PHASE 2 FACILITY OPERATIONS AND MAINTENANCE PLAN FOR 2013

Appendix B

to

Remedial Action Work Plan for Phase 2 Dredging and Facility Operations in 2013

HUDSON RIVER PCBs SUPERFUND SITE

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ACRONYMS AND ABBREVIATIONS

AAR	Association of American Railroads
CD	Consent Decree
CFM	cubic feet per minute
CHASP	Remedial Action Community Health and Safety Plan
CM	Construction Manager
CMSA	Coarse Material Staging Area
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
D&FO	dredging & facility operations
EPA	United States Environmental Protection Agency
EPS	Engineering Performance Standards
EZ	Exclusion Zone
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	Master Control Panel
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
PFOC	Processing Facility Operations Contractor
POL	Petroleum, Oil, and Lubricant
PPE	personal protective equipment

ACRONYMS AND ABBREVIATIONS (CONTINUED)

PSCP	Performance Standards Compliance Plan
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
RAM	Remedial Action Monitoring
RAWP	Remedial Action Work Plan
RIP	Repair in Place
ROD	Record of Decision
RYOC	Rail Yard Operations Contractor
SCADA	supervisory control and data acquisition
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
VPGAC	vapor-phase granular activated carbon

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SECTION 1

INTRODUCTION

This *Phase 2 Facility Operations and Maintenance Plan for 2013* (2013 Facility O&M Plan) has been prepared in accordance with the revised Statement of Work (SOW; EPA 2010) for Remedial Action and Operations, Maintenance and Monitoring, which is Appendix B to the Consent Decree (CD; EPA and GE 2005). This 2013 Facility O&M Plan is an appendix to the *Remedial Action Work Plan for Phase 2 Dredging and Facility Operations in 2013* (2013 RAWP). The scope of this plan covers processing facility operations planned for 2013 and the following off-season. This plan is an updated version of the Facility O&M Plan submitted to and approved by the U.S. Environmental Protection Agency (EPA) for processing facility operations in 2011. Specifically, this plan has been revised to:

1. Capture the changes to operational procedures that were implemented during the 2012 season which will continue during the 2013 season;
2. Describe the operation of new equipment installed at the processing facility between the 2012 and 2013 seasons; and
3. Incorporate adaptive response adjustments to the processing facility operations, as agreed to by EPA and GE.

This 2013 Facility O&M Plan addresses the operation and maintenance (O&M) of the sediment processing facility, located in Fort Edward, New York, during 2013 and the following off-season. It describes operational aspects of sediment processing at this facility, 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. This plan includes, 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 decommissioning procedures at the conclusion of the 2013 season and of the activities to be undertaken at the facility during the following off-season.

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 PCBs. Dredge material will be off-loaded from barges and be processed, as follows:

- Separation of large debris and coarse solids from fine sediments and water to facilitate dewatering;
- 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).

1.2 FACILITY O&M PLAN ORGANIZATION

This 2013 Facility O&M Plan 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) and coordinated with activities to be conducted by the Dredging Contractor and Rail Yard Operations Contractor (RYOC).

This document is organized into sections as follows:

- **Section 1 – Introduction**: provides an introduction to the 2013 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 relevant contractors 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 2013 operations season, winterization of equipment, and site security and access, as well as management of storm water and other ongoing operations, during that off-season.
- **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 / 2013 Facility O&M Plan Cross-Reference Table

Description of Requirement	Citation	Facility O&M Plan Section
Written description of major elements of work.	SOW Section 3.1.1 (page 3-17), cross-referencing Section 2.3.2.2.5 of the SOW	Section 2
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 shutdown of the equipment and a schedule for inspections that are required for specific equipment and machines.	Same as above	Sections 2.3.4, 2.4.4, 2.5.4, 2.6.4
An operation schedule to include primary labor types (e.g., dredging, processing, monitoring, etc.), number of shifts and hours	Same as above	Sections 3 & 6

Description of Requirement	Citation	Facility O&M Plan Section
of operation, and estimated number of persons required on a daily basis.		
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).	Same as above	Section 5
A Contingency Plan, along with the names and contacts of manufacturers and maintenance professionals for critical equipment related to Phase 2 activities.	Same as above	Section 4
Emergency contact numbers for local, state and federal government organizations shall be cross-referenced to the appropriate RA document (i.e., Phase 2 Remedial Action Community Health and Safety Plan, Phase 2 Remedial Action Health and Safety Plan).	Same as above	Section 5.4
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.	Same as above	Section 6

This 2013 Facility O&M Plan will apply to processing facility operations conducted during 2013 and the following off-season. It will be revised and updated as appropriate for subsequent years of Phase 2.

1.3 RELATED WORK PLAN DOCUMENTS

This 2013 Facility O&M Plan is one volume (Appendix B) of a set of documents that forms the 2013 RAWP. 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 2013 RAWP volume. Certain aspects of the processing facility operations are described in other appendices to the 2013 RAWP, as listed below:

- *Phase 2 Dredging Construction Quality Control/Quality Assurance Plan for 2013* (2013 DQAP). This plan contains, among other items:
  - A description of a barge trip database 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 2 Transportation and Disposal Plan for 2013* (2013 TDP). This plan describes the following activities to be performed at the processing facility:
  - Material staging and segregation;
  - 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.
- *Phase 2 Performance Standards Compliance Plan for 2013* (2013 PSCP). This plan describes the actions to be taken in 2013 to implement the Engineering Performance Standards (EPS; EPA 2010a), Quality of Life Performance Standards (QoLPS; EPA 2010b), and substantive water quality requirements issued by EPA as applicable to Phase 2 of the RA. As relevant to the processing facility, the 2013 PSCP includes the following:
  - Since operation of the processing facility will influence the overall project productivity, a description of the Productivity Performance Standard, including routine reporting of productivity pertaining to the processing facility;
  - 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; 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 2 Property Access Plan for 2013* (2013 PAP). Access agreements have been obtained for the properties needed for the processing facility. The 2013 PAP includes procedures for accessing properties to collect data related to the QoLPS.
- *Phase 2 Remedial Action Community Health and Safety Plan for 2013* (2013 CHASP). This plan 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.

In addition to the foregoing plans, the following plans, which are submitted under separate cover, also cover some aspects of processing facility operations:

- *Phase 2 Remedial Action Monitoring Quality Assurance Project Plan* (Phase 2 RAM QAPP). The Phase 2 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 when necessary;
  - Measurement of noise levels when necessary;
  - Measurement of light levels when necessary;
  - Monitoring for odor when necessary;
  - 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.
- *Phase 2 Remedial Action Health and Safety Plan for 2013* (2013 RA HASP; Parsons, 2013). 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.

SECTION 2

PROCESSING FACILITY OPERATIONS AND MAINTENANCE

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

2.1 OVERVIEW

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 thickeners, 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. EPA will be notified if these schedules are refined.

During operations, manufacturers' O&M manuals will be kept at the Construction Manager's office and will be available at that location for review by EPA 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. The following subsections describe the off-loading process to be implemented in 2013.

2.2.1 Material Unloading

Barges filled with dredged material are delivered to the processing facility by the Dredging Contractor. The waterfront consists of a staging slip in front of the work wharf, two dewatering stations, and two unloading stations. At each decant station, a pump suspended from a marine arm will be used to decant water from the barge, transferring it to one of the two storage tanks in the size separation plant. A tug will be used to index the barge from the dewatering station to the unloading station where the dredged material will be removed with a sediment unloader. At the unloading station, the barge is attached to the index and breasting system, which will typically be operated remotely by the unloader operator. The operator will index the barge to be able to reach sediment at the bow and stern ends of the hopper and unload the barge evenly. Spill plates are positioned between the barge and the unloading wharf and a splash screen is installed on the edge of the wharf to prevent spills into the canal during unloading. The spill plates will have raised edges to be able to contain and channel water back into the barge hopper or onto the unloading wharf. A description of the spill containment measures during off-loading is included in Section 5.

When received, the barge and its contents will be inspected to gain an understanding of the material type. At each barge dewatering station, free standing water will be decanted using an electric submersible pump to a double-contained HDPE pipe. A hydraulic arm will be used to maneuver the pump. The decanted water will be directed into the Size Separation Process Water Storage Tank. The pump suction will have a screen or strainer to prevent transfer of oversize material and possible plugging of the manifold.

At each unloading wharf, a Sennebogen 870 material handling machine equipped with a level cut clamshell bucket will remove the sediment from the barge. The material in the barges will be removed to an average barge draft of 2 feet or less. If necessary, a hydraulically operated solids pump powered by a silenced power pack will be at the ready to remove additional water and sediment slurry. Large debris will be picked separately with the bucket and loaded into a truck or temporarily placed on the deck of the unloading wharf. Free draining sediment designated as subject to the Toxic Substances Control Act (TSCA sediment), as defined in the applicable *Phase 2 Transportation and Disposal Plan for 2013* (2013 TDP), may be loaded directly into trucks. Free draining non-TSCA sediment (as defined in the applicable 2013 TDP) will be loaded directly into trucks under any of the following conditions: mechanical issues prevent size separation, the gravity thickener requires time to settle, the barge contains predominantly gravel/stone that has the potential to plug the system, or EPA has approved direct truck loading. Sediment that does not drain freely will be loaded to an elevated hopper to feed

the size separation plant. Once unloading is complete, the barge will be inspected and released directly to the Dredging Contractor.

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 processing facility, and tied off to the wharf by the Dredging Contractor. The Dredging Contractor will notify the PFOC of pending barge shipments and general contents. Barges containing sediments with relatively high PCB content (from dredge areas identified in the design or by air monitoring data) will be identified by the Dredging Contractor and given priority for transit to the processing facility. If a priority barge is in transit to the processing facility, it will move into one of the Dewatering Stations ahead of any non-priority barge that may be staged at the work wharf. A Dredging Contractor-operated tug will be available to tend the barges at the wharf and will coordinate the barge transfer at the wharf by the Dredging Contractor. Barges will be managed 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 a barge has been emptied and inspected and is cleared for pick up by the Dredging Contractor. Empty barges will be retrieved by the Dredging Contractor.

2.3 SIZE SEPARATION

The goal of sediment processing is to separate river water from sediment. The first process step is size separation, which will remove debris and coarse solids from the finer sediments and water. Two size separation plants will be used to process sediments. The South Size Separation Plant was used for Phase 1 and continues to be used each season in Phase 2. A second size separation plant was first used in 2012, located north of the existing (south) size separation area and adjacent to Unloading Wharf No. 2.

2.3.1 South Size Separation Area

Large debris in the barge being unloaded at Unloading Wharf No. 1 that is visible to the unloading operator may be loaded into a truck and transported to the debris staging area within the Coarse Material Staging Area (CMSA). Sediment will be processed through a wobbler screen, trommel screen, intermediate screen, and hydrocyclones to sort out additional debris, gravel, and sand or loaded directly into trucks, subject to the conditions outlined in Section 2.2.1. Captured material from each process will be transferred by dump truck to the CMSA. The remaining slurry of fine material will be pumped through force mains to the dewatering area.

2.3.1.1 Equipment Overview

Wobbler and Apron Feeder

The wobbler and apron feeder system consists of a hopper with an integral wobbler screen, apron conveyor system, appurtenances, and I&C. The hopper has a removable 18-inch bar grizzly, and the material screened by the grizzly will be staged temporarily near the hopper on the wharf deck. A feed chute was added to the trommel during the 2011 season to permit direct feed of fine-grained materials to the trommel barrel. The hopper feeds a wobbler screen which is directly below the hopper. The wobbler captures solids greater than 4 inches in diameter (over-sized) and conveys the material to a rejects pile while materials less than 4 inches in diameter (underflow) are conveyed to the trommel by a variable speed apron feeder system.

Trommel Screen

The trommel screen system consists of a trommel screen, underflow sump assembly, overflow radial conveyor system, appurtenances, and I&C. The trommel screen captures solids greater than 5/8-inch in diameter from the dredged material. Pumps with variable speed drives will control the rate of the underflow from the sump assembly to the intermediate screen.

Intermediate Screen

The intermediate screen system consists of two vibratory screens (in parallel), a slurry tank, dual pump skid, and solids chute, along with appurtenances and controls. The underflow of the intermediate screen will feed the sediment slurry tank. The screen panels are fabricated from punched steel plate or woven wire mesh. The panels are interchangeable and screen openings of ¼-inch and 1/8-inch are used.

Sediment Slurry Tank

The sediment slurry tank collects the underflow from the intermediate screen. The tank has a volume of approximately 25,000 gallons. The tank is fitted with a mixer and equipped with two centrifugal discharge pumps which feed the hydrocyclone units.

Hydrocyclones

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

Size Separation Storage Tanks

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 hydrocyclones to the dewatering area.
- A single centrifugal pump that supplies spray water to the trommel screen, Hydrocyclone spray bars and intermediate screen spray bars.

2.3.1.2 Process and Operations Description

Wobbler and Apron Feeder

Dredged material will be loaded into the hopper. The wobbler will reject solids greater than 4 inches in diameter (over-sized) and convey the material to a rejects pile. Materials less than 4 inches in diameter (underflow) will be transferred through the wobbler bars and then conveyed by the apron feeder to the trommel screen system. The apron feeder has variable speed drives to control the rate of the underflow to the trommel screen.

Trommel Screen

After conveyance of material from the apron feeder into the trommel barrel, the trommel screen 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 three 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 rotating screen (underflow) will be pumped as a slurry by dual centrifugal pumps through a common discharge manifold to the intermediate screen.

Intermediate Screen

The intermediate screen system will be operated to provide an additional separation before being transferred to the sediment slurry tank. The trommel underflow is split between the two screen decks. Typically, for each deck, the influent spills on the punched plate panel and is conveyed by the vibratory action of the screen bed to the end of the deck. Material that does not pass through the screen is rejected onto a stacking conveyor. The slurry that passes the screens flows into a mixer tank beneath the screens and is pumped to the sediment slurry tank.

Sediment Slurry Tank

The sediment slurry tank receives underflow from the intermediate screen. 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 is equipped with a mixer mounted on a beam assembly to homogenize the tank contents.

Hydrocyclones

The slurry will be processed through three hydrocyclone systems to provide further separation of coarse and fine solids. The hydrocyclone 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 hydrocyclone sump and recycle pump assembly of the respective hydrocyclone 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 hydrocyclone cluster.

Overflow slurry from the hydrocyclone cluster will pass back into the sump assembly. Hydrocyclone cluster underflow (solids) discharges onto a vibratory dewatering screen. The vibratory screen will capture solids greater than 200-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 to rail transport.
- The screen underflow will pass back to the sump. The hydrocyclone overflow will be gravity flow through a standpipe in the sump to the hydrocyclone overflow pump station wet well. A portion of the overflow may be recycled back to the sediment slurry tank to serve as dilution water.

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, from the Barge Dewatering Station, and from the Champlain Canal (if make-up water is needed).

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 make-up 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.

Material Staging in the South Size Separation Area

At each unit of the size separation process, the solids removed 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. Large debris from barges may be directly unloaded onto the wharf pavement. Stockpiles will be created at the bar grizzly and wobbler screen.
- Material captured on the trommel screen will be moved by the stacker at the trommel barrel discharge.

- Material captured on the intermediate screens and desanding units will be moved by the stackers for each unit.

Size separation operations will share the following equipment at both unloading wharfs: two front end loaders to load three 30-ton off-road dump trucks for material and debris transport to the CMSAs; and one water truck for dust control. One sediment unloading machine will be utilized at each wharf to offload the barges. In addition, one skid steer will be available for cleaning the area. The size separation area equipment pool may be changed depending on the production rate. For instance, the equipment working in the filter cake enclosures or at the CMSA may be temporarily utilized at the size separation area. Trucks hauling material within the sediment processing facility will not be allowed to exceed a gross vehicle weight of 80,000 pounds

Oversized debris will be brought to the CMSA for size reduction. Wood debris will be sized with a chainsaw to appropriate lengths, metal will be sized with either cutoff saws or torches, and boulders will be sized with a hoe-ram. Sizing operations at the CMSA will be restricted to day shift between the hours of 8:00 AM to 5:00 PM. Sizing operations will be performed on the north side of the CMSA, such that the material bins act as noise barriers.

A front end loader will manage the size and distribution of material produced from the wobbler, the trommel screen, the intermediate screens, and the hydrocyclones. 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 and large debris will be transferred 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 2-4 depicts this on-site waste transport routing. Drainage from the stockpiles will be captured and conveyed to the waterfront storm water basin (Section 2.6).

2.3.1.3 Instruments and Controls

The instruments and controls are organized by equipment component in which the instrument is installed. Field-located sensors transmit data to 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 MCP-1 after comparison with the programmed settings. The operators can also take manual control of processes and use data received at MCP-1 to respond to changing conditions.

Trommel Screen and Wobbler Feeder System

The wobbler feeder system will have a local programmable logic controller (PLC) to control the speed of the apron feeder and shutdown the conveyor if low speed is detected. The PLC will receive a signal from MCP-1 and the feeder system will shutdown sequentially upon trommel

shutdown. This will also activate a beacon to alert the unloader operator to stop feeding the hopper.

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.

Hydrocyclones

Flow meters are installed along the feed lines to each desanding unit 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 desanding units.

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 hydrocyclone feed pumps, the tank mixer, and the automatic valves along the hydrocyclone feed lines.

- The operating speed of the hydrocyclone 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 hydrocyclones 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 hydrocyclone 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 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 will turn off to prevent overfilling the tank.
- 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.

2.3.1.4 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 recommendations. 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.

Inspection Schedule

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

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 2A. It should be noted that system redundancy will often allow for equipment maintenance without interrupting operations. 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. It is anticipated that equipment maintenance that cannot be done while the unit is running will be performed on system down days.

2.3.2 North Size Separation Area

Barges will be indexed, dewatered, and unloaded at Unloading Wharf No. 2. Large debris in the barge being unloaded at Unloading Wharf No. 2 that is visible to the unloading operator may be loaded into a truck and transported to the debris staging area within the CMSA. The sediment will be processed through screen decks, log washer, and desanding units to sort out additional debris, gravel, and sand or loaded directly into trucks, subject to the conditions outlined in Section 2.2.1. Captured material from each process will be transferred by dump truck to the CMSAs. The remaining slurry of fine material will be pumped through force mains to the dewatering area. As described above for the south system, oversized debris will be transported to the CMSAs for size reduction.

2.3.2.1 Equipment Overview

A series of screens will be used to separate the coarse oversize fractions from the sand and fine fractions. A log washer will be used to scrub the separated coarse oversize fractions and separate the lighter materials, such as wood and plastic. The sand will be separated from the fines fraction with three desanding units, which consist of an integrated bucket wheel, hydrocyclone cluster, and dewatering screen unit. The fines fraction (silt and clay) will be

discharged from the size separation plant as a slurry and pumped to the dewatering area. The process steps are as follows:

1. The unloader will feed the dredged material from the barge into a hopper.
2. A belt feeder will convey the material into a feed box containing an 8-ft by 24-ft triple deck scalping screen.
3. The oversize from the top deck (greater than 4-inch diameter) will be directed to a bin adjacent to the screen via a chute.
4. The material captured in the second and third decks will be directed to belt conveyors that will take the coarser material to the 6-ft by 20-ft midsize vibratory screen and the finer fraction to the 6-ft by 20-ft fine vibratory screen.
5. The underflow (less than 1/8-inch diameter) from the triple deck screen will be pumped to a 6-ft x 20-ft fine vibratory screen.
6. The overs (1/8-inch to 4-inch diameter) from the midsize and fine vibratory screens will be conveyed to a log washer.
7. The underflow from the midsize and fine vibratory screens will be pumped to one of three desanding units.
8. The log washer will scrub the coarse component of the dredged material to complete the separation of the fines fraction. Additionally, the light material, such as wood and plastic will float in the log washer and be discharged via a dewatering screen. Both of these fractions will be stacked and then loaded into dump trucks for transport to the CMSAs.
9. The underflow from the log washer will be pumped to a desanding unit.
10. In each of the three desanding units, a bucket wheel will filter the sand and discharge it onto a dewatering screen. The water and fines in the sump will be pumped to a cluster of hydrocyclones for additional desanding. The hydrocyclone overflow will be discharged to one of two storage tanks for all three units. The underflow from the hydrocyclones discharges onto the same dewatering screen as the bucket wheel. The dewatered sand is rejected onto a stacking conveyor. The dewatered sand will then be loaded into dump trucks for transport to the CMSAs.
11. The hydrocyclone overflow is either recycled back to the sump under the triple deck screen to act as dilution water or is pumped to the gravity thickener for dewatering.

Material Staging in the North Size Separation Area

At each unit of the size separation process, the solids removed 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. Large debris from barges may be directly unloaded onto trucks for transport to the CMSAs and items larger than the truck bed will be offloaded to the wharf pavement for reduction in size for transport. Stockpiles will be created at the initial scalper screen.

- Material captured by the log washer will be staged for transport to the CMSAs with a radial stacker.
- Material captured by the desanding units will be staged for transport to the CMSAs with a radial stacker.

Mobile equipment supporting the North Size Separation Area are shared with the South Plant as described in Section 2.3.1.2 above.

Oversized material and large debris will be transported to the CMSAs using dump trucks, cycling between the size separation area and the CMSAs so that these materials do not accumulate to the point where operations are impeded. Figure 2-4 depicts this on-site waste transport routing. Drainage from the stockpiles will be captured and conveyed to the waterfront storm water basin (Section 2.6).

2.3.2.2 Instrumentation and Controls

The instruments and controls are organized by equipment component in which the instrument is installed. Field-located sensors transmit data to a master control panel (MCP). 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 after comparison with the programmed settings. The operators can also take manual control of processes and use data received at the MCP to respond to changing conditions.

Screen Decks

The screen deck systems will have a programmable controller to control the speed of the feeder conveyors. The underflow pumps will have a programmable logic controller (PLC) to indentify low-low or high-high levels in the screen deck sumps. The PLC will receive a signal from the hopper level sensors and shut down the pumps under a low-low condition and illuminate a beacon to alert the sediment unloader operator to stop feeding the hopper. A high-high level alarm will shut down the conveyor feed and shut down the pumps feeding the system. This will also activate a beacon to alert the sediment unloader operator to stop feeding the hopper.

Size Separation Storage Tanks

Hydrocyclone Mix Tank Level: The level in the hydrocyclone mix tank will control operation of the force main pumps to the dewatering area.

- A low-low level condition in the tank turns off the feed pumps to the dewatering area.
- A high-level switch/alarm in the mix tank turns off the screen deck pumps and illuminates the beacon to signal the operator to stop loading the hopper.
- High and low pressure sensors are installed in the dewatering area feed lines and will shut down the mix tank pumps and signal an alarm at the dewaterting area.

Size Separation Process Water Storage Tank Level: Level sensors will control the pumping of the feed pumps from the recycle water equalization tank as well as the make-up water pumps to the screen decks, log washer, and desanding units.

- 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 will turn off to prevent overfilling the tank.
- If the level goes below a low-low set-point, the make-up water pumps to the screen decks, log washer, and desanding units will turn off to prevent emptying of the tank.

2.3.2.4 Equipment Inspection and Maintenance

Regular attention will be given to maintenance and inspection of all treatment equipment items. All equipment will be regularly inspected in accordance with the manufacturer recommendations. 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.

Inspection Schedule

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

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 2B. It should be noted that system redundancy will often allow for equipment maintenance without interrupting operations. 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. It is anticipated that equipment maintenance that cannot be done while the unit is running will be performed on system down days.

2.4 PUMPING OF SLURRY TO DEWATERING AREA

Size separation and dewatering activities are located in separate areas at the sediment processing facility. Therefore, hydrocyclone overflow from both the north and south size separation areas will be pumped through force mains to the dewatering equipment for further processing.

2.4.1 Equipment Overview

2.4.1.1 Hydrocyclone Overflow Lift Station

The hydrocyclone lift station at each of the size separation areas consists of a wet well, overflow tank and a trio of centrifugal pumps. The wet well is equipped with mixers.

2.4.1.2 Force Mains

For the south plant, each of the three hydrocyclone 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 Gravity Thickener No. 1. For the north plant, the fines slurry will be conveyed from the hydrocyclone overflow tank to Gravity Thickener No. 2 through a single 18-inch HDPE force main.

The force mains for each size separation area are installed along utility corridors or in pipe chases and are either single- or double-walled, depending on the location along the run. The pipe material of construction will transition to welded carbon steel in chases beneath roadways. Air/vacuum release combination valves along the force mains will relieve pressure or vacuum build-up in the mains.

Water from the recycle water equalization tank to the size separation process water storage tanks, as discussed in Sections 2.3.1.2 and 2.3.2.2, will be pumped through separate 14-inch force mains. These force mains for recycle water are also equipped with air/vacuum release valves. Equipment for pumping water from the recycle water equalization tanks through these force mains is discussed separately in Section 2.5.

2.4.2 Process and Operations Description

The three discharge pumps that convey the mixture from the hydrocyclone overflow tanks in each size separation area to the dewatering area are equipped with variable speed drives.

2.4.3 Instruments and Controls

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

- A high-level condition in the wet well will shut off the hydrocyclone 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 prevent the wet well from running dry. This condition 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.

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 hydrocyclone overflow wet well mixers and the wet well discharge pumps. Inspection, maintenance, and lubrication schedules and procedures are 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 provide equipment inspection requirements. A generalized inspection schedule is provided in Attachment 3. This inspection schedule also includes the force mains

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. If necessary, the three lift station pumps for each of the two size separation areas 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 hydrocyclone overflow will be dewatered to produce a solid cake (with no free liquid) so it can be disposed off-site. Initial 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 remove 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 Thickeners

Two, above-ground, gravity thickening units (Gravity Thicker No. 1 (South Thickener) and Gravity Thicker No. 2 (North Thickener)) will provide for settling of fine sediment. The gravity thickening units consist 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. Each gravity thickener has a separate influent feed line from the size separation area. A static mixer is installed in each influent feed line. In addition, the north gravity thickener has a flocculation tank and a mechanical mixer installed before the influent point.

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:

- Flocculant
  - Neat polymer bulk storage tanks with top entry mixer
  - Polymer make-up units with metering pump
- Coagulant
  - Neat polymer bulk storage tanks
  - 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 incorporates an electric/ hydraulic opening and closing system, automatic plate shifter, filter cloth wash systems, and appropriate safety interlock systems. The filter press plates have a center feed, four-corner discharge, recessed chamber, and non-gasketed polypropylene with polypropylene-fabric filter cloths. The filter presses have a blow-down using a compressed air system. A bomb bay door

attached under each press will deflect dewatered solids to a 40-cy roll off container installed on a rail 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.

Filter cake will exit the process at the filter presses in the dewatering building. The filter cake will drop from the elevated presses into dedicated 40 cy roll-off containers. Each container will be indexed to accept the dropped cake. The roll-off containers will be moved underneath the press with an indexing system. If the filter cake has no free liquid, it will be conveyed by roll-off trucks to the filter cake staging enclosures, where the material will be unloaded, as described in the 2013 TDP. Once the material is dumped, the roll-off trucks will return the empty rolloff containers to the indexing system where the containers will be repositioned under the filter press to receive the next load. Figure 2-4 depicts this on-site filter cake routing.

2.5.1.4 Recycle Water Collection Pumping Station

Water recovered during the dewatering processes will be collected in the recycle water collection wet well from Gravity Thickener No. 1 and the filter press operations. 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. Water from Gravity Thickener No. 2 will be collected in a frac tank and pumped by a three pump system to the recycle water equalization tank.

2.5.1.5 Recycle Water Equalization Tank

The recycle water equalization tank is a 750,000-gallon 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 Thickeners

The two gravity thickeners (Gravity Thicker No. 1 (South Thickener) and Gravity Thicker No. 2 (North thickener)) will process hydrocyclone overflow slurry, and underflow from the water treatment clarifiers (Section 2.6). Flocculent and coagulant polymers will be injected into the gravity thickener feed line to enhance particle agglomeration. A separate static mixer installed downstream of each gravity thickener of all polymer injection points will enhance homogenization of all process flows and polymer. Gravity Thickener No. 2 also has a flocculation tank with a mechanical mixer at its' influent point to enhance polymer mixing. 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 tanks will also deflect solids toward the bottom of the tanks. Upflow current deflection baffles will enhance mixing and enhance the deflection of solids to the bottom of the tanks. The bottom of the tanks are 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 lines through injection rings. The static mixers located in the thickener feed line downstream of the polymer injection points will enhance the distribution of the polymer blends into each thickener's influent stream. At Gravity Thickener No. 2 the chemical metering pumps introduce the blended polymers to the influent flocculation tank and the mechanical mixer. Blended coagulant polymer may also be injected into the thickened slurry discharge from the gravity thickeners.

Neat polymer will be received from supply trucks. Polymer will be pumped from the transfer station through 2- and 3-inch-diameter polymer fill lines to the neat polymer bulk storage tanks.

2.5.2.3 Filter Presses

The 12 filter presses are housed 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 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 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

For Gravity Thickener No. 1, the recycle water collection pumping station wet well will receive gravity thickener overflow from Gravity Thickener No. 1 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.

For Gravity Thickener No. 2 a frac tank will receive the gravity thickener No. 2 overflow. Similar to Gravity Thickener No. 1, three centrifugal pumps dedicated to Gravity Thickener No. 2 will move water collected in the frac tank to the recycle water equalization tank.

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 process water storage 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 four centrifugal pumps will furnish water from the recycle water equalization tank to the two size separation process water storage tanks in the size separation area. These pumps will also run at variable speed in proportion to the level in the respective size separation process storage tanks. 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 Thickeners

Feed Flow: Flow rate and solids concentration will be measured by sensors installed in the force main feed line. 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 hydrocyclone 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 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 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 hydrocyclone 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 two size separation process water storage tanks 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 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 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 thickeners 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 is 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 2 RAM QAPP.

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 Exclusion Zone (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 60,000-gallon storm water equalization 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. Pumps will convey water to each of the two parallel process water treatment trains, drawing through separate suction lines.

2.6.1.3 Water Treatment Unit Processes

Process and storm water will be treated through a series of unit processes. Theseinclude 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 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. Another duplex pump arrangement 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, dust control, 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.

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 treated 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 thickeners.

Additional water treatment capacity has been added for 2013 to increase the volume of water available on-site for filter press cloth washing, polymer dilution water, and the seal water system for on-site pumps. The additional water treatment will target removal of solids greater than 10 micron and will consist of filtration using a multimedia filter followed by a bag filter. Since the treated water is consumed by on-site processes it will not require treatment for removal of PCBs. The recycle water equalization tank will provide the water source for the additional water treatment equipment and the effluent will be discharge directly into existing piping already providing plant water in the dewatering area. For equalization purposes, treated water will be stored in a 21,000 gallon frac tank and discharged as needed for filter press cloth washing, polymer dilution water, or pump seal water.

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:

- 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 alarm the operator to 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. 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 pump and the multi-media and/or GAC vessels will be backwashed or the bag filters will be replaced. 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 contain the relevant, detailed information on inspections and scheduled maintenance.

2.6.4.1 Inspection Schedule

The equipment manufacturers' O&M manuals 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 has crossover lines that, if necessary, balance the flow to the three treatment trains. 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 scheduled system down time each week, although storm water will be treated 7 days per week, if needed.

2.7 PUMP SEAL WATER SYSTEM

A seal water system supplies the size separation area, dewatering and water treatment pumps. The discharge pressure at the seal water connection for each operating pump has 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 provide sufficient holding capacity to operate the system. Water from the backwash holding tank or the additional water treatment system (if constructed) will be used to supply the water for the seal water system.

2.8 STAGING AREA OPERATIONS

Staging area operations, including processed TSCA/Non-TSCA material management and monitoring, air handling system operation, oversize material staging, and rail car loading and operations, are discussed in detail in the 2013 TDP.

2.9 RAIL YARD OPERATIONS AND MAINTENANCE

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 by the PFOC 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 2013 TDP.

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 inspection 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-startup 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, 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 RYOC will report any observed deficiencies on Track #1 to the CM, and if necessary, the CM will coordinate with CPR. 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 each 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.

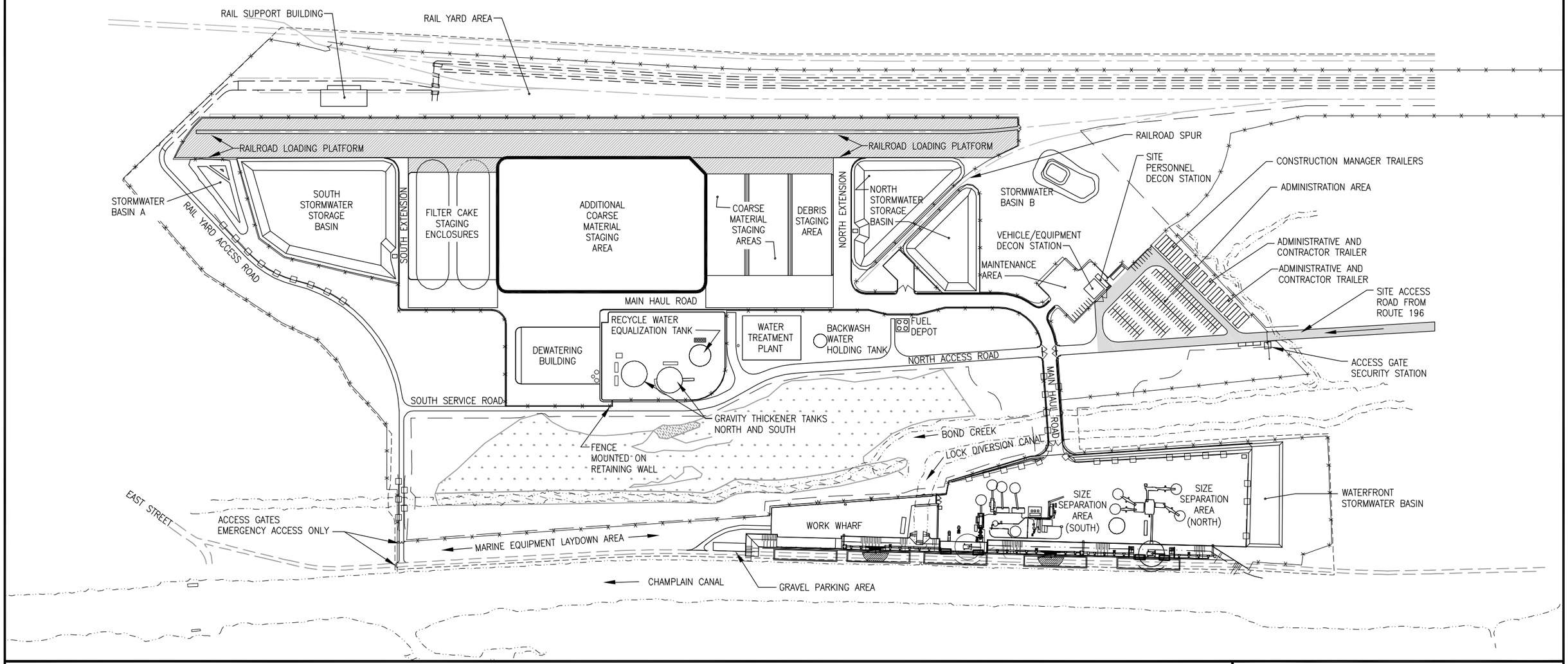
2.9.3 Adjacent Work Areas

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 annually. 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 performed in accordance with Section 13900, Part 3.01.A of the Contract 60 Specifications.



NOTES:

1. BASE MAP INFORMATION SUPPLIED BY ARCADIS AND SHAW.
2. ADDITIONAL COARSE MATERIAL STAGING AREA AND SECOND GRAVITY THICKENER TANK (NORTH) WERE CONSTRUCTED IN 2011 AND 2012.
3. SIZE SEPARATION AREA (NORTH) WAS CONSTRUCTED IN 2012.

300 150 0 300

SCALE: 1" = 300'

LEGEND:

- GUIDE RAIL
- SITE PERIMETER FENCE
- FORESTED AREA
- EMERGENT WETLANDS
- SITE ACCESS ROAD FROM ROUTE 196
- RAILROAD LOADING PLATFORM

FIGURE 2-1

GENERAL ELECTRIC COMPANY
HUDSON RIVER PCBs SUPERFUND SITE
FACILITY OPERATIONS & MAINTENANCE PLAN

PROCESSING FACILITY SITE PLAN
(PROCESSING & RAIL YARD FACILITY)

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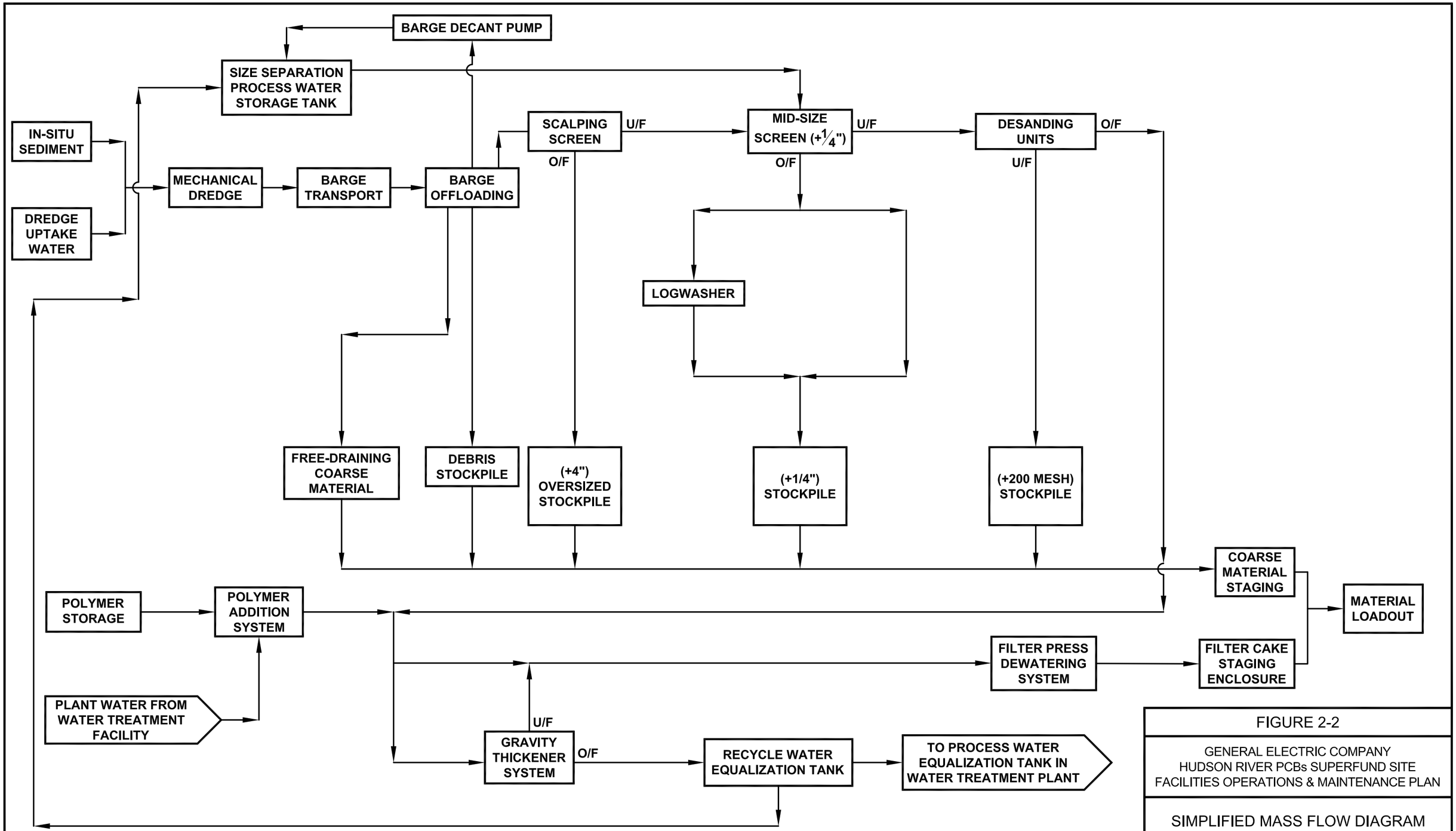

FIGURE 2-2

GENERAL ELECTRIC COMPANY
HUDSON RIVER PCBs SUPERFUND SITE
FACILITIES OPERATIONS & MAINTENANCE PLAN

SIMPLIFIED MASS FLOW DIAGRAM

SOURCE: INFORMATION SUPPLIED BY SHAW.

NOTES: 1. U/F = UNDERFLOW
2. O/F = OVERFLOW

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PLOT DATE: 3/15/2013 12:01 PM PLOTTED BY: GOLDTHWAIT, JAMES

NORTH ACCESS ROAD

NORTH TOWER 2 FOR NORTH SIZE SEPARATION BARGE INDEX SYSTEM

MATERIAL PILE (TYP)

SEDIMENT SLURRY MIXING TANK

SIZE SEPARATION AREA (SOUTH)

ACCESS CATWALK

LOG WASHER

SOUTH TOWER 2 FOR NORTH SIZE SEPARATION BARGE INDEX SYSTEM

SIZE SEPARATION AREA (NORTH)

WATERFRONT STORMWATER BASIN

WATER STORAGE TANK

TROMMEL

MATERIAL PILE (TYP)

MARINE UNLOADING ARM FITTED WITH SUBMERSIBLE PUMP TO DECANT BARGE WATER

WINCH PLATFORM

WOBBLER

NORTH TOWER

FRAC TANK

WORK WHARF

UNLOADING WHARF 1

WATER STORAGE TANK

CONVEYOR

ACCESS CATWALK

CONVEYOR

PIPING MANIFOLD

WINCH PLATFORM

UNLOADING WHARF 2

WINCH PLATFORM

ACCESS CATWALK

NORTH TOWER 2 FOR NORTH SIZE SEPARATION BARGE INDEX SYSTEM

GRAVEL PARKING AREA

SOUTH TOWER FOR SOUTH SIZE SEPARATION AREA BARGE INDEX SYSTEM

PIPING MANIFOLD

SPILL SHIELD

SEDIMENT UNLOADER (SOUTH)

SPILL PAN

SPILL SHIELD

BARGE INDEX (HAUL) SYSTEM

WINCH PLATFORM

SPILL SHIELD

SPILL PAN

SEDIMENT UNLOADER (NORTH)

SPILL SHIELD

SPILL PAN

CHAMPLAIN CANAL

(DOUBLE WALL HDPE EXCULSION ZONE) PIPE MANIFOLD OUTSIDE OF EXCLUSION ZONE)

MARINE UNLOADING ARM FITTED WITH SUBMERSIBLE PUMP TO DECANT BARGE WATER

STATION P1

STATION P3

STATION P5

STATION P7

STATION P9

SOURCE:

BASE MAP INFORMATION SUPPLIED BY ARCADIS AND SHAW.

120 60 0 120

SCALE: 1" = 120'

LEGEND:

UNLOADING MACHINE WORKING DISTANCE

UNLOADING MACHINE OUTER MAXIMUM DISTANCE

GUIDE RAIL

SITE PERIMETER FENCE

BARGE

FIGURE 2-3

GENERAL ELECTRIC COMPANY
HUDSON RIVER PCBs SUPERFUND SITE
FACILITIES OPERATIONS & MAINTENANCE PLAN

BARGE UNLOADING SEQUENCE AND LAYOUT

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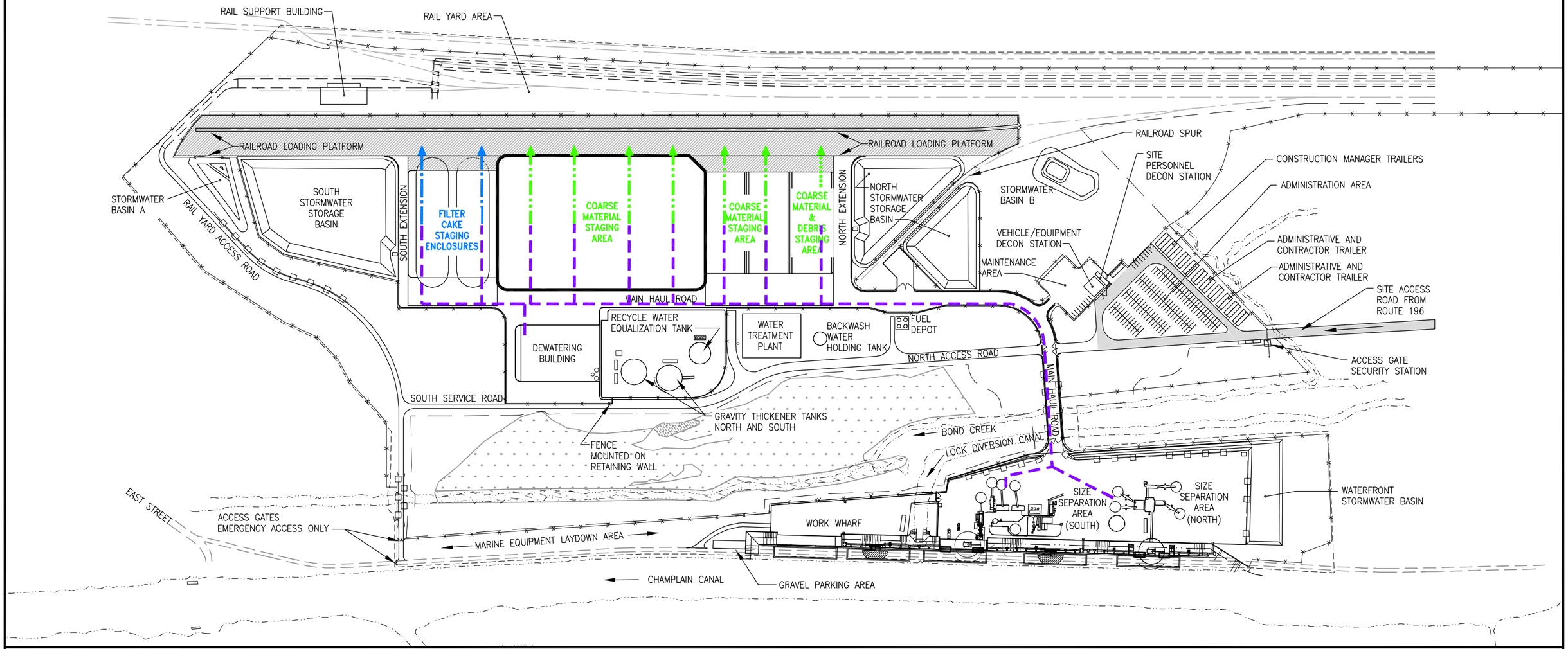

NOTES:

1. BASE MAP INFORMATION SUPPLIED BY ARCADIS AND SHAW.
2. ADDITIONAL COARSE MATERIAL STAGING AREA AND SECOND GRAVITY THICKENER TANK (NORTH) WERE CONSTRUCTED IN 2011.
3. SIZE SEPARATION AREA (NORTH) WAS CONSTRUCTED IN 2012.
4. FILTER CAKE STAGING ENCLOSURES AND COARSE MATERIAL STAGING AREAS ARE MANAGED AS BOTH TSCA AND NON-TSCA AREAS. REFER TO SECTION 2.1.

- MATERIAL TRANSPORT TO STAGING AREAS & FILTER CAKE STAGING ENCLOSURES
- COARSE MATERIAL LOADING TO RAIL YARD PLATFORM
- COARSE MATERIAL & DEBRIS LOADING TO RAIL YARD PLATFORM
- FILTER CAKE LOADING TO RAIL YARD PLATFORM

LEGEND:

- GUIDE RAIL
- SITE PERIMETER FENCE
- FORESTED AREA
- EMERGENT WETLANDS
- SITE ACCESS ROAD FROM ROUTE 196
- RAILROAD LOADING PLATFORM

300 150 0 300

SCALE: 1" = 300'

FIGURE 2-4

GENERAL ELECTRIC COMPANY
HUDSON RIVER PCBs SUPERFUND SITE
FACILITIES OPERATIONS & MAINTENANCE PLAN

ON-SITE MATERIAL TRANSPORT ROUTES (PROCESSING & RAIL YARD FACILITY)

PARSONS
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FILE NAME: P:\GE HUDSON RIVER\442209 PHASE 2\09.0 REFERENCE DOCUMENTS\9.6 RAWP-2 CAD DWGS\442209-PFSP-FIGURES-2013.DWG
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SECTION 3

OPERATIONS SCHEDULE

This section provides an overview of the general stages of 2013 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 2013 dredging and facility operations is contained in the 2013 RAWP.

3.1 OVERVIEW

2013 facility operations will be conducted by the PFOC. 2013 facility operations will consist of the following stages:

- Mobilization Stage, during which the PFOC will reassemble all winterized processing facility systems. In addition the PFOC will perform necessary functional tests as required by the specifications;
- 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 re-commissioning and into full-scale sediment processing. The PFOC will commence start-up and re-commissioning by reviewing the O&M manuals for the equipment, preparing a start-up plan, and training the plant operators.

For start-up and re-commissioning of the processing facility, the PFOC will conduct a functional test of each unit, then perform a wet test that will consist of running water (either

storm water or canal water) through the plant to check pump capacities, check for leaks at pipe joints, and test the instrumentation and control systems.

3.2.1 Reassembly of the Processing Plant

The PFOC will take the necessary actions to restore the processing facility to operational condition. These activities will include:

- Restoring and testing the disconnected sections of carbon steel piping at the size separation area;
- Reinstalling and testing the removed pressure gauges at the Size Separation area;
- Reconnecting and testing the Seal Water system at the Size Separation Area;
- Returning the Force Main Pumps and Motors to their pads in the hydrocyclone Overflow Pit and reconnecting electrical and control wiring;
- Returning the Density Meter sources to the "operating" positions at the Size Separation Area;
- Reinstalling and testing the cyclones and installing new screens where needed on the desanding units;
- Reinstalling and testing the Force Main Spool pieces beneath the 4-way intersection;
- Reconnecting and testing the Force Main piping and components at the Dewatering Facility;
- Reconnecting and testing the Seal Water system at the Dewatering Area;
- Restoring and testing the Plant Water system at the Dewatering Area;
- Reinstalling and testing the Polymer Quills and reconnect disconnected Polymer System components;
- Returning the Density Meters to sources to the "operating" positions at the Dewatering Area;
- Reinstalling and testing the OIT screens, Battery, and Safety Relays at each Filter Press; and
- Reinstalling and testing the removed pressure gauges at the Dewatering area.

3.2.2 Facility Start Up and Commissioning

The PFOC will start-up and test each major piece of equipment at the South and North size separation areas. Start-up and Commissioning activities, including pre-functional checklists and valve line up checks, will be incorporated into the construction schedule. All activities of the pre-functional inspection will be documented by the PFOC on the individual component checklist, signed by the PFOC inspector overseeing the test and by the CM inspector witnessing the test. Deficiencies, non-conformance, and any notes corresponding to the equipment during

the pre-functional inspection and startup will be documented in the "remarks" section of the checklist. All repairs and or corrective action required to correct any deficiencies observed will also be tracked and documented on the checklist.

The testing and commissioning will commence in a logical system by system sequence. The overall method will be to perform the Pre-Functional Checklists and the necessary Valve Line-up Checklists. Each component will then be tested by intermittently running to ensure proper starting, pump rotations, and signals to the supervisory control and data acquisition (SCADA) system. Each system will be operated in manual and then via the SCADA system or other remote operation stations as applicable. System and subsystem start-up procedures will be governed by the Standard Operating Procedures (SOPs) for each component, system and subsystem. After completion of the pre-functional testing of components, each system will be operated to ensure complete system operability using water.

Once the equipment and systems are assured of electrically starting, a wet test will be performed. This wet test will be initiated by adding a sufficient volume of water into the Recycle Water Equalization Tank, then transferring this water to the Size Separation Process Equalization Tanks for the South and North processing trains using the installed Recycle Equalization Tank Pumps. Alternatively, water may be obtained from the Champlain Canal to fill the size separation process equalization tank. With sufficient water in the Size Separation Process tank each component at the South and North wharf will be operated with process water. This will include the south processing system: providing spray and flush water to the trommel; rotating the trommel barrel; operating the Intermediate Shaker unit screens and conveyor; transferring water from the Intermediate Shaker Unit to the Sediment Slurry Tank and simulating dilution of this tank by adding water from the Size Separation Process Tank, transferring water from the Sediment Slurry Tank to each hydrocyclone unit and operating their shaker screens and conveyors; and operating the Trommel Feed system. As this is occurring, the South Size Separation Process system will be placed into recirculation mode. This will provide sufficient operating time to test each component within the system and the system as a whole. Wet test operations for the North processing system will consist of the following: providing spray and underflow water to the screen decks, starting the screen operation and conveyors; operating the logwash spray bars, underflow pumps, paddle assemblies, and conveyors; transfer the underflow from the screen decks and the logwash to the desanding units and operate the bucket wheels, hydrocyclones, pumps, and conveyors. The wet test will be performed for a sufficient operating time to test each component within the system and the system as a whole. Once the applicable component and system data are obtained and any necessary adjustments made to the system, the water will then be transferred from the south and north processing trains to their respective gravity thickeners using the system pumps. Each filter press system, including the filter press feed pumps, the cloth washing systems, recycle (filtrate) water collection, recycle water wet well pump station, and blow down systems will be operated and tested. System performance testing and indications of such parameters as high and low alarms and interlock features that will not be

tested within the scope of the wet test methods, but will be tested, analyzed, and adjusted by manipulation of system inputs within the SCADA system.

3.3 MANPOWER REQUIREMENTS DURING FULL-SCALE OPERATIONS

Operations will commence when the Dredging Contractor delivers the first barge load of dredged material. For the first two weeks (or less as determined by the CM), barge unloading and sediment processing will occur during a 12-hour single shift. During this time system optimization will occur. After the second week of single shift operations, or as determined by the CM, full-scale sediment processing operations will commence on a 24-hour per day, Monday through Saturday period. 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 approximately 45 to 70 personnel per shift during 2013 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 dredging operations. A third shift will overlap both the first and second shifts for certain functions, such as mechanics and electricians, in order to support both the day and night plant operations shifts and for rail car loading.

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 2013 Full-Scale Operational Manpower Projections.

General Labor Category	First Shift	Second Shift	Third Shift
Management & Administration[1]	20	7	--
Sediment Unloading	5	5	--
Size Separation	15	15	2
Thickening and Dewatering	9	9	1
Water Treatment	2	2	--
Staging Area	1	1	--
Rail Car Loading	0	0	13
Health and Safety & QC	5	4	--
Maintenance & Site Operations Support	9	8	9

Note:

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 2013 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 equipment maintenance when dredging is not occurring. 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 delay to dredging operations. If a piece of equipment ceases to operate properly, the equipment manufacturer will immediately be contacted if on-site mechanics are unable to diagnose the problem. 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 2013 facility operations is listed in Table 4-1.

Table 4-1 List of Critical Spares

Equipment Item	Description
South Size Separation Area	
Trommel Feeder Equipment	Drive sprockets
	Return rollers
	Top carry rollers
	42-inch standard pan with bolts
	Tail wheel
	Wobbler bearings
	Scrapers
	Drag conveyor chain
Trommel Screen	Spray pipe assembly
	Drive chain links
	Two screen sections
Sediment Slurry Tank	Mixer motor
Hydrocyclone system	48 screen panels
	One recirculation pump 6 spare hydrocyclone cone-apex
Intermediate Screen and pump	4 Spare screen panels
North Size Separation Area	
Logwasher	Motor
	Filter
	Pump
	Disc return Roller
Feeder Belt	Gearbox
	Motor
	Impact Roller
	belt scraper
Desanding Units	Dewatering screens
	Hydraulic Pump
	Electric Motor
	Vibrating Motor
Conveyors	Bearings
	Troughing Sets
	Return Rollers
	Motor

Table 4-1 List of Critical Spares (continued)

Equipment Item	Description
North Size Separation Area (continued)	
Double & Triple Deck Screens	Finger Deck
	Timing Belt
	Springs
	Liners
Dewatering Area	
Polymer Feed System	Mix chamber mechanical seal
	MU pump assembly
	Mix chamber O-rings
Filter Press System	Filter press plates
	Filter cloths
Container Handling Mechanisms	Anchor shackle, turnbuckle, proximity switch, sprocket & gear box
	Variable frequency drive
	Double flange wheel idler
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
Storm water basin lift stations	Electronic controller
	Air bubbler component
	Seal kit

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 north and south Size Separation Areas, Main Haul Road, Maintenance Area, Dewatering Area (including the Dewatering Building, Gravity Thickener Tanks 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).
- 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 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 and equipment 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 Lay-down 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 2013 RA HASP (Parsons, 2013), develop site-specific health and safety protocols, and implement elements of health and safety planning into everyday operations.

The 2013 RA HASP 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).

Two Site Safety Representatives (SSRs) will be on site at all times during sediment processing operations, and at least one SSR will be 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 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 that 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 2013 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.

The Main Haul Road is considered to be within the EZ and the portion of it at the intersection with the North Access Road will be washed before the gates are opened to permit vehicles to cross the Main Haul Road. When these gates are open, access will be controlled 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 2013 RA HASP 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 2013 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 5-1 describes, for the materials and types of equipment and structures to be used in 2013 operations, 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 2013 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 5-1 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.D.

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, spill plate(s) between the moored barge 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(s) 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 a spill plate, which will control incidental spills from the bucket. Spill plates may be provided for moving equipment, such as pumps, hoses, and a skid steer into and out of barges. Other spill preventive measures at the wharf include the following:
  - Workers will wash or change their protective boot covers before accessing the grated catwalks that have been constructed over the water; and,
  - Hoses that may be used for pumping water out of barges will have secondary containment.
  - Splash shields will be installed if the operation of the sediment unloader, front-end loaders, or dump trucks has the potential to cause wet sediment or puddled storm water to enter the Canal.
- In most locations within the EZ, contaminated water or sediments will be contained on pavement with an underliner. 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 hydrocyclone overflow wet well (south 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 building 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 has been 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. The polymer will be pumped from the polymer transfer station through 2- or 3-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, has 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 has been 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.

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 has been prepared. This SPCC Plan meets the applicable requirements of 6 NYCRR Parts 611 through 614 and 40 CFR Parts 110 and 112. It establishes overall spill prevention and contingency measures for various potential types of POL spills resulting from all site contractor activities. The site-wide SPCC Plan has been 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. 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 30 and Contract 60 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 and Attachment A of the 2013 RA HASP and will be included in Attachment 1 of the 2013 CHASP.

5.5 CONTRACTOR NOISE AND LIGHTING MONITORING

GE will separately contract for monitoring of the QoLPS parameters, including airborne PCBs, opacity, odors, noise, and light, to assess achievement of the criteria set forth in those standards. Methods for such monitoring will be described in detail in the 2013 RAM QAPP, 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 2013 PSCP and the 2013 CHASP.

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.

5.6 FILTER CAKE ENCLOSURES – VAPOR-PHASE GAC EVALUATION

Dewatered filter cake generated during dredging and processing operations is staged in two Filter Cake Enclosures at the Sediment Processing Facility prior to being loaded into railcars for offsite transport and disposal. Five vapor-phase granular activated carbon (VPGAC) adsorption units were installed to control PCB emissions from each of the enclosures during the staging of the dredged sediments. Each adsorption unit contains approximately 20,000 pounds of VPGAC (i.e., 100,000 pounds of VPGAC for each enclosure structure) and is connected to the enclosure by ductwork and a 10,000 cubic feet per minute (CFM) blower. Each enclosure system is designed to capture at least 98 percent of the air volume inside the Filter Cake Enclosure with the doors open.

An evaluation was performed to assess the remaining capacity of the adsorption units by comparing PCB mass loading estimates with the available capacity of the VPGAC. The PCB mass loading estimates were calculated based on 24-hour PCB air sampling data collected as part of five sampling events inside each Filter Cake Enclosure between July 2011 and November 2011. The PCB loading estimates assumed that each blower was operated at full capacity (i.e., 10,240 CFM) while dewatered sediments were staged in the enclosures (i.e., conservatively assumed to be between the start of dredging and the end of the calendar year for the 2009, 2011, and 2012 dredging seasons and for more than 300 days during 2010 when for a period of time, the Phase 1 dredged materials were staged prior to offsite transport and disposal). The available capacity of the VPGAC was estimated based on PCB isotherm information provided by the

VPGAC manufacturer (Calgon). In addition, a conservative assumption related to the amount of relative humidity inside the filter cake enclosures (assumed to be 100 percent) and a safety factor (assumed to be 25 percent), which reduce the assumed effectiveness of the VPGAC, were used in the calculations.

Based on PCB mass loading estimates calculated using the highest PCB concentration detected inside the Filter Cake Enclosures and conservative assumptions used to develop the PCB mass loading and available VPGAC capacity estimates, the PCB loading analysis indicates that less than 5 percent of the available VPGAC mass has been consumed through the project to date (i.e., 2009 through 2012). This analysis indicates that the VPGAC units will be capable of remaining effective for the duration of the project without needing replacement. The results of the evaluation confirm design expectations. In addition, the CFM for each blower will be tested in the field at the start of the season to confirm that the blowers are operating at the assumed rates in order to ensure the system continues to meet the required capture rates.

Table 5-1 Structures and Equipment Decontamination Procedures

1	2	3	4	5	6
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 enclosures, water treatment bldg, dewatering bldg)	Power Wash (or equivalent 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 treatment bldg, dewatering bldg). Steel members - filter cake staging enclosures, container handling mechanisms. Gravity Thickener, Filter Press System	Power Wash (or equivalent 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 equivalent 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 equivalent method of surface cleaning)	None	N/A	Unrestricted use; distribution in commerce
Vessels	Barges, Scows	Power Wash (or equivalent 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 equivalent method of surface cleaning)	None	N/A	Unrestricted use; distribution in commerce
Containers	Sediment slurry tank, Granular activated carbon vessels, above grade storage tanks	Rinse (including with cleaners that do not contain organic solvents)	None	N/A	Unrestricted use; distribution in commerce

Notes:

1. 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.

2. Rail cars before being released from the project must be inspected pursuant to the "Empty Rail Car Inspection and Release Procedure" (Transportation and Disposal Plan, Attachment C).

3. These decontamination procedures do not apply to structures, equipment and vessels being cleaned for continued service on the GE Hudson River Project for handling of non-TSCA sediments. These cleaning procedures are presented in the *Transportation and Disposal Plan.*

SECTION 6

DECOMMISSIONING AND OFF-SEASON OPERATIONS

This section covers procedures for shutting down operations at the sediment processing facility at the end of the 2013 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 completion of 2013 operations.

6.1 OVERVIEW

Upon the completion of 2013 facility 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 2013 Facility O&M Plan, the off-season includes the winter after the completion of 2013 dredging and facility operations and the following spring until start-up of operations for the 2013 season. 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. 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 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 2013 processing season, the PFOC will decommission facility operations. These activities will include:

- Emptying process and water lines;
- Emptying tanks;
- Washing roadways and CMSAs with water truck;

- Decontaminating certain process and support equipment that will be removed from the site;
- Locking out and tagging any sources of energy that are not required for off-season operations, and
- Winterizing the processing facility.

The facility decommissioning will take place over a four-week period.

6.2.2 Rail Yard

Winterization of the rail yard (buildings, switches, scale, etc.) will be conducted in accordance with Section 13900 of the Contract 60 specifications. Specifically:

- All equipment in rail yard, including switches, will be 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.
- All equipment in the weigh-in-motion scale will be turned off and desiccant packs placed inside controllers.

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. A staff of 2 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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ATTACHMENTS

Attachment 1A
Equipment Inspection Schedule – South Size Separation Area

Equipment Item	Inspection Required	Frequency
TROMMEL FEEDER SYSTEM		
Wobbler	Wobbler Individual Roller Alignment	Daily
	Bearings	Daily
	Automatic Lubricating System	Daily
Apron Feeder System	Conveyor Chain	Daily
	Bearings	Daily
	Conveyor Drive Gearbox	Daily
TROMMEL SCREEN EQUIPMENT		
Trommel Barrel	Hydraulic Lift Jacks on each Side are not deployed	Daily
	Visual Confirmation – interior of barrel	Daily
	Trommel Spray Water System – Barrel interior	Daily
+5/8-inch Conveyor	Drive System	Daily
	Rollers	Daily
	Conveyor Belt	Daily
	Gear Case	Daily
	Guards	Daily
	Bearings	Daily
	Discharge Chute from Trommel Barrel	Daily
	E-Stop System	Daily
Underflow Pumps	Shaft Couplers/Belt and Sheave	Daily
	Bearing/Seal Waters	Daily
	Discharge Pressures	Daily
INTERMEDIATE SCREEN EQUIPMENT		
Intermediate Screen Tank	High and Low Level Alarms	Daily
	Valves/Flanges/Piping	Daily
	Walkways	Daily
	Handrails	Daily
Intermediate Screen Tank Mixers	Gear Case Fluids	Daily
	Shaft Couplers	Daily
	Shaft Flange Lugs	Daily
	Shaft Seals	Daily
	Coupler Guards	Daily
	Bearings	Daily
Vibrator Screens	Screen Wear	Daily
	Screen Supports	Daily
	Springs	Daily
	Vibrator Motor Bolts	Daily

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

Equipment Item	Inspection Required	Frequency
INTERMEDIATE SCREEN SYSTEM (continued)		
	Screen Tension Lugs	Daily
	Bearings	Daily
Conveyor	Rollers	Daily
	Driver Motor and Chain	Daily
	Gear Box	Daily
	E-Stop System	Daily
Underflow Pumps	Shaft Couplers/Belt and Sheave	Daily
	Bearings/Seal Water	Daily
	Discharge Pressures	Daily
HYDROCYCLONES		
Hydrocyclones	Cones	Daily
	Pressure Gauges	Daily
Vibratory Dewatering Screens	Screens	Daily
	Springs	Daily
	Screen Supports	Daily
	Screen Tension Legs	Daily
	Vibrator Motor Bolts	Daily
	Bearings	Daily
Conveyors	Drive System	Daily
	Rollers	Daily
	Belts	Daily
	Gear Case	Daily
	E-Stop System	Daily
Recycle Pumps	Gear Case Lube	Daily
	Bearings / Seal Water	Daily
	Shaft Couplers/Belt and Sheave	Daily
	Guards	Daily
Feed Pumps	Gear Case Lube	Daily
	Bearings / Seal Water	Daily
	Shaft Couplers / Belt and Sheave	Daily
	Guards	Daily
Hydrocyclone Control Room	Recirculation Pump Variable Frequency Driver (VFD) Settings	Daily

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

Equipment Item	Inspection Required	Frequency
HYDROCYCLONES (continued)		
Hydrocyclone Control Room	Conveyor VFD Settings	Daily
	Control Room Exhaust and Cooling	Daily
	Control Room Doors Closed During Operations	Daily
TANKS AND ACCESSORIES		
Trommel Screen Make-up Water Feed Pumps (1-active / 1-Spare)	Gear Case Lube	Daily
	Bearings / Seal Water	Daily
	Shaft Couplers / Belt and Sheave	Daily
	Guards	Daily
	Discharge Pressures	Daily
Sediment Slurry Tank Make-up Water Feed Pumps (1-active / 1-Spare)	Gear Case Lube	Daily
	Bearings/ Seal Water	Daily
	Shaft Couplers/ Belt and Sheave	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 1B
Equipment Inspection Schedule – North Size Separation Area

Equipment Item	Inspection Required	Frequency
TRIPLE DECK SCREEN EQUIPMENT		
Screen Deck	Screen Wear	Daily
	Screen Supports	Daily
	Springs	Daily
	Vibrator Motor Bolts	Daily
	Spray bars	Daily
	Walkways	Daily
	Handrails	Daily
Conveyors	Drive System	Daily
	Rollers	Daily
	Conveyor Belt	Daily
	Gear Case	Daily
	Guards	Daily
	Bearings	Daily
	Discharge Chute from Trommel Barrel	Daily
	E-Stop System	Daily
Underflow Pumps	Shaft Couplers/Belt and Sheave	Daily
	Bearing/Seal Waters	Daily
	Discharge Pressures	Daily
DOUBLE DECK SCREEN EQUIPMENT		
Screen Deck	Screen Wear	Daily
	Screen Supports	Daily
	Springs	Daily
	Vibrator Motor Bolts	Daily
	Spray Bars	Daily
	Walkways	Daily
	Handrails	Daily
Conveyors	Drive System	Daily
	Rollers	Daily
	Conveyor Belt	Daily
	Gear Case	Daily
	Guards	Daily
	Bearings	Daily
	Discharge Chute from Trommel Barrel	Daily
	E-Stop System	Daily
Underflow Pumps	Shaft Couplers/Belt and Sheave	Daily
	Bearing/Seal Waters	Daily
	Discharge Pressures	Daily
LOG WASHER		
Screen Deck	Conveyor Paddles	Daily

Attachment 1B

(continued)
Equipment Inspection Schedule – North Size Separation Area

Equipment Item	Inspection Required	Frequency
LOG WASHER (continued)		
Screen Deck	Paddle Supports	Daily
	Paddle motor	Daily
	Walkways	Daily
	Handrails	Daily
Conveyors	Drive System	Daily
	Rollers	Daily
	Belts	Daily
	Gear Case	Daily
	E-Stop System	Daily
Feed Pumps	Gear Case Lube	Daily
	Bearings / Seal Water	Daily
	Shaft Couplers / Belt and Sheave	Daily
	Guards	Daily
DESANDING UNITS		
Vibratory Dewatering Screens	Screens	Daily
	Springs	Daily
	Screen Supports	Daily
	Screen Tension Legs	Daily
	Vibrator Motor Bolts	Daily
	Spray Bars	Daily
	Bearings	Daily
Conveyors	Drive System	Daily
	Rollers	Daily
	Belts	Daily
	Gear Case	Daily
	E-Stop System	Daily
Wheel Motors	Gear Case	Daily
	Guards	Daily
	Bearings	Daily
	Drive System	Daily
Feed Pumps	Gear Case Lube	Daily
	Bearings / Seal Water	Daily
	Shaft Couplers / Belt and Sheave	Daily
	Guards	Daily

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

Equipment Item	Inspection Required	Frequency
DESANDING UNITS (continued)		
Bucket Wheel	Wheel VFD Settings	Daily
	Ladder and walkway	Daily
	Buckets	Daily
TANKS AND ACCESSORIES		
Screen Deck Make-up Water Feed Pumps (1-lead / 1-lag)	Gear Case Lube	Daily
	Bearings / Seal Water	Daily
	Shaft Couplers / Belt and Sheave	Daily
	Guards	Daily
	Discharge Pressures	Daily
Logwash Water Feed Pumps (1-lead / 1-lag)	Gear Case Lube	Daily
	Bearings/ Seal Water	Daily
	Shaft Couplers/ Belt and Sheave	Daily
	Guards	Daily
	Discharge Pressures	Daily
Hydrocyclone Overflow 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
Triple and Double Deck Screen Tanks	High Level Alarm	Daily
	Low Level Alarm	Daily
	Valves	Daily
	Flanges	Daily
	Piping	Daily
	Walkways	Daily
	Handrails	Daily
	Ladders	Daily

Attachment 2A
Maintenance Activities at South Size Separation Area

Equipment Item	Maintenance Category	Daily[1]	Weekly	Monthly
TROMMEL FEEDER SYSTEM				
Wobbler	Inspection	✓		
	Lubrication	✓		
	Scheduled Maintenance			✓
Apron Feeder System	Inspection	✓		
	Lubrication	✓		
	Scheduled Maintenance			✓
TROMMEL SCREEN EQUIPMENT				
Screen	Inspection	✓		
	Lubrication	✓		
	Scheduled Maintenance			✓
Overflow Conveyor	Inspection	✓		
	Lubrication		✓	
	Scheduled Maintenance			✓
Underflow Pumps	Inspection	✓		
	Lubrication		✓	
	Scheduled Maintenance			✓
INTERMEDIATE SCREEN				
Vibratory Screen	Inspection	✓		
	Lubrication		✓	
	Scheduled Maintenance			✓
Conveyor	Inspection	✓		
	Lubrication		✓	
	Scheduled Maintenance			✓
Underflow Pumps	Inspection	✓		
	Lubrication		✓	
	Scheduled Maintenance			✓
HYDROCYCLONES				
Vibratory Dewatering Screens	Inspection	✓		
	Lubrication		✓	
	Scheduled Maintenance			✓
Conveyors	Inspection	✓		
	Lubrication		✓	
	Scheduled Maintenance			✓
Sump/Recycle Assembly Pumps	Inspection	✓		
	Lubrication		✓	
	Scheduled Maintenance			✓

Attachment 2A
(continued)
Maintenance Activities at South Size Separation Area

Equipment Item	Maintenance Category	Daily[1]	Weekly	Monthly
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 2B
Maintenance Activities at North Size Separation Area

Equipment Item	Maintenance Category	Daily[1]	Weekly	Monthly
TRIPLE & DOUBLE DECK SCREEN SYSTEMS				
Vibratory Screen	Inspection	✓		
	Lubrication	✓		
	Maintenance			✓
Underflow Pumps	Inspection	✓		
	Lubrication		✓	
	Maintenance			✓
LOG WASHER				
Screen Deck	Inspection	✓		
	Lubrication		✓	
	Maintenance			✓
Underflow Pumps	Inspection	✓		
	Lubrication		✓	
	Maintenance			✓
Conveyors	Inspection	✓		
	Lubrication		✓	
	Maintenance			✓
DESANDING UNITS				
Vibratory Screen Deck	Inspection	✓		
	Lubrication		✓	
	Maintenance			✓
Bucket Wheels	Inspection	✓		
	Lubrication		✓	
	Maintenance			✓
Feed Pumps	Inspection	✓		
	Lubrication		✓	
	Maintenance			✓
TANKS AND ACCESSORIES				
Tank Mixers	Inspection	✓		
	Lubrication			✓
	Maintenance			✓
Tanks	Inspection	✓		
	Maintenance			✓

Attachment 3
Equipment Inspection Schedule – Sediment Conveyance[(1)(2)]

Equipment Item	Inspection Required	Frequency
HYDROCYCLONE OVERFLOW LIFT STATION		
Hydrocyclone Overflow Wet Well Mixers	Gear Lube	Daily
	Couplings	Daily
	Flange Bolts	Daily
	Bearings	Daily
	Shaft Seals	Daily
	Guards	Daily
Overflow Pumps	Gear Lube	Daily
	Couplings	Daily
	Bearings / Seal Water	Daily
	Actuated Control Valves	Daily
	Pressure Indicators	Daily
	Shaft Seals	Daily
	Discharge Pressure	Daily
FORCE MAINS		
12-inch Slurry Force Mains	Flanged Connections	Daily
14-inch Recycle Water Force Main	Flanged Connections	Daily
3-inch Seal Water Distribution Force Main	Flanged Connections	Daily
12-inch Slurry Force Main	Welded Connections	Monthly
14-inch Recycle Water Force Main	Welded Connections	Monthly
14-inch Slurry Force Main	Welded Connections	Monthly
14-inch Slurry Force Main	Flanged Connections	Daily
18-inch Slurry Force Main	Welded Connections	Monthly
18-inch Slurry Force Main	Flanged Connections	Daily
3-inch Seal Water Distribution Force Main	Welded Connections	Monthly
12-inch HDPE	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.
2. Table includes both North and South system.

Attachment 4
Maintenance Activities for Sediment Conveyance[1]

Equipment Item	Maintenance Category	Daily[2]	Weekly	Monthly
HYDROCYCLONE OVERFLOW LIFT STATION				
Hydrocyclone Overflow Wet Well Mixers	Inspection	✓		
	Lubrication		✓	
	Scheduled Maintenance			✓
Hydrocyclone Overflow Pumps	Inspection	✓		
	Lubrication		✓	
	Scheduled Maintenance			✓
FORCE MAINS				
12-inch, 14-inch, and 18-inch Slurry Force Mains	Inspection	✓		
	Flange Bolt Tightening		✓	
	Force Main Support Realignment			✓
	Scheduled Maintenance	As required		
14-inch Recycle Water Force Main	Inspection	✓		
	Flange Bolt Tightening		✓	
	Force Main Support Realignment			✓
	Scheduled Maintenance	As required		
3-inch Seal Water Distribution Force Main	Inspection	✓		
	Flange Bolt Tightening		✓	
	Force Main Support Realignment			✓
	Scheduled Maintenance	As required		
Air/Vacuum Release Valves	Inspection	✓		
	Flange Bolt Tightening		✓	
	Scheduled Maintenance			✓

1. Table includes both North and South system
2. Visual Inspection only. Does not require shutdown of equipment.

Attachment 5
Equipment Inspection Schedule – Dewatering Area

Equipment Item	Inspection Required	Frequency
GRAVITY THICKENERS		
Gravity Thickener Tanks	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
Gravity Thickener Recirculation Pumps	Motor	Daily
	Guards	Daily
	Pump	Daily
	Bearings	Daily
	Seals	Daily
	Couplings	Daily
	Shaft Flanges	Daily
	Discharge Pressure	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
Filter Presses	Feed Connections/ Discharge Connections	Daily
	Plates	Daily
	Cloth	Daily
	Gaskets	Daily
	Hydraulic Units: Pumps, Pressure switches, Electric Motor, and Valves,	Daily
	Plate Shifter	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
POLYMER FEED SYSTEM		
Neat Polymer Storage Tanks	Vent Line	Before Deliveries
	Fill Line	Before Deliveries
	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 Make-up 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 Tanks	Piping	Daily
	Valves	Daily
	Flanges	Daily
Polymer Tank Mixer	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

Attachment 5
(continued)
Equipment Inspection Schedule – Dewatering Area

Equipment Item	Inspection Required	Frequency
Static Mixer and Injection Rings	Couplings	Daily
	Fittings	Daily
RECYCLE WATER		
Recycle Water Collection Wet Well	High Level	Daily
	Low Level	Daily
Recycle Water Collection Lift Station Pumps	Motors	Daily
	Pumps	Daily
	Bearings	Daily
	Lube	Daily
	Guards	Daily
	Piping	Daily
	Valves	Daily
	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

Attachment 5
(continued)
Equipment Inspection Schedule – Dewatering Area

Equipment Item	Inspection Required	Frequency
RECYCLE WATER (continued)		
Size Separation Process Water Storage Tank Feed Pumps	Motors	Daily
	Pumps	Daily
	Bearings	Daily
	Guards	Daily
	Piping	Daily
	Valves	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
FILTER CAKE SOLIDS ENCLOSURE		
Exhaust Fans	Motors	Annual
	Blowers	Annual
	Shafts	Annual
	Bearings	Annual
	Guards	Annual
	Duct	Annual
	Dampers	Annual
GAC Filters	Filter Media	Monthly

Attachment 6
Maintenance Activities at Dewatering Area

Equipment Item	Maintenance Category	Daily	Weekly	Monthly
GRAVITY THICKENERS				
Gravity Thickener Tanks	Inspection	✓		
	Scheduled Maintenance			✓
Rake Arm/Drive Unit	Inspection	✓		
	Lubrication		✓	
	Scheduled Maintenance			✓
Rake Arm Lift Mechanism	Inspection	✓		
	Lubrication		✓	
	Scheduled Maintenance			✓
Thickened Underflow Pumps	Inspection	✓		
	Lubrication		✓	
	Scheduled Maintenance			✓
Thickened Recirculation Pumps	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 Make-up Units	Inspection	✓		
	Lubrication		✓	

Attachment 6
(continued)
Maintenance Activities at Dewatering Area

Equipment Item	Maintenance Category	Daily	Weekly	Monthly
POLYMER FEED SYSTEM (continued)				
	Scheduled Maintenance			✓
Polymer Day Tanks	Inspection	✓		
	Scheduled Maintenance			✓
Polymer Day Tank Mixers	Inspection	✓		
	Lubrication		✓	
	Scheduled Maintenance			✓
Polymer (Coagulant) Feed Pumps	Inspection	✓		
	Lubrication		✓	
	Scheduled Maintenance			✓
Polymer (Flocculant) Feed Pumps	Inspection	✓		
	Lubrication		✓	
	Scheduled Maintenance			✓
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				
Enclosure (membrane panels; frame)	Inspection	✓		
	Scheduled Maintenance			Annual

Attachment 6
(continued)
Maintenance Activities at Dewatering Area

Equipment Item	Maintenance Category	Daily[1]	Weekly	Monthly
FILTER CAKE SOLIDS ENCLOSURE (continued)				
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			✓
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	✓		

Attachment 6
(continued)
Maintenance Activities at Dewatering Area

Equipment Item	Maintenance Category	Daily[1]	Weekly	Monthly
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			✓
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
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	Weekly
	Skimming/Removal of flow Restrictive Sediments on Surface of Filter Media	Frequency as required
	Replacement of Surface Media Above Lateral Flow Screens	Frequency as required
Carbon – Vessels	Inlet Pressure	Daily
	Relief Valves	Daily
	Piping	Daily
	Valves	Daily
	Flanges	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
BACKWASH WATER		
Backwash Water Holding Tank	Ladders	Daily
	Walk-ways	Daily
	Hand rails	Daily
	Piping	Daily
	Valves	Daily
	High Level	Daily
	Low Level	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	✓		
	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	✓		
	Scheduled Maintenance			90 days
Rail Car Covers (lids)	Inspection	In and Outbound		
	Scheduled Maintenance	As Needed		
Air Compressors – Yard Air	Inspection		✓	
	Lubrication (including motors)			Annual
	Scheduled Maintenance Air Filter			Monthly
	Scheduled Maintenance Fluid Filter			6 months
	Scheduled Maintenance Separator Elements, Safety Shutdown System, Pressure relief valve			Annual

Attachment 10
Critical Equipment and Maintenance Contact Information

Equipment Item	Contract Equipment Professional	Contact Information
Trommel Feeder System	**Metso Minerals Industries Inc.** 1500 Corporate drive Suite 300 Canonsburg, PA 15317	Phone : (412) 269-5000 E-mail : Minerals.info@Metso.com
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
Hydrocyclones (hydrocyclone clusters, dewatering screens, conveyors)	**Del Tank** 436 Highway 93 N Scott, LA 70583	Phone: (337) 237-8400 E-mail: sales@deltank.com
Triple & Double Deck Screens	**Emerald Equipment Systems, Inc.** 7600 Morgan Road Liverpool, NY, 13090	Phone : (315) 437-1977 E-Mail : bmccammon@emeraldscreening.com
Log Washer	**Emerald Equipment Systems, Inc.** 7600 Morgan Road Liverpool, NY, 13090	Phone : (315) 437-1977 E-Mail : bmccammon@emeraldscreening.com
Desanding Units	**Emerald Equipment Systems, Inc.** 7600 Morgan Road Liverpool, NY, 13090	Phone : (315) 437-1977 E-Mail : bmccammon@emeraldscreening.com
Gravity Thickeners	**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

Attachment 10
(continued)
Critical Equipment Contact Information

Equipment Item	Contract Equipment Professional	Contact Information
Air Handling Systems (at 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
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 Operations Contractor	**Shaw**	Phone: (518) 378-3679 E-mail: john.waechter@shawgrp.com
Power Utility	**National Grid** Customer Service (Industrial / Commercial)	Phone: (518) 664-6728