# REMEDIAL ACTION WORK PLAN FOR PHASE 1 PROCESSING EQUIPMENT INSTALLATION

## HUDSON RIVER PCBs SUPERFUND SITE

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## ACRONYMS AND ABBREVIATIONS

| | |
|---|---|
| CD | consent decree |
| CFR | Code of Federal Regulations |
| CHASP | Community Health and Safety Plan |
| CM | Construction Manager |
| CQAP | construction quality control and quality assurance plan |
| CQCP | construction quality control plan |
| cy | cubic yard |
| EHS | environmental health and safety |
| EPA | United States Environmental Protection Agency |
| FDR | final design report |
| FSP | Field Sampling Plan |
| FSWC | facility site work construction |
| GAC | granulated activated carbon |
| GE | General Electric Company |
| HASP | health and safety plan |
| HDPE | high-density polyethylene |
| hp | Horsepower |
| I&C | instrumentation and controls |
| MCC | motor control center |
| MPA | mass per unit area |
| NAAQS | National Ambient Air Quality Standards |
| NEC | National Electrical Code |
| NEMA 4 | National Electrical Manufacturers Association Type 4 |
| NYSDEC | New York State Department of Environmental Conservation |
| O&M | operation and maintenance |
| OSHA | Occupational Safety and Health Administration |
| Parsons | Parsons Engineering of New York, Inc. |

## ACRONYMS AND ABBREVIATIONS (CONTINUED)

| | |
|---|---|
| PCB | polychlorinated biphenyl |
| PLC | programmable logic controller |
| PVC | polyvinyl chloride |
| QA | quality assurance |
| QC | quality control |
| QC/QA | quality control and quality assurance |
| QoLPS | quality of life performance standards |
| RA | remedial action |
| RA HASP | remedial action health and safety plan |
| RAWP | remedial action work plan |
| RD AOC | Administrative Order on Consent for Hudson River Remedial Design and Cost Recovery |
| ROW | right-of-way |
| RM | river mile |
| ROD | record of decision |
| sf | square feet |
| SOW | statement of work |
| SPCC | spill prevention, control, and countermeasure |
| SWPPP | stormwater pollution prevention plan |
| TID | Thompson Island Dam |
| UPS | uninterrupted power supply |
| XLPE | cross-linked polyethylene |

# SECTION 1

# INTRODUCTION

The United States Environmental Protection Agency (EPA) issued a Superfund Record of Decision (ROD) on February 1, 2002 (EPA, 2002) calling for, among other things, the dredging and disposal of certain sediments from the Upper Hudson River containing polychlorinated biphenyls (PCBs). On August 18, 2003, the General Electric Company (GE) and EPA entered into an Administrative Order on Consent for Hudson River Remedial Design and Cost Recovery (RD AOC) (Index No CERCLA-02-2003-2027) (EPA/GE, 2003), under which GE agreed to design the remedy outlined in the ROD.

On October 6, 2005, the Consent Decree (CD) for the remedial action (RA) in the Upper Hudson River (Civil Action No. 1:05-CV-1270) was filed in Federal Court. After an extensive public review and comment period, the court approved and entered the CD on November 2, 2006 (EPA/GE, 2005).

GE prepared the Phase 1 Final Design Report (FDR) and submitted it to the EPA on March 21, 2006 (BBL, 2006). On May 31, 2006, the EPA approved the portion of the FDR that included the processing equipment installation and remaining site work (Contract 3A), which comprise the scope of this work plan.

Included as Appendix B to the CD is the Statement of Work (SOW) for *Remedial Action and Operations, Maintenance and Monitoring* which sets forth a number of requirements for implementing the remedial action set forth in the ROD. Section 2.2.2 of the SOW requires that an RA Work Plan for Phase 1 Processing Equipment Installation be provided to EPA for review and approval. This document is being submitted to satisfy that requirement.

## 1.1 PROJECT SETTING

The Upper Hudson River is defined as the section of river from the Fenimore Bridge in Hudson Falls to the Federal Dam at Troy, New York. The ROD calls for, among other things, a remedial action to remove and dispose of sediments from the Upper Hudson River. Sediments to be removed are defined based on the PCB mass per unit area (MPA) and surface concentration or characteristic criteria (EPA, 2002).

EPA defined three sections of the Upper Hudson River for the sediment remediation activities outlined in the 2002 ROD:

- River Section 1: Former location of Fort Edward Dam to Thompson Island Dam (TID) (from river mile [RM] 194.8 to RM 188.5; approximately 6.3 river miles);

- River Section 2: TID to Northumberland Dam (from RM 188.5 to RM 183.4; approximately 5.1 river miles); and
- River Section 3: Northumberland Dam to the Federal Dam at Troy (from RM 183.4 to RM 153.9; approximately 29.5 river miles).

The remedial action is to be conducted in two phases, designated Phase 1 and Phase 2. Phase 1 is defined as the first year of dredging and will be completed in a portion of River Section 1. Phase 1 also includes preparation of the land-based sediment processing facility. Phase 2 covers the remaining dredging in the three river sections.

## 1.2 PHASE 1 CONTRACTS DESCRIPTION

Phase 1 activities will be conducted under at least seven separate contracts (excluding the rail transport and disposal contracts as well as agreements with the originating rail carrier for infrastructure improvements) and three separate Remedial Action Work Plans (RAWPs). The contracts and RAWPs are described below and summarized in Table 1-1. The table also includes the relationship of construction quality assurance (QA), quality control (QC) and health and safety to other Phase 1 activities.

**Table 1-1. Organization of Phase 1 RA Work Plans**

| Phase 1 Contract Packages | Remedial Action Work Plans | Construction Quality Assurance Plans | Remedial Action Health and Safety Plan |
|---|---|---|---|
| Contract 1 – Facility Site Work Construction | **RA Work Plan #1** Phase 1 Facility Site Work Construction | Construction Quality Control / Quality Assurance Plan | One umbrella RA Health and Safety Plan |
| Contract 2 – Rail Yard Construction | | | |
| Contract 3A – Processing Facility Construction | **RA Work Plan #2** Phase 1 Processing Equipment Installation | | |
| Contract 3B – Processing Facility Operation | **RA Work Plan #3** Phase 1 Dredging and Facility Operations | Dredging Construction Quality Control/Quality Assurance Plan | |
| Contract 4 – Dredging Operations | | | |
| Contract 5 – Habitat Construction | | | |
| Contract 6 – Rail Yard Operations | | | |

The activities to be performed under Contract 1 (Facility Site Work Construction) and Contract 2 (Rail Yard Construction) are described in RAWP #1, *Remedial Action Work Plan for Phase 1 Facility Site Work Construction* (Parsons, 2007) and include the following:

- Contract 1 – Facility Site Work Construction includes general civil work, such as grading, placement and compaction of fill, and paving. Other work activities include wharf area construction, access road construction, river mooring installation, and construction of a support marina. The contractor selected for Contract 1 will be referred to as the civil work contractor in this document.
- Contract 2 – Rail Yard Construction includes rail construction on the processing facility site property and within the right-of-way of the commercial rail carrier and rail yard facilities work. The contractor selected for Contract 2 will be referred to as the rail yard construction contractor in this document.

The activities to be performed under Contract 3A – Processing Equipment Installation are described in this *Remedial Action Work Plan for Phase 1 Processing Equipment Installation* (RAWP #2). RAWP #2 covers the following:

- Contract 3A – Processing Facility Construction includes remaining site work, such as installation of processing facility buildings, equipment, piping, electrical, instrumentation, communications, and startup and testing of each major process item. The contractor selected for Contract 3A will be referred to as the processing equipment installation contractor (PEI Contractor) in this document.

The scope of work under Contract 3B, Contract 4, Contract 5, and Contract 6 will be addressed in RAWP #3, *Remedial Action Work Plan – Phase 1 Dredging and Processing Facility Operations*. Briefly, RAWP #3 will cover the following:

- Contract 3B – Processing Facility Operations, including barge offloading, coarse material separation, sediment dewatering, water treatment (process and stormwater), stormwater management, and staging area management and maintenance. In the off season (when the Champlain Canal is closed), the contractor will winterize the processing facility and operate and maintain the stormwater collection and treatment system. The contractor to be selected for Contract 3B will be referred to as the processing facility operations contractor (PFO Contractor) in this document.
- Contract 4 – Dredging Operations, including resuspension containment system installation, debris removal, the performance of inventory and residual dredging operations and the transport of loaded sediment barges to the off-loading wharf at the processing facility. After dredging is completed in an area, the contractor will place appropriate backfill, cap, or shoreline stabilization structures.
- Contract 5 – Habitat Construction, including the supply and planting of sub aquatic vegetation in certain dredged areas pursuant to habitat reconstruction plans.

- Contract 6 – Rail Yard Operations, including all activities required to operate and maintain the rail yard. This primarily will involve the loading of debris, coarse material and dewatered sediment into empty rail cars, setting up of outbound loaded trains, and receiving of inbound empty trains.

## 1.3 WORK PLAN ORGANIZATION

This work plan (RAWP #2) for Phase 1 processing equipment installation and remaining site work addresses:

- Procurement, installation and interconnection of the sediment processing and water treatment equipment; and
- Any site work (remaining after Contract 1) needed to complete construction of the processing facility.

RAWP #2 has been developed in accordance with Section 2.2.2 of the CD SOW. Table 1-2 provides a cross-reference of the CD SOW requirements to this RAWP #2.

**Table 1-2. Consent Decree/RAWP Cross-Reference Table**

| Citation | Description of Requirement | RAWP Section |
|---|---|---|
| SOW, Section 2.2.2, Page 2-6 | …address the work necessary for the construction of necessary structures | Section 2 |
| SOW, Section 2.2.2, Page 2-6 | Procurement and installation of the sediment processing/ transfer and water treatment equipment | Section 2 |
| SOW, Section 2.2.2, Page 2-6 | Ancillary and support equipment | Section 2 |
| SOW, Section 2.2.2, Page 2-6 | Remaining site work | Section 5 |
| SOW, Section 2.2.2, Page 2-6 | Construction activities to be conducted to install the sediment processing and water treatment equipment and to complete any remaining site work | Section 2 & 5 |
| SOW, Section 2.2.2, Page 2-6 | Monitoring requirements applicable to processing equipment installation, and remaining site work construction | Section 9 |
| SOW, Section 2.2.2, Page 2-6 | Equipment staging | Section 8 |
| SOW, Section 2.2.2, Page 2-6 | Compliance monitoring | Section 9 |
| SOW, Section 2.2.2, Page 2-6 | The construction schedule shall describe the sequencing and reasonable durations for construction elements and account for seasonal limitations for construction in the Upper Hudson Work Area (*e.g.*, frost conditions which could compromise construction quality such as building/ equipment foundations, waterfront dredging, seasonal high water events, etc.) | Section 7 & Figure 7-1 |
| SOW, Section 2.2.2, Page 2-6 | This construction schedule shall be integrated with the construction schedule for the site work (*i.e.*, facility site work construction) | Section 7 |

| Citation | Description of Requirement | RAWP Section |
|---|---|---|
| SOW, Section 2.2.2, Page 2-6 | Worker health and safety plan (HASP) | Section 10.3.2 and RA HASP (previously submitted with RAWP #1) |
| SOW, Section 2.2.2, Page 2-6 | Construction quality control / quality assurance plan (CQAP) pursuant to Section 2.3.2.2.1 of the SOW | Section 9 and CQAP (previously submitted with RAWP #1) |

Note: RAWP contents are prescribed in the CD SOW, Section 2.2.2.

This plan consists of:

**Section 1 – Introduction:** presents general background information about the project.

**Section 2 – Procurement and Installation of Processing and Transfer Equipment:** describes the procurement, installation, and construction sequencing of the major sediment processing and water treatment items.

**Section 3 – Electrical Power:** describes the on-site unit substations installation, electrical distribution, tie-ins, and light poles installation.

**Section 4 – Filter Cake Staging Enclosure:** explains how the enclosure will be constructed, including the interface of construction of the concrete wall with Contract 1.

**Section 5 – Remaining Site Work:** describes final civil site work to complete the development of the processing facility site.

**Section 6 – Startup and Testing:** describes factory and field testing of materials and processing equipment where specified.

**Section 7 – Schedule:** the construction schedule for the Phase 1 processing equipment installation and remaining site work lists construction activities, milestone dates, durations of activities, and depicts how activities are related to one another. Interface points with activities described in other RAWPs are also discussed.

**Section 8 – Equipment Staging:** depicts the areas for the contractor to stage equipment and materials during construction.

**Section 9 – Monitoring Requirements and Compliance Monitoring Applicable to Processing equipment Installation:** summarizes the Quality of Life Performance Standards (QoLPS) applicable to the processing equipment installation activities, describes the Stormwater

Pollution Prevention Plan (SWPPP) requirements, and construction quality control and quality assurance (QC/QA) requirements.

**Section 10 – Safety:** describes the health and safety framework that will be used to address the potential hazards associated with the processing equipment installation activities to ensure that all work is performed in a safe manner.

**Section 11 – References:** provides bibliographic references to key documents referred to in the body of the report.

This work plan describes the work detailed in the EPA-approved design plans and specifications for Contract 3A. If there are any differences between this work plan and Contract 3A design plans and specifications, the design plans and specifications for Contract 3A will govern.

### 1.4 WORK PLAN REVISIONS

Construction activities described herein are based on the EPA-approved design plans and specifications for Contract 3A. During implementation, revisions to this RAWP may become necessary due to design changes, unexpected field conditions, or other reasons. When GE becomes aware that revisions will be necessary, and those revisions affect the approved schedule or significantly alter the means or scope of the work set forth in this RAWP, GE will notify EPA of the proposed change and seek EPA approval.

# SECTION 2

# PROCUREMENT AND INSTALLATION OF PROCESSING EQUIPMENT

This section covers the procurement and installation of sediment processing equipment, and water treatment equipment needed for remaining site work at the processing facility site.

## 2.1 PROCUREMENT AND INSTALLATION APPROACH

The procurement approach followed a multi-step process of screening, pre-qualification, competitive proposals, and best-value selection. Two prime sources for equipment are:

- The PEI Contractor, who in accordance with Contract 3A, will furnish all major processing units, ancillary and support equipment, materials and supplies from their own capabilities, and from subcontractors and suppliers; and,
- GE, which will furnish the major electrical distribution equipment.

The PEI Contractor will provide the labor for the installation and interconnection of the equipment and the remaining site work. The scope of work includes procurement, installation, start up, and testing.

The PEI Contractor has estimated the delivery time lines for the processing equipment, which are the basis for the construction schedule in Section 7. GE identified the procurement, fabrication, and delivery times for the electrical equipment. The main processing equipment has to be fabricated and delivered to the site. The PEI Contractor may install and construct many of the foundations, pads, ancillary equipment (*e.g.*, pumps), rough-in of conduit and preliminary piping prior to arrival of these major process components. Once major equipment and tanks are delivered and installed, final piping, electrical connections and instrumentation and controls (I&C) will be completed. These final piping connections will include spool piece installation, bolting flanges, welding, threading, supporting pipes, and other means of connection, in accordance with specification Sections 15050 through 15146.

I&C includes installation of sensors, transmitters and controllers connected to final piping, tanks and processing equipment. Low voltage wiring, connecting all sensors, transmitters, signal converters, isolators, amplifiers, intrinsically safe barriers, etc. to programmable logic controllers (PLCs) will be completed. The PEI Contractor will install all control system architecture. Testing and calibration of I&C is described in Section 6.

## 2.2 SEDIMENT PROCESSING UNITS

The primary purpose of the sediment processing facility is to separate water from dredged sediment. The sediment will be processed through trommel screens and hydrocyclones to sort out debris, gravel, and sand, which will be transferred by dump truck to an onsite staging area near the rail loading area. The remaining slurry of fine sediments will be pumped via force mains to the dewatering area. At the dewatering area, the slurry will be mixed with polymers in a gravity thickener, and then pumped into filter presses. The "filter cake" removed from the presses will be transferred by truck to on-site enclosed staging areas east of the rail yard. The location of major processing equipment, including trommel, separation equipment, gravity thickener, filter presses and the water treatment plant is depicted on Figure 2-1.

During fabrication of the major sediment processing equipment items (described below), the PEI Contractor will conduct shop witness testing at the manufacturer's facility to inspect craftsmanship and completeness of work against the project schedule. The PEI Contractor working together with the manufacturer will provide equipment installation and equipment startup and testing certifications for the major equipment items listed below. The manufacturer will also provide a field representative for installation inspection and training of select equipment during system startup, in accordance with Division 11 of the specifications.

Tests for tanks, sumps, and stormwater piping will be conducted in accordance with specification Section 02211- Leakage Tests. Tests for piping related to processing equipment will be conducted in accordance with specification section 15052- Process Piping.

### 2.2.1 Trommel Screen

The PEI Contractor will install the trommel screen system on the southern area of the unloading wharf as shown on Figure 2-1. The trommel screen system will consist of loading chute, trommel screen, underflow sump assembly, overflow radial stacking conveyor system, appurtenances, and I&C. The trommel screens will capture large solids (greater than 5/8 inch) from dredged material offloaded from barges. The conveyor will transfer the captured solids (overflow) to an overflow pile. The material passing the screen (underflow) will be washed into a sump below the trommel. A horizontal spray bar in the trommel will receive water from the size separation process water storage tank to assist this process. The underflow will be pumped by dual 75-horsepower (hp) centrifugal pumps to the sediment slurry tank.

#### 2.2.1.1 Pumps and Associated Piping

Each pump unit will be lifted by a small crane, forklift or other suitable means and positioned onto the pad by aligning the pump base plates to the foundation anchor bolts. The pumps will be bolted to the pad. Piping will include the pump manifolds on the intake and discharge sides of the pumps. Pipe and fittings will be fabricated; then they will be fitted between the water storage tank and the spray bar and from the trommel sump to the discharge

pumps. Typically, recycle water will be used to slurry the solids in the trommel. However, piping will be installed by the Civil Work Contractor for a pump that can extract water from the Champlain Canal, as a backup source of process water.

#### 2.2.1.2 Trommel Screen Installation

The trommel screen equipment will be factory fabricated, delivered to the site, and installed sequentially as follows: feed hopper and bar, conveyor, trommel screen, and drive motors. Equipment will be lifted and guided into the final mounting position on the foundation pad. The equipment will be fastened with mounting bolts into the foundation pad.

#### 2.2.1.3 Final Piping

Once final assembly and installation of the trommel screen equipment is complete, the final piping will be installed. Pipe runs will be installed on pipe racks using supports. All piping connections to equipment or tanks will be provided with unions or coupling flanges, located so that piping may be readily dismantled from the equipment or tank.

The 180,000-gallon water storage tank will be utilized to store water used to slurry the trommel screen underflow. The PEI Contractor will compact and level the foundation area for the tank. A 2-ft concrete slab will be poured over a crushed stone and geotextile base. The PEI Contractor will install a leveling ring prior to tank erection.

The glass-lined steel tank panels will be bolted and erected on-site, using excavator(s) and lifting slings. An electric leak detection test will be performed by the tank supplier on each panel after fabrication, and before shipping to the site. The PEI Contractor will saw-cut the openings for all penetrations and install interior and exterior flanges. The PEI Contractor will submit shop and erection drawings showing all pertinent information necessary for the fabrication and erection of the tanks and piping in accordance with specification section 11210. The tank will be equipped with a level switch and level alarm. Following erection, the tank will be filled to the overflow level and held for 12-hours to check and correct for any leakage.

#### 2.2.1.4 Instrumentation & Controls

The PEI Contractor will install a low voltage control panel for operation of the trommel screen. The PEI Contractor will install sump level indicators/switches/alarms as indicated in the specifications. Wiring for these sensors will be hard-wired to the system control panel through control cable conduits. The PEI Contractor will also perform all hard-wire and software control connections. Wiring from the field mounted instruments will be fed from a server which ties to a PLC. Calibration and testing is described in Section 6.

### 2.2.2 Coarse and Fine Sediment Separation Equipment

A single 25,000-gallon sediment slurry tank will accept trommel screen underflow, along with make-up water from the size separation process water storage tank. The tank is

approximately 16 ft in diameter and 16 ft tall. The sediment slurry tank will be fitted with a mixer. The tank contents will be pumped by dual 50-hp centrifugal pumps to the hydrocyclone system or back into the sediment slurry tank through a recycle loop.

The PEI Contractor will install two hydrocyclone systems. Each hydrocyclone system will consist of a hydrocyclone cluster, one dewatering screen, one sump/recycle pump assembly, and a solids radial stacking conveyor system, along with appurtenances and controls. A common lift station serves both hydrocyclone systems. Hydrocyclone overflow will be captured in the lift station wet well.

#### 2.2.2.1 Pumps and Associated Piping

Two 50-hp centrifugal pumps will provide the driving force to convey the homogenized sediment slurry tank contents to the hydrocyclone system. Anchor bolts will be installed into the foundation pad to fasten the pumps. Each pump unit will be lifted by a small crane or other suitable means and positioned onto the pad by aligning the pump base plates to the foundation anchor bolts, then bolted to the pad. The PEI Contractor will also install the piping, which includes the pump manifolds on the intake and discharge sides of the pumps.

The PEI Contractor will install a lift station that contains the hydrocyclone overflow sump and triplicate 100-hp conveyance pumps. The hydrocyclone overflow pumps will be hoisted onto the foundation with a crane and positioned by equipment handlers to the concrete foundation. The base plate of each pump will be fastened to the foundation with anchor bolts.

#### 2.2.2.2 Separation Equipment Installation

The sediment slurry tank will be factory-fabricated and delivered to the site. Fabrication will include the tank cover along with penetrations to accommodate the tank mixer, influent lines (trommel screen underflow; process make-up water), recycle lines, and additional appurtenances (*e.g.*, tank vents, instrument ports). A crane will hoist the tank and place it on its foundation pad. The tank will be supported on integral leg supports. The tank will be leveled to within the required tolerances.

The hydrocyclone system will be set after installation of all foundation, pumps, and the hydrocyclone lift station. The sump assembly will support the weight of the dewatering screen and hydrocyclone cluster. The PEI Contractor will install the sump structure first. Following installation of the structural steel and sump/recycle pump assembly, the PEI Contractor will install the dewatering screens and the hydrocyclone clusters, and the solids radial stacking conveyor system.

#### 2.2.2.3 Final Piping

The PEI Contractor will finish all piping to tanks and pumps. Final piping will be installed to piping terminations at pump manifolds or to individual pumps, to tanks through ports or flange

connections, and to equipment at manufacturer-installed inlet and outlet piping connections. Aboveground pipe will be installed on pipe racks. Pipe runs will be placed in nominal lengths and lifted into location by crane or other mechanical equipment means depending on the pipe diameter, length, and weight.

#### 2.2.2.4 Instrumentation & Controls

The size separation equipment will be controlled through the size separation main control panel. The PEI Contractor will install the control panels and/or PLCs accompanying the equipment items. The PEI Contractor will install and calibrate the sensors, transmitters, controllers, and alarms using appropriate cable, and hardwire them to the local control panels and/or PLCs. The PEI Contractor will install all hardware connections between the main control panel, including finishing control cable conduits from stub-ups, pulling cable through the finished conduits, and making all wiring connections at the main control panel, and at the PLCs. The PEI Contractor will install and run all control software as applicable.

### 2.2.3 Process Force Mains

Three 12-inch diameter force mains will convey slurry from the hydrocyclone overflow lift station, in the wharf area, to the gravity thickener. A fourth force main will convey water from the recycle water equalization tank to the size separation process water storage tank in the wharf area. The gravity thickener and recycle water equalization tank will be located between the filter press building and water treatment building.

The force mains will be fusion welded high-density polyethylene (HDPE) plastic pipe. The pipe will be either single- or double-walled depending on the force main section. Force main piping will be fully restrained at all rigid connections per the manufacturer's requirements. Each force main will terminate to final piping at each processing equipment item.

The force mains are divided into the following sections:

- Section 1: Gravity thickener area to the approach to stream crossings (Bond Creek and the New York State Canal Corporation by-pass canal for Lock 8);
- Section 2: The approach to (and at least 100 ft before) the stream crossings, to at least 100 ft beyond the crossings; and
- Section 3: Stream crossing transition to the hydrocyclone lift station.

In the first force main section, the PEI Contractor will connect the force mains, consisting of single-walled HDPE pipe, to the final piping to the gravity thickener and recycle water equalization tank pump station. The PEI Contractor will install the four force mains adjacent to each other in an 8-ft utility corridor. The PEI Contractor will install the pipes above 4-inch sleepers spaced per the pipe manufacturer's requirements. The pipe segments will be hand placed and connected in the field. The pipe joints will be welded up to pump manifolds. Pipe

manifolds will be flanged and bolted. The PEI Contractor will install a removable corrugated steel pipe cover connected to the surface. A concrete barrier will be installed along the entire length except where the pipe corridor crosses roads.

The second pipe section starts approximately 100 ft before the stream crossings to at least 100 ft beyond the Lock Diversion Canal (bypass), and consists of double-walled HDPE pipe installed in an 8-ft utility corridor on 4-inch sleepers. The PEI Contractor will install a concrete barrier along this section. A chain-link fence will also be installed along this section. The pipe will be positioned and connected as described for the first pipe section.

The third pipe section is comprised of the pipe between the second pipe section and the hydrocyclone overflow lift station. The PEI Contractor will install the single-walled piping in a cast in place concrete utility chase with a steel cover.

### 2.2.4 Fine Sediment Gravity Thickener

A single above ground gravity thickening unit provides for settling of fine solids from the slurry. The thickener includes a sloped-bottom settling tank, center feed, rake arms, and launderers along with related mechanical equipment. The gravity thickener receives slurry from the hydrocyclone lift station via the three HDPE force mains and from unit operations in the water treatment plant, including underflow from the process water and stormwater clarifiers, and backwash water from the multimedia and granular activated carbon filters. Flocculant and coagulant polymers may be introduced into the influent to enhance particle agglomeration.

Thickener underflow is pumped by two 50-hp centrifugal pumps to two thickened slurry tanks. Three mixers are mounted in each thickened slurry tank. Twelve 100-hp centrifugal filter press feed pumps transfer the contents from the tanks to the twelve filter presses. Thickener tank overflow is conveyed by gravity to the recycle water wet well, then pumped from the wet well to the recycle water equalization tank.

#### 2.2.4.1 Pumps and Associated Piping

Thickener Underflow Pumps

The PEI Contractor will install the two 50-hp centrifugal slurry pumps. A base plate affixed to each pump and motor will be fastened to anchor bolts installed by the PEI Contractor in the foundation pad, as described in previous sections. The PEI Contractor will also install a pipe manifold on both the intake and discharge sides of the pumps and knife or gate valves on the discharge manifold for connection of thickened slurry recycle lines that return to the gravity thickener.

### 2.2.4.2 Gravity Thickener Installation

The gravity thickening unit will consist of an elevated steel tank, cover, feed well, center cage and rake arms, motorized lifting device for the rake arms, platform with handrails and kickplate, weirs, and deflection baffles. The gravity thickener system will also include the thickened slurry tanks.

The gravity thickener mechanical equipment will be factory fabricated and delivered partially assembled. The PEI Contractor will submit a test report to the construction manager (CM) verifying the drive meets the quality assurance standards of the manufacturer in accordance with specification Section 11070. The PEI Contractor will install the elevated tank support columns; then construct the elevated tank using steel plates. The PEI Contractor will install all mechanical thickening equipment. A representative from the manufacturer will be on-site to observe the installation.

The PEI Contractor will also install the thickened slurry tanks. The factory-fabricated tanks will be hoisted by crane and aligned with the anchorages on the foundation, then fastened to the foundation. The PEI Contractor will then install the tank mixers, which includes assembly of structural support elements.

### 2.2.4.3 Final Piping

Gravity Thickener Feed Line

The three 12-inch hydrocyclone overflow force mains will be connected through a manifold to a single 16-inch HDPE gravity thickener line. The PEI Contractor will install this manifold and associated valves, connect the force mains and thickener feed line to the manifold, and install the gravity thickener feed line to the center feed well. The HDPE clarifier underflow pipe and backwash wastewater lines from the water treatment building will be connected to the gravity thickener feed line through union tee connections. The PEI Contractor will install a static mixer and polymer injection rings downstream of these connections, then continue the feed line to the center feed well. Pipe supports will be installed in accordance with Section 15094.

Gravity Thickener Overflow Line

The PEI Contractor will install the overflow line from the gravity thickener to the recycle water wet well above grade on pipe supports. The PEI Contractor will install the pipe into the wet well using a mechanical sleeve through a vertical opening, in the overlying cast-in-place concrete pad. The line will terminate below the pad with a plain end and will be held in place with stainless steel straps and masonry anchors.

Remaining final piping for the gravity thickener, including the piping manifolds for the thickened slurry pumps, piping from each filter press feed pump to its dedicated filter press, and other piping, will be completed.

#### 2.2.4.4 Instrumentation & Controls

Most of the gravity thickener equipment will be controlled through the dewatering area main control panel. The dedicated PLC for the gravity thickener MCP will be powered by an uninterrupted power supply (UPS) and connected to a control switch at the sediment processing facility central control room.

The PEI Contractor will install and calibrate all sensors (*e.g.*, level transducers, solids concentration sensors, flow meters) in the dewatering area. The PEI Contractor will install conduit from the motor control centers (MCC) to the various PLCs and control panels, as described in previous sections. The PEI Contractor will install and run all control software as applicable.

### 2.2.5 Dewatering Building

The PEI Contractor will erect a pre-engineered metal building to house the filter presses and dewatering polymer system. Structural steel members and associated miscellaneous pieces will be fabricated, inspected and tested prior to shipping to the site for field erection. The building will have an area of approximately 41,000 square feet (sf) and include a dedicated room for a polymer feed system and a compressed air system to operate the presses. Interior partitions will be constructed for the control room and electrical room. A concrete secondary containment curb will be installed along the building perimeter to contain spillage and equipment wash water. Access to the building will be through personnel doors. Filter cake will be removed from the building in roll-off boxes via overhead doors at the end of each filter press. Piping and electrical conduit that from services that originate or terminate outside of the building will be stubbed up through the concrete floor slab or through the walls.

### 2.2.6 Filter Presses

Twelve recessed plate filter presses will be installed in a new dewatering building. The presses will each have a capacity of 600 cubic feet. The filter plates will be top center feed, four corner discharge, recessed, and non-gasketed polypropylene with polypropylene-fabric filter cloths. The filter press frame will be constructed from carbon steel. Each press will incorporate an electric/hydraulic opening and closing system, automatic plate shifter, filter cloth wash systems, and appropriate safety interlock systems. The filter presses will have a blow-down and center core removal system using compressed air. The presses will be installed on a raised structural steel frame and platform. A filter cake deflector chute attached underneath each press will deflect dewatered solids to a 40 cubic yard (cy) roll off container handling system beneath each press.

### 2.2.6.1 Pump Installation

A dedicated 100-hp centrifugal pump will feed slurry from the thickened slurry tanks to each filter press. An 8-inch diameter feed line will be installed between each filter press and its feed pump.

The twelve centrifugal filter press feed pumps will be installed in a similar manner to the thickener underflow pumps. Since each pump draws and discharges along individual lines, no manifolds will be installed.

### 2.2.6.2 Filter Press Installation

The filter presses will be factory fabricated and delivered to the site partially assembled. The filter presses will be hoisted by crane into the building, maneuvered into position, and fastened to the structural supports.

A manufacturer's representative will be on-site during installation, as required, to provide direction during installation. Prior to final completion of all presses, the manufacturer's representative will be on-site to perform a final inspection and certification that the filter presses are correctly installed and are ready for operation.

The filter presses will be installed on raised platforms supported by columns. Steel support platforms will be high enough to allow clearance of the roll off container handling system. The roll off container handling system will have steel rollers similar to a conventional roll off container and ride on two strips of steel set into the floor slab on grade.

### 2.2.6.3 Final Piping

Filter Press Feed Lines and Filter Press Filtrate Discharge Piping

The PEI Contractor will install 8-inch carbon steel slurry lines from the stub-ups in the building slab to the feed piping ports installed by the manufacturer.

The PEI Contractor will install filtrate drain lines from each filter press to floor drains that serve the building. The filtrate drain line will be connected to the press at a discharge manifold that will be supplied with each press.

Floor Drains, Plant Water Supply Lines, and Compressed Air System

The PEI Contractor will install floor drains in the slab of the filter press building. The trench drains flow by gravity to the recycle water collection pumping station and are pumped to the recycle water equalization tank adjacent to the water treatment building.

The PEI Contractor will run 4-inch-diameter plant water lines above the bays to the wash-down system. The PEI Contractor will also run 2-inch-diameter water lines above the bays. Wash water will be supplied from four 1,000-gallon filter press cloth wash tanks.

A 2-inch line will be installed to each filter press from the air compressor system, located at the south wall of the dewatering building. The compressor is equipped with a refrigerated dryer, high efficiency oil removal filter, and sized to handle all air requirements for the twelve presses. The compressed air is used when the filter cycle is complete to blow down any filtrate water left in the press and manifold to the floor drains, as a core blow to blow back the wet feed core slurry to the press feed tanks, and for filter press valve operation.

#### 2.2.6.4 Instrumentation & Controls

Each filter press will be equipped with National Electrical Manufacturers Association Type 4 (NEMA 4) cabinet containing the control system, and an operator interface terminal. The filter presses will be operated manually using these controls. Filter press operation will be coordinated with the sequencing of the feed pumps through the instrumentation and controls system. The feed pumps will be variable speed controlled based on the level in the thickened slurry tanks. The PLCs in the individual filter press control panels will be networked with the Dewatering Main Control Panel PLC which is one of the main nodes on the plant-wide Supervisory Control and Data Acquisition (SCADA) system.

### 2.2.7 Polymer Feed System

The PEI Contractor will install a polymer storage, blending and feed system to pump diluted polymer to the gravity thickener influent feed and/or thickened underflow (filter press feed). Both flocculant and coagulant polymers have been specified. The system will include a polymer transfer station, bulk storage tanks for each polymer type, transfer pumps, tank mixers, day tanks, polymer blend units, and metering pumps, along with piping, valves, supports, controls, and other accessories and appurtenances. The polymer feed system will be located in an area with secondary containment within the dewatering building.

Separate equipment will be provided for the flocculant and coagulant polymers. Neat (undiluted) polymer will be received from supply trucks at the polymer transfer station and pumped from the truck through 2-inch stainless steel quick-connects through 2-inch polymer fill lines to the neat polymer bulk storage tanks. Polymer will be diluted through a make-up unit and stored in “day” tanks. Metering pumps will transfer the diluted polymer from the day tanks into the gravity thickener feed line, prior to an in-line static mixer. Valves will allow the flocculant to be added to the thickener underflow discharge line upstream of the thickener underflow pumps.

#### 2.2.7.1 Installation of Polymer System Equipment and Piping

The PEI Contractor will procure and install all polymer system equipment and piping. All equipment except the polymer transfer station will be installed in the dewatering building. The equipment includes the following:

- Polymer (Flocculant)
  - One neat polymer bulk storage tank (5,000 gallons) with 2-hp top entry mixer
  - One polymer make-up unit with 5 hp metering pump
- Polymer (Coagulant)
  - Two neat polymer bulk storage tank (12,500 gallons)
  - One polymer make up unit with 5-hp metering pump

All equipment will be factory fabricated. Since the polymer system is contained within a spill containment wall, all equipment will be lowered onto the floor inside the containment area by crane. The neat polymer bulk storage tanks and polymer day tanks will be factory fabricated with hold-down brackets welded to the side-bottom, which will be used to secure the tanks to anchor bolts installed in the floor slab. Equipment stands will be used to house the polymer make-up units and metering pumps. The metering pumps and polymer make-up units will be supported by floor stands.

The PEI Contractor will install all equipment and appurtenances, including the polymer fill box, control box, and piping. The PEI Contractor will then complete all piping between equipment items, perform all connections at the equipment, and connect the polymer feed lines to the gravity thickener feed line and thickener underflow line with schedule 80 polyvinyl chloride (PVC) pipe. Connections will be solvent welded using appropriate primer and cement.

The PEI Contractor will install flocculant and coagulant injection ports prior to the static mixer and an injection ring for coagulant in the gravity thickener draw-off pipe prior to the thickened underflow pump and connect these to the polymer feed lines. The PEI Contractor will install 2-inch polymer fill lines from the polymer transfer station; up to the paved area around the filter press building, the pipes will be rigidly supported above-grade and, the pipes will be installed in a pre-cast concrete pipe chase in areas designated to be placed below the paving.

#### 2.2.7.2 Instrumentation and Controls

The PEI Contractor will install a control panel for operation of all polymer system equipment. The polymer system control panel will be in a NEMA 4 enclosure and will be connected to the main dewatering control panel. The PEI Contractor will install tank level sensors (transducers or ultrasonic) in the bulk storage and day tanks. Wiring for the sensors will be hard-wired to the system control panel through control cable conduits. The PEI Contractor will also perform all hard-wire and software control connections between the polymer system

control panel and main control panel. The PEI Contractor will also install a NEMA 4 enclosed control panel for the polymer transfer station for high and low level alarms in each of the 3 tanks with a shutoff for the mixer in the 5,000-gallon bulk storage flocculant tank.

## 2.3 WATER TREATMENT SYSTEM

Water collected during the dewatering process, along with stormwater from any area at the site that might come in contact with dredged sediment, will be collected and treated. The treatment process includes multimedia clarifiers, sand filters, polishing through granular activated carbon (for PCB adsorption), and final bag filters. Treated water will be discharged to the Champlain Canal and monitored to verify compliance with discharge limitations established by EPA. The stormwater system is designed to manage stormwater from a 24-hour, 100-year storm event and has a capacity to treat approximately 2-million gallons of water per day.

Process water from dewatering processes and stormwater collected in basins will be treated in parallel through a series of water treatment processes. There are three separate water treatment trains each with the same processes and each capable of treating up to 1,000-gallons per minute. Water will be pumped from the process water equalization tank or stormwater equalization tank to a flash mix/flocculation chamber. Polymer will be added to each influent stream ahead of the flash mix/flocculation chamber to achieve agglomeration of suspended solids. The stream will then flow by gravity to a clarifier, where agglomerated solids will settle to a solids hopper and the clarified water will discharge by gravity to a clarifier effluent tank. The clarifier underflow will be pumped from the clarifier solids hopper to the gravity thickener by means of an air diaphragm pump. A compressed air system will supply compressed air for equipment and instruments/controls.

The clarifier effluent will be pumped from the clarifier effluent tank through a series of multi-media filters, granular activated carbon filters, and bag filters. The final effluent will be discharged to the canal or to a backwash holding tank, which will serve as a reservoir for the plant water and filter backwash water.

During fabrication of the major water treatment equipment items (described below), the PEI Contractor will conduct shop witness testing at the manufacturer's facility to inspect craftsmanship and completeness of work against the project schedule. The manufacturer will provide proper equipment installation and equipment startup and testing certifications, where specified, for the major equipment items listed below. The manufacturer will also provide a field representative for installation inspection and training during system startup, in accordance with Division 11 specifications.

Tests for tanks, sumps, and process piping will be conducted in accordance with the technical specifications.

### 2.3.1 Stormwater Pump Stations

Three stormwater collection basins (north, south, and waterfront) will be installed to store stormwater runoff collected from areas where PCB materials are processed, staged, or managed (Type 1 areas). Water from both the north and south basins is pumped by dual (one duty/one spare) 15-hp centrifugal pumps through double-walled HDPE force mains. Water from the waterfront basin is pumped by dual (one duty/one spare) 15-hp centrifugal pumps through a double-walled HDPE force main. All conveyance lines will be installed underground and terminate up and through the water treatment building floor and transition to single-walled carbon steel pipe inside the building.

Water will be conveyed from the basins to the stormwater equalization tank. A crossover line also allows the combined flow from the three basins to be pumped to the Process Water Equalization Tank. Since the process water and stormwater treatment trains have identical unit operations, any spare capacity in the process water treatment train can be used to treat stormwater, and vice-versa.

#### 2.3.1.1 Installation

The three stormwater force mains will be installed under Contract 1 from the pump stations to within 5 ft of the water treatment building foundation. The PEI Contractor will extend these lines, penetrate the building wall, and manifold them to a single 8-inch force main that proceeds to the Stormwater Equalization Tank, with a crossover to the process water equalization tank. The PEI Contractor will install the electrical and I&C for the pump stations. The PEI Contractor will pull and terminate electrical and instrumentation wiring. In addition, the PEI Contractor will terminate and test all remote connections at master control panel. The interface of this work with Contract 1 is described in more detail in Section 7.

#### 2.3.1.2 Instrumentation & Controls

All three pump stations will be powered through a main control panel with pump speed dependent upon operator-input flow set-points. Level sensors within the pump stations operate the pumps. Operator input and sensor/transmitter/alarm information is transmitted and processed through the main control panel, which is networked to the sediment processing control center. The PEI Contractor will install all utility conduits between the pump stations and the motor-control panel, as well as between the main control panel and the central control center. The PEI Contractor will perform all hardwiring connections and software installation within the communication system architecture.

### 2.3.2 Water Treatment Building

A water treatment building of pre-engineered metal construction will be erected adjacent to the dewatering area. The building will measure approximately 24,000-sf and house all process and stormwater treatment equipment as well as the process water and stormwater equalization

tanks. The building will also contain separate office and control rooms and an interior partition for the discharge sampling station.

#### 2.3.2.1 Construction and Equipment Installation

The PEI Contractor will extend the utility conduits which will be terminated under Contract 1 just outside the building footprint. The PEI Contractor will install sleeves/ penetrations, run the conduits into the building and complete the below-slab plumbing, and install new stub-ups inside the building footprint. Openings in the sleeves/penetrations will be sealed with non-shrink grout. The PEI Contractor will pour and finish the concrete for the footings.

Clarifier Installation

A clarifier system will be installed in each of the three treatment trains. Each system consists of a polymer feed pump, rapid mix/flocculation chamber, gravity settler (clarifier), clarifier effluent tank, and underflow sludge pumps. The rapid/mix flocculation chamber will be factory-fabricated including ports for polymer addition and influent water. The gravity settler consists of a settling tank with internal sludge hopper, along with baffle plates. The components will be factory-welded and delivered as a single unit and will be fabricated with flanged connections. The clarifier effluent tank will consist of a prefabricated 2,900-gallon cross-linked polyethylene tank with penetrations that will include an opening in the top of the tank for installing the clarifier overflow (effluent) line from the gravity settler; a 16-inch manhole; and penetration/flange fittings for instruments.

Installation of Multimedia Filters

Clarifier effluent in each treatment train will be pumped by a single 40-hp centrifugal pump to a multimedia filter system. Each filter system will consist of a pair of filter vessels along with a piping manifold that allows for parallel or single vessel operation. The filter vessels will be vertical, cylindrical pressure type with elliptical or flanged-and-dished top and bottom heads. The filters will be factory-assembled, include all appurtenances, and be mounted on structural steel skids. The filters will be supplied with media by the manufacturer. The PEI Contractor will submit to the CM for approval, factory test and inspection reports for factory-applied linings or coatings for adsorber vessels and piping. Pressure testing for the vessel will be in accordance with specification Section 11800.

The skid mounted multimedia filter will be lowered by crane and positioned on the concrete foundation supports, and fastened. The multimedia filters will be provided by the manufacturer with flanged inlet, outlet, and backwash ports. The PEI Contractor will complete all piping connections to these ports. The PEI Contractor will also run schedule 40 carbon steel compressed air lines and connect them to the compressed air manifold of each filter system, allowing for operation of automatic valves to actuate the solenoid valves.

Installation of GAC Units

Two granulated activated carbon (GAC) filter systems will be installed downstream of the multimedia filters along each treatment train. Each system will be comprised of two 20,000-pound GAC vessels along with manifolds, piping, appurtenances, and controls. The filter vessels will be vertical, cylindrical pressure type with elliptical or flanged-and-dished top and bottom heads. Each GAC system will be skid mounted.

The PEI Contractor will submit to the CM for approval, factory test and inspection reports for factory-applied linings or coatings for adsorber vessels and piping. Pressure testing for the vessel will be in accordance with specification Section 11800.

The GAC filter systems will be equipped with pad eyes, to permit the PEI Contractor to lift the system components by crane and position them on the concrete supports, where they will be fastened. The PEI Contractor will complete all assembly of equipment, appurtenances, and supports. The GAC systems will come with factory-installed/fabricated pipe and valve assemblies. The PEI Contractor will install piping for influent, effluent, backwash, and required piping and connect to the pipe fittings or openings installed by the manufacturer.

Following testing, inspection, and disinfection of the system, each carbon adsorber vessel will be filled with a minimum of 20,000 lbs of virgin GAC. The GAC will be delivered in bulk, as dry material. The GAC will be slurried in the delivery container and blown into the vessels using compressed air. Prior to commissioning, each vessel will be filled with water and held for 24 hours in order to saturate the carbon prior to usage.

Multi-media and GAC Filter Backwash System

A 200,000-gallon holding tank will be constructed to store backwash water and two 60-hp backwash pumps will be installed to direct water to the backwash manifolds at the multi-media and GAC filters. The construction of the backwash water storage tank is described in Section 5.2.

Piping and valves will be installed for conveying spent backwash water to the gravity thickener from the filter and GAC vessels.

Installation of Bag filters

Two bag filter systems will be installed for each treatment train. Each bag filter system will be comprised of three bag filters. The bag filter systems will be installed to allow treatment through either system separately or through both systems simultaneously. The system can also be bypassed.

Each bag filter system will be equipped with the bag filter housings, bag support baskets, legs, interconnecting piping, shutoff valves, and other accessories and appurtenances. The bag filter system vendor will supply all of the system components and assemble each system including interconnecting piping and valves. The PEI Contractor will install and connect influent and effluent piping to inlet and outlet pipe connections installed by the bag filter system supplier.

Polymer Handling and Makeup

A polymer handling and makeup system is incorporated into each treatment train. Each system consists of a polymer storage tank, polymer metering pump, and piping to deliver polymer directly to the flash mix tank. The system includes plant water feed to the polymer storage tank for polymer preparation. The PEI Contractor will install the polymer storage tanks directly on the floor slab in the designated locations. The tanks will be secured to the floor slab using pre-installed anchor bolts. The polymer metering pumps will be installed on individual pump stands or a pump rack. The PEI Contractor will install all piping and valves from the bulk storage tank to the metering pump and from the pump to a connection at the flash mix tank. Polymer totes will be provided by the polymer supplier under Contract 3B.

Process Water and Stormwater Equalization Tanks

The PEI Contractor will install two 60,000 gallon glass-lined steel tanks, one each for process water and stormwater equalization. The tanks will be installed inside the water treatment building.

The tanks will be installed on tank foundation/pads. Each foundation will incorporate a level starting ring along with a leveling plate assembly consisting of anchor rods and slotted plate to secure the starting ring prior to encasement in concrete.

The PEI Contractor will field-erect the tanks from factory-prefabricated bolt-together glass-lined steel panels. All materials and appurtenances, as well as specialized erection jacks and equipment, will be supplied by the tank manufacturer. The PEI Contractor will conduct electrical leak testing during tank erection. The PEI Contractor will field-locate, saw cut, and install interior and exterior flange assemblies for all pipe connection penetrations. The PEI Contractor will also install all tank appurtenances, including an outside tank ladder, access door, and any other features, as necessary.

Building Mechanical Systems

A duplex air compressor will be installed to operate the clarifier underflow sludge pumps, automatically actuated valves, and general instrumentation needs in the water treatment building. The compressor will come equipped with a reserve tank, refrigerated air dryer, and ultra-high efficiency oil removal filter. The compressor will come equipped with cork and rubber isolation

pads. The PEI Contractor will install the air compressor directly on the floor slab. The PEI Contractor will also install any required manifolds and all tubing to the individual equipment, solenoid valves, and instruments.

Plant water will be supplied from the backwash holding tank, which collects a side-stream of final treated effluent. The plant will be supplied water on-demand by a 40-hp pump along with piping, valves, and accessories/appurtenance. The PEI Contractor will construct an equipment pad slab-on-slab and install anchor bolts to match the pump base plate. The PEI Contractor will hoist the pump by crane, position it on the pad, and fasten the pump base plate to the pad. The PEI Contractor will then install all pipe, valves, blind flanges, and other components as required, between the pump and the discharge port at the backwash holding tank, and also from the pump to the various on-demand locations in the building.

#### 2.3.2.2 Process Piping

The PEI Contractor will install all required piping between the water treatment unit operations after all treatment equipment has been installed. In most cases the processing equipment will be supplied with manufacturer-installed piping connections for inlet, outlet, and other piping. Tank penetrations will be factory-installed to the extent possible and prepared in accordance with the design specifications (*e.g.*, gasketed, flanged). The PEI Contractor will also install all pumps and connect all conveyance piping to the pumps. Large diameter pipe will be lifted into the building by a crane, and held in place until the necessary connections to piping are completed, pipe fittings, pumps, tank penetrations, or other locations. The PEI Contractor will make all field connections to inlet pipes, outlet pipes, tank penetrations, ports, or other connection points and using methods dictated by the specific application and pipe material.

#### 2.3.2.3 Instrumentation & Controls

The water treatment processes will be controlled through a main control panel. The primary instrumentation and controls includes tank level controllers for pumps feeding into or discharging from tanks; line pressure indicators; tank level switches for actuation of automatic valves (opened/closed by solenoid valves operated by the treatment plant compressed air system); status indicators and flow controllers.

The PEI Contractor will install and calibrate the sensors, transmitters, controllers, and alarms and hardwire them to the local control panels and/or programmable logic controllers. The PEI Contractor will also hardwire connections to the motor control panel (MCP). The PEI Contractor will be responsible for installing the software so that the MCP can accept operator-input set points, accept sensor information from the transmitters, display operating information, compare sensor readings to set-points, and execute commands.

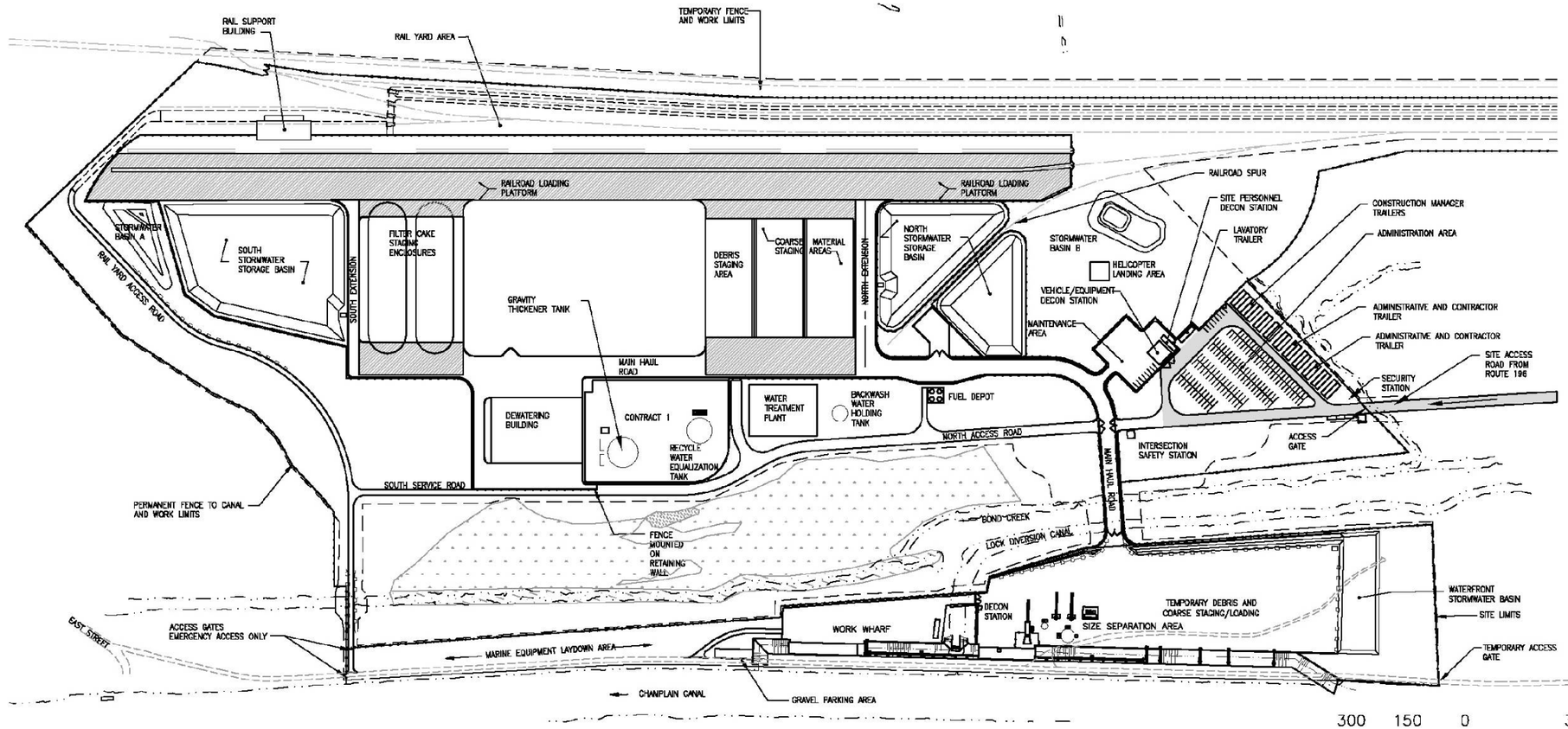
## 2.4 DELIVERY OF MATERIALS AND EQUIPMENT

Figure 2-2 shows the truck routes in the vicinity of the processing facility site. During processing equipment installation and remaining site work, any structural fill, equipment, and materials will be trucked to the site. A map depicting anticipated truck routes from potential fill sources to the site is shown in Appendix A. The map provides for informational purposes only; actual routes will be decided by the PEI Contractor and will adhere to the truck routes identified in Figure 2-2. The materials, equipment or other items delivered to the staging areas will be unloaded in the staging area or directed to the appropriate area of the site.

The number of trucks and other vehicles traveling to the processing facility site will vary as construction progresses. It is estimated that the PEI Contractors' vehicles (pickup trucks and personal cars) will number approximately 15 to 30 per day, varying throughout the construction period, with virtually all vehicles present during normal project hours.

Subcontractors' trucks and delivery trucks are estimated initially at about 10 per day, with a peak of up to 50 per day. In the initial mobilization phase (i.e., first 2 weeks) most of the trucks will be hauling construction equipment such as excavators, fork lifts, manlifts, etc. Following mobilization, principal truck traffic will be reinforcing steel, sand, aggregate and concrete deliveries for pouring building foundations and equipment slabs. Trucks carrying processing equipment, steel tanks, and building components will arrive at the site periodically during the construction.

The two staging areas for the PEI Contractor will be located in the center of the site, east of the proposed north stormwater storage basin. Deliveries for Contract 3A will be directed to this area. On-site distribution of equipment, materials or other items will be arranged by the PEI Contractor, with the routing patterns to be approved by the CM. Large pieces of equipment may be set-in-place or near their final installed location, rather than being transferred in a designated staging area.




300 150 0 300 600

SCALE: 1"=300'

SOURCE:

BASE MAP DRAWING SUPPLIED BY BLASLAND, BOUCK & LEE, INC.

LEGEND:

- SITE PERIMETER FENCE
- TEMPORARY FENCE
- FORESTED AREA
- EMERGENT WETLANDS
- SITE ACCESS ROAD FROM ROUTE 196

FIGURE 2-1

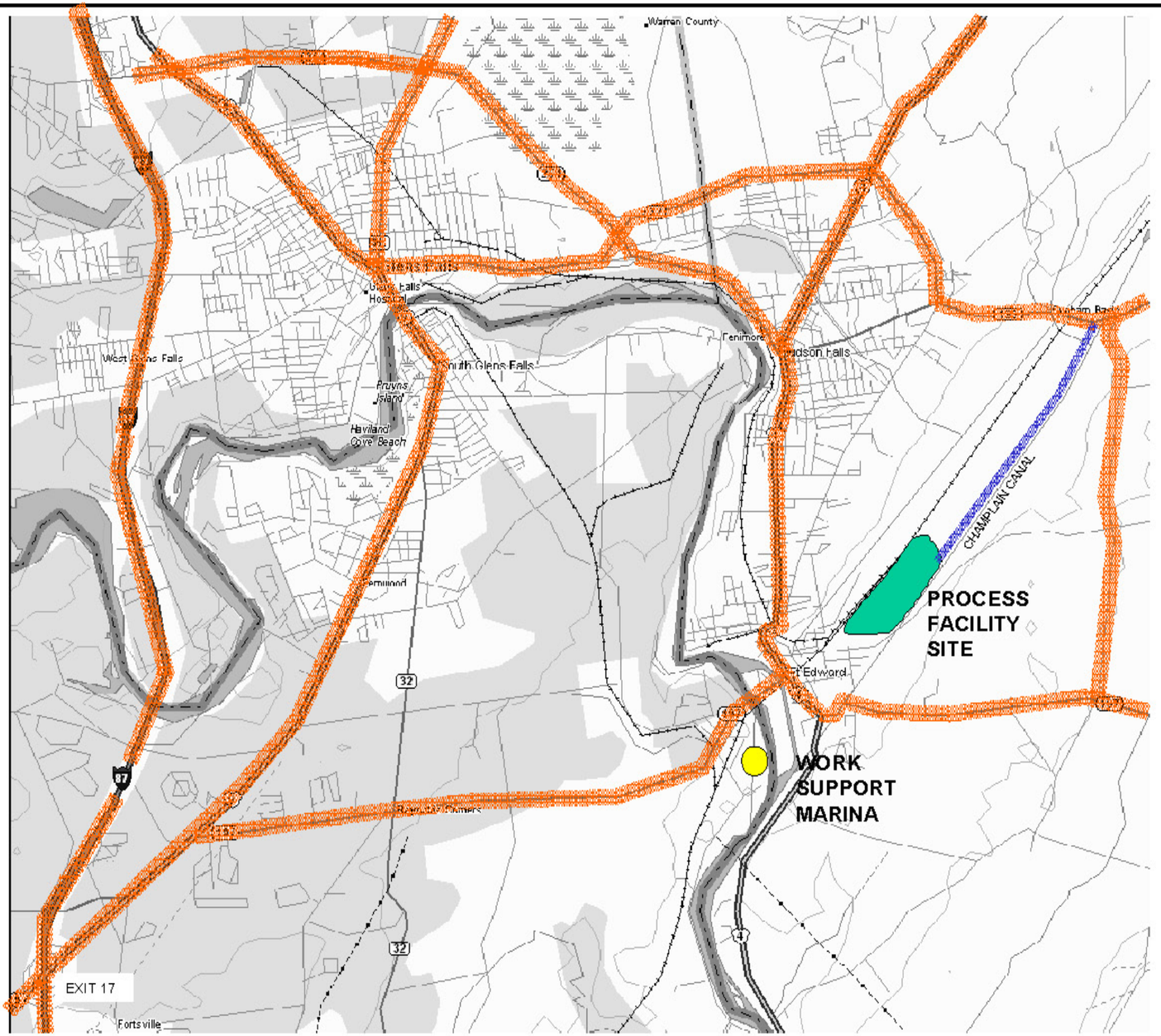
GENERAL ELECTRIC COMPANY
HUDSON RIVER PCBs SUPERFUND SITE
REMEDIAL ACTION WORK PLAN FOR PHASE 1
PROCESSING EQUIPMENT INSTALLATION

PROCESSING FACILITY SITE PLAN
(PROCESSING AND RAIL YARD FACILITY)

PARSONS

GE COMPANY – PARSONS PROJECT OFFICE, BUILDING 40-1,
381 BROADWAY FT. EDWARD, NY 12828

4-2209.04022(RevB)442209C003RAWP2(REVB).DWG ** STEVE ** 02/26/07 ** 10:20:30





LATITUDE: N43° 18' 11"
LONGITUDE: W73° 32' 29"

**New York**
Quadrangle

SOURCE: DeLORME 3-D TOPOQUAD PROGRAM

2000 ft Scale: 1 : 68,750 Detail: 11-5 Datum: WGS84

**LEGEND:**

STATE OF NEW YORK DESIGNATED TRUCK ROUTES

ACCESS ROAD FROM ROUTE 196

**NOTES:**

REFERENCE: OFFICIAL DESCRIPTION OF DESIGNATED QUALIFYING AND ACCESS HIGHWAYS IN NEW YORK STATE. NYSDOT, TRAFFIC ENGINEERING AND HIGHWAY SAFETY DIVISION APRIL, 2006.

FIGURE 2-2

GENERAL ELECTRIC COMPANY
HUDSON RIVER PCBs SUPERFUND SITE
REMEDIAL ACTION WORK PLAN FOR PHASE 1
PROCESSING EQUIPMENT INSTALLATION

TRUCK ROUTE MAP

PARSONS
GE Company - Parsons Project Office, Building 40 – 2, 381 Broadway Ft. Edward, NY 12828
Phone: 518-746-5322

# SECTION 3

# ELECTRICAL POWER

This section covers acquisition and distribution of electrical power at the processing facility site.

## 3.1 MAIN UTILITY POWER SUPPLY AND ELECTRICAL SUBSTATIONS

Primary service power (34.5 kV) will be supplied to the site by National Grid. National Grid will install new overhead poles, where necessary, and aerial cable from the existing Decora Substations to the on-site primary substation receiving structure, located near the dewatering building. A portion of this infrastructure may be installed initially as part of the temporary power (13.2 kV) service installation. National Grid will bring the primary power to the on-site 34.5 kV main substation. The primary power receiving structure and medium voltage substation will be constructed to National Grid's specifications. As described in Section 5.1 of this RAWP, the underground electrical distribution system of ductbank, conduit and manholes will be installed under Contract 1, at the locations shown on Contract 3A drawing P-2000 for the main power supply and each of the six on-site substations. The on-site primary distribution will be rated at 13.2kV with underground ductbank and feeder distribution to the unit substation rated at 13.2kV – 480/277V and 13.2 kV – 208/120V to serve major pieces of equipment. The primary conductors will be pulled through the duct banks from the main substation to the unit substations distributed throughout the site.

## 3.2 DISTRIBUTION AND WIRING

This section describes the installation of electrical distribution to various locations at the site, including:

- Waterfront area for size separation operations;
- Dewatering plant, including the thickener and the filter press building;
- Water treatment building and stormwater pump stations;
- Rail yard and staging areas; and,
- General site services.

### 3.2.1 Waterfront Area

Power will be distributed to the waterfront area by pulling feeder conductors from Unit Substation-1 to two MCCs. Wiring will be distributed from the MCCs to the wharf area size separation processing equipment and to low-voltage panels for 120V power.

Branch circuit conductors will be distributed from the primary MCC to provide power to the trommel drive, conveyor, and other powered items of the trommel screen equipment, as well as to the trommel underflow pumps. The second trommel underflow pump will be wired from the other MCC. I&C will be fed from the control panel located in the walk-in outdoor switchgear. The pumps are run from two separate MCCs.

Motorized equipment for the sediment processing operations will be powered through two separate MCCs. The motorized equipment includes the hydrocyclone vibratory screens, conveyors, and recycle pumps; various conveyance pumps, and tank mixers. Branch circuit conductors will be pulled from underground stub-ups (terminated under Contract 1) through conduits installed on pipe racks under Contract 3A, to the MCCs and individual equipment. The PEI Contractor will install each MCC, pull cable through conduits from the substation to each MCC, then wire the MCCs. The PEI Contractor will also wire all motorized equipment from the MCCs. Additionally, the PEI Contractor will install low voltage and high voltage panels and provide wiring from the panels to power circuits. I&C will be fed from low-voltage power. All I&C control and signal wiring will be served via the PLC control panel located in the walk-in outdoor switchgear.

Branch circuit conductors will be pulled, and terminated to major pieces of equipment as per the plans and equipment tested in accordance with the manufacturer recommendations.

### 3.2.2 Dewatering Plant

This section describes the installation of electrical service for dewatering plant units, including the gravity thickener and filter presses.

#### 3.2.2.1 Gravity Thickener

Electrical equipment will be powered through two 480V, 3-phase MCCs supplied from Unit Substation-4 low voltage switchgear. The gravity thickener mechanical equipment, along with one of the thickener underflow pumps and six of the filter press feed pumps, will be powered from one MCC, and the other underflow pump and six remaining filter press feed pumps will be powered from the second MCC. Power will also be distributed to the following equipment:

- Thickener drive unit motor
- Thickener lifting device (motorized worm gear type)
- Slurry underflow feed pumps
- Filter press feed pumps
- I&C
- Area lighting

#### 3.2.2.2 Filter Presses

The filter presses and related equipment along with filter press building system will be served from 480V, 3-phase MCCs. The PEI Contractor will install all electrical equipment, including switchgear, the MCCs, and electrical cables. The PEI Contractor will pull feeder conductors from the substation through ductbanks via a series of manholes as shown on the plans. Conduits will be run to the MCCs in the electrical room and to a transformer for energizing 208/120V power panels.

### 3.2.3 Water Treatment Facility

Power (480V, 3-phase) to the water treatment facility will be supplied by pulling feeder conductors from Unit Substation-3 to a switchgear unit inside the water treatment building. The switchgear will feed power to one MCC inside the building. The equipment includes the process feed pumps (from the equalization tanks), polymer metering pumps, multimedia feed pumps, backwash pumps, and plant water supply pump, and duplex air compressor, along with the mixers in the rapid mix and flocculation tanks. The PEI Contractor will connect wiring pulled from Unit Substation-3 to the MCC via switchgear. The PEI Contractor will also install all electrical conduits and cables/wires throughout the treatment building from the MCC to the electrical equipment.

The PEI Contractor will also install panels to supply power for the low voltage (208/120V) needs throughout the building, including instrumentation and controls, lighting, and other requirements. The low-voltage panel board for 208/120V power will be fed directly from a 480V panelboard.

### 3.2.4 Stormwater Pump Stations

The PEI Contractor will provide feeder connections from the MCCs and terminate cables to three stormwater pump stations. The PEI Contractor will also install and test the I&C control and signal wiring from the pump station control panel.

The North Basin, South Basin and Waterfront Basin pump stations will each be powered through dedicated motor control center, which are each supplied from individual unit substations. The PEI Contractor will also install the unit substations along with the main 480V switchgears and feeder circuit breakers, limiter lugs, and other electrical power equipment and accessories as specified.

### 3.2.5 Filter Cake Staging Area and Rail Yard Facility

The Filter Cake Staging Area will be served from Unit Substation-5 via a 480/277V outdoor switchgear to two outdoor panels. Feeder conductors will be distributed from the outdoor panels to air handler units, discharge pumps for the South Stormwater pump station, and lighting.

Two rows of 12 evenly spaced light fixtures will be fastened to the top of the framing structure within each staging enclosure. A man lift will be used to position and install the light fixtures. The light fixtures will be connected with conduit, and the branch circuit wiring will be pulled through the conduit and connected to a panel board circuit breaker. Section 4 describes the construction of the filter cake staging enclosures.

Power to the Rail Yard facility will be supplied from Unit Substation-6 to one main outdoor panel. Feeder conductors will be distributed from the outdoor panel to the engine house, track scale house, and three welding machines.

### 3.2.6 General Services

Power to the administration area and decontamination area will be supplied from Substation 2 to one main outdoor panel. Wiring will be distributed from the outdoor panel to panels supplying 208/120V power to the field trailers and decontamination stations. Power will also be distributed to an on-site meteorological station and four high-volume air sampling units. Power for the meteorological station and high-volume air sampling units will be taken from the nearest low voltage distribution panelboard.

The PEI Contractor will feed power from six on-site transformers to distribution panels. The site light poles will be served from designated panels at the locations specified on the contract drawings. The civil work contractor will install the pole bases provided under Contract 1. The PEI contractor will furnish and install poles, fixtures and lamps for the area lighting, and will pull cables and terminate all cables at each light fixture under Contract 3.

## 3.3 GROUNDING

Electrical grounds will be installed to electrical equipment to the earth, system ground, or other location of zero electrical potential. Ground grid resistance will be tested to 5 ohms maximum before connections are made to equipment, building steel metallic objects, or other grounding materials. Electrical grounds will be installed as specified to the various electrical system components and each piece of equipment. Suitable materials such as exposed copper grounding conductors, ground rods, clamps and terminals, which meet the requirements of specification Section 16450 will be used for grounds.

# SECTION 4

# FILTER CAKE STAGING ENCLOSURES

Two pre-engineered stressed membrane enclosures will be constructed for staging of filter cake, which will be moved from the filter press building. Each enclosure will be approximately 400 ft long x 100 ft wide x 50 ft tall. Each structure will be mounted to a 6-ft-high concrete retaining wall and will be a clear-span structure with no interior supports to maximize storage of filter cake. Each structure will have double panel rolling doors on both ends.

The PEI Contractor will use a man-lift and a crane to anchor the metal framing to the 6-ft high concrete walls, which will be installed under Contract 1. Metal frame members, leg extensions, cable bracing, and base plates bolted together will compose the framing system.

A double panel rolling door will be bolted to the framing at each end of both staging enclosures. Two personnel man doors will be attached to each staging enclosure. The man doors will include a protective hood system to keep precipitation away from the doorways.

The exterior architectural membrane panels connected to the steel structure will include a track system to hold the architectural membrane to the main structure support beams. A fan, louvers, and granular activated carbon units will make up each air handling system. Five air handlers will be installed at each staging enclosure.

# SECTION 5

# REMAINING SITE WORK

The majority of the civil site work will be completed under Contracts 1 and 2, as described in RAWP#1. This section covers remaining site work at the processing facility site, including construction of foundations, the backwash holding tank, and interfacing with other contractors.

## 5.1 FOUNDATIONS

Prior to installation of the processing equipment, piping and pump skids, the PEI Contractor will install the necessary structural pads to support the piping and equipment. The PEI Contractor will design and construct the dewatering building foundation, in accordance with Specification Section 03800 – Foundation Installation. Construction of the equipment and tank pads, including all test and quality control procedures, will be performed in accordance with Division 3 specifications, which describes approved methods for concrete formwork, reinforcement, concrete pumping, and finishes.

Unless otherwise noted, concrete slabs will be underlain with a 6-inch layer of crushed stone over geotextile fabric. The foundation will be prepared with wooden forms having rebar placed and supported within the formed area prior to pouring of concrete. Structural excavation, backfill and compaction associated with foundation construction will be performed in accordance with specification Sections 02203 and 02304. The foundations and housekeeping pads will also incorporate anchor bolts to which equipment will be fastened. The foundation work described below is organized by major equipment processes.

### 5.1.1 Trommel Screen

Trommel Foundation

The slab foundation will include a footing installed around the slab perimeter to a depth of approximately 4.5 ft below finished grade. The slab foundation will be approximately 38 ft long x 14 ft wide.

Pump Skid Foundation

A shallow spread concrete footing equipment pad will be installed to support two 75-hp centrifugal pumps. Each pump/motor assembly will have its own base, which will be bolted to the foundation.

### 5.1.2 Size Separation Equipment Foundations

A concrete pad will be constructed to support the sediment slurry tank. The PEI Contractor will install a concrete pad 24 ft in diameter to a thickness of 1 ft. The PEI Contractor will install a shallow spread footing foundation for the hydrocyclones. The slab will measure approximately 18 ft x 20 ft, with a slab thickness of 1 ft. A foundation for the pump station, process water storage tank, and overflow pump stations of varying dimensions will also be constructed.

### 5.1.3 Gravity Thickener Foundations

Gravity Thickener Tank and Thickener Underflow Pumps

The gravity thickener tank will be installed on an equipment pad approximately 87 ft in diameter, sloped outwards from the center. The equipment slab will be 2 ft thick, supported on shallow spread footings. Rebar, installed and tied by hand, will include radial and circumferential elements both top and bottom. The anchorages for the tank support columns will be installed into the equipment slab. The two 50-hp thickened underflow pumps will be installed on a shallow spread footing.

Thickened Slurry Tanks and Filter Press Feed Pumps

The PEI Contractor will install a single shallow spread footing foundation for the two thickened slurry tanks and 12 filter press feed pumps. The pad will measure approximately 43 ft x 100 ft and have a slab thickness of one ft. The PEI Contractor will construct individual concrete equipment support pads for the thickened slurry tanks and filter press feed pumps on top of the foundation slab, including anchor bolts and other means required by the thickened slurry tank and filter feed pumps.

### 5.1.4 Dewatering Building Foundations

The PEI Contractor will erect a pre-engineered metal building to house the filter presses and dewatering polymer system. The PEI Contractor will excavate the dewatering building (described in Section 2.2.5) foundation with an excavator, and spread and compact fill with dump trucks and front-end loaders. Then the foundation, grade beams, and floor slab will be constructed. After completion of the floor and removal of all forms, individual equipment pads will be installed for the filter press and polymer system equipment, as required.

### 5.1.5 Polymer Feed System Foundations

The polymer feed equipment will be mounted directly on the dewatering building floor slab or on equipment stands installed on the slab. The PEI Contractor will construct a 1-ft high concrete wall to provide spill containment around the entire polymer feed area. The PEI Contractor will also install a concrete pad at the polymer transfer station. The pad will be slab-on-grade and will slope toward a sump with steel grate.

### 5.1.6 Water Treatment System Building Foundations

A shallow-spread footing foundation will be built to support the water treatment system building. Concrete footings installed around the perimeter of the building will provide support for the structure. A variety of interior footings or concrete pads will be installed to support the processing equipment and tanks. Concrete support columns will be installed on the equipment/tank footings, which will protrude approximately six inches above the final floor slab grade.

The water treatment building (described in Section 2.3.2) will be erected in parallel with installation of concrete equipment supports. The building structural elements will be installed on the foundation footings using anchorages, and the building wall panels and roof panels installed. Forms and rebar for the concrete supports will be installed, after which the column supports will be poured, finished, and allowed to cure. The floor slab will then be poured and finished in sections. The PEI Contractor will then install treatment equipment after the floor slab section has cured. Additionally, slab-on-slab equipment pads will be poured. The PEI Contractor will also install a six inch high perimeter curb, to provide secondary spill containment for the building.

## 5.2 BACKWASH HOLDING TANK

The PEI Contractor will erect a single 200,000-gallon glass-lined steel backwash holding tank. The tank will serve as a reservoir for supplying treated effluent to the multimedia and GAC filter backwash systems and to the plant water system, and is located outside the water treatment plant building.

The tank will be installed on a shallow spread footing foundation. The foundation will incorporate a level starting ring along with a leveling plate assembly consisting of anchor rods and slotted plate to secure the starting ring prior to encasement in concrete.

The PEI Contractor will field-erect the tank from factory-prefabricated bolt-together glass-lined steel panels. All materials and appurtenances, as well as specialized erection jacks and equipment, will be supplied by the tank manufacturer. The contractor will conduct electrical leak testing during tank erection. The contractor will field-locate, saw cut, and install interior and exterior flange assemblies for all pipe connection penetrations. The contractor will also install all tank appurtenances, including an outside tank ladder, and the access door.

## 5.3 FLEXIBLE MEMBRANE LINER

As presented in the RAWP #1, the majority of the membrane liner specified in the Phase 1 FDR will be placed under Contract 1. However, in building footprints and under other major structures that would go below the liner, Contract 1 will only place the liner a few feet into the future structure footprint. The PEI Contractor will trim the liner as required to construct the

foundations, then furnish and install additional liner, as required. The PEI Contractor will terminate and seal the liner against building structures and foundations and weld the liner installed to the existing liner system. The PEI Contractor will protect the existing liner from damage during construction, and provide sufficient slack as needed to prevent tension in the liner section placed between the new structure and the existing liner. The PEI Contractor will slope the liner away from the foundation when terminating and sealing liner against concrete structures. The PEI Contractor will maintain a minimum overlap of 24-inches when welding new liner from building structures to the existing liner system.

Quality control of liner construction will meet Specification 02621 specifically providing for pre-approval of installer's qualifications and QC program, shop drawings, and liner manufacturer's QC certifications, material and installation warranties (per Specification 01600 1.05.C), and submittal of test results. Field tests will be conducted on the liner to verify that seaming conditions are satisfactory. Test seams will be conducted at the beginning of each seaming period and at least once every four hours, for each seaming apparatus used that day.

# SECTION 6

# STARTUP AND TESTING

This section covers the startup and testing of the sediment dewatering and water treatment facility system. The PEI Contractor will perform the work in accordance with specification Section 01810. The PEI Contractor will submit a startup and testing plan that describes the startup and testing procedure for each major equipment item described in Section 2.2 and 2.3. The startup and testing plan will include testing, adjusting, and balancing procedures for appropriate equipment items. The startup and testing plan will be submitted for CM approval prior to commencing startup and testing of any equipment. The test data and startup results will be submitted to the CM for review and approval.

The PEI Contractor will supply the CM with vendor operation and maintenance (O&M) manuals for each piece of equipment installed. The vendor O&M manuals will include a description of the equipment, safety protocols, operating and maintenance instructions, part numbers, troubleshooting and repair procedures, preventive maintenance, and shutdown procedures.

Key elements of the PEI Contractor's startup and testing process include:

1. **Factory testing and quality control of materials and processing equipment where specified.** Key areas in this category include electrical leak detection testing of the glass-lined steel tanks; certified pump curves for process pumps; and, factory testing of filter presses;
2. **Ringing out cables (both electrical and I&C) and bumping of electric motors to check rotation;**
3. **Load testing and field test of the electrical cables, each piece of electrical equipment, including switchgear;**
4. **Hydrostatic testing of piping, tanks and water pumping throughout the entire system;**
5. **Testing of major processing equipment with equipment vendors where specified**. Major **processing equipment** vendors will be present for field testing of process pumps, the trommel screen, hydrocyclones, gravity thickener, the polymer feed systems, the filter presses and the container systems, the clarifier systems, the multi-media filters, the GAC vessels, the pre-packaged pump station, major electrical switchgear, instrumentation and control systems including PLC software;

6. **Calibration of instruments; and verification of manual and automatic operation of systems**. The PEI Contractor will field calibrate, test, inspect, and adjust each instrument to its specified performance requirement in accordance with manufacturer's specifications and instructions as presented in specification Section 17690, and submit a detailed description of the installation tests to be conducted to demonstrate the correct operation of the instrumentation supplied. The PEI Contractor will provide a written calibration sheet to the CM for each instrument, certifying that it has been calibrated to its published specified accuracy. After completion of instrumentation installation, a loop check will be performed. The PEI Contractor will submit final loop test results with all instruments listed in the loop;
7. **Testing of alarms, emergency and safety systems including fire extinguishers, emergency lighting, and safety mechanisms such as filter press light curtains; and**
8. **Operation of each individual component of the system followed by a "wet test" operation of the entire system.** This will be described in detail in RAWP#3.

## 6.1 TRAINING MATERIALS

The PEI Contractor will demonstrate the system operations and equipment, provide hands-on training in operation and maintenance, and develop training modules to include office and field instructions and videotapes for each process operation. The demonstration will be provided to the PFO Contractor and will be inspected by the CM.

Training materials will be developed by the PEI Contractor for delivery in both the classroom and field instruction. The training materials will be based upon the Processing Facility O&M Manual prepared by the PEI Contractor and vendor-supplied O&M manuals.

The training materials will be prepared in modules, as follows:

1. Overview of Processing Facilities
2. Waterfront Operations (Offloading, trommel screen and hydrocyclone operation)
3. Thickening and Dewatering Operations
4. Water Treatment and Stormwater Treatment Operations
5. Processed Material and Loadout Operations
6. Processed Material Loadout

Training will be provided by the PEI Contractor, as well as engineering and operating personnel, and by vendor personnel on specific equipment, as determined by the PEI Contractor. The training will focus on recommended equipment and system operation, troubleshooting, safety and housekeeping, preventative maintenance, and equipment/instrument calibration.

# SECTION 7

# SCHEDULE

## 7.1 OVERVIEW

The construction schedule for Phase 1 Processing Equipment Installation is presented as Figure 7-1. The construction schedule describes the sequencing and reasonable durations for the installation and construction of the sediment processing facility described in Section 2. The schedule identifies the major construction activities and sequencing for mobilization, procurement and installation of processing facility equipment, and post-construction activities (commissioning and start-up). The schedule accounts for average seasonal limitations to construction in the Upper Hudson River work area. These include, but are not limited to, frost conditions and weather delays such as precipitation events and ground and ambient temperature limitations, which would compromise construction quality. The schedule is integrated with the construction schedule for Phase 1 facility site work presented in RAWP #1 and other contract activities, as further described below.

## 7.2 INTERFACE POINTS WITH OTHER CONSTRUCTION CONTRACTS

Because the Phase 1 RA is divided into at least seven major contracts, the interface points between each contract scope of work are important to the overall project schedule. The key sequence of activities and interface points between the PEI Contractor (Contract 3A) and other contractors are listed below.

### 7.2.1 Interface with Contract 1 – Civil Work Contractor

- The civil work contractor (Contract 1) will complete initial site work, including grading, underground utility piping, drainage, and the liner. The civil work contractor will also bring the entire the processing facility site to the specified subgrade and compaction, with emphasis on early completion of the main access road to allow use by other contractors.
- Duct banks, manholes, handholes, and conduit as specified for the electrical and communication distribution will be furnished under Contract 1. The PEI Contractor, under Contract 3A, will pull cable, furnish and install all electrical grounds and manhole hardware, terminates cables, and construct equipment pads.
- Initial site work for the wharf area will be completed under Contract 1. Also, underground utilities and stormwater drainage will be completed at the wharf before the area is released for work under Contract 3A. The electrical cable will be pulled and terminated, all grounds completed, manhole hardware installed, and equipment pads constructed under Contract 3A.

- The liner will be placed under Contract 1. Under Contract 3A, the PEI Contractor will trim liner as required to construct the foundations, furnish and install additional liner as required, and terminate to existing liner system and to the foundations.
- Underground piping, utility conduits, duct banks, manholes, and water or sewer lines to within 5 ft of building or end-use point will be installed under Contract 1. Under Contract 3A, the PEI Contractor will extend the utilities into buildings, equipment pad or structure and terminate the service.
- For lighting, underground utility conduits, manholes, handholes, and pole foundations will be installed under Contract 1. Wiring, grounding, fixtures, and poles will be installed under Contract 3A.
- The 6-ft high concrete wall for the filter cake staging enclosures is in the scope of Contract 1. Under Contract 3A, the PEI Contractor will complete the installation of the two enclosures for staging filter cake, including an air handling system, double panel rolling doors, and lighting for each structure.

### 7.2.2 Interface with Contract 3B – Processing Facility Operations Contractor

- The PEI Contractor (Contract 3A) will provide copies of required submittals to the PFO Contractor (Contract 3B) for review and comment.
- The PFO Contractor will periodically inspect the construction during installation of processing equipment.
- The PFO Contractor will witness the startup and testing of equipment to be performed by the PEI Contractor.
- The PEI Contractor will provide training to the PFO Contractor and jointly commission the plant with the PFO Contractor. Major equipment vendors will also participate in the plant commissioning under Contract 3A.

## 7.3 ASSUMPTIONS AND QUALIFICATIONS

The project schedule contains the following assumptions and qualifications:

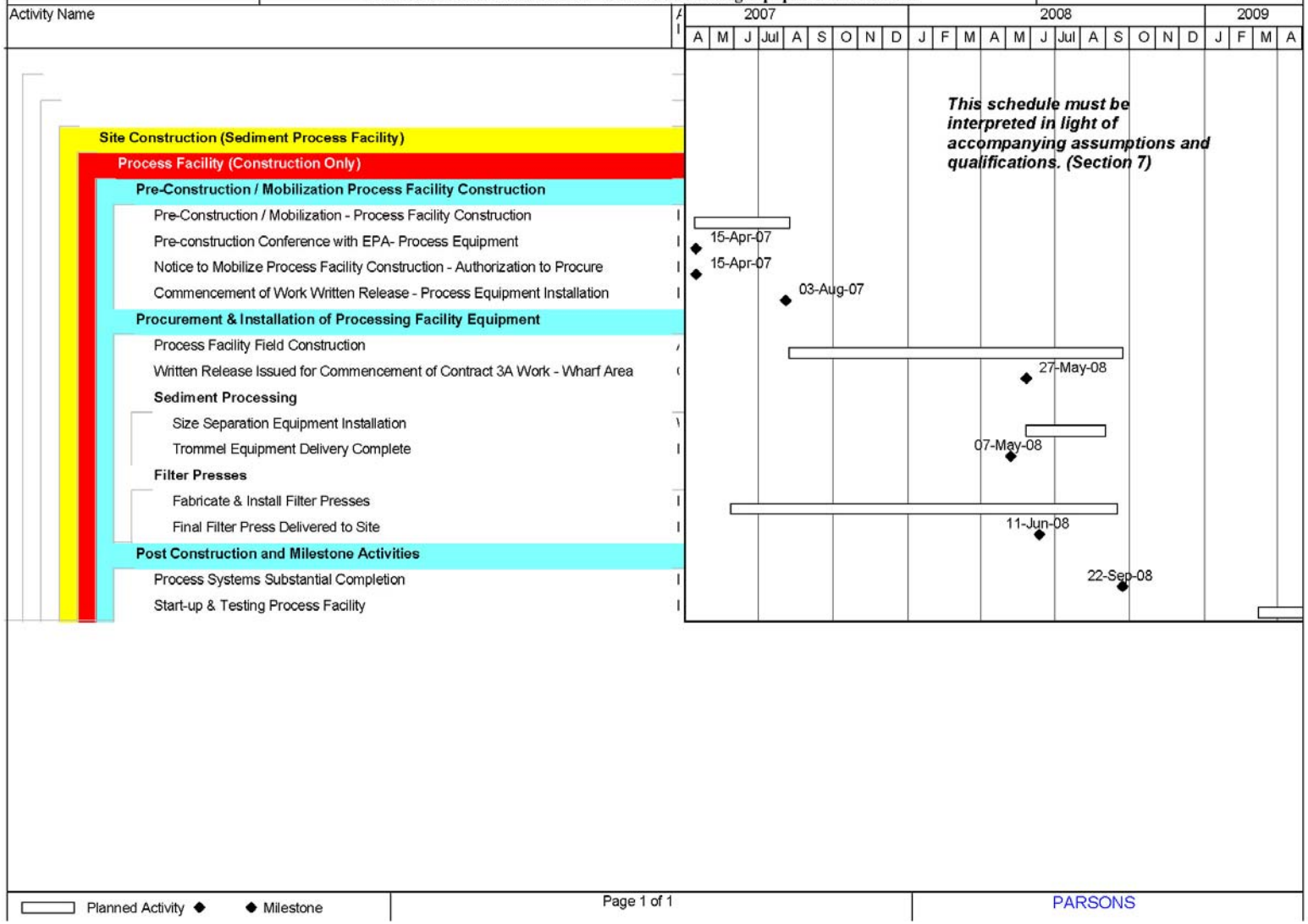
- Manufacturers meet equipment fabrication and delivery dates.
- Third party entities, including but not limited to utility service providers, railroads, rail transport, public entities and landfill, meet required dates, as described below.
- Weather conditions are such that the access road, main processing facility and rail yard site are free of snow and ice and are sufficiently dry to allow commencement of earthwork on April 2, 2007.
- Necessary site access leases and agreements will be executed for the processing facility site and main access road so that mobilization can begin by March 16, 2007.

- Site leases, railroad agreements and public utility agreements are fully executed prior to issuing Notices to Mobilize for Contracts 1 and 2.
- Private rail crossing agreement will be executed for crossing the existing mainline to mobilize equipment to the processing facility site by March 16, 2007.
- Relocation of existing handholes and overhead power lines by Canadian Pacific Railways within the grading limits will occur by mid-March 2007.
- Temporary construction power will be provided to the limits of the site by April 1, 2007.
- Power pole relocation at Route 196 is accomplished prior to April 1, 2007.
- Power for the traffic control signal is provided to the Route 196 intersection by May 1, 2007.
- EPA approves RAWP # 1 by March 1, 2007 and RAWP #2 by March 30, 2007.
- The schedule does not account for events that are beyond the control of GE.
- EPA and GE will continue to discuss and reach timely resolution of the outstanding Phase 1 final design issues that relate to Contracts 1 and 2 (access road design).
- Weather conditions meet average seasonal limitations for construction in the Upper Hudson River work area (e.g., frost conditions, high water events, ambient temperature limitations, etc.).
- Actual site conditions are consistent with site condition data previously obtained and which have been relied upon for the basis of design and construction.
- Material and equipment fabrication and delivery times are estimated; actual fabrication and delivery times are controlled by market conditions and will be determined at the time orders are placed.

*FIGURE 7-1*

**Hudson River Sediment Remediation Project - Phase I**

**Remedial Action Work Plan #2 - Phase 1 Processing Equipment Installation**



# SECTION 8

# EQUIPMENT STAGING

Within the processing facility site, areas are established for each contractor to stage equipment and materials. A 7-ft-high, chain-link fence will control access to the site. Equipment and materials to be used for processing equipment installation and remaining site work will be received and staged in these designated areas.

Appendix C presents the Equipment Staging Plan for the PEI Contractor. Appendix C also contains a contract staging areas figure, Drawing SP-005, depicting the locations of the designated equipment and materials staging locations for PEI Contractor. The PEI Contractor will stage equipment and materials in two areas east of North Stormwater Storage Basin.

The Equipment Staging Plan presents the following:

- The PEI Contractor will lock all equipment and vehicles when not in use.
- Stormwater protection measures, such as installation of silt fences, will be implemented within their staging areas by each contractor.
- The equipment staging plan (Appendix C) describes fueling equipment and controls, and location of equipment and materials.
- Trash debris dumpsters will be staged at the contractor staging areas for collection of trash and other debris from each day's work activities. The dumpsters will be emptied routinely and disposed off-site.
- First-aid supplies and fire extinguishers will be readily available.

# SECTION 9

# MONITORING REQUIREMENTS AND MITIGATION AND RESPONSE ACTIONS APPLICABLE TO PROCESSING EQUIPMENT INSTALLATION

This section summarizes the Quality of Life Performance Standards (QoLPS) applicable to the processing equipment installation, the controls that will be implemented to meet those standards, the monitoring that will be conducted to assess achievement of those standards, and the actions to be taken if the numerical values in those standards are exceeded or if complaints are received from the local community related to these quality-of-life issues. This section also describes SWPPP requirements and construction QC/QA requirements.

## 9.1 QUALITY OF LIFE PERFORMANCE STANDARDS

EPA has established QoLPS for Phase 1 of the Remedial Action in the Upper Hudson River (EPA, 2004). Those standards address air quality, odor, noise, lighting, and navigation. The portions of the air quality standard relating to polychlorinated biphenyls (PCBs) and to the National Ambient Air Quality Standards (NAAQS) do not apply to the processing equipment installation activities, although the portion of that standard relating to opacity does. The QoLPS for odor, noise, and lighting, apply to these activities. These standards require implementation of engineering and/or operational measures to meet those standards (based on the Phase 1 FDR), monitoring to assess achievement of those standards, and the implementation of mitigation and other response actions in the event of an exceedance of or deviation from those standards.

GE's Phase 1 FDR describes the QoLPS and presents design analyses assessing the ability to achieve the standards, as well as engineering and operational features that are included in the design to meet the standards and, where necessary, to mitigate potential exceedances of the QoLPS. Section 4 of the associated Phase 1 Remedial Action Community Health and Safety Plan (RA CHASP) (BBL, 2006) describes GE's overall approach to addressing the QoLPS and provides detailed descriptions of the actions that will be undertaken in the event monitoring detects an exceedance of any of the performance standards. Phase 1 specification section 01460 for Contract 3A requires contractor-specific plans for implementing the work in accordance with the QoLPS requirements.

The following subsections describe the monitoring that will be undertaken during the processing equipment installation to assess achievement of the QoLPS, the controls and mitigation measures that the PEI Contractor will implement to meet the standards, and the response actions that GE will take in the event of an exceedance of the applicable QoLPS criteria during the processing equipment installation or in the event of a complaint relating to the

subjects of the QoLPS. In accordance with the CD, during processing equipment installation, to the extent that additional measures to address the QoLPS include equipment modifications or additions, only those that are reasonably available from a schedule and cost standpoint will be implemented.

### 9.1.1 Quality of Life Performance Standards Compliance Monitoring

The monitoring that will be undertaken during the processing equipment installation activities to assess and verify achievement of the applicable QoLPS is specified in detail in the QoLPS Field Sampling Plan (FSP), which was submitted as part of RAWP #1. That FSP describes the routine and contingency monitoring that will be implemented for opacity, odor, noise, and lighting. As described in that plan, the point of compliance with the noise and lighting standards is at the actual receptors.

### 9.1.2 Control and Mitigation Actions

The specific actions that the PEI Contractor will take to control noise and light during construction are set forth in the Noise and Lighting Control Plans (attached as Appendix D and B, respectively). In addition, those plans describe the monitoring that the PEI Contractor will conduct within their work areas for noise and lighting. This work area monitoring will be conducted solely for construction management purposes – i.e., to self-verify compliance with contract specifications and to provide a guide to the PEI Contractor of the potential for noise or light levels to exceed the applicable QoLPS criteria at nearby receptors. Based on the work area monitoring results, the PEI Contractor can implement control strategies, as appropriate. This work area monitoring should not be considered as monitoring to assess or verify compliance with the QoLPS; the latter will be conducted by a separate monitoring contractor in accordance with the QoLPS FSP. Finally, the Noise and Lighting Control Plans specify certain actions that the PEI Contractor will take to mitigate noise and lighting impacts in the event that the QoLPS compliance monitoring shows an exceedance of an applicable QoLPS criterion.

### 9.1.3 Response Actions in the Event of an Exceedance or Complaint

The specific actions that GE will take if the monitoring shows an exceedance of the opacity standard, the odor standard for hydrogen sulfide, the noise standard criteria, or the lighting standards are specified in Section 4 of the Phase 1 RA CHASP (Sections 4.2.6, 4.3.4, 4.4.4, 4.4.5, and 4.5.4). The specific actions that GE will take in the event of an air quality, odor, noise or lighting complaint are likewise specified in Section 4 of the Phase 1 RA CHASP (Sections 4.2.7, 4.3.5, 4.4.6, and 4.5.5). All these provisions of the Phase 1 RA CHASP are incorporated by reference herein.

## 9.2 POLLUTION PREVENTION

### 9.2.1 Stormwater Pollution Prevention Plan

A SWPPP covering the processing equipment installation and remaining site work is provided in Appendix E. The applicable monitoring and other requirements of that plan are described below.

During the processing equipment installation and remaining site work, the PEI Contractor will comply with the monitoring requirements described in specification Section 02371 for Contract 3A, Dust, Erosion & Sediment Control.

To implement the SWPPP, the construction areas must be routinely inspected and documented. The key elements of the monitoring effort include:

- Frequent site inspections and maintenance;
- Record-keeping;
- Performance of repairs if necessary; and
- Review and modification of the SWPPP.

As detailed in the SWPPP, site inspections are generally performed every seven days and within 24 hours of a rainfall of 0.5 inches or greater. All disturbed areas for material storage, locations where vehicles enter and/or exit the site, and erosion and sedimentation controls that are identified as part of the SWPPP will be inspected. Controls must be in good working condition. If a repair is necessary, it must be completed within seven days of receipt of report or notice, if practicable.

The PEI Contractor will be responsible for inspection of all control measures. The PEI Contractor will designate an individual for the purpose of performing maintenance and repair activities required by the SWPPP control features. The individual inspecting the site will record any damages or deficiencies on SWPPP inspection forms. Disturbed areas and areas used for storage of materials that are exposed to precipitation will be inspected for evidence of, or the potential for, pollutants entering the drainage system.

Locations where vehicles enter and/or exit the construction site will be examined for evidence of offsite sediment tracking. Erosion controls will be maintained in good operating condition until the area affected has been completely stabilized and the construction activity is complete.

Stabilization measures will be initiated as soon as practicable in portions of the site where construction activities have temporarily or permanently ceased, but in no case more than 14 days after the construction activity in that portion of the site has temporarily or permanently ceased.

### 9.2.2 Spill Prevention

The PEI Contractor anticipates that the quantity of fuel stored on site may be greater than 1,100-gallons. If the quantity of fuel stored on site is greater than 1,100-gallons, the PEI Contractor will prepare a Spill Prevention, Control and Countermeasures Plan (SPCC Plan) in accordance with Contract 3A Specification Section 01355, Part 3.04 A. Once approved by the CM, this plan will be available for review upon request.

## 9.3 CONSTRUCTION QC/QA

The quality of constructed facilities will be achieved through a combination of design and technical specifications (technical requirements) and a program of quality oversight (QC/QA) conducted during implementation. This approach will be implemented to both assure that facilities are built to meet the approved FDR and to document that FDR requirements are met or exceeded. The construction QC/QA program is summarized below.

### 9.3.1 Technical Requirements

Technical requirements are embodied in the facility design plans and specifications developed as part of the approved Phase 1 FDR. These plans and specifications are then implemented by contract specifications for Contract 3A – Processing Facility Construction. The specifications cover all relevant aspects of facility construction, and include specific requirements for quality control. Technical requirements are thus established for design quality and for quality monitoring, and are contract obligations to be met by the PEI Contractor.

### 9.3.2 Monitoring for QC/QA

Monitoring of construction quality performance will be conducted in accordance with the *Construction Quality Control/Quality Assurance Plan* (CQAP) (Parsons, 2007a) administered by the CM. The CQAP required as part of this RAWP has been prepared in accordance with the requirements of Section 2.1.2 and Section 2.2.2 of the CD SOW, and was submitted as a stand-alone document on January 29, 2007 for EPA review and approval as part of the RAWP #1 package. The CQAP and Phase 1 contract specifications require Construction Quality Control Plans (CQCP) for each contract work package.

#### 9.3.2.1 Construction Quality Control/Quality Assurance Plan

The CQAP provides for:

- Quality Control – inspections and testing performed by the PEI Contractors pursuant to its CQCP; and
- Quality Assurance – oversight of the PEI Contractors' QC activities, including daily monitoring of PEI Contractor QC activities and limited supplemental testing and inspections.

The CM's QA function confirms the PEI Contractor's QC process by providing oversight and verification of the construction quality, inspections, and testing plans and activities of the PEI Contractor. The CM will perform inspections and supplemental monitoring in accordance with the CQAP to ensure effectiveness of the CQCP.

Duties of the CM include:

- Ensuring that routine inspections of the PEI Contractor's work are conducted and documented;
- Verifying that the equipment used in testing meets the test requirements and that the tests are conducted by qualified personnel according to the standardized procedures;
- Monitoring construction QC tests conducted by the PEI Contractor's personnel, as may be required by the technical specifications;
- Confirming that the testing equipment and procedures do not change over time or assuring that any changes do not result in a deterioration of the quality of the inspection process or constructed facilities; and
- Performing independent, onsite inspection and construction QA testing of the work in progress to verify the effectiveness of the QC program and compliance with requirements of the contract documents.

#### 9.3.2.2 Construction Quality Control Plan

The PEI Contractor will be responsible for implementing QC for the scope of work under its respective contract. The PEI Contractor's CQCP detail how the PEI Contractor will comply with the specifications, drawings, and monitoring requirements. The PEI Contractor's CQCP provides for inspection and testing by qualified QC personnel to ensure that equipment, materials, and the constructed product are inspected and tested in accordance with applicable specifications, codes, regulations, and industry standards. After the PEI Contractor's CQCP has been approved by the CM it is available for review upon request for informational purposes only.

# SECTION 10

# SAFETY

## 10.1 GE ENVIRONMENTAL HEALTH AND SAFETY POLICY

GE provides a safe and healthy working environment in all the communities in which it does business. GE's environmental health and safety (EHS) programs combine clear leadership by management; the participation of all employees, contractors, and functions; and the use of appropriate technology to ensure the health and safety of its employees and the public.

GE requires that each of its facilities and sites identify and control potential hazards in order to protect the public, its employees, and the environment. Reviews are conducted regularly; deficiencies, if any, are identified; issues are tracked to closure; improvements are made to prevent potential hazards; and mitigation measures are implemented as a result of these reviews. The end result enhances injury prevention, increases operations knowledge, improves communications, and helps assure compliance with required EHS standards.

The Phase 1 PEI will abide by the requirements of GE's world-class EHS program.

## 10.2 CONSTRUCTION MANAGER HEALTH AND SAFETY PROGRAM

The project CM also holds the highest standards for project health and safety. The safety goal for this project is zero incidents, zero injuries – a Zero Incident philosophy. This approach originated with a study by the Construction Industry Institute, which identified specific control measures shown to dramatically reduce the probability of incidents. These control measures, known as Zero Incident Techniques, provide the framework for safety on this project, and the Project Team's proactive approach to manage the interrelated areas of safety, health, environment, and risk management. The definition of an incident is any unplanned or unexpected event that results in or has the potential to result in a personal injury, property damage or environmental release.

## 10.3 HEALTH AND SAFETY PLAN

### 10.3.1 RA HASP

A *Remedial Action Health and Safety Plan* (RA HASP) (Parsons, 2007b) defines minimum safety and health requirements, guidelines, and practices applicable to the overall Phase 1 RA project, including the processing equipment installation and remaining site work. The RA HASP is an umbrella document covering all Phase 1 work activities and was submitted on January 29, 2007 for EPA review and approval as part of the RAWP #1 package.

The RA HASP reflects the corporate policy of both GE and the CM. The RA HASP uses the zero incident management approach and defines the safety goal for this project as *zero incidents and zero injuries.*

The RA HASP provides a general description of anticipated types of field activities. Specific field activities are described in more detail in the Contractor HASP. The objectives of the RA HASP are to:

- Establish minimum health and safety requirements;
- Identify the physical, chemical, and biological hazards potentially present during field work associated with the RAWP;
- Prescribe the protective measures necessary to control those hazards;
- Define emergency procedures; and
- Prescribe training and medical qualification criteria for site personnel.

The RA HASP must be reviewed by all contractor and subcontract managers, supervisors, foremen, and safety personnel. All craft personnel performing field activities will receive a site specific project orientation summarizing the content of the RA HASP. All personnel will be required to sign the appropriate documentation acknowledging an understanding of the RA HASP requirements.

The RA HASP was written to comply with the requirements of the Occupational Safety and Health Administration (OSHA) Hazardous Waste Operations and Emergency Response Standard (29 CFR 1910.120). All activities covered by the RA HASP will be conducted in compliance with applicable federal, state, and local health and safety regulations, including 29 CFR 1910.120.

### 10.3.2 Contractor HASP

Under the RA HASP and this RAWP, the PEI Contractor is required to prepare a "worker HASP" (referred to herein as Contractor HASP). The Contractor HASP will discuss tasks and provide detailed procedures and activity hazard analyses specific to its scope of work. The Contractor HASP will conform to the RA HASP. The Contractor HASP for the PEI Contractor is submitted concurrently with this RAWP and will be appended to the RA HASP, which was submitted to EPA for review and approval as part of the RAWP #1 submittal.

# SECTION 11

# REFERENCES

Blasland, Bouck & Lee, Inc. 2006. *Phase 1 Final Design Report – Hudson River PCBs Superfund Site (including Contract drawings and specifications)*. (March, 2006)

Parsons. 2006. *Remedial Action Community Health and Safety Plan (RA CHASP). Hudson River PCBs Superfund Site.* Ft. Edward, NY. (March 21, 2006)

Parsons. 2007. *Remedial Action Work Plan for Phase 1 Facility Site Work Construction - Hudson River PCBs Superfund Site*. (January, 2007)

Parsons. 2007a. *Construction Quality Control/Quality Assurance Plan - Phase 1 Facility Site Work Construction – Hudson River PCBs Superfund Site*. (January 2007)

Parsons. 2007b. *Remedial Action Health and Safety Plan – Hudson River PCBs Superfund Site.* Ft. Edward, NY. (January 2007)

United States Environmental Protection Agency. 2002. *Superfund Record of Decision*. February 1, 2002.

United States Environmental Protection Agency. 2004. *Quality Of Life Standards for Hudson River Clean-Up.* March, 2004.

United States Environmental Protection Agency and General Electric Company. 2003. Administrative Order on Consent for Hudson River Remedial Design and Cost Recovery. Index No. CERCLA-02-2003- 2027.

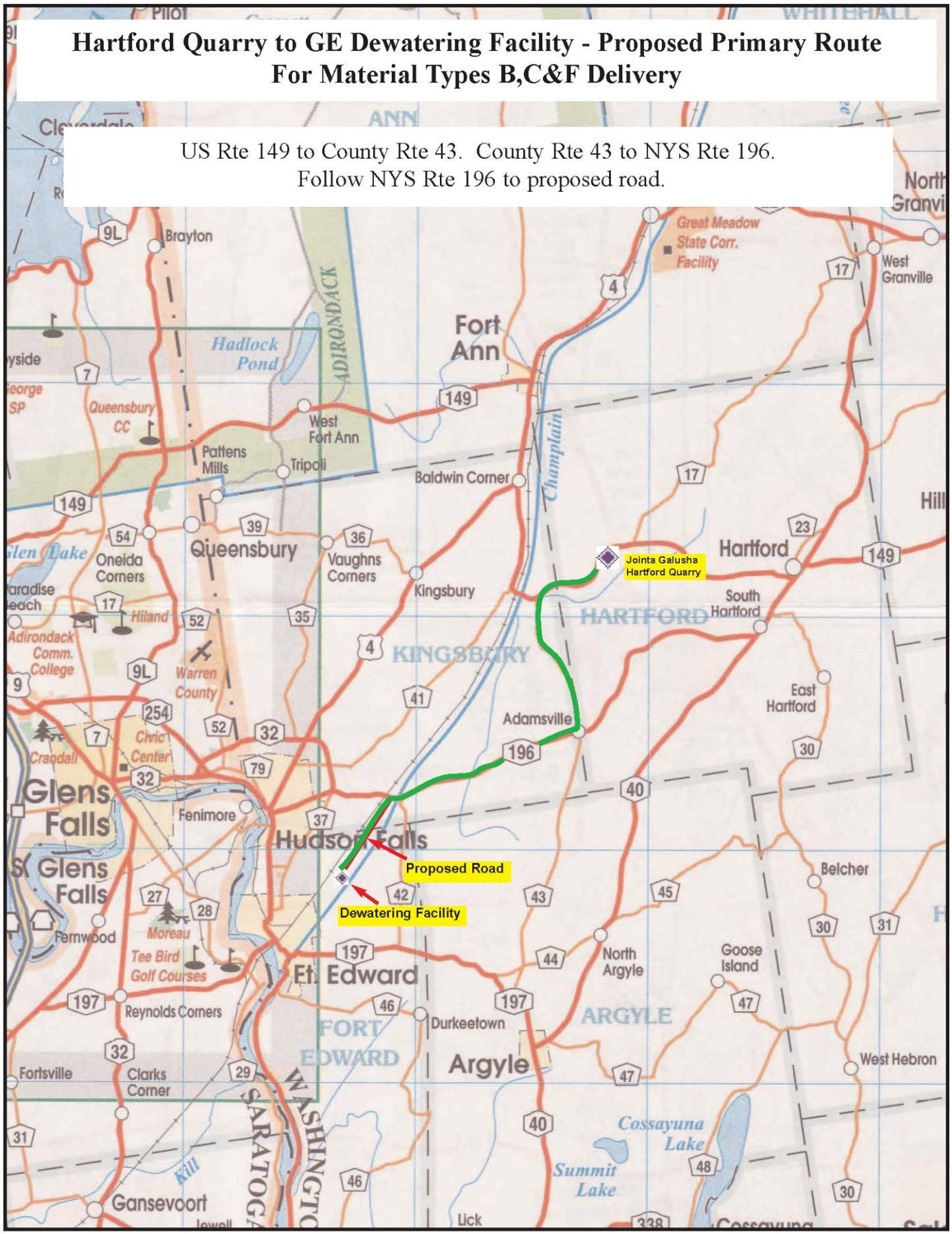
United States Environmental Protection Agency and General Electric Company. 2005. Consent Decree in *United States v. General Electric Company*, Civil Action No. 1:05-cv-1270, lodged in United States District Court for the Northern District of New York, October 6, 2005*; final judgment entered November 2, 2006.*

# APPENDIX A

# CONTRACTOR TRUCK ROUTES FROM THE SELECTED FILL SOURCES

# Hartford Quarry to GE Dewatering Facility - Proposed Primary Route For Material Types B,C&F Delivery

US Rte 149 to County Rte 43. County Rte 43 to NYS Rte 196.
Follow NYS Rte 196 to proposed road.



# APPENDIX B

# LIGHTING CONTROL PLAN

# LIGHTING CONTROL PLAN

**For The**

**REMEDIAL ACTION WORK PLAN FOR PHASE 1 PROCESSING EQUIPMENT INSTALLATION**
**HUDSON RIVER PCBs SUPERFUND SITE**

**Submitted To**

**PARSONS**

**GE Company – Parsons Project Office**
**381 Broadway, Bldg 40-2**
**Fort Edward, NY 12828**

**Submitted By**

**Sevenson Environmental Services, Inc.**
**2749 Lockport Road**
**Niagara Falls, NY 14305**

**February 2007**

Sevenson Environmental Services, Inc.

## INTRODUCTION

The United States Environmental Protection Agency (EPA) established Light Performance Standards applicable to the project. These were published in the Quality of Life Performance Standards (QoLPS) in May 2004. The purpose of this Light Control Plan is to present the construction contractor's program of self-monitoring and self-regulation which is designed to assure compliance with the established standards.

This Lighting Control Plan is submitted to comply with Contract 3A specification section 02936 –Lighting Restrictions and Controls; it describes the control actions, work area noise monitoring and potential mitigation actions Sevenson will perform to meet the specification requirements. Demonstration of compliance with EPA's Quality of Life Performance Standards (QoLPS) for lighting will be conducted by others.

## STANDARDS

The Performance Standards for Light applicable to construction of the processing facility are summarized in the flowing table extracted in part from the QoLPS:

**Lighting Standard Summary (QoLPS, EPA, May 2004)**

| Land Use Categories | Performance Standard | Demonstration of Compliance |
|---|---|---|
| Rural and suburban residential areas (areas of low ambient brightness) | 0.2-ft-candle | Monitor at receptor property line |
| Urban residential areas (areas of medium ambient brightness) | 0.5-ft-candle | Monitor at receptor property line |
| Commercial/industrial areas (areas of high ambient brightness) | 1.0-ft-candle | Monitor at receptor property line |

## CONTROL MEASURES

Processing equipment installation and remaining site work activities have been planned to minimize nighttime work activities. Any nighttime work that needs to be conducted will be carefully planned to minimize the amount of unnatural light that would be needed. Sevenson will check all lighting equipment prior to delivery to site to make sure that the equipment is well maintained within normal industry standards. Lighting will be directed toward work areas and away from neighboring properties. The light generated by processing equipment installation should not exceed the limits set forth in the QoLPS.

## PROPOSED ACTIVITIES

Contract 3A comprises construction and commissioning of the processing facility. This activity will occur following the site preparation construction performed under Contract 1 and before the river dredging operations performed under Contract 4, and the processing operations performed under Contract 3B.

Construction of the processing facility will consist of procurement and installation of building and tank foundations and equipment pads, building enclosures and supplying and installing sediment processing and water treatment processing equipment. Construction includes procurement and installation of piping, mechanical, plumbing, electrical work and instrumentation. This contract also includes completion of site paving and finishing the site-work as well as start-up, training and commissioning of the processing facility.

Artificial illumination will probably be required for exterior activities seasonally during facility construction.

Temporary lighting fixtures will be used inside the building enclosures. Building walls will shield these fixtures. In the event that temporary lighting fixtures are attached to structural frames before the walls are erected, then fixture shields will be installed to direct light downward.

During any nighttime construction Sevenson will monitor the work areas to verify compliance with the Contract 3A specification Section 02936, Lighting Restrictions and Controls (Work Area Light Monitoring). Work Area Light Monitoring will be conducted:

- Light monitoring will be conducted at the start of any new operation, performed during hours of darkness, to demonstrate that the operation is compliant with the Quality of Life requirements.
- Sevenson will periodically monitor the operation to ensure continued compliance.

Work Area Light Monitoring will be performed for source evaluation and construction management purposes only. It will serve as a guide with respect to compliance with contractor specifications and the potential for light levels to exceed the applicable QoLPS criteria at nearby receptors.

Should the work area monitoring suggest potential for a lighting exceedance, the CM will be notified immediately. Specific methods, reporting requirements, personnel qualifications and equipment are described in the Work Area Light Monitoring Plan. The Work Area Light Monitoring Plan will be adjusted should work conditions or schedule change.

## SELF-MONITORING PROGRAM

The contractor will monitor illumination levels whenever construction activity is occurring after dusk or before dawn. The contractor will institute corrective measures if the self-monitoring suggests that the lighting compliance standards may be exceeded.

The proposed light control self-monitoring program will consist of periodic monitoring with a handheld photometer that is traceable to NTIS standards. The photometer will have a digital display reading in foot-candles (e.g., Sper Scientific 8406C, or equivalent).

The self-monitoring program will be reviewed periodically at the job-site progress meetings and adjustments made as required.

## LIGHT MITIGATION

Measures available to mitigate the light from construction activities include relocation of work areas away from receptor paths, cessation of work activities after dark, lowering the tower masts, repositioning work lights to avoid glare and spillover and installation of fixture shields. Light plants will be adjusted, repositioned, redirected or lowered within 4 hours if a lighting performance standard is exceeded.

# WORK AREA LIGHT MONITORING PLAN

## LIGHTING TO BE USED

Nighttime exterior work areas will be illuminated by means of portable light towers (Ingersoll-Rand L6 and L8, or equivalent). The portable light towers have four (L6) or six (L8) 1000-Watt metal-halide flood lamps with aluminum reflector housings. The reflectors will be directed downward toward the work areas to minimize stray light spillover.

Location of these portable light towers will be determined once operations are started and only if night time work is anticipated. The work operations, if needed at night, will be at different locations on the site and identification of such locations at this time are not practical. The light plants will be positioned to appropriately light the work area, while assuring that light does not flow into other areas of the site or surrounding properties.

All Work Area Light Monitoring conducted by Sevenson will be for construction management purposes only.

Light monitoring will be conducted using a light meter (Sper Scientific 840020 or equivalent). The Sper Scientific 840020 meets the accuracy needed for the Lighting Performance Standard, has traceable and acceptable calibration standards, and is durable for the field conditions in which it will be used. The light meter will be held approximately 3.5 ft. off the ground and parallel to the ground with the light sensor pointed up. A measurement will then be recorded in foot-candles. The light meter will be zeroed at the beginning of each day that monitoring is conducted following the manufacturer's zeroing procedure.

## REPORTING

The CM will be notified if the Work Area Monitoring performed suggests the potential for a Light exceedance.

## PERSONNEL QUALIFICATIONS

Field sampling personnel will have current health and safety training, site supervisor training, and site-specific training, as needed. In addition, personnel performing light monitoring equipment installation and monitoring will be trained in the use of the light meter and other appropriate equipment.

## EQUIPMENT LIST

The following materials will be available as required, while performing light monitoring:

- Personal protective equipment (PPE), as required by the *Health and Safety Plan* (HASP);
- Field notebook.

- Light meter (Sper Scientific 840020 light meter, or equivalent)
- Light meter manual;
- Light meter calibration notebook;
- GPS unit (Trimble XT or equivalent), as required; and

# APPENDIX C

# EQUIPMENT STAGING PLAN

# EQUIPMENT STAGING PLAN

**For The**

**REMEDIAL ACTION WORK PLAN FOR PHASE 1 PROCESSING EQUIPMENT INSTALLATION HUDSON RIVER PCBs SUPERFUND SITE**

**Submitted To**

**PARSONS**
**GE Company – Parsons Project Office**
**381 Broadway, Bldg 40-2**
**Fort Edward, NY 12828**

**Submitted By**

**Sevenson Environmental Services, Inc.**
**2749 Lockport Road**
**Niagara Falls, NY 14305**

**February 2007**

The equipment staging plan for the Contract 3A Processing Equipment Installation Contractor is intended to show and describe the locations of the designated equipment and materials staging area locations for the Contractor. Drawing SP-005 shows an administration area located west of the main access gate that will be designated as the area where field and office trailers will be located.

The Contractor will receive equipment and supplies throughout the mobilization and implementation of the project as per the project schedule. The Contractor will coordinate with Contracts 1 and 2, and the Contractor's own vendors to ensure equipment and supplies arrive when needed and are not delivered earlier than required. This will keep the equipment staging areas from getting full of equipment for an extended period.

As the equipment is received it will be staged in Contract 3A areas as shown on Drawing-SP-005, or sent directly to the required construction sites. Generally deliveries will be delivered to the staging areas where it will be inspected and documented and then the equipment will be moved to the construction site. There are two construction staging areas designated for Contract 3A. The first is in the northwest section of the site and the second is in the south east section of the sight.

The Contractor will coordinate equipment and supply delivery with the Contract 1 Facility Site Work Construction and Contract 2 Rail Yard Construction schedules in order to facilitate easy equipment delivery. It will be important to ensure safe delivery and off loading of the equipment and supplies. All health and safety requirements will be strictly adhered to for equipment and supply delivery and unloading. All fire extinguishers are inspected and tested annual per Sevenson's Health and Safety Plan.

If any equipment needs to be fueled through the course of the day outside the equipment staging area, secondary spill containment devices such as absorbent diapers, portable containment dikes and spill kits will be readily available and on-hand in case of a spill or leak. All fuel supply vendors and subcontractors will be required to keep the same materials and kits on their trucks as well.

The Contractor will place 40-ft Connex™ boxes in the equipment staging area to store miscellaneous supplies and smaller equipment. The use of these boxes will allow for extra security and organization of the small tools and equipment. The boxes will be locked when not used.

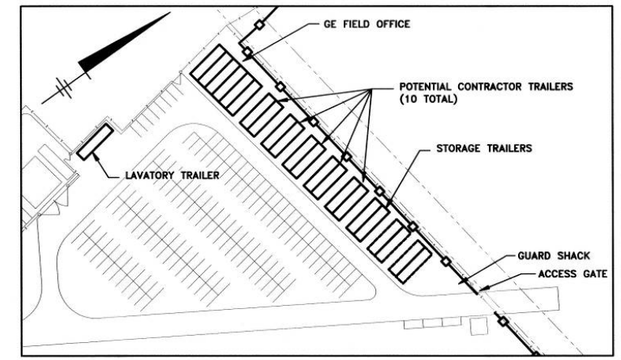
Every effort will be taken to construct the process buildings early in the project prior to major equipment delivery to allow for storage of weather-sensitive equipment. All heavy equipment will be kept in the staging areas when not in use. The keys will be removed and the doors will be locked. All stockpiled material will be stored in accordance with the Stormwater

Pollution Prevention Plan. Silt fences and tarps will be utilized to control erosion and minimize loss of topsoil and fill.

Equipment fueling and fuel storage will be done in accordance with the Stormwater Pollution Prevention Plan. Fuel storage will be inside a double containment area, and protected from vehicles by "Jersey" barriers.

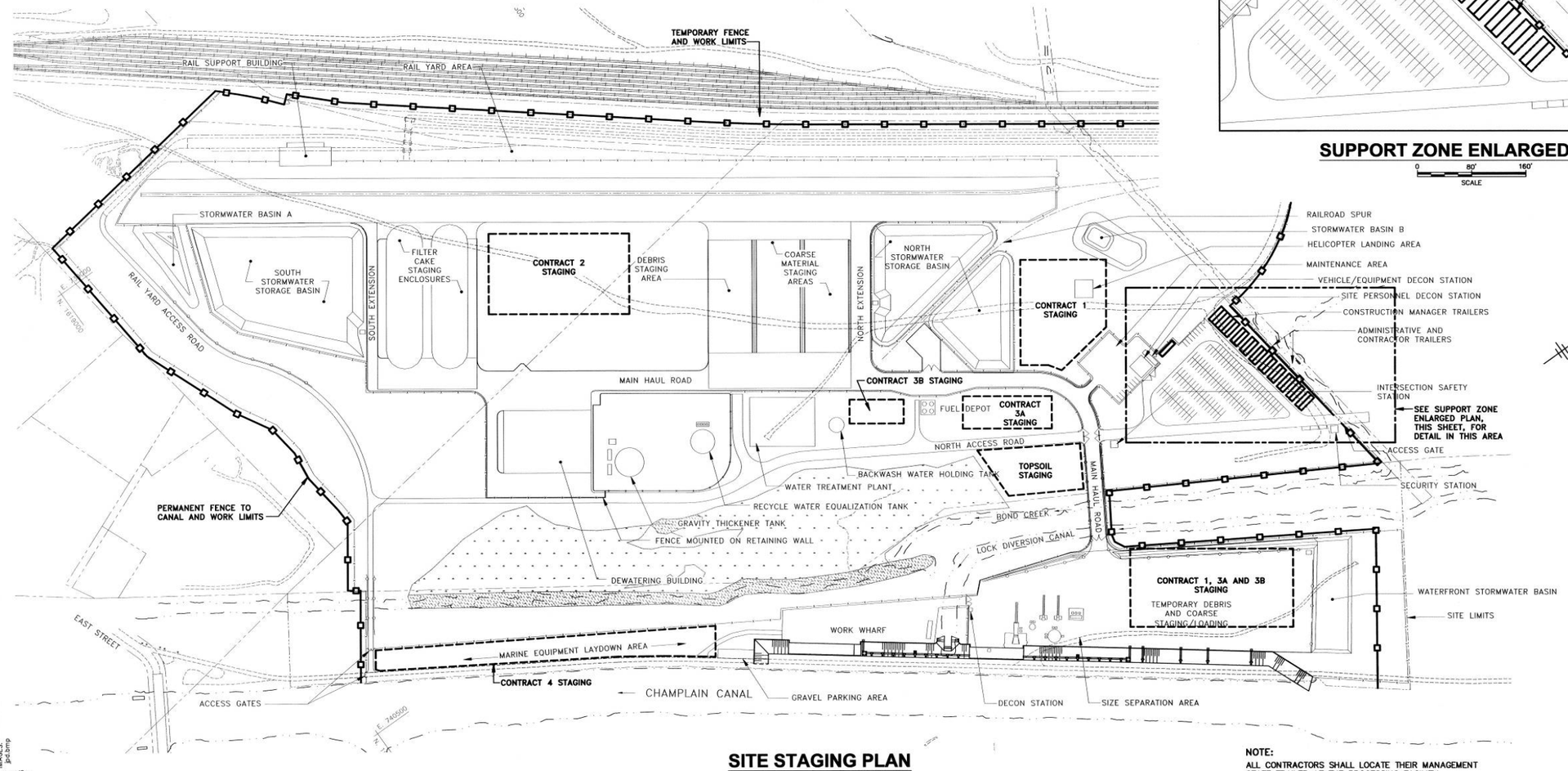
All health and safety requirements will be strictly adhered too. As stated in the Health and Safety Plan first aid and fire extinguishers will be readily available.

Trash and debris dumpsters will be located in the Contract 3A staging areas for collection of trash and other debris from each day's activities. The dumpsters will be emptied off site as needed. The staging areas will be kept in a clean and organized manor. House keeping will be done daily to ensure that the construction and staging areas are kept clean.




## SUPPORT ZONE ENLARGED PLAN

0 80' 160'
SCALE




## SITE STAGING PLAN

0 150' 300'
SCALE

**NOTE:**
ALL CONTRACTORS SHALL LOCATE THEIR MANAGEMENT STAFF TRAILER AT THE PROCESSING FACILITY.

**ISSUED FOR CONSTRUCTION**

XREFS: XDWG-PLOT XDN-TB01 XDN-EX03 XDN-EX01
IMAGES: gs1.bmp

ORIGINAL SCALE APPLIES TO 22"X34" DRAWING

AS NOTED ABOVE

THIS DRAWING WAS PREPARED AT THE SCALE(S) INDICATED. INACCURACIES IN THE STATED SCALE(S) MAY BE INTRODUCED WHEN DRAWINGS ARE REPRODUCED. **USE THE GRAPHIC SCALE BAR(S) TO DETERMINE THE ACTUAL SCALE(S) OF THIS DRAWING.**

| No. | Date | Revisions | Init |
|---|---|---|---|

NO ALTERATIONS PERMITTED HEREON EXCEPT AS PROVIDED UNDER SECTION 7209 SUBDIVISION 2 OF THE NEW YORK STATE EDUCATION LAW

Professional Engineer's Name: JOHN PAUL DOODY
Professional Engineer's No.: 067405
State: NY
Date Signed: 12-20-06
Project Mgr.: JJC
Designed by: JPD
Drawn by: GHS

STATE OF NEW YORK · JOHN PAUL DOODY · 067405 · LICENSED PROFESSIONAL ENGINEER

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

GENERAL ELECTRIC COMPANY • HUDSON RIVER PCBs SUPERFUND SITE
SEDIMENT REMEDIATION PHASE 1 PROJECT

# STAGE 5 PLAN - CONTRACT STAGING AREAS

CONTRACTS 1 2 3A 3B AND 4 – STAGING PLANS

BBL Project No. 20435.700
Date DECEMBER 15, 2006
Blasland, Bouck & Lee, Inc. Corporate Headquarters 6723 Towpath Road Syracuse, NY 13214 315-446-9120

**SP-005**

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PARSONS

# APPENDIX D

# NOISE CONTROL PLAN

# NOISE CONTROL PLAN

## For The

## REMEDIAL ACTION WORK PLAN FOR PHASE 1 PROCESSING EQUIPMENT INSTALLATION HUDSON RIVER PCBs SUPERFUND SITE

## Submitted To

## PARSONS

## GE Company – Parsons Project Office

**381 Broadway, Bldg 40-2**
**Fort Edward, NY 12828**

## Submitted By


## Sevenson Environmental Services, Inc.

**2749 Lockport Road**
**Niagara Falls, NY 14305**


## February 2007

Sevenson Environmental Services, Inc.

# Remedial Action Work Plan

## INTRODUCTION

The United States Environmental Protection Agency (EPA) established Noise Performance Standards applicable to the project. These were published in the Quality of Life Performance Standards (QoLPS) in May 2004. Compliance monitoring and reporting as described in the *Quality of Life Performance Standards Field Sampling Plan*, Phase 1 Facility Site Work Construction will be conducted by others.

The purpose of this Noise Control Plan is to present the construction contractor's program of self-monitoring and self-regulation which is designed to assure compliance with the established standards. This Noise Control Plan is submitted to comply with Contract 3A specification Section 02931 –Noise Restrictions and Controls; it describes the control actions, work area noise monitoring and potential mitigation actions to be performed to meet the specification requirements. Demonstration of compliance with EPA's Quality of Life Performance Standards (QoLPS) for noise will be conducted by others, and is detailed in the QoLPS Field Sampling Plan for Phase 1 Facility Site Work Construction (QEA, January, 2007).

The Noise Control Plan will be updated and changed if work conditions or work hours change substantively.

## STANDARDS

The Performance Standards for Noise applicable to construction of the processing facility are summarized in the flowing table extracted in part from the QoLPS.

**Noise Standard Summary (QoLPS, EPA, May 2004)**

| Receptor Location | Performance Standard/ Control Level | Performance Standard/ Control Level Values (exterior) |
|---|---|---|
| Residential | Control Level (established as the threshold at which mitigation is recommended) | Daytime: 75 dBA<br>(maximum hourly average) |
| | Standard (established as the threshold at which mitigation is required) | Nighttime: (10:00 pm to 7:00 am) 65 dBA (maximum hourly average)<br><br>Daytime: 80 dBA<br>(maximum hourly average) |
| Commercial/Industrial | Standard (established as the threshold at which mitigation is required) | 80 dBA<br>(maximum hourly average) |

Several observations can be made regarding these standards:

1. The standards are based one-hour equivalent noise levels
2. The noise standard is less stringent in commercial/industrial areas than in residential areas.
3. The nighttime standard is more stringent than the daytime standard in residential areas.
4. The nighttime standard is applicable between 10:00 pm and 7:00 am.
5. Demonstration of Compliance will be monitored by others, i.e. not the facility construction contractor.
6. The location of monitoring by others for compliance with the standard is the receptor location (neighboring properties), i.e. not the processing facility boundary.

**PROPOSED ACTIVITIES**

Contract 3A comprises construction and commissioning of the dredged sediment processing facility. This activity will occur following the site preparation construction performed under Contract 1 and before the river dredging operations performed under Contract 4 and the processing operations performed under Contract 3B.

Construction of the processing facility will consist of procurement and installation of building and tank foundations and equipment pads, building enclosures and supplying and installing sediment processing and water treatment processing equipment. Construction includes procurement and installation of piping, mechanical, plumbing, electrical work and instrumentation. This contract also includes completion of site paving and finishing the site-work as well as start-up, training and commissioning of the processing facility.

Noise may emanate from several sources during construction including material and equipment delivery vehicles, construction equipment, generators, pumps, rigging equipment, power tools, etc.

No nighttime (i.e. after 10:00 pm) exterior construction is planned at this time. Nighttime activity may occur within erected buildings.

**CONTROL MEASURES**

Control Measures will be implemented to keep equipment operating at their respective standard operating levels. Control measures to be implemented by Sevenson will include, but not limited to:

- All equipment will have a maintenance check prior to delivery to the site.
- If the equipment is not running within the normal standards, maintenance will be performed, such as brake adjustment, or muffler replacement, prior to delivery to job site.
- Equipment will be inspected daily.

- Routine maintenance will be performed to keep equipment running properly.
- Excessive engine throttling will be avoided.
- Where practicable, equipment will be positioned to maximize natural or artificial features to attenuate noise and limit time of operation of construction activities to routine work hours.

**APPLICATION OF STANDARDS**

The processing facility is being constructed in an industrial area, therefore the Commercial/Industrial Standard applies in the majority of cases. This is true for the railroad sidings and industrial facilities along Factory Street west of the site and for the undeveloped industrial land north of the site. The 80dBA commercial/industrial standard would apply to these receptor locations.

The land south of the site has some rural residential development, therefore the 75dBA control level and the 80dBA standard would apply between 7:00AM and 10:00PM. The 65dBA standard applies between 10:00 PM and 7:00 AM.

The site is bounded on the immediate east by the Champlain Canal and further by East Street. This area is sparsely settled with rural residential dwelling units, therefore the 75dBA control level and the 80dBA standard would apply between 7:00AM and 10:00PM. The 65dBA standard applies between 10:00 PM and 7:00 AM.

The control levels and standards apply to the receptor locations. The operant theory is that sound pressure levels attenuate over distance. If the noise standard is achieved at the boundary, the noise level will be even further below the standard at the more distant receptor locations.

The noise performance standards applicable to facility construction (i.e. short-term) are based on equivalent sound levels. An integrating or data logging type noise level meter is necessary for measurement of time averaged sound pressure levels.

**NOISE MONITORING**

During construction Sevenson will monitor the work areas to verify compliance with Contract 3A specification section 02931 –Noise Restrictions and Controls (Work Area Noise Monitoring). Work Area Noise Monitoring will be conducted:

- Commencing processing equipment installation and remaining site work;
- When equipment installation and remaining site work which have not previously been monitored begin;
- When equipment installation begins at new locations on the site (wharf area, processing area);

- When significant modifications are made to the types of equipment being utilized to install equipment at the site; and
- During these activities to confirm continued compliance with the specifications.

Work Area Noise Monitoring will be performed for source evaluation and construction management purposes only. It will serve as a guide with respect to compliance with contractor specifications and the potential for noise levels to exceed the applicable QoLPS criteria at nearby receptors.

Should the work area monitoring suggest potential for a noise exceedance, the CM will be notified immediately. Sevenson may also elect to proactively implement engineering controls, as appropriate.

Specific methods, reporting requirements, personnel qualifications and equipment are described in the attached Work Area Noise Monitoring Plan. The Work Area Noise Monitoring Plan will be adjusted should work conditions or schedule change.

Sevenson will endeavor to coordinate noise monitoring with the other construction contracts and contractors on-site.

**NOISE MITIGATION**

It is expected that average noise levels will not exceed the applicable control levels and standards since use of heavy equipment such as large loaders and excavators, off-road dump-trucks, pile drivers, etc. during Contract 3A construction is anticipated to be very limited.

Should the CM advise Sevenson that the construction activities are resulting in an exceedance of the QoLPS for noise, based on the third-party compliance monitoring, the specific source of the exceedance will be identified and engineering controls will be implemented.

These controls may include, but are not limited to:

- Shrouds, barriers or changing of equipment when practical.
- Corrective measures will be done as quickly as possible but no longer than 4-hours after the initial exceedance event.

If the short-term (construction) noise standard is exceeded, then more assertive mitigation measures such as erection of temporary sound barriers, removal and replacement of offending equipment, additional sound insulation or sound baffling in engine compartments, additional engine exhaust mufflers or resonators, etc.

Mitigation measures for construction activities will be implemented within 4-hours if a noise performance standard is exceeded.

Should these corrective measures fail to mitigate the exceedance, as directed by the CM, an acoustical engineer will be brought in to analyze the situation and recommend practical solutions.

# WORK AREA NOISE MONITORING PLAN

## Methods

The contractor will monitor sound levels whenever construction activity is occurring and will institute corrective measures if the self-monitoring suggests that the noise compliance standards may be exceeded.

The proposed noise control self-monitoring program will consist of one-hour long noise monitoring done at a distance of 200 ft of the operation each working day of facility construction. The sound level meter will be placed approximately 5 ft off the ground with the microphone pointed towards the noise source at an angle of 10º, and a measurement will be recorded in A-weighted decibels (dBA). Monitoring will be conducted in the slow response mode for continuous equivalent sound level over a one hour period at receptor locations while the construction activity is at peak load. Monitoring duration may be shortened for sources having steady noise emission levels.

An integrating-type sound level meter will be erected on a tripod. The average sound level will be manually recorded on a daily log sheet. A minimum one-hour long average noise level will be measured for every four hours that facility construction is occurring.

Construction activity will usually end before the 10:00 pm nighttime noise standards take effect. Nighttime construction activity (10:00 pm – 7:00 am) is expected to occur only rarely for activities such as utility changeovers. Sound level measurements will continue every four hours throughout the evening if third-shift construction activity occurs.

Once the processing equipment is installed and the startup, testing and commissioning activities are being performed, the contractor will attempt to identify and remedy or control any non-conforming equipment. For example, loud motors will be checked for improper rotation or defective manufacturing such as a mismatch between the stator and rotor poles. Equipment will be checked to ensure that intakes and impellers are free of debris, etc.

The self-monitoring program will be reviewed periodically at the job-site progress meetings and adjustments made as required.

## Reporting

The CM will be immediately notified if Work Area Monitoring suggests potential for a noise exceedance at a compliance point. The CM will be notified immediately if a noise complaint is received.

## Personnel Qualifications

Field sampling personnel will have current health and safety training, site supervisor training, and site-specific training, as needed. In addition, personnel performing sound

monitoring equipment installation and monitoring will be trained in the use of the sound level meter and other appropriate equipment.

**Equipment List**

The following materials, as required, will be available while performing sound monitoring:

- Personal protective equipment (PPE), as required by the *Health and Safety Plan* (HASP);
- Sound level meter(s) with appropriate batteries, cable and all-weather microphone equipment;
- Sound level meter manual;
- Sound level meter calibration notebook;
- Field notebook

# APPENDIX E

# STORMWATER POLLUTION PREVENTION PLAN

# STORMWATER POLLUTION PREVENTION PLAN

**For The**

**REMEDIAL ACTION WORK PLAN FOR PHASE 1**
**PROCESSING FACILITY CONSTRUCTION**

**PROCESSING EQUIPMENT INSTALLATION**
**HUDSON RIVER PCBs SUPERFUND SITE**

**Submitted To**

**PARSONS**
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## 1.0 Stormwater Pollution Prevention Plan Summary and Objectives

The Stormwater Pollution Prevention Plan (SWPPP) covers site construction activities that could cause sediment transport to the Hudson River, surrounding canals, or wetland areas, or cause contaminants such as fuels or other petroleum products to run off the site to a water course or wetland. A further objective of the SWPPP is to minimize the quantity of accumulated stormwater on the site, so as to allow excavations and other site activities to remain dry and active.

This SWPPP includes the contractor's plan for controlling erosion and sediment transport as a result of construction activities on the designated Contract 3A site. Temporary erosion and sediment control measures such as dikes, silt fences, turbidity curtains (booms), diversion ditches, and inlet protection shall be identified and employed on site as described in this plan or shown in the contract documents. These structural measures and other Best Management Practices (BMP) that may be necessary to achieve the plan's objectives are included in this SWPPP.

## 2.0 Site Description

The Energy Park site consists of approximately 100 acres of agricultural land and wooded area. The site generally slopes southeast toward the Champlain Canal at an average gradient of 1%. Existing surface runoff reportedly occurs as a result of sheet flow across the site, as well as shallow-concentrated flow.

The construction site is bounded by railroad tracks to the northwest, an unnamed tributary of Bond Creek to the north and northeast, agricultural and residential properties to the south and southwest. To the southeast and east lie a Lock Diversion Channel, Bond Creek, the Champlain Canal, and a 7.4-acre wetland.

The facility to be constructed under Contract 3A will process PCB-contaminated sediment dredged from the Hudson River. Surface water that contacts these facilities will be treated by an onsite stormwater treatment system and discharged to the Champlain Canal, or reused within the treatment process for backwash water.

Maps showing the existing and proposed site conditions are included in Appendix D, Attachment A of the Remedial Action Work Plan for Phase 1 Facility Site Work Construction previously submitted to the EPA.

## 3.0 Plan Objectives

The objective of the SWPPP is to describe the soil erosion and sediment control measures to be taken during the construction of the sediment processing facilities. Soil, water, and other natural resources will be protected from degradation from site runoff containing turbidity, and man-made contaminants such as gasoline, kerosene, or petrochemical lubricants. No contaminated materials are known to be present on the present site. Therefore, the SWPPP will focus on mitigating construction activities that could result in increased turbidity from surface runoff, or the presence of contaminants from normal construction activities, rather than from processing of contaminated sediment.

The soil erosion and contaminant control measures described herein are designed based on the following principles:

1. Minimize exposure of bare soil;
2. Preserve existing vegetative cover wherever possible;
3. Prevent soil from leaving the site through the use of silt fences, permeable berms, inlet protection, tracking pad and/or stone weeper (as necessary);
4. Stabilize disturbed areas soon after final grading;
5. Keep runoff velocities low;
6. Divert run-on water away from disturbed areas; and
7. Reduce sedimentation by utilizing erosion control practices on site.

This plan is based on two New York State Department of Environmental Conservation (NYSDEC) documents: *Instruction Manual for Stormwater Construction Permit,* the *New York Standards and Specifications for Erosion and Sediment Control*, and the requirements of the project contract drawings and specifications. A copy of the approved SWPPP, including related drawings and inspection logs, will be kept on site at all times for inspection by the Contractor. Revisions to the approved plan will be submitted to the Construction Manager for approval.

## 4.0 Plan Implementation

The general sequence of construction for Contract 3A will be:

1. Mobilization—delivery and setup of site trailers, site staking, delivery of construction equipment, installation of silt fences and security fences, and installation of temporary utilities as required;

2. Excavation and Foundation Installation—excavation for building foundations and equipment pads in coordination with Contract No. 1 and 2 contractors. Rigging of reinforcing steel and pouring of concrete slabs and foundation walls. Installation of piping, plumbing, electrical and instrumentation stub ups in building slabs.

3. Erection of Water Treatment and Dewatering Buildings.

4. Erection of Outside Tanks and Cake Storage Building

5. Excavation and Installation of Outside Piping and Fittings

6. Installation of Processing Equipment in Process Area

7. Installation of Processing Equipment in Waterfront Area

8. Installation of Electrical and Instrumentation in all Buildings

9. Training of Contract 3B Personnel

10. Startup and Commissioning of the Unit Processes, Electrical and Instrumentation

11. Startup and Commissioning of the Entire Facility, Electrical and Instrumentation in Automatic

12. Demobilization and Removal of Construction Vehicles.

It is anticipated that the excavation and foundation activities will have the most impact on site erosion. Most of these activities will occur within the first 4-6 months of mobilization. Therefore, all erosion and sediment controls will be put into effect and functional prior to commencement of any earthwork activities.

Sediment and erosion control practices will be consistent with currently acceptable practices, including the placement of silt fencing and permeable berms to mitigate sedimentation transport; the use of berms and trenches to re-direct surface water runoff/run-on to prevent migration to and control discharges from adjacent properties; and the use of absorbent booms, where applicable, to prevent the flow of contaminated liquids from entering navigable waterways and/or storm sewer pathways.

Sedimentation barriers will be installed using silt fence and/or permeable berm along the perimeter of the work area (i.e., excavation areas) as a secondary protection to the surrounding water courses. In addition to regular weekly inspections, all sedimentation

barriers will be spot checked during the daily quality control inspection. Areas of bare soil exposed by construction activities will be minimized. Stabilized construction entrances will be used to minimize tracking of mud or soil into the roadways. Mud or soil that may be tracked from the site onto roadways will be cleaned as necessary. The Contractor or its subcontractors will immediately clean up mud or soil tracked from the site onto roadways.

All soil erosion and sediment control measures (silt fence, trenches, berms, etc.) will be installed prior to any major soil disturbances, or in their proper sequence, and maintained until permanent protection is established.

Any changes to the approved SWPPP will require the submission of a revised SWPPP to the Construction Manager. The revised plans must meet all current soil erosion and sediment control standards.

**Coordination with Contract 1:** Under Contract No. 1, surface drainage from cuts and fills within the limits of the work will be graded to control surface water flow (i.e., mitigate runoff and run-on) and mitigate soil erosion. This will include construction of three stormwater retention ponds: one at the north end of the site, one at the south end of the site, and one at the north end of the waterfront area.

Under Contract No. 1, the three stormwater retention ponds will be equipped with pumping stations to ultimately pump stormwater to the on-site treatment facility when the facility is fully operational.

However, electrical power, instrumentation and the stormwater treatment facilities will not be available until the completion of Contract 3A. Therefore, the Contract 3A Contractor will monitor the water levels in the stormwater basins, and will utilize portable pumps to lower the basin water level as required. Discharge will be to the Champlain Canal. Care will be taken to minimize the discharge of settled solids in the basin.

**Good Housekeeping:** During construction, the Contractor will establish and maintain good housekeeping Best Management Practices (BMP) for the site. These will include the following:

- When not in use, all construction equipment will be stored in designated equipment staging areas**.**
- All vehicle fueling will be conducted within a containment area or asphalt pad.
- All fuel will be stored in approved storage containers. Fuel storage tanks will be protected from vehicles by “Jersey” barriers.

- All vehicle maintenance such as oil changes, lubrication, and other tasks will be conducted within a containment area, or on an asphalt pad within the designated site.

- All vehicle washing and general maintenance activities that could produce contaminants will be conducted within a containment area, or on an asphalt pad within the designated site.

- All cleaning materials, lubricants, fuel, and other construction materials will be stored in original containers as much as possible, or will be stored in other approved containers when necessary. All spills will be promptly cleaned up.

- The Contractor will provide and utilize dumpsters in appropriate areas to collect construction debris, paper, and other waste material. The dumpsters will be emptied on a regular basis, or as required.

The housekeeping practices will be monitored and administered by the Quality Control Manager.

## 5.0 Site Sediment Controls

The following control devices will be constructed as indicated below and will meet the requirements of the contract documents and the *New York Standards and Specifications for Erosion and Sediment Control*:

- **Construction Entrance**: The site presently has one main access point for vehicular traffic, at the northern end of the site. Three other access gates will also be provided, and will only be used if necessary. As much as possible, the Contractor will use northern main access gate as the means of access to and from the site for employees, subcontractors and all deliveries. The main entrance is the paved roadway leading into the site from Route 196. This road that will be used will be monitored daily. Any dirt and/or mud deposited from a source at the site on public roadways will be removed and cleaned up.

- **Sedimentation Barriers**: Pre-manufactured silt fences will be used as sedimentation barriers and will be installed in areas where the potential of soil runoff and erosion may occur. Silt fences will be installed on natural ground, at the bottom of fill slopes, and in ditches and other areas where siltation is a problem, and will be maintained until grass is established. These silt fences will be embedded to prevent water from running under them. Silt fences will be spot checked daily and maintained in satisfactory condition for the duration of the project.

- **Inlet Protection**: All catch basins and storm drains will be protected using silt fences, and hay bales as required to reduce sediment and contaminants from the construction site. In addition to the regular weekly inspections, all inlet protection structures will be spot checked daily by the quality control manager or a designated representative.

- **Stockpiles**: Silt fencing will be placed to surround all stockpiles of clean material, and any stockpile staying onsite for periods of time of more than 1 week will be covered with tarps or poly.

- **Additional Measures**: Immediately upon recognizing that unforeseen circumstances pose the potential for accelerated erosion or sedimentation, the Contractor will use appropriate best management practices to eliminate the potential for accelerated erosion and sedimentation. The Contractor, where necessary, will supplement the above control devices with hay bales, rock dams, erosion control matting, and riprap lining. Should the need arise to pump sediment-laden water, the Contractor will use best management practices to discharge the water through sediment control devices, such as hay bales, silt fence, etc. prior to discharging the water over non-disturbed vegetative areas.

- **Removal**: Removal of the erosion and sediment controls will be accomplished as the items are no longer needed. Inlet protection structures and silt fencing around stockpiles will be removed once they are not needed. Remaining soil erosion controls will be removed upon approval from the Construction Manager.

## 6.0 Post-Construction Stormwater Management

Refer to the Contract 1 SWPPP, Section 4 – Stormwater Management, for descriptions and details of post-construction stormwater management measures.

## 7.0 Inspection and Maintenance

Once in place, the Contractor's Quality Control Manager, or his representative, will be responsible for regular weekly inspections of all erosion and sediment control measures and spot checking structural control measures daily. In addition, site inspections will be performed by the Quality Control Manager, or his representative, within 24 hours of a rainfall of 0.5 inches or greater. Any items found noncompliant with this plan will either be repaired or replaced immediately.

The Quality Control Manager has the authority to stop work until these repairs are completed. He will also maintain a log of his inspections and a list of deficiencies found, and the corrective action(s) taken. A sample site inspection form has been included in Attachment A of this SWPPP. This form will be used by the Quality Control Manager on a weekly basis during dry weather, during storm events, and pre- and post-storm events to assess the state of the site stormwater controls. The form will be used to document the nature and date of corrective actions taken.

## 8.0 Final Restoration, Maintenance, and Acceptance

Following the completion of all construction activities, the site will be restored. Site restoration will include the repair of any site areas damaged or disturbed during the completion of construction activities, as well as establishing vegetative cover as required, and cleaning of all work areas to remove all materials and waste.

The Contractor will protect newly sub-graded areas that cannot be top soiled/seeded right away, that will remain exposed for more than 14 days, or that are exposed at a time outside of the growing season. Silt barriers, straw mulch, or soil erosion control blankets and fabric will be used to prevent siltation of areas beyond the work limit. All washed out areas will be re-graded to final grades and restored.

All maintenance work will be performed in accordance with Contract Specifications until final contract acceptance.

# ATTACHMENT A

# STORMWATER SITE INSPECTION FORM

# STORMWATER SITE INSPECTION FORM

| General Information | | | |
|---|---|---|---|
| **Project Name** | | | |
| **NPDES Tracking No.** | | **Location** | |
| **Date of Inspection** | | **Start/End Time** | |
| **Inspector's Name(s)** | | | |
| **Inspector's Title(s)** | | | |
| **Inspector's Contact Information** | | | |
| **Describe present phase of construction** | | | |
| **Type of Inspection**<br>❑ **Regular** ❑ **Pre-storm event** ❑ **During storm event** ❑ **Post-storm event** | | | |
| **Weather Information** | | | |
| **Has it rained since the last inspection?**<br>❑Yes ❑No<br><br>**If yes, provide:**<br>**Storm Start Date & Time:** **Storm Duration (hrs):** **Approximate Rainfall (in):** | | | |
| **Weather at time of this inspection?** | | | |
| **Do you suspect that discharges may have occurred since the last inspection?**<br>❑Yes ❑No | | | |
| **Are there any discharges at the time of inspection?**<br>❑Yes ❑No | | | |

# Site-specific BMPs

*Number the structural and non-structural BMPs identified in your SWPPP on your site map and list them below (add as many BMPs as necessary). Carry a copy of this numbered site map with you during your inspections. This list will help ensure that you are inspecting all required BMPs at your site. Customize this section as needed.*

| | **BMP Description** | **BMP Installed and Operating Properly?** | **Corrective Action Needed** | **Date for corrective action/responsible person** |
|---|---|---|---|---|
| 1 | | ❑Yes ❑No | | |
| 2 | | ❑Yes ❑No | | |
| 3 | | ❑Yes ❑No | | |
| 4 | | ❑Yes ❑No | | |
| 5 | | ❑Yes ❑No | | |
| 6 | | ❑Yes ❑No | | |
| 7 | | ❑Yes ❑No | | |
| 8 | | ❑Yes ❑No | | |
| 9 | | ❑Yes ❑No | | |
| 10 | | ❑Yes ❑No | | |
| 11 | | ❑Yes ❑No | | |
| 12 | | ❑Yes ❑No | | |
| 13 | | ❑Yes ❑No | | |
| 14 | | ❑Yes ❑No | | |
| 15 | | ❑Yes ❑No | | |
| 16 | | ❑Yes ❑No | | |
| 17 | | ❑Yes ❑No | | |
| 18 | | ❑Yes ❑No | | |
| 19 | | ❑Yes ❑No | | |
| 20 | | ❑Yes ❑No | | |

Below are some general site issues that should be assessed during inspections. Please customize this list as needed for conditions at your site.

## Overall Site Issues

| | BMP/activity | Implemented? | Maintained? | Corrective Action | Date for corrective action/responsible person |
|---|---|---|---|---|---|
| 1 | Are all slopes and disturbed areas not actively being worked properly stabilized? | ❑Yes ❑No | ❑Yes ❑No | | |
| 2 | Are natural resource areas (e.g., streams, wetlands, mature trees, etc.) protected with barriers or similar BMPs? | ❑Yes ❑No | ❑Yes ❑No | | |
| 3 | Are perimeter controls and sediment barriers adequately installed (keyed into substrate) and maintained? | ❑Yes ❑No | ❑Yes ❑No | | |
| 4 | Are discharge points and receiving waters free of sediment deposits? | ❑Yes ❑No | ❑Yes ❑No | | |
| 5 | Are storm drain inlets properly protected? | ❑Yes ❑No | ❑Yes ❑No | | |
| 6 | Is there evidence of sediment being tracked into the street? | ❑Yes ❑No | ❑Yes ❑No | | |
| 7 | Is trash/litter from work areas collected and placed in covered dumpsters? | ❑Yes ❑No | ❑Yes ❑No | | |
| 8 | Are washout facilities (e.g., paint, stucco, concrete) available, clearly marked, and maintained? | ❑Yes ❑No | ❑Yes ❑No | | |
| 9 | Are vehicle and equipment fueling, cleaning, and maintenance areas free of spills, leaks, or any other deleterious material? | ❑Yes ❑No | ❑Yes ❑No | | |
| 10 | Are materials that are potential stormwater contaminants stored inside or under cover? | ❑Yes ❑No | ❑Yes ❑No | | |
| 11 | Are non-stormwater discharges (e.g., wash water, dewatering) properly controlled? | ❑Yes ❑No | ❑Yes ❑No | | |
| 12 | (Other) | ❑Yes ❑No | ❑Yes ❑No | | |
| 13 | (Other) | ❑Yes ❑No | ❑Yes ❑No | | |