



June 18, 2013

Washington State Department of Natural Resources  
Geology and Earth Resources Division  
1111 Washington Street SE  
Olympia, WA 98504-7007

Attention: Mr. Rian Skov

**Reclamation Plan Narrative**  
CalPortland DuPont North Parcel Expansion  
City of DuPont, Pierce County, Washington  
GeoDesign Project: CalPortCo-1-02

Dear Rian Skov,

On behalf of our client, CalPortland, GeoDesign Inc. (GDI) is providing the attached documents for the DuPont North Parcel Expansion Surface Mine and Reclamation Permit. To minimize duplication, this submittal does not include the Final Environment Impact Statement (Final EIS) and associated studies. The Final EIS document can be found on City of DuPont or CalPortland websites. The Draft EIS (March 2013) is currently on these web sites and is expected to be finalized in the very near future. The following documents are included:

- Reclamation Plan Narrative
- Attachment A - SM-6
- Attachment B - SM-8A
- Figures 1-8 & Appendix A-D

Should you have any questions regarding the submittal information please call me at 360-431-5120 or Pete Stoltz at 206-768-7636.

Sincerely,

A handwritten signature in blue ink, appearing to read "Roy Garrison", with a stylized flourish at the end.

Roy Garrison  
Principal - Mining Consulting

Encl:

cc: Pete Stoltz - CalPortland

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City of DuPont, Pierce County, Washington  
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## INTRODUCTION

On behalf of Glacier Northwest, Inc., dba CalPortland, GeoDesign, Inc. has prepared this surface mine reclamation plan for the Washington State Department of Natural Resources (DNR). This reclamation plan, including the narrative, DNR forms, maps, and figures, is intended to satisfy the requirements of the State Surface Mining Act (*Chapter 78.44 Revised Code of Washington*). DNR Forms SM-6 and SM-8A are presented in Attachments A and B, respectively.

## SITE DESCRIPTION

### ***SITE LOCATION***

The North Parcel area is located approximately 1.5 miles north of DuPont City Hall, Pierce County, Washington. The site is situated in Portions of the NE & SE quarters of Section 22, NW, NE & SW of Section 23, SW quarter of Section 14, and SE quarter of Section 15, Township 19 North, Range 1 East; Willamette Meridian (Figure 1). The North Parcel is within the city limits of DuPont and adjoins the existing Pioneer Aggregates pit (DNR permit #70-012668) to the south.

### ***BACKGROUND***

The North Parcel property (201 acres) is owned by Northwest Aggregates, and overlaps into the northern portion of their existing Pioneer Aggregates mine (467 acres) to the south. Within the North Parcel property, the mine permit boundary is being expanded 105 acres. There are 7 acres of undisturbed area proposed for removal from the existing permit boundary. These 7 acres are located in the northwestern corner of the existing permit boundary that overlaps the southwestern corner of the North Parcel property (Figure 2). Coupled with the 105 acres being

expanded in the North Parcel and removal of 7 acres within the 467 acre existing permit boundary, the total permit boundary will encompass 565 acres.

The existing mine was originally leased from the Weyerhaeuser Company and is now leased by the current property owner, WPP LLC. Refer to Figures 3 and 3A. The existing mine has been in operation since 1997. The existing operation will sequentially transition into the North Parcel expansion area while continuing to process the high quality Steilacoom Gravels at the onsite facility located in the northeast portion of the existing pit. The majority of the processed aggregate will continue to be shipped from the processing plant via conveyor to CalPortland's barge transport dock at Tatsolo Point on Puget Sound (Figure 4).

The northern expansion area is bordered to the west by Puget Sound and adjoining bluffs. The Burlington Northern-Santa Fe Railroad is located between the Puget Sound shoreline and the toe of the slope. These forested slopes will not be disturbed by the mine expansion, and a prescribed buffer between the mineral extraction and the crest of the slope will be maintained.

The proposed mine expansion in the North Parcel has been extensively reviewed in an Final Environmental Impact Statement (FEIS) under the State Environmental Policy Act (SEPA). To avoid replication and redundancy, studies from the FEIS will be referenced throughout this document.

#### ***SUBSEQUENT USE***

As stated on Form SM-6, the subsequent use of the site after reclamation is Residential Reserve (RR), Residential 4 (R-4), Open Space/Sensitive Areas (OS), Community Park (CP), Manufacturing and Research (MRP), Industrial (IND), (Attachment A). Refer to Section 3.6 - Land Use of the FEIS for a full description of subsequent uses and there locations identified (FEIS Figures 3.6-2 and 3.6-3).

#### **GEOLOGY AND GROUNDWATER**

The geology and groundwater section has been prepared by Aspect Consulting. The geology and groundwater of the North Parcel and existing mine have been studied extensively and are presented in the Final Environmental Impact Statement (FEIS) for the existing mine (City of DuPont and Ecology, 1993) and the Final Environmental Impact Statement (FEIS) for the North Parcel (City of DuPont and Ecology, 2013).

The pre-mining topography consists of a gently rolling forested upland that generally slopes gradually down to the northwest, and then descends steeply to Puget Sound. Elevations range from approximately 215 feet (NGVD 29) in the southeast corner to approximately 200 feet to 125 feet (NGVD 29) along the western boundary. Within 300 to 400 feet of its northwestern boundary, the topography dips steeply down toward the barge loading conveyor and transport dock. The railroad was cut into the original slope and slope material was used to construct the railroad embankment. The embankment lies at about elevation 32 feet and is about 50 feet wide with an armored, steep embankment on the northwest side that continues downward into the intertidal zone.

The geology of the area was formed when the Puget Sound lowland was repeatedly glaciated, or covered with thick sheets of ice that also covered much of Alaska, Canada and the Northern United States, during the last two million years. Soil and rocks carved from the landscape and deposited by these ice sheets and glacial rivers and lakes are termed glacial deposits. Sediments deposited in lowland river, floodplain, lake, and forest bog environments during intervening periods between times when glacial ice sheets occupied the landscape, are recognized as non-glacial deposits. The most recent glacial period in the area is the Vashon stage of the Fraser glaciation.

Geologic units of glacial and non-glacial origin were deposited in the area before, during, and after the Vashon glaciation. In the area of the mine, the surface geology consists primarily of Vashon-age recessional sand and gravel locally known as Steilacoom Gravel. This recessional glacial unit is underlain by older Vashon age glacial deposits, pre-Vashon non-glacial deposits, and pre-Vashon glacial deposits, all comprised primarily of sand and gravel.

The uppermost pre-Vashon non-glacial sequence in the area is identified as the Olympia beds. These non-glacial deposits are generally marked by an increase in silt, organics, and wood fragments. The Olympia beds underlie the Steilacoom gravel in the eastern portion of the existing mine. The Olympia beds are not present in the western portion of the existing mine and the North Parcel.

The first (shallowest) aquifer in the existing mine occurs within the Vashon outwash deposits. The Vashon outwash deposits comprise a productive, highly permeable groundwater zone that occurs at relatively shallow depths of approximately 15 to 25 feet [190 to 200 feet in elevation (NGVD 29)].

Beneath the North Parcel, however, the aquifer occurs well below the ground surface and lies within the Steilacoom Gravel at a depth of roughly 200 feet or greater (near sea level elevation). This change in depth to groundwater is because the North Parcel lies west of the truncation of the Olympia beds.

All mining is, and will be, above the seasonal high groundwater level. The mine floor would be established at an elevation intended to maintain a minimum separation of 10 feet between ground surface and regionally high groundwater.

## **MINING AND RECLAMATION**

The reclamation plan for the expansion area will include returning the mined slopes to forest and leaving a relatively flat mine floor for residential use. All mining will be dry and maintain a minimum 10-foot separation between the mine floor and the seasonal high groundwater table. At the conclusion of mining, insitu slopes (2 feet horizontal to 1 foot vertical, or flatter) will surround the mine floor and sinuously join the existing mined area to the south. The pit floor will be developed to slope gently toward perimeter drainage leading to the wetponds and infiltration ponds. Slope stability was evaluated in the FEIS documents for the existing mine and the expansion area.

The North Parcel expansion boundary is 105 acres of which approximately 99 acres will be disturbed by mineral extraction. Prior to the inception of mining, reclamation preparation starts by logging and clearing stumps, followed by removing and stockpiling native topsoil which will be applied to the slopes once postmining topography is achieved. Topsoil will be directly placed when applicable or stockpiled for future placement. As with the existing mine, segmental mining and reclamation is planned for the entire expansion area (Figure 5). Topsoil will be redistributed on the slopes at the completion of mining each segment, providing foot rooting medium for young tree seedlings. Reclamation will occur as each mining segment is completed, creating a contemporaneous approach to reclaiming the site. Topsoil will not be handled in overly wet or dry conditions. Historically, topsoil has been handled throughout the entire year, due to the gravelly/sandy texture and high infiltration capacity of the native soil. Topsoil will not be placed on the completed mine floor due to the subsequent use being residential.

The maximum vertical depth of mining at any given point is 185 feet below ground surface, occurring between elevations 210 feet and 25 feet above MSL. A cut method of mining will be utilized creating a postmining topography with overall 2 foot horizontal to 1 foot vertical insitu slopes and a gently sloping pit floor. Backfilling will not be required to reclaim the site using a cut slope method of mining. Figure 6 illustrates the final configuration of the reclaimed mine area upon completion of mining activities. Figure 7 illustrates cross sections through the site. The perimeter of the mining disturbance area will be sinuously joined to the existing contours surrounding the site.

Eight soil test pits on the relatively flat expansion area indicate the presence of approximately 20 inches of salvageable topsoil/rooting medium (average), which is consistent with the Natural Resources Conservation Service description for the Spanaway Gravelly Sandy Loam soil series (41A). Approximately 259,000 cubic yards of topsoil will be salvaged within the 99 acre expansion, which will be utilized for reclamation.

After mining is complete in a segment, topsoil previously stripped and stored in advance of mining will be replaced to an approximate depth of 3 feet on the slopes for reforestation. This will provide adequate and substantial rooting medium and aid in revegetating the slopes. Historically, wood chips from onsite vegetation, pond sediments and filter press fines have been used to augment topsoil. This topsoil augmentation practice has produced an excellent rooting medium for a successfully proven reforestation program. All though pond sediments are in much smaller quantity than the filter press fines, both provide additional moisture holding capacity to the native soil.

The following section is an excerpt from the Earth and Water Resource Report, Sections 2.1.4.4 and 2.2.4 (Aspect Consulting) referencing topsoil and the Tacoma Smelter Plume: *The North Parcel is located within the Tacoma Smelter Plume (TSP). The TSP is an approximately 1,000-square-mile area where pollutants emitted from a former Asarco smelter before 1986, most notably arsenic and lead, settled onto surface soils. The Washington State Department of Ecology (Ecology) predicts more than 730,000 properties are within the TSP, including the entire City of DuPont and the portions of the existing mine and the North Parcel where mining is proposed.*

*Ecology developed a model to predict the concentration of arsenic in surface soil throughout the TSP using wind speed, wind direction, and empirical results obtained from soil samples collected across the TSP (Ecology, 2012). The model indicates the concentration of TSP-related metals decreases as the distance from the former smelter increases (Ecology, 2012). Ecology has also determined elevated concentrations of metals in undisturbed areas within the TSP are generally confined to the top 6 inches of soil (Ecology, 2012).*

*The North Parcel is within an area where Ecology predicts surface soil concentrations of arsenic are between 40 and 100 parts per million (ppm). Ecology considers areas with these concentrations to be "moderate" zones where immediate action is not necessary (Ecology, 2012). Ecology has pre-approved certain approaches to achieve the established cleanup levels at properties within the TSP. Mixing of impacted surface soils with deeper clean soils is one of the approved approaches under the Final Interim Action Plan (Ecology, 2012).*

*The proposed mining and reclamation activities will serve as a permanent and final remedy for any TSP-impacted soils at the existing mine and North Parcel. Under the Proposed Action, topsoil within the North Parcel would be removed to facilitate extraction, and conserved and maintained on site to be incorporated into the reclaimed mine landscape and support re-vegetation and reclamation of mined areas consistent with the anticipated subsequent residential land use identified in the City of DuPont Comprehensive Land Use Plan (2001). Stripping, stockpiling, and replacement of topsoil would be completed using methods and procedures that are generally the same as those used in the existing mine area, including employment of BMPs to control erosion and fugitive dust. Samples would be collected from stockpiled topsoil and analyzed in accordance with the Final Interim Action Plan for the TSP (Ecology, 2012). If the sample results indicate the topsoil does not contain arsenic in concentrations exceeding 20 ppm (the conservative cleanup level established by Ecology for the TSP), then the topsoil would be used in reclamation. If the sample results indicate the topsoil contains arsenic in concentrations equal to or greater than 20 ppm, then clean soil would be mixed with the topsoil to reduce the arsenic concentration. Stockpiled topsoil would not be used for reclamation until sample results confirm the concentration of arsenic is below 20 ppm.*

Mitigation measures recommended by Ecology for potential contamination from the TSP on the CalPortland-owned North Parcel include the following:

1. The applicant shall operate the facility to meet health and safety requirements and to limit worker exposure to potentially contaminated soils. The applicant shall notify operators, employees and construction workers that the property is located within the Tacoma Smelter Plume (TSP) and may contain contaminated soils and duff.
2. Before undertaking any grading activities, the applicant shall enter into a Voluntary Cleanup Program (VCP) with the Department of Ecology pursuant to the Model Toxics Control Act (MTCA) RCW 70.105D and WAC 173-340.
3. The applicant shall develop a cleanup action plan for the disturbed area of the property consistent with Ecology requirements, and will include compliance sampling and a remediation plan for area of the property, approximately 20 acres, that are not proposed for mining or open space. The cleanup action plan will acknowledge that the

45-acre open space area will be addressed in the Settlement Agreement process. The cleanup action plan will also include compliance sampling and a remediation plan for area on the property not proposed for mining and open space (approx. 20 acres).

4. Prior to initiating grading, the applicant shall obtain an opinion letter from Ecology for property areas outside of the open space area. The opinion letter will state that the proposed duff and soil remediation, and the human health and environmental protections, will likely result in no further action under MTCA. The opinion letter will also acknowledge that the open space area will be addressed later as part of the Settlement Agreement process.
5. City-permitted site development plans shall be consistent with the plans that Ecology reviewed and deemed consistent with MTCA.
6. Because the soil and duff may be contaminated, appropriate best management practices (BMPs) shall be installed to avoid escaping dust, soil erosion and water pollution during clearing and grading activities.
7. If contamination is left on the property, the applicant shall record a notice on title about the contamination to notify future buyers. The notice on title shall be recorded prior to any public access to the property, including the open space area.
8. Prior to the public gaining any access to the property, including the open space area and any un-mined areas, the property owner shall obtain a "No Further Action" determination from Ecology indicating that the remediation plan and protections for human health and the environment were successfully implemented under MTCA.
9. Any imported soil shall follow the Tacoma Smelter Plume Model Remedies Guidance, Chapter 9: Imported Soil Sampling.

After application of topsoil, slopes would be re-forested. 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.

## SETBACKS

The steep slope buffer associated with the west side of the pit, as negotiated in the 2011 Settlement Agreement (Ecology, City of DuPont, CalPortland, and Environmental Coalition, 2011) varies from a minimum of 25 feet in some locations to approximately 120 feet in others. The City of DuPont Municipal Code requires a 50 foot buffer between proposed development activity and hillslopes of 40 percent. The proposed development maintains a 50 foot buffer from the top of slopes greater than 40 percent with the exception of two areas. These areas are the two scallop-shaped former borrow pits along the bluff slope west of the expansion. The slope in these areas is greater than 40 percent at the top, but then becomes much more gradual downslope. The average slope from the top of the bluff to the railroad embankment in these areas is less than 40 percent. According to the City of DuPont Municipal Code (DMC 25.105.070(2)), the development buffer can be reduced to a minimum of 25 feet if the Geotechnical Engineer demonstrates that four criteria are met. As discussed in the FEIS, the

proposed development meets all four criteria for a buffer reduction to 25 feet where the project borders the two former borrow pits. A 50 foot setback from mine excavation is established along the eastern boundary of the expansion.

## **STORMWATER**

Existing stormwater and processing water collected in the processing area are pumped to a water treatment facility located within the processing area. All water is treated and most is reused for washing sand and gravel. During periods of heavy rainfall, the supply of treated water exceeds plant needs. Excess treated water is discharged from the treatment pond to NPDES discharge monitoring point P3, where it infiltrates to recharge groundwater. During dry periods, the supply of treated water is not sufficient to meet plant needs and is supplemented by adding water from CalPortland's onsite water supply well. Stormwater from the conveyor and road collects at two pump stations (NPDES discharge points P5 and P6) and is pumped to an infiltration area in the adjacent forest.

As the area is mined, it will form a closed depression so all stormwater generated within the mine will either infiltrate or evaporate. Stormwater runoff will be collected and conveyed to separate pond systems in each drainage basin for treatment and infiltration. Each pond system will consist of a two-celled lined wetpond designed to remove sediments and provide spill control and an infiltration pond to dispose of stormwater and recharge groundwater. The predicted stormwater flows presented above were used in preliminary design of the water quality and infiltration ponds. Pond locations and the conceptual drainage patterns are shown on Figure 6.

The wetponds were designed to treat 91 percent of the total runoff under developed conditions in accordance with Ecology guidance (Ecology, 2005). Key pond dimensions are shown in Table 4-5 of the FEIS. The ponds were designed to be 7 feet deep, which includes one foot of sediment storage at the bottom of the first cell, and one foot of freeboard in both cells.

The conveyance system would consist of a network of open ditches that collect and route stormwater to the water quality facilities described above. In places where the slope is less than 2.5 percent, the ditches would be vegetated. Steeper ditches would require lining with cobbles for slopes up to 5 percent, or rip rap for steeper.

The final drainage calculations are presented in the FEIS.

## **REVEGETATION**

Once topsoil has been placed on the slopes, tree seedlings will be planted during the dormant season. Douglas fir and Red Alder will be planted at 10ft.x10ft. spacing, establishing a stocking level of approximately 430 trees per acre on the reclaimed slopes. Based on the success of the reforested slopes in the existing mine, Douglas fir (1+1 seedling stock) and Red Alder (plug 1 or yearling pull-ups) are recommended. Based on existing reclamation at the site, volunteer seedlings are expected to propagate on the topsoiled slopes in addition to the planting described above. The mature forests that buffer the western mine boundary provide an excellent seed source of other native deciduous and conifer species.



Due to the high porosity and low erosion potential of the native topsoil, grasses are not recommended as part of the reforestation prescription. Grass cover can be detrimental to reforestation due to the competition for moisture and nutrients. In addition, grass cover provides a habitat for rodents that chew the bark around the base of the seedlings (girdling) which leads to seedling mortality and potential disease.

As the reclaimed areas mature, a native understory of herbaceous and woody species will also propagate from seed and rhizomes naturally occurring in the redistributed topsoil. Reclaimed slopes along the western boundary of the site are designed in a sinuous fashion to mimic and blend with the native topography that parallels the Puget Sound.

Deleterious vegetation such as blackberry and Scotch Broom will be removed either mechanically or with the use of herbicides to allow tree establishment and release from shading and competition for nutrients and moisture.

The following table prescribes a recommended specification for temporary revegetation on stockpiled topsoil to minimize the potential for erosion to occur. A comparable seed mix can substitute this specification.

**Temporary Revegetation Specifications**

<b>Species Common Name</b>	<b>Scientific Name</b>	<b>Planting Method</b>	<b>Planting Density (percent)</b>	<b>Planting Season</b>
Big bluegrass	<i>Poa secunda</i>	broadcast	5	spring/fall
Creeping wild rye	<i>Elymus repens</i>	broadcast	10	spring/fall
Blue creeping rye	<i>Elmyus glaucus</i>	broadcast	20	spring/fall
Timothy	<i>Phleum pratense</i>	broadcast	10	spring/fall
Idaho fescue	<i>Festuca idahoensis</i>	broadcast	20	spring/fall
White clover	<i>Trifolium repens</i>	broadcast	25	spring/fall
Ladak alfalfa	<i>Medicago sativa</i>	broadcast	5	Spring/fall
Burnet	<i>Sanguisorba sp.</i>	broadcast	5	spring/fall

## LIMITATIONS

The services described in this narrative were performed consistent with generally accepted professional consulting principles and practices. There are no other warranties, express or implied. The services performed were consistent with our agreement with our client. This narrative is prepared solely for the use of our client and may not be used or relied upon by a third party for any purpose. Any such use or reliance will be at such party's risk.

The opinions and recommendations contained in this narrative apply to conditions existing when services were performed. GeoDesign is not responsible for the impacts of any changes in environmental standards, practices, or regulations after the date of this narrative. GeoDesign does not warrant the accuracy of supplemental information that was supplied by others as incorporated in this narrative.

◆ ◆ ◆

Please call if you have questions concerning the information provided.

Sincerely,

GeoDesign, Inc.



Roy Garrison  
Principal – Mining Consulting

cc: Pete Stolz, CalPortland, (two copies)

RLG.kt

Attachments

One copy submitted

Document ID: CalPortCo-1-02-061813-mini-reclamation-plan

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## REFERENCES

Final Environmental Impact Statement (FEIS) for the existing mine (City of DuPont and Ecology, 1993).

Aspect Consulting. Earth and Water Resources Report, DuPont Mine North Expansion, January 22, 2013 Draft.



Final Environmental Impact Statement (FEIS), CalPortland DuPont North Parcel Mining (City of DuPont and Ecology, 2013), <http://www.calportlandresources.com>.

## **ATTACHMENT A**



WASHINGTON STATE DEPARTMENT OF  
**Natural Resources**

COUNTY OR MUNICIPALITY  
APPROVAL FOR  
SURFACE MINING  
(Form SM-6)

<b>NAME OF COMPANY OR INDIVIDUAL APPLICANT(S)</b> Same as name of the exploration permit holder. (Type or print in ink.)  Glacier Northwest, Inc., dba CalPortland		<b>TOTAL ACREAGE AND DEPTH OF PERMIT AREA</b> (Include all acreage to be disturbed by mining, setbacks, and buffers, and associated activities during the life of the mine.) (See SM-8A.) Total area disturbed will be <u>565</u> acres Maximum vertical depth below pre-mining topographic grade is <u>185</u> feet Maximum depth of excavated mine floor is <u>25</u> feet relative to mean sea level				
<b>MAILING ADDRESS</b>  5975 E. Marginal Way South Seattle, WA 98134-2414  Telephone <u>206-768-7636</u>		COUNTY <u>Pierce</u> No attachments will be accepted. Legal description of permit area:				
		1/4	1/4	Section	Township	Range
		Portions	NE/SE	22	19N	R1E
		Portions	NW/SW	23	19N	R1E
		Portions	NE	23	19N	R1E
		Portions	SW	14	19N	R1E
		Portions	SE	15	19N	R1E
<b>Proposed subsequent use of site upon completion of reclamation</b>  Residential Reserve (RR), Residential 4 (R-4), Open Space/Sensitive Areas (OS), Community Park (CP), Manufacturing and Research (MRP), Industrial (IND).						
<b>Signature of company representative or individual applicant(s)</b> 		<b>Name and title of company representative (please print)</b> Scott Nicholson Director		<b>Date signed</b> 6/11/13		
<b>TO BE COMPLETED BY THE APPROPRIATE COUNTY OR MUNICIPALITY:</b>						
Please answer the following questions 'yes' or 'no'. 1. Has the proposed surface mine been approved under local zoning and land-use regulations? 2. Is the proposed subsequent use of the land after reclamation consistent with the local land-use plan/designation?  When complete, return this form to the appropriate Department of Natural Resources regional office.					Yes	No
						X
					X	
<b>Name of planning director or administrative official (please print)</b> Bill KINGMAN		<b>Address</b> CITY OF DUPONT 1700 CIVIC DRIVE DUPONT, WA 98327				
<b>Signature</b> 						
<b>Title (please print)</b> DUPONT PLANNING MANAGER						
<b>Telephone</b> 253-912-5393		<b>Date</b> 6/11/13		<b>DNR Reclamation Permit No.</b>  FOR DEPARTMENT USE ONLY		

## **ATTACHMENT B**



WASHINGTON STATE DEPARTMENT OF  
**Natural Resources**

**APPLICATION FOR  
RECLAMATION PERMIT  
(Form SM-8A)**

Check appropriate box(es): ☐ new permit ☐ revision of existing permit ☐ transfer of permit ☒ expansion

**NOTE: Do not attempt to complete this form until you have carefully read "Instructions for Form SM-8A".**

1. NAME OF APPLICANT/PERMIT HOLDER(S) Glacier Northwest, Inc., dba CalPortland				
2. MAILING ADDRESS 5975 E. Marginal Way South Seattle, WA 98134-2414				
3. Telephone 206-768-7636 UBI No. 601301145 Location 7				
4. NAME OF MINE DuPont Pioneer Aggregates				
5. Street address and milepost of surface mine 4301 Pioneer Avenue DuPont, WA 98327-7736				
6. Distance (miles) 1.5	7. Direction from North	8. Nearest community DuPont City Hall		
9. COUNTY Pierce No attachments will be accepted. Legal Description of permit area:				
1/4	1/4	Section	Township	Range
Portions	NE&SE	22	19N	R1E
Portions	NW&SW	23	19N	R1E
Portions	NE	23	19N	R1E
Portions	SW	14	19N	R1E
Portions	SE	15	19N	R1E
10. TOTAL ACREAGE OF PERMIT AREA APPLIED FOR: (Include all acreage to be permitted. See Form SM-6.) 565 acres				
11. Do you or any person, partnership, or corporation associated with you now hold, or have you held, a surface mining operating or reclamation permit? <input checked="" type="checkbox"/> yes <input type="checkbox"/> no If you answered yes to the above, please list:				
Permit Number	Active Operation?		Reclamation current/complete?	
	Yes	No	Yes	No
See Attached List	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
12. Are all of these mines now in compliance with RCW 78.44, WAC 332-18, and conditions of the permits? <input checked="" type="checkbox"/> yes <input type="checkbox"/> no				
13. Have you ever had a surface mine operating or reclamation permit revoked? <input type="checkbox"/> yes <input checked="" type="checkbox"/> no Have you ever had a reclamation security forfeited? <input type="checkbox"/> yes <input checked="" type="checkbox"/> no If you answered yes to either of the above, give permit number(s):				
14. Type of proposed or existing mine: <input checked="" type="checkbox"/> pit <input type="checkbox"/> quarry Material(s) to be mined: <input checked="" type="checkbox"/> sand and gravel <input type="checkbox"/> rock or stone <input type="checkbox"/> clay <input type="checkbox"/> metal <input type="checkbox"/> limestone <input type="checkbox"/> silica <input type="checkbox"/> other				

Deposit type: <input checked="" type="checkbox"/> glacial <input type="checkbox"/> river floodplain (alluvial) <input type="checkbox"/> river channel deposits <input type="checkbox"/> talus <input type="checkbox"/> bedrock <input type="checkbox"/> lode <input type="checkbox"/> unknown <input type="checkbox"/> other	
15. Total disturbed acreage and maximum depth of permit area: (Include all acreage to be disturbed by mining and reclamation during the life of the mine.) Total area to be disturbed: 431 acres Area to be disturbed in next 36 months: 116 acres. Maximum vertical depth (thickness) mined below pre-mining topographic grade will be 185 feet. Lowest elevation of excavated mine will be 25 feet (NGVD 29). Highest elevation of excavated mine will be 210 feet (NGVD 29).	
16. Expected start date of mining: 2013	17. Estimated number of years: 8-15
18. Total quantity to be mined over life of mine (estimated): 26,600,000 <input type="checkbox"/> tons or <input checked="" type="checkbox"/> cu yds	19. Estimated annual production: 2.8 million <input type="checkbox"/> tons or <input checked="" type="checkbox"/> cu yds
20. Subsequent land use: <input checked="" type="checkbox"/> industrial <input type="checkbox"/> commercial <input checked="" type="checkbox"/> residential <input type="checkbox"/> agricultural <input type="checkbox"/> forestry <input type="checkbox"/> wetlands and lakes <input checked="" type="checkbox"/> other Open Space/Sensitive Areas, Manufacturing and Research, Community Park. Reclaimed elevation of floor of mine: 25 feet relative to mean sea level Reclaimed elevation is shown on cross sections? <input checked="" type="checkbox"/> yes <input type="checkbox"/> no Subsequent land use is compatible with County or Municipal comprehensive plan? <input checked="" type="checkbox"/> yes <input type="checkbox"/> no County or Municipality Approval for Surface Mining (Form SM-6) attached? <input checked="" type="checkbox"/> yes <input type="checkbox"/> no SEPA Checklist required? <input checked="" type="checkbox"/> yes <input type="checkbox"/> no If any answers are no, explain:	
21. Application fee for a new reclamation permit is herewith attached? <input checked="" type="checkbox"/> yes <input type="checkbox"/> no	

# APPLICATION FOR RECLAMATION PERMIT

## 22. SEGMENTAL RECLAMATION

Permit area has been divided into segments for mining and a mining schedule has been developed? ☒ yes ☐ no

If no, explain:

Permit area has been divided into segments for reclamation and a reclamation schedule has been developed? ☒ yes ☐ no

If no, explain:

## 23. SITE PREPARATION

### 23A. Permit and Disturbed Area Boundaries

Boundary of the permit area has been marked on the ground with permanent boundary markers? ☒ yes ☐ no

Explain boundary markers: **Metal tee posts with florescent painted tops.**

### 23B. Saving Topsoil, Subsoil, and Overburden for Reclamation

Thickness of topsoil is **1.67 (20 inches)** feet Thickness of subsoil is **0** feet Depth to bedrock is **1.67 (20 inches)** feet

Total volume of topsoil is **259,000** cubic yards Total volume of subsoil is **0** cubic yards

Volume of stored topsoil/subsoil is **86,000** cubic yards and will require **2-3** acres for storage.

Storage areas are shown on maps and have been marked on the ground with permanent boundary markers? ☒ yes ☐ no

**Storage areas are shown on maps. Topsoil will be stored in berms at the top of the slopes in advance of mining which will not be staked since this material will be replaced on reclaimed slopes in a relatively short duration.**

Topsoil will be salvaged? ☒ yes ☐ no

If no, explain:

Topsoil and overburden will be moved to reclaim an adjacent depleted segment? ☒ yes ☐ no

If no, explain:

Before materials are moved, vegetation will be cleared and drainage planned for soil storage areas? ☒ yes ☐ no

If no, explain:

Soil storage areas will be stabilized with vegetation to prevent erosion if materials will be stored for more than one season? ☒ yes ☐ no

If no, explain:

### 23C. Setbacks and Screens

The setback for this site will be **Varied** feet wide. **Refer to Setbacks Section of the Narrative.**

Is a permanent, undisturbed buffer planned for this site? ☒ yes ☐ no

If no, explain:

Setbacks are shown on maps and have been marked on the ground with permanent boundary markers? ☒ yes ☐ no

If no, explain:

Does this site have a backfilling plan that addresses the protection of adjacent property and how the final, stable slopes are to be achieved? ☐ yes ☒ no

If no, explain: **No backfill is planned.**

### 23D. Buffers to Protect Streams and Flood Plains

A stream buffer of at least 200 feet has been marked on the ground with permanent boundary markers? ☐ yes ☒ no

**If yes, see "Additional Requirements for Mines in Flood Plains" in "Instructions for SM-8A".**

A buffer of at least 200 feet from the 100-year flood plain has been marked on the ground with permanent boundary markers? ☐ yes ☒ no

If no, explain: **N/A**

Copy of Shoreline Permit from local government or the Department of Ecology is attached? **N/A** ☐ yes ☒ no

Hydraulic Project Approval from the Department of Fish and Wildlife is attached? **N/A** ☐ yes ☒ no



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## 23E. Conservation Buffers

Conservation buffers will be established for the following purpose(s): *(Check all that apply)*

☐ unstable slopes   ☐ wildlife habitat   ☐ water quality   ☐ other

Describe the nature and configuration of the conservation buffer(s): N/A

Conservation setbacks are shown on maps and have been marked on the ground with permanent boundary markers? N/A

☐ yes   ☒ no

## 23F. Ground Water

### EXISTING MINE:

High water table depth is 200 feet ☐ relative to mean sea level, ☐ below original surface, or ☒ NGVD 29.

Low water table depth is 5.73 feet ☐ relative to mean sea level, ☐ below original surface, or ☒ NGVD 29.

Annual fluctuation of water table is estimated at 5-10 feet.

Direction of ground water flow: Northwest

Refer to narrative.

### NORTH PARCEL

High water table depth is 9.59 feet ☐ relative to mean sea level, ☐ below original surface, or ☒ NGVD 29.

Low water table depth is 5.73 feet ☐ relative to mean sea level, ☐ below original surface, or ☒ NGVD 29.

Annual fluctuation of water table is from 5.73 feet on 9/29/09 to 9.30 feet on 1/19/10.

Direction of ground water flow: Northwest

Refer to narrative.

Are well logs attached? Well OB-1

☒ yes   ☐ no

Is the aquifer perched?

☐ yes   ☒ no

The shallowest aquifer is ☐ confined   ☒ unconfined?

The site will be mined: ☐ wet   ☒ dry   ☐ both

Describe mining method: Open pit mining will continue as in the existing mine south of the expansion. Concurrent clearing, mining, and reclamation will occur in increments.

The site is in a: N/A

☐ critical aquifer recharge area   ☐ sole source aquifer   ☐ public water supply watershed  
☐ wellhead protection area   ☐ special protection area   ☐ designated aquifer protection area

Ground water study attached? Groundwater study in attached EIS.

☒ yes   ☐ no

*If yes, see "Additional Requirements for Mines in Hydrologically Sensitive Areas" in "Instructions for SM-8A". If no, explain:*

## 23G. Archeology

Are archeological/cultural resource sites present?

☐ yes   ☒ no

If yes, describe how you will protect these resources:

## 24. MINING PRACTICES TO FACILITATE RECLAMATION

### 24A. Soil Replacement

Topsoil will be saved?

☒ yes   ☐ no

If no, explain:

Up to 4 feet of topsoil and (or) subsoil will be restored?

☒ yes   ☐ no

If "yes" give details. If "no", explain: All salvaged topsoil will be replaced to approximately 3 feet on the pit slopes as rooting medium.

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Topsoil will be restored and seedbeds prepared as necessary to promote effective revegetation and to stabilize slopes and mine floor? If "yes" give details. If "no", explain: <b>Topsoil will be replaced on the slopes only and mine floor is for residential use.</b>	<input checked="" type="checkbox"/> yes <input type="checkbox"/> no
Subsoil will be replaced to an approximate depth of <u>0</u> feet on the pit floor and a depth of <u>0</u> feet on slopes. Topsoil will be replaced to an approximate depth of <u>0</u> feet on the pit floor and a depth of <u>3</u> feet on slopes.	
Topsoil will be distributed evenly over the site? If no, explain: <b>Topsoil will be replaced on the slopes only and mine floor is for residential use.</b>	<input type="checkbox"/> yes <input checked="" type="checkbox"/> no
If topsoil is in short supply, it will be strategically placed in depressions and low areas in adequate thickness to conserve moisture and promote revegetation? If no, explain: <b>There will be a sufficient supply of topsoil to distribute evenly over the slopes.</b>	<input type="checkbox"/> yes <input checked="" type="checkbox"/> no
Topsoil will be moved when conditions are not overly wet or dry? If no, explain:	<input checked="" type="checkbox"/> yes <input type="checkbox"/> no
Topsoil will be imported? If yes, describe source. If no, explain: <b>There will be a sufficient supply of topsoil to distribute evenly over the slopes.</b>	<input type="checkbox"/> yes <input checked="" type="checkbox"/> no
Synthetic topsoil made from compost, biosolids, or other amendments will be used and (or) made on site to supplement existing topsoil? <b>Wood chips from onsite vegetation and filter press fines will be used to augment topsoil as appropriate.</b>	<input checked="" type="checkbox"/> yes <input type="checkbox"/> no
Materials such as till, loess, and (or) silt are available on site that could be used to supplement topsoil for reclamation. If yes, explain: <b>As explained in the following two questions, filter press fines, silt and clay materials will be utilized as topsoil supplement.</b>	<input checked="" type="checkbox"/> yes <input type="checkbox"/> no
Silt from settling ponds or a filter press will be used for reclamation? <b>As appropriate, filter press material will continue to be blended with the native topsoil for reclamation.</b>	<input checked="" type="checkbox"/> yes <input type="checkbox"/> no
Settling pond clay slurries will be pumped or hauled to other segments for reclamation? If yes, explain: <b>Only small quantities are generated from pond clean out and will supplement topsoil as appropriate.</b>	<input checked="" type="checkbox"/> yes <input type="checkbox"/> no
Topsoil will be replaced with equipment that will minimize compaction, or it will be plowed, disked, or ripped following placement? If no, explain:	<input checked="" type="checkbox"/> yes <input type="checkbox"/> no
Topsoil will be immediately stabilized with grasses and legumes to prevent loss by erosion, slumping, or crusting? If no, explain:	<input checked="" type="checkbox"/> yes <input type="checkbox"/> no
Topsoil stockpile areas are shown on maps and will be marked on the ground with permanent boundary markers to protect from loss? If no, explain: <b>Storage areas are shown on maps. Topsoil will be stored in berms at the top of the slopes in advance of mining which will not be staked since this material will be replaced on reclaimed slopes in a relatively short duration.</b>	<input checked="" type="checkbox"/> yes <input type="checkbox"/> no
Segmental topsoil removal and replacement is shown on maps? If no, explain:	<input checked="" type="checkbox"/> yes <input type="checkbox"/> no
Topsoil salvage and replacement plan included? <b>Refer to narrative.</b> If no, explain:	<input checked="" type="checkbox"/> yes <input type="checkbox"/> no
<b>24B. Removal of Vegetation</b>	
Vegetation will be removed sequentially from areas to be mined to prevent unnecessary erosion? If no, explain:	<input checked="" type="checkbox"/> yes <input type="checkbox"/> no

# APPLICATION FOR RECLAMATION PERMIT

Small trees and other transplantable vegetation will be salvaged for use in revegetating other segments?	<input type="checkbox"/> yes <input checked="" type="checkbox"/> no
If yes, give details. If no, explain: <b>No transplanting is planned, but topsoil will contain seed and rhizomes that will augment revegetation.</b>	
Wood and other organic debris will be:	
<input checked="" type="checkbox"/> recycled <input type="checkbox"/> removed from site <input checked="" type="checkbox"/> chipped <input type="checkbox"/> burned <input type="checkbox"/> buried <input checked="" type="checkbox"/> used to synthesize topsoil or mulch	
<input type="checkbox"/> other (explain)	
Solid waste disposal, burning, and land use permits are attached? N/A	<input type="checkbox"/> yes <input checked="" type="checkbox"/> no
Some coarse wood (logs, stumps) and other large debris will be salvaged for fish and wildlife habitats?	<input checked="" type="checkbox"/> yes <input type="checkbox"/> no
If yes, give details. If no, explain: <b>Salvaged as needed for proposed stormwater ponds.</b>	
<b>24C. Erosion control for Reclamation</b>	
Pit floor will slope at gentle angles toward highwall, sediment retention pond, or proper drainage?	<input checked="" type="checkbox"/> yes <input type="checkbox"/> no
If yes, give details. If no, explain: <b>Stormwater will be directed to infiltration ponds located at the be of the reclaimed slopes. Refer to Figure 6. Refer to narrative for description of existing stormwater management.</b>	
Revegetation, sheeting, and (or) matting will be used to protect areas susceptible to erosion?	<input checked="" type="checkbox"/> yes <input type="checkbox"/> no
If yes, give details. If no, explain: <b>Reclaimed slopes will be reforested contemporaneously to minimize the potential for erosion. The mine plan is designed to eliminate the need for sheeting or matting materials. Erosion control BMP's will be used if necessary to protect areas susceptible to erosion.</b>	
Water control systems used for erosion control during segmental reclamation will:	
Divert clean water around pit?	<input checked="" type="checkbox"/> yes <input type="checkbox"/> no
Trap sediment-laden runoff before it enters a stream?	<input checked="" type="checkbox"/> yes <input type="checkbox"/> no
Result in essentially natural conditions of volume, velocity, and turbidity?	<input checked="" type="checkbox"/> yes <input type="checkbox"/> no
Handle a 25-year, 24-hour peak event?	<input checked="" type="checkbox"/> yes <input type="checkbox"/> no
(Have you attached calculation?) Calculations are included in the FEIS.	<input checked="" type="checkbox"/> yes <input type="checkbox"/> no
Be removed or reclaimed?	<input type="checkbox"/> yes <input checked="" type="checkbox"/> no
If any answers are no, explain: <b>Infiltration ponds will remain at the completion of mining.</b>	
Will any water control systems be removed upon final reclamation?	<input type="checkbox"/> yes <input checked="" type="checkbox"/> no
If yes, explain:	
Water control measure will be established to prevent erosion of setbacks and neighboring properties?	<input checked="" type="checkbox"/> yes <input type="checkbox"/> no
If yes, give details. If no, explain: <b>The pit is incised and all stormwater will infiltrate on site.</b>	
Storm-water conveyance ditches and channels will be lined with vegetation or riprap?	<input checked="" type="checkbox"/> yes <input type="checkbox"/> no
If yes, give details. If no, explain: <b>Ditches will be constructed in native gravel and cobbles.</b>	
Natural and other drainage channels will be kept free of equipment, wastes, stockpiles, and overburden?	<input checked="" type="checkbox"/> yes <input type="checkbox"/> no
If no, explain:	
<b>25. RECLAMATION TOPOGRAPHY</b>	
<b>25A. Final Slopes</b>	
Final slopes will be created using the cut-and-fill method?	<input type="checkbox"/> yes <input checked="" type="checkbox"/> no
Explain procedure to be used: <b>Cut method.</b>	
Slopes will be created by mining to the final slope using the cut method?	<input checked="" type="checkbox"/> yes <input type="checkbox"/> no
Explain procedure to be used: <b>Final slopes will be created by cutting to final grade with dozer.</b>	
Slopes will vary in steepness?	<input checked="" type="checkbox"/> yes <input type="checkbox"/> no
If no, explain:	
Slopes will have a sinuous appearance in both profile and plan view?	<input checked="" type="checkbox"/> yes <input type="checkbox"/> no
If no, explain:	

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Large rectilinear (that is, right angle, or straight, planar) areas will be eliminated?	<input checked="" type="checkbox"/> yes <input type="checkbox"/> no
If no, explain:	
Where reasonable, tracks of the final equipment pass will be preserved and oriented to trap moisture, soil, and seeds, and to inhibit erosion?	<input checked="" type="checkbox"/> yes <input type="checkbox"/> no
If no, explain:	
<b>25B. Slope Requirements for Pits and Overburden/Waste Rock Dumps (non-saleable products)</b>	
<i>If the mine is a quarry or in hard rock, skip to Quarry section (25C).</i>	
Slopes will vary between 2 and 3 feet horizontal to 1 foot vertical or flatter, except in limited areas where steeper slopes are necessary to create sinuous topography and control drainage?	<input checked="" type="checkbox"/> yes <input type="checkbox"/> no
If no, explain:	
For pits, slopes will not exceed 2 feet horizontal to 1 foot vertical except as necessary to blend with adjacent natural slopes?	<input checked="" type="checkbox"/> yes <input type="checkbox"/> no
Give details: <b>Slopes will be cut at 2:1, no blending will be required because the mine will be incised.</b>	
Slope stability analysis required?	<input type="checkbox"/> yes <input checked="" type="checkbox"/> no
<i>If yes, see "Additional Requirements for Mines with Steep or Potentially Unstable Slopes" in "Instructions for SM-8A".</i>	
Slope stability analysis provided by: <b>Slope stability of reclaimed mine slopes were evaluated in the FEIS.</b>	
<b>25C. Slope Requirements for Quarries and Hardrock Metal Mines</b>	
<i>If mine is a pit in unconsolidated materials covered by Section 25B, go to Section 25D</i>	
Check the appropriate box(es)	
<input type="checkbox"/> Slopes will not exceed 2 feet horizontal to 1 foot vertical.	
<input type="checkbox"/> Slopes steeper than 1 foot horizontal to 1 foot vertical are an acceptable subsequent land use as confirmed on Form SM-6.	
<input type="checkbox"/> Hazardous slopes or cliffs are indigenous to the immediate area and already present a potential threat to human life. Photo and maps attached to document presence of cliffs.	
<input type="checkbox"/> Geologic or topographic characteristics of the site preclude slopes being reclaimed at a flatter angle and are an acceptable subsequent land use as confirmed on Form SM-6.	
Slope stability analysis required?	<input type="checkbox"/> yes <input type="checkbox"/> no
<i>If yes, see "Additional Requirements for Mines with Steep or Potentially Unstable Slopes" in "Instructions for SM-8A".</i>	
Slope stability analysis provided by	
Measures will be taken to limit access to the top and bottom of hazardous slopes?	<input type="checkbox"/> yes <input type="checkbox"/> no
Describe measures, or if no, explain:	
Selective blasting will be used to remove benches and walls and to create chutes, buttresses, spurs, scree slopes, and rough cliff faces that appear natural?	<input type="checkbox"/> yes <input type="checkbox"/> no
Describe procedures, or if no, explain:	
Reclamation blasting will be used to reduce the entire highwall to a scree or rubble slope less than 2 feet horizontal to 1 foot vertical?	<input type="checkbox"/> yes <input type="checkbox"/> no
Blasting plan is attached?	
If no, explain:	
Access to benches will be maintained for reclamation blasting?	<input type="checkbox"/> yes <input type="checkbox"/> no
If no, explain:	
Small portions of benches will be left to provide habitat for raptors and other cliff-dwelling birds?	<input type="checkbox"/> yes <input type="checkbox"/> no
<b>25D. Backfilling</b>	
Slopes will require backfilling?	<input type="checkbox"/> yes <input checked="" type="checkbox"/> no
Depth of backfilling is <u>N/A</u> feet.	
Slope stability compaction analysis required?	<input type="checkbox"/> yes <input checked="" type="checkbox"/> no
Compaction analysis provided by <u>N/A</u> .	

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Backfilling plan and (or) permits are attached? If no, explain: <b>N/A.</b>	<input type="checkbox"/> yes <input checked="" type="checkbox"/> no
Backfilling will be done with overburden material after topsoil has been separated? <b>N/A</b> If no, describe composition and source of backfill material: <b>N/A</b> Explain method of placement of fill: <b>N/A</b>	<input type="checkbox"/> yes <input checked="" type="checkbox"/> no
Locations of stockpiles are shown on maps and will be marked on the ground with permanent boundary markers? <b>No backfill is required.</b>	<input type="checkbox"/> yes <input checked="" type="checkbox"/> no
Will backfill be imported? <b>N/A</b> If yes, give volumes needed to meet reclamation plan:	<input type="checkbox"/> yes <input checked="" type="checkbox"/> no
Areas to be backfilled are shown on maps? If no, explain: <b>N/A</b>	<input type="checkbox"/> yes <input checked="" type="checkbox"/> no
All grading/backfilling will be done with clean, inert, non-organic solids? If yes, give details. If no, explain: <b>N/A</b>	<input type="checkbox"/> yes <input checked="" type="checkbox"/> no
Backfilled slopes will be compacted? If yes, give details. If no, explain: <b>N/A</b>	<input type="checkbox"/> yes <input checked="" type="checkbox"/> no
Will you be backfilling into water? <b>N/A</b> If yes, is slope stability analysis attached? <b>N/A</b> If yes, describe method:	<input type="checkbox"/> yes <input checked="" type="checkbox"/> no <input type="checkbox"/> yes <input checked="" type="checkbox"/> no
<b>25E. Mine Floors</b>	
Flat areas will be formed into gently rolling mounds? If yes, give details. If no, explain: <b>Flat areas will be formed with features consistent with future land use. See attached narrative.</b>	<input type="checkbox"/> yes <input checked="" type="checkbox"/> no
Mine floor will be gently graded into sinuous drainage channels to preclude sheetwash erosion during intense precipitation? If yes, give details. If no, explain: <b>Ditches along the toe of the reclaimed slopes direct stormwater to infiltration ponds.</b>	<input checked="" type="checkbox"/> yes <input type="checkbox"/> no
Mine floor and other compacted areas will be bulldozed, plowed, ripped, or blasted to foster revegetation? If yes, give details. If no, explain: <b>Ripping will implemented on the slopes as necessary, floor will not be revegetated as its final use is residential.</b>	<input checked="" type="checkbox"/> yes <input type="checkbox"/> no
<b>25F. Lakes, Ponds, and Wetlands</b>	
Is water currently present in the area or will the mining penetrate the water table? <i>If no, go to Section 25G.</i>	<input type="checkbox"/> yes <input checked="" type="checkbox"/> no
Reclaimed areas below the permanent low water table in soil, sand, gravel, and other unconsolidated material will have a slope no steeper than 1.5 feet horizontal to 1 foot vertical? If yes, give details. If no, explain:	<input type="checkbox"/> yes <input type="checkbox"/> no
If not already present, soils, silts, and clay-bearing material will be placed below water level to enhance revegetation? If yes, give details. If no, explain:	<input type="checkbox"/> yes <input type="checkbox"/> no
Some parts of pond and lake banks will be shaped so that a person can escape from the water?	<input type="checkbox"/> yes <input type="checkbox"/> no
Armored spillways or other measures to prevent undesirable overflow or seepage will be provided to stabilize bodies of water and adjacent slopes? If yes, give details. If no, explain:	<input type="checkbox"/> yes <input type="checkbox"/> no

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Wildlife habitat will be developed, incorporating such measures as:		
Sinuous and irregular shorelines?	<input type="checkbox"/>	yes <input type="checkbox"/> no
Varied water depths?	<input type="checkbox"/>	yes <input type="checkbox"/> no
Shallow areas less than 18 inches deep?	<input type="checkbox"/>	yes <input type="checkbox"/> no
Islands and peninsulas?	<input type="checkbox"/>	yes <input type="checkbox"/> no
Give details:		
Ponds or basins will:		
Be located in stable areas?	<input type="checkbox"/>	yes <input type="checkbox"/> no
Have sufficient volume for expected runoff?	<input type="checkbox"/>	yes <input type="checkbox"/> no
Have an emergency overflow spillway?	<input type="checkbox"/>	yes <input type="checkbox"/> no
Spillways and outfalls will be protected (for example, rock armor) to prevent failure and erosion?	<input type="checkbox"/>	yes <input type="checkbox"/> no
If any answers are no, explain:		
Proper measures will be taken to prevent seepage from water impoundments that could cause flooding outside the permitted area or adversely affect the stability of impoundment dams or adjacent slopes?		
	<input type="checkbox"/>	yes <input type="checkbox"/> no
If yes, give details. If no, explain:		
Written approval from other agencies with jurisdiction to regulate impoundment of water is attached?		
	<input type="checkbox"/>	yes <input type="checkbox"/> no
If no, explain:		
<b>25G. FINAL DRAINAGE CONFIGURATION</b>		
Drainage will be capable of carrying the peak flow of the 25-year, 24-hour precipitation event? <i>(Data are available at DNR Region offices)</i>		
	<input checked="" type="checkbox"/>	yes <input type="checkbox"/> no
If yes, are calculations attached?		
	<input checked="" type="checkbox"/>	yes <input type="checkbox"/> no
If yes, give details. If no, explain: <b>Drainage designed for 100-year event. Calculations are included in the FEIS.</b>		
Drainages will be constructed on each reclaimed segment to control surface water, erosion, and siltation?		
	<input checked="" type="checkbox"/>	yes <input type="checkbox"/> no
Clean runoff is directed to a safe outlet?	<input checked="" type="checkbox"/>	yes <input type="checkbox"/> no
If either yes, give details. If no, explain: <b>Mine will create a closed depression where stormwater will infiltrate, existing stormwater system will remain in place (refer to narrative).</b>		
Are these shown on maps?		
	<input checked="" type="checkbox"/>	yes <input type="checkbox"/> no
The grade of ditches and channels will be constructed to limit erosion and siltation?		
	<input checked="" type="checkbox"/>	yes <input type="checkbox"/> no
If yes, give details. If no, explain: <b>The ditches direct runoff at a very gentle grade to infiltration ponds.</b>		
Natural-appearing drainage channels will be established upon reclamation?		
	<input checked="" type="checkbox"/>	yes <input type="checkbox"/> no
If yes, give details. If no, explain: <b>Drainage channels will be shallow vegetated ditches in native gravel.</b>		
<b>26. SITE CLEANUP AND PREPARATION FOR REVEGETATION</b>		
<b>26A. Dealing with Hazardous Materials</b>		
Hazardous materials are present at the mine site?		
	<input type="checkbox"/>	yes <input checked="" type="checkbox"/> no
<i>If no, go to Section 26B</i>		
The final ground surface drains away from any hazardous natural materials?		
	<input type="checkbox"/>	yes <input type="checkbox"/> no
If yes, give details. If no, explain:		
Plan for handling hazardous mineral wastes indigenous to the site is attached?		
	<input type="checkbox"/>	yes <input type="checkbox"/> no
If no, written approval from all appropriate solid waste regulatory agencies attached?		
	<input type="checkbox"/>	yes <input type="checkbox"/> no
<b>26B. Removal of Debris</b>		
All debris (garbage, 'bone piles', treated wood, old mining equipment, etc.) will be removed from the mine site?		
	<input checked="" type="checkbox"/>	yes <input type="checkbox"/> no
All sheds, scale houses, and other structures will be removed from the site?		
	<input checked="" type="checkbox"/>	yes <input type="checkbox"/> no
If either answer is yes, give details. If no, explain: <b>The Conveyor may stay in place at the completion of mining should the processing facility remain in the existing mine.</b>		

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## 27. REVEGETATION

The mine site is in: ☐ eastern Washington  
☒ western Washington

The mine site is: ☐ wet ☒ dry?

The average precipitation is 39 inches per year.

Revegetation will start during the first proper growing season (fall for grasses and legumes, fall or late winter for trees and shrubs) following restoration of slopes?

☒ yes ☐ no

If yes, give details. If no, explain: **Reforestation will occur prior to bud break, typically before April 15<sup>th</sup>.**

Test plots will be used to determine optimum vegetation plans? N/A

☐ yes ☒ no

The site will not be revegetated because:

- ☐ It is a rural area with a rainfall exceeding 30 inches annually and erosion will not be a problem (requires approval of DNR).  
☐ Demonstration plots and areas will be used to show that active revegetation is not necessary.  
☒ Revegetation is inappropriate for the approved subsequent use of this surface mine.

Explain: **It is inappropriate to revegetated the mine floor as its subsequent use is residential. Slopes will be reforested.**

Documentation is attached?

☐ yes ☒ no

### 27A. Recommended Pioneer Species

In the Sections below, check the species that will be planted at your mine site:

*\* indicates nitrogen-fixing species*

#### Western Washington Dry Areas

- |  |  |  |   |
|--|--|--|---|
| <input type="checkbox"/> alfalfa*            | <input type="checkbox"/> lupine*               | <input type="checkbox"/> clover*   | <input type="checkbox"/> orchard grass  |
| <input type="checkbox"/> cereal rye          | <input type="checkbox"/> perennial rye         | <input type="checkbox"/> colonial bent grass   | <input type="checkbox"/> ponderosa pine |
| <input type="checkbox"/> creeping red fescue | <input checked="" type="checkbox"/> red alder* | <input checked="" type="checkbox"/> Douglas fir  | <input type="checkbox"/> shore pine     |
| <input type="checkbox"/> ground cover        | <input type="checkbox"/> shrubs                | <input checked="" type="checkbox"/> other Volunteer Madrone and shrub seedlings will naturally propagate the site. |   |

#### Western Washington Wet Areas

- |  |  |  |                                 |
|--|--|--|---------------------------------|
| <input type="checkbox"/> birdsfoot trefoil | <input type="checkbox"/> sedges          | <input type="checkbox"/> cedar               | <input type="checkbox"/> tubers |
| <input type="checkbox"/> cottonwood        | <input type="checkbox"/> wetland grasses | <input type="checkbox"/> creeping red fescue | <input type="checkbox"/> willow |
| <input type="checkbox"/> red alder*        | <input type="checkbox"/> other           |  |                                 |

#### Eastern Washington Dry Areas

- |   |   |                                   |   |
|---|---|-----------------------------------|---|
| <input type="checkbox"/> alder*             | <input type="checkbox"/> grasses        | <input type="checkbox"/> alfalfa* | <input type="checkbox"/> juniper                  |
| <input type="checkbox"/> black locust       | <input type="checkbox"/> lodgepole pine | <input type="checkbox"/> clover   | <input type="checkbox"/> lupine*                  |
| <input type="checkbox"/> deciduous trees    | <input type="checkbox"/> ponderosa pine | <input type="checkbox"/> shrubs   | <input type="checkbox"/> deep-rooted ground cover |
| <input type="checkbox"/> diverse evergreens | <input type="checkbox"/> other          |                                   |   |

#### Eastern Washington Wet Areas

- |                                       |                                     |                                 |                                 |
|---------------------------------------|-------------------------------------|---------------------------------|---------------------------------|
| <input type="checkbox"/> alder*       | <input type="checkbox"/> cottonwood | <input type="checkbox"/> poplar | <input type="checkbox"/> sedges |
| <input type="checkbox"/> serviceberry | <input type="checkbox"/> tubers     | <input type="checkbox"/> willow |                                 |
| <input type="checkbox"/> other        |                                     |                                 |                                 |

Give planting details (stems/acres of trees and shrubs, see Forest Practices manual; lbs/acre of grass, legume, or forb mixture):

**Refer to revegetation specifications in narrative.**

Describe weed control plan:

**Deleterious species such as Scotts broom, Himalayan and Evergreen blackberry will be controlled so that they do not become competitive with the reforested slopes. Once the tree canopy closes, deleterious species are shaded out and are not of concern.**

# APPLICATION FOR RECLAMATION PERMIT

## 27B. Planting Techniques

Revegetation at this site will require:

- |  |   |  |
|--|---|--|
| Ripping and tilling?                         | <input type="checkbox"/> yes            | <input checked="" type="checkbox"/> no |
| Blasting to create permeability?             | <input type="checkbox"/> yes            | <input checked="" type="checkbox"/> no |
| Mulching?                                    | <input type="checkbox"/> yes            | <input checked="" type="checkbox"/> no |
| Irrigation?                                  | <input type="checkbox"/> yes            | <input checked="" type="checkbox"/> no |
| Fertilization?                               | <input type="checkbox"/> yes            | <input checked="" type="checkbox"/> no |
| Importation of clay- or humus-bearing soils? | <input type="checkbox"/> yes            | <input checked="" type="checkbox"/> no |
| Other soil conditioners or amendments?       | <input checked="" type="checkbox"/> yes | <input type="checkbox"/> no            |
| Give details: <b>Refer to the narrative.</b> |   |  |

Trees and shrubs will be planted in topsoil or in subsoil amended with generous amounts of organic matter? ☒ yes ☐ no

If yes, give details. If no, explain: **Topsoil may be amended with onsite process fines and wood chips as available.**

Mulch will be piled around the base of trees and shrubs? ☐ yes ☒ no

High quality stock will be used? ☒ yes ☐ no

Trees and shrubs will be planted while they are dormant? ☒ yes ☐ no

Stock will be properly handled, kept cool and moist, and planted as soon as possible? ☒ yes ☐ no

Seeds will be covered with topsoil or mulch no deeper than one-half inch? N/A ☐ yes ☒ no

If any answers are no, explain: **Mulching and seeding are not required to successfully reforest the slopes.**

## 28. FINAL CHECKLIST

All required maps are attached? (See "Instructions for SM-8A" for detailed requirements.) ☒ yes ☐ no

All required cross sections are attached? (See "Instructions for SM-8A" for detailed requirements.) ☒ yes ☐ no

Geologic map attached (if required)? (See "Instructions for SM-8A" for detailed requirements.) ☒ yes ☐ no

All documents submitted have the date, the name and address of the permit holder, and the application number on every page of the material? ☒ yes ☐ no

The plan contains predominantly relevant information? ☒ yes ☐ no

Have you completed the SM-6 and has it been signed by the local jurisdiction? ☒ yes ☐ no

Have you provided the SEPA checklist? ☒ yes ☐ no

Have you provided a copy of the SEPA determination (DNS, MDNS, or DS)? ☒ yes ☐ no

Have you attached photographs? ☐ yes ☒ no

Are additional supplemental studies included? ☐ yes ☐ no

If yes, check the appropriate box(es) below:

- |  |   |   |   |
|--|---|---|---|
| <input type="checkbox"/> Archeological | <input checked="" type="checkbox"/> Geohydrologic | <input type="checkbox"/> Backfill       | <input checked="" type="checkbox"/> Slope stability |
| <input type="checkbox"/> Topsoil       | <input type="checkbox"/> Flood plain              | <input type="checkbox"/> Conservational | <input type="checkbox"/> Vegetation                 |
| <input type="checkbox"/> Other         |   |   |   |

Other permits required? ☒ yes ☐ no

If yes, check the appropriate box(es) below:

- |  |   |   |
|--|---|---|
| <input type="checkbox"/> Shoreline Permit                  | <input type="checkbox"/> Water Discharge Permit   | <input type="checkbox"/> Solid Waste Permit         |
| <input type="checkbox"/> Air Quality Permit                | <input type="checkbox"/> NPDS or General Discharge Permit                                   | <input type="checkbox"/> Hydraulic Project Approval |
| <input type="checkbox"/> Special or Conditional Use Permit | <input checked="" type="checkbox"/> Other Forest Practices Permit, City of DuPont Site Plan |   |



# APPLICATION FOR RECLAMATION PERMIT

*When signed by the applicant and approved by the Department of Natural Resources, this document and the associated maps, cross sections, reclamation narrative, and other attachments will be the approved reclamation plan for this permit that the permit holder must follow. Significant variations from the approved reclamation plan may require that a new plan be submitted to the Department for approval.*

The applicant shall be considered as the permit holder for this surface mine and shall be responsible for compliance with Chapter 78.44 RCW, Chapter 332-18 WAC, the approved reclamation plan and attachments, and the conditions of the permit if issued by the Department of Natural Resources.			
I hereby agree to comply with this plan. <i>Signature of applicant or company representative</i> 	Name and Title of Company Representative <i>(Please print)</i> Scott Nicholson Director	Date signed 6/11/13	
<b>SURFACE OWNERSHIP</b>  Give names, addresses, and signatures of all individuals with possessory interest in land. <i>(Attach signed copies of this page if more than one )</i>  I verify that the applicant has my permission to mine from my land. <i>Signature of landowner(s)</i> <span style="float: right;"><i>Date signed</i></span> for Calpoatland 6/11/13  I hereby verify that I have seen and approved this plan. <i>Signature of landowner(s)</i> <span style="float: right;"><i>Date signed</i></span> for Calpoatland 6/11/13		<b>OWNERSHIP OF RIGHTS TO REMOVE MINERALS BY SURFACE MINING</b>  Give names, addresses, and signatures of all individuals with rights. <i>(Attach signed copies of this page if more than one )</i>  I verify that the applicant has my permission to mine this land. <i>Signature of rights owner(s)</i> <span style="float: right;"><i>Date signed</i></span> for Calpoatland 6/11/13  I hereby verify that I have seen and approved this plan. <i>Signature of rights owner(s)</i> <span style="float: right;"><i>Date signed</i></span> for Calpoatland 6/11/13	
<b>FOR DEPARTMENTAL USE ONLY</b>			
Date accepted	Accepted by:	Title:	Reclamation Permit No.
Comments by Department:			

Northwest Aggregates Co.  
 UBI Number: 601301145

11. Do you or any person, partnership, or corporation associated with you now hold, or have you held, a surface mining operating or reclamation permit?      yes      no If you answered yes to the above, please list:				
Permit Number	Active Operation?		Reclamation current/complete?	
	Yes	No	Yes	No
Concrete - 70-012195		X	X	
DuPont - 70-012668	X		X	
Mats Mats - 70-010170	X		X	
Maury Island - 70-010256		X	X	
Snoqualmie - 70-012558	X		X	
Vashon - 70-010271 (10 acres)	X		X	
Vashon - 70-010272 (26 acres)	X		X	
White River - 70-012865	X		x	

S H C S

21 FEB 9 1991

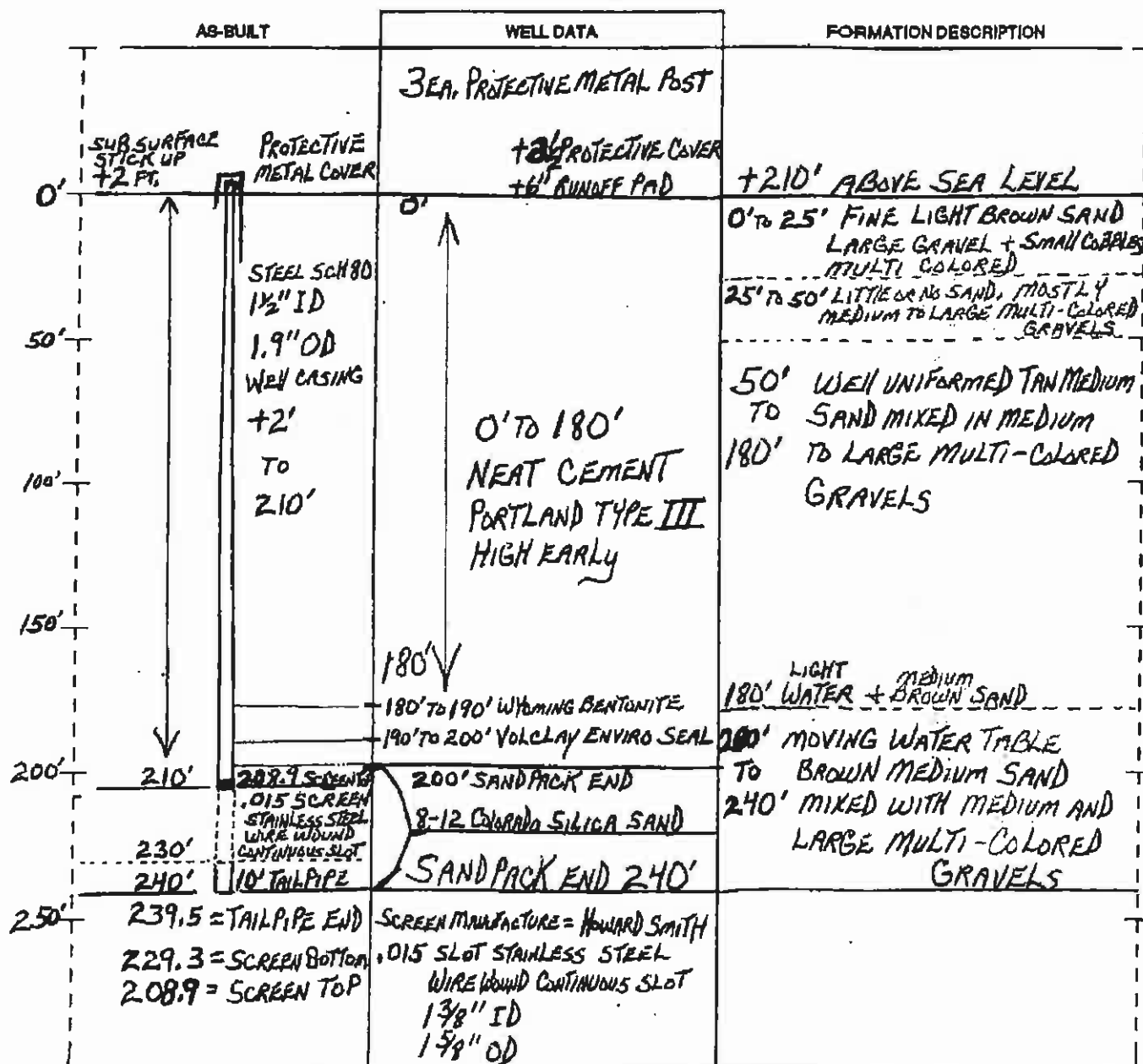
14P1

# RESOURCE PROTECTION WELL REPORT

START CARD NO. 063977

PROJECT NAME: LONE STAR NW OBSERVATION WELL  
 WELL IDENTIFICATION NO. LONE STAR 191B-1  
 DRILLING METHOD: REVERSE CIRCULATION ROTARY  
 DRILLER: DOUGLAS GRABOWSKI  
 FIRM: BECKER DRILLS INC.  
 SIGNATURE: William A. Fleckey  
 CONSULTING FIRM: HART CROWSER  
 REPRESENTATIVE: TOM NOYES

COUNTY: PIERCE  
 LOCATION: SE 1/4 SW 1/4 Sec 14 Twp 19N R 1E  
 STREET ADDRESS OF WELL: NORTHWEST LANDING ANNEX  
DUPONT STEELACQUIN ROAD DUPONT WASHINGTON  
 WATER LEVEL ELEVATION: 200 FT. STATIC  
 GROUND SURFACE ELEVATION: +210  
 INSTALLED: FEBRUARY 15, 1991  
 DEVELOPED: \_\_\_\_\_



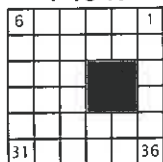
SCALE: 1" = 50 FEET

PAGE 1 OF 1

ECY 060-12 (Rev. 11/89)

## FIGURES

T 19 N



R 1 E

**SITE COORDINATES:**

LATITUDE; 47° 87' 17" N

LONGITUDE; 122° 38' 16" W

**DIRECTIONS TO SITE:**

THE DUPONT PIONEER AGGREGATES SITE IS LOCATED WITHIN THE CITY OF DUPONT. FROM EXIT 119 FROM INTERSTATE 5 TO DUPONT, DRIVE NORTHBOUND ON DUPONT-STEILACOOM ROAD. TURN LEFT (WEST) ONTO WHARF ROAD, THEN TURN RIGHT (NORTH) ONTO PIONEER AVENUE. SITE ACCESS IS LOCATED ON THE LEFT SIDE OF PIONEER AVENUE, ROUGHLY 1/2 MILE NORTH OF THE INTERSECTION OF WHARF ROAD AND PIONEER AVENUE.

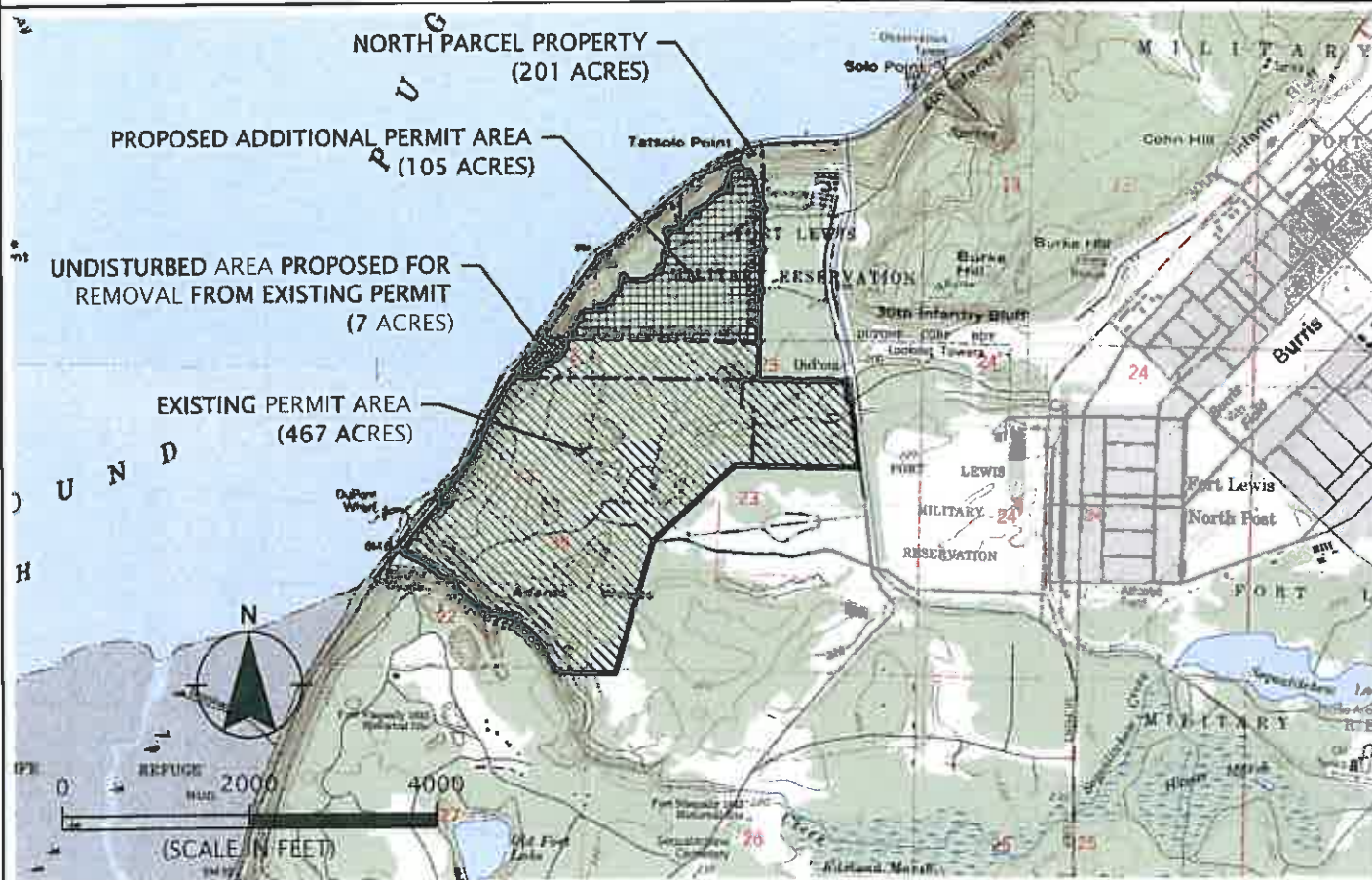
**LEGAL DESCRIPTION:**

THE CURRENT PERMIT BOUNDARY AND NORTHERN EXPANSION PERMIT BOUNDARY ARE LOCATED IN PORTIONS OF THE FOLLOWING SECTIONS;

- NE QUARTER OF SECTION 22
- SE QUARTER OF SECTION 22
- NW QUARTER OF SECTION 23
- SW QUARTER OF SECTION 23
- NE QUARTER OF SECTION 23
- SW QUARTER OF SECTION 14
- SE QUARTER OF SECTION 15

**WESTERN WASHINGTON****NOTE:**

USGS TOPOGRAPHIC QUADRANGLE MAPS (MCNEIL ISLAND, STEILACOOM, FORT LEWIS, AND NISQUALLY) REPRODUCED USING MAPTECH TERRAIN NAVIGATOR PRO®

**GEODESIGN INC.**

1157 3rd Avenue - Suite 220B  
Longview, WA 98632  
Off 360 200 4803 Fax 360 200 4803

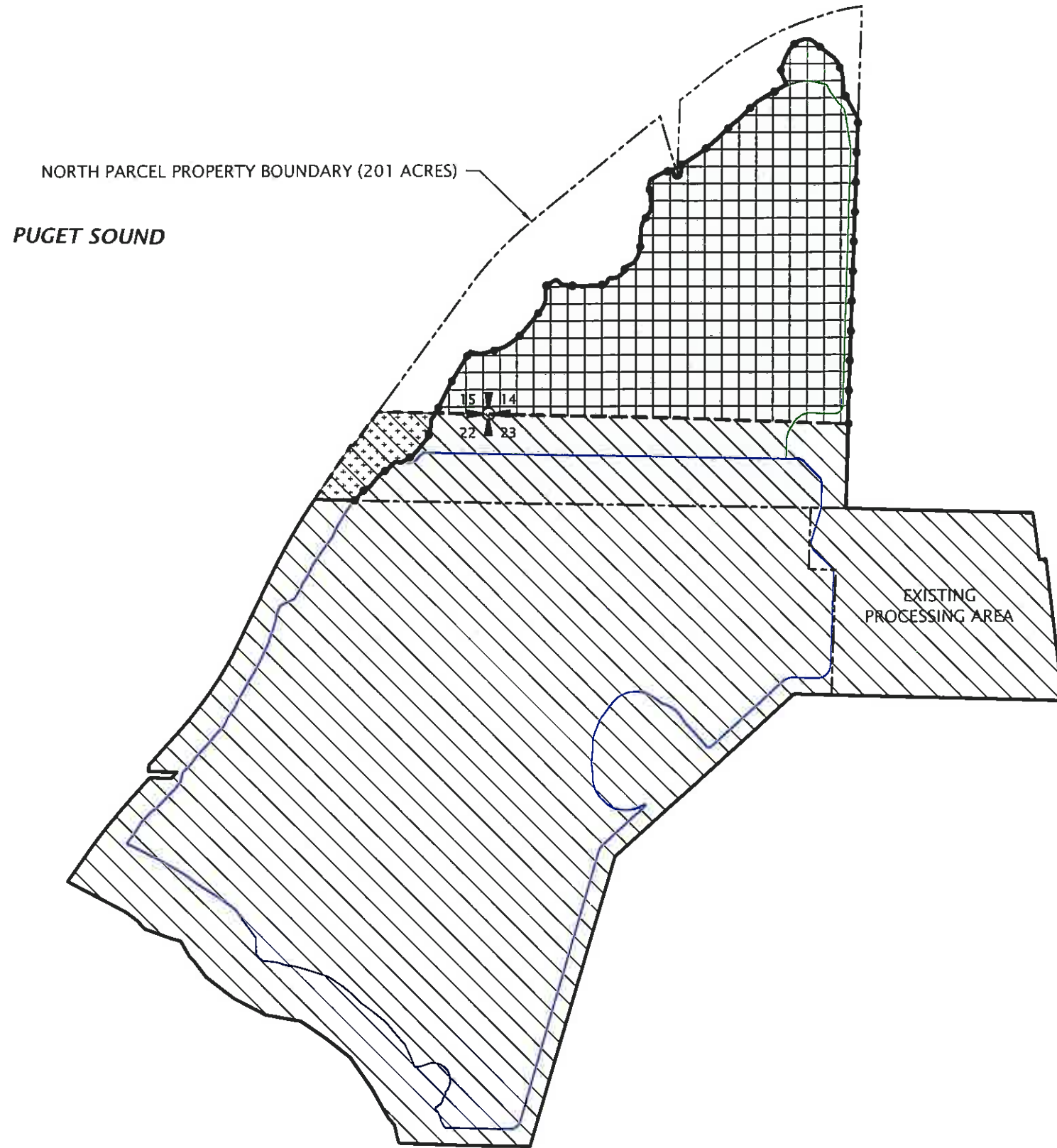
GLACIER NW, INC.  
DBA CALPORTLAND

CALPORTCO-1-02  
JUNE 2013

**VICINITY MAP**  
DUPONT PIONEER AGGREGATES (DNR #70-12668)

CITY OF DUPONT, PIERCE COUNTY, WA  
SECTIONS 14, 15, 22, & 23, T19N, R1E, W.M.

**FIGURE 1**



LEGEND:



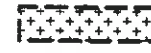
PROPOSED ADDITIONAL PERMIT AREA IN NORTH PARCEL (105 ACRES)



EXISTING PERMIT AREA (467 ACRES)



EXISTING PERMIT BOUNDARY TO BE RETAINED



UNDISTURBED AREA PROPOSED FOR REMOVAL FROM EXISTING PERMIT (7 ACRES)



EXISTING PERMIT BOUNDARY TO BE REMOVED



PROPOSED NEW PERMIT BOUNDARY



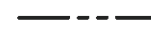
EXISTING PERMITTED EXTRACTION AREA (315 ACRES)



PROPOSED ADDITIONAL EXTRACTION AREA (116 ACRES)



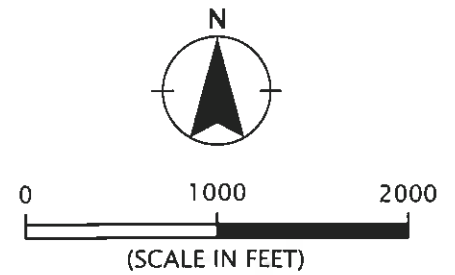
EXISTING EXTRACTION AREA WHERE ADDITIONAL MINING IS PROPOSED TO FLATTEN SLOPE (NORTH PARCEL OVERLAP; 26 ACRES)



PROPERTY LINE



GEOREFERENCE - SECTION CORNER  
N47° 07' 35.16"  
W122° 39' 14.63"



NOTES:

1. TOTAL PROPOSED PERMIT AREA = 565 ACRES (467 ACRES EXISTING PERMIT - 7 ACRES TO BE EXCLUDED + 105 PROPOSED ADDITIONAL ACRES).
2. TOTAL EXTRACTION AREA IN NORTH PARCEL = 142 ACRES (26 ACRES IN EXISTING EXTRACTION AREA + 116 ACRES IN PROPOSED EXTRACTION AREA)



TATSOLO SPECIAL MANAGEMENT UNIT;  
EXCLUDED FROM OPEN SPACE AREA







NORTH PARCEL PROPERTY BOUNDARY (201 ACRES)

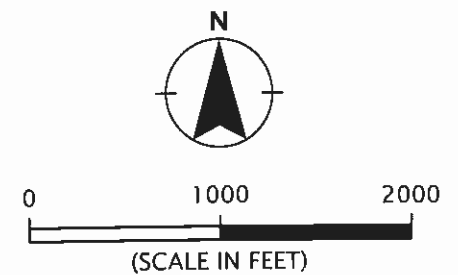
PUGET SOUND

JOINT BASE  
LEWIS MCCORD

JOINT BASE  
LEWIS MCCORD

LEGEND:

-  PROPOSED PERMIT BOUNDARY (565 ACRES;  
460 ACRES EXISTING + 105 ACRES PROPOSED)
-  BNSF RAILROAD ROW
-  PROPERTY LINES
-  PROPERTY PARCEL LINES
-  PROPERTY PARCEL NUMBERS
-  GEOREFERENCE - SECTION CORNER  
N47° 07' 35.16"  
W122° 39' 14.63"



NOTES:

1. SEE FIGURE 3B FOR PROPERTY OWNERSHIP INFORMATION.
2. PARCEL MAP AND PARCEL NUMBERS OBTAINED FROM ASPECT CONSULTING, FEBRUARY 11, 2013.

**SUBJECT PROPERTY OWNERSHIP INFORMATION**

PARCEL NUMBER	PROPERTY OWNER	OWNER ADDRESS
119231005	GLACIER NORTHWEST, INC.	2025 E FINANCIAL WAY GLENORA, CA 91741-4692
0119232003 0119232006 0119221004 0119154000 0119143000 0119143001	NORTHWEST AGGREGATES CO.	2025 E FINANCIAL WAY GLENORA, CA 91741-4692
0119221007 0119221013 0119221014 0119232008 0119232009 0119232010 0119232011 0119221015 0119221011 0119221012 0119221009 0119221010 0119233010 0119232012 0119233012 0119224008 0119224007 0119224006 0119224005 0119224004 0119221008 0119224009 0119233013	WPP LLC	5260 IRWIN RD HUNTINGTON, WV 25705-3247

**ADJACENT PROPERTY OWNERSHIP INFORMATION**

PARCEL NUMBER	PROPERTY OWNER	OWNER ADDRESS
0119224010	CITY OF DUPONT	1700 CIVIC DR DUPONT, WA 98327-9603
0119234017 0119234016	PIERCE COUNTY INVESTORS LLC	20415 72ND AVE S SUITE 210 KENT, WA 98032-2357
0119262015 0119233016 0119233014 0119233011	WPP LLC	5260 IRWIN RD HUNTINGTON, WV 25705-3247
JBLM (JOINT BASE LEWIS-MCCHORD)	USA	JBLM PUBLIC AFFAIRS OFFICE BOX 339500 MAIL STOP 14A JOINT BASE LEWIS-MCCHORD, WA 98433-9500
BNSF ROW	BURLINGTON-NORTHERN SANTA FE RAILROAD	TERRY FINN 2454 OCCIDENTAL AVE BLDG 1A SEATTLE, WA 98134

**NOTES:**

- SEE FIGURE 3A FOR PROPERTY OWNERSHIP MAP.
- PROPERTY OWNERSHIP INFORMATION OBTAINED ONLINE FROM PIERCE COUNTY ASSESSOR.

**GEODESIGN INC**

1157 3rd Avenue - Suite 220B  
Longview, WA 98632  
Off 360 200 4803 Fax 360 200 4803

GLACIER NW, INC.  
DBA CALPORTLAND

CALPORTCO-1-02  
JUNE 2013

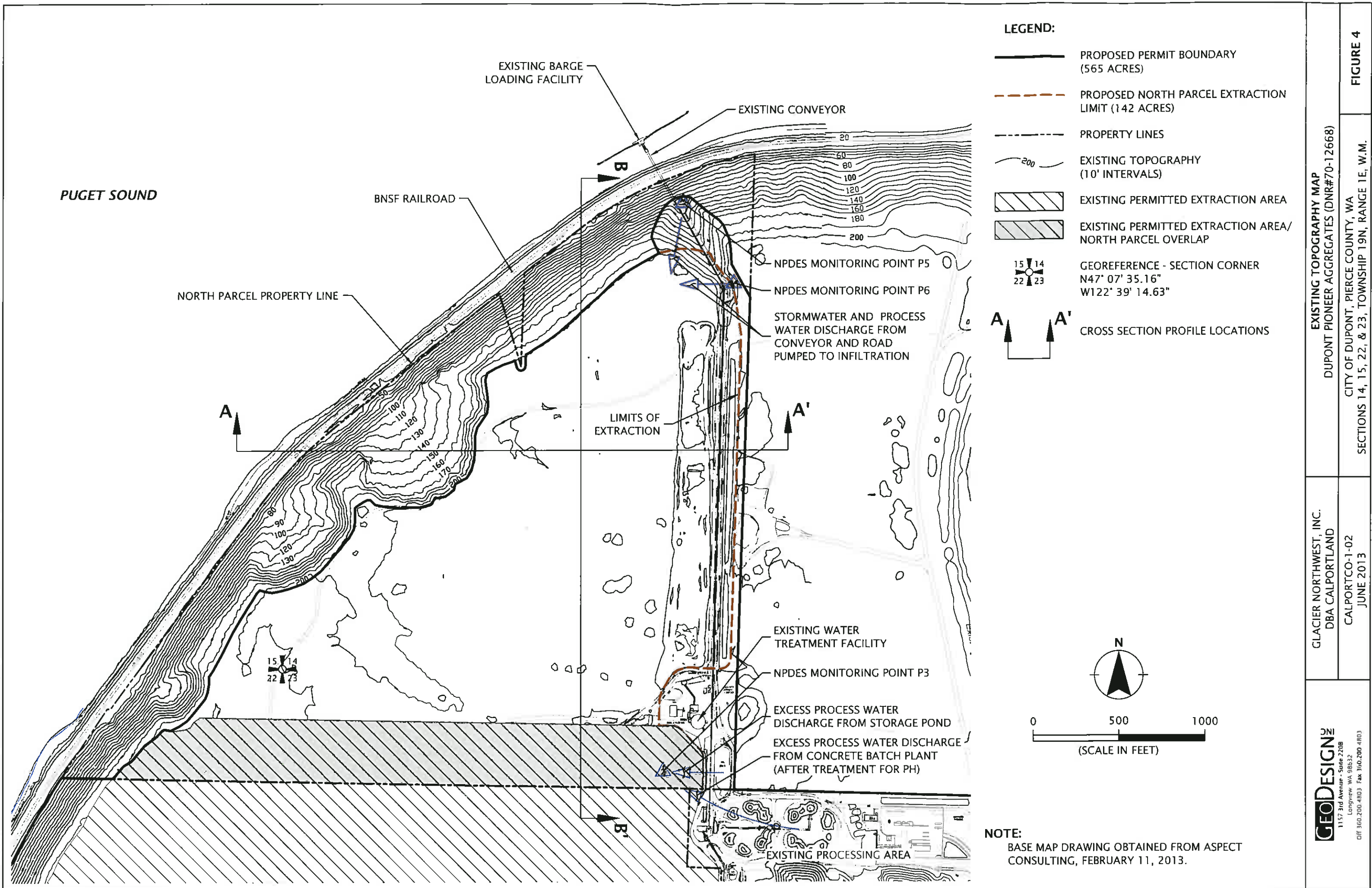
**PROPERTY OWNERSHIP INFORMATION TABLES**  
DUPONT PIONEER AGGREGATES (DNR #70-12668)

CITY OF DUPONT, PIERCE COUNTY, WA  
SECTIONS 14, 15, 22, & 23, T19N, R1E, W.M.

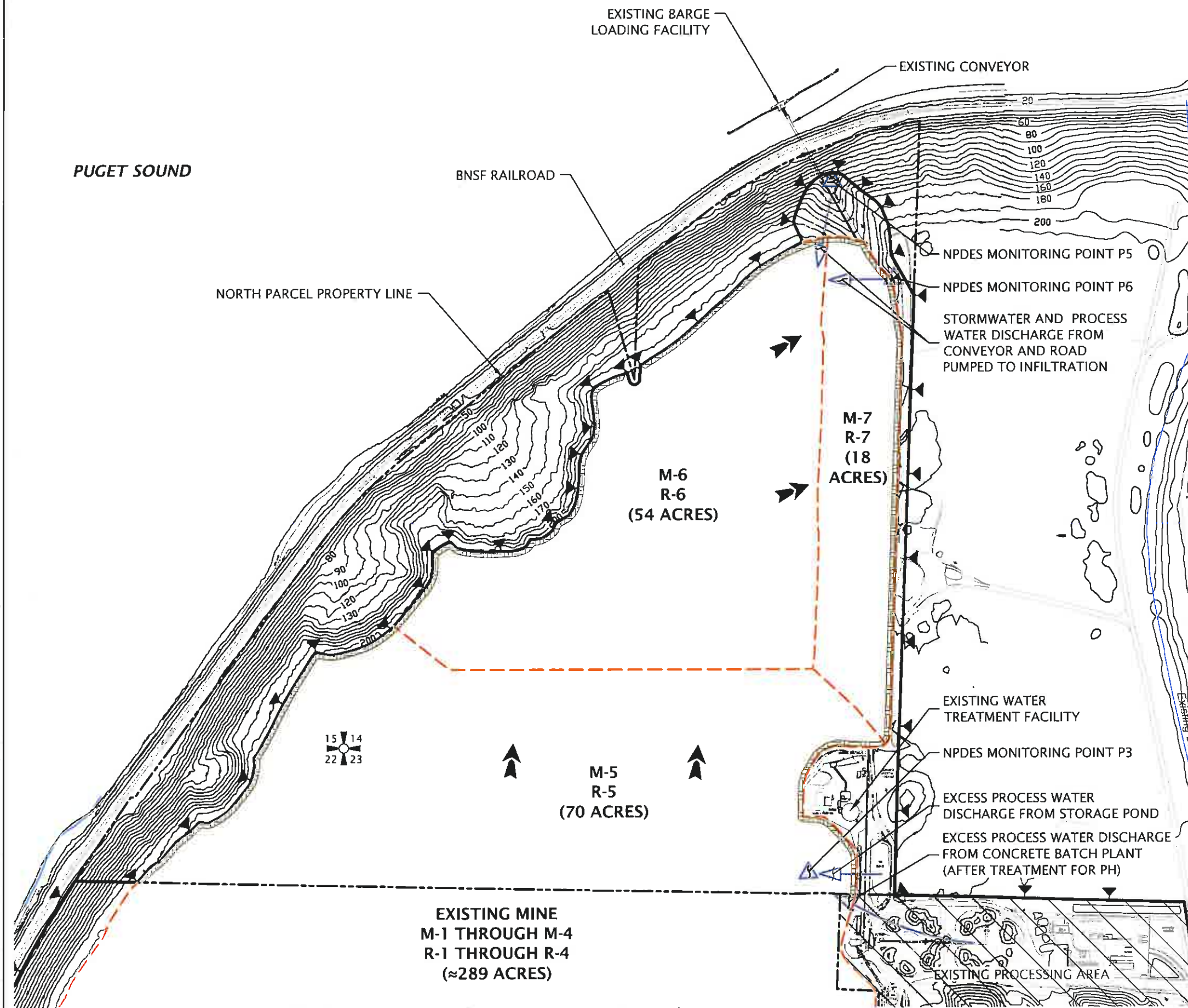
**FIGURE 3B**



Printed By: mmiller | Print Date: 6/10/2013 3:03:03 PM  
File Name: J:\A-D\CalPortCo\CalPortCo-1-02\Figures\CAD\CalPortCo-1-02 - EC.dwg | Layout: FIGURE 4

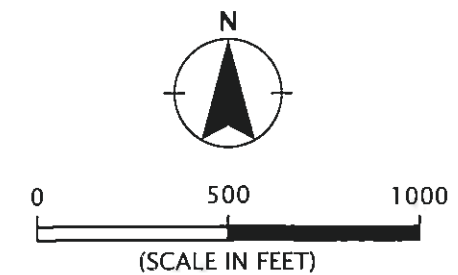


Printed By: mmiller | Print Date: 6/10/2013 3:06:30 PM  
File Name: J:\A-D\CalPortCo\CalPortCo-1-02\Figures\CAD\CalPortCo-1-02 - RS.dwg | Layout: FIGURE 5



#### LEGEND:

- PROPOSED PERMIT BOUNDARY (565 ACRES)
- PROPERTY LINES
- EXISTING TOPOGRAPHY (10' INTERVALS)
- TOPSOIL STOCKPILES
- M-1** MINING PHASE
- R-1** RECLAMATION SEQUENCE
- PHASE BOUNDARY
- DIRECTION OF MINING
- PERMANENT MARKER (LINE OF SIGHT)



#### NOTE:

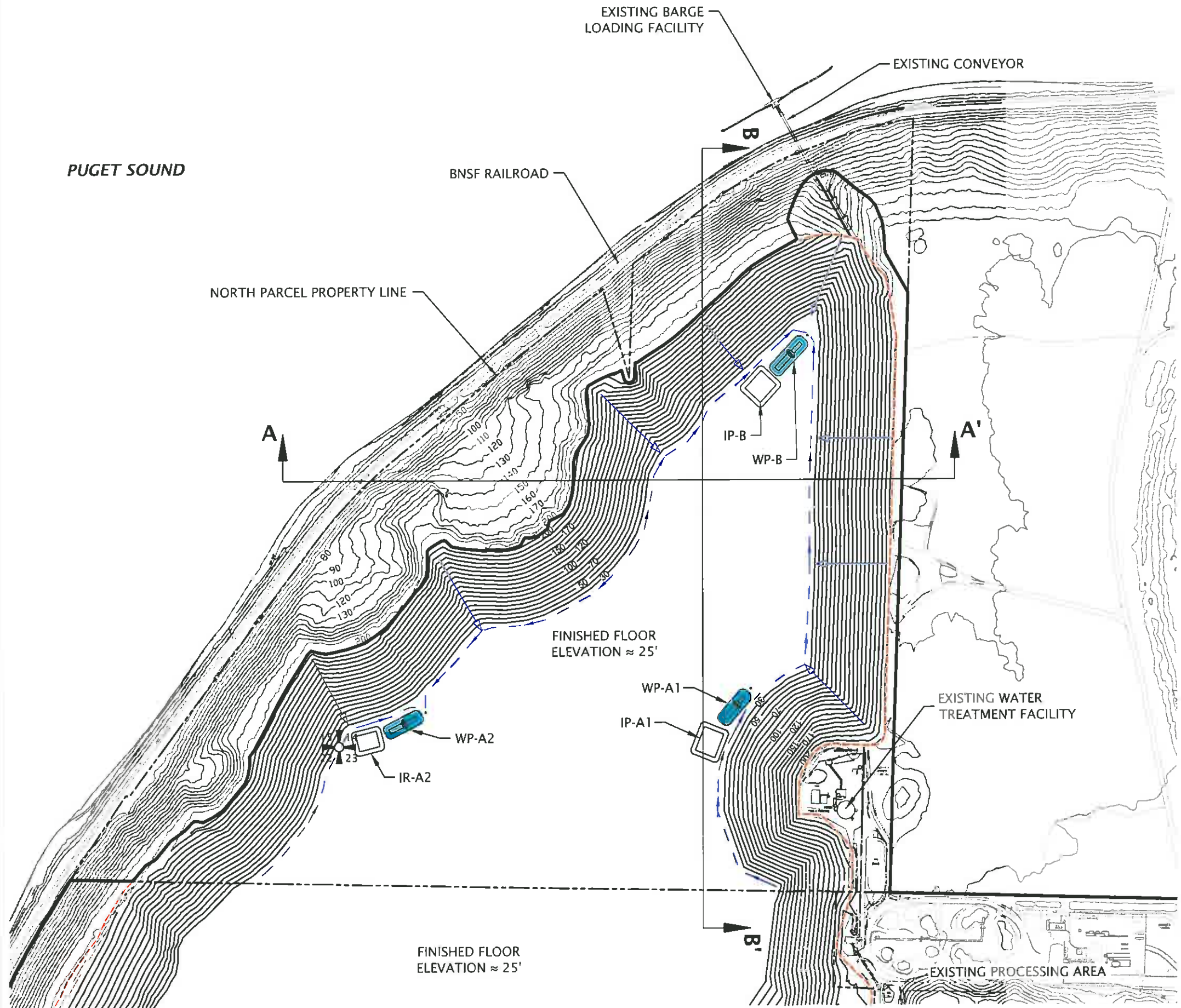
1. BASE MAP DRAWING OBTAINED FROM ASPECT CONSULTING, FEBRUARY 11, 2013.
2. STOCKPILED TOPSOIL WILL MEET INTERIM TACOMA SMELTER PLUME CLEANUP OBJECTIVES PRIOR TO PLACEMENT FOR RECLAMATION.
3. FOR STORMWATER EROSION CONTROL MEASURES, SEE NARRATIVE.

GLACIER NORTHWEST, INC. DBA CALPORTLAND CALPORTCO-1-02 JUNE 2013	RECLAMATION SEQUENCE MAP DUPONT PIONEER AGGREGATES (DNR#70-12668)	
	CITY OF DUPONT, PIERCE COUNTY, WA SECTIONS 14, 15, 22, & 23, TOWNSHIP 19N, RANGE 1E, W.M.	

FIGURE 5

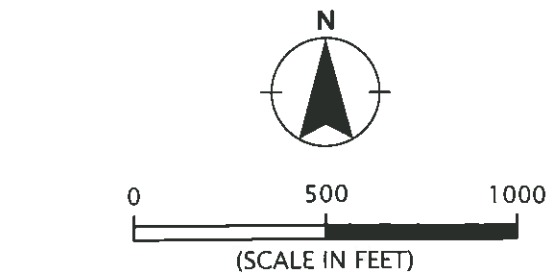


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File Name: J:\A-D\CalPortCo\CalPortCo-1-02\Figures\CAD\CalPortCo-1-02-FL.dwg | Layout: FIGURE 6



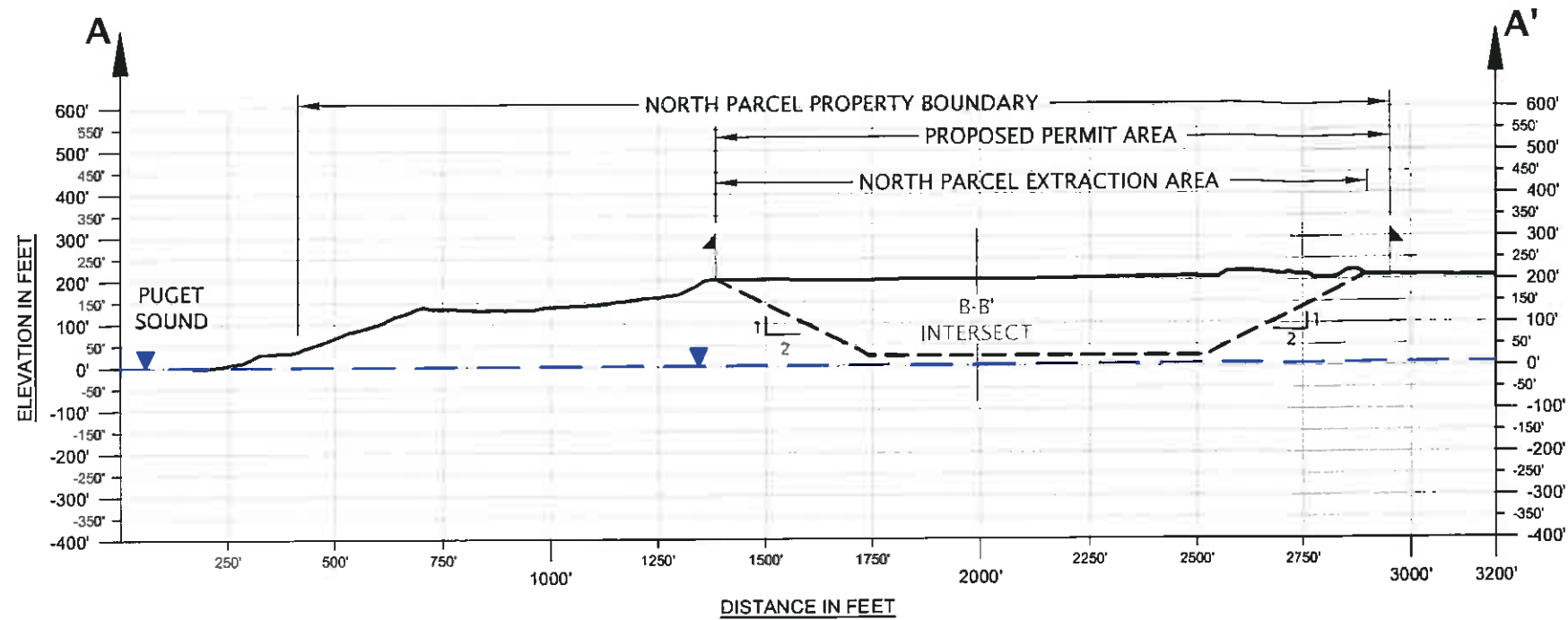
LEGEND:

- PROPOSED PERMIT BOUNDARY (565 ACRES)
- EXTRACTION LIMIT (431 ACRES TOTAL; 142 ACRES IN NORTH PARCEL)
- PROPERTY LINES
- RECLAIMED TOPOGRAPHY (10' INTERVALS)
- EXISTING TOPOGRAPHY (10' INTERVALS)
- ON-SITE DRAINAGE PATTERNS
- GEOREFERENCE - SECTION CORNER  
N47° 07' 35.16"  
W122° 39' 14.63"
- WET POND
- INFILTRATION POND
- SWALE
- CROSS SECTION PROFILE LOCATIONS



NOTE:

1. BASE MAP DRAWING OBTAINED FROM ASPECT CONSULTING, FEBRUARY 11, 2013.
2. FOR REVEGETATION AND PROPOSED SPECIES, SEE NARRATIVE.
3. FOR POSTMINING STORMWATER EROSION CONTROL MEASURES, SEE NARRATIVE. MAPPED FEATURES OBTAINED FROM ASPECT CONSULTING, FEBRUARY 11, 2013.



**LEGEND:**

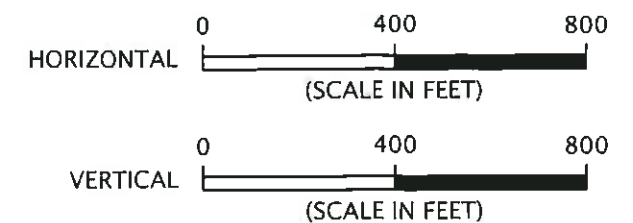
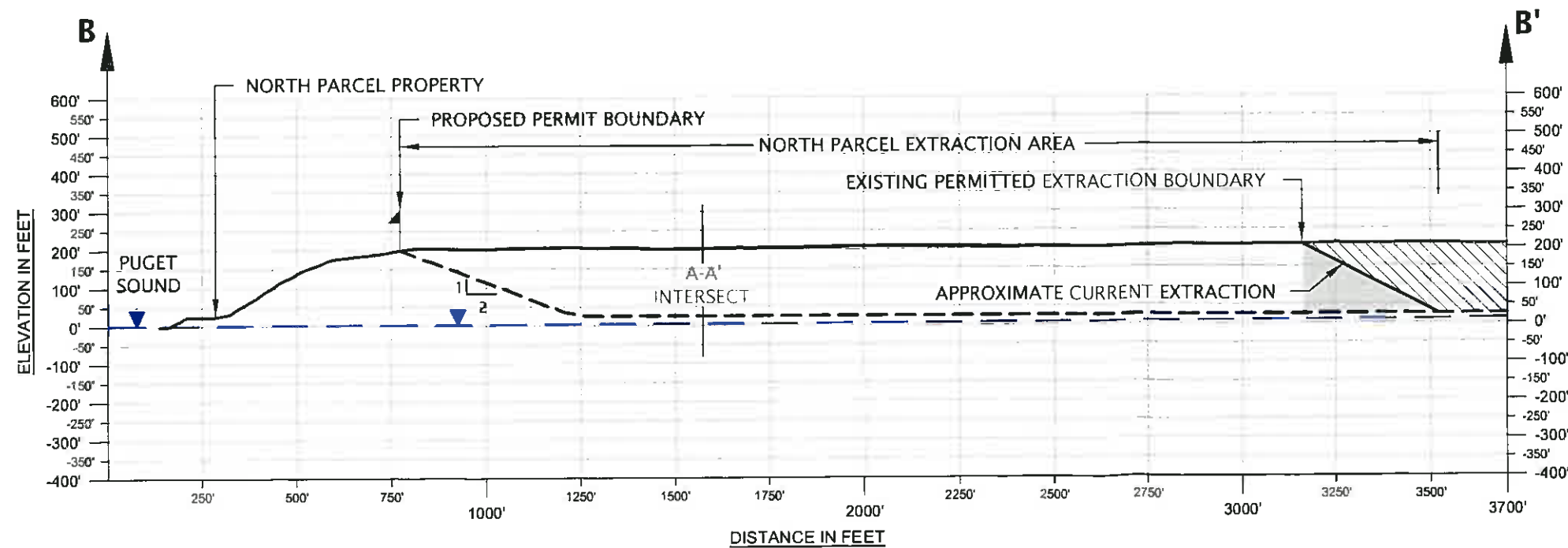
- EXISTING TOPOGRAPHY
- - - RECLAIMED TOPOGRAPHY
- EXISTING PERMITTED EXTRACTION AREA
- EXISTING PERMITTED EXTRACTION AREA/  
NORTH PARCEL OVERLAP AREA
- ▽ — WATER

EXTRACTION CALCULATIONS	
EXTRACTION VOLUME*	≈26,600,000 CUBIC YARDS
MAXIMUM MINING DEPTH	185' (210' TO 25')

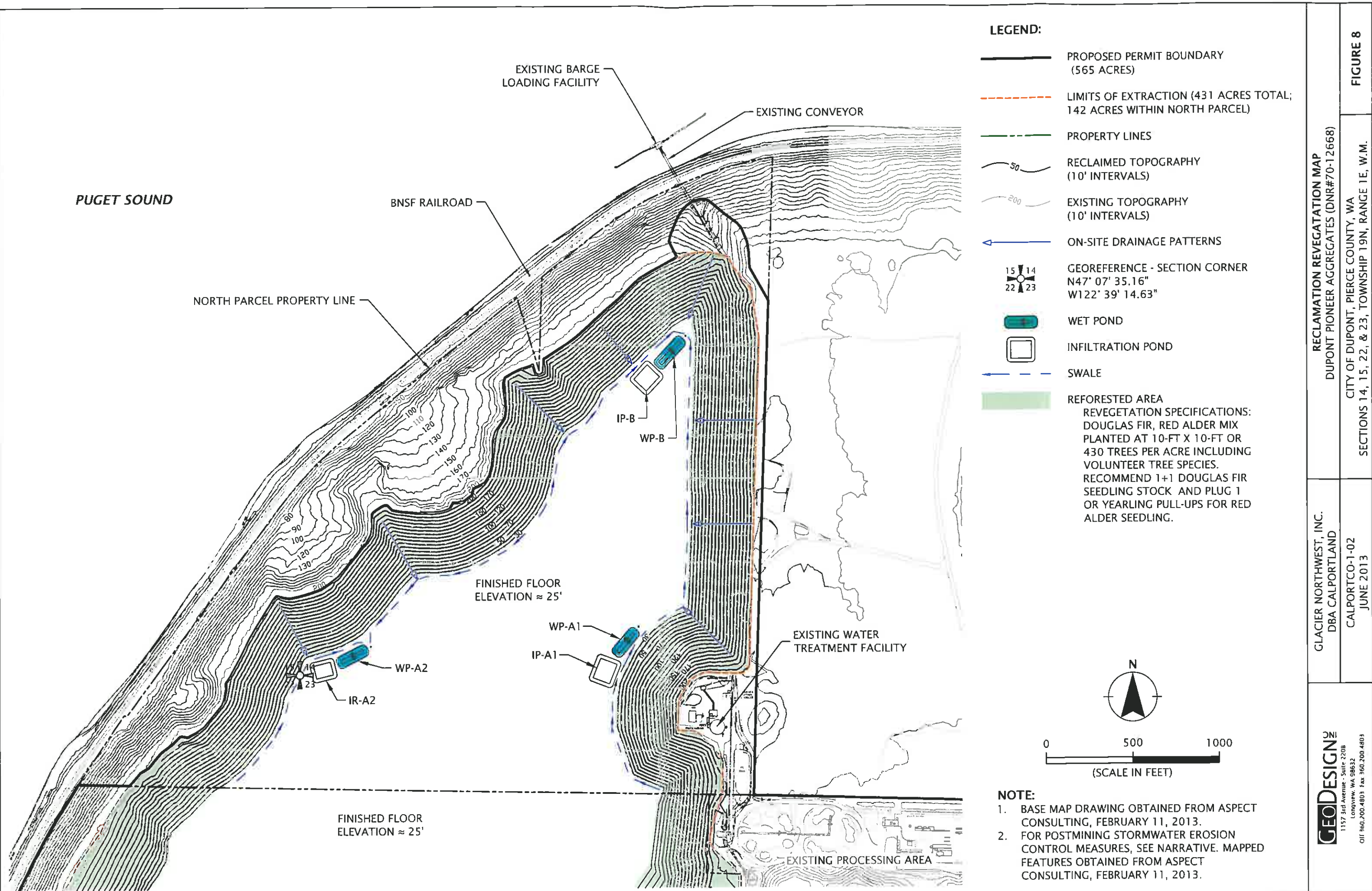
\* DRAFT EIS

**NOTE:**

WATER LEVEL OBTAINED FROM ASPECT CONSULTING  
GROUNDWATER ELEVATIONS MAP DATED JANUARY 2013.

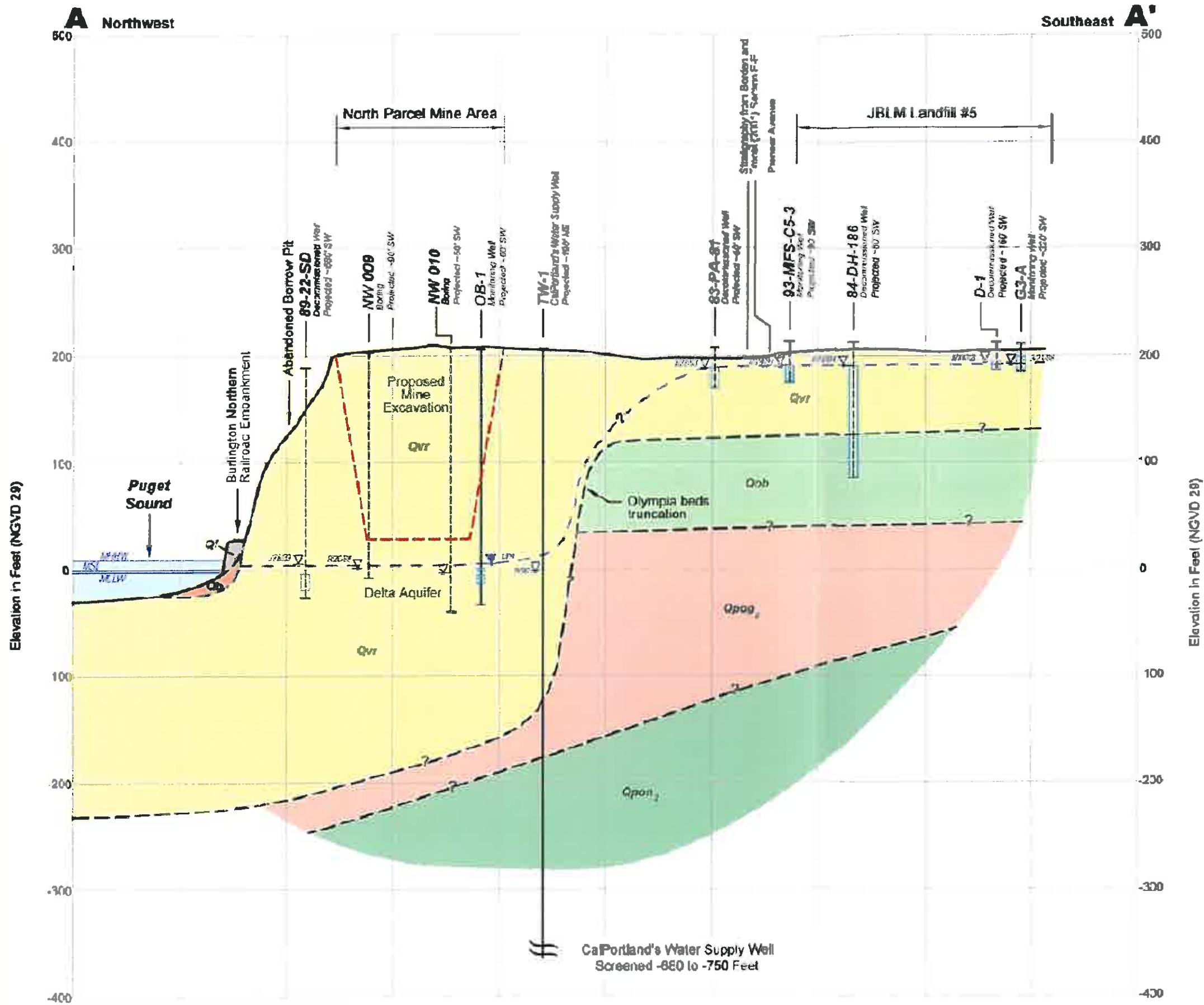












NOTE:  
1. MAP BASED ON IMAGE PREPARED BY ASPECT CONSULTING, 2013.

### Legend

- Monitoring Well Location
- Screen Interval
- Boring or Decommissioned Monitoring Well
- Former Screen Interval
- Qr (Fill)  
Artificial fill placed on embankment. Likely consists primarily of crushed rock and rip-rap.
- Qc (Beach Deposits)  
Loose sand and gravel.
- Qv (Recent/Recent Glacial Outwash)  
Medium dense to dense, slightly silty to clean sand and gravel, and includes silty beds. The majority of near-surface outwash is composed of silty sand, which is composed of silty sand and gravelly sand, with minor amounts of silt.
- Qob (Olympia Beds)  
The Olympia Beds are generally composed of interbedded lacustrine silt and clay and siltstone deposits.
- Qpog (Third Glacial Unit)  
Very dense to hard sandy and gravelly glacial outwash and till with variable silt content.
- Qpon (Third Moraine Unit)  
Very dense to hard till overbank deposits including lacustrine silt, sand, and gravelly sand.

### Tidal Elevations (NGVD 1929)

MHHW	5.96 ft
MSL	1.00 ft
MLLW	-6.87 ft

### Additional References:

- 1) Section E-E' from Borden and Troost (2001).
- 2) Section A-A' from Hart Crowder (1991).
- 3) Figure 3 from CH2M HILL (2000).
- 4) Geologic Map of Mukilteo Island (Walsh, Logan, and Feltz 2003).

Scale: 1" = 1000' Vert  
1" = 100' Vert  
Vertical exaggeration = 10x

HORIZONTAL

0 1000 2000

(SCALE IN FEET)

VERTICAL

0 100 200

(SCALE IN FEET)

