May 16, 2011

David S. Szymanski
Project Manager
New York State Department of Environmental Conservation
270 Michigan Avenue
Buffalo, NY 14203-2999

Re: Former Vac Air Alloys Site (NYSDEC Site No. 907016)
300 Falconer Street, Frewsburg, New York 14738
Draft 2011 Operation, Maintenance & Monitoring Plan

Dear Mr. Szymanski:

On behalf of our client Keywell, L.L.C., Benchmark Environmental Engineering & Science, PLLC (Benchmark) is submitting in electronic format the Draft 2011 Post-Remedial Operation, Maintenance & Monitoring (OM&M) Plan for the Former Vac Air Alloys Site located at 300 Falconer Road in Frewsburg, New York. The enclosed 2011 OM&M Plan will replace the Operation & Maintenance Plan prepared by Conestoga-Rovers & Associates (CRA).

Benchmark will forward to NYSDEC one hard copy (double-sided) and one electronic copy on CD of the draft Plan.

Please contact us at (716) 856-0599 if you have any questions or require additional information.

Sincerely,
Benchmark Environmental Engineering & Science, PLLC

Thomas H. Forbes, P.E.
Sr. Project Manager

Enc.

c: Mr. Martin Doster – NYSDEC, Division of Environmental Remediation
Ms. Scarlette Messier – NYS Department of Health
Mr. Bradley Albright – Keywell LLC
Mr. Ron Gostek – Keywell LLC
File: 0095-005-100

# 2011 POST-REMEDIAL OPERATION, MAINTENANCE & MONITORING PLAN

**FORMER VAC AIR ALLOYS SITE**
**FREWSBURG, NEW YORK**
**INACTIVE HAZARDOUS WASTE SITE NO. C907016**

May 2011 0095-005-100

Prepared for:

KEYWELL L.L.C.

Prepared By:

BENCHMARK ENVIRONMENTAL ENGINEERING & SCIENCE, PLLC

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# POST-REMEDIAL OPERATION, MAINTENANCE & MONITORING (OM&M) PLAN

## Former Vac Air Alloys Site, Frewsburg, NY

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# 1.0 INTRODUCTION

## 1.1 Background and History

Keywell, L.L.C. is located at 300 Falconer-Frewsburg Road in the Town of Carroll immediately north of the Village of Frewsburg, New York (see Figure 1). The property is bounded by Conewango Creek to the north; open fields, wooded and low lying areas to the east; commercial and residential properties to the south; and Frewsburg-Falconer Road and the former Frewsburg Water District Supply Wells (Well 2A) to the west (see Figure 2). An unnamed, intermittent drainage way consisting of sections of buried culvert and open swale traverses the property and discharges to a low lying wetland area at the north end. The low lying area drains to Conewango Creek.

The property was formerly owned by Vac Air Alloys, which began metal processing operations at the Site in 1969. As part of the facility operations, trichloroethylene (TCE) was used to clean and degrease metals. Prior to 1969, the property was used for the manufacturing of waferboard. Keywell purchased the facility in 1987, and currently processes stainless steel, titanium, and other high grade scrap metal.

The remedy for the former Vac Air Alloys Site (the Site) was specified in the Record of Decision (Ref. 1) and the Evaluation of North Soil Area Remedial Alternatives Report (Ref. 2). Remedial construction activities began in June 1997 and were substantially completed in January 1998. As described in the Final Remedial Construction Report (Ref. 3), the remedial activities included:

- Installation of a vibrated beam barrier wall along the downgradient boundary of the North Soil Area.
- Installation of a 12-well groundwater extraction system.
- Construction of a groundwater treatment system consisting of two bag filters, an air stripper, and a catalytic combustion unit (CCU) for vapor treatment, with treated effluent discharge to surface water of Conewango Creek. The CCU was taken off-line on January 19, 2010 with NYSDEC approval as it was no longer required to provide treatment of VOC off gases from the air stripper to achieve compliance with air emission discharge limitations.
- Installation of a six well soil vapor extraction (SVE) collection and treatment system within the Center Soil Area. Operation of the SVE system was discontinued in August 2004 with NYSDEC approval since it was demonstrated

that the mass of TCE removed by the SVE system under optimal operating conditions was insignificant in contrast to the effectiveness of the treatment system.

- Installation of two monitoring wells (MW-13 and MW-14) and two piezometers (PZ2 and PZ3).
- Installation of a new storm sewer along the west side of the Main Building, replacement of the 36-inch corrugated metal pipe storm sewer that traversed the property with a 28-inch HDPE sewer and installation of a precast concrete oil/sediment/water separation unit (stormceptor) in-line, and other controls to isolate runoff from potentially contaminated groundwater.
- Excavation and off-site disposal of contaminated sediments from the low-lying wet area.
- Paving of areas north and west of the Main Building.

Startup activities of the groundwater treatment system began in late December 1997. The groundwater extraction and treatment system was operated from early March 1998 through April 20, 1998. Due to unsatisfactory performance, the air stripper was replaced during the week of April 20, 1998. Post-remedial activities included: institutional controls consisting of deed restrictions and access restrictions; and long-term groundwater monitoring program to monitor and evaluate the effectiveness of the remedy.

The original Operation and Maintenance (O&M) Plan was submitted to the NYSDEC in September 1998 (Ref. 4) following construction of the Remedial Design (RD) at the Site. This work was performed in compliance with the requirements set forth in the fully executed NYSDEC Order on Consent, Index #B9-0333-90-05 (Ref. 5), and in accordance with the NYSDEC-approved Final Remedial Design Report (Ref. 6).

## 1.2 Purpose and Scope

On behalf of Keywell, L.L.C., Benchmark Environmental Engineering & Science, PLLC (Benchmark) has prepared this 2011 Operation, Maintenance & Monitoring (OM&M) Plan to describe the current operation, maintenance, and monitoring activities being performed as part of the long-term operation of the various components of the Remedial Action.

## 2.0 SITE CONTACTS AND RESPONSIBILITIES

Environmental maintenance, monitoring, and corrective measures concerns related to current NYSDEC Order on Consent activities at the Site are the responsibility of Keywell, L.L.C. The official contact person for matters pertaining to these issues is:

Mr. Ronald G. Gostek
Senior Vice President
Keywell, L.L.C.
11900 South Cottage Grove Ave.
Chicago, IL 60628
(773) 660-2060 Ext. 221

Operation, maintenance, and monitoring of the Site is performed by experienced Keywell personnel properly trained in accordance with 29 CFR 1910.120. Operations include activities and adjustments necessary to assure continued and reliable system function. Routine maintenance includes bag filter change-out, air stripper tray cleaning, and miscellaneous minor repairs or preventative maintenance for existing equipment. Monitoring includes groundwater and effluent sample collection and recording of key process variables. The contact person for day-to-day operation and maintenance of the treatment system is:

Mr. R. Bradley Albright
General Manager
300 Falconer Rd
Frewsburg, NY 14738
(716) 569-0700

Keywell, L.L.C. has retained Benchmark Environmental Engineering & Science, PLLC as its contract provider of operation and maintenance oversight services. Benchmark's key contacts are:

Mr. Thomas H. Forbes, P.E. and
Ms. Lori E. Riker, P.E.
Benchmark Environmental Engineering & Science, PLLC
2558 Hamburg Turnpike, Suite 300
Buffalo, New York 14218
(716) 856-0599

The NYSDEC will provide guidance concerning NY State regulatory issues and the requirements of the Order on Consent. NYSDEC's project contact person is:

Mr. David S. Szymanski
Project Manager
NYSDEC – Region 9
Division of Environmental Remediation
270 Michigan Ave.
Buffalo, NY 14203-2999
(716) 851-7220

The New York State Department of Health primary contact for the Site is:

Ms. Scarlett Messier
Public Health Specialist
NYS Department of Health
Bureau of Environmental Exposure Investigation
Flanigan Square, 547 River Street
Troy, NY 12180-2216
(800) 458-1158 Ext. 27870

# 3.0 REMEDIAL ACTION DESCRIPTION/PRINCIPLE OF OPERATION

The groundwater collection and treatment system involves recovery of contaminated groundwater from 18 extraction wells with concurrent on-site treatment of the recovered groundwater via low profile air stripping. Contaminants present in Site groundwater are predominantly TCE and breakdown products, including cis-1,2-dichloroethene (DCE) and vinyl chloride (VC). Concentrations of these constituents are typically present in untreated groundwater at low part per million levels.

Figure 3 presents a process flow schematic for the groundwater extraction and treatment systems. Table 1 summarizes the construction details for the extraction wells. A description of the process components and their operating principles are presented in the following sections.

## 3.1 Groundwater Extraction System

The groundwater extraction system well network consists of 12 extraction wells located along the downgradient perimeter of the Site, six extraction wells located within the Center Soil Area, and a vacuum pump system. The pump is connected to the wells by a series of groundwater extraction headers and transfer pipes. Each well contains a draw tube connected to the groundwater extraction header by way of a pitless adapter, allowing removal of the tube when necessary. A PVC ball valve installed between the well and header can be used to isolate any and all wells. The flow rate from each extraction well is expected to range from 0.5 to 3.0 gallons per minute (gpm), and the total flow is expected to be near 30 gpm. A groundwater level transmitter is located in each of two extraction wells (EW-5 and EW-12) to assist in flow regulation. The average water level of the three wells is used to adjust the flow set point.

Groundwater is extracted from the well network using a small vacuum pump located within the treatment building. The pump is a Burks Model No. 330WA6, self-priming centrifugal pump (Appendix A presents manufacturer information on the pump). Flow through the system is regulated using an automatic control valve that receives signals from the level transmitter system. A priming port is located near the pump inlet to facilitate pump startup.

## 3.2 Groundwater Treatment System

The "Certified for Construction" set of drawings has been revised to reflect as-built conditions of remedial action components. Appendix B contains a set of reduced size (11" x 17") as-built drawings, hand-corrected to reflect current equipment models and configuration.

### *3.2.1 Flow Control Valve*

The flow control valve that regulates flow through the treatment system is a True Union 2-inch ball valve with an electric actuator and positioner (George Fischer, Model #EA20). The flow control valve receives signals from the programmable logic controller (PLC) and opens or closes the valve as necessary to maintain the system properly. Under normal conditions, the flow control valve operates based on the groundwater levels in extraction wells EW-5 and EW-12. The valve will open when higher levels are evident and will begin to close as the levels drop.

### *3.2.2 Bag Filters*

Extracted groundwater is discharged from the vacuum pump to the groundwater treatment system bag filters. The bag filters remove any suspended solids larger than the bag filter size of 25 microns. The bag filters housings are manufactured by Filtration Systems, Model #NC-122, and are filled with GAF Filter Systems bag filter units ABP 25 T2Z or equivalent. The filter bags are easily removed and replaced from a removable lid on top of each unit. Since the filters are set up in parallel, the system may continue to run while one of the filter units is undergoing maintenance. Each unit is equipped with an influent pressure gauge that is monitored on a daily basis. A high pressure alarm (greater than 15 psi) indicates when the bag filters need to be changed out. The pressure switch on the influent line sends a signal to the PLC when the pressure reaches 15 psi causing a red light to illuminate on the control panel. Additional pressure buildup will cause a 1-inch pressure relief valve to open, bypassing the bag filters, and discharging directly to the phase separator.

### *3.2.3 Phase Separator*

The phase separator is a 500-gallon coalescing oil/water separator manufactured by HydroQuip, Inc. The phase separator is capable of separation of dense and light non-aqueous phase liquid (NAPL) from the water stream at flows of up to 50 gpm. The phase

separator interior has been coated with Tneme-Liner Series 61 to prevent deterioration from the groundwater and NAPLs, and the exterior has been painted with Tneme-Fascure Series 161. Each of these coatings was manufactured by Tnemec Company, Inc.

The phase separator was installed on an elevated skid and 12-inch high concrete pad to raise the unit to the proper elevation for gravity flow through the unit. The separator contains a hopper-type bottom section to collect DNAPL, if present, and an LNAPL collector to separate floating oils from the water stream. The separator contains a float switch that triggers a system shutdown in the event of high water level in its main compartment.

The phase separator contains a nozzle for release of any DNAPL and LNAPL to storage drums. The DNAPL nozzle has been connected by a valve and a flexible hose to a 55-gallon storage drum; however, no DNAPL has been collected since startup. Accumulations of LNAPL have been evident in the phase separator. Therefore, the flexible hose and storage drum was moved to the LNAPL nozzle. This nozzle is controlled by a ball valve that, when necessary, can be opened to release LNAPL to the drum.

### *3.2.4 Air Stripper*

The air stripper originally installed was a QED Environmental Systems, Inc., Model #EZ-8.4 air stripper, equipped with 4 trays capable of treating groundwater flow of up to 50 gpm using at least 420 standard cubic feet per minute (SCFM) of air flow. Flow into and out of the stripper is by gravity; the air stripper is set on a concrete pad to provide proper hydraulic performance. The treated water effluent sampling port is located on the air stripper sump. During startup of the groundwater extraction system, the 4-tray air stripper could not remove the VOCs in the groundwater to the level required by the NYSDEC. Accordingly, the stripper was replaced with a 6-tray stripper unit (Model #EZ8.6) in April 1998.

Air flow through the stripper is drawn by a 7.5 Hp, 3 pH blower manufactured by New York Blower Company (Model #2004A). The blower is capable of producing 500 SCFM air flow with a suction pressure of 30 inches of water. Contaminated air is drawn from the air stripper and discharged to the atmosphere.

Interlocks on the air stripper will shut down the extraction system in the event that low air flow (below 500 SCFM) is detected or if high water level is detected in the sump of

the air stripper. Treated water is discharged through the effluent magnetic flow meter to the low lying wet area.

The air stripper is equipped with a high level switch and alarm. A high water level in the air stripper reservoir will cause the air stripper blower to shutdown and transmit a signal to the PLC to shut down the remaining pump and treatment system components. This shutdown, in turn, will send a signal to the auto-dialer that the system is down.

The air stripper blower normally operates automatically and continuously. The blower is equipped with a manual hand/off/auto (HOA) switch. The air stripper blower also shuts down when the water level rises above the high level in the building sump.

### *3.2.5 Treatment Building*

The treatment building is a pre-engineered, single story, single span, steel frame and clad building engineered and manufactured by United Structures of America, Inc. Appendix A (Section 3) includes the pre-engineered building's certification.

#### *Utilities*

The utilities supplied to the building consist of natural gas, electric, and potable water. Under the direction of a construction subcontractor of National Fuel, a shallow (30 inches deep) trench was excavated in which a 1 1/8-inch double wall polyethylene gas pipe was placed. The connection to the gas main was made adjacent to the main guard house. The alignment of the natural gas pipe follows the west perimeter fence line (25 feet east) and begins to follow the groundwater extraction header near EW-2. The gas pipe continues adjacent to the extraction header to the south west corner of the treatment building.

A new 225-amp overhead electrical service was installed to the building by Niagara Mohawk service crews. The new service included installation of all new poles and perimeter lighting fixtures. The existing overhead electrical lines and poles were removed.

Potable water was supplied to the treatment building from the Main Building. A segment of existing water piping was located within the southeast corner of the Main Building and was fitted with a new valve to control flow to the treatment building. While constructing the extraction header from the treatment building to the former SVE system wells, a 1-inch HDPE pipe was installed in the trench and continued from EW/SVE-16 to the outside wall of the Main Building. The water pipe was located below the building footer

to the inside of the building and connected to the new valve. The plumbing work on the inside of the Main Building was performed by Keywell maintenance personnel.

Other appliances and accessories installed in the treatment building include the following:

- Utility sink and 40-gallon water heater
- Gas-fired unit heater
- 8-foot wide overhead door and 36-inch wide access door
- Telephone service (on electric poles)
- Safety shower and eyewash station
- Work bench/station
- Storage cabinets and shelving

***Building Sump***

The treatment building sump is used only during washdown of the air stripper trays. The building sump pump is equipped with a manual switch for operation of the pump. The sump is equipped with a high level switch that will shut down the treatment system when activated. A shutdown will activate the auto-dialer.

## 3.3 Stormwater Controls

Due to possible infiltration of impacted groundwater, the former 36-inch diameter storm sewer that traversed the center of the Site was excavated and replaced with a 28-inch diameter near watertight HDPE storm sewer. Sewer bedding plugs were constructed near the sewer inlet and outfall to prevent groundwater migration through the bedding and discharge to the low lying wet area. The bedding plugs extend approximately two feet in each direction beyond the existing pipe bedding that was reused to bed the new pipe.

A bedding drain and sump are located on the downstream side of the outfall bedding (upgradient of the plug) to collect impacted bedding groundwater. Water collected in the sump is transferred to the groundwater treatment system by a submersible sump pump. The pump is a Goulds Model 3886, ¾-horsepower pump, installed on a slide rail system to facilitate removal of the pump when necessary. The sump pump is normally in constant operation and pumps at a rate of approximately 5 gpm. When the inflow to the sump is less

than 5 gpm, the pump operates using float switches for on/off control. This flow enters the treatment train behind the bag filters and prior to the influent meter.

A heavy traffic asphaltic pavement pad was installed north of the Main Building where the stainless steel turnings are stored. Runoff to the turnings pad is collected in a trench drain and directed to the existing oil/water separator prior to discharge to Conewango Creek via Outfall 001 under SPDES Permit No. 0171832.

A new storm sewer was constructed to provide surface water drainage from the areas west of the Main Building and several adjoining roof areas. The new west side storm sewer originates at the shipping dock at the southwest corner of the Main Building and ultimately discharges to the Conewango Creek adjacent to MW-3 via Outfall SW-01 under NPDES General Permit for Stormwater Discharges Associated with Industrial Activity (No. NYR00B773).

# 4.0 OPERATION, MAINTENANCE, AND MONITORING

Under normal conditions, the groundwater treatment system operates automatically and does not require continuous attention. The system is equipped with automatic alarms and interrupts that will shut down the system to prevent an overflow situation or damage to equipment should a failure occur. The system alarms will be indicated by lighting on the control panel, and auto-dialer function.

This section presents an overview of the startup and operational procedures necessary for routine operation of the groundwater extraction and treatment system. Appendix A presents manufacturer and O&M information on the various system components.

## 4.1 Normal Operation

The treatment plant control system is designed so that the treatment system operates without continuous supervision in a failsafe mode. All process equipment can be shutdown locally or by initiating the PLC shutdown sequence described in Appendix C, Remedial Systems Logic and Control. The system uses an auto-dialer that operates under any of the following conditions:

- Building sump high level
- Building temperature out of range
- Groundwater pump shutdown

### *4.1.1 Groundwater Pump*

The groundwater pump will normally operate automatically and continuously. The groundwater pump is equipped with a manual on/off switch. Flow through the groundwater pump and the treatment system will be regulated by the automatic flow control valve. The flow control valve receives signals from the PLC and adjusts the flow to maintain a prescribed groundwater level. The groundwater level will be monitored and transmitted to the process controller by pressure transducers located in EW-5 and EW-12.

A sight glass is provided at the pump's suction to allow the operator to view the incoming groundwater. Temperature and pressure gauges are also provided at the pump inlet. At the pump outlet, a pressure gauge is also provided. A pump shutdown will occur under any of the following conditions:

- Air flow falls below low limit at air stripper
- High water level in the phase separator
- High water level in the air stripper
- High water level in the building sump

### *4.1.2 Bag Filters*

The bag filters are equipped with drain ports to enable the operator to relieve the pressure on the filters prior to changeout. A high pressure alarm (greater than 15 psi) indicates when the bag filters need to be changed out. This alarm will not cause any process shutdowns. Additional pressure buildup will cause a 1-inch pressure relief valve to open, bypassing the bag filters, and discharging directly to the phase separator. The pressure relief line also vents any air in the system to the top of the phase separator.

### *4.1.3 Phase Separator*

The phase separator contains a nozzle for release of the DNAPL and the LNAPL to storage drums, when necessary. The LNAPL nozzle is controlled by a ball valve and connected to a 55-gallon storage drum with a flexible hose. When necessary, the ball valve can be opened, releasing LNAPL to the drum.

Any DNAPL that may collect in the bottom of the phase separator will be transferred to 55-gallon storage drums for off-site disposal; the transfer operation will not be automatic and will require routine inspection of the DNAPL accumulation in the phase separator. (No DNAPL has historically been present in the incoming groundwater.) The phase separator high level alarm will shut down the groundwater pump and the sewer bedding sump pump, which in turn will send a signal to the auto-dialer that the system is down. Groundwater discharged from the sewer bedding sump will also discharge to the phase separator. Similarly, any LNAPL accumulation in the phase separator will be skimmed and transferred to 55-gallon storage drums for off-site disposal.

### *4.1.4 Air Stripper*

A flow rate indicator and totalizer are located on the air stripper discharge to monitor the flow to Conewango Creek. The totalized flow is recorded on a weekly basis. The air stripper is equipped with a high level switch and high level alarm. A high water level in the

air stripper reservoir will cause the air stripper blower to shutdown and transmit a signal to the PLC to shut down the remaining pump and treatment system components. This shutdown will send a signal to the auto-dialer that the system is down. Sight glasses are provided on the influent and effluent piping of the air stripper to allow viewing of the water conditions.

#### *4.1.5 Air Stripper Blower*

The air stripper blower normally operates automatically and continuously. The blower is equipped with a manual on/off switch. The air stripper blower will be deactivated when a high water level is detected in the air stripper. The air stripper blower will also shut down when the water level rises above the high level in the building sump.

#### *4.1.6 Building Sump*

The building sump pump is equipped with a manual switch for operation of the pump. The sump is used only during wash down of the air stripper trays. The sump is equipped with a high level switch that will shut the system down in the event excess water collects in the sump. This shutdown will activate the auto-dialer.

#### *4.1.7 Sewer Bedding Sump Pump*

The sewer bedding sump collects water migrating along the 28-inch HDPE storm sewer bedding. The sump is equipped with a submersible pump to discharge the collected water to the treatment plant upstream of the bag filters. The pump will operate automatically based on the water level in the sump. At high level, the pump will turn on until lower level is reached, at which time the pump will shut off. The sewer bedding sump also has a high-high level alarm to inform the operator of an unusual condition. This alarm will not trigger any shutdowns. The pump will be shutdown whenever the groundwater pump is shut down.

### 4.2 Maintenance

#### *4.2.1 General Treatment System*

Regular inspection and maintenance of the treatment systems shall include, but not necessarily be limited to, the following activities:

- General visual inspection of the treatment equipment for leaks, overflows, or malfunctions.
- Inspection or changing of bag filters when back pressure exceeds 15 psi. Spent bag filters are placed in a 55-gallon drum for off-site disposal when full.
- Periodic checking of NAPL levels in phase separator.
- Inspection of process-indicating instruments.
- Correction of operational problems.
- Repair or replacement of damaged parts.
- Routine maintenance for equipment as specified in the manufacturer's operating and maintenance manuals.

Keywell will perform weekly inspections of the treatment system components and record the information on Table 2. Inspection forms and maintenance records will be maintained in the treatment system building.

### *4.2.2 Air Stripper Tray Cleaning*

Prior to cleaning the air stripper, the unit must be shut down and flow through the unit temporarily stopped. Begin by removing the front covers. Insert the washer wand all the way into the opening. Have the spray nozzle pointed up toward the bottom of the lowest tray. Holding the wand tightly, pull the trigger to start the pressurized water flow. Expect the wand to kick back as flow starts. Move the wand side to side at a rate of about 1 inch per second, making sure to cover the entire tray bottom area. The recommended cleaning time for one side of one tray is 8 minutes for this model. Periodically stop the cleaning operation and inspect the cleaned area by shining a light into the unit. The area is clean when there are no deposits around the aeration holes. When the surface appears clean, move the wand to the top side of the tray by inserting it in the next highest cleanout port. Continue spraying with the nozzle pointed down onto the top surface of the tray. Remove all visible deposits from the tray baffles and the walls of the unit. Repeat the procedure for the bottom of the next higher tray, etc., working up to the top tray.

After the cleaning operation is finished, rinse the trays, baffles, and walls with the washer wand. Work down from the top tray to the sump tank. Make sure the surfaces are clean and the holes are not blocked by loosened debris. Rinse the top cover, flip it over, and wash the bottom side. Inspect the demister pad for fouling. Use the washer wand to remove

debris, deposits, and gummy residues sometimes found on the demister pad. Demister pads that are excessively plugged should be replaced. The old pad is removed by loosening the retainer screws on the hold-down brackets, and a new pad is installed in the same fashion.

#### *4.2.3 Groundwater Monitoring Wells*

The integrity of all groundwater monitoring wells will be evaluated as part of routine groundwater monitoring events. Monitoring well integrity including, but not limited to, sediment intrusion, working locks, adequate surface seals, and protective casings will be evaluated. In addition, the well riser will be inspected for cracks and damage. Well repair, if necessary, will be performed to restore the well to original construction conditions.

If it is determined through long-term monitoring that a well no longer provides useful information or a monitoring well requires replacement, a well decommissioning request will be submitted to the NYSDEC for approval, and implemented in general accordance with field operating procedures (FOPs) presented in the Post-Remedial Monitoring Plan (see Appendix D). A procedure for new well installation will be submitted for replacement wells, if required.

#### *4.2.4 Paved Areas and General Site*

The following maintenance activities will be performed:

- Visual inspection of the Site including sediment traps, paved areas, access roads, and security fence.
- Annual cleaning, inspection, and repair of pavement joints.
- Turnings and other material are swept weekly or on an as-needed basis from asphalt areas. This is performed using a sweeper attached on a small loader.

## 4.3 Monitoring

#### *4.3.1 Site Objectives*

The objective of the barrier wall is to prevent the migration of impacted groundwater in the Water Table Aquifer from the North Soil Area to Conewango Creek. The objectives of the groundwater extraction and treatment system are to:

- Create an inward hydraulic gradient between Conewango Creek and the Site, to the extent possible, given the changes in stage in Conewango Creek.
- Prevent migration of contaminated groundwater in the Water Table Aquifer to surface water bodies and the deeper Frewsburg Aquifer.
- Remove VOC contaminants from the extracted groundwater to levels acceptable for discharge.

### *4.3.2 Environmental Monitoring*

Appendix D contains the Post-Remedial Monitoring Plan used to determine the effectiveness and performance of the remedial systems. The components of the monitoring program include:

- Weekly groundwater treatment system inspection
- Monthly treatment system effluent discharge monitoring
- Semi-annual treatment system influent sampling
- Semi-annual groundwater and surface water hydraulic monitoring (spring and fall)
- Semi-annual groundwater quality monitoring (spring and fall)
- Annual seep inspection (fall)

The Post-Remedial Monitoring Plan also includes, as attachments, the treated groundwater discharge criteria specified by the NYSDEC Division of Environmental Remediation, standard FOPs, and monitoring well construction logs. The Monitoring Plan describes all requirements and frequencies for sampling, analysis, and monitoring of the remedial action components.

In addition, an untreated groundwater sample will be collected on a semi-annual basis to provide an indication of the treatment system efficiency. Samples will be analyzed for VOCs in accordance with EPA Method 624 or 8260B.

## 4.4 Health and Safety

All Keywell personnel involved in the OM&M of the remedial systems must be familiar with and observe the health and safety protocols outlined in the Health and Safety Plan (HASP) included as Appendix E. The HASP addresses those site-specific hazards that may potentially be encountered while performing the post-remedial maintenance and monitoring tasks described herein. Neither Keywell nor Benchmark accepts responsibility

for the health and safety of any individuals other than their own employees. Site representatives, contractors, and any other persons performing work at the Site shall be required to provide their own site-specific HASP covering their employees and subcontractors.

# 5.0 RECORDKEEPING, DOCUMENTATION, AND NOTIFICATION REQUIREMENTS

The text, tables, and figures of the following deliverables will be submitted in paper form (double-sided) with the appendices provided electronically in the form of a CD attached to the report. The laboratory analytical data packages will be included on the CD.

## 5.1 Recordkeeping

Table 2 outlines the information Keywell will record on a weekly basis. Completed inspection forms will be maintained in the treatment system building.

## 5.2 Monthly Reporting

Keywell will provide NYSDEC treatment system effluent data (monthly) and monitoring well data (semi-annually) in Electronic Data Deliverable (EDD) format via EarthSoft's EQuIS (Environmental Quality Information System).

## 5.3 Annual Periodic Review Report

The first Periodic Review Report (PRR) under the 2011 OM&M Plan will be submitted to NYSDEC on or before June 30, 2011. This submittal will cover the period of January 1, 2010 to April 30, 2011. Subsequent PRR submittals will be on an annual basis for the period May 1 through April 30. The PRR will summarize and document an evaluation of all site-related data to support the required elements of the Institutional Controls and Engineering Controls (IC/EC) certification and include:

- The performance and effectiveness of the remedy including identification of any needed repairs or modifications. The remedy includes the groundwater extraction and treatment system; the barrier wall; the stormceptor system; site pavement; and fencing.
- Any new conclusions or observations regarding Site contamination based on inspections or data generated by the implementation of the remedy.
- Recommendations regarding any necessary changes to the remedy and/or Site Monitoring or OM&M Plans.
- A Site figure showing the groundwater monitoring well locations where effectiveness monitoring is performed, showing the area of influence/radius of capture of the groundwater extraction system.

The PRR will also demonstrate compliance with the Groundwater Monitoring Plan by including a summary of all groundwater monitoring laboratory analytical data and any recommendations for monitoring program revisions. The PRR will also include a Performance Evaluation Report that provides:

- A description of the performance of the groundwater extraction and treatment system, including:
  - Total hours of operation.
  - Volume of groundwater extracted.
  - A description of major maintenance activities and/or problems that required corrective action during the reporting period and resulted in significant downtime. A brief summary of routine maintenance events will also be provided.
  - Evaluation of the effectiveness of the groundwater extraction system, and a description of any system optimization performed.
- Monthly treatment system effluent data, and the calculated mass of contaminants removed via groundwater extraction and treatment using semi-annual influent treatment system data.
- Groundwater analytical results from both semi-annual groundwater monitoring events compared to NYSDEC Class GA groundwater quality standards. The annual spring sampling event summarized in Table 2 includes all shallow and deep groundwater monitoring wells.
- Groundwater and surface water hydraulic monitoring data from both semi-annual events.
- Shallow groundwater isopotential maps documenting the inward hydraulic gradient provided by the groundwater extraction system for the spring and fall monitoring events.
- Comments, conclusions, and recommendations for any system or monitoring program revisions based on an evaluation of the prior year of operation.

## 5.4 Semi-Annual Reporting

Keywell will prepare a semi-annual Environmental Monitoring and Inspection letter report to supplement the annual PRR described above. Semi-annual reports will be offset from the annual PRR by six months, with the first semi-annual report under the 2011 OM&M Plan submitted on or before December 30, 2011 to cover the period of May 1, 2011 to October 31, 2011. The information collected from November 1 through April 30 will be

included in the annual PRR; a separate semi-annual report will not be submitted in June of each year. The semi-annual letter reports will include the following:

- A table summarizing monthly treatment system effluent data, as well as the semi-annual influent data.
- A table summarizing the semi-annual groundwater quality data compared to NYSDEC Class GA groundwater quality standards. The fall semi-annual sampling event summarized in Table 2 includes the shallow water table aquifer wells that consistently show VOC detections.
- A table summarizing groundwater and surface water hydraulic monitoring data for the fall semi-annual event.
- A shallow groundwater isopotential map documenting the inward hydraulic gradient provided by the groundwater extraction system for the fall monitoring event.
- A description of major maintenance activities and/or problems with the groundwater treatment system that required corrective action during the reporting period and resulted in significant downtime.

## 5.5 5-Year Remedial Technology Evaluation

Keywell will provide NYSDEC with the 5-Year Remedial Technology Evaluation with the Annual PRR to be submitted on or before June 29, 2012. This 5-year review will assess the current treatment system and evaluate the need for additional remedial measures throughout the entire site, including a discussion of the groundwater quality in the vicinity of MW-2.

## 5.6 Notifications

NYSDEC will be notified in advance of any changes to the groundwater collection or treatment systems that could materially affect the quality or character of system discharges. NYSDEC will be notified within 24 hours of any interruption in treatment.

## 5.7 Remedial System Modifications

Any operational changes to the remedial system will be submitted to NYSDEC for approval prior to the change. Appendix F will contain any correspondence with the NYSDEC on proposed changes and subsequent approvals.

# 6.0 REFERENCES

1. New York State Department of Environmental Conservation. March 1996. *Record of Decision, Vac Air Alloys Inactive Hazardous Waste Site, Town of Carroll, Chautauqua County, New York, Site No. 907016.*

2. Conestoga-Rovers & Associates. May 1996. *Evaluation of North Soil Area Remedial Alternatives, Vac Air Alloys Division, Frewsburg, New York.*

3. Conestoga-Rovers & Associates. July 1998. *Final Remedial Construction Report, Vac Air Alloys Site, Frewsburg, New York, NYSDEC Site No. 907016.*

4. Conestoga-Rovers & Associates. September 1998. *Operation and Maintenance Plan, Remedial Action, Vac Air Alloys Site, Frewsburg, New York, NYSDEC Site No. 907016.*

5. New York State Department of Environmental Conservation. September 1996. *Order on Consent, Index #B9-0333-90-05.*

6. Conestoga-Rovers & Associates. June 1997. *Final Remedial Design Report, Vac Air Alloys Site, Frewsburg, New York, NYSDEC Site No. 907016.*

# TABLES

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ENVIRONMENTAL
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# TABLE 1

## EXTRACTION WELL CONSTRUCTION DETAILS

## 2011 OPERATION, MAINTENANCE & MONITORING PLAN
## Former Vac Air Alloys Site
## Frewsburg, New York

| Extraction Well No. | Ground Elevation | Top of Clay Elevation | Bottom of Screen Elevation | Discharge Invert Elevation |
|---|---|---|---|---|
| EW-1 | 1246.00 | 1229.77 | 1230.02 | 1241.80 |
| EW-2 | 1246.48 | 1228.43 | 1228.68 | 1241.50 |
| EW-3 | 1247.85 | 1229.85 | 1230.10 | 1242.50 |
| EW-4 | 1248.93 | 1230.93 | 1231.18 | 1244.27 |
| EW-5 | 1249.35 | 1227.10 | 1227.35 | 1244.31 |
| EW-6 | 1249.93 | 1225.93 | 1226.18 | 1244.47 |
| EW-7 | 1249.60 | 1227.60 | 1227.85 | 1244.63 |
| EW-8 | 1249.10 | 1231.60 | 1231.85 | 1244.82 |
| EW-9 | 1250.10 | 1231.93 | 1232.18 | 1244.93 |
| EW-10 | 1249.10 | 1230.68 | 1230.93 | 1245.07 |
| EW-11 | 1249.35 | 1232.10 | 1232.35 | 1245.17 |
| EW-12 | 1251.00 | 1229.77 | 1230.02 | 1244.95 |
| EW-13 | 1251.60 | 1231.60 | 1231.85 | 1244.38 |
| EW-14 | 1251.35 | 1233.35 | 1233.60 | 1244.34 |
| EW-15 | 1251.27 | 1233.27 | 1233.52 | 1246.72 |
| EW-16 | 1251.00 | 1231.27 | 1231.52 | 1246.75 |
| EW-17 | 1251.27 | 1231.27 | 1231.52 | 1246.54 |
| EW-18 | 1250.93 | 1226.93 | 1227.18 | 1246.71 |

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**TABLE 2**

**WEEKLY TREATMENT SYSTEM INSPECTION FORM**

**2011 OPERATION, MAINTENANCE & MONITORING PLAN**
**Former Vac Air Alloys Site**
**Frewsburg, New York**

**Date:** _____

**Inspector:** _____

| Equipment/Location | Tag No. | Reading | Units | Normal Range Low | Normal Range High |
|---|---|---|---|---|---|
| **Groundwater Pump** | | | | | |
| Inlet Pressure | PI-200 | | in Hg | 3 | 27 |
| Inlet Temperature | TI-201 | | °F | 35 | 45 |
| Outlet Pressure | PI-204 | | psi | 20 | 30 |
| Total Hours Running | Meter | | hr | | |
| **Bag Filters** | | | | | |
| No. 1 Pressure | PI-207 | | psi | 0 | 15 |
| No. 2 Pressure | PI-208 | | psi | 0 | 15 |
| **NAPL Separator** | | | | | |
| Total Flow In | FGI-206 | | gal | | |
| | | | gpm | | |
| NAPL Pressure | | LNAPL Yes/No | | | |
| | | DNAPL Yes/No | | | |
| **Air Stripper** | | | | | |
| Air Inlet Pressure | PI-213 | | in w.c. | 2 | 4 |
| Air Outlet Pressure | PI-214 | | in w.c. | 22 | 24 |
| Total Flow Out | FGI-222 | | gal | | |
| | | | gpm | | |

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**TABLE 2**

**WEEKLY TREATMENT SYSTEM INSPECTION FORM**

**2011 OPERATION, MAINTENANCE & MONITORING PLAN**
**Former Vac Air Alloys Site**
**Frewsburg, New York**

**Date:** _____

**Inspector:** _____

**Alarms Occurring?** ☐ **YES** ☐ **NO**

If yes, describe: _____

**Leaks in Process Lines/Equipment?** ☐ **YES** ☐ **NO**

If yes, describe: _____

**Maintenance Performed?** ☐ **YES** ☐ **NO**

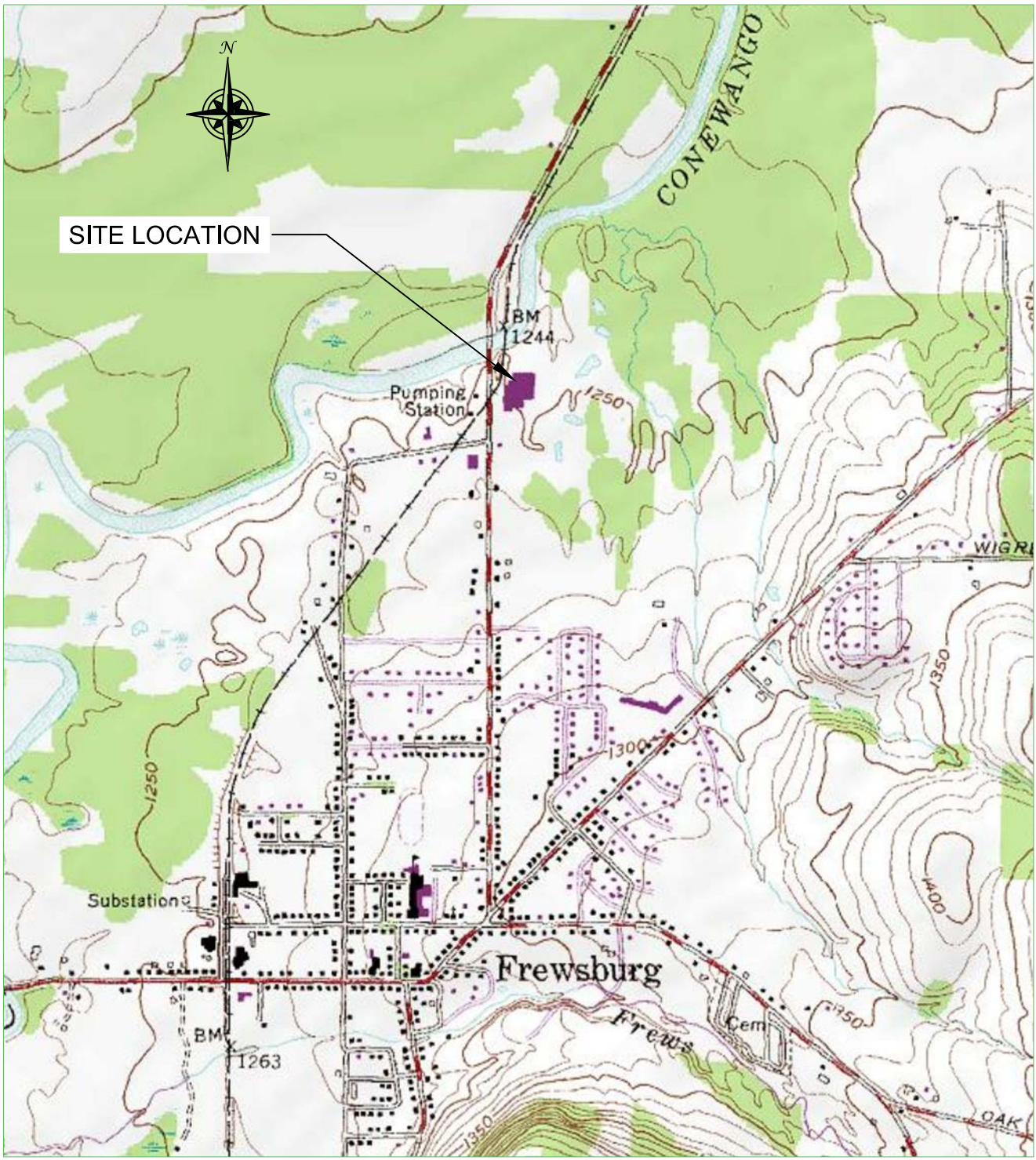
If yes, describe: _____

**Sampling Data:**

| Type of Sample | Sample No. | Chain of Custody No. |
|---|---|---|
| Weekly Effluent pH | | |
| Monthly Effluent Sample | | |
| Annual Influent Sample | | |

# FIGURES

# FIGURE 1




750' 0' 750' 1500'

SCALE: 1 INCH =1500 FEET
SCALE IN FEET
(approximate)

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2558 HAMBURG TURNPIKE
SUITE 300
BUFFALO, NY 14218
(716) 856-0599

PROJECT NO.: 0095-005-100

DATE: MAY 2011

DRAFTED BY: AJZ

## SITE LOCATION AND VICINITY MAP

POST-REMEDIAL OPERATION, MAINTENANCE, & MONITORING PLAN

FORMER VAC AIR ALLOYS SITE
FREWSBURG, NEW YORK

PREPARED FOR
KEYWELL, LLC

MP-1 MP-2

2 2A 1 T-3 MW-7 MW-12

FALCONER-FREWSBURG ROAD

MW-5D MW-5 EW-1 MW-13 SG-1 EW-2 MW-14 EW-3 MW-4D MW-4 EW-4 MW-3 EW-5 EW-6 EW-7 MW-8 MW-9 (DECOMMISSIONED) EW-8 MW-9R EW-9 MW-2 Conewango Creek

MW-10/BH-P EW-17 EW-18 EW-16 PZ-1-96 CENTER SOIL AREA EW-15 EW-13 MW-11R EW-14 MW-11 (DECOMMISSIONED) EW-10 EW-11 PZ-3-97 Groundwater Treatment Facility

STORMCEPTER AREA EW-12 LOW LYING WET AREA

POND PZ-2 MW-6 MW-1

LEGEND

- SHALLOW MONITORING WELL
- GROUNDWATER EXTRACTION WELL
- DISTRICT WATER SUPPLY WELL
- SURFACE WATER MONITORING LOCATION
- PIEZOMETER
- SWALE/CULVERT
- FENCE
- BARRIER WALL ALIGNMENT
- (1400.26) WATER LEVEL ELEVATION

o MW-9R NEW SHALLOW MONITORING WELL

N

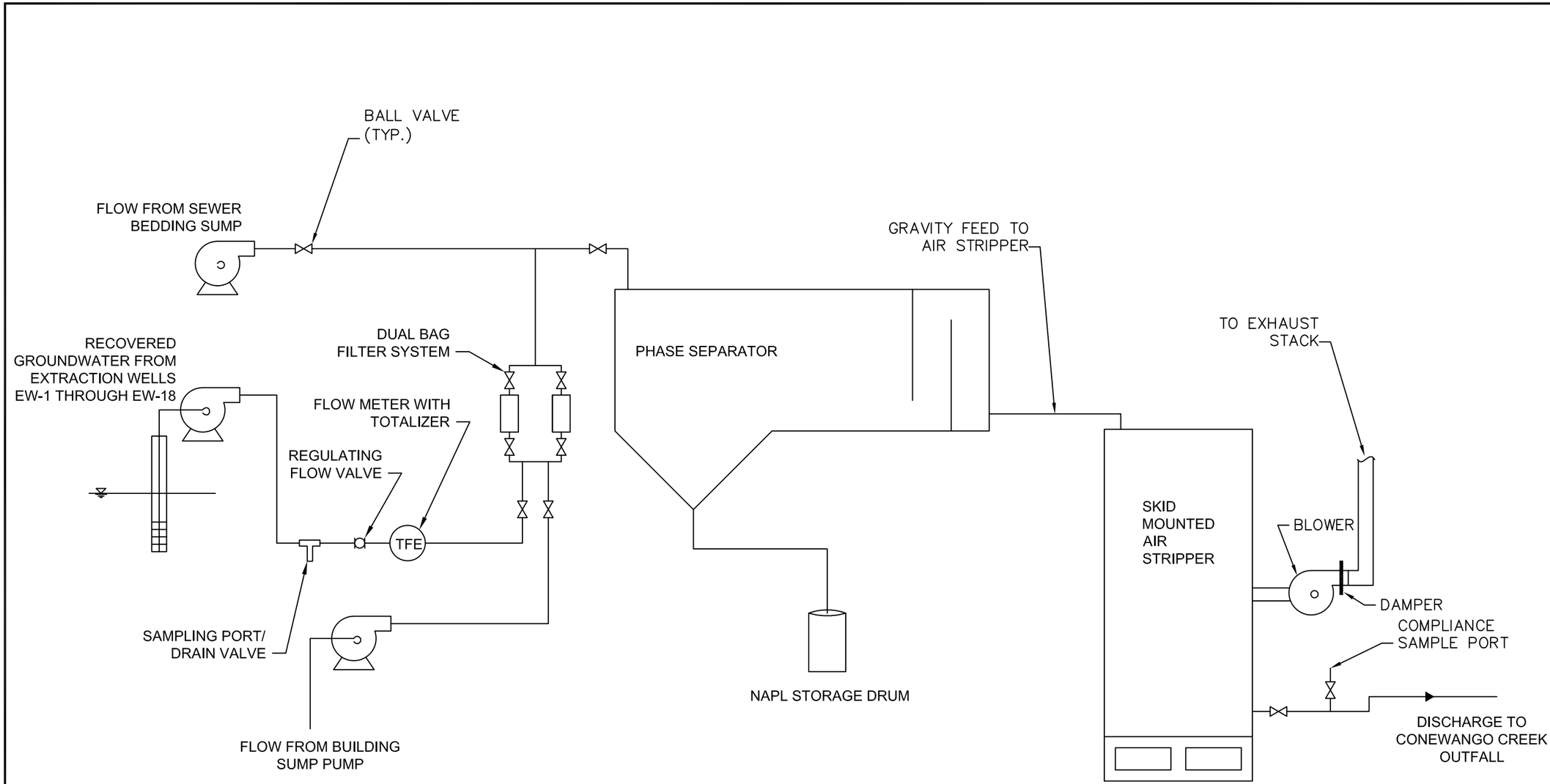
0 60 150ft

# FIGURE 2

## SITE PLAN

## Former Vac Air Alloys Site

## Keywell, L.L.C., Frewsburg, New York

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JOB NO.: 0095-005-100

**GROUNDWATER TREATMENT**
**PROCESS FLOW SCHEMATIC**
POST-REMEDIAL OPERATION, MAINTENANCE, AND MONITORING PLAN

FORMER VAC AIR ALLOYS SITE
FREWSBURG, NEW YORK
PREPARED FOR
KEYWELL, LLC

**FIGURE 3**

DATE: MAY 2011
DRAFTED BY: AJZ
FILEPATH: