REPORT

Shallow Bedrock Ground-Water Interim Action Enhancement Basis of Design Report

Former Powerex, Inc. Facility
Site Code 7-06-006
Auburn, New York

Prepared for:
General Electric Company
Corporate Environmental Programs
Albany, New York

August 21, 2000

BBL
BLASLAND, BOUCK & LEE, INC.
engineers & scientists

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VIA FEDERAL EXPRESS

August 24, 2000

Mr. Kevin Kelly
Division of Hazardous Waste Remediation
New York State Department of Environmental Conservation
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Syracuse, New York 13204

RECEIVED
AUG 25 2000
DIVISION OF ENVIRONMENTAL REMEDIATION

Subject: **Detailed Design Documents**
Contigent Air Stripper for Primary Treatment System
Shallow Bedrock Ground Water Interim Action
Former Powerex, Inc. Facility (Site No. 7-06-006)
Auburn, New York

Dear Kevin:

Please find enclosed three copies of the detailed design documents prepared by Blasland, Bouck & Lee, Inc. (BBL) for the contingent air stripper for the primary treatment system associated with the Shallow Bedrock Ground Water Interim Action at the above-referenced site. This unit must be added to meet the stringent discharge limitations that the New York State Department of Environmental Conservation (NYSDEC) intends to set for the irrigation fields.

As always, please contact me if you have any comments or questions. Otherwise, as we discussed on August 16, 2000, we are proceeding to procure the necessary equipment and install the contingent air stripper.

Respectfully,

Paul Wm. Hare

Paul Wm. Hare, C.P.G.
Manager, Northeast/Midwest Regions,
Environmental Remediation Program

enclosures (three copies)

cc: Michael Lesser, Esq., NYSDEC (Central Office)
Dave Foster, NYSDEC (Central Office) (w/ two copies of enclosures)

Henriette Hamel, NYSDOH (Syracuse Field Office) (w/ two copies of enclosures)
Don Sauda, BBLES (w/o enclosures)
Judy Gretsch, Decision Quest EIM (w/o enclosures)
Bonnie Harrington, Esq., General Electric (w/o enclosures)

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TECHNICAL REPORT

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Prepared for:
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1. Introduction

1.1 General

This report presents the basis of design for an enhancement to the Shallow Bedrock Ground-Water Interim Action System at the former Powerex, Inc. (Powerex) facility (the site) in Auburn, New York (see Figure 1). This enhancement has been designed to provide additional treatment, via air stripping, of volatile organic compounds (VOCs) remaining in the treated ground water before being discharged to the irrigation fields (or surface water, if that discharge option is used).

The Shallow Bedrock Ground-Water Interim Action, constructed during 1998, involved installing a ground-water extraction and treatment system at the site. Following construction, the New York State Department of Environmental Conservation (NYSDEC) issued preliminary substantive requirements for water discharges from the ground-water treatment system, which included very low discharge limitations for certain discharge locations (i.e., outfalls). The Shallow Bedrock Ground-Water Interim Action Enhancement will consist of a low-profile air stripping system designed to provide additional treatment of any remaining VOCs in the ground water before discharging to either the irrigation fields (or surface water, if that discharge option is used).

1.2 Site Background

The site consists of 55.4 acres of land located on the boundary of the Town of Aurelius and the City of Auburn in Cayuga County, New York. The General Electric Company (GE) purchased the property, formerly farmland, in 1951 and constructed a manufacturing plant (see Figure 2) where a variety of electric components, including radar equipment, printed circuit boards for high-fidelity equipment, and high-voltage semi-conductors were manufactured. The site was acquired by Powerex in January 1986. Powerex continued to manufacture high-voltage semi-conductors until May 1990, when the plant was closed. In November 1990, GE purchased the site back from Powerex, largely to facilitate remedial activities. The plant remains inactive today.

Past waste solvent handling practices at the site included the disposal of waste solvents into one, possibly two, unlined evaporation pits: the North Evaporation Pit and the purported West Evaporation Pit. An unknown quantity of solvents was reportedly disposed of in the purported West Evaporation Pit located in the field just west of the plant building. Acetone may have been used to ignite fires in this pit to burn off ponded liquids. The practice of burning was apparently discontinued and the purported West Evaporation Pit abandoned in 1962 by bulldozing. However, although VOCs have been detected in overburden soils and ground water in the field west of the plant building, the exact location, dimensions, and history of the purported West Evaporation Pit remain unknown. Aerial photographs clearly indicate that an evaporation pit was not present in this field in July 1954. Additionally, there is no visible expression of a former evaporation pit in aerial photographs taken in June 1963, and analysis of samples from a series of 49 test pits installed in November 1989 failed to indicate any signs of the purported West Evaporation Pit.

The North Evaporation Pit is located north of the northwestern corner of the plant building. Reports indicate that use of this pit began in 1962 or 1963, after the purported West Evaporation Pit was abandoned. During its use, the North Evaporation Pit received an unknown quantity of waste solvents which were gravity-fed to the pit through pipes from the Drum Storage Building located on the north side of the plant building. Use of the North Evaporation Pit was reportedly discontinued when the underground Waste Solvent Tank was installed in 1966 or 1967.

The Waste Solvent Tank was a 21,000-gallon, underground concrete tank located just outside the northwestern corner of the plant building. Waste solvents were periodically removed from the tank and transported off-site for reclamation or disposal. Powerex discontinued use of the Waste Solvent Tank in August 1988 and closed the tank in December 1988 in accordance with a closure plan approved by the NYSDEC. The Waste Solvent Tank was subsequently removed as part of the Site Preparation Activities, the first phase of construction for the Shallow Bedrock Ground-Water Interim Action.

Waste solvents were also stored in two small underground tanks located along the eastern side of the plant building. These two Laboratory Waste Solvent Tanks, which were apparently installed in 1960, were reportedly used to collect waste solvents that were gravity-fed via underground piping from the Engineering Laboratory located just inside the eastern wall of the plant building. Periodically, the contents of these tanks were reportedly pumped into 55-gallon drums, which were subsequently taken to the Drum Storage Building and emptied into the drain leading to the North Evaporation Pit. Use of the two tanks was reportedly discontinued in 1966 or 1967 when the Waste Solvent Tank and the drain lines that connected it to the Engineering Laboratory were installed. The two Laboratory Waste Solvent Tanks were removed in February 1994 as part of an Interim Remedial Measure (IRM) performed under the Order on Consent executed with the NYSDEC for the Remedial Investigation/Feasibility Study (RI/FS).

1.3 Previous Investigations

Systematic investigations of subsurface environmental conditions at the site began in December 1985, when a Phase I Investigation was initiated to evaluate the vertical extent of contaminants in overburden soils at the North Evaporation Pit. This investigation was conducted by Dunn Geoscience Corporation (Dunn) and is documented in a report dated February 1986.

In November 1986, Dunn proceeded with the Phase II Investigation to obtain a general understanding of hydrogeologic conditions and to make a preliminary assessment of the nature and extent of chemical constituents, primarily VOCs, in ground water in the vicinity of the North Evaporation Pit. The Phase II Investigation is detailed in a report dated July 1987.

Based on the information obtained during the Phase I and II Investigations, the site was formally added to the NYSDEC's Registry of Inactive Hazardous Waste Disposal Sites (Site Code 7-06-006) in October 1987. The site was designated Class 2, which requires that a remedial program be developed, including performance of a RI/FS.

Dunn initiated the Phase III Investigation in August 1987 to obtain a more thorough understanding of hydrogeologic conditions, further define the extent of VOCs in ground water, and determine if VOCs were present in surface water at the site. The results of the Phase III Investigation are presented in a May 1988 report and indicated that VOCs were present in the drainage ditch located in the northwestern corner of the site and also in the storm sewer which passes through the field west of the plant building.

Dunn began the fourth and final phase of voluntary investigation in August 1988. Although the purpose of this Phase IV Investigation was to better define the three-dimensional extent of VOCs within the bedrock ground water, a considerable amount of information was also collected for both surface water and overburden soils. The Phase IV Investigation is detailed in a September 1991 report prepared by Dunn Corporation.

1.4 Remedial Investigation/Feasibility Study

An Order on Consent (Index No. A7-0286-92-08) was executed between GE and the NYSDEC on March 31, 1993. This order requires that GE perform a RI/FS for the site, and a RI/FS Work Plan was approved by NYSDEC and incorporated into the order. The RI/FS is currently in progress. The Order on Consent also allows GE to propose IRMs for the NYSDEC's consideration. With NYSDEC's approval, GE has completed three such IRMs to date.

GE retained Dunn Engineering Company to perform the RI. To date, all of the non-contingent tasks of the RI have been completed. These tasks include performing a step-rate pumping test on a large-diameter well installed in the shallow bedrock less than 50 feet downgradient of the North Evaporation Pit. In addition, some of the contingent tasks of the RI have been triggered and have also been completed, including the permanent abandonment of selected wells, and the subsequent resampling of certain deep bedrock wells and their associated shallow bedrock wells.

were they abandoned, or decommissioned?

Based on data developed from the site investigations performed to date, the site consists of three principal hydrostratigraphic units: overburden, shallow bedrock, and deep bedrock. The overburden unit consists of approximately 10 to 22 feet (15 feet average) of relatively fine-grained, glacially-derived, unconsolidated deposits. The water table fluctuates up to 10 feet seasonally, but during much of the year is near ground surface.

The shallow bedrock hydrostratigraphic unit consists of limestones of the Onondaga and underlying Manlius Formations, both of Devonian age. The combined thickness of these formations at the site is approximately 45 feet. The potentiometric surface in the shallow bedrock also fluctuates up to 10 feet seasonally, but is within a few feet of ground surface during the wet seasons (i.e., late fall through spring). The shallow bedrock is strongly anisotropic in vertical section, with a horizontal hydraulic conductivity approximately 250 to 500 times the vertical conductivity. The vertical hydraulic gradient is generally downward from the overburden to the shallow bedrock unit, and is downward within the shallow bedrock to the deep bedrock unit.

The deep bedrock unit consists of dolomites of the Rondout, Cobleskill, and Bertie Formations, which are of Silurian age. The deep bedrock unit is generally less fractured and less permeable than the limestones of the shallow bedrock unit. Additional work is currently planned during the RI to develop a better understanding of ground water conditions in the deep bedrock unit.

As part of the RI, a Biodegradation Study has been completed by Beak Consultants, Ltd. (Beak), as detailed in an April 1995 report. In summary, Beak conducted a study on the biodegradation of trichloroethene (TCE) and other VOCs in the ground water in the three hydrostratigraphic units identified at the site. The objectives of the study were to determine ~~if~~ whether biodegradation is occurring and proceeding to convert VOCs to innocuous end products, to evaluate the nature of the biological processes, and to assess what role biodegradation could play in the overall remedial program. The information presented in the Biodegradation Study Report indicates that several biological processes are working symbiotically to degrade TCE in the overburden and shallow bedrock units.

With respect to surface water conditions at the site prior to implementation of the Surface Water Interim Action, it appeared that overburden ground water had discharged to storm sewer drains and the on-site drainage ditch flowing northwest from the plant building during wet portions of the year. [Because overburden ground water in certain areas of the site contains VOCs,] contaminants had previously been detected in surface water in and downstream of those areas. TCE, cis-1,2-dichloroethene (DCE), vinyl chloride, and chloroform had been detected in surface water in the storm sewer drains located in the northeast corner of the West Parking Area and the field west of the plant building. Additionally, flow from the storm sewer drain which ran along the back of the 1962 Building ?

? did it, or didn't it?

Addition adjacent to the Waste Solvent Tank area appeared to contain tetrachloroethene (PCE), 1,1,1-trichloroethane (TCA), and xylenes in addition to TCE and cis-1,2-DCE. TCE, cis-1,2-DCE, and PCE had also been detected in the drainage ditch running behind the plant building.

GE has retained O'Brien & Gere Engineers, Inc. (O'Brien & Gere) to perform the FS, and the development of remedial alternatives has been initiated. However, the remainder of the FS cannot be performed until the RI has been completed.

1.5 Interim Remedial Measures

Prior to construction of the Surface Water Interim Action, two other IRMs had been completed at the site. Under the observation of Dunn Engineering Company, OBG Technical Services, Inc. excavated and removed the two Laboratory Waste Solvent Tanks and their contents in February 1994. This IRM was performed under the Order on Consent pursuant to the NYSDEC-approved Laboratory Waste Solvent Tanks IRM Work Plan dated September 1993. Soil from the base and walls of the excavations was sampled in accordance with the work plan, and VOCs were detected. The excavations were subsequently backfilled and the contingent investigative activities identified in the work plan were performed to determine the extent of VOCs in the vicinity of the two tanks. These investigative activities included soil borings radiating outward from the two tanks and the installation of overburden and shallow bedrock monitoring wells. The resulting data are to be incorporated into the RI, and these source areas are to be addressed in the FS for the site.

The second IRM involved the installation of additional fencing and gates at the site. This Access Restriction IRM was performed by Atlas Fence, Inc. and was completed in December 1994. Construction observation was conducted by O'Brien & Gere. This IRM was also performed under the Order on Consent, in accordance with the NYSDEC-approved Access Restriction IRM Work Plan dated July 1994.

1.6 Interim Action

To support development and implementation of an Interim Action addressing the surface water and shallow bedrock ground water, Dunn Engineering Company prepared an Interim Remedial Investigation (IRI) Report to document the investigative activities which had been performed to date pursuant to the NYSDEC-approved RI/FS Work Plan. The investigative activities conducted pursuant to implementation of the Laboratory Waste Solvent Tanks IRM Work Plan are also described in the IRI Report, which was submitted to the NYSDEC for review in January 1995.

To expedite implementation of an Interim Action and to further support the associated decision-making, GE proposed to conduct certain pre-design investigation activities and also pilot test the use of dual-phase extraction technology at the site. These activities were incorporated into the RI/FS via an addendum to the work plan. The pre-design investigation activities included: sampling of sediments in the drainage ditch at the site; a geotechnical assessment of three existing building foundations for possible reuse during the remedial program; and a constant-head pumping test of the large-diameter well previously installed next to the North Evaporation Pit. The pilot testing consisted of three dual-phase extraction tests; one test was performed on the large-diameter well previously installed next to the North Evaporation Pit (designated PW-1), and the two other tests were performed on large-diameter wells installed next to the Waste Solvent Tank and purported West Evaporation Pit (designated as PW-2 and PW-3, respectively).

After completing the pre-design investigation and pilot testing activities, O'Brien & Gere performed a Focused Feasibility Study (FFS) to evaluate various interim remedial alternatives for surface water and shallow bedrock ground water. A FFS Report was submitted to the NYSDEC for its review in February 1995. An addendum to the FFS Report that evaluates two additional interim remedial alternatives for the shallow bedrock ground water, both of which involve hybridized discharge options, was submitted to the NYSDEC in September 1995. The FFS Report Addendum did not impact the recommended interim remedial alternative for the surface water.

In the FFS Report, a number of remedial alternatives to address the surface water at the site were developed and analyzed. Alternative SW2 was the recommended remedial alternative and included the following major activities:

- Removal and off-site disposal of impacted sediments in the on-site drainage ditch upstream of the Trap Dam;
- Slip-lining or grouting portions of the storm sewer piping to mitigate the infiltration of impacted overburden ground water;
- Installing piping in the on-site drainage ditch to mitigate the infiltration of impacted overburden ground water;
- Removal and off-site disposal of the abandoned agriculture drainage pipe at the northwestern corner of the site; and
- Comprehensive monitoring program to document effectiveness.

In the FFS Report and its addendum, a number of remedial alternatives were developed to address the shallow bedrock ground water at the site. Alternative SBGW4D was the recommended remedial alternative and included the following activities:

- Extraction of ground water from the shallow bedrock hydrostratigraphic unit;
- Construction, start-up, and operation of an on-site ground-water treatment system;
- Discharge of treated ground water by the combination of several methods including (a) recharge back to the shallow bedrock unit via recharge wells, (b) discharge to the on-site surface water, (c) discharge to the City of Auburn's wastewater treatment plant, and, possibly, (d) recharge to the ground surface via sprinkle irrigation during the growing season; and
- Comprehensive monitoring program to document effectiveness.

Since the recommended Surface Water and Shallow Bedrock Ground-Water Interim Actions were not interdependent, GE separated these actions so that the surface water could be addressed on an expedited schedule. A basis of design report, dated September 7, 1995, was prepared by Blasland, Bouck & Lee, Inc. (BBL) to present the fundamental design concepts for the Surface Water Interim Action. GE submitted this report to the NYSDEC on September 8, 1995, and, so that construction could be substantially completed in 1995, proposed to complete the construction activities for the Surface Water Interim Action as a third IRM under the existing Order on Consent. In a letter dated October 3, 1995, NYSDEC approved commencement of the work described in the Surface Water Interim Action Basis of Design Report as a third IRM.

1.7 Surface Water Interim Action

The Surface Water Interim Action was performed pursuant to the existing Order on Consent in accordance with the Surface Water IRM Work Plan, which was submitted by GE to the NYSDEC in October 1995. BBL Environmental Services, Inc. (BBLES) was selected by GE as general contractor to implement the Surface Water Interim Action, which consisted of the following major activities:

- Removing and off-site disposal of impacted sediments from the on-site drainage ditch upstream of the Trap Dam;
- Removing and off-site disposal of abandoned agricultural drainage pipe from the field west of the plant building;
- Abandoning nine storm sewer catch basins in the West Parking Area;
- Slip-lining the existing reinforced concrete pipe from manhole MH-1 to the on-site drainage ditch with high density polyethylene (HDPE) pipe;
- Abandoning or removing some of the existing storm sewer system north and west of the plant building and replacing with a water-tight HDPE storm sewer system;
- Removing and replacing with HDPE piping the storm sewer section near the former Laboratory Waste Solvent Tanks;

- Demolishing and off-site disposal of the former Oil Storage Building and adjacent concrete trays; and
- Removing to grade and off-site disposal of four concrete tank saddles and the northern section of concrete diking in the Waste Solvent Tank area.

Construction of the Surface Water Interim Action began in early November 1995 and was substantially completed by the end of December 1995. Surface restoration was completed in June 1996. An Engineering Certification Report, prepared by BBL, was submitted to NYSDEC by GE in February 1996.

1.8 Surface Water Interim Action Enhancement

Sampling conducted following construction of the Surface Water Interim Action indicated the continued presence of VOCs, primary TCE, cis-1,2-DCE, and PCE, in the storm sewer system at the site. To address the continued presence of VOCs in the site storm sewer system, GE proposed implementation of a Surface Water Interim Action Enhancement. A Basis of Design Report, dated October 30, 1996, was prepared by BBL to present the detailed design for the Surface Water Interim Action Enhancement. GE submitted this report to the NYSDEC in November 1996. Information regarding the potential air emissions associated with the Surface Water Interim Action Enhancement was also submitted to NYSDEC in November 1996 for the purpose of determining substantive requirements, if any. The NYSDEC provided approval to proceed with the proposed enhancement activities in December 1996.

BBLES was selected by GE as general contractor to implement the Surface Water Interim Action Enhancement. Implementation of the Surface Water Interim Action Enhancement consisted of the following major activities:

- Installing an incoming electrical service to provide power for the Surface Water Interim Action Enhancement and for the future Shallow Bedrock Ground-Water Interim Action;
- Installing an air bubbler system in catch basin CB-16 to aerate the water in the site storm sewer system;
- Installing an equipment enclosure adjacent to catch basin CB-16 to house the air bubbler system equipment and controls; and
- Installing security fencing around catch basin CB-16 and the equipment enclosure.

Construction of the Surface Water Interim Action Enhancement began in December 1996 and was substantially completed in January 1997. An Engineering Certification Report, prepared by BBL, was submitted to NYSDEC by GE in February 1997. Operation of the Surface Water Interim Action Enhancement began in January 1997 and continues today.

1.9 Shallow Bedrock Ground-Water Interim Action

As stated previously, the FFS Report recommended alternative SBGW4D to address shallow bedrock ground water at the site. GE retained Radian Engineering, Inc. (Radian) to perform the design activities associated with the Shallow Bedrock Ground-Water Interim Action. A Basis of Design Report, dated October 7, 1996 was prepared to present the fundamental design concepts for the Shallow Bedrock Ground-Water Interim Action. The 2-PHASE Extraction™ technology patented by Xerox Corporation was selected to perform the ground-water extraction component of the Interim Action. The 2-PHASE Extraction™ process was chosen because it is the most aggressive method which was currently available for accomplishing hydraulic control of ground water at this site. To accelerate implementation of the Shallow Bedrock Ground-Water Interim Action, the construction activities were conducted in two phases. The first phase consisted of the Site Preparation Activities that needed to be performed before installation of the on-site ground-water extraction and treatment system. This phase consisted of the following activities:

- Demolishing and removing the Waste Solvent Tank and the Temporary Plating Solution Storage Tank;
- Renovating a portion of the 1975 Building Addition interior for use as the Primary Treatment Room; and
- Installing a water service to the southwestern corner of the renovated 1975 Building Addition that utilized existing sections of water main piping, capped unused sections of water main piping, and installed new sections of water main piping.

Construction of the first phase of the Shallow Bedrock Ground-Water Interim Action began in July 1997 and was substantially completed in December 1997. An Engineering Certification Report, prepared by Radian, was submitted to NYSDEC by GE in July 1998.

The second phase of the Shallow Bedrock Ground-Water Interim Action consisted of the installation of an on-site ground-water extraction and treatment system and was performed in accordance with the following design documents:

- Shallow Bedrock Ground-Water Interim Action Treatment System Materials and Performance Specifications (Radian, December 17, 1997); and

- Shallow Bedrock Ground-Water Interim Action Treatment System Contract Drawings (Radian, December 17, 1997).

Construction of the treatment system associated with the Shallow Bedrock Ground-Water Interim Action began in April 1998 and was substantially completed in December 1998. An Engineering Certification Report, prepared by BBL, was submitted to NYSDEC by GE in May 1999.

1.10 Report Organization

Following this introductory section, Section 2 presents the basis of design for the Shallow Bedrock Ground-Water Interim Action Enhancement and describes the proposed low-profile air stripping system.

2. Basis of Design

2.1 General

The objective of the Shallow Bedrock Ground-Water Interim Action Enhancement is to address VOCs that may remain in the existing ground-water treatment system effluent at concentrations in excess of their discharge limits before the water is discharged to the irrigation fields (or surface water, if that discharge option is used). As shown in Figure 3, ground water from the five extraction wells in the Primary Source Areas is withdrawn by a vacuum pump and the vapor/water streams are segregated in a separator. The water is subsequently treated by filtration, biological treatment in a fluidized bed biological reactor (FBBR), and additional filtration in a multi-media filtration (MMF) system prior to collection in three storage tanks for discharge. The low-profile air stripping system will be installed in the Primary Treatment Room between the MMF system and the treated water storage tanks. This section presents the basis of design of the low-profile air stripping system and describes implementation of the Shallow Bedrock Ground-Water Interim Action Enhancement.

2.2 Design Conditions

The low-profile air stripping system design influent concentrations will primarily depend on the treatment efficiency of the FBBR. The treatment efficiency of the FBBR is a function of the influent biodegradable chemical oxygen demand (COD) concentrations and flow rate. As stated in a December 14, 1999 letter to the NYSDEC from BBL (see Appendix A), the FBBR influent biodegradable COD concentrations and treatment efficiency will be determined during a phased start-up. If the FBBR effluent is able to meet the water discharge substantive requirements, operation of the air stripper will not be needed. Operation of the air stripper will also not be needed when discharge from the primary treatment system is not being directed to the irrigation fields (or surface water, if that discharge option is used). However, the low-profile air stripper is designed to operate continuously regardless of the FBBR treatment efficiency or discharge option selected.

The allowable influent concentrations to the low-profile air stripping system are based on the potentially available air emissions from the low-profile air stripping system as stated in the December 14, 1999 letter and the anticipated water discharge substantive requirements. The actual influent concentrations to the low-profile air stripping system will be determined during a phased start-up of the extraction wells that will be described in the Operations and Maintenance (O&M) Plan, which will be submitted to NYSDEC prior to system start-up.

The NYSDEC has not formally provided GE with final substantive requirements for the water discharges, and NYSDEC concurrence with the December 14, 1999 letter regarding the substantive requirements for air emissions is still pending. Therefore, the low-profile air stripping system has been designed for the conditions described below.

Parameter	Units	Influent Basis of Design	Anticipated Discharge Substantive Requirements
Flow	gpm	50	Monitor
Vinyl Chloride	mg/l	0[3]	0.002
cis-1,2-DCE	mg/l	2.0	0.005
trans-1,2-DCE	mg/l	36	0.005
TCA	mg/l	19	0.005
TCE	mg/l	4.0	0.005
PCE	mg/l	22	0.005
Methylene Chloride	mg/l	0.3	0.005
Toluene	mg/l	6.0	0.005
Ethylbenzene	mg/l	16	0.005
Xylenes, Total	mg/l	5.0	0.015

Notes:
1. gpm = gallons per minute
2. mg/l = milligrams per liter
3. The potentially available air stripper influent concentrations of 0 mg/l for vinyl chloride is only based on the air modeling results. If actual operating conditions are different than the assumptions used in the modeling (e.g., higher catalytic oxidizer destruction and removal efficiency, phased start-up of extraction wells, etc.), this concentration will likely be greater than 0 mg/l.

The influent flow rate is based on the existing MMF system feed pump capacity, which is 100% greater than the existing ground-water treatment system nominal design flow rate of 25 gpm. The anticipated discharge limits are based on the preliminary water discharge substantive requirements provided by NYSDEC for discharge to the irrigation fields because these requirements are slightly lower than those for discharge to surface water.

2.3 System Design

The Shallow Bedrock Ground-Water Interim Action Enhancement design is described below. Additional details are found on the Shallow Bedrock Ground-Water Interim Action Enhancement Contract Drawings (Contract Drawings) included as Appendix B.

The effluent from the existing MMF system will be directed to a low-profile air stripping system. The low-profile air stripper will be designed for a maximum influent flow rate of 50 gpm and will consist of five aeration trays, a forced draft blower, dual discharge pumps with a single variable frequency drive (VFD), and associated instrumentation and controls. The low-profile air stripper will use forced draft, counter current air stripping through five baffled aeration trays to remove VOCs from the ground water. Vapors leaving the air stripper will be directed through an 8-inch-diameter fiberglass reinforced plastic (FRP) stack to atmosphere. The low-profile air stripper will be equipped with instrumentation that will permit steady and continuous flow through the system. The discharge pumps will be equipped with a single VFD that will allow the air stripper discharge flow rate to keep pace with the air stripper influent flow rate via level control at the air stripper sump. In addition, the air stripper system will be equipped with a recycle line to the MMF system surge tank and two block valves, one located on the recirculation line and the other located on the treated water tank influent line. Block valve position (open or closed) will be based on MMF system surge tank level. When a low level occurs at the surge tank, the air stripper effluent will be completely recirculated back to the surge tank to prevent low-profile air stripper system shutdown. The specifications for the equipment, controls and alarms included as part of the low-profile air stripping system are provided below.

Equipment

1. Air Stripper

Quantity:	1
Manufacturer:	NEEP Systems
Model:	Shallow Tray Model 2651
Hydraulic Capacity:	2-115 gpm
No. of Trays:	5
Material:	304L Stainless Steel

2. Air Stripper Blower

Quantity:	1
Manufacturer:	American Fan or equal
Performance:	600 standard cubic feet per minute (scfm) @ 26-inch water column (w.c.)
Electrical:	10 horsepower (hp), 480 volt, three phase totally enclosed fan-cooled (TEFC)

3. Air Stripper Discharge Pump

Quantity:	2
Type:	Centrifugal
Manufacturer:	Goulds or equal
Design Flow Rate:	50 gpm @ 22 feet total dynamic head (TDH)
Electrical:	1 hp, 480 volt, three phase TEFC (variable frequency drive (VFD) control)

4. Variable Frequency Drive

Quantity:	1
Manufacturer:	GE or equal
Model:	GE-AF300
Electrical:	480 volt, three phase

5. Air Stripper Inlet Air Duct Heater

Quantity:	1
Manufacturer:	Indeeco or equal
Electrical:	7.5 kilowatt (kw), 480 volt, three phase

Instrumentation/Alarms

1. Instrumentation

a. NEMA 4 control panel with main disconnect switch, blower and discharge pump starters, hand/off/auto switches and run lights, and Underwriters Laboratory (UL) listed programmable logic controller (PLC) located at air stripper skid.

b. Level capacitor located in the air stripper sump to control operation of water discharge pumps.

c. Air flow indicating transmitter located on the blower inlet duct.

d. Air pressure indicating transmitter located on the air stripper sump.

e. Air temperature indicating transmitter located on the blower inlet duct.

f. High and low air pressure switches located on the air stripper sump.

g. High-high and low-low float switches located on the air stripper sump.

h. Two motorized block valves located on the air stripper discharge and recirculation lines.

i. Water flow indicating transmitter located on the air stripper inlet line.

2. Alarms

a. High or low air pressure in the air stripper sump - Shutdown air stripper system, turn off MMF system feed pumps, and signal alarm at main PLC.
b. Low-low water level in the air stripper sump - Turn off air stripper discharge pumps and signal alarm at main PLC.
c. High-high water level in the air stripper sump - Turn off MMF system feed pumps and signal alarm at main PLC.
d. High level at MMF system surge tank - Open air stripper discharge valve and close recirculation valve.

e. Low level at MMF system surge tank - Open recirculation valve and close air stripper discharge valve.

f. Low or high air flow to air stripper - Shutdown air stripper system, turn off MMF system feed pumps, and signal alarm at main PLC.

g. Low or high water flow to air stripper - Shutdown air stripper system, turn off MMF system feed pumps, and signal alarm at main PLC.

h. Low air temperature to air stripper - Shutdown air stripper system, turn off MMF system feed pumps, and signal alarm at main PLC.

I. High-high level at treated water storage tanks - Shutdown air stripper system.

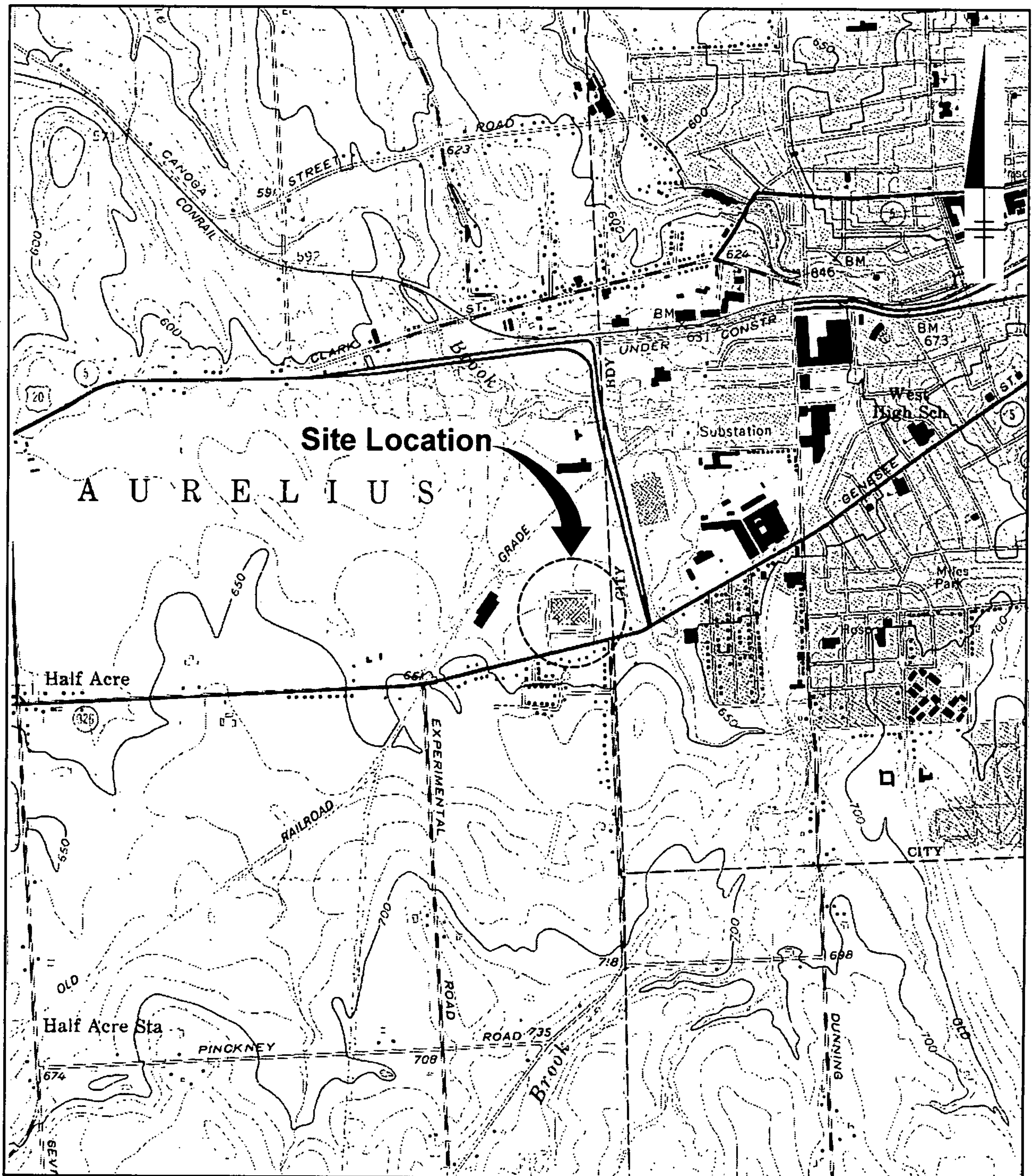
2.4 Implementation

The Shallow Bedrock Ground-Water Interim Action Enhancement will be constructed according to the design and specifications shown on the Contract Drawings included as Appendix B. On April 12, 2000, GE submitted a letter to NYSDEC (see Appendix C) requesting formal submittal of the substantive requirements for both the air emissions and water discharges. Material procurement and contractor selection will proceed following issuance of the substantive requirements for both the air emissions and water discharges and approval of this document by NYSDEC. Equipment procurement and contractor selection will require approximately six to eight weeks. GE will then proceed with on-site construction activities, which are anticipated to require approximately four weeks after receipt of equipment at the site. GE anticipates substantial completion of construction activities in 2000.

Respectfully submitted,

Edward R. Lynch, P.E.
Executive Vice President

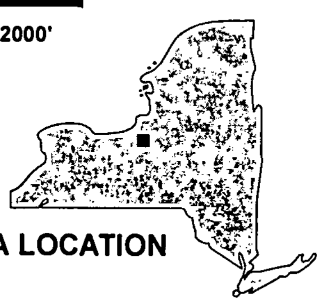
Figures



REFERENCE: BASE MAP USGS QUAD., AUBURN, NY, 1954, PHOTOREVISED 1978.

2000' 0 2000'

Approximate Scale: 1" = 2000'



AREA LOCATION

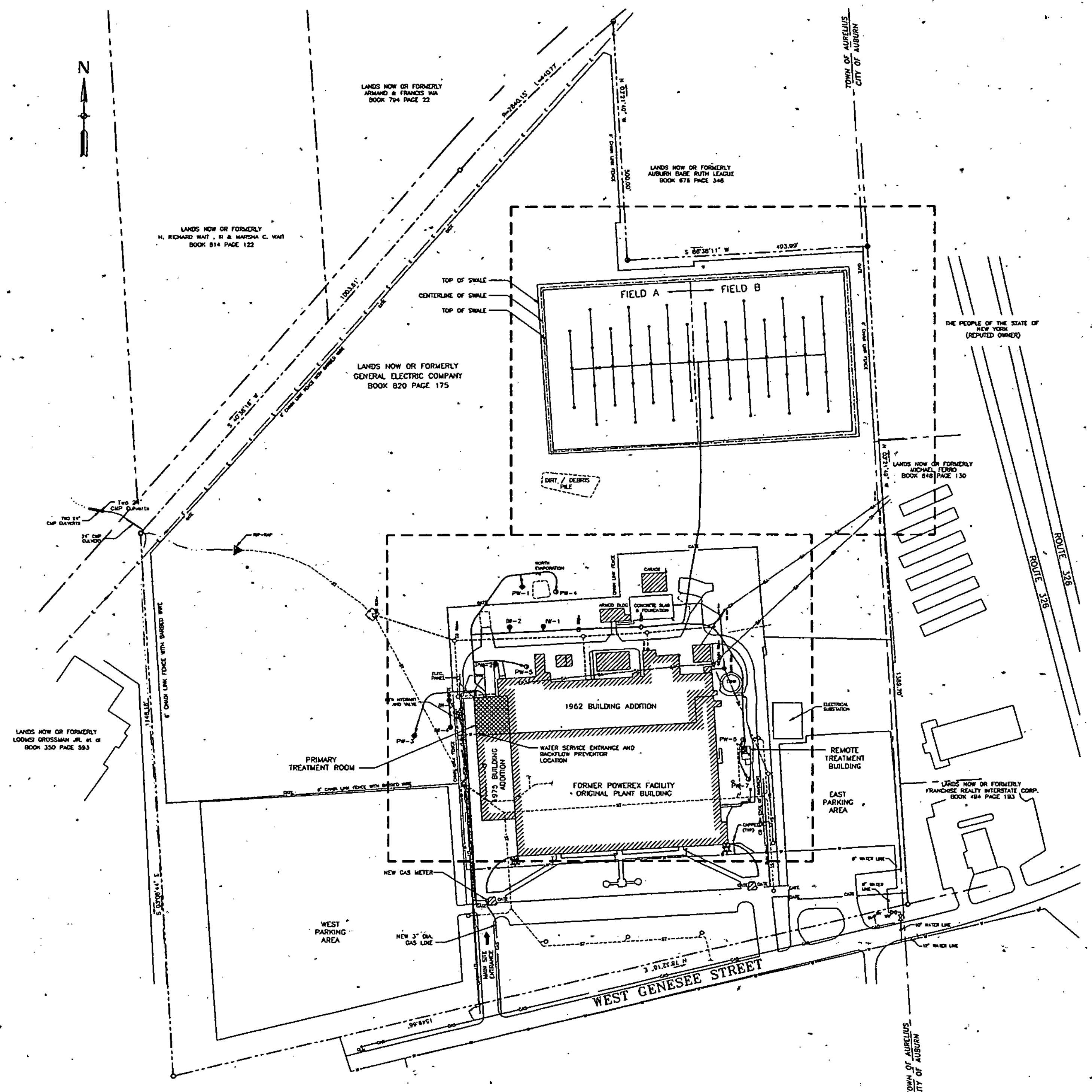
FORMER POWEREX, INC. FACILITY
AUBURN, NEW YORK

SITE LOCATION MAP

BBL BLASLAND, BOUCK & LEE, INC. engineers & scientists

FIGURE 1

06/98 SYR-D54-LBR
48097006/48097n01.cdr



LEGEND

- NEW EXTRACTION WELL
- NEW INJECTION WELL
- NEW WATER VALVE
- NEW FIRE HYDRANT
- NEW NATURAL GAS PIPE
- PROPERTY LINE
- EXISTING STRUCTURE
- 6' HIGH CHAIN LINK FENCE (W/BARBED WIRE WHERE NOTED)
- EXISTING SANITARY SEWER PIPE
- EXISTING SANITARY SEWER MANHOLE
- APPROXIMATE LOCATION OF EXISTING NATURAL GAS PIPE
- APPROXIMATE LOCATION OF EXISTING PUBLIC WATER PIPE
- EXISTING OVERHEAD ELECTRIC POWER LINES
- EXISTING UTILITY POLE
- EXISTING EXTRACTION WELL
- EXISTING STORMWATER DRAINAGE DITCH
- GAS VALVE
- IRON ROD SET
- PROPERTY CORNER
- IRRIGATION FIELD SPRINKLER HEAD
- FIRE HOSE STORAGE CABINET

NOTE:

DRAWING OBTAINED FROM RADIAN ENGINEERING INC. SHALLOW BEDROCK GROUNDWATER INTERIM ACTION – RECORD DRAWINGS, DRAWING C-1, DATED APRIL 30, 1999 @ AN APPROXIMATE SCALE OF 1"=100'.

0 300' 600'

GRAPHIC SCALE

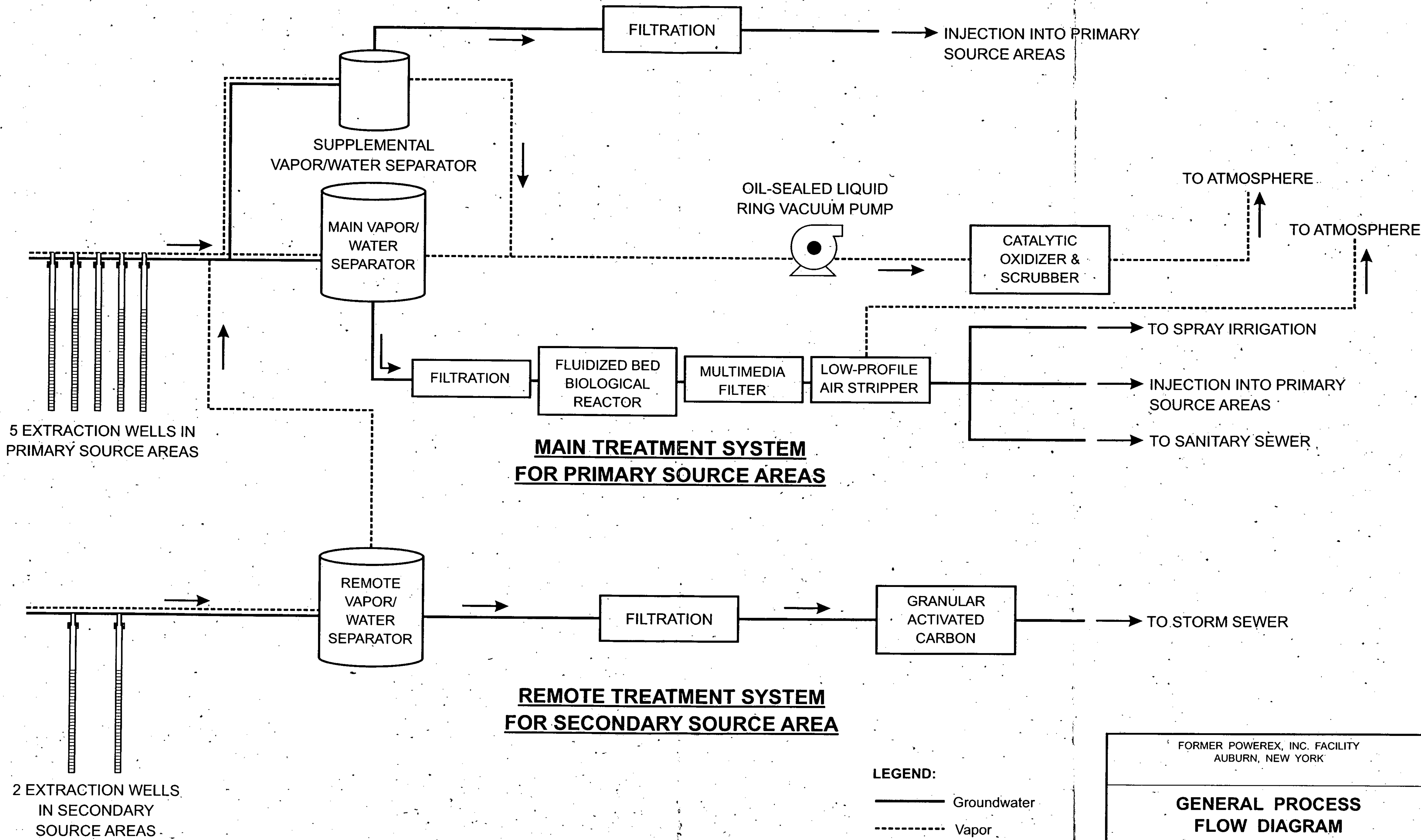
FORMER POWEREX, INC. FACILITY
AUBURN, NEW YORK

SITE PLAN

BBL BLASLAND, BOUCK & LEE, INC. *engineers & scientists*

FIGURE 2

L: ON=* OFF=*REF*
P: STD-PCP/BL
6/8/00 SYR-54-AK, NES, DCC
48097006/48097C04.DWG



8/00 SYR D54-DJH LAS
48097006/48097F02.CDR

FORMER POWEREX, INC. FACILITY
AUBURN, NEW YORK

GENERAL PROCESS FLOW DIAGRAM

BBL BLASLAND, BOUCK & LEE, INC. engineers & scientists

FIGURE 3

Appendices

Appendix A

BBL
BLASLAND, BOUCK & LEE, INC.
engineers & scientists

Transmitted Via Facsimile/U.S. Mail

December 14, 1999

Mr. Kevin Kelly
New York State Department of Environmental Conservation
615 Erie Boulevard West
Syracuse, NY 13204-2400

Re: Air Emissions Summary
Former Powerex, Inc. Facility
Auburn, New York
BBL Project #: 0201.10064 #2

Dear Mr. Kelly:

Please find enclosed three copies of the air emissions summary for the Shallow Bedrock Ground-Water Interim Action (Interim Action) at the former Powerex, Inc. (Powerex) facility in Auburn, New York. In March 1997, Radian Engineering, Inc. (Radian) prepared an Air Permit Application for the Interim Action at Powerex on behalf of the General Electric Company (GE). Since submission to the New York State Department of Environmental Conservation (NYSDEC), there have been a number of significant changes to the basis of design and underlying assumptions used to prepare that application. These changes include the following:

1. Global Technologies, the manufacturer of the catalytic oxidizer, clarified a guarantee of 99% destruction rate for any and all volatile compounds. This affects the effluent concentrations which were the basis for the original application. Radian assumed greater than 99% destruction for several of the compounds, including vinyl chloride, trichloroethene, benzene, toluene, ethylbenzene, xylene, chloroform, carbon tetrachloride, and 1,2-dichlorobenzene. However, less than 99% destruction was applied to 1,1-dichloroethene.

2. NYSDEC has now provided (although not yet in a formal submittal) the substantive requirements for the water discharges, which will necessitate the addition of an air stripper to the primary treatment system prior to discharge to the irrigation fields (and surface water, if that discharge option is used).

Attachment A provides a summary of calculations presented on Tables 1 through 5 included with this submittal. These calculations include fence-line emissions determined through modeling, the expected impact from the air stripper, and the justification of the need for only a Minor Facility Registration at this site.

As part of system start-up, a number of key operating parameters will need to be quantified to confirm the basis of the calculations presented herein. First and foremost, the actual destruction efficiency of the catalytic oxidizer will need to be determined. GE expects the equipment to exceed the manufacturer's guaranteed performance specifications, which will reduce the actual air emissions. Secondly, the treatment efficiency for the fluidized bed biological reactor (FBBR) for treatment of ground water will need to be documented. If the FBBR effluent is able to meet the water discharge limitations, operation of the air stripper will not be needed. Operation of the air stripper will also not be needed when discharge from the primary treatment system is not being directed to the irrigation field (or surface water, if that discharge option is used).

For hydrogeological reasons, the extraction wells will be phased into operation. This phasing will include starting one or two extraction wells at a time and slowly lowering the extraction points in each well. This differs from the pilot test when the extraction wells were started to maximize drawdown during the test. The vapor concentrations obtained during the pilot test under this maximum drawdown scenario were the basis of concentrations used in the air modeling. The phased start-up will reduce the peak mass flux into the Shallow Bedrock Ground-Water Interim Action system. The phased start-up will also allow GE to determine treatment system efficiencies before operating at full capacity. In other words, the modeling results presented herein are conservative since they do not factor in the phased start-up. This phased approach will be described in the Operating and Maintenance (O&M) Plan, which will be submitted to NYSDEC for review and approval prior to system start-up.

In Attachment B, a completed Minor Facility Registration, which supercedes the March 1997 Air Permit Application, is presented. A registration is required because the air emissions are less than 50% of the Major Threshold Limits. Additionally, the natural gas-fired furnace on the catalytic oxidizer is exempt from reporting because the fuel usage is only 325,000 British thermal units per hour (BTU/hr) (below the 10 million BTU/hr reporting threshold).

In conclusion, the information contained in this package demonstrates that the site air emissions will meet substantive requirements. As will be described in detail in the O&M Plan, GE will be collecting analytical data to confirm the basis for these calculations. Additionally, because the total potential to emit Hazardous Air Pollutants (HAPs) and volatile organic compounds (VOCs) does not exceed 50% of the Major Source Thresholds, only a Minor Facility Registration is required for the site.

I would like to meet with you as soon as possible to review this information. GE wishes to complete the air stripper design this month so that procurement can proceed and the O&M Plan can be completed for submission to NYSDEC. Our current target for startup is the end of the first quarter 2000.

Thanks you for helping us meet that target.

Sincerely,

BLASLAND, BOUCK & LEE, INC.

Donald F. Sauda
Associate

DFS/mbl
Enclosures

cc: David Foster, New York State Department of Environmental Conservation
Paul Wm. Hare, C.P.G., General Electric Company
David Murtha, Blasland, Bouck & Lee, Inc.

Attachment A

Attachment A

Summary of Calculations

1. Treatment System Concentrations (Tables 1 and 2)

All original laboratory analysis used for modeling can be found in the original Air Permit Application (Radian, March 1997). Outlined below are the calculations presented on Tables 1 and 2.

Uncontrolled (Influent) Concentrations for Catalytic Oxidizer (Table 1)

The influent concentrations used in the air emissions modeling, are based on analysis of vapor samples collected during dual phase extraction pilot tests for recovery wells PW-1, PW-2, and PW-3 and analyzed by Microseeps. In all cases, the median analysis was used. Concentrations are reported in pound-mole of constituent per million pound-moles of air (ppmv). The following assumptions were made for the new extraction wells that were not pilot tested:

1. PW-4 is in the same area as PW-1 and, therefore, will contain similar concentrations as PW-1.
2. PW-5 is in the same area as PW-2 and, therefore, will contain similar concentrations as PW-2.
3. The area near PW-6 and PW-7 has similar concentrations as the area near PW-3 and, therefore, PW-6 and PW-7 will contain similar concentrations as PW-3. This assumption is probably very conservative because PW-6 and PW-7 are located in secondary source areas, not a primary source area.

It was also assumed that each well will be pumped at a maximum of 20 standard cubic feet per minute (SCFM) vapor. During the pilot tests, the system yielded less than half of that rate from any given extraction well. The median Microseeps molar concentrations were converted to milligrams per cubic meter (mg/m^3) using the standard PV=nRT equation. Then, the anticipated maximum air concentration for each component was calculated as follows:

$$\frac{(\text{PW-1 Conc. } (mg/m^3) \times 2 \text{ wells}) + (\text{PW-2 Conc. } (mg/m^3) \times 2 \text{ wells}) + (\text{PW-3 Conc. } (mg/m^3) \times 3 \text{ wells})}{7 \text{ wells}}$$

The anticipated maximum air concentration was converted to the anticipated maximum air discharge rate in pounds per hour and pounds per day using the 140 SCFM total vapor extraction rate. These discharge rates represent the maximum value of each constituent present in the treatment system influent to the catalytic oxidizer.

Air Discharge Concentrations for Catalytic Oxidizer (Table 2)

The estimated emissions in pounds per day, pounds per hour, and pounds per year were calculated based on the anticipated maximum air concentration and the catalytic oxidizer manufacturer's guarantee of 99% destruction efficiency for all constituents. The contaminant load in pound-moles per day was calculated using the molecular weight. Assuming 100% conversion of chlorine to hydrochloric acid (HCl), and using the number of chlorine atoms in each constituent and the contaminant load, the pound-moles, pounds per day, and pounds per year of HCl liberated were also determined. Finally, using the 99% caustic scrubber efficiency guaranteed by the manufacturer, the pounds of HCl discharged to the atmosphere hourly, daily, and annually were calculated.

2. Air Modeling Summary for Catalytic Oxidizer (Table 3)

The following describes the air quality impact modeling completed by Blasland, Bouck & Lee, Inc. (BBL) to estimate potential air emissions from the catalytic oxidizer used as part of the Shallow Bedrock Ground-Water Interim Action system.

Basic Cavity Impact Modeling

An Air Guide 1 (AG-1) analysis was first conducted to evaluate and compare the potential air emissions to the Annual Guideline Concentrations (AGCs) and the Short Term Guideline Concentrations (SGCs) for all detected compounds. This method is very conservative because it does not use site-specific meteorological, building, terrain, or receptor data, but is recommended by New York State Department of Environmental Conservation (NYSDEC) as a first step in conducting an air impact analysis. The results and inherent assumptions of this analysis are attached in Table 3. Although the modeling results indicated that all compounds would be less than the respective SGC values, it also indicated that Vinyl Chloride (VC) and Trichloroethene (TCE) exceeded the respective AGC values. These results suggest that a modeling analysis using more site-specific data be performed.

Standard Point Source Method

Upon consultation with Mr. Leon Sedefian, Lead Atmospheric Scientist for NYSDEC, Division of Air Resources, the recommendation was to use the United States Environmental Protection Agency (USEPA) SCREEN3 model as an alternative to the AG-1 analysis. SCREEN3 incorporates less conservative meteorological assumptions, adjusts for building cavity and basic elevated terrain effects, and is capable of identifying impact at user specified distances. While this is a more site-specific analysis, it did not decrease the modeled concentrations of VC and TCE to below the AGC values.

Industrial Source Complex Model

BBL then performed a more rigorous air quality analysis using the USEPA Industrial Source Complex Model, Version 3.0 (ISC3). The ISC3 model used was an enhanced interface package from Trinity Consultants called Breeze Suite. This package incorporates a user-friendly interface for use with USEPA's ISC3 model. The ISC3 model requires more detailed input information and is therefore the most site-specific model recommended by Mr. Sedefian. Model inputs included a detailed facility layout for calculation of building downwash and cavity effects, region specific meteorological and mixing height data, and regulatory default assumptions. The detailed facility layout was inputted to the model by importing a facility plot plan in the form of an AutoCAD DVX file. From this plot plan, building, stack, and fence-line objects were further identified in three dimensions. Meteorological data was downloaded from the USEPA's Support Center for Regulatory Air Models (SCRAM) web site and included both hourly meteorological and twice-a-day mixing height observations. The closest meteorological station to the site is Station #14771 located in Syracuse, New York. The closest upper air station is Station #14733, located at the International Airport in Buffalo, New York. The use of closest available stations is a standard practice when these data are not available for a given site. The results of the ISC3

Model analysis indicated that all constituents are equal to or below the respective AGC and SGC values.

3. Addition of Air Stripper (Table 4)

The water that is extracted with the vapor in the dual phase extraction process requires treatment to meet the various substantive requirements determined by NYSDEC. The original treatment process proposed a fluidized bed biological reactor (FBBR) followed by a multi-media sand filter (MMF). To meet the water discharge limitations, the effluent may require further treatment through an air stripper. The addition of an air stripper will increase the air emissions previously estimated.

Modeling shows that, with the different temperature and air flow rate, the air stripper discharge exhibits similar characteristics as the catalytic oxidizer scrubber stack. As shown on the table below, the five-year maximum concentrations calculated by the model using a unity contaminant input of 1 gram per second were identical for a 1-hour period and within 0.07% for an annual period.

	Cat Ox/Scrubber Stack Flow = 140 SCFM		Air Stripper Stack Flow = 600 CFM Temp = 70 F	
Year of Meteorological Data Run	Annual Maximum (µg/m³)	1-Hour Maximum (µg/m³)	Annual Maximum (µg/m³)	1-Hour Maximum (µg/m³)
1986	27.184	2077.359	27.141	2080.052
1988	30.867	1809.444	30.703	1805.277
1989	32.636	2011.357	32.657	2011.357
1990	31.203	1780.363	31.260	1763.713
1991	29.673	2215.152	29.713	2215.152
Five-Year Maximum	32.636	2215.152	32.657	2215.152

Based on this relationship, a ratio of the estimated emissions in pounds per hour to the maximum potential annual air impact determined by modeling was used to calculate the Potentially Available Emission for each constituent from the air stripper. The Potentially Available Emission was converted to potentially available influent concentration using the expected flow rate of 25 gallons per minute (gpm) for the primary treatment system (where the FBBR and MMF are located). Table 4 shows that, with the exception of VC, all the components in the water fraction must be present in significant concentrations before they would impact the AGCs.

While Table 4 indicates that 0 milligrams per liter (mg/L) of VC is potentially available for the air stripper influent, this result is based only on the modeling results. Vinyl Chloride is readily biodegradable under aerobic conditions (such as in the FBBR), so even if it is present in the influent water, it will likely not be present in the FBBR effluent. However, if VC is present in the FBBR effluent, the modeling results are conservative since actual anticipated operating conditions have not been factored in. For instance, GE expects the catalytic oxidizer to exceed the manufacturer's guaranteed performance specifications, which will reduce the actual air emissions. Additionally, the extraction wells will be phased into operation. This phasing will include starting one or two extraction wells at a time and slowly lowering the extraction points in each well. This differs from the pilot test when the extraction wells were started to maximize drawdown during the test. The vapor concentrations obtained during the pilot test under this maximum drawdown scenario were the basis of concentrations used in the air modeling. The phased start-up will reduce the peak mass flux into the system and, therefore, the modeling results presented herein are conservative since they do not factor this in.

4. Air Registration Justification (Table 5)

Radian originally prepared an Air Permit Application for the site in March 1997. Based on the estimated emissions for all the constituents (see Table 5), the site does not qualify as a Major Source and therefore does not require a Title V Air Permit. Because the emissions will not exceed the emissions threshold values identified in 6 NYCRR Part 201-7.3(e), a Minor Facility Registration is being submitted to the agency pursuant to 6 NYCRR 201-4.1(a) (see Attachment B).

5. References

Radian 1997. *Shallow Bedrock Groundwater Interim Action Air Permit Application, Former Powerex Inc. Facility, Auburn, New York.* Radian Engineering Inc. March 11, 1997.

Table 1

Former Powerex Facility
Shallow Bedrock Groundwater Interim Action
Calculations for Uncontrolled (Influent) Emissions
For Catalytic Oxidizer

Flow Rate: *140 SCFM*

A Compound or Analyte	B Concentration from PW-1 (ppmv) (1)	C Concentration from PW-2 (ppmv) (1)	D Concentration from PW-3 (ppmv) (1)	E Molecular Weight	F From PW-1 Air Concentration (mg/m^3)	G From PW-2 Air Concentration (mg/m^3)	H From PW-3 Air Concentration (mg/m^3)	I Anticipated Maximum Air Concentration (mg/m^3)	J Anticipated Maximum Air Discharge Rate (lb/hr)	K Anticipated Maximum Air Discharge Rate (lb/day)
Equation	Data	Data	Data		B*E/22.415	C*E/22.415	D*E/22.415	See Note 2	See Note 3	J*24
Vinyl Chloride	166	645	375	62.50	463	1.8E+03	1.0E+03	1.1E+03	0.57	13.8
Methylene Chloride	144	637	ND	84.93	546	2.4E+03	NA	845	0.44	10.6
cis-1,2-Dichloroethene	771	1.1E+03	699	96.94	3.3E+03	4.5E+03	3.0E+03	3.5E+03	1.9	44.6
1,1,1-Trichloroethane	0.51	16.8	5.0E-03	133.40	3.0	100	0.030	29.5	0.015	0.37
Trichloroethene	5.7E+03	268	71.0	131.39	3.3E+04	1.6E+03	416	1.0E+04	5.3	127
Benzene	0.97	0.29	ND	78.11	3.4	1.0	NA	1.25	6.6E-04	0.016
Toluene	85.4	24.4	3.5	92.14	351	100	14.3	135	0.071	1.7
Ethylbenzene	49.8	21.2	0.33	106.17	236	100	1.6	96.8	0.051	1.2
Xylene(s)	73.6	91.5	2.1	106.17	348	433	9.8	228	0.12	2.9
Fluorotrichloromethane	0.089	0.12	ND	137.37	0.55	0.70	NA	0.357	1.9E-04	4.5E-03
1,1-Dichloroethene	4.5	5.2	2.4	96.94	19.3	22.5	10.4	16.4	8.6E-03	0.21
1,1-Dichloroethane	0.77	7.9	ND	98.96	3.4	34.8	NA	10.9	5.7E-03	0.14
Chloroform	0.82	0.24	ND	119.38	4.4	1.3	NA	1.62	8.5E-04	0.020
1,1,2-Trichloroethane	0.041	0.081	ND	133.40	0.24	0.48	NA	0.207	1.1E-04	2.6E-03
Tetrachloroethylene	0.80	63.0	0.13	165.83	5.9	466	0.98	135	0.071	1.7
1,2-Dichlorobenzene	0.60	0.20	ND	147.00	3.9	1.3	NA	1.50	7.9E-04	0.019
trans-1,2-Dichloroethene	7.3	3.5	8.2	96.94	31.6	15.1	35.5	28.5	0.015	0.36
Acetone	3.6E+03	277	29.5	58.08	9.4E+03	718	76.4	2.9E+03	1.5	36.7

__Notes:__

1) Based on the dual phase extraction pilot test data. Median of vapor-phase concentration data analyzed by Microseeps.
2) Anticipated Maximum Air Concentration = (F*2+G*2+H*3)/7; assumption that PW-4 is similar to PW-1, PW-5 is similar to PW-2, and PW-6 & PW-7 are similar to PW-3.
3) Anticipated Maximum Air Discharge Rate = Anticipated Maximum Air Concentration (mg/m^3) x flow x 3.75×10^{-6}
4) ND = Compound not detected.
5) NA = Not applicable due to ND.
6) ppmv = pound-mole of compound per million pound-moles of air
7) mg/m^3 = milligrams per cubic meter
8) lb/hr = pounds per hour
9) lb/day = pounds per day

Table 2

Former Powerex Facility
Shallow Bedrock Groundwater Interim Action
Calculations for Air Discharge Concentrations
For Catalytic Oxidizer

A Compound or Analyte	B Molecular Weight (lb/lb-mol)	C Moles Chlorine (Cl) per Mole of Compound	D Contaminant Load (lb/day) (2)	E Contaminant Load (lb/hr) (2)	F Catalytic Oxidizer DRE (3,4)	G Estimated Emissions (lb/day)	H Estimated Emissions (lb/hr)	I Estimated Emissions (lb/yr)	J Contaminant Load (lbmol/day)	K Moles HCl Liberated During Oxidation (lbmol/day) (5)	L Mass HCl Liberated During Oxidation (lb/day) (6)	M Mass HCl Liberated During Oxidation (lb/hr) (6)
Equation			'Table 1' K	'Table 1' J		D*(1-F)	G/24	G*365	D/B	C*F*J	K*36.46	L/24
Vinyl Chloride	62.50	1	13.8	0.57	99%	0.14	5.7E-03	50.2	0.22	0.22	7.9	0.33
Methylene Chloride	84.93	2	10.6	0.44	99%	0.11	4.4E-03	38.8	0.13	0.25	9.0	0.38
cis-1,2-Dichloroethene	96.94	2	44.6	1.9	99%	0.45	0.019	163	0.46	0.91	33.2	1.39
1,1,1-Trichloroethane	133.40	3	0.37	0.015	99%	3.7E-03	1.5E-04	1.4	2.8E-03	8.3E-03	0.30	0.013
Trichloroethene	131.39	3	127	5.3	99%	1.3	0.053	465	0.97	2.9	105	4.4
Benzene	78.11	0	0.016	6.6E-04	99%	1.6E-04	6.6E-06	5.8E-02	2.0E-04	0	0	0
Toluene	92.14	0	1.7	0.071	99%	0.017	7.1E-04	6.2	0.018	0	0	0
Ethylbenzene	106.17	0	1.2	0.051	99%	0.012	5.1E-04	4.4	0.011	0	0	0
Xylene(s)	106.17	0	2.9	0.12	99%	0.029	1.2E-03	10.5	0.027	0	0	0
Fluorotrichloromethane	137.37	4	4.5E-03	1.9E-04	99%	4.5E-05	1.9E-06	1.6E-02	3.3E-05	1.3E-04	4.7E-03	2.0E-04
1,1-Dichloroethene	96.94	2	0.21	8.6E-03	99%	2.1E-03	8.6E-05	0.75	2.1E-03	4.2E-03	0.15	6.4E-03
1,1-Dichloroethane	98.96	2	0.14	5.7E-03	99%	1.4E-03	5.7E-05	0.50	1.4E-03	2.7E-03	0.10	4.2E-03
Chloroform	119.38	3	0.020	8.5E-04	99%	2.0E-04	8.5E-06	7.4E-02	1.7E-04	5.1E-04	0.018	7.7E-04
1,1,2-Trichloroethane	133.40	3	2.6E-03	1.1E-04	99%	2.6E-05	1.1E-06	9.5E-03	2.0E-05	5.8E-05	2.1E-03	8.8E-05
Tetrachloroethylene	165.83	4	1.7	0.071	99%	0.017	7.1E-04	6.2	0.010	0.041	1.5	0.062
1,2-Dichlorobenzene	147.00	2	0.019	7.9E-04	99%	1.9E-04	7.9E-06	6.9E-02	1.3E-04	2.5E-04	9.3E-03	3.9E-04
trans-1,2-Dichloroethene	96.94	2	0.36	0.015	99%	3.6E-03	1.5E-04	1.3	3.7E-03	7.3E-03	0.27	0.011
Acetone	58.08	0	36.7	1.5	99%	0.37	0.015	134	0.63	0	0	0
Total Mass of HCl (lb/hr):												6.57
Removal Efficiency of Caustic Scrubber (%):												99%
Mass of HCl Discharged to the Atmosphere (lb/hr):												0.066
Mass of HCl Discharged to the Atmosphere (lb/day):												1.58
Mass of HCl Discharged to the Atmosphere (lb/yr):												575

Notes:

1) Compounds detected during the dual phase pilot test.
2) Based on extrapolation of dual phase pilot test data to a full sized extraction system (140 scfm; see Table 1).
3) DRE is destruction and removal efficiency
4) DRE and caustic scrubber removal efficiency values obtained as guarantee from manufacturer.
5) Assumes all chlorine atoms form HCl.
6) Moles of HCl times molecular weight of HCl (36.46).
7) lb/lb-mol = pounds per mole of compound
8) lb/day = pounds per day
9) lb/hr = pounds per hour
10) lb/yr = pounds per year
11) lb-mol/day = moles per day

Table 3

Former Powerex Facility
Shallow Bedrock Groundwater Interim Action
Calculations For Air Discharge Concentrations
For Catalytic Oxidizer
Air Modeling Summary

Based on 140 SCFM.

A Compound	B Toxicity Level (4)	C Estimated Emissions (lb/hr)	D Estimated Emissions (lb/yr)	E Annual Cavity Impact (µg/m³)	F Short-Term Cavity Impact (µg/m³)	G Maximum Actual Annual Impact (µg/m³)	H Maximum Potential Annual Impact (µg/m³)	I Maximum Short-Term Impact (µg/m³)	J Estimated Emissions (g/s)	K Maximum Potential Annual Impact (µg/m³)	L Maximum Short-Term Impact (µg/m³)	M New York State Air Guide-1 AGC (µg/m³)	N New York State Air Guide-1 SGC (µg/m³)
Equation		'Table 2' H	'Table 2' I	1.72*D/st.ht.	$904000*C/st.ht.^{2}$	$6*D/st.ht.^{2.25}$	$52500*C/st.ht.^{2.25}$	H*65	C*0.126	J*32.73584	J*2215.15		
				Basic Cavity Impact Method (5)		*Standard Point Source Method (6)*			*IGC3 Method (7)*			*(8)*	*(9)*
Vinyl Chloride	H	5.7E-03	50.2	0.071	4.2	0.10	0.10	6.57	7.2E-04	0.02	1.6	0.02	1,300
Methylene Chloride	M	4.4E-03	38.8	0.055	3.3	0.078	0.078	5.08	5.6E-04	0.018	1.2	27	41,000
cis-1,2-Dichloroethene	M	0.019	163	0.23	13.7	0.33	0.33	21.3	2.3E-03	0.077	5.2	1,900	190,000
1,1,1-Trichloroethane	L	1.5E-04	1.4	1.9E-03	0.11	2.7E-03	2.7E-03	0.18	1.9E-05	6.4E-04	0.043	1,000	450,000
Trichloroethene	M	0.053	465	0.65	39.2	0.94	0.94	60.8	6.7E-03	0.22	14.8	0.45	33,000
Benzene	H	6.6E-06	0.058	8.1E-05	4.9E-03	1.2E-04	1.2E-04	7.5E-03	8.3E-07	2.7E-05	1.8E-03	0.12	32
Toluene	L	7.1E-04	6.2	8.7E-03	0.52	0.012	0.012	0.81	8.9E-05	2.9E-03	0.20	400	45,000
Ethylbenzene	M	5.1E-04	4.4	6.2E-03	0.37	9.0E-03	8.9E-03	0.58	6.4E-05	2.1E-03	0.14	1,000	100,000
Xylene(s)	M	1.2E-03	10.5	0.015	0.88	0.021	0.021	1.4	1.5E-04	4.9E-03	0.33	300	100,000
Fluorotrichloromethane	L	1.9E-06	0.016	2.3E-05	1.4E-03	3.3E-05	3.3E-05	2.1E-03	2.4E-07	7.7E-06	5.2E-04	700	560,000
1,1-Dichloroethene	H	8.6E-05	0.75	1.1E-03	0.064	1.5E-03	1.5E-03	0.099	1.1E-05	3.5E-04	0.024	0.02	2,000
1,1-Dichloroethane	L	5.7E-05	0.50	7.0E-04	0.042	1.0E-03	1.0E-03	0.066	7.2E-06	2.4E-04	0.016	500	96,000
Chloroform	M	8.5E-06	0.074	1.0E-04	6.3E-03	1.5E-04	1.5E-04	9.7E-03	1.1E-06	3.5E-05	2.4E-03	0.04	980
1,1,2-Trichloroethane	H	1.1E-06	9.5E-03	1.3E-05	8.0E-04	1.9E-05	1.9E-05	1.2E-03	1.4E-07	4.5E-06	3.0E-04	0.06	13,000
Tetrachloroethylene	M	7.1E-04	6.2	8.7E-03	0.52	0.013	0.012	0.81	8.9E-05	2.9E-03	0.20	1.2	40,000
1,2-Dichlorobenzene	M	7.9E-06	0.069	9.7E-05	5.8E-03	1.4E-04	1.4E-04	9.0E-03	9.9E-07	3.2E-05	2.2E-03	200	36,000
trans-1,2-Dichloroethene	M	1.5E-04	1.3	1.8E-03	0.11	2.6E-03	2.6E-03	0.17	1.9E-05	6.2E-04	0.042	1,900	190,000
Acetone	L	0.015	134	0.19	11.3	0.27	0.27	17.5	1.9E-03	0.063	4.3	14,000	140,000

Notes:

1) Stack Height = 35 feet
2) Stack Height Squared = 1225 $feet^{2}$
3) Stack Height Raised to 2.25 = 2980 $feet^{2.25}$
4) H = High Toxicity Level, M = Moderate Toxicity Level, L = Low Toxicity Level
5) Based on *Air Guide-1 Basic Cavity Impact Method*, 1995 Edition
6) Based on *Air Guide-1 Standard Point Source Method*, 1995 Edition
7) Based on the *Industrial Source Complex Model*, Version 3.0.
8) Annual Guideline Concentrations (AGC) taken from New York State Air Guide Chapter - 1, Guidelines For The Control of Toxic Ambient Air Contaminants. NYSDEC - Division of Air Resources. 1991 Edition with updates to AGCs and SGCs made in 1995. Compare values to columns E, H, and K.
9) Short Term Guideline Concentrations (SGC) taken from New York State Air Guide Chapter - 1, Guidelines For The Control of Toxic Ambient Air Contaminants. NYSDEC - Division of Air Resources. 1991 Edition with updates to AGCs and SGCs made in 1995. Compare values to columns F, I, and L.
10) lb/hr = pounds per hour
11) lb/yr = pounds per year
12) µg/m^3 = micrograms per cubic meter
13) g/s = grams per second

Table 4

Former Powerex Facility
Shallow Bedrock Groundwater Interim Action
Calculations For Air Stripper Discharge Concentrations

A Compound	B Estimated Emissions (lb/hr)	C Maximum Potential Annual Impact ($\mu g/m^3$)	D New York State Air Guide-1 AGC ($\mu g/m^3$)	E Potentially Available Emission ($\mu g/m^3$)	F Potentially Available Emission (lb/hr)	H Potentially Available Air Stripper Influent Concentration (mg/L)
Equation	'Table 2' H	'Table 3' K	'Table 3' M	D-C	B*E/C	See Note 1
Vinyl Chloride	5.7E-03	0.02	0.02	0	0	0 (See Note 2)
Methylene Chloride	4.4E-03	0.018	27	27	6.5	523
cis-1,2-Dichloroethene	0.019	0.077	1,900	1,900	461	36,800
1,1,1-Trichloroethane	1.5E-04	6.4E-04	1,000	1,000	242	19,400
Trichloroethene	0.053	0.22	0.45	0.23	0.056	4.44
Benzene	6.6E-06	2.7E-05	0.12	0.12	0.029	2.33
Toluene	7.1E-04	2.9E-03	400	400	97	7,800
Ethylbenzene	5.1E-04	2.1E-03	1,000	1,000	242	19,400
Xylene(s)	1.2E-03	4.9E-03	300	300	73	5,800
Fluorotrichloromethane	1.9E-06	7.7E-06	700	700	170	13,600
1,1-Dichloroethene	8.6E-05	3.5E-04	0.02	0.02	0.0048	0.38
1,1-Dichloroethane	5.7E-05	2.4E-04	500	500	121	9,700
Chloroform	8.5E-06	3.5E-05	0.04	0.04	0.010	0.77
1,1,2-Trichloroethane	1.1E-06	4.5E-06	0.06	0.06	0.015	1.16
Tetrachloroethylene	7.1E-04	3.0E-03	1.2	1.2	0.28	22.6
1,2-Dichlorobenzene	7.9E-06	3.2E-05	200	200	48	3,900
trans-1,2-Dichloroethene	1.5E-04	6.2E-04	1,900	1,900	461	36,800
Acetone	0.015	0.063	14,000	14,000	3,394	271,300

Notes:

1) Based on 25 gpm (0.036 MGD) liquid extraction rate,

$$\frac{\text{Emission in lb/hr} \times 24 \text{ hr/day} \times 1\times10^6 \text{ mg/L}}{\text{flow in MGD} * 8.34 \text{ lb/gal} * 1\times10^6 \text{ gal/Mgal}}$$

2) The potentially available air stripper influent concentrations of 0 mg/L for vinyl chloride is only based on the modeling results. If actual operating conditions are different than the assumptions used in the modeling (e.g., higher catalytic oxidizer destruction and removal efficiency, phased startup of extraction wells, etc.), this concentration will likely be greater than 0 mg/L.
3) lb/hr = pounds per hour
4) $\mu g/m^3$ = micrograms per cubic meter
5) mg/L = milligrams per liter
6) gpm = gallons per minute
7) hr/day = hours per day
8) MGD = million gallons per day
9) lb/gal = pounds per gallon
10) gal/Mgal = gallons per million gallons

Table 5

Former Powerex Facility
Shallow Bedrock Groundwater Interim Action
<u>Major Source Determination</u>

Compound	HAP	HAPs Estimated Emissions		Non-HAP VOCs Estimated Emissions	
		lbs/yr	tons/yr	lbs/yr	tons/yr
Vinyl Chloride	X	50.24	0.025		
Methylene Chloride	X	38.84	0.019		
cis-1,2-Dichloroethene				163	0.0815
1,1,1-Trichloroethane				1.35	0.0007
Trichloroethene				465	0.2327
Benzene	X	0.06	0.000029		
Toluene	X	6.21	0.0031		
Ethylbenzene	X	4.45	0.0022		
Xylene(s)	X	10.45	0.0052		
Fluorotrichloromethane				0.016	8.21E-06
1,1-Dichloroethene				0.754	0.00038
1,1-Dichloroethane				0.501	0.00025
Chloroform	X	0.07	0.00004		
1,1,2-Trichloroethane	X	0.01	0.000005		
Tetrachloroethylene	X	6.21	0.003		
1,2-Dichlorobenzene				0.069	3.44E-05
trans-1,2-Dichloroethene				1.31	0.0007
Acetone				134	0.0669
Hydrochloric Acid	X	575	0.288		
Total		**692**	**0.346**	**766**	**0.383**

Notes:

1) Registration only if actual emissions less than 1/2 Major Source Threshold.
2) Minor Source if actual emissions less than Major Source Threshold.
3) Major Source if actual emissions greater than Major Source Threshold.
4) Major Source Threshold is greater than 10 tons/yr of any HAP, greater than 25 tons/yr of all HAPs, or greater than 100 tons/yr of any air pollutant
5) HAP = Hazardous Air Pollutant as defined in 6NYCRR Part 200.1 (ag).
6) lbs/yr = pounds per year
7) tons/yr = tons per year

Attachment B

New York State Departme of Environmental Conservat
Air Facility Registration

DEC ID
- -

Owner/Firm						Taxpayer ID
Name	General Electric Company					
Street Address	320 Great Oaks Boulevard, Suite 323					
City / Town / Village	Albany	State or Province	New York	Country	USA	Zip 12203

Owner/Firm Contact	
Name Paul Wm. Hare, C.P.G.	Phone No. (518) 862-2713

Facility		
Name	Former Powerex, Inc. Facility	
Location Address	2181 West Genesee Street	
☒ City / ☐ Town / ☐ Village	Auburn, New York	Zip 13021-9415

Facility Information	
Total Number of Emission Points: 2	☐ Cap by Rule

Description

This is an inactive facility constructed for the manufacture of various electronic components. Operations at the facility are currently limited to remediation processes. A ground water extraction and treatment system will be used to address contamination in the shallow bedrock ground water and is expected to startup late in the first quarter of the year 2000. The vapor phase will be subsequently treated with a catalytic oxidation unit which will be used to minimize the impact to air quality.

Standard Industrial Classification Codes					
9999					

HAP CAS Numbers					
75 - 01 - 4	75 - 09 - 2	71 - 43 - 2	108 - 88 - 3	100 - 41 - 4	1330 - 20 - 7
67 - 66 - 3	79 - 00 - 5	127 - 18 - 4	7647 - 01 - 0	- -	- -

Applicable Federal and New York State Requirements (Part Nos.)					
6 NYCRR Part 201					

Certification

I certify that this facility will be operated in conformance with all provisions of existing regulations.

Responsible Official	Title
Signature	Date / /

Appendix B

Appendix C

Paul Wm. Hare
Remedial Project Manager

Corporate Environmental Programs
General Electric Company
320 Great Oaks Boulevard – Suite 323
Albany, New York 12203
Phone: (518) 862-2713; Fax: (518) 862-2702

April 12, 2000

Mr. Kevin Kelly
Division of Hazardous Waste Remediation
New York State Department of Environmental Conservation
615 Erie Boulevard West
Syracuse, New York 13204

Subject: **Assistance Needed Now to Make Additional Progress**
Shallow Bedrock Groundwater Interim Action
Former Powerex, Inc. Facility (Site No. 7-06-006)
Auburn, New York

Dear Kevin:

As you are aware, little progress is being made on the Shallow Bedrock Groundwater Interim Action at the above-referenced site. The General Electric Company (GE) wants to place the system into operation as soon as practicable. However, we need formal input from the New York State Department of Environmental Conservation (NYSDEC) before any additional progress can be made toward that goal. Specifically, the substantive requirements for both the air emissions and water discharges must be determined by NYSDEC before any additional work can proceed. The purpose of this letter is to request your assistance, and to identify subsequent steps that must be performed but can not proceed until input is received from NYSDEC.

Background Information

The Interim Action Record of Decision (ROD) was issued by NYSDEC in March 1996, and the Amended Order on Consent was executed to implement the Interim Action ROD in April 1997. Since that time, GE has invested over $2,000,000 to permit, design, and construct the Shallow Bedrock Groundwater Interim Action system at the site. There were two phases of construction. The first phase, which consisted of the site preparation activities, was completed from July to December 1997 and an Engineering Certification Report was submitted to NYSDEC in July 1998. The second phase of construction, which consisted of installing the treatment system, was completed from April to October 1998. Clean water testing of equipment was completed in December 1998, and an Engineering Certification Report was submitted to NYSDEC in May 1999. Unfortunately, the Shallow Bedrock Groundwater Interim Action system remains inactive today, and a significant amount of work remains before it can be placed into operation.

Assistance Needed Now to Make Additional Progress

Formal input is needed from NYSDEC at this time if additional progress is to be made on the Shallow Bedrock Groundwater Interim Action. Specifically, we need the following, both of which are discussed further below:

- NYSDEC must determine and document the substantive requirements for the water discharges from the Shallow Bedrock Groundwater Interim Action system; and
- NYSDEC must determine and document the substantive requirements for the air emissions from the Shallow Bedrock Groundwater Interim Action system.

With respect to the substantive requirements for the water discharges, there have been several meetings and telephone conversations over the past two years between GE, NYSDEC Division of Water's headquarters staff in Albany, New York and yourself. It is my understanding from Brian Baker that NYSDEC's Division of Water has already provided you which what we believe are the substantive requirements for the water discharges. If this understanding is correct, then the only remaining action needed by NYSDEC is to transmit those substantive requirements to GE. If our understanding is incorrect, then please let me know what GE can do to assist NYSDEC further on this matter.

With respect to the substantive requirement for the air emissions, in a December 14, 1999 letter to you from Don Sauda, Blasland, Bouck & Lee, Inc. (BBL), on behalf of GE, submitted additional information to demonstrate that the potential air emissions from the Shallow Bedrock Groundwater Interim Action system will meet the substantive requirements, including the contingent air stripper needed to ensure compliance with the substantive requirements for the water discharges. In a telephone conversation with Mr. Sauda several weeks ago, you stated that you had reviewed this letter with NYSDEC Division of Air's regional staff in Syracuse, New York and concurred with BBLs' findings. You indicated, however, that you wanted to confirm that opinion with NYSDEC Division of Air's personnel in Albany. We request that NYSDEC provide written confirmation to GE that the air emissions from the Shallow Bedrock Groundwater Interim Action system will indeed meet the substantive requirements without any additional controls.[1] If there are any issues or questions that NYSDEC personnel have regarding the potential air emissions, please contact Don Sauda at (315) 446-9120 or me as soon as possible so we can set up a meeting to resolve any outstanding issues.

It is worth reiterating here that GE can not proceed with any additional work until the substantive requirements for both the air emissions and water discharges have been

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[1] A catalytic oxidizer and caustic scrubber are already incorporated into the Shallow Bedrock Groundwater Interim Action system to treat vapors resulting from the 2-PHASE Extraction™ process. Emissions from the contingent air stripper, which will be used to polish the treated groundwater prior to discharge, most notably to the irrigation fields, will be discharged directly to the atmosphere.

determined and documented by NYSDEC. This information is needed to finalize the design of the contingent air stripper, and complete preparation of the Operation and Maintenance (O&M) Plan that is required by the Amended Order on Consent.

Next Steps Towards an Operational System

After NYSDEC determines and documents the substantive requirements for the air emissions and water discharges, additional progress can be made. The most significant action items involve the following:

- Design and installation of the contingent air stripper; and

- Preparation and approval of the O&M Plan required by the Amended Order on Consent.

The December 14, 1999 letter from Don Sauda of BBL describes in detail the rationale behind the addition of a contingent air stripper to the primary treatment system. Basically, this stripper is needed to polish the treated groundwater prior to discharge to the irrigation fields (and surface water, if that discharge option is ever used) to meet the stringent discharge limitations set by NYSDEC's Division of Water. The design of the contingent air stripper is well underway, but, as stated above, can not be completed until NYSDEC determines and documents the substantive requirements for both the air emissions and water discharges for the Shallow Bedrock Groundwater Interim Action system. At that point, GE should be able to submit the detailed design documents for the air stripper within two or three weeks for review and approval by NYSDEC. With your approval, in an effort to further speed progress, GE is willing to progress directly to equipment procurement and installation immediately after the design is submitted.

GE expects to complete the O&M Plan for the Shallow Bedrock Groundwater Interim Action system four to six weeks after submitting the detailed design documents. This plan will include those items required by the Amended Order on Consent, but will also include the surface water monitoring required by the Interim Action ROD. The O&M Plan will be submitted to NYSDEC for its review and approval, at which point the start-up activities can be initiated.

*****

By way of Don Sauda's December 14, 1999 letter, GE established as a target start-up date the end of the first quarter 2000. That goal is obviously no longer achievable. At this point, GE has set a new target, that being to initiate start-up by the beginning of the third quarter of 2000. This would allow the Shallow Bedrock Groundwater Interim Action system to be debugged and adjusted prior to the start of inclement weather this fall. GE wishes to start the system as quickly as possible, not only for the obvious environmental benefit, but also to gather important information necessary to complete the Remedial Investigation/Feasibility Study (RI/FS) for this site.

We look forward to receiving information from NYSDEC that documents the substantive requirements for both the air emissions and water discharges so that additional progress can be made at this site. In the interim, please contact me if you or others have any questions. Thank you for your attention to this matter.

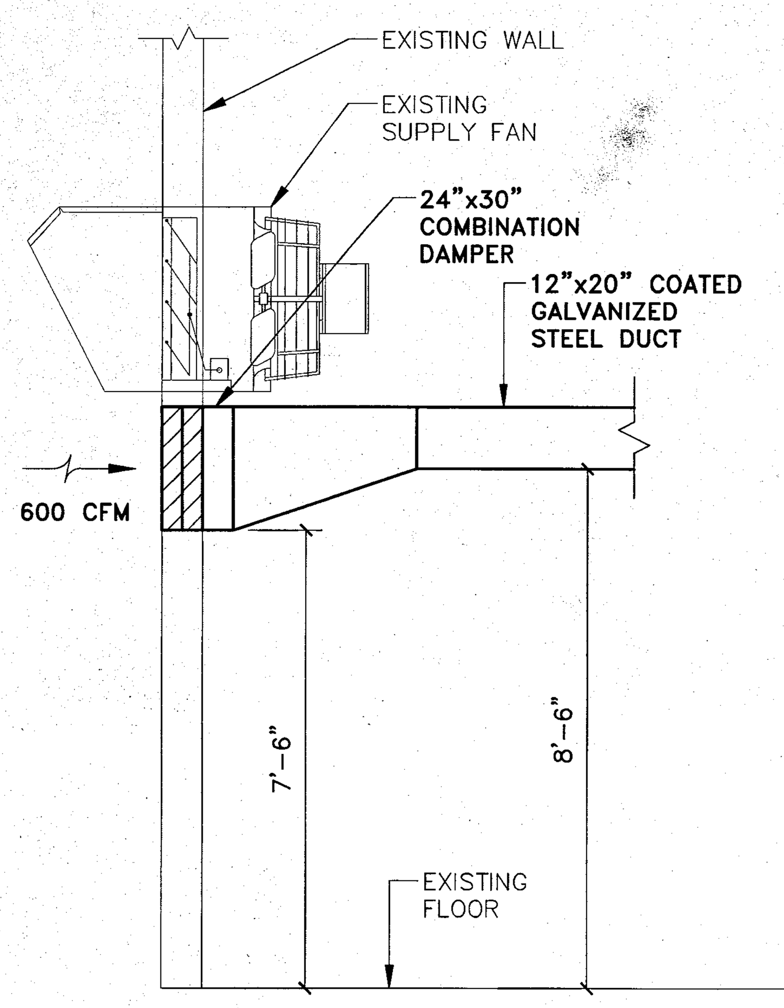
Sincerely,

Paul Wm. Hare, C.P.G.
Remedial Project Manager

cc: David Foster, DEC (Central Office)
Maureen Markert, P.E., O'Brien & Gere
Donald Sauda, Blasland, Bouck & Lee
Judy Gretsch, EIM

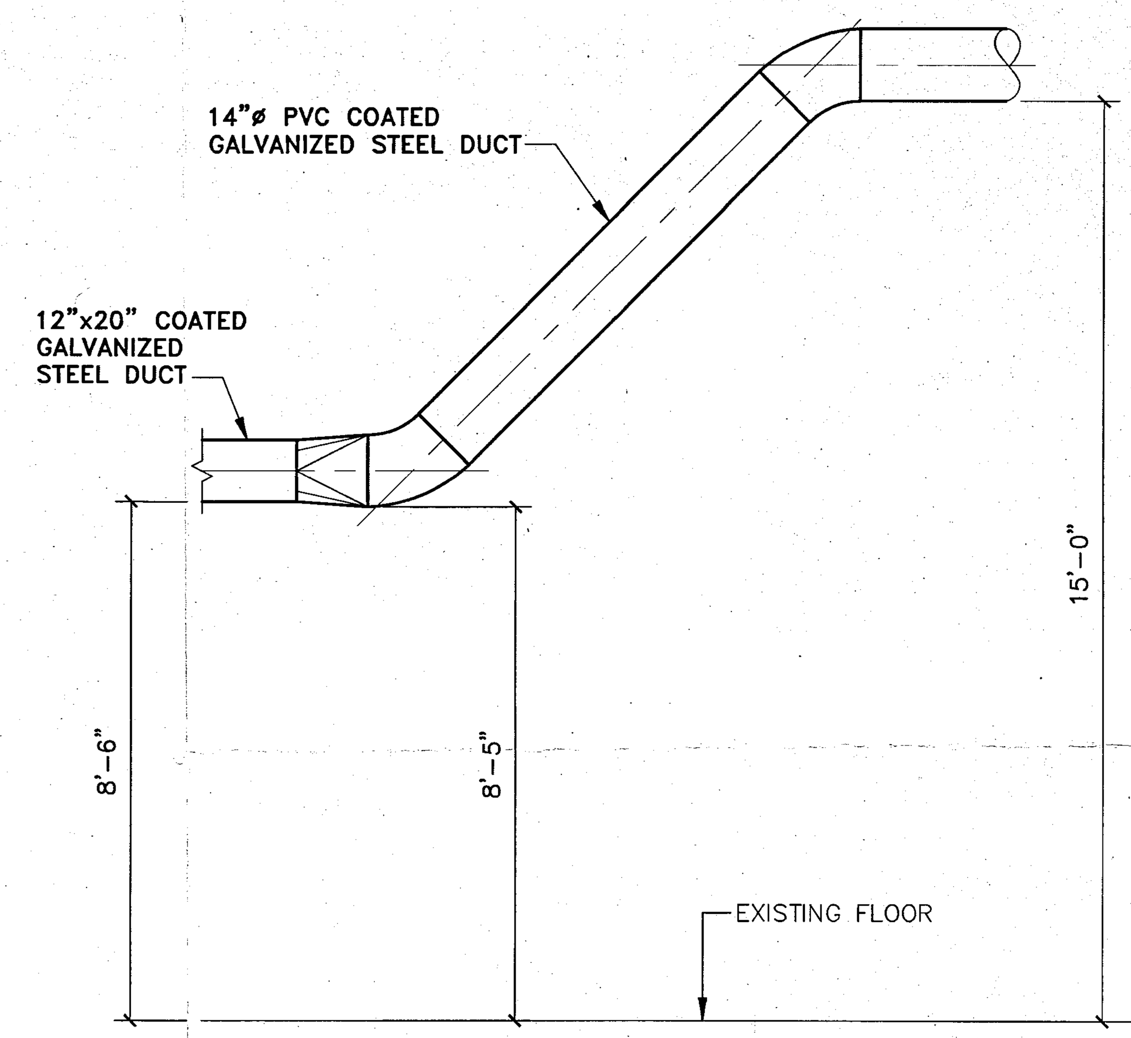
PH/ph
00079

Printed on Recycled Paper



SECTION 1/1

SCALE: 3/8"=1'-0"



SECTION 2/1

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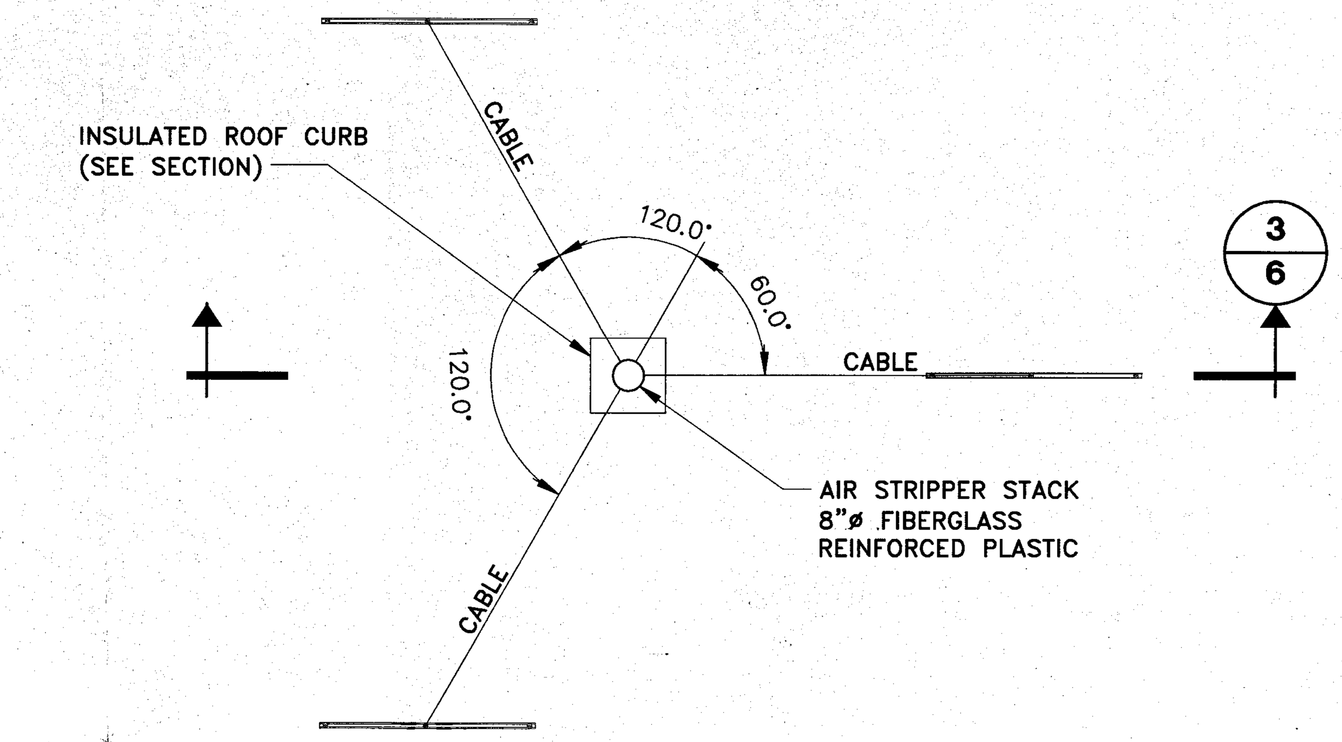
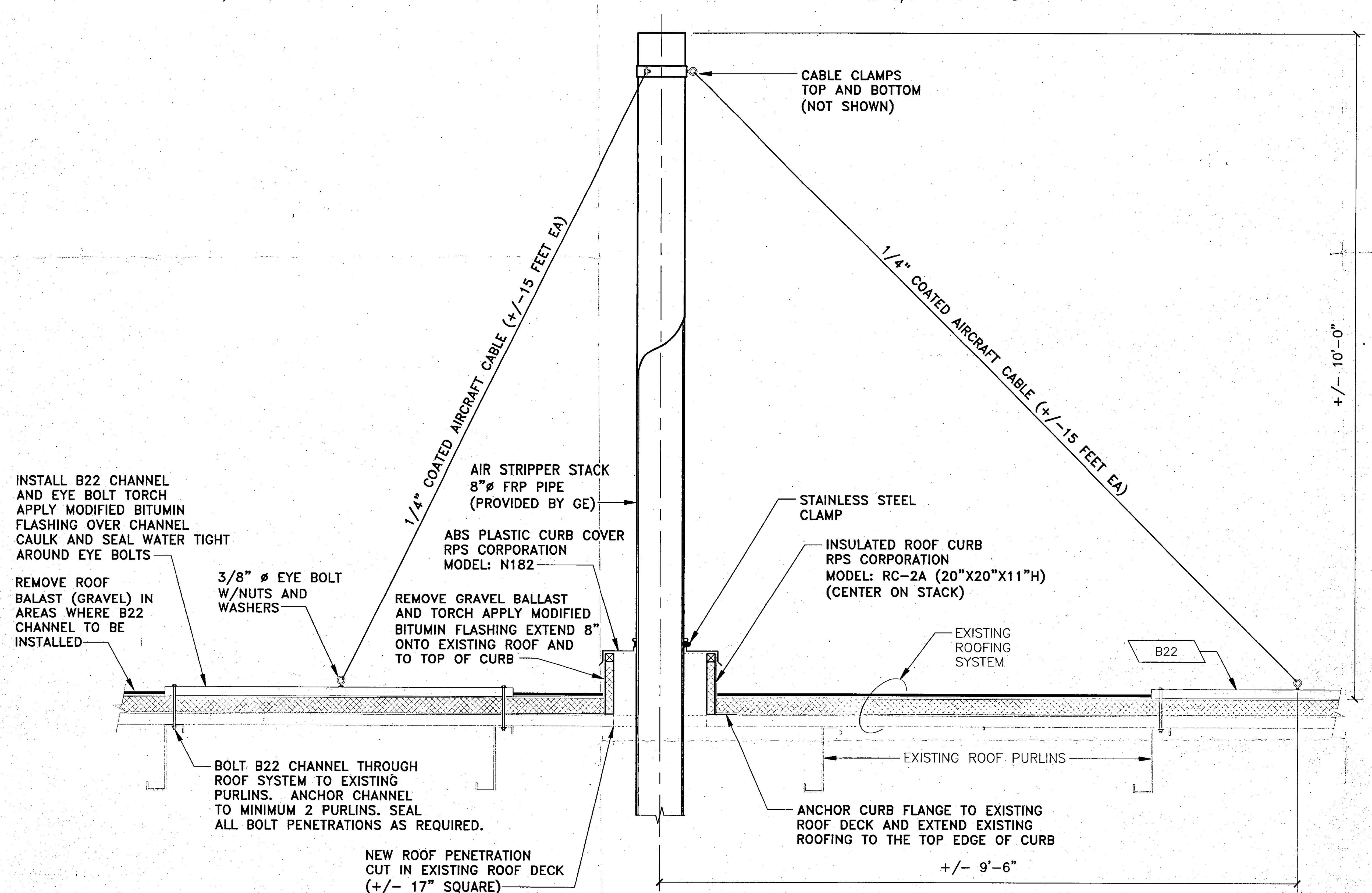


AIR STRIPPER STACK DETAIL

SCALE: 1"=1'-0"



AIR STRIPPER STACK SECTION 3/6

SCALE: 3/4"=1'-0"

ELECTRICAL/HVAC SPECIFICATIONS:

GENERAL

1. ALL ELECTRICAL WORK SHALL BE IN ACCORDANCE WITH THE LATEST REVISION OF NFPA-70 NATIONAL ELECTRIC CODE (NEC).
2. ALL ELECTRICAL EQUIPMENT SHALL BE U.L. LISTED AND LABELED.
3. CONTRACTOR SHALL USE GE EQUIPMENT WHENEVER POSSIBLE.

WALL LOUVER

1. WALL LOUVER SHALL BE RUSKIN MODEL ELC6375D, OR EQUAL.
2. WALL LOUVER SHALL BE 6063-T5 EXTRUDED ALUMINUM. FRAME SHALL BE 4" X 1" X 0.081" AND BLADES SHALL BE 4" WIDE AIRFOILS. AXLES SHALL BE 1/2" PLATED STEEL HEX WITH MOLDED SYNTHETIC BEARINGS.
3. WALL LOUVER SHALL BE PROVIDED WITH A FACTORY-INSTALLED DAMPER OPERATOR:
   A. MANUFACTURER AND MODEL SHALL BE BARBER COLEMAN MA-418-500, OR EQUAL.
   B. ELECTRICAL SHALL BE 120V WITH 70 INPUT WATTS RUNNING AND 25 INPUT WATTS HOLDING RATED AT 60 LB./IN. SPRING RETURN.
   C. LIMIT SWITCH SHALL BE PROVIDED WITH DAMPER.

IN-LINE DUCT HEATER

IN-LINE DUCT HEATER SHALL BE A 12"x20", 7.5 KW, 480V SLIP-IN FINNED TUBE ELECTRIC DUCT HEATER MANUFACTURED BY INDEECO, OR EQUAL.

CONDUITS

1. RIGID METAL CONDUIT (RGS) SHALL BE GALVANIZED STEEL, HOT DIPPED ZINC, ANSI STANDARD C80.1 AND C80.4. MANUFACTURERS SHALL BE ALLIED TUBE & CONDUIT CORPORATION, TRIANGLE WIRE & CABLE INC., OR EQUAL. JUNCTION BOXES AND FITTINGS SHALL BE OF GALVANIZED CAST IRON OR COPPER FREE ALUMINUM.
2. USE CABLE TRAY AS APPROPRIATE.

WIRES AND CABLES

1. GENERAL
   A. ALL CONDUCTORS, UNLESS OTHERWISE NOTED, SHALL BE STRANDED COPPER, CONSTRUCTED OF SOFT DRAWN OR ANNEALED COPPER.
   B. CONDUCTORS INSULATION SHALL BE COLOR CODED, WITH COLOR OF INSULATION ONE COLOR THROUGHOUT THE ENTIRE RUN.
      I. 480 VAC, 3 PHASE, 3 WIRE
         PHASE A - BROWN
         PHASE B - ORANGE
         PHASE C - YELLOW
         GROUND - GREEN
      II. 120/240 VAC, SINGLE PHASE, 3 WIRE
         CONDUCTOR 1 - BLACK
         CONDUCTOR 2 - RED
         NEUTRAL - WHITE
         GROUND - GREEN
2. LOW VOLTAGE CONDUCTORS
   A. ALL CONDUCTORS FOR POWER, LIGHTING AND 120 VAC CONTROL SHALL BE RATED A MINIMUM 600 VAC.
   B. CONDUCTORS SHALL BE CONSTRUCTED OF UNCOATED CLASS C COPPER CONCENTRIC-LAY-STRANDED WIRES.
   C. POWER AND LIGHTING CONDUCTORS SHALL BE TYPE THHN-90C/THWN-2-90C WITH PVC INSULATION AND NYLON JACKET.
3. CONNECTORS
   A. PIGTAIL SPLICING #10 AND SMALLER SHALL USE TAPERED SPRING WIRE NUTS MANUFACTURED BY IDEAL WING NUT, BUCHANAN B-CAP, T&B PIGGIES, OR EQUAL.
   B. FOR TERMINATION OF #14 CONTROL WIRES TO TERMINALS, USE INSULATED COMPRESSION SPADE TYPE CONNECTORS MANUFACTURED BY BURNDY HYDENT; T&B STA-KON, OR EQUAL.
   C. SPLICES AND TERMINALS FOR #8 AND LARGER SHALL BE COPPER COMPRESSION TYPE MANUFACTURED BY BURNDY HYDENT OR HYLUG, T&B STA-KON, OR EQUAL
   D. FIXTURE CONNECTIONS SHALL BE T&B STA-KON SERIES PT-66M, IDEAL CRIMP SLEEVE NO. 410 WITH LONG BARREL, OR EQUAL.

GROUNDING

1. GROUNDING OF ELECTRICAL SYSTEMS AND EQUIPMENT SHALL, AS A MINIMUM, MEET THE REQUIREMENTS OF THE NEC ARTICLE 250 OR SHALL EXCEED ARTICLE 250 AS HEREIN SPECIFIED.
2. ALL CONDUITS SHALL HAVE AN INTERNAL GROUND CONDUCTOR. THIS GROUND CONDUCTOR SHALL BE PROVIDED ALTHOUGH IT MAY NOT BE SHOWN OR SCHEDULED ON THE PLANS.

ENCLOSURES

1. ENCLOSURES SHALL BE NEMA TYPE 4.
2. ENCLOSURES SHALL HAVE NAMEPLATE ON THE EXTERIOR IDENTIFYING THE APPLICATION FUNCTION OF THE EQUIPMENT ENCLOSED.

WIRING DEVICES

PROVIDE AS INDICATED.

PANELS

1. PANELS SHALL BE CIRCUIT BREAKER PANEL BOARDS DESIGNED FOR SEQUENCE PHASE CONNECTION OF BRANCH CIRCUIT BREAKERS.
2. CIRCUIT BREAKERS SHALL BE OF THE PLUG-ON TYPE. UNLESS OTHERWISE SHOWN, BREAKERS SHALL BE RATED AT 20 AMPERES.
3. CIRCUIT BREAKERS SHALL HAVE A MINIMUM INTERRUPTING RATING OF 10,000 AMPERES RMS SYMMETRICAL AT 240 VAC OR 14,000 AMPERES AT 480 VAC UNLESS OTHERWISE SHOWN.

DISCONNECT SWITCHES

DISCONNECT SWITCHES SHALL BE HEAVY DUTY SAFETY SWITCHES, FUSED OR NON-FUSED AS SHOWN OR NOTED.

SIGNAL ISOLATOR

SIGNAL ISOLATOR SHALL BE A IFMA0035-DIN-RAIL FREQUENCY TO ANALOG CONVERTER.

MECHANICAL SPECIFICATIONS:

1. ALL PIPING SHALL BE PVC SCHEDULE 80.
2. ALL PVC PIPE JOINTS SHALL BE SOLVENT WELDED, INSTALLED AND PRESSURE-TESTED IN ACCORDANCE WITH MANUFACTURER'S SPECIFICATIONS. ZERO LEAKAGE IS ALLOWED FOR ALL JOINTS.
3. ALL PIPE SHALL BE SUPPORTED AT 7'-0" O.C. (MAX) AND LOCATED 2'-0" FOR JOINT LOCATIONS.
4. ALL BALL VALVES SHALL BE PVC TRUE UNION BALL VALVES WITH VITON O-RING SEAL, TEFLON SELF-LUBRICATING SEATS, TIGHT SHUTOFF IN EITHER DIRECTION, FULL PORT DESIGN, SOLVENT WELDED SOCKET ENDS AND OPERATING HANDLE. MANUFACTURERS SHALL BE: HAYWARD, NIBCO, PLASTO-MATIC, OR EQUAL.
5. ALL CHECK VALVES SHALL BE PVC TRUE UNION BALL CHECK TYPE WITH VITON O-RING SEALS. MANUFACTURERS SHALL BE: HAYWARD, NIBCO, PLASTO-MATIC, OR EQUAL.
6. SAMPLE TAPS AND DRAIN VALVES SHALL CONSIST OF A 1/2" DIAMETER PVC PIPE EXTENSION, BALL VALVE AND NIPPLE. SAMPLE TAPS AND DRAIN VALVES SHALL BE LOCATED AT LOCATIONS SHOWN ON THE DRAWINGS AND AT ALL LOW ELEVATIONS IN THE PROCESS PIPING.
7. ALL FLOW METERS SHALL HAVE STRAIGHT PIPE AT A MINIMUM OF 10 PIPE DIAMETERS PRECEDING AND 5 PIPE DIAMETERS FOLLOWING
8. ALL PRESSURE GAUGES SHALL BE TRERICE MODEL A50 CFB (WCT) LIQUID-FILLED OR EQUAL WITH DIAL RANGE FROM 0 TO 60 PSI.

AIR STRIPPER SPECIFICATIONS:

LOW PROFILE AIR STRIPPING SYSTEM SHALL BE THE NEEP SYSTEMS SKID-MOUNTED FIVE-TRAY, 304L STAINLESS STEEL MODEL 2651 FORCED DRAFT LOW PROFILE AIR STRIPPER. THE AIR STRIPPER SHALL BE EQUIPPED WITH THE FOLLOWING:

1. 10 HP, 3 PHASE, 480 VOLT FORCED DRAFT BLOWER.
2. TWO 1 HP, 3 PHASE, 480 VOLT DISCHARGE PUMPS WITH A SINGLE GE-AF300 VARIABLE SPEED DRIVE.
3. NEMA 4 CONTROL PANEL WITH MAIN DISCONNECT SWITCH, ALARM INTERLOCKS AND LIGHT, BLOWER AND DISCHARGE PUMP MOTOR STARTERS, H-O-A SWITCHES AND RUN LIGHTS, AND UL LISTED GENERAL ELECTRIC PLC WITH 16 DISCRETE INPUTS, 16 DISCRETE OUTPUTS, 16 ANALOG INPUTS, AND 8 ANALOG OUTPUTS.
4. DWYER MODEL DS400-16 AVS PITOTUBE AIR FLOW INDICATING TRANSMITTER.
5. DWYER MODEL 605 AIR PRESSURE INDICATING TRANSMITTER.
6. DWYER MODEL 4130N AIR TEMPERATURE INDICATING TRANSMITTER WITH K-18" THERMOCOUPLE.
7. MAGNETROL RF CAPACITOR SUMP WATER LEVEL TRANSMITTER WITH FUJI PID.
8. LOW AND HIGH AIR PRESSURE ALARM/SHUTDOWN SWITCHES.
9. LOW AND HIGH WATER LEVEL ALARM/SHUTDOWN FLOAT SWITCHES.
10. TWO 3" 120 VAC, NEMA 4 MOTORIZED BLOCK(ON/OFF) VALVES WITH LIMIT SWITCHES.

X: 48097X00, X01.DWG
L: ON=*, OFF=REF
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8/21/00 SYR-54-DCC
48097001/48097G03.DWG

1"=1'-0" · 3/4"=1'-0" · 3/8"=1'-0"

No.	Date	Revisions	Init

Project Mgr. DFS
Designed by TEM
Drawn by DCC
Checked by DFS
Prof. Eng. EDWARD R. LYNCH
PE License N.Y. 057526

STATE OF NEW YORK · EDWARD R. LYNCH · 057526 · LICENSED PROFESSIONAL ENGINEER

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GENERAL ELECTRIC COMPANY • ALBANY, NEW YORK
FORMER POWEREX, INC. FACILITY – AUBURN, NEW YORK
SHALLOW BEDROCK GROUND-WATER INTERIM ACTION ENHANCEMENT

DETAIL, SECTIONS, AND SPECIFICATIONS

GENERAL

File Number 480.97.06F
Date AUGUST 2000

Blasland, Bouck & Lee, Inc.
Corporate Headquarters
6723 Towpath Road
Syracuse, NY 13214
315-446-9120

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LEGEND:

	EXISTING PROCESS PIPING
	EXISTING INSTRUMENTATION SIGNAL
	PROPOSED PROCESS PIPING
	PROPOSED INSTRUMENTATION SIGNAL
	SKID-MOUNTED EQUIPMENT PROVIDED BY AIR STRIPPER MANUFACTURER
	BALL VALVE
	BUTTERFLY VALVE
	CHECK VALVE
	GLOBE VALVE
	PNEUMATIC CONTROL VALVE
M	MOTORIZED BLOCK VALVE
SP	SAMPLE PORT
	BLOWER
	PUMP
M	MOTOR
1	INTERLOCK
XX / XXX	REMOTE INDICATOR (AT CONTROL PANEL)
XX / XXX	LOCAL INDICATOR (AT EQUIPMENT)
LC / XXX	LOCAL CONTROL PANEL OR PLC (AT EQUIPMENT)
	FUNCTION IN MAIN PLC (CONNECTIONS TO AND FROM MADE BY ELECTRICAL CONTRACTOR)
	90° ELBOW
	TEE
	ELBOW DOWN

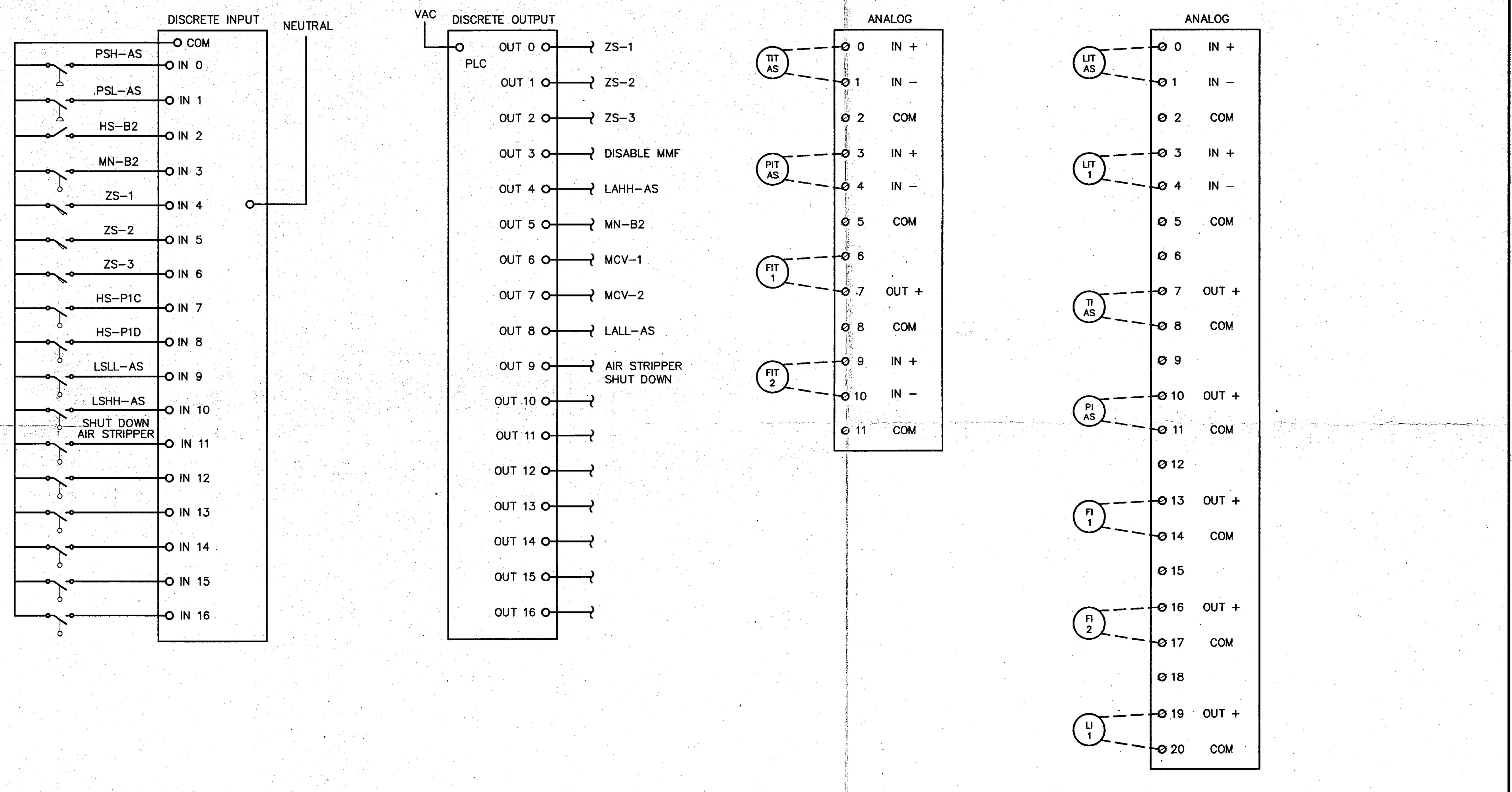
MAIN PLC INTERLOCK SCHEDULE:

1. LOW-LOW LEVEL AT AIR STRIPPER SUMP, TURN OFF P-1C AND P-1D, AND SIGNAL ALARM TO MAIN PLC.
2. HIGH-HIGH LEVEL AT AIR STRIPPER SUMP, TURN OFF MMF SYSTEM FEED PUMPS (P-1A AND P-1B) AND SIGNAL ALARM TO MAIN PLC.
3. HIGH OR LOW AIR PRESSURE AT AIR STRIPPER BLOWER OUTLET, SHUT DOWN AIR STRIPPER SYSTEM, TURN OFF MMF SYSTEM FEED PUMPS AND SIGNAL ALARM TO MAIN PLC.
4. WHEN AIR STRIPPER BLOWER START SWITCH IS DEPRESSED, OPEN AIR INLET DAMPER.
5. IF AIR STRIPPER BLOWER IS TURNED OFF, CLOSE AIR INLET DAMPER.
6. IF AIR DAMPER LIMIT SWITCH INDICATES DAMPER IS OPEN, ENABLE AIR STRIPPER BLOWER.
7. IF LEVEL AT T-501 (LIT-1) IS GREATER THAN 75% (16mA), OPEN MBV-1 AND CLOSE MBV-2. DO NOT CLOSE MBV-2 UNTIL MBV-1 LIMIT SWITCH INDICATES THAT MBV-1 IS OPEN. (SETPOINTS ARE FULLY ADJUSTABLE).
8. IF LEVEL AT T-501 (LIT-1) IS LESS THAN 25% (8mA), OPEN MBV-2 AND CLOSE MBV-1. DO NOT CLOSE MBV-1 UNTIL MBV-2 LIMIT SWITCH INDICATES THAT MBV-2 IS OPEN. (SETPOINTS ARE FULLY ADJUSTABLE).
9. IF LOW AIR TEMPERATURE, TURN OFF MMF SYSTEM FEED PUMPS (P-1A AND P-1B), SHUT DOWN AIR STRIPPER SYSTEM, AND SIGNAL ALARM TO MAIN PLC. (SET POINTS ARE FULLY ADJUSTABLE).
10. IF LOW OR HIGH AIR FLOW, TURN OFF MMF SYSTEM FEED PUMPS (P-1A AND P-1B), SHUT DOWN AIR STRIPPER SYSTEM, AND SIGNAL ALARM TO MAIN PLC. (SET POINTS ARE FULLY ADJUSTABLE).
11. HIGH-HIGH LEVEL ALARM AT T-801, T-802, OR T-803, SHUT DOWN AIR STRIPPER SYSTEM.
12. IF LOW OR HIGH WATER FLOW TO AIR STRIPPER, TURN OFF MMF SYSTEM FEED PUMPS (P-1A AND P-1B), SHUT DOWN AIR STRIPPER SYSTEM, AND SIGNAL ALARM AT MAIN PLC. (SET POINTS ARE FULLY ADJUSTABLE).

NOTE:
DURING AN AIR STRIPPER SYSTEM SHUTDOWN, THE AIR STRIPPER BLOWER WILL BE TURNED OFF 5 MINUTES AFTER SYSTEM SHUTDOWN IS ACTIVATED.

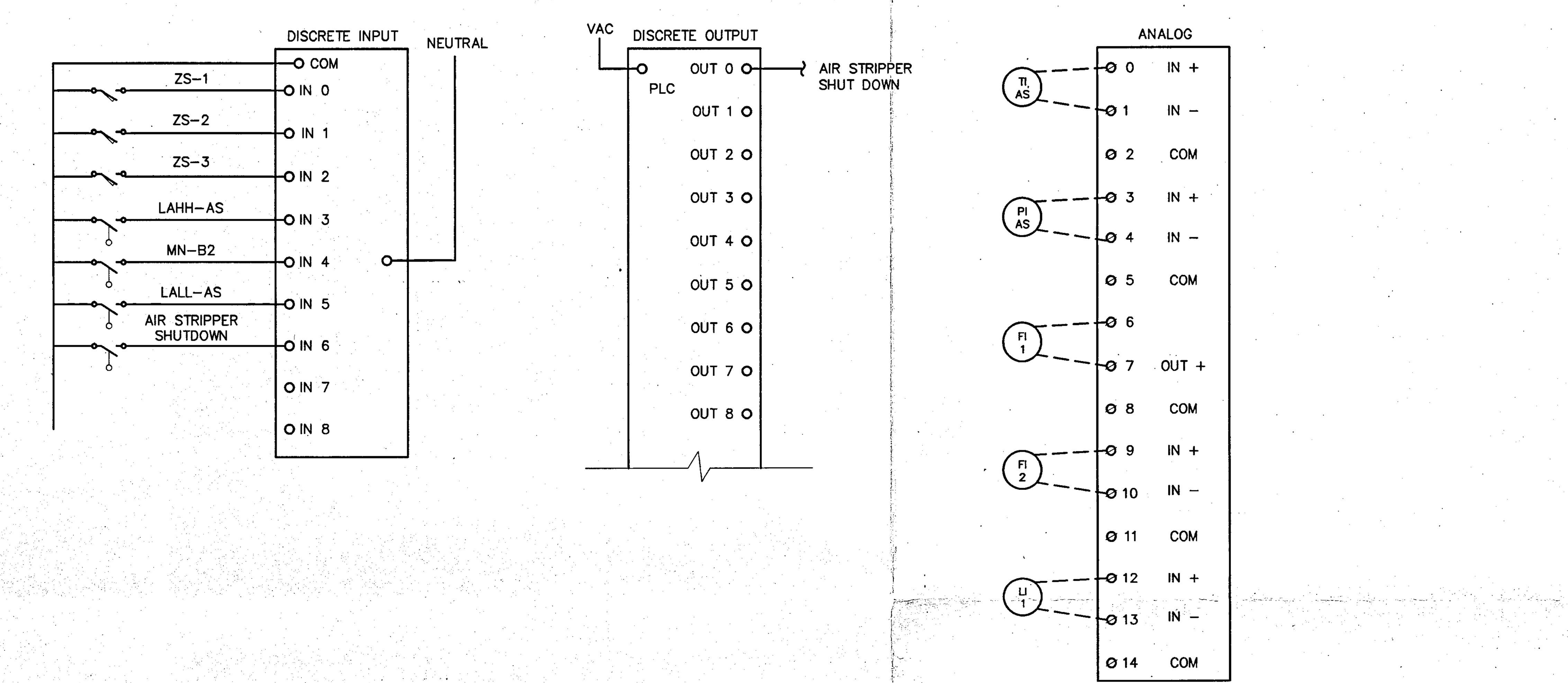
ABBREVIATIONS:

A	AMPERE	MBV	MOTORIZED BLOCK VALVE
AIC	ACTUATOR INDICATING CONTROLLER	MMF	MULTIMEDIA FILTER SYSTEM
AS	AIR STRIPPER	MN	RUN INDICATOR
B	BLOWER	NEEP	NORTHEAST ENVIRONMENTAL PRODUCTS, INC.
B.O.D.	BOTTOM OF DUCT	NEMA	NATIONAL ELECTRICAL MANUFACTURER'S ASSOCIATION
CFM	CUBIC FEET PER MINUTE	NFPA	NATIONAL FIRE PRETCTION AGENCY
ø	DIAMETER	P	PUMP OR PHASE
DM	DAMPER MOTOR	PAH	PRESSURE ALARM HIGH
EL.	ELEVATION	PAL	PRESSURE ALARM LOW
ES	ELECTRICAL SUPPLY	PSH	PRESSURE SWITCH HIGH
FAH	FLOW ALARM HIGH	PSL	PRESSURE SWITCH LOW
FAL	FLOW ALARM LOW	PE	PRESSURE ELEMENT
FE	FLOW ELEMENT	PI	PRESSURE INDICATOR
FI	FLOW INDICATOR	PP	POWER PANEL
FIT	FLOW INDICATOR TRANSMITTER	PVC	POLYVINYL CHLORIDE
FM	FLOW METER	R	REDUCER
FQI	FLOW INTEGRATING INDICATOR	RGS	RIGID GALVANIZED STEEL
FS	FLOW SWITCH	SP	SAMPLE PORT
FT	FLOW TRANSMITTER	SS	LIMIT SWITCH
FREQ.	FREQUENCY	TAL	TEMPERATURE ALARM LOW
FRP	FIBERGLASS REINFORCED PLASTIC	TDH	TOTAL DYNAMIC HEAD
GE	GENERAL ELECTRIC COMPANY	TI	TEMPERATURE INDICATOR
GPM	GALLONS PER MINUTE	TIT	TEMPERATURE INDICATING TRANSMITTER
HOA	HAND-OFF-AUTO	TS	TEMPERATURE SWITCH
HS	HAND SWITCH	TYP.	TYPICAL
KW	KILOWATT	U.L.	UNDERWRITER'S LABORATORY
LAHH	LEVEL ALARM HIGH-HIGH	V	VOLT
LALL	LEVEL ALARM LOW-LOW	VAC	VOLT ALTERNATING CURRENT
LE	LEVEL ELEMENT	W	WATT
LIT	LEVEL INDICATING TRANSMITTER	XY	SIGNAL ISOLATOR
LSHH	LEVEL SWITCH HIGH-HIGH	ZS	POSITION SWITCH
LSLL	LEVEL SWITCH LOW-LOW		
M	MOTOR		
mA	MILLIAMPERES		



LOW-PROFILE AIR STRIPPER SYSTEM PLC WIRING DIAGRAMS

NOT TO SCALE



MAIN PLC WIRING DIAGRAMS

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X: 48097X00, X01.DWG
L: ON=*, OFF=REF
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8/21/00 SYR-54-DCC
48097001/48097G02.DWG

Graphic Scale

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Project Mgr. DFS
Designed by TEM/MEE
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FORMER POWEREX, INC. FACILITY – AUBURN, NEW YORK
SHALLOW BEDROCK GROUND-WATER INTERIM ACTION ENHANCEMENT

LEGENDS, INTERLOCK SCHEDULE, ABBREVIATIONS, AND DIAGRAMS

GENERAL

File Number 480.97.05F
Date AUGUST 2000

Blasland, Bouck & Lee, Inc.
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315-446-9120

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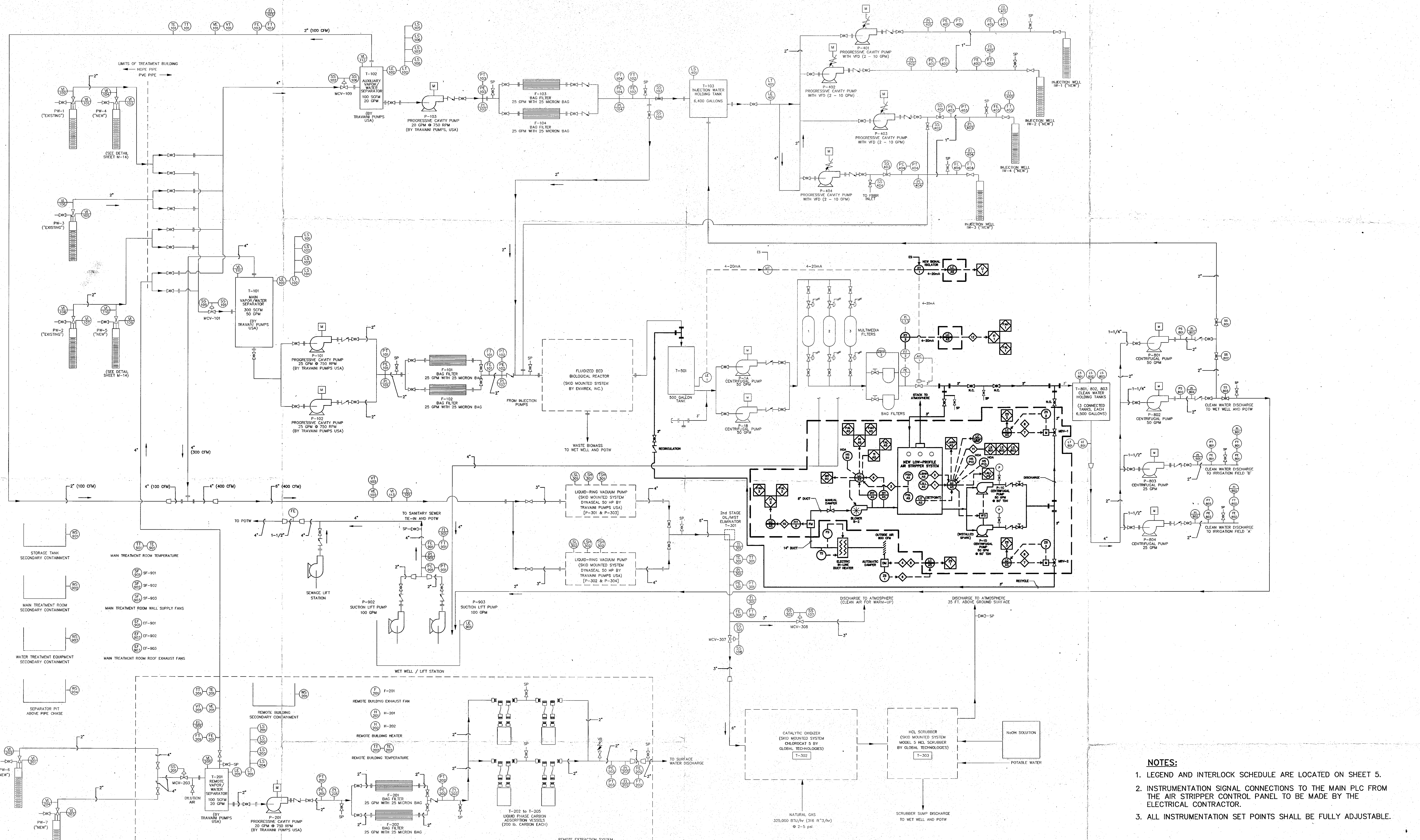

NOTES:

1. LEGEND AND INTERLOCK SCHEDULE ARE LOCATED ON SHEET 5.
2. INSTRUMENTATION SIGNAL CONNECTIONS TO THE MAIN PLC FROM THE AIR STRIPPER CONTROL PANEL TO BE MADE BY THE ELECTRICAL CONTRACTOR.
3. ALL INSTRUMENTATION SET POINTS SHALL BE FULLY ADJUSTABLE.

X: 48097X00.DWG
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SHALLOW BEDROCK GROUND-WATER INTERIM ACTION ENHANCEMENT

OVERALL PROCESS AND INSTRUMENTATION DIAGRAM

MECHANICAL/ELECTRICAL

File Number
480.97.04F

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Blasland, Bouck & Lee, Inc.
Corporate Headquarters
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NOTES:

1. LEGEND AND INTERLOCK SCHEDULE ARE LOCATED ON SHEET 5.
2. INSTRUMENTATION SIGNAL CONNECTIONS TO THE MAIN PLC FROM THE AIR STRIPPER CONTROL PANEL TO BE MADE BY THE ELECTRICAL CONTRACTOR.
3. ALL INSTRUMENTATION SET POINTS SHALL BE FULLY ADJUSTABLE.

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SHALLOW BEDROCK GROUND-WATER INTERIM ACTION ENHANCEMENT

PROCESS AND INSTRUMENTATION DIAGRAM

MECHANICAL/ELECTRICAL

File Number 480.97.03F
Date AUGUST 2000

Blasland, Bouck & Lee, Inc.
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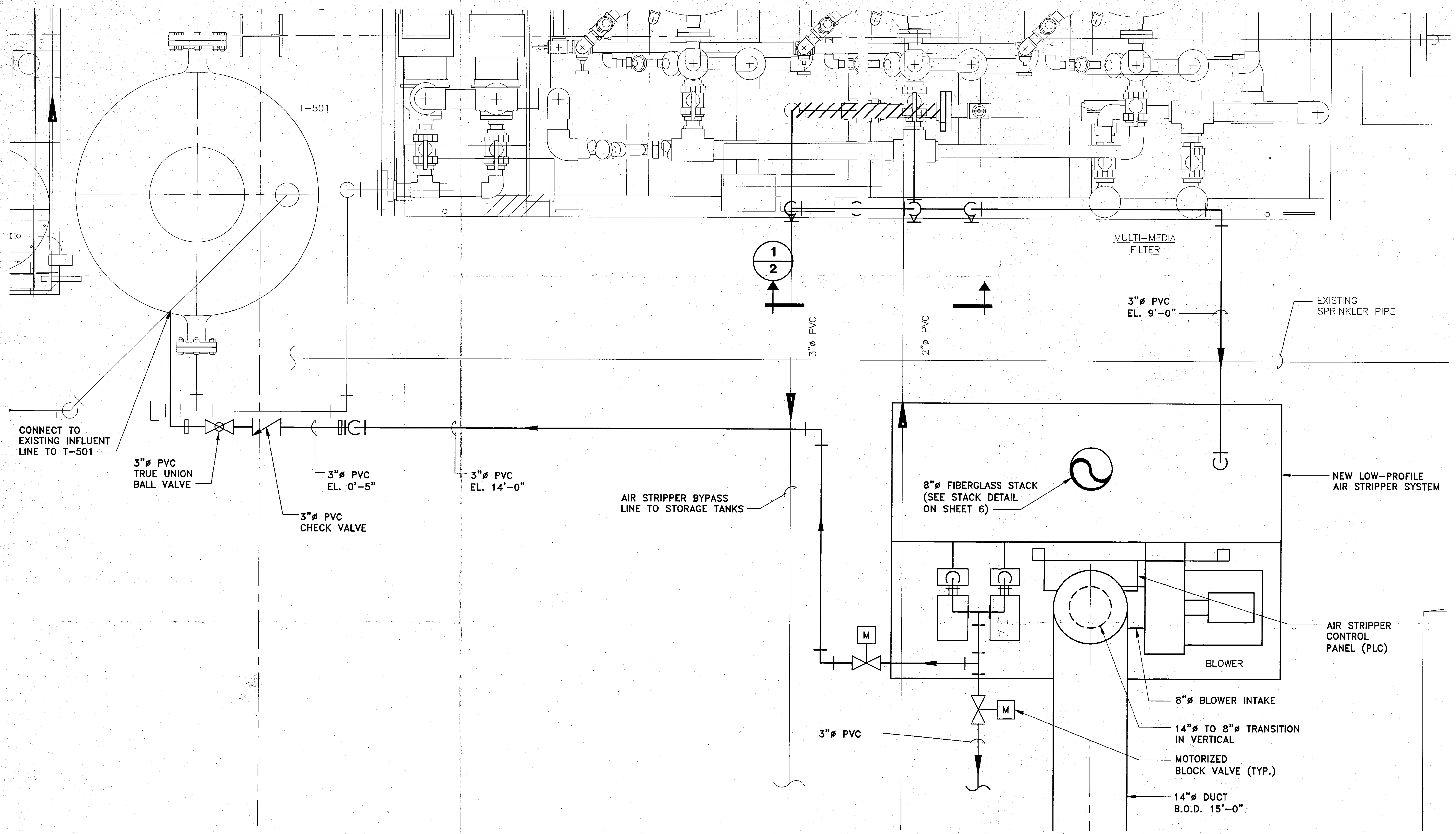
3



PLAN
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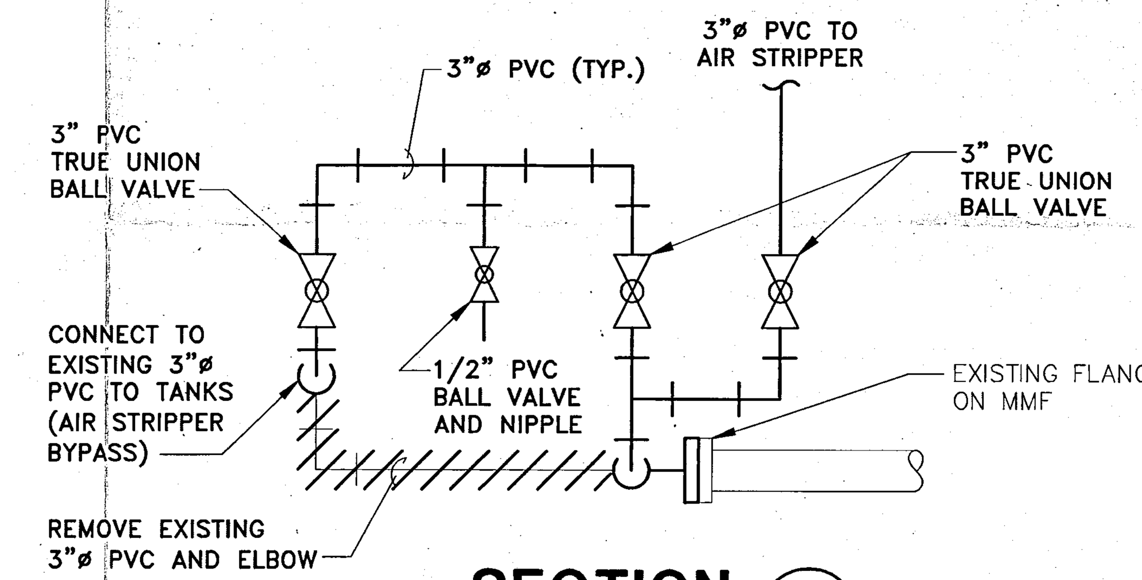

SECTION 1/2
NOT TO SCALE

NOTE:
LEGEND AND ABBREVIATIONS ARE LOCATED ON SHEET 5.

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Graphic Scale
1"=1'-0" 0 1' 2'

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SHALLOW BEDROCK GROUND-WATER INTERIM ACTION ENHANCEMENT

PLAN AND SECTION

MECHANICAL

File Number
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Blasland, Bouck & Lee, Inc.
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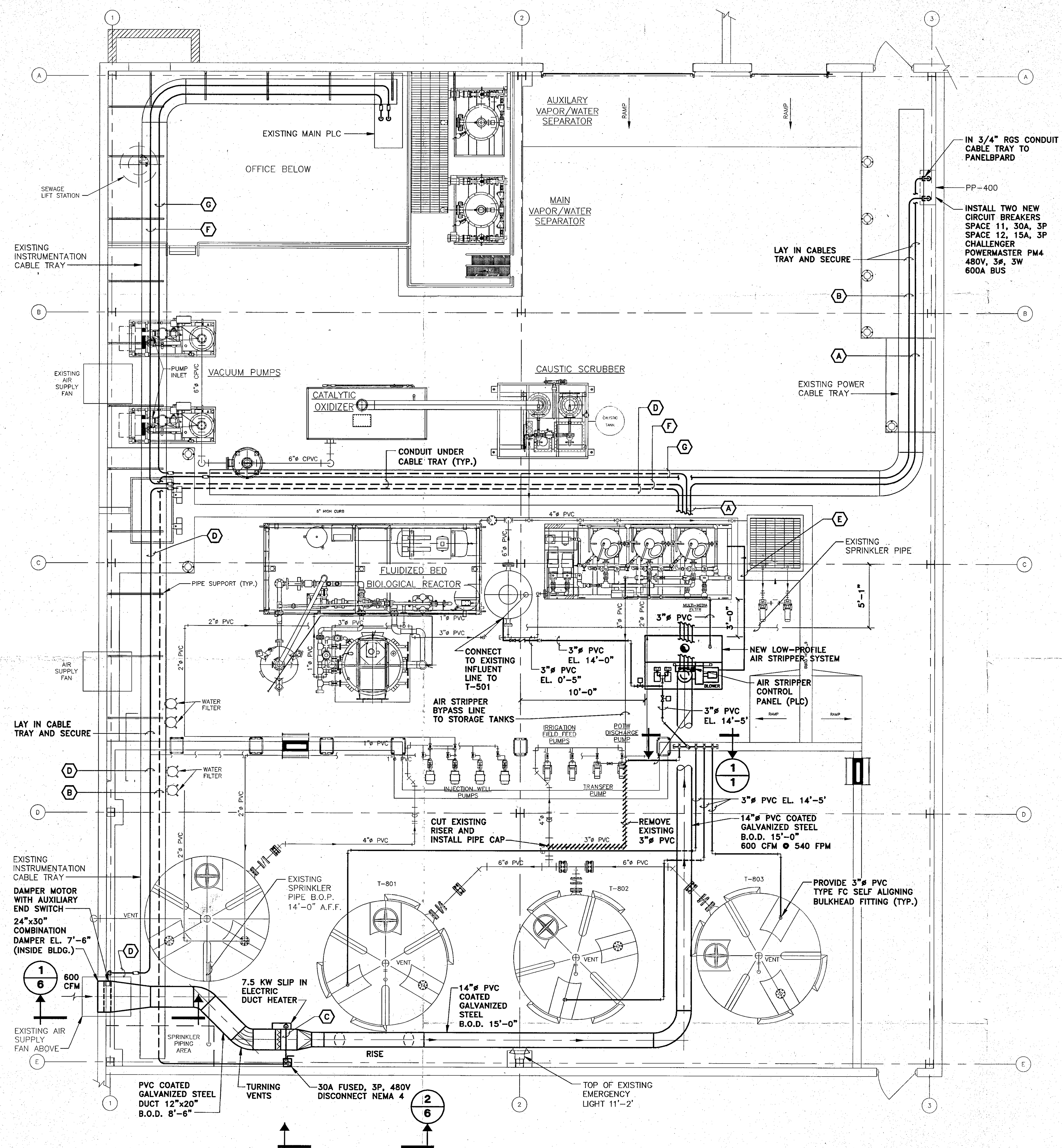
Syracuse, NY 13214
315-446-9120

2

CABLE/CONDUCTOR SCHEDULE									
		RUN			CONDUCTOR				
CABLE/ CONDUIT TAG	APPLICATION	FROM	TO	SIZE	NUMBER OF CONDUCTORS	SIZE	VOLTAGE	GROUND CONDUCTOR	COMMENTS
P-1026	STRIPPER FEEDER	PP-400	AIR STRIPPER PLC	3/4"ø	3	#12	480	#12	PP-400, CIRCUIT 11
P-1027	DUCT HEATER FEEDER	PP-400	HEATER DISC.	3/4"ø	3	#12	480	#12	PP-400, CIRCUIT 12
P-1027A	DUCT HEATER	HEATER DISC.	DUCT HEATER	3/4"ø	3	#12	480	#12	
PC 1028	DAMPER MOTOR WITH	AIR STRIPPER PLC	DAMPER MOTOR	3/4"ø	2	#14	120	#14	
	AUXILIARY END SWITCH		END SWITCH		2	#14		–	
C 3205	FLOW & LEVEL INPUTS	MMF PANEL	AIR STRIPPER PLC	3/4"ø	2	TSP#16	24	–	
C 3206	ANALOG SIGNALS TO & FROM MAIN PLC	MAIN PLC	AIR STRIPPER PLC	1"ø	5	TSP#16	24	–	
C 3207	DISCRETE SIGNALS TO & FROM MAIN PLC	MAIN PLC	AIR STRIPPER PLC	1"ø	8	#14	24	–	

ITEM	CONDUIT
A	P-1026
B	P-1027
C	P-1027A
D	PC 1028
E	C 3205
F	C 3206
G	C 3207



PLAN

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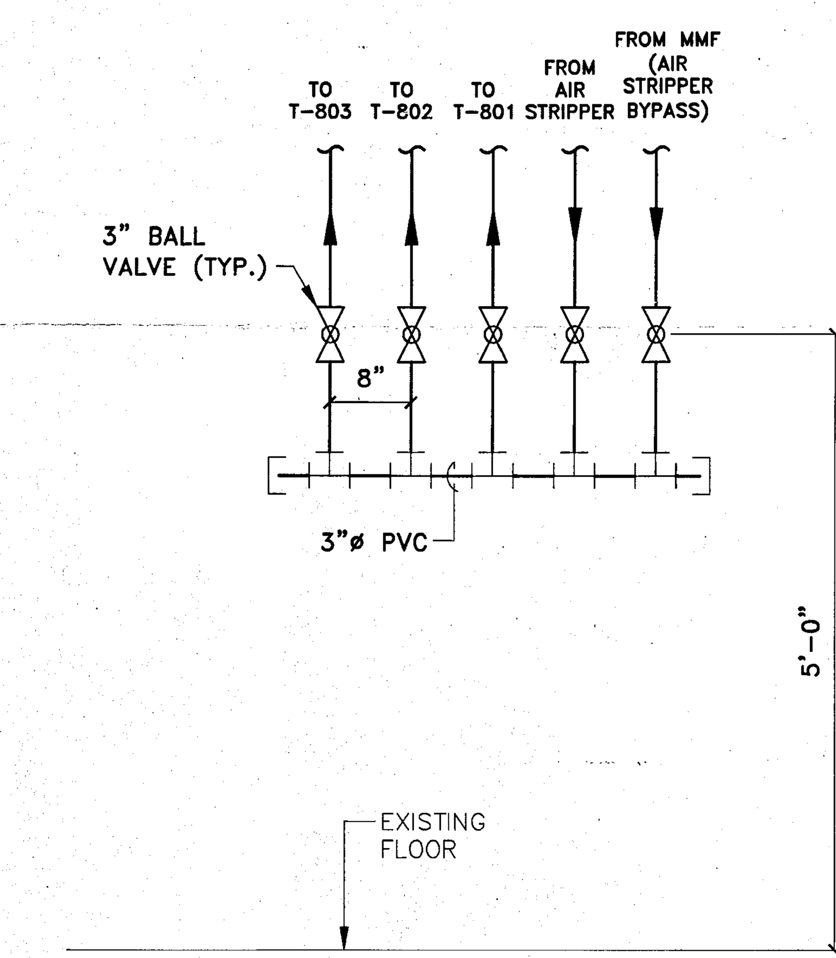

SECTION 1/1

NOT TO SCALE

NOTES:

1. BASE PLANS SUPPLIED BY RADIAN ENGINEERING, INC. SHALLOW BEDROCK GROUNDWATER INTERIM ACTION-RECORD DRAWINGS, DATED 4/30/99.
2. THE CONTRACTOR SHALL COORDINATE ALL CONSTRUCTION ACTIVITIES WITH REPRESENTATIVES OF GENERAL ELECTRIC COMPANY (GE) PRIOR TO COMMENCING ON-SITE ACTIVITIES.
3. THE CONTRACTOR SHALL VERIFY ALL DIMENSIONS IN THE FIELD.
4. THE CONTRACTOR SHALL INSTALL COMPONENTS IN A NEAT AND WORKMANLIKE MANNER THAT ARE EASILY ACCESSIBLE FOR INSPECTION, OPERATION, REPAIR, AND ALIGN, LEVEL AND ADJUST FOR SATISFACTORY OPERATION AND MAINTENANCE. DEVIATIONS FROM INDICATED ARRANGEMENTS ARE SUBJECT TO REVIEW AND APPROVAL BY REPRESENTATIVES OF GE PRIOR TO INSTALLATION AND/OR OPERATION.
5. THE CONTRACTOR SHALL FURNISH AND PLACE PROPER GUARDS FOR PREVENTION OF ACCIDENTS, PROVIDE ALL SCAFFOLDING, SHIELDING, DUST/FUME PROTECTION, MECHANICAL/ELECTRICAL PROTECTION, SPECIAL GROUNDING, SAFETY RAILINGS, BARRIERS, OR OTHER SAFETY FEATURES, AS REQUIRED. THE CONTRACTOR SHALL PROVIDE AND MAINTAIN SUFFICIENT LIGHTS DURING NIGHT HOURS TO SECURE SUCH PROTECTION.
6. THE CONTRACTOR SHALL MAINTAIN A SET OF PLANS WITH CURRENT FIELD CHANGES MARKED THERE-ON AND SHALL DELIVER THESE PLANS TO REPRESENTATIVES OF GE UPON COMPLETION OF CONSTRUCTION.
7. THE CONTRACTOR SHALL NOTIFY REPRESENTATIVES OF GE IMMEDIATELY WHEN CONFLICTS BETWEEN DRAWINGS AND ACTUAL CONDITIONS ARE DISCOVERED.
8. ALL ELECTRICAL WORK AND MATERIALS SHALL BE IN ACCORDANCE WITH THE LATEST REVISION OF THE NATIONAL ELECTRIC CODE.
9. THE CONTRACTOR SHALL PROVIDE ALL LOCAL PERMITS AND MAKE ARRANGEMENTS FOR LOCAL INSPECTIONS (AS NECESSARY).
10. THE CONTRACTOR SHALL BE SOLELY RESPONSIBLE FOR INITIATING, MAINTAINING, AND SUPERVISING ALL SAFETY PRECAUTIONS AND PROGRAMS IN CONNECTION WITH THIS PROJECT. THE CONTRACTOR SHALL TAKE ALL NECESSARY PRECAUTIONS FOR THE SAFETY OF, AND SHALL PROVIDE THE NECESSARY PROTECTION TO PREVENT DAMAGE, INJURY, OR LOSS TO ALL EMPLOYEES ON THE WORK SITE AND ANY OTHER PERSONS WHO MAY BE AFFECTED THEREBY.
11. THE CONTRACTOR SHALL COMPLY WITH ALL APPLICABLE LAWS, ORDINANCES, RULES, REGULATIONS, AND ORDERS OF PUBLIC BODIES HAVING JURISDICTION FOR THE SAFETY OF PERSONS OR PROPERTY OR TO PROTECT THEM FROM DAMAGE, INJURY, OR LOSS, INCLUDING, WITHOUT LIMITATION, THE DEPARTMENT OF LABOR SAFETY AND HEALTH REGULATIONS FOR CONSTRUCTION PROMULGATED UNDER THE OCCUPATIONAL SAFETY AND HEALTH ACT OF 1970 (PL 91-596) AND UNDER SECTION 107 OF THE CONTRACT WORK HOURS AND SAFETY STANDARDS ACT (PL 91-54) AND AMENDMENTS THERE TO. THE CONTRACTOR SHALL ERECT AND MAINTAIN, AS REQUIRED BY THE CONDITIONS AND THE PROGRESS OF THE WORK, ALL NECESSARY SAFEGUARDS FOR THE SAFETY AND PROTECTION OF ALL EMPLOYEES ON THE WORK SITE AND ANY OTHER PERSONS WHO MAY BE AFFECTED THERBY, AND SHALL COMPLY WITH ALL APPLICABLE RECOMMENDATIONS OF THE MANUAL OF ACCIDENT PREVENTION IN CONSTRUCTION OF THE ASSOCIATED GENERAL CONTRACTORS OF AMERICA, INC.
12. ITEMS OF SPECIFIC MANUFACTURERS SHALL BE INSTALLED IN STRICT ACCORDANCE WITH THE PRINTED INSTRUCTIONS AND/OR THE MANUFACTURER'S REPRESENTATIVES DIRECTIONS.
13. ALL EQUIPMENT SHALL BE LABELED WITH EQUIPMENT NUMBER, EQUIPMENT NAME, AND CONTENTS.
14. ALL PIPING AND DUCTING SHALL BE LABELED WITH FLOW ARROWS AND DESCRIPTION. LABELING DESCRIPTIONS AND COLOR SCHEME DESIGNATION SERVICE SHALL BE SUBMITTED TO REPRESENTATIVES OF GE FOR APPROVAL.
15. LEGEND AND ABBREVIATIONS ARE LOCATED ON SHEET 5.

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Graphic Scale 3/8"=1'-0" 2' 0 3' 6'

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FORMER POWEREX, INC. FACILITY – AUBURN, NEW YORK
SHALLOW BEDROCK GROUND-WATER INTERIM ACTION ENHANCEMENT

EQUIPMENT LAYOUT PLAN AND SECTION

MECHANICAL/ELECTRICAL

File Number 480.97.01F
Date AUGUST 2000
Blasland, Bouck & Lee, Inc. Corporate Headquarters 6723 Towpath Road Syracuse, NY 13214 315-446-9120

1