANIFEST	1. Generator ID Number: NOT REQUIRED	2. Page 1 of: 1	3. Emergency Response Phone: 315-374-6574	4. Waste Tracking Number

5. Generator's Name and Mailing Address: Federal Mogul, 26555 Northwestern Highway, Southfield, MI 48034

Generator's Site Address (if different than mailing address): 85 Grand Street, Kingston, NY 12401

Generator's Phone:

6. Transporter 1 Company Name: Gostel Trucking — U.S. EPA ID Number: MAC 300 008 056

7. Transporter 2 Company Name — U.S. EPA ID Number:

8. Designated Facility Name and Site Address: City of Albany Solid Waste Management Facility, 625 Rapp Road, Albany, NY 12205 — U.S. EPA ID Number: NOT REQUIRED

Facility's Phone: (518) 869-3951

	9. Waste Shipping Name and Description	10. Containers No.	10. Containers Type	11. Total Quantity	12. Unit Wt./Vol.
1.	Non RCRA, Non DOT Regulated Waste Solid (Soil)	001	DT	est	T
2.					
3.					
4.					

13. Special Handling Instructions and Additional Information

1: AppF Lab# 3455

Joint CAN-SHL

14. GENERATOR'S/OFFEROR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by the proper shipping name, and are classified, packaged, marked and labeled/placarded, and are in all respects in proper condition for transport according to applicable international and national governmental regulations.

Generator's/Offeror's Printed/Typed Name: On Behalf of Federal Mogul Dennis Lyttle — Signature: Dennis Lyttle — Month: 4 — Day: 15 — Year: 14

15. International Shipments: ☐ Import to U.S. ☐ Export from U.S. — Port of entry/exit: — Transporter Signature (for exports only): — Date leaving U.S.:

16. Transporter Acknowledgment of Receipt of Materials

Transporter 1 Printed/Typed Name: Marcel Boissonnault [027-T-106] — Signature: Marcel Boissonnault — Month: 4 — Day: 15 — Year: 14

Transporter 2 Printed/Typed Name — Signature — Month — Day — Year

17. Discrepancy

17a. Discrepancy Indication Space: ☐ Quantity ☐ Type ☐ Residue ☐ Partial Rejection ☐ Full Rejection

Manifest Reference Number:

17b. Alternate Facility (or Generator) — U.S. EPA ID Number:

Facility's Phone:

17c. Signature of Alternate Facility (or Generator) — Month — Day — Year

18. Designated Facility Owner or Operator: Certification of receipt of materials covered by the manifest except as noted in Item 17a

Printed/Typed Name — Signature — Month — Day — Year

DESIGNATED FACILITY

169-BLC-O 6 10498 (Rev. 9/09)

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Appendix E – Operation Maintenance and Monitoring (OM&M) Plan