

DRAFT ENVIRONMENTAL IMPACT STATEMENT

for the proposed

PIONEER AGGREGATES SOUTH PARCEL PROJECT



prepared by

City of DuPont

June 14 2024



CITY OF DUPONT
1700 Civic Drive, DuPont, WA 98327
Telephone: 253.964.8121
www.dupontwa.gov

June 14, 2024

Dear Affected Agencies, Tribes, Organizations and Interested Parties:

Enclosed is the Draft Environmental Impact Statement (DEIS) for the proposed **Pioneer Aggregates South Parcel Project, City File No. SEPA2021-002**. This DEIS analyzes the probable adverse environmental impacts associated with the Proposed Action Alternative and the No Action Alternative.

The public comment period associated with this DEIS is: **June 14, 2024 through July 15, 2024**

Agencies, affected tribes, organizations and members of the public are invited to comment on the DEIS. Methods for presenting your comments are described below.

All comments are due no later than July 15, 2024 and may be submitted via the following:

City of DuPont website at: <https://www.dupontwa.gov/719/Pioneer-Aggregates-South-Parcel-Project->

Or by providing hard copies via US mail or hand delivery to The City of DuPont at 1700 Civic Drive, DuPont, WA 98327 care of Barb Kincaid.

Following the DEIS comment period, City of DuPont will prepare a Final EIS (FEIS) that addresses comments received during the DEIS public comment period.

Copies of this DEIS have been distributed to agencies noted on the Distribution List of this DEIS (**Appendix A**). The DEIS can be reviewed at the City of DuPont at 1700 Civic Drive, DuPont, WA 98327, and online at <https://www.dupontwa.gov/719/Pioneer-Aggregates-South-Parcel-Project->

Thank you for your interest in the **Pioneer Aggregates South Parcel Project** DEIS.

Sincerely,

Barbara Kincaid, City of DuPont SEPA Official

**DRAFT
ENVIRONMENTAL IMPACT STATEMENT**

for the

**PIONEER AGGREGATES
SOUTH PARCEL PROJECT**

This Draft Environmental Impact Statement (DEIS) for the proposed *Pioneer Aggregates South Parcel Project* has been prepared in compliance with the State Environmental Policy Act (SEPA) of 1971 (Chapter 43.21C, Revised Code of Washington); the SEPA Rules (Chapter 197-11, Washington Administrative Code); and rules adopted by the City of DuPont implementing SEPA (DuPont Municipal Code Chapter 23.01). Preparation of this EIS is the responsibility of the City of DuPont, and based on a scoping process has directed the areas of research and analysis that were undertaken in preparation of this EIS. This document is not an authorization for an action, nor does it constitute a decision or a recommendation for an action. In its final form – as a Final EIS – it will accompany the Proposed Action and will be considered in making final decisions concerning mining operation of the proposed *Pioneer Aggregates South Parcel Project*.

Date of Draft EIS Issuance..... **June 14, 2024**

Date Comments are due on the Draft EIS **July 15, 2024**

PREFACE

The purpose of this Draft Environmental Impact Statement (DEIS) is to:

- identify and evaluate probable significant adverse environmental impacts that could result from development associated with the *Proposed Action* and development alternatives, and the *No Action Alternative*; and
- identify measures to mitigate those impacts.

This DEIS does not authorize a specific action or alternative nor does it recommend for or against a particular course of action; it is one of several key documents that will be considered in the decision-making process for this project. A list of expected regulatory actions, including: licenses, permits and approvals is contained in the **Fact Sheet** to this Draft EIS (pgs. ii-iii); the Final Environmental Impact Statement (FEIS) associated with this project will accompany the applications specifically associated with the permit processes and will be considered as the final environmental (SEPA) document relative to those applications.

The environmental elements that are analyzed in this DEIS were determined as a result of the formal, public EIS scoping process, which occurred from September 20, 2021 through October 20, 2021. The SEPA Determination of Significance/Scoping Notice was mailed to numerous governmental agencies, organizations, and owners and current occupants of parcels located within approximately 500 feet of the site. Following review of the written comments received, the City of DuPont determined the issues and alternatives to be analyzed in this DEIS. They include broad areas of environmental review consisting of: Earth, Air Quality, Surface Water & Groundwater, Fisheries, Plants & Animals, Noise, Land & Shoreline, Aesthetics, Cultural Resources, Transportation, and Economic & Fiscal Conditions.

The Table of Contents for this DEIS is contained on pgs. v-ix of the **Fact Sheet**. In general, the DEIS is organized into four major chapters:

- **Fact Sheet** (immediately following this Preface) provides an overview of the proposed action and development alternatives, permits and major approvals needed, contact information and the Table of Contents;
- **Chapter 1** (beginning on page 1-1) summarizes the description of the proposed project, the Proposed Action, and the No Action Alternative, as well as provides a summary of environmental impacts, mitigation measures, and significant unavoidable adverse impacts (if any);
- **Chapter 2** (beginning on page 2-1) provides a detailed description of the Proposed Action and alternatives and the No Action Alternative; and,
- **Chapter 3** (beginning on page 3-1) is an analysis of potential impacts in the subject areas mentioned above for the Proposed Action and development alternatives. This chapter also identifies relevant mitigation measures and potential significant unavoidable adverse environmental impacts.

FACT SHEET

Name of Project	Pioneer Aggregates South Parcel Project
Proponent	CalPortland
Location	<p>The proposed <i>Pioneer Aggregates South Parcel Project</i> would occur on an approximately 313-acre site located on and to the southeast of the existing Pioneer Aggregates Mine in the City of DuPont, southwestern Pierce County, sections 22, 23, and 26, Township 19 North, Range 1 East of the Willamette Meridian. The site includes areas previously undisturbed by mining (termed the “Expansion Area”) and mining deeper within a portion of existing mine (referred to as the “Re- Mine Area”). The Expansion Area is approximately 188 acres and is comprised of three subareas as follows: The <i>Kettle Area</i> is a 10.8-acre previously undisturbed area; the 9.2-acre <i>Buffer Strip</i> is a strip of vegetation that was retained along the inside of the originally permitted mine bordering the undeveloped South Parcel; and, the <i>South Parcel Area</i> is 168 acres located southeast of the original mine. The Re-Mine Area consists of 125 acres in the southeastern portion of the existing mine where current mining activities are permitted above current groundwater levels.</p>
EIS Required	<p>The City of DuPont issued a Determination of Significance (DS) on September 20, 2021 indicating that an Environmental Impact Statement must be prepared for the <i>Pioneer Aggregates South Parcel Project</i>.</p>
EIS Alternatives	<p>The EIS evaluates the Proposed Action (Alternative 1) and the No Action Alternative (Alternative 2) as described below:</p>
<p><u>Alternative 1 – Proposed Action</u></p> <p>The Proposed Action is to allow horizontal expansion of mining into approximately 188 acres previously undisturbed by mining (Expansion Area), and vertical deepening of approximately 125 acres where mining would deepen a portion of the Existing Mine (Re-Mine Area). In advance of proposed mining, the Proposed</p>	

Action includes installation of wells to intercept and pump groundwater to dry out gravels for mining. The intercepted groundwater would be conveyed by surface channels and infiltrated in ponds on the floor of the Existing Mine. The Proposed Action is anticipated to extend mining at the current average rate for approximately 14 years. The method of mining and materials processing, and transport of materials would not change from current conditions at the Existing Mine.

Alternative 2 – No Action Alternative

This alternative is typically defined as what would most likely happen if the proposal does not move forward. According to the SEPA Rules, “no action” does not necessarily mean that nothing (no development in this case) would occur. The No Action Alternative that will be studied in this EIS will include two scenarios: Scenario A – Continuation of Existing Conditions (i.e. continuation of mining at the Existing Mine which has an estimated remaining life of 6 to 10 years with mining currently limited to an elevation of 10 feet above groundwater level); and, Scenario B – Site Development Under Existing Zoning (i.e. development under the existing Manufacturing and Research, Residential-4, Residential Reserve, and Open Space/Sensitive Area zoning designations). While it is unlikely that the Sequalitchew Creek Restoration Plan would be implemented if the proposal does not occur, it is possible that other funding (e.g., grants) could be obtained to carry out the Restoration Plan. Therefore, the No Action Alternative will reference the potential for the Sequalitchew Creek Restoration Plan to be implemented without the Proposed Action.

Lead Agency

City of DuPont

SEPA Responsible Official

Barbara Kincaid
Community Development Director
City of DuPont
DuPont, WA 98327

EIS Contact Person**Barbara Kincaid**

Telephone: (253) 912-5393

Email: bkincaid@dupontwa.com**Required Approvals
and/or Permits**

Preliminary analysis indicates that the following approvals and/or permits may be required from agencies with jurisdiction¹ for continued mining. Additional permits/approvals may be required. Note that mining permits will not be legally effective unless and until permits for the Restoration Plan are issued.

State of Washington

- Dept. of Natural Resources - Reclamation Permit, Forest Practices Permit.
- Dept. of Ecology - NPDES, Administrative Order for Wetland Impacts.

City of DuPont

- Community Development – Site Plan Review, Tree Modification, Critical Areas Permit, Site Development Permit (including Grading Permit), Building Permit, Determination of Transportation Concurrency.
- Public Works – Site Work (Civil Work) Review and Storm Drainage Facilities Review.

**EIS Authors and Principal
Contributors****EA Engineering, Science and Technology, Inc., PBC**

- EIS Project Manager, Primary Author: Project Description, Land Use, Peer Review Aesthetics and Air Quality.

DE Sherrard & Associates

- Surface Water & Groundwater Lead.

Aspect Consulting

- Surface Water, Groundwater, Earth.

Anchor QEA

- Trees, Critical Areas, Wetlands, Floodplain, Parking.

¹ An agency with jurisdiction is “an agency with authority to approve, veto or finance all or part of a nonexempt proposal (or part of a proposal)” (WAC 197-11-714(3)). Typically, this refers to a local, state or federal agency with licensing or permitting approval responsibility concerning a project.

Landau Associates

- Air Quality, Noise, and peer review for Earth and Surface Water.

Heffron Transportation

- Transportation

Historical Research Associates

- Cultural Resources

Mott MacDonald

- Peer Review - Groundwater

Raedeke Associates

- Peer Review - Trees, Critical Areas, Wetlands, Floodplain

BRC | Coffman Engineers

- Peer Review – Noise

Transpo Group

- Peer Review – Transportation, Parking

Cultural Resource Consultants

- Peer Review – Cultural Resources

ECONorthwest

- Economics & Fiscal

Location of Background Information

Background material and supporting documents are available at the offices of:

EA Engineering, Science and Technology, Inc., PBC
2200 Sixth Avenue, Suite 707
Seattle, WA 98121

City of DuPont
1700 Civic Drive
DuPont, WA 98327

Date of DEIS Issuance

June 14, 2024

Date DEIS

July 15, 2024

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Availability of this DEIS

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DuPont City Hall
1700 Civic Drive
DuPont, WA 98327

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- A. Distribution List
- B. Earth and Water Resources Report, Aspect Consulting, May 2023
- C. Air Quality Assessment, Ramboll Corporation, September 2022
- D. Stormwater Management Report, Aspect Consulting, February 2021
- E. Groundwater Model Update, Aspect Consulting, June 2017
- F. South Parcel Monitoring Plan, Aspect Consulting, November 2017
- G. Fisheries Technical Report, Anchor QEA, June 2023
- H. Plants & Animals Technical Report, Anchor QEA, June 2023
- I. Landmarks Tree Inventory, Anchor QEA, August 2021
- J. Floodplain Habitat Assessment & Mitigation Report, Anchor QEA, November 2020
- K. Noise Study, Ramboll Corporation, September 2022
- L. Visual Impact Analysis, ESA, December 2022
- M. Cultural Resources Desktop Analysis, November 2022
- N. Traffic Impact Assessment, Heffron Transportation, July 2022
- O. Parking Narrative, Anchor QEA, November 2020
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CHAPTER 1

SUMMARY

1.1 INTRODUCTION

This chapter provides a summary of the Draft Environmental Impact Statement (Draft EIS) for the *Pioneer Aggregates South Parcel Project*. **Chapter 1** briefly describes the Proposed Action (Alternative 1) and the No Action Alternative (Alternative 2) and contains a comprehensive overview of environmental impacts identified for the Proposed Action and alternatives. Please see **Chapter 2** of this Draft EIS for a more detailed description of the Proposed Action and alternative and **Chapter 3** for a detailed description of the affected environment, environmental impacts, mitigation measures, and significant unavoidable adverse impacts.

The proposed *Pioneer Aggregates South Parcel Project* would occur on an approximately 313-acre site located on and to the southeast of the existing Pioneer Aggregates Mine in the City of DuPont, southwestern Pierce County, Sections 22, 23, and 26, Township 19 North, Range 1 East of the Willamette Meridian. The site includes areas previously undisturbed by mining (termed the “Expansion Area”) and mining deeper within a portion of existing mine (referred to as the “Re- Mine Area”). The Expansion Area is approximately 188 acres and is comprised of three subareas as follows: The *Kettle Area* is a 10.8-acre previously undisturbed area; the 9.2-acre *Buffer Strip* is a strip of vegetation that was retained along the inside of the originally permitted mine bordering the undeveloped South Parcel; and the *South Parcel Area* is 168 acres located southeast of the original mine. The Re-Mine Area consists of 125 acres in the southeastern portion of the existing mine where current mining activities are permitted above current groundwater levels.

Alternative 1 – Proposed Action

The Proposed Action is to allow horizontal expansion of mining into approximately 188 acres previously undisturbed by mining (Expansion Area), and vertical deepening of approximately 125 acres where mining would deepen a portion of the Existing Mine (Re-Mine Area). In advance of proposed mining, the Proposed Action includes installation of wells to intercept and pump groundwater to dry out gravels for mining. The intercepted groundwater would be conveyed by surface channels and infiltrated in ponds on the floor of the Existing Mine. The Proposed Action is anticipated to extend mining at the current average rate for approximately 14 years. The method of mining and materials processing, and transport of materials would not change from current conditions at the Existing Mine.

Alternative 2 – No Action Alternative

This alternative is typically defined as what would most likely happen if the proposal does not move forward. According to the SEPA Rules, “no action” does not necessarily mean that nothing (no development in this case) would occur. The No Action Alternative that will be studied in this EIS will include two scenarios: Scenario A – Continuation of Existing Conditions (i.e. continuation of mining at the Existing Mine which has an estimated remaining life of 6 to 10 years with mining currently limited to an elevation of 10 feet above groundwater level); and, Scenario B – Site Development Under Existing Zoning (i.e. development under the existing Manufacturing and Research, Residential-4, Residential Reserve, and Open Space/Sensitive Area zoning designations). While it is unlikely that the Sequalitchew Creek Restoration Plan would be implemented if the proposal does not occur, it is possible that other funding (e.g., grants) could be obtained to carry out the Restoration Plan. Therefore, the No Action Alternative will reference the potential for the Sequalitchew Creek Restoration Plan to be implemented without the Proposed Action.

1.2 IMPACTS, MITIGATION MEASURES AND SIGNIFICANT UNAVOIDABLE ADVERSE IMPACTS

The following highlights the impacts, mitigation measures, and significant unavoidable adverse impacts that would potentially result from the alternatives analyzed in this Draft EIS. **Table 1-1** summarizes the potential impacts that would be anticipated under the EIS Alternatives. This summary is not intended to be a substitute for the complete discussion of each element that is contained in **Chapter 3**.

For the Draft EIS analysis, the Sequalitchew Creek Restoration Plan is considered a separate project. As such, the summary of impacts of the Proposed Action only addresses the impacts of proposed mining/reclamation and does not include implementation of the Restoration Plan. The combined impacts of mining under the Proposed Action together with implementation of the Sequalitchew Creek Restoration Plan are discussed as cumulative impacts.

Table 1-1
IMPACT SUMMARY MATRIX

Alternative 1 Proposed Action	Alternative 2 No Action Alternative
3.1 – EARTH	
<ul style="list-style-type: none"> Natural deposits of sand and gravel would be removed, altering the topography and leaving an irregular-shaped bowl. Following mining, slopes would be re-contoured consistent with the reclamation plan. 	<ul style="list-style-type: none"> Under <u>Scenario A</u> mining activities at the Re-Mine Area would continue as permitted, with the Expansion Area remaining in forest. The Expansion Area would be redeveloped under existing zoning and would likely remain relatively flat under <u>Scenario B</u>.
<ul style="list-style-type: none"> Stability of the slopes would be acceptable and exceed static and seismic safety values. 	<ul style="list-style-type: none"> Under <u>Scenario A</u> the mine slopes within the Re-Mine Area would be consistent with approved permits, with the Expansion Area remaining undeveloped. Development under existing zoning in the Expansion Area under Scenario B would not be expected to result in substantial slopes.
<ul style="list-style-type: none"> Considering the course-grained nature and good infiltration characteristics and the proposed stormwater control system, erosion impacts are not anticipated. 	<ul style="list-style-type: none"> Under <u>Scenario A</u> stormwater in the Re-Mine Area would be controlled as under current conditions. Under <u>Scenario B</u> clearing and development under existing zoning would result in the potential for erosion; stormwater control during construction and operations would be required to be consistent with applicable regulations.
<ul style="list-style-type: none"> The proposed mining and reclamation are intended to serve as a final remedy for any lead and arsenic impacted soils, and impacts associated with past industrial activities on the site and deposits associated with the Tacoma Smelter Plume are not anticipated. 	<ul style="list-style-type: none"> Under <u>Scenario A</u> the Re-Mine Area would be reclaimed consistent with the current approved Reclamation Plan, and the Expansion Area would remain forest land. Development under existing zoning under <u>Scenario B</u> would require measures for final remedy of contaminants on the site.
<ul style="list-style-type: none"> Impacts to Landslide, Steep Slope, and Erosion Hazard Areas associated with Sequalitchew Creek ravine are not anticipated. 	<ul style="list-style-type: none"> As under Alternative 1, impacts to Landslide, Steep Slope, and Erosion Hazard areas associated with Sequalitchew Creek would not be anticipated under <u>Scenario A</u> or <u>Scenario B</u>.

Alternative 1 Proposed Action	Alternative 2 No Action Alternative
3.2 – AIR QUALITY	
<ul style="list-style-type: none"> Site preparation activities (logging and clearing, topsoil removal, and construction of perimeter berms) may temporarily cause localized increases in particulate matter (dust) and engine exhaust pollutants. Emissions would be temporary and localized and is expected to be minimal compared to regional emissions. Fugitive dust emissions associated with mining and transport of materials would occur, primarily during the drier summer months. With operations conducted consistent with applicable air quality regulations, significant impacts are not anticipated. Greenhouse gas emissions (GHG emissions) associated with direct emissions (proposed mining, processing, and transport) and indirect emissions (production of electricity utilized and transport) would occur. The annual generation of GHG emissions would not change, although the timeframe for mining on the site would be extended. The direct/indirect GHG emissions associated with the Proposed Action would represent a very small percentage of the total state-wide inventory. 	<ul style="list-style-type: none"> Under <u>Scenario A</u> mining activity on the Re-Mine Area would continue until permitted mining is complete (6 to 10 years estimate). Under <u>Scenario B</u> development of the Expansion Area under existing zoning would result in fugitive dust, equipment emissions, and GHG emissions from construction, Operations of uses under existing zoning would also generate emissions. Fugitive dust emissions under <u>Scenario A</u> and <u>Scenario B</u> would generally be as described above.
<ul style="list-style-type: none"> GHG emissions on the Re-Mine Area under <u>Scenario A</u> would be as under current conditions with the Expansion Area remaining undeveloped. Under <u>Scenario B</u> development of the Expansion Area with construction and operation of uses under existing zoning would be anticipated to generate GHG emissions at a similar magnitude as Alternative 1. 	
3.3 – GROUNDWATER	
<p><u>Impacts of the Proposed Action</u></p> <ul style="list-style-type: none"> Vashon Aquifer water levels would decrease due to dewatering activities needed for mining. Ultimately, the gravel deposits of which the Vashon Aquifer is comprised would be removed from the Re-Mine Area and part of the South Parcel. Drawdown of the Vashon Aquifer is anticipated to affect groundwater within a one to two-mile radius from the proposed mine site, with aquifer drawdown projected to generally decrease with increasing distance from the dewatering area. The extracted groundwater would be conveyed to a constructed wetland system and ultimately infiltration galleries located at the bottom of the current mine, where the Vashon Aquifer and the Sea Level Aquifer are comingled and permeable Steilacoom Gravels are present. 	<ul style="list-style-type: none"> Under <u>Scenario A</u>, mining activities at the Re-Mine Area would continue as permitted and would occur above the groundwater level. No active dewatering wells or passive dewatering trough would be installed and the associated decrease in Vashon Aquifer levels would not occur. Under <u>Scenario B</u>, the increase in impervious surfaces on the site with development consistent with existing zoning would increase surface water runoff and decrease area available for groundwater recharge to underlying aquifers; however, with adherence to applicable regulations related to stormwater quantity, significant impacts are not anticipated.

Alternative 1 Proposed Action	Alternative 2 No Action Alternative
<ul style="list-style-type: none"> Potential impacts on aquifer water levels are expected to build slowly over time as wells are added and mining progresses southward. At the end of mining, a passive dewatering trough would be constructed at the toe of the eastern mine slope to collect groundwater and replace the dewatering wells. With active dewatering during mining, the (“worst case scenario”) maximum predicted aquifer drawdown is 69.56 feet beneath the South Parcel and is up to 9.29 feet beneath the western edge of the off-site marsh complex. Maximum performance threshold drawdowns farther east in the marsh complex are approximately one foot or less. <p>With passive dewatering at the end of mining, the maximum predicted aquifer drawdown is 64.43 feet beneath the South Parcel and is up to 8.73 feet beneath the marsh complex. Maximum performance threshold drawdowns farther east in the marsh complex are approximately one foot or less.</p>	<ul style="list-style-type: none"> No potential impacts on aquifer levels would occur because no active dewatering wells or passive dewatering trough would be installed under <u>Scenario A</u> or <u>Scenario B</u>. No aquifer drawdown would occur because no active dewatering wells or passive dewatering trough would be installed under <u>Scenario A</u> or <u>Scenario B</u>.
<ul style="list-style-type: none"> With the Proposed Action, the general groundwater flow direction in the Vashon Aquifer is expected to remain to the northwest. However, in the immediate vicinity of the project site, local groundwater flow paths are expected to change and flow toward the dewatering wells (or the groundwater collection trough in the last step of groundwater dewatering) rather than flowing toward their existing natural discharge points (i.e., the Olympia Beds Truncation or seeps in the Sequalitchew Creek ravine). Up to 79% of the groundwater flows to Sequalitchew Creek would be lost. <p>Predicted water level changes in the Sea Level Aquifer are expected to be negligible beneath the Olympia Beds.</p> <p>Lower groundwater levels in the Vashon Aquifer near the site are expected to result in less groundwater discharge to surface water bodies and more aquifer recharge due to surface water losses.</p>	<ul style="list-style-type: none"> No changes in groundwater flow direction are expected under <u>Scenario A</u> or <u>Scenario B</u>.

Alternative 1 Proposed Action	Alternative 2 No Action Alternative
<ul style="list-style-type: none"> Groundwater quality beneath and in the area of the South Parcel would largely be unaffected by the Proposed Action. Mining permits require best management practices for groundwater and stormwater pollution prevention, defined spill control and cleanup procedures, and operations management to minimize the use of potential pollutants within the mine. Drinking water supplies near the South Parcel (Sequalitchew Springs, DuPont's Bell Hill and Hoffman Hill wellfields) are not expected to be impacted by the Proposed Action since they are either significantly up gradient of the project site (Sequalitchew Springs) or completed in deeper aquifers that are separated from the Vashon Aquifer by confining units. 	<ul style="list-style-type: none"> No significant impacts on groundwater quality are expected with continuing mining activities at the Re-Mine Area under <u>Scenario A</u> as mining permits requiring BMPs would be required, similar to for the Proposed Action. Clearing and grading associated with construction activities for <u>Scenario B</u> would increase potential for erosion impacts to surface and groundwater resources. With adherence to applicable regulations during construction, significant impacts to groundwater quality are not anticipated No significant impacts on water supplies are expected under <u>Scenario A</u> or <u>Scenario B</u>, similar to under the Proposed Action.
<p><u>Cumulative Conditions</u></p> <ul style="list-style-type: none"> The combined impacts of mining under the Proposed Action together with implementation of the Sequalitchew Creek Restoration Plan (the "cumulative condition") on groundwater would include: <ul style="list-style-type: none"> East Edmond Marsh is predicted to become a groundwater discharge feature; groundwater recharge is expected to increase beneath West Edmond Marsh; significant changes in the groundwater recharge/discharge relationships are not expected at Bell, McKay, and Hamer Marshes. Greater surface water flow through West Edmond Marsh and the Sequalitchew Creek "dry reach" is likely to increase groundwater recharge in its vicinity. Increased recharge in this area would potentially cause spring discharge in the upper Sequalitchew Creek ravine to increase. Streamflow loss from Lower Sequalitchew Creek to the combined Vashon-Sea Level Aquifer should increase (as well as nearby aquifer water level). During dry summers (when Sequalitchew Springs discharge to Sequalitchew Lake is fully consumed by 	<ul style="list-style-type: none"> There is a potential that the Sequalitchew Creek Restoration Plan could be implemented without the Proposed Action (alternative funding sources would be necessary). If so, cumulative conditions would be generally similar to Alternative 1.

Alternative 1 Proposed Action	Alternative 2 No Action Alternative
<p>JBLM), no surface water outflow from Sequalitchew Lake to East Edmond Marsh and Sequalitchew Creek would occur. Lower reaches of Sequalitchew Creek would be dry.</p> <ul style="list-style-type: none"> ○ Intertidal spring water quality and discharge rates from the combined Vashon-Sea Level Aquifer are not expected to change. ○ Recharge near the Diversion Canal (if any) would likely decrease; however, the canal is not a significant source of recharge to the aquifer. 	
3.4 – SURFACE WATER	
<p><u>Impacts of the Proposed Action</u></p> <ul style="list-style-type: none"> • Under the Proposed Action, there would likely be impacts to surface water features both onsite and within the larger Sequalitchew Creek watershed, primarily due to the permanently lowered groundwater levels in the vicinity of the site due to long-term pumping and groundwater drainage at the site. 	<ul style="list-style-type: none"> • Under <u>Scenario A</u>, mining activities at the Re-Mine Area would continue as permitted. No active dewatering wells or passive dewatering trough would be installed and the associated impacts from these activities on surface water features would not occur. Under <u>Scenario B</u>, the increase in impervious surfaces on the site with development consistent with existing zoning would increase surface water runoff; however, with adherence to applicable regulations related to stormwater quantity, significant impacts on surface water are not anticipated.
<ul style="list-style-type: none"> • On an overall basis, on-site grading would affect stormwater flows, but not the overall stormwater balance, within the site. Primarily, changes in groundwater levels beneath the site resulting from proposed groundwater lowering are expected to affect flow in Sequalitchew Creek and surface water levels in the marsh system. 	<ul style="list-style-type: none"> • On-site grading would occur under <u>Scenario A</u> in the Re-Mine Area. On-site grading would also occur under <u>Scenario B</u>, but much less than under the Proposed Action. Similar to the Proposed Action, grading for these Scenarios would affect stormwater flows but not the overall stormwater balance.
<ul style="list-style-type: none"> • <u>Sequalitchew Lake</u> - Water levels in the lake are not anticipated to be significantly impacted by the Proposed Action because the primary water source to the lake is groundwater (spring) discharge at the far eastern end. This source is far from appreciable groundwater drawdown area from the project. Also, the lake level is controlled by the Diversion Weir. 	<ul style="list-style-type: none"> • Water levels in the lake are not anticipated to be significantly impacted under <u>Scenario A</u> or <u>Scenario B</u> because groundwater drawdown would not occur.
<ul style="list-style-type: none"> • <u>Marsh System</u> - Water levels in the off-site marshes]are expected to be lowered, due to the proposed groundwater lowering. The effect on marsh water levels is anticipated to vary seasonally as 	<ul style="list-style-type: none"> • Water levels in the marsh system are not anticipated to be lowered under <u>Scenario A</u> or <u>Scenario B</u>, because groundwater drawdown would not occur.

Alternative 1 Proposed Action	Alternative 2 No Action Alternative
<p>well. In West Edmond Marsh, there could be an average decline of 1.9 ft., in East Edmond Marsh an average decline of 0.1 ft., and in Bell-McKay-Hamer Marshes an average decline of 0.3 ft.</p>	
<ul style="list-style-type: none"> • <u>Sequalitchew Creek</u> - The Proposed Action and associated groundwater-level lowering would decrease the number and flow rate of groundwater seeps and springs feeding Sequalitchew Creek within the ravine section. With passive dewatering at the end of mining, reductions in spring flows leading to the creek are anticipated to occur throughout the entire year and to range from 76% (in January) to 86% (in summer). Base flow and peak flow in the creek are accordingly expected to be reduced. The annual average flow in Sequalitchew Creek is anticipated to be reduced from approximately 1.6 cfs to approximately 0.34 cfs. • <u>Other Surface Water Features</u> - Wetland 1-D; Pond Lake, Strickland, Grant, and Old Fort Lakes; and Wetlands #8, #9, #10, and #11 may be impacted by the proposed groundwater lowering. The magnitude of the impact would depend on proximity to the proposed groundwater lowering activities at the site. Impacts to Wetland 1-D water levels would be the greatest (reduced by approximately 3 ft). Water levels at the other off-site water features would be reduced from 0.5 ft (Old Fort Lakes) to 2 ft (Pond Lake). The on-site Kettle Wetland and its buffer would be cleared under the Proposed Action, and the entire wetland would be eliminated. The proposal includes creation of a new wetland onsite. 	<ul style="list-style-type: none"> • Decreases in the number and flow rate of groundwater seeps and springs feeding Sequalitchew Creek are not expected under <u>Scenario A</u> or <u>Scenario B</u> because groundwater drawdown would not occur. • Other off-site water features are not expected to be impacted under <u>Scenario A</u> or <u>Scenario B</u> because groundwater drawdown would not occur. The on-site Kettle Wetland would not be eliminated under either Scenario.
<p>Cumulative Conditions</p> <ul style="list-style-type: none"> • The combined impacts of mining under the Proposed Action together with implementation of the Sequalitchew Creek Restoration Plan (the “cumulative condition”) on surface water would include: <ul style="list-style-type: none"> ○ <u>Marsh System</u> - Target water levels in the East and West Edmond Marshes could generally be achieved, resulting in continuous surface water flow from Sequalitchew Lake through to Sequalitchew Creek. In general, the water quality within East and West Edmond Marshes is expected to be 	<ul style="list-style-type: none"> • There is a potential that the Sequalitchew Creek Restoration Plan could be implemented without the Proposed Action (alternative funding sources would be necessary). If so, cumulative conditions would be generally similar to Alternative 1.

Alternative 1 Proposed Action	Alternative 2 No Action Alternative
<p>improved under the Proposed Action and the Restoration Plan, due to increased and consistent surface water inflows from Sequalitchew Lake and flushing out through Sequalitchew Creek.</p> <ul style="list-style-type: none"> ○ <u>Sequalitchew Creek</u> - Flow rates and volumes delivered to and flowing through the dry reach segment of Sequalitchew Creek between West Edmond Marsh and the ravine section of the creek are generally expected to increase. However, even with the Restoration Plan, there may still be periods of dry, no-flow conditions in the dry reach of the creek. The number of no-flow days at the mid-ravine would be expected to increase under the Proposed Action and Restoration Plan scenario because of reduced or eliminated groundwater seepage to the ravine section of the creek that would no longer be present to add flows to the creek. These lower predicted flows in the creek are anticipated to occur typically in the period from July through October. However, no flow days are rare under existing conditions and would remain rare with the Proposed Action and Restoration Plan. <p>The water quality effects in the ravine section of Sequalitchew Creek from the combined Proposed Project and Restoration Plan scenario would be primarily related to temperature. Temperatures in the creek in the winter are expected to fall to 5 or 6°C (41°F to 43°F). Creek temperatures in the summer—particularly June through August—are expected to rise to 21°C.</p> <ul style="list-style-type: none"> ○ <u>Other Surface Water Features</u> – other nearby surface water bodies would not benefit directly from the Restoration Plan implementation and would be expected to be impacted by the proposed groundwater lowering in a similar manner to described under the Proposed Action. ○ <u>Stormwater Management</u> – stormwater management would be implemented similar to under the Proposed Action. 	

Alternative 1 Proposed Action	Alternative 2 No Action Alternative
3.5 – FISHERIES <p><u>Impacts of the Proposed Action</u></p> <ul style="list-style-type: none"> Potential fisheries impacts to the marine shoreline include effects from the spillage of sand and gravel from the conveyor, potential for overturning of barges during loading, accidental spills of pollutants, shading, and lighting. Extending the life of the conveyor and barge loading dock by about 14 years would extend any impacts to areas directly beneath the dock by shading the shallow water, as well as impacts associated with dock lighting. 	<ul style="list-style-type: none"> Under <u>Scenario A</u> the current conditions associated with the marine shoreline associated with potential spillage of sand and gravel from the conveyor and potential barge spills would continue, although for a shorter mine life. Under <u>Scenario B</u> clearing and grading associated with construction of residential and manufacturing/research park use would increase potential for erosion impacts to area fisheries resources; with adherence to applicable regulations during construction, significant impacts to these resources are not anticipated. The increase in impervious surfaces on the Expansion Area portion of the site with development consistent with existing zoning would increase surface water runoff; with adherence to applicable regulations related to stormwater quantity and quality, significant impacts are not anticipated.
<p><u>Cumulative Conditions</u></p> <ul style="list-style-type: none"> The combined impacts of mining under the Proposed Action together with implementation of the Sequalitchew Creek Restoration Plan (the ‘cumulative condition’) on stream habitat would include a re-establishment of flow from Sequalitchew Lake to flow through the marshes and into Sequalitchew Creek ravine, and re-establishing ecosystem processes. The increase in hydrology and stream energy would increase aquatic ecosystem productivity and create and maintain habitat diversity, particularly for target species such as chum salmon and cutthroat trout in the system. The cumulative condition would affect stream temperature in the Sequalitchew Creek ravine by restoring the flow of surface water in the system at a different temperature. The effects would vary seasonally as the volume of water from Sequalitchew Lake and temperature vary. In summer, the outflow from Sequalitchew Lake is warmer than Sequalitchew Creek; groundwater input to the creek would also be reduced due to groundwater diversion. This temperature increase could alter habitat for juvenile fish. Flows in the <u>dry reach</u> area upstream of Sequalitchew Creek ravine (an area that currently receives inconsistent flow, with periods of no flow) would increase in the cumulative condition and improve fisheries habitat conditions. However, there could be periods 	<ul style="list-style-type: none"> Under <u>Scenario A</u>, the condition of Sequalitchew Creek fish habitat would remain as under existing conditions. There is a potential that the Sequalitchew Creek Restoration Plan could be implemented without the Proposed Action (alternative funding sources would be necessary) and cumulative conditions would be generally similar to Alternative 1. Under <u>Scenario B</u>, an increased potential for fisheries impacts from stormwater runoff during construction and operation uses consistent with existing zoning on the Expansion Area would occur. Cumulative conditions under Scenario B would be similar to Scenario A. Water temperature conditions associated with the Sequalitchew Creek Restoration Plan may not occur under <u>Scenario A</u> or <u>Scenario B</u>. There is a potential that the Sequalitchew Creek Restoration Plan could be implemented without the Proposed Action (alternative funding sources would be necessary); if implemented, temperature conditions under either alternative would be similar to Alternative 1, although the temperature increase in creek water could be less than under Alternative 1 given retention of groundwater input to the creek. Flows in the dry reach area upstream or the Sequalitchew Creek ravine would not increase under <u>Scenario A</u> or <u>Scenario B</u> without implementation of the Sequalitchew Creek Restoration Plan. There is a potential that the Sequalitchew Creek Restoration Plan could be implemented without the Proposed Action

Alternative 1 Proposed Action	Alternative 2 No Action Alternative
<p>where there would continue to be no flow which would temporarily disrupt the enhanced habitat and fish migratory functions of the stream reach.</p>	<p>(alternative funding sources would be necessary); if implemented, flow conditions in the dry reach area would be similar to Alternative 1.</p>
<ul style="list-style-type: none"> The vast majority of flow at <u>mid-ravine</u> would originate from Sequalitchew Lake. Springs within the ravine currently contribute to mid-ravine flows, and groundwater input to springs would be reduced or eliminated. The contribution from springs with the Proposed Action and Sequalitchew Creek Restoration Plan would be lower than under existing conditions. 	<ul style="list-style-type: none"> Flow to the mid-ravine under <u>Scenario A</u> and <u>Scenario B</u> would be similar to current conditions without implementation of the Sequalitchew Creek Restoration Plan. There is a potential that the Sequalitchew Creek Restoration Plan could be implemented without the Proposed Action (alternative funding sources would be necessary); if implemented, flow conditions in the mid-ravine would be similar to Alternative 1 although contribution from springs to mid-ravine flows would likely be higher than under Alternative 1.
3.6 – PLANTS & ANIMALS	
<u>Impacts of the Proposed Action - Plants</u> <ul style="list-style-type: none"> Direct plant and habitat impacts would include clearing of remaining forest within the Re-Mine Area and majority of forest and shrubland/grassland within the Expansion Area. 	<ul style="list-style-type: none"> Under <u>Scenario A</u> the remaining forest within the Re-Mine Area, and forest and shrubland/grassland within the Expansion Area would remain. Under <u>Scenario B</u> the majority of the forest and shrubland/grassland in the Expansion Area would be cleared to accommodate development under existing zoning.
<ul style="list-style-type: none"> Approximately 90 landmark trees would be removed. Replacement of landmark trees would be provided consistent with City of DuPont replacement ratio guidance. 	<ul style="list-style-type: none"> The existing landmark trees on the site would remain as under existing conditions under <u>Scenario A</u>. Under <u>Scenario B</u>, the majority of the Expansion Area would likely be cleared in association with development under existing zoning, with landmark trees retained or replaced in accordance with DMC requirements.
<ul style="list-style-type: none"> The 1.8-acre Kettle Wetland and buffer would be cleared and eliminated. Proposed mitigation includes creation of new wetland. 	<ul style="list-style-type: none"> The Kettle Wetland and wetland would be retained under both <u>Scenario A</u> and <u>Scenario B</u>. The Kettle Wetland buffer width could be reduced to the DMC minimum under Scenario B.
<u>Cumulative Conditions - Plants</u> <ul style="list-style-type: none"> No cumulative impacts to forest, landmark trees, shrublands, or grasslands habitat anticipated. <p>Sequalitchew Creek Restoration would include re-establishment of flow from Sequalitchew Lake through marshes and to Sequalitchew Creek. Cumulative conditions at specific aquatic resources most applicable to the proposal are as follows:</p> <ul style="list-style-type: none"> <u>West Edmond Marsh</u> – seasonal fluctuations in water levels would decrease which would help stabilize vegetation communities; 	<ul style="list-style-type: none"> No cumulative impacts to forest, landmark trees, shrublands and grasslands habitat anticipated under <u>Scenario A</u> or <u>Scenario B</u>. <p>Under <u>Scenario A</u> and <u>Scenario B</u> the Sequalitchew Creek Restoration Plan would not receive funding from the Applicant, although it is possible that funding for the plan could be provided from another source(s). If funding for the Sequalitchew Creek Restoration Plan were to be obtained and the plan implemented, conditions at the West Edmond Marsh, East Edmond March, and Brackish March would be similar to the cumulative condition under Alternative 1. The changes to groundwater flow that would disrupt ravine (seep) wetlands under Alternative 1 would likely not occur under Scenario A and Scenario B.</p>

Alternative 1 Proposed Action	Alternative 2 No Action Alternative
<ul style="list-style-type: none"> <u>East Edmond Marsh</u> – restored gradient between Lake Sequalitchew to Sequalitchew Creek ravine would allow for re-establishment forested wetland and wetland buffer. <u>Sequalitchew Creek Ravine Wetlands</u> – Changes to groundwater flow would disrupt ravine (seep) wetland habitat. Increased creek flow would also change creek width and increase sediment load which would affect riparian and floodplain wetland communities. <u>Brackish Marsh</u> – Increased flows in Sequalitchew Creek would increase sediment input and decrease salinity at the creek mouth; these conditions are not expected to impact existing marsh vegetation or functions. 	
<u>Impacts of the Proposed Action - Animals</u> <ul style="list-style-type: none"> Foraging and breeding habitat for birds and mammals would be reduced and degraded. Clearing of vegetation would increase the fragmentation and isolation of remaining habitat. 	<ul style="list-style-type: none"> Under <u>Scenario A</u> the remaining forest habitat within the Re-Mine Area, and forest and shrubland/grassland habitat within the Expansion Area would remain. Under <u>Scenario B</u> the majority of the vegetation habitat in the Expansion Area would be cleared and/or fragmented to accommodate development under existing zoning.
<ul style="list-style-type: none"> Removal of mature trees in the coniferous forest could reduce habitat for big brown bat, little brown bat, and Yuma myotis bat priority species. Clearing of forested areas within the site would reduce habitat that is thought to have once been within the historical range of gray squirrels but is unlikely to be occupied by the current population. 	<ul style="list-style-type: none"> Under <u>Scenario A</u> the remaining forest within the Re-Mine Area, and forest within the Expansion Area would remain as would associated animal habitat. Under <u>Scenario B</u> the majority of the forest and associated animal habitat in the Expansion Area would be cleared to accommodate development under existing zoning
<ul style="list-style-type: none"> Within the Kettle Wetland any existing amphibians would perish or be displaced during the clearing of the surface vegetation and soils. New habitat with similar hydrology would be provided in the mitigation wetland. 	<ul style="list-style-type: none"> The Kettle Wetland and wetland would be retained under both <u>Scenario A</u> and <u>Scenario B</u>. The Kettle Wetland buffer width could be reduced to the DMC minimum under Scenario B.
<u>Cumulative Conditions - Animals</u> <ul style="list-style-type: none"> For birds the cumulative condition (specifically the Restoration Plan) would reverse the changes in bird habitat in East and West Edmond Marsh that have occurred over the last three decades. This would include a reorganization of some specific habitats to include scrub-shrub wetlands and forested wetlands. It would increase the area of forested wetland buffer as water levels in 	<ul style="list-style-type: none"> Under <u>Scenario A</u>, the condition of bird would remain as under existing conditions. There is a potential that the Sequalitchew Creek Restoration Plan could be implemented without the Proposed Action (alternative funding sources would be necessary) and cumulative conditions would be generally similar to Alternative 1. Under <u>Scenario B</u>, an increased potential for South Parcel clearing during

Alternative 1 Proposed Action	Alternative 2 No Action Alternative
<p>some areas of East Edmond Marsh drop and increase the amount of and persistence of emergent wetland habitat in the west end of West Edmond Marsh.</p>	<p>construction and activity associated with uses consistent with existing zoning on the Expansion Area would occur. Cumulative conditions under Scenario B would be similar to Scenario A.</p>
<ul style="list-style-type: none"> Beaver in the Edmond Marsh complex would be actively managed under the cumulative condition (specifically the Sequalitchew Creek Restoration Plan). The intent is to maintain the beaver population while managing water levels to restore flow. Other mammal species are expected to see increases in available habitat, particularly where water levels drop providing additional denning opportunities in the wetland banks and increasing the size of upland islands within the wetland complex. 	<ul style="list-style-type: none"> Beaver management in the Edmond Marsh complex would not occur under <u>Scenario A</u> or <u>Scenario B</u> without implementation of the Sequalitchew Creek Restoration Plan. There is a potential that the Sequalitchew Creek Restoration Plan could be implemented without the Proposed Action (alternative funding sources would be necessary); if implemented, beaver management would be similar to Alternative 1.
<ul style="list-style-type: none"> Amphibian reproduction can be adversely affected by sudden, non-seasonal changes in water levels. This occurs in West Edmond Marsh when the large beaver dam above the dry reach is breached. Amphibian eggs attached to the stalks of emergent vegetation would suddenly be above water, causing complete mortality. Areas of reduced wetland area under the cumulative condition in the Edmond Marsh complex could reduce the area of habitat for some amphibian species, while others would benefit from the re-establishment of the forested riparian buffer. 	<ul style="list-style-type: none"> Amphibian conditions would remain as under current conditions under <u>Scenario A</u> or <u>Scenario B</u> without implementation of the Sequalitchew Creek Restoration Plan. There is a potential that the Sequalitchew Creek Restoration Plan could be implemented without the Proposed Action (alternative funding sources would be necessary); if implemented, amphibian conditions would be similar to Alternative 1.
3.7 – NOISE	
<ul style="list-style-type: none"> Site preparation activity (logging, top soil removal, extension of conveyors, etc.) would entail heavy equipment similar to that used in current mining, and noise levels associated with site preparation would be similar to that under current and proposed mining. Site preparation activities could result in temporary and short-term increases in noise levels. Operational noise from equipment used for mining (front-end loaders, bulldozer, and electric conveyor) would increase compared to existing conditions. 	<ul style="list-style-type: none"> Under <u>Scenario A</u> noise associated with continued mining in the Re-Mine Area would continue to generate noise similar to existing conditions for the duration of remaining mining (6 to 10 years estimated). The Expansion Area would remain undeveloped. Under <u>Scenario B</u> construction associated with development under existing zoning would generate temporary increases in noise. Under <u>Scenario A</u> noise associated with continued mining in the Re-Mine Area would continue to generate noise similar to existing conditions for the duration of remaining mining (6 to 10 years estimated). Operation of residential and manufacturing/research uses under <u>Scenario B</u> would generate noise associated with traffic and on-site activity.

Alternative 1 Proposed Action	Alternative 2 No Action Alternative
<ul style="list-style-type: none"> Noise associated with proposed mining was modeled (CadnaA noise model), and modeled noise levels generally complied with applicable noise limits. Some exceedance at the upper floors of the Creekside Apartment units facing the site may exceed limits if Phase 2C mining occurred during early morning hours (between 5 and 7 AM); limiting bulldozer use during these morning hours results in modeled noise levels below the noise limit. 	<ul style="list-style-type: none"> Noise associated with continued mining on the Re-Mine Area under <u>Scenario A</u> would be as under current conditions. Under <u>Scenario B</u> construction and operation of uses under existing zoning on the Expansion Area would generate noise; noise levels would be required to be in compliance with applicable noise limits.
3.8 – LAND USE	
<ul style="list-style-type: none"> The Proposed Action would continue mining use on the Re-mine Area and would change the land use of the Expansion Area from undeveloped forest area to mining use. No existing uses would be displaced under the Proposed Action. 	<ul style="list-style-type: none"> Under <u>Scenario A</u> the use of the Re-Mine Area would continue in mining use and the Expansion Area would remain as undeveloped forest. The Expansion Area would be converted to manufacturing/research and residential use under Scenario B. No existing uses would be displaced under <u>Scenario A</u> or <u>Scenario B</u>, although the Expansion Area would be developed consistent with existing zoning under Scenario B.
<ul style="list-style-type: none"> Portions of the Expansion Area are proximate to surrounding sensitive uses off-site and mining activity (noise, dust) has the potential to be perceived at surrounding uses, including recreational and residential land uses. 	<ul style="list-style-type: none"> Under <u>Scenario A</u> the use of the Re-Mine Area would continue in mining use and the Expansion Area would remain as undeveloped forest. Under <u>Scenario B</u> the Expansion Area would be redeveloped with manufacturing/research and residential uses under existing zoning, and activity associated with these uses (noise, traffic, etc.) has the potential to be perceived at surrounding land uses.
<ul style="list-style-type: none"> The proposed minimum 100-foot wide vegetated setback from the top of the Sequalitchew Creek ravine slope, coupled with a 20-foot high berm where the trail is not in the ravine, would limit the potential for impacts to users of the trail. 	<ul style="list-style-type: none"> Under <u>Scenario A</u> the Expansion Area would remain in undeveloped forest use. Redevelopment of the Expansion Area with manufacturing/research and residential uses consistent with existing zoning under <u>Scenario B</u> would be required to provide 25-foot front setbacks and 15-foot side and rear setbacks; providing a 20-foot high berm where the trail is not in a ravine is not a zoning requirement.
<ul style="list-style-type: none"> The southeast corner of the Expansion Area is proximate to the Creekside Village apartment complex and phased clearing and mining (Phase 2C) would occur in proximity to this residential use. The vegetated perimeter buffer and 20-foot high berm would limit the potential for impacts. 	<ul style="list-style-type: none"> The Expansion Area would remain in undeveloped forest use under <u>Scenario A</u>. Under <u>Scenario B</u> the southeast corner of the Expansion Area would be developed with uses consistent with the Manufacturing/Research Park zoning. A 20-foot high berm is not required under existing zoning.
<ul style="list-style-type: none"> On an overall basis, proposed mining is not expected to indirectly affect uses in the vicinity. Proposed mining activities are considered a transitional use and would not prevent future uses of 	<ul style="list-style-type: none"> As under Alternative 1, land use under <u>Scenario A</u> would not be anticipated to result in indirect land use impacts or generate spin-off uses. Residential and manufacturing/research uses under <u>Scenario B</u> would provide new site residents and employees that would increase the potential for spin-off uses in the area

Alternative 1 Proposed Action	Alternative 2 No Action Alternative
<p>the area. It is not anticipated that the Proposed Action would generate any spin-off uses in the area.</p>	
3.9 - AESTHETICS	
<ul style="list-style-type: none"> Under the Proposed Action site preparation and extraction of mined material would result in a permanent change in the visual character of the Expansion Area portion of the site. The change of visual character of the Expansion Area would occur incrementally over an approximately 14-year period. Six viewpoints representative of viewpoints where public views toward the site are simulated to illustrate to illustrate the potential for visual impacts. <ul style="list-style-type: none"> Changes to the existing view from the identified viewpoints primarily relate to the removal of mature trees on the site from viewpoints along Powerline Road and at Powerline Road Community Garden. Views to the site would not be affected from viewpoints at Sequalitchew Drive, Sequalitchew Trail, or the Home Course. 	<ul style="list-style-type: none"> Under <u>Scenario A</u> the Expansion Area would remain in undeveloped forest visual character. Manufacturing/research park and residential development under <u>Scenario B</u> would permanently change the visual character of the Expansion Area. Under <u>Scenario A</u> the Expansion Area would remain in undeveloped forest visual character. Manufacturing/research park and residential development under <u>Scenario B</u> would permanently change the visual character of the Expansion Area. Visual conditions would be as under existing conditions under <u>Scenario A</u> with a similar potential for visual change under <u>Scenario B</u> as under Alternative 1. <ul style="list-style-type: none"> Depending on the level of development on the Expansion Area under <u>Scenario B</u> some removal of mature trees could be visible. Depending on the location and height of buildings some buildings could be visible. Given the intervening topography, development under <u>Scenario B</u> would likely not be visible from the Sequalitchew Drive, Sequalitchew Trail or Home Course viewpoints.
3.10 – CULTURAL RESOURCES	
<ul style="list-style-type: none"> A review of archaeological sites in or near the Area of Impacts (ADI) was completed for this EIS. Three known archaeological are located within the ADI and one known site is located south of the ADI. <ul style="list-style-type: none"> Site 45P162 – Railroad Dump #2 (<i>within the ADI</i>) Site 45P163 – Railroad Dump #3 (<i>within the ADI</i>) Site 45P166 – Methodist Episcopal Mission (<i>outside ADI</i>) Site 45P170 – DuPont Company (<i>within ADI</i>) Sites 45P162, 45P163 and 45P170 within the ADI have been deemed not eligible for listing in the National Register of Historic 	<ul style="list-style-type: none"> Same as Alternative 1 for <u>Scenario A</u> and <u>Scenario B</u>. Same as Alternative 1 for <u>Scenario A</u> and <u>Scenario B</u>. Same as Alternative 1 for <u>Scenario A</u> and <u>Scenario B</u>.

Alternative 1 Proposed Action	Alternative 2 No Action Alternative
Places (NRHP) and Site 45P166 is located outside of the ADI and would not be impacted.	
3.11 – TRANSPORTATION	
<ul style="list-style-type: none"> Trip generation would continue at current levels and would remain below the peak day estimates evaluated in the 2013 North Parcel FEIS. As indicated in the 2013 North Parcel FEIS, “<i>because the project generated trips would represent a small portion of traffic volumes at study intersections and would have negligible effect on the levels of service at the I-5 ramps and city intersections, no adverse level of service impacts are projected to result from the South Parcel proposal.</i>” This conclusion is applicable to the Proposed Action. 	<ul style="list-style-type: none"> Under <u>Scenario A</u> current traffic conditions associated with the Re-Mine Area would continue and there would be no traffic associated with the Expansion Area. Construction and operational traffic typical of manufacturing/research and residential uses would be generated on the Expansion Area under <u>Scenario B</u>. The conclusion from the 2013 North Parcel FEIS is not applicable to either <u>Scenario A</u> or <u>Scenario B</u>.
3.12 – FISCAL	
<ul style="list-style-type: none"> Fiscal conditions are primarily a function of tax revenues to the City of DuPont generated by the Proposed Action and City of DuPont service costs associated with the proposal. The most relevant tax revenue sources to the City of DuPont associated with the Proposed Action include property taxes, sales & use taxes, business & occupation taxes, and utility taxes. Public service costs to the City of DuPont associated with the Proposed Action include costs associated with: Police and Fire Departments; Parks/Facilities/Greenways; General City Administration; Community Development; and Public Works (street maintenance). The cost/revenue balance to the City of DuPont associated with the Proposed Action is analyzed under two approaches (<u>cost allocation</u> approach and <u>average value</u> approach). The fiscal analysis indicates a surplus to the City of DuPont under either approach, ranging from an estimated annual surplus of \$18,400 under the cost allocation 	<ul style="list-style-type: none"> Similar to Alternative 1 for <u>Scenario A</u> and <u>Scenario B</u>. Similar to Alternative 1 for <u>Scenario A</u> and <u>Scenario B</u>. Similar to Alternative 1 for <u>Scenario A</u> and <u>Scenario B</u>. For <u>Scenario A</u> the current cost/revenue condition associated with the Re-Mine Area would continue, with minimal revenue and cost associated with the Expansion Area. For <u>Scenario B</u> the current cost/revenue condition associated with the Re-Mine Area would continue. For the Expansion Area, both manufacturing/research and residential uses represent a more intense use of the land that would lead to more property, sales, and utility, and other taxes on a per

Alternative 1 Proposed Action	Alternative 2 No Action Alternative
approach to an estimated annual surplus of \$125,700 under the average value approach.	square foot basis. However, on the cost side these uses also generate more needs for public services such as public safety services for residential uses and public works needs to support manufacturing uses.

SUMMARY OF MITIGATION MEASURES AND SIGNIFICANT UNAVOIDABLE ADVERSE IMPACTS

3.1 Earth

Mitigation Measures

The following mitigation measures have been included in the Proposed Action to reduce impacts on slope stability and erosion (see to Section 3.3, **Surface Water**, and Section 3.4, **Groundwater** for additional discussion and mitigation measures related to surface water and groundwater):

- A reclamation plan would be prepared and implemented in accordance with the Surface Mining Act (RCW 78.44). The reclamation plan would be submitted to DNR for review and approval prior to mining. Prior review by the City is also required as part of that process.
- Mining would occur in segments; no mass clearing of the Expansion Area portion of the site would occur.
- An erosion and sediment control plan would be prepared and implemented in accordance with the requirements of the City of DuPont Municipal Code (DMC 22.01.180) and the NPDES Sand and Gravel General Permit. Erosion control features would include stormwater drainage into the interior of the mine and onsite stormwater disposal.
- A vegetated buffer would be maintained between the proposed mine area and the top of steep slopes in accordance with the City of DuPont's Sensitive Areas Code [DMC 25.105.070(2)].
- A 100-foot setback would be maintained from the top of slopes greater than 40% within the Sequalitchew Creek ravine, consistent with the conditions for the existing mine and the 1994 and 2012 Settlement Agreements.
- Earthwork for excavation and reclamation would be in accordance with the federal and state statutes of the Mine Safety and Health Act and the Surface Mining Act.
- Topsoil would be stockpiled and used for reclamation of mined areas. Consistent with the approved Reclamation Plan, Cleanup Action Plan developed for the South Parcel Project and published Ecology guidance, samples would be collected from stockpiled topsoil to confirm arsenic concentrations meet Ecology standards.

- After application of the topsoil, slopes would be re-vegetated by planting with trees and grass. When reclamation is complete, heavy equipment would generally not operate on the reclaimed slopes except for construction or maintenance of pedestrian paths, access roads, utilities, or other permitted facilities.
- The Expansion Area would be cleared in segments corresponding to the mining plan.
- Internal drainage would be maintained during mining.
- Mine slopes would be track-walked to tamp soils and create surface roughness to encourage infiltration of stormwater on the slope.
- Mine slopes would be reclaimed with soil amendments and vegetation according to a DNR-approved Reclamation Plan.
- The existing wheel wash, or equivalent equipment, would continue to be used and maintained for vehicles exiting the mine.
- Settling ponds would be constructed upstream of the infiltration ponds.
- Mine slopes would be periodically inspected and repaired or revegetated to reduce erosion or improve surface stability.

Significant Unavoidable Adverse Impacts

The Proposed Action would result in the unavoidable alteration of topography and creation of new slopes. With implementation of proposed mitigation measures, however, no significant unavoidable adverse earth-related impacts are anticipated from the Proposed Action.

3.2 Air Quality

Mitigation Measures

The following mitigation measures have been included in the Proposed Action to reduce air quality impacts.

Proposed Mitigation Measures

- The use of control equipment, enclosures, and wet (or chemical) suppression techniques, as practical, and curtailment during high winds.
- Surfacing roadways and parking areas with asphalt, concrete, or gravel.
- Treating temporary, low-traffic areas (e.g., construction sites) with water or chemical stabilizers, reducing vehicle speeds, constructing pavement or rip rap exit aprons, and use of the existing wheel wash system or equivalent equipment by vehicles before they exit to prevent the track-out of mud or dirt onto paved public roadways.
- Covering or wetting truck loads or allowing adequate freeboard to prevent the escape of dust-bearing materials.

Other Possible Mitigation Measures

- Converting incandescent lighting systems to LED and implementing motion-activated lighting.
- Regenerating electricity from the conveyor belt leading downhill to the barge load-out facility.
- Participating in PSE's Schedule 258 electricity energy efficiency program.

Significant Unavoidable Adverse Impacts

With the application of some or all the mitigation measures described above and consistent use of best management practices, no significant air quality impacts are expected from the proposed project.

3.3 Groundwater

Mitigation Measures

Proposed Mitigation Measures

The following mitigation measures have been included in the Proposed Action to reduce surface water and groundwater impacts.

- Groundwater and surface water level monitoring for features in the site area that could potentially be affected would be implemented. Monitoring data would be reviewed throughout the active dewatering period and used in support of the Proposed Action mitigation measures bulleted below. City review of monitoring data should include retention of a qualified hydrogeologist to provide qualified review of both data and projected impacts.
- Steps 1 and 2 of the aquifer pumping tests would be completely reversible and would allow for confirmation testing of groundwater model predictions. If observed impacts differ significantly from predicted impacts, updates to the groundwater model would be pursued to improve its predictive accuracy for subsequent dewatering steps and/or adjustments to the dewatering and mining activity plans would be made.
- The dewatering plan would be phased so that dewatering would start at locations farthest from Sequalitchew Creek and the wetland complex, and gradually would proceed closer to the waterbodies only if observed aquifer water levels do not exceed performance threshold values.
- If performance threshold water levels are exceeded, adaptive management responses (such as adjusting the dewatering operations and/or the boundaries and depth of mining so that performance threshold exceedances do not occur) would be required before additional mining could occur.
- Since dewatering Step 3 would be irreversible, increased monitoring vigilance at different phases of Step 3 as dewatering and mining progress southward could be warranted to ensure that performance threshold water levels are not exceeded.
- Erosion and sediment controls and stormwater treatment, which are intended to protect groundwater quality and the long-term performance of the proposed infiltration facilities, would be implemented (see **Section 3.1, Earth**, for details).

Other Possible Contingency Mitigation Measures

As an element of the approval conditions for the Proposed Action, the City of DuPont could require a Monitoring and Response Plan. The Monitoring and Response Plan could include, among other things, definition of monitoring methodology, establishment of performance thresholds, and identification of contingency response measures to be considered for implementation if monitoring indicates exceedance of a performance threshold. The Monitoring and Response Plan could incorporate elements of the adaptive management processes proposed to be established for the Proposed Action and the Sequalitchew Creek Restoration Plan.

The Sequalitchew Creek Restoration Plan is a separate but related action that is intended to

be implemented in parallel with the Proposed Action. The mine and the stream restoration project each have their own adaptive management process tailored to achieving the goals and objectives of each specific project. The interaction between the two adaptive management processes could include: 1) project schedules that encourage restoration in advance of the potential impacts from mining; 2) development of performance thresholds for mining that support restoration and 3) coordinated monitoring and open sharing of information. The City, as the permitting authority for both projects would have a key role in assuring consistency between the two adaptive management plans. The adaptive management process included in the Monitoring Plan (Aspect Consulting, 2017) includes, but is not limited to, the following potential mitigation actions if the impacts of dewatering on groundwater levels are greater than anticipated including: Installing additional monitoring locations; modifying the dewatering system or approach; revising the mining plan; and providing additional mitigation to impacted surface waters.

The Sequalitchew Creek Restoration Plan's adaptive management process similarly identifies examples of potential response actions to be implemented if restored flows do not meet the plans objectives that include, but are not limited to: removing beaver obstructions; installing additional beaver exclusion devices; escalating beaver management; installing additional flow paths through the former railroad grade that divides Edmond Marsh; sealing the losing reach; creating connections to Bell and/or McKay marshes; and expediting later elements of the Restoration Plan.

Other groundwater contingency mitigation measures that could be implemented as part of the adaptive management process include:

- Groundwater captured from the mine could be conveyed to the Sequalitchew Creek ravine (either by open channel or micro-tunneling). This approach could provide mitigation for decreased seep discharge within the ravine if the conveyance outfall (or confluence) is located in the vicinity where groundwater discharge currently occurs. However, this mitigation measure could require revisiting conflicting provisions in the 2011 Settlement Agreement and would not augment streamflow between Sequalitchew Lake and the ravine.
- Groundwater captured from the mine could be pumped into Edmond Marsh rather than into the Sequalitchew Creek ravine. Benefits of this mitigation approach would be that cool groundwater (which has a low summer water temperature relative to surface water) would enter the marsh and could enhance Sequalitchew Creek surface water flow and fish habitat. A potential drawback of this mitigation action is that groundwater discharge/infiltration to the comingled Vashon-Sea Level Aquifer would substantially decrease. In addition, it likely would over-mitigate expected dewatering impacts to Sequalitchew Creek if active year-round (as opposed to only during certain dry or low-flow conditions).
- Water could be actively conveyed to Edmond Marsh during dry periods, while during

all other periods captured groundwater from the South Parcel could be conveyed to the lower mine area for infiltration (as is planned in the Proposed Action). This could serve as a contingent measure for consideration and/or further study to supplement Sequalitchew Creek flows during dry periods when no outflow from Sequalitchew Lake occurs or if the Restoration Plan provides less environmental benefit than currently expected.

Significant Unavoidable Adverse Impacts

- The Vashon Aquifer water table would significantly decrease in the vicinity of the South Parcel. Groundwater levels beneath Edmond Marsh, the closest marsh to the site, are predicted to decrease by up to 0.87 feet near its center (at MW-EM-2S) and remain up to 0.84 feet lower following completion of the Proposed Action. At the west end of the marsh (MW-EM-1S), long-term groundwater level declines of up to 8.73 feet could occur.
- Groundwater discharge in the Sequalitchew Creek ravine is expected to significantly decrease (by an annual average of up to 83%) during the Proposed Action and is expected to provide on average 79% less baseflow to Sequalitchew Creek following the Proposed Action. Greater percentage decreases in baseflow are expected during the dry season. Impacts to baseflow quantity could be mitigated by the Sequalitchew Creek Restoration Plan, except during periods when surface water outflow from Sequalitchew Lake does not occur.

3.4 Surface Water

Mitigation Measures

Proposed Mitigation Measures

- Mitigation for the elimination of the Kettle Wetland will be accomplished by the creation of a new 3.4-acre constructed wetland in the southwest portion of the existing mine's bottom. The constructed wetland will be designed, constructed, maintained, and monitored in accordance with a detailed wetland mitigation plan (Anchor QEA, 2021). This is discussed in further detail in Section 3.5, **Plants and Animals**.
- On-site stormwater flow and groundwater seepage and the associated potential for increased erosion will be managed in accordance with a series of Mine Best Management Practices, as described in the Preliminary Stormwater Management Report (2021) and the Earth and Water Resources Report (Aspect 2022, Revised 2023).

Proposed Mitigation Measures for Off-Site Resources

As described in **Chapter 2** of this DEIS, the 2011 Settlement Agreement states that permits for the Pioneer Aggregates South Parcel Project (Proposed Action) shall not be effective until permits for the Sequalitchew Creek Restoration Plan (Restoration Plan) are in place. The Restoration Plan will be evaluated as a separate but related action. The Restoration Plan seeks to restore and enhance streamflow and ecological functions from Sequalitchew Lake through Edmond Marsh into Sequalitchew Creek ravine by sequentially restoring diverted flows back to the creek, improving the sustainability of flows through the system, and restoring aquatic habitat.

The impacts of this mitigation measure are the same as described above in the subsection Cumulative Impacts with Proposed Action and Sequalitchew Creek Restoration Plan.

Other Possible Contingency Mitigation Measures

As an element of the approval conditions for the Proposed Action, the City of DuPont could require a Monitoring and Response Plan. The Monitoring and Response Plan could include, among other things, definition of monitoring methodology, establishment of performance thresholds, and identification of contingency response measures to be considered for implementation if monitoring indicates exceedance of a performance threshold. The Monitoring and Response Plan could incorporate elements of the adaptive management processes proposed to be established for the Proposed Action and the Sequalitchew Creek Restoration Plan.

The Sequalitchew Creek Restoration Plan is a separate but related action that is intended to be implemented in parallel with the Proposed Action. The mine and the stream restoration project each have their own adaptive management process tailored to achieving the goals and objectives of each specific project. The interaction between the two adaptive management processes could include: 1) project schedules that encourage restoration in advance of the potential impacts from mining; 2) development of performance thresholds for mining that support restoration and 3) coordinated monitoring and open sharing of information. The City, as the permitting authority for both projects would have a key role in assuring consistency between the two adaptive management plans.

The adaptive management process included in the Monitoring Plan (Aspect Consulting, 2017) includes, but is not limited to, the following potential mitigation actions if the impacts of dewatering on groundwater levels are greater than anticipated including: Installing additional monitoring locations; modifying the dewatering system or approach; revising the mining plan; and providing additional mitigation to impacted surface waters.

The Sequalitchew Creek Restoration Plan's adaptive management process similarly identifies examples of potential response actions to be implemented if restored flows do

not meet the plans objectives that include, but are not limited to: removing beaver obstructions; installing additional beaver exclusion devices; escalating beaver management; installing additional flow paths through the former railroad grade that divides Edmond Marsh; sealing the losing reach; creating connections to Bell and/or McKay marshes; and expediting later elements of the Restoration Plan.

Other surface water contingency mitigation measures that could be implemented as part of the adaptive management process include:

- As described in Section 3.3, **Groundwater**, a possible contingency mitigation measure not considered in recent CalPortland documents – but discussed in the 2010 Final Feasibility Study (Anchor QEA 2010) – is to convey at least some of the intercepted groundwater seepage from the eastern slopes of the proposed mine expansion area to discharge to the ravine section of Sequalitchew Creek or West Edmond Marsh. Such mitigation has the potential to provide surface water flows in Sequalitchew Creek to offset the reduced groundwater seepage to the creek due to the Proposed Action and/or to make up for low- or no-flow periods in the creek and marsh system due to low or no flow discharges from Sequalitchew Lake under implementation of the Restoration Plan. If coupled with the Restoration Plan (including lining the dry reach section of the creek), the diversion of the groundwater seepage from the proposed expansion area to West Edmond Marsh would provide flows to the dry reach as well as the ravine section of Sequalitchew Creek, while diversion to the ravine section of the creek would only provide flows to the ravine section (not the dry reach). Such mitigation could be adaptively managed, based on flow and temperature conditions in Sequalitchew Creek, and in such a way as to allow for some groundwater seepage from the proposed expansion area to be retained on-site and infiltrated to the Vashon-Sea Level Aquifer via the planned infiltration facilities in order to reduce negative impacts to the intertidal springs. Conveying groundwater from the mine expansion area to the ravine may require revisiting conflicting provisions in the 2011 Settlement Agreement.
- Another possible additional mitigation measure that was considered in the 2010 Final Feasibility Study (Anchor QEA 2010) is raising the level of Sequalitchew Lake to increase the hydraulic gradient of Sequalitchew Creek through the East and West Edmond Marshes in order to better facilitate flows through the marsh system. With Restoration Plan implementation, the anticipated hydraulic gradient across the marsh system is approximately 0.0006 ft/ft. According to the 2010 Final Feasibility Study, the primary limitation to raising the lake level to induce a higher gradient is the protection of the Sequalitchew Springs located on the east end of Sequalitchew Lake. The Sequalitchew Springs are the drinking water source for JBLM and are protected behind a back-flow prevention weir. Reportedly, the lake level could potentially be raised (by modifying the outlet structure at the west end of the lake) by 0.56 ft with a moderate level of effort for modifications to the back-flow

prevention weir at the springs. Raising the lake level higher than that is possible but would reportedly require a significant reconstruction of the facilities at the springs.

Significant Unavoidable Adverse Impacts

Under the Proposed Action with the Sequalitchew Creek Restoration Plan, unavoidable adverse impacts to the surface water system of the Sequalitchew Creek watershed would likely include:

- Increasing the surface water gradient between Sequalitchew Lake and the top of the ravine to restore the natural flow regime to the Sequalitchew Creek watershed, in combination with lower groundwater levels resulting from mining, would result in water levels in East and West Edmond Marshes being lowered by up to approximately 3 ft compared to existing conditions.
- Water levels in isolated lakes and kettle wetlands not directly connected by surface water to the Sequalitchew Creek system would be lowered due to lowered groundwater levels from the Proposed Action. The anticipated decrease in water levels would be approximately 3 ft for Wetland 1D; 2 ft for Pond Lake; 1 ft for Wetlands, #8, #9, #10, and #11; and 0.5 ft for Old Fort Lake. Implementation of the Restoration Plan would likely not mitigate these impacts. These isolated wetlands have significant seasonal variability in water levels and are often dry during the summer. For these reasons, changes that result from changes in groundwater level may be difficult to observe.
- Flows in the ravine section of Sequalitchew Creek would likely be lower than under existing conditions an estimated 10% of the time due to a reduction in groundwater seeps and spring discharges to the creek following groundwater lowering.
- Water temperatures in Sequalitchew Creek from April through September would likely be warmer than under existing conditions and could be expected to exceed 16°C (the 7-day average of daily maximum temperatures water quality criterion provided in WAC 173-201A-200) from May to September.
- If the contingency mitigation measure of conveying the intercepted groundwater from the eastern slopes of the proposed expansion area to Sequalitchew Creek and/or West Edmond Marsh is feasible and implemented as part of the adaptive management process for the Proposed Action and Restoration Plan Alternative, the flow and temperature impacts to Sequalitchew Creek would likely be at least partially reduced, if not eliminated, and may result in greater overall improvement of conditions within the creek.
- Flows in the JBLM Diversion Canal would be reduced with the redirection of Sequalitchew Lake outlet flows to the historically natural drainage course through

Sequalitchew Creek. Because the Diversion Canal was originally constructed to convey stormwater flows from JBLM and provide a watercourse for Sequalitchew Lake outlet flows, the reduced flows in the Diversion Canal are not considered an adverse impact.

- Because on-site stormwater flows will be managed in a similar manner as existing conditions (i.e., on-site collection, conveyance, and infiltration) and because the removal of the Kettle Wetland will be mitigated by a new constructed wetland, no significant unavoidable adverse impacts to on-site surface waters are anticipated under the Proposed Action and Restoration Plan scenario.

3.5 Fisheries

Mitigation Measures

Proposed On-Site Mitigation

- Existing mitigation measures at the barge loading facility at Tatsolo Point that minimize the potential for impacts on fisheries resources would continue. These include:
 - The facility is designed in accordance with adopted federal, state, and local regulations and guidelines to reduce the likelihood of spills of lubricants, fuels, and chemicals employed in the processing and manufacturing proposed for the site;
 - The overwater portion of the conveyor is enclosed to prevent spillage of gravel; and
 - The dock is not used for the delivery of supplies, or chemical or other materials by water; a spill plan has been prepared for all elements and operations of the facility (marine and upland). Appropriate oil spill containment equipment is available at the dock site.
- Mining operations would continue to manage fugitive dust, and forested buffers around Sequalitchew Creek would remain to protect water quality and its support of healthy fisheries resources.
- Site water and stormwater would continue to be recycled and/or infiltrated in the mine, eliminating turbid runoff and its potential to impact fisheries resources.
- During construction of the mitigation wetland and other excavation of soils, construction best management practices would be used to prevent erosion of soils and sedimentation of water resources that support fisheries resources.

Proposed Mitigation for Off-Site Resources

- Implementation of the Sequalitchew Creek Restoration Plan would mitigate for potential impacts to aquatic resources and vegetation resulting from changes to groundwater levels. The Sequalitchew Restoration Plan will be permitted and implemented contemporaneously with mining of the South Parcel. Among other things, the Restoration Plan would mitigate for the impacts of the mine. Monitoring and mitigation measures, including specific timeframes for monitoring and mitigation efforts, are defined in the Restoration Plan. The goal of the Restoration Plan is to offset potential impacts to aquatic resources within the area subject to changes in groundwater level.
- The Sequalitchew Creek Restoration Plan and proposed mining both include monitoring and adaptive management programs aimed at ensuring the projects achieve their objectives (e.g., to maintain and enhance fisheries resources). A main purpose of ongoing monitoring and adaptive management is to look for detrimental cumulative effects and, if identified, adaptively respond to minimize them.

Other Possible Contingency Mitigation Measure

- As an element of the approval conditions for the Proposed Action, the City of DuPont could require a Monitoring and Response Plan. The Monitoring and Response Plan could include, among other things, definition of monitoring methodology, establishment of performance thresholds, and identification of contingency response measures to be considered for implementation if monitoring indicates exceedance of a performance threshold. The Monitoring and Response Plan could incorporate elements of the adaptive management processes proposed to be established for the Proposed Action and the Sequalitchew Creek Restoration Plan.
- The Sequalitchew Creek Restoration Plan is a separate but related action that is intended to be implemented in parallel with the Proposed Action. The mine and the stream restoration project each have their own adaptive management process tailored to achieving the goals and objectives of each specific project. The interaction between the two adaptive management processes could include: 1) project schedules that encourage restoration in advance of the potential impacts from mining; 2) development of performance thresholds for mining that support restoration and 3) coordinated monitoring and open sharing of information. The City, as the permitting authority for both projects would have a key role in assuring consistency between the two adaptive management plans. The adaptive management process included in the Monitoring Plan (Aspect Consulting, 2017) includes, but is not limited to, the following potential mitigation actions if the impacts of dewatering on groundwater levels are greater than anticipated including: Installing additional monitoring locations; modifying the

dewatering system or approach; revising the mining plan; and providing additional mitigation to impacted surface waters.

- Other groundwater contingency mitigation measures that could be implemented as part of the adaptive management process include:
 - Groundwater captured from the mine could be conveyed to the Sequalitchew Creek ravine (either by open channel or micro-tunneling). This approach could provide mitigation for decreased seep discharge within the ravine if the conveyance outfall (or confluence) is located in the vicinity where groundwater discharge currently occurs. However, this previously considered mitigation measure would require revisiting conflicting provisions in the 2011 Settlement Agreement and would not augment streamflow between Sequalitchew Lake and the ravine.
 - Groundwater captured from the mine could be pumped into Edmond Marsh rather than into the Sequalitchew Creek ravine. Benefits of this mitigation approach would be that cool groundwater (which has a low summer water temperature relative to surface water) would enter the marsh and could enhance Sequalitchew Creek surface water flow and fish habitat. A potential drawback of this mitigation action is that it is, at best, a temporary action because pumping in perpetuity is not feasible, and groundwater discharge/infiltration to the comingled Vashon-Sea Level Aquifer would substantially decrease. In addition, it likely would over-mitigate expected dewatering impacts to Sequalitchew Creek if active year-round (as opposed to only during certain dry or low-flow conditions).
 - Water could be actively conveyed to Edmond Marsh during dry periods, while during all other periods captured groundwater from the South Parcel could be conveyed to the lower mine area for infiltration (as is planned in the Proposed Action). This could serve as a contingent measure for consideration and/or further study to supplement Sequalitchew Creek flows during dry periods when no outflow from Sequalitchew Lake occurs or if the Restoration Plan provides less environmental benefit than currently expected. However, this mitigation measure is also likely at best, a temporary action because pumping in perpetuity is not feasible.

Significant Unavoidable Adverse Impacts

The cumulative impacts of the Proposed Action and Sequalitchew Creek Restoration Plan (the cumulative condition) would generally improve all aspects of the freshwater fish habitat in the Sequalitchew Creek watershed compared to current conditions.

The existing low flows do not currently support a fish population. The flows in the ravine section of Sequalitchew Creek under the Proposed Action would likely be lower than under existing conditions an estimated 10% of the time (during drought years) with the reduction in groundwater discharge to the creek.

Increased water temperature in the Sequalitchew Creek system is anticipated to occur in late summer when only resident fish are present. Fish movement and growth could be limited during the period when water temperature peaks in late summer until temperatures reduce in fall.

Considering the overall increase in freshwater fish habitat conditions in the cumulative condition, in combination with the proposed and potential measures identified in Sub-section 3.5.3, significant unavoidable adverse impacts are not anticipated.

3.6 Plants & Animals

Mitigation Measures

Proposed On-Site Mitigation

- Revegetation of cleared and mined area on the site would occur as part of segmental reclamation under the Reclamation Plan reviewed and approved by the Washington State Department of Natural Resources.
- Mitigation for impacts for the removal of the Kettle Wetland are identified in the *Project Wetland Mitigation Plan*. The design of the mitigation wetland complex is intended to create aquatic, wetland, riparian, and upland forest habitat by using groundwater intercepted within the mine. Specific Kettle Wetland mitigation goals include the following:
 - Create a constructed palustrine depressional wetland complex consisting of forested, scrub-shrub, emergent, and aquatic bed wetland areas at least 3.4 acres in size.
 - Provide adequate wetland acreage, functions, and values to mitigate all Project-related wetland impacts to the Kettle Wetland.
 - Construct a vegetated buffer at least 100 feet around the boundary of the wetland.
 - Create a larger complex of seep wetlands and springs within the mine.
- Springs and seeps will generally emanate on the eastern and southeastern slopes of the proposed mine in the South Parcel. Generally, seeps and springs will form within the lower one-third of the mine slope, approximately 20 to 30 vertical feet above the Olympia Beds. These areas will be colonized or planted with pioneer wetland species, such as horsetail (*Equisetum* sp.), buttercup (*Ranunculus* sp.), and miner's lettuce (*Montia fontana*). Additional species would be introduced later, once the soils have developed sufficiently to support seral grasses such as foxtails, rushes, sedges etc.

The buffers around these new seeps will be subject to the City of DuPont's Critical Areas Ordinance (DMC 25.105.050) and protected. The minimum buffer size is 50 feet. These buffers would be planted in accordance with the mine reclamation plan and monitored in accordance with the Wetland Mitigation Plan. Control of Scot's broom, reed canarygrass, Himalayan blackberry (*Rubus armeniacus*), and other noxious weeds within areas affected by the proposed Project would also be included as part of the Project mitigation activities.

- The Applicant (CalPortland) has provided a tree replacement proposal as part of its application and will coordinate with the City of DuPont regarding the appropriate strategy for replacement of removed landmark trees through proposed mine reclamation plans.

Proposed Mitigation for Off-Site Resources

- Implementation and monitoring of the Sequalitchew Creek Restoration Plan would provide mitigation to minimize potential impacts to aquatic resources and vegetation resulting from changes to groundwater levels. As described in **Chapter 2** of this DEIS, the Sequalitchew Creek Restoration Plan will be permitted and implemented contemporaneously with mining of the South Parcel.
- Conditions associated with this mitigation measure are the same as described above in the subsection Cumulative impacts with Proposed Action and Sequalitchew Creek Restoration Plan.

Other Possible Contingency Mitigation Measure

- As an element of the approval conditions for the Proposed Action, the City of DuPont could require a Monitoring and Response Plan. The Monitoring and Response Plan could include, among other things, definition of monitoring methodology, establishment of performance thresholds, and identification of contingency response measures to be considered for implementation if monitoring indicates exceedance of a performance threshold. The Monitoring and Response Plan could incorporate elements of the adaptive management processes proposed to be established for the Proposed Action and the Sequalitchew Creek Restoration Plan.
- The Sequalitchew Creek Restoration Plan is a separate but related action that is intended to be implemented in parallel with the Proposed Action. The mine and the stream restoration project each have their own adaptive management process tailored to achieving the goals and objectives of each specific project. The interaction between the two adaptive management processes could include: 1) project schedules that encourage restoration in advance of the potential impacts from mining; 2) development of performance thresholds for mining that support restoration and 3) coordinated

monitoring and open sharing of information. The City, as the permitting authority for both projects would have a key role in assuring consistency between the two adaptive management plans.

Significant Unavoidable Adverse Impacts

Development of the Proposed Action would result in the loss of existing conifer forest/shrublands, the existing kettle wetland, and associated animal habitat on the site. The proposed site reclamation plan and wetland mitigation plan would mitigate loss of on-site resources. These impacts would be unavoidable but not considered significant with mitigation described above in Section 3.6.3.

The Proposed Action would indirectly impact the off-site Seep Wetlands associated with the Sequalitchew Creek Ravine by disrupting the hydrology of these wetlands. This impact would be unavoidable and mitigated by creation a larger complex of seep wetlands on the eastern slope of the reclaimed mine, resulting in a net impact that is considered insignificant.

Cumulatively, implementation of the Sequalitchew Creek Restoration Plan would further mitigate for the loss of wetland acreage associated with reduction in groundwater levels. The intent of the proposed mitigation measures described in 3.6.3 with the Sequalitchew Creek Restoration Plan, is to reduce these unavoidable adverse impacts to a non-significant status. If implementation of the proposed mitigation measures fails to mitigate these unavoidable adverse impacts, the City will consider implementing other possible contingency mitigation measures listed in Section 3.6.3 as part of the adaptive management process.

3.7 Noise

Mitigation Measures

The following mitigation measures have been included in the Proposed Action to reduce noise impacts.

Proposed Construction Measure

- Construction activities (i.e., logging and construction of the southern berm) would be conducted during daytime hours only (7 AM to 10 PM) to minimize noise impacts.

Proposed Operation Measures

- The plans for the site include construction of a 20-foot high berm on the south side of Phase 2C to reduce noise at off-site locations, especially at the Creekside Apartments. With such a berm, modeled sound levels of worst-case mining activities are well below the applicable daytime noise limits at all receptor locations.
- Excavation in Phase 2C during early morning hours (i.e., between 5 and 7 AM) may exceed the stricter nighttime limit of 50 dBA applicable at the Creekside Apartments. Restriction of the bulldozer to daytime hours only within Phase 2C reduces the modeled sound levels at the Creekside Apartments to 48 dBA or less, which would comply with DuPont's nighttime noise limit.

Significant Unavoidable Adverse Impacts

With construction of the proposed berm as noted above and with restriction of hours of bulldozer operation in Phase 2C to daytime hours only, the project is expected to comply with City of DuPont noise limits. Furthermore, potential noise impacts at the Creekside Apartments (R1) can be mitigated by the proposed mitigation measures, although short-term unavoidable noise impacts may be expected. Due to the short-term nature of the impacts at R1, any such impacts would not be considered significant.

3.8 Land Use

Mitigation Measures

No significant adverse land use impacts have been identified. However, the following mitigation measures have been identified to further reduce the potential for land use impacts associated with the proposed South Parcel Project.

Proposed Mitigation Measures

- Maintain a vegetated buffer along Powerline Road. Trees will be planted densely to establish screening during mining operations. After mining is completed, selective thinning may be necessary to facilitate a healthy future forest within the buffer.
- Mitigation measures identified throughout the EIS would minimize impacts to land use from mining activities, consistent with City regulations (see Section 3.1, **Earth**, Section 3.2, **Air Quality/GHG Emissions**, Section 3.6, **Noise**, and Section 3.10, **Transportation**).

Significant Unavoidable Adverse Impacts

The proposed Pioneer Aggregates South Parcel Project would result in an unavoidable change to the land use character of the existing landscape within the Expansion Area portion of the site. The extraction of mined material would result in a permeant change in the land use character of the site. However, the Proposed Action is not expected to result in a significant adverse impact to land uses of the surrounding community. Mining is a transitional use of the site; although mining would alter the site for a number of years, after mining is complete, the site would likely be developed to another permitted use.

3.9 Aesthetics

Mitigation Measures

The following mitigation measure have been included in the Proposed Action to reduce aesthetics impacts.

Proposed Mitigation Measures

- A vegetated buffer would be maintained along Powerline Road. Trees would be planted densely to establish screening during mining operations. After mining is completed, selective thinning may be necessary to facilitate a healthy future forest within the buffer.
- As mining progresses, completed mine segments would be reclaimed to a vegetated condition. The reclamation plan would be reviewed by the Washington State Department of Natural Resources (“DNR”) for consistency with the Surface Mining Act (RCW 78.44). In general, reclamation would consist of regrading, replacement of topsoil, and revegetation.

Significant Unavoidable Adverse Impacts

The Proposed Action would result in an unavoidable change to the visual character of the Expansion Area portion of the site. The extraction of mined material would result in a permeant change in the visual character of the site. However, the Proposed Action is not expected to result in a significant adverse impact to the visual environment of the surrounding community. The mining operation is expected to be only minimally visible to the general public from outside of the property boundary. In addition, mining is a transitional use of the site; although mining would alter the site for a number of years, after mining is complete, the site would be reclaimed and ultimately it would be available for development to another permitted use.

3.10 Cultural Resources

Mitigation Measures

The following mitigation measures have been included in the Proposed Action, or in a prior decision applicable to the property, to reduce cultural resources impacts.

Proposed Mitigation Measures

- Based on the additional evaluation and assessment of cultural resources for the project that was completed and included in **Appendix M**, it is recommended that additional shovel probing be conducted in the two areas shown in **Appendix M**, with a high probability for containing archaeological resources prior to clearing, mining and/or construction of the proposed noise berm. A study plan should be developed in consultation with DAHP and the affected Indian Tribes. Alternatively, archaeological monitoring of any ground disturbing activities in these areas should be conducted.
- Mitigation requirements that address archaeological monitoring and inadvertent discovery of cultural resources or human remains prior to ground disturbance or during mining as required as a result of the 2004 Settlement Agreement between Quadrant Corporation, Weyerhaeuser real Estate Company, the City of DuPont and the Nisqually Tribe. These mitigation requirements apply to all Weyerhaeuser properties in the City of DuPont, and have been recommended, applied as conditions of approval, and implemented as ongoing management practices in all Glacier NW/CalPortland mining projects in the City. These mitigation measures should continue to be implemented as applicable to the South Parcel Project. These measures include the following (paraphrased from North Parcel conditions No. 28-30):
 - Notification of Nisqually Indian Tribe resource representative in advance of any clearing or topsoil stripping for each mine segment; and employment of the tribal Archaeologist to write a closing report to DAHP documenting coordination with the Nisqually Indian Tribe and observed conditions.
 - Notification of DAHP and the Nisqually Indian Tribe if any Native American remains are unearthed.
 - Monitoring of clearing activities by the Nisqually Indian Tribe to identify any historic resources and appropriate notice and treatment of any resources discovered.
- If any archaeological sites are identified under the Proposed Action, and they are determined to be eligible for the NRHP, and that proposed mining activities would constitute a significant adverse impact to them, then DAHP and the affected Tribes should be consulted for guidance regarding appropriate mitigation measures. Mitigation

measures may include, but not be limited to data recovery and/or interpretation (e.g., displays, exhibits).

Significant Unavoidable Adverse Impacts

No historically significant cultural resources have been previously identified within the site to date; therefore, no significant adverse impacts would occur to known resources. However, if a previously unidentified cultural resource is discovered with in the ADI, there is potential for a significant adverse impact to occur if the resource is determined to be eligible for the NRHP.

3.11 Transportation

Mitigation Measures

No transportation-related mitigation measures are necessary, and no additional transportation-related measures are provided.

Significant Unavoidable Adverse Impacts

The proposed Pioneer Aggregates South Parcel Project is not expected to result in significant transportation impacts in the study area. Trip generation is expected to continue at current levels and would remain below the peak day estimates that had been evaluated in the 2013 FEIS.

3.12 Fiscal

Mitigation Measures

No significant adverse fiscal impacts have been identified. Beyond the payment of required payment of applicable property tax, sales & use tax, business & occupation tax, and utility taxes, no additional mitigation is identified.

Significant Unavoidable Adverse Impacts

The fiscal analysis conducted for this EIS indicates that expected revenues to the City of DuPont would exceed expected costs. Therefore, no significant unavoidable adverse are anticipated. .