PHASE 1 FACILITY OPERATIONS AND MAINTENANCE PLAN

Appendix B

to

Remedial Action Work Plan for Phase 1 Dredging and Facility Operations

HUDSON RIVER PCBs SUPERFUND SITE

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Revision 1 – May 2009

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ACRONYMS AND ABBREVIATIONS

AAR	Association of American Railroads
CD	Consent Decree
CHASP	Phase 1 Remedial Action Community Health and Safety Plan
CM	Construction Manager
CPR	Delaware & Hudson Railway Company d/b/a Canadian Pacific Railway
CRZ	Contamination Reduction Zone
cy	cubic yard(s)
DQAP	Dredging Construction Quality Control/Quality Assurance Plan
EPA	United States Environmental Protection
EPS	Agency Engineering Performance Standards
EZ	Exclusion Zone
FDR	Final Design Report
FRA	Federal Railroad Administration
GAC	granular activated carbon
GE	General Electric Company
gpm	gallon(s) per minute
HASP	health and safety plan
HDPE	high-density polyethylene
I&C	instrumentation and controls
MCP-1	Master Control Panel-1
min	minute(s)
NORAC	Northeast Operating Rules Advisory Committee
NYSDEC	New York State Department of Environmental Conservation
O&M	operation and maintenance
PAP	Property Access Plan
PCB	polychlorinated biphenyl
PEIC	Processing Equipment Installation Contractor
PFOC	Processing Facility Operations Contractor
POL	Petroleum, Oil, and Lubricant
PPE	personal protective equipment
PSCP	Performance Standards Compliance Plan

ACRONYMS AND ABBREVIATIONS
(CONTINUED)

psig	pounds per square inch gauge
PVC	polyvinyl chloride
QAPP	Quality Assurance Project Plan
QC	quality control
QoLPS	Quality of Life Performance Standards
RA	remedial action
RA HASP	Remedial Action Health and Safety Plan
RAM	Remedial Action Monitoring
RAWP	Remedial Action Work Plan
RIP	Repair in Place
ROD	Record of Decision
RYOC	Rail Yard Operations Contractor
SOW	Statement of Work
SPCC	spill prevention, control, and countermeasure
SSHO	site safety and health officer
SSO	site safety officer
SSR	site safety representative
SWPPP	Storm Water Pollution Prevention Plan
T&D	Transportation and Disposal
VFD	variable frequency drive

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SECTION 1

INTRODUCTION

On October 6, 2005, a Consent Decree (CD) for the Remedial Action (RA) in the Upper Hudson River (Civil Action No. 1:05-CV-1270), executed by the General Electric Company (GE) and the U.S. Environmental Protection Agency (EPA), was filed in federal district court. After an extensive public review and comment period, the court approved and entered the CD on November 2, 2006, when it went into effect (USEPA/GE, 2005).

GE prepared the *Phase 1 Final Design Report* (Phase 1 FDR) and submitted it to EPA on March 21, 2006 (BBL, 2006). On May 31, 2006, EPA approved the portion of the Phase 1 FDR that included the civil site work and rail yard construction (Contracts 1 and 2). On September 14, 2006, EPA approved the portions of the Phase 1 FDR that included construction and operation of the sediment processing facility (Contracts 3A and 3B) and rail yard operations (Contract 6). Subsequently, based on numerous discussions between GE and EPA, the Phase 1 FDR was modified, especially in regard to dredging operations (Contract 4) and habitat construction (Contract 5), through numerous revised plans and specifications and other documents reflecting the parties' agreements. On January 25, 2008, the EPA approved all remaining portions of the Phase 1 FDR, so that that plan was approved in its entirety.

This *Phase 1 Facility Operations and Maintenance Plan* (Facility O&M Plan) has been prepared in accordance with Section 2.3.2.2.5 of the Statement of Work (SOW) for Remedial Action and Operations, Maintenance and Monitoring, which is Appendix B to the CD) and sets forth a number of requirements for implementing the Remedial Action set forth in the Record of Decision (ROD). This Phase 1 Facility O&M Plan is an appendix to and part of the *Remedial Action Work Plan for Phase 1 Dredging and Facility Operations* (RAWP #3), as described in the SOW. The scope of this plan covers Phase 1 of the Remedial Action (as described in the CD and SOW) and the off-season after the completion of Phase 1.

This Phase 1 Facility O&M Plan addresses the operation and maintenance (O&M) of the sediment processing facility to be used during Phase 1, which is located in Fort Edward, New York. It describes operational aspects of sediment processing at this site, from receipt of dredged material through transfer of dewatered solids to a staging area for loading of rail cars. It also describes the treatment of process water and storm water at the site and the reuse and discharge of treated water. The descriptions of operations in this plan include, for each operation, descriptions of the equipment and processes involved, as well as the instruments and controls and the inspection and maintenance procedures for the equipment used. This plan also presents a general operations schedule and description of manpower requirements, a contingency plan for unplanned maintenance of critical equipment, and a description of worker health and safety measures, decontamination procedures for personnel and equipment, spill control and

response measures, and contractor noise and light monitoring to be implemented at the processing facility. Finally, this plan includes a description of the procedures for shutting down facility operations at the conclusion of Phase 1 and of the activities to be undertaken at the facility during the off-season following Phase 1.

1.1 PROCESS OVERVIEW

Dredged material from the Hudson River will be treated at the processing facility site in Fort Edward. Dredged material will consist of a mixture of debris, coarse and fine sediment solids, and water, all of which are expected to contain polychlorinated biphenyls (PCBs). Dredge material will be off-loaded from barges and undergo treatment to accomplish the following:

- Separation of large debris and coarse solids from fine sediments and water to facilitate sediment processing;
- Dewatering of fine sediments to generate a solid waste for disposal;
- Treatment of the water recovered from size separation and dewatering processes and the water collected in the site's storm water collection system to remove contaminants from that water; and
- Staging, transportation, and disposal of debris, coarse solids, and dewatered fine solids (filter cake).

The dredged material will go through a series of unit processes, each of which is designed to achieve a specific objective:

- Initial size classification to remove large debris.
- Size separation processes:
  - Trommel screen to remove coarse solids (greater than 5/8-inch-diameter) from sediment; and
  - Hydro-cyclone units for separation and dewatering of the sand fraction.
- Dewatering:
  - Gravity thickening for removal of water from fine sediment; and
  - Filter pressing for mechanical dewatering of gravity-thickened fine sediment.
- Water Treatment:
  - Clarification, including polymer addition, flocculation, and settling to remove suspended solids;
  - Mixed-media filtration to remove additional suspended solids after the clarification step;
  - Granular activated carbon (GAC) filtration to remove dissolved contaminants, particularly PCBs;
  - Bag filtration to remove fine particles that may break through the GAC filters ; and

- Recovery of solids from the clarifiers, mixed-media filters, and GAC filters; solids will be recycled to the gravity thickener.

The treated water will be recycled as plant water or discharged to the Champlain Canal.

1.2 FACILITY O&M PLAN ORGANIZATION

This Phase 1 Facility O&M Plan was developed in accordance with Section 2.3.2.2.5 of the SOW and addresses the following operations:

- Dredged material off-loading;
- Size separation;
- Transfer of sediment to dewatering area;
- Sediment dewatering;
- Water treatment;
- Processed material staging; and,
- Rail yard maintenance.

These activities will be performed mainly by the Processing Facility Operations Contractor (PFOC) under Contract 3B, with some activities to be conducted by the Rail Yard Operations Contractor (RYOC) under Contract 6.

This document is organized into sections as follows:

- **Section 1 – Introduction**: provides an introduction to the Facility O&M Plan, including its purpose, an overview of sediment processing, and the document organization.
- **Section 2 – Processing Facility Operations and Maintenance**: presents, for each major processing area at the processing facility, a summary of equipment involved; a process description; a description of principal instruments and controls; and a discussion of the inspection and maintenance requirements for critical processing equipment, including scheduled maintenance that will require equipment shutdown. Material staging, loading, and transport from major process areas are also described.
- **Section 3 – Operations Schedule**: summarizes the general stages of processing facility operations, the activities to be performed during the pre-operational stage, and staffing requirements during facility operations, including shift schedules and general manpower requirements.
- **Section 4 – Contingency Plan for Maintenance/Replacement of Critical Equipment**: describes contingency planning for unplanned maintenance or replacement of critical equipment, including contacts for vendors and maintenance professionals for that equipment.

- **Section 5 – Health, Safety, and Environmental Protection Measures:** describes: (a) general worker health and safety measures; (b) decontamination of processing equipment machinery and structures, as well as workers handling PCB-containing materials; (c) spill control/containment measures covering releases of hazardous materials and fuels and untreated contaminated water and solids; (d) emergency response contact information and related information; and (e) the noise and lighting monitoring to be conducted by the PFOC and RYOC to assess and verify compliance with the contract specifications.
- **Section 6 – Off-Season Operations:** describes the shutting down of facility operations at the end of the Phase 1 operations season, winterization of equipment, and site security and access, as well as management of storm water and other on-going operations, during the off-season after the completion of Phase 1 sediment processing.
- **Section 7 – References**: provides references to key documents referred to in the body of the report.

Table 1-1 provides a cross-reference of the SOW requirements to the portions of this Facility O&M Plan where those requirements are addressed.

Table 1-1 Consent Decree SOW/Facility O&M Plan Cross-Reference Table

Citation	Description of Requirement	Facility O&M Plan Section
SOW, Section 2.3.2.2.5, Page 2-16	Written description of major elements of work.	Section 2
SOW, Section 2.3.2.2.5, Page 2-17	Operation and maintenance procedures required for critical machinery and equipment according to manufacturers' recommendations. This item shall include major daily, weekly, and monthly maintenance activities that will require shut-down of the equipment and a schedule for inspections that are required for specific equipment and machines.	Sections 2.3.4, 2.4.4, 2.5.4, 2.6.4
SOW, Section 2.3.2.2.5, Page 2-17	An operation schedule to include primary labor types (e.g., dredging, processing, monitoring, etc.), number of shifts and hours of operation, and estimated number of persons required on a daily basis.	Sections 3 & 6
SOW, Section 2.3.2.2.5, Page 2-17	An Equipment Decontamination Plan for machinery and trucks that come into contact with PCBs or any other potential constituents of concern at the site and are leaving the site or otherwise need to be decontaminated (e.g., equipment leaving an EZ).	Section 5

Table 1-1 – Consent Decree SOW/Facility O&M Plan Cross-Reference Table (continued)

Citation	Description of Requirement	Facility O&M Plan Section
SOW, Section 2.3.2.2.5, Page 2-17	A Contingency Plan, along with the names and contacts of manufacturers and maintenance professionals for critical equipment related to Phase 1 activities.	Section 4
SOW, Section 2.3.2.2.5, Page 2-17	Emergency contact numbers for local, state and federal government organizations shall be cross-referenced to the appropriate RA document (i.e., Remedial Action Community Health and Safety Plan, Remedial Action Health and Safety Plan).	Section 5.4
SOW, Section 2.3.2.2.5, Page 2-17	Procedures for shutting down operations at the sediment processing facility for the off season (i.e., after processing of dredged sediments is completed for the season). Procedures for winterization of equipment, security and site access, demobilization of labor and equipment, and management of storm water shall be included.	Section 6

Note: RAWP contents are prescribed in the CD SOW, Section 2.3.2.2.5.

1.3 RELATED WORK PLAN DOCUMENTS

This Phase 1 Facility O&M Plan is one volume (Appendix B) of a set of documents that forms RAWP #3. A description of the processing facility O&M activities in the context of the entire project and an integrated schedule for the operations, which includes the facility operations, are included in the main RAWP #3 volume. Certain aspects of the processing facility operations are described in other appendices to RAWP #3, as listed below:

- Phase 1 Dredging Construction Quality Control/Quality Assurance Plan (DQAP). This plan contains, among other items:
  - A Barge Trip Log for logging information about barge unloading and transfer of barge custody, which is compiled by both the Dredging Contractor and the PFOC;
  - A description of the quality assurance program, including the processing facility component; and
  - A description of the communication methods between the Dredging Contractor and the PFOC.
- *Phase 1 Performance Standards Compliance Plan* (PSCP). This plan describes the actions to be taken to implement the Engineering Performance Standards (EPS), Quality of Life Performance Standards (QoLPS), and substantive water quality requirements issued by EPA. Activities at the sediment processing facility will affect several of those standards and requirements. As relevant to the processing facility, the Phase 1 PSCP includes the following:

  - Since operation of the processing facility will influence the overall project productivity, a description of the Productivity Performance Standard, routine monitoring and reporting of productivity, and potential response actions in the event that productivity falls behind schedule;
  - Since activities at the processing facility may contribute to off-site impacts on air quality, odor, noise, and lighting, a description of the QoLPS for those parameters, design analyses to assess achievement of those standards, control measures to be implemented at the facility to promote attainment of the standards, and response actions in event of an exceedance of a standard, including potential additional engineering controls and mitigation measures;
  - A description of the navigation standard, which controls the docking and staging of barges at the unloading dock and work wharf; and
  - Limits for discharging treated water to the Champlain Canal and non-contact (Type 2) storm water to Bond Creek, the routine monitoring requirements associated with these discharges, and response actions in the event of an exceedance.

- *Phase 1 Property Access Plan* (PAP). Access agreements have been obtained for the properties needed for the processing facility. The Phase 1 PAP includes a plan for accessing properties to collect data related to the QoLPS as a contingency in the event of an exceedance at the site perimeter.
- *Phase 1 Transportation and Disposal Plan* (T&D Plan). This plan describes the following activities to be performed at the processing facility:
  - The transfer of debris, coarse solids, and filter cake from the staging areas into rail cars set on the loading track;
  - The assembly of unit trains, which occurs within the on-site rail yard;
  - The weighing of the rail cars with the on-site scale;
  - Waste profiling; and
  - Manifesting and recordkeeping.

In addition to the foregoing plans attached to RAWP #3, the following plans, which have been previously submitted under separate cover, also cover some aspects of processing facility operations:

- *Phase 1 Remedial Action Monitoring Quality Assurance Project Plan* (Phase 1 RAM QAPP; Anchor QEA, 2009; currently under revision). The Phase 1 RAM QAPP describes data quality objectives and protocols for monitoring and sampling to assess achievement of the numerical criteria in the EPS, QoLPS, substantive water quality standards, and other substantive requirements related to the processing facility operations. As related to the processing facility, these include:

  - Routine monitoring and analysis (including locations, frequency, and test methods) related to emissions of PCBs in air at the perimeter of the processing facility;
  - Opacity monitoring;
  - Measurement of noise levels;
  - Measurement of light levels;
  - Monitoring for odor
  - Routine sampling and analysis of the water treatment plant discharge to Champlain Canal; and
  - Routine sampling and analysis of discharges to Bond Creek from non-contract (Type 2) storm water basins.
- *Remedial Action Health and Safety Plan* (RA HASP; Parsons, 2008). This plan includes the following as related to the processing facility:
  - Assessment of potential hazards that are associated with the facility operation to on-site workers;
  - A hazard mitigation plan, including personnel protective equipment, personnel decontamination procedures, emergency response procedures, and contact information; and
  - Notification and reporting requirements related to worker health and safety.
- *Phase 1 Remedial Action Community Health and Safety Plan* (CHASP; Parsons, 2009). The CHASP includes several items relevant to the processing facility. These include:
  - Description of measures to implement the QoLPS at the processing facility, including a summary of monitoring and a description of responses to exceedances of the criteria in those standards and to complaints relating to the parameters addressed by those standards;
  - Assessment of potential hazards to the community that are associated with the facility operation;
  - A community hazard mitigation plan, including emergency response procedures and contact information; and
  - Notification and reporting requirements related to community health and safety.

SECTION 2

PROCESSING FACILITY OPERATIONS AND MAINTENANCE

This section describes the major elements of work involved at the sediment processing facility.

2.1 OVERVIEW

As described in the *Remedial Action Work Plan for Phase 1 Processing Equipment Installation* (Parsons, 2007), the primary purpose of the sediment processing facility is to separate and treat water from dredged sediment. The locations of major processing equipment, including size separation equipment, gravity thickener, filter presses and the water treatment plant, are depicted on Figure 2-1 presented at the end of this section.

Descriptions of process O&M schedules are presented in this section for each of the following major process operations:

- Dredged Material Off-loading;
- Size Separation;
- Sediment Transport to Dewatering;
- Sediment Dewatering;
- Water Treatment;
- Processed Material Staging; and
- Rail Yard Maintenance**.**

The process descriptions include the equipment, general operating principles, and treatment objectives for each unit process. Descriptions of principal instrumentation and controls (I&C) are also provided for processing to highlight the types of variables that impact operations. Descriptions of solid material transport, stockpiling, and load out are provided within the relevant processing areas. A basic mass flow diagram of the sediment and water treatment process is presented as Figure 2-2 at the end of this section.

The descriptions of each processing operation also include general maintenance that highlight the routine attention that must be paid to the functioning of process equipment to keep it in working order. Preliminary schedules for maintenance activities and equipment operations are contained in the attachments. The EPA oversight personnel will be notified if these schedules are refined.

During operations, manufacturers' O&M manuals will be kept at the Construction Manager Trailer and will be available at that location for review by EPA oversight personnel upon request.

2.2 DREDGED MATERIAL OFF-LOADING

Planning and scheduling for barge off-loading will be performed by the PFOC. Receipt and return of barges to the dredge areas will be coordinated with the Dredging Contractor.

2.2.1 Material Unloading

Barges containing dredged sediment will be moved into place and connected to the barge winch system at the unloading wharf. At any given time, up to three barges may be staged at the waterfront area. The PFOC will transfer dredged sediment to the trommel screen. A crane with a clamshell bucket, or large excavator, will be used for emptying material barges and loading the trommel screen. Oversized debris will also be removed from the barge using this equipment. The PFOC will position a spill plate between the moored barges and the wharf to prevent spills into the canal during unloading. The spill plate will have raised edges to be able to contain and channel water back into the barge hopper or onto the unloading wharf. Dewatered material and/or debris at the wharf consists of material generated by the trommel screen, hydro-cyclones and oversized debris (tree branches, stumps, metallic material, etc.) removed from the barges.

Barge supernatant (free liquid within the barge) will be pumped directly to the hydro-cyclone pump station wet well. The pump suction line will have a screen or strainer to prevent transfer of oversize material and possible plugging of the pipeline.

A front end loader will manage the size and distribution of material produced from the trommel screen and hydro-cyclones. The front end loader will also be used to relocate and/or load out any accumulated debris material removed from the barges. If necessary, a second front end loader can be relocated from another area of the site. Oversized material from the trommel and hydrocyclones and large debris will be transported to the coarse material staging area using dump trucks, cycling between the size separation area and the coarse material staging areas so that these materials do not accumulate to the point where operations are impeded. Figure 2-3 depicts this on-site waste transport routing. A description of the spill containment measures during off-loading is included in Section 5.

The barges containing only debris will be pumped of free standing water, and the debris will then be unloaded directly into dump trucks or roll off boxes or temporarily staged on the deck of the unloading wharf for transportation to the debris staging area.

2.2.2 Interface with RAWP for Dredging and Facility Operations

Debris and sediment removal will be performed by the Dredging Contractor. The dredged materials will be placed in a barge, pushed with a tug to the unloading wharf and tied off to the wharf by the Dredging Contractor. The PFOC and Dredging Contractor will coordinate the barge unloading scheduling. It is expected that each barge will be off-loaded in approximately three hours or less, however, the PFOC has up to eight hours to unload a barge. The Dredging Contractor will notify the PFOC of pending barge shipments. The PFOC will be required to be ready to receive barges within two hours of notification from the Dredging Contractor.

Barges containing sediment will be connected to the barge winch system. A PFOC tug will be available to tend the barges and move the barges forward for unloading should the winch system fail. The material in the barges will be removed down to a level of approximately 6 inches. Barges will be unloaded in a manner that does not create an unsafe condition, cause damage to the barge, or cause spillage of the dredged material into the canal.

The PFOC will inform the Dredging Contractor that the barge has been emptied and inspected and is cleared for pick up by the Dredging Contractor. Once the barges are empty, the barges will be disconnected from the winch system and tied off for pickup by the Dredging Contractor. A log that will be used to record information about barge transfer and unloading is provided in the DQAP.

2.3 SIZE SEPARATION

The goal of sediment processing is to separate river water from dredged sediment. The first process step is size separation, which will remove debris and coarse solids from the finer sediments and water. Large debris that is visible to the operator may be removed during barge off-loading and transported to the debris staging area. The remaining sediment will be processed through a trommel screen and hydro-cyclones to sort out additional debris, gravel, and sand. Captured material from each process will be transferred by dump truck to the respective staging area. The remaining slurry of fine material will be pumped through force mains to the dewatering area.

2.3.1 Equipment Overview

2.3.1.1 Trommel Screen

The trommel screen system consists of a loading chute (hopper) with an integrated feed screen, trommel screen, underflow sump assembly, overflow radial conveyor system, appurtenances, and I&C. The trommel screen captures large solids (greater than 5/8-inch in diameter) from the dredged material offloaded from the barges. The feed rate is expected to be approximately 5 cy of dredged material per minute (cy/min). Pumps with variable speed drives will control the rate of the underflow from the sump assembly to the sediment slurry tank.

2.3.1.2 Hydro-Cyclones

Two hydro-cyclone systems will be operated. Each hydro-cyclone system consists of a hydro-cyclone cluster, dewatering screen, sump/recycle pump assembly, and solids conveyor system, along with appurtenances and controls. The sump of each hydro-cyclone system is equipped with a centrifugal recirculation pump.

2.3.1.3 Size Separation Storage Tanks

The Sediment Slurry Tank collects and stores the underflow from the trommel screen system. The tank has a volume of approximately 25,000 gallons. The tank is fitted with a mixer and equipped with two centrifugal discharge pumps.

Water used in the size separation processes is stored in the 180,000-gallon Size Separation Process Water Storage Tank. The tank is equipped with five pumps, including;

- Dual centrifugal pumps to supply make-up water to the sediment slurry tank;
- Dual centrifugal pumps to supply make-up water to the trommel screen; and,
- A single, centrifugal pump that supplies flush water for the force mains that carry sediment from the hydro-cyclones to the dewatering area.

2.3.2 Process and Operations Description

2.3.2.1 Trommel Screen

Dredged material will be loaded onto the trommel screen loading chute at approximately 5 cy/min. A coarse screen is integrated into the loading chute. The integrated feed screen will reject material that is greater than 12 inches. After large pieces of debris are removed, the chute will convey material onto the trommel screen. The loading chute will be flooded with make-up water from the size separation process water storage tank. The trommel screen also will be flooded to facilitate screening, wash underflow through the screen openings, and to improve the slurry characteristics of the underflow sediment. Flooding/make-up water is pumped by dual centrifugal pumps with variable frequency drives (VFD), which operate in duty/standby fashion.

Solids greater than 5/8–inch-diameter will be captured on the trommel screen (overflow) and transferred by the overflow radial conveyor to an oversize solids stockpile. The material that passes through the screen (underflow) will be pumped by dual centrifugal pumps through a common discharge manifold to the sediment slurry tank. Make-up water from the size separation process water storage tank may be pumped by dual centrifugal pumps to the sediment slurry tank to improve slurry handling and pumping.

2.3.2.2 Hydro-Cyclones

Trommel screen underflow stored in the sediment slurry tank will be processed through dual hydro-cyclone systems to provide further separation of coarse and fine solids. The hydro-cyclone systems will be operated in parallel. Each of two centrifugal pumps will pump slurry from the sediment slurry tank through a dedicated line to the two-chambered hydro-cyclone sump and recycle pump assembly of the respective hydro-cyclone system. Each sump assembly is sized to handle a maximum flow of 2,250 gallons per minute (gpm) of slurry, or about 150 dry tons per hour. The slurry will be pumped from the sump by a centrifugal recirculation pump into the hydro-cyclone cluster.

Overflow slurry from the hydro-cyclone cluster will pass back into the sump assembly. Hydro-cyclone cluster underflow (solids) discharge onto a vibratory dewatering screen. The vibratory screen will capture solids greater than 400-mesh size (screen overflow).

- The screen overflow will be transmitted onto a variable-speed conveyor/stacker and transported by dump truck to the coarse material staging area for subsequent load-out by rail.
- The screen underflow will pass back to the sump and recycle pump assembly. Because the contents of the sump assembly are continuously recycled, the contents consist primarily of hydro-cyclone overflow. As such, hydro-cyclone overflow will be pumped directly from the sump assembly to the hydro-cyclone overflow pump station wet well.

2.3.2.3 Size Separation Storage Tanks

Sediment Slurry Tank: This tank receives underflow from the trommel. Make-up water from the size separation process water storage tank may be added to improve slurry handling. The make-up water will be pumped by dual centrifugal pumps that are operated in duty/standby mode. The sediment slurry tank also will be equipped with a mixer mounted on a beam assembly to homogenize the tank contents.

Size Separation Process Water Storage Tank: The size separation process water storage tank will receive water recycled from the dewatering processes (gravity thickening and filter pressing) as described in Section 2.5, below, and from the Champlain Canal (if makeup water is needed). The former will be pumped by pumps discharging from the Recycle Water Equalization Tank in the dewatering area. The latter will be pumped from the Champlain Canal by a centrifugal pump.

During normal operating conditions, water from the recycle water equalization tank is pumped to the size separation process water storage tank and provides the needed makeup water to create a slurry in the trommel screen. In the event that additional water is needed to create the slurry, canal water can be used as a source of make-up water to the size separation process water storage tank at the wharf.

2.3.2.4 Material Staging in the Size Separation Area

At each stage of size separation, the solids removed from the dredged material will be staged for hauling. This operation includes the following:

- The initial steps of the size separation system involve scalping operations and size classification of the material. Material from the barges will be loaded into the chute of the trommel screen.
- During barge off-loading, debris may be loaded into a roll-off container or dump truck for transport to the debris staging area.

- Material captured by the coarse screen integrated with the trommel feed chute will be stockpiled near the front end of the trommel. A front end loader will load this material into dump trucks or roll-off boxes and it will be transferred to the debris staging area.
- Material captured on the trommel screen will be moved by the conveyor at the trommel barrel discharge to a pile prior to hauling.
- Material captured on the hydro-cyclone vibratory screen will be moved by a conveyor to a pile prior to hauling.

Drainage from the stockpiles will be captured and conveyed to the Waterfront Storm Water Basin (Section 2.6). The solids will be transported by truck from the stockpiles to the Coarse Material Staging Areas near the rail yard.

2.3.3 Instruments and Controls

The instruments and controls are organized by equipment component in which the instrument is installed. Field-located sensors transmit data to the Master Control Panel-1 (MCP-1). Data included in process logic control loops are compared against settings programmed by system operators. Equipment control commands are executed automatically, based on the data received at the MCP-1 after comparison with the programmed settings. The operators can also take manual control of processes and use data received at the MCP-1 to respond to changing conditions.

2.3.3.1 Trommel Screen

Underflow Sump Level: A high-level switch in the underflow sump will turn off the make-up water pumps furnishing water from the size separation process water storage tank. The high level alarm will also activate a beacon to alert the unloader operator to stop feeding the trommel.

2.3.3.2 Hydro-Cyclones

Feed Pump Flow: Flow meters are installed along the feed lines to each hydro-cyclone downstream of the feed pump. A high-flow condition closes the automatic valve along that line to recycle flow back to the sediment slurry tank. This prevents overloading of the hydro-cyclone.

2.3.3.3 Size Separation Storage Tanks

Sediment Slurry Tank Level: The level in the sediment slurry tank will control operation of the trommel underflow sump pumps, the hydro-cyclone feed pumps, the tank mixer, and the automatic valves along the hydro-cyclone feed lines.

- The operating speed of the hydro-cyclone feed pumps is proportional to the level in the sediment slurry tank within the normal operating range.
- At the low end of the normal operating range (low-level set-point), the automatic valves to the hydro-cyclones will close so that slurry recycles back to the tank to prevent the tank from emptying. The automatic valves open at a high-level set-point.

- A low-low level condition in the tank turns off the hydro-cyclone feed pumps and the tank mixer.
- A high-level switch/alarm in the sediment slurry tank turns off the trommel screen underflow sump pumps and closes the automatic control valve on the feed line from the Size Separation Process Water Storage Tank to prevent overfilling the tank.

Size Separation Process Water Storage Tank Level: Level sensors will control the pumping of the feed pumps from the dewatering area and Champlain Canal as well as the make-up water pumps to the sediment slurry tank and trommel screen.

- For the feed pumps, as the level in the size separation process water storage tank drops to a low set-point, the lead feed pump from the dewatering area will activate to replenish the tank. As the level rises above a high set-point, the lead pump turns off. At a high-level alarm set-point, the feed pumps in the dewatering area and at the Champlain Canal will turn off to prevent overfilling the tank.
- The feed pump from the Champlain Canal will be operated manually as needed to add volume to the tank. However, it will be turned off automatically at a high-level alarm point, as noted above.
- If the level goes below a low-low set-point, the make-up water pumps to the sediment slurry tank and trommel screen will turn off to prevent emptying of the tank.

2.3.4 Equipment Inspection and Maintenance

Regular attention will be paid to upkeep of all treatment equipment items. All equipment will be regularly inspected in accordance with the manufacturer instructions. Regular maintenance including lubrication of moving parts will also be performed as specified by the manufacturers. Specific inspection, lubrication, and scheduled maintenance items will be delineated in the equipment manufacturers' O&M manuals. Tanks will also be periodically inspected for signs of corrosion, leakage, and other problems and maintained (e.g., painting, corrosion protection) as instructed in the tank manufacturers' O&M manuals. Additionally, the operators will implement good housekeeping measures that will enhance safe working conditions and prolong equipment and system operability.

2.3.4.1 Inspection Schedule

The equipment manufacturers' O&M manuals will provide equipment inspection requirements. A generalized inspection schedule is provided in Attachment 1.

2.3.4.2 Scheduled Maintenance and Equipment Shutdown

Periodic maintenance items may require shutting equipment down. The weekly and monthly scheduled inspection and maintenance activities that are anticipated to require the shutdown of size separation equipment are presented in Attachment 2. It should be noted that system redundancy will often allow for equipment maintenance without interrupting operations,

depending on the sediment throughput rates. For example, most pump sets include at least two pumps that will generally operate in duty/standby mode. The operators will be responsible for adjusting the designation of duty and standby to allow a pump to be taken off-line while retaining pumping capability with the other pump. The regular adjustment of duty/standby, as well as lead/lag for sequentially operating pumps, will also balance out usage and thereby prevent pumps from wearing out prematurely. Dual hydro-cyclone systems operating in parallel may also allow one system to be taken off-line without interrupting overall system operation. The Phase 1 operations schedule includes one day of down-time per week for equipment maintenance. It is anticipated that equipment maintenance will be performed on system down days.

2.4 PUMPING OF SLURRY TO DEWATERING AREA

Size separation and dewatering activities will be located in separate areas at the sediment processing facility. Therefore, hydro-cyclone overflow along with barge supernatant will be pumped through force mains to the dewatering equipment for further processing.

2.4.1 Equipment Overview

2.4.1.1 Hydro-Cyclone Overflow Lift Station

The hydro-cyclone lift station will consist of a wet well and a trio of centrifugal pumps. The wet well will be equipped with three mixers. The wet well is tapered at the bottom.

2.4.1.2 Force Mains

Each of the three hydro-cyclone overflow lift station discharge pumps will convey sediment/water mixture through a dedicated 12-inch-diameter, high-density polyethylene (HDPE) force main to the dewatering area. A manifold in the dewatering area will merge the flows from the three force mains through a single, 16-inch-diameter line that discharges to the gravity thickener.

The three force mains installed along utility corridors or in pipe chases are either single- or double-walled, depending on the location along the run. Air/vacuum release combination valves along the force mains will relieve pressure or vacuum build-up in the mains. A flush water pump is available to move water from the Size Separation Process Water Storage Tank through the force mains to prevent sediment buildup.

Water from the Recycle Water Equalization Tank to the Size Separation Process Water Storage Tank, as discussed in Section 2.3.2.3, will be pumped through a separate 14-inch force main that is installed adjacent to the three hydro-cyclone overflow force mains. This fourth force main will also be equipped with air/vacuum release valves. It will be operationally similar to the three sediment force mains except it will convey water instead of sediment. Equipment for pumping water from the Recycle Water Equalization Tank through this fourth force main is discussed separately in Section 2.5.

2.4.2 Process and Operations Description

Hydro-cyclone overflow and barge supernatant will collect in the wet well and are homogenized by the three mixers. The three discharge pumps that convey the mixture to the dewatering area will be equipped with variable speed drives.

The flush water pump will be fixed-speed and manually operated through MCP-1. A single feed line from the size separation process water storage tank will lead to a discharge header with separate discharge lines to each force main. Motorized valves along each discharge branch will allow the operators to introduce flush water to the desired force main.

2.4.3 Instruments and Controls

Lift Station Wet Well Level: The level in the hydro-cyclone overflow wet well will control the hydro-cyclone feed pumps, wet well discharge pumps, and wet well mixers.

- A high-level condition in the wet well will shut off the hydro-cyclone feed pumps, thereby preventing the wet well from overflowing.
- A low-low level condition in the wet well will shut off the wet well discharge pumps to allow the level to recover and prevents the wet well from running dry. It will also shut off the wet well mixers.

Force Main Discharge Pressure: A high-pressure condition along a force main will shut off the wet well discharge pump dedicated to that force main. A low-pressure condition effects the same actions.

Flush Water Pump Control: Although the flush water pump will be manually controlled, it will shut off automatically if there is a low-low condition in the size separation process water storage tank.

2.4.4 Equipment Inspection and Maintenance

General inspection and maintenance procedures were discussed in Section 2.3.4 (specifically for Size Separation equipment) and also apply to the slurry pumping equipment. The primary mechanical equipment associated with the sediment conveyance consists of the hydro-cyclone overflow wet well mixers and the wet well discharge pumps. Inspection, maintenance, and lubrication schedules and procedures will be presented in the O&M manuals supplied by the manufacturers of these equipment items. The force mains will be visually inspected periodically for any signs of leakage and potential failure, particularly at pipe segment joints but also along the pipe segments themselves.

2.4.4.1 Inspection Schedule

The equipment manufacturers' O&M manuals will provide equipment inspection requirements. A generalized inspection schedule is provided in Attachment 3. This inspection schedule also includes the force mains. The 14-inch recycle water return force main to the Size Separation Process Water Storage Tank is included but listed separately due to possible

variations in inspection and/maintenance requirements associated with differences in function (recycled water is less abrasive than slurry).

2.4.4.2 Scheduled Maintenance and Inspection Shutdowns

Attachment 4 presents a list of scheduled maintenance items for the sediment conveyance equipment (including the 14-inch recycle water return force main) that requires a shutdown of the equipment. The operators will be responsible for implementing the maintenance requirements provided in the manufacturers' O&M manuals. The use of three lift station pumps will provide a level of conveyance system redundancy that allows one pump and/or force main to be taken off-line for maintenance.

2.5 SEDIMENT DEWATERING

The slurry from the hydro-cyclone overflow will be dewatered to reduce the weight and volume of solids that are disposed of off-site. Initial bulk dewatering will take place in a gravity thickening tank equipped to promote settling. Gravity settling will be enhanced by the addition of polymer to encourage fine solids to agglomerate. Gravity-thickened solids will be mechanically dewatered through filter presses to squeeze additional water from the sediment. Recovered water from gravity settling and filter pressing will be collected and recycled or treated on-site (Water Treatment, Section 2.6). The dewatered solids will be transported to one of two Filter Cake Staging Enclosures for load out into rail cars.

2.5.1 Equipment Overview

2.5.1.1 Gravity Thickener

A single, aboveground, gravity thickening unit will provide for settling of fine sediment. The gravity thickening unit consists of an elevated steel tank with sloped bottom, tank cover, feed well, center cage and rake arms with drive unit, motorized lifting device for the rake arms, platform with handrails and kick plate, weirs, and deflection baffles. A static mixer is installed in the influent feed line to the thickener.

2.5.1.2 Polymer Feed System

The polymer feed system includes equipment to store neat (undiluted) polymer, dilute it, and inject diluted polymer into the gravity thickener feed and thickened underflow discharge line. Both flocculent and coagulant polymers may be used. The system includes 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 is located in the dewatering building, which also houses the filter presses (Section 2.5.1.3). The following provides a list of the equipment:

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

The polymer transfer station is equipped to receive both types of neat polymer through hook-ups from supply trucks.

2.5.1.3 Filter Presses

A dewatering building houses 12 plate-and-frame filter presses. A dedicated centrifugal pump will feed slurry to each filter press. An air compressor system will provide the compressed air needs to each filter press.

Each filter press has a capacity of 600 cubic feet. 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 press plates will be top-center feed, four-corner discharge, recessed, and non-gasketed polypropylene with polypropylene-fabric filter cloths. The filter presses will have a blow-down using a compressed air system. A filter cake deflector chute attached under each press will deflect dewatered solids to a 40-cy roll off container handling system beneath each press.

Each filter press is fitted with a filtrate drain line that connects to a gravity sewer line within the dewatering building. The sewer will convey filtrate to the recycle water collection wet well. The dewatering building also contains a floor drain that will convey drippings and spillages to the building sewer.

2.5.1.4 Solids Staging

Filter cake will exit the process at the filter presses in the dewatering building. The filter cake will drop from the elevated presses into roll off containers. Each container will be indexed to accept the dropped cake. If the filter cake has no free liquid, it will be conveyed in the roll off container to the filter cake staging enclosures, where the material will be unloaded. (Evaluation for free liquid is discussed in Section 2.8.) Wet material will be stabilized or recycled and dewatered again. Figure 2-3 depicts this on-site filter cake routing. A front end loader will manage the stockpiles within the filter cake staging enclosure, where they will subsequently be handled by the RYOC, as described in the *Phase 1 Transportation and Disposal Plan*. Each enclosure will include an air treatment system to reduce nuisance odors and air contaminants, as further described in Section 2.8.

2.5.1.5 Recycle Water Collection Pumping Station

Water recovered during the dewatering processes will be collected in the recycle water collection wet well. Three centrifugal pumps will draw water from the wet well through separate suction lines and pump it through a manifold to a single discharge line to the recycle water equalization tank.

2.5.1.6 Recycle Water Equalization Tank

The recycle water equalization tank is a 750,000-gallon, bolted, glass-lined steel tank that stores recycle water from the dewatering area. Dual centrifugal pumps will move water to the process water equalization tank in the water treatment area (Section 2.6). Dual centrifugal pumps will convey equalized recycle water to the Size Separation Process Water Storage Tank, as described in Section 2.3.

2.5.2 Process and Operations Description

2.5.2.1 Gravity Thickener

The gravity thickener will process hydro-cyclone overflow slurry, underflow from the water treatment clarifiers (Section 2.6), and backwash water from the water treatment multimedia and GAC filters (Section 2.6). Flocculent and coagulant polymers will be injected into the gravity thickener feed line to enhance particle agglomeration. A static mixer installed downstream of all feed line inputs will enhance homogenization of all process flows and polymer. The homogenized and polymer-amended slurry will be fed into the feed well. The motorized rake arm will impart a mixing action in the tank that promotes agglomeration of fine solids into larger flocs to enhance settling. The movement of the angled rake arm through the thickener tank will also deflect solids toward the bottom of the tank. The rake arm will move up and down by means of the lifting device to rake the entire vertical profile of the tank. Upflow current deflection baffles will enhance mixing and enhance the deflection of solids to the bottom of the tank. The bottom of the tank is sloped downward toward the center to a sludge well.

Gravity thickener supernatant (overflow) will discharge through an effluent channel to the recycle water collection pumping station wet well. Thickened slurry (underflow) from the sludge well will discharge through a single suction line that leads to a manifold that splits the discharge flow lines. Twelve feed pumps will pump underflow from the gravity thickener sludge well directly into each filter press.

2.5.2.2 Polymer Feed System

The flocculent and coagulant polymer feed systems will operate separately.

Neat polymer from the polymer bulk storage tanks will be blended with water through the polymer make-up units to attain the desired delivery concentration. Each polymer bulk storage tank (coagulant and flocculent) will be served by chemical metering pumps. Chemical metering pumps will introduce the blended polymers into the gravity thickener feed line through injection

rings. The static mixer located in the thickener feed line downstream of the polymer injection points will enhance the distribution of the polymer blends into the thickener influent stream. Blended coagulant polymer may also be injected into the thickened slurry discharge from the gravity thickener.

Neat polymer will be received from supply trucks or rail cars. Polymer will be pumped from the transfer station through 2-inch-diameter polymer fill lines to the neat polymer bulk storage tanks.

2.5.2.3 Filter Presses

The 12 filter presses are arrayed into four sets, each with three presses, in the dewatering building. Each press will be fed by a dedicated centrifugal pump. The pumps have variable speeds controlled by the filter press control panel.

Prior to slurry feed, the press hydraulic ram system will clamp the plates closed to a sealing pressure 50 percent higher than the terminal pump feed pressure to prevent leakage. Interlocks will prevent the pump from starting until terminal clamping pressure is attained.

Slurry will be pumped into the press chambers via a double-end, center-feed arrangement to ensure a balanced delivery. As the material collects on the face of the cloths and pump pressure rises, filtrate water will discharge from the press in a four-corner arrangement and be gravity fed to the building drains.

The press will remain static while the pump provides the filtration driving force. As filter cake builds on the cloths in the plate chambers, pump pressure will rise as the feed rate drops. When the design feed pressure is reached and filtrate flow drops to a trickle, the feed pump will shut off and the pressure inside the press will be allowed to drop to zero. Interlocks will prevent opening of the hydraulic ram until a pressure of zero pounds per square inch gauge (psig) is reached. The hydraulic ram will then be retracted and the automated plate shifter is actuated to open the plates (and cake chambers) one at a time. The cakes will be released by gravity into a roll off container below the press. Filter cloths will be washed on an as needed basis.

2.5.2.4 Recycle Water Collection Pumping Station

The recycle water collection pumping station wet well will receive gravity thickener overflow and filtrate from the filter press dewatering building sewers. The gravity thickener overflow will enter the wet well by gravity through a 24-inch-diameter HDPE line. The two dewatering building sewers that carry filter press filtrate from the two banks of filter presses will flow by gravity to separate manholes, which will discharge to a common manhole. The liquid will then flow by gravity through a 16-inch-diameter polyvinyl chloride (PVC) sewer line to the wet well.

Three centrifugal pumps will move water collected in the wet well to the recycle water equalization tank, at the head of the process water treatment system, or for use at the size separation area.

2.5.2.5 Recycle Water Equalization Tank

The Recycle Water Equalization Tank provides for flow equalization from the recycle water collection pumping station. The equalization tank will dampen variations in water characteristics and water generation rates from the dewatering processes. Two sets of pumps will draw water from the tank.

- A set of two centrifugal pumps will deliver water from this tank to the Process Water Equalization Tank located in the water treatment area, providing for additional equalization ahead of water treatment. The flow can also be diverted to the Storm Water Equalization Tank. The pumps will run automatically at variable speed in proportion to the level in the Recycle Water Equalization Tank. A single suction line will lead to an intake manifold branching to the two pumps; a discharge manifold will merge to a single discharge line. This will allow the pumps to operate in duty/standby mode.
- A set of centrifugal pumps will furnish water from the Recycle Water Equalization Tank to the Size Separation Process Water Storage Tank in the size separation area. These pumps will also run at variable speed in proportion to the level in the Recycle Water Equalization Tank. Intake and discharge manifolding will allow the pumps to operate in duty/standby mode.

2.5.3 Instruments and Controls

The instrument and control functions are presented with the equipment in which the instruments are installed, as described in the following sections.

2.5.3.1 Gravity Thickener

Feed Flow: Flow rate and solids concentration will be measured by sensors installed in the 16-inch-diameter combined force main feed line ahead of other inputs to the gravity thickener. The information will be transmitted to a control panel. This information will provide the mass flow information that controls the speed of the polymer chemical metering pumps.

Tank Level and Sludge Blanket Depth: An ultrasonic sensor will measure the level in the gravity thickener tank. A separate sensor will determine the sludge bed thickness.

- A high-high level condition in the thickener tank will shut off the hydro-cyclone overflow lift station pumps in the size separation area, the water treatment clarifier underflow sludge pumps, and the water treatment filter backwash pumps.
- A low sludge blanket level will shut off the thickened underflow pumps. A high sludge blanket level signals an alarm.

Thickened Slurry Tank Level: The filter press feed pumps are manually controlled through the filter press control panel.

2.5.3.2 Polymer Feed System

The instruments and controls within the polymer feed system will be configured primarily to turn off tank mixers, indicate when tanks require refilling, and signal when a tank is full.

Neat Polymer Storage Tank Level:

- A high-level alarm will sound during filling when the level in a bulk storage tank approaches full, alerting operators to stop filling from the polymer transfer station.
- A low-low level alarm will alert the operators that the tanks require immediate refilling. Additionally, the tank mixer in the flocculent bulk tank will shut off.

2.5.3.3 Filter Presses

As a safety precaution, a light curtain located on both sides of each filter press will cause the filter press to shut off automatically when an obstruction is detected during indexing of plates. Each press has a control panel with an operator interface terminal. The panel will control the filter press using a fail-safe two handed operation control. The panel will also control the automatic plate shifter, the cloth washer, and blow down valve sequences via on/off/auto control switches. The start cycle interlock will prevent the feed pump from being energized if there is inadequate hydraulic pressure to keep the filter plates tightly in place. The filter open cycle interlock will prevent the filter press from opening if pressure is detected within the feed system. A series of other interlocks will control proper operation of the drip trays, light beams, and other filter press components.

2.5.3.4 Recycle Water Collection Pump Station

Wet Well Level:

- A low-low condition in the wet well will shut off the recycle water pump station pumps to avoid running the pumps dry.
- A high level condition in the wet well will turn off the hydro-cyclone overflow discharge pumps to halt sediment input into the gravity thickener. The high condition will also shut off the clarifier underflow sludge pumps and the filter backwash pumps.

2.5.3.5 Recycle Water Equalization Tank

Tank Level:

- A high-level alarm in the recycle water equalization tank will shut off the recycle water pump station pumps to halt filling the tank from the recycle water collection wet well.
- A low-low condition will shut off the discharge pumps to the process water equalization tank and to the size separation process water storage tank to prevent running the pumps dry.

2.5.4 Equipment Inspection and Maintenance

General inspection and maintenance procedures were discussed in Section 2.3.4 (specifically for Size Separation equipment) but also apply to the sediment dewatering equipment. The equipment manufacturers' O&M manuals will contain the relevant, detailed information on inspections and scheduled maintenance. The dewatering equipment operators will adjust pump designations to balancing pump operating times and implement good housekeeping measures to promote safe working conditions and prolong equipment life.

2.5.4.1 Inspection Schedule

The equipment manufacturers' O&M manuals will provide equipment inspection requirements. A generalized inspection schedule is provided in Attachment 5.

2.5.4.2 Scheduled Maintenance and Equipment Shutdown

Scheduled maintenance that will require shutting down equipment is summarized in Attachment 6. The multiplicity of filter press units and feed pumps to maintain required processing rates builds redundancy that will allow overall system operation to remain unaffected by periodic shutdowns of individual equipment items. All pump sets associated with dewatering will also be present in duplicate or triplicate, allowing periodic shutdowns without affecting overall system operation. It is further anticipated that scheduled maintenance for the gravity thickener will be performed on system wide maintenance days. Some components of the polymer feed system may also require attention only on system wide maintenance days to avoid disrupting system operations.

2.6 WATER TREATMENT

The water treatment system will be housed in a water treatment building. Treated water will be discharged to the Champlain Canal, or will be reused in filter backwash and plant water systems as described below. The discharge to the Champlain Canal at Outfall 001 will be monitored as described in the Phase 1 RAM QAPP (Anchor QEA 2009).

Because rainfall may come into contact with debris, coarse solids, and other sediments containing PCBs across the sediment processing facility, storm water runoff from within the EZ has the potential to become contaminated with PCBs. A collection and conveyance system will provide containment of storm water from areas where PCB sediments are handled. Storm water will be collected in retention basins, pumped to the water treatment building, and treated with process water removed during sediment dewatering operations.

2.6.1 Equipment Overview

2.6.1.1 Storm Water Collection and Equalization

Storm water will be captured in a series of catch basins, diversion channels, and other features across the site. Captured storm water will be conveyed through storm sewers by gravity

to the North, South, and Waterfront storm water retention basins. From the retention basins, lift stations pump the water to the storm water equalization tank, a 60,000-gallon, glass-lined, bolted steel tank inside the water treatment building. A branch in the suction line and valve upstream of the clarifier feed pump will allow the storm water from the tank to be treated in one of the parallel process water treatment trains (see Section 2.6.1.2).

2.6.1.2 Process Water Equalization

Process water originating from the sediment dewatering process (gravity thickener and filter presses) will be pumped from the recycle water equalization tank to the process or storm water equalization tanks as described in Section 2.5.2.5. The process water equalization tank is also a 60,000-gallon tank. A pump will convey water to each of the two parallel process water treatment trains, drawing through separate suction lines. A second pump is also capable of drawing from both the process water and storm water equalization tanks.

2.6.1.3 Water Treatment Unit Processes

Process and storm water will be treated through a series of unit processes. These include clarification, filtration through multi-media filters, contact with GAC for PCB adsorption, and final filtration through bag filters. The process layout is arranged such that there are three identical treatment trains that can be utilized. Each treatment train is configured in the same way, consisting of a clarifier, multimedia filters, GAC filters, and bag filters, as follows:

Clarifier System:

- Polymer storage tote;
- Polymer feed pump;
- Flash mix and flocculation chamber;
- Inclined-plate clarifier with integral sludge hopper;
- Underflow sludge discharge pump;
- Effluent tank; and
- Effluent discharge pump.

Multi-Media Filters: one pair of multi-media filters. Each pair of filters will contain a manifold and valves to allow for adjustments in sequencing.

GAC Vessels: two pairs of GAC vessels. The vessels are vertical, cylindrical pressure vessels, each containing 20,000 pounds of GAC. Each pair of vessels will contain a manifold and valves to allow for adjustments in sequencing within the pair.

Bag Filter Systems: A bag filter system will be located downstream of the GAC vessels. Each bag filter system will consist of two pairs of three bag filter assemblies (canister and bag filter) arranged in parallel, for a total of six bag filters per system.

2.6.1.4 Backwash Water Holding Tank

A portion of the final treated effluent is discharged to a 200,000-gallon, glass-lined, bolted steel backwash water holding tank, which serves as a reservoir for the filter backwash and plant water systems. The backwash water systems for the process and storm water treatment trains will be fed from the tank by one of two centrifugal pumps. A third pump will pressurize the plant water supply system.

2.6.2 Process and Operations Description

2.6.2.1 Storm Water Collection and Equalization

Runoff will be captured during precipitation events. Additionally, any water used for decontamination or cleaning will be captured in the runoff collection facilities and flow by gravity through the storm sewers to the storm water basins.

The South, North, and Waterfront storm water pump stations each contain two centrifugal pumps (listed in Section 2.6.1.1) that draw through separate suction lines. The pumps will be automatically initiated when the level in the basin reaches a level set by the water treatment operators. The pumps will be manifolded on the discharge side to pump through a single force main. The force mains from the three pump stations combine into a single force main that discharges to the storm water equalization tank.

Water collected in the storm water equalization tank will be pumped into the treatment system. A branch in the combined flow force main will also allow flow to be diverted to the process water equalization tank by closing a valve downstream of the branch along the line to the storm water equalization tank. The storm water equalization tank can receive flow from the recycle water equalization tank.

2.6.2.2 Process Water Equalization

The process water equalization tank will receive water pumped primarily from the recycle water equalization tank by dual centrifugal pumps. The pumps will operate in duty/standby mode and at a variable speed that is proportional to the level in the recycle water equalization tank. A branch in this line will allow flow to be diverted to the storm water equalization tank. Flow diversion will be controlled by a pneumatically-actuated valve along this branch to allow for water treatment flexibility (weather, process conditions, etc). Occasionally, the combined storm basin discharge may be diverted to the Process Water Equalization Tank depending on the level in the storm water equalization tank or during equipment shutdowns along one of the water treatment trains.

2.6.2.3 Water Treatment Unit Process Effluent

Process water and storm water will be treated through the equipment described above. The water will flow to an inclined plate 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

sludge 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 the multimedia filters to remove residual solids. The water will continue under the driving force of the clarifier effluent tank pumps through each set of GAC filters to remove PCBs and other contaminants potentially remaining in the water. The GAC-treated water will then proceed through bag filters, which provide final removal of solids that breakthrough the GAC beds. Final treated effluent from the treatment trains will combine into a single effluent pipe to the outfall at the Champlain Canal. If needed, the water will instead be reused and directed to the backwash water holding tank which serves as a reservoir for the plant water and multimedia/GAC filter backwash systems. Used backwash water will be pumped to the gravity thickener.

2.6.2.4 Backwash Water Holding Tank

If needed, effluent from the water treatment plant will be directed to the backwash water holding tank for backwash water for the multimedia filters, and GAC vessels as well as plant water supply. Valves along each branch will control the flow direction of the final treated effluent. The valve to the Champlain Canal outfall will open and the valve to the tank will close, if the tank level rises to a high-level set-point. If the tank reaches a low-level set-point, the reverse will occur so that final treated effluent fills the tank.

The backwash water holding tank will discharge separately through centrifugal pumps to the process water and storm water filter backwash systems, respectively. A separate pump will draw from the tank and pumps to the plant water system.

2.6.3 Instruments and Controls

The instruments and controls are organized by the equipment component in which the instrument is installed. Field-located sensors will transmit data to a control panel where data will be automatically processed and compared against operator-programmed settings.

2.6.3.1 Storm Water Collection and Equalization

Storm Water Basin Level:

- The pumps will be automatically initiated when the level in the basin reaches a level set by the water treatment operators.
- A high-level condition in the storm water basins will signal an alarm that will alert the operators in the water treatment plant.
- A low-low level condition will shut off the pumps at the basins' lift stations to prevent the pumps from running dry.

Storm Water Equalization Tank Level:

- The discharge pump will operate at variable speed based on the level in the tank.
- A high-level condition in the tank will shut off the pumps at the storm water pump stations.
- A low-low level in the tank will shut off the discharge pumps to the water treatment train to prevent the pumps from running dry.

2.6.3.2 Process Water Equalization

Tank Level:

- The discharge pumps to the water treatment trains will operate at variable speed, based on the level in the tank. The second pump, which can also draw from the storm water equalization tank, will operate in this manner as long as the suction side valve to the process water equalization tank is open (that is, drawing from the process water equalization tank).
- A low-low level in the tank will shut off the discharge pumps to the water treatment trains. The second pump will be turned off if it is drawing from the water equalization tank to prevent the pumps from running dry.
- A high-level condition in the tank will shut off the pumps from the recycle water equalization tank and the storm water pump station pumps discharge is being diverted to the tank. This will prevent the tank from overflowing.

2.6.3.3 Water Treatment Unit Processes

Clarifier System:

- A high-level condition in the inclined plate clarifier will shut off the equalization tank (process or storm water) discharge pump associated with that treatment train to avoid overfilling the clarifier.
- A high-level condition in the clarifier effluent tank will shut off the equalization tank (process or storm water) discharge pump associated with that treatment train to avoid overfilling the effluent tank.
- A low-low level condition in the clarifier effluent tank will shut off the discharge pump from that effluent tank to prevent the pump from running dry.
- A high-pressure condition in the line downstream of the clarifier effluent pump will shut off the pump.
- The clarifier underflow sludge pumps will be controlled by a timer that controls opening and closing of the solenoid valve along the pneumatic feed line at each pump. The pumps will be automatically shut off if the level in the gravity thickener reaches a high-high condition to prevent additional input into the thickener tank (Section 2.5.3.1).

Multi-Media, GAC, and Bag Filter Systems:

The pressure in the lines downstream of the clarifier effluent tank discharge pumps will reflect the condition in the multimedia, GAC, and bag filters. The pressure will be monitored for changes that may reflect plugging in any of these systems along the treatment train; as such, the condition will require frequent monitoring. A high pressure condition will shut off the effluent tank discharge pumps as described above reflects a plugging condition that will require backwashing of the multi-media and/or GAC vessels or replacement of the bag filters. It is anticipated that regular backwashing and bag filter replacement will largely alleviate the potential for a high pressure condition to develop. All vessels are equipped with pressure relief discs.

2.6.3.4 Backwash Water Holding Tank

At a low-level set-point, the automatic valve to the Champlain Canal closes and the valve to the tank will open, allowing final treated effluent to fill the tank. As the tank level reaches a high-level set point, the valves will reverse status to halt filling, and the final treated effluent will be discharged to the Champlain Canal.

2.6.4 Equipment Inspection and Maintenance

The equipment manufacturers' O&M manuals will contain the relevant, detailed information on inspections and scheduled maintenance.

2.6.4.1 Inspection Schedule

The equipment manufacturers' O&M manuals will provide equipment inspection requirements, including model-specific information for pumps. A generalized inspection schedule is provided in Attachment 7.

2.6.4.2 Scheduled Maintenance and Equipment Shutdown

Attachment 8 presents a summary of scheduled maintenance that will require shutdowns of water treatment equipment. The water treatment system will provide crossover treatment to balance out treatment (i.e., the water treatment trains are selectable among the three identical trains with some valving to direct flow) and process water can be diverted to the storm water equalization tank, as described above. Therefore, the water treatment system will provide three parallel process trains for treating the combined facility process, plus storm water. During off-peak periods, this will provide a level of redundancy that will allow equipment along one train to be taken off-line while retaining system throughput and thereby avoid disruptions to processing. Most scheduled maintenance will still be performed during the one scheduled system down time day each week.

2.7 PUMP SEAL WATER SYSTEM

A seal water system will be installed to protect size separation area, dewatering and water treatment pumps requiring seal water. The discharge pressure at the seal water connection for each operating pump will have a higher pressure than the pressure of the process pump, thus preventing any leaking of process water at the pump shaft. Seal water supply tanks will provide sufficient holding capacity to operate the system. Treated water from the backwash holding tank will supply water for the seal water system, and if necessary supplemented with potable water.

2.8 STAGING AREA OPERATIONS

The PFOC will monitor all processed material prior to conveying it to the staging area and/or prior to loading by the RYOC to confirm that the material is not saturated to an extent that free liquid may be released. The PFOC will monitor such material via visual observation and will also periodically apply the paint filter liquids test (EPA method 9095B) to the filter cake and the coarse material discharged from the hydrocyclone unit dewatering screens (due to material size, the paint filter liquids test is not applicable to debris). Initially each batch of filter cake will be tested, and then the testing frequency will be reduced once consistent operations are achieved. Testing frequency may be increased again, as necessary, if results or visual observation indicate the presence of free liquid or that the condition of the material is such that it may release free liquid. The coarse material will also be subject to the paint filter test to confirm visual observations for this material. Monitoring for free liquid will also be performed, as necessary, prior to loading from staging piles. Production of dewatered materials without free liquid by the PFOC is a quality control aspect and as such, is addressed in Attachment 2 in the DQAP.

Filter cake collected in roll-off containers will be conveyed by roll-off trucks to the Filter Cake Staging Enclosure, dumped and graded into the pile by the PFOC. The RYOC will be responsible for load out of material from the enclosure into rail cars. The PFOC will be responsible for maintaining the enclosure and for operating and maintaining the air handling system. The architectural membranes on the Filter Cake Staging Enclosures will be routinely inspected by the PFOC, checking for any holes, rips, tears or other deteriorated conditions, and repaired as necessary.

Each Filter Cake Staging Enclosure will contain an air handling system, which will provide ventilation within each enclosure. The air handling system for each enclosure will be composed of five blowers, which will discharge off-gas through GAC vessels. Fresh air will enter the building through louvers and doors. A generalized inspection schedule and summary of scheduled maintenance for this air handling system are included in Attachments 5 and 6.

The trucks hauling material from the size separation area will unload the debris and coarse material onto the asphalt pads in one of the three designated staging areas. Debris and coarse materials will be consolidated with a front end loader to consolidate all stored material into manageable piles for tarping. The tarps will be secured using rubber tires, sandbags, or other

suitable means. The tarps will be inspected by checking for any holes, rips, tears or other deteriorated conditions, and repaired and replaced as necessary. As a part of staging area management, tarps will be placed and maintained during periods of forecasted precipitation, high winds or other unsuitable conditions. The tarps may be removed during dry weather periods to facilitate drying. GE will monitor PCB air emissions in accordance with the Phase 1 RAM QAPP and restrict removal of tarps if monitoring indicates potential for an exceedance of a PCB Standard or Concern Level. Placement of the tarps on material deposited in the staging area and maintenance of those tarps will be the responsibility of the PFOC. Removal of the tarps for rail car loading operations are the responsibility of the RYOC as is replacement and maintenance of the tarps on the rail car loading face.

If necessary, oversized material will generally be reduced in size at the debris staging area to meet the following dimensions: less than or equal to 3 cy in volume, less than or equal to 8 ft in any dimension, and less than or equal to 6 tons in weight. Coarse material will be segregated from larger debris. Any oversize material that cannot be reduced to an acceptable size will be staged separately from other materials in the debris staging areas.

The PFOC will maintain contact with the RYOC to determine the staging schedule for solids. Rail car positioning, preparation (lining, etc), and loading will be handled by the RYOC, as described in the Phase 1 T&D Plan. The RYOC will load all materials into rail cars and will identify any oversize debris prior to loading and see that any additional size reduction activities are performed before loading. From the staging areas, the debris and coarse material will be transported to the rail cars staged for loading on Track #7, as described in the Phase 1 T&D Plan.

2.9 RAIL YARD OPERATIONS AND MAINTENANCE

As described in the Phase 1 FDR (BBL, 2006) the RYOC will be responsible for activities required to set up outbound loaded trains and receive inbound empty trains. A locomotive dedicated to the project will be used to break down the train set and switch the rail cars to the loading track. The RYOC will maintain, and operate an on-site rail support building and a repair-in-place track facility. The RYOC will also inspect, operate, and maintain the rail yard and set rail cars for loading. The rail yard hours of train operations are not restricted, as the RYOC must interface with the Class I railroad carrier, Delaware & Hudson Railway Company d/b/a Canadian Pacific Railroad (CPR), whose hours of operations are not controlled by on-site processing facility operations. Rail cars will be loaded during daylight hours only unless approved in writing by the Construction Manager (CM). A detailed description of the rail car loading procedures and assembly of loaded trains is provided in the Phase 1 T&D Plan.

The RYOC will provide sufficient personnel to inspect and maintain the switching locomotive, and rail yard infrastructure. Maintenance of project rail cars while in the rail yard will be conducted by the rail car leasing company pursuant to the applicable regulations and standards. Rail yard infrastructure includes track, turnouts, derails, scale, pavement, fence, gates,

lighting, drainage structures, and train air supply and appurtenances. All necessary tools, shop equipment, utility services, and consumables for all maintenance work will be performed by the RYOC. Track inspections will be conducted by Federal Railroad Administration (FRA) certified track inspector personnel. A listing of equipment items requiring maintenance and the frequency of inspection is provided in Attachment 9.

2.9.1 General Inspections and Maintenance

The RYOC will provide for the inspection, maintenance and repair of rail yard equipment, rail yard facilities, and locomotives. Inspection of rail cars will be performed by the RYOC. All inspections and maintenance will be performed in accordance with the appropriate requirements of the FRA, Association of American Railroads (AAR), CPR, and the RYOC.

All inspections and maintenance will be performed by employees qualified in accordance with the requirements of the RYOC or CPR. All records of such qualifications will be maintained on site and will be available for inspection.

2.9.2 Track and Switches

Track and switch inspections and maintenance tasks will be recorded on the Railway Private Track Inspection Report with repairs noted. Inspections of Track #9 will be documented on the Repair in Place (RIP) Track Inspection form. All records of inspections and maintenance tasks will be submitted to the CM and maintained in a centralized location and available for inspection through the CM.

A pre-operations inspection will be performed prior to the start of rail activities to verify that the tracks, switches, buildings and access points meet the design requirements and associated regulatory requirements. This inspection will include an inspection of the tracks and their component parts; an inspection of switches for operation, construction, and fit; and an inspection of access points to confirm that any gates are in proper working order with proper security and safety appliances applied.

During operations, inspection and maintenance activities for tracks will be performed to verify that FRA standards are met. Yard tracks will include all tracks in the yard except Track #1. These tracks will be inspected weekly or as required by a report of a deficiency; and the results will be documented on a “Private Industry Track Inspection Report” by a qualified RYOC employee, noting any defects, repairs made, and remaining work to be performed as a result of the inspection. The passing siding, Track #1, will be inspected weekly or as required by a deficiency report. The performance and results of the inspections, including any lock-out information, will be documented on the Private Industry Track Inspection Report, which will be filed with the CM.

Switch inspections will be performed to confirm that the switch meets the applicable FRA standards and operates properly with points fitting up properly in both positions. Yard switches will be inspected weekly or as required by a deficiency report. Switches on Track #1 will be

inspected only after coordination with the CPR dispatcher. Testing of power switches will be performed in conjunction with CPR dispatcher assistance. These inspections, including any lock-out information, will be documented on the Private Industry Track Inspection Report.

2.9.3 Adjacent Work Areas

Adjacent work areas will be inspected for cleanliness and grading for the safety of workers. These inspections will be performed in conjunction with switch and track inspections. Walkways will be inspected for grading and cleanliness so that workers have a safe route to perform their duties. Vehicle paths, or the gravel paths for yard equipment between the tracks, will be inspected for grading and cleanliness so that vehicles have a safe travel route. These inspections, including any lock-out information, will be recorded on the Private Industry Track Inspection Report.

2.9.4 Rail Yard Support Area

Track #9, the RIP track, will be inspected weekly or as required by a report of a deficiency and documented on Private Industry Track Inspection Report by a qualified RYOC employee, noting any defects, repairs made, and remaining work to be performed as a result of the inspection. Additionally, it will be inspected to verify that its use as a repair location is safe and operated in accordance with rail industry safety practices.

The Rail Yard Service Building will be utilized for the indoor storage of required materials and tools. It will be inspected weekly and documented on Rail Yard Service Building Inspection Form in accordance with the RYOC's Quality Control Plan. The inspections will include testing of the provided air compressors at the intervals recommended by the manufacturer and consistent with the FRA requirements for the testing and certification of air compressors providing the air source for the terminal air test. The weigh-in-motion scale, which will weigh rail cars containing processed sediment materials prior to transport off-site for disposal, will be inspected as per the manufacturer's recommendations. The scale will be calibrated prior to the start of shipments at the beginning of the operations season. The scale structure will be inspected weekly or as required through observations or failures. The inspection will be in accordance with the manufacturer's specifications, and documentation on the inspection will be filed with the CM. The electronic interface will be inspected daily prior to weighing rail cars. The inspection will be logged in accordance with Section 13900, Part 3.01.A of the Contract 6 Specifications.

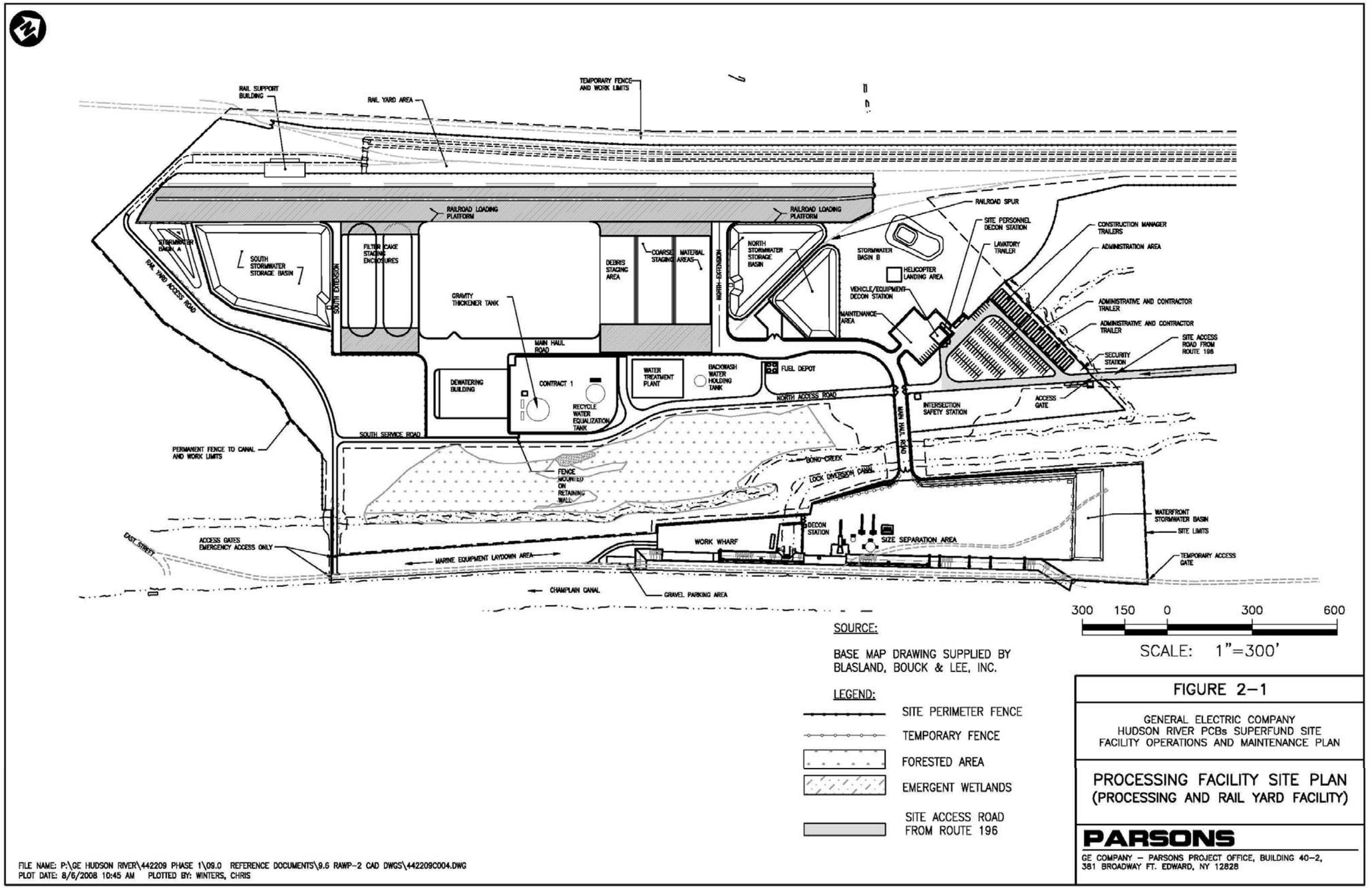
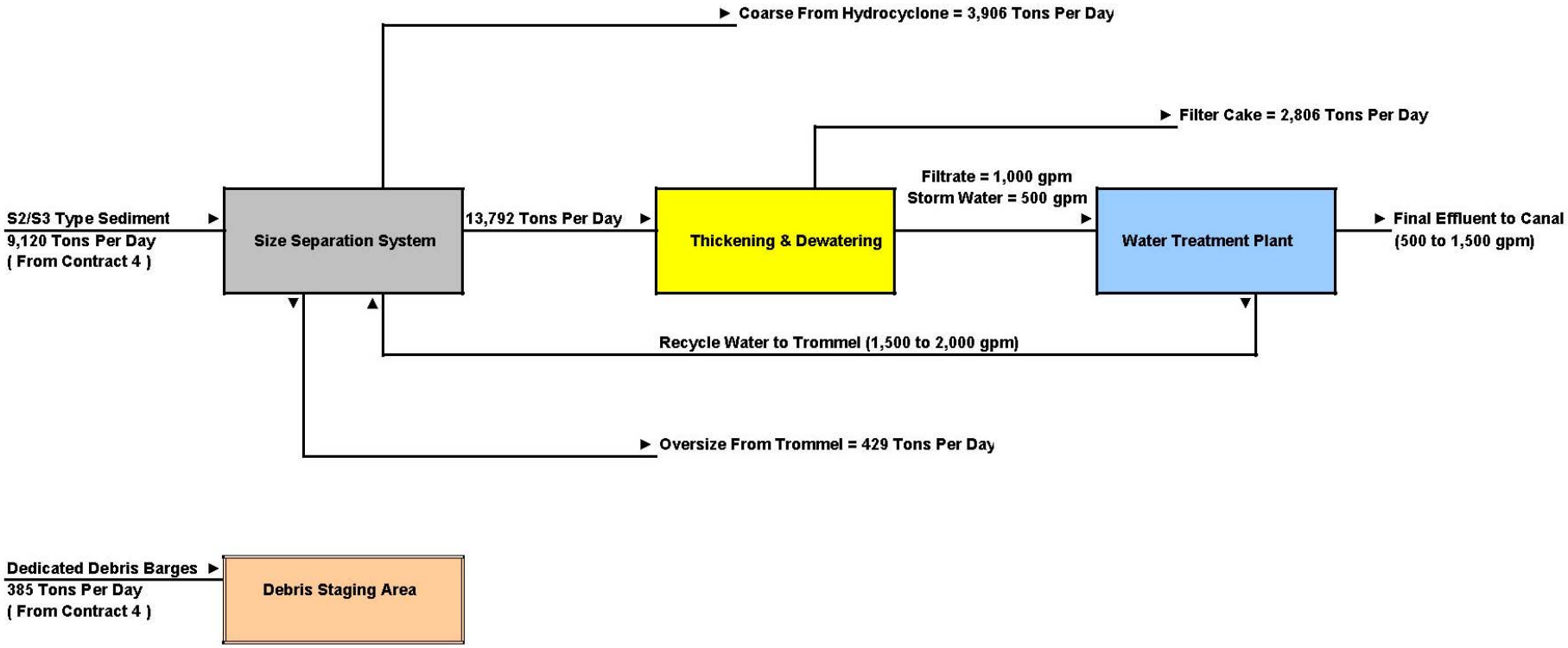
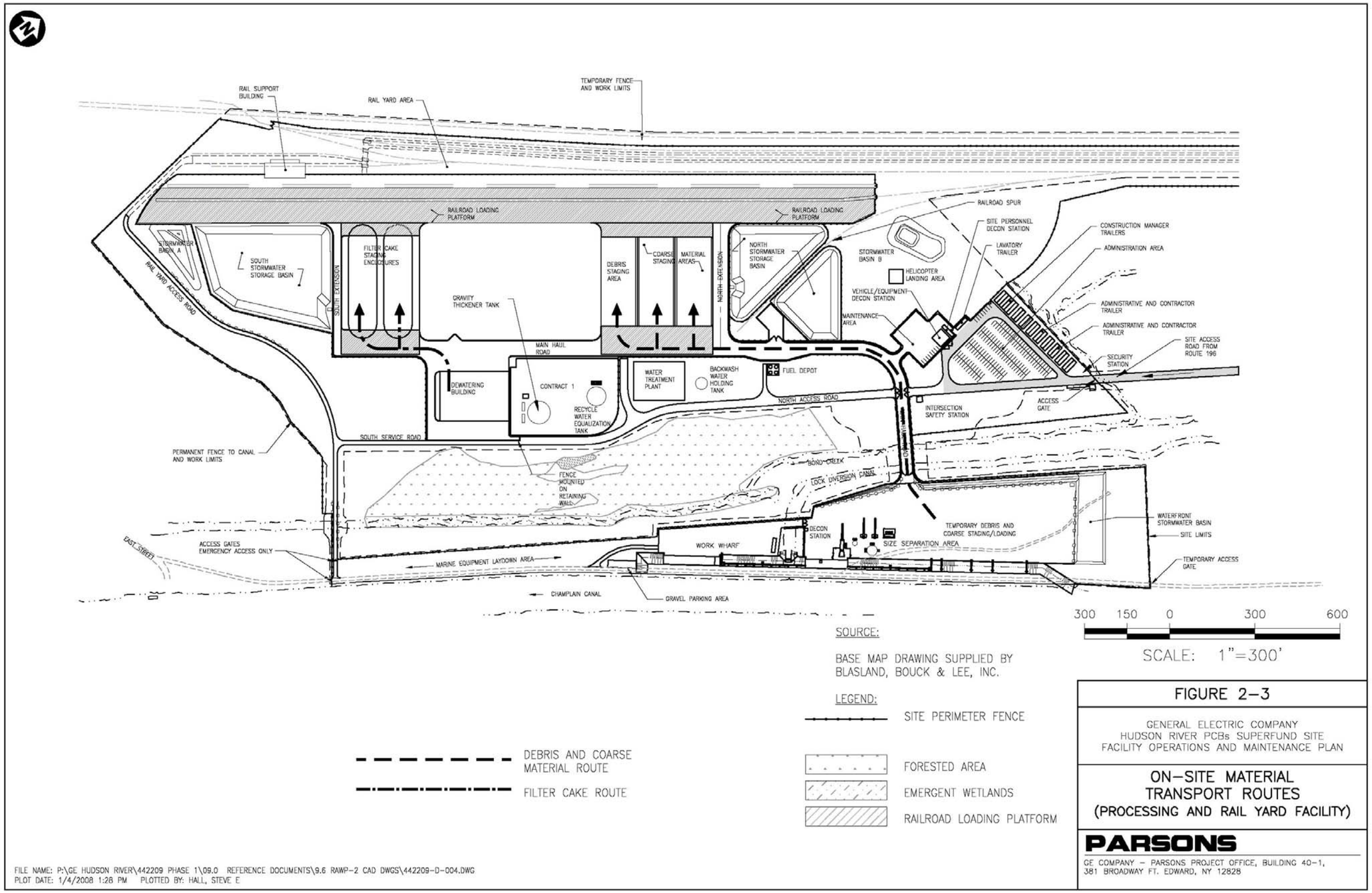

RAIL SUPPORT BUILDING
RAIL YARD AREA
TEMPORARY FENCE AND WORK LIMITS
RAILROAD LOADING PLATFORM
RAILROAD LOADING PLATFORM
RAILROAD SPUR
SITE PERSONNEL DECON STATION
CONSTRUCTION MANAGER TRAILERS
LAVATORY TRAILER
ADMINISTRATION AREA
STORMWATER BASIN A
RAIL YARD ACCESS ROAD
SOUTH STORMWATER STORAGE BASIN
SOUTH EXTENSION
FILTER CAKE STAGING ENCLOSURES
GRAVITY THICKENER TANK
DEBRIS STAGING AREA
COARSE STAGING
MATERIAL AREAS
NORTH EXTENSION
NORTH STORMWATER STORAGE BASIN
STORMWATER BASIN B
HELICOPTER LANDING AREA
VEHICLE/EQUIPMENT DECON STATION
MAINTENANCE AREA
ADMINISTRATIVE AND CONTRACTOR TRAILER
ADMINISTRATIVE AND CONTRACTOR TRAILER
SECURITY STATION
SITE ACCESS ROAD FROM ROUTE 196
MAIN HAUL ROAD
DEWATERING BUILDING
CONTRACT 1
RECYCLE WATER EQUALIZATION TANK
WATER TREATMENT PLANT
BACKWASH WATER HOLDING TANK
FUEL DEPOT
NORTH ACCESS ROAD
INTERSECTION SAFETY STATION
ACCESS GATE
SOUTH SERVICE ROAD
PERMANENT FENCE TO CANAL AND WORK LIMITS
FENCE MOUNTED ON RETAINING WALL
BOND CREEK
LOCK DIVERSION CANAL
WATERFRONT STORMWATER BASIN
SITE LIMITS
TEMPORARY ACCESS GATE
DECON STATION
SIZE SEPARATION AREA
WORK WHARF
ACCESS GATES EMERGENCY ACCESS ONLY
EAST STREET
MARINE EQUIPMENT LAYDOWN AREA
CHAMPLAIN CANAL
GRAVEL PARKING 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
FACILITY OPERATIONS AND MAINTENANCE PLAN
PROCESSING FACILITY SITE PLAN
(PROCESSING AND RAIL YARD FACILITY)
PARSONS
GE COMPANY – PARSONS PROJECT OFFICE, BUILDING 40-2,
381 BROADWAY FT. EDWARD, NY 12828
FILE NAME: P:\GE HUDSON RIVER\442209 PHASE 1\09.0 REFERENCE DOCUMENTS\9.6 RAWP-2 CAD DWGS\442209C004.DWG
PLOT DATE: 8/6/2008 10:45 AM PLOTTED BY: WINTERS, CHRIS

FIGURE 2-2
SIMPLIFIED MASS FLOW DIAGRAM



Notes:

1 This is an example for illustrative purposes only.
2 The values/quantities are not guaranteed to be representative of conditions to be encountered.
3 The following information is provide for costing estimating purposes only. Actual flow rates will vary and depend on actual sediment properties and unloading rates of the dredged material.
4 9,120 Tons Per Day represents a peak dredge volume of 5, 100 Cubic Yards Per Day, plus 25% uptake water.
5 All noted values of "Tons Per Day" are shown as " Wet Tons".
6 Proportional flow rates shall be assumed for lower production rates.
7 Additional Mass Balance Information can be found in the Intermediate Design Report on the USEPA Hudson River Web Site.


RAIL SUPPORT BUILDING
RAIL YARD AREA
TEMPORARY FENCE AND WORK LIMITS
RAILROAD LOADING PLATFORM
RAILROAD LOADING PLATFORM
RAILROAD SPUR
STORMWATER BASIN A
SOUTH STORMWATER STORAGE BASIN
RAIL YARD ACCESS ROAD
SOUTH EXTENSION
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GRAVITY THICKENER TANK
DEBRIS STAGING AREA
COARSE STAGING
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NORTH STORMWATER STORAGE BASIN
STORMWATER BASIN B
HELICOPTER LANDING AREA
VEHICLE/EQUIPMENT DECON STATION
MAINTENANCE AREA
SITE PERSONNEL DECON STATION
LAVATORY TRAILER
CONSTRUCTION MANAGER TRAILERS
ADMINISTRATION AREA
ADMINISTRATIVE AND CONTRACTOR TRAILER
ADMINISTRATIVE AND CONTRACTOR TRAILER
SITE ACCESS ROAD FROM ROUTE 196
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WATER TREATMENT PLANT
BACKWASH WATER HOLDING TANK
FUEL DEPOT
NORTH ACCESS ROAD
INTERSECTION SAFETY STATION
ACCESS GATE
SOUTH SERVICE ROAD
PERMANENT FENCE TO CANAL AND WORK LIMITS
FENCE MOUNTED ON RETAINING WALL
BOND CREEK
LOCK DIVERSION CANAL
WATERFRONT STORMWATER BASIN
SITE LIMITS
TEMPORARY DEBRIS AND COARSE STAGING/LOADING
DECON STATION
SIZE SEPARATION AREA
WORK WHARF
TEMPORARY ACCESS GATE
EAST STREET
ACCESS GATES EMERGENCY ACCESS ONLY
MARINE EQUIPMENT LAYDOWN AREA
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GRAVEL PARKING AREA
300 150 0 300 600
SCALE: 1"=300'
SOURCE:
BASE MAP DRAWING SUPPLIED BY BLASLAND, BOUCK & LEE, INC.
LEGEND:
SITE PERIMETER FENCE
DEBRIS AND COARSE MATERIAL ROUTE
FILTER CAKE ROUTE
FORESTED AREA
EMERGENT WETLANDS
RAILROAD LOADING PLATFORM
FIGURE 2-3
GENERAL ELECTRIC COMPANY
HUDSON RIVER PCBs SUPERFUND SITE
FACILITY OPERATIONS AND MAINTENANCE PLAN
ON-SITE MATERIAL TRANSPORT ROUTES
(PROCESSING AND RAIL YARD FACILITY)
PARSONS
GE COMPANY - PARSONS PROJECT OFFICE, BUILDING 40-1,
381 BROADWAY FT. EDWARD, NY 12828
FILE NAME: P:\GE HUDSON RIVER\442209 PHASE 1\09.0 REFERENCE DOCUMENTS\9.6 RAWP-2 CAD DWGS\442209-D-004.DWG
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SECTION 3

OPERATIONS SCHEDULE

This section provides an overview of the general stages of Phase 1 facility operations, describes activities to be performed during the pre-operational stage, and summarizes manpower requirements for full-scale operations, including a list of primary labor types, number of shifts, work hours, and estimated number of persons required on a daily basis. Note that the overall project schedule for the Phase 1 remedial action is contained in RAWP #3.

3.1 OVERVIEW

Facility operations will begin once process equipment installation has been completed and the equipment has been tested, as described in the, *Remedial Action Work Plan for Phase 1 Process Equipment Installation* (Parsons, 2007). Facility operations will be conducted by the PFOC and the RYOC and will continue through the end of Phase 1. The Phase 1 operations will consist of the following stages:

- Pre-Operational Stage, during which the PFOC will learn about processing equipment and systems during site visits and collaboration with the Process Equipment Installation Contractor (PEIC) during start-up and commissioning;
- Full-Scale Operations, during which the PFOC will be fully engaged in processing of dredged sediment, including coordinating with the Dredging Contractor and the RYOC;
- Site Decommissioning, during which the PFOC will shut down, clean, and decontaminate processing equipment at the end of the sediment processing season; and
- Off-Season Operations, during which the PFOC will perform certain activities, including continued operation of storm water treatment systems.

A discussion of the pre-operational stage is presented in Section 3.2, and a summary of manpower requirements to administer and accomplish the required work during full-scale operations is presented in Section 3.3. Site decommissioning and off-season operations are discussed in Section 6.

3.2 PRE-OPERATIONAL STAGE

Prior to full-scale sediment processing, the PFOC will participate in a number of activities to successfully operate the facility and transition through start-up and commissioning and into full-scale sediment processing. The PFOC will collaborate with the PEIC during start-up and commissioning by reviewing the O&M manuals provided by the PEIC for the equipment as they are being compiled, including a detailed assessment of critical shop drawings of equipment being

constructed. Key members of the PFOC staff will witness the startup of all pieces of operational equipment.

For testing and commissioning of the processing facility, the PEIC will blend a minimum of 5,000 cy of material. The test material will be clean soil and blended to represent similar solids composition and grain size of the dredged sediments. The PEIC will process material through the trommel and the hydro-cyclone before testing the filter presses to ensure that a sufficient volume of material has been developed in the Gravity Thickener. Once the filter presses have been tested and accepted by the CM, the PEIC working with the PFOC will remove the excess test material from the system and place it in the excess soil stockpile near the administrative area on the site.

3.3 MANPOWER REQUIREMENTS DURING FULL-SCALE OPERATIONS

Full-scale operations will commence when the dredging contractor delivers the first barge load of dredged material. Once full-scale sediment processing operations are underway, the PFOC will have a staff of field management and administrative personnel, as well as craft labor to operate and maintain the facility. The total labor force will range from 30 to 50 personnel per shift during Phase 1 operations, including support functions such as health and safety, quality control (QC), management, and administration.

The process equipment will be operated six days per week, with the seventh day reserved for equipment inspections and repairs and; if necessary, additional processing to meet production targets or reduce backlogs. Generally, two 12-hour shifts are anticipated on each day of operations during inventory dredging operations. Early in the season, the number and duration of shifts may be less due to the lower productivity planned. Also, once inventory dredging operations are complete, the number and duration of shifts may be reduced.

The water treatment plant will be operated when dredged material is being processed and/or when storm water treatment is necessary. General site maintenance activities (i.e., minor road repairs, housekeeping) will be performed eight hours per day, five days per week.

Qualified, trained personnel including, management and administration, equipment operators, laborers, and maintenance personnel will comprise the workforce. It is anticipated maintenance personnel will be limited to the first shift. A summary of the planned workforce is provided in Table 3-1 below.

Table 3-1 Phase 1 Full-Scale Operational Manpower Projections.

General Labor Category	First Shift	Second Shift
Management & Administration[1]	7	2
Sediment Unloading	7	7
Size Separation	7	7
Thickening and Dewatering	10	10
Water Treatment	5	5
Staging Area	2	2
Health and Safety & QC	3	3
Maintenance	5	0

Notes 1. 8 hour workdays are planned for project accounting & receptionist.

During operations, the actual manpower requirements, number of shifts and shift durations will be adjusted as necessary to meet demand. Manpower requirements during facility decommissioning and off-season operations are further described in Section 6.

SECTION 4

CONTINGENCY PLAN FOR MAINTENANCE/REPLACEMENT OF CRITICAL EQUIPMENT

To maintain the processing rates planned for Phase 1 operations, the sediment processing facility must run with minimal disruptions. Scheduled maintenance is expected to cause little or no disruptions to operations due to a combination of equipment redundancy and scheduling of down days for equipment maintenance. Contingencies for maintenance of critical processing equipment and a list of spare parts for critical equipment are described in this section.

Unplanned equipment breakdowns have the potential to disrupt operations appreciably and cause a back-up to dredging operations. If a piece of equipment ceases to operate properly, the equipment manufacturer will immediately be contacted. Contract maintenance professionals for most critical processing equipment are expected to be available on short notice and at non-work hours. The utility company will be notified immediately during power outages so that the cause may be addressed as quickly as possible.

A list of critical equipment manufacturers and maintenance professional contact information is provided in Attachment 10. Contact information for the utility company is also included in Attachment 10.

A list of critical spares to be on-site during Phase 1 facility operations is listed in Table 4-1.

Table 4-1 List of Critical Spares

Equipment Item	Description
Size Separation Area	
Trommel Screen	Spray pipe assembly
	Two screen sections
Sediment Slurry Tank	Mixer motor
Hydro-cyclone system	One screen panel per unit
	One recirculation pump
Dewatering Area	
Polymer Feed System	Mix chamber mechanical seal
	Mix chamber O-rings
Filter Press System	Two complete feed pumps
	Filter press plates
	Filter cloths
Container Handling Mechanisms	Anchor shackle, turnbuckle, proximity switch, sprocket & gear box
	Variable frequency drive
	Double flange wheel idler
	Two containers
Water Treatment Building	
Multimedia Filter System	Valve actuator and process valve
	Rupture disk
	Solenoid valve
Granular Activated Carbon System	Butterfly valve
	Pressure relief valve
	Rupture disk & air release valve
Bag Filter System	3 bag filter baskets
	3 swing bolts sets (swing bolt, eye-nut, pin, 2 push pins, washer)
	0.5., 1 and 5 micron bag filters for each bag filter housing
Additional Equipment	
Pumps	Packing set for each centrifugal pump
	One impeller for each pump make/model
	One set of bearings for each pump make/model
	One set of seals for each pump make/model

SECTION 5

HEALTH, SAFETY, AND ENVIRONMENTAL PROTECTION MEASURES

This section provides a description of: (1) general worker health and safety measures; (2) procedures for decontamination of personnel, equipment, and machinery; (3) spill control and containment measures and storm water pollution prevention measures; (4) emergency response measures; and (5) contractor monitoring of noise and lighting impacts to assess and verify compliance with the contract specifications.

5.1 WORKER HEALTH AND SAFETY

A key operational feature of the processing facility is the definition of site work zones. These zones are as follows:

- The Exclusion Zone (EZ) is a segregated area of the site, in which all PCB material management will occur. A chain-link fence separates the EZ from the Support Zone. The EZ includes the Size Separation Area, Main Haul Road, Maintenance Area, Dewatering Area (including the Dewatering Building, Gravity Thickener Tank and Recycle Water Equalization Tank), the Filter Cake Staging Enclosures, Debris and Coarse Material Staging Areas, the Rail Loading Platform, and the North, South and Waterfront Storm Water Basins (see Figure 2-1). Within the EZ, all personnel must wear appropriate personal protective equipment (PPE), and personnel and equipment must be decontaminated before moving out of the EZ.
- The Contamination Reduction Zone (CRZ) is the transition area from the EZ to non-contaminated areas. A CRZ is located west of the administration area, as well as a second CRZ located adjacent to the gate between the work wharf and unloading wharf as shown on Figure 2-1. The CRZ is physically sectioned off from the EZ and from non-contaminated areas, and is the area where decontamination of personnel will take place.
- The Support Zone is the clean area outside the CRZ, which comprises the administrative area. It includes the Administration Area, Fuel Depot, Marine Equipment Laydown Area, Work Wharf, Rail Yard Area, Water Treatment Plant, and Storm Water Basins A & B.

The only point of egress from the EZ to the Support Zone is the CRZ, which comprises the Site Personnel Decontamination Station and Vehicle/Equipment Decontamination Station. The procedures for personnel and equipment decontamination are given in Section 5.2.

The PFOC will review the RA HASP (Parsons, 2008), develop site-specific health and safety protocols and implement elements of health and safety planning into everyday operations.

The RA HASP (Parsons, 2008) provides an extensive list of potential hazards to workers associated specifically with operations at the sediment processing facility. These include physical hazards and environmental hazards. Physical hazards include being caught between equipment, being struck by tools, falls, lifting/carrying heavy objects, and several others. Environmental hazards include heat stress, cold stress, and biological hazards (e.g., exposure to insects, plants, and animals). Due to potential hazards, specific types of work require special work authorization. These types of work are summarized in Table 5-1.

Table 5-1 Types of Work that Require Special Authorization and/or Application of Specific Procedures to Prevent Injury

Category	Section in RA HASP
Lockout/tagout	4.4
Fire prevention/hotwork	4.5
Confined spaces	4.6
Fall protection	4.7
Cranes, hoists, rigging	4.8
Scaffolding	4.9
Electrical	4.10
Other operations – related	4.11 – 4.13
Lifting safety	4.18

Two Site Safety Representatives (SSR) will be on-site at all times during sediment processing operations, and at least one SSR present during maintenance days. The SSRs will be responsible for daily "tail-gate" meetings and the preparation of daily Job Safety Analyses designed to delineate potential job-specific hazards and incorporate potential hazards identified by other field workers. The SSRs will also be responsible for verifying compliance with the approved RA HASP (Parsons, 2008) during the course of processing facility operations. This will be accomplished by daily monitoring of individual work areas including work area inspections, observing project personnel for signs and symptoms of chemical exposure, heat/cold stress, and ensuring personnel protective equipment (PPE) is available for project personnel.

5.2 PCB DECONTAMINATION

Decontamination of processing equipment machinery and structures, as well as personnel working around PCB-containing materials (i.e., working within the EZ), is discussed in the following subsections. Decontamination procedures will be followed so that equipment and structures exposed to PCB-containing sediment during Phase 1 operations are properly disposed of or decontaminated prior to release from the project. These procedures will be applied to

vehicles and equipment sent off-site for repair or service as well. Personnel decontamination procedures will be followed to prevent off-site migration of PCBs on the PPE worn by the workers.

Decontamination will not be required for equipment, vehicles, and personnel that strictly operate in the Support Zone.

Although the Main Haul Road is generally considered to be within the EZ, the portion of it at the intersection with the North Access Road will not be considered to be within that zone when the North Access Road gates are opened to permit vehicles to cross the Main Haul Road. When these gates are open, there is no access from this intersection to the rest of the Main Haul Road, and the intersection will be considered part of the Support Zone. A Safety Station will be staffed to control traffic at this intersection and manage incidental material that might be tracked there by trucks operating on the Main Haul Road.

5.2.1 Personnel Decontamination

Contamination control and equipment decontamination are described in detail in Section 9 of the RA HASP (Parsons, 2008) and briefly summarized herein. Personnel decontamination will be accomplished in the CRZ defined in Section 5.1. As discussed above, personnel within the EZ, who will be working in the vicinity of PCB-contaminated debris, sediments, and water, must don proper PPE. To prevent the possible migration of contaminants, the PFOC will implement measures to contain contaminants and require that PPE is removed before these workers leave the EZ and enter the Support Zone. Personnel wearing appropriate PPE will go through decontamination in the CRZ through a series of stations, as described in the RA HASP. Disposable PPE will be placed into rail cars for off-site disposal in accordance with the Phase 1 T&D Plan. Decontamination water (not containing surfactants or solvents) and storm water in this area will be routed to the water treatment plant.

5.2.2 Equipment and Structures

Equipment and structural components of the processing facility that will contact PCB-containing materials, process water, or storm water, such as processing equipment machinery and related components, construction equipment, various structures, and project vehicles, will be decontaminated. Table 5-2 describes, for the materials and types of equipment and structures to be used in Phase 1, the anticipated decontamination and sampling protocols to be followed, PCB decontamination criteria, and the ultimate disposition options. The decontamination procedures include, but are not limited to, power washing of unpainted and painted metal surfaces, scarification and removal of concrete surfaces or coatings, and rinsing of processing facility containers.

Disposable equipment or equipment that has contacted PCB materials and is not salvageable and solid waste residuals from decontamination operations may be placed in rail cars and disposed of in the TSCA landfill. During Phase 1 operations, the PFOC will have dedicated

equipment and vehicles within the EZ. The contractor's equipment that is used within this zone will be power washed as described in Table 5-2 before being removed from the site. Vehicles are not expected to enter and leave the EZ on a routine basis. Fuel will be transferred from a fuel vendor staged outside the Vehicle/Equipment Decon Station to equipment as well as to an on-site fuel truck dedicated to the EZ during operations. If vehicles are required to leave the EZ during operations, the Vehicle/Equipment Decon Station will be used to rinse tires and wheel wells with water. If a vehicle is observed to contain high levels of dirt or PCB-containing materials, it will be thoroughly pressure or steam-washed. Rinsate from decontamination will be collected in the storm drain system, which is routed to the on-site water treatment plant.

Sampling and decontamination of surfaces that will not be exposed to PCB-containing materials will not be required.

5.3 POLLUTION PREVENTION

All on-site handling and transport of materials potentially containing PCBs will occur within areas designated for Type 1 storm water control. These areas include all areas inside the EZ. In these areas, drainage will be controlled and treated, as described in Section 2.6, before being discharged. As described in Section 5.3.1, potential spills of petroleum, oils and lubricants (POL) will be described in and managed under the site-wide Spill Prevention, Control, and Countermeasure (SPCC) Plan, and spills within the PFOC's and RYOC's work areas will addressed in those contractors' specific SPCC Plans. Storm water management is briefly described in Section 5.3.2, and is further detailed in the contractors' Storm Water Pollution Prevention Plans (SWPPPs), prepared pursuant to Specification Section 02371, Part 1.02.E.

5.3.1 Spill Prevention

Spill control/containment measures will cover releases of hazardous chemicals and fuels as well as untreated contaminated water and solids. These measures will include physical features to contain releases and procedures to respond to such releases (if they occur) to prevent pollutant migration. Since all processing and handling of dredged materials before transport will occur in the EZ, which is designed and constructed with engineered controls, spillage of dredged sediment within this area will not be considered a spill or release to the environment prompting planned response or reporting. Response to spillage of dredged materials that may occur outside the EZ will be managed in accordance with the contractors' SPCC Plans, which are further discussed below.

Engineered controls within the EZ include the following measures:

- Storm water that comes into contact with contaminated sediments in the EZ will be contained by the storm water collection system and treated in the water treatment system.

- During barge unloading, a spill plate between the moored barges and the wharf will be used to deflect material that may be dropped back into the barge or onto the unloading wharf and away from the canal during unloading. The spill plate will have raised edges to be able to channel fluids, and be large enough to provide for sufficient clearance from the inner confines of the barge to the wharf, which will minimize potential for spills into the canal. The unloader bucket will pass over this spill plate, which will control incidental spills from the bucket. Other spill preventive measures at the wharf include:
  - Workers will wash or change their protective boot covers before accessing the grated catwalks that have been constructed over the water;
  - Hoses that may be used for pumping water out of barges will have secondary containment; and
  - A barrier will be installed between the trommel feed chute and the edge of the wharf. This barrier will prevent oversize material that is rejected from the screen, which is integrated into the feed chute, from entering the canal.
- In most locations within the EZ, contaminated water or sediments will be contained on pavement or on liner. In some areas, such as the main haul road and rail yard loading platform, curbing will serve as splash protection. Contained water will be directed to catch basins that drain to the storm water collection basins. Contained solids/slurry will be collected and hauled to the hydro-cyclone overflow wet well (size separation area) for dewatering or stabilized (if necessary) and loaded into rail cars.
- Double-walled pipe will be used for the most vulnerable sections of the force mains to transport PCB-containing sediment slurry pumped to the dewatering area, as well as to recycle water flowing back to the size separation area. Concrete barriers will protect the piping from vehicular traffic.
- Other sections of the force mains will be located below grade and contained in a slurry trench with a steel cover, or above grade with corrugated metal pipe covers to serve as splash protection. Concrete barriers will protect the piping from vehicular traffic.
- Any spill of process water within the dewatering and water treatment buildings will be captured by floor drains leading to the building sewers. The water flows by gravity through manholes into combined lines leading to the recycle water lift station and on to treatment.
- Containment will be provided for polymers in sediment processing/water treatment and for fuels. As described in Section 2.5.2.2, polymer will be received from supply trucks or by rail. The polymer will be pumped from the polymer transfer station through 2-inch-diameter polymer fill lines to the neat polymer bulk storage tanks inside the dewatering building. The fill station, located outside of the dewatering building, will have a tank level indicator and alarm to prevent overfilling of the tanks.

The transfer station will have a grated sump to collect accidental spills and incidental drips. This sump does not have a drain. If polymer should spill and collect in this sump, it will be readily removed and recovered for reuse or disposed. Inside the dewatering building, a curb will be installed around the polymer storage tanks and blending equipment. This curbing will prevent concentrated polymer from entering the drain lines which convey filtrate to the recycle water wet well.

GE will prepare and implement a site-wide SPCC Plan governing POL storage and management and response to POL spills (both inside and outside the EZ) at the processing facility. This SPCC Plan will meet the applicable requirements of 6 NYCRR Parts 611 through 614 and 40 CFR Parts 110 and 112. It will establish overall spill prevention and contingency measures for various potential types of POL spills resulting from all site contractor activities. The site-wide SPCC Plan will be certified by a registered professional engineer in the State of New York, and will be maintained at the site and be available for inspection by EPA upon request prior to mobilization of dredging operations.

In addition, contractor SPCC Plans will be prepared by the PFOC and the RYOC and attached to the site-wide SPCC Plan. These plans will conform to the site-wide SPCC Plan as well as project technical specifications. The contractors' SPCC Plans will be maintained on-site and will be available for EPA review. In addition to POL storage and management activities, these SPCC Plans will address prevention and response to spills, including spills of processed sediment that may occur outside of the EZ. Topics covered will include:

- Spill prevention means, methods, and procedures;
- Spill response means, methods, and procedures;
- Material and equipment maintained on-site for spill response;
- Notification and reporting protocols; and
- Personnel assignments, responsibilities, and training.

Contractors will perform inspections and tests and keep records pursuant to the site-wide SPCC Plan. Any stored hazardous materials subject to spill control reporting such as fuel or chemicals will be described in the plan. Monitoring will be required to confirm that control measures are functioning properly to prevent a spill from reaching navigable waters, and that the countermeasures to contain, clean up, and mitigate the spill are effective. Monitoring for releases of identified materials will be combined with routine inspections.

5.3.2 Storm Water Pollution Prevention

The PFOC and RYOC will prepare SWPPPs, as described in Section 02371 of the Contract 3B and 6 Specifications. To implement the SWPPPs, the processing facility and rail yard must be routinely inspected and documented. Key elements of the monitoring and maintenance effort include:

- Maintaining all storm water management controls (e.g., spill/splash prevention, erosion and sediment control);
- Implementation of a preventative maintenance program including, inspection and removal of accumulated sediments, maintaining vegetation in grass lined swales, as well as inspection of inlet and outlet protection at culverts;
- Record-keeping; and
- Performance of repairs if necessary.

The Type 1 storm water areas have a liner under the pavement. There are several low points in the liner where the level of the water accumulating on the liner can be monitored and pumped. If a level of 12 inches is reached at a particular point, the PFOC will use a portable pump to transfer the water accumulated on the liner to an adjacent Type 1 catch basin. The water will then flow to a Type 1 storm water containment basin and subsequently be pumped to the water treatment plant.

The PFOC and RYOC will be responsible for inspection of all control measures within their respective work areas, and each will designate an individual to perform the maintenance and repair activities required by the SWPPP. The individual inspecting the site will record any damages or deficiencies on SWPPP inspection forms.

5.4 EMERGENCY CONTACT NUMBERS

Emergency contact information and procedures are presented in Section 10 of the RA HASP (Parsons, 2008) and Attachment 1 of the CHASP (Parsons, 2009).

5.5 CONTRACTOR NOISE AND LIGHTING MONITORING

GE will separately contract for monitoring of the QoLPS parameters, including noise, light, odors, opacity, and airborne PCBs, to assess achievement of the criteria set forth in those standards. Methods for such monitoring are described in detail in the Phase 1 RAM QAPP (Anchor QEA 2009), and the actions to be taken in the event of an exceedance of such criteria, or in response to complaints about these parameters, are described in the Phase 1 PSCP and the CHASP (Parsons, 2009).

In addition, the PFOC and RYOC will conduct monitoring within their work areas for noise and lighting. This work area monitoring will be conducted solely for operations management purposes – to verify compliance with contract specifications and to provide a guide to the contractors 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 contractors can implement controls strategies as appropriate. This work area monitoring should not be considered as monitoring to assess or verify achievement of the QoLPS, which is described above.

Table 5-2 Structures and Equipment Decontamination Procedures

Material	Typical Equipment and Structures	Decontamination Method	Sampling*	PCB Decontamination Levels	Disposition Options
Surfaces unexposed to PCB-containing sediments	Pre-Cast Box Culverts, rails, pre-cast ties, structural exteriors (roofs, exterior walls), Seal Water System, Rail Support Bldg (floor and steel)	N/A	None	N/A	Unrestricted use; distribution in commerce
Unpainted metal surfaces	Galvanized metal, corrugated steel pipe, steel members (filter cake staging enlosures, water trtmt bldg, dewatering bldg)	Power Wash (or eqiuivalent method of surface cleaning)	Yes (wipe)	< 10 µg/100 cm^2	Unrestricted use; distribution in commerce
Painted metal surfaces	Steel members - (rail support bldg, water trtmt bldg, dewatering bldg). Steel members - filter cake staging enlosures, container handling mechanisms. Gravity Thickener, Filter Press System	Power Wash (or eqiuivalent method of surface cleaning)	Yes (wipe and chip)	< 10 µg/100 cm^2 and < 1 ppm (in coating)	Unrestricted use; distribution in commerce
				< 100 µg/100 cm2 and < 25 ppm (in coating)	Low-occupancy use
				< 50 ppm (in coating)	Disposal in scrap metal recovery oven or; Recycle at smelter operating in accordance with 40 C.F.R. § 761.72
Other porous materials and surfaces	Pre-cast materials, dewatering and water treatment building floors, Unloading Wharf Fine Staging Area floor slabs, loading platforms	Any method of surface cleaning or scarification	Yes (wipe and chip)	< 10 µg/100 cm^2 and < 1 ppm	Unrestricted use
				< 100 µg/100 cm^2 and < 25 ppm	Low-occupancy use
			Yes (chip)	< 50 ppm	Disposal in non-TSCA landfill
Plastic	HDPE corrugated pipe, Process Equipment Components (*e.g.*, Clarifier System)	Power Wash (or eqiuivalent method of surface cleaning)	Yes (wipe)	< 10 µg/100 cm^2	Unrestricted use; distribution in commerce
	Process Equipment Components		Yes (chip)	< 50 ppm	Disposal in non-TSCA landfill
Movable equipment (excluding vessels)	Front End Loaders, Skid Steers, Excavators, Container Handling Systems	Power Wash (or eqiuivalent method of surface cleaning)	None	N/A	Unrestricted use; distribution in commerce
Vessels	Barges, Scows	Power Wash (or eqiuivalent method of surface cleaning)	Yes (wipe)	generally < 100 µg/100 cm^2 and <10 µg/100 cm^2 at high contact areas (e.g., hand rails)	Restricted Use (e.g., no food use)
Vehicles - entering and leaving site (Exclusion Zone)	Front End Loaders, Tractor Trailers, Fuel Trucks	Power Wash (or eqiuivalent method of surface cleaning)	None	N/A	Unrestricted use; distribution in commerce
Containers	Sediment slurry tank, Granular activiated carbon vessels, above grade storage tanks	Rinse (including with cleaners that do not contain organic solvents)	None	N/A	Unrestricted use; distribution in commerce
*Sampling methods, including the number and location of sampling points, will depend on a number of factors, including the extent and nature of the subject material's contact with > 50 ppm PCBs. The sample point selection methods chosen in any particular situation may be different from and alternatives to those set forth in 40 CFR Part 761, Subparts N – R.					

SECTION 6

DECOMMISSIONING AND OFF-SEASON OPERATIONS

This section covers procedures for shutting down operations at the sediment processing facility after the Phase 1 dredging season, and a description of winterization of equipment, as well as site security and access and management of storm water during the off-season after Phase 1.

6.1 OVERVIEW

Upon the completion of Phase 1 dredging and processing operations, the PFOC will shut down and secure the processing facility equipment and prepare the site for the upcoming off-season. The RYOC will shut down and secure the rail yard facility. For purposes of this Phase 1 Facility O&M Plan, the off-season includes the winter after the completion of Phase 1 and the following period until such time as a determination is made regarding the continued use of the facility. The decommissioning activities will include emptying and cleaning of process lines and tanks, decontamination and removal of certain non-stationary processing and support equipment not needed for off-season O&M, and preparing the site for winter. These activities are described further in Section 6.2.

During the off-season, the only processing system that will be operational at the site is the water treatment plant. The water treatment system will continue operations as necessary to handle storm water, seven days per week up to 24 hours per day throughout the shut-down period. In addition, site security will be maintained, and housekeeping and general site maintenance will be conducted, including snow removal/sanding and lawn mowing as necessary. During the off-season, a smaller crew of up to 6 to 8 personnel will be on site to maintain security, keep the water treatment plant operating, maintain the operability of all equipment according to manufacturers' recommendations, and conduct general site maintenance. These activities are described further in Section 6.3. Personnel required for decommissioning and winterization will be demobilized upon completion of those activities, as described below.

6.2 SHUTDOWN OF OPERATIONS

6.2.1 Processing Facility

At the end of the Phase 1 processing season, the PFOC will decommission facility operations. These activities will include:

- Emptying and cleaning process and water lines;
- Emptying and cleaning tanks;

- Decontaminating certain process and support equipment that will be removed from the site; and
- Winterizing the processing facility.

For safety and effectiveness, particularly in regard to equipment decontamination, facility decommissioning will take place over a two-week period. The PFOC will maintain a field crew of approximately four equipment operators and ten laborers per shift to allow the decommissioning to be completed during the two-week period before winter conditions. A supervisor will be provided to oversee the field work and maintain the required health and safety standards. Most of the work is anticipated to be completed during a single shift, each day Monday through Friday, over that period, depending on weather conditions. If necessary, decommissioning will also occur during a second shift or on the weekend to maintain schedule.

Facility decommissioning activities will take place once the last materials are processed for Phase 1. Dormant process lines intended for winterization will be drained, flushed once with canal water, and then re-drained to remove the lines of as much fluid as required to prevent damage from freezing. The rinsates will be directed to the water treatment system for final processing. All process system valves will be left in accordance to manufacturer's recommendations and/or serviced in preparation for potential continued operations in the next processing season. Open tanks such as the pump seal water tank, trommel screen tank and hydro-cyclone system tank will be emptied and covered with a wood cover and 20-mil plastic sheeting to prevent water and snow from entering the tank. The sheeting will be weighed down accordingly. All pumps not in operation will be drained to ensure the casing is protected. Water traps on air lines will be drained.

The coarse material storage areas and filter cake storage enclosures will also be swept clean after the last processed materials are loaded out by the RYOC. Condensate will be drained from the vapor phase GAC units. The filter cake staging enclosures may be used to store equipment.

All rental heavy equipment and all non-stationary equipment not required for off-season O&M will be decontaminated in accordance with Table 5-2 and removed from site. The goal for cold weather shut down and winterizing the filter presses is to remove as much water from the presses as required to prevent damage from freezing. The steps are as follows:

- Immediately after the last process cycle, the press and valves will be closed for a blow down, and air will be run through the plates and cloths for 30 minutes. This will remove water from the cloths.
- The lower left valve will be opened to remove filtrate from that side of the plates, and air will be blown for about 10 minutes to remove water from the discharge eyes.
- The press will be pressurized by closing all valves, and opening the air blow valve, pressurizing the press with air pressure to about 40 psi. After the press is pressurized, the feed pipe valve will be opened to blow out the sludge in the pipe between the

pump and the press. The same procedure will be followed for the pre-coat pump if applicable.

- The inlet hose to the pump will be disconnected and a similar hose will be inserted into a barrel of premixed antifreeze. The pump will be run slowly with about 10 psi air pressure until some antifreeze comes out the end of the lower discharge eye. The same procedure will be followed for the pre-coat pump if used.
- The final step will be to blow out all hoses and drain water in the air compressor tank.

The manufacturer's recommendations for winterization of the filter presses include the cleaning of all filter press plates, which will be left in place in the filter press frame with the press ram in the closed position. All filter press plates will be inspected for damage and the report will be provided to the CM as part of the routine maintenance and inspection schedule. Filter fabric from each of the presses will be rinsed clean and left in the press.

Touch screens for control panels/displays for the filter presses will be removed and stored in a heated indoor area on-site.

Any slurry remaining in sumps, tanks, the gravity thickener, and force mains will be flushed to a single filter press once sediment off-loading operations have ceased. If necessary, the residual solids from the press cycle will be stabilized with a solidifying agent.

6.2.2 Rail Yard

Winterization of the rail yard (buildings, switches, scale, loading equipment, etc.) will be conducted in accordance with Section 13900, Part 3.01.A of the Contract 6 specifications. Specifically:

- All equipment in rail yard including switches will be shut down and secured;
- Locomotive(s) will be shut down and secured or removed from the rail yard;
- Water, heat, and power will be shut down to the rail yard support building; and
- Water and air will be blown out of air compressors and hoses.

6.3 OFF-SEASON OPERATIONS

Limited activities will take place during the off-season, as defined above. These include:

- Water treatment;
- Site security; and
- Housekeeping and general site maintenance, including snow removal/sanding and lawn mowing as necessary.

Although sediment processing will not occur during the off-season, there will still be a need to operate the water treatment systems to treat storm water. It is expected that water treatment will be limited principally to storm water basin pumping and operation of the storm water

equalization tank and the storm water treatment train. However, as described in Section 2.6.2.3 the storm water equalization tank may be used interchangeably with the process water equalization tank, so the process water treatment trains will also remain operational if needed to treat storm water. A staff of 2 to 4 workers will be required to operate and maintain the water treatment plant.

In addition to operating the treatment plant throughout the off-season to handle storm water, the on-site crew will be responsible for maintaining site security and for general housekeeping of the site, including garbage removal, snow removal and sanding, and/or mowing as necessary. Further, site mechanical personnel will handle inspections of equipment (motors, pumps, valves and electronics) and pertinent aspects of the facility (e.g., the storm water basin, pumping stations, force mains, road conditions, storage basin enclosures and liners), and will perform routine maintenance in accordance to all manufacturers' recommendations.

SECTION 7

REFERENCES

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United States Environmental Protection Agency and General Electric Company. 2005. Consent Decree in *United States v. General Electric Company*, Civil Action No. 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

ATTACHMENTS

Attachment 1
Equipment Inspection Schedule – Size Separation Area

Equipment Item	Inspection Required	Frequency
TROMMEL SCREEN EQUIPMENT		
Screen	Screen	Daily
	Drive Belts	Daily
	Counter Weights	Daily
	Bearings	Daily
	Wet End Forward Screw	Daily
	Screen Tension Lugs	Daily
Overflow Conveyor	Drive System	Daily
	Rollers	Daily
	Belts	Daily
	Gear Case	Daily
	Guards	Daily
	Bearings	Daily
Underflow Pumps	Shaft Couplers	Daily
	Bearings	Daily
	Discharge Pressures	Daily
HYDRO-CYCLONES		
Hydro-cyclones	Cones	As Needed
Vibratory Dewatering Screens	Screens	Daily
	Rub Pads	Daily
	Screen Supports	Daily
	Screen Tension Legs	Daily
	Counter Weights	Daily
	Bearings	Daily
	Drive Pulleys	Daily
	Possums Belly (Funnel) Solids	Daily
Conveyors	Drive System	Daily
	Rollers	Daily
	Belts	Daily
	Gear Case	Daily
	Guards	Daily
	Bearings	Daily
Sump/Recycle Assembly Pumps	Gear Case Lube	Daily
	Bearings	Daily
	Shaft Couplers	Daily
	Guards	Daily
Feed Pumps	Gear Case Lube	Daily
	Bearings	Daily
	Shaft Couplers	Daily
	Guards	Daily

Attachment 1
(continued)
Equipment Inspection Schedule – Size Separation Area

Equipment Item	Inspection Required	Frequency
TANKS AND ACCESSORIES		
Trommel Screen Make-up Water Feed Pumps	Gear Case Lube	Daily
	Bearings	Daily
	Shaft Couplers	Daily
	Guards	Daily
	Discharge Pressures	Daily
Sediment Slurry Tank Make-up Water Feed Pumps	Gear Case Lube	Daily
	Bearings	Daily
	Shaft Couplers	Daily
	Shaft Seals	Daily
	Guards	Daily
	Discharge Pressures	Daily
Sediment Slurry Tank Mixers	Gear Case Fluids	Daily
	Shaft Couplers	Daily
	Shaft Flange Lugs	Daily
	Shaft Seals	Daily
	Coupler Guards	Daily
	Bearings	Daily
Size Separation Process Water Storage Tank	High Level Alarm	Daily
	Low Level Alarm	Daily
	Valves	Daily
	Flanges	Daily
	Piping	Daily
	Walkways	Daily
	Handrails	Daily
	Ladders	Daily
Sediment Slurry Tank	High Level Alarm	Daily
	Low Level Alarm	Daily
	Valves	Daily
	Flanges	Daily
	Piping	Daily
	Walkways	Daily
	Handrails	Daily
	Ladders	Daily

Attachment 2
Maintenance Activities at Size Separation Area

Equipment Item	Maintenance Category	Daily[1]	Weekly	Monthly
TROMMEL SCREEN EQUIPMENT				
Screen	Inspection	✓		
	Lubrication		✓	
	Scheduled Maintenance			✓
Overflow Conveyor	Inspection	✓		
	Lubrication		✓	
	Scheduled Maintenance			✓
Underflow Pumps	Inspection	✓		
	Lubrication		✓	
	Scheduled Maintenance			✓
HDYROCYCLONES				
Vibratory Dewatering Screens	Inspection	✓		
	Lubrication		✓	
	Scheduled Maintenance			✓
Conveyors	Inspection	✓		
	Lubrication		✓	
	Scheduled Maintenance			✓
Sump/Recycle Assembly Pumps	Inspection	✓		
	Lubrication		✓	
	Scheduled Maintenance			✓
Feed Pumps	Inspection	✓		
	Lubrication		✓	
	Scheduled Maintenance			✓
TANKS AND ACCESSORIES				
Trommel Screen Make-up Water Feed Pumps	Inspection	✓		
	Lubrication		✓	
	Scheduled Maintenance			✓
Sediment Slurry Tank Make-up Water Feed Pumps	Inspection	✓		
	Lubrication		✓	
	Scheduled Maintenance			✓
Sediment Slurry Tank Mixers	Inspection	✓		
	Lubrication		✓	
	Scheduled Maintenance			✓
Size Separation Process Water Storage Tank	Inspection	✓		
	Scheduled Maintenance			✓
Sediment Slurry Tank	Inspection	✓		
	Scheduled Maintenance			✓

1. Visual Inspection only. Does not require shutdown of equipment.

Attachment 3
Equipment Inspection Schedule – Sediment Conveyance[1]

Equipment Item	Inspection Required	Frequency
HYDRO-CYCLONE OVERFLOW LIFT STATION		
Wet Well Mixers	Guards	Monthly
	Couplings	Monthly
	Flange Bolts	Monthly
	Bearings	Monthly
	Shaft Seals	Monthly
	Guards	Monthly
Lift Station Pumps	Guards	Monthly
	Couplings	Monthly
	Bearings	Monthly
	Shaft Seals	Monthly
	Discharge Pressure	Monthly
FORCE MAINS		
12-inch Sediment Force Mains	Flange Connections	Daily
14-inch Recycle Water Force Main	Flange Connections	Daily
	Wall Thickness	Annual
Air/Vacuum Release Valves	Release Valves	Daily
	Release Valve Wear	Annual

1. Force mains include separate 14-inch main that conveys water from Dewatering Area to Size Separation Process Water Storage Tank.

Attachment 4
Maintenance Activities for Sediment Conveyance

Equipment Item	Maintenance Category	Daily[1]	Weekly	Monthly
HYDRO-CYCLONE OVERFLOW LIFT STATION				
Wet Well Mixers	Inspection	✓		
	Lubrication		✓	
	Scheduled Maintenance			✓
Lift Station Pumps	Inspection	✓		
	Lubrication		✓	
	Scheduled Maintenance			✓
FORCE MAINS				
12-inch Sediment Force Mains	Inspection	✓		
	Lubrication		NA	
	Scheduled Maintenance			✓
14-inch Recycle Water Force Main	Inspection	✓		
	Lubrication		NA	
	Scheduled Maintenance			✓
Air/Vacuum Release Valves	Inspection	✓		
	Lubrication		✓	
	Scheduled Maintenance			✓

1. Visual Inspection only. Does not require shutdown of equipment.

Attachment 5
Equipment Inspection Schedule – Dewatering Area

Equipment Item	Inspection Required	Frequency
GRAVITY THICKENER		
Gravity Thickener Tank	Flanges	Daily
	Valves	Daily
	Piping	Daily
	Solids Content	Daily
	Liquid Levels	Daily
Rake Arm/Drive Unit	Drive Motor	Daily
	Couplings	Daily
	Gear Box	Daily
	Flanges	Daily
	Drive Chains / Sprockets	Daily
Rake Arm Lift Mechanism	Worm Gear	Monthly
	Outer Shaft Sprocket	Monthly
	Drive Motor	Monthly
	Bearings	Monthly
	Performance	Monthly
Thickened Underflow Pumps	Motor	Daily
	Guards	Daily
	Pump	Daily
	Seals	Daily
	Bearings	Daily
	Lubrication	Daily
	Couplings	Daily
	Discharge Pressure	Daily
Thickened Slurry Tanks	Piping	Daily
	Valving	Daily
	Levels	Daily
	Inspection Gates	Daily
	Flanges	Daily
	Ladders	Daily
	Handrails	Daily
Thickened Slurry Tank Mixers	Motor	Daily
	Gear Box	Daily
	Bearings	Daily
	Seals	Daily
	Couplings	Daily
	Shaft Flanges	Daily
	Lubrication	Daily
FILTER PRESSES		
Filter Press Feed Pumps	Motors	Daily
	Pumps	Daily
	Bearings	Daily

Attachment 5
(continued)
Equipment Inspection Schedule – Dewatering Area

Equipment Item	Inspection Required	Frequency
FILTER PRESSES (continued)		
	Couplings	Daily
	Seals	Daily
	Discharge Pressure	Daily
	Lubrication	Daily
Dewatering Building Compressed Air System Compressor	Motor	Daily
	Compressor Fluids	Daily
	Belts	Daily
	Sheaves	Daily
	Pulleys	Daily
	Pressure Relief Valves	Daily
	Operating Pressures	Daily
	Air Intake Filters	Daily
	Condensation Drains/ Water Traps	Daily
	Air Dryers	Daily
Filter Press Solenoid Valves	Ram Pressure	Daily
	Ram Seals	Daily
	Hydraulic Fittings	Daily
	Motor	Daily
	Fluid Levels	Daily
	Hydraulic Oil Filter	Daily
	Operating Performance	Daily
POLYMER FEED SYSTEM		
Neat Polymer Storage Tanks	Fill Line	Daily
	Vent Line	Daily
	Level Indicator	Daily
	Drain Line	Daily
	Flanges	Daily
	Valves	Daily
Neat Polymer (Flocculant) Tank Mixer	Tank Mix Motor	Daily
	Gear Box	Daily
	Bearings	Daily
	Seals	Daily
	Flanges	Daily
	Couplers	Daily
	Guards	Daily
	Gear Lube	Daily

Attachment 5
(continued)
Equipment Inspection Schedule – Dewatering Area

Equipment Item	Inspection Required	Frequency
POLYMER FEED SYSTEM (Continued)		
Polymer Makeup Units	Metered Feed System	Daily
	Metered Feed Pump System	Daily
	Recirculation Pumps	Daily
	Piping	Daily
	Valves	Daily
	Flanges	Daily
	Couplings	Daily
Polymer Day Tank Mixers	Motors	Daily
	Guards	Daily
	Shafts	Daily
	Couplers	Daily
	Propellers	Daily
	Mounting Brackets	Daily
Polymer (Coagulant) Feed Pumps	Motors	Daily
	Pumps	Daily
	Piping	Daily
	Valves	Daily
	Bearings	Daily
	Guards	Daily
	Performance	Daily
Polymer (Flocculant) Feed Pumps	Motors	Daily
	Pumps	Daily
	Piping	Daily
	Valves	Daily
	Bearings	Daily
	Guards	Daily
	Performance	Daily
	Couplings	Daily
	Fittings	Daily
RECYCLE WATER		
Recycle Water Collection Wet Well	High Level	Weekly
	Low Level	Weekly
Recycle Water Collection Lift Station Pumps	Motors	Daily
	Pumps	Daily
	Bearings	Daily
	Lube	Daily
	Guards	Daily
	Piping	Daily
	Valves	Daily

Attachment 5
(continued)
Equipment Inspection Schedule – Dewatering Area

Equipment Item	Inspection Required	Frequency
RECYCLE WATER (continued)		
	Connections	Daily
	Performance	Daily
Recycle Water Equalization Tank	Carry-Over Piping	Daily
	Flanges	Daily
	High Level	Daily
	Low Level	Daily
Process Water Equalization Tank Feed Pumps	Motors	Daily
	Pumps	Daily
	Bearings	Daily
	Lube	Daily
	Guards	Daily
	Piping	Daily
	Valves	Daily
	Connections	Daily
	Performance	Daily
Size Separation Process Water Storage Tank Feed Pumps	Motors	Daily
	Pumps	Daily
	Bearings	Daily
	Lube	Daily
	Guards	Daily
	Piping	Daily
	Valves	Daily
	Connections	Daily
	Performance	Daily
FILTER CAKE SOLIDS ENCLOSURE		
Solids Enclosure (membrane panels; frame)	Anchor Bolts	Annual
	Nuts	Annual
	Fasteners	Annual
	Panels	Annual
	Support Beams	Annual
	Support Rafters	Annual
	Bracing	Annual
	Doors	Annual
	Fabric	Bimonthly
Makeup Air Handling Units	Motors	Monthly
	Belts	Monthly
	Blower	Monthly
	Bearings	Monthly
	Sheaves	Monthly
	Pulleys	Monthly

Attachment 5
(continued)
Equipment Inspection Schedule – Dewatering Area

Equipment Item	Inspection Required	Frequency
FILTER CAKE SOLIDS ENCLOSURE (continued)		
	Guards Enclosure Housing	Monthly
	Duct Work	Monthly
	Vents / Outlets	Monthly
	Flow Control Dampers	Monthly
FILTER CAKE SOLIDS ENCLOSURE		
Exhaust Fans	Motors	Annual
	Blowers	Annual
	Shafts	Annual
	Bearings	Annual
	Guards	Annual
	Duct	Annual
	Dampers	Annual
Filters	Filter Media	Monthly

Attachment 6
Maintenance Activities at Dewatering Area

Equipment Item	Maintenance Category	Daily	Weekly	Monthly
GRAVITY THICKENER				
Gravity Thickener Tank	Inspection	✓		
	Scheduled Maintenance			✓
Rake Arm/Drive Unit	Inspection	✓		
	Lubrication		✓	
	Scheduled Maintenance			✓
Rake Arm Lift Mechanism	Inspection	✓		
	Lubrication		✓	
	Scheduled Maintenance			✓
FILTER PRESSES				
Filter Press Feed Pumps	Inspection	✓		
	Lubrication		✓	
	Scheduled Maintenance			✓
Filter Presses	Inspection	✓		
	Lubrication		✓	
	Scheduled Maintenance			✓
Dewatering Building Compressed Air System Compressor	Inspection	✓		
	Lubrication		✓	
	Scheduled Maintenance			✓
Filter Press Solenoid Valves	Inspection	✓		
	Lubrication		✓	
	Scheduled Maintenance			✓
POLYMER FEED SYSTEM				
Neat Polymer Storage Tanks	Inspection	✓		
	Scheduled Maintenance			✓
Neat Polymer (Flocculant) Tank Mixer	Inspection	✓		
	Lubrication		✓	
	Scheduled Maintenance			✓
Polymer Makeup Units	Inspection	✓		
	Lubrication		✓	
	Scheduled Maintenance			✓
Polymer (Coagulant) Feed Pumps	Inspection	✓		
	Lubrication		✓	
	Scheduled Maintenance			✓
Polymer (Flocculant) Feed Pumps	Inspection	✓		
	Lubrication		✓	
	Scheduled Maintenance			✓

Attachment 6
(continued)
Maintenance Activities at Dewatering Area

Equipment Item	Maintenance Category	Daily[1]	Weekly	Monthly
POLYMER FEED SYSTEM (continued)				
Static Mixer and Injection Rings	Inspection	✓		
	Lubrication		✓	
	Scheduled Maintenance			✓
Recycle Water Collection Wet Well	Inspection	✓		
	Scheduled Maintenance			✓
Recycle Water Collection Lift Station Pumps	Inspection	✓		
	Lubrication		✓	
	Scheduled Maintenance			✓
Recycle Water Equalization Tank	Inspection	✓		
	Scheduled Maintenance			✓
Process Water Equalization Tank Feed Pumps	Inspection	✓		
	Lubrication		✓	
	Scheduled Maintenance			✓
Size Separation Process Water Storage Tank Feed Pumps	Inspection	✓		
	Lubrication		✓	
	Scheduled Maintenance			✓
FILTER CAKE SOLIDS ENCLOSURE				
Solids Enclosure (membrane panels; frame)	Inspection	✓		
	Scheduled Maintenance			Annual
Blower 1	Inspection	✓		
	Lubrication		✓	
	Scheduled Maintenance			✓
Blower 2	Inspection	✓		
	Lubrication		✓	
	Scheduled Maintenance			✓
Blower 3	Inspection	✓		
	Lubrication		✓	
	Scheduled Maintenance			✓
Blower 4	Inspection	✓		
	Lubrication		✓	
	Scheduled Maintenance			✓
Blower 5	Inspection	✓		
	Lubrication		✓	
	Scheduled Maintenance			✓
Blower 6	Inspection	✓		
	Lubrication		✓	
	Scheduled Maintenance			✓

Attachment 6
(continued)
Maintenance Activities at Dewatering Area

Equipment Item	Maintenance Category	Daily[1]	Weekly	Monthly
Blower 7	Inspection	✓		
	Lubrication		✓	
	Scheduled Maintenance			✓
Blower 8	Inspection	✓		
	Lubrication		✓	
	Scheduled Maintenance			✓
Blower 9	Inspection	✓		
	Lubrication		✓	
	Scheduled Maintenance			✓
Blower 10	Inspection	✓		
	Lubrication		✓	
	Scheduled Maintenance			✓
Filter Cake Staging Enclosure 1 – Louvers	Inspection			✓
Filter Cake Staging Enclosure 2 – Louvers	Inspection			✓
Granular Activated Carbon (GAC) Vessel 1	Inspection	✓		
	Scheduled Maintenance			✓
Granular Activated Carbon (GAC) Vessel 2	Inspection	✓		
	Scheduled Maintenance			✓
Granular Activated Carbon (GAC) Vessel 3	Inspection	✓		
	Scheduled Maintenance			✓
Granular Activated Carbon (GAC) Vessel 4	Inspection	✓		
	Scheduled Maintenance			✓
Granular Activated Carbon (GAC) Vessel 5	Inspection	✓		
	Scheduled Maintenance			✓
Granular Activated Carbon (GAC) Vessel 6	Inspection	✓		
	Scheduled Maintenance			✓
Granular Activated Carbon (GAC) Vessel 7	Inspection	✓		
	Scheduled Maintenance			✓
Granular Activated Carbon (GAC) Vessel 8	Inspection	✓		
	Scheduled Maintenance			✓
Granular Activated Carbon (GAC) Vessel 7	Inspection	✓		
	Scheduled Maintenance			✓

Attachment 6
(continued)
Maintenance Activities at Dewatering Area

Equipment Item	Maintenance Category	Daily[1]	Weekly	Monthly
FILTER CAKE SOLIDS ENCLOSURE (continued)				
Granular Activated Carbon (GAC) Vessel 8	Inspection	✓		
	Scheduled Maintenance			✓
Granular Activated Carbon (GAC) Vessel 9	Inspection	✓		
	Scheduled Maintenance			✓
Granular Activated Carbon (GAC) Vessel 10	Inspection	✓		
	Scheduled Maintenance			✓

1. Visual Inspection only. Does not require an equipment shutdown.

Attachment 7
Equipment Inspection Schedule – Water Treatment

Equipment Item	Inspection Required	Frequency
STORM WATER COLLECTION AND EQUALIZATION		
South Storm water Basin Pumps	Motors	Daily
	Guards	Daily
	Pumps	Daily
	Bearings	Daily
	Seals	Daily
	Discharge Pressure	Daily
	Valves	Daily
	Flanges	Daily
	Piping	Daily
North Storm water Basin Pumps	Motors	Daily
	Guards	Daily
	Pumps	Daily
	Bearings	Daily
	Seals	Daily
	Discharge Pressure	Daily
	Valves	Daily
	Flanges	Daily
	Piping	Daily
Waterfront Storm water Basin Pumps	Motors	Daily
	Guards	Daily
	Pumps	Daily
	Bearings	Daily
	Seals	Daily
	Discharge Pressure	Daily
	Valves	Daily
	Flanges	Daily
	Piping	Daily
Storm water Equalization Tank	Equalization Lines	Daily
	Valves	Daily
	High Level	Daily
	Low Level	Daily
	Hand Rails	Daily
	Holding Capacity	Daily
	Solids Build-up	Daily
	Walk-ways	Daily
Storm water Equalization Tank Discharge Pump (to Storm Water Treatment Train)	Motors	Daily
	Guards	Daily
	Pumps	Daily
	Bearings	Daily
	Seals	Daily
	Discharge Pressure	Daily

Attachment 7
(continued)
Equipment Inspection Schedule – Water Treatment

Equipment Item	Inspection Required	Frequency
STORM WATER COLLECTION AND EQUALIZATION (continued)		
	Valves	Daily
	Flanges	Daily
	Piping	Daily
Liner Monitoring Point	Water level above liner	Weekly and/or 24-hours after rainfall event[1]
PROCESS WATER EQUALIZATION		
Process Water Equalization Tank	Ladders	Daily
	Walk-ways	Daily
	Hand rails	Daily
	Piping	Daily
	Valves	Daily
	High Level	Daily
	Low Level	Daily
Process Water Equalization Tank Discharge Pumps (to Process Water Treatment Trains)	Motors	Daily
	Guards	Daily
	Pumps	Daily
	Bearings	Daily
	Seals	Daily
	Discharge Pressure	Daily
	Valves	Daily
	Flanges	Daily
	Piping	Daily
WATER TREATMENT - CLARIFICATION		
Rapid Mix Chamber Mixer	Motors	Daily
	Guards	Daily
	Shafts	Daily
	Couplers	Daily
	Propeller	Daily
	Bearings	Daily
	Seals	Daily
Flocculation Chamber Mixer	Motors	Daily
	Guards	Daily
	Shafts	Daily
	Couplers	Daily
	Propeller	Daily
	Bearings	Daily
	Seals	Daily
Inclined Plate Clarifier	In-Flow	Daily
	Out-Flow	Daily
	Performance	Daily
	Build-up on Plates	Daily

Attachment 7
(continued)
Equipment Inspection Schedule – Water Treatment

Equipment Item	Inspection Required	Frequency
WATER TREATMENT – CLARIFICATION (continued)		
	Solids in Lower Sump	Daily
	Scum Build-up	Daily
	Piping	Daily
	Valves	Daily
	Flanges	Daily
Clarified Underflow Sludge Pump	Piping	Daily
	Valves	Daily
	Seals	Daily
	Clamps	Daily
	Performance	Daily
Clarifier Effluent Tank	Ladders	Daily
	Walk-ways	Daily
	Hand rails	Daily
	In-Flow	Daily
	Out-Flow	Daily
	High Level	Daily
	Low Level	Daily
	Water Quality – TSS	Daily
	Valves	Daily
	Piping	Daily
Effluent Tank Discharge Pump	Motors	Daily
	Guards	Daily
	Shafts	Daily
	Propeller	Daily
	Bearings	Daily
	Seals	Daily
	Discharge Pressure	Daily
	Valves	Daily
	Flanges	Daily
	Piping	Daily
Plant Air System Compressor	Motors	Daily
	Compressor Fluids	Daily
	Belts	Daily
	Sheaves	Daily
	Pulleys	Daily
	Pressure Relief Valve	Daily
	Operating Pressures	Daily
	Air Intake Filters	Daily
	Condensate Drains/ Water Traps	Daily
	Air Dryers	Daily

Attachment 7
(continued)
Equipment Inspection Schedule – Water Treatment

Equipment Item	Inspection Required	Frequency
WATER TREATMENT – CLARIFICATION (continued)		
Sludge Underflow Pump Solenoid Valves	RAM Pressure	Daily
	RAM Seals	Daily
	Hydraulic Fittings	Daily
	Motors	Daily
	Fluid Levels	Daily
	Hydraulic Oil Filter	Daily
	Operating Performance	Daily
WATER TREATMENT – FILTRATION AND GAC		
Multimedia Filters – Vessels	Vessel Inlet Pressure	Daily
	Flow Restrictions	Daily
	Outflow TSS	Daily
	Piping	Daily
	Valves	Daily
	Flanges	Daily
	Piping	Daily
	Pressure Relief Valves	Daily
	Backwash	Daily
Multimedia Filters - Media	Backwash	Daily
	Skimming/Removal of flow Restrictive Sediments on Surface of Filter Media	Daily
	Replacement of Surface Media Above Lateral Flow Screens	Daily
Carbon – Vessels	Inlet Pressure	Daily
	Relief Valves	Daily
	Piping	Daily
	Valves	Daily
	Flanges	Daily
	Discharge Quality Sampling	Daily
Carbon - Media	Rate of Depletion	Daily
	Life Expectancy Forecast	Daily
	Discharge Sample Criteria	Daily
Bag Filters (Replacement of Filters)	Inlet Pressure	Daily
	Bag Filter Micron Ratings	Daily
	Inspection Hatch	Daily

Attachment 7
(continued)
Equipment Inspection Schedule – Water Treatment

Equipment Item	Inspection Required	Frequency
WATER TREATMENT – FILTRATION AND GAC (continued)		
	Seals	Daily
	Clamps	Daily
	Piping	Daily
	Valves	Daily
	Flanges	Daily
	Inlet TSS	Daily
	Outlet TSS	Daily
BACKWASH WATER		
Backwash Water Holding Tank	Ladders	Daily
	Walk-ways	Daily
	Hand rails	Daily
	Piping	Daily
	Valves	Daily
	High Level	Daily
	Low Level	Daily
	Water Quality	Daily
Backwash Water Feed Pumps	Motors	Daily
	Guards	Daily
	Pumps	Daily
	Bearings	Daily
	Seals	Daily
	Discharge Pressure	Daily
	Valves	Daily
	Flanges	Daily
	Piping	Daily
Plant Water Feed/Pressurization Pump	Motors	Daily
	Guards	Daily
	Pumps	Daily
	Bearings	Daily
	Seals	Daily
	Discharge Pressure	Daily
	Valves	Daily
	Flanges	Daily
	Piping	Daily

Notes.
1. A rainfall event is defined as a precipitation event of 0.5-inches or greater.

Attachment 8
Maintenance Activities at Water Treatment Plant

Equipment Item	Maintenance Category	Daily[1]	Weekly	Monthly
STORM WATER COLLECTION AND EQUALIZATION				
South Storm water Basin Pumps	Inspection	✓		
	Lubrication		✓	
	Scheduled Maintenance			✓
North Storm water Basin Pumps	Inspection	✓		
	Lubrication		✓	
	Scheduled Maintenance			✓
Waterfront Storm water Basin Pumps	Inspection	✓		
	Lubrication		✓	
	Scheduled Maintenance			✓
Storm water Equalization Tank	Inspection	✓		
	Scheduled Maintenance			✓
Storm water Equalization Tank Discharge Pump *(to Storm Water Treatment Train)*	Inspection	✓		
	Lubrication		✓	
	Scheduled Maintenance			✓
PROCESS WATER EQUALIZATION				
Process Water Equalization Tank	Inspection	✓		
	Scheduled Maintenance			✓
Process Water Equalization Tank Discharge Pumps *(to Process Water Treatment Trains)*	Inspection	✓		
	Lubrication		✓	
	Scheduled Maintenance			✓
WATER TREATMENT - CLARIFICATION				
Rapid Mix Chamber Mixer	Inspection	✓		
	Lubrication		✓	
	Scheduled Maintenance			✓
Flocculation Chamber Mixer	Inspection	✓		
	Lubrication		✓	
	Scheduled Maintenance			✓
Inclined Plate Clarifier	Inspection	✓		
	Scheduled Maintenance			✓
Clarified Underflow Sludge Pump	Inspection	✓		
	Lubrication		✓	
	Scheduled Maintenance			✓
Clarifier Effluent Tank	Inspection	✓		
	Scheduled Maintenance			✓

Attachment 8
(continued)
Maintenance Activities at Water Treatment Plant

Equipment Item	Maintenance Category	Daily[1]	Weekly[2]	Monthly[2]
WATER TREATMENT – CLARIFICATION (continued)				
Effluent Tank Discharge Pump	Inspection	✓		
	Lubrication		✓	
	Scheduled Maintenance			✓
Plant Air System Compressor	Inspection	✓		
	Lubrication		✓	
	Scheduled Maintenance			✓
Sludge Underflow Pump Solenoid Valves	Inspection	✓		
	Lubrication		✓	
	Scheduled Maintenance			✓
WATER TREATMENT – FILTRATION AND GAC				
Multimedia Filters – Vessels	Inspection	✓		
	Scheduled Maintenance			✓
Multimedia Filters - Media	Inspection	✓		
	Scheduled Maintenance			✓
Carbon – Vessels	Inspection	✓		
	Scheduled Maintenance			✓
Carbon - Media	Inspection	✓		
	Scheduled Maintenance			✓
Bag Filters	Inspection	✓		
	Scheduled Maintenance			✓
BACKWASH WATER				
Backwash Water Holding Tank	Inspection	✓		
	Scheduled Maintenance			✓
Backwash Water Feed Pumps	Inspection	✓		
	Lubrication		✓	
	Scheduled Maintenance			✓
Plant Water Feed/Pressurization Pump	Inspection	✓		
	Lubrication		✓	
	Scheduled Maintenance			✓

1. Visual Inspection only. Does not require an equipment shutdown.
2. WWTP has redundant trains, so lubrication and scheduled maintenance is not anticipated to result in a shutdown of the WWTP.

Attachment 9
Maintenance Activities – Rail Yard Area

Equipment Item	Maintenance Category	Daily	Weekly	Other
Critical Track				
Yard Tracks	Inspection		✓	
	Scheduled Maintenance		As Required	
Track #1	Inspection		✓	
	Scheduled Maintenance		As Required	
Turn-Outs				
Yard Switches	Inspection		✓	
	Lubrication		As Required	
	Scheduled Maintenance		As Required	
Track #1 Switches	Inspection		✓	
	Lubrication		✓	
	Scheduled Maintenance		✓	
Scale, Rail Cars and Other Equipment				
Locomotives	Inspection	✓		
	Lubrication	As Required		
	Scheduled Maintenance	As Required		92 Day Inspection
Idler Cars	Inspection	✓		
	Lubrication	✓		
	Scheduled Maintenance	As Required		
Mill Gondolas	Inspection	In and Outbound		
	Lubrication	As Needed		
	Scheduled Maintenance	As Required		
Scale	Inspection	✓		
	Lubrication	Per Mfg's Requirements		
	Scheduled Maintenance	Per Mfg's Requirements		
Rail Car Covers (lids)	Inspection	In and Outbound		
	Scheduled Maintenance	As Needed		
Air Compressors – Yard Air	Inspection	Per Mfg's Requirements		
	Lubrication		Per Mfg's Require-ments	
	Scheduled Maintenance			Per Mfg's Require-ments

Attachment 10
Critical Equipment and Maintenance Contact Information

Equipment Item	Contract Equipment Professional	Contact Information
Trommel Screen (screen, overflow conveyor)	**Central Material Handling Systems** PO Box 420 Groveland, IL, 61536	Phone: (309) 387-6591 E-mail: centralmhs@aol.com
Sediment Slurry Tank	**Troy Boiler Works** 2800 7th Ave Troy, NY 12180	Phone: (518) 274-2650
Sediment Slurry Tank Mixer	**Lightnin** 135 Mt. Read Blvd Rochester, NY, 14611	Phone: (585) 436-5550 E-mail: seco@siewerequipment.com
Hydro-cyclones (hydro-cyclone clusters, dewatering screens, conveyors)	**Del Tank** 436 Highway 93 N Scott, LA 70583	Phone: (337) 237-8400 E-mail: sales@deltank.com
Gravity Thickener	**Westech** 3625 S. West Temple Salt Lake City, UT 84115	Phone: (801) 265-1000
Filter Presses	**Siemens Water Technologies** 2155 112th Ave Holland, MI 49424	Phone: (616) 772-9011 E-mail: information@siemens.com
Polymer Feed System	**Siemens Water Technologies** 2155 112th Ave Holland, MI 49424	Phone: (616) 772-9011 E-mail: information@siemens.com
Filter Cake Staging Enclosure	**Universal Fabric Structures** 2200 Kumry Road Quakertown, PA 1895	Phone: (215) 529-9921 E-mail: sales@ufsinc.com
Air Handling Systems (@ Filter Cake Staging Enclosure)	**Encotech Environmental Controls** P.O. Box 305 Eight Four, PA 15330	Phone: (724) 222-3334 E-mail: jdlalli@encotech.net
Clarifier System	**Hydroflow Technologies** 3985 Commerce Drive St. Charles, IL ,60174	Phone: (630) 762-0380 E-mail: contact@hydroflowtech.com
Multimedia Filters	**Encotech Environmental Controls** P.O. Box 305 Eight Four, PA 15330	Phone: (724) 222-3334 E-mail: jdlalli@encotech.net

Attachment 10
(continued)
Critical Equipment Contact Information

Equipment Item	Contract Equipment Professional	Contact Information
GAC Vessels	**Encotech Environmental Controls** P.O. Box 305 Eight Four, PA 15330	Phone: (724) 222-3334 E-mail: jdlalli@encotech.net
Bag Filters (Maintenance; Bag Filter Supply)	**Strainrite, Inc.** 86 First Flight Drive Auburn, ME 0421	Phone: (800) 487-3136 E-mail: info@strainrite.com
Container Handling Mechanisms	**Schwing Boiset, Inc.** 98 Mill Plain Rd., Suite 2A Danbury, CT 06811	Phone: (203) 744-2100
Centrifugal Pumps	**Rolf Industries** 2 Parkford Drive Clifton Park, NY 12065	Phone: (518) 383-2244 E-mail: rjohnson@rolfeindustries.com
Contract Maintenance Professionals		
Processing Facility Construction Contractor	**Sevenson Environmental Services** Contact: Jerry Castiglione	Phone: (716) 284-0431
Processing Facility Operations Contractor	**Shaw Environmental Inc.** Contact: Steven Petty	Phone: (609) 584-6838
Power Utility	**National Grid** Customer Service (Industrial / Commercial)	Phone: (518) 664-6728