TRANSMITTAL OF SHOP DRAWINGS, EQUIPMENT DATA, MATERIAL SAMPLES, OR MANUFACTURER'S CERTIFICATES OF COMPLIANCE

For use of this form, see ER 415-1-0; the proponent agency is CECW-CE

DATE: 2/4/2022

TRANSMITTAL NO.: 1800-60.1

SECTION I - REQUEST FOR APPROVAL OF THE FOLLOWING ITEMS (This section will be initiated by the contractor)

TO: Eastern Resident Office
US Army Corps of Engineers
355 RXR Plaza
Uniondale, New York 11556

FROM: HydroGeoLogic, Inc
11107 Sunset Hills Road, Suite 400
Reston VA 20190
USA

CONTRACT NO.: W912DQ-17-D-3016
W912DQ20F3045

THIS IS A: RESUBMITTAL OF TRANSMITTAL 1800-60

SPECIFICATION SEC. NO. (Covers only one section with each transmittal): 1800-Operation and Maintenace of Existing Systems

PROJECT TITLE AND LOCATION: 01
LAI Superfund Site OU 1-LTRA ,Port Jefferson, New

THIS TRANSMITTAL IS FOR: (Check one)
☐ FIO ☒ GA ☐ DA ☐ CR ☐ DA/CR ☐ DA/GA ☐ S

ITEM NO. (See Note 3) a.	DESCRIPTION OF SUBMITTAL ITEM (Type size, model number/etc) b.	SUBMITTAL TYPE CODE (See Note 8) c.	NO. OF COPIES d.	CONTRACT REFERENCE DOCUMENT		FOR CONTRACTOR USE g.	VARIATION (See Instruction No. 6) h.	FOR CE USE CODE (Note 9) i.
				SPEC. PARA NO e.	DRAWING SHEET NO. f.			
79	LAI O&M Manual - HGL	10 - OPERATIONS AND MAINTENANCE DATA	1	1.3.1.1		A	No	A
80	LAI Plan of Operation - HGL	01 - PRECONSTRUCTION SUBMITTALS	1	1.3.1.2		A	No	A

Remarks from Contractor

A response to comments form is provided for ease of reference.

I certify that the above submitted items have been reviewed in detail and are correct and in the strict conformance with the contract drawings and specifications except as otherwise stated. Eric Dambaugh - HydroGeoLogic, Inc.

Eric Dambaugh

Digitally signed by Eric Dambaugh
Date: 2022.02.04 08:46:20 -05'00'

NAME AND SIGNATURE OF CONTRACTOR

SECTION II - APPROVAL ACTION

ENCLOSURES RETURNED (List by Item No.)

NAME, TITLE AND SIGNATURE OF APPROVING AUTHORITY

BIAN.SHEWEN.1228728337

Digitally signed by BIAN.SHEWEN.1228728337
Date: 2022.02.07 07:17:07 -05'00'

DATE: 2/07/2022

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Site: **Lawrence Aviation Industries Superfund Site**
Document: **O&M Manual and As-Builts**
Date: **November 2021**

#	Document Section(s)	Page, Paragraph, Line, etc.	Commenter	Comment	Response
1	Section 2.4	LAI VOC Extraction Bullets	L'Ecuyer	EW-3 should be added to this list and simply include the VOC data from the initial sample.	A new bullet was added to the list for EW-3: Extraction well EW-3 was installed in August 2021 to enhance capture of VOCs near the source area. Sampling of the well shortly after installation indicated a range of total VOC concentrations in the samples. The initial sample collected on September 1, 2021, indicated a total VOC concentration of 252 µg/L, primarily TCE (247 µg/L). A follow-up sample collected on September 22, 2021, indicated a total VOC concentration of 153 µg/L, primarily TCE (150 µg/L).
2	Section 4.1	Table 4-1	L'Ecuyer	Do we not have the top of casing elevation for EW-3? When will the survey be conducted so this info can be provided to EPA and the state?	The top of casing elevation has not been measured yet. Several surveying firms were contacted for this scope, but no bids were received. HGL has been seeking bids from more firms and expects to have the survey work completed in February.
3	General		L'Ecuyer	There were discussions about having typical injection well rehab procedures included in the O&M manual. This could be added as an appendix. Also, these injection wells are an important part of the treatment system that can shut down the plant if water levels get too high. Information about injection well fouling overtime should be added to the manual as well as a statement that injection well rehab is needed annually.	A new section, Section 6.3, was added to the document. Section 6.3 is as follows: The injection wells tend to become fouled and their capacity to accept water from the treatment system decreases due to residual aluminum in the discharge water, and other water chemistry-related factors. An injection well redevelopment event is performed once each year. In 2021 the injection wells were redeveloped via high-velocity jetting. Jetting was performed within the wetted portion of the screen interval, with pressures up to 4,000 or 5,000 pounds per square inch. This low

#	Document Section(s)	Page, Paragraph, Line, etc.	Commenter	Comment	Response
					range of pressure was used to not damage the well screen or sand pack. The 4-nozzle, rotating jetting tool was run continually up and down the entire screen interval rather than concentrating on small intervals for long periods of time (e.g., several minutes/foot) and moving to successive intervals. Simultaneously with jetting, water was pumped from the well with an electric submersible pump positioned below the jetting nozzle. The well casing was surged with air lifting to re-establish the gravel pack and to remove fine material from the well. During some previous redevelopment events, nitrogen burst and dry penetrating agent were used to redevelop the injection wells. Minimal information is available about the methodology used for these events.
End of Comments.					

OPERATIONS AND MAINTENANCE PLAN AND MANUAL
LAWRENCE AVIATION INDUSTRIES
GROUNDWATER TREATMENT SYSTEM

LAWRENCE AVIATION INDUSTRIES SUPERFUND SITE
OPERABLE UNIT 1, LONG TERM REMEDIAL ACTION
PORT JEFFERSON, SUFFOLK COUNTY, NEW YORK

Prepared for

U.S. Army Corps of Engineers
Kansas City District

Contract: W912DQ-17-D-3016
Delivery Order: W912DQ20F3045

February 2022

HydroGeoLogic, Inc

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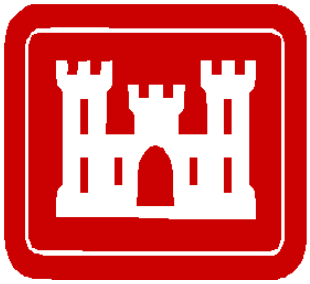
OPERATIONS AND MAINTENANCE PLAN AND MANUAL
LAWRENCE AVIATION INDUSTRIES
GROUNDWATER TREATMENT SYSTEM

LAWRENCE AVIATION INDUSTRIES SUPERFUND SITE
OPERABLE UNIT 1, LONG TERM REMEDIAL ACTION
PORT JEFFERSON, SUFFOLK COUNTY, NEW YORK

Prepared for



U.S. Army Corps of Engineers
Kansas City District
601 E. 12th Federal Building
Kansas City, MO 64106-2896

Prepared by
HydroGeoLogic, Inc.
Northway 10 Executive Park
313 Ushers Road
Ballston Lake, NY 12019

February 2022

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This document was prepared by HydroGeoLogic, Inc. and has received the appropriate technical review and approval.

Prepared by:

Skaarup, John Digitally signed by Skaarup, John Date: 2022.02.04 09:01:02 -05'00'

2/4/2022

John Skaarup **Date**
Project Engineer/Waste Disposal
Quality Control Manager

Reviewed by:

Eric Dambaugh Digitally signed by Eric Dambaugh Date: 2022.02.04 09:06:22 -05'00'

2/4/2022

Eric Dambaugh, P.G. **Date**
Contractor Quality Control
System Manager

Approved by:

Dacyk, Pete Digitally signed by Dacyk, Pete Date: 2022.02.04 09:27:23 -05'00'

2/4/2022

Peter Dacyk, P.G. **Date**
Project Manager

Document Revision Log

Revision No.	Review/ Revision Date	Summary of Changes
0	11/2021	First submittal of this document
1	2/2022	Revision to address comments

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TABLE OF CONTENTS

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LIST OF APPENDICES

amsl	above mean sea level
APP	Accident Prevention Plan
bgs	below ground surface
cfm	cubic feet per minute
cis-1,2-DCE	cis-1, 2-dichloroethene
CV	controlled variable
1,1-DCE	1,1-dichloroethene
F	Fahrenheit
ft	feet
GAC	granular activated carbon
gpd	gallons per day
gpm	gallons per minute
GWTP	groundwater treatment plant
H&S	health and safety
HGL	HydroGeoLogic, Inc.
HMI	human-machine interface
Hp	horsepower
lb	Pound
LE	level element
µg/L	micrograms per liter
msl	mean sea level
NYSDEC	New York State Department of Environmental Conservation
NYSPDES	New York State Pollutant Discharge Elimination System
OI	operator interface
OSR	off-site rule
O&M	operations and maintenance
OSHA	Occupational Safety and Health Administration
OU1	operable unit 1
PCE	tetrachloroethene
%	Percent
PID	proportional-integral-derivative
PLC	programmable logic controller
PPE	personal protective equipment

RAO	remedial action objective
rpm	revolutions per minute
SCADA	supervisory control and data acquisition
SDS	safety data sheet
SU	standard units
1,1,1-TCA	1,1,1-trichoroethane
TBD	to be determined
TCE	trichloroethene
USACE	U.S. Army Corps of Engineers
USEPA	U.S. Environmental Protection Agency
VC	vinyl chloride
VFD	variable frequency drive
VGAC	vapor-phase granular activated carbon
VOC	volatile organic compound

OPERATIONS AND MAINTENANCE PLAN AND MANUAL
LAWRENCE AVIATION INDUSTRIES
GROUNDWATER TREATMENT SYSTEM

LAWRENCE AVIATION SUPERFUND SITE
OPERABLE UNIT 1, LONG TERM REMEDIAL ACTION
PORT JEFFERSON, NEW YORK

1.0 INTRODUCTION

This Operations and Maintenance (O&M) Plan and Manual has been prepared by HydroGeoLogic, Inc. (HGL) for the Lawrence Aviation Industries groundwater treatment system operating for operable unit 1 (OU1) of the Lawrence Aviation Industries Superfund Site. This document has been prepared for the U.S. Army Corps of Engineers (USACE) under contract W912DQ-17-D-3016, delivery order W912DQ20F3045 in accordance with Specifications Section 01800 – Operation and Maintenance of Existing Systems.

This document is intended to be the primary reference for the O&M of the groundwater treatment system. The O&M specifications for key system components are described in this document. The document must be read in conjunction with the following project planning documents:

- Environmental Protection Plan (HGL, 2020a);
- Contractor Quality Control Plan (HGL, 2020b);
- Staffing Plan (HGL, 2020c);
- Uniform Federal Policy-Quality Assurance Project Plan (UFP-QAPP) (HGL, 2021a); and
- Accident Prevention Plan (APP) (HGL, 2021b).

This document may be updated periodically to reflect any changes in operating, sampling, or reporting procedures that are introduced in the future.

1.1 O&M PLAN AND MANUAL ORGANIZATION

This O&M Plan and Manual is organized as follows:

- Section 1 Introduction - Includes the remedial action objectives (RAO), an overview of the treatment system, and a description of the project organization and staffing.
- Section 2 Site Description and History - Provides a description of the site and the historical operations.
- Section 3 Permits - Describes the permits required for system operation.
- Section 4 System Components - Describes each remedial system component and its operation.
- Section 5 System Operations - Describes the procedures for system start-up and shutdown.

- Section 6 Inspection and Maintenance - Summarizes the system maintenance requirements and inspections. This section also discusses the warrantees for the treatment plant.
- Section 7 Sampling and Monitoring Activities - Provides a summary of the system sampling and monitoring activities, including performance and compliance sampling and groundwater quality monitoring.
- Section 8 Record Keeping and Reporting - Summarizes the remedial system record keeping and reporting requirements.
- Section 9 Government Property - Explains contractor's duties to document Government property location.
- Section 10 Health and Safety - Provides a summary of the O&M health and safety requirements.
- Section 11 References - Material references within the O&M Manual.

1.2 REMEDIAL ACTION OBJECTIVES AND GOALS

The RAOs for the treatment system are to restore the groundwater aquifer to drinking water quality and prevent human ingestion of contaminated groundwater. These objectives are met by extracting contaminated groundwater, treating it through air stripping and granular activated carbon (GAC), then discharging the treated water to the injection wellfield.

The RAOs for the groundwater were developed to address the human health risks and environmental concerns as follows:

- Restore the groundwater aquifer to drinking water quality; and
- Prevent human ingestion of contaminated groundwater.

The objectives will be achieved through implementation of the following:

- Extraction of contaminated groundwater;
- Treatment of extracted groundwater using air stripping and GAC adsorption; and
- Discharge of treated water to the injection wellfield, while meeting all required water quality standards.

The New York State Groundwater Quality Standards for site related contaminants and associated daughter products are presented in Table 1-1.

Table 1-1 New York State Groundwater Quality Standards

Parameter	New York Groundwater Quality Standards micrograms per liter (µg/L)
Vinyl Chloride (VC)	2
Tetrachloroethene (PCE)	5
Trichloroethene (TCE)	5

Parameter	New York Groundwater Quality Standards micrograms per liter (µg/L)
cis-1,2-Dichlorethene (cis-1,2-DCE)	5
1,1,1-Trichlorethane (1,1,1-TCA)	5
1,1-Dichloroethane	5
1,1-Dichloroethene	5
Chloroform	7

1.3 TREATMENT SYSTEM OVERVIEW

The groundwater treatment system includes three extraction wells that extract groundwater from the contaminated portion of the aquifer, for a total influent flow rate of approximately 130 to 200 gallons per minute (gpm). The combined influent groundwater enters an air stripper, where volatile organic compounds (VOC) are stripped out of the water and enter into the air stream. VOCs in the air stripper off-gas are treated by two vapor-phase granular activated carbon (VGAC) units before the effluent air is discharged to the atmosphere. The VGAC units are normally operated in series, as a lead/lag arrangement. Treated water is discharged to the injection wellfield.

The treatment system is highly automated for control, monitoring, alarms, and shutdowns. Further details for the system components and controls, and operation of the treatment system, are included in Sections 4.0 and 5.0.

The location of the Lawrence Aviation Industries groundwater treatment system is shown on Figure 1.1. The site layout for the Lawrence Aviation Industries system is shown on Figure 1.2 and the layout of the treatment system building is shown on Figure 1.3. Details for the treatment system process water and air components, system instrumentation, and process piping are shown on Figure 1.4. The treatment system as-built drawings are presented in Appendix A.

1.4 PROJECT ORGANIZATION AND STAFFING PLAN

Treatment system construction was completed, and operation began in 2010. HGL began performing O&M activities on October 19, 2020. The project is staffed by qualified personnel to ensure the treatment system is operated and maintained to meet the RAOs. A project staffing plan (HGL, 2020c) outlines the proposed project staff, staff roles and certifications, subcontractors, and includes an organization chart.

A minimum of two treatment system operators will be provided to perform O&M tasks. One operator will act as the person responsible for routine plant operation, responding to system shutdowns, etc., and the second operator will serve as a backup in the event the primary operator is unavailable or additional resources are needed to complete O&M tasks. The operator will be present at the facility a minimum of once each day and will respond to alarm conditions within 2 hours of the shutdown notification. A minimum of two people will be on site for periodic O&M

tasks when safety concerns warrant, in accordance the approved site-specific APP (HGL, 2021b).

2.0 SITE DESCRIPTION AND HISTORY

2.1 SITE DESCRIPTION

The Lawrence Aviation Industries Superfund Site OU1 includes two groundwater treatment systems. One system is located at Old Mill Pond; it is the subject of a separate Operation and Maintenance Plan and Manual. The Lawrence Aviation Industries groundwater treatment system is the subject of this document. It is located on the back end of Lawrence Aviation Drive; the closest intersection is where Lawrence Aviation Drive meets Sheep Pasture Road in Port Jefferson, Suffolk County, New York, as shown on Figure 1.2.

Site activities that do not occur within the Lawrence Aviation Industries water treatment system building, such as monitoring well sampling, will take place within public areas in Port Jefferson.

2.2 SITE AND PROJECT HISTORY

The Lawrence Aviation Industries Site encompasses approximately 126 acres and includes the former Lawrence Aviation Industries manufacturing facility and outlying parcels. The former facility is approximately 42 acres in size and was a titanium sheeting manufacturer. The former facility consists of 10 buildings, which are located in the southern portion of the property.

The Long Island Railroad and Sheep Pasture Road form the northern border of the former facility. To the east and west are various residential single family houses and to the south is a wooded area, beyond that is a residential area with more single family houses. The village of Port Jefferson and Port Jefferson Harbor, an embayment of Long Island Sound, lie approximately 1 mile to the north.

The section of the property currently occupied by the former facility was previously a turkey farm, which was owned by Lawrence Aviation Industries' corporate predecessor, Ledkote Products Co. of New York. Ledkote produced items that included lead gutters and spouts for roof drains. In 1959, Ledkote Products Co. of New York changed names to Lawrence Aviation Industries, Inc. The former facility manufactured products from titanium sheet metal, including golf clubs and products for the aeronautics industry.

A Remedial Investigation was performed from 2003 to 2005; it documented a VOC plume originating at the former facility. The primary VOCs in the groundwater plume originating from the site are TCE and PCE. Other VOCs are present to a lesser extent, such as: chloromethane, 1,1-DCE, methyl tert-butyl ether, 1,1- DCA, cis-1,2- DCE, chloroform, and 1,1,1- TCA.

The Record of Decision was signed on September 29, 2006. The selected remedy documented in the Record of Decision included the construction of two groundwater pump and treatment systems; one located at the former facility on former Lawrence Aviation Drive, and a second system located approximately 1 mile downgradient within the village of Port Jefferson.

2.3 SITE GEOLOGY AND HYDROLOGY

Three aquifers are present beneath the site: the Upper Glacial Aquifer, the Magothy Aquifer, and the Lloyd Sand Member of the Raritan Formation (Koszalka, 1984). The Magothy and underlying Lloyd Sand Aquifers are separated by the Raritan Clay member of the Raritan Formation. Consequently, water is interchanged more readily between the Upper Glacial and Magothy Aquifers than between the Magothy and Lloyd Aquifers. The presence of the Raritan Clay, directly underlying the Magothy Aquifer, is the lower boundary of the upper flow system. Investigations at the site have only focused on the Upper Glacial Aquifer and the top of the Magothy Aquifer.

The Magothy Aquifer consists of Upper Cretaceous Magothy deposits to the top of the confining clay unit of the Raritan Formation. It consists of fine to medium sand with interbedded silts and clays. It extends between the bottom of the Upper Glacial Aquifer and the Raritan Clay. The aquifer has a fluvial-deltaic depositional origin, is wedge shaped, and thickens progressively towards the south and southeast. The Magothy deposits were unconformably overlain by a veneer of Pliocene and Pleistocene deposits, chiefly of glacial origin (Franke and McClymonds, 1972). Deposition of the glacial deposits left the top of the Magothy Aquifer with discontinuous clay bodies in the deposits of the Pliocene-Pleistocene succession (Upper Glacial Aquifer), Smithtown Clay Unit, or Magothy Formation. This upper portion of the Magothy will be referred to as the reworked Magothy. The top of the Magothy Aquifer, which underlies the Upper Glacial Aquifer, was observed at a depth of 324 feet below ground surface (ft bgs) (99 ft below mean sea level [msl]) in stratigraphic boring ST-03. This unit also was observed in the boring for MPW-09 at a depth of 108 ft bgs (98.34 ft below msl).

The site is directly underlain by the Pleistocene-age Harbor Hill moraine, a remnant of the most recent glaciation. The moraine is up to 70 ft thick and composed primarily of sand and gravel with occasional lenses of silty sand and silt. The moraine deposits thin to the south and to the north.

At the former industrial facility, the moraine deposits are underlain by well graded fine to medium grained sands and silts with occasional layers of silt and clay or sand and gravel. The clay-rich layers observed in this zone were thin and discontinuous, likely derived from Magothy formation materials (or Smithtown Clays), reworked and then re-deposited during the creation of the local moraine. The localized glacial activity at the site has reworked the upper layers of the Magothy Formation and left very complex heterogeneous glacial deposits at the base of the Upper Glacial Aquifer; this material is not differentiated from the reworked Magothy material described above. During the pre-design investigation, an aquifer test was performed on a test well in the area near well MPW-02. The upper 60 ft (180-240 ft bgs) of the aquifer was screened by the test well and piezometers also were screened within the zone from 205 to 225 ft bgs. The lithology observed in the screened zone was predominantly a mixture of fine to medium grained sands with silt.

The Upper Glacial Aquifer is generally under unconfined conditions and the upper limit is the water table. Synoptic groundwater elevation data collected in June 2016 was used to prepare a potentiometric surface map for the Upper Glacial Aquifer from the former facility to the Port Jefferson Harbor. The potentiometric surface map shows that groundwater flow in the vicinity

of the former facility is to the north towards Port Jefferson Harbor. There is a downward gradient measured under the moraine, but moving to the north and off of the moraine towards Port Jefferson Harbor there is a significant upward hydraulic gradient driving groundwater towards the water table to discharge at Port Jefferson Harbor. The Upper Glacial Aquifer is under artesian conditions at MPW-9, which is near the Old Mill Pond facility and Old Mill Pond.

2.4 SITE CONTAMINATION

Contaminant removal actions were performed in 1990, 1991, 2009, 2014, and 2015. The remedial actions largely addressed waste materials and contaminated soil.

The June 2008 groundwater sampling results indicated the VOC plume emanated from the vicinity of monitoring wells MPW-2 and MPW-7 and migrates to the northwest. In the vicinity of multiport well MPW-10, approximately 1,000 ft from the western boundary of the former facility, groundwater flow and the VOC plume bend to the north toward Port Jefferson Harbor. There is an upward hydraulic gradient near MPW-9, indicating contaminated groundwater is moving upward as it moves northward in the vicinity of well MPW-9 (near Old Mill Pond).

Groundwater sampling data indicates the width of the VOC plume is generally decreasing as the Lawrence Aviation Industries and Old Mill Pond groundwater treatment plants (GWTP) continue to operate. Recent data suggests that groundwater VOC contamination has separated into source area and downgradient plumes. Continued annual groundwater sampling and biennial surface water sampling events will provide additional data for ongoing evaluations of groundwater contamination from the site.

The following information summarizes VOC data for groundwater extracted by the Lawrence Aviation Industries GWTP:

- Total site-related VOC concentrations in EW-1 were detected at 251 micrograms per liter (µg/L) when the sampling program began and were 197 µg/L in October 2012. VOC concentrations in EW-1 decreased to approximately 61.6 µg/L in October 2020; a reduction of approximately 75 percent (%).
- Total site-related VOC concentrations in EW-2 were detected at 154 µg/L when the sampling program began and were 37 µg/L in October 2012. VOC concentrations in EW-2 were approximately 34.7 µg/L in September 2020; a reduction of approximately 77% since the sampling program began. VOC concentrations in EW-2 started to slowly increase again in September 2017.
- Extraction well EW-3 was installed in August 2021 to enhance capture of VOCs near the source area. Sampling of the well shortly after installation indicated a range of total VOC concentrations in the samples. The initial sample collected on September 1, 2021, indicated a total VOC concentration of 252 µg/L, primarily TCE (247 µg/L). A follow-up sample collected on September 22, 2021, indicated a total VOC concentration of 153 µg/L, primarily TCE (150 µg/L).

The following information summarizes VOC data for groundwater extracted by the Old Mill Pond GWTP:

- Total site-related VOC concentrations in EW-1 decreased from 313 µg/L since system startup in August 2011 to 73 µg/L in October 2020; a reduction of approximately 78%.
- Total site-related VOC concentrations in EW-2 decreased since system startup from 454 µg/L in August 2011 to 66 µg/L in October 2020; a reduction of approximately 86%.
- Total site-related VOC concentrations in EW-6 decreased since startup in September 2013 from 934 to 272 µg/L in October 2020; a reduction of approximately 71%.

3.0 SITE PERMITS

The Lawrence Aviation Industries treatment system operates under two permit equivalencies, as described below. Copies of the permit equivalencies are included in Appendix B.

The treated effluent from the plant discharges to a field of five injection wells located hydraulically upgradient of the site. Under CERCLA provisions, a permit is not required for discharge. However, the discharge must be performed in compliance with the "substantive requirements" of a permit. The permit, which would otherwise be required in this case, is a New York State Pollutant Discharge Elimination System (NYSPDES) permit. The "substantive requirements," which must be complied with for discharge are presented in Appendix B.

- NYSPDES Discharge Permit Equivalency: The permit equivalency regulates the treatment system effluent water quality and limits the mass and/or concentration of pollutants that may be discharged to injection wellfield. A summary of the permit equivalent criteria is provided below in Table 3-1.

Table 3-1 NYSPDES Discharge Criteria

Parameter	Limits	Units	Frequency
Flow	200	gpm	Continuous
Flow	Monitor	gpd	Continuous
pH (determined in the field)	5.1 – 8.5	SU	Monthly
1,1-DCA	5	µg/L	Monthly
cis-1,2-DCE	5	µg/L	Monthly
PCE	5	µg/L	Monthly
1,1,1-TCA	5	µg/L	Monthly
TCE	5	µg/L	Monthly
Aluminum	2	mg/L	Monthly
Chromium, total	100	µg/L	Monthly
Fluoride	3	mg/L	Monthly
Iron	600	µg/L	Monthly
Lead	50	µg/L	Monthly
Manganese	600	µg/L	Monthly
Nickel	200	µg/L	Monthly
Sum or Iron and Manganese	1	mg/L	Monthly

Notes:

gpd – gallons per day

SU – standard units

- New York Air Permit Equivalent: This permit equivalency regulates Lawrence Aviation Industries treatment system air emissions. U.S. Environmental Protection Agency (USEPA), Region 2 is listed as the permittee but monitoring and reporting is performed by the O&M contractor. The permit equivalency does not allow emissions into the atmosphere

of substances in quantities that would result in air pollution. A summary of the permit equivalent criteria is provided below in Table 3-2.

Table 3-2 New York Air Permit Equivalent Criteria

Parameter	Criteria
GAC Removal Efficiency	≥ 99 percent
Air Stripper Blower Flow Rate	1,300 cubic ft per minute
Discharge of TCE	0.1320 pounds per day
Discharge of PCE	0.0055 pound per day

4.0 SYSTEM COMPONENTS

The treatment system consists of three active groundwater extraction wells, a 1,071 square foot, above grade building that houses the treatment system equipment, and discharge piping to the injection wellfield. The treatment system building also contains all of the electrical distribution equipment, instrumentation and control equipment for the groundwater treatment process, and other building support systems.

4.1 EXTRACTION WELLS, PUMPS, AND PIPING

The treatment system utilizes three active groundwater extraction wells: EW-1, EW-2, and EW-3. The extraction wells are located along the western boundary of the Lawrence Aviation Industries property. The locations of the extraction wells are presented on Figure 1.2. The well construction details are provided below in Table 4.1.

Table 4-1 Extraction Well Construction Details

Well Number	Top of Casing Elevation (ft amsl)	X Coordinate	Y Coordinate	Well Diameter (inches)	Top of Screened Interval (ft bgs)	Bottom of Screened Interval (ft bgs)	Well Depth (ft bgs)
EW-1	219.30	1241213.95	278985.42	10	182 238	222 248	252
EW-2	222.61	1241367.23	279180.5	10	182 229	214 240	250
EW-3	TBD	1241388.766	278959.8493	6	186	226	230

Notes:
Each well is constructed of polyvinyl chloride piping.
X and Y coordinates are in New York State Plane - Long Island, Datum: NAD83, units of feet.
amsl = feet above mean sea level
TBD = to be determined (table will be updated once elevation survey data becomes available)

The layout of the extraction wells was selected to provide hydraulic control of the groundwater plume and to recover VOC-impacted groundwater for treatment. Groundwater is extracted from each well using a submersible groundwater pump. Each pump has a variable frequency drive (VFD) motor that allows the pump operation to be adjusted to the desired flow rate. A water level transducer is located in each extraction well to provide water level inputs to the supervisory, control, and data acquisition (SCADA) system. Extraction well flow rate information is displayed by the human-machine interface (HMI).

Table 4-2 provides the design flow rates for each of the active extraction wells. The extraction well flow rates have been adjusted as necessary based on the field monitoring of water levels and an evaluation of the contaminant plume. The extraction well pumping rates will be evaluated and optimized to achieve maximum contaminant removal from the aquifer that is within the capacity of the treatment system.

The design flow rate for the extraction wells is 150 gpm. They can operate up to a flow rate of 200 gpm. The current influent flow rate for the treatment system is approximately 120 gpm.

Table 4-2 Extraction Well Design and Typical Flow Rates

Well Number	Design Flow Rate (gpm)	Typical Operation Flow Rate (gpm)
EW-1	75	25
EW-2	75	70
EW-3	--	25
Total	**150**	**120**

Inside the treatment building, pipes from the three extraction wells terminate at the air stripper. The individual well pipes contain sample ports for process water sampling.

Table 4-3 provides manufacturer name plate data for each of the extraction well pumps.

Table 4-3 Extraction Well Pump Design Data

	EW-1 and EW-2	EW-3
Manufacturer	Grundfos	Grundfos
Model	85S150-10	77S50-10
Size, inches	6	4

Table 4-4 provides manufacturer and distributor contact information.

Table 4-4 Extraction Well Pump Manufacturer and Distributor Contact Information

Manufacturer	Grundfos Pump Corporation 17100 West 118th Terrace Olathe, KS 66061 Phone: 913-227-3400 Fax: 913-227-3500	
Local Area Representative	NY Pump and Motor Repair 144 Centre Street Brooklyn, NY 11231 Phone: 718-768-8700	Morris Industries 777 NJ Route 23 Pompton Plains, NJ 07444 Phone: 973-835-6600

The manufacturer's equipment information and O&M manual for the extraction well pumps are contained in Appendix C-1.

4.2 AIR STRIPPER

Ambient air is forced through the process water to remove VOCs within the air stripper. Ambient air is pushed into the air stripper sump by a blower. During the air stripping process, air and water mix vigorously within the air stripper. As a result, VOCs are transferred from the water into the countercurrent air.

The air stripper is a low-profile unit that contains three trays. Each tray contains numerous orifices to allow the water to bubble as it flows downward due to the air coming up through it, which creates a large surface area to allow the VOCs to be stripped out of the groundwater and placed in the air stream. Air stripper design data is provided below in Table 4-5.

After moving through the last tray, the process water enters into the air stripper sump. The air stripper sump water level is monitored by a level element (LE)/transmitter LE/level indicating transmitter. The air stripper discharge pump transfers the process water to the VGAC units for final treatment prior to discharge to the injection wellfield.

Table 4-5 Air Stripper Design Data

Manufacturer	QED
Model	24.6 EZ-Tray
Number of units	1
Number of trays	8
Maximum liquid flow rate, gpm	200
Average liquid flow rate, gpm	130 - 150
Sump capacity, gallons	100
Operating air flow, cfm	1,300

Note 1: Differential pressure during startup testing was measured at 24 inches water column.
cfm = cubic feet per minute

Table 4-6 provides manufacturer's contact information for the air stripper.

Table 4-6 Air Stripper Manufacturer Contact Information

Equipment Manufacturer	QED 2355 Bishop Circle W. Dexter, MI 48130 Phone: 734-995-2547

The manufacturer's equipment information and O&M manual for the air stripper is contained in Appendix C-1.

Due to the excessive throttling of the extraction well pumps and the long extraction well header pipe distance, SCADA may sense a low flow or low-pressure alarm for the air stripper unit, just before the extraction well pump is able to satisfy the flow and pressure set points. It is recommended the operator quickly reset the alarm to restart the pump, which will allow the set points to be met before the alarm conditions occur again.

Periodically, the operator will inspect the air stripper trays for solids buildup through the inspection ports. If buildup of solids is observed, the treatment system will need to be shut down to allow cleaning of the air stripper trays.

During the warm humid summer months, the water condensation will form on the exterior of the air stripper. The plant operator shall sweep any condensation that has dripped onto the floor into the system sump, to prevent a slip hazard.

4.3 AIR SRIPPER BLOWER

The air stripper blower forces air through the air stripper trays. The blower transfers the VOC-laden air to the VGAC units for treatment prior to being discharged to the atmosphere.

The blower is designed to raise the temperature of the discharge air through the heat of compression. This rise in temperature reduces the relative humidity of the vapor air to approximately 50% relative humidity, which is optimal for contaminant adsorption through the VGAC units.

Table 4-7 Air Stripper Blower Design Data

Manufacturer	New York Blower
Model (motor)	2408A
Number of units	1
Motor, hp	15
Blower fan speed, rpm	3,499
Electrical requirements	3 phase

Note 1: Values from air stripper and blower approved shop drawing.
Note 2: During normal operations, the blower discharge temperature will range from 96 Fahrenheit (F) to 101F.
Hp = horsepower
rpm = revolutions per minute

Table 4-8 provides manufacturer's contact information for the blower.

Table 4-8 Air Stripper Blower Manufacturer Contact Information

Equipment Manufacturer	U.S. Electric Motors 5693 E. Shelby Drive. Memphis, TN 38141 Phone: 800-233-6890
Local Area Representative	Same (stocking distributor)

The manufacturer's equipment information and O&M manual for the blower is contained in Appendix C-1.

4.4 VGAC UNITS

Two VGAC units treat the air stripper off-gas to meet the air permit equivalency limits. Each of the VGAC units contains 3,000 pounds (lbs) of reactivated coconut carbon for a total of 6,000 lbs of carbon media. The VGAC carbon media adsorbs the VOCs as the air stream passes through the carbon beds. Each of the VGAC units has differential pressure indicating transmitter to monitor the differential pressure across the carbon vessel.

The VGAC units are operated in series operation (lead/lag configuration). Treated air is discharged into the atmosphere through a 6-inch stack that extends through the roof of the treatment system building.

Table 4-9 Vapor Phase Carbon Media Design Data

Manufacturer	H2K
Model	VC-028
Mesh size	4 x 10
Material	Coconut Shell
Expected Contaminant Removal, %	≥ 99

Table 4-10 Vapor Phase Carbon Media Replacement Contact Information

Media Replacement Firm	TetraSolv Services 1424 Abraham Drive Anderson, IN 46013 Phone: 765-643-3941

4.5 AIR STRIPPER DISCHARGE PUMP

Process water from the air stripper is pumped through three bag filter units to remove particulate matter prior to discharge to the injection wellfield. The air stripper centrifugal discharge pump is powered by a variable-frequency drive motor to allow adjustments for the speed of the pump, to maintain the water level in the air stripper sump, and to maintain water flow through the VGAC units.

Table 4-11 Air Stripper Discharge Pump Design Data

Manufacturer	Summit
Model	2196
Number of units	1
Capacity (gpm)	200
Motor, hp	10
Electrical requirements	3-phase

Table 4-12 provides manufacturer's contact information for the air stripper discharge pump.

Table 4-12 Air Stripper Discharge Pump Manufacturer Contact Information

Equipment Manufacturer	Summit Pump Inc. P.O. Box 12145 Green Bay, WI 54307 Phone: 920-869-4800

The manufacturer's equipment information and O&M manual for the air stripper discharge pump are contained in Appendix C-6.

4.6 PARTICLE FILTRATION UNITS

The treatment system includes three particle filter units to remove particulate matter from water that is processed by the air stripper. The particle filters prevent the injection wells from being fouled by particulate matter or minimize the amount of fouling. Two units, H2K Technologies, Inc. model number 2424, house four size #2 bag filters. The third unit is a Cary Company model number 24-30-6F-3-150-CS-BS-PB-DP; it houses six size #2 bag filters. The third unit was installed in March 2021 to provide more run time for the water treatment system between bag filter change out events. A total of 10 micron bag filters are used in each unit. Typically, every bag filter is replaced in two of the three units once each day.

4.7 PROCESS AREA SUMP PUMP

The process area includes a sump to collect water that is drained from treatment system components for maintenance activities, etc. The sump contains a submersible sump pump to transfer water into the treatment system. Sump Pump characteristics are summarized below in Table 4.13.

Table 4-13 Sump Pump Characteristics

Sump Pump	Zoeller Pump Company Model 140/4140 or 145/4145 Single Phase Motor 120 volts
Distributor	Holbrook Plastic Pipe Supply 790 Grundy Avenue Holbrook, NY 11741 Phone: 631-588-6880

4.8 DISCHARGE LOCATIONS

After the treated water is filtered through the particle filter units, the effluent is discharged to a field of five injection wells located hydraulically upgradient of the site. The injection well locations are depicted on Figure 1.2.

4.9 PROCESS CONTROL AND OPERATIONS

The facility equipment is primarily monitored and controlled via a control panel located in the control room inside the treatment system building. This panel is equipped with a programmable logic controller (PLC) system to execute automatic control logic and a HMI to display equipment status, alarms, and input/output diagnostics; to enter operational parameters (operating mode [automatic or manual], set points, etc.); to trend data; and to historically log data. The system can be remotely accessed via a secure internet connection.

The color of motors, valves, and level switches indicates their current operating status. For valves and motors, green indicates operational/within the established parameters and gray indicates not operating/outside of established parameters. For the air stripper level switches, blue indicates the water level is rising and black indicates the water level is decreasing. For the pond and creek discharge level switches, green indicates the water level is decreasing and black indicates the water level is rising.

Extraction well pumps are controlled by the water level in the well, the status of the air stripper, and the established flow rate set point on the HMI. The well pumps will turn off if the water level decreases to the established "stop" water level set point, or if the air stripper operation is shut down or disabled by a high water level alarm.

The air stripper and its blower will be operational if any of the extraction well pumps are active and will turn off if all the extraction well pumps are off. The air stripper will shut down if the sump water level decreases to the established "stop" water level set point.

The manufacturer's equipment information and O&M manuals for instrumentation and controls system items are included in Appendix C.

The Lawrence Aviation Industries treatment system has multiple alarms to shut down the treatment process:

- Air Stripper No Air Flow: A no flow issue indicates a blower failure or clogged VGAC units and stops the extraction wells from pumping more contaminated water into the air stripper. A controlled system shutdown will occur if a no flow condition is detected.
- Air Stripper Sump Water High Level: A high water level alarm in the sump indicates an air stripper discharge pump failure or clogging of the particle filter units. A controlled system shutdown will occur if a water high level condition is detected.
- Extraction Well Low Flow: A low flow issue indicates a pump failure or a piping leak between the pump and the flow meter. A controlled system shutdown will occur if a low flow condition is detected.

4.10 ELECTRICAL DISTRIBUTION

The treatment system receives its power from a single 480-volt feed from Public Service Energy Group (PSEG Long Island). The power is fed to a single motor control center where the power is branched out to the individual loads. The treatment system is not equipped with any alternative power sources to power the treatment system or building.

As-Built drawings "Power Connection #1" and "Power Connection #2" in Appendix A illustrate the power distribution and the power panel schedule.

The site also has telephone and internet communications. The internet is used to remotely monitor the treatment system. The SCADA system uses a Sensaphone autodialer unit to call out to operations personnel when an alarm condition occurs. The telephone and internet communication service is provided by Verizon.

4.11 HEATING, VENTILATION, AND AIR CONDITIONING

The heating system in the treatment system building consists of a geothermal heater. The treatment system building also contains exhaust fans for regulating the building temperature in warm weather.

4.12 POTABLE WATER

Potable water is used for a variety of uses in the treatment building and system. In the treatment building, the potable water system is protected by one reduced pressure zone backflow prevention device. The device prevents contamination of the potable water distribution system by the treatment system if a siphon is created. The primary use of potable water is for the restroom in the treatment building.

4.13 BUILDING AND LANDSCAPING

The treatment system building is approximately 1,071 square feet in area. The treatment building is a pre-engineered metal structure. The sanitary system is composed of gravity lines. The floor drain in the bathroom discharges to the sanitary system and the floor drain the process room drains to the building sump.

When pumping out the building sump, to increase the flow rate of the building sump pump, the flow from the extraction wells can be temporarily reduced. This will allow the sump pump to increase the amount of water it pumps into the air stripper. After the building sump pump is stopped, the extraction well pumps should be checked and their flow rates may need to be adjusted to ensure they are pumping at their desired flow rates.

The perimeter fence, locks, and other security items should be checked for integrity and operation. The surrounding vegetation will be kept in a neat and orderly manner. Specifically, the contractor will:

- Cut brush and weeds in all areas within the groundwater treatment system building fence as necessary to maintain proper working conditions and site appearance, including mowing of all grassed areas a minimum of six times per year within the fence and adjacent to the access road.
- Properly dispose of all litter, cut brush and weeds, and other similar on-site generated waste.
- Immediately repair minor on-site soil erosion within the site fence to prevent major erosion problems.
- Maintain a litter-free site at all times.
- Maintain neat and clean work areas and equipment at all times.
- Keep trash, debris, and rubbish picked up from the floor, walkways, stairways, and passageways.
- Keep walkways free of grease and oil.

- Keep all roads, drives, and parking areas clear and clean; provide repairs to the parking lot and other areas, if damaged.
- Provide snow removal for the parking area and building entrance to afford continuous operations. If required, ice should be physically removed or have salt placed on it to melt the ice to prevent slips and falls.

4.14 ONE-CALL MARKOUTS

The contractor shall be responsible for performing New York One-Call markouts for the underground extraction well headers and the discharge piping in response to markout requests. Operations personnel receive notifications from New York 811 that provide notice of any planned excavation activities in the area of the GWTP or associated buried utilities. Markouts shall be conducted promptly.

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5.0 SYSTEM OPERATIONS

This section of this O&M Manual provides guidance on system startup, shutdown, and what actions to complete in case of an emergency. This section also contains guidance for what actions are required to perform a GAC media change out for the VGAC units.

The groundwater treatment system is fully automated. Operations are controlled by an Allen Bradley Compact Logix 5380 PLC. A C-More EA9-T15CL-R touch screen HMI provides access to the system controls by the operator. The system controls are the same as described in the previous O&M Manual (CDM Smith Federal Programs and Arrowhead Contracting, Inc., 2011), with the exception of additional display and operations functionality for new groundwater extraction well EW-3.

5.1 OPERATOR INTERFACE

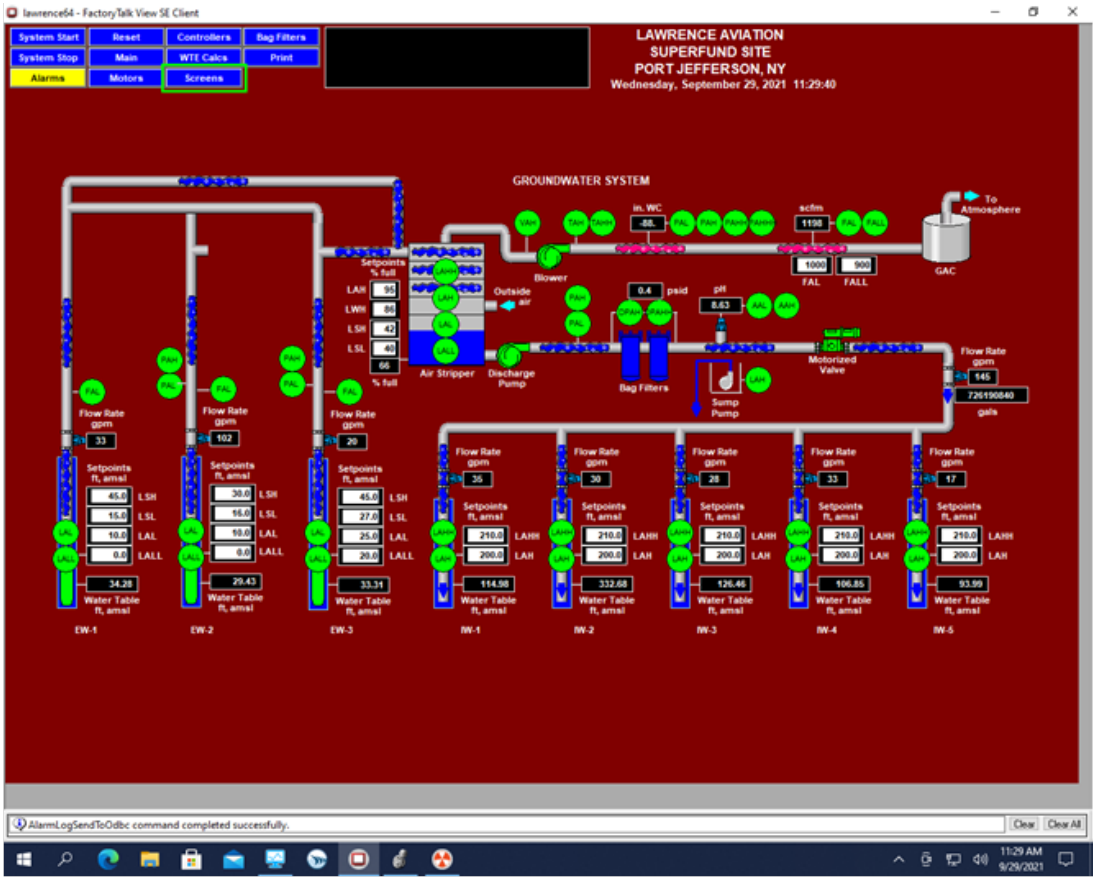
The software running on the operator interface (OI) provides the operator with a process control and monitoring workstation. It consists of a touch screen industrial computer mounted in the front of the control panel enclosure (located in the field office portion of the building) running Rockwell Automation's Factory Talk View software. The components of the configured software used by the operator include:

- Process control screens depicting all controlled processes in Piping & Instrumentation Diagram format;
- Master system start, system stop, and reset buttons;
- Motor control panels for starting, stopping, and selecting modes of operation for individual motors;
- Proportional-integral-derivative (PID) controllers for controlling extraction well flow rate and air stripper sump water level;
- Alarm display listing any current alarm condition;
- Data logs for all integrated process and status variables;
- Alarm logs listing all previous alarm conditions; and
- Trend screens depicting real-time and historical process data in “online graph” format.

5.1.1 MAIN Screen

The MAIN screen shown in Exhibit 1 includes all of the process equipment controlled by the PLC, analog and discrete input/output, and alarm conditions for the system. The functionality of this screen includes real-time numerical displays of water table elevation in extraction wells and injection wells, influent groundwater flow rate, totalized influent and effluent gallons at stripper sump water level, and motor status. To access the other OI screens, the operator clicks one of the buttons at the top, which are common to all screens, or the SCREENS button, which brings up a list of all screens configured in the OI.

Exhibit 1- MAIN Screen

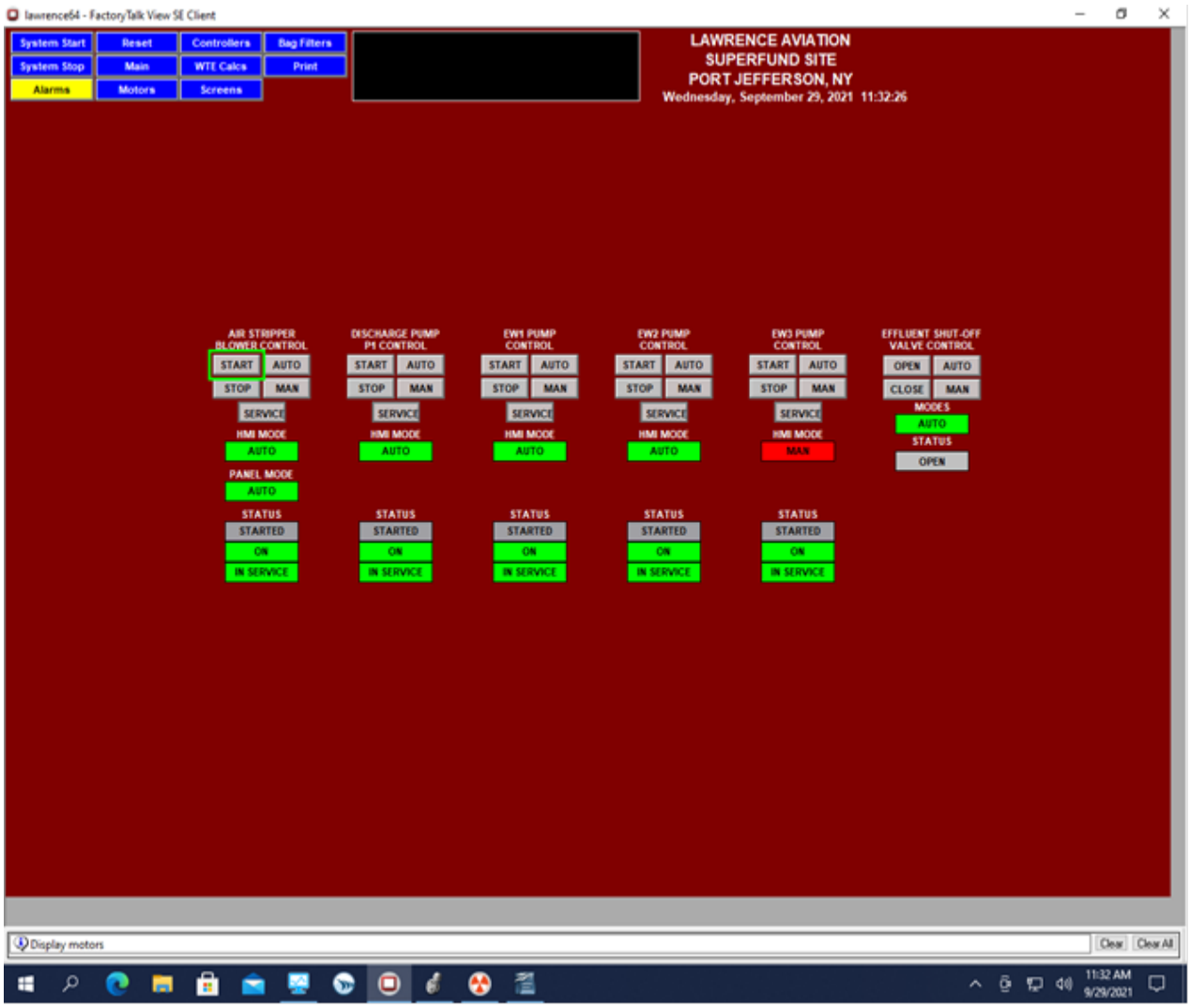


5.1.2 MOTORS Screen

The motor control panels are available on the MOTORS screen shown in Exhibit 2. The motor controls provide AUTO or MAN(ual) modes of operation for each motor. In AUTO mode all control and safety interlocks are applied to the motor control circuits. Conversely, in MAN mode no interlocks are applied. The motor control panels also include status indicators for AUTO / MAN modes, START and STOP switch status, and the current ON / OFF status of the motor. When the operator initiates system start up by pressing the system START button available at the top of all OI screens, the PLC control program automatically places all motors in AUTO mode and then sequentially starts each piece of equipment beginning with the air stripper blower. When the operator stops the system with the system STOP button all motors except the air stripper blower are stopped immediately as though the operator had stopped each individual motor through its motor control panel. The air stripper blower is programmed to keep running for 5 minutes during a normal system shutdown using the system STOP button. All motors remain in AUTO mode at all times during startup and shutdown unless MAN modes are selected by the operator. A SERVICE button and indicator are provided so that the operator may take individual motors out of service to prevent starting in response to a system START command. An effluent shut off valve also is controlled from the MOTORS screen. When placed in AUTO mode this valve is programmed to automatically shut off effluent flow whenever the effluent pH is out of the acceptable range of 5.1 - 8.5 SU. The valve is opened and closed automatically with

a system START and system STOP command, respectively. The valve can be opened or closed at any time in MAN(ual) mode. Note the transfer pump P-l will not operate in AUTO mode with the effluent shut off valve closed.

Exhibit 2 – MOTORS Screen



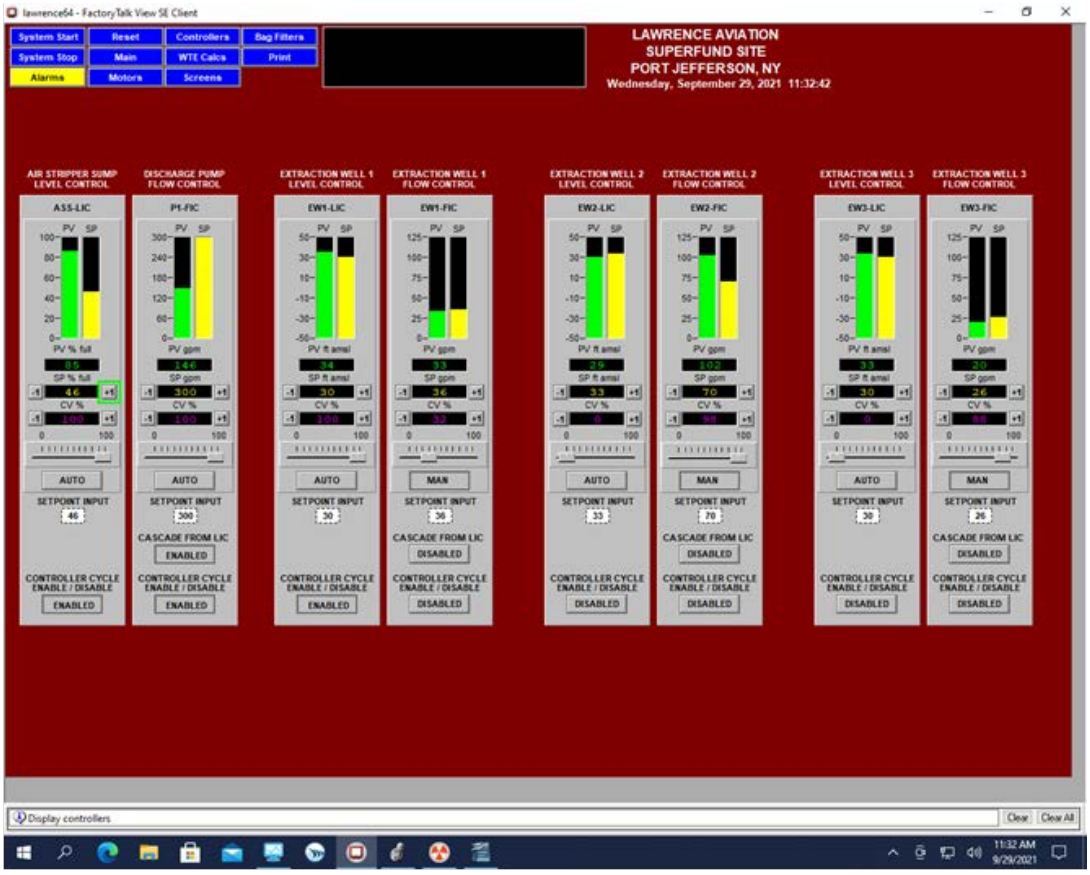
5.1.3 CONTROLLERS Screen

The CONTROLLERS screen includes PID process controllers for well pump flow rates, transfer pump flow rates, and air stripper sump water level control. (The term "PID" comes from the proportional-integral-derivative actions that this type of controller can make in response to an analog input, e.g., flow rate.) Using EW-1 flow rate control as an example, the operator selects a set point for the flow rate in gpm by touching or mouse-clicking repeatedly on the increment (+l) or decrement (l) push buttons provided on either side of the set point numerical display on the level (PID) controller until the desired set point is displayed. Alternatively, the operator may type the desired set point value into the numeric input field provided at the bottom of the controller. If the PID controller is in AUTO mode, the controller will automatically manipulate the speed of the extraction well pump through its analog output to the VFD to achieve the set

point flow rate. Manual control of pump speed is provided by the controller by selecting MAN mode and incrementing or decrementing the pushbuttons on either side of the controlled variable (CV) numeric display. The CV display is ranged from 0 - 100%, which corresponds to a 4 - 20mA analog output signal to the controlled device, i.e., VFD for the pump. The range of the VFD speed for all pumps is currently set at 30 – 60 hertz corresponding to CV values from 0 - 100%.

The PID controllers allow the operator to enable or disable automatic cycling of the controller between AUTO and MAN modes of operation. During normal operations, PID controllers are cycled automatically (cycling enabled) between AUTO and MAN modes to maintain a constant controller output when the associated process equipment cycles off. For example, if the transfer pump should cycle off on detecting a low level in the air stripper sump, then the PID controller needs to cycle off or make drastically different adjustments than before to accommodate the very different (and meaningless) process dynamics associated with a pump that is not running. By automatically cycling to MAN mode when water flow stops, the PID controller output will be exactly where it was just before the water flow stopped, and therefore, much closer to where it needs to be when the pump cycles back on. The CONTROLLERS screen also includes level controllers for the extraction wells. As discussed earlier, these level controllers are currently not used (cascade to the flow controller is disabled) but are available for use if needed. The PID - CONTROLLERS screen is shown below in Exhibit 3.

Exhibit 3 – CONTROLLERS Screen



5.1.4 WATER TABLE ELEVATION CALCULATION Screen

A Water Table Elevation Calculation screen is provided to assist the Operator in routinely re-calibrating all water table elevation measurements. Knowing the top of casing elevation, which is displayed for each well, an operator takes a manual depth to water measurement while a second operator or off-site support personnel simultaneously reads the water column value generated by the submersible liquid level transmitter. The measured depth to water and water column values are subtracted from the TOC to calculate a new level transmitter elevation which is entered into the field provided for each well on the screen. The ladder logic computes the recalibrated water table elevation and all future WTE values are based on the revised level transmitter elevation. This procedure is recommended on a monthly basis or whenever the level transmitter is moved for maintenance or repair.

Exhibit 4 – WATER TABLE ELEVATION CALCULATION Screen

5.1.5 TREND Screens

A real-time trend screen, Exhibit 6, is configured for the air stripper sump water level controls. Real-time level, set point, and controller output from the most recent 2-hour period scroll across

this screen from right to left. Real-time trend data is not cached when the OI software (Factory Talk View) is not running and therefore this trend will initially be empty of data when the program is started.

A historical trend screen has been configured for the same process variables shown in the real time trend above. These trend screens obtain data from the "pv" data log files and display 28 days of data over any given time period selected by the operator using the scroll backward and scroll forward buttons provided at the bottom of the screen. Exhibit 7 depicts the historical trend screen for air stripper level controls.

Exhibit 6 – Real-Time TREND Screen

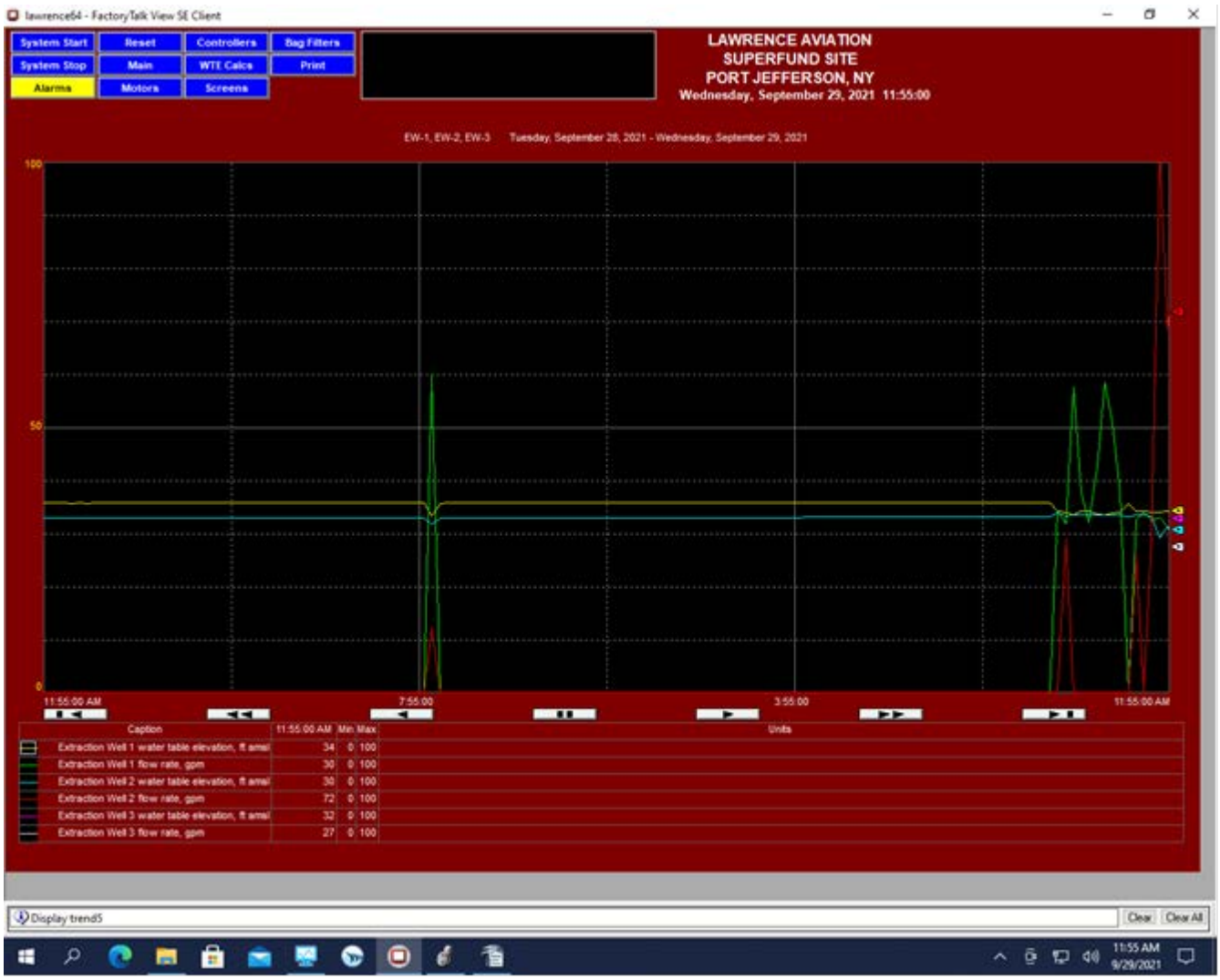
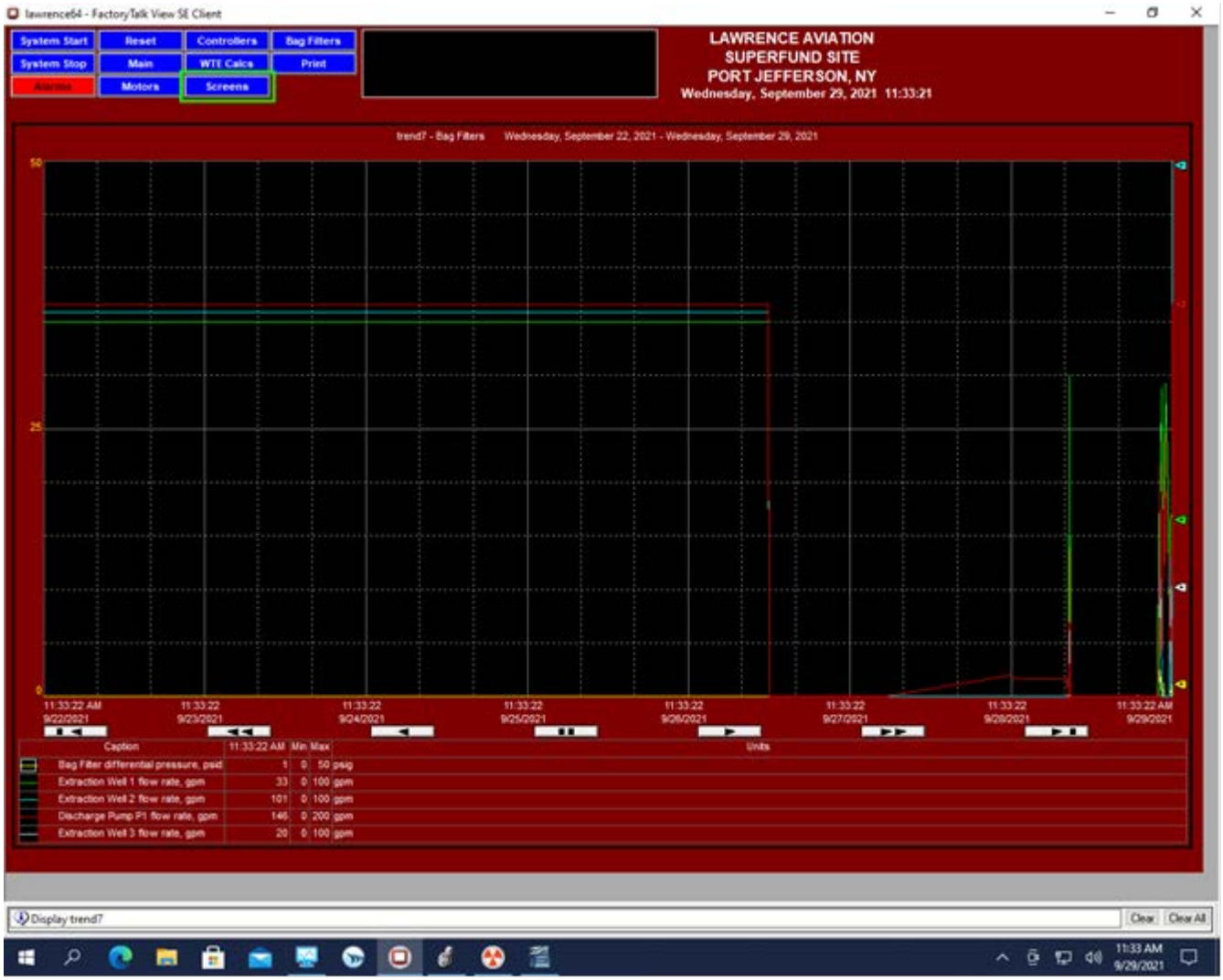


Exhibit 7 – Historical TREND Screen



5.2 INITIAL CONDITIONS

The following items are assumed to be completed prior to any startup of the treatment system.

- Power is available, and all electrical breakers are in their correct position;
- All valves are in their correct position;
- Potable water is available;
- All machinery safety guards are installed;
- All maintenance and repairs are complete;
- All instrumentation is operating correctly;
- All programming is complete and correct;
- Carbon is loaded into all GAC units; and

- All equipment is ready for operation.

5.3 STARTUP SEQUENCE

During system startup and restart, the system will require a manual restart. This manual startup procedure will involve a series of steps that the PLC will sequence to startup the system. The steps required for the startup of the treatment system include the following:

1. Place the air stripper blower in "Automatic" mode on the HMI.
2. Start the air stripper blower via the HMI.
3. Check the air stripper blower pressure and ensure it is within the normal operating range.
4. Select the lead/lag positioning for each of the GAC units.
5. Place the air stripper discharge pump in "Automatic" mode via the HMI.
6. Start the applicable extraction well pumps through the HMI.
7. Vent the individual extraction well pumps through their manual vents after startup of the individual pump.
8. Check that all pressure and flow indications match expected values for the extraction well pumps and the air stripper blower.
9. Check that the air stripper discharge pump starts and maintain the sump level in the air stripper.
10. Check the differential pressure across all the GAC units to verify the units are not clogged.
11. Check the injection well water level to ensure that the treated water is being injected into the aquifer.
12. Complete operator round sheets and check that all parameters are within their normal expected values.
13. Conduct operational groundwater quality monitoring.
14. Test external communications by triggering a building entry alarm. This should send an alarm notification without affecting the treatment system processes.

5.4 SHUTDOWN SEQUENCE

Shutdown sequences are presented below.

5.4.1 Operator Shutdown

When an operator determines a shutdown is required, the following actions shall be taken.

1. Stop all extraction well pumps via the HMI. Check to ensure all flow rates and pressures from the extraction wells are indicating "zero."

2. After 2 minutes, stop the air stripper discharge pump via the HMI. Check to ensure the water flow rate into the VGAC units is indicating "zero." This will make sure no water is being discharged and that there is no siphoning from the discharge piping into the treatment system.
3. Wait 5 minutes, then stop the air stripper blower via the HMI. Check that the air flow is indicating "zero."

5.4.2 Controlled System Shut Down

When the PLC determines that a controlled system shut down is required, the PLC performs the following actions:

1. Stop all of the extraction well pumps.
2. Stop the air stripper discharge pump.
3. After an operator-adjustable time delay, the air stripper blower will be shut down.

5.4.3 Extended Shut Down

When the treatment system has to be shut down for long period of time (greater than 1 week), an extended shut down procedure needs to be completed:

1. Complete the actions described in Section 5.41 or 5.4.2 of this document.
2. Open all electrical power supply breakers to all of the extraction well pumps.
3. Open the electrical power supply breakers to the air stripper discharge pump.
4. Open the electrical power supply breaker for the air stripper blower.
5. Drain the process piping of water to the maximum extent possible by opening and shutting various vent and drain valves.

5.5 EMERGENCY PROCEDURES

Emergency procedures provided below should be followed in the event of the following circumstances. USACE shall be notified immediately of all incidents and shutdowns.

5.5.1 Equipment Malfunction

During normal operations, the PLC will determine if operational parameters are out of specification based on the set points of the various instruments and the control logic. If the PLC determines any item is not functioning correctly, it will complete a controlled shut down of the treatment system (please refer to Section 5.4.2). Malfunctioning extraction well pumps will automatically shut down via the low flow alarm or the pump low pressure alarm. The PLC will send automated email messages to system operators reporting the alarm, and operations will remain suspended until the issue is resolved and cleared from the PLC.

System operators who will be notified by automated email messages currently include USACE personnel and HGL operators.

5.5.2 Spill

The treatment system building includes a sump that is equipped with a high level float switch. In the event of a liquid spill within the O&M building, liquid will collect within the sump. If the high level float switch is triggered, the PLC will complete a controlled shut down of the treatment system. The PLC will send automated email messages to system operators reporting the alarm, and operations will remain suspended until the issue is resolved and cleared from the PLC. A spill may occur due to errors associated with automated controls for pumping rates, air stripper sump level, or may result from damage to system equipment or piping.

5.5.3 Power Failure

In the event of power loss to the treatment system building, treatment plant operations will cease, and the PLC will send automated email messages to system operators reporting the alarm. Operations will remain suspended until power is restored and the system is restarted from the PLC.

5.5.4 Manual Shutdown

In the event of an emergency observed by the operator, which does not trigger a controlled shutdown, the facility will be shut down manually by one of two methods: 1) an operator-initiated shutdown at the HMI performed in accordance with Section 5.4.2 or 2) an emergency shut down at the main breaker switch.

If at any time, the operator observes an emergency, becomes aware of a hazard to personnel, or believes a piece of equipment is not operating correctly, the operator should shut down the treatment system. System shut down at the HMI will be performed in accordance with Section 5.4.2, if time allows, and the operator can safely access the HMI. Alternately, if time or hazardous conditions do not allow the operator to shut down the facility through the HMI, the operator will go to the main breaker switch in the control room and flip the switch to the “off” position.

5.5.5 Evacuation

Depending on the emergency, personnel may need to evacuate the facility. Personnel should evacuate the facility and perform a head count of personnel that were on site at the time of the emergency. Personnel will gather at the end of Park Avenue and contact appropriate emergency response personnel as described herein and in the site-specific APP.

5.5.6 Emergency Contact Information and Hospital Location

In the event of a situation or unplanned occurrence requiring assistance, the appropriate contact(s) should be made from the following list:

Table 5-1 Emergency Contact Information

Emergency Contact	Phone Number(s)
Fire/Police/Ambulance/Paramedics - Emergency	911
Emergency Hospital: Mather Hospital 75 N. Country Road, Port Jefferson, NY 11777	631-473-1320
Poison Control Center	800-222-1222
National Response Center (All spills in reportable quantities)	800-424-8802
NYSDEC Spill Control	800-457-7362
USEPA Remedial Project Manager Maria Jon	212-637-3967
USACE KC District Project Manager Jason L'Ecuyer	816-389-3908
USACE KC District Engineer Thomas Zelesky	816-389-3919
USACE NY District Project Engineer/COR Shewen Bian	646-942-4532
USACE NY District Project Manager Rich Gajdek	917-790-8234
USACE Project Engineer/COR Alternate Mike Ortega	917-790-6252
USACE NY Project Manager Kinjal Shah	917-790-8233
HGL 24/7 Emergency Number	800-341-3647
Program Manager Lisa Tholl	913-378-2318
Project Manager Pete Dacyk	518-222-1203
Superintendent/Alternate SSHO James Russell	609-774-4212
Corporate H&S Director/Safety and Health Manager Steve Davis, CSP, CIH	865-659-0499
WorkCare 24/7 Incident Intervention service (First aid and injury management guidance)	888-449-7787

H&S = health and safety
NYSDEC = New York State Department of Environmental Conservation

The nearest hospital is Mather Hospital, which is located at 75 N. Country Road, Port Jefferson, New York. A map and directions to the hospital are provided in Appendix E and are posted in the treatment system building control room. General first aid equipment is provided on site; however, please seek immediate medical assistance, if necessary.

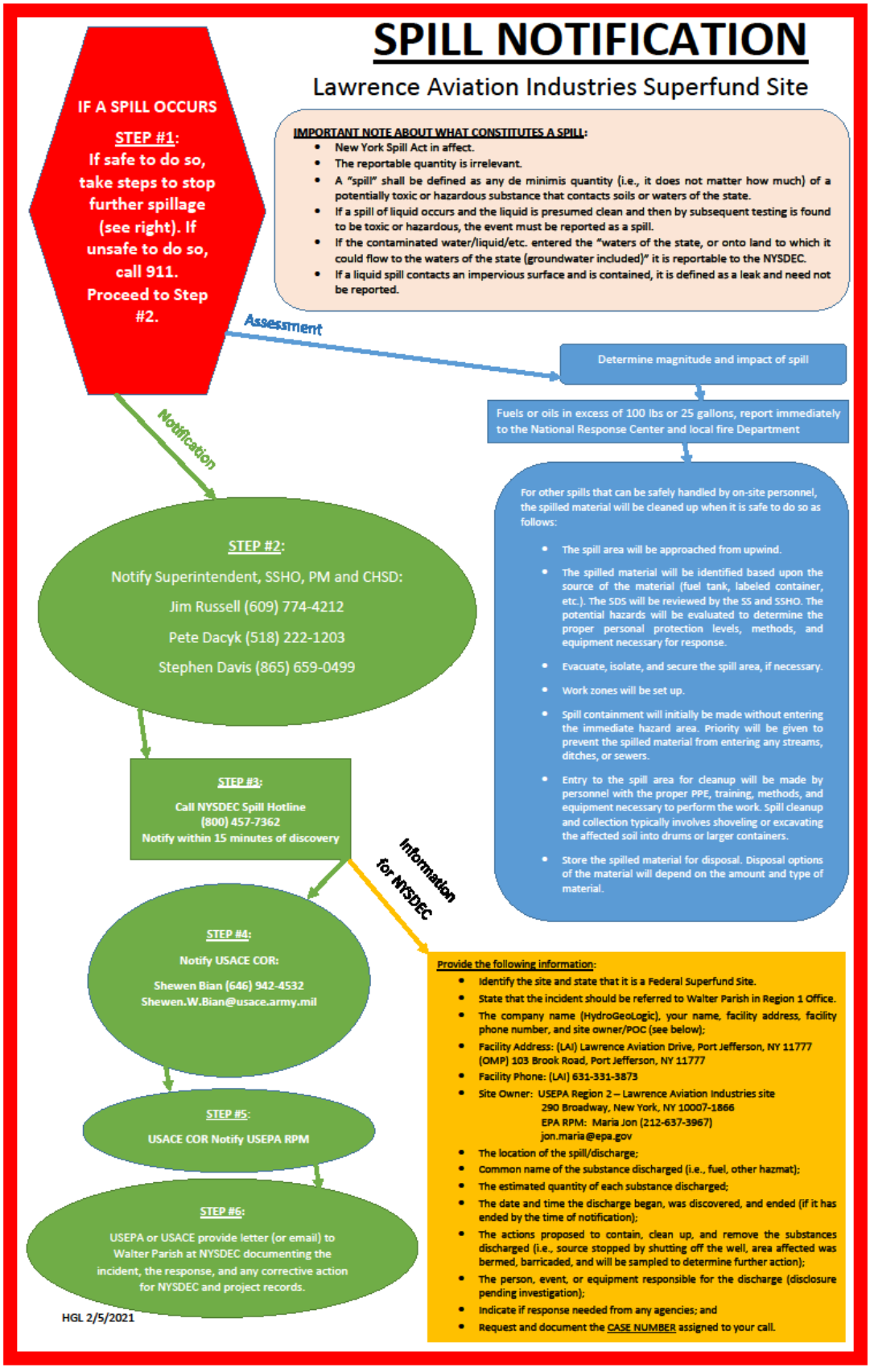
When the cause of the emergency situation has been determined and repaired or corrected, then the operator may restart operations at the facility using the process designated within this document.

5.5.7 Reporting Permit Non-Compliance, Chemical Spills, and Release of Contaminants to Groundwater

In the event of permit non-compliance, injection well malfunction, or other catastrophic failure of the treatment system, NYSDEC needs to be notified of the event by calling 1-800-457-7362. NYSDEC must be notified within 2 hours of the commencement of the discharge or of becoming aware of the discharge in the event of permit non-compliance. All information that is provided during the phone call should be recorded in the facility log book. In addition, USACE will be orally notified as soon as possible, but no later than 24 hours of the event. Written notification will be provided to USACE and USEPA within 72 hours of the event.
Notifications should contain the following information:

- Chemical name (whether the material is extremely hazardous or a Comprehensive Environmental Response, or Compensation and Liability Act substance);
- Exact (if known) or estimated quantity of release;
- Time and duration of incident;
- Medium or media into which the release occurred;
- Any known or anticipated health effects and advice regarding medical attention, precautions taken as a result of the release; and
- Name and phone number of the person who may be contacted for further information.

Release notification must be done immediately. If a facility operator fails to report a release, he or she may be subject to penalties. Written follow-up notifications should be submitted no later than 30 days following the release incident. The actual telephone release notification(s) should be made as described above.


SPILL NOTIFICATION
Lawrence Aviation Industries Superfund Site
IF A SPILL OCCURS
STEP #1:
If safe to do so, take steps to stop further spillage (see right). If unsafe to do so, call 911. Proceed to Step #2.
IMPORTANT NOTE ABOUT WHAT CONSTITUTES A SPILL:
New York Spill Act in affect.
The reportable quantity is irrelevant.
A "spill" shall be defined as any de minimis quantity (i.e., it does not matter how much) of a potentially toxic or hazardous substance that contacts soils or waters of the state.
If a spill of liquid occurs and the liquid is presumed clean and then by subsequent testing is found to be toxic or hazardous, the event must be reported as a spill.
If the contaminated water/liquid/etc. entered the "waters of the state, or onto land to which it could flow to the waters of the state (groundwater included)" it is reportable to the NYSDEC.
If a liquid spill contacts an impervious surface and is contained, it is defined as a leak and need not be reported.
Assessment
Determine magnitude and impact of spill
Fuels or oils in excess of 100 lbs or 25 gallons, report immediately to the National Response Center and local fire Department
Notification
For other spills that can be safely handled by on-site personnel, the spilled material will be cleaned up when it is safe to do so as follows:
The spill area will be approached from upwind.
The spilled material will be identified based upon the source of the material (fuel tank, labeled container, etc.). The SDS will be reviewed by the SS and SSHO. The potential hazards will be evaluated to determine the proper personal protection levels, methods, and equipment necessary for response.
Evacuate, isolate, and secure the spill area, if necessary.
Work zones will be set up.
Spill containment will initially be made without entering the immediate hazard area. Priority will be given to prevent the spilled material from entering any streams, ditches, or sewers.
Entry to the spill area for cleanup will be made by personnel with the proper PPE, training, methods, and equipment necessary to perform the work. Spill cleanup and collection typically involves shoveling or excavating the affected soil into drums or larger containers.
Store the spilled material for disposal. Disposal options of the material will depend on the amount and type of material.
STEP #2:
Notify Superintendent, SSHO, PM and CHSD:
Jim Russell (609) 774-4212
Pete Dacyk (518) 222-1203
Stephen Davis (865) 659-0499
STEP #3:
Call NYSDEC Spill Hotline
(800) 457-7362
Notify within 15 minutes of discovery
Information for NYSDEC
Provide the following information:
Identify the site and state that it is a Federal Superfund Site.
State that the incident should be referred to Walter Parish in Region 1 Office.
The company name (HydroGeoLogic), your name, facility address, facility phone number, and site owner/POC (see below);
Facility Address: (LAI) Lawrence Aviation Drive, Port Jefferson, NY 11777
(OMP) 103 Brook Road, Port Jefferson, NY 11777
Facility Phone: (LAI) 631-331-3873
Site Owner: USEPA Region 2 – Lawrence Aviation Industries site
290 Broadway, New York, NY 10007-1866
EPA RPM: Maria Jon (212-637-3967)
jon.maria@epa.gov
The location of the spill/discharge;
Common name of the substance discharged (i.e., fuel, other hazmat);
The estimated quantity of each substance discharged;
The date and time the discharge began, was discovered, and ended (if it has ended by the time of notification);
The actions proposed to contain, clean up, and remove the substances discharged (i.e., source stopped by shutting off the well, area affected was bermed, barricaded, and will be sampled to determine further action);
The person, event, or equipment responsible for the discharge (disclosure pending investigation);
Indicate if response needed from any agencies; and
Request and document the CASE NUMBER assigned to your call.
STEP #4:
Notify USACE COR:
Shewen Bian (646) 942-4532
Shewen.W.Bian@usace.army.mil
STEP #5:
USACE COR Notify USEPA RPM
STEP #6:
USEPA or USACE provide letter (or email) to Walter Parish at NYSDEC documenting the incident, the response, and any corrective action for NYSDEC and project records.
HGL 2/5/2021

5.6 CARBON CHANGE OUT EVENTS

5.6.1 VGAC

The Lawrence Aviation Industries treatment system has two VGAC units that operate in a lead/lag arrangement. Monthly process air sampling results are used to determine when a carbon change out event is required. VGAC media change out events are scheduled when the VOC removal for one or more units begins to decrease significantly. The media in multiple VGAC units can be replaced during a change out event. VOC concentrations are field monitored weekly with a PID to provide additional data.

The procedure for completing a VGAC media change out for the lead VGAC unit is provided below:

1. Shut down the treatment system.
2. Lockout/tagout the lead VGAC unit following all applicable local, state, and Federal laws.
3. Open the access hatches to the lead VGAC unit.
    a. Prior to opening the GAC unit, staff must wear all appropriate personal protective equipment (PPE) as required by the VGAC Safety Data Sheets (SDS).
4. Use a vacuum truck or other piece of equipment, carefully remove the spent VGAC media and place it in appropriate containers that are United Nations/Department of Transportation approved for transportation to an off-site regeneration facility. Note: Verify USEPA Off-Site Rule (OSR) procedures have been followed (the contractor has submitted regeneration facility information to USEPA OSR personnel and received approval).
5. Label the spent VGAC media containers and include a non-hazardous manifest for proper documentation of the shipment.
6. Use a flashlight to inspect the interior of the VGAC unit. Ensure all of the air distribution manifolds are installed and are not damaged.
    a. If damage is observed, implement confined space entry procedures, including having an entrant and attendant/supervisor on site, conduct air monitoring within the VGAC unit, and perform a confined space entry to repair or replace air distribution manifolds as necessary.
7. Using an appropriate method, place 3,000 lbs of fresh, reactivated VGAC media into the vessel. Be certain to exercise caution while installing the fresh media, to avoid damaging the air distribution manifolds within the VGAC unit.
8. Shut and tighten all access hatches.
9. Start the air stripper blower in “Manual” mode and inspect all of the VGAC hatches for leaks using soap bubbles to check for air leaks.
    a. Record the differential pressure across each of the lead and lag VGAC units.
    b. Address any leaks that may have been found prior to system start up.

10. Stop the air stripper blower and place it in “Automatic” control mode at the operator interface terminal.
11. Start the treatment system.

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6.0 INSPECTIONS AND MAINTENANCE

The treatment system requires periodic monitoring, inspections, and maintenance to detect any electrical, mechanical, or process issues that may affect the performance of the treatment system. The goal of the contractor's monitoring, inspection, and maintenance program will be to achieve a minimum operational readiness rate of 90%. The readiness rate is defined as the number of fully capable operational days divided by number of available operational days in any particular month. If the readiness rate drops below 90%, the contractor will submit in writing to the Government recommended actions to improve operations. Actions may include additional spare parts or maintenance of equipment, equipment improvements, additional operations or maintenance training, and/or revised operating procedures.

6.1 SYSTEM INSPECTIONS AND MONITORING

The physical inspection and review of equipment and operating parameters will be performed during each operator visit (a minimum of once per week). Inspections will include, at a minimum, visual observations that all equipment is working as intended and that no leaks are observed in any treatment equipment or piping. During the inspections, the operator will collect operational parameter readings from the treatment system and note any abnormalities that are observed.

The treatment system also will be monitored by obtaining water and vapor samples at several locations through the treatment train to determine the treatment efficiency; confirm that the system is operating in accordance with the requirements of the permits and equivalencies; and to estimate the frequency of carbon change out events. The system sampling and monitoring is described in Section 7.2.

6.2 SYSTEM MAINTENANCE

The treatment system equipment requires periodic maintenance to achieve the required system readiness rate and to ensure the equipment is able to operate at its design capacity for long periods of time. Maintenance activities include:

- Routine maintenance including lubrication, belt tensioning, adjustment of pump packing glands, and routine adjustments;
- Preventive maintenance including inspection, cleaning, lubrication, adjustment, calibration, and minor part and component replacement (e.g., filters, hoses, oil, and grease) as required to minimize malfunctions, breakdown, and deterioration of equipment; and
- Corrective maintenance and repair work that is required to return a system or component to its proper operating condition, including overhauling, reprocessing, or replacing parts or materials that have deteriorated by action of the elements or usage and have not been addressed through preventative maintenance.

An inventory of spare parts, tools, and materials will be maintained on site as necessary to operate the system in accordance with equipment manufacturers' information, including health

and safety supplies, personnel protection equipment, and first aid supplies. The contractor will replenish the spare parts, tools, and materials inventory as parts and materials are used for maintenance and will keep the inventory up-to-date and fully stocked.

Equipment and materials warranties are included in Appendix C. The contractor will operate and maintain all equipment, systems, processes, and appurtenances in accordance with the manufacturers' recommendations to ensure the warranties or guarantees are not voided. Corrective maintenance performed by suppliers, manufacturers or subcontractors on warranted equipment, components, materials or workmanship will be coordinated by the contractor with the Government and supplier, subcontractor, or manufacturer. Corrective maintenance involving replacement due to normal failure of equipment and materials not under warranty will be performed by the contractor utilizing the on-site maintenance staff to the greatest extent possible.

The contractor will characterize, dispose, and handle all debris and waste generated by the treatment system O&M activities and sampling events, including the off-site regeneration of spent carbon. If site waste is characterized as hazardous waste, it shall be handed in accordance with the accumulation and storage requirements of a Small Quantity Generator. All hazardous waste will be disposed at USEPA-approved disposal facilities in accordance with OSR procedures. General refuse will be picked up as part of the normal neighborhood collection service.

6.3 INJECTION WELL REDEVELOPMENT

The injection wells tend to become fouled and their capacity to accept water from the treatment system decreases due to residual aluminum in the discharge water, and other water chemistry-related factors. An injection well redevelopment event is performed once each year.

In 2021 the injection wells were redeveloped via high-velocity jetting. Jetting was performed within the wetted portion of the screen interval, with pressures up to 4,000 or 5,000 pounds per square inch. A low range of pressure was used to not damage the well screen or sand pack. The 4-nozzle, rotating jetting tool was run continually up and down the entire screen interval rather than concentrating on smaller intervals for long periods of time (e.g., several minutes/foot) and moving to successive intervals. Simultaneously with jetting, water was pumped from the well with an electric submersible pump positioned below the jetting nozzle. The well casing was surged with air lifting to re-establish the gravel pack and to remove fine material from the well.

During some previous redevelopment events, nitrogen burst and dry penetrating agent were used to redevelop the injection wells. Minimal information is available about the methodology used for these events.

7.0 SAMPLING AND MONITORING ACTIVITIES

This section provides an overview of the sampling and monitoring activities that have been developed to monitor the performance of the treatment system and compliance with permit requirements. All sampling activities will be performed in accordance with the Uniform Federal Policy-Quality Assurance Project Plan (HGL, 2021a) and site permit equivalencies. Site permit equivalencies are provided in Appendix B.

7.1 SITE-WIDE GROUNDWATER MONITORING

The groundwater monitoring program includes the collection of groundwater samples and groundwater level data from site-wide monitoring wells. The wells will be sampled on an annual basis to evaluate the reduction in groundwater contaminant concentrations. The list of long-term monitoring wells to be sampled and analytical parameters is provided in Appendix F. The sampling locations are shown on Figure 1.1.

Table 7-1 Site-Wide Groundwater Monitoring Schedule

Location	Frequency	Medium	Monitoring Required
Extraction wells: EW-1, EW-2, EW-3	Annual	Water	VOCs, metals, and wet chemistry parameters (alkalinity, sulfate, hardness, chloride, fluoride, total Kjeldahl nitrogen, total organic carbon, total suspended solids, total dissolved solids, and ammonia) In addition to the above-referenced parameters, EW-1, EW-2, and EW-3 are monitored for 1,4-dioxane.
Long-term monitoring wells*	Annual	Water	VOCs, metals, and wet chemistry parameters (alkalinity, sulfate, hardness, chloride, fluoride, total Kjeldahl nitrogen, total organic carbon, total suspended solids, total dissolved solids, and ammonia) In addition to the above-referenced parameters, select wells are monitored for 1,4-dioxane.
Long-term monitoring wells*	Annual**	Water	Synoptic water levels

*See Appendix F for a list of wells.
** To coincide with the groundwater sampling events.

7.2 PERFORMANCE AND COMPLIANCE MONITORING

Performance and compliance sampling and monitoring will be performed to confirm that the treatment system is operating as intended and the permit discharge criteria are being met. A

summary of the performance and compliance sampling and monitoring is summarized below. Analytical detection limits must be sufficiently low to achieve the applicable permit limits.

Table 7-2 Treatment System Performance and Compliance Monitoring Schedule

Equipment	Purpose	Frequency	Medium	Analytical Required
Treatment System Discharge				
Treated Water Effluent to Injection Wells	Compliance: NYSPDES	Monthly	Water	Select VOCs, select metals (total), pH (field parameter)
Treated Air Effluent	Compliance: Air Permit Equivalent	Weekly	Air	Total VOCs using PID
Treated Air Effluent	Compliance: Permit Equivalent	Monthly	Air	Grab sample VOCs (Summa canister)
VGAC				
Influent VGAC	Performance	Weekly	Air	Total VOCs using PID
Effluent VGAC	Compliance	Weekly	Air	Total VOCs using PID
VGAC Post Lead Unit	Performance	Weekly	Air	Total VOCs using PID
Extraction Wells				
EW-1, EW-2, and EW-3	Performance	Monthly	Water	Select VOCs, select metals (total)
Air Stripper				
Air Stripper Effluent	Performance	Monthly	Water	Select VOCs, select metals (total)

8.0 RECORD KEEPING AND REPORTING

Records documenting the O&M of the treatment system will be maintained electronically (SCADA system) and via physical records (visual site inspection, and maintenance logs and log books). A regular backup schedule will be employed to prevent inadvertent loss of electronic data. The records will be retained as hard copies on site and electronically as scanned copies. Site inspection and maintenance logs will be completed during the weekly routine site inspections, and during emergency site inspections (e.g., following a system shutdown) to document system operation and maintenance activities.

8.1 PROGRESS AND STATUS REPORTS

Monthly Progress Reports and Annual Groundwater Sampling Reports will be prepared and submitted to the Government to aid in tracking system performance and effectiveness in achieving the RAOs. The Monthly Progress Reports will describe treatment system operations and will be submitted to the Government by the 15th day of the following month (pending receipt of data from the laboratory). The progress reports will include, but not be limited to, discussions of the following items:

- H&S activities, including safety hours (hours on site) status, H&S problems encountered, safety instruction, accidents, corrective actions, and any deficiencies noted during routine inspections;
- A description of all O&M activities that occurred;
- Total water and air volumes treated and estimates for contaminant mass removed in each unit process per month, and total removal to date;
- Readiness rate determined by fully capable operational days divided by available operational days in the reporting period;
- A summary of performance and compliance sampling, analytical results, problems, and corrective actions;
- A summary of data logged by the PLC per month;
- Carbon use per month, to date, and projection for the timing of the next change out;
- If used, chemical consumption per month, to date, and projection for next month, including quantities and cost to contractor;
- Updated O&M logs;
- Identification of problems, suggested correction actions, and activities performed by the contractor to correct the problem;
- Planned activities and schedule for significant operations, maintenance, laboratory, and administrative activities to be performed; and
- All other factors that affect the operation, maintenance, and management of the treatment system.

Annual Groundwater Sampling Reports will be prepared upon receipt of annual sampling event data, in accordance with the guidance USEPA 542-R-05-010 O&M Report Template for Groundwater Remedies. The report will generally include, but not be limited to:

- Proposed changes to standard operating procedures for unit process items that maximize performance and minimize chemical usage, energy requirements, etc.
- A summary of the groundwater monitoring data to evaluate the effectiveness of the groundwater remedy, including statistical trends and a comparison to the site cleanup goals.
- A summary of the groundwater monitoring well inventory and recommended repairs, if needed.
- The "remedy progress" section of the annual report will summarize remedy progress with respect to the system goals and will include the following:
    - A brief summary of the groundwater extraction and treatment system goals;
    - A discussion of data collected during the reporting period (e.g., water levels, groundwater concentrations, etc.) and whether the data is consistent or inconsistent with expectations and/or previous data (if not, include a brief description of the difference);
    - A description of whether the short-term remedy goals are being met, based on an interpretation of data collected and implementation of institutional controls;
    - A description of whether longer-term remedy goals are being met or when they will likely be met, based on an interpretation of data collected and implementation of institutional controls; and
    - A discussion of new inconsistencies or gaps in the current "site conceptual model," if any have been identified based on an interpretation of O&M data, and whether or not the site conceptual model has been updated accordingly.
- The "proposed modifications" section of the Annual Groundwater Sampling Report will present modifications to the groundwater remedy and long-term monitoring program for consideration by stakeholders. It will include the following:
    - A brief description of any such recommendations; and
    - The details of recommended modifications, including the rationale behind those recommendations, and estimated costs and/or savings associated with the recommendations.

8.2 COMPLIANCE REPORTING

Monthly reports shall be prepared for each period the Lawrence Aviation Industries treatment system is operational. Reports are submitted to USACE.

9.0 GOVERNMENT PROPERTY

One of the contractor's duties is to maintain a list of Government property that is present at the site. The current Government property list is provided in Appendix G.

During the course of normal treatment system operations, various equipment may be imported or exported from the Lawrence Aviation Industries treatment system building based on needs and goals of USACE or USEPA. Proper tracking of equipment transfer involves organized recordkeeping practices. When transferring any equipment to the job site or away from the job site, a transfer form must be completed and signed off on by a USACE representative. A copy of all transfer forms will be maintained on file at the site in the control room filing system. A standard form used to document inventory transfers to other Government-owned sites is presented in Appendix H.

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10.0 HEALTH AND SAFETY

The Contractor is responsible for all aspects of H&S associated with O&M activities, including safety of lower-tier subcontractors in accordance with project Specification Section 01 35 26 - Safety, Health, and Emergency Response. All work will be performed in accordance with the APP and the Activity Hazard Analysis forms that have been prepared and submitted for site activities. The contractor will:

- Maintain up-to-date H&S records for all on-site personnel;
- Inform the Government of all near misses, incidents, on-site accidents, and related claims;
- Provide all necessary PPE for the contractor personnel prior to proceeding with the work;
- Provide hard hats, safety glasses, reflective vests, and hearing protection to Government personnel and other visitors; and
- Show proper Occupational Safety and Health Administration (OSHA)-approved 40-hour H&S training and subsequent 8-hour refreshers for all workers associated with any activity that may be exposed to contaminated materials.

A H&S Checklist is provided in Appendix D for guidance on the number and type of equipment that is housed within the treatment system building. SDSs are included in the hazardous communications binder, which is located on site. SDS for new materials that are brought on site will be added to binder. The SDS binder will be reviewed for accuracy a minimum of once per year to ensure all required information is included.

10.1 HAZARDS

During normal O&M of the treatment system, operators will be exposed to the following hazards:

- **Process Equipment and Electrical Components-** Operators should be aware of all the potential physical hazards associated with the use of motorized equipment (e.g., pumps and blowers) and electrical equipment (e.g., electrical panels, motors, instrumentation, and wiring) during the operation of the treatment system components.
- **Heavy Equipment-** Operators must be aware of the potential physical hazards associated with the use of heavy equipment (such as vacuum trucks) during the O&M of the treatment system.
- **Slip/Trips/Falls-** Significant slip/trip/fall hazards exist within in the treatment system building. This includes piping, vaults, equipment skids, secondary containment berms, and outdoor components of the groundwater extraction and treatment system.
- **Chemical Vapors-**Volatile organic vapors may be released from process equipment and piping due to leaks. These vapors could potentially accumulate within the process building at unsafe levels.
- **Hazardous Energy-** All maintenance and repairs that are completed for the treatment system must be compliant with the OSHA standard for The Control of Hazardous Energy

(Lockout/Tagout**)** (29 Code of Federal Regulations 1910.147). Hazardous energy includes pressurized fluids, gases, compressed springs, and electrical equipment as examples. Controlling hazardous energy includes removing the energy by depressurizing piping and removing electrical power from components and completing a full and proper lockout/tagout of the components. Prior to any work being completed, staff should test their lockout/tagout boundaries to ensure the hazardous energy is removed. If the isolations do not remove all of the hazardous energy, or the component must be operational to troubleshoot or repair, notify supervisors and only qualified personnel should conduct the repairs or troubleshooting.

- **Confined Space Entry-** The VGAC and LGAC vessels are considered permit required confined spaces. Although it is highly unlikely the vessels will need to be entered, whenever operators are required to enter the spaces, confined space procedures must be followed. This includes initial and continuous monitoring of the atmosphere inside the spaces prior to and during entry.
- **Ladder Safety-** Operators must utilize proper ladder safety procedures when using fixed and portable ladders. Portable ladders must be secured to a fixed surface that will support more than the anticipated total load. When climbing or descending a ladder, personnel must face the ladder and maintain three points of contact at all times.
- **Elevated Work Locations and Fall Protection-** Work performed at heights greater than 6 feet where a fall hazard exists requires fall protection. Fall protection may include guardrails, safety nets, or personal fall arrest systems. Fall protection must be used in accordance with the OSHA Standard for Fall Protection (29 Code of Federal Regulations 1926 Subpart M). Operators should not use fall arrest equipment until they have been properly trained.
- **Pressurized Equipment**- Pressurized conditions resulting from pump and blower operations are regulated under normal conditions by process control equipment. Any observed leaks within piping or loose components of equipment should be immediately repaired to prevent spills or pressurized releases. Routine equipment and piping inspections should be performed as preventative measures to minimize hazards that may result from pressurized releases. Operators must wear appropriate PPE at all times.
- **Noise-** Noise (decibel) levels inside the process area can be expected to exceed OSHA permissible exposure limits. It is recommended that hearing protection be used whenever personnel will be inside the process area within the treatment system building.
- **PPE-** Operators must wear all appropriate PPE before entering the treatment system building and the extraction vaults. As a minimum, nitrile gloves, safety glasses, hard hat, hearing protection, and steel toe shoes should be worn or used.

All activities conducted on site must be compliant with all local, state, and Federal rules and regulations. Examples of such activities include ladder use and working in confined spaces.

Health and safety information including the hospital map and directions, emergency contact list, safety checklists, and regulatory postings are posted in the treatment plant control room.

The nearest hospital is Mather Hospital, located at 75 N. Country Road, Port Jefferson, New York. General first aid equipment is provided on site; however, please seek immediate medical assistance if necessary. USACE must be notified immediately via e-mail or phone of all safety incidents. An emergency contact list is provided in Section 5.5.6.

In the event of treatment system-related emergencies, emergency shutdown procedures will be conducted in accordance with Section 5.5.

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11.0 REFERENCES

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FIGURES

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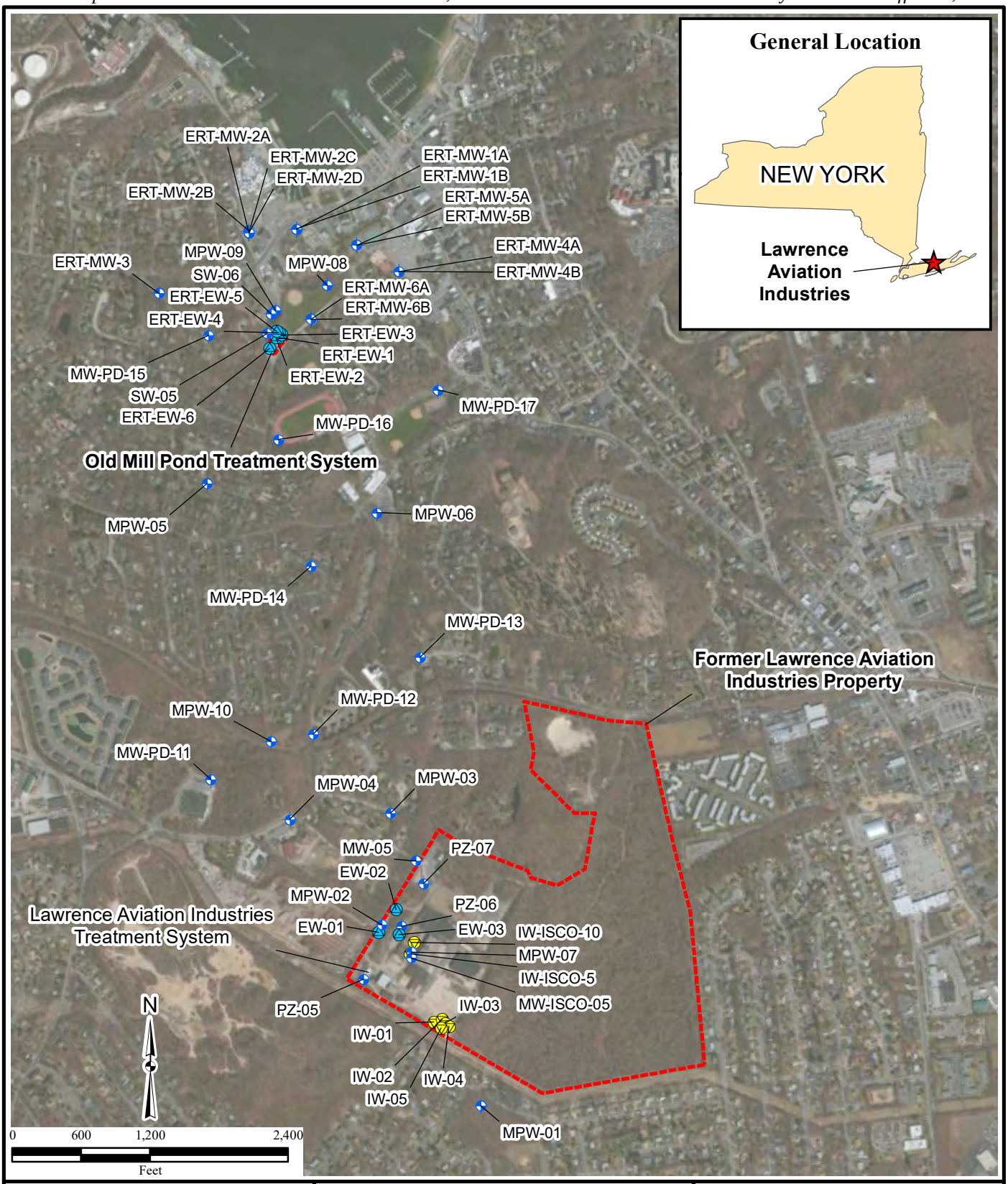

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Source: HGL, HDR, ESRI
ArcGIS Online Imagery

Legend

- Monitoring Well
- Extraction Well
- Injection Well
- Site Location
- Site Boundary

Figure 1.1
Site Location

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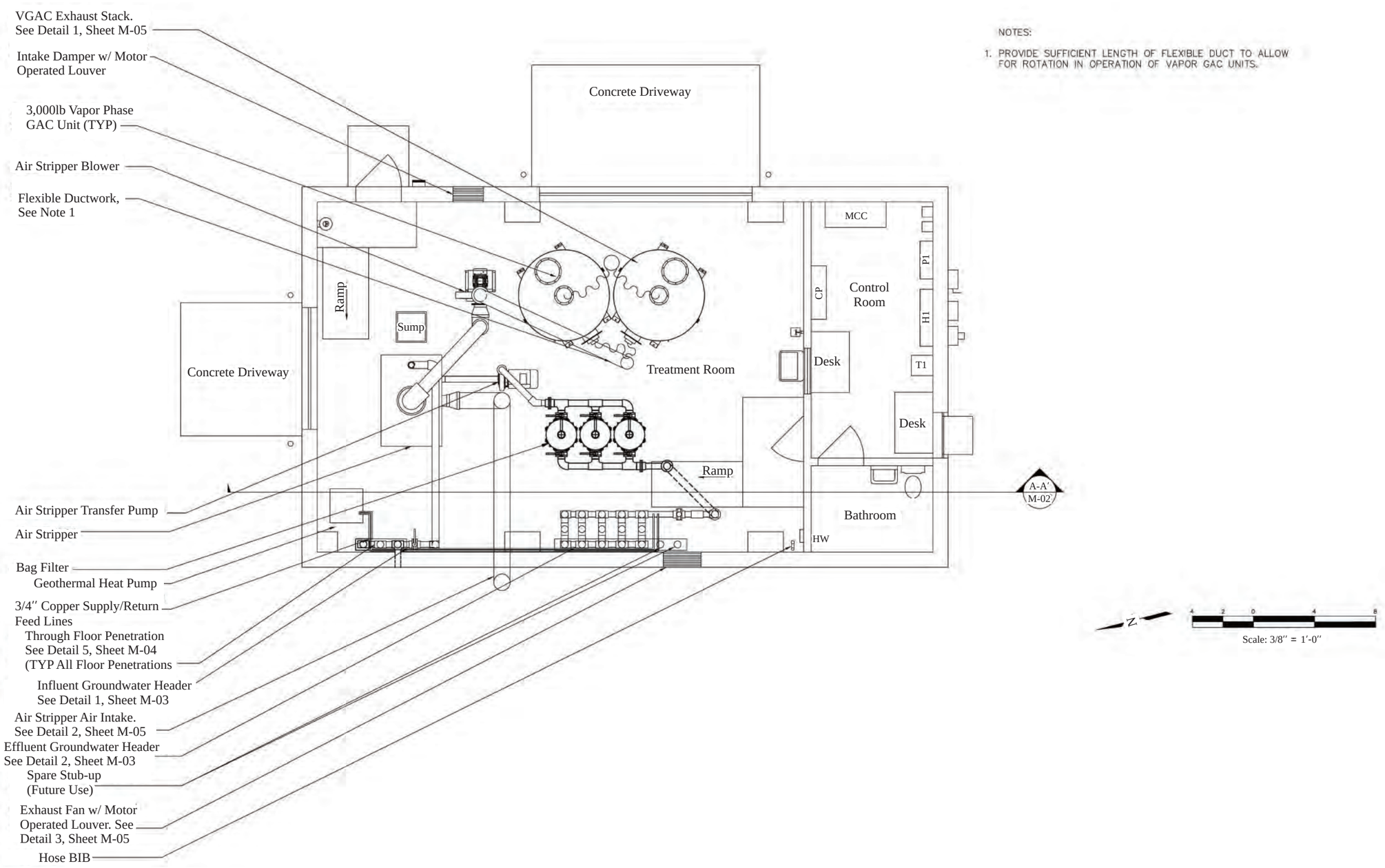
Source: HGL, HDR, ESRI
ArcGIS Online Imagery

Legend

- Extraction Well
- Injection Well
- Site Boundary

Figure 1.2
Site Layout
Lawrence Aviation
Treatment System



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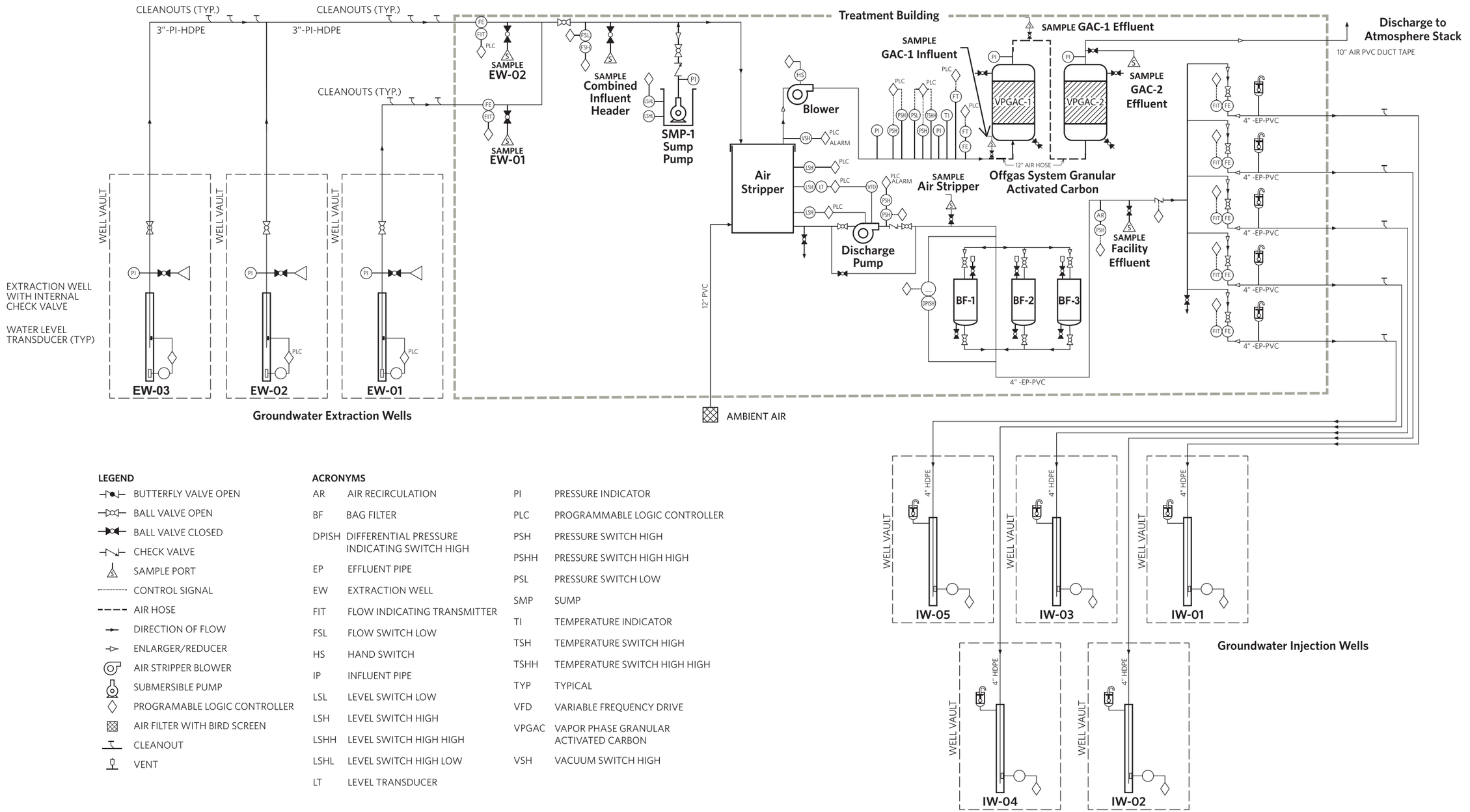
Source: Environmental Restoration, LLC

Notes:
Provide sufficent length of flexible duct to allow for rotation in operation of vapor GAC units.

GAC=granular activated carbon
VGAC=vapor phase granular activated carbon
TYP=typical
HW=hot water
MCC=motor control center

Figure 1.3
Treatment System Building Layout



LEGEND

- BUTTERFLY VALVE OPEN
- BALL VALVE OPEN
- BALL VALVE CLOSED
- CHECK VALVE
- SAMPLE PORT
- CONTROL SIGNAL
- AIR HOSE
- DIRECTION OF FLOW
- ENLARGER/REDUCER
- AIR STRIPPER BLOWER
- SUBMERSIBLE PUMP
- PROGRAMABLE LOGIC CONTROLLER
- AIR FILTER WITH BIRD SCREEN
- CLEANOUT
- VENT

ACRONYMS

AR	AIR RECIRCULATION
BF	BAG FILTER
DPISH	DIFFERENTIAL PRESSURE INDICATING SWITCH HIGH
EP	EFFLUENT PIPE
EW	EXTRACTION WELL
FIT	FLOW INDICATING TRANSMITTER
FSL	FLOW SWITCH LOW
HS	HAND SWITCH
IP	INFLUENT PIPE
LSL	LEVEL SWITCH LOW
LSH	LEVEL SWITCH HIGH
LSHH	LEVEL SWITCH HIGH HIGH
LSHL	LEVEL SWITCH HIGH LOW
LT	LEVEL TRANSDUCER
PI	PRESSURE INDICATOR
PLC	PROGRAMMABLE LOGIC CONTROLLER
PSH	PRESSURE SWITCH HIGH
PSHH	PRESSURE SWITCH HIGH HIGH
PSL	PRESSURE SWITCH LOW
SMP	SUMP
TI	TEMPERATURE INDICATOR
TSH	TEMPERATURE SWITCH HIGH
TSHH	TEMPERATURE SWITCH HIGH HIGH
TYP	TYPICAL
VFD	VARIABLE FREQUENCY DRIVE
VPGAC	VAPOR PHASE GRANULAR ACTIVATED CARBON
VSH	VACUUM SWITCH HIGH

\\Srv-gst-01\hglgis\Lawrence_Aviation_K13006_MSIW\LAI_OMPM\ (1-4)Process_Flow_LAI.cdr
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Source: CDM Smith, HDR

Notes:
GAC=granular activated carbon

1. Valves for instrumentation lines are not shown.
2. Controls will be used to maintain a constant groundwater elevation in the extraction well.
3. Port will be used to collect cleanout water during maintenance of pipes.

Figure 1.4
Process Flow Diagram
Lawrence Aviation
Treatment System

APPENDIX A

AS-BUILT DRAWINGS

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US EPA
Region II
New York, New York

As-Built Drawings for Groundwater Remediation at the Lawrence Aviation Industries Superfund Site Port Jefferson Station, New York

Prepared For:

CDM Federal Programs Corporation
New York, New York

Prepared By:

Arrowhead Contracting, Inc.
10981 Eicher Road
Lenexa, Kansas
(913) 814-9994

October 2010

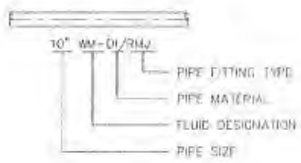
PROCESS LINE ABBREVIATIONS

AIR	AIR, ATMOSPHERIC PRESSURE
BW	BACKWASH
CA	COMPRESSED AIR
CCA	CHLORINE CONTAMINATED AIR
CGW	CONTAMINATED GROUNDWATER
D	DRAIN
EFF	EFFLUENT
EXH	EXHAUST
FLT	FILTRATE
FTW	FILTER-TO-WASTE
NPW	NON-POTABLE WATER
OZE	OZONE GAS
P	PRODUCT
PW	POTABLE WATER
RW	RAW WATER
S	SANITARY
SL	SLUDGE
SN	SUPERNATANT
SP	SAMPLE PORT
SS	STORM SEWER
TF	TOTAL FLUIDS
TW	TREATED WATER
V	VENT
VAP	VAPOR

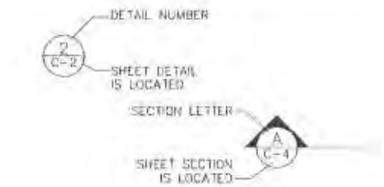
PIPING MATERIAL IDENTIFICATION

CPVC	CHLORINATED POLYVINYL CHLORIDE
CSP	CARBON STEEL PIPE
COP	COPPER
CMP	CORRUGATED METAL PIPE
CIP	CAST IRON PIPE
DIP	DUCTILE IRON PIPE
FRP	FIBERGLASS REINFORCED PIPE
GSP	GALVANIZED STEEL PIPE
HDPE	HIGH DESITY POLYETHYLENE PIPE
PE	POLYETHYLENE PIPE
PP	POLYPROPYLENE PIPE
PVC	POLYVINYL CHLORIDE PIPE
RCP	REINFORCED CONCRETE PIPE
RUB	RUBBER
SS	STAINLESS STEEL PIPE
VCP	VITRIFIED CLAY PIPE

PIPING DESIGNATION



DETAIL & SECTION DESIGNATION



SHEET NUMBER	TITLE
G-01	DRAWING INDEX AND LEGEND
G-02	LEGEND
G-01	PROJECT SITE PLAN
G-02	UNIT SITE PLAN
G-03	CONVEYANCE PIPE TRENCH DETAILS
G-04	CONTROL WIRING PULLBOX DETAIL
G-05	FENCE DETAILS
G-06	FENCE DETAILS
G-07	CIVIL DETAILS
G-08	SITE PLAN
G-09	SANITARY PLAN
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A-01	BUILDING PLAN
A-02	BUILDING ELEVATIONS VIEW
A-03	DOOR SCHEDULE AND FINISH SCHEDULE
A-04	CONTROL ROOM/BATHROOM PARTITION WALL CONSTRUCTION DETAILS
A-05	RESERVED
S-01	STRUCTURAL SPECIFICATIONS
S-02	STRUCTURAL FOUNDATION PLAN AND DETAILS
S-03	SUB SLAB VENTING SYSTEM DETAILS
M-01	TREATMENT EQUIPMENT MECHANICAL PLAN I
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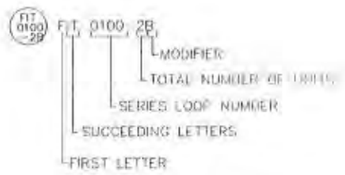
M-03	TREATMENT SYSTEM HEADER DETAILS
M-04	MECHANICAL DETAILS
M-05	MECHANICAL DETAILS
M-06	EXTRACTION WELLHEAD DETAIL
M-07	INJECTION WELLHEAD DETAIL
P-01	POTABLE WATER AND SANITARY SEWER PIPING PLAN
E-01	ELECTRICAL SITE PLAN
E-02	ONE-LINE DIAGRAM
E-03	POWER PLAN
E-04	LIGHTING PLAN
E-05	CONTROL WIRING PLAN
H-01	HVAC PLAN
I-01	PROCESS AND INSTRUMENTATION DIAGRAM

EQUIPMENT NOTATION ABBREVIATIONS

AC	AIR COMPRESSOR
AN	ANNUGAR
ARV	AIR RELIEF VALVE
B	BLOWER
BFP	BELT FILTER PRESS
BP	BOOSTER PUMP
BPD	BACKFLOW PREVENTION DEVICE
C	CATALYST
CA	COLLECTOR ARM
CC	CALIBRATION COLUMN (LG)
CL	CHLORINATOR
CV	CHECK VALVE
CY	CYCLONE
D	DIFFUSERS
E	EDUCTOR
FC	FILTER CELL
FM	FLOW METER
FV	FLOW VALVE
GC	GRIT CLASSIFIER
GS	GAS SENSOR
GT	GRAVITY THICKENER
H	HYDROCYCLONE
HP	HOPPER
HV	HAND VALVE
IN	INJECTOR
L	LAUNDER
MX	MIXER
OP	ORIFICE PLATE
P	PUMP
PE	POLYMER AIRLOCK
PCV	PRESSURE CONTROL VALVE
PS	PULSATION DAMPENER
PW	PRESSURE WASHER
PWC	PRE WETTING CON
RA	ROTARY AIRLOCK
RM	ROTOMETER
S	STORAGE
SB	STORAGE BIN
SC	SCALE
SIL	SILENCER
SM	STATIC MIXER
SP	SAMPLE PUMP
SV	SOLENOID VALVE
SW	STILLING WELL
T	TANK
V	VIBRATOR
VR	AUTOMATIC SWITCHOVER VACUUM REGULATOR
WP	ADJUSTABLE WEIR PLATE
WW	WETWELL

INSTRUMENT IDENTIFICATION



FUNCTION ABBREVIATIONS

A	ANALOG
AIT	ANALOG INDICATING TRANSMITTER
ALT	ALTERNATE
BFC	BALLASTED FLOCCULATION / CLARIFICATION
CL_2	CHLORINE RESIDUAL
CS	CONTROL STATION
D	DIGITAL
dP	DIFFERENTIAL PRESSURE
DO	DISSOLVED OXYGEN
?	INTERNAL INDICATOR
FC	FAIL CLOSED
FI	FAIL INDETERMINATE
FL	FAIL LOCKED
FO	FAIL OPEN
HMI	HUMAN MACHINE INTERFACE
HOA	HAND-OFF-AUTOMATIC
HS	HAND SWITCH
IAS	INTERNAL AIR SUPPLY
I/I	CURRENT-TO-CURRENT
I/P	CURRENT-TO-PNEUMATIC
LEL	LOWER EXPLOSIVE LIMIT
L	LENGTH
LCP	LOCAL CONTROL PANEL
LOS	LOCK OUT SERVICE
L/R	LOCAL-REMOTE
NO	NORMALLY OPEN
NC	NORMALLY CLOSED
O_3	OZONE GAS
OAC	OPEN-AUTO-CLOSE
OC	OPEN-CLOSE
OO	ON-OFF, MAINTAINED
ORP	OXIDATION REDUCTION POTENTIAL
OSC	OPEN-STOP-CLOSE, MOMENTARY
SEQ	SEQUENCE OPERATION
SP	SET POINT
S/S	START-STOP, MOMENTARY
TOAE	TIME-TO-OPEN AFTER ENERGIZED
TURB	TURBIDITY
UCP	UNIT CONTROL PANEL
VGAC	VAPOR-PHASE GRANULAR ACTIVATED CARBON
>	HIGH SELECT
<	LOW SELECT

REV #	Revisions	Date	Approved
	AS-BUILT	10/10	
	ISSUED FOR CONSTRUCTION	5/19/10	
1	100 PERCENT DESIGN	3/19/10	

ARROWHEAD CONTRACTING INC
[illegible]
Lawrence, Kansas 66049
(913) 814-9994

CDM FEDERAL PROGRAMS
NEW YORK, NEW YORK

Designed by: DLR
Drawn by: DLR
Checked by: GWW
Reviewed by: SFS
Submitted by: GWW

LAWRENCE AVIATION INDUSTRIES SUPERFUND SITE
PORT JEFFERSON STATION, NEW YORK

GROUNDWATER TREATMENT PLANT
LEGEND

Scale: AS SHOWN
Spec. No: -
Contract No: -
Sheet Reference number: G-01
Date: January 27, 2010
Drawing Code: -

PUMP AND COMPRESSOR SYMBOLS

- RECIPROCATING COMPRESSOR
- CENTRIFUGAL PUMP
- CENTRIFUGAL BLOWER
- REGENERATIVE BLOWER
- ROTARY VANE COMPRESSOR
- ROTARY LOBE BLOWER
- CLAW ROTARY LOBE BLOWER
- PROGRESSIVE CAVITY PUMP
- AIR/AIR OR AIR/WATER HEAT EXCHANGER
- SUBMERSIBLE SUMP PUMP
- ROTARY SCREW COMPRESSOR
- DIAPHRAGM METERING PUMP
- DOUBLE DIAPHRAGM PNEUMATIC PUMP

VALVE SYMBOLS

- GATE VALVE
- BALL VALVE
- GLOBE VALVE
- BUTTERFLY VALVE
- DIAPHRAGM VALVE
- CHECK VALVE
- SOLENOID VALVE
- PRESSURE RELIEF VALVE
- VACUUM RELIEF VALVE
- SAMPLE PORT
- SP SAMPLE PORT
- PRESSURE REGULATOR
- PNEUMATIC DIAPHRAGM VALVE
- PRESSURE SUSTAINING VALVE

PIPING SYMBOLS

- WYE STRAINER
- QUICK DISCONNECT HOSE CONNECTION
- UNION PIPE CONNECTION
- FLEXIBLE JOINT OR CONNECTOR
- BUCKET TRAP OR SEPARATOR
- AIR FILTER ELEMENT
- SILENCER
- SITE GLASS

INSTRUMENT SYMBOL LEGEND

ALARM LIGHT: LAH 104

INSTRUMENT: PSHH 100

FIRST	SECOND	THIRD	FOURTH
C – CONDUCTIVITY	A – ALARM	C – COMMON	H – HIGH
dP – DIFFERENTIAL PRESSURE	E – ELEMENT	H – HIGH	L – LOW
F – FLOW	I – INDICATOR	L – LOW	
H – HAND	P – PROBE	T – TRANSMITTER	
L – LEVEL	S – SWITCH		
P – PRESSURE	T – TRANSMITTER		
T – TEMPERATURE			
V – VACUUM			

LINE THRU INSTRUMENT SIGNIFIES PANEL MOUNTED INSTRUMENT (NO LINE INDICATES FIELD MOUNTED INSTRUMENT)

INDICATES INSTRUMENT TAG NUMBER

PRIMARY ELEMENT SYMBOLS

- FE 101 ROTAMETER (VARIABLE AREA FLOW METER)
- FE 100 VENTURI FLOW ELEMENT
- FE 100 PITOT TUBE FLOW ELEMENT
- FE 100 POSITIVE DISPLACEMENT FLOW ELEMENT
- PT 100 SUBMERSIBLE PRESSURE TRANSMITTER ELEMENT
- FE 100 MAGENTIC FLOW METER ELEMENT
- FE 100 PADDLE WHEEL FLOW ELEMENT
- FE 100 TURBINE FLOW ELEMENT
- FE 100 VARIABLE AREA VANE FLOW ELEMENT

PIPE AND FITTING SYMBOLS

- WELDED JOINT
- FLANGED JOINT
- MECHANICAL JOINT
- RESTRAINED MECHANICAL JOINT
- PUSH ON JOINT
- RESTRAINED PUSH ON JOINT
- BALL JOINT
- DIRECTION OF FLOW
- PLAIN END x PLAIN END PIPE COUPLING
- PLAIN END x PLAIN END RESTRAINED PIPE COUPLING
- FLANGED ADAPTER COUPLING
- FLEXIBLE COUPLING OR EXPANSION JOINT (SLEEVE TYPE)
- FLEXIBLE COUPLING OR EXPANSION JOINT (BELLOWS TYPE)
- GROOVED END JOINT COUPLING (FLEXIBLE OR RIGID)
- FLANGE GUARD
- FILLER FLANGE
- UNION
- QUICK CONNECT COUPLING
- HOSE COUPLING
- CAP

PIPE AND FITTING SYMBOLS

- 90° ELBOW
- 90° ELBOW ROTATED UP
- 90° ELBOW ROTATED DOWN
- TEE
- TEE ROTATED UP
- TEE ROTATED DOWN
- CONCENTRIC REDUCER
- ECCENTRIC REDUCER

REV #	Revisions	Date	Approved
	AS-BUILT	10/10	
	ISSUED FOR CONSTRUCTION	5/19/10	
1	100 PERCENT DESIGN	2/19/10	

ARROWHEAD CONTRACTING INC

CDM FEDERAL PROGRAMS NEW YORK, NEW YORK

LAWRENCE AVIATION INDUSTRIES SUPERFUND SITE
PORT JEFFERSON STATION, NEW YORK

GROUNDWATER TREATMENT PLANT
LEGEND

Designed by: DLR
Drawn by: DLR
Checked by: GWW
Reviewed by: SFS
Submitted by: GWW
Scale: AS SHOWN
Spec. No.:
Contract No.:
Sheet reference number: G-02
Date: JANUARY 27, 2010
Drawing Code: –

NOTES:

1. PIPE INSTALLATION WITH LIMITS OF STATE RIGHT OF WAY TO BE BURIED MINIMUM 120" BELOW GRADE. REFER TO DETAIL 5, SHEET C-03.
2. RESTORATION WITHIN NYSDOT RIGHT OF WAY TO BE COMPLETED IN ACCORDANCE WITH NYSDOT STANDARD SPECIFICATION SECTION 107-08.

GENERAL NOTES

COORDINATES BASED ON HORIZONTAL SYSTEM NAD '83, SPC (3104 NY L).

ELEVATIONS BASED ON VERTICAL DATUM NAVD '88.

FOR WELLS EW1, EW2, IW-01, IW-02, IW-03, IW-04 AND IW-05 THE ELEVATIONS ARE TAKEN ON THE EDGE OF HOLE ON THE INSIDE OF THE FLANGE.

ALL OTHER ELEVATIONS TAKEN ON THE NOTCH ON THE NORTH SIDE OF THE CASING.

REV #	Revisions	Date	Approved
2	AS-BUILT REVISIONS	11/15/21	
	AS-BUILT	12/10	
	ISSUED FOR CONSTRUCTION	5/19/10	
1	100 PERCENT DESIGN	3/19/10	

HGL

CDM FEDERAL PROGRAMS
NEW YORK, NEW YORK

Designed by: DLR	LAWRENCE AVIATION SUPERFUND SITE PORT JEFFERSON STATION, NEW YORK		
Drawn by: DLR	GROUNDWATER TREATMENT PLANT PROJECT SITE PLAN		
Checked by: GMN			
Reviewed by: SFS	Scale: AS SHOWN	Sheet Reference Number: C-01	Date: JANUARY 27, 2010
Submitted by: GMN	Spec. No.: / Contract No.: -		Drawing Code:

VERIFY SCALE
BAR IS ONE INCH ON ORIGINAL DRAWING
IF NOT ONE INCH ON THIS SHEET ADJUST SCALES ACCORDINGLY

NOTES:

1. SURFACE SOIL IN THE AREA SURROUNDING THE GWTF BUILDING HAVE BEEN REMEDIATED BY OTHERS TO REMOVE PCB AND LEAD CONTAMINATED SOIL. TO THE BEST OF ARROWHEADS KNOWLEDGE NO SURFICIAL SOIL CONTAMINATION REMAINS. DURING SOIL CHARACTERIZATION OF THE YARD PIPING TRENCHES ADDITIONAL SOIL SAMPLES WILL BE COLLECTED IN THE LOCATION OF THE GWTF BUILDING TO CONFIRM THAT CONTAMINATED SOIL WITH THE LIMITS OF EXCAVATION (I.E. FOUNDATIONS) IS NOT PRESENT. REFER TO THE PROJECT WORK PLAN FOR SAMPLING REQUIREMENTS AND SPECIFIC SOIL HANDLING REQUIREMENTS IF CONTAMINATED SOIL IS PRESENT.

2. PREVIOUS REMEDIAL ACTIVITIES IN THE GWTF AREA HAVE RESULTED IN A SMOOTH LEVEL SURFACE. CLEARING AND GRUBBING ACTIVITIES CONDUCTED AS PART OF THIS WORK WILL BE PERFORMED SUCH THAT FINAL GRADING MATCHES THE SURROUNDING TOPOGRAPHY.

3. MINIMAL SITE GRADING WILL BE REQUIRED TO ACCOMMODATE THE GWTF BUILDING. THE FINISH FLOOR ELEVATION WILL BE CONSTRUCTED TO MATCH THE TOP OF CONCRETE PAD ELEVATION AT LOCATION "A". FINAL GRADING OF THE AREA SURROUNDING THE GWTF WILL BE COMPLETED TO PROMOTE DRAINAGE AWAY FROM THE BUILDING.

RECYCLED CRUSHED CONCRETE SURFACE, SEE DETAIL 3, SHEET C-07

LOCATION "A" EL. 230.1'

1 STY. MAS. BLDG.

42.8

25.4

20'

ARMOR EXISTING SLOPE WITH GEOTEXTILE FABRIC AND RIP-RAP. SEE DETAIL SHEET C-10

NEW GWTF BUILDING

CHAIN LINK FENCE, REFER TO DRAWINGS C-5 AND C-6 FOR CONSTRUCTION DETAILS

NEW PAD-MOUNTED ELECTRICAL TRANSFORMER

SEPTIC TANK

LEACHING POOL

PZ-05

SCALE: 0 5 10 20

REV. #	Revisions	Date	Approved
2	AS-BUILT REVISIONS	11/15/21	
	AS-BUILT	12/10	
	ISSUED FOR CONSTRUCTION	5/19/10	
1	100 PERCENT DESIGN	3/19/10	

HGL

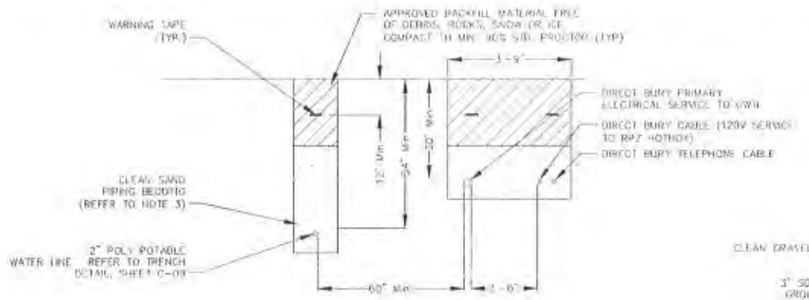
CDM FEDERAL PROGRAMS NEW YORK, NEW YORK

LAWRENCE AVIATION SUPERFUND SITE
WEST JEFFERSON STATION, NEW YORK

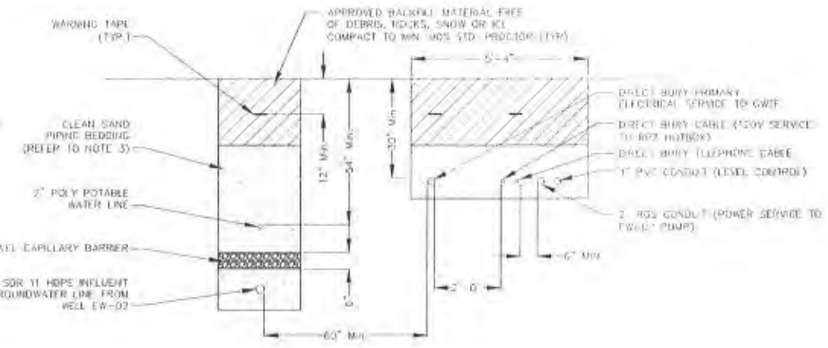
GROUNDWATER TREATMENT PLANT
GWTF SITE PLAN

Designed by: DLR	Scale: AS SHOWN	Sheet reference number: C-02	Date: JANUARY 27, 2010
Drawn by: DLR	Spec. No.: -		Drawing Code:
Checked by: DAV	Contract No.: -		
Reviewed by: SFS			
Submitted by: DAV			

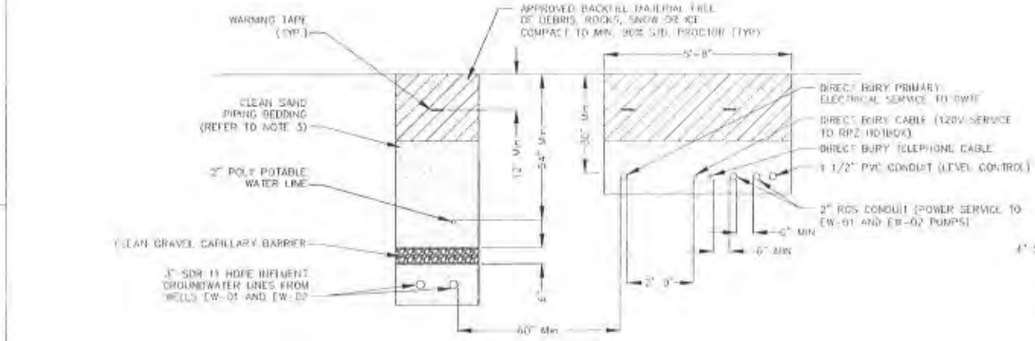
VERIFY SCALE BAR IS ONE INCH ON ORIGINAL DRAWING. IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY



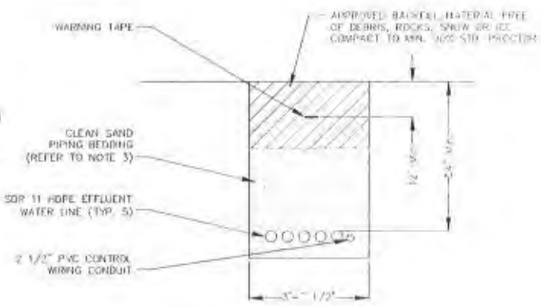
1 TRENCH SECTION
NOT TO SCALE



2 TRENCH SECTION
NOT TO SCALE



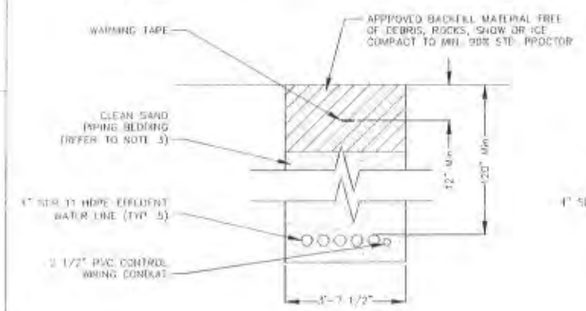
3 TRENCH SECTION
NOT TO SCALE



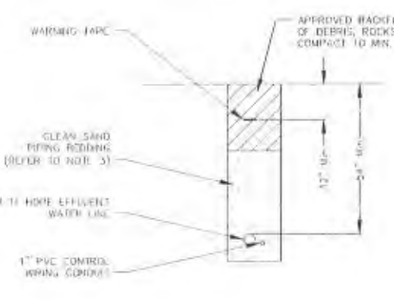
4 TRENCH SECTION
NOT TO SCALE

NOTES

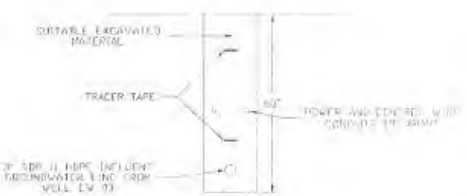
1. PROVIDE MINIMUM 6" CLEARANCE BETWEEN EACH PIPE TRENCH WALLS AND 2" BETWEEN EACH PIPE, TYPICAL ALL PIPING.
2. ALL PIPING LOCATED WITHIN STATE RIGHT OF WAY TO BE BURIED MINIMUM OF 120" TO TOP OF HIGHEST PIPE.
3. EXCAVATED MATERIAL USED FOR PIPE BEDDING.
4. REFER TO DRAWING E-01 FOR ADDITIONAL DETAIL OF ELECTRICAL CABLE AND CONDUIT BURIAL AND SEPARATION REQUIREMENTS.



5 TRENCH SECTION
NOT TO SCALE



6 TRENCH SECTION
NOT TO SCALE



7 VERTICAL SECTION
NOT TO SCALE

REV #	Revisions	Date	Approved
2	ADDRESS REVISION	11/15/11	
1	AS-BUILT	10/10	
0	ISSUED FOR CONSTRUCTION	9/19/10	
	100 PERCENT DESIGN	9/16/10	

HGL

CDM FEDERAL PROGRAMS
NEW YORK, NEW YORK

Designed by:
Drawn by:
Checked by:
Reviewed by:
Submitted by: D.P.

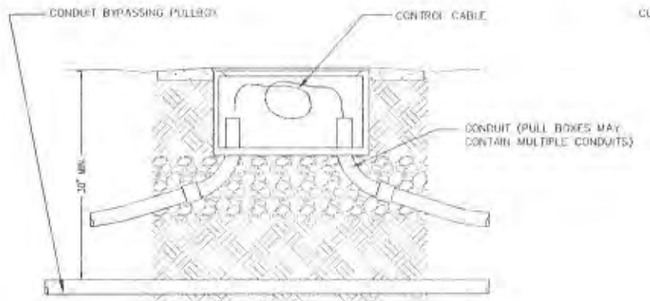
LAWRENCE AVIATION SUPERFUND SITE
FORT JEFFERSON STATION, NEW YORK

GROUNDWATER TREATMENT PLANT
CONVEYANCE PIPE TRENCH DETAILS

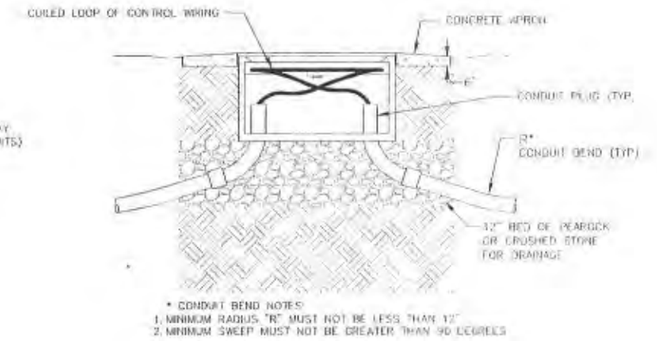
Scale	Sheet reference number	Date
AS SHOWN	C-03	JANUARY 27, 2010
Spec. No.		Drawing Code:
Contract No.		

NOTES:

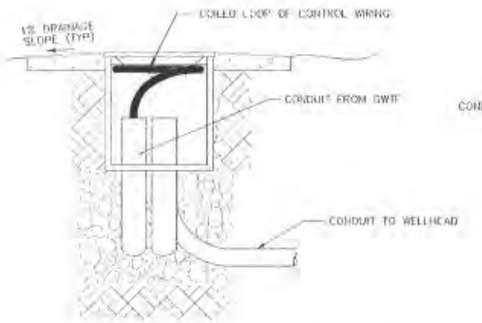
1. CONDUITS DEPICTED ON THIS SHEET ARE REPRESENTATIVE ONLY. EXACT NUMBER OF CONDUITS INSTALLED AND CONDUIT SIZE SHALL BE AS SHOWN ON DRAWING C-03.
2. CONDUIT CENTERLINE SHALL BE ALIGNED WITHIN THE PULL BOX TO FACILITATE CABLE PULLING.
3. CONDUIT PLUGS SHALL BE INSTALLED IN ALL CONDUITS, BOTH WITH OR WITHOUT CABLE.
4. TRACER WIRE AND PULL ROPE TO BE INSTALLED AS FOLLOWS:
   IF INSTALLATION INCLUDED MULTIPLE RUNS OF CONDUIT, PULL ROPE SHALL BE INSTALLED IN EACH INDIVIDUAL CONDUIT. TRACER WIRE WILL BE INSTALLED IN ONLY ONE CONDUIT.
   IF INSTALLATION INCLUDES ONLY ONE CONDUIT, PULL ROPE AND TRACER WIRE WILL BE INSTALLED IN CONDUIT.
5. PULL BOXES SHALL HAVE 12" WIDE x 6" THICK CONCRETE APRON SLOPED AWAY FROM PULLBOX.
6. PULL BOX CONSTRUCTED OF POLYETHYLENE, PLACE BOLLARD POSTS AT EACH LOCATION TO PREVENT DAMAGE.

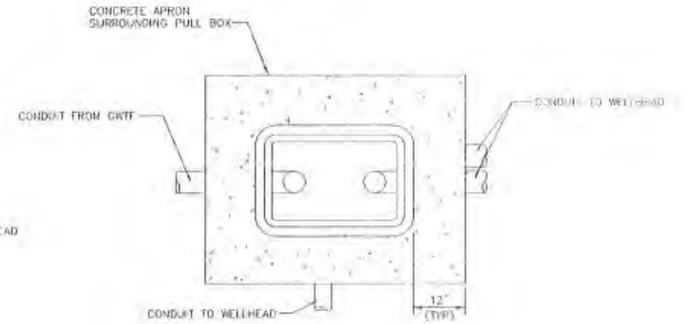


CONDUIT BYPASS DETAIL



* CONDUIT BEND NOTES:
1. MINIMUM RADIUS "R" MUST NOT BE LESS THAN 12"
2. MINIMUM SWEEP MUST NOT BE GREATER THAN 90 DEGREES





PULL BOX INSTALLATION

REV'S	Revisions	Date	Approved
	AS-BUILT	10/10	
	ISSUED FOR CONSTRUCTION	3/19/10	
1	100 PERCENT DESIGN	3/19/10	

ARROWHEAD CONTRACTING INC.
10081 Eaker Drive
Lenexa, Kansas 66219
(913) 814-9994

CDM FEDERAL PROGRAMS
NEW YORK, NEW YORK

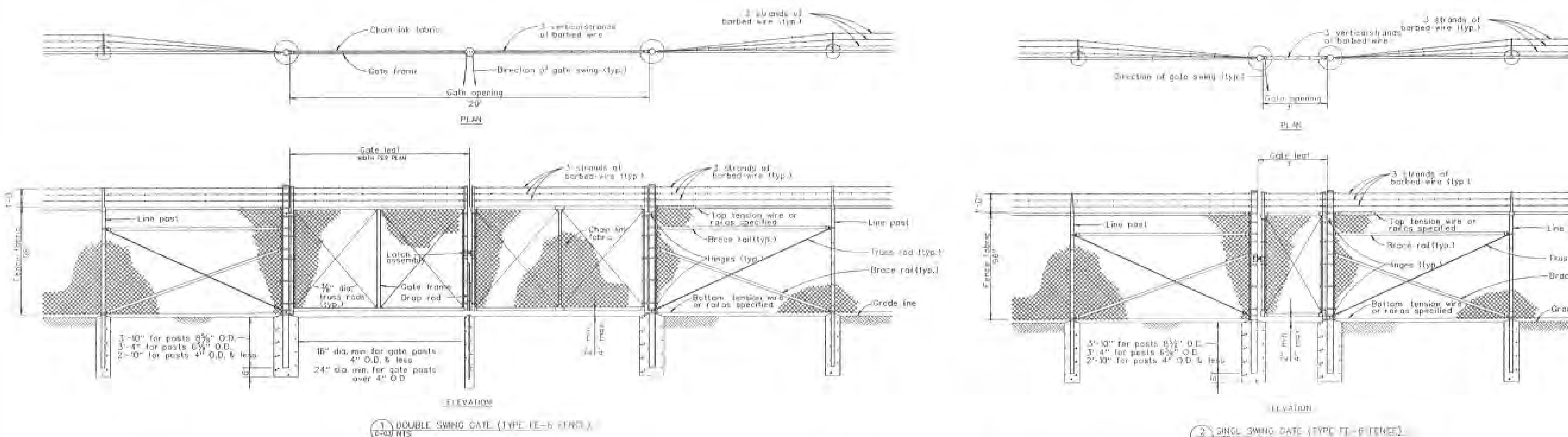
Designed by: ELP
Drawn by: ELP
Checked by: GWB
Reviewed by: MJS
Submitted by: GWB

LAWRENCE AVIATION INDUSTRIES SUPERFUND SITE
PORT JEFFERSON STATION, NEW YORK

GROUNDWATER TREATMENT PLANT
CONTROL WIRING PULLBOX DETAIL

VERIFY SCALE BAR IS ONE INCH ON ORIGINAL DRAWING. IF NOT ONE INCH ON THIS SHEET ADJUST SCALES ACCORDINGLY

Scale: AS SHOWN
Spec. No.: -
Contract No.: -
Sheet reference number: C-04
Date: JANUARY 27, 2010
Drawing Code: -

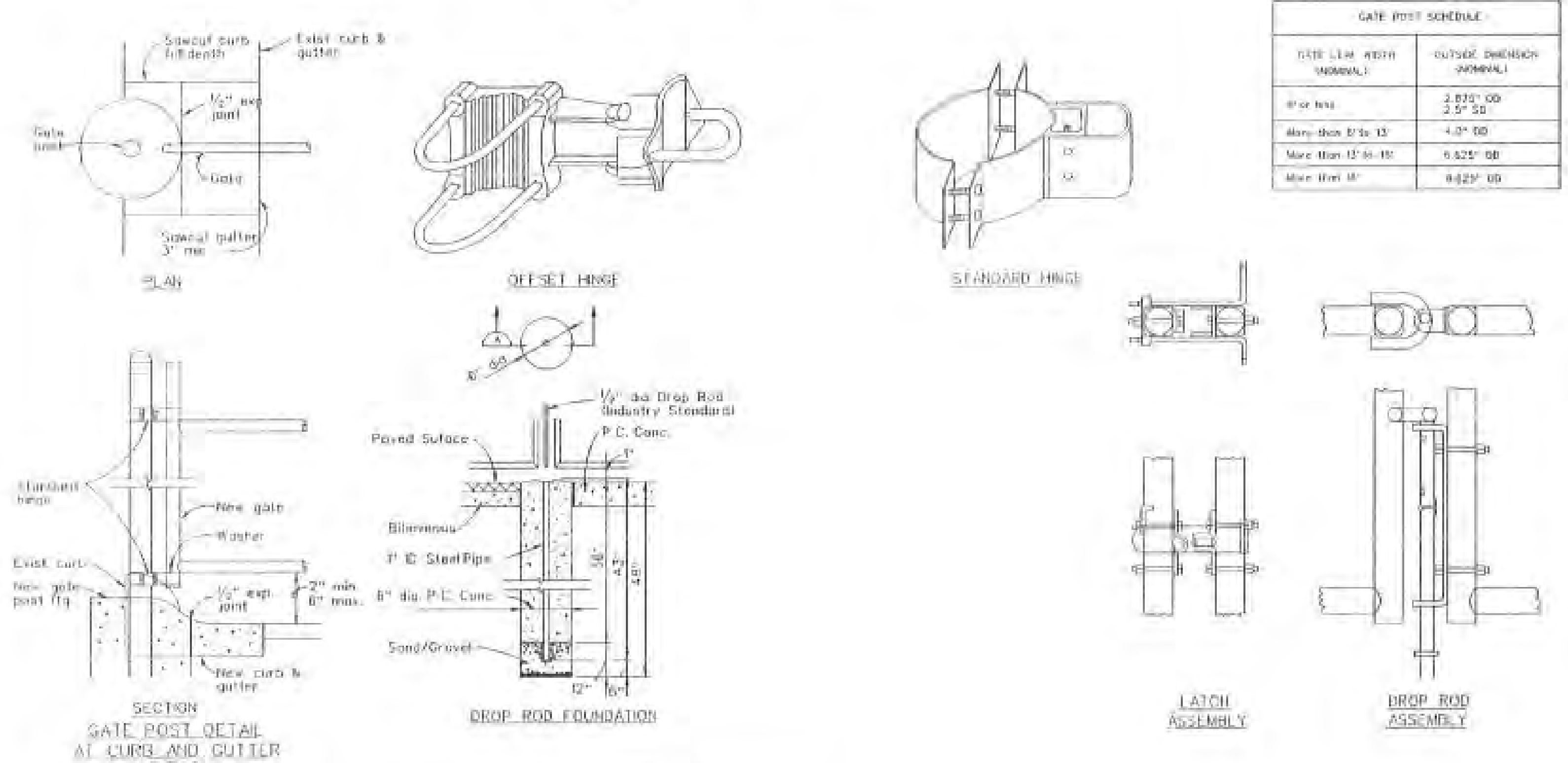


1 DOUBLE SWING GATE (TYPE FE-6 FENCE) NTS

2 SINGL SWING GATE (TYPE FE-6 FENCE) NTS

GATE POST SCHEDULE	
GATE LEAF WIDTH (NOMINAL)	OUTSIDE DIMENSION (NOMINAL)
6' or less	2.875" OD 2.5" SQ
More than 6' to 12'	4.0" OD
More than 12' to 18'	6.625" OD
More than 18'	8.625" OD

NOTES:
1. Details shown are to clarify requirements but are not intended to limit other type of fence accbure and methods of installation.
2. Swing Gates shall be constructed with drop rods, padlocks, latch assemblies and gate keepers except as noted.
3. All gate frames shall be a minimum 1.90" nominal (round) or 2.00" nominal (square). Gate frames shall be of welded construction or shall be assembled using heavy fittings. At Contractor's option a welded horizontal brace may be used in lieu of truss rods to brace all welded gate frames. The Contractor shall be responsible for the proper rigid construction of all gates supplied.



3 MISC FENCE DETAILS NTS

REV. #	Revisions	Date	Approved
	AS BUILT	10/10	
	ISSUED FOR CONSTRUCTION	5/19/10	
1	100 PERCENT DESIGN	3/19/10	

ARROWHEAD CONTRACTING INC.

CDM FEDERAL PROGRAMS NEW YORK, NEW YORK

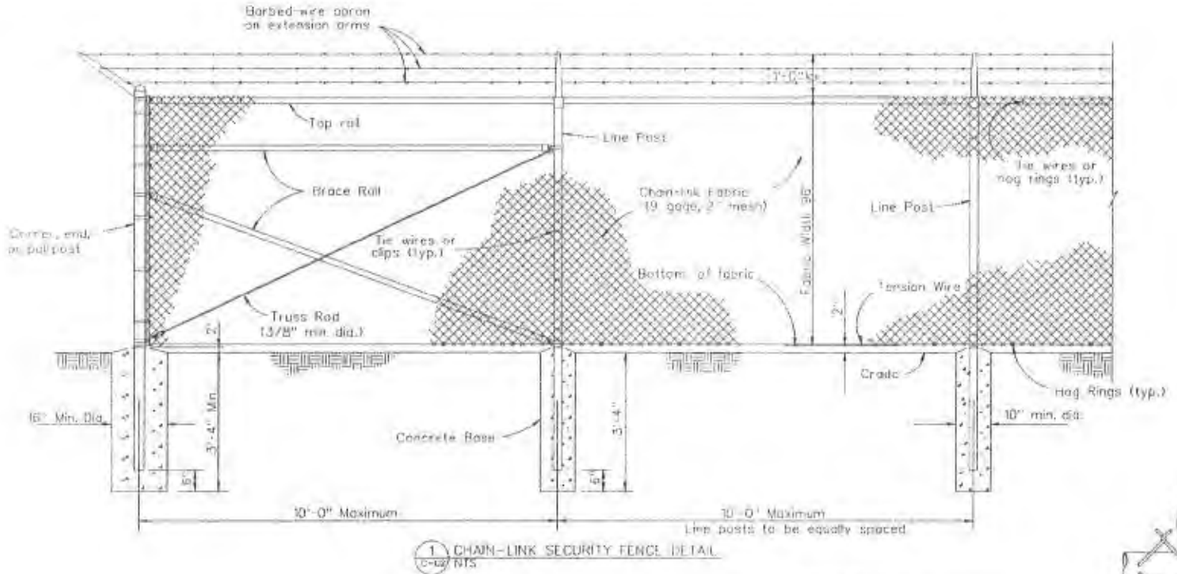
LAWRENCE AVIATION SUPERFUND SITE
PORT JEFFERSON STATION, NEW YORK

GROUNDWATER TREATMENT PLANT
FENCE DETAILS

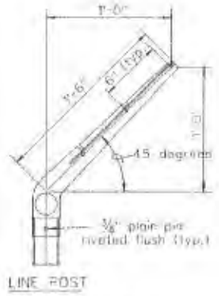
Designed by: DLP
Drawn by: DLP
Checked by: TWV
Reviewed by: SFS
Spec. Aprv. by: TWV

VERIFY SCALE
BAR IS ONE INCH ON ORIGINAL DRAWING
IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY

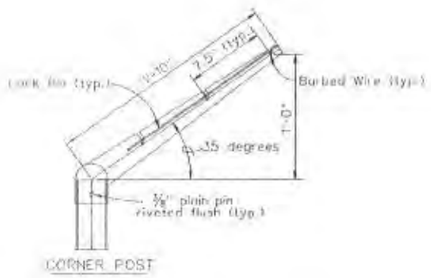
Scale: AS SHOWN
Sheet reference number: C-05
Date: JANUARY 07, 2010
Drawing Code:
Contract No.



1 CHAIN-LINK SECURITY FENCE DETAIL
C-02 NTS



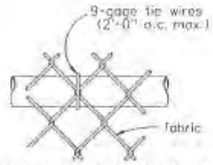
LINE POST



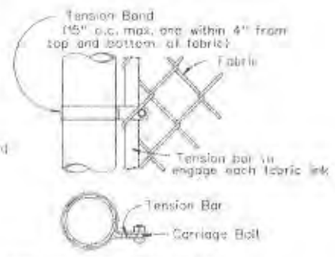
CORNER POST

2 CHAIN-LINK SECURITY FENCE DETAIL
C-02 NTS

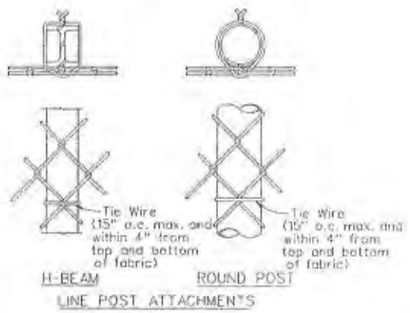
USE AND SECTION	STEEL POST SCHEDULE MINIMUM OUTSIDE DIMENSIONS (NOMINAL)		
	FABRIC LESS THAN 72"	FABRIC 72" TO 96"	FABRIC OVER 96"
Corner, End & Pull Posts			
Tubular - Round	2.375" O.D.	2.875" O.D.	4.00" O.D.
Tubular - Square	2.00" SQ.	2.50" SQ.	3.00" SQ.
C-Section (Roll-Formed)	3.50" x 3.50"	3.50" x 3.50"	———
Line Posts			
Tubular - Round	1.90" O.D.	2.375" O.D.	2.875" O.D.
H-Section	2.25" x 1.70"	2.25" x 1.70"	2.25" x 1.70"
C-Section (Roll-Formed)	1.875" x 1.625"	2.25" x 1.70"	———
Top, Bottom & Brace Rail			
Tubular - Round	1.66" O.D.		
Tubular - Square	1.50" O.D.		
H-Section	1.625" x 1.50"		
C-Section (Roll-Formed)	1.625" x 1.25"		



TOP OR BRACE RAIL ATTACHMENT

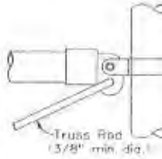


END OR GATE POST DETAIL



H-BEAM ROUND POST

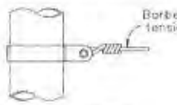
LINE POST ATTACHMENTS



ROUND POST

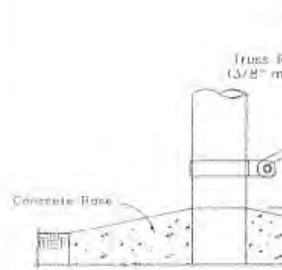
H-BEAM

BRACE RAIL CLAMP DETAILS

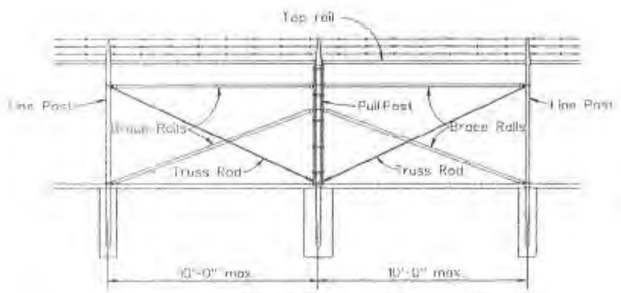


TENSION BAND DETAIL

FASTENING DETAILS
NO SCALE

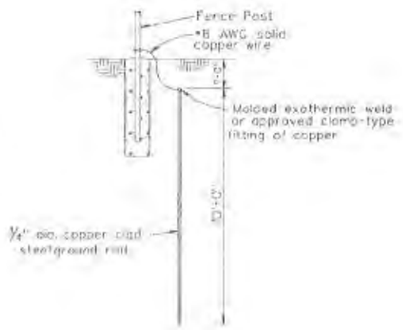


TRUSS ROD AND BAND



BRACE PANEL DETAIL
NO SCALE

NOTE:
Provide brace panel whenever straight runs exceed 500 feet



GROUNDING DETAIL
NO SCALE

3 MISC. FENCE DETAILS
C-02 NTS

NOTES:
1. Details shown are to clarify requirements and are not intended to limit other types of fence sections and methods of installation.
2. Wire ties, rails, posts, and braces shall be constructed on the secure side of the fence alignment. Chain-link fabric shall be placed on the opposite side of the secure area.
3. Unless specifically shown or specified, all FEE fence shall have apron extended outward from the area being protected.
4. Corner posts shall be installed so that the void inside the post is completely filled with concrete up to the top of the foundation.
5. Fences shall be type: FE6-TR-96

FENCE LEGEND:
Type FE5 - Chain-Link Fence Without barbed-wire apron
Type FE6 - Chain-Link Fence w/barbed-wire on single outrigger
Type FE7 - Chain-Link Fence w/barbed-wire on double outrigger
Type FE8 - Chain-Link Fence w/barbed-wire and barbed-tape on double outrigger
TR - Fence with top rail and tension wire at bottom
TOR - Fence with top and bottom rails
TWB - Tensior wire top and bottom
TWBR - Fence with top tension wire and bottom rail
Fence number is fabric width in inches.

Examples:
FE6-TR-72 - Chain-Link security fence with barbed-wire on single outrigger, top rail, and 72 inch fabric width
FE5-TWB-48 - Chain-Link security fence with no apron, top and bottom tension wire, and 48 inch fabric width

REV. #	Revisions	Date	Approved
	AS-BUILT	10/10	
	ISSUED FOR CONSTRUCTION	3/19/10	
1	100 PERCENT DESIGN	3/19/10	

ARROWHEAD CONTRACTING INC.
12101 Parker Drive
Lenexa, Kansas 66215
(913) 814-9994

CDM FEDERAL PROGRAMS
NEW YORK, NEW YORK

Designed By: DLR
Drawn By: DLR
Checked By: GWV
Rev. Exam By: SFS
Submitted By: GWV

LAWRENCE AVIATION INDUSTRIES SUPERFUND SITE
PORT JEFFERSON STATION, NEW YORK

GROUNDWATER TREATMENT PLANT
FENCE DETAILS

VERIFY SCALE
BAR IS ONE INCH ON ORIGINAL DRAWING
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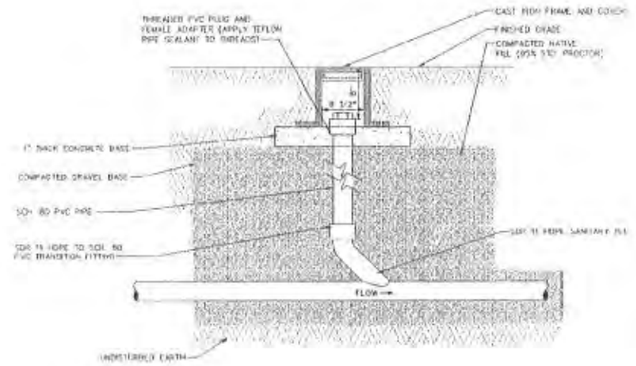
Date: JANUARY 27, 2010
Drawing Code: -
Spec. No.: -
Contract No.: -



2 CLEAN-OUT DETAIL
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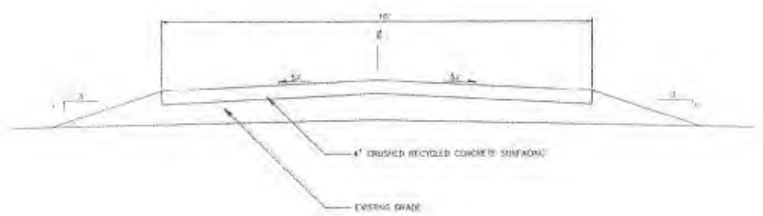
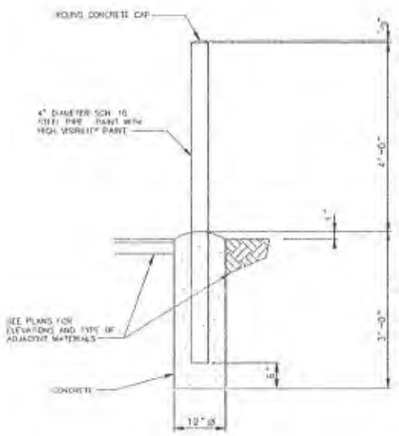


3 ACCESS ROAD DETAIL
NOT TO SCALE



4 BOLLARD POST DETAIL
NOT TO SCALE

REV #	Revisions	Date	Approved
	AS-BUILT	10/10	
	ISSUED FOR CONSTRUCTION	5/19/10	
1	100 PERCENT DESIGN	3/19/10	

ARROWHEAD CONTRACTING INC
10669 Bacon Drive
Littleton, Colorado 80127
(913) 814-9664

CDM FEDERAL PROGRAMS
NEW YORK, NEW YORK

Designed by: DLR
Drawn by: DLR
Checked by: GWW
Reviewed by: NFS
Submitted by: GWW

LAWRENCE AVIATION INDUSTRIES SUPERFUND SITE
FORT JEFFERSON STATION, NEW YORK

GROUNDWATER TREATMENT PLANT
CIVIL DETAILS

VERIFY SCALE
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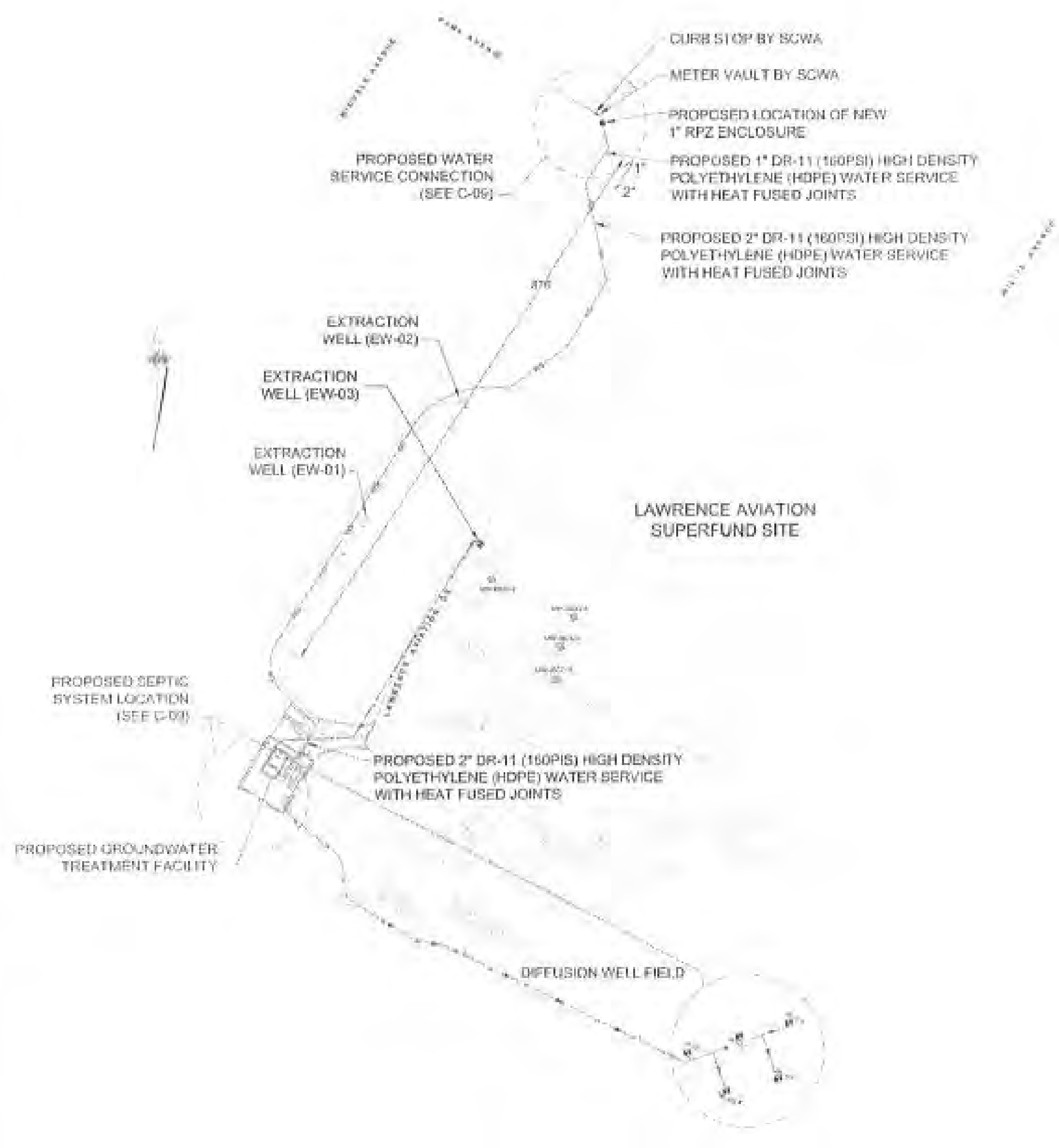
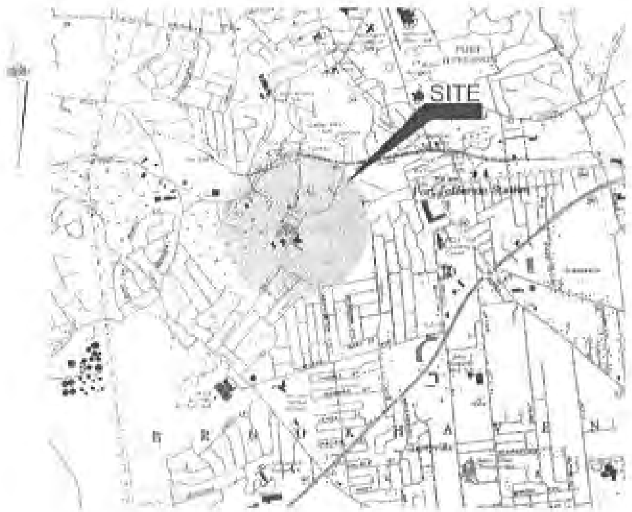
Sheet No.: 1
Contract No.: -
Sheet reference number: C-07
Date: JANUARY 27, 2010
Drawing Code: -

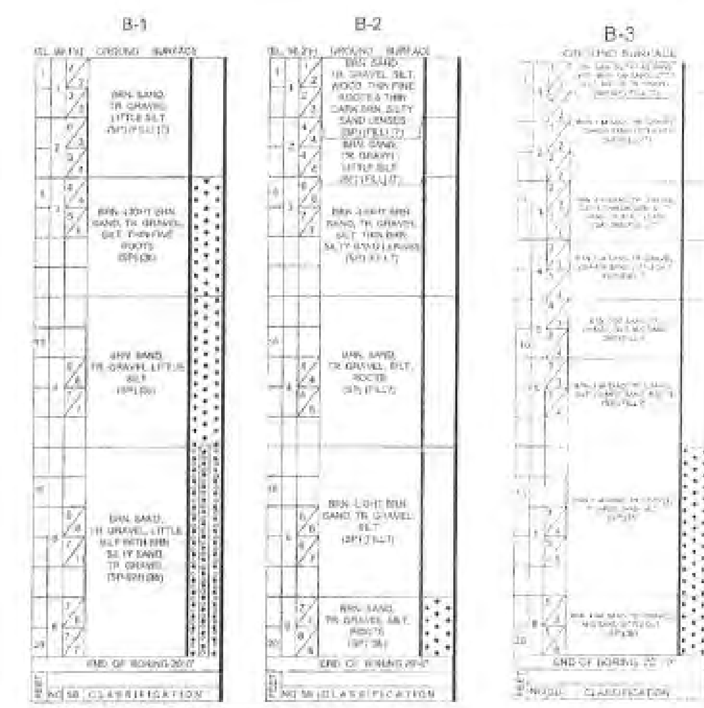


SITE PLAN

SCALE: 1" = 100'



VICINITY MAP



TEST HOLE

NOT TO SCALE

Site Data Summary

SCDHS Design Sanitary Flow

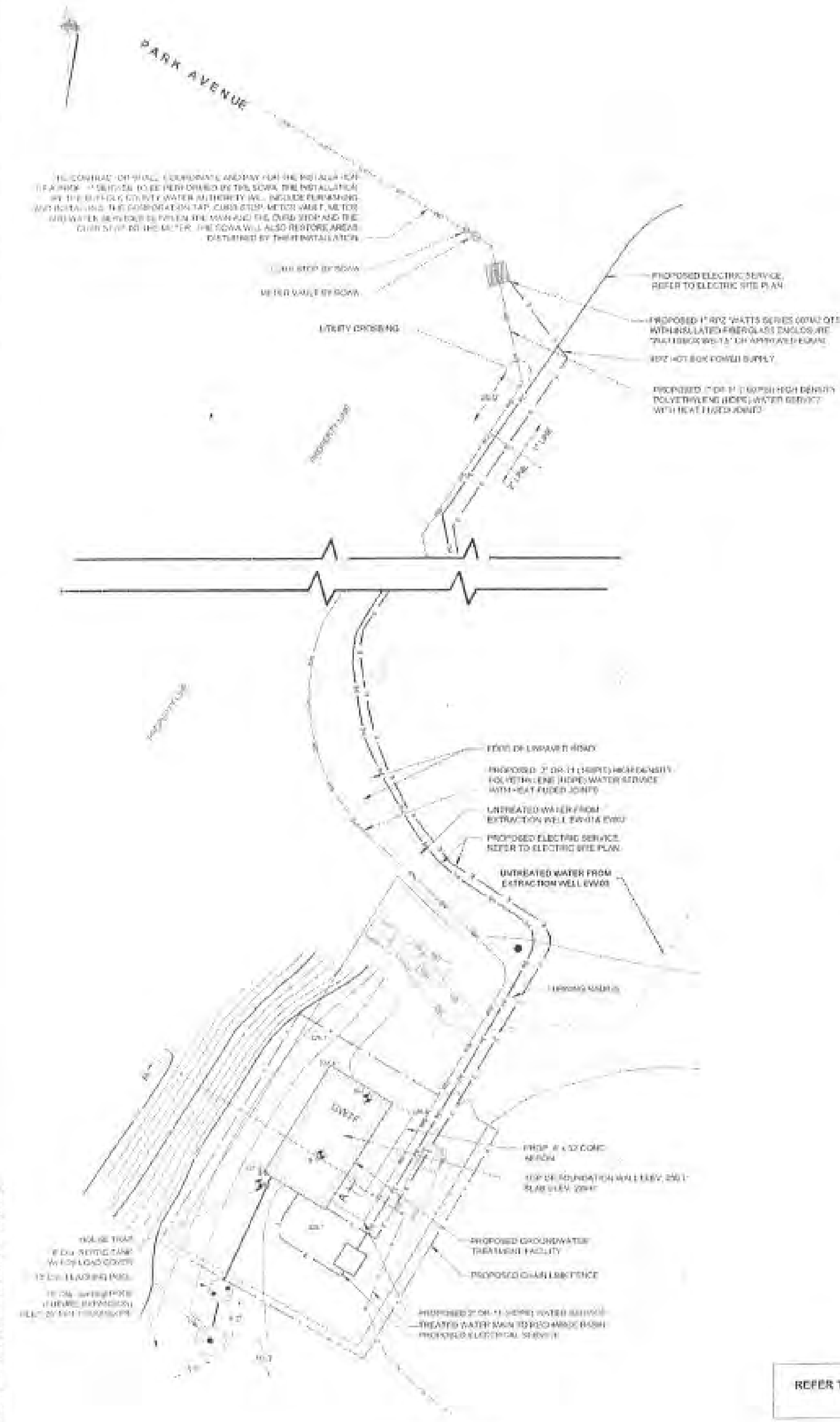
REFER TO DRAWING C-01 FOR AS-BUILT SITE PLAN

Rev	Revisions	Date
	AS-BUILT	10/10

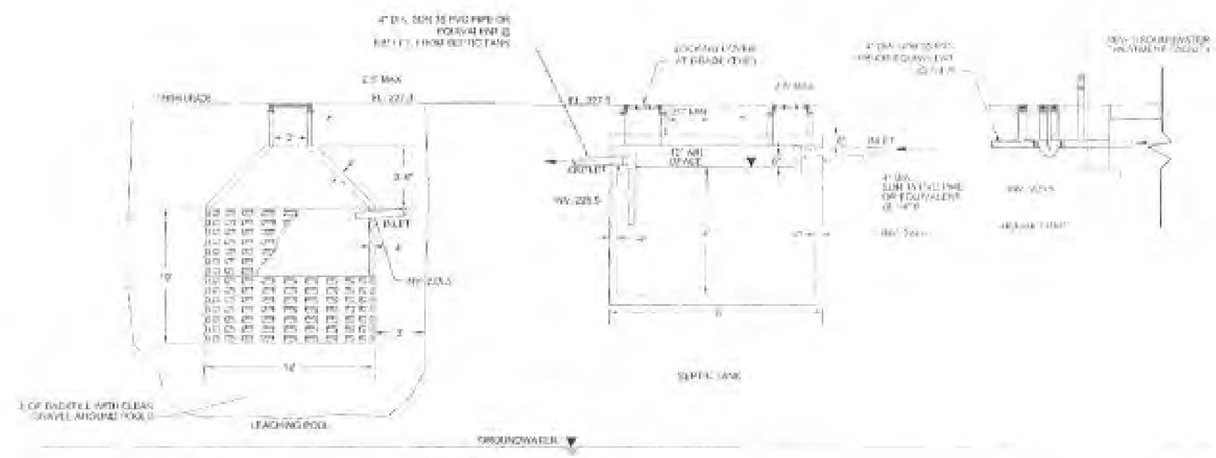
HGL

CDM FEDERAL PROGRAMS NEW YORK, NEW YORK

C-08

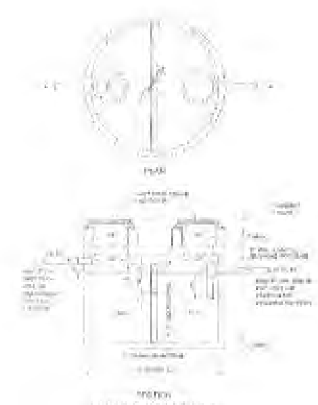


SANITARY PLAN



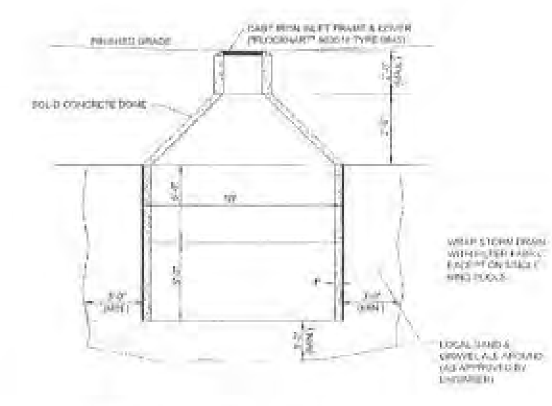
SANITARY PROFILE

SCALE: NOT TO SCALE



1,200 GAL. SEPTIC TANK

SCALE: NOT TO SCALE



LEACHING POOL DETAIL

SCALE: NOT TO SCALE

NOTES

1. THERE ARE NO PRIVATE OR PUBLIC POTABLE WATER SUPPLY WELLS WITHIN 200' OF THE PROPOSED SANITARY SYSTEM.
2. ALL MANHOLE COVERS SHALL BE INSECT PROOF, INSTALLED TO FLUSH WITH GRADE, AND SHALL BE DESIGNED FOR AASHTO H-20 LOADING.
3. ALL PRE-CAST STRUCTURES TO MEET SUFFOLK COUNTY DEPARTMENT OF HEALTH SERVICES STANDARDS.
4. USE (1) 1,200 GAL. REINFORCED PRE-CAST CONCRETE SEPTIC TANK.
5. USE (1) 10 FT DIAMETER, 10 FT HIGH AND PRE-CAST CONCRETE LEACHING POOLS.
6. USE 4 INCH DIAMETER APPROVED SEWER PIPE THROUGHOUT.
7. BACKFILL MATERIAL SHALL BE COARSE SAND AND GRAVEL.
8. BOTTOM OF LEACHING POOL SHALL BE A MINIMUM OF 3 FEET ABOVE HIGH SEASONAL GROUNDWATER.
9. SANITARY LINE CLEANOUTS TO BE PLACED AT EACH 45° BEND AND NO GREATER THAN 100' APART.
10. SEPTIC SYSTEM TO BE PLACED 25' MINIMUM AWAY FROM SLOPE.
11. ALL PRE-CAST CONCRETE STRUCTURES TO BE 4,000 PSI @ 28 DAYS, AND SHALL BE DESIGNED FOR AASHTO H-20 LOADING.

REFER TO DRAWING C-01 FOR AS-BUILT SITE PLAN

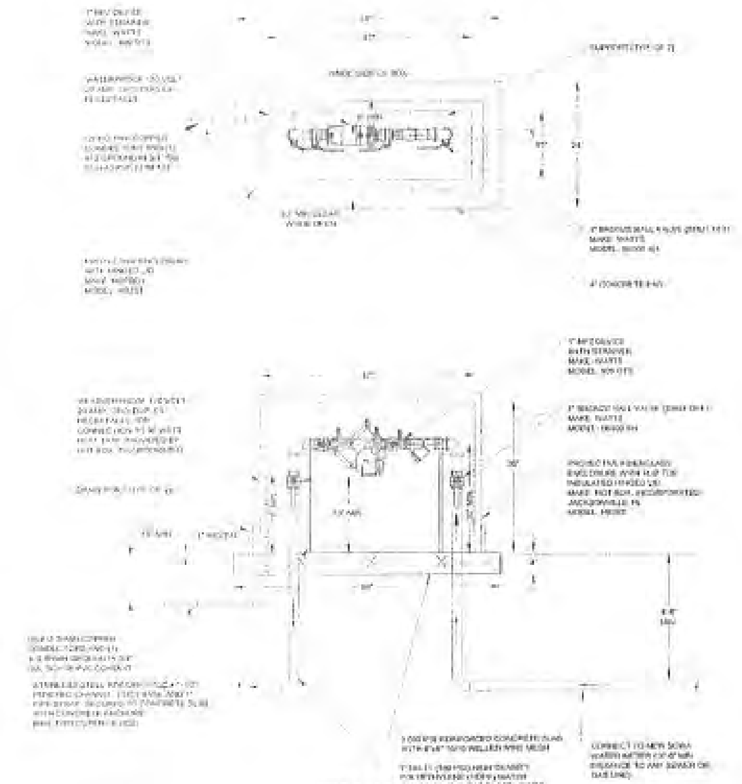
REV. #	REVISION	DATE	APPROVED
	ISSUED FOR CONSTRUCTION		
2	AS-BUILT REVISIONS	11/15/21	

HGL

CDM FEDERAL PROGRAMS
NEW YORK, NEW YORK

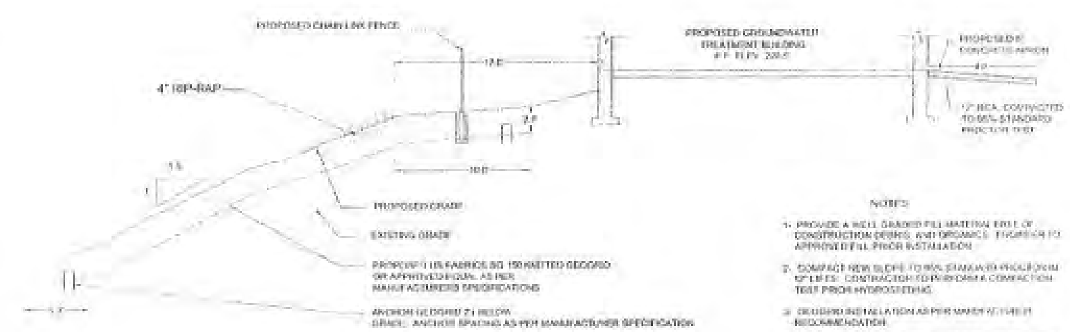
GROUNDWATER TREATMENT PLANT
UTILITY PLAN

C-03



RPZ DETAIL

SCALE: NOT TO SCALE



NOTES

1- PROVIDE A WELL GRADED FILL MATERIAL FREE OF CONSTRUCTION DEBRIS, AND ORGANICS. ENGINEER TO APPROVED FILL PRIOR INSTALLATION.

2- COMPACT NEW SLOPE TO 95% STANDARD PROCTOR IN 12" LIFTS. CONTRACTOR TO PERFORM A COMPACTION TEST PRIOR HYDROSEEDING.

3- GEOGRID INSTALLATION AS PER MANUFACTURER RECOMMENDATION.

4- PROVIDE APPROVED GEOGRID ANCHORING SPACED AS PER MANUFACTURER INSTRUCTION.

5- CONTRACTOR TO PROVIDE HYDROSEEDING MIXTURE TO BE APPROVED PRIOR TO INSTALLATION.

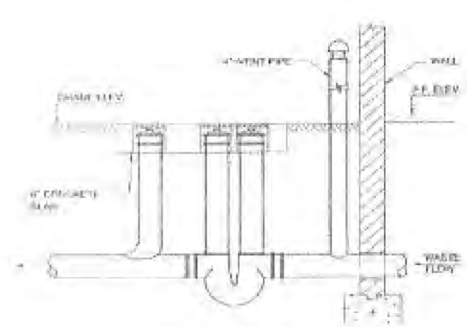
6- CONCRETE APRON TO BE 3,500 PSI CLASS A CONCRETE.

7- PROVIDE 6 x 6 W.W.F. AT TOP AND BOTTOM OF APRON (2" MIN. COVER).

8- PROVIDE 1" EXPANSION JOINT BETWEEN CONC. APRON AND BLDG. FOUNDATION.

SLOPE STABILIZATION PROFILE (SECTION A-A)

NOT TO SCALE



HOUSE TRAP DETAIL

NOT TO SCALE

NOTES

1. ALL PIPING WITHIN ENCLOSURE TO BE 1" DIAMETER TYPE K COPPER PIPING WITH BRASS SOLDERED FITTINGS.
2. EXPOSED RPZ, COPPER PIPING AND FITTINGS IN PROTECTIVE ENCLOSURE WRAPPED WITH 90 WATT HEAT TRACE TAPE PROVIDED BY HOT BOX, INCORPORATED.
3. SURROUNDING GRADE SHALL BE SLOPED AWAY FROM THE NEW CONCRETE SLAB.

Rev. #	Description	Date	Approved
1	ISSUED FOR CONSTRUCTION		
	AS-BUILT	10/10	

ARROWHEAD CONTRACTING INC

CDM FEDERAL PROGRAMS NEW YORK, NEW YORK

GROUNDWATER TREATMENT PLANT

SITE DETAILS

JANUARY 2010

C 10

14'-0" x 9'-0" INSULATED STEEL ROLL-UP DOOR

INTAKE DAMPER W/ MOTOR OPERATED LOUVER

INTERIOR STOOP

SKYLIGHT (TYP. 4 PLACES)

20lb TYPE ABC FIRE EXTINGUISHER

ALUMINUM RAMP

INSULATION BLANKET

8'-0" x 12'-0" INSULATED STEEL ROLL-UP DOOR

BOLLARD, SEE DETAIL 4 SHEET C-07

AIR STRIPPER

GEOTHERMAL HEAT PUMP

BAG FILTER

INFLUENT GROUNDWATER HEADER

AIR STRIPPER AIR INTAKE

CONCRETE PLASTER (TYP)

EFFLUENT GROUNDWATER HEADER

EXHAUST FAN W/ MOTOR OPERATED LOUVER

42'-0"

15'-7⅜"

14'

12'-10⅝"

3'-8⅝"

5'

3'-4¾"

2'

3'-8⅝"

CONCRETE DRIVEWAY

RAMP

SUMP

CONCRETE DRIVEWAY

EW-03 PIPE ENTERS THE FACILITY THROUGH A WALL PENETRATION

TREATMENT ROOM

RAMP

9'-0"

23'-9⅛"

2'-6"

10'-2⅝"

INSULATION BLANKET

VGAC EXHAUST STACK

3,000lb VAPOR PHASE GAC UNIT (TYP)

MCC

8'

16'-10"

CONTROL ROOM

EYEWSH STATION

FIXED PANE WINDOW

SERVICE SINK

36"x72" LANDING - REFER TO DETAIL 3, SHEET A-02

DESK

A/C / HEATER UNIT

A-A A-04

REFER TO DETAIL 1, SHEET A-04 FOR THROUGH WALL DETAIL

DESK

B-B A-04

5'-8½"

8'

BATHROOM

TANKLESS HOT WATER HEATER

ALUMINUM RAMP

FLOOR PLAN

NOTE:
ARCHITECTURAL ELEVATION 100'-0" CORRESPONDS TO CIVIL ELEVATION 229.6 FT. AMSL

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

NO. #	Revisions	Date	Approved
3.	AS-BUILT REVISIONS	11/15/11	
	AS-BUILT	10/16	
2	REVISED INTERIOR WALL PLACEMENT	7/28/10	
	ISSUED FOR CONSTRUCTION	5/19/10	
1.	100 PERCENT DESIGN	3/19/10	

HGL

CDM FEDERAL PROGRAMS NEW YORK, NEW YORK

Designed by: DLR	LAWRENCE AVIATION INDUSTRIES SUPERFUND SITE PORT JEFFERSON STATION, NEW YORK
Drawn by: DLR	GROUNDWATER TREATMENT PLANT BUILDING PLAN
Checked by: GWV	
Reviewed by: SFS	Scale: AS SHOWN
Submitted by: GWV	Sheet No.: -
	Contract No.: -
	Sheet reference number: A-01
	Date: JANUARY 27, 2010
	Drawing Code:

VERIFY SCALE
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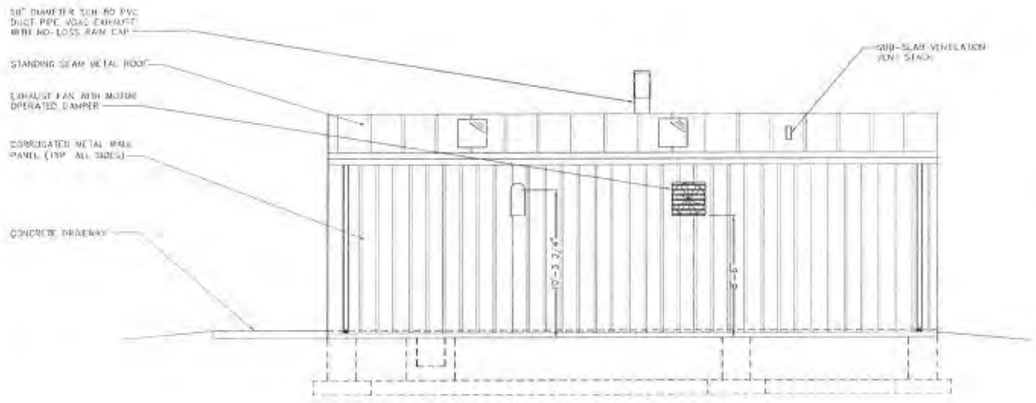
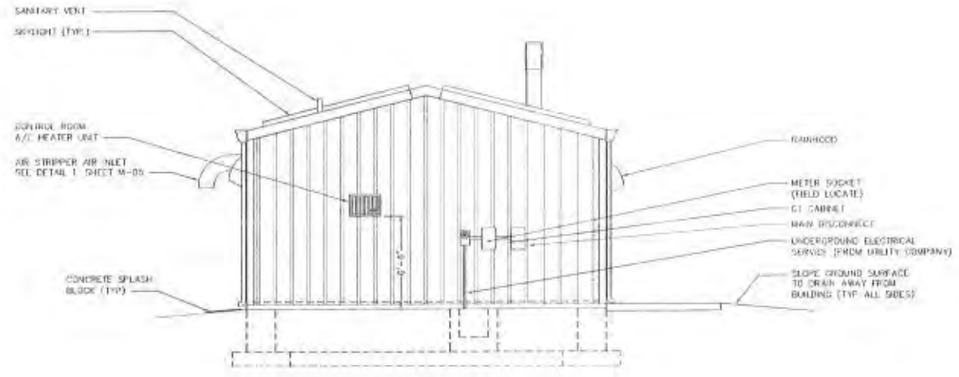
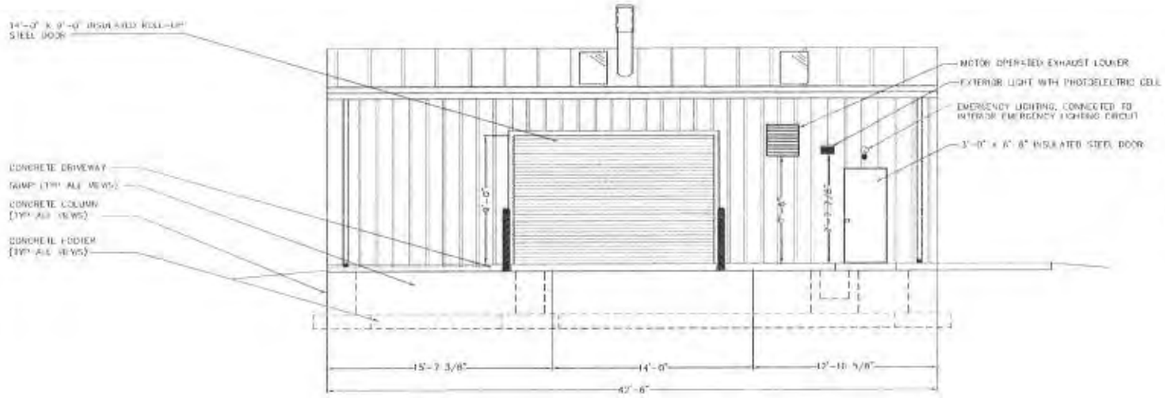
NOTE
ARCHITECTURAL ELEVATION 100'-0"
CORRESPONDS TO CIVIL ELEVATION
229.6 FT AMSL



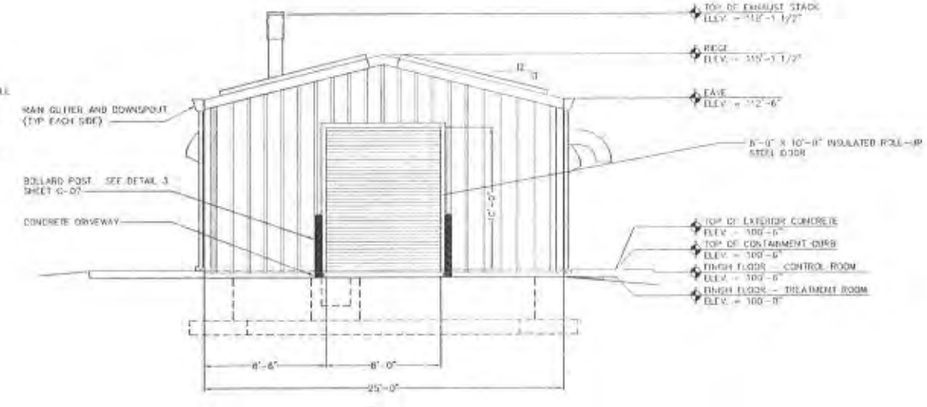
1 WEST ELEVATION



2 SOUTH ELEVATION



3 EAST ELEVATION



4 NORTH ELEVATION

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

REV. #	Revisions	Date	Approved
	AS-BUILT	10-10	
	ISSUED FOR CONSTRUCTION	5/19/10	
1	100 PERCENT DESIGN	3/19/10	

ARROWHEAD CONTRACTING INC
10581 Eicher Drive
Lenexa, Kansas 66219
(913) 814-9994

CDM FEDERAL PROGRAMS
NEW YORK, NEW YORK

LIVERMORE AVIATION INDUSTRIES SUPERFUND SITE
PORT JEFFERSON STATION, NEW YORK

GROUNDWATER TREATMENT PLANT
BUILDING ELEVATION VIEW

Designed by: BLR			
Drawn by: BLR			
Checked by: DVN			
Reviewed by: SCV	Scale: AS SHOWN	Sheet reference number: A-02	Date: JANUARY 27, 2010
Submitted by: DVN	Spec. No.: - Contract No. -		Drawing Code: -

VERIFY SCALE
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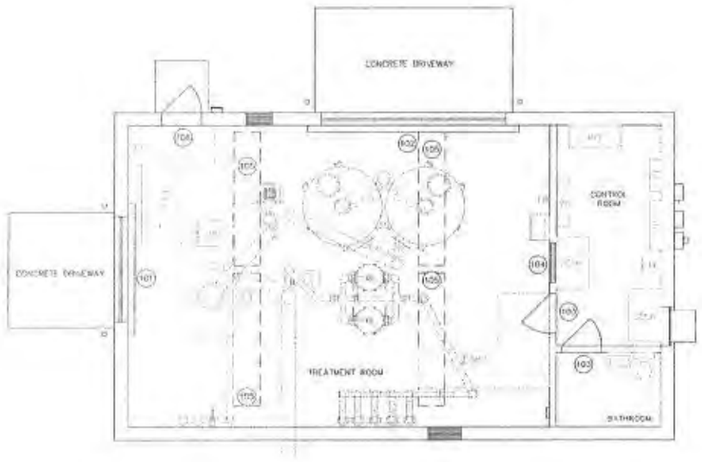
DOOR AND WINDOW SCHEDULE

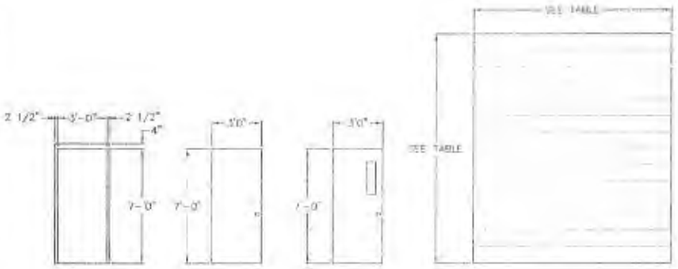
NO.	DOOR/WINDOW SIZE	DOOR/WINDOW MATERIAL	DOOR/WINDOW FINISH	DOOR/WINDOW TYPE	FRAME MATERIAL	FRAME FINISH	FRAME TYPE	DOOR FIRE RATING	DETAILS	REMARKS
101	8'-0" x 10'-0"	ST	PAINT	C	ST	PAINT	–	–	MANUFACTURERS STD. DETAIL	ROLL-UP, INSULATED
102	14'-0" x 9'-0"	ST	PAINT	C	ST	PAINT	–	–	MANUFACTURERS STD. DETAIL	ROLL-UP, INSULATED
103	3'-0" x 7'-0"	HM	PAINT	A	HM	PAINT	A	–	MANUFACTURERS STD. DETAIL	INSULATED
104	5'-0" x 2'-6"	–	–	–	HM	PAINT	–	–	FIXED SINGLE PANE GLASS	
105	2'-0" x 10'-6"	–	–	–	–	–	–	–		
106	3'-0" x 7'-0"	HM	PAINT	B	HM	PAINT	A	–	MANUFACTURERS STD. DETAIL	INSULATED W/ SIDELIGHT

FINISH SCHEDULE

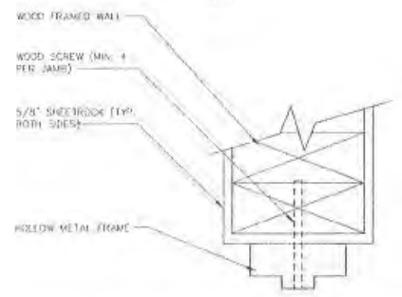
ROOM		TYPE	FINISH	COLOR	REMARKS
EXTERIOR TREATMENT BUILDING	WALLS	METAL	PAINT	LIGHT STONE	METAL PANELS TO BE FACTORY PAINTED
	ROOF	METAL	PAINT	TAUPE SAND	METAL PANELS TO BE FACTORY PAINTED
	TRIM/GUTTER	METAL	PAINT	LIGHT STONE	METAL PANELS TO BE FACTORY PAINTED
TREATMENT ROOM	WALLS	METAL	PAINT	POLAR WHITE	METAL PANELS TO BE FACTORY PAINTED
	FLOOR	CONCRETE	NONE		
CONTROL ROOM	WALLS	DRYWALL	PAINT	LIGHT GRAY	
	FLOOR	CONCRETE	PAINT	GRAY	
	CEILING	DRYWALL	PAINT	LIGHT GRAY	
BATHROOM	WALLS	DRYWALL	PAINT	LIGHT GRAY	
	FLOOR	CONCRETE	PAINT	GRAY	
	CEILING	DRYWALL	PAINT	LIGHT GRAY	
BOLLARD POSTS	–	STEEL	PAINT	SAFETY YELLOW	



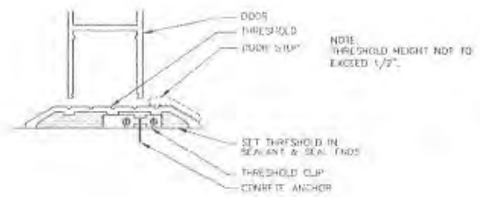
FLOOR PLAN
NTS



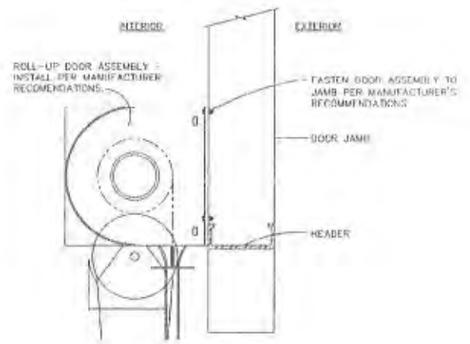
FRAME TYPE "A" DOOR TYPE "A" DOOR TYPE "B" DOOR TYPE "C"

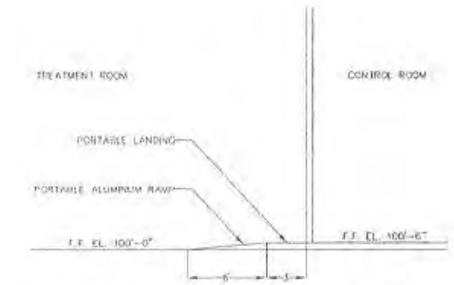


1 A-03 WOOD FRAMED WALL DOOR/WINDOW JAMB
NTS

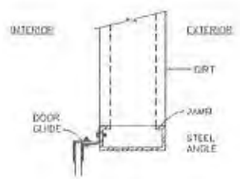


2 A-03 ENTRY DOOR TRESHOLD
NTS





3 A-03 PORTABLE INTERIOR LANDING DETAIL
NTS



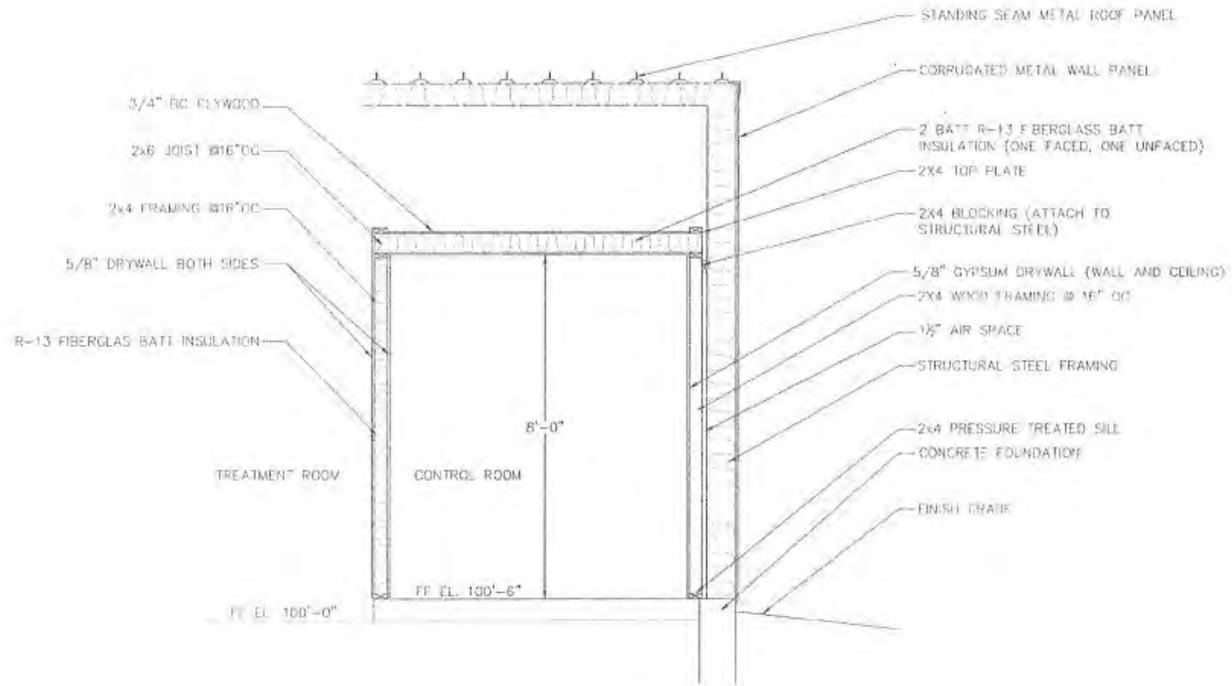
4 A-03 STEEL OVERHEAD DOOR
NTS

REV. #	Revisions	Date	Approved
	AS-BUILT	10/10	
	ISSUED FOR CONSTRUCTION	5/19/10	
1	100 PERCENT DESIGN	3/19/10	

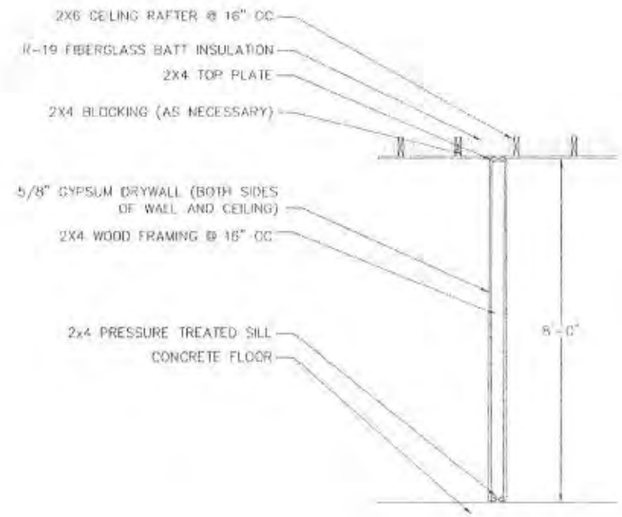
ARROWHEAD CONTRACTING INC.
11067 Davis Drive
Lenexa, Kansas 66219
(913) 814-9988

CDM FEDERAL PROGRAMS
NEW YORK, NEW YORK

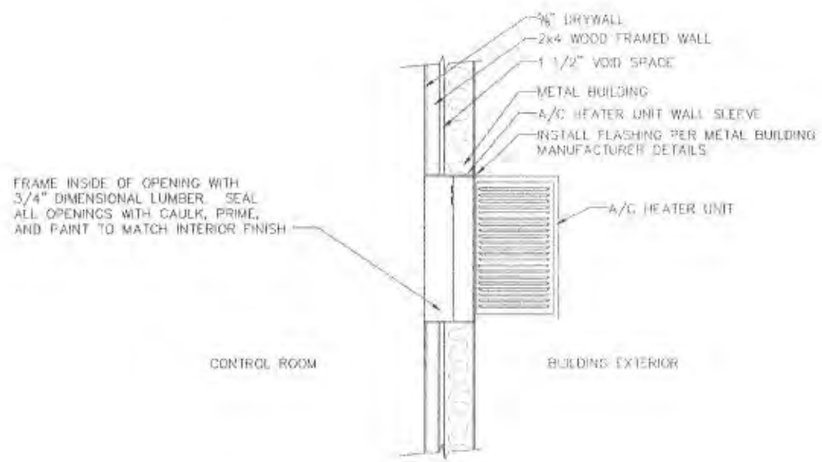
Designed by: SLR	LAWRENCE AVIATION INDUSTRIES SUPERFUND SITE FORT JEFFERSON STATION, NEW YORK
Drawn by: SLR	GROUNDWATER TREATMENT PLANT DOOR SCHEDULE AND FINISH SCHEDULE
Checked by: GWH	
Reviewed by: SFS	Scale: AS SHOWN
Submitted by: GWH	Spec. No.: Contract No.:
	Sheet reference number: A-03
	Date: JANUARY 27, 2010
	Drawing Code: –



A-A' / A-01 | A-04 CONTROL ROOM/BATHROOM EXTERIOR WALL CONSTRUCTION DETAIL
NTS



B-B' / A-01 | A-04 CONTROL ROOM/OFFICE INTERIOR WALL CONSTRUCTION DETAIL
NTS



1 / A-01 | A-04 EXTERIOR FRAMED OPENING DETAIL
NTS

REV #	Revisions	Date	Approved
	AS-BUILT	10/10	
	ISSUED FOR CONSTRUCTION	5/19/10	
1	100 PERCENT DESIGN	3/19/10	

ARROWHEAD CONTRACTING INC
[illegible]

CDM FEDERAL PROGRAMS
NEW YORK, NEW YORK

Designed by: DLR	LAWRENCE AVIATION INDUSTRIES, SMITHTOWN, NEW YORK FORT JEFFERSON STATION, NEW YORK
Drawn by: DLR	GROUNDWATER TREATMENT PLANT CONTROL ROOM/BATHROOM PARTITION WALL CONSTRUCTION DETAILS
Checked by: GWK	
Reviewed by: SFS	Scale: AS SHOWN
Submitted by: GWK	Sheet reference number: A-04
	Date: JANUARY 27, 2010
	Drawing Code: -

VERIFY SCALE
BAR IS ONE INCH ON ORIGINAL DRAWING
IF NOT ONE INCH ON THIS SHEET ADJUST SCALE ACCORDINGLY

STRUCTURAL SPECIFICATIONS

I. CODES AND STANDARDS

A. ALL WORK SHALL CONFORM TO THE REQUIREMENTS OF THE "NEW YORK STATE BUILDING CODE", LATEST EDITION, WITH THE SPECIFICATION, AND WITH THE REGULATIONS OF ALL GOVERNMENTAL AGENCIES HAVING JURISDICTION.

B. WHERE MORE STRINGENT, THE LATEST EDITION OF THE FOLLOWING CODES SHALL APPLY TO WORK:

1. "BUILDING CODE REQUIREMENTS FOR STRUCTURAL CONCRETE", ACI 318.
2. "STANDARD PRACTICE FOR SELECTING PROPORTIONS FOR NORMAL, HEAVYWEIGHT AND MASS CONCRETE", ACI 211.1.
3. "RECOMMENDED PRACTICE FOR EVALUATION OF STRENGTH TEST RESULTS OF CONCRETE", ACI 214.
4. "SPECIFICATIONS FOR STRUCTURAL CONCRETE FOR BUILDING", ACI 301.
5. "RECOMMENDED PRACTICE FOR MEASURING, MIXING, TRANSPORTING AND PLACING CONCRETE", ACI 304.
6. "PLACING CONCRETE BY PUMPING METHODS", ACI 304.2R.
7. "HOT WEATHER CONCRETING", ACI 305R.
8. "COLD WEATHER CONCRETING", ACI 306R.
9. "STANDARD PRACTICE FOR CURING CONCRETE", ACI 308.
10. "STANDARD PRACTICE FOR CONSOLIDATION OF CONCRETE", ACI 309.
11. "CONCRETE SANITARY ENGINEERING STRUCTURES", ACI 350R.
12. "BUILDING CODE REQUIREMENTS FOR CONCRETE MASONRY STRUCTURES", ACI 531.

C. REFERENCE DOCUMENTS:

1. "ACI DETAILING MANUAL - 1988" SP-66 (INCLUDES ACI 315-80 AND ACI 315R-80).
2. "MANUAL OF STANDARD PRACTICE", CONCRETE REINFORCING STEEL INSTITUTE.
3. "STANDARD TOLERANCES FOR CONCRETE CONSTRUCTION AND MATERIALS", ACI 117.
4. "RECOMMENDED PRACTICE FOR CONCRETE FORMWORK", ACI 347 WITH THE SPECIFIC DELETION OF REFERENCE TO TOLERANCES WHERE IN CONFLICT WITH THIS SPECIFICATION. TOLERANCES GIVEN IN ACI 117 SHALL APPLY TO THE WORK.
5. "NATIONAL DESIGN SPECIFICATION FOR WOOD CONSTRUCTION", NATIONAL FOREST PRODUCTS ASSOCIATION.

II. GENERAL

A. THIS PROJECT HAS BEEN DESIGNED FOR THE WEIGHTS OF MATERIALS INDICATED IN THE DESIGN DATA. IT IS THE CONTRACTOR'S RESPONSIBILITY TO DETERMINE ALLOWABLE CONSTRUCTION LOADS AND TO PROVIDE PROPER DESIGN AND CONSTRUCTION OF FALSEWORK, FORMWORK, STAGING, BRACING, SHEETING, SHORING, ETC.

B. PRIOR TO CONSTRUCTION, CONTRACTOR SHALL VERIFY STRUCTURAL ELEVATIONS AND DIMENSIONS WITH EXISTING CONDITIONS AND WITH OTHER DRAWINGS. COORDINATE LOCATION OF SLEEVES AND OPENINGS THROUGH THE STRUCTURE, SLAB DEPRESSIONS, FLOOR DRAINS, INSERTS AND OTHER RELATED ITEMS.

C. CONTRACTOR SHALL BE SOLELY RESPONSIBLE FOR THE CORRECTNESS OF DIMENSIONS OR QUANTITIES AND FOR THE FITTING TO OTHER WORK, FOR WORK TO BE CONFIRMED AND CORRELATED AT THE SITE, FOR INFORMATION PERTAINING TO THE FABRICATION PROCEDURE OR TO THE MEANS, METHODS, TECHNIQUES, SEQUENCES AND PROCEDURES OF CONSTRUCTION, AND FOR THE COORDINATION OF STRUCTURAL WORK WITH THE WORK OF ALL OTHER TRADES. THE VERIFICATION OF THE PHYSICAL INTERRELATIONSHIPS OF ELEMENTS OF THE WORK FROM PLANS AND SPECIFICATIONS AND IN THE FIELD IS THE CONTRACTOR'S SOLE RESPONSIBILITY. REVIEW OF CONTRACTOR'S SUBMISSIONS DOES NOT RELIEVE CONTRACTOR FROM THESE RESPONSIBILITIES.

D. SEE ARCHITECTURAL DRAWINGS FOR DETAILS AND LOCATION OF OPENINGS, DEPRESSIONS IN WALLS AND SLABS AND OTHER DIMENSIONS NOT SHOWN IN STRUCTURAL DRAWINGS.

SEE ARCHITECTURAL, MECHANICAL AND ELECTRICAL DRAWINGS FOR INFORMATION REGARDING SIZE AND LOCATION OF OPENINGS FOR DUCTS, PIPES, CONDUITS, MACHINE PADS, ETC.

PROPOSED OPENINGS OR RECESSES IN THE STRUCTURE WHICH ARE NOT SHOWN IN THE STRUCTURAL DRAWINGS, EITHER DIRECTLY OR BY TYPICAL DETAIL, SHALL BE SUBMITTED FOR ACCEPTANCE.

III. REINFORCED CONCRETE

A. UNLESS OTHERWISE NOTED:

1. ALL REINFORCING STEEL SHALL BE DEFORMED BARS CONFORMING TO ASTM A615, GRADE 60.
2. WELDED WIRE FABRIC SHALL CONFORM TO ASTM A185.

B. CONCRETE MIX DESIGNS REQUIRED ARE LISTED BELOW. ALL CONCRETE MIXES SHALL CONFORM TO THE PROVISIONS FOR CONCRETE QUALITY CONTAINED IN CHAPTER 5, ACI 318. COMPRESSIVE STRENGTH, F'C, IS MEASURED AT 28 DAYS AGE, EXCEPT IF HIGH STRENGTH CEMENT IS USED F'C IS MEASURED AT 7 DAYS AGE.

f'c (PSI)*	MINIMUM CEMENT (LBS. PER C.Y.)	MAXIMUM SLUMP (IN.)	MAXIMUM WATER CEMENT RATIO
3,500 NORMAL WEIGHT (SUPERPLASTICIZED)	700	3"**	0.38
3,500	570	5	0.45

* f'c SHALL BE 28 DAY STRENGTH.
** PRIOR TO ADDITION OF HRWR ADMIXTURE.

C. PROVIDE CONCRETE WITH THE FOLLOWING PROPERTIES IN THE LOCATIONS INDICATED:

f'c	COARSE AGGREGATE	LOCATIONS
4,000 PSI	NORMAL WEIGHT (SUPER PLASTICIZED)	FOUNDATION WALLS, FOOTINGS AND BASE SLAB
4,000 PSI	NORMAL WEIGHT	ALL CONCRETE UNLESS SPECIFICALLY SHOWN OTHERWISE

D. WATER REDUCING ADMIXTURE SHALL BE INCORPORATED INTO ALL CONCRETE AT A MINIMUM DOSAGE AS RECOMMENDED BY THE MANUFACTURER. ALL CONCRETE OTHER THAN FOR FOOTINGS SHALL BE AIR ENTRAINED TO 4 TO 6 PERCENT. EXTERIOR CONCRETE SHALL BE AIR ENTRAINED TO 5 TO 7 PERCENT. CALCIUM CHLORIDE IS NOT PERMITTED FOR USE IN CONCRETE.

E. SPLICING OF REINFORCEMENT IS PERMITTED ONLY AT LOCATIONS SHOWN IN THE CONTRACT DRAWINGS OR AS ACCEPTED BY THE ENGINEER. UNLESS OTHERWISE SHOWN OR NOTED REINFORCING STEEL SHALL BE SPLICED TO DEVELOP ITS FULL TENSILE CAPACITY IN ACCORDANCE WITH ACI 318.

F. REINFORCING BAR DEVELOPMENT LENGTHS SHALL BE IN ACCORDANCE WITH ACI 318 UNLESS NOTED OTHERWISE.

G. DETAILING OF REINFORCING STEEL SHALL CONFORM TO "ACI MANUAL OF STANDARD PRACTICE FOR DETAILING REINFORCED CONCRETE STRUCTURES" (ACI 315).

H. MINIMUM CONCRETE COVER FOR REINFORCEMENT (SUBJECT TO TOLERANCES PERMITTED BY CODE) SHALL BE AS GIVEN IN PARAGRAPH 7.7.1 OF ACI 318 UNLESS OTHERWISE INDICATED.

I. ALL WALL AND FLOOR SLAB CONSTRUCTION SHALL BE CAST MONOLITHICALLY WITHOUT HORIZONTAL CONSTRUCTION JOINTS, UNLESS SHOWN IN THE CONTRACT DRAWINGS.

J. SUPERPLASTICIZED CONCRETE: PREPARE WITH A HIGH RANGE, WATER REDUCING ADMIXTURE (HRWR). CONTRACTOR'S MIX DESIGN SHALL INCLUDE ALSO WRITTEN DESCRIPTIONS OF CONTRACTOR'S METHODS FOR MIXING, PLACING AND CONVEYING SUCH CONCRETE. HRWR MIXES SHALL BE PREPARED TO PROVIDE CONCRETE WITH 8 INCH MAXIMUM SLUMP WHILE ADHERING TO THE WATER CEMENT RATIO MAXIMUM SPECIFIED. HRWR MIXES SHALL ARRIVE AT THE JOB SITE AT 3" MINIMUM SLUMP, BE VERIFIED, THEN HIGH RANGE WATER REDUCING ADMIXTURE ADDED TO INCREASE SLUMP TO AN ACCEPTABLE LEVEL.

K. LOCATION OF ALL CONSTRUCTION JOINTS ARE SUBJECT TO THE REQUIREMENTS OF THE CONTRACT DOCUMENTS, CONFORMANCE WITH ACI 318, AND ACCEPTANCE OF THE ENGINEER.

L. SPLICES OF WWF, AT ALL SPLICED EDGES, SHALL BE SUCH THAT THE OVERLAP MEASURED BETWEEN OUTERMOST CROSS WIRES OF EACH FABRIC SHEET IS NOT LESS THAN THE SPACING OF THE CROSS WIRE PLUS 2 INCHES, NOR LESS THAN 6", AND IN ACCORDANCE WITH PARAGRAPH 12.18 OF ACI 318.

M. WELDING OF REINFORCING BARS IS PROHIBITED.

N. BAR SUPPORTS SHALL BE ALL GALVANIZED METAL WITH PLASTIC TIPS.

O. ALL REINFORCEMENT SHALL BE SECURELY TIED IN PLACE TO PREVENT DISPLACEMENT BY CONSTRUCTION TRAFFIC OR CONCRETE. TIE WIRE SHALL BE 16 GAUGE CONFORMING TO ASTM A82.

P. REINFORCING STEEL SUPPORTED ON THE GROUND SHALL BE PLACED ON PRECAST BLOCKS PRODUCED SPECIFICALLY FOR THE INTENDED PURPOSE.

Q. SLAB-ON-GROUND:

1. CAST OVER A MINIMUM OF 12 INCHES OF FREE DRAINING GRAVEL FILL.
2. PROVIDE VAPOR BARRIER OVER GRAVEL FILL AS BOTTOM FORM FOR SLAB ON GROUND. OVERLAP JOINTS AND BOND TOGETHER IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS. PROVIDE MOISTOP [illegible] BY FORTIFIBER CORP. OR OTHER ACCEPTED BY ENGINEER.

IV. FOUNDATIONS

A. ALL FOOTINGS ARE DESIGNED TO BEAR ON UNDISTURBED SOIL WITH A MINIMUM BEARING CAPACITY OF 2.5 TONS PER SQUARE FOOT. ALL EXISTING LOOSE FILL AND UNSATISFACTORY BEARING MATERIAL SHALL BE REMOVED FROM THE SITE.

B. DEWATERING SHALL BE PROVIDED AS REQUIRED SO THAT EXCAVATION, CONCRETE WORK AND BACKFILLING ARE PERFORMED IN THE DRY.

C. TEMPORARY BRACING, SHEETING AND SHORING, ETC. SHALL BE THE SOLE RESPONSIBILITY OF THE CONTRACTOR, AND SHALL BE DESIGNED, FABRICATED AND INSTALLED IN ACCORDANCE WITH ACCEPTED DRAWINGS PREPARED AND SEALED BY A PROFESSIONAL ENGINEER REGISTERED IN THE STATE OF NEW YORK.

D. CONTRACTOR SHALL NOT POUR CONCRETE UNTIL FIELD BORINGS HAS BEEN PERFORMED AND CHECKED BY THE ENGINEER.

V. MISCELLANEOUS MATERIAL

A. JOINT FILLER - PREFORMED, NON-EXTRUDING, RESILIENT TYPE, NON-ASPHALTIC CONFORMING TO ASTM D1752.

B. DRILLED-IN ANCHORS INTO WORK SHALL BE EXPANSION TYPE UNLESS NOTED OTHERWISE. ACCEPTABLE ANCHORS: KWIK BOLT II BY HILTI FASTENING SYSTEMS, TULSA, OKLAHOMA, RED HEAD WEDGE ANCHORS BY ITT PHILLIPS DRILL DIVISION OR OTHER ACCEPTED BY ENGINEER.

VI. SUBMITTALS

A. GENERAL: SUBMIT SAMPLES, SHOP DRAWINGS, PRODUCT DATA, TEST REPORTS AND DATA, MANUFACTURER'S NAMES, CERTIFICATIONS AND PROCEDURES FOR ALL SPECIFIED ITEMS AND AS REQUESTED. SHOP DRAWINGS SHALL CONFORM TO THE BEST STANDARDS OF THE CONSTRUCTION INDUSTRY, AND SHALL BE PREPARED BY AND UNDER THE SUPERVISION OF COMPETENT ENGINEERING PERSONNEL.

B. REINFORCED CONCRETE:

1. SUBMIT REINFORCING STEEL SHOP DRAWINGS INCLUDING APPLICABLE BAR LISTS AND BENDING SCHEDULES. INDICATE ALL LAP LENGTHS AND LOCATIONS AND CLEAR COVER ON REINFORCING STEEL IN THE PLACING PLANS.
2. SUBMIT CERTIFIED MILL TEST REPORTS FOR CEMENT AND STEEL REINFORCING UPON REQUEST.
3. SUBMIT CONCRETE MIX DESIGN.
4. SUBMIT CATALOG CUTS FOR TIES, WATERSTOPS, VAPOR BARRIER AND EXPANSION ANCHORS.

VII. CONTROLLED INSPECTION

A. PROVIDE CONTROLLED INSPECTION FOR INSTALLATION OF:

1. FOUNDATION BEARING SURFACES.
2. CAST-IN-PLACE CONCRETE.
3. SUB-GRADE BELOW SLAB ON GROUND.

B. ALL CONTROLLED INSPECTION SHALL BE DONE UNDER THE SUPERVISION OF A PROFESSIONAL ENGINEER LICENSED IN THE STATE OF NEW YORK. REPORTS SHALL BE SUBMITTED TO THE OWNER AND ENGINEER FOR REVIEW.

VIII. SCHEDULE

A. THE CONTRACTOR SHALL NOTIFY THE ENGINEER 48 HOURS PRIOR TO POURING CONCRETE.

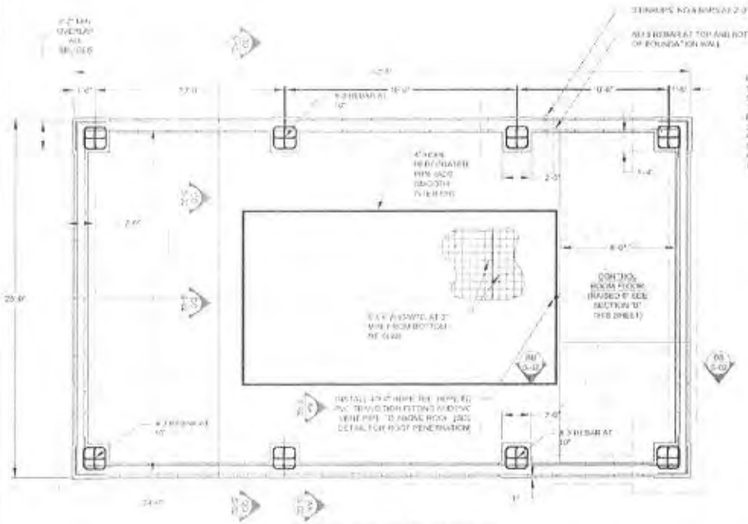
REV. #	DESCRIPTION	DATE	APPROVAL
	AS-BUILT	10/10	
2	REVISED FOUNDATION PER SOIL BORINGS	04/07/10	
1	[illegible]	[illegible]	

ARROWHEAD CONTRACTING INC
[illegible]
Lenexa, Kansas 66219

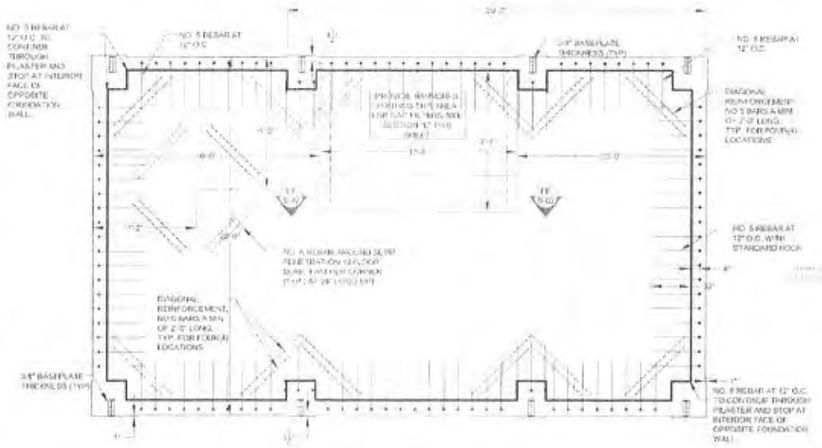
CDM FEDERAL PROGRAMS
NEW YORK, NEW YORK

630 JOHNSON AVE. - SUITE 7
BOHEMIA, NY 11716-2618
E-MAIL: [illegible]

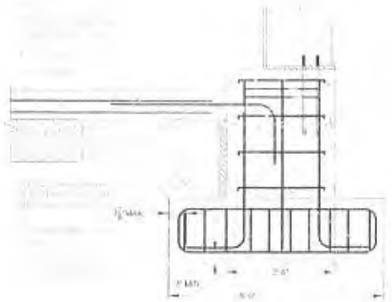
GROUNDWATER TREATMENT PLANT
STRUCTURAL SPECIFICATIONS



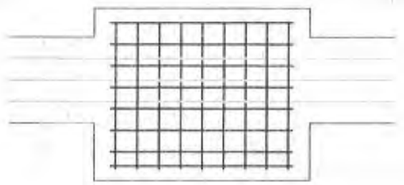
FOUNDATION: PLAN VIEW



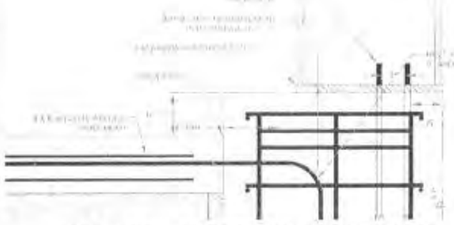
FOUNDATION: FLOOR PLAN



FOUNDATION PILASTER: SECTION VIEW A-A S-02

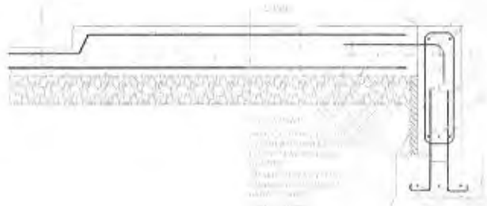


DETAIL "A": FOUNDATION PILASTER FOOTING

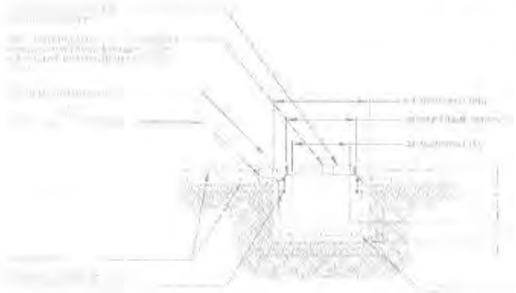


DETAIL "B": ANCHOR BOLT EMBEDMENT DETAIL

NOTE:

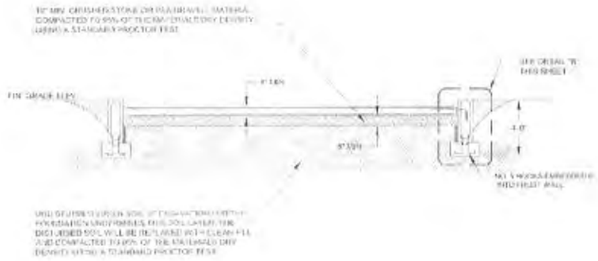


FOUNDATION WALL: SECTION VIEW B-B S-02



SUMP: SECTION VIEW C-C S-02

DETAIL "C": GRATING ANCHOR ANGLE



FOUNDATION: SECTION VIEW D-D S-02

HAUNCH FOOTING: SECTION VIEW E-E S-02

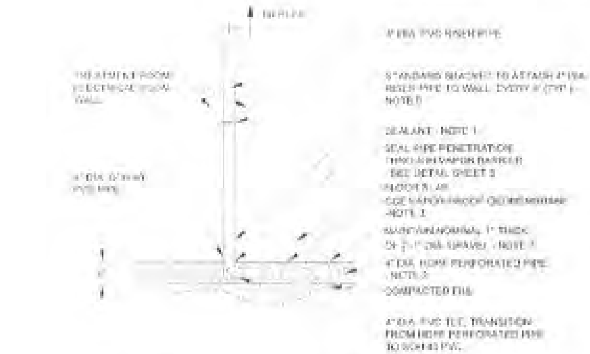
NO.		DATE	INITIALS
	AS-BUILT	10/10	
3	[illegible]	[illegible]	
2	[illegible]	[illegible]	
1	[illegible]	[illegible]	
	COMMENTS	03/22/10	

ARROWHEAD CONTRACTING INC

CDM FEDERAL PROGRAMS NEW YORK, NEW YORK

NOTES

1. SEAL OPENING WITH ELASTOMERIC JOINT SEALANT AS DEFINED IN ASTM C920.
2. HIGH DENSITY POLYETHYLENE CORRUGATED PERFORATED PIPE WITH SMOOTH INTERIOR WATERWAY, ADS N-12 OR APPROVED EQUAL.
3. 15 MIL GSE HDE ... HIGH DENSITY POLYETHYLENE VAPOR GUARD GEOMEMBRANE OR APPROVED EQUAL, FOR USE BELOW SLAB. VAPOR BARRIER TO BE INSTALLED AS PER MANUFACTURER'S INSTRUCTIONS. VAPOR BARRIER SHALL HAVE A PERMEANCE RATING OF 0.1 PERMS OR LESS.
4. FINAL LOCATION OF VERTICAL RISER PIPE TO BE DETERMINED WITH ARCHITECT AND GENERAL CONTRACTOR.
5. GRAVEL LAYER TO BE CONSISTENT AND UNIFORM BENEATH ENTIRE SLAB.
6. SURFACE SEALING MATERIAL TO BE NON-VOC EMITTING CEMENT OR CEMENT BENTONITE.
7. THE VAPOR BARRIER PENETRATION DETAIL PROVIDES VISUAL INSTRUCTIONS TO INSTALL AND SEAL THE VAPOR BARRIER AROUND ROUND PENETRATIONS SUCH AS PIPES AND CONDUITS. INSTALL VAPOR BARRIER AS PER MANUFACTURER'S INSTRUCTIONS.



CROSS SECTIONAL DETAIL

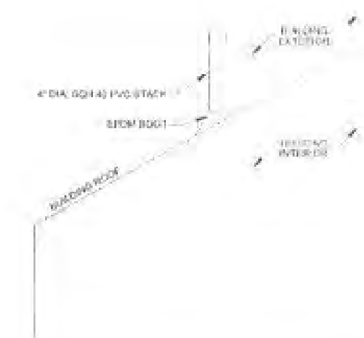
SCALE: NOT TO SCALE

VAPOR BARRIER PENETRATION DETAIL

SCALE: NOT TO SCALE

VAPOR BARRIER END DETAIL

SCALE: NOT TO SCALE



VAPOR BARRIER END DETAIL

SCALE: NOT TO SCALE

VAPOR BARRIER OVERLAP DETAIL

SCALE: NOT TO SCALE

VAPOR BARRIER END DETAIL

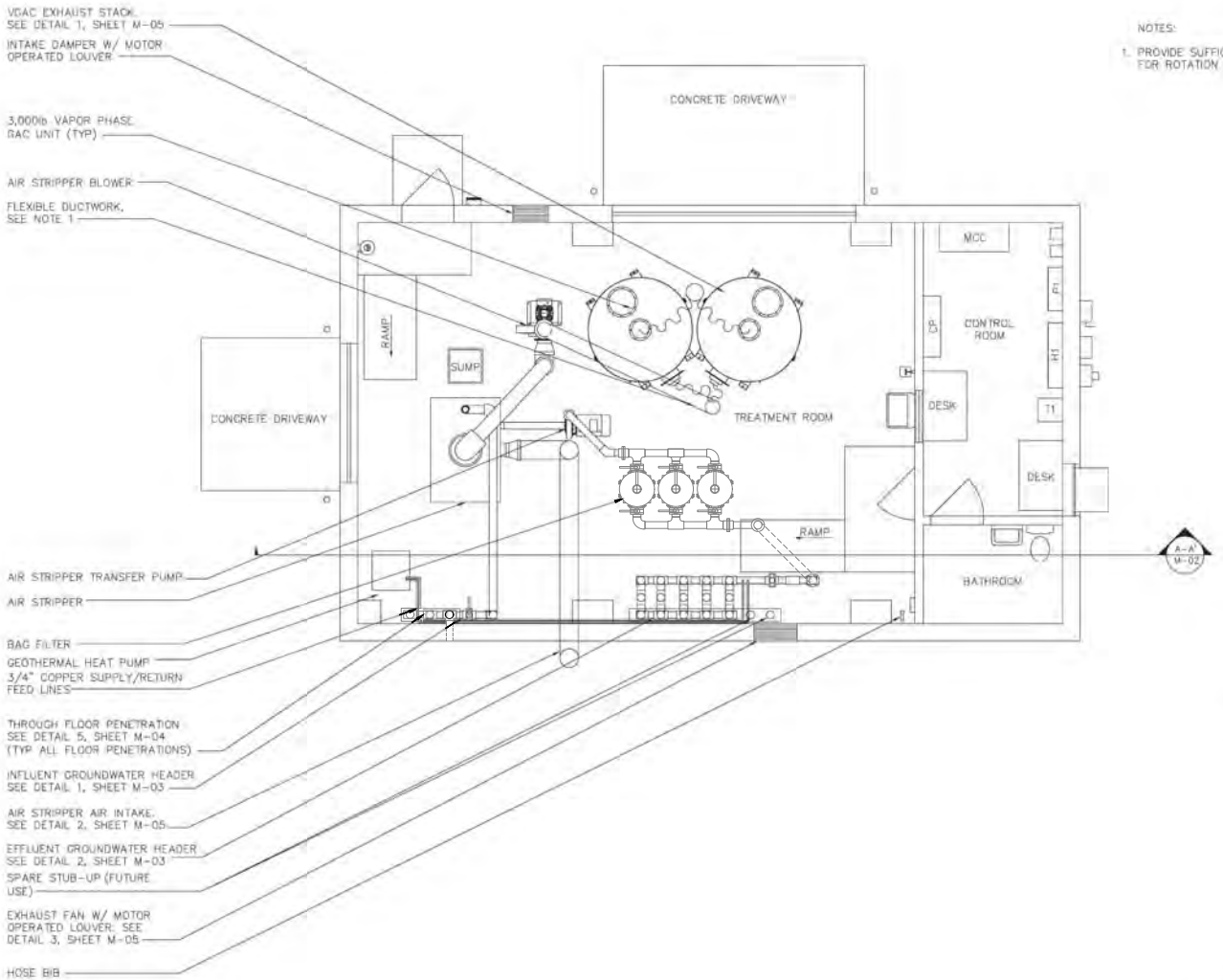
SCALE: NOT TO SCALE

AS-BUILT

ARROWHEAD CONTRACTING INC.

CDM FEDERAL PROGRAMS
NEW YORK, NEW YORK

850 JOHNSON AVE. - SUITE 7
BOHEMIA - NY - 11716-2015



NOTES:

1. PROVIDE SUFFICIENT LENGTH OF FLEXIBLE DUCT TO ALLOW FOR ROTATION IN OPERATION OF VAPOR GAC UNITS.

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

REV #	Revisions	Date	Approved
2	AS-BUILT REVISIONS	11/15/21	
	AS-BUILT	10/10	
	ISSUED FOR CONSTRUCTION	3/19/10	
1	100 PERCENT DESIGN	3/19/10	

HGL | CDM FEDERAL PROGRAMS NEW YORK, NEW YORK

LAWRENCE AVIATION INDUSTRIES SUPERFUND SITE
PORT JEFFERSON STATION, NEW YORK

GROUNDWATER TREATMENT PLANT
TREATMENT EQUIPMENT
MECHANICAL PLAN

Designed by:	DLP
Drawn by:	DLP
Checked by:	DVV
Reviewed by:	SFS
Submitted by:	DVV
Scale:	AS SHOWN
Spec. No.:	-
Contract No.:	-
Sheet reference number:	M-01
Date:	JANUARY 07, 2010
Drawing Code:	-

VERIFY SCALE
BAR IS ONE INCH ON ORIGINAL DRAWING
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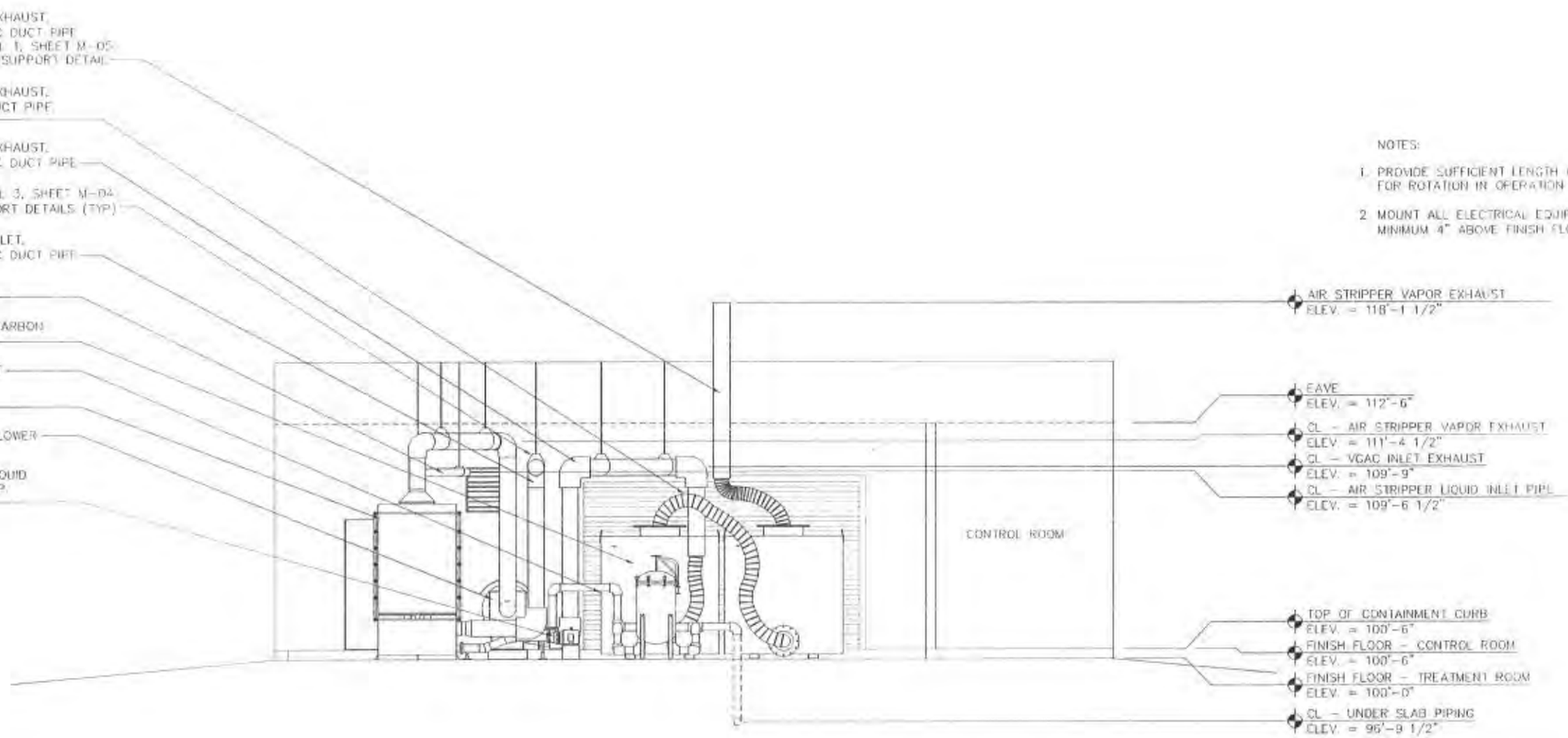

A-A' / M-01 CROSS-SECTION

NOTES:

1. PROVIDE SUFFICIENT LENGTH OF FLEXIBLE DUCT TO ALLOW FOR ROTATION IN OPERATION OF VAPOR GAC UNITS.
2. MOUNT ALL ELECTRICAL EQUIPMENT (MOTORS, SWITCHES, ETC.) MINIMUM 4" ABOVE FINISH FLOOR.

SCALE 3/8"= 1'-0"

REV #	Revisions	Date	Approved
	AS-BUILT	10/10	
	ISSUED FOR CONSTRUCTION	5/19/10	
1	100 PERCENT DESIGN	3/19/10	

ARROWHEAD CONTRACTING INC
10581 Eicher Drive
Lenexa, Kansas 66219
(913)814-9994

CDM FEDERAL PROGRAMS
NEW YORK, NEW YORK

LAWRENCE AVIATION INDUSTRIES SUPERFUND SITE
PORT JEFFERSON STATION, NEW YORK

GROUNDWATER TREATMENT PLANT
TREATMENT EQUIPMENT
MECHANICAL CROSS-SECTION

Designed by:	BLR
Drawn by:	BLR
Checked by:	GWV
Reviewed by:	SFS
Submitted by:	GWV
Scale:	AS SHOWN
Spec. No.	-
Contract No.	-
Sheet reference number	M-02
Date	JANUARY 27, 2010
Drawing Code	-

VERIFY SCALE
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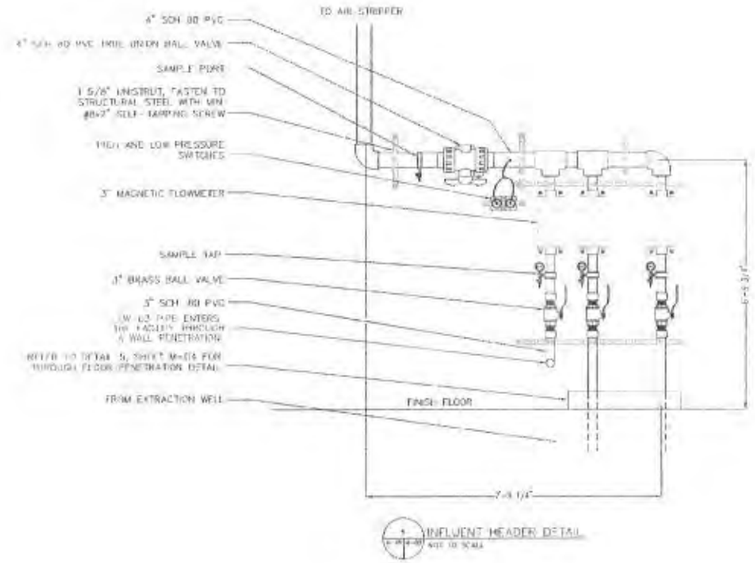
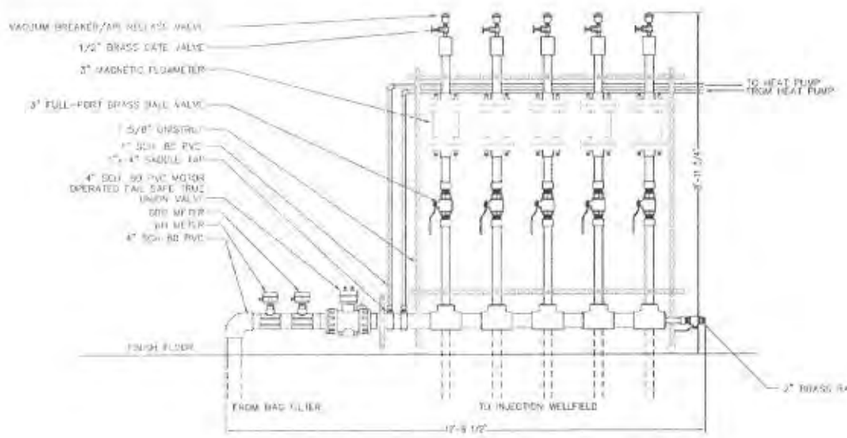
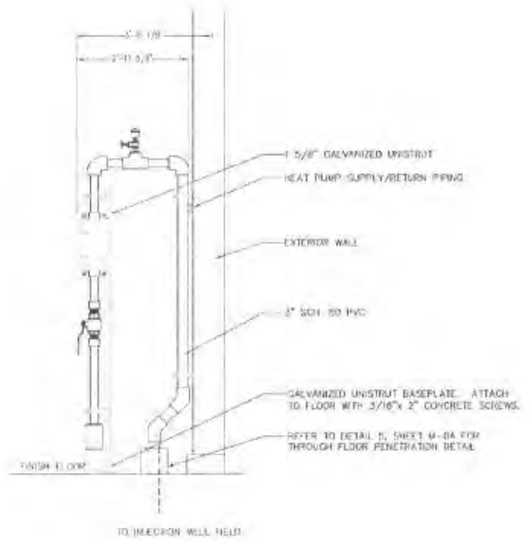


1 INFLUENT HEADER DETAIL
NOT TO SCALE



ELEVATION VIEW



SIDE VIEW

2 EFFLUENT HEADER DETAIL
NOT TO SCALE

REV #	Revisions	Date	Approved
2	AS-BUILT REVISIONS	01/15/01	
	AS-BUILT	05/10	
	ISSUED FOR CONSTRUCTION	5/19/10	
1	100 PERCENT DESIGN	3/19/10	

HGL — CDM FEDERAL PROGRAMS, NEW YORK, NEW YORK

Designed by: BLR
Drawn by: BLR
Checked by: GWV
Reviewed by: SFS
Submitted by: GWV

LAWRENCE AVIATION INDUSTRIES, GRUMMAN AVE., EAST PATCHOGUE, NEW YORK

GROUNDWATER TREATMENT PLANT
TREATMENT SYSTEM HEADER DETAILS

Scale: AS SHOWN
Spec. No.: -
Contract No.: -
Sheet reference number: M-03
Date: JANUARY 22, 2010
Drawing Code: -

VERIFY SCALE
BAR IS ONE INCH ON ORIGINAL DRAWING
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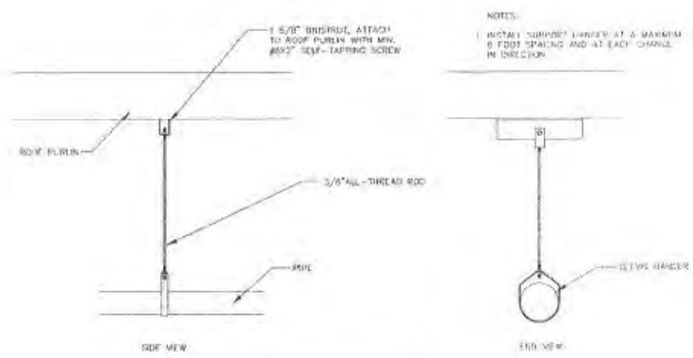
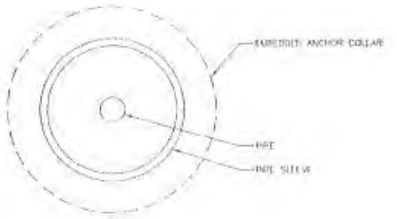
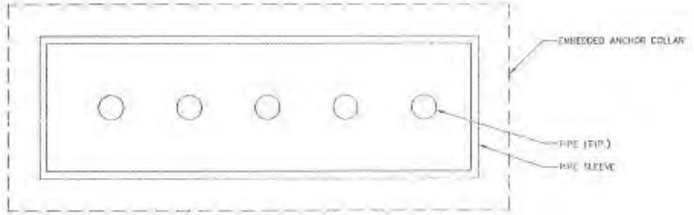


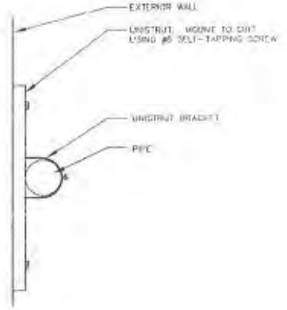
3 M-03 M-04 CEILING MOUNTED PIPE HANGER DETAIL
NOT TO SCALE



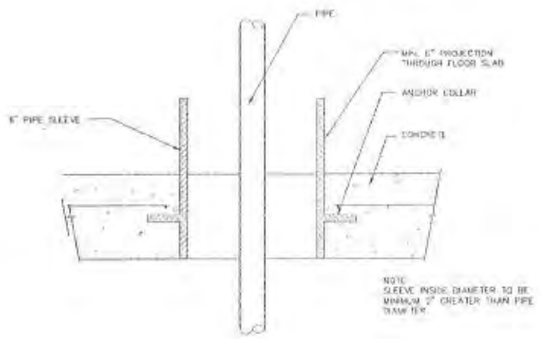
PLAN



PLAN

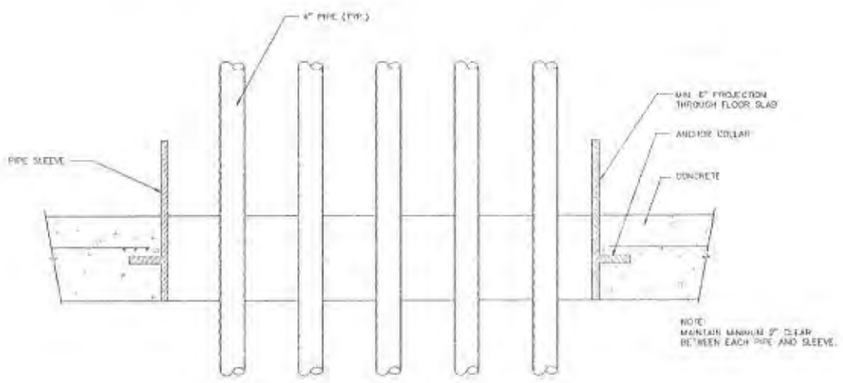


4 M-03 M-04 WALL-MOUNTED PIPE HANGER DETAIL
NOT TO SCALE



SECTION

SINGLE PIPE



SECTION

MULTIPLE PIPE

5 M-03 M-04 PIPE SLEEVE DETAIL
NOT TO SCALE

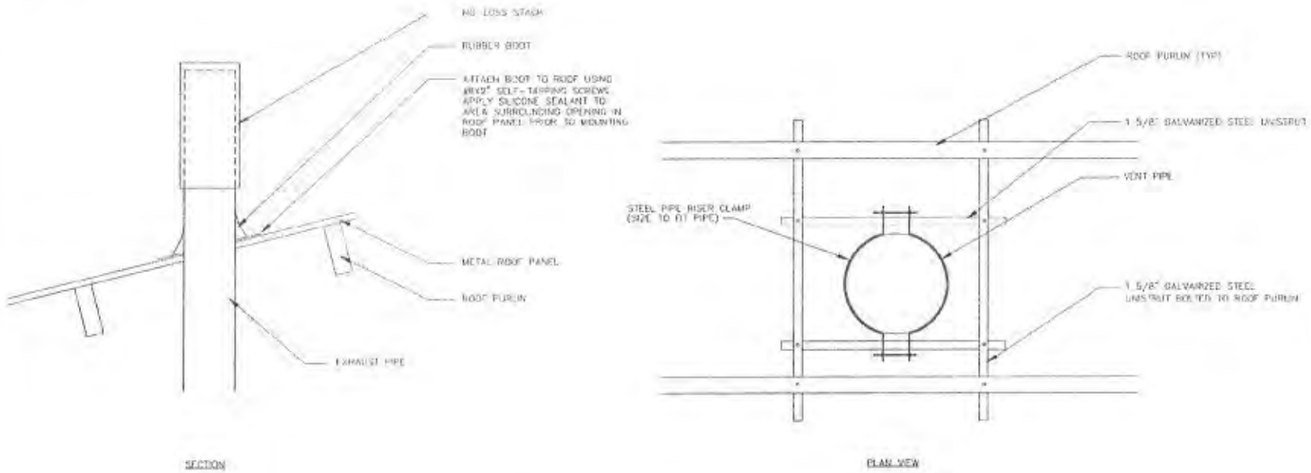
REV #	Revisions	Date	Approved
	AS-BUILT	10/10	
	ISSUED FOR CONSTRUCTION	5/19/10	
1	100 PERCENT DESIGN	3/19/10	

ARROWHEAD CONTRACTING INC.
10801 Canal Drive
Lenexa, Kansas 66219
(913)814-8884

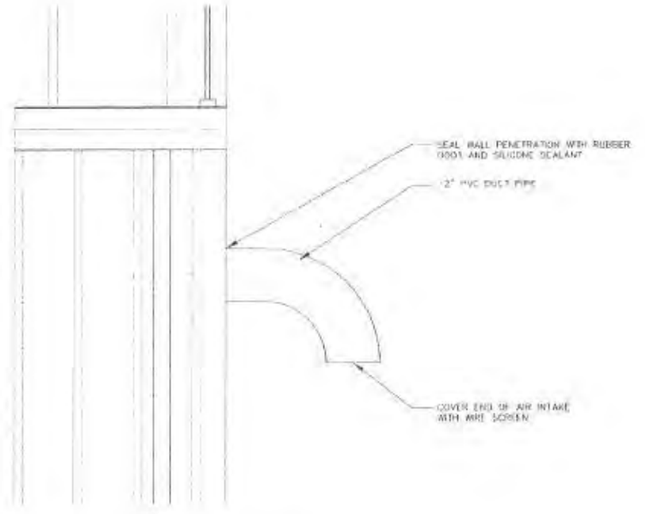
CDM FEDERAL PROGRAMS
NEW YORK, NEW YORK

Designed by: DLR	LAWRENCE AVIATION SUPERFUND SITE PORT JEFFERSON STATION, NEW YORK
Drawn by: DLR	GROUNDWATER TREATMENT PLANT MECHANICAL DETAILS
Checked by: GVW	
Reviewed by: SFS	Scale: AS SHOWN
Submitted by: GVW	Date: JANUARY 27, 2010
Sheet reference number: M-04	Drawing Code: -

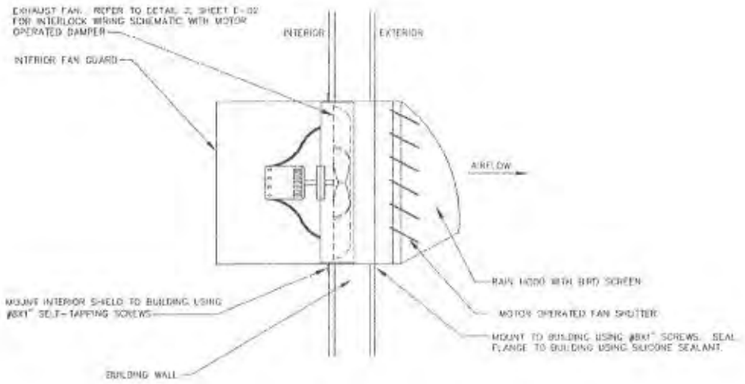
VERIFY SCALE
BAR IS ONE INCH ON ORIGINAL DRAWING
IF NOT ONE INCH ON THIS SHEET ADJUST SCALES ACCORDINGLY



1 EXHAUST PIPE THROUGH ROOF DETAIL
NOT TO SCALE



2 AIR STRIPPER AIR INTAKE DETAIL
NOT TO SCALE



3 EXHAUST FAN MOUNTING DETAIL
NOT TO SCALE

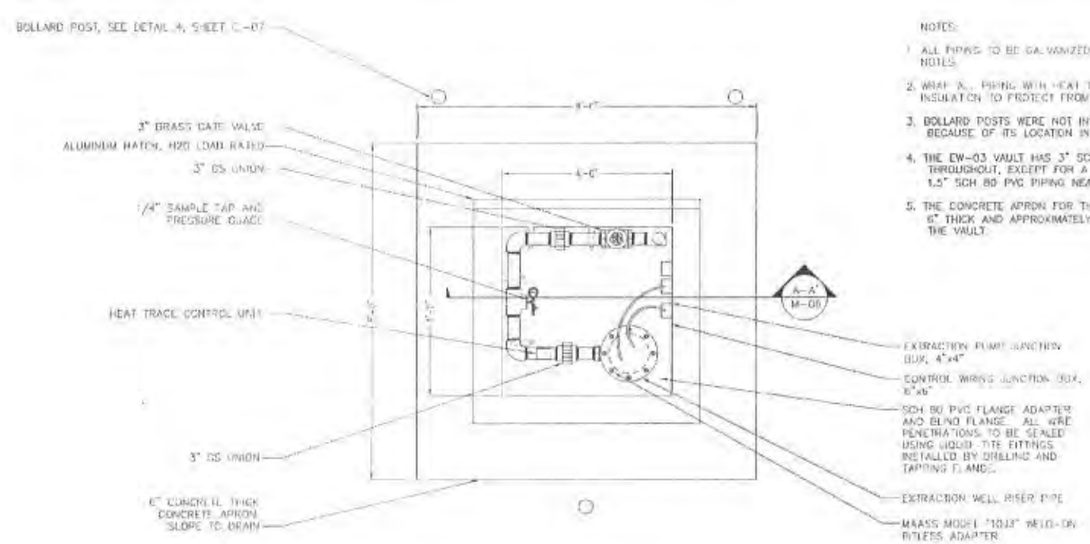
REV #	REVISIONS	Date	Approved
	AS-BUILT	10/10	
	ISSUED FOR CONSTRUCTION	5/19/10	
1	100 PERCENT DESIGN	3/19/10	

ARROWHEAD CONTRACTING INC.
10981 Eicher Drive
Lenexa, Kansas 66219
(913)814-9994

CDM FEDERAL PROGRAMS
NEW YORK, NEW YORK

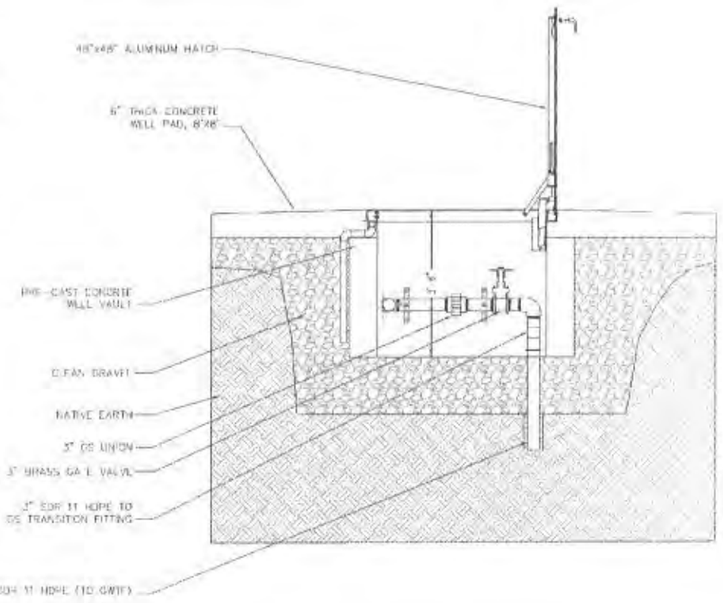
Designed by: DLR	LAWRENCE AVIATION INDUSTRIES SUPERFUND SITE PORT JEFFERSON STATION, NEW YORK
Drawn by: DLR	GROUNDWATER TREATMENT PLANT MECHANICAL DETAILS
Checked by: GWV	
Reviewed by: SFS	Scale: AS SHOWN
Submitted by: GWV	Spec. No. -
	Contract No. -
	Sheet reference number: M-05
	Date: JANUARY 27, 2010
	Drawing Code: -

VERIFY SCALE
BAR IS ONE INCH ON ORIGINAL DRAWING (22X34). IF NOT ONE INCH ON THIS SHEET ADJUST SCALES ACCORDINGLY



NOTES:

1. ALL PIPING TO BE GALVANIZED STEEL UNLESS NOTED.
2. WRAP ALL PIPING WITH HEAT TRACE TAPE AND PIPE INSULATION TO PROTECT FROM FREEZING.
3. BOLLARD POSTS WERE NOT INSTALLED FOR EW-03 BECAUSE OF ITS LOCATION IN AN ACCESS ROAD.
4. THE EW-03 VAULT HAS 3" SCH 80 PVC PIPE THROUGHOUT, EXCEPT FOR A SMALL SECTION OF 1.5" SCH 80 PVC PIPING NEAR THE WELL HEAD.
5. THE CONCRETE APRON FOR THE EW-03 VAULT IS 6" THICK AND APPROXIMATELY 12" WIDE AROUND THE VAULT.



EXTRACTION WELLHEAD DETAIL
NOT TO SCALE

A-A' M-05 EXTRACTION WELLHEAD CROSS-SECTION
NOT TO SCALE

REV #	Revisions	Date	approved
2	AS-BUILT REVISIONS	11/15/21	
	AS-BUILT	10/10	
	ISSUED FOR CONSTRUCTION	5/19/10	
1	100 PERCENT DESIGN	3/19/10	

HGL Harding ESL Inc. | CDM FEDERAL PROGRAMS NEW YORK, NEW YORK

Designed by: BLP	LAWRENCE AVIATION INDUSTRIES SUPERFUND SITE, FORT JEFFERSON STATION, NEW YORK
Drawn by: DLR	GROUNDWATER TREATMENT PLANT
Checked by: GWM	EXTRACTION WELLHEAD DETAIL
Reviewed by: SFS	Scale: AS SHOWN
Submitted by: GWM	Spec. No.:
	Contract No.
	Drawn reference number: M-05
	Date: JANUARY 27, 2010
	Drawing Code:

VERIFY SCALE
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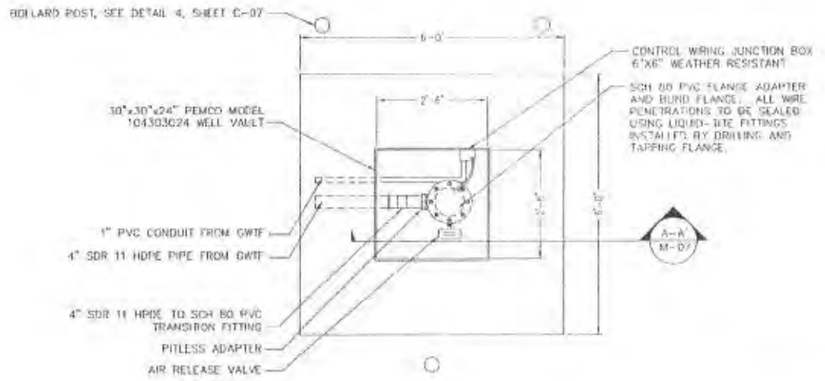
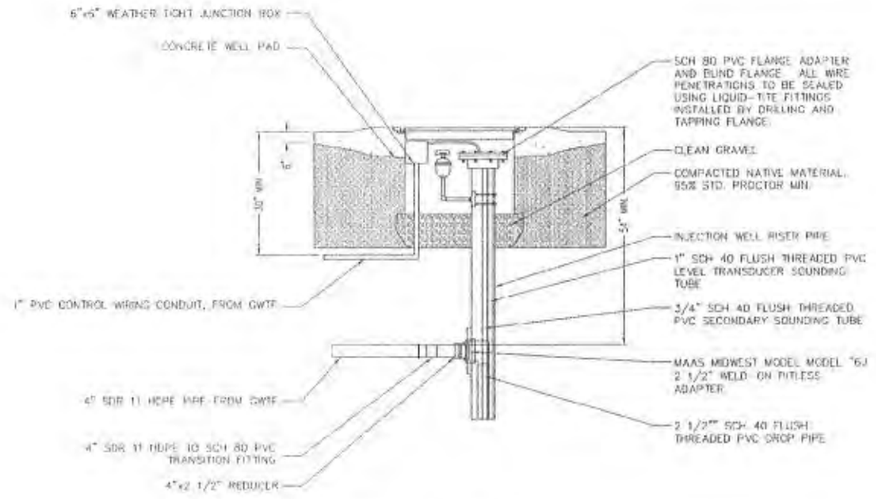


NOTE:
ATTACH 2 1/2" SCH 40 PVC DROP PIPE TO PITLESS ADAPTER. DROP PIPE TO EXTEND TO MID-POINT OF WELL SUMP (253' BGS)

INJECTION WELLHEAD DETAIL
NOT TO SCALE



A-A' INJECTION WELLHEAD CROSS-SECTION
M-07 NOT TO SCALE

REV #	Revisions	Date	Approved
	AS-BUILT	10/10	
	ISSUED FOR CONSTRUCTION	5/19/10	
1	100 PERCENT DESIGN	3/19/10	

ARROWHEAD CONTRACTING INC
10661 Esther Drive
Lenexa, Kansas 66219
(913) 814-9994

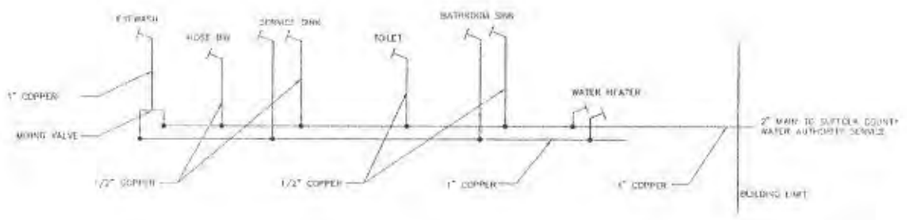
CDM FEDERAL PROGRAMS
NEW YORK, NEW YORK

LAWRENCE AVIATION INDUSTRIES/GIVAUDAN SITE
PORT JEFFERSON STATION, NEW YORK

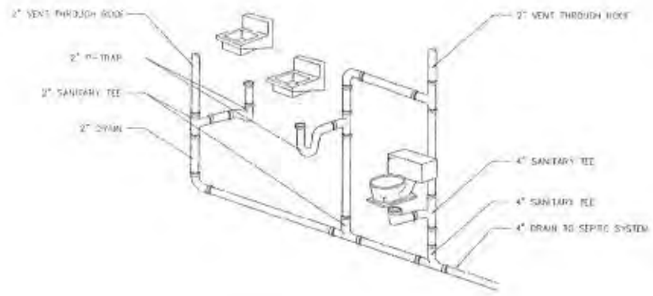
GROUNDWATER TREATMENT PLANT
INJECTION WELLHEAD DETAIL

Designed by: BLR	Scale: AS SHOWN	Sheet reference number: M-07	Date: JANUARY 27, 2010
Drawn by: BLR	Spec. No. -		Drawing Code -
Checked by: GVW	Contract No -		
Reviewed by: SFS			
Submitted by: GVW			

VERIFY SCALE
BAR IS ONE INCH ON ORIGINAL DRAWING
IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY



1 A-01 P-01 POTABLE WATER SERVICE RISER
NOT TO SCALE



2 A-01 P-01 SANITARY DRAIN RISER PLAN
NOT TO SCALE

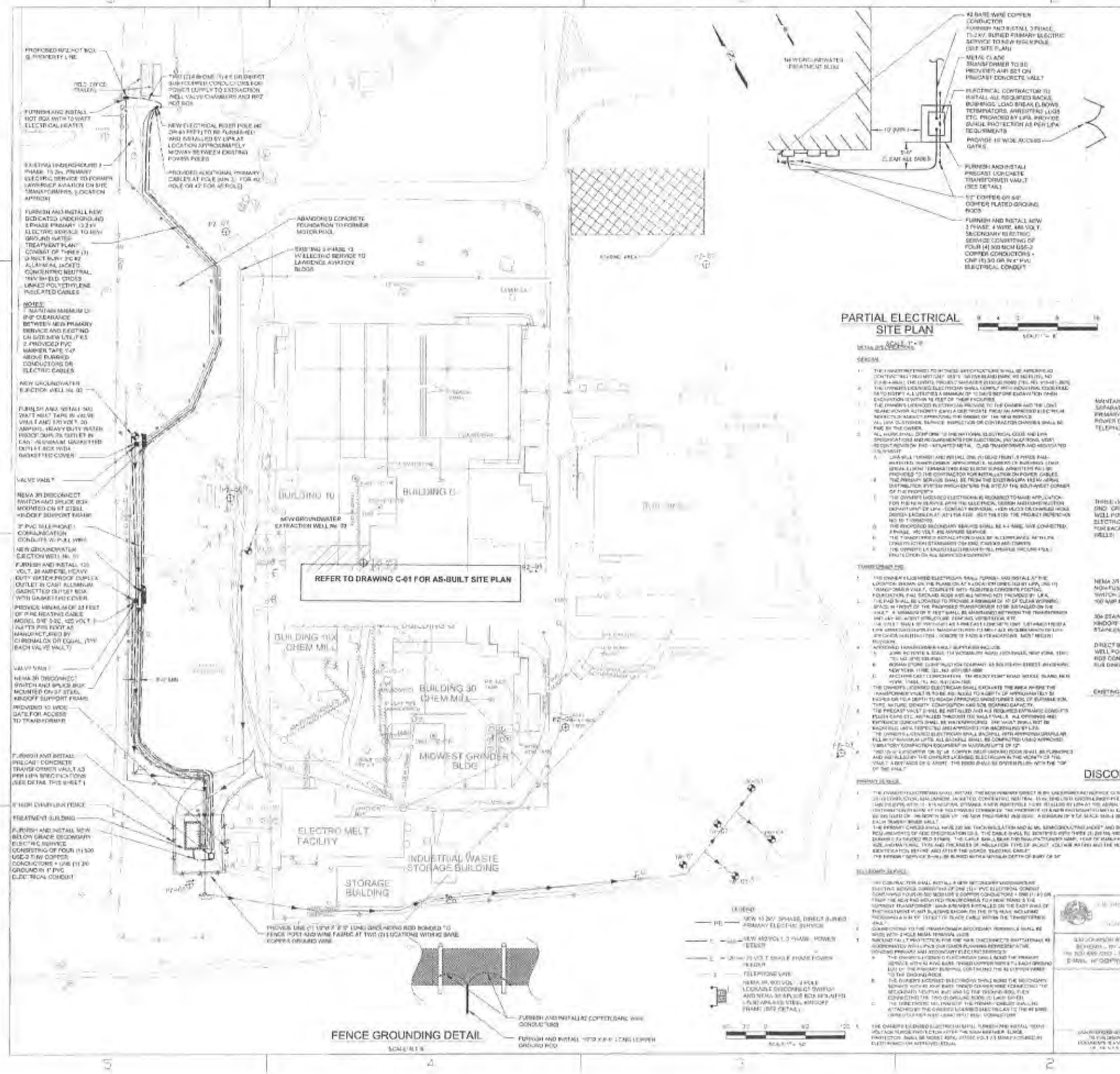
REV #	Revisions	Date	Approved
	AS-BUILT	10/10	
	ISSUED FOR CONSTRUCTION	5/19/10	
1	100 PERCENT DESIGN	3/19/10	

ARROWHEAD CONTRACTING INC
13861 Fisher Drive
Lenexa, Kansas 66215
(913) 814-9994

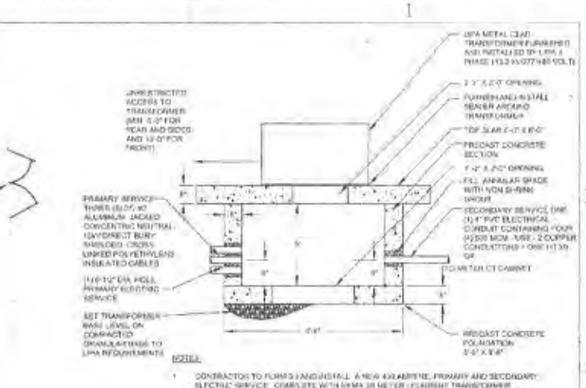
CDM FEDERAL PROGRAMS
NEW YORK, NEW YORK

Designed by: DCR	LAWRENCE AVIATION INDUSTRIES SUPERFUND SITE PORT JEFFERSON STATION, NEW YORK
Drawn by: DLR	GROUNDWATER TREATMENT PLANT PLUMBING PLAN
Checked by: GWW	
Reviewed by: SFS	Scale: AS SHOWN
Submitted by: GWW	Spec. No.: -
	Contract No.: -
	Sheet reference number: P-01
	Date: JANUARY 27, 2010
	Drawing Code: -

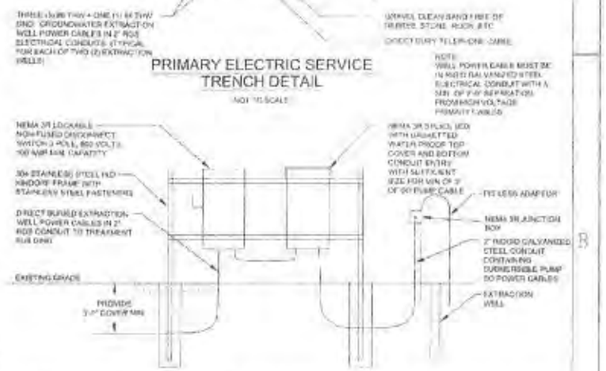
VERIFY SCALE
BAR IS ONE INCH ON ORIGINAL DRAWING
IF NOT ONE INCH ON THIS SHEET ADJUST SCALES ACCORDINGLY



PARTIAL ELECTRICAL SITE PLAN



TRANSFORMER VAULT DETAIL



PRIMARY ELECTRIC SERVICE TRENCH DETAIL

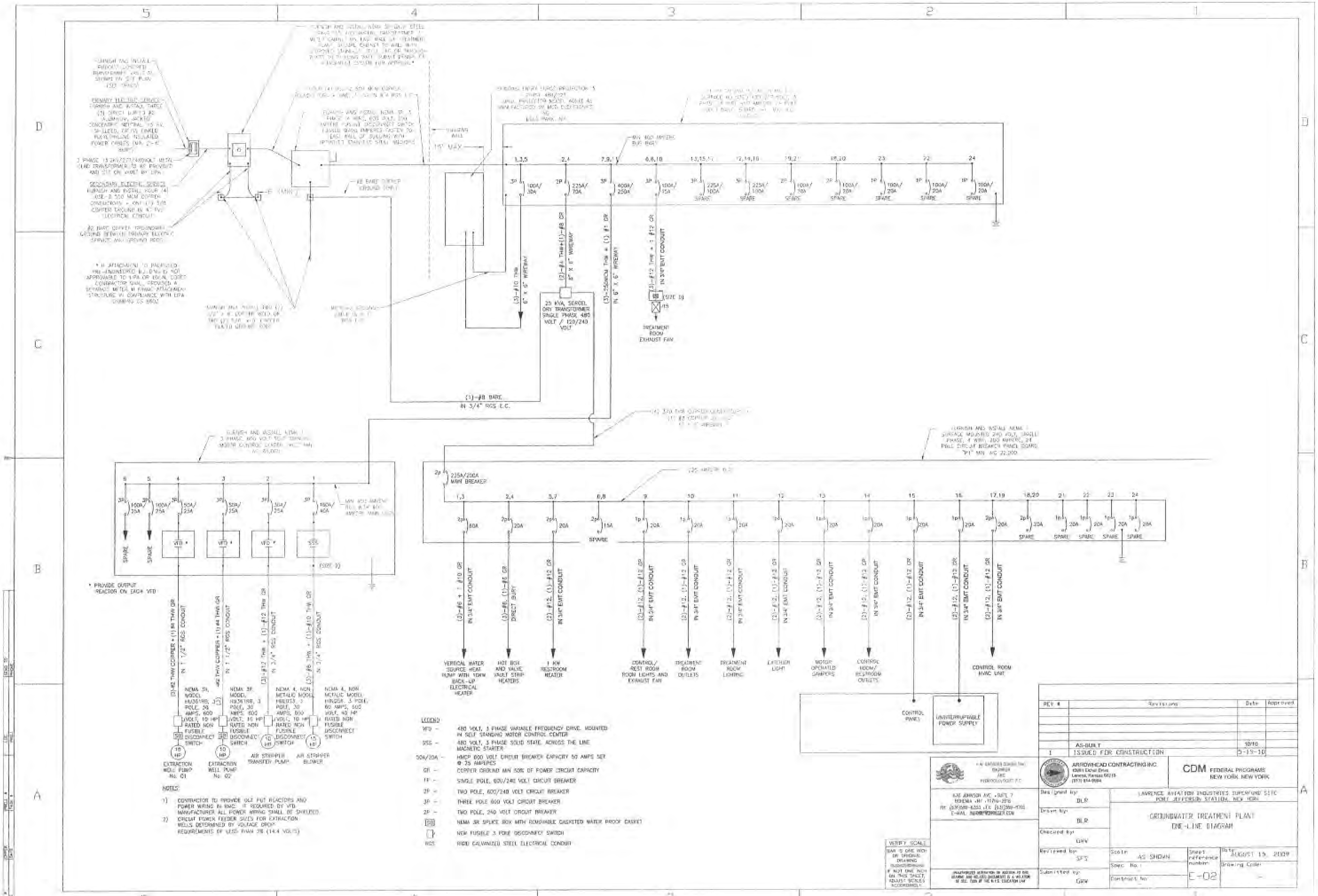
DISCONNECT SWITCH / SPLICE BOX DETAIL (TYP. FOR TWO(2) LOCATIONS

CDM FEDERAL PROGRAMS
NEW YORK, NEW YORK

HGL

LAWRENCE AVIATION INDUSTRIAL SITE
FORMER GRUMMAN AEROSPACE FACILITY
GROUNDWATER TREATMENT PLANT
ELECTRICAL SITE PLAN

AS SHOWN
AUGUST 15, 2005
E-1



LEGEND

VFD – 480 VOLT, 3 PHASE VARIABLE FREQUENCY DRIVE. MOUNTED IN SELF STANDING MOTOR CONTROL CENTER

SSS – 480 VOLT, 3 PHASE SOLID STATE, ACROSS THE LINE MAGNETIC STARTER

50A/20A – HMCP 600 VOLT CIRCUIT BREAKER CAPACITY 50 AMPS SET @ 25 AMPERES

GR – COPPER GROUND AWI 50% OF POWER CIRCUIT CAPACITY

1P – SINGLE POLE, 600/240 VOLT CIRCUIT BREAKER

2P – TWO POLE, 600/240 VOLT CIRCUIT BREAKER

3P – THREE POLE 600 VOLT CIRCUIT BREAKER

2P – TWO POLE, 240 VOLT CIRCUIT BREAKER

SB – NEMA 3R SPLICE BOX WITH REMOVABLE GASKETED WATER PROOF GASKET

NEW FUSIBLE 3 POLE DISCONNECT SWITCH

RGS – RIGID GALVANIZED STEEL ELECTRICAL CONDUIT

NOTES:

1) CONTRACTOR TO PROVIDE OUT PUT REACTORS AND POWER WIRING IN RMC. IF REQUIRED BY VFD MANUFACTURER ALL POWER WIRING SHALL BE SHIELDED.
2) CIRCUIT POWER FEEDER SIZES FOR EXTRACTION WELLS DETERMINED BY VOLTAGE DROP REQUIREMENTS OF LESS THAN 3% (14.4 VOLTS)

REV #	Revisions	Date	Approved
	AS-BUILT	10/10	
1	ISSUED FOR CONSTRUCTION	5-19-10	

ARROWHEAD CONTRACTING INC.

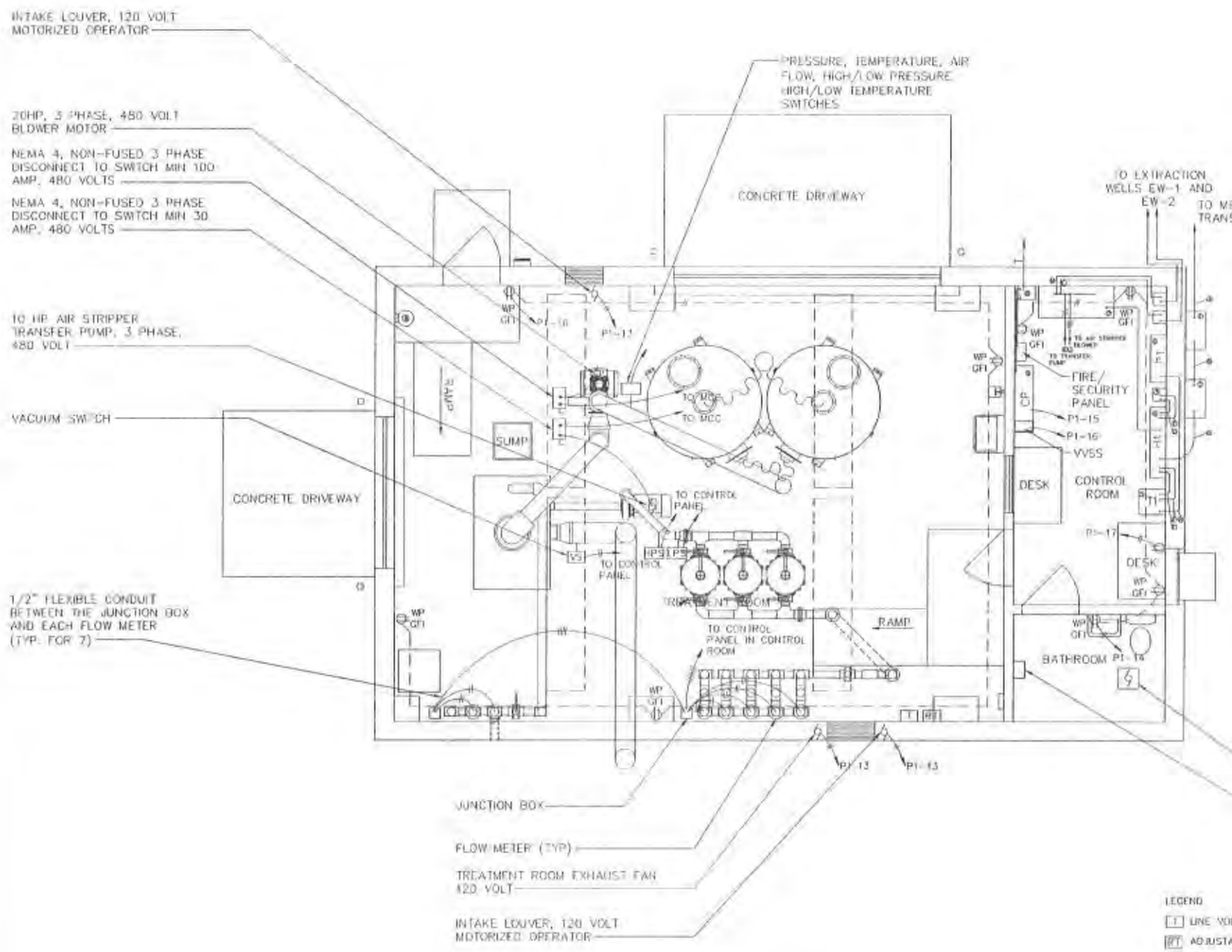
CDM FEDERAL PROGRAMS NEW YORK, NEW YORK

Designed by: DLR
Drawn by: DLR
Checked by: GHW
Reviewed by: SFS
Submitted by: GHW

LAWRENCE AVIATION INDUSTRIES SUPERFUND SITE
PORT JEFFERSON STATION, NEW YORK

GROUNDWATER TREATMENT PLANT
ONE-LINE DIAGRAM

Scale: AS SHOWN
Spec. No.: –
Contract No: –
Sheet reference number: E-02
Date: AUGUST 15, 2009
Drawing Code: –



POWER PLAN

CONTROL ROOM PANELS

(1) TRANS S CT CABINET
(2) MAIN SWITCH
(3) BUILDING ENTRY SURGE PROTECTOR
(4) POWER PANELBOARD H-1 3 PHASE, 480 VOLT
(5) 25KVA TRANSFORMER
(6) POWER PANELBOARD P-1 SINGLE PHASE 120/240 VOLT
(7) MOTOR CONTROL CENTER
(8) TELEPHONE CABINET
(9) CONTROL PANEL
(10) 6"x6" WIREWAY

CONTROL ROOM CIRCUITS

(A) SECONDARY ELECTRIC SERVICE FOUR (4) 500MCM USE 2-COPPER CONDUCTORS + ONE (1) 3/0 GR IN 4" PVC CONDUIT
(B) FOUR (4) 500 MCM THW COPPER CONDUCTORS + ONE (1) 3/0 GR IN 4" RGS E.C.
(C) THREE (3) #10 THW COPPER CONDUCTORS IN 6" WIREWAY.
(D) MICRO-2 GROUND CABLES IN 1" RGS E.C.
(E) TWO (2) #4 THW COPPER CONDUCTORS + ONE (1) #8 GR IN 6"x6" WIREWAY.
(F) THREE (3) 250MCM THW COPPER CONDUCTOR + ONE (1) #1 GR IN 6"x6" WIREWAY.
(G) THREE (3) #12 THW COPPER CONDUCTORS + ONE (1) #12 GR IN 3/4" EMT E.C.
(H) FOUR (4) 3/0 THW COPPER CONDUCTORS + ONE (1) #3 GR IN 6"x6" WIREWAY.
(I) THREE (3) 250 THW COPPER CONDUCTORS + 1#3 GR IN 6"x6" WIREWAY.
(J) THREE (3) #6 THW COPPER CONDUCTORS + ONE (1) #10 GR IN 3/4" EMT E.C.
(K) THREE (3) #12 THW COPPER CONDUCTORS + ONE (1) #12 GR IN 3/4" EMT E.C.
(L) THREE (3) #1 THW COPPER CONDUCTORS + ONE (1) #4 GR IN 1 1/2" RGS E.C.
(M) THREE (3) #1 THW COPPER CONDUCTORS + ONE (1) #4 GR IN 1 1/2" RGS E.C.

CIRCUIT NO.

1-3 WEIRDAL WATER SOURCE HEAT PUMP – TWO (2) #6 THW + ONE (1) #10 GR IN 3/4" EMT E.C.
2-4 HOT BOX/VALVE PIT STRIP HEATERS – THREE (3) #6 THW + ONE (1) #8 GR O.B.
5,7 240 VOLT, 1 KW RESTROOM HEATER – TWO (2) #12 THW + ONE (1) #12 GR IN 3/4" EMT E.C.
9 CONTROL/RESTROOM LIGHTS – TWO (2) #12 THW ONE (1) #12 GR IN 3/4" EMT E.C.
10 TREATMENT PLANT OUTLETS – TWO (2) #12 THW ONE (1) #12 GR IN 3/4" EMT E.C.
11 TREATMENT ROOM LIGHTS – TWO (2) #12 THW ONE (1) #12 GR IN 3/4" EMT E.C.
12 EXTERIOR LIGHT – TWO (2) #12 THW ONE (1) #12 GR IN 3/4" EMT E.C.
13 MOTOR OPERATED DAMPERS – TWO (2) #12 THW ONE (1) #12 GR IN 3/4" EMT E.C.
14 CONTROL ROOM/RESTROOM OUTLETS – TWO (2) #12 THW ONE (1) #12 GR IN 3/4" EMT E.C.
15 CONTROL PANEL – TWO (2) #12 THW ONE (1) #12 GR IN 3/4" EMT E.C.
16 TWO MOTOR – TWO (2) #12 THW ONE (1) #12 GR IN 3/4" EMT E.C.

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

LEGEND

T LINE VOLTAGE THERMOSTAT
RT ADJUSTABLE REVERSE ACTING THERMOSTAT
CONDUIT HOME RUN TO PANELBOARD OR DEVICE CONTAINING TWO (2) #12 + ONE (1) #12 GND. IN ¾" CONDUIT
WP GFI 240 VOLT 20 AMPERE, GFI WATERPROOF OUTLET WITH WATERPROOF CAST ALUMINUM OUTBOX AND GASKET COVER PLATE
RGS RIGID GALVANIZED STEEL
EMT ELECTRICAL METALLIC TUBING

REV #	Revisions	Date	Approved
2	AS-BUILT REVISIONS	11/15/21	
	AS-BUILT	10/10	
2	REVISED INTERIOR WALL PLACEMENT	7/28/10	
	ISSUED FOR CONSTRUCTION	5/19/10	
1	100 PERCENT DESIGN	3/19/10	

HGL | CDM FEDERAL PROGRAMS NEW YORK, NEW YORK

Designed by: DLB	LAWRENCE AVIATION INDUSTRIES SUPERFUND SITE, FIRE ISLAND STATION, NEW YORK
Drawn by: DLP	GROUNDWATER TREATMENT PLANT POWER PLAN
Checked by: GWK	
Reviewed by: SFS	Scale: AS SHOWN
Submitted by: GWK	Sheet reference number: E-03
	Date: JANUARY 27, 2010
	Drawing Code: -

VERIFY SCALE
BAR IS ONE INCH ON ORIGINAL DRAWING.
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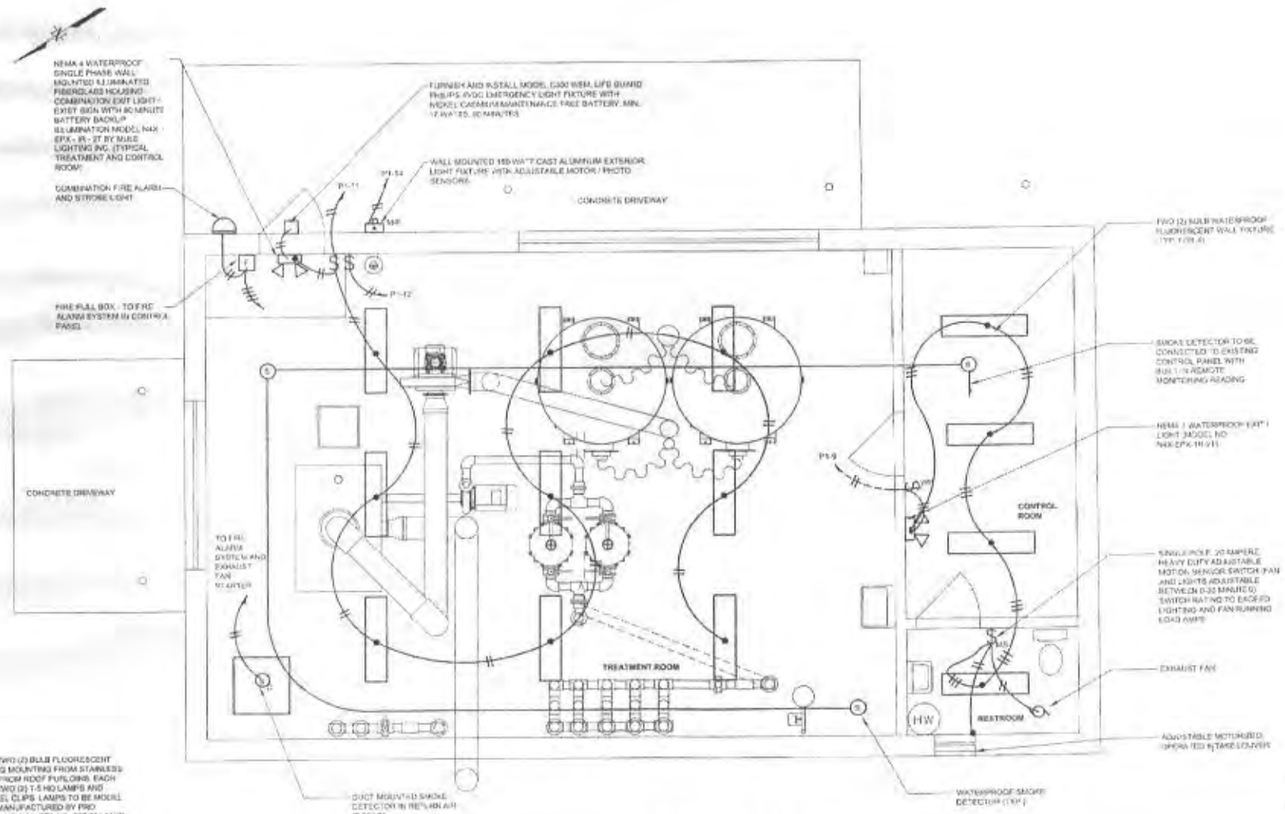

LIGHTING FLOOR PLAN

SCALE 3/8" = 1'-0"

LEGEND

VAPOR TIGHT, TWO (2) BULB FLOORESCENT FIXTURE, CEILING MOUNTING FROM STAINLESS STEEL CHAINS FROM ROOF PURLOINS. EACH FIXTURE WITH TWO (2) T-5 HO LAMPS AND STAINLESS STEEL CLIPS. LAMPS TO BE MODEL WT-270-UH AS MANUFACTURED BY PRO LIGHTING, BRIGHTON, MI (TEL NO. 877-461-8400)

EMERGENCY LIGHTING FIXTURE 120 VOLT POWER SUPPLY - MIN. 30 MIN BATTERY BACKUP

HEAVY DUTY, 240 VOLT, 20 AMPERE WATER PROOF SWITCH WITH GAS ALUMINUM GASKET OUTLET BOX AND GASKET COVER PLATES (NEMA 3R)

EXTERIOR CAST ALUMINUM WATERPROOF LIGHT WITH MOTION SENSOR, PHOTO CELL ADJUSTABLE TIMER

20 AMP, 120 VOLT WATERPROOF ADJUSTABLE MOTION SENSOR SWITCH

MOISTURE PROOF SURFACE MOUNTED SMOKE DETECTOR

DUCT MOUNTED SMOKE DETECTOR

NOTE:
SMOKE DETECTORS AND FIRE PULL STATION TO BE CONNECTED TO EXHAUST FAN CONTROL TO DE-ENERGIZE THE EXHAUST FAN WHEN A FIRE ALARM CONDITION EXISTS

REFER TO DRAWING M-01 FOR TREATMENT PLANT EQUIPMENT LAYOUT

Rev #	Revisions	Date	Approved
	AS-BUILT	10/10	
1	ISSUED FOR CONSTRUCTION	05-19-10	

ARROWHEAD CONTRACTING INC.
10801 Escher Drive
Lenexa, Kansas 66219
(913) 814-9994

CDM FEDERAL PROGRAMS
NEW YORK, NEW YORK

LAWRENCE AVIATION INDUSTRIES SUPERFUND SITE
PORT JEFFERSON STATION, NEW YORK

GROUNDWATER TREATMENT PLANT
LIGHTING PLAN

Designed by:	DLR
Drawn by:	DLR
Checked by:	GWV
Reviewed by:	SFS
Submitted by:	GWV
Scale:	AS SHOWN
Sheet reference number:	E-04
Date:	AUGUST 15, 2009
Drawing Code:	-
Spec. No.	-
Contract No.	-

VERIFY SCALE
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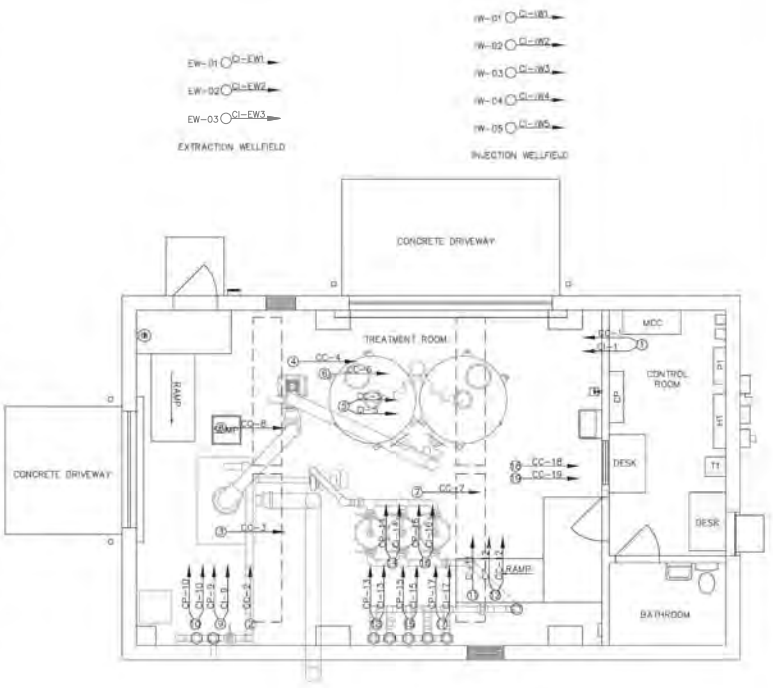
FIELD WIRING SCHEDULE

LOCATION NUMBER	P&ID TAG	DESCRIPTION	NUMBER OF CONDUCTORS			CONDUIT DESIGNATIONS			NOTES
			P	C	I	CP	CC	CI	
1	B-1	BLOWER MOTOR STARTER AUX CONTACTS		2			1		MOTOR STARTER IN MCC TO MCP
1	B-1	BLOWER HOA SWITCH AUTO POSITION		2			1		HOA SWITCH IN MCC TO MCP
1	P-1	DISCHARGE PUMP VFD RUNNING		2			1		VFD IN MCC TO MCP
1	P-1	DISCHARGE PUMP VFD AUTO MODE		2			1		VFD IN MCC TO MCP
1	P-1	DISCHARGE PUMP VFD GENERAL FAULT		2			1		VFD IN MCC TO MCP
1	EW-1	EW-1 PUMP VFD RUNNING		2			1		VFD IN MCC TO MCP
1	EW-1	EW-1 PUMP VFD AUTO MODE		2			1		VFD IN MCC TO MCP
1	EW-1	EW-1 PUMP VFD GENERAL FAULT		2			1		VFD IN MCC TO MCP
1	EW-1	EW-1 PUMP VFD DRY RUN FAULT		2			1		VFD IN MCC TO MCP
1	EW-2	EW-2 PUMP VFD RUNNING		2			1		VFD IN MCC TO MCP
1	EW-2	EW-2 PUMP VFD AUTO MODE		2			1		VFD IN MCC TO MCP
1	EW-2	EW-2 PUMP VFD GENERAL FAULT		2			1		VFD IN MCC TO MCP
1	EW-2	EW-2 PUMP VFD DRY RUN FAULT		2			1		VFD IN MCC TO MCP
2	PSL-303	GW INFLUENT LOW PRESSURE SWITCH		2			2		SWITCH ON INFLUENT PIPE TO MCP
2	PSH-303	GW INFLUENT HIGH PRESSURE SWITCH		2			2		SWITCH ON INFLUENT PIPE TO MCP
3	LSL-400	AIR STRIPPER SUMP LOW-LOW LEVEL SWITCH		2			3		SWITCH ON AIR STRIPPER SUMP TO MCP
3	LSH-400	AIR STRIPPER SUMP HIGH-HIGH LEVEL SWITCH		2			3		SWITCH ON AIR STRIPPER SUMP TO MCP
4	VSH-500	BLOWER HIGH VACUUM SWITCH		2			4		SWITCH ON BLOWER SUCTION PIPE TO MCP
5	PSH-502	BLOWER HIGH PRESSURE SWITCH		2			5		SWITCH ON BLOWER DISCHARGE PIPE TO MCP
5	PSHH-502	BLOWER HIGH-HIGH PRESSURE SWITCH		2			5		SWITCH ON BLOWER DISCHARGE PIPE TO MCP
5	TSH-502	BLOWER HIGH TEMPERATURE SWITCH		2			5		SWITCH ON BLOWER DISCHARGE PIPE TO MCP
5	TSHH-502	BLOWER HIGH-HIGH TEMPERATURE SWITCH		2			5		SWITCH ON BLOWER DISCHARGE PIPE TO MCP
5	FSL-502	BLOWER LOW FLOW SWITCH		2			5		SWITCH ON BLOWER DISCHARGE PIPE TO MCP
6	PSL-403	DISCHARGE PUMP LOW PRESSURE SWITCH		2			6		SWITCH ON PUMP DISCHARGE PIPE TO MCP
6	PSH-403	DISCHARGE PUMP HIGH PRESSURE SWITCH		2			6		SWITCH ON PUMP DISCHARGE PIPE TO MCP
7	DPSH-412	BAG FILTER DIFFERENTIAL PRESSURE SWITCH		2			7		SWITCH ON BAG FILTER TO MCP
8	LSHH-300	BUILDING SUMP HIGH-HIGH LEVEL PROBES		2			8		TWO PROBES IN BUILDING SUMP TO MCP. ONE CONDUCTOR PER PROBE.
1	NOT SHOWN	PHASE LOSS MONITOR		2			1		PHASE LOSS MONITOR IN MCC TO MCP
12	MOV-415	EFFLUENT SHUT-OFF VALVE OPEN LIMIT SWITCH		2			12		MOTORIZED VALVE TO MCP
12	MOV-415	EFFLUENT SHUT-OFF VALVE CLOSED LIMIT SWITCH		2			12		MOTORIZED VALVE TO MCP
1	B-1	BLOWER RUN COMMAND TO MOTOR STARTER		2					MCP TO MOTOR STARTER IN MCC
1	P-1	DISCHARGE PUMP RUN COMMAND TO VFD		2					MCP TO VFD IN MCC
1	EW-1	EW-1 RUN COMMAND TO VFD		2					MCP TO VFD IN MCC
1	EW-2	EW-2 RUN COMMAND TO VFD		2					MCP TO VFD IN MCC
12	MOV-415	EFFLUENT SHUT-OFF VALVE OPEN COMMAND	2	2		12	12		120V POWER FROM LIGHTING PANEL. OPEN AND CLOSE COMMANDS FROM MCP.
12	MOV-415	EFFLUENT SHUT-OFF VALVE CLOSE COMMAND		2			12		120V POWER FROM LIGHTING PANEL. OPEN AND CLOSE COMMANDS FROM MCP.
3	LIT-400	AIR STRIPPER SUMP LEVEL TRANSMITTER			2			3	TRANSMITTER AT AIR STRIPPER SUMP TO MCC
EW-1	LT-100	EW-1 LEVEL TRANSMITTER			2			EW-1	TRANSMITTER IN EW-1 TO MCP
9	FIT-106	EW-1 FLOW TRANSMITTER	2		2			9	TRANSMITTER ON EW-1 INFLUENT PIPE TO MCP
EW-2	LT-200	EW-2 LEVEL TRANSMITTER			2			EW-2	TRANSMITTER IN EW-2 TO MCP
10	FIT-206	EW-2 FLOW TRANSMITTER	2		2	10		10	TRANSMITTER ON EW-2 INFLUENT PIPE TO MCP
11	AIT-415	EFFLUENT pH TRANSMITTER			2			11	TRANSMITTER ON EFFLUENT PIPE TO MCP
IW-1	LT-420	IW-1 LEVEL TRANSMITTER			2			IW-1	TRANSMITTER IN IW-1 TO MCP
13	FIT-420	IW-1 FLOW TRANSMITTER	2		2			13	TRANSMITTER ON IW-1 EFFLUENT PIPE TO MCP
IW-2	LT-422	IW-2 LEVEL TRANSMITTER			2			IW-2	TRANSMITTER IN IW-2 TO MCP
14	FIT-422	IW-2 FLOW TRANSMITTER	2		2			14	TRANSMITTER ON IW-2 EFFLUENT PIPE TO MCP
IW-3	LT-424	IW-3 LEVEL TRANSMITTER			2			IW-3	TRANSMITTER IN IW-3 TO MCP
15	FIT-424	IW-3 FLOW TRANSMITTER	2		2			15	TRANSMITTER ON IW-3 EFFLUENT PIPE TO MCP
IW-4	LT-426	IW-4 LEVEL TRANSMITTER			2			IW-4	TRANSMITTER IN IW-4 TO MCP
16	FIT-426	IW-4 FLOW TRANSMITTER	2		2			16	TRANSMITTER ON IW-4 EFFLUENT PIPE TO MCP
IW-5	LT-428	IW-5 LEVEL TRANSMITTER			2			IW-5	TRANSMITTER IN IW-5 TO MCP
17	FIT-428	IW-5 FLOW TRANSMITTER	2		2			17	TRANSMITTER ON IW-5 EFFLUENT PIPE TO MCP
5	FIT-502	AIR STRIPPER BLOWER FLOW TRANSMITTER	2		2			5	TRANSMITTER ON BLOWER DISCHARGE PIPE TO MCP. 24VDC TRANSMITTER POWER ALLOWED IN INSTRUMENTATION CONDUIT.
5	PIT-502	AIR STRIPPER BLOWER PRESSURE TRANSMITTER			2			5	TRANSMITTER ON BLOWER DISCHARGE PIPE TO MCP
1	P-1	4-20 mA SPEED SIGNAL TO P-1 VFD			2			1	MCP TO VFD IN MCC
1	EW-1	4-20 mA SPEED SIGNAL TO EW-1 VFD			2			1	MCP TO VFD IN MCC
1	EW-2	4-20 mA SPEED SIGNAL TO EW-2 VFD			2			1	MCP TO VFD IN MCC
18	NOT SHOWN	FIRE ALARM		2			2		ALARM SWITCH TO MCP; POWER OBTAINED FROM BUILDING LIGHTING CIRCUIT
19	NOT SHOWN	SECURITY ALARM		2			2		ALARM SWITCH TO MCP; POWER OBTAINED FROM BUILDING LIGHTING CIRCUIT

Field Wiring and Conduit Notes:

1. P=Power , THHN/THWN, min 14 AWG, stranded. C=Control, THHN/THWN, min 14 AWG, stranded. I=Instrumentation, twisted, shielded pair w/drain wire, min 16 AWG, stranded.
2. CP=Power conduit; CC=Control conduit; CI=Instrumentation conduit; MCC=Motor Control Center; Panel=PLC Control Panel.
3. Conduit designations are only suggestions on combining circuits into a common conduit. Under no circumstances shall instrumentation wire be placed in Power or Control conduits.
4. Conductor wire counts are for instrumentation and control conduit wiring only and include power required for field control devices, if needed. Conductor counts do not include ground wires for powered devices. Refer to Specifications for wiring materials and methods. Refer to DWG E-01 for motor power wiring schedule.
5. Conduit sizes to be determined by Electrical Contractor in accordance with NFPA 70.

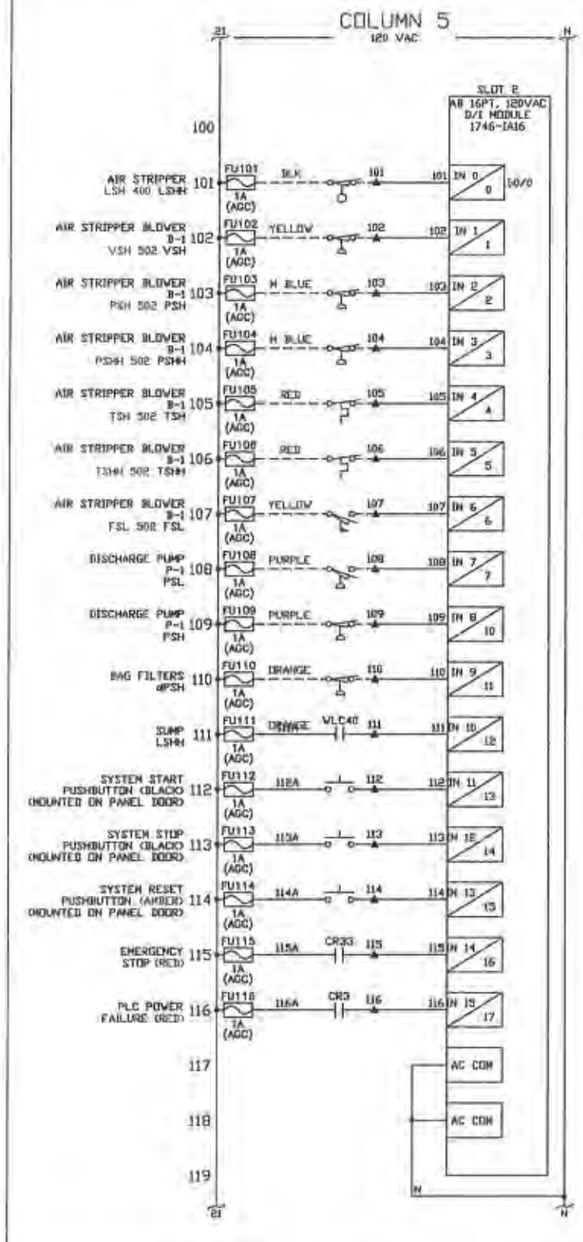


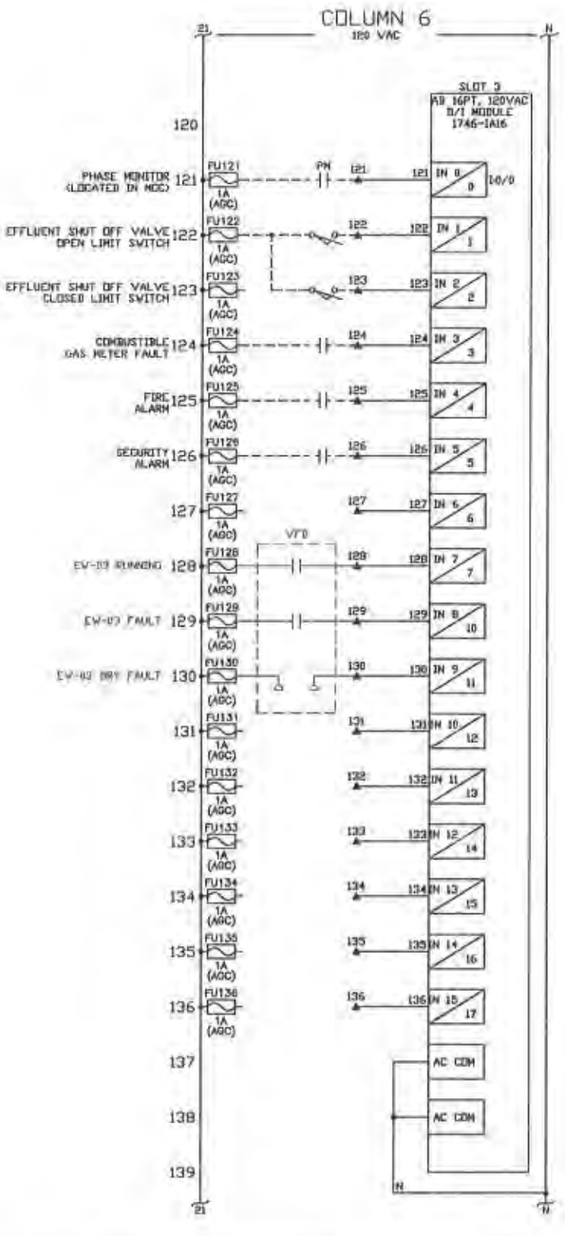
REV. #	Revisions	Date	Approved
2	AS-BUILT REVISIONS	11/15/21	
	AS-BUILT	12/10	
	ISSUED FOR CONSTRUCTION	3/19/10	

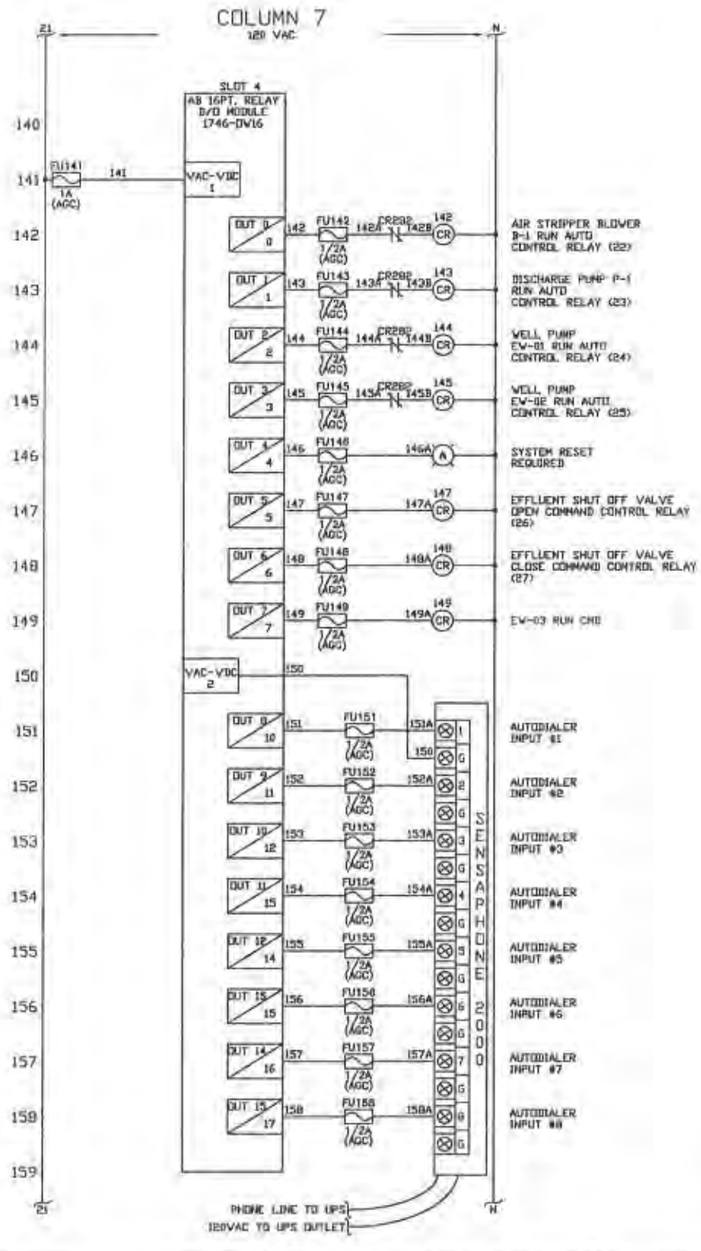
HGL

CDM FEDERAL PROGRAMS NEW YORK, NEW YORK

Designed by: BCL	LAWRENCE AVIATION INDUSTRIES SUPERFUND SITE PORT JEFFERSON STATION, NEW YORK
Drawn by: BLR	GROUNDWATER TREATMENT PLANT CONTROL WIRING PLAN
Checked by: GWW	
Reviewed by: SFS	Scale: AS SHOWN; Sheet reference number: ; Date: MARCH 19, 2010
Submitted by: GWW	Spec. No.: ; Contract No.: ; Drawing No.: E-05







REVISIONS			
REV	DESCRIPTION	DATE	DWN
A	RELEASE FOR SUBMITTAL	02/01/10	RC
B	RELEASE FOR RE-SUBMITTAL	03/10/10	RC
C	RELEASE FOR PRODUCTION	06/22/10	RC
D	AS BUILT	08/17/10	RC
E	STARTUP REVISIONS	10/14/10	RC
F	AS-BUILT REVISIONS	11/15/21	TB

UNLESS SPECIFIED OTHERWISE
* DIMENSIONS ARE IN INCHES
* DO NOT SCALE DRAWING

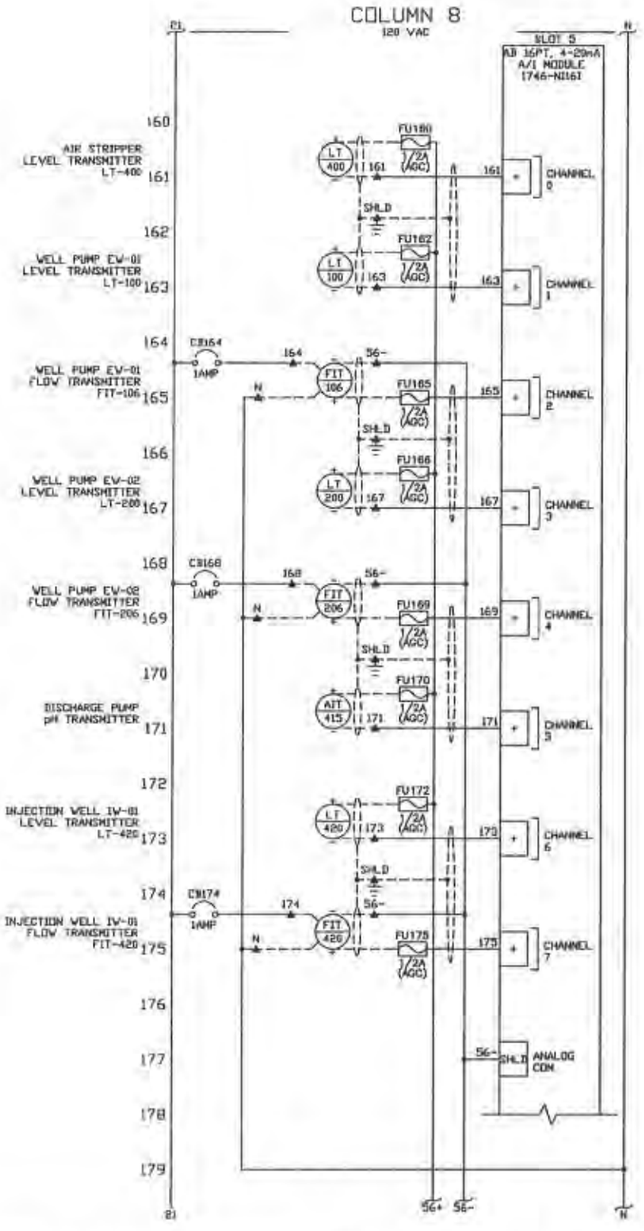
DRAWN BY: RC
DESIGNED BY: RC
PROJECT MANAGER: MK
DATE: 01/11/10
PROJECT NO.: 2933

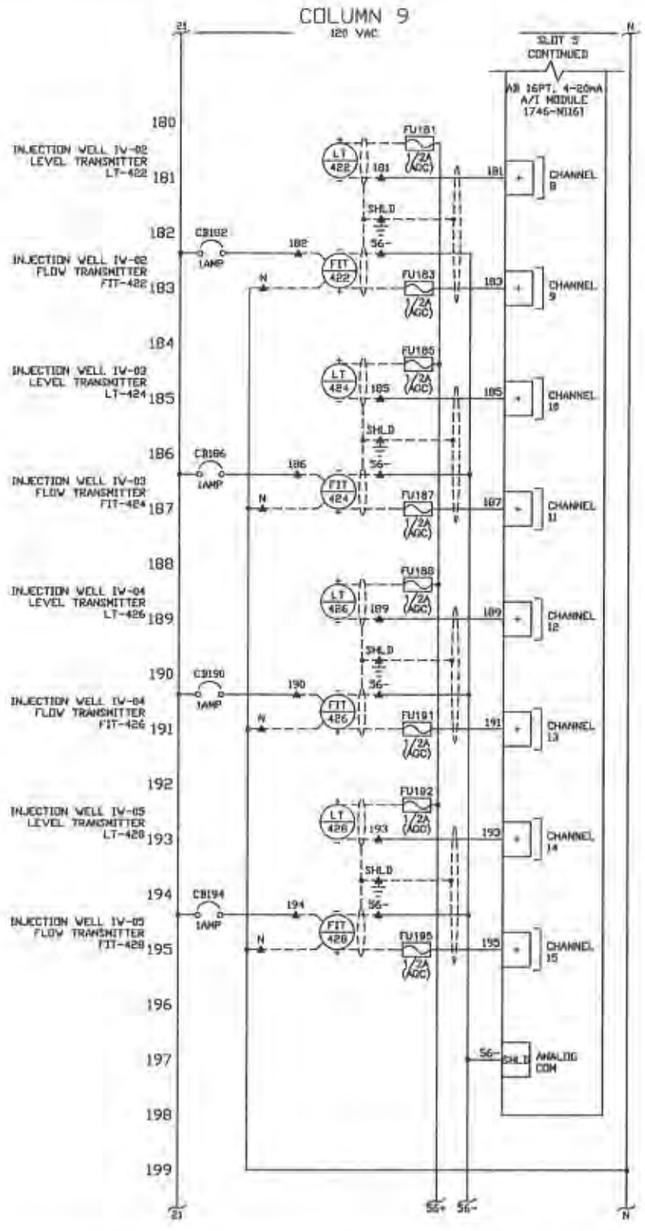
HGL HydroGeologic Inc.

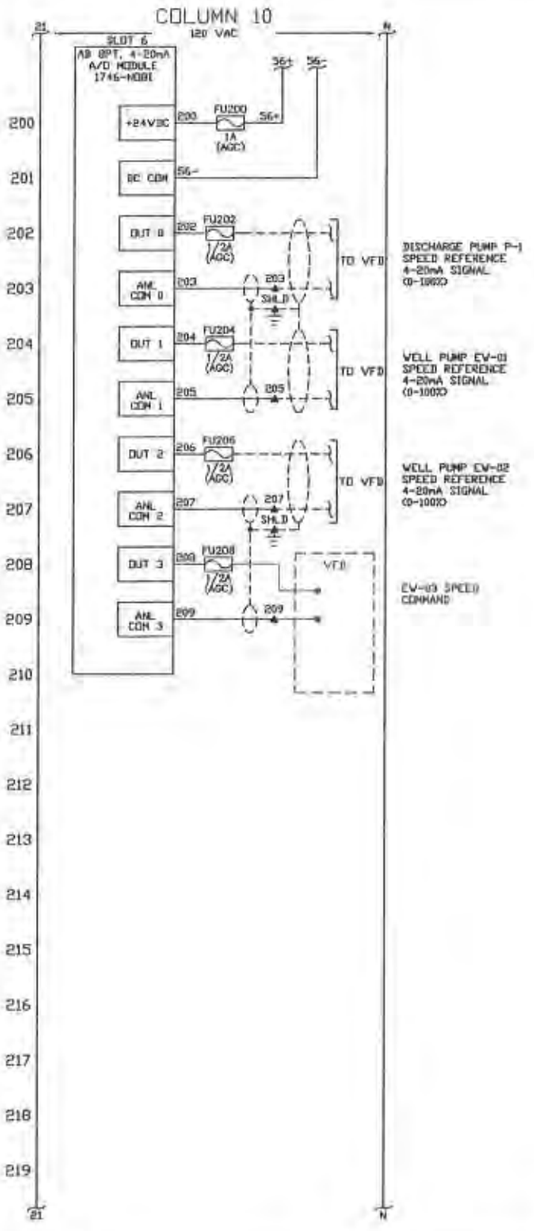
PROJECT TITLE:
ARROWHEAD–
LAWRENCE AVIATION
PORT JEFFERSON,
NY

DRAWING TITLE:
E-6
SCHEMATIC CONTROL PANEL

SHEET 4 OF 10
DRAWING NO.:
2933-23







REVISIONS				UNLESS SPECIFIED OTHERWISE * DIMENSIONS ARE IN INCHES * DO NOT SCALE DRAWING
REV	DESCRIPTION	DATE	DWN	
A	RELEASE FOR SUBMITTAL	02/01/10	RC	DRAWN BY: RC
B	RELEASE FOR RE-SUBMITTAL	03/10/10	RC	DESIGNED BY: RC
C	RELEASE FOR PRODUCTION	06/22/10	RC	PROJECT MANAGER: MH
D	AS BUILT	08/17/10	RC	DATE: 01/11/10
E	STARTUP REVISIONS	10/14/10	RC	PROJECT NO.: 2933
F	AS-BUILT REVISIONS	11/17/21	TB	

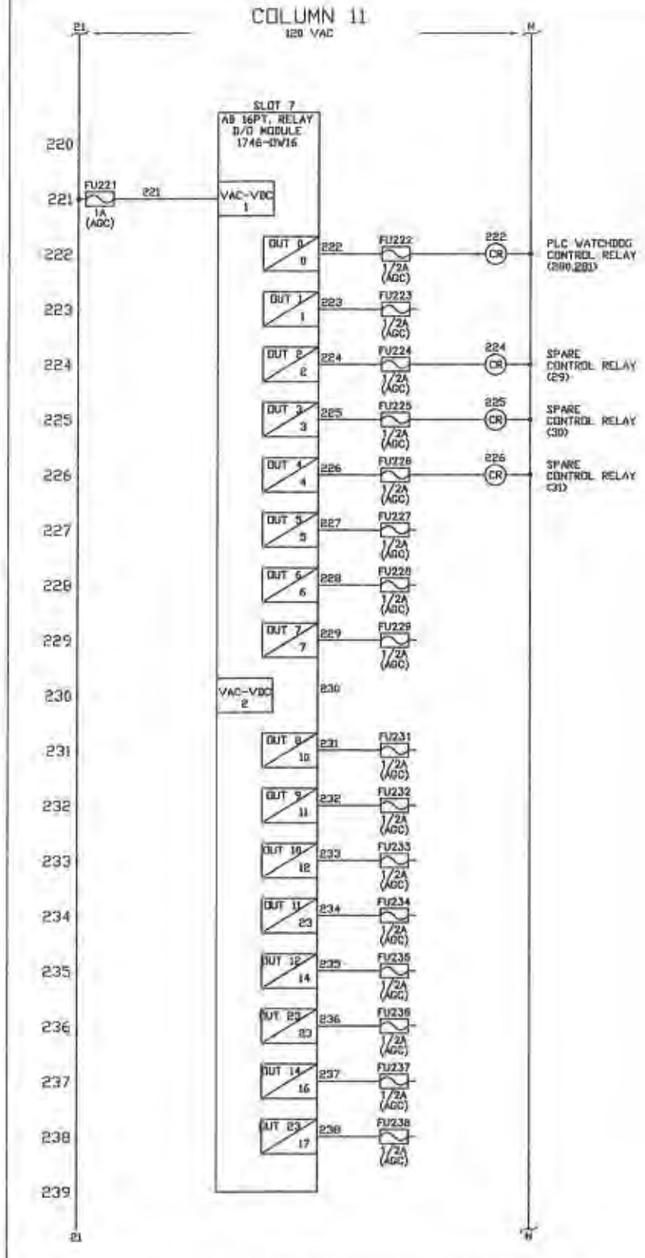
HGL Dynamics Logic, Inc.

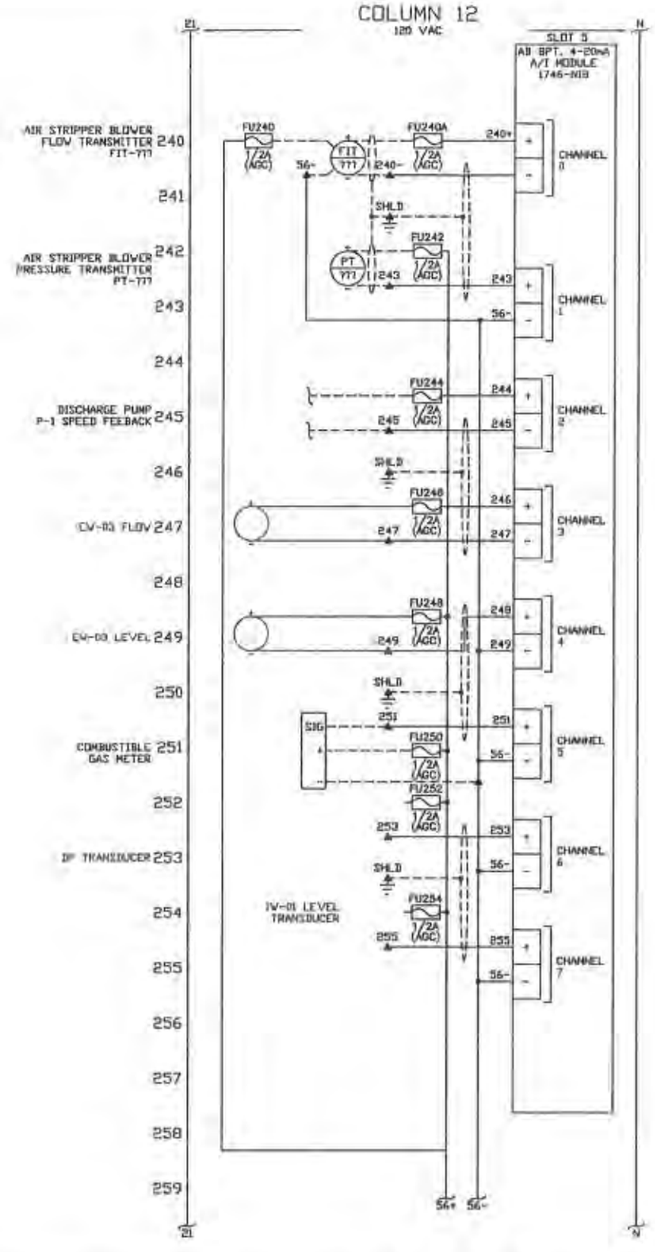
PROJECT TITLE:
ARROWHEAD–
LAWRENCE AVIATION
PORT JEFFERSON,
NY

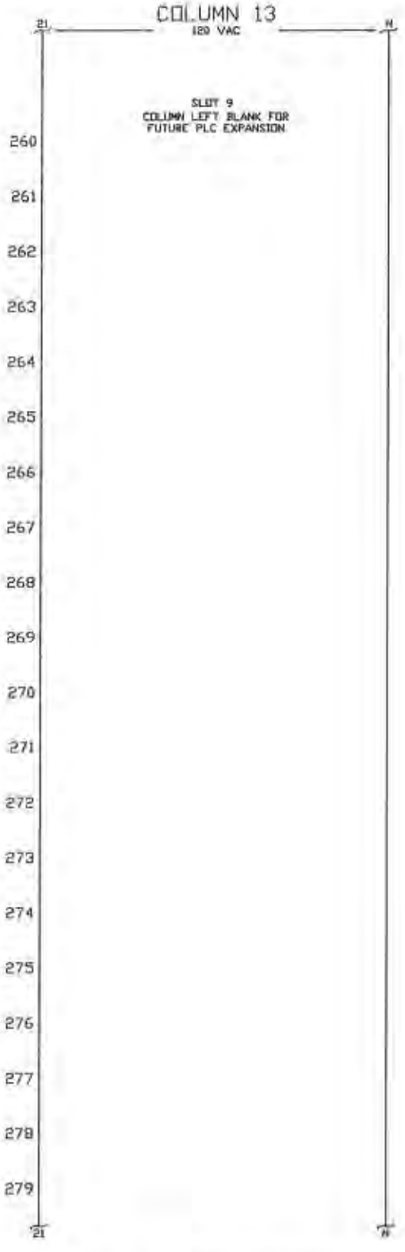
DRAWING TITLE:
E–7
SCHEMATIC CONTROL PANEL

SHEET 5 OF 10

DRAWING NO.:
2933–24







REVISIONS				UNLESS SPECIFIED OTHERWISE * DIMENSIONS ARE IN INCHES * DO NOT SCALE DRAWING
REV	DESCRIPTION	DATE	DWN	
A	RELEASE FOR SUBMITTAL	02/01/10	RC	DRAWN BY: RC
B	RELEASE FOR RE-SUBMITTAL	03/10/10	RC	DESIGNED BY: RC
C	RELEASE FOR PRODUCTION	06/22/10	RC	PROJECT MANAGER: MH
D	AS BUILT	08/17/10	RC	DATE: 01/11/10
E	STARTUP REVISIONS	10/14/10	RC	PROJECT NO.: 2933
F	AS-BUILT REVISIONS	11/15/21	TB	

HGL HydroGeologic, Inc

PROJECT TITLE:
ARROWHEAD–LAWRENCE AVIATION
PORT JEFFERSON, NY

DRAWING TITLE:
E-8
SCHEMATIC CONTROL PANEL

SHEET 6 OF 10

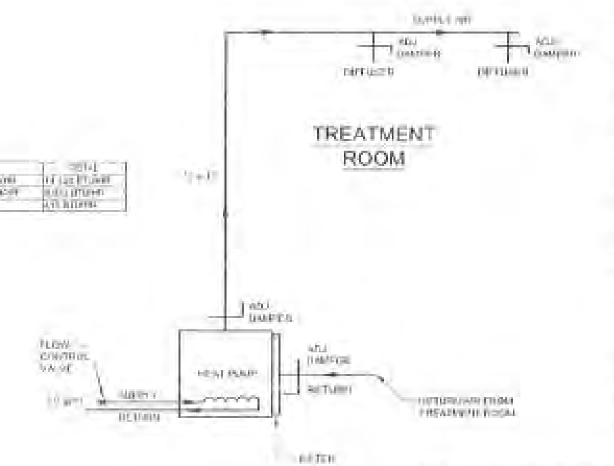
DRAWING NO.:
2933-25

HEAT LOSS CALCULATIONS — DIFFERENTIAL TEMPERATURE (5 DEGREES FAHRENHEIT OUTSIDE, 65 DEGREES FAHRENHEIT INSIDE)

LOCATION	HEAT LOSS FLOOR	HEAT LOSS EXTERNAL WALLS	ROOF	DOOR / WINDOWS	INFILTRATION	TOTAL
TREATMENT ROOM	33' x 25' x 25 x 0.25 = 5,156 BTU/HR	3'-4" x 95'-0" x 60 x 1/11 = 4,441 BTU/HR	33' x 26'-0" x 60 x 1/19 = 2,709 BTU/HR	9.8' x 7' = 77 SF; 3.5' x 6' = 28 SF; 9.1' x 2' = 2 SF; 210 x 60 x 1.20 = 15,120 BTU/HR	93 LF x 2 CFM/LF x 60 x 1.08 = 12,052 BTU/HR	39,842 BTU/HR
CONTROL ROOM	18'-6" x 9'-8" x 25 x 0.25 = 1,041 BTU/HR	9'-4" x 27'-8" x 60 x 1/11 = 1,405 BTU/HR	18'-6" x 9'-8" x 60 x 1/19 = 554 BTU/HR	None	None	2,998 BTU/HR
RESTROOM	8'-0" x 8'-0" x 25 x 0.25 = 351 BTU/HR	9'-4" x 16'-0" x 60 x 1/11 = 764 BTU/HR	5'-8" x 6'-0" x 60 x 1/19 = 171 BTU/HR	None	4 LF x 2 CFM/LF x 60 x 1.08 = 864 BTU/HR	2,150 BTU/HR

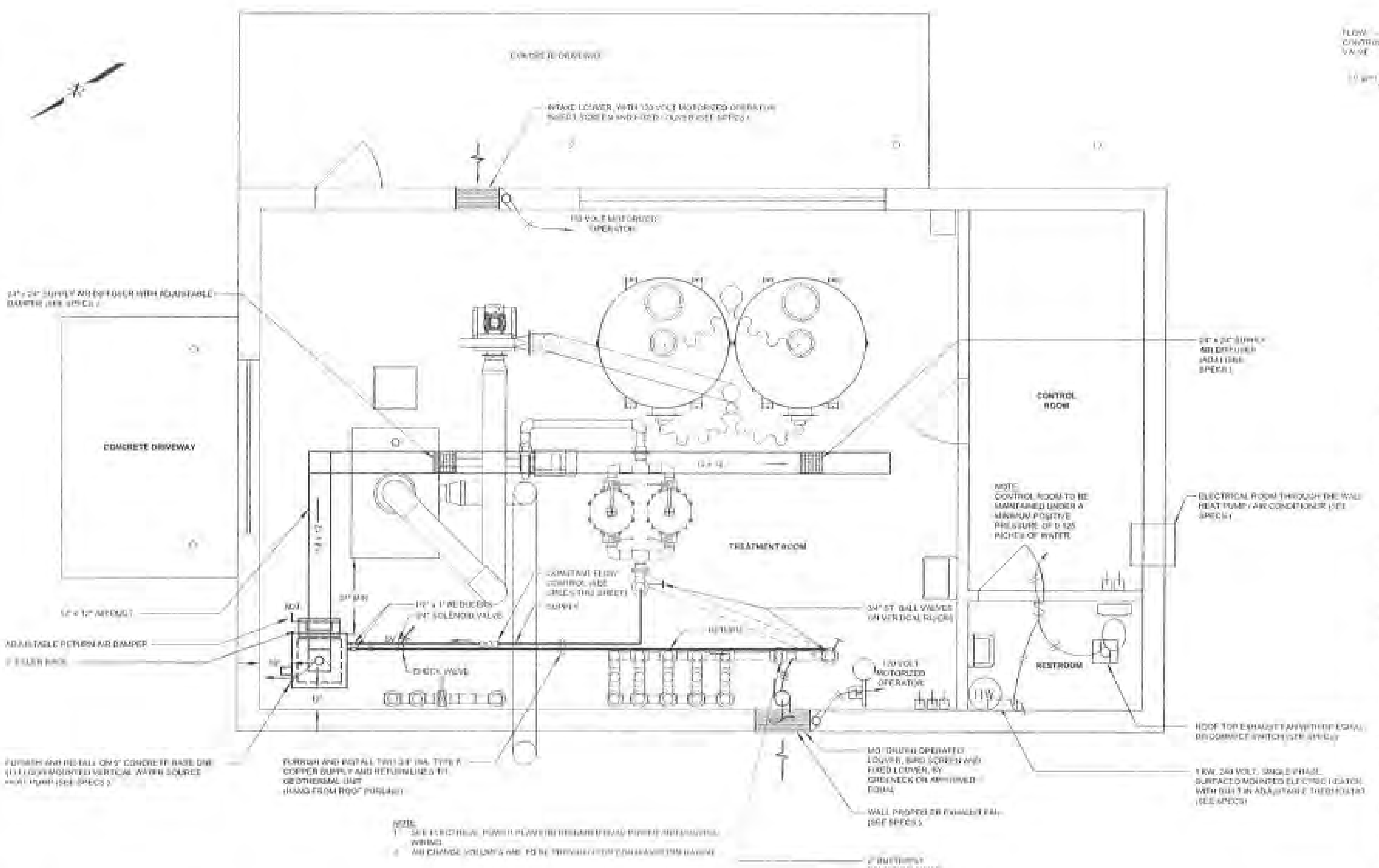
HEAT GAIN CALCULATIONS — DIFFERENTIAL TEMPERATURE (95 DEGREES FAHRENHEIT OUTSIDE, 75 DEGREES FAHRENHEIT INSIDE)

LOCATION	HEAT GAIN FLOOR	HEAT GAIN EXTERNAL WALLS	ROOF	DOORS/WINDOWS	INFILTRATION	LIGHTING	EQUIPMENT	TOTAL
TREATMENT ROOM	33' x 25' x 10 x 0.25 = (-) 2,063 BTU/HR	3'-4" x 95'-0" x 20 x 1/11 = 1,540 BTU/HR	33' x 26'-6" x 20 x 1/19 = 920 BTU/HR	213 SF x 20 x 1.22 = 5,113 BTU/HR	93 LF x 2 CFM/LF x 20 x 1.08 = 4,018 BTU/HR	33' x 25' x 2 watts/SF x 1.34 = 2,211 BTU/HR	27,000 kW x 10% x 1.34 = 3,618 BTU/HR	11,122 BTU/HR
CONTROL ROOM	18'-6" x 9'-8" x 10 x 0.25 = (-)690 BTU/HR	9'-4" x 27'-8" x 20 x 1/11 = 467 BTU/HR	18'-6" x 9'-8" x 20 x 1/19 = 154 BTU/HR	None	None	18'-6" x 9'-8" x 2.0 watts/SF x 1.34 = 452 BTU/HR	14,000 watts x 10% x 1.34 = 1,876 BTU/HR	2,811 BTU/HR
RESTROOM	8'-0" x 8'-0" x 10 x 0.25 = (-)170 BTU/HR	9'-4" x 16'-0" x 20 x 1/11 = 255 BTU/HR	5'-8" x 6'-0" x 20 x 1/19 = 32 BTU/HR	None	4 LF x 2 CFM/LF x 20 x 1.08 = 173 BTU/HR	8'-0" x 8'-0" x 1.0 watts/SF x 1.34 = 145 BTU/HR	None	435 BTU/HR



PID DRAWING HVAC SYSTEM

NOT TO SCALE



NOTE:
1. SEE ELECTRICAL POWER PLANS FOR [illegible] WIRING
2. AIR CHANGE VOLUMES ARE TO BE [illegible]

HVAC FLOOR PLAN

NOT TO SCALE

MINIMUM OUTDOOR AIR VENTILATION REQUIREMENTS FOR CONTINOUS AND EMERGENCY OPERATION

1. TREATMENT ROOM
   A. VOLUME = 33'-0" L X 25'-0" W X (AVERAGE EVE HEIGHT) 13'-8" = 11,280 CUBIC FEET
   B. AIR CHANGES PER HOUR = 12
   C. REQUIRED FAN CAPACITY = 11,280 CUBIC FEET X 12 CHANGES PER HOUR / 60 MINUTES PER HOUR = 2,256 CFM
2. CONTROL ROOM
   A. VOLUME = 18'-6" X 9'-0" W X (AVERAGE EVE HEIGHT) 13'-8" = 2,278 CUBIC FEET
   B. AIR CHANGES PER HOUR = 12
   C. REQUIRED FAN CAPACITY = 2,278 CUBIC FEET X 12 CHANGES PER HOUR / 60 MINUTES PER HOUR = 456 CFM
3. RESTROOM
   A. VOLUME = [illegible] = 613 CUBIC FEET
   B. AIR CHANGES PER HOUR = 6
   C. MINIMUM REQUIRED FAN CAPACITY = 613 CUBIC FEET X 6 CHANGES PER HOUR / 60 MINUTES PER HOUR = 61.3 CFM

REFER TO DRAWING M-01 FOR TREATMENT PLANT EQUIPMENT LAYOUT

HEATING VENTILATION AND AIR CONDITIONING SPECIFICATIONS

1. TREATMENT ROOM VERTICAL WATER SOURCE HEAT PUMP

FURNISH AND INSTALL ONE (1) FLOOR MOUNTED VERTICAL WATER SOURCE HEAT PUMP ENFINITY MODEL VFC018 4.8 GPM, 18,200 BTU/HR MINIMUM CAPACITY, 600 CFM MINIMUM SUPPLY AIR FAN CAPACITY, MINIMUM EFFICIENCY 15.2 AS MANUFACTURED BY MCQUAY, SINGLE PHASE, 240 VOLT POWER SOURCE WITH FILTER RACK AND RETURN AIR COLLAR WITH [illegible] BACK UP AUXILIARY/EMERGENCY ELECTRIC HEAT COIL, SINGLE POINT POWER TO OPERATE IN EMERGENCY SITUATIONS WHERE THE COMPRESSOR NO LONGER FUNCTIONS (THE INTEGRAL ELECTRIC HEAT COIL CAN PROVIDE TEMPORARY HEATING UNTIL THE COMPRESSOR IS REPLACED), R-410A NON OZONE DEPLETING REFRIGERANT, ECM HIGH EFFICIENT FAN MOTOR TO MAINTAIN CONSTANT AIRFLOW OVER VARYING STATIC PRESSURE, 2-WAY MOTORIZED VALVES (NO OR NC) WHEN THERE ISN'T A CALL FOR UNIT OPERATION, THE VALVE CLOSES, REDUCING THE FLOW REQUIREMENTS THROUGH THE CONDENSER WATER LOOP, COMPRESSOR SOUND BLANKET, AND PAINTED CABINET SUITABLE FOR HIGH HUMIDITY ENVIRONMENT.

MINIMUM PERFORMANCE SCHEDULE

Unit Size	Capacity (BTUH)	EER - Water Loop		EER - Ground Loop		EER - Ground Source		Nominal Airflow (CFM)
		PSC	ECM	PSC	ECM	PSC	ECM	
VFC018	18,200	15.2	16.6	17.3	18.8	23.5	26.1	600

2. TREATMENT ROOM EXHAUST FAN/INTAKE LOUVER VENTILATION SYSTEM - (DESIGNED FOR CONTINOUS AND EMERGENCY OPERATION)

FURNISH AND INSTALL ONE (1) COMPLETE TREATMENT ROOM VENTILATION SYSTEM CONSISTING OF ONE (1) 36" X 36" WALL INTAKE LOUVER, ONE (1) WALL EXHAUST FAN, ONE (1) VENTILATION CONTROL PANEL CONTAINING ONE (1) REVERSE ACTING THERMOSTAT AND ONE H-O-A OPERATION SWITCH. THE SYSTEM SHALL BE INSTALLED TO PROVIDE A MINIMUM OF 12 AIR CHANGES/HOUR OR 2,256 CFM. THE INTAKE LOUVER SHALL BE PROVIDED WITH ANODIZED ALUMINUM FIXED WHEATERPROOF LOUVER, A MOTORIZED OPERATING SHUTTER, 120 VOLT MOTOR OPERATOR AND INSECT/BIRD SCREEN. THE EXHAUST FAN SHALL BE PROVIDED WITH A ANODIZED ALUMINUM FIXED LOUVER, MOTORIZED OPERATED SHUTTER, 120 VOLT MOTOR OPERATOR AND BIRD SCREEN. THE VENTILATION CONTROL PANEL SHALL BE A NEMA 12 PANEL CONTAINING A HONEYWELL 120 VOLT PROGRAMMABLE REVERSE ACTING THERMOSTATE, AND A HAND-OFF-AUTOMATIC SWITCH TO PROVIDE FOR MANUAL OPERATION OF THE SYSTEM VIA THE HAND POSITION OF THE SWITCH AND AUTOMATIC OPERATION THROUGH THE REVERSE ACTING THERMOSTAT AND AUTOMATIC POSITION OF THE SWITCH. THE FAN SHALL BE A SIDEWALL DIRECT DRIVE LEVEL 2 PROPELLER FAN MODEL NUMBER SE-[illegible], SINGLE PHASE, 120/208 VOLTS, 1/3 HORSE POWER, 1750 RPM, RATED AT A MINIMUM CAPACITY OF 2,[illegible] CFM @ 0.125 INCHES OF WATER AS MANUFACTURED BY GREENHECK FAN CORPORATION, PO BOX 410, SCHOFIELD, WI 54476, 715.359.6171.

3. TREATMENT ROOM AIR DIFFUSERS

FURNISH AND INSTALL 24" X 24" ADJUSTABLE 3/4 STAINLESS STEEL HORIZONTAL AIR PATTERN DIFFUSERS, SURFACE MOUNTED MODEL SSE-1, 16" DIAMETER NECK, MINIMUM AIR FLOW VOLUME 415 CFM @ 500 FEET/MINUTE NECK VELOCITY AND 0.04 INCHES OF WATER PRESSURE DROP, AS MANUFACTURED BY ANEMOSTAT AIR DISTRIBUTION, 1220 WATSON CENTER ROAD, CARSON, CALIFORNIA 90745, LOCAL DISTRIBUTOR ALBERT WEISS AIR PRODUCTS INC., 270 MADISON AVENUE, NEW YORK CITY, NEW YORK 10016, TELEPHONE NUMBER [illegible].

4. CONTROL ROOM THROUGH THE WALL HEAT PUMP AIR CONDITIONER

FURNISH AND INSTALL ONE (1) THROUGH THE WALL HEAT PUMP AIR CONDITIONER WITH WALL SLEEVE/CASE, MODEL NUMBER GE AHM10DC, MINIMUM COOLING CAPACITY 10,000 BTU/HOUR, MINIMUM HEATING CAPACITY 11,000 BTU/HOUR (ELECTRIC) AND 8,700 BTU/HOUR (REVERSE ACTING CYCLE), DEHUMIDIFICATION CAPACITY OF 2.9 PINT/HOUR, MINIMUM SUPPLY AIR FLOW (OUTDOOR AIR) 3[illegible] CFM, WITH OUTDOOR VENT/EXHAUST, 2 SPEED FAN, SINGLE PHASE, 208/240 VOLT, 15 AMPERS, 3,600 WATTS, AS MANUFACTURED BY GENERAL ELECTRIC CORPORATION OR SPECIFICALLY APPROVED EQUAL.

5. RESTROOM EXHAUST FAN/INTAKE LOUVER VENTILATION SYSTEM - (DESIGNED FOR CONTINOUS AND EMERGENCY OPERATION)

FURNISH AND INSTALL ONE (1) COMPLETE RESTROOM VENTILATION SYSTEM CONSISTING OF ONE (1) ROOFTOP DOWN BLAST EXHAUST VENTILATOR, ONE (1) ADJUSTABLE MONITOR SENSOR CONTROL SWITCH AND ONE REVERSE ACTING THERMOSTATE. THE SYSTEM SHALL BE INSTALLED TO REMOVE RESTROOM AIR DURING AND AFTER USE AND TO PROVIDE TEMPERATURE VENTILATION OF THE RESTROOM VIA AN ADJUSTABLE REVERSE ACTING THERMOSTATE. THE SYSTEM SHALL BE INSTALLED TO PROVIDE A MINIMUM OF 6 AIR CHANGES/HOUR AND/OR 125 CFM. THE EXHAUST FAN SHALL BE PROVIDED WITH A ANODIZED ALUMINUM FIXED LOUVER, MOTORIZED OPERATED SHUTTER, 120 VOLT MOTOR OPERATOR AND BIRD SCREEN. THE VENTILATION CONTROLS SHALL CONSIST OF A HONEYWELL 120 VOLT PROGRAMMABLE REVERSE ACTING THERMOSTATE, AND A ADJUSTABLE MOTION SENSOR SWITCH FOR AUTOMATIC OPERATION OF THE SYSTEM VIA THE MOTION SENSOR AND THE REVERSE ACTING THERMOSTAT. THE FAN SHALL BE A ROOFTOP DIRECT DRIVE LEVEL 2 PROPELLER FAN MODEL NUMBER SE-[illegible], SINGLE PHASE, 120/208 VOLTS, [illegible] HORSE, 1750 RPM, RATED AT A MINIMUM CAPACITY OF [illegible] CFM @ 0.125 INCHES OF WATER AS MANUFACTURED BY GREENHECK FAN CORPORATION PO BOX 410, SCHOFIELD, WI 54476, 715.359.6171.

6. RESTROOM HEATING SYSTEM - (DESIGNED FOR CONTINOUS AND EMERGENCY OPERATION)

FURNISH AND INSTALL ONE (1) COMPLETE RESTROOM HEATING SYSTEM CONSISTING OF ONE WALL MOUNTED SURFACE MOUNTED ELECTRIC HEATER. THE HEATER SHALL BE PROVIDED WITH A FACTORY WIRED BUILT IN THERMOSTAT. THE HEATER SHALL HAVE DUAL PROTECTION IS IN THE FORM OF A THERMAL CUTOUT WITH INDICATOR LIGHT AND A ONETIME THERMAL FUSE. THE UNIT SHALL BE UL AND CUL LISTED. IT SHALL BE SURFACE MOUNTED ON THE RESTROOM WALL. THE UNIT SHALL HAVE A FAST RESPONSE COIL ELEMENT DESIGNED FOR QUICK HEAT AND LOW MAINTENANCE. IT SHALL HAVE THREE PIECE CONSTRUCTION AND AN ELEGANT NORTHERN WHITE FINISH. THE UNIT SHALL BE Q-MARK [illegible] ELECTRIC WALL HEATER. THE UNIT SHALL HAVE THE FOLLOWING CHARACTERISTICS:

VOLTS: 120
WATTS: 1500
AMPS: 12.5
BTU/HR: 5118
HEAT RANGE: 40-85 DEGREES
BUILT-IN THERMOSTAT
FAST RESPONSE COIL ELEMENT
THREE PIECE CONSTRUCTION
EUROPEAN STYLING
DUAL PROTECTION: THERMAL CUTOUT WITH INDICATOR LIGHT AND ONE-TIME THERMAL FUSE
NORTHERN WHITE FINISH

REV #	Revisions	Date	Approved
	AS-BUILT	10/10	
1	ISSUED FOR CONSTRUCTION	5-19-10	

ARROWHEAD CONTRACTING INC.
10981 Eicher Drive
Lenexa, Kansas 66219
(913) 814-9994

CDM FEDERAL PROGRAMS
NEW YORK, NEW YORK

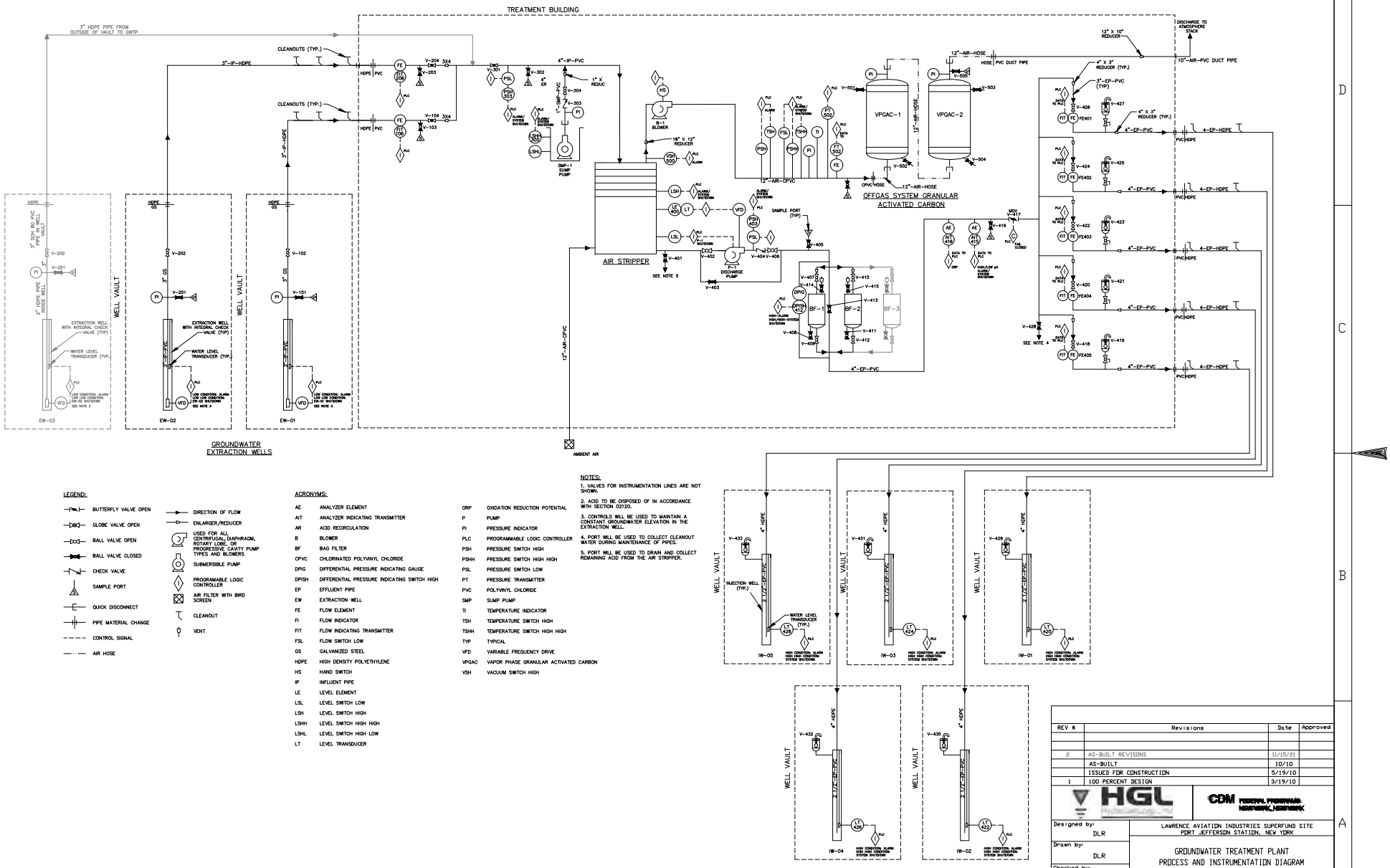
Designed by: DLR
Drawn by: DLR
Checked by: DMM
Reviewed by: RFS
Submitted by: DJP

LAWRENCE AVIATION INDUSTRIES SUPERFUND SITE
PORT JEFFERSON STATION, NEW YORK

GROUNDWATER TREATMENT PLANT
HVAC PLAN

Scale: NTS
Spec. No.: -
Contract No.:
Drawing number: M-01
Date: JANUARY 26, 2010

VERIFY SCALE
BAR IS ONE INCH ON ORIGINAL DRAWING
IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY



LEGEND:

- BUTTERFLY VALVE OPEN
- GLOBE VALVE OPEN
- BALL VALVE OPEN
- BALL VALVE CLOSED
- CHECK VALVE
- SAMPLE PORT
- QUICK DISCONNECT
- PIPE MATERIAL CHANGE
- CONTROL SIGNAL
- AIR HOSE
- DIRECTION OF FLOW
- ENLARGER/REDUCER
- USED FOR ALL CENTRIFUGAL, DIAPHRAGM, ROTARY LOBE, OR PROGRESSIVE CAVITY PUMP TYPES AND BLOWERS
- SUBMERSIBLE PUMP
- PROGRAMABLE LOGIC CONTROLLER
- AIR FILTER WITH BIRD SCREEN
- CLEANOUT
- VENT

ACRONYMS:

AE	ANALYZER ELEMENT
AIT	ANALYZER INDICATING TRANSMITTER
AR	ACID RECIRCULATION
B	BLOWER
BF	BAG FILTER
CPVC	CHLORINATED POLYVINYL CHLORIDE
DPIG	DIFFERENTIAL PRESSURE INDICATING GAUGE
DPISH	DIFFERENTIAL PRESSURE INDICATING SWITCH HIGH
EP	EFFLUENT PIPE
EW	EXTRACTION WELL
FE	FLOW ELEMENT
FI	FLOW INDICATOR
FIT	FLOW INDICATING TRANSMITTER
FSL	FLOW SWITCH LOW
GS	GALVANIZED STEEL
HDPE	HIGH DENSITY POLYETHYLENE
HS	HAND SWITCH
IP	INFLUENT PIPE
LE	LEVEL ELEMENT
LSL	LEVEL SWITCH LOW
LSH	LEVEL SWITCH HIGH
LSHH	LEVEL SWITCH HIGH HIGH
LSHL	LEVEL SWITCH HIGH LOW
LT	LEVEL TRANSDUCER
ORP	OXIDATION REDUCTION POTENTIAL
P	PUMP
PI	PRESSURE INDICATOR
PLC	PROGRAMMABLE LOGIC CONTROLLER
PSH	PRESSURE SWITCH HIGH
PSHH	PRESSURE SWITCH HIGH HIGH
PSL	PRESSURE SWITCH LOW
PT	PRESSURE TRANSMITTER
PVC	POLYVINYL CHLORIDE
SMP	SUMP PUMP
TI	TEMPERATURE INDICATOR
TSH	TEMPERATURE SWITCH HIGH
TSHH	TEMPERATURE SWITCH HIGH HIGH
TYP	TYPICAL
VFD	VARIABLE FREQUENCY DRIVE
VPGAC	VAPOR PHASE GRANULAR ACTIVATED CARBON
VSH	VACUUM SWITCH HIGH

NOTES:

1. VALVES FOR INSTRUMENTATION LINES ARE NOT SHOWN.
2. ACID TO BE DISPOSED OF IN ACCORDANCE WITH SECTION 02120.
3. CONTROLS WILL BE USED TO MAINTAIN A CONSTANT GROUNDWATER ELEVATION IN THE EXTRACTION WELL.
4. PORT WILL BE USED TO COLLECT CLEANOUT WATER DURING MAINTENANCE OF PIPES.
5. PORT WILL BE USED TO DRAIN AND COLLECT REMAINING ACID FROM THE AIR STRIPPER.

REV #	Revisions	Date	Approved
2	AS-BUILT REVISIONS	11/15/21	
	AS-BUILT	10/10	
	ISSUED FOR CONSTRUCTION	5/19/10	
1	100 PERCENT DESIGN	3/19/10	

HGL HydroGeoLogic, Inc. | CDM Federal Programs Newark, New York

Designed by:	DLR
Drawn by:	DLR
Checked by:	GWW
Reviewed by:	SFS
Submitted by:	GWW

LAWRENCE AVIATION INDUSTRIES SUPERFUND SITE
PORT JEFFERSON STATION, NEW YORK

GROUNDWATER TREATMENT PLANT
PROCESS AND INSTRUMENTATION DIAGRAM

VERIFY SCALE
BAR IS ONE INCH ON ORIGINAL DRAWING
IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY.

Scale:	AS SHOWN
Spec. No.:	-
Contract No.:	-
Sheet reference number:	I-01
Date:	JANUARY 27, 2010
Drawing Code:	-

APPENDIX B

PERMIT EQUIVALENCIES

B-1 New York State Pollution Discharge Elimination System Permit Equivalent

B-2 Air Permit Equivalent

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NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION
Division of Water, Bureau of Water Permits
625 Broadway, Albany, New York 12233
www.dec.ny.gov

M E M O R A N D U M
SPDES Permit Equivalent

TO: Steven Scharf, DER

FROM: Gwendolyn Temple, Bureau of Water Permits, DOW

SUBJECT: SPDES Permit Equivalent: Lawrence Aviation Industries On-Site (LAI) Groundwater Treatment System, DER Site ID# 1-52-016

DRAINAGE BASIN: 17

DATE: May 17, 2021

In response to your request dated March 2, 2021, attached please find the effluent limitations and monitoring requirements for the above noted remediation discharge. This is a renewal of an existing SPDES permit equivalent.

The discharge consists of treated water from groundwater collected on-site at the Lawrence Aviation Industries (LAI) Superfund site. The treatment system consists of two groundwater extraction wells, a low-profile air stripper, two particle filtration units, and two vapor carbon units. Treated water is discharged to five injection wells located upgradient from the extraction wells and treatment system.

The DOW does not have any regulatory authority over a discharge from a State, PRP, or Federal Superfund Site. DER will be responsible for ensuring compliance with the attached effluent limitations and monitoring requirements, and approval of all engineering submissions. The additional conditions identifies the appropriate DER contact person who will receive all effluent results, engineering submissions, and modification requests. The Regional Water Engineer should be kept appraised of the status of this discharge and, in accordance with the attached criteria, receive a copy of the effluent results for informational purposes.

If you have any questions, please call Gwendolyn Temple at 518-402-8194.

Attachment (Effluent Limitations and Monitoring Requirements)

cc: Region 1 Regional Water Engineer (via email, w/attach)
BWP Section Chief, DOW (via email, w/attach)

EFFLUENT LIMITATIONS & MONITORING REQUIREMENTS

OUTFALL	DISCHARGE TYPE	LATITUDE/ LONGITUDE	RECEIVING WATER and CLASS	EFFECTIVE	EXPIRING
001	Treated Remediation Wastewater	**IW-01** 40° 55' 35" N 73° 4' 6" W **IW-02** 40° 55' 35" N 73° 4' 5" W **IW-03** 40° 55' 35" N 73° 4' 4" W **IW-04** 40° 55' 35" N 73° 4' 4" W **IW-05** 40° 55' 34" N 73° 4' 5" W	Groundwater, Class GA	Date	Date

The discharges from the treatment facility shall be limited and monitored by the operator as specified below:

Outfall and Parameters **Outfall 001**	**CAS No.**	**Monthly Avg. Limits**	**Daily Max Limits**	**Units**	**Minimum Monitoring Requirements**		**FN**
					Measurement Frequency	**Sample Type**	
Flow	NA	Monitor	200	GPM	Continuous	Recorder	
Flow	NA	Monitor	Monitor	GPD	Continuous	Recorder	
pH	NA	5.1 - 8.5		SU	Weekly	Grab	1
1,1-Dichloroethane	75-34-3	Monitor	5	ug/L	Monthly	Grab	1
cis-1,2-Dichloroethylene	156-59-2	Monitor	5	ug/L	Monthly	Grab	1
Tetrachloroethene	127-18-4	Monitor	5	ug/L	Monthly	Grab	1
1,1,1-Trichloroethane	71-55-6	Monitor	5	ug/L	Monthly	Grab	1
Trichloroethene	79-01-6	Monitor	5	ug/L	Monthly	Grab	1
Aluminum	7439-90-5	Monitor	2	mg/L	Monthly	Grab	1
Chromium, Total	7440-47-3	Monitor	100	ug/L	Monthly	Grab	1
Fluoride	16984-48-8	Monitor	3	mg/L	Monthly	Grab	1
Iron	7439-89-6	Monitor	600	ug/L	Monthly	Grab	1
Lead, Total	7439-92-1	Monitor	50	ug/L	Monthly	Grab	1
Manganese	7439-96-5	Monitor	600	ug/L	Monthly	Grab	1
Nickel, Total	7440-02-0	Monitor	200	ug/L	Monthly	Grab	1
Sum of Iron and Manganese	NA	Monitor	1	mg/L	Monthly	Grab	1

Additional Conditions:

1. Discharge is not authorized until such time as an engineering submission showing the method of treatment is approved by the Department. The discharge rate may not exceed the effective or design treatment system capacity. All monitoring data, engineering submissions and modification requests must be submitted to:

   Steven Scharf
   Division of Environmental Remediation
   NYSDEC, 625 Broadway, Albany, New York 12233- 7015,
   Tel: 518-402- 9620

   With a copy sent to:

   Regional Water Engineer, Region 1
   50 Circle Road, Stony Brook, New York, 11790-3409 Phone: (631) 444-0405

2. Samples and measurements, to comply with the monitoring requirements specified above, must be taken from the effluent side of the final treatment unit prior to discharge to the receiving water body unless otherwise noted above.

3. Only site generated wastewater is authorized for treatment and discharge.

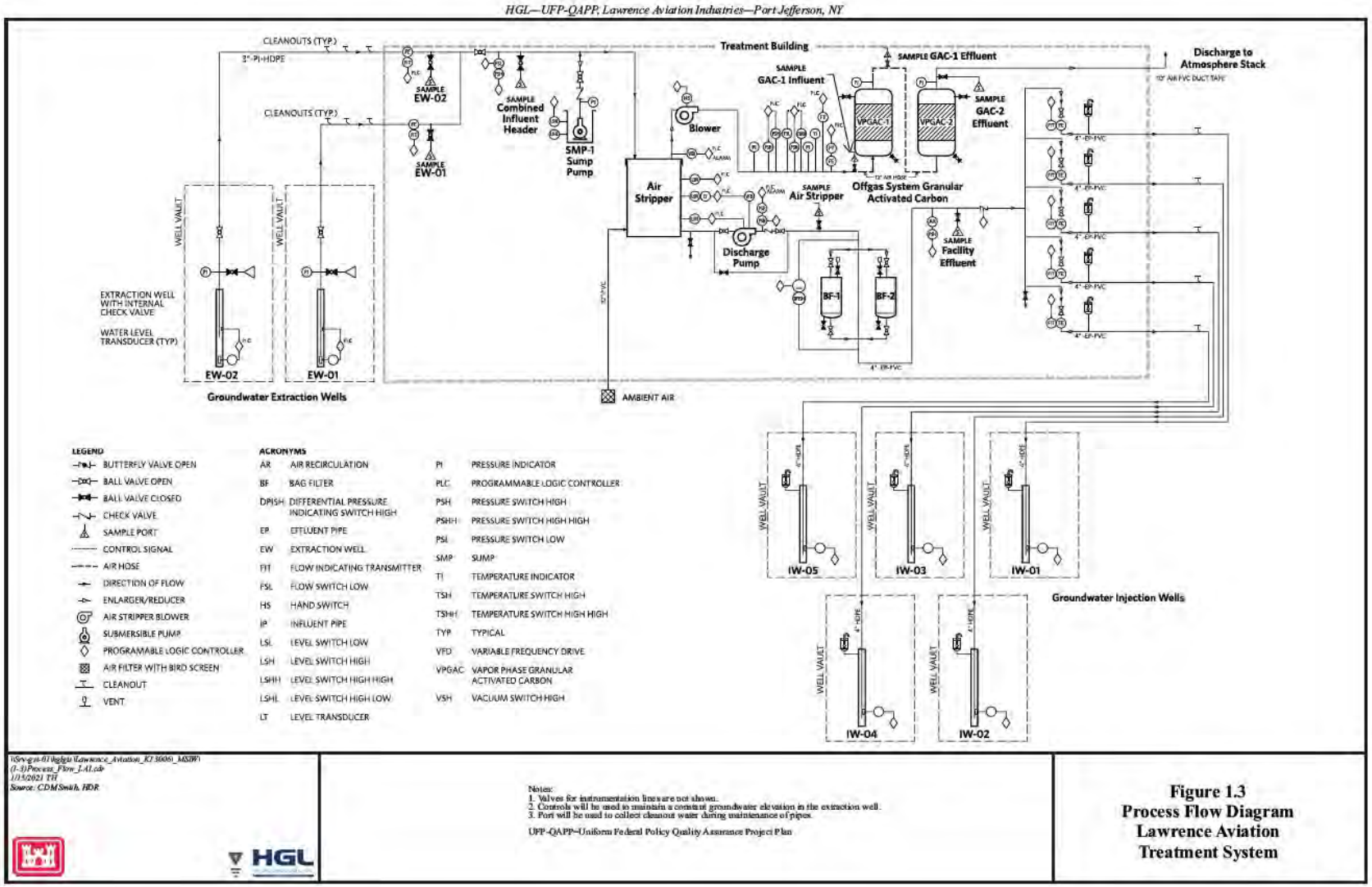
4. Authorization to discharge is valid only for the period noted above but may be renewed if appropriate. A request for renewal must be received 6 months prior to the expiration date to allow for a review of monitoring data and reassessment of monitoring requirements.

5. Both concentration (mg/l or µg/l) and mass loadings (lbs/day) must be reported to the Department for all parameters except flow and pH.

6. Any use of corrosion/scale inhibitors, biocidal-type compounds, or other water treatment chemicals used in the treatment process must be approved by the department prior to use.

7. This discharge and administration of this discharge must comply with the substantive requirements of 6NYCRR Part 750.

MONITORING LOCATIONS



New York State Department of Environmental Conservation
Division of Environmental Remediation
Bureau of Remedial Action A
625 Broadway, 11th Floor
Albany, New York 12233-7015
Phone: (518) 402-9625 • Fax: (518) 402-9022
Website: www.dec.state.ny.us

Alexander B. Grannis
Commissioner

June 24, 2010

Maria Jon, Project Manager
USEPA Region II
290 Broadway, 20th Floor
New York, NY

RE: Lawrence aviation Industies National Priorities List Site, Suffolk County, NYSDEC Site No. 151016.

Dear Ms. Jon:

Camp. Dresser and McKee, Inc., on behalf of the United State Environmental Protection Agency (USEPA), has submitted the enclosed New York State Department of Environmental Conservation (NYSDEC) Division of Air Resources (DAR) Air Permit Application as a permit equivalent. This DAR Air permit equivalent is for the treated air stripper discharge from the Onsite Lawrence Aviation Industries National Priorities List (NPL) groundwater remediation system. The NYSDEC Division of Environmental Remediation (DER) has reviewed the permit equivalent and, by means of this letter approves the onsite area remedy air discharge for immediate operation.

The Lawrence Aviation Industries remedial system utilizes the reasonably available control technology (RACT) with activated carbon. The air discharge will be periodically monitored at start up and will be added for routine monitoring in the operation, maintenance and monitoring (OMM) plan, to be submitted for Departmental review at a later date.

If you have any questions, please contact me at your earliest convenience at (518)402-9620.

Sincerely,

Steven M. Scharf, P.E.
Project Engineer
Division of Environmental Remediation
Bureau of Remedial Action A

ec/w/enc: J. Swartwout
W. Parish, Region 1 DEC
A. Shah, Region 1 DEC
D. Klerides (CDM)
EDOCs:Region 1:Suffolk (C), Brookhaven (T), OMM: Onsite Pump And Treat Air Permit Equivalent

New York State Department of Environmental Conservation
Air Permit Application

DEC ID	APPLICATION ID	OFFICE USE ONLY
- -	- /	/ /

Section I - Certification

Title V Certification

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons directly responsible for gathering the information [required pursuant to 6 NYCRR 201-6.3(d)] I believe the information is, true, accurate and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fines and imprisonment for knowing violations.

Responsible Official	Title
Signature	Date / /

State Facility Certification

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

Responsible Official	Title
Signature	Date / /

Section II - Identification Information

Title V Facility Permit N/A	State Facility Permit N/A
• New • Significant Modification • Administrative Amendment	• New • Modification
• Renewal • Minor Modification General Permit Title:	General Permit Title:
X Application involves construction of new facility	• Application involves construction of new emission unit(s)

Owner/Firm

Name EPA			
Street Address 290 BROADWAY 20TH FLOOR			
City NY	State NY	Country USA	Zip 10007-1866
Owner Classification X Federal • State • Municipal • Corporation/Partnership • Individual			Taxpayer ID

Facility

• Confidential

Name LAWRENCE AVIATION INDUSTRIES GROUNDWATER TREATMENT FACILITY	
Location Address 100 SHEEP PASTURE ROAD	
• City / • Town / • Village PORT JEFFERSON STATION, NY	Zip 11776

Project Description

• Continuation Sheet(s)

GROUNDWATER EXTRACTION SYSTEM USING AN AIRSTRIPPER W/ VAPOR PHASE GRANULATED ACTIVATED CARBON TO REMOVE VOCs FROM GROUNDWATER.

Owner/Firm Contact Mailing Address

Name (Last, First, Middle Initial) JON, MARIA		Phone No. 212 637-3967
Affiliation EPA	Title REMEDIAL PM	Fax No. ( )
Street Address 290 BROADWAY, 20TH FLOOR		
City NY	State NY / Country USA	Zip 10007-1866

Facility Contact Mailing Address

Name (Last, First, Middle Initial)		Phone No. ( )
Affiliation	Title	Fax No. ( )
Street Address		
City	State / Country	Zip

DEC ID
- -

Section III - Facility Information

Classification

• Hospital • Residential • Educational/Institutional • Commercial X Industrial • Utility

Affected States (Title V Only) N/A

• Vermont	• Massachusetts	• Rhode Island	• Pennsylvania	Tribal Land:_____
• New Hampshire	• Connecticut	• New Jersey	• Ohio	Tribal Land:_____

SIC Codes

9511	3499											

Facility Description • Continuation Sheet(s)

GROUNDWATER EXTRACTION SYSTEM W/ AIR STRIPPER FOLLOWED BY VAPOR

Compliance Statements (Title V Only) N/A

I certify that as of the date of this application the facility is in compliance with all applicable requirements: • YES • NO

If one or more emission units at the facility are not in compliance with all applicable requirements at the time of signing this application (the 'NO' box must be checked), the noncomplying units must be identified in the "Compliance Plan" block on page 8 of this form along with the compliance plan information required. For all emission units at this facility that are operating in compliance with all applicable requirements complete the following:

- This facility will continue to be operated and maintained in such a manner as to assure compliance for the duration of the permit, except those units referenced in the compliance plan portion of Section IV of this application.
- For all emission units, subject to any applicable requirements that will become effective during the term of the permit, this facility will meet all such requirements on a timely basis.
- Compliance certification reports will be submitted at least once a year. Each report will certify compliance status with respect to each requirement, and the method used to determine the status.

Facility Applicable Federal Requirements N/A • Continuation Sheet(s)

Title	Type	Part	Sub Part	Section	Sub Division	Paragraph	Sub Paragraph	Clause	Sub Clause

Facility State Only Requirements • Continuation Sheet(s)

Title	Type	Part	Sub Part	Section	Sub Division	Paragraph	Sub Paragraph	Clause	Sub Clause

New York State Department of Environmental Conservation
Air Permit Application

DEC ID
- - -

Section III - Facility Information (continued)

Facility Compliance Certification N/A • Continuation Sheet(s)

Rule Citation

Title	Type	Part	Sub Part	Section	Sub Division	Paragraph	Sub Paragraph	Clause	Sub Clause

• Applicable Federal Requirement • State Only Requirement	• Capping	CAS No. - -	Contaminant Name

Monitoring Information

• Ambient Air Monitoring • Work Practice Involving Specific Operations • Record Keeping/Maintenance Procedures

Description

Work Practice Type	Process Material Code	Process Material Description	Reference Test Method

Parameter Code	Parameter Description	Manufacturer Name/Model No.

Limit Upper	Limit Lower	Limit Units Code	Limit Units Description

Averaging Method Code	Averaging Method Description	Monitoring Frequency Code	Monitoring Frequency Description	Reporting Requirements Code	Reporting Requirements Description

Facility Emissions Summary • Continuation Sheet(s)

CAS No.	Contaminant Name	PTE (lbs/yr)	PTE Range Code	Actual (lbs/yr)
NY075 - 00 - 5	PM-10			
NY075 - 00 - 0	PARTICULATES			
7446 - 09 - 5	SULFUR DIOXIDE			
NY210 - 00 - 0	OXIDES OF NITROGEN			
630 - 08 - 0	CARBON MONOXIDE			
7439 - 92 - 1	LEAD			
NY998 - 00 - 0	VOC			
NY100 - 00 - 0	HAP			
00079 - 01 - 6	Trichloroethene	48		
00127 - 18 - 4	Tetrachloroethene	2		
- -				
- -				
- -				

New York State Department of Environmental Conservation
Air Permit Application

DEC ID
- - - - - - - - -

Section IV - Emission Unit Information

Emission Unit Description • Continuation Sheet(s)

EMISSION UNIT 1-00EU1

EFFLUENT FROM VAPOR PHASE GRANULATED ACTIVATED CARBON (VPGAC) UNIT AIR IS FORCED THROUGH TWO IN-LINE VPGAC UNITS USING A BLOWER. PLEASE SEE SHEET C-01 FOR SITE PLAN WITH BUILDING LOCATION

Building • Continuation Sheet(s)

Building	Building Name	Length (ft)	Width (ft)	Orientation
BLDG-1	TREATMENT BUILDING	40	23	0

Emission Point • Continuation Sheet(s)

EMISSION PT. 00EP1

Ground Elev. (ft)	Height (ft)	Height Above Structure (ft)	Inside Diameter (in)	Exit Temp. (°F)	Cross Section	
					Length (in)	Width (in)
	18.5	3	12	80		
Exit Velocity (FPS)	**Exit Flow (ACFM)**	**NYTM (E) (KM)**	**NYTM (N) (KM)**	**Building**	**Distance to Property Line (ft)**	**Date of Removal**
28	1300			BLDG-1	100	

EMISSION PT.

Ground Elev. (ft)	Height (ft)	Height Above Structure (ft)	Inside Diameter (in)	Exit Temp. (°F)	Cross Section	
					Length (in)	Width (in)
Exit Velocity (FPS)	**Exit Flow (ACFM)**	**NYTM (E) (KM)**	**NYTM (N) (KM)**	**Building**	**Distance to Property Line (ft)**	**Date of Removal**

Emission Source/Control • Continuation Sheet(s)

Emission Source ID	Type	Date of Construction	Date of Operation	Date of Removal	Control Type Code	Control Type Description	Manufacturer's Name/Model No.
BL1	1	9/2010			048	GRANULATED ACTIVATED CARBON	H2K MODEL VG-028

Design Capacity	Design Capacity Units Code	Design Capacity Units Description	Waste Feed Code	Waste Feed Description	Waste Type Code	Waste Type Description

Emission Source ID	Type	Date of Construction	Date of Operation	Date of Removal	Control Type Code	Control Type Description	Manufacturer's Name/Model No.

Design Capacity	Design Capacity Units Code	Design Capacity Units Description	Waste Feed Code	Waste Feed Description	Waste Type Code	Waste Type Description

New York State Department of Environmental Conservation
Air Permit Application

DEC ID
- - - - -

Section IV - Emission Unit Information (continued)

Process Information

• Continuation Sheet(s)

EMISSION UNIT 1-00EU1 PROCESS GAC

Description

THE TREATMENT FACILITY WILL CONSIST OF TWO EXTRACTION WELLS, AN AIR STRIPPER AND A VAPOR PHASE GRANULATED ACTIVATED CARBON SYSTEM WHICH INCLUDES 1 BLOWER AND 2 VAPOR PHASE GAC UNITS PRIOR TO DISCHARGE FROM STACK 00EP1. THE VAPOR PHASE GAC UNITS WILL EACH CONTAIN 3,000 lb 4X10 MESH REACTIVATED VAPOR PHASE CARBON. THE BLOWER WILL RUN AT APPROXIMATELY 1,300 CFM.

Source Classification Code (SCC)	Total Thruput		Thruput Quantity Units	
	Quantity/Hr	Quantity/Yr	Code	Description

• Confidential X Operating at Maximum Capacity • Activity with Insignificant Emissions	Operating Schedule		Building	Floor/Location
	Hrs/Day	Days/Yr		
	24	365	BLDG-1	MAIN

Emission Source/Control Identifier(s)

BL1							

EMISSION UNIT - PROCESS

Description

Source Classification Code (SCC)	Total Thruput		Thruput Quantity Units	
	Quantity/Hr	Quantity/Yr	Code	Description

• Confidential • Operating at Maximum Capacity • Activity with Insignificant Emissions	Operating Schedule		Building	Floor/Location
	Hrs/Day	Days/Yr		

Emission Source/Control Identifier(s)

New York State Department of Environmental Conservation
Air Permit Application

DEC ID
- -

Section IV - Emission Unit Information (continued)

Emission Unit	Emission Point	Process	Emission Source	Emission Unit Applicable Federal Requirements • Continuation Sheet(s)									
				Title	Type	Part	Sub Part	Section	Sub Division	Parag.	Sub Parag.	Clause	Sub Clause
-													
-													
-													
-													

Emission Unit	Emission Point	Process	Emission Source	Emission Unit State Only Requirements • Continuation Sheet(s)									
				Title	Type	Part	Sub Part	Section	Sub Division	Parag.	Sub Parag.	Clause	Sub Clause
-													
-													
-													
-													

Emission Unit Compliance Certification • Continuation Sheet(s)

Rule Citation

Title	Type	Part	Sub Part	Section	Sub Division	Paragraph	Sub Paragraph	Clause	Sub Clause
6	NYCRR	212							

• Applicable Federal Requirement • State Only Requirement • Capping

Emission Unit	Emission Point	Process	Emission Source	CAS No.	Contaminant Name
1-00EU1	00EP1	GAC		00079-01-6	TRICHLOROETHENE

Monitoring Information

- Continuous Emission Monitoring
- [X] Intermittent Emission Testing
- Ambient Air Monitoring
- Monitoring of Process or Control Device Parameters as Surrogate
- Work Practice Involving Specific Operations
- Record Keeping/Maintenance Procedures

Description

MONTHLY GRAB SAMPLES ANALYZED FOR VOCs FROM THE GAC UNIT EFFLUENT AND INFLUENT

Work Practice Type	Process Material Code	Process Material Description	Reference Test Method
		OFFGAS	TO-15

Parameter Code	Parameter Description	Manufacturer Name/Model No.
54	VOLATILE ORGANIC COMPOUNDS	

Limit Upper	Limit Lower	Limit Units Code	Limit Units Description
23,000		255	MICROGRAMS PER CUBIC METER

Averaging Method Code	Averaging Method Description	Monitoring Frequency Code	Monitoring Frequency Description	Reporting Requirements Code	Reporting Requirements Description

DEC ID
- -

Section IV - Emission Unit Information (continued)

Determination of Non-Applicability (Title V Only) • Continuation Sheet(s)

Rule Citation

Title	Type	Part	Sub Part	Section	Sub Division	Paragraph	Sub Paragraph	Clause	Sub Clause

Emission Unit	Emission Point	Process	Emission Source	• Applicable Federal Requirement • State Only Requirement
-				

Description

Rule Citation

Title	Type	Part	Sub Part	Section	Sub Division	Paragraph	Sub Paragraph	Clause	Sub Clause

Emission Unit	Emission Point	Process	Emission Source	• Applicable Federal Requirement • State Only Requirement
-				

Description

Process Emissions Summary • Continuation Sheet(s)

EMISSION UNIT 1-00EU1 PROCESS GAC

CAS No.	Contaminant Name	% Thruput	% Capture	% Control	ERP (lbs/hr)	ERP How Determined
00079-01-6	TRICHLOROETHENE			95	0.11	02

PTE (lbs/hr)	PTE (lbs/yr)	PTE (standard units)	Standard Units	PTE How Determined	Actual (lbs/hr)	Actual (lbs/yr)
0.11	964					

EMISSION UNIT 1-00EU1 PROCESS GAC

CAS No.	Contaminant Name	% Thruput	% Capture	% Control	ERP (lbs/hr)	ERP How Determined
00127-18-4	TETRACHLOROETHENE			95	0.003	02

PTE (lbs/hr)	PTE (lbs/yr)	PTE (standard units)	Standard Units	PTE How Determined	Actual (lbs/hr)	Actual (lbs/yr)
0.003	27					

EMISSION UNIT - PROCESS

CAS No.	Contaminant Name	% Thruput	% Capture	% Control	ERP (lbs/hr)	ERP How Determined
- -						

PTE (lbs/hr)	PTE (lbs/yr)	PTE (standard units)	Standard Units	PTE How Determined	Actual (lbs/hr)	Actual (lbs/yr)

New York State Department of Environmental Conservation
Air Permit Application

DEC ID
- -

Section IV - Emission Unit Information (continued)

EMISSION UNIT	Emission Unit Emissions Summary • Continuation Sheet(s)			
-				
CAS No.	Contaminant Name			
- -				
ERP (lbs/yr)	PTE Emissions		Actual	
	(lbs/hr)	(lbs/yr)	(lbs/hr)	(lbs/yr)
CAS No.	Contaminant Name			
- -				
ERP (lbs/yr)	PTE Emissions		Actual	
	(lbs/hr)	(lbs/yr)	(lbs/hr)	(lbs/yr)
CAS No.	Contaminant Name			
- -				
ERP (lbs/yr)	PTE Emissions		Actual	
	(lbs/hr)	(lbs/yr)	(lbs/hr)	(lbs/yr)
CAS No.	Contaminant Name			
- -				
ERP (lbs/yr)	PTE Emissions		Actual	
	(lbs/hr)	(lbs/yr)	(lbs/hr)	(lbs/yr)

Compliance Plan N/A • Continuation Sheet(s)

For any emission units which are not in compliance at the time of permit application, the applicant shall complete the following

Consent Order | Certified progress reports are to be submitted every 6 months beginning ___/___/___

Emission Unit	Process	Emission Source	Applicable Federal Requirement: Title	Type	Part	Sub Part	Section	Sub Division	Parag.	Sub Parag.	Clause	Sub Clause
-												

Remedial Measure / Intermediate Milestones	R/I	Date Scheduled

DEC ID
- -

Section IV - Emission Unit Information (continued)

Request for Emission Reduction Credits N/A • Continuation Sheet(s)

EMISSION UNIT -

Emission Reduction Description

Contaminant Emission Reduction Data

Baseline Period ___/___/___ to ___/___/___

CAS No.	Contaminant Name	Reduction Date	Reduction Method	ERC (lbs/yr) Netting	ERC (lbs/yr) Offset
- -		___/___/___			
- -					
- -					

Facility to Use Future Reduction

Name | APPLICATION ID - - /

Location Address

• City / • Town / • Village | State | Zip

Use of Emission Reduction Credits N/A • Continuation Sheet(s)

EMISSION UNIT -

Proposed Project Description

Contaminant Emissions Increase Data

CAS No.	Contaminant Name	PEP (lbs/yr)
- -		

Statement of Compliance

• All facilities under the ownership of this "ownership/firm" are operating in compliance with all applicable requirements and state regulations including any compliance certification requirements under Section 114(a)(3) of the Clean Air Act Amendments of 1990, or are meeting the schedule of a consent order.

Source of Emission Reduction Credit - Facility

Name | PERMIT ID - - /

Location Address

• City / • Town / • Village | State | Zip

Emission Unit	CAS No.	Contaminant Name	ERC (lbs/yr) Netting	ERC (lbs/yr) Offset
-	- -			
-	- -			
-	- -			

DEC ID
- - - - - - - - - -

Supporting Documentation

- P.E. Certification (form attached)
- List of Exempt Activities (form attached)
- Plot Plan
- Methods Used to Determine Compliance (form attached)
- ☒ Calculations
- Air Quality Model (_____ / _____ / _____)
- Confidentiality Justification
- Ambient Air Monitoring Plan (_____ / _____ / _____)
- Stack Test Protocols/Reports (_____ / _____ / _____)
- Continuous Emissions Monitoring Plans/QA/QC (_____ / _____ / _____)
- MACT Demonstration (_____ / _____ / _____)
- Operational Flexibility: Description of Alternative Operating Scenarios and Protocols
- Title IV: Application/Registration
- ERC Quantification (form attached)
- Use of ERC(s) (form attached)
- Baseline Period Demonstration
- Analysis of Contemporaneous Emission Increase/Decrease
- LAER Demonstration (_____ / _____ / _____)
- BACT Demonstration (_____ / _____ / _____)
- Other Document(s): _____ (/ /)

_____ (/ /)
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Air Concentration Calculations for Emission Point 00EP1
Lawrence Aviation Industries Superfund Site
Port Jefferson Station, New York

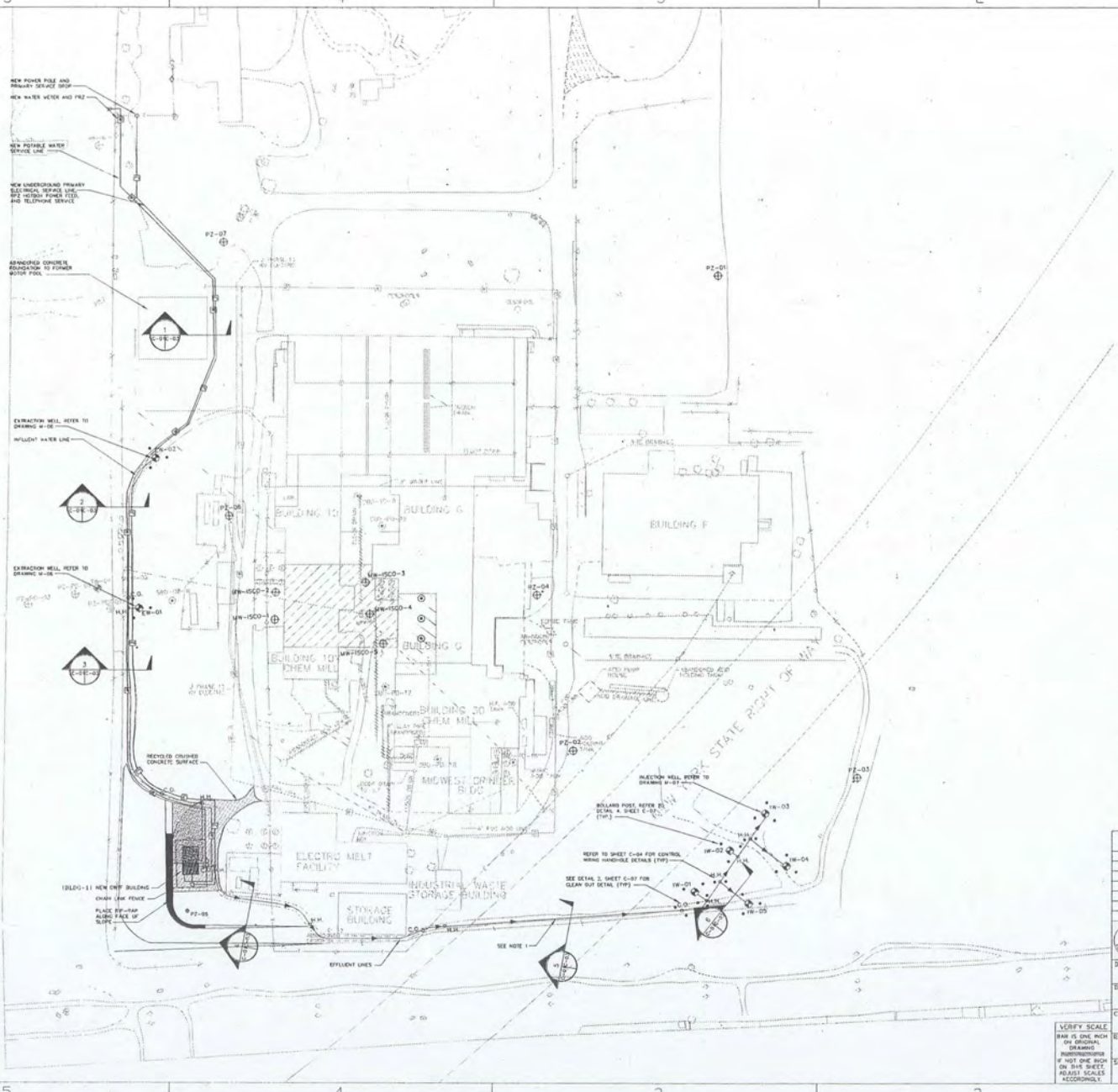
Parameters	Maximum Estimated Influent Water Quality (µg/L)	Maximum Flow Rate (gpm)	Air Flow Rate (cfm)	Mass Removal (lb/yr)	Air Concentration Influent to VPGAC (ug/m^3)	Air Concentration Effluent to VPGAC (ug/m^3)	Air Concentration Effluent to VPGAC (lb/yr)[1]
Volatile Organic Compounds:							
Chloromethane	0.53	200	1,300	0.46	10.88	0.54	0.02
1,1-Dichloroethene	0.54	200	1,300	0.47	11.09	0.55	0.02
Methyl tert-Butyl Ether	1.6	200	1,300	1.40	32.86	1.64	0.07
1,1-Dichloroethane	2.5	200	1,300	2.19	51.34	2.57	0.11
cis-1,2-Dichloroethene	2.3	200	1,300	2.01	47.24	2.36	0.10
Chloroform	1.6	200	1,300	1.40	32.86	1.64	0.07
1,1,1-Trichloroethane	2.2	200	1,300	1.93	45.18	2.26	0.10
Trichloroethene	1,100	200	1,300	964	22,591	1,130	48
Tetrachloroethene	31	200	1,300	27	637	32	1.36

NOTE:

1. Due to low estimated annual emissions, only included on the permit were Trichloroethene and Tetrachloroethene.

ABBREVIATIONS:

cfm - cubic feet per minute
gpm - gallons per minute
lb/yr - pounds per year
µg/L - micrograms per liter
$\mu g/m^3$ - micrograms per cubic meter
VPGAC - vapor phase granulated activated carbon



NOTES:

1. PIPE INSTALLATION WITH LIMITS OF STATE RIGHT OF WAY TO BE BURIED MINIMUM 1'00" BELOW GRADE. REFER TO DETAIL 5, SHEET C-03.
2. RESTORATION WITHIN NYSDOT RIGHT OF WAY TO BE COMPLETED IN ACCORDANCE WITH NYSDOT STANDARD SPECIFICATION SECTION 107-08.
3. PRIOR TO NEW YORK STATE DEPARTMENT OF TRANSPORTATION (NYSDOT) HIGHWAY WORK PERMIT ACCEPTANCE, FINAL SURVEY ELEVATIONS OF THE EFFLUENT LINES WILL BE SUBMITTED TO THE NYSDOT.

REV #	Revisions	Date	Approved
	ISSUED FOR CONSTRUCTION	5/7/10	
1	100 PERCENT DESIGN	3/19/10	

ARROWHEAD CONTRACTING INC.
10981 Dicker Drive
Lenexa, Kansas 66219
(913) 814-9994

CDM FEDERAL PROGRAMS
NEW YORK, NEW YORK

LAWRENCE AVIATION SUPERFUND SITE
PORT JEFFERSON STATION, NEW YORK

GROUNDWATER TREATMENT PLANT
PROJECT SITE PLAN

Designed by:	DLR
Drawn by:	DLR
Checked by:	GWW
Reviewed by:	SFS
Submitted by:	GWW
Scale:	AS SHOWN
Spec. No.:	-
Contract No:	-
Sheet reference number:	C-01
Date:	JANUARY 27, 2010
Drawing Code:	-

VERIFY SCALE
BAR IS ONE INCH ON ORIGINAL DRAWING
IF NOT ONE INCH ON THIS SHEET ADJUST SCALES ACCORDINGLY.

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APPENDIX C

EQUIPMENT OPERATION AND MAINTENANCE MANUALS

C-1 H2K Operation and Maintenance Manual
C-2 pH Probe/Pre-Amplifier/Transmitter
C-3 Magnetic Flowmeters
C-4 Motor-Operated Fail-Safe Valve
C-5 Air Velocity Transmitter
C-6 Discharge Pump
C-7 Motor Control Center
C-8 Variable Frequency Drive Installation Manual
C-9 Variable Frequency Drive User Manual
C-10 25kVA Transformer
C-11 Extraction Well Line Filter
C-12 Electrical Distribution Panels
C-13 Motorized Damper
C-14 Control Room Air Conditioner/Heater
C-15 Uninterruptible Power Supply
C-16 Water Heater
C-17 Pre-Engineered Metal Building Maintenance Guide
C-18 RPZ Valve
C-19 Security/Fire Alarm System Operation Guide
C-20 Eye-Wash Station Mixing Valve
C-21 Geothermal Heat Pump
C-22 Control Panel Wiring Schematics
C-23 Pump SMP-1
C-24 Pumps EW-01, EW-02, and EW-03
C-25 O&M Forms
C-26 Example Electrical Preventative Maintenance Program
C-27 Bag Filter Unit Drawing, 6-Filter Unit
C-28 Replacement PLC and HMI

Due to the overly large size of the electronic version of the Equipment Manual file, it has been omitted from this version of the O&M Manual. The Equipment Manual can be found on the HGL Client Portal and also on a compact disc of the entire O&M Manual that will be delivered to the GWTP after the O&M Manual is finalized.

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APPENDIX D

HEALTH AND SAFETY INSPECTION CHECKLIST

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28.3 USACE FACILITY SAFETY INSPECTION CHECKLIST

Facility	Date:	Inspected by:

INSTRUCTIONS

The purpose of this inspection checklist is to record your facility self-inspection.

The checklist is divided into major hazard groups. Under each hazard group are **Statements** about various conditions in the facility. There are three possible answers for each statement: **Yes** means that that there are no deficiencies associated with that statement anywhere in the facility; **No** means that there are one or more deficiencies; **N/A** means that the statement is not applicable to your facility; and, **Corrected** means that all the deficiencies connected to that statement have been corrected during the inspection. For example, if an electric wall socket is missing a cover plate but it was immediately corrected, then the **No** and the **Corrected** boxes would be checked. A "No" deficiency will be noted in the Deficiency Description box. If three wall sockets in various employees' facility offices were missing cover plates and either none of them or not all of them were corrected, then the **No** box would be checked and one or more deficiencies would be recorded in the Deficiency Description box.

The entry in the Deficiency Description box should include a deficiency number as explained in the Office and Facility Inspection Program, Section 3, the statement number of the deficiency, and the location(s) of the deficiency. Deficiencies found in multiple locations under the same statement number can be grouped under one deficiency number.

Forward the completed Inspection Checklist to the responsible manager and to the Director, Health & Safety by the 15th of the first month of the calendar Quarter in which the inspection is due.

28.3 USACE FACILITY SAFETY INSPECTION CHECKLIST

Facility	Date:	Inspected by:

1.0 GENERAL FACILITIES ISSUES

Workplace Conditions	Yes	No	N/A	Corrected	EM 385-1-1 or OSHA reference
1.1 Bulletin board: State and federal Labor Posters are current and posted in an area frequented by employees. OSHA 300A posted Feb 1-April 30.					01.A.07h and 01.A.07.g
1.2 Bulletin board: Emergency phone numbers are posted where they can be found in case of an emergency. A map to the nearest emergency care facility is available					01.A.07a-b
1.3 Bulletin board: The facility has a copy of the APP.					01.A.07c
1.4 Bulletin board: The facility has a deficiency tracking log.					01.A.07.e
1.5 Bulletin board: The facility has an up to date SDS book or other system for making SDSs available to personnel and a list of chemicals and quantities with their locations.					01.A.07.i
1.6 Facility offices and cubicles are kept neat without excessive piles of files, books, plans either on top of or under desks, that could pose a hazard or impede egress.					02.B.03
1.7 Lighting is adequate, especially in escape routes.					07.A and 07.B.02
1.8 Are there new hazards or hazards not addressed by this checklist that should be assessed or controlled?					
Notes					

2.0 WALKING AND WORKING SURFACES

Workplace Conditions	Yes	No	N/A	Corrected	EM 385-1-1 or OSHA reference
2.1 Floors are clean. Free of trip, slip, and fall hazards. Floors are free of protrusions, loose tiles, or carpets.					14.D.02
2.2 Corridors, passageways and aisles are clear and unobstructed.					14.D.02
2.3 Stair treads and edgings are in good repair.					14.D.02
2.4 Handrails are present and in good repair.					24.C
2.5 Exits are clear and unobstructed.					14.C.07
2.6 Outside exit landings and walkways are clear and unobstructed.					29 CFR 1910.37

HydroGeoLogic, Inc
Exceeding Expectations

28.3 USACE FACILITY SAFETY INSPECTION CHECKLIST

Facility	Date:	Inspected by:

Workplace Conditions	Yes	No	N/A	Corrected	EM 385-1-1 or OSHA reference
2.7 Exits are marked with visible signs. If exit signs are illuminated there are no burnt out bulbs.					08 Table 8-1 Accident prevention signs
2.8 Facility exit doors open easily and without use of keys or other actions that might impede egress.					OSHA 29 CFR 1910.36 and 1910.37 NFPA 101 life safety codes
Notes					

3.0 STORAGE

Workplace Conditions	Yes	No	N/A	Corrected	EM 385-1-1 or OSHA reference
3.1 Storage areas are neat and maintain at least 2 feet of unobstructed aisle space.					14.C.07
3.2 Adequate storage shelving is available. Boxes are not stacked on the floor or on top of file cabinets or in other locations that might pose a hazard or impede egress.					14.C.01
3.3 Vertical storage shelving and other storage systems are sturdy and stable or are secured to walls or to each other to prevent falling over or collapsing (bookcases are excluded from this requirement).					14.C
3.4 Materials are properly stacked (heaviest materials on the bottom).					14.C
3.5 Step ladders are present to enable access to top shelves and the ladders are in good condition and have slip resistant feet.					24B.08
3.6 Flammable/combustible liquids or compressed gases are not stored in offices.					09.B.01
3.7 Field equipment is cleaned before it is returned to the facility for storage.					OSHA 29 CFR 1910.303(b)(1)(i)
3.8 If there are more than 10 gallons of flammable solvents and chemicals stored inside, they are stored in NFPA and OSHA compliant cabinets away from sources of ignition. If less than 10 gallons they will be stored in original containers.					09.B.12 and OSHA 29 CFR1910.106 and 29 CFR 1910.101

28.3 USACE FACILITY SAFETY INSPECTION CHECKLIST

Facility	Date:	Inspected by:

Workplace Conditions	Yes	No	N/A	Corrected	EM 385-1-1 or OSHA reference
3.9 Each container of hazardous substances is labeled with the name of the chemical and its hazards or it bears the original label from the manufacturer.					06.B.01.a (4)b OSHA 29 CFR 1910.1200
3.10 Mezzanines used for storage have been evaluated for static load capacity and a sign stating the allowable weight per square foot posted.					OSHA 29 CFR1926.250 and 1910.30(a)

Notes

4.0 EQUIPMENT AND FURNISHINGS

Workplace Conditions	Yes	No	N/A	Corrected	EM 385-1-1 or OSHA reference
4.1 Office furniture is functional without obvious defects (clean and without protruding splinters or sharp metal edges).					5(a)1 OSHA General Duty Clause
4.2 Space heaters have guards in front of the heating elements, are positioned clear of combustible materials, and have a working tip switch.					09.D.09
4.3 Machines with rotating parts, pinch points, flying debris, or sparks adequately guarded.					17.A.03
4.4 Power saws and all mechanical cutting and grinding equipment are adequately guarded.					13.C.02
4.5 Machinery and equipment are inspected well maintained and clean.					18.G.02

Notes

28.3 USACE FACILITY SAFETY INSPECTION CHECKLIST

Facility	Date:	Inspected by:

5.0 ELECTRICAL SAFETY

Workplace Conditions	Yes	No	N/A	Corrected	EM 385-1-1 or OSHA reference
5.1 Electrical equipment is used in the application for which it was rated (power levels for extension cords, wet vs. dry service, etc.).					11.A.04
5.2 Power cords are in good condition – no exposed wires, not spliced, not frayed or with cracked or damaged plugs.					11.A.04e
5.3 Power cords are used safely – placed/secured to prevent tripping and not run under carpets or chair mats or anything else that might compress the cords or retain heat.					11.A.04
5.4 Temporary wiring used for 90 days or less shall be marked with the date put into service.					National Electric code section 590.3 (B)and OSHA 29 CFR 1910.305(a)(2)(i)(B)
5.5 There is no daisy chaining of extension cords and/or power strips.					OSHA 29CFR 1910.303 (a) and 1910.304(b)(2)
5.6 Ground fault circuit interrupter outlets are in place near water (sinks, showers, etc.).					19.A.05m
5.7 Outlets (receptacles) are grounded with no evidence of cracking or burning.					EM 385-1-1 Appendix E OSHA 29 CFR 1910.304 (a)
5.8 All wall electrical receptacles and switches are protected with a cover plate so that no wires or energized components are exposed.					OSHA 29 CFR 1926.405(j)(1)(i) and 29 CFR 1910.305 (b)(2)(i)
5.9 Circuit breaker boxes have securely fastened covers.					11.C.01 11.C.05
5.10 Each circuit breaker is marked with the outlet or circuit it controls.					11.C.04
5.11 Access to each circuit breaker box is not impeded by stored materials (3 feet of clearance taped off on the floor in front of the circuit breaker box marking an access way is best practice).					11.C.01 OSHA 29 CFR 1910.303
5.12 All unused openings (including conduit knockouts) in electrical enclosures and fittings are closed with appropriate covers, plugs, and plates. There are no exposed energized components.					11.A
5.13 Portable electric hand tools are grounded or double insulated.					11.D

28.3 USACE FACILITY SAFETY INSPECTION CHECKLIST

Facility	Date:	Inspected by:

Notes

6.0 FIRE AND EMERGENCY RESPONSE

Workplace Conditions	Yes	No	N/A	Corrected	EM 385-1-1 or OSHA reference
6.1 Fire extinguishers are the proper type for the hazard.					09.A
6.2 The location of the nearest fire extinguisher is indicated by a sign on the wall over its location.					08.A.05 f (1)
6.3 Access to fire extinguishers is not impeded by stored materials					OSHA 29 CFR 1910.157
6.4 Sprinkler heads, if present, are in good condition and their operation is unimpeded (there is at least 18 inches of clearance all the way around sprinkler heads). Nothing is hung from exposed sprinkler heads.					OSHA 29 CFR 1910.159(c)(10)
6.5 Building management conducts annual sprinkler system testing.					OSHA 29CFR1910.159(c)(2); NFPA 25 5.1 and Table 5.1.
6.6 Smoke and/or heat detectors, if present, are in good condition and their operation is unimpeded.					OSHA 29 CFR 1019.164
6.7 Building management conducts annual smoke and/or heat detector testing.					National Fire Protection Association, National Fire Alarm Code, NPFA-72
6.8 Evacuation routes are posted near every exit door and in the elevator lobby.					33.B.02 n.(3)
6.9 Each employee knows the rally point to meet after evacuation.					01.E.01.d.(3)
6.10 One employee is responsible for bringing the visitor's log from the building.					OSHA 29 CFR 1910.38
6.11 The building runs fire drills at least annually, if occupancy exceeds 50 personnel.					Fire brigade drills 09.J.02
6.12 Smoking prohibited except in designated areas and signs posted.					33.B.02 i.(1)

28.3 USACE FACILITY SAFETY INSPECTION CHECKLIST

Facility	Date:	Inspected by:

Notes

7.0 FIRST AID AND SANITATION

Workplace Conditions	Yes	No	N/A	Corrected	EM 385-1-1 or OSHA reference
7.1 Kitchenette appliances are clean and in safe working order:					OSHA 29 CFR 1910.141
7.1.1 Toasters in good condition and free of heavy accumulations of crumbs, which can pose a fire hazard.					OSHA 29 CFR 1910.141
7.1.2 Coffee Makers in good condition with no exposed wiring or signs of overheating.					OSHA 29 CFR 1910.141
7.1.3 Microwaves in good condition: doors close securely and protective covers in place.					OSHA 29 CFR 1910.141
7.2 Materials in First Aid and CPR kits are within their expiration dates.					03.A.03 a. (2)b.
7.3 Facility toilets and washing stations are clean and sanitary.					02.E
7.4 Facility quick water flush systems in place if corrosive liquids are present.					06.B.02 b. and OSHA 29 CFR 1910.151(c)
7.5 Potable water and refreshment for extreme temperature work (hot or cold) is available.					5(a)1 OSHA General Duty Clause
Notes					

8.0 CHECKS AND INSPECTIONS

Workplace Conditions	Yes	No	N/A	Corrected	EM 385-1-1 or

28.3 USACE FACILITY SAFETY INSPECTION CHECKLIST

Facility	Date:	Inspected by:

					OSHA reference
8.1 A monthly functional test of emergency lights is conducted for 30 seconds. Lights should be fully operational during the entire test.					NFPA Life Safety Code (101) OSHA 29 CFR 1910.37
8.2 Fire extinguishers are inspected monthly by HGL or building management and serviced annually by a service company.					09.F.01 a.
8.3 First aid kits/CPR equipment are inspected minimally every 3 months and consumed or out of date supplies replaced.					03.B.03
8.4 Eyewash and emergency shower stations inspected every 30 days.					OSHA 29 CFR 1910.151(c)
Notes					

9.0 PERSONAL PROTECTIVE EQUIPMENT

Workplace Conditions	Yes	No	N/A	Corrected	EM 385-1-1 or OSHA reference
9.1 Eye protection available					05.B
9.2 Head protection available					05.D
9.3 Hand protection available					05.H
9.4 Electrical/Arc Flash equipment available					05.I/11.B.02
9.5 Protective clothing available					05.A.06
9.6 Fall protection equipment available					05.A.09
9.7 Respiratory protection available					05.G
9.8 Lockout/Tagout equipment available					12.B.02
9.9 Insect repellent available					06. E. 01
9.10 Hearing protection available					05.C.04
9.11 Permit-required confined space entry equipment available					Section 34
Notes					

28.3 USACE FACILITY SAFETY INSPECTION CHECKLIST

Facility	Date:	Inspected by:

10.0 COVID-19

		Yes	No	N/A	Corrected
10.1	Controls comply with current client requirements.				
10.2	Controls comply with current CDC recommendations.				
10.3	Controls comply with local or project requirements.				
10.4	Personnel spaced at least 6 feet apart.				
10.5	Personnel wearing face covers over nose and mouth when near others.				
10.6	Handwashing facilities readily available and stocked with soap or hand sanitizer.				
10.7	Meetings are held outside or in well ventilated spaces that allow distancing.				
10.8	Commonly touched surfaces are disinfected regularly.				
10.9	Persons with signs of illness, such as coughing, are excluded.				
10.10	Personnel are reminded that they are to evaluate their health status every morning before coming to work and that they are not to come to work if ill.				
Notes					

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APPENDIX E

HOSPITAL ROUTE MAP

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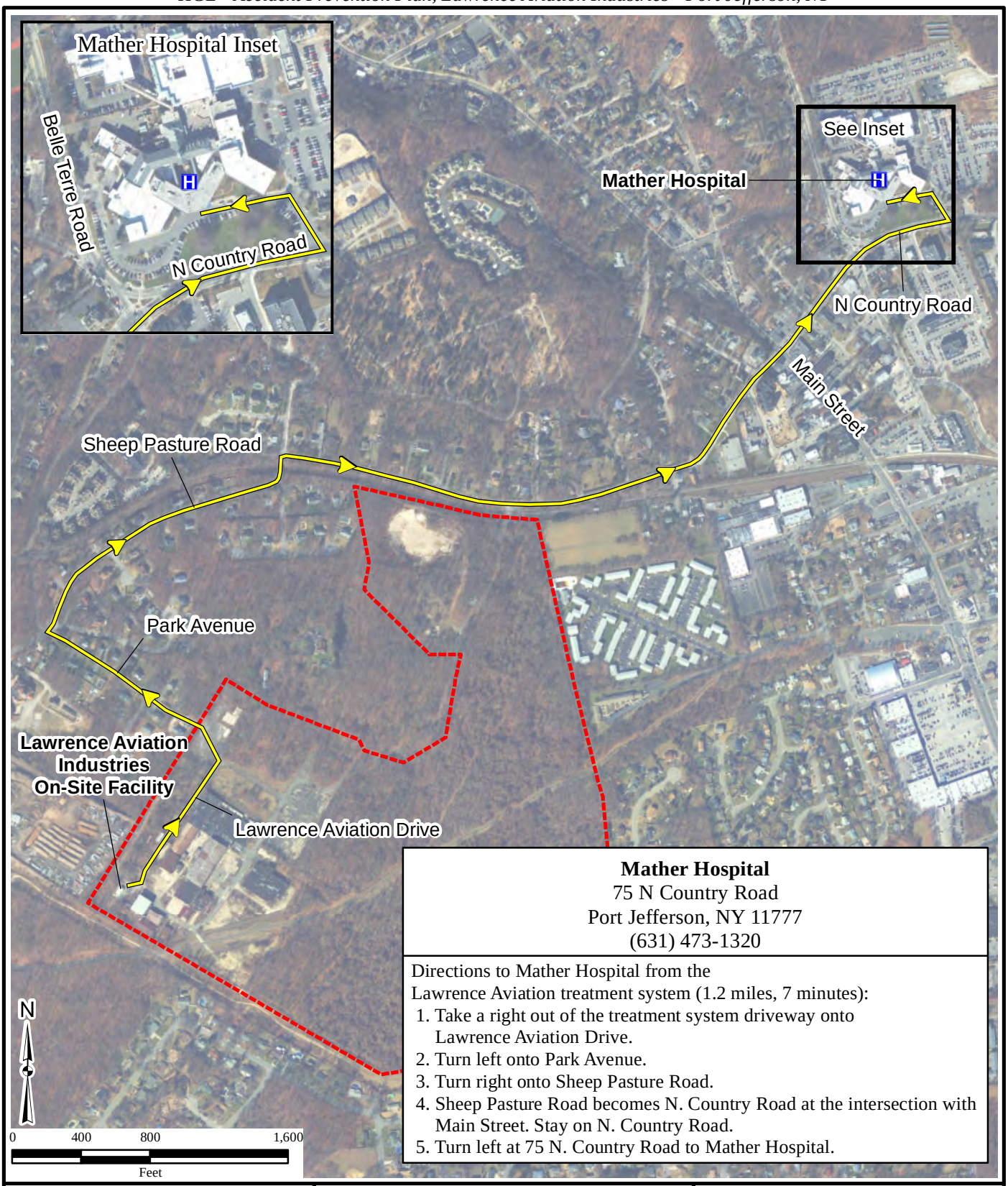

Mather Hospital
75 N Country Road
Port Jefferson, NY 11777
(631) 473-1320

Directions to Mather Hospital from the Lawrence Aviation treatment system (1.2 miles, 7 minutes):

1. Take a right out of the treatment system driveway onto Lawrence Aviation Drive.
2. Turn left onto Park Avenue.
3. Turn right onto Sheep Pasture Road.
4. Sheep Pasture Road becomes N. Country Road at the intersection with Main Street. Stay on N. Country Road.
5. Turn left at 75 N. Country Road to Mather Hospital.

\\Srv-gst-01\hglgis\Lawrence_Aviation_K13006_MSIW\APP_SSHP\(x)LAI_Hospital_Route.mxd
11/9/2020 JG
Source: HGL, HDR, ESRI ArcGIS Online Imagery

Legend

- Mather Hospital
- Hospital Route
- Site Boundary

Hosptial Route Map Lawrence Aviations Industries Facility

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APPENDIX F

GROUNDWATER SAMPLING SUMMARY TABLE

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Table 01800-3

Environmental Monitoring Schedule for Groundwater

Lawrence Aviation Industries Superfund Site, Port Jefferson Station, New York

Well Type	Well ID	Port	Annual Monitoring		Synoptic Water Levels	
			All other parameters	1,4-Dioxane only	Annually	Continuously
Extraction Well	EW-01	N/A	X	X		X
Extraction Well	EW-02	N/A	X	X		X
Injection Well	IW-01	N/A				X
Injection Well	IW-02	N/A				X
Injection Well	IW-03	N/A				X
Injection Well	IW-04	N/A				X
Injection Well	IW-05	N/A				X
Multiport Well	MPW-01	A	X		X	
		B	X		X	
		C	X		X	
Multiport Well	MPW-02	A	X		X	
		B	X		X	
		C	X		X	
		D	X		X	
Multiport Well	MPW-03	A	X		X	
		B	X		X	
		C	X		X	
		D	X		X	
Multiport Well	MPW-04	A	X		X	
		B	X		X	
		C	X		X	
		D	X		X	
		E	X		X	
Multiport Well	MPW-05	A	X		X	
		B	X		X	
		C	X		X	
		D	X		X	
Multiport Well	MPW-06	A	X		X	
		B	X		X	
		C	X		X	
		D	X		X	
Multiport Well	MPW-07	A	X		X	
		B	X		X	
		C	X		X	
Multiport Well	MPW-08	A	X		X	
		B	X		X	
		C	X		X	
		D	X		X	
		E	X		X	
Multiport Well	MPW-09	A	X	X	X	
		B	X	X	X	
		C	X	X	X	
		D	X	X	X	
		E	X	X	X	
Multiport Well	MPW-10	A	X		X	
		B	X		X	
		C	X		X	
		D	X		X	
Monitoring Well	MW-PD-11	N/A	X		X	
Monitoring Well	MW-PD-12	N/A	X	X	X	
Monitoring Well	MW-PD-13	N/A	X		X	
Monitoring Well	MW-PD-14	N/A	X		X	
Monitoring Well	MW-PD-15	N/A	X		X	
Monitoring Well	MW-PD-16	N/A	X	X	X	
Monitoring Well	MW-PD-17	N/A	X		X	
Monitoring Well	MW-1	N/A	X		X	
Monitoring Well	MW-05	N/A	X		X	

Table 01800-3

Environmental Monitoring Schedule for Groundwater

Lawrence Aviation Industries Superfund Site, Port Jefferson Station, New York

Well Type	Well ID	Port	Annual Monitoring		Synoptic Water Levels	
			All other parameters	1,4-Dioxane only	Annually	Continuously
Monitoring Well	FG-01	N/A	X		X	
Piezometer	PZ-01	N/A			X	
Piezometer	PZ-02	N/A			X	
Piezometer	PZ-03	N/A			X	
Piezometer	PZ-04	N/A			X	
Piezometer	PZ-05	N/A	X		X	
Piezometer	PZ-06	N/A	X		X	
Piezometer	PZ-07	N/A	X		X	
Monitoring Well	MW-ISCO-1	N/A				
Monitoring Well	MW-ISCO-2	N/A	X			
Monitoring Well	MW-ISCO-3	N/A				
Monitoring Well	MW-ISCO-4	N/A	X	X		
Monitoring Well	MW-ISCO-5	N/A	X			
ISCO-Injection Well	IW-ISCO-10	N/A	X			
Extraction Well	EW-1	N/A	X	X		X
Extraction Well	EW-2	N/A	X	X		X
Extraction Well	EW-3	N/A	X			X
Extraction Well	EW-4	N/A	X			X
Extraction Well *	EW-6	N/A	X	X		X
Monitoring Well	EW-5	N/A	X		X	
Monitoring Well	TB-01	N/A	X		X	
Monitoring Well	RB-01	N/A	X		X	
Monitoring Well	MW-1A	N/A	X		X	
Monitoring Well	MW-1B	N/A	X		X	
Monitoring Well	MW-2A	N/A	X		X	
Monitoring Well	MW-2B	N/A	X	X	X	
Monitoring Well	MW-3	N/A	X		X	
Monitoring Well	SDW-1	N/A	X		X	
Monitoring Well *	MW-2C	N/A	X		X	
Monitoring Well *	MW-2D	N/A	X		X	
Monitoring Well *	MW-4A	N/A	X		X	
Monitoring Well *	MW-4B	N/A	X		X	
Monitoring Well *	MW-5A	N/A	X		X	
Monitoring Well *	MW-5B	N/A	X		X	
Monitoring Well *	MW-6A	N/A	X		X	
Monitoring Well *	MW-6B	N/A	X		X	

Notes:

Samples will be collected for VOCs, metals, and wet chemistry parameters (alkalinity, sulfate, hardness, chloride, fluoride, TKN, TOC TSS, TDS, and ammonia.

Field measurements will be collected for water level, DO, temperature, conductivity, pH, turbidity, ferrous iron, and ORP.

Synoptic groundwater levels will be collected during annual groundwater sampling events.

Continuous water level measurements will be recorded using a pressure transducer installed in the well.

Sample will be collected from all ports at the multiport wells.

* Wells installed in July 2013 by ERT/USEPA.

APPENDIX G

GOVERNMENT PROPERTY LIST

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Lawrence Aviation GWTP

Site	Location	Sub Location	Asset Name	Asset Description	Barcode	Asset Category	Asset Usage	Manufacturer	Model	Quantity On Hand	Comments	Status
Lawrence Aviation Industries	Port Jefferson, NY	LAI System	Building and Treatment System	Pre-Engineered Metal Building and Treatment System Equipment	V-003242	Equipment	In-Use	None	None	1		
Lawrence Aviation Industries	Port Jefferson, NY	LAI Treatment Room	TOOL BOX with tools		G-002743	Equipment	In-Use	Rubbermaid	None	1		
Lawrence Aviation Industries	Port Jefferson, NY	LAI Treatment Room	Bag Filters		V-003256	Field Supplies	Available	None	None	100		
Lawrence Aviation Industries	Port Jefferson, NY	LAI Treatment Room	Air Flow Meter		V-003257	Field Supplies	Available	None	None	1		
Lawrence Aviation Industries	Port Jefferson, NY	LAI Treatment Room	Discharge pump and Motor, 10HP		V-003258	Field Supplies	Available	Summit Pump	2196	1		
Lawrence Aviation Industries	Port Jefferson, NY	LAI Treatment Room	Low Profile Air Stripper Unit			Equipment	In-Use	QED Environmental	EZ-Tray 24.6	1		
Lawrence Aviation Industries	Port Jefferson, NY	LAI Treatment Room	Air Stripper Blower Motor, 20 HP		V-003259	Equipment	Available	New York Blower	2412A	1		
Lawrence Aviation Industries	Port Jefferson, NY	LAI Treatment Room	Pressures/Level Transmitter/Indicator			Equipment	In-Use	Foxboro	IDP-10	1		
Lawrence Aviation Industries	Port Jefferson, NY	LAI Treatment Room	Extraction Well Pump		V-003260	Field Supplies	In-Use	None	None	1		
Lawrence Aviation Industries	Port Jefferson, NY	LAI Treatment Room	Extraction Well Pump Motor, 15 HP		V-003261	Field Supplies	In-Use	None	None	1		
Lawrence Aviation Industries	Port Jefferson, NY	LAI Treatment Room	Extraction Well Water Level Transducer, 250'		V-003262	Field Supplies	Available	None	None	1		
Lawrence Aviation Industries	Port Jefferson, NY	LAI Treatment Room	Sump Pump			Equipment	In-Use	Eaton		1		
Lawrence Aviation Industries	Port Jefferson, NY	LAI Treatment Room	Vapor Carbon Vessel, 3000 pound capacity			Equipment	In-Use	H2K	VC-028	2		
Lawrence Aviation Industries	Port Jefferson, NY	LAI Treatment Room	Extraction Well Flow Meters, Magnetic			Equipment	In-Use	Sparling		3		
Lawrence Aviation Industries	Port Jefferson, NY	LAI Treatment Room	Geothermal Heat Pump			Equipment	In-Use			1		
Lawrence Aviation Industries	Port Jefferson, NY	LAI Treatment Room	Bag Filter Units, 4 bag capacity			Equipment	In-Use	Krystil Klear	2424	2		
Lawrence Aviation Industries	Port Jefferson, NY	LAI Treatment Room	Bag Filter Unit, 6 bag capacity			Equipment	In-Use	The Cary Company	24	1		
Lawrence Aviation Industries	Port Jefferson, NY	LAI Treatment Room	Stainless Steel IW Drop Pipe Centralizers			Field Supplies	Available		SSCSX12	8		
Lawrence Aviation Industries	Port Jefferson, NY	LAI Treatment Room	Rolling Stairs			Equipment	In-Use			1		

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APPENDIX H

GOVERNMENT PROPERTY TRANSFER FORM

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Government-Furnished Property Transfer Form
LAI Superfund Site, Operable Unit 1
Lawrence Aviation Industries GWTP

Date: _____

Item Being Transferred: _____

Quantity:_____

Manufacturer's Name:_____

Model No: _____

Serial No: _____

Identification No: _____

Condition at time of transfer: ___ **Good** ___**Fair** ___**Poor**

Owner's Manuals Provided:___**Yes** __**No**

Maintenance Records Provided:___**Yes** __**No**
Other Information:

Transfer FROM contract: _____

HydroGeoLogic (HGL) _____
Sign-out: **Print Name/Signature**

USACE sign-out:_____
Print Name/Signature

Transfer TO contract: _____

HGL, Inc.
_____
sign-in: **Print Name/Signature**

USACE sign-in: _____
Print Name/Signature

Date Item removed from LAI OMP GWTP database: _____
Note: Copies of this Government-Furnished Property Transfer Form are to be kept as part of the project record for both contracts.