

Appendix K

Remediation Water Management Plan

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March 2023  
Former Reynolds Metals Reduction Plant – Longview



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# Remediation Water Management Plan

**Prepared for**

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## ABBREVIATIONS

µg/L	micrograms per liter
AKART	All Known, Available, and Reasonable Technologies
B(a)P	benzo(a)pyrene
DMR	discharge monitoring report
Ecology	Washington State Department of Ecology
ELF Pump Station	East Landfill Pump Station
Final EDR	<i>Final Engineering Design Report, Version 2</i>
gpm	gallons per minute
HDPE	high-density polyethylene
mg/L	milligrams per liter
NPDES	National Pollutant Discharge Elimination System
NTU	nephelometric turbidity unit
PRB	permeable reactive barrier
RWMP	<i>Remediation Water Management Plan</i>
SU	site unit
SWPPP	<i>Stormwater Pollution Prevention Plan</i>
TSC	temporary stormwater control
TSS	total suspended solids
USEPA	U.S. Environmental Protection Agency
WAD	weak acid dissociable

# 1 Introduction

This *Remediation Water Management Plan (RWMP)* describes the management of remediation water, defined as contaminated groundwater accessed from the upper shallow water-bearing zone of the East and West Groundwater Areas underlying the former Reynolds Metals Reduction Plant in Longview, Washington, and stormwater that comingles with contaminated groundwater and/or contaminated soils. This RWMP is an appendix of the *Final Engineering Design Report, Version 2* (Final EDR), prepared in accordance with the cleanup action as specified in the *Cleanup Action Plan* (Ecology 2018a) pursuant to Consent Decree No. 18-2-01312-08 (Ecology 2018b).

## 1.1 Site Description

The site is located at 4029 Industrial Way, just outside the city limits of Longview in Cowlitz County, Washington, approximately 2.9 miles northwest of the center of Longview and 4.8 miles northwest of I-5. The property includes about 460 acres and is currently operated as a multimodal bulk materials handling facility. The site is approximately 10 feet above mean sea level and bounded by the Columbia River to the south; Consolidated Diking Improvement District No. 1 drainage ditches to the north, west, and east; Industrial Way along the northern boundary; and private property to the east.

## 1.2 Purpose

The purpose of this appendix is to provide details on how remediation water will be managed and treated using the wastewater treatment plant (Facility 71) and Facility 73 stormwater management facilities and describes the responsibilities of the Contractor and Owner associated with remediation water management during the cleanup. Permit Condition S1.E of the site's National Pollutant Discharge Elimination System (NPDES) permit defines remediation water as "contaminated groundwater from the upper shallow water-bearing zone of the east and west groundwater areas and stormwater that comingles with contaminated groundwater and/or contaminated soils." This RWMP supports the Final EDR by presenting the appropriate best management practices and improvements that will be implemented to capture, batch, evaluate for fluoride, and treat remediation water in compliance with the NPDES permit.

## 1.3 Plan Organization

The remainder of this report is organized as follows:

- **Section 2 – Project Management** describes the project management structure and associated roles and responsibilities for remediation water management.
- **Section 3 – Compliance with NPDES Permit** lists all the permit conditions associated with remediation water management.

- **Section 4 – Remediation Water Conveyance and Treatment** provides an overview of the existing treatment facilities and current conveyance that will be used to treat remediation water.
- **Section 5 – Temporary Stormwater Control Facilities for the Conveyance of Remediation Water to Facility 77** describes the temporary stormwater controls (TSCs) for the conveyance of remediation water.
- **Section 6 – Other Remediation Water** describes how other remediation water, such as decontamination water and dewatering water, will be managed.
- **Section 7 – Testing and Treatment Facility Batching Procedures** describes the procedure for testing batches of remediation water for fluoride and routing remediation water for appropriate treatment. It also describes the monitoring at Outfalls 002A and 002B when treating remediation water.
- **Section 8 – Documentation and Reporting** presents the documentation and reporting requirements for the RWMP as required in the NPDES permit.
- **Section 9 – References** includes a list of references cited throughout the report.

## 2 Project Management

This section describes the project management structure for implementing this RWMP.

### 2.1 Roles and Responsibilities

The key project staff and associated roles and responsibilities are as follows:

- **The Owner (Northwest Alloys, Inc.).** The Owner, Northwest Alloys, Inc., is the primary party responsible for implementation of the RWMP for meeting compliance with the NPDES permit. The Owner will have an Owner's Team for this project that will consist of a Project Manager; Construction Manager; Environment, Health, and Safety Support; Engineer; and other individuals as needed to properly manage, oversee, and ensure the success of the project. The Owner's Team will be referred to as Owner throughout this document. For this project, the Owner will be responsible for pumping, testing the remediation water for fluoride, determining treatment facility, and providing appropriate treatment of the remediation water. Sampling and analysis will be completed with equipment owned or contracted by Northwest Alloys, and each remediation water sample will be tested in the on-site, state-certified laboratory.
- **The Consultant (Anchor QEA, LLC).** The consultant is Anchor QEA, LLC. The project manager for Anchor QEA is Nicole Forsberg. Ms. Forsberg will be responsible for overall project coordination to ensure that the requirements of this RWMP and those of the NPDES permit are being met and that the Owner is technically supported in remediation water management.
- **The Contractor.** The Contractor will be responsible for construction of the TSCs used to capture and convey remediation water. The Contractor will furnish labor and equipment to collect and route remediation water as directed by the Owner.
- **Regulatory Agency (Washington State Department of Ecology).** The regulatory agency, Washington State Department of Ecology (Ecology), is responsible for providing general oversight of the remediation project. Ecology is also responsible for overseeing compliance with the NPDES permit. Garin Schrieve is the Ecology project manager for the cleanup.

### 2.2 Training

Batch sample collection and laboratory analysis will be performed by qualified environmental laboratory staff. All qualified laboratory staff are trained and demonstrate proficiency as described in Northwest Alloys' *Lab Quality Assurance Manual* (Northwest Alloys 2022).



### 3 Compliance with NPDES Permit

The NPDES individual permit No. WA 000008-6 was issued by Ecology on February 7, 2018, and the permit became effective March 1, 2018 (Ecology 2018c). The permit is for the discharges currently occurring at the site and for those discharges that will occur during future remediation and redevelopment. Permit Condition S1.E defines remediation water as “contaminated groundwater from the upper shallow water-bearing zone of the east and west groundwater areas and stormwater that comingles with contaminated groundwater and/or contaminated soils. Contaminated groundwater and contaminated soils are groundwater or soils that have come in contact with legacy pollutants - fluoride, cyanide, or B(a)P and are above site MTCA levels” (Ecology 2018c).

#### 3.1 Remediation Water Treatment and Best Management Practices

During the remediation activities, remediation water generated at the site must be captured, batched, and evaluated for treatment. As described in Permit Condition S1.E.1, each batch of remediation water must be tested for fluoride, and treatment will apply as follows:

- If the fluoride results are at or above 45 milligrams per liter (mg/L), the remediation water must be batch-processed through Facility 71 for treatment. The effluent from Facility 71 must be conveyed through Facility 77 sump/pump station, treated at Facility 73, and discharged through Outfall 002A.
- If the fluoride results are below 45 mg/L, the remediation must be batched through Facility 77, treated at Facility 73, and discharged through Outfall 002A.

The permit also requires that an up-to-date log book be maintained with the estimated volumes, dates, and fluoride test results for all remediation water evaluated for treatment and that this information must be submitted with the corresponding monthly discharge monitoring report (DMR).

The Owner will update the site *Stormwater Pollution Prevention Plan* (SWPPP) per Permit Condition S10 to include best management practices consistent with Ecology’s *2012 Stormwater Management Manual for Western Washington* (amended in 2014; Ecology 2014) to remove and reduce sediment and suspended solids in any remediation water generated during the site cleanup. As required in Permit Condition S10.B, proposed modifications to the SWPPP must be submitted to Ecology at least 30 days in advance of implementing the proposed changes in the plan unless Ecology approves immediate implementation. Therefore, the updated SWPPP will be provided to Ecology within 30 days of the generation of remediation water.

Best management practices that will be implemented during remediation activities will be a combination of operational, structural, and treatment best management practices. Construction best management practices include a schedule of activities, good housekeeping practices (i.e., sweeping, dust control, prompt repair of leaking equipment, and containment systems), silt fence, soil coverings

such as erosion control blankets, and filtration such as filter socks. These best management practices are included in the “Temporary Erosion and Sediment Control Plans” as part of the Drawings in Appendix E of the Final EDR and will be included in the updated SWPPP.

### **3.2 Remediation Water AKART Study Plan**

The Owner will prepare and submit an All Known, Available, and Reasonable Technologies (AKART) study plan to evaluate the treatment of remediation water at Facility 71. The study plan will be submitted to Ecology for review and approval within 6 months of the planned start date of remediation water processing and treating and will include a proposed schedule for sampling and report submittal. Based on the current anticipated construction schedule start date of April 2023, the AKART study plan is anticipated to be submitted between November 2022 and January 2023.

As described in Permit Condition S1.E.2 of the NPDES permit, the AKART study plan must include, at a minimum, three 24-hour time-based composite samples of influent and effluent per batch of remediation water for three separate batches (i.e., nine samples total). There must be at least 1 day between each sample collection. Each sample must be analyzed for total suspended solids (TSS), fluoride, free cyanide, and benzo(a)pyrene (B[a]P). The timing of sample collection must be such that each of the effluent samples corresponds to the influent sample, and the resultant analytical results can be effectively used to estimate removal efficiencies across Facility 71.

The AKART study plan will be developed to provide guidance on sampling procedures, including sample locations, chemical analyses for samples collected from each sampling event, sampling event conditions, and collection methods necessary to characterize the influent and effluent in order to estimate removal efficiencies through Facility 71.

## 4 Remediation Water Conveyance and Treatment

Existing treatment facilities will be used to treat remediation water per the requirements stated in Section 3.1. Descriptions of the existing treatment facilities and new conveyance systems are included in this section. Figure K4-1 illustrates the locations of key elements of the existing system that will be used to treat remediation water.

### 4.1 Facility 77

Facility 77 consists of a sump, pump station, and thickener tanks. Remediation water management will use the thickener tanks as storage prior to routing water to the designated treatment systems. For the management of remediation water from the East Groundwater Area, a temporary connection from the new East Landfill force main (Section 4.1.4) will be made at Facility 77 and routed to one of the thickener tanks. West side remediation water will only be possible if a summer rainstorm occurs during waste consolidation at Site Unit (SU) 2. On the west side, remediation water will be collected by the Contractor for conveyance to the Facility 77 tank area. From the thickener tanks, remediation water will be sampled, tested for fluoride, and treated as described in Section 3.1. An extension to Facility 77 storage will be added for supplemental batching. This batch system extension will be located by the Contractor at the former sandblast area, west of Facility 77. This extension will be selected by the Contractor and may include Baker tanks or temporary aboveground storage pond(s). Batching of remediation water will be determined by the Owner to facilitate appropriate water management through Facilities 71 and 73 according to fluoride test results. All batch results will be logged and reported with the monthly DMR.

### 4.2 Facility 71

Facility 71 was designed to treat influent concentrations of fluoride, cyanide, and polycyclic aromatic hydrocarbons (including B[a]P; Anchor QEA 2011). The treatment processes include pH adjustment, reaction/precipitation, flocculation, and clarification. The treatment process through Facility 71 can be operated in a batch mode by a system of controls. Treated wastewater discharging from Facility 71 is conveyed to the Facility 77 Sump/Pump Station, where it combines with stormwater and other commingled waters. Flows are then pumped from the Facility 77 Sump/Pump Station to Facility 73 prior to discharge through Outfall 002A. No improvements or upgrades to Facility 71 are planned during the cleanup.

### 4.3 Facility 73

Facility 73 is a stormwater treatment system that includes a Retention Basin, Pump Station C, and a Filter Plant. Facility 73 was designed and constructed to provide treatment for combined flow sources, including stormwater runoff, untreated process wastewater, and treated effluent from Facility 71. A turbidity meter located on the force main piping inside the Filter Plant provides

continuous monitoring of turbidity. Routing of water through the filtration system is automatically initiated based on the turbidity level of the effluent from the Retention Basin. If the turbidity of the discharge from Pump Station C to the Filter Plant is greater than 15 nephelometric turbidity units (NTU) for 20 minutes, then valves are triggered to open and close so that the effluent is automatically routed through the filtration system for additional treatment prior to discharging through Outfall 002A to the Columbia River. Filtration continues until the measured influent turbidity decreases to 10 NTU for 50 minutes, at which point the valves return to their original position, and the effluent from Pump Station C is no longer diverted to the filtration system and is discharged directly through Outfall 002A to the Columbia River. No improvements or upgrades to Facility 73 are planned during the cleanup.

#### **4.4 East Landfill Area Force Main and Pump Station**

The East Landfill Pump Station (ELF Pump Station) will include two pumps, each rated for 2,500 gallons per minute (gpm). Each pump will be powered by a variable frequency drive for which the low-speed flow rate basis is 1,250 gpm. Normal operations will have the pump's cycle on at low speed at a designated high-level set point and off at a designated low level. The level band will be set to minimize or prevent surcharging of flow into the manholes. When pump station inflow exceeds the 1,250-gpm basis, the pump will speed up to maintain a level near the high-level set point.

The ELF Pump Station will discharge into a buried 16-inch-diameter DR 17 high-density polyethylene (HDPE) force main pipeline. The buried pipeline will be routed to the south along the west side of Berth Road, generally parallel with the discharge line that conveys flows from Pump Station 004 to the storm drain system in the Former South Plant area. The force main will turn to the west and generally run along the Consolidated Diking Improvement District easement and site fence line.

This is the only conveyance change to the on-site treatment facilities. Once East Landfill No. 1 and East Landfill No. 2 (collectively referred to as the East Landfills) have been fully consolidated and capped (following Year 2), this force main will only be used for clean runoff from the caps. This change in treatment design requires Ecology approval. Plans and specifications for this conveyance are in Appendices E and F of the Final EDR.

## 5 Temporary Stormwater Control Facilities for the Conveyance of Remediation Water to Facility 77

Remediation water will be generated on the east side of the property and once captured will need to be conveyed to Facility 77. West side remediation water will only be possible if a summer rainstorm occurs during waste consolidation. TSC facilities for the conveyance of remediation water are included in this section.

### 5.1 Remediation Water from the West Groundwater Area

Minimal remediation water from the West Landfill is expected to be generated because SU2 excavations should be dry excavations occurring during summer months. However, if remediation water is generated (i.e., during a summer storm), it will be collected by the Contractor. As required per Technical Specification Section 02 71 00 (Appendix F of the Final EDR), west side remediation water will be collected at the northeast corner of the west landfill construction area (Figure K5-1) and pumped to Facility 77. Once at Facility 77, the remediation water will be batched and tested by the Owner so that the water may be appropriately treated as described in Section 7.

Excavation and consolidation work at SU2 will begin after the West Landfill perimeter ditch has been installed. Construction of the West Landfill and associated stormwater improvements are anticipated to be complete at the conclusion of the first construction season, and therefore, remediation water will no longer be generated from the West Groundwater Area and no further remediation water management will be required.

Permeable reactive barriers (PRBs) will be installed during construction Year 2. PRB installation is expected to be done in situ with no generation of remediation water; however, the Contractor will be directed to have a contingency, such as Baker tanks, for batching in the event remediation water needs to be captured. If the Contractor selects more standard trenching methods for PRB installation, dewatering water will be collected and batched in Baker tanks. The water will be tested for fluoride and then conveyed to Facility 77 for appropriate treatment by the Owner.

### 5.2 Remediation Water from the East Groundwater Area

Before excavation and consolidation begins, the new force main and pump station adjacent to Berth Road across from the East Landfills will be installed by the Contractor. A temporary connection from the new force main to Facility 77 will be made for managing remediation water.

A temporary cofferdam will be installed, or the culvert plugged, near the northeast corner of East Landfill No. 1 upstream of Pump Station 004 so that the water collected in the existing ditches can be managed as remediation water. The existing ditches will also be slightly graded, so they will drain toward the temporary inlet for the new pump station.

After the new force main and pump station are installed and operating and the temporary ditch connections are made, excavation and consolidation of the East Landfills will begin. During that work, water will be collected from the low point in the existing ditches around the East Landfills and adjacent to Berth Road and conveyed under Berth Road to the new pump station.

An extension to Facility 77 will be added for supplemental batching, if needed. This batch system extension will be selected by the Contractor and located at the former sandblast area, west of Facility 77. Temporary piping will be installed to extend the batching capacity within Facility 77. The Owner will use all Facility 77 storage capacity to evaluate each treatment batch to successfully manage remediation water through either Facility 71 or Facility 73.

The use of the existing Berth Road ditch system with the new pump station and force main will occur during all of construction Year 1, between the two construction seasons, and for most of construction Year 2. A site plan of the TSC facilities for the East Groundwater Area is depicted in Figure K5-2.

Remediation water management with TSC facilities will continue until the new geosynthetic clay-lined landfill perimeter ditches, roadside ditch reconfiguration, and low permeable caps are installed over the East Landfills. Once the ditches and capping are complete, and final connections are made to the new pump station, the temporary dam near Pump Station 004 will be removed, the batch system extension at the former sandblast area will be decommissioned, and the stormwater system will operate in the permanent configuration with no further remediation water to manage. Ecology-required plans and specifications for this final configuration will be provided in the *Engineering Report for NPDES Permit Renewal Application* and will accompany the NPDES permit renewal application that will be submitted by September 1, 2022.

## 6 Other Remediation Water

Other remediation water to be managed on site includes decontamination water and dewatering effluent during stormwater infrastructure installation. Decontamination water is water that contacts waste material during the decontamination of a variety of equipment and construction materials during remediation. Dewatering effluent is water from dewatering excavations for stormwater improvements such as for pump station installation.

As required per Technical Specification Section 02 71 00 – Water Management and Treatment (Appendix F of the Final EDR), the Contractor will be required to procure a collection system capable of holding, at a minimum, a volume equal to 2 weeks of effluent generated from active use of the decontamination and dewatering systems. These systems will be located adjacent to the area being dewatered and will not be located in the same footprint as the Facility 77 storage extension. Characterization of decontamination and dewatering water will be coordinated by the Contractor and performed by the Owner. Once characterized, the Contractor will be responsible for conveying the batch water to Facility 77 so that the Owner may appropriately treat the water as described in Section 7.

If listed dangerous waste is encountered that remediation water or stormwater comes in contact with, proper handling, storage, and disposal will occur.

## 7 Testing and Treatment Facility Batching Procedures

Remediation water batched at Facility 77 will be tested by the Owner’s environmental staff and analyzed for fluoride in the on-site Washington State-accredited laboratory by qualified laboratory staff following the fluoride analysis standard operating procedure contained in the Northwest Alloys *Lab Quality Assurance Manual* (Northwest Alloys 2022). Documentation and reporting of the fluoride testing is described in Section 8.

Each batch of remediation water will be managed as follows:

- If the fluoride results are 45 mg/L or greater, water will be directed to Facility 71 for treatment. The effluent from Facility 71 will be conveyed through Facility 77, treated at Facility 73, and discharged through Outfall 002A.
- If fluoride results are below 45 mg/L, the water will be conveyed directly to the sump at the Facility 77 pump station, treated at Facility 73, and discharged through Outfall 002A.

The Owner must notify Ecology when it first begins treating remediation water at Facility 71. Once remediation water treatment begins, monitoring requirements at Outfall 002A will change as described in Section 7.1, monitoring at Outfall 002B will begin as described in Section 7.2, and AKART study sampling will be conducted as described in Section 7.3. Reporting of these data is described in Section 8.

### 7.1 Monitoring at Outfall 002A

Once remediation water treatment begins, sampling at Outfall 002A (monitoring point 002R) will transition to the schedule in Table K7-1. This transition includes increasing monitoring of fluoride, B(a)P, and free cyanide to three times per week when treating remediation water at Facility 71.

**Table K7-1  
Outfall 002A Monitoring Requirements with Remediation Water**

Parameter	Units	Minimum Sampling Frequency	Sample Type	Analytical Method <sup>1</sup>
Flow	Million gallons per day	Continuous	Metered	Calibrated device
		Monthly average and daily maximum	Calculated	
TSS	mg/L	1/week	24-hour composite	SM2540-D
Oil and Grease	mg/L	1/week	Grab	1644A or B
Fluoride	mg/L	3/week	24-hour composite	SM4500-F E
Cyanide, Free (WAD)	µg/L	3/week	Grab	SM4500-CN I
B(a)P	mg/L	3/week	24-hour composite	USEPA 610/625
Temperature	C°	Continuous	Measurement	Analog recorder



Parameter	Units	Minimum Sampling Frequency	Sample Type	Analytical Method <sup>1</sup>
pH	SU	Continuous	Measurement	Calibrated device
		Daily	Recorded – Instantaneous and Minimum	
Precipitation	Inches	Daily	Measurement	Rain gauge

Note:

1. Analytical methods specified match Appendix A of the NPDES permit (Ecology 2018c).

## 7.2 Monitoring at Outfall 002B

Once remediation water treatment begins at Facility 71, sampling at Outfall 002B (monitoring point 002R) will begin as listed in the schedule in Table K7-2.

**Table K7-2  
Outfall 002B Monitoring Requirements with Remediation Water**

Parameter	Units	Minimum Sampling Frequency	Sample Type	Analytical Method <sup>1</sup>
TSS	mg/L	1/week	24-hour composite	SM2540-D
Fluoride	mg/L	1/week	24-hour composite	SM4500-F C
Cyanide, Free (WAD)	µg/L	1/week	Grab	SM4500-CN I
B(a)P	mg/L	1/week	24-hour composite	USEPA 610/625

Note:

1. Analytical methods specified match Appendix A of the NPDES permit (Ecology 2018c).

## 7.3 Monitoring for AKART Study

Permit Condition S1.E.1. requires sampling for the AKART study when treatment of remediation water begins at Facility 71. Sampling will include, at a minimum three, 24-hour time-based composite samples of influent and effluent per batch of remediation water for three separate batches (i.e., nine samples total). There must be at least 1 day between each sample collection, and each sample must be analyzed for the parameters listed in Table K7-3. The timing of sample collection must be such that each of the effluent samples corresponds to the influent sample.

**Table K7-3  
AKART Study Monitoring Requirements**

<b>Parameter</b>	<b>Units</b>	<b>Sample Type</b>	<b>Analytical Method<sup>1</sup></b>
TSS	mg/L	24-hour composite	SM2540-D
Fluoride	mg/L	24-hour composite	SM4500-F C
WAD Cyanide	µg/L	Grab	ASTM D2036
B(a)P	mg/L	24-hour composite	USEPA 610/625

Note:

1. Analytical methods specified match Appendix A of the NPDES permit (Ecology 2018c).

## 8 Documentation and Reporting

Qualified laboratory staff training records will be maintained in the on-site laboratory. The fluoride analyses will be recorded in the fluoride laboratory log book. In addition, a log book will be maintained with the estimated volumes, dates, and fluoride test results for remediation water collected and evaluated for treatment.

The Outfall 002A and 002B monitoring results, AKART study monitoring results, and fluoride analysis log book information will be submitted with the corresponding monthly DMR.

## 9 References

Anchor QEA (Anchor QEA, LLC), 2011. Memorandum to Kristin Gaines, Millennium Bulker Terminals – Longview, LLC. RE: Proposed Temporary Wastewater Treatment System for Facility 71. November 15, 2011.

Ecology (Washington State Department of Ecology), 2014. *2012 Stormwater Management Manual for Western Washington*. Publication Number 14-10-055. As Amended in December 2014.

Ecology, 2018a. *Cleanup Action Plan*. Former Reynolds Metals Reduction Plant – Longview. October 2018.

Ecology, 2018b. Consent Decree No. 18-2-01312-08. Former Reynolds Metals Reduction Plant – Longview. December 14, 2018.

Ecology, 2018c. National Pollutant Discharge Elimination System, Waste Discharge Permit No. WA 000008-6. Issued: February 7, 2018.

Northwest Alloys, Inc., 2022. *Lab Quality Assurance Manual*. Updated February 2022.

## Figures

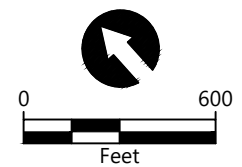
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**SOURCE:** Site boundary is based on ALTA/ACSM Land Title Survey by Minister & Glaeser Surveying, Inc., dated December 13, 2010. Proposed design by HDR, Inc. Aerial image from Bing Maps.  
**HORIZONTAL DATUM:** Washington State Plane South Zone, NAD83, U.S. Survey Feet

**LEGEND:**

----- Parcel Boundary

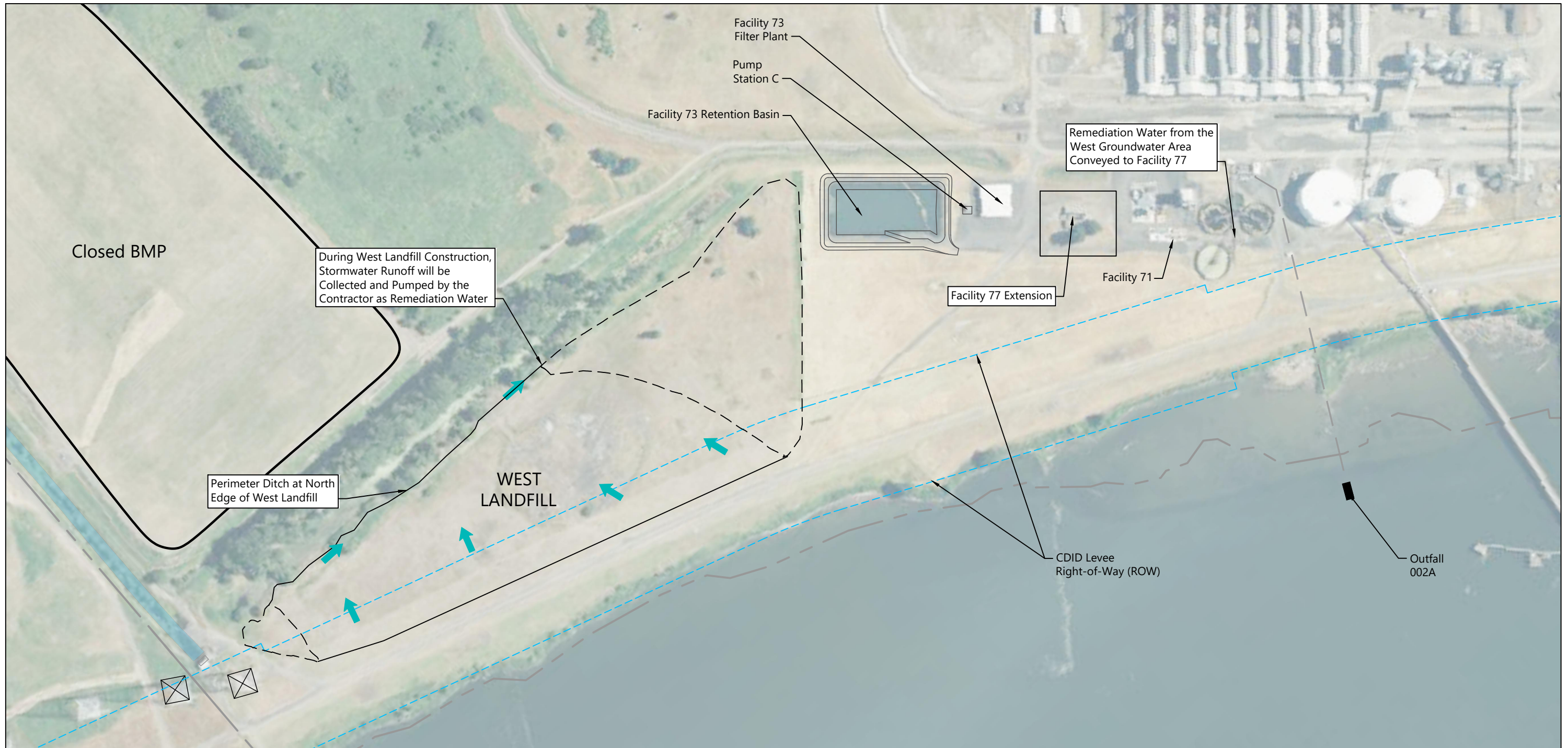


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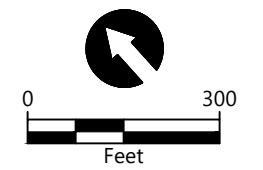
**Figure K4-1**  
**Key Elements of Remediation Water Conveyance and Treatment**

Remediation Water Management Plan  
 Former Reynolds Metals Reduction Plant – Longview



**SOURCE:** Site boundary is based on ALTA/ACSM Land Title Survey by Minister & Glaeser Surveying, Inc., dated December 13, 2010. Proposed design by HDR, Inc. Aerial image from Bing Maps.  
**HORIZONTAL DATUM:** Washington State Plane South Zone, NAD83, U.S. Survey Feet

- LEGEND:**
- - - - - CDID Levee Right-of-Way
  - ← Remediation Water Flow Direction
  - Proposed Landfill Ditch
  - FM** Proposed Force Main
  - SU2 Excavation Area

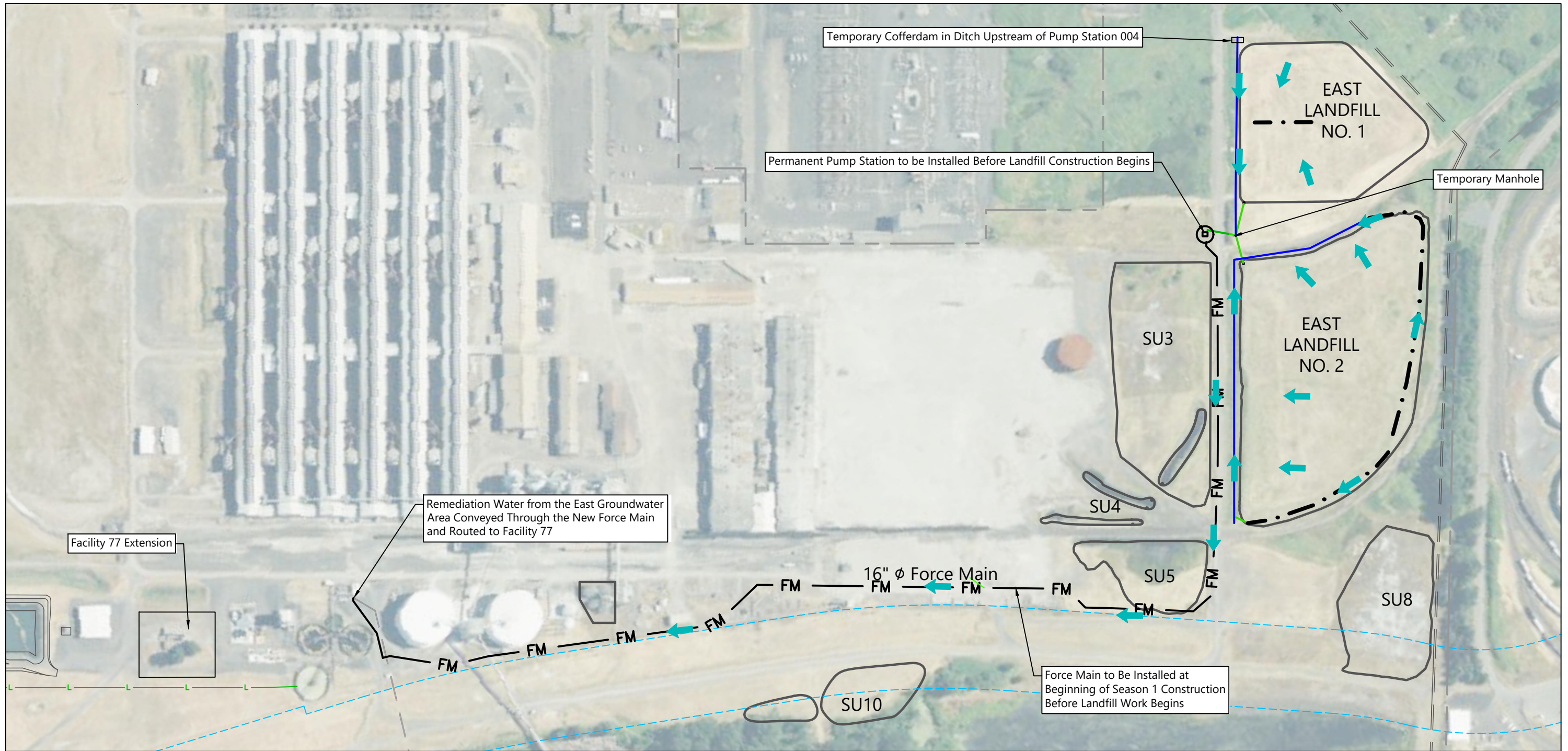


Publish Date: 2022/08/26 1:42 PM | User: chewett  
 Filepath: 0730-WK-004 (Remediation Water Management).dwg Figure K5-1



**Figure K5-1**  
**Remediation Water Management – West Groundwater Area**

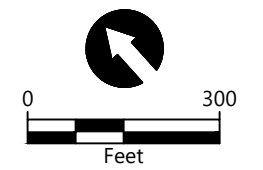
Remediation Water Management Plan  
 Former Reynolds Metals Reduction Plant – Longview



**SOURCE:** Site boundary is based on ALTA/ACSM Land Title Survey by Minister & Glaeser Surveying, Inc., dated December 13, 2010. Proposed design by HDR, Inc. Aerial image from Bing Maps.  
**HORIZONTAL DATUM:** Washington State Plane South Zone, NAD83, U.S. Survey Feet

**LEGEND:**

- CDID Levee Right-of-Way
- Existing Ditch
- ← Remediation Water Flow Direction
- FM** — Proposed Force Main
- Proposed Storm Drain or Culvert
- Proposed Landfill Ditch
- ⊕ Pump Station



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 Filepath: 0730-WK-004 (Remediation Water Management).dwg Figure K5-2



**Figure K5-2**  
**Remediation Water Management – East Groundwater Area**  
 Remediation Water Management Plan  
 Former Reynolds Metals Reduction Plant – Longview