From:	Jeffrey Delapena
To:	James D. Howsley; Cnty 2025 Comp Plan; Jose Alvarez; Jenna Kay
Cc:	Oliver Orjiako
Subject:	RE: Washougal Pit Mapping Error
Date:	Monday, December 1, 2025 11:18:39 AM
Attachments:	image001.png image002.png DNR Permit.pdf Geo Design - Revised Surface Mine Reclamation Permit App - Washougal Pit- DNR # 70-010745 4829-3945-5900 v.2.pdf image003.png image004.png image005.png image006.png

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Good day, Jamie,

Thank you for submitting Jordan Ramis' feedback related to the Draft Environmental Impact Statement for the 2025 Comprehensive Plan Update.

I have forwarded your comments to additional Staff and will enter these into the Index of Record.

Jeff Delapena
Program Assistant
COMMUNITY PLANNING

564.397.4558

From: James D. Howsley <jamie.howsley@jordanramis.com>
Sent: Sunday, November 30, 2025 1:54 PM
To: Cnty 2025 Comp Plan <comp.plan@clark.wa.gov>; Jose Alvarez <Jose.Alvarez@clark.wa.gov>; Jenna Kay <Jenna.Kay@clark.wa.gov>
Cc: James D. Howsley <jamie.howsley@jordanramis.com>; Oliver Orjiako <Oliver.Orjiako@clark.wa.gov>
Subject: Washougal Pit Mapping Error

Dear Oliver and Jose:

Please include this comment to the DEIS. Our office represents ZP#5 who are owners of property commonly referred to as the Washougal Pit. It has come to our attention that several of the parcels that have been part of the permitted mining area since the inception of the pit back in 1972 have not been included with a surface mining overlay and this appears to be a mapping error and not consistent with the Growth Management Act, the County Comprehensive Plan, nor the decision of the 2014 Mineral Lands Task force. The County has not made available the annual review for some time which include the provision to correct a mapping error. But the County can and should do this as part of the current GMA update and could easily analyze this as part of the Final EIS.

Specifically parcels 134202000, 134219000, 134200000, and 134201000 do not contain the County's surface mine overly even though they have part of the mine since 1972. We offer the following proof attached to an Exhibit, this shows the original surface mine reclamation permit, an application for an amendment which shows the 120 acres permit area and an attached map showing the permitted boundary. This site has the appropriate permit since 1972 (link embedded since page 60 and attached Exhibit).DNR conducted a rock aggregate resource map study in October 2005 and it recognized this as an active mine (link to map embedded). Here is a link to the to the active surface mine sites which who the Washougal Pit with a permit acreage of 120 acres. You can confirm all of this by contacting Rian Skov at DNR.

According to GMA 36.70A.131 and WAC 365-190-070 "Counties and cities must identify and designate Mineral Resource Lands of long-term commercial significance. Mineral Resource Lands include aggregate resources." GMA requires that counties and cities should use information provided by the Department of Natural Resources (DNR), the U.S. Geological Survey, **and any other relevant information provided by property owners** for their land-use decisions related to mineral resources and Mineral Resource Lands (MRLs) . In general, MRLs are where mineral resources could be mined or quarried **with the proper permits**. We and our client have continued to provide the County with the relevant information and request to amend this clear mapping error. The surface

mining overlay should reflect the permit boundary. The County confirmed the designation of the Washougal Pit unanimously during the last surface mining permit update. The full permitted boundary should therefore have the overlay.

Continuing failure to address this clear mapping error would be a violation of the Growth Management Act on several grounds, primarily the failure to protect a resource, failure to have the correct zoning associated with said resource, amongst many other violations for the County's failure to adequately ensure a viable supply or aggregate and sand and gravel.

We strongly urge the County to consider this mapping error amendment during this current GMA update.

Best,

Jamie

James D. Howsley | Attorney
OR Direct: (503) 598-5503
WA Direct: (360) 567-3913

JORDAN RAMIS

jordanramis.com | (888) 598-7070
Portland | Bend | Vancouver WA

State of Washington

Department of Natural Resources

BERT L. COLE, Commissioner of Public Lands

DON LEE FRASER, Supervisor

DIVISION OF MINES AND GEOLOGY

VAUGHN E. LIVINGSTON, JR.
State Geologist

Information Circular No. 48

DIRECTORY OF WASHINGTON MINING OPERATIONS 1971-72

By

J. ERIC SCHUSTER

STATE PRINTING PLANT, OLYMPIA, WASH.
1973

NAME OF OPERATOR	PRODUCT	PROPERTY LOCATION
OLYMPIC TIMBER CO. Giles J. Hogan, owner Rt. 4, Box 155 Hoquiam, WA 98550 Current production	Gravel	GRAYS HARBOR COUNTY Hogan's Corner SW¼SW¼ sec. 14, (18-12W)
OROVILLE TRANSIT MIX, INC. La Mar Wolley, owner P. O. Box 490 Oroville, WA 98844 Current production	Sand, gravel, ready-mixed concrete	OKANOGAN COUNTY Oroville area Sec. 3, (39-27E)
PACIFIC NORTHWEST AGGREGATES, INC. Merl Henkle and D. Churchill, owners P. O. Box 435 The Dalles, OR 97058 Current production	Sand, gravel	KLICKITAT COUNTY Avery area N½ sec. 14, (2-14E)
PACIFIC SAND & GRAVEL CO. Harold LaBrie, Mgr. Johnson Rd. P. O. Box 699 Centralia, WA 98531 Current production at:		
Centralia plant and pit	Sand, gravel, crushed gravel	LEWIS COUNTY Centralia area N½ sec. 31, (15-2W)
Harmony pit	Gravel, crushed gravel	4 miles N. of Mossyrock NW¼NW¼ sec. 1, (12-2E)
Grand Mound plant and pit	Gravel, crushed gravel	THURSTON COUNTY 7 miles N. of Centralia Sec. 1, (15-3W)
Lacey pit	Sand, gravel, crushed gravel	Lacey area SW¼ sec. 10 and NE¼ Sec. 9, (18-1W)
PARKER AND ASSOCIATES C. A. Parker, owner 8448 S. 208th Kent, WA 98031 Current production	Sand, gravel	KING COUNTY 7 miles NE. of Auburn SE¼SW¼ sec. 3 and NE¼NW¼ Sec. 10, (21-5E)
PARKER SAND AND GRAVEL INC. A. V. DeBlasio, Pres. P. O. Box 282 Parker, WA 98939 Current production	Sand, gravel	YAKIMA COUNTY Parker area E½ sec. 20, (12-19E)
PAUL ZIMMERLY ROAD CONSTRUCTION Paul Zimmerly, owner 7511 NE. 61st Ave. Vancouver, WA 98661 Current production	Sand, gravel	CLARK COUNTY Washougal area S½ sec. 10 and N½ sec. 15, (1-4E)

GEODESIGN INC

REVISED SURFACE MINE RECLAMATION PERMIT APPLICATION

Washougal Pit – DNR # 70-010745
Clark County, Washington

For
Nutter Corporation
February 27, 2019

GeoDesign Project: Nutter-6-01

REVISED SURFACE MINE RECLAMATION PERMIT APPLICATION
WASHOUGAL PIT

Permit Holder/Owner:
Paul Zimmerly Rock Products

Mailing Address:
19304 NW 61st Avenue
Ridgefield, WA 98642

Operator/Lessee:
Nutter Corporation

Mailing Address:
7211 NE 43rd Avenue
Vancouver, WA 98661

Physical Location:
6303 SE 356th Avenue
Clark County, WA 98671

February 27, 2019

Permit Contact:
Jerry Nutter
T: 360-253-1100

Washington State Department of Natural Resources
Division of Geology and Earth Resources
Permit # 70-010745

Prepared by:
GeoDesign, Inc.
1157 3rd Avenue, Suite 220B
Longview, WA 98632
T: 360-200-4803

GeoDesign Project: Nutter-6-01

1.0 INTRODUCTION

On behalf of Nutter Corporation (Nutter), GeoDesign, Inc. has prepared this revised reclamation permit application, which is intended to satisfy DNR requirements pursuant to RCW Chapter 78.44, for DNR's Division of Geology and Earth Resources. This reclamation permit application includes a backfill plan and associated changes to the reclamation narrative, maps, Figures 1 - 7, and the following appendices:

- Appendix A - SM-8A, Application for Reclamation Permit and Plan
- Appendix B - SM-6, County or Municipality Recommendations
- Appendix C - SEPA Environmental Checklist
- Appendix D - Stormwater Design and Infiltration Calculations
- Appendix E - Water Well Logs
- Appendix F - General Acceptance Requirements for Fill Material
- Appendix G - General Fill Material Information Form

Acronyms and abbreviations used herein are defined at the end of this document.

2.0 SITE DESCRIPTION

2.1 SITE LOCATION

Washougal Pit is located approximately 1 mile east of Washougal, off SE Evergreen Boulevard, in unincorporated Clark County, Washington. The site is accessed via SE 356th Avenue (a private street owned in fee by Judith A. Zimmerly). The site is located in the southwest and southeast quarters of Section 10 and the northwest and northeast quarters of Section 15, Township 1 North, Range 4 East, Willamette Meridian and includes tax parcel numbers 133044000, 134200000, 134201000, 134202000, and 134219000 (Figures 1 and 2).

2.2 BACKGROUND

The purpose of revising the associated permit documents and figures is to include backfill as a component to reclaiming the site. The revised post-mining topography reflects the backfill plan when fully completed. The incised mine floor will be backfilled to the extent that all drainage will still be contained and infiltrated on site at the completion of mining. Resource is currently excavated as needed, and Nutter intends to use on-site well water to wash aggregate before exporting off site. The current mining method will not change.

The 74-acre mineral extraction area is situated within the 120-acre permit boundary owned by Judith Zimmerly (Figure 4). A portion of the 74-acre site contained within the permit boundary has been in continuous use as a gravel pit for several decades. The hearing examiner for Clark County has recently approved the continued mining operations.

2.3 SUBSEQUENT USE

The site will be reclaimed for future residential subdivision as described on DNR Permit Form SM-6, which is located in Appendix B. The property is currently zoned by Clark County as Gorge Large-Scale Agriculture 40.

3.0 GEOLOGY AND HYDROGEOLOGY

3.1 GEOLOGY

The site is situated on a gently sloping and westward-facing ridge that borders the north side of the Columbia River Gorge. The north side of the site contains a steep slope formed by stream incision from Gibbons Creek. The main portion of the site is primarily situated on a gentle slope at an elevation ranging from 300 to 400 feet. The ridge has been partially scoured by multiple flood water events from the Pleistocene age Missoula Floods, which likely reached elevations greater than 400 feet near the west end of the Columbia River Gorge during peak flows. Geologic units mapped by Phillips (1987) indicate the site is underlain by sand and gravel deposits of the Troutdale Formation. The deposits consist of silt, sand, and gravel sediments derived from the ancestral Columbia River that form variably cemented conglomerate and sandstone layers. The coarse sediments are typically rounded and contain a mixture of basaltic, granitic, and metamorphic clasts bound by oxide cement with a silt and sand matrix. Observations of the pit face show the cemented sand and gravel layers can stand at near-vertical inclinations on a temporary basis. Based on a review of geologic mapping and water well logs, the sand and gravel deposits formed extensive alluvial fans across a broad paleo-valley at the west end of the Columbia River Gorge. The alluvial deposits are estimated to extend several hundred to as much as 1,000 feet BGS in the site vicinity (Evarts and O'Connor, 2008).

3.2 HYDROGEOLOGY

Water bearing zones utilized by domestic wells drilled around the site and within the same gravel encounter water at varying elevations ranging from approximately 167 feet northeast of the site to 100 feet west of the site. Water well logs were approximately located based on site address and are provided in Appendix E. A water well is located on site just south of the existing barn and is shown on Figure 3. The static water level of this well was reported to be at approximately 100 feet in elevation. The depth to water derived from seven water wells located in the surrounding vicinity allowed an approximate groundwater elevation to be determined. Based on this subsurface data, groundwater elevations vary across the site from an approximate elevation of 150 feet on the northeast boundary to an elevation of 100 feet on the southwest site boundary, as shown in cross sections A and B on Figure 6. The groundwater gradient appears to flow from northeast to southwest, which mimics the flow direction of Gibbons Creek along the northwest site boundary. However, groundwater levels appear to be 20 to 30 feet below the level of the creek along the north site boundary. The proposed maximum depth of mining will be greater than 100 feet above the estimated groundwater elevation, as shown on cross sections A and B on Figure 6.

Surface water currently collects on the lowest point of the mine floor, which is the east side of the pit as shown on Figure 3. Surface runoff on the west side of the pit is conveyed through culverts and drainage ditches and routed to a stormwater pond system on the west side of the site. The current drainage system collects and infiltrates all stormwater generated on site. The final pond in the stormwater system has an emergency outfall on the west side of the site that connects to a drainage ditch paralleling the access road.

Evidence of minor groundwater seepage is visible on the exposed pit face and concentrated along a contact between a gravel layer and an underlying sand layer.

4.0 MINING AND RECLAMATION

4.1 MINING AND RECLAMATION

The permit boundary is 120 acres, 74 of which will be disturbed by mineral extraction. The existing topography map is shown on Figure 3 and the reclamation sequence map is shown on Figure 4. Approximately 45 acres within the permit boundary have been previously disturbed by mining operations. Mining and reclamation will occur within the permit boundary in two segments. Mining is dependent upon market demands and will occur until the resource is depleted. Resource extraction will involve the removal of approximately 6,582,000 cubic yards of material. It is calculated that 7,175,000 cubic yards of clean, inert backfill will be placed in the pit to achieve final topography, as shown on Figures 5 and 6. Refer to Sections 4.3 and 4.4 for specific criteria regarding the material to be backfilled in the pit. The post-mining topography is designed to contain all potential stormwater from leaving the site. Material is currently excavated as needed and Nutter intends to use on-site well water to wash aggregate before export off site. The current mining method will not change.

The maximum depth of mining at any given point is approximately 80 feet BGS with a base floor elevation of 250 feet above MSL. The mine will be backfilled to approximate elevations ranging from 250 to 400 feet above MSL, reclaiming the site to near pre-mining conditions. Sinuous post-mining slopes separating up to three flat benches will be constructed using imported clean fill. Native vegetative buffers around the perimeter of the mining disturbance area will remain undisturbed. Figures 5 and 6 illustrate the final configuration of the reclaimed mine area upon completion of mining activities. The perimeter of the mining disturbance area is sinuously joined to the existing contours surrounding the site. The perimeter of the disturbed area will have a drainage ditch or infiltration pond to capture and control surface water runoff. Flat benches will be sloped to approximately 1 percent to direct surface runoff to collection ditches that direct water to infiltration ponds. Infiltration ponds will be located along the reclamation boundary to collect surface runoff and infiltrate into the native sand and gravel deposits.

4.2 TOPSOIL AND SUBSOIL PLAN

The USDA *Soil Conservation Service Soil Survey of the Clark County, Washington* maps soil on and around the project area as Hesson clay loam (HcF), 30 to 55 percent slopes; Lauren gravelly loam, cemented substratum (LrC), 3 to 15 percent slopes; and Lauren gravelly loam, cemented substratum (LrF), 20 to 55 percent slopes. HcF soil occupies the hilltop located on the east portion of the property outside the limits of extraction. LrC soil occupies most of the site where the current mining disturbance exists. LrF soil occupies the southwest corner of the property primarily outside the limits of extraction. In general, the typical profile description for each of these soils includes up to 6 inches of O and A horizons combined and up to 27 inches of B horizons. Below the B horizons, the alluvium parent material is prominent enough to be utilized as minable product.

Topsoil storage will occur along the perimeter of the segment boundaries and within the setback easements as indicated on Figure 4. Stockpiling may also occur temporarily within a segment when appropriate and in conjunction with contemporaneous reclamation.

4.3 *BACKFILL PLAN*

A total of approximately 7,175,000 cubic yards of backfill are proposed for the site. Backfill will create the post-mining topography depicted on Figure 6. Backfill will be placed in lifts compacted with dump truck traffic and track walked with a dozer when soil conditions are not overly dry or wet. The incised mine floor will be backfilled as stated above to create suitable topography to support the subsequent use. Refer to Figure 6, where existing cut and final topography is depicted in cross section. A relatively flat, benched, post-mining topography will be constructed during backfill and grading operations using an end dump truck and dozer push method of fill placement. Stormwater infiltration will be maintained along the outer edge of the backfill where it contacts in situ gravel. Permanent infiltration areas will be constructed at the completion of the backfill specifically along this gravel contact to provide adequate infiltration (Figure 7). Imported soil will adhere to the following importation plan and clean soil policy.

4.4 *IMPORTATION PLAN AND CLEAN SOIL POLICY*

This section describes the procedures and processes for acceptance of clean soil to be imported on the mine site. Importing of permitted material is controlled through customer notifications, on-site reclamation screening process, and restricted site access.

The mine site will accept the following materials: native soil, clay, silt, sand, gravel, rock, and incidental quantities of unreinforced concrete and asphalt. Small and insignificant amounts of refuse materials are unavoidable and accepted as long as they are not a significant portion of the fill and do not pose a risk to the integrity of the fill and the slopes created from the fill. Mine personnel shall receive specific training regarding the type of material accepted at the mine site and operating procedures for managing the material. This training will be provided by a qualified environmental coordinator or engineer on an annual basis.

Unacceptable material for importation includes, but is not limited to, contaminated material as defined by the Washington MTCA unrestricted land use cleanup criteria (173-340 WAC), material that contains hazardous substances at concentrations in excess of MTCA Method A soil cleanup criteria, any material from a designated environmental cleanup site, reinforced concrete, wood waste, and construction or demolition debris.

Customer notification includes signs posted at all entrances to the mine indicating the name of the mine site, emergency telephone number, hours and days of operation, and description of unacceptable materials allowed on the site. Traffic control and safety requirements are also located near the entrance if necessary. Any unacceptable materials delivered to the site are the responsibility of the party delivering the material. The generators and transporters of imported material retain responsibility for prohibited material detected in their loads. Generators and haulers who use the site for importation of clean soil are notified of these conditions through the use of notices, contracts, signs, and verbal communication.

The majority of the material accepted at the site is clean soil generated from construction projects in the area. To the extent possible, soil quality information should be obtained before the material is received at the mine site. Information regarding the type of material that is acceptable is presented in Appendix F. The material source verification procedure requires a General Fill Material Information form (Appendix G) be included with each load of material

imported on site. The form must be completed by the hauler and the information on the form reviewed by the appropriate mine personnel before the material is accepted. Electronic or paper copies of the forms shall be retained at the facility for the life of the operation.

Importers must disclose whether the source location for the material may impact the quality of the material. For example, soil from a previously undeveloped area would typically have less potential for contaminants, while soil from an urban redevelopment project would typically have a higher potential for contaminants. When appropriate, the mine operator will direct the importer to provide soil quality data before the material will be accepted.

The mine operator will adhere to the following material screening and acceptance procedure to detect and prevent unacceptable material from being placed on the premises of the mine site. Upon entering the premises, haul trucks with clean soil will be directed by signs to the main scale house. The weigh master is required to fill out a ticket indicating the trucking company and truck number, material source, and quantity of imported material. The trucks shall be weighed and recorded on the weigh ticket. The weigh master will then conduct a visual check of each incoming load. Acceptable material will be directed to a designated area for disposal. If unacceptable material is suspected, the scale attendant will instruct the hauler to remove the unacceptable material from the site. Material containing unacceptable waste (wood waste, excess concrete, etc.) or material suspected of containing contaminants will be rejected.

If contamination is suspected with a load that has been dumped on site, the mine operator may either direct the transporter to remove the material or require sampling and laboratory testing. The testing is based on field observations (e.g., odor, staining) and any other information that may be available regarding the source of the soil. Testing may include, but not be limited to, TPH as gasoline, diesel, and oil. As appropriate, soil may also be subjected to testing for metals and VOCs such as BTEX. If laboratory testing indicates that the material is unacceptable, the importer shall be directed to return to the site and retrieve the material at its expense. Records of laboratory analyses performed on imported materials or imported materials that have been received shall be kept in a designated location for the life of the operation.

The mine operator reserves the right to reject any material delivered. The ability to reject material is clearly stated in the acceptance information provided to the importing party. The material may be rejected outright based on lack of information, observations made, or testing performed by the mine operator. All costs associated with rejected loads shall be paid by the importing party. Exceptions to the material acceptance procedures are subject to internal review and documentation by mine personnel and concurrence with outside consultants. If appropriate, approval by DNR may be required.

4.5 SETBACKS

The 120-acre permit boundary is composed of contiguous ownership made up of five parcels (refer to Figure 2). Two large parcels include the mine disturbance area and have a 30-foot setback from the permit boundary. Three small parcels located in the southwest portion of the site include SE 356th Avenue, a private road wholly owned by the Washougal Pit.

5.0 EROSION CONTROL

5.1 EXISTING STORMWATER

Currently, stormwater in the east portion of the site collects on the deeply incised gravel mine floor, where it slowly infiltrates or evaporates. Stormwater on the west portion of the site is collected in drainage ditches and routed to infiltration ponds located along the west site boundary.

5.2 POST-MINING STORMWATER

Post-mining stormwater will be fully contained on site by the post-mining topography and a series of rock-armored collection ditches and infiltration ponds. Stormwater generated during the mining process will also be fully contained within the limits of disturbance by the on-site topography. Conveyance ditches, ponds, and pond outlets have been designed for the 100-year, 24-hour storm event (refer to Appendix D). Stormwater infiltration will be maintained along the outer edge of the backfill where it contacts in situ sand and gravel layers; infiltration calculations are included in Appendix D. Permanent infiltration areas will be constructed following completion of the backfill along this geologic contact to provide adequate infiltration (Figure 5).

6.0 REVEGETATION PLAN

The disturbed areas will be replanted with appropriate vegetation to stabilize the reclaimed areas, help re-establish pre-existing flora, and enhance vegetative diversity. The reclamation phases will consist of two main types of vegetation communities. A third community will be incorporated if the reclaimed infiltration facilities provide enough hydrology for an extended period of time during the growing season. At a minimum, all disturbed portions of the site will be revegetated with a seed mixture as described or comparable to that specified in Table 1. This mixture will be applied at a rate of 40 pounds per acre with 200 pounds per acre of 12-24-24 fertilizer (or comparable blend). Sloped areas may require approximately 2 tons per acre of weed-free straw mulch if signs of erosion occur.

Table 1. Open Benched Area Revegetation Specifications

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

In addition to or concurrently with grasses and legumes, portions of the slopes between the benches at the site may be replanted with native trees as described in or comparable to those specified in Table 2. Trees would be planted in groups as small as 5 to 10 individual trees up to densities of 430 trees per acre depending upon the design and goals of the subsequent use. The result would be open areas suited for residential development interspersed with forested slopes. Red alder and Douglas-fir would form the dominant overstory community in the wooded areas. The ultimate planting scheme will depend on the goals for residential use, which will be set when mining is exhausted or determined to be economically complete. Bareroot trees would be supplied by a local nursery and from within the proper seed zone for this site.

Table 2. Forested or Wooded Area Specifications

Species Common Name	Scientific Name	Planting Method	Planting Density	Planting Season	Planting Locations
Red alder	*Alnus rubra*	Bareroot	215 trees per acre ranging from small groups to contiguous acres	Early spring	North and east aspects
Douglas-fir	*Pseudotsuga menziesii*	1-1 bareroot	215 trees per acre ranging from small groups to contiguous acres	Early spring	South and west aspects

The third vegetation community would be composed of trees as described in or comparable to those specified in Table 3 and would involve the infiltration areas.

Table 3. Wet Area Specifications

Species Common Name	Scientific Name	Planting Method	Planting Density	Planting Season	Planting Locations
Red alder	*Alnus rubra*	Bareroot	108 trees per acre	Early spring	Areas of adequate moisture
Black cottonwood	*Populus balsamifera ssp. trichocarpa*	Bareroot	108 trees per acre	Early spring	Areas of adequate moisture
Sitka willow	*Salix sitchensis*	3-foot cuttings	108 trees per acre	Early spring	Saturated or inundated soil
Oregon ash	*Fraxinus latifolia*	Bareroot	108 trees per acre	Early spring	Saturated or inundated soil

7.0 REFERENCES

Evarts, R.C. and O'Connor, J.E., 2008. *Geologic Map of the Camas Quadrangle, Clark County, Washington, and Multnomah County, Oregon*, U.S. Geological Survey, Scientific Investigations Map 3017, 21 p., scale 1:24,000.

National Cooperative Soil Survey: Web Soil Survey, Clark County, Washington. Accessed at http://websoilsurvey.nrsc.usda.gov/app/

Phillips, W.M., 1987. *Geologic Map of the Vancouver Quadrangle, Washington and Oregon*, Washington Division of Geology and Earth Resources Open File Report 87 - 10, 32 p., scale 1:100,000.

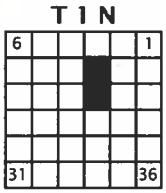
Washington Department of Ecology, on-line well log viewer. Accessed at http://apps.ecy.wa.gov/welllog/

8.0 LIMITATIONS

The services described in this narrative were performed consistent with generally accepted professional consulting principles and practices. There are no other warranties, expressed 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.

FIGURES

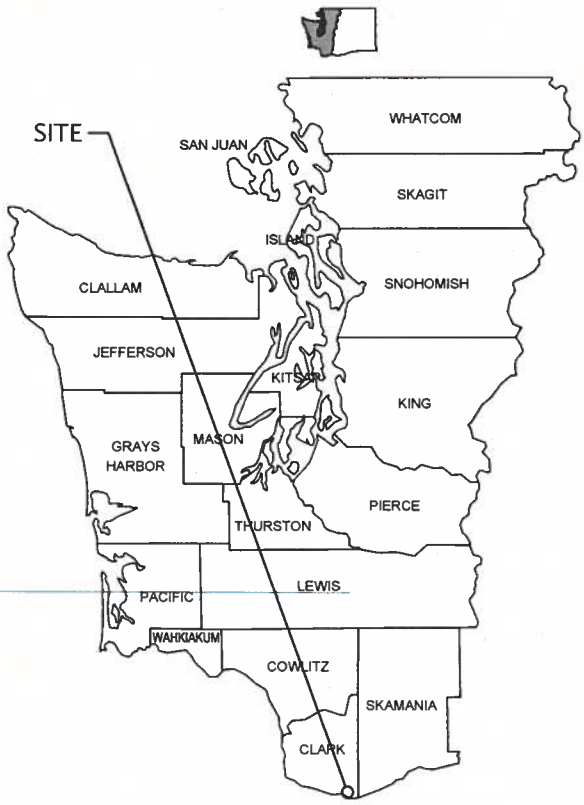


SITE COORDINATES:

LATITUDE: 45° 34' 51 " N

LONGITUDE: 122° 18' 03" W

WESTERN WASHINGTON



DIRECTIONS TO SITE

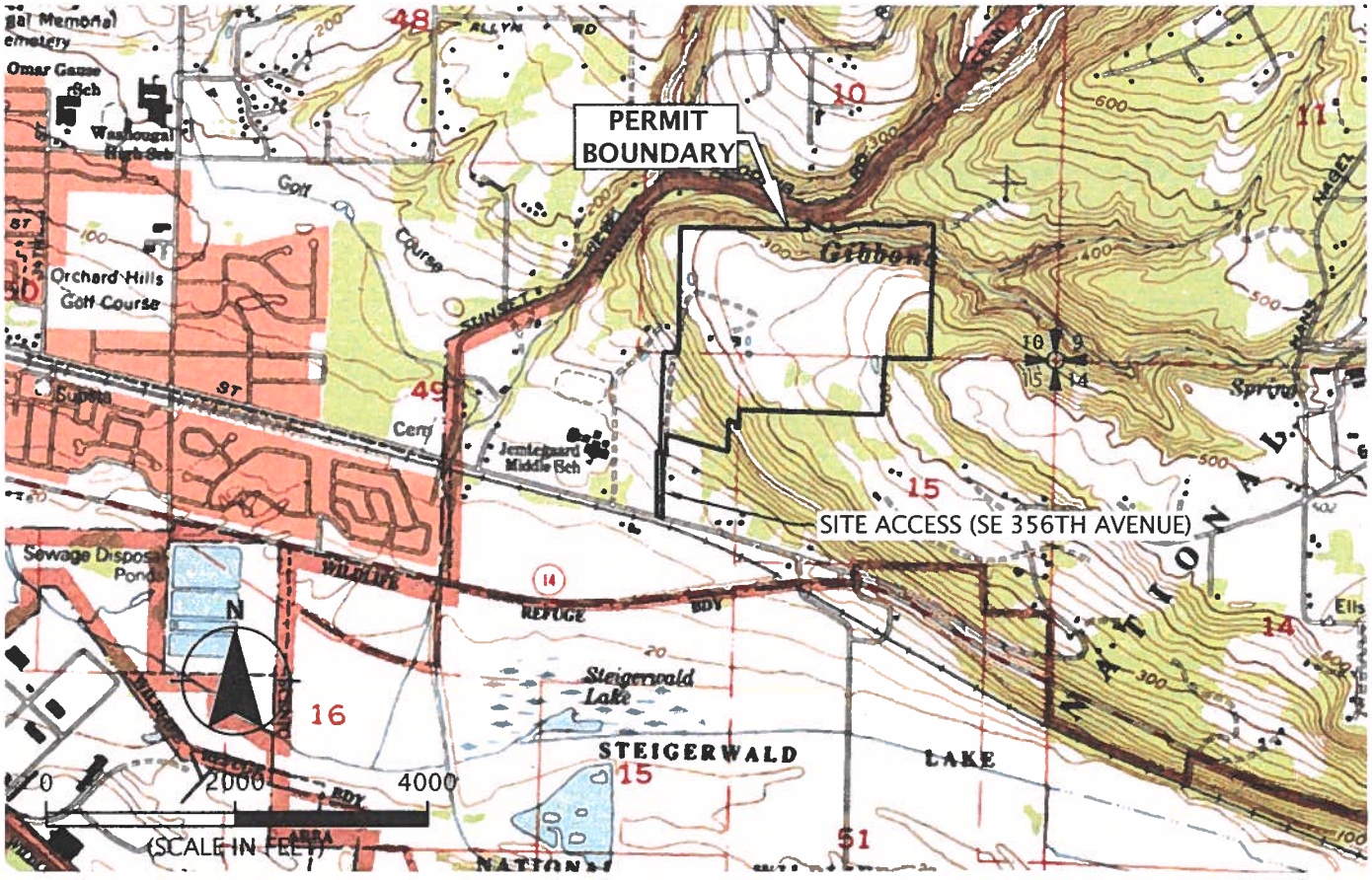
WASHOUGAL PIT IS LOCATED EAST OF WASHOUGAL, WA. FROM WASHOUGAL, DRIVE EASTBOUND ON SE EVERGREEN HIGHWAY. TURN LEFT (NORTH) ONTO SE 356TH AVENUE. THIS IS THE SITE ACCESS ROAD TO WASHOUGAL PIT. SITE OFFICE IS LOCATED APPROXIMATELY ½ MILE FROM INTERSECTION TO SE EVERGREEN HIGHWAY AND SE 356TH AVENUE.

LEGAL DESCRIPTION

THE PERMIT BOUNDARY IS LOCATED IN PORTIONS OF THE FOLLOWING QUARTER-QUARTER SECTIONS:

- SW QUARTER OF THE SW QUARTER OF SECTION 10
- SE QUARTER OF THE SW QUARTER OF SECTION 10
- SW QUARTER OF THE SE QUARTER OF SECTION 10
- NE QUARTER OF THE NW QUARTER OF SECTION 15
- NW QUARTER OF THE NW QUARTER OF SECTION 15
- SW QUARTER OF THE NW QUARTER OF SECTION 15
- NW QUARTER OF THE NE QUARTER OF SECTION 15

NOTE: USGS TOPOGRAPHIC QUADRANGLE MAP (*WASHOUGAL, 1994*) REPRODUCED USING MAPTECH TERRAIN NAVIGATOR PRO®.



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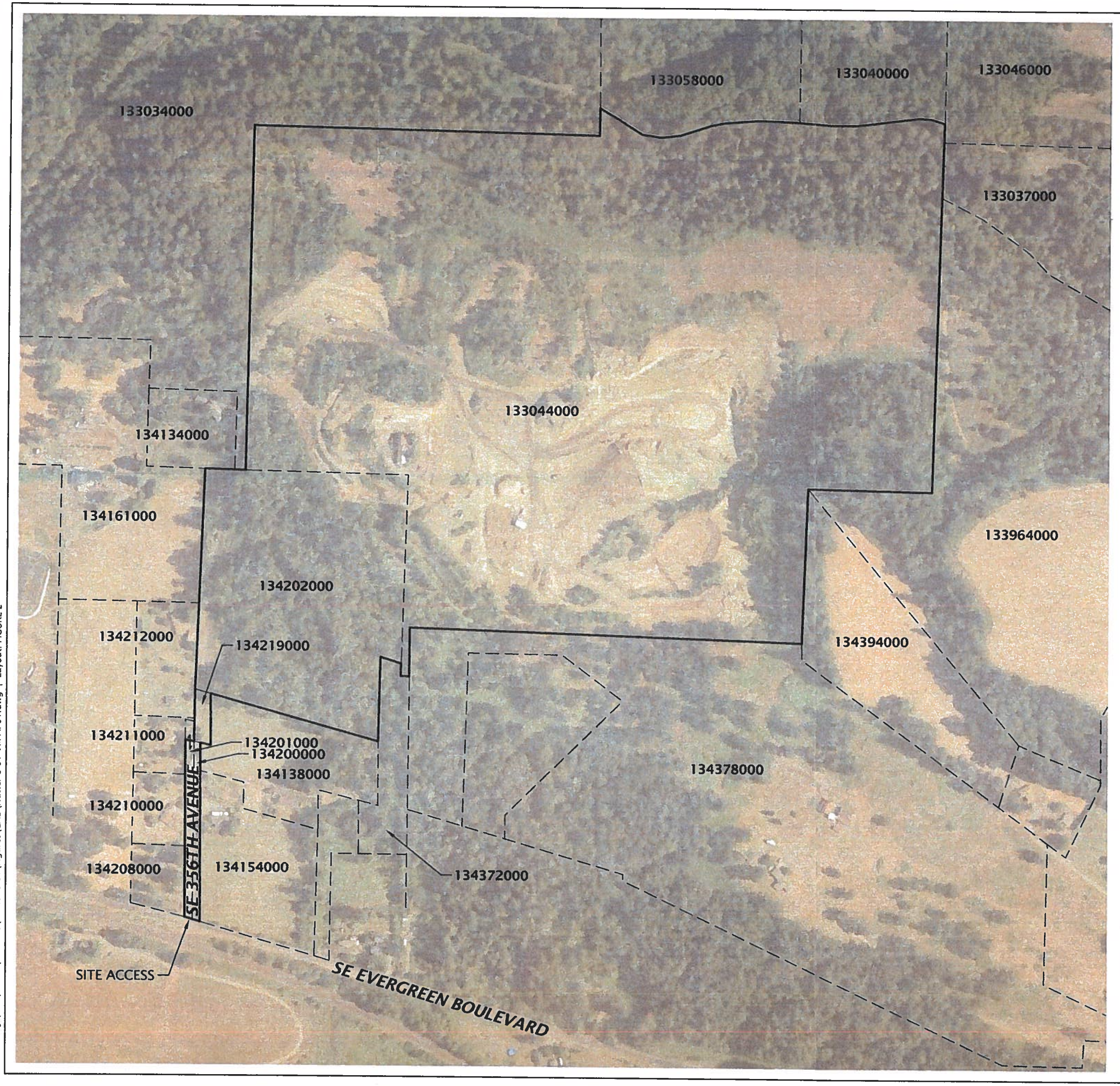
File Name: J:\M-R\Nutter\Nutter-6\Nutter-6-01\Figures\CAD\Nutter-6-01-VM-AP01.dwg | Layout: FIGURE 1

GEODESIGN INC
1157 3rd Avenue - Suite 2208
Longview WA 98632
360.200.4803 www.geodesigninc.com

NUTTER CORPORATION	**VICINITY MAP** WASHOUGAL PIT	
NUTTER-6-01 FEBRUARY 2019	CLARK COUNTY, WA SECTIONS 10 AND 15, TOWNSHIP 1N, RANGE 4E, W.M.	**FIGURE 1**



LEGEND:

PERMIT/PROPERTY BOUNDARY (120 ACRES)

PARCEL LINES

13304000 PARCEL NUMBER (SEE TABLE BELOW)

PROPERTY INFORMATION TABLE		
PARCEL NUMBER	**PROPERTY OWNER**	**OWNER MAILING ADDRESS**
133044000 134202000 134219000 134200000 134201000	JUDITH ZIMMERLY	19034 NW 61ST AVENUE RIDGEFIELD, WA 98642
133046000 133037000	SEAN STREETER	36861 SE WOODING ROAD WASHOUGAL, WA 98671
133964000	SIMON YANG	4519 NW 122ND STREET VANCOUVER, WA 98685
134394000	THOMAS WILLIAMS	37136 SE GIBSON ROAD WASHOUGAL, WA 98671
134378000	FRIENDS OF COLUMBIA GORGE LAND TRUST	333 SW 5TH AVENUE SUITE 300 PORTLAND, OR 97204
134372000	LUXE GROUP III LLC	PO BOX 5846 PORTLAND, OR 97228
134138000	RICHARD ROSS	PO BOX 166 WASHOUGAL, WA 98671
134154000	NORMAN ALEXANDER	PO BOX 225 WASHOUGAL, WA 98671
134208000	WAYNE RITTER	PO BOX 1052 CAMAS, WA 98607
134210000	DAVID GJENDEM TRUSTEES	PO BOX 797 WASHOUGAL, WA 98671
134211000	JEFFREY CONDON	6400 SE 356TH AVENUE WASHOUGAL, WA 98671
134212000	ZACHARY GRICE	6302 SE 356TH AVENUE WASHOUGAL, WA 98671
134161000	REECE TOWNSEND	2212 SALMON FALLS ROAD WASHOUGAL, WA 98671
134134000	PAUL AKERS	35570 SE EVERGREEN HIGHWAY WASHOUGAL, WA 98671
133034000	JOHN ANDERSON	2630 H STREET WASHOUGAL, WA 98671
133058000 133040000	DANNY GAUDREN	36205 SE WOODINGS ROAD WASHOUGAL, WA 98671

N

0 400 800

(SCALE IN FEET)

NOTES:

1. PERMIT BOUNDARY OBTAINED FROM RECLAMATION FIGURE SET DATED SEPTEMBER 27, 2006 PREPARED BY ECOLOGICAL LAND SERVICES, INC.
2. PARCEL BOUNDARIES AND PARCEL NUMBERS OBTAINED FROM CLARK COUNTY ASSESSOR.
3. AERIAL PHOTOGRAPH (JULY 16, 2018) OBTAINED FROM GOOGLE EARTH PRO NOVEMBER 27, 2018.

PROPERTY OWNERSHIP MAP

WASHOUGAL PIT

CLARK COUNTY, WA
SECTIONS 10 AND 15, TOWNSHIP 1N, RANGE 4E, W.M.

FIGURE 2

NUTTER CORPORATION

NUTTER-6-01
FEBRUARY 2019

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Longview, WA 98632
360.200.4803 www.geodesigninc.com

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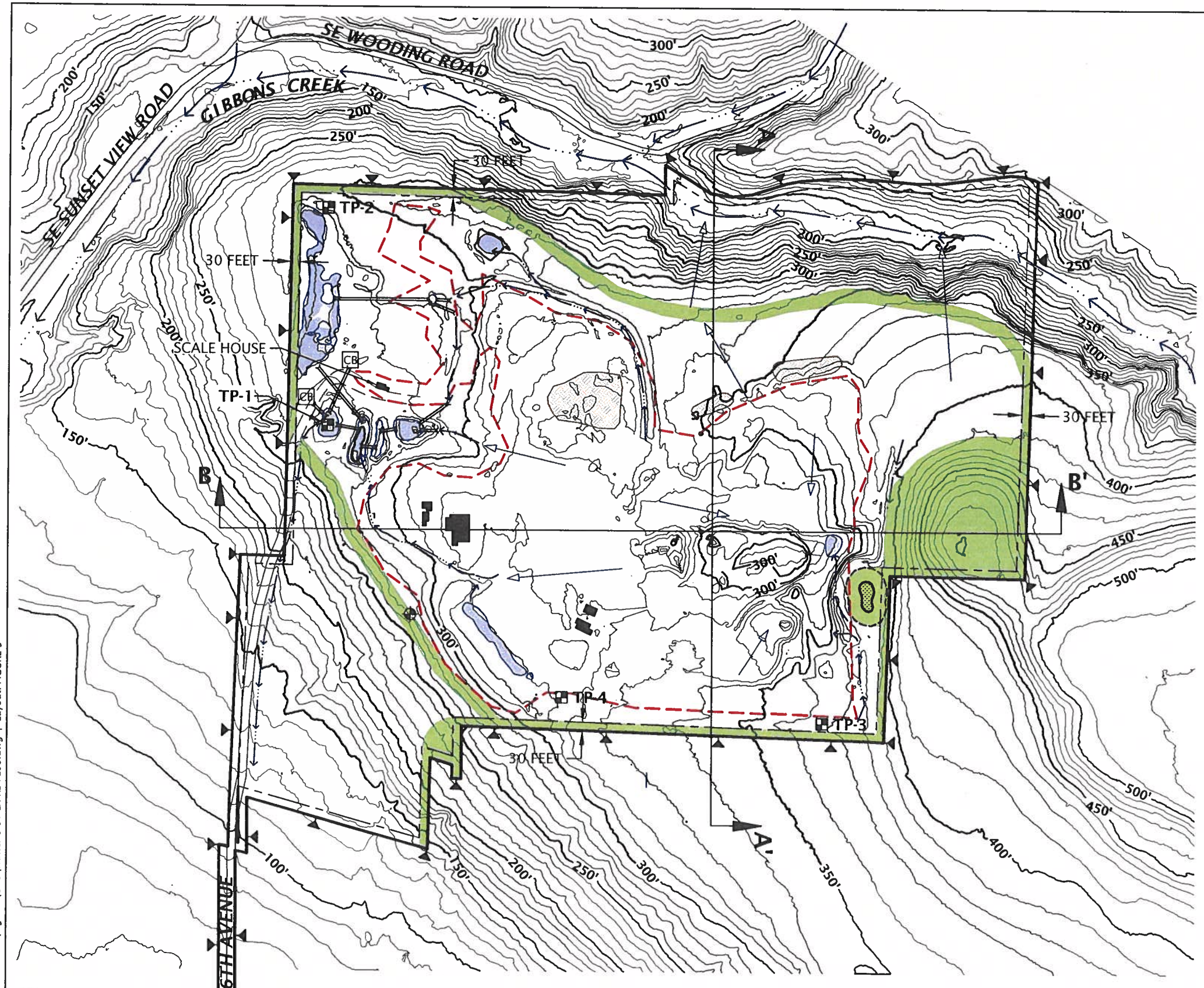
File Name: J:\M-R\Nutter\Nutter-6\Nutter-6-01\Figures\CAD\Nutter-6-01-VM-AP01.dwg | Layout: FIGURE 2



LEGEND:

- PERMIT BOUNDARY (120 ACRES)
- 30-FOOT SETBACK
- EXISTING DISTURBANCE (≈44.7 ACRES)
- 300' EXISTING TOPOGRAPHY (10-FOOT INTERVALS; 50-FOOT INDEX CONTOURS)
- ROAD
- BUILDING
- EXISTING DRAINAGE PATTERN
- POND
- CREEK WITH FLOW DIRECTION
- CULVERT
- DRAINAGE DITCH WITH FLOW DIRECTION
- CB CATCH BASIN
- SOIL STOCKPILE
- CREATED WETLAND
- 50-FOOT WETLAND BUFFER
- VEGETATION SCREEN BUFFER
- PERMANENT MARKERS (LINE OF SIGHT)
- TP-1 TEST PIT
- WATER WELL (044247)
- A A' CROSS SECTION

N

0 400 800

(SCALE IN FEET)

NOTES:

1. EXISTING TOPOGRAPHY (2010) OBTAINED FROM PUGET SOUND LIDAR CONSORTIUM.
2. PERMIT BOUNDARY OBTAINED FROM RECLAMATION FIGURE SET DATED SEPTEMBER 27, 2006 PREPARED BY ECOLOGICAL LAND SERVICES, INC.
3. EXISTING DISTURBANCE AREA OBTAINED FROM WADNR INSPECTION REPORT DATED JUNE 27, 2018.

EXISTING TOPOGRAPHY MAP

WASHOUGAL PIT

CLARK COUNTY, WA
SECTIONS 10 AND 15, TOWNSHIP 1N, RANGE 4E, W.M.

FIGURE 3

NUTTER CORPORATION

NUTTER-6-01
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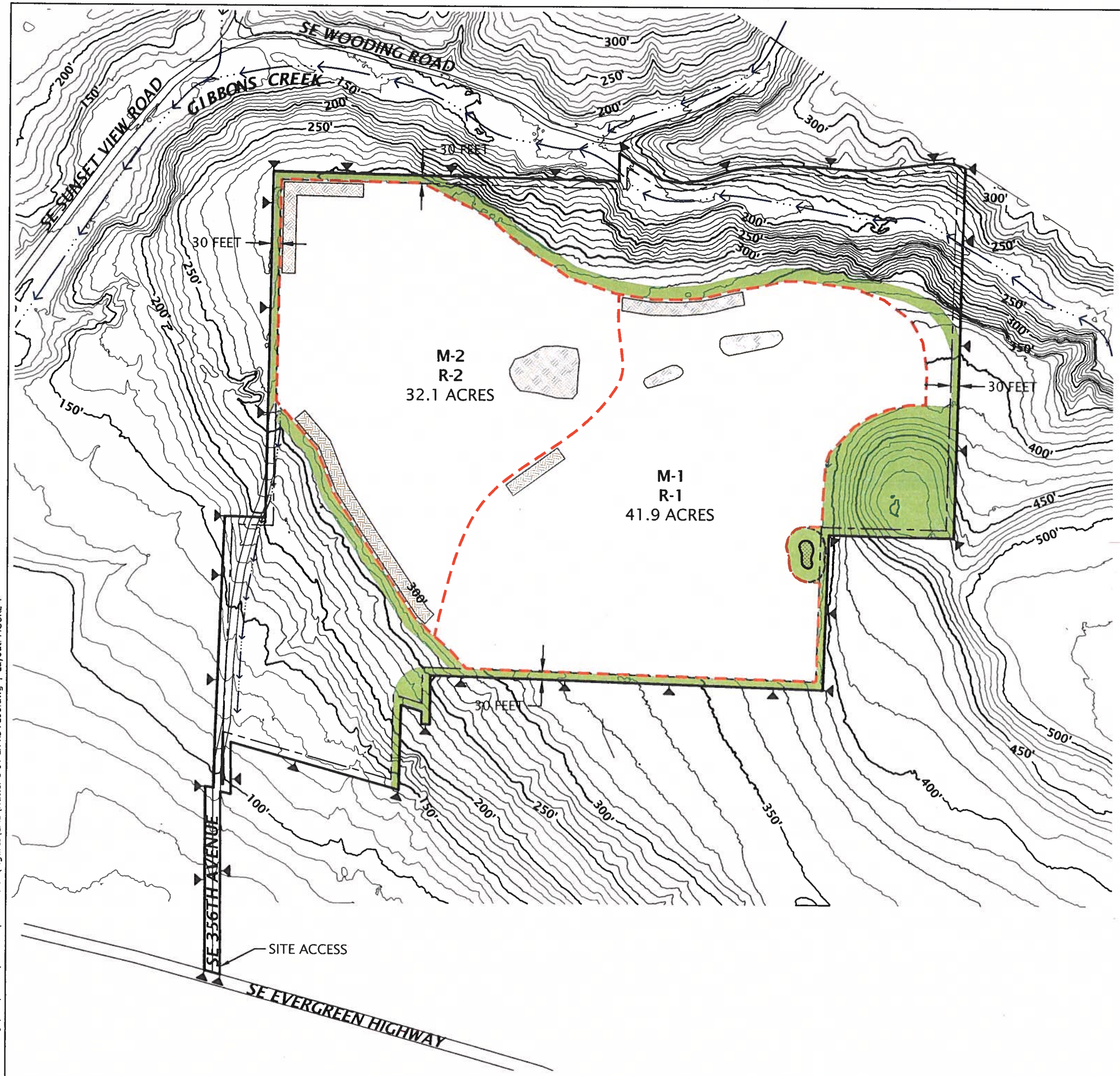

LEGEND:

- PERMIT BOUNDARY (120 ACRES)
- 30-FOOT SETBACK
- EXISTING TOPOGRAPHY (10-FOOT INTERVALS; 50-FOOT INDEX CONTOURS)
- ROAD
- CREEK WITH FLOW DIRECTION
- DRAINAGE DITCH WITH FLOW DIRECTION
- SOIL STOCKPILE
- CREATED WETLAND
- 50-FOOT WETLAND BUFFER
- VEGETATION SCREEN BUFFER
- PERMANENT MARKERS (LINE OF SIGHT)
- M-1 MINING SEGMENT
- R-1 RECLAMATION SEQUENCE
- SEGMENT/PHASE BOUNDARY

N

0 400 800

(SCALE IN FEET)

NOTES:

1. EXISTING TOPOGRAPHY (2010) OBTAINED FROM PUGET SOUND LIDAR CONSORTIUM.
2. PERMIT BOUNDARY OBTAINED FROM RECLAMATION FIGURE SET DATED SEPTEMBER 27, 2006 PREPARED BY ECOLOGICAL LAND SERVICES, INC.
3. FOR STORMWATER EROSION CONTROL MEASURES, SEE NARRATIVE.

RECLAMATION SEQUENCE MAP

WASHOUGAL PIT

CLARK COUNTY, WA
SECTIONS 10 AND 15, TOWNSHIP 1N, RANGE 4E, W.M.

FIGURE 4

NUTTER CORPORATION

NUTTER-6-01
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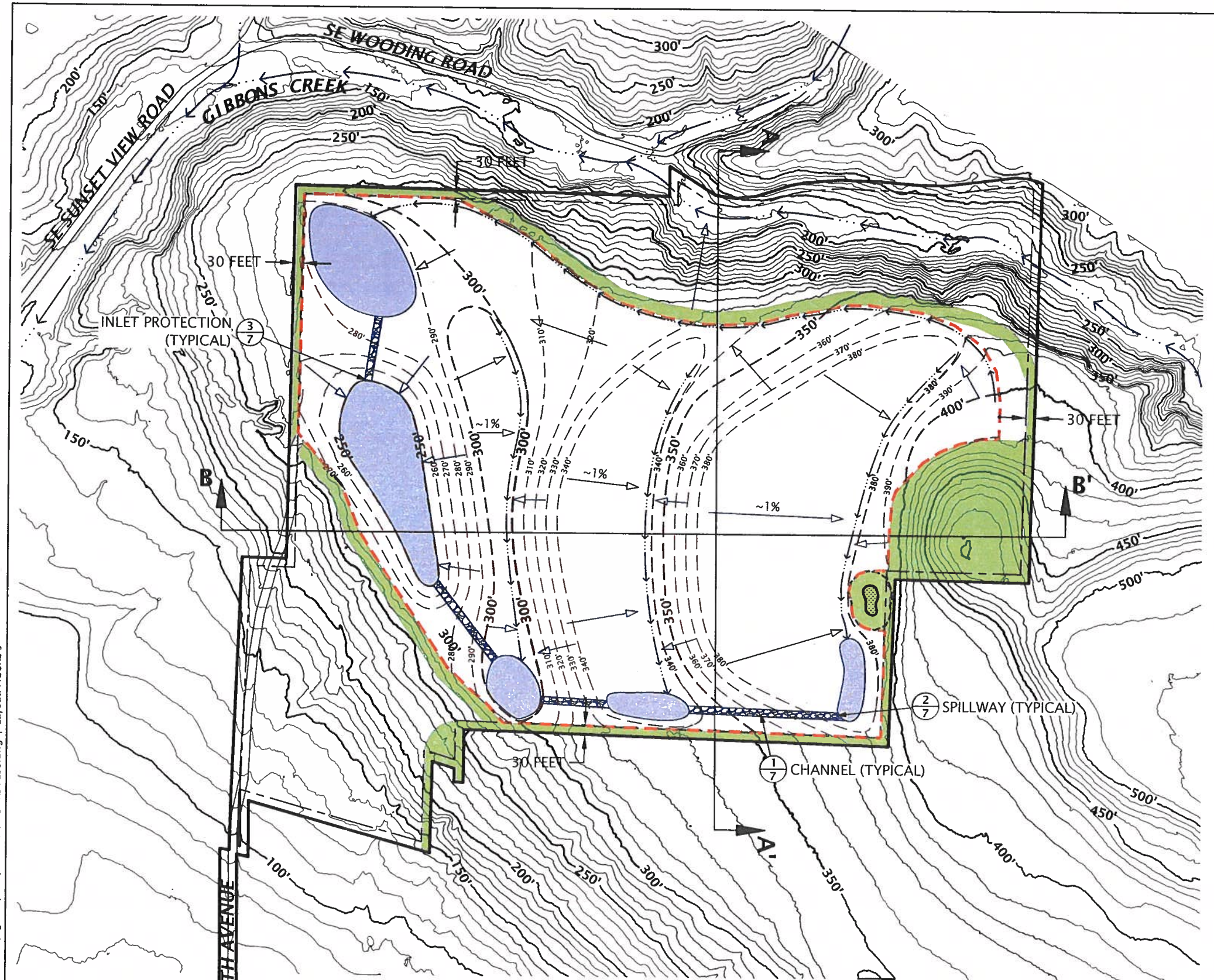

LEGEND:

- PERMIT BOUNDARY (120 ACRES)
- 30-FOOT SETBACK
- RECLAMATION BOUNDARY
- FINAL TOPOGRAPHY (10-FOOT INTERVALS; 50-FOOT INDEX CONTOURS)
- EXISTING TOPOGRAPHY (10-FOOT INTERVALS; 50-FOOT INDEX CONTOURS)
- ROAD
- INFILTRATION POND (6.5 ACRES WITHIN RECLAMATION AREA)
- CREEK WITH FLOW DIRECTION
- DRAINAGE DITCH WITH 1% GRADE
- CREATED WETLAND
- 50-FOOT WETLAND BUFFER
- VEGETATION SCREEN BUFFER
- FINAL DRAINAGE PATTERNS
- ROCK-LINED DITCH
- A A' CROSS SECTION

N

0 400 800

(SCALE IN FEET)

NOTES:

1. EXISTING TOPOGRAPHY (2010) OBTAINED FROM PUGET SOUND LIDAR CONSORTIUM.
2. PERMIT BOUNDARY OBTAINED FROM RECLAMATION FIGURE SET DATED SEPTEMBER 27, 2006 PREPARED BY ECOLOGICAL LAND SERVICES, INC.
3. FOR REVEGETATION AND PROPOSED SPECIES, SEE NARRATIVE.
4. FOR POSTMINING STORMWATER EROSION CONTROL MEASURES, SEE NARRATIVE.

FINAL TOPOGRAPHY MAP

WASHOUGAL PIT

CLARK COUNTY, WA
SECTIONS 10 AND 15, TOWNSHIP 1N, RANGE 4E, W.M.

FIGURE 5

NUTTER CORPORATION

NUTTER-6-01
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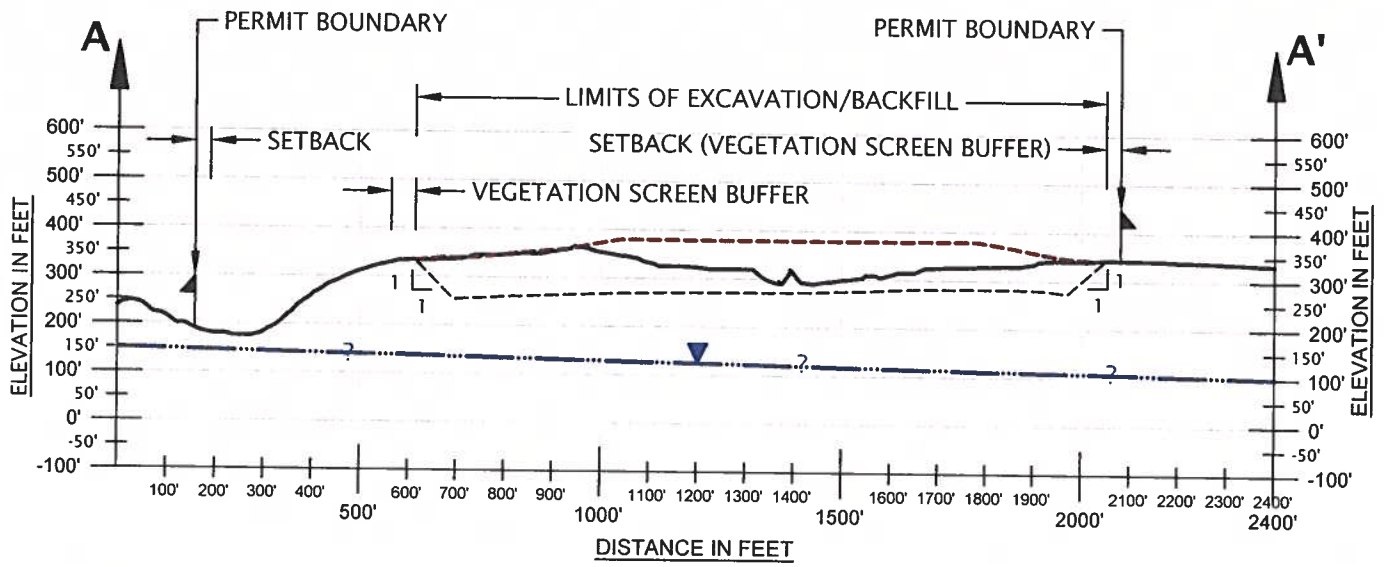

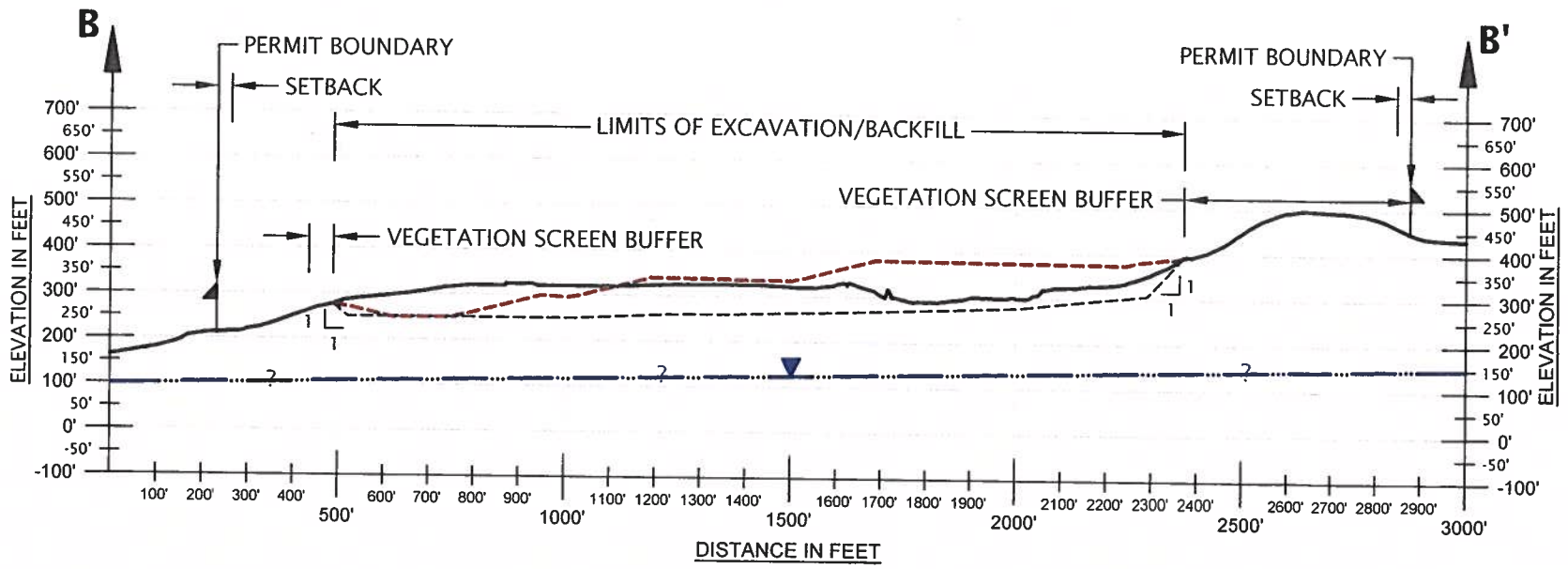

LEGEND:

- EXISTING TOPOGRAPHY (LIDAR 2010)
- PROPOSED CUT TOPOGRAPHY (80 FEET BGS NOT TO EXCEED 250 FEET MSL)
- FINAL TOPOGRAPHY (FILL)
- PERMANENT MARKER
- WATER LEVEL (APPROXIMATE)

CUT VOLUME = 6,582,442 CUBIC YARDS
(EXISTING TOPOGRAPHY VS CUT TOPOGRAPHY)

FILL VOLUME = 7,119,138 CUBIC YARDS
(CUT TOPOGRAPHY VS FINAL TOPOGRAPHY)

0 400 800
(VERTICAL SCALE IN FEET)

0 400 800
(HORIZONTAL SCALE IN FEET)

CROSS SECTIONS A-A' AND B-B'
WASHOUGAL PIT
CLARK COUNTY, WA
SECTIONS 10 AND 15, TOWNSHIP 1N, RANGE 4E, W.M.

FIGURE 6

NUTTER CORPORATION

NUTTER-6-01
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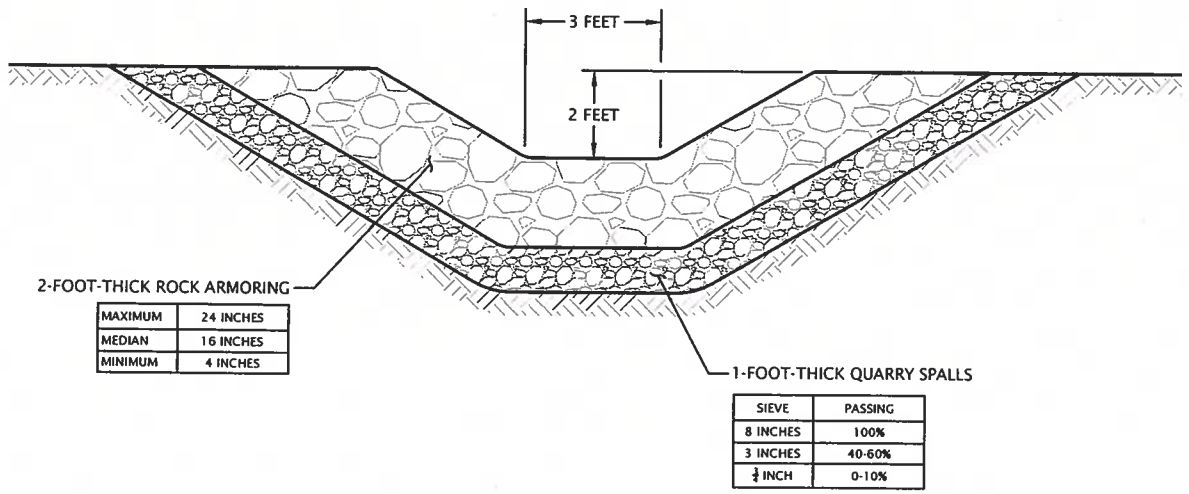
File Name: J:\M-R\Nutter\Nutter-6\Nutter-6-01\Figures\CAD\Nutter-6-01-CS06.dwg | Layout: FIGURE 6

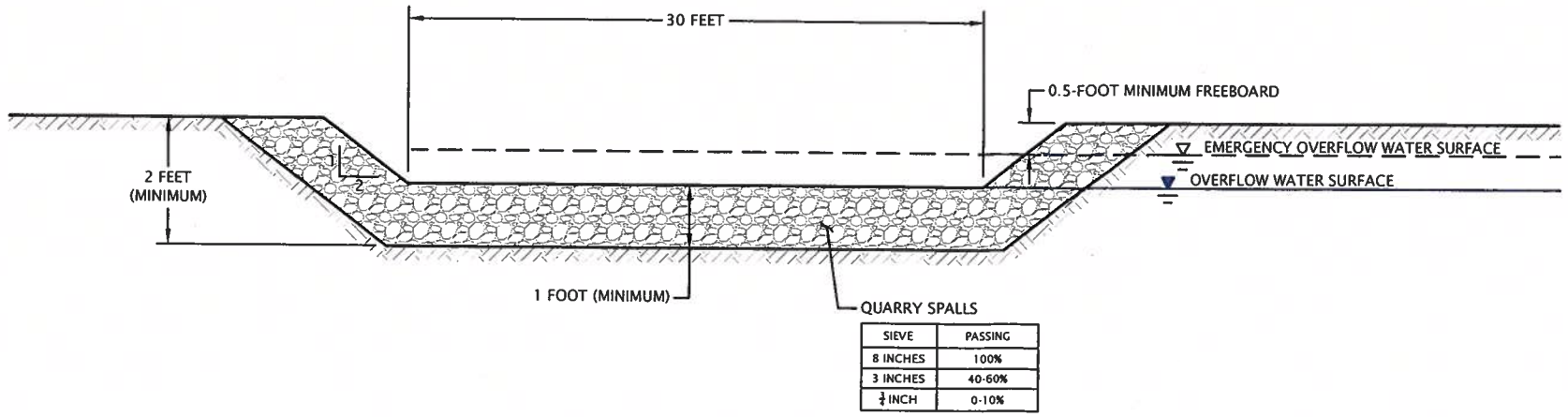


MAXIMUM	24 INCHES
MEDIAN	16 INCHES
MINIMUM	4 INCHES

SIEVE	PASSING
8 INCHES	100%
3 INCHES	40-60%
¼ INCH	0-10%

1/7 **CHANNEL DETAIL**

NOT TO SCALE

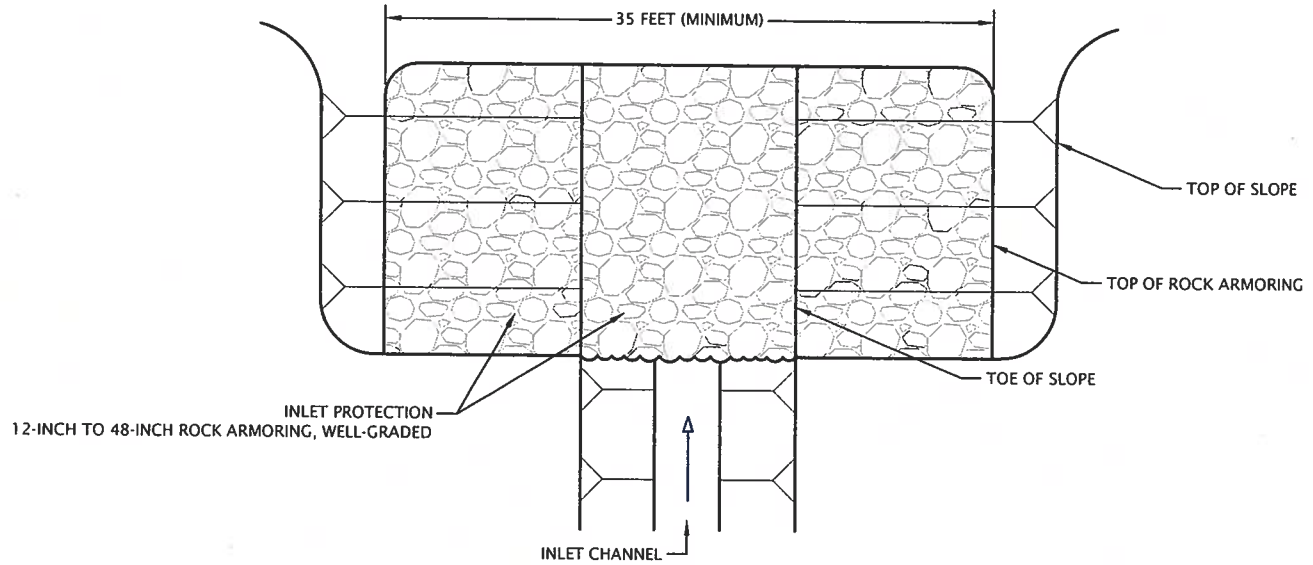


SIEVE	PASSING
8 INCHES	100%
3 INCHES	40-60%
¼ INCH	0-10%

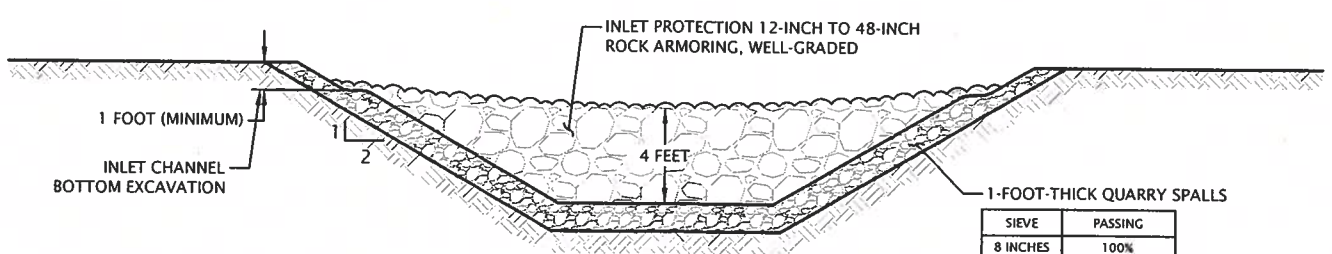
2/7 **EMERGENCY SPILLWAY DETAIL**

NOT TO SCALE

PLAN



SECTION



SIEVE	PASSING
8 INCHES	100%
3 INCHES	40-60%
¼ INCH	0-10%

3/7 **INLET PROTECTION DETAIL**

NOT TO SCALE

STORMWATER DETAILS
WASHOUGAL PIT

CLARK COUNTY, WA
SECTIONS 10 AND 15, TOWNSHIP 1N, RANGE 4E, W.M.

FIGURE 7

NUTTER CORPORATION

NUTTER-6-01
FEBRUARY 2019

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APPENDIX A

WASHINGTON STATE DEPT OF
NATURAL RESOURCES

APPLICATION FOR RECLAMATION PERMIT AND PLAN (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)
Paul Zimmerly Rock Products

2. MAILING ADDRESS
19304 NW 61st Avenue Ridgefield, WA 98642

3. Telephone **360-253-1100** Email

4. NAME OF MINE
Washougal Pit

5. Street address and milepost of surface mine
6303 SE 356th Avenue
Unincorporated Clark County

6. Distance (miles)	7. Direction from	8. Nearest community
1	East	Washougal

9. COUNTY **Clark**
No attachments will be accepted. Legal Description of permit area:

1/4	Section	Township	Range
NE	10	1N	4E
SW	10	1N	4E
SE	10	1N	4E
NW	15	1N	4E
NE	15	1N	4E

10. 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:

11. Are all of these mines now in compliance with RCW 78.44, WAC 332-18, and conditions of the permits? ☐ yes ☐ no
Have you ever had a surface mine operating or reclamation permit revoked? ☐ yes ☐ no
Have you ever had a reclamation security forfeited? ☐ yes ☐ no
If you answered yes to either of the above, give permit number(s):

12. TOTAL ACREAGE OF PERMIT AREA APPLIED FOR:
(Include all acreage to be permitted. See Form SM-6.) **120** acres

13. Total disturbed acreage (Include all acreage to be disturbed by mining and reclamation during the life of the mine.)
Total area to be disturbed: **74** acres.
Area to be disturbed in next 36 months: **5** acres.

14. Maximum vertical depth (thickness) mined below pre-mining topographic grade will be **80** feet.

15. Lowest elevation of excavated mine will be **250** feet relative to mean sea level.
Highest elevation of excavated mine will be **410** feet relative to mean sea level.

16. Type of proposed or existing mine: ☒ pit ☐ quarry

17. Material(s) to be mined: ☒ sand and gravel ☐ rock or stone ☐ clay ☐ metal ☐ limestone ☐ silica ☐ other _____

18. Deposit type: ☐ glacial ☒ river floodplain (alluvial) ☐ river channel deposits ☐ talus ☐ bedrock ☐ lode ☐ other _____

19. Expected start date of mining:
Ongoing operation

20. Estimated number of years:
Unknown, market dependent

21. Total quantity to be mined over life of mine (estimated):
6,582,000 Remaining ☐ tons or ☒ cu yds

22. Estimated annual production:
Unknown ☐ tons or ☐ cu yds

23. Subsequent land use: ☐ industrial ☐ commercial ☒ residential ☐ agricultural ☐ forestry ☐ wetlands and lakes ☐ other
County or Municipality Approval for Surface Mining (Form SM-6) attached? ☒ yes ☐ no

24. Reclaimed elevation of floor of mine: Average **350** feet relative to mean sea level
Reclaimed elevation is shown on cross sections? ☒ yes ☐ no

25. SEPA Checklist required? ☒ yes ☐ no

26. Application fee for a new reclamation permit is herewith attached? ☒ yes ☐ no

APPLICATION FOR RECLAMATION PERMIT AND PLAN

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. Saving Topsoil, Subsoil, and Overburden for Reclamation

Thickness of topsoil is **approx. 3** feet Thickness of subsoil is **n/a** feet Subsoil is a minable product. Depth to bedrock is **3** feet
Total volume of topsoil is **137,500** cubic yards Total volume of subsoil is **n/a** cubic yards
Volume of stored topsoil/subsoil is **Approx. 20,000** cubic yards and will require **1.5** acres for storage.

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

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:

23B. Permit and Disturbed Area Boundaries

Boundary of the permit area will be marked on the ground with permanent boundary markers? ☒ yes ☐ no
Explain boundary markers: Metal tee posts with florescent painted tops.

23C. Setbacks Screens and Buffers

Are Screens required and are shown on maps? ☒ yes ☐ no

The reclamation setback for this site will be **30** feet wide.

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

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

23D. Buffers to Protect Streams and Flood Plains

Will the site include a stream or flood plain? ☒ **yes** ☐ **no**
If yes, see "Additional Requirements for Mines in Flood Plains" in "Instructions for SM-8A".
If no, skip to 23E.

A stream buffer of at least 200 feet has been marked on the ground with permanent boundary markers? ☒ yes ☐ no
Gibbons Creek is located inside the northeastern corner of the permit boundary, there is a 250 foot or greater buffer between the creek and mining disturbance.

APPLICATION FOR RECLAMATION PERMIT AND PLAN

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

23E. Conservation Buffers

Are there any conservation buffers? ☐ yes ☒ no

If no, skip to 23F

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):

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

23F. Ground Water

High water table depth is **250** feet ☐ relative to mean sea level, ☒ below original surface, or ☐ unknown.

Low water table depth is **250** feet ☐ relative to mean sea level, ☒ below original surface, or ☐ unknown.

Annual fluctuation of water table is from _____ feet on _____ to _____ feet on _____. **Unknown**

Are well logs attached? ☒ yes ☐ no

The shallowest aquifer is ☐ confined ☒ unconfined

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

Describe mining method: **Cut method.**

The site is in a: **None**

☐ critical aquifer recharge area ☐ sole source aquifer ☐ public water supply watershed

☐ wellhead protection area ☐ special protection area ☐ designated aquifer protection area

If checked above, see "Additional Requirements for Mines in Hydrologically Sensitive Areas" in "Instructions for SM-8A".

Ground water study attached? ☐ yes ☒ no

If no, explain: **Mining has been taking place since the 1972 permit was acquired without encountering more than the occasional discontinuous seep. The site has already been permitted to a depth of 80 ft.**

23G. Archeology

Are archeological/cultural resource sites present? ☐ yes ☒ no

If yes, describe how you will protect these resources:

APPLICATION FOR RECLAMATION PERMIT AND PLAN

24. MINING PRACTICES TO FACILITATE RECLAMATION

24A. Soil Replacement

Topsoil and (or) subsoil will be restored? ☒ yes ☐ no

If "no", explain:

Subsoil will be replaced to an approximate depth of **0** feet on the pit floor and a depth of **0** feet on slopes. **The site will be backfilled to original topography.**

Topsoil will be replaced to an approximate depth of **0** feet on the pit floor and a depth of **14 inches** on slopes.

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? ☒ yes ☐ no

If no, explain:

Topsoil will be moved when conditions are not overly wet or dry? ☒ yes ☐ no

If no, explain:

Topsoil will be restored to promote effective revegetation and to stabilize slopes and mine floor? ☒ yes ☐ no

If "no", explain:

Topsoil will be replaced with equipment that will minimize compaction, or it will be plowed, disked, or ripped following placement? ☒ yes ☐ no

If no, explain:

Topsoil will be immediately stabilized with grasses and legumes to prevent loss by erosion, slumping, or crusting? ☒ yes ☐ no

If no, explain:

Segmental topsoil removal and replacement is shown on maps? ☒ yes ☐ no

If no, explain:

Topsoil will be imported? ☐ yes ☒ no

If yes, describe source.

Estimated volume is _____ cubic yards.

Synthetic topsoil made from compost, biosolids, or other amendments will be used and (or) made on site to supplement existing topsoil? ☐ yes ☒ no

Materials such as till, loess, and (or) silt are available on site that could be used to supplement topsoil for reclamation. ☐ yes ☒ no

If yes, explain:

Silt from settling ponds or a filter press will be used for reclamation? ☐ yes ☒ no

Settling pond clay slurries will be pumped or hauled to other segments for reclamation? ☐ yes ☒ no

If yes, explain:

24B. Removal of Vegetation

Vegetation will be removed sequentially from areas to be mined to prevent unnecessary erosion? ☒ yes ☐ no

If no, explain:

Small trees and other transplantable vegetation will be salvaged for use in revegetating other segments? ☐ yes ☒ no

If yes, give details. If no, explain: **N/A**

Wood and other organic debris will be:

☐ recycled ☒ removed from site ☐ chipped ☐ burned ☐ buried ☐ used to synthesize topsoil or mulch

☐ other (*explain*)

Solid waste disposal, burning, and land use permits are attached? ☐ yes ☒ no

Some coarse wood (logs, stumps) and other large debris will be salvaged for fish and wildlife habitats? ☐ yes ☒ no

If yes, give details. If no, explain: **N/A**

APPLICATION FOR RECLAMATION PERMIT AND PLAN

24C. Stormwater and Erosion control for Reclamation

Pit floor will slope at gentle angles toward highwall, sediment retention pond, or proper drainage? ☒ yes ☐ no

If yes, give details. If no, explain: **The pit floor will slope towards the seasonal infiltration pond along the western border as shown in previous plans and the updated plans.**

Revegetation, sheeting, and (or) matting will be used to protect areas susceptible to erosion? ☒ yes ☐ no

If yes, give details. If no, explain: **Revegetation will occur on the slopes above the benched contours. Conveyance ditches will have designed out falls to the infiltration ponds.**

Water control systems used during segmental reclamation will:

- Divert clean water around pit? ☒ yes ☐ no
- Trap sediment-laden runoff before it enters a stream? ☒ yes ☐ no
- Be established to prevent erosion of setbacks and neighboring properties? ☒ yes ☐ no
- Be removed or reclaimed? **Conveyance systems will remain at the completion of mining.** ☒ yes ☐ no

If any answers are no, explain: **All precipitation and runoff will be collected and infiltrated onsite.**

Stormwater system design will be capable of carrying the peak flow of the 25-year, 24-hour precipitation event? ☒ yes ☐ no

(*Data are available at the National Oceanic And Atmospheric Administration (NOAA)*) ☒ yes ☐ no

If yes, are calculations attached? **See Appendix D of Reclamation Permit Application Narrative.**

If yes, give details. If no, explain: **Stormwater control systems have been designed to exceed the 25-year event, a 100-year event was used to further protect the stormwater systems.**

Natural and other drainage channels will be kept free of equipment, wastes, stockpiles, and overburden? ☒ yes ☐ no

If no, explain:

25. RECLAMATION TOPOGRAPHY

25A. Final Slopes

Final slopes will be created using the cut-and-fill method? ☒ yes ☐ no

Explain procedure to be used: **The pit will be backfilled and graded to a benched topography for subsequent use.**

Slopes will be created by mining to the final slope using the cut method? ☐ yes ☒ no

Explain procedure to be used: **Pit slopes will be backfilled to create benched topography.**

Slopes will vary in steepness? ☒ yes ☐ no

If no, explain:

Slopes will have a sinuous appearance in both profile and plan view? ☒ yes ☐ no

If no, explain:

Large rectilinear (that is, right angle, or straight, planar) areas will be eliminated? ☒ yes ☐ 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? ☒ yes ☐ no

If no, explain:

25B. Slope Requirements for Pits and Overburden/Waste Rock Dumps (non-saleable products)

If the mine is a quarry or in hard rock, skip to Quarry section (25C).

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? ☒ yes ☐ 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? ☒ yes ☐ no

Give details: **Final slopes will be graded to gently sloping topography.**

APPLICATION FOR RECLAMATION PERMIT AND PLAN

Review "Additional Requirements for Mines with Steep or Potentially Unstable Slopes" in "Instructions for SM-8A".
Slope stability analysis required? ☐ yes ☒ no If yes, attach analysis.
25C. Slope Requirements for Quarries and Hardrock Metal Mines
If mine is a pit in unconsolidated materials covered by Section 25B, go to Section 25D
Check the appropriate box(es) ☐ Slopes will not exceed 2 feet horizontal to 1 foot vertical. ☐ Slopes steeper than 1 foot horizontal to 1 foot vertical are an acceptable subsequent land use as confirmed on Form SM-6. ☐ 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. ☐ 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.
Review "Additional Requirements for Mines with Steep or Potentially Unstable Slopes" in "Instructions for SM-8A".
Slope stability analysis required? ☐ yes ☐ no If yes, attach analysis.
Measures will be taken to limit access to the top and bottom of hazardous slopes? ☐ yes ☐ 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? ☐ yes ☐ no Blasting plan attached? ☐ yes ☐ no 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? ☐ yes ☐ no Blasting plan is attached? ☐ yes ☐ no If no, explain:
Access to benches will be maintained for reclamation blasting? ☐ yes ☐ no If no, explain:
Small portions of benches will be left to provide habitat for raptors and other cliff-dwelling birds? ☐ yes ☐ no
25D. Backfilling
The site will require backfilling? ☒ yes ☐ no **If no, skip to 25E.** Maximum depth of backfilling is **80** feet.
Backfill will be ☐ onsite materials ☐ imported materials ☒ both ☒ yes ☐ no Provide a written screening method that ensures importation of acceptable soil for reclamation. **Refer to Importation Plan and Clean Soil Policy (Section 4.4 of Reclamation Permit Application Narrative, including Appendices F and G.**
Backfilling plan is attached? ☒ yes ☐ no If no, explain:
Backfill stockpiles are shown on maps and will be marked on the ground with markers? ☒ yes ☐ no
All grading/backfilling will be done with non-noxious, non-combustible, and relatively incompactible solids? ☒ yes ☐ no If no, explain:
Backfill will require compaction? ☒ yes ☐ no If no, explain:

APPLICATION FOR RECLAMATION PERMIT AND PLAN

Will you be backfilling to create slopes?	☒ yes ☐ no
Is slope stability analysis attached?	☐ yes ☒ no
If no, explain. **Slopes will be 2H:1V or flatter and do not require stability analysis.**	
25E. Mine Floors	
Flat areas will be formed into gently rolling mounds?	☐ yes ☒ no
If yes, give details. If no, explain: **Subsequent use promotes backfill of the pit floor.**	
Mine floor will be gently graded into sinuous drainage channels to preclude sheetwash erosion during intense precipitation?	☐ yes ☒ no
If yes, give details. If no, explain: **The mine floor will be backfilled. See narrative.**	
Mine floor and other compacted areas will be bulldozed, plowed, ripped, or blasted to foster revegetation?	☐ yes ☒ no
If yes, give details. If no, explain: **The mine floor will be backfilled. See narrative.**	
25F. Lakes, Ponds, and Wetlands	
Is water currently present in the area or will the mining penetrate the water table?	☐ yes ☒ no
If no, go to Section 25G.	
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?	☐ yes ☐ no
If yes, give details. If no, explain:	
If not already present, soils, silts, and clay-bearing material will be placed below water level to enhance revegetation?	☐ yes ☐ no
If yes, give details. If no, explain:	
Some parts of pond and lake banks will be shaped so that a person can escape from the water?	☐ yes ☐ no
Armored spillways or other measures to prevent undesirable overflow or seepage will be provided to stabilize bodies of water and adjacent slopes?	☐ yes ☐ no
If yes, give details. If no, explain:	
Wildlife habitat will be developed, incorporating such measures as:	
Sinuous and irregular shorelines?	☐ yes ☐ no
Varied water depths?	☐ yes ☐ no
Shallow areas less than 18 inches deep?	☐ yes ☐ no
Islands and peninsulas?	☐ yes ☐ no
Give details:	
Ponds or basins will:	
Be located in stable areas?	☐ yes ☐ no
Have sufficient volume for expected runoff?	☐ yes ☐ no
Have an emergency overflow spillway?	☐ yes ☐ no
Spillways and outfalls will be protected (for example, rock armor) to prevent failure and erosion?	☐ yes ☐ 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?	☐ yes ☐ no
If yes, give details. If no, explain:	
Written approval from other agencies with jurisdiction to regulate impoundment of water is attached?	☐ yes ☐ no
If no, explain:	

APPLICATION FOR RECLAMATION PERMIT AND PLAN

25G. Final Drainage Configuration

Drainages will be constructed on each reclaimed segment to control surface water, erosion, and siltation? ☒ yes ☐ no

Result in essentially natural conditions of volume, velocity, and turbidity? ☒ yes ☐ no

Clean runoff is directed to a safe outlet? ☒ yes ☐ no

If yes, give details. If no, explain: **All proposed stormwater will be contained within the permit boundary and will be directed to the infiltration areas in the western portion of the property.**

Are these shown on maps? **See Figure 5 of the narrative.** ☒ yes ☐ no

26. SITE CLEANUP AND PREPARATION FOR REVEGETATION

26A. Dealing with Hazardous Materials

Hazardous materials are present at the mine site? ☐ yes ☒ no

If no, go to Section 26B

The final ground surface drains away from any hazardous natural materials? ☐ yes ☐ no

If yes, give details. If no, explain:

Plan for handling hazardous mineral wastes indigenous to the site is attached? ☐ yes ☐ no

If no, written approval from all appropriate solid waste regulatory agencies attached? ☐ yes ☐ no

26B. Removal of Debris

All debris (garbage, 'bone piles', treated wood, old mining equipment, etc.) will be removed from the mine site? ☒ yes ☐ no

All sheds, scale houses, and other structures will be removed from the site? ☒ yes ☐ no

If either answer is yes, give details. If no, explain: **If any structures or materials are left on site they be compatible with the subsequent use.**

27. REVEGETATION

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

Revegetation area is: ☐ wet ☒ dry ☐ both

The average precipitation is **45-55 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 mine segments? ☒ yes ☐ no

If yes, give details. If no, explain: **See Revegetation Plan, Section 6.0 of narrative.**

The site will not be revegetated because: **N/A**

☐ It is a rural area with a rainfall exceeding 30 inches annually and erosion will not be a problem (requires approval of DNR).

☐ Revegetation is inappropriate for the approved subsequent use of this surface mine.

Explain:

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

☒ alfalfa*	☐ lupine*	☒ clover*	☒ orchard grass
☐ cereal rye	☐ perennial rye	☐ colonial bent grass	☐ ponderosa pine
☐ creeping red fescue	☒ red alder*	☒ Douglas fir	☐ shore pine
☒ ground cover	☐ shrubs	☒ other **See narrative.**	

Western Washington Wet Areas

☐ birdsfoot trefoil	☐ sedges	☐ cedar	☐ tubers
☐ cottonwood	☐ wetland grasses	☐ creeping red fescue	☐ willow
☐ red alder*	☐ other		

APPLICATION FOR RECLAMATION PERMIT AND PLAN

Eastern Washington Dry Areas

☐ alder*	☐ grasses	☐ alfalfa*	☐ juniper
☐ black locust	☐ lodgepole pine	☐ clover	☐ lupine*
☐ deciduous trees	☐ ponderosa pine	☐ shrubs	☐ deep-rooted ground cover
☐ diverse evergreens	☐ other		

Eastern Washington Wet Areas

☐ alder*	☐ cottonwood	☐ poplar	☐ sedges
☐ serviceberry	☐ tubers	☐ willow	
☐ other			

Give planting details (stems/acres of trees and shrubs, see Forest Practices manual; lbs/acre of grass, legume, or forb mixture):
Refer to the Revegetation section of the narrative.

Describe weed control plan:
Refer to the Revegetation section of the narrative.

27B. Planting Techniques

Revegetation at this site will require:

Ripping and tilling?	☒ yes	☐ no
Blasting to create permeability?	☐ yes	☒ no
Mulching?	☐ yes	☒ no
Irrigation?	☐ yes	☒ no
Fertilization?	☒ yes	☐ no
Importation of clay- or humus-bearing soils?	☐ yes	☒ no
Other soil conditioners or amendments?	☐ yes	☒ no

Give details:

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: **N/A**

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?	☐ yes	☒ no

If any answers are no, explain: **N/A**

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?	☒ 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 (as needed)?	☒ yes	☐ no

APPLICATION FOR RECLAMATION PERMIT AND PLAN

Are additional supplemental studies included? ☒ yes ☐ no

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

☐ Archeological ☐ Geohydrologic ☒ Backfill ☐ Slope stability
☐ Topsoil ☐ Flood plain ☐ Conservational ☐ Vegetation
☐ Other

Other permits required? ☒ yes ☐ no

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

☐ Shoreline Permit ☐ Water Discharge Permit ☐ Solid Waste Permit
☐ Air Quality Permit ☒ NPDS or General Discharge Permit ☐ Hydraulic Project Approval
☐ Special or Conditional Use Permit ☐ Other

APPLICATION FOR RECLAMATION PERMIT AND PLAN

IDENTIFICATION OF LANDOWNER(S)

Identify names and addresses of all landowners. Provide written evidence of landowner approval of the extraction of minerals by surface mining methods and of the reclamation plan and/or provide the signature of all landowners below. If landownership has been severed between surface and mineral rights ownership, identify all affected mineral rights owner(s) and provide their approval. *(Attach signed copies of this page if more than one.)*

Print Name(s): Judith A. Zimmerly

Address(es): 19304 NW 61st Ave., Ridgefield, WA 98642

APPLICANT ACKNOWLEDGEMENT

By signing this application, the applicant acknowledges the following:

- **Application's Information True.** The applicant verifies that all information on this application and reclamation plan is true.
- **Reclamation Plan Contents.** The applicant's reclamation plan consists of this document (SM-8A), associated maps, cross sections, reclamation narrative, and other attachments. The department's approval of this application would reflect approval of the applicant's reclamation plan.
- **Applicant/Permit Holder Must Comply.** If the department approves this application, the applicant shall be the permit holder and shall be responsible for compliance with Chapter 78.44 RCW, Chapter 332-18 WAC, the terms and conditions of the permit, and the approved reclamation plan and attachments. ***The permit holder shall comply with the permit and may not significantly deviate from the reclamation plan without prior written approval by the department for the proposed change.*** Revised permits or modified plans might be necessary following significant deviations.
- **Applicant/Permit Holder Consents to Inspection.** All permitted surface mines are subject to regular inspection. See RCW 78.44.161 and WAC 332-18-050. The applicant verifies that it has authority to consent to department inspections on behalf of itself and the landowner(s). ***Applicant authorizes the department to enter and inspect any property covered by this application during any day or time determined necessary by the department to ensure compliance with the Surface Mining Act, Surface Mining Rules, the Reclamation Permit, and the Reclamation Plan.***

APPLICANT Signature of surface mine permit applicant or applicant's company representative	Name and Title of Company Representative (Please print)	Date signed
	Jerry Nutter Chairman	2-28-19

LANDOWNER(S)

As landowner, I Judith A. Zimmerly **(name) authorize the applicant to extract minerals from my land using surface mining methods and I approve this reclamation plan.**

Signature:  Date signed: 2-28-19

FOR DEPARTMENT USE ONLY

Date accepted	Accepted by:	Title:	Reclamation Permit No.

APPENDIX B

STATE OF WASHINGTON
BOARD
of
NATURAL RESOURCES
P.O. Box 168 Olympia, Wa 98501

COUNTY OR MUNICIPALITY RECOMMENDATIONS

SURFACE MINING

TO BE COMPLETED BY APPLICANT

APPLICANT (TYPE OR PRINT)
Paul Zimmerly
7511 N. E. 61st Avenue
Vancouver, Washington

ADDRESS
(Same as above)

TELEPHONE NO.: 695 3446

DESCRIPTION OF SITE
S. E. Quarter of S. W. Quarter and S. W. Quarter of S. E. Quarter Sec. 10- T 1 - R 4 E.W.M. and Govm't. Lot 6 Sec. 15- T 1 - R4 E.W.M. and Portion of north half of N. W. Quarter of Section 15.

SEC	T	RGE		COUNTY
10&15	1 N	4	(X) E ( ) W	Clark

DISTANCE	DIRECTION FROM	NEAREST COMMUNITY
9000'	East	Washougal

INDICATE PROPOSED SUBSEQUENT USE OF SITE UPON COMPLETION OF RECLAMATION
Sub-division

SIGNATURE (APPLICANT'S)	TITLE	DATE
Paul Zimmerly	Owner	February 18, 1972

TO BE COMPLETED BY APPROPRIATE COUNTY OR MUNICIPALITY

TO: BOARD OF NATURAL RESOURCES
SUBJECT: RECOMMENDATIONS ON SURFACE MINING PERMIT APPLICATION FOR A NEW OPERATOR COMMENCING OPERATIONS

	Yes	No
1. Would the proposed subsequent use be illegal under current local zoning regulations?		X
2. If required by local regulations, does the applicant have an appropriate permit to conduct surface mining?	N/A	

3. Recommendations and comments:

ADDRESS
REGIONAL PLANNING COUNCIL OF CLARK COUNTY
2405 "F" STREET
VANCOUVER, WASH.

SIGNATURE (PLANNING DIRECTOR OR ADMINISTRATIVE OFFICIAL)
D Jackson

TELEPHONE NO.: 695-3361

NOTE: Chapter 64, Laws of 1970, 1st Ex. Sess., requires evidence that the proposed subsequent use would not be illegal under local zoning regulations.

PERMIT NO. 10745

SM-6

Copy Distribution: White - Olympia, Yellow - District, Pink - Operator, Blue - County or Municipality

APPENDIX C

SEPA ENVIRONMENTAL CHECKLIST

Purpose of checklist:

Governmental agencies use this checklist to help determine whether the environmental impacts of your proposal are significant. This information is also helpful to determine if available avoidance, minimization or compensatory mitigation measures will address the probable significant impacts or if an environmental impact statement will be prepared to further analyze the proposal.

A. Background

1. Name of proposed project, if applicable: **Washougal Pit**

2. Name of applicant: **Nutter Corporation**

3. Address and phone number of applicant and contact person:
   Jerry Nutter
   7211 NE 43rd Avenue
   Vancouver, WA 98661

4. Date checklist prepared: **2/07/2019**

5. Agency requesting checklist: **Washington State Department of Natural Resources, Division of Geology and Earth Resources (DNR)**

6. Proposed timing or schedule (including phasing, if applicable): **This is an active site.**

7. Do you have any plans for future additions, expansion, or further activity related to or connected with this proposal? If yes, explain. **No future expansions anticipated.**

8. List any environmental information you know about that has been prepared, or will be prepared, directly related to this proposal.
None are known.

9. Do you know whether applications are pending for governmental approvals of other proposals directly affecting the property covered by your proposal? If yes, explain.
None are known.

10. List any government approvals or permits that will be needed for your proposal, if known.
    - **DNR approval of the revised Application for Surface Mining Permit (Form SM-8A) to include a Backfilling Plan.**

11. Give brief, complete description of your proposal, including the proposed uses and the size of the project and site. There are several questions later in this checklist that ask you to describe certain aspects of your proposal. You do not need to repeat those answers on this page. (Lead agencies may modify this form to include additional specific information on project description.)

Revise the existing DNR 120-acre permit to allow clean inert backfill to be imported on the site. The subsequent use for the site at completion of final reclamation will be residential use.

12. Location of the proposal. Give sufficient information for a person to understand the precise location of your proposed project, including a street address, if any, and section, township, and range, if known. If a proposal would occur over a range of area, provide the range or boundaries of the site(s). Provide a legal description, site plan, vicinity map, and topographic map, if reasonably available. While you should submit any plans required by the agency, you are not required to duplicate maps or detailed plans submitted with any permit applications related to this checklist.
Washougal Pit is located approximately 1 mile east of Washougal off SE Evergreen Boulevard, in unincorporated Clark County, Washington. The site is accessed via SE 356th Avenue off SE Evergreen Boulevard (a private street owned in fee by Judith A. Zimmerly). Site Coordinates: 45°34'51" N, 122°18'03"

The site is located in portions of the southwest, southeast, and northeast quarters of Section 10 and portions of the northwest and northeast quarters of Section 15, Township 1 North, Range 4 East, Willamette Meridian and includes tax parcel numbers 133044000, 134200000, 134201000, 134202000, and 134219000.

B. ENVIRONMENTAL ELEMENTS

1. Earth

a. General description of the site:

(Circle one): Flat, rolling, (**hilly**,) steep slopes, mountainous, other _____

b. What is the steepest slope on the site (approximate percent slope)?
Mine highwalls are approximately 100% or steeper.

c. What general types of soils are found on the site (for example, clay, sand, gravel, peat, muck)? If you know the classification of agricultural soils, specify them and note any agricultural land of long-term commercial significance and whether the proposal results in removing any of these soils.
Soils on the site are predominantly Lauren gravelly sandy loam, cemented substratum, 3 to 15 percent slopes.

d. Are there surface indications or history of unstable soils in the immediate vicinity? If so, describe.
None are known.

e. Describe the purpose, type, total area, and approximate quantities and total affected area of any filling, excavation, and grading proposed. Indicate source of fill. [help]
The surface mine operation will excavate 6,582,000 cubic yards of aggregate resource within 74 of the 120-acre permit boundary. A smaller area outside of the excavation limits will have temporary soil storage and access roads. The site may receive clean, inert construction soil as backfill, concurrent with mining and reclamation operations.

The volume of fill will depend on the availability of suitable backfill material in the local area. The maximum capacity of the backfill plan is 7,175,000 cubic yards. Typical sources of fill would be from construction sites removing the upper soil profile prior to development and road cuts.

f. Could erosion occur as a result of clearing, construction, or use? If so, generally describe.
Erosion could occur during active mining operations prior to reclamation. However, the site will be mined to direct stormwater and any potential erosion toward the incised pit floor and infiltration areas.

g. About what percent of the site will be covered with impervious surfaces after project construction (for example, asphalt or buildings)?
Less than 2% of the site is currently impervious surface (paved entrance road, buildings, and concrete pads). At the completion of mining, there will be no impervious surface except for the already established entrance road.

h. Proposed measures to reduce or control erosion, or other impacts to the earth, if any:
The site will be mined in segments with contemporaneous reclamation occurring as mining progresses. This will minimize the disturbance area at any given time which will reduce the potential for erosion. Mine operations will implement erosion control practices as required by the site's Sand and Gravel General Permit. Mining activity will take place such that any potential erosion from disturbance of native materials will be directed back into the active (incised) mining areas. Stockpiles of topsoil and overburden reserved for reclamation will be located within or above the active pit. These stockpiles will be seeded with an erosion control mix and/or broadcast with straw to stabilize the piles and prevent erosion.

2. Air

a. What types of emissions to the air would result from the proposal during construction, operation, and maintenance when the project is completed? If any, generally describe and give approximate quantities if known.
Short-term emissions may occur from sporadic operation of equipment (i.e. dozers, loaders, and haul trucks). Operator will utilize best management practices to reduce fugitive dust on haul roads and operating areas within the permit boundary.

b. Are there any off-site sources of emissions or odor that may affect your proposal? If so, generally describe.
None are known.

c. Proposed measures to reduce or control emissions or other impacts to air, if any:
Mobile equipment will utilize requisite emission control devices. Operator will utilize best management practices to reduce fugitive dust within operating area.

3. **Water**

a. Surface Water:

1) Is there any surface water body on or in the immediate vicinity of the site (including year-round and seasonal streams, saltwater, lakes, ponds, wetlands)? If yes, describe type and provide names. If appropriate, state what stream or river it flows into.

Gibbons Creek flows through the northeastern corner of the permitted mine boundary. The limits of disturbance boundary are at least 250 feet or greater away from the stream.

A wetland (PEMFx) exists along the eastern permit boundary. This wetland is within the existing disturbance and was created by mine excavation. It will remain at the completion of mining.

There are a series of settling ponds on site that seasonally contain water.

2) Will the project require any work over, in, or adjacent to (within 200 feet) the described waters? If yes, please describe and attach available plans.

Mining and reclamation will occur around the excavated wetland, but historic mining in that area has already removed most of the material. Mining will remove the existing settling ponds.

3) Estimate the amount of fill and dredge material that would be placed in or removed from surface water or wetlands and indicate the area of the site that would be affected. Indicate the source of fill material.

None.

4) Will the proposal require surface water withdrawals or diversions? Give general description, purpose, and approximate quantities if known.

No.

5) Does the proposal lie within a 100-year floodplain? If so, note location on the site plan.

No.

6) Does the proposal involve any discharges of waste materials to surface waters? If so, describe the type of waste and anticipated volume of discharge.

No.

b. Ground Water:

1) Will groundwater be withdrawn from a well for drinking water or other purposes? If so, give a general description of the well, proposed uses and approximate quantities withdrawn from the well. Will water be discharged to groundwater? Give general description, purpose, and approximate quantities if known.

Groundwater will not be withdrawn. Stormwater discharges to groundwater will be treated and monitored according to the site's Sand and Gravel General Permit

requirements. Stormwater design and infiltration calculations for the site are attached to the revised DNR Application for Reclamation Permit.

2) Describe waste material that will be discharged into the ground from septic tanks or other sources, if any (for example: Domestic sewage; industrial, containing the following chemicals. . .; agricultural; etc.). Describe the general size of the system, the number of such systems, the number of houses to be served (if applicable), or the number of animals or humans the system(s) are expected to serve.
None.

c. Water runoff (including stormwater):

1) Describe the source of runoff (including storm water) and method of collection and disposal, if any (include quantities, if known). Where will this water flow? Will this water flow into other waters? If so, describe.
Runoff will be limited to stormwater from precipitation and seasonal snowmelt that will be directed to the mine floor or designed stormwater infiltration areas. Sand and Gravel General Permit requirements will be adhered to and stormwater design and infiltration calculations for the site are attached to the revised DNR Application for Reclamation Permit.

2) Could waste materials enter ground or surface waters? If so, generally describe.
There will be no waste materials on site. Any sediment from runoff will be contained on site.

3) Does the proposal alter or otherwise affect drainage patterns in the vicinity of the site? If so, describe.
No.

d. Proposed measures to reduce or control surface, ground, and runoff water, and drainage pattern impacts, if any:
Segmental mining/reclamation and best management practices such as designed stormwater detention ponds, ditching, check dams and topsoil replacement for revegetation will be incorporated to control surface runoff. Runoff from undisturbed areas will be re-directed around active mining area where practical.

4. **Plants**

a. Check the types of vegetation found on the site:

__X__deciduous tree: alder, maple
__X__evergreen tree: Douglas fir
__X__shrubs: various species
__X__grass: various species
____pasture
____crop or grain
____ Orchards, vineyards or other permanent crops.
____ wet soil plants
__X water plants: water lily, eelgrass, milfoil, other

____other types of vegetation

b. What kind and amount of vegetation will be removed or altered?
Most of the site's original vegetation has been removed following decades of mining. Vegetation will be subsequently replaced according to the reclamation plan.

c. List threatened, and endangered species known to be on or near the site.
None known.

d. Proposed landscaping, use of native plants, or other measures to preserve or enhance vegetation on the site, if any:
Reclaimed mining areas will be revegetated according to DNR reclamation standards and requirements for the prescribed subsequent use. Native vegetative buffers will remain undisturbed along portions of the eastern and southern permit boundaries.

e. List all noxious weeds and invasive species known to be on or near the site.
Any invasive weed species discovered onsite will be reported and controlled in accordance with Clark County Noxious Weed Board standards.

5. **Animals**

a. List any birds and other animals which have been observed on or near the site or are known to be on or near the site. [help]

Examples include:

birds: (hawk) heron, eagle, (songbirds) other:
mammals: (deer) bear, elk, beaver, other:
fish: bass, salmon, trout, herring, shellfish, other _____

b. List any threatened and endangered species known to be on or near the site.
None known.

c. Is the site part of a migration route? If so, explain.
Pacific fly way.

d. Proposed measures to preserve or enhance wildlife, if any:
The disturbed areas will be replanted with appropriate vegetation to stabilize the reclaimed areas in accordance with the subsequent use. The excavated wetland along the eastern boundary will, however, provide increasing opportunity for habitat development. Native vegetative buffers will remain undisturbed along portions of the eastern and southern permit boundaries.

e. List any invasive animal species known to be on or near the site.
None are known.

6. **Energy and Natural Resources**

a. What kinds of energy (electric, natural gas, oil, wood stove, solar) will be used to meet the completed project's energy needs? Describe whether it will be used for heating, manufacturing, etc.

Electricity service is already established at the site. Petroleum products (diesel, gasoline) will power excavation and hauling equipment.

b. Would your project affect the potential use of solar energy by adjacent properties? If so, generally describe.

No.

c. What kinds of energy conservation features are included in the plans of this proposal? List other proposed measures to reduce or control energy impacts, if any:

Not applicable.

7. **Environmental Health**

a. Are there any environmental health hazards, including exposure to toxic chemicals, risk of fire and explosion, spill, or hazardous waste, that could occur as a result of this proposal? If so, describe.

Accidental fuel or oil spills are possible from mine operations, a Pollution Prevention and Spill Control Plan (SCP) will be followed and revised as necessary throughout the life of the project according to the site's Sand and Gravel General Permit requirements.

1) Describe any known or possible contamination at the site from present or past uses.

None known.

2) Describe existing hazardous chemicals/conditions that might affect project development and design. This includes underground hazardous liquid and gas transmission pipelines located within the project area and in the vicinity.

None known.

3) Describe any toxic or hazardous chemicals that might be stored, used, or produced during the project's development or construction, or at any time during the operating life of the project.

No chemicals will be stored on site; petroleum products will be delivered and consumed onsite.

4) Describe special emergency services that might be required.

None.

5) Proposed measures to reduce or control environmental health hazards, if any:

The SCP will remain in effect through project duration. Best Management Practices (BMPs) will be employed onsite to reduce the potential for accidental fuel or oil spills from occurring during equipment refueling. BMPs will also be used to quickly and completely clean up any spills consistent with the SCP and to remove any spill-contaminated materials to an approved disposal site

b. Noise

1) What types of noise exist in the area which may affect your project (for example: traffic, equipment, operation, other)?
None.

2) What types and levels of noise would be created by or associated with the project on a short-term or a long-term basis (for example: traffic, construction, operation, other)? Indicate what hours noise would come from the site.
Sporadic noise would be generated by mining equipment and haul trucks during operating hours.

3) Proposed measures to reduce or control noise impacts, if any:
Requisite muffling devices will be maintained on trucks and excavating equipment. The depth of the pit aids in screening noise from operations to the surrounding areas. Native vegetative buffers will remain undisturbed along portions of the eastern and southern permit boundaries.

8. **Land and Shoreline Use**

a. What is the current use of the site and adjacent properties? Will the proposal affect current land uses on nearby or adjacent properties? If so, describe.
The site is currently used for commercial mining of sand and gravel. Adjoining lands to the south and east sides of the site are also zoned GSLA 40. Adjoining lands to the north and northwest sides of the site are occupied by single-family residences and zoned Gorge Small Woodland 20 (GSW 20). Adjoining lands to the southwest of the site are occupied by single-family residences and zoned Gorge Residential 5 (GR 5). Mining will not affect current land uses on nearby or adjacent properties.

b. Has the project site been used as working farmlands or working forest lands? If so, describe. How much agricultural or forest land of long-term commercial significance will be converted to other uses as a result of the proposal, if any? If resource lands have not been designated, how many acres in farmland or forest land tax status will be converted to nonfarm or nonforest use?
Not applicable.

1) Will the proposal affect or be affected by surrounding working farm or forest land normal business operations, such as oversize equipment access, the application of pesticides, tilling, and harvesting? If so, how:
No.

c. Describe any structures on the site.

Scale house, barn, pole shed, and dilapidated house.

d. Will any structures be demolished? If so, what?
The existing barn, pole shed, and dilapidated house will be demolished, and the scale house removed upon completion.

e. What is the current zoning classification of the site?
Gorge Large-scale Ag 40 (GLSA 40), with a Surface Mining Overlay.

f. What is the current comprehensive plan designation of the site?
GLSA-40

g. If applicable, what is the current shoreline master program designation of the site?
Not applicable.

h. Has any part of the site been classified as a critical area by the city or county? If so, specify.
None known.

i. Approximately how many people would reside or work in the completed project?
Up to four single residence lots will be created at the completion of reclamation.

j. Approximately how many people would the completed project displace?
None.

k. Proposed measures to avoid or reduce displacement impacts, if any:
Provide new residential lots as subsequent use.

L. Proposed measures to ensure the proposal is compatible with existing and projected land uses and plans, if any:
This activity is allowed and expected under Clark County zoning and comprehensive plan designation in furtherance of the resource goals of the Growth Management Act and associated Washington Administrative Code.

m. Proposed measures to reduce or control impacts to agricultural and forest lands of long-term commercial significance, if any:
Not applicable.

9. **Housing**

a. Approximately how many units would be provided, if any? Indicate whether high, middle, or low-income housing.
Residential subsequent use.

b. Approximately how many units, if any, would be eliminated? Indicate whether high, middle, or low-income housing.
None.

c. Proposed measures to reduce or control housing impacts, if any:
Not Applicable.

10. **Aesthetics**

a. What is the tallest height of any proposed structure(s), not including antennas; what is the principal exterior building material(s) proposed?
Not applicable.

b. What views in the immediate vicinity would be altered or obstructed?
None.

b. Proposed measures to reduce or control aesthetic impacts, if any:
Maintain existing vegetation screen (tree) buffer along portions of the south and east sides of site.

11. **Light and Glare**

a. What type of light or glare will the proposal produce? What time of day would it mainly occur?
Excavation and hauling will take place during daylight hours, therefore lighting will not normally be required. Occasionally contract orders require loading and hauling after daylight hours. Overhead lighting and headlights will be utilized on haul trucks and loading equipment as needed.

b. Could light or glare from the finished project be a safety hazard or interfere with views?
No.

c. What existing off-site sources of light or glare may affect your proposal?
None.

d. Proposed measures to reduce or control light and glare impacts, if any:
Should emergency maintenance lighting be required, all temporary sources will be hooded and directed at the specific area to avoid the escape of glare.

12. **Recreation**

a. What designated and informal recreational opportunities are in the immediate vicinity?
Steigerwald Lake Wildlife Refuge is located approximately one-third mile south of the pit and south of SE Evergreen Highway.

b. Would the proposed project displace any existing recreational uses? If so, describe.
No.

c. Proposed measures to reduce or control impacts on recreation, including recreation opportunities to be provided by the project or applicant, if any:

No mining activities will affect existing recreational opportunities.

13. **Historic and cultural preservation**

a. Are there any buildings, structures, or sites, located on or near the site that are over 45 years old listed in or eligible for listing in national, state, or local preservation registers? If so, specifically describe.

None are known.

b. Are there any landmarks, features, or other evidence of Indian or historic use or occupation? This may include human burials or old cemeteries. Are there any material evidence, artifacts, or areas of cultural importance on or near the site? Please list any professional studies conducted at the site to identify such resources.

None are known.

c. Describe the methods used to assess the potential impacts to cultural and historic resources on or near the project site. Examples include consultation with tribes and the department of archeology and historic preservation, archaeological surveys, historic maps, GIS data, etc.

Reviewed Clark County GIS data available online.

d. Proposed measures to avoid, minimize, or compensate for loss, changes to, and disturbance to resources. Please include plans for the above and any permits that may be required.

Not applicable. Mining approvals for this site has already been granted.

14. **Transportation**

a. Identify public streets and highways serving the site or affected geographic area and describe proposed access to the existing street system. Show on site plans, if any.

The site is served by a private access road off SE 356th Avenue, which is wholly owned by the Washougal Pit. See figure set attached to the revised Application for Reclamation Permit.

b. Is the site or affected geographic area currently served by public transit? If so, generally describe. If not, what is the approximate distance to the nearest transit stop?

Yes, C-TRAN Route 92 services SE Evergreen Highway with a transit stop approximately 0.75 miles southeast of the pit entrance.

c. How many additional parking spaces would the completed project or non-project proposal have? How many would the project or proposal eliminate?

None.

d. Will the proposal require any new or improvements to existing roads, streets, pedestrian, bicycle or state transportation facilities, not including driveways? If so, generally describe (indicate whether public or private).

None are planned.

e. Will the project or proposal use (or occur in the immediate vicinity of) water, rail, or air transportation? If so, generally describe.

No.

f. How many vehicular trips per day would be generated by the completed project or proposal? If known, indicate when peak volumes would occur and what percentage of the volume would be trucks (such as commercial and non-passenger vehicles). What data or transportation models were used to make these estimates?

Hauling is sporadic; it will take place on an as-needed basis.

g. Will the proposal interfere with, affect or be affected by the movement of agricultural and forest products on roads or streets in the area? If so, generally describe.

No.

h. Proposed measures to reduce or control transportation impacts, if any:

No measures will be necessary.

15. **Public Services**

a. Would the project result in an increased need for public services (for example: fire protection, police protection, public transit, health care, schools, other)? If so, generally describe.

No.

b. Proposed measures to reduce or control direct impacts on public services, if any.

No measures will be necessary.

16. **Utilities**

a. Circle utilities currently available at the site:
(electricity), natural gas, (water), refuse service, (telephone), sanitary sewer, septic system, other _____

b. Describe the utilities that are proposed for the project, the utility providing the service, and the general construction activities on the site or in the immediate vicinity which might be needed.

No utilities are necessary for continued operations at this site.

C. Signature

The above answers are true and complete to the best of my knowledge. I understand that the lead agency is relying on them to make its decision.

Signature: _____

Name of signee _____

Position and Agency/Organization _____

Date Submitted: _____

f. How many vehicular trips per day would be generated by the completed project or proposal? If known, indicate when peak volumes would occur and what percentage of the volume would be trucks (such as commercial and non-passenger vehicles). What data or transportation models were used to make these estimates?
Hauling is sporadic; it will take place on an as-needed basis.

g. Will the proposal interfere with, affect or be affected by the movement of agricultural and forest products on roads or streets in the area? If so, generally describe.
No.

h. Proposed measures to reduce or control transportation impacts, if any:
No measures will be necessary.

15. **Public Services**

a. Would the project result in an increased need for public services (for example: fire protection, police protection, public transit, health care, schools, other)? If so, generally describe.
No.

b. Proposed measures to reduce or control direct impacts on public services, if any.
No measures will be necessary.

16. **Utilities**

a. Circle utilities currently available at the site:
(electricity) natural gas, (water) refuse service, (telephone) sanitary sewer, septic system, other _____

b. Describe the utilities that are proposed for the project, the utility providing the service, and the general construction activities on the site or in the immediate vicinity which might be needed.
No utilities are necessary for continued operations at this site.

C. Signature

The above answers are true and ~~complete~~ to the best of my knowledge. I understand that the lead agency is relying on them to make its decision.

Signature: _____

Name of signee _____

Position and Agency/Organization _____

Date Submitted: 2-26-19

APPENDIX D

Summary Calculations 100yr Event

Channel No.	Slope	Tributary Area			Avg. Runoff Coefficient C	t_c (min)	Runoff Intensity (I, in/hr)	Flow Rate (Q, cfs)	Total For Channel		Channel Characteristics (2H:1V Sides)			
		Sub-Basin	(Ft^2)	Acres					cfs	gpm	Manning's n	Flow Depth (ft)	Bottom Width (ft)	Flow Capacity (cfs)
1	0.08	A	1,299,126	29.82	0.14	16.41	2.92	12.25	12.25	5,497	0.045	0.60	3.0	13.69
2	0.16	B	834,681	19.16	0.16	12.39	3.44	10.55	10.55	4,733	0.045	0.45	3.0	11.52
3	0.13	C	652,120	14.97	0.16	11.51	3.58	8.58	8.58	3,849	0.045	0.45	3.0	10.38
4	0.18	D	432,567	9.93	0.14	4.99	5.14	7.15	7.15	3,207	0.045	0.35	3.0	7.83
5	0.10	E	425,178	9.76	0.14	1.28	6.83	9.33	9.33	4,189	0.045	0.50	3.0	11.00

Rational Peak Flow - Basin A

Surface Type	Area (A) (Acres)	Curve Number	A*CN	Runoff C Coeff.	A*C
Forested (steep)	2.07	70	144.63	0.08	0.17
Rock Outcrops	0	98	0.00	0.80	0.00
Brush Cover	24.00	72	1728.00	0.09	2.16
Gravel	3.75	89	333.75	0.50	1.88
Roof/Impervious	0	98	0.00	0.95	0.00
Totals	**29.82**		**2206.38**		**4.20**
Weighted Avg. CN	**74.0**				
Weighted Avg. C	**0.14**				

Maximum t_c: *(see CERM Eq. 20.11)*

Pathway	$L_{o,\ ft}$	CN	$S_{percent}$	$S_{fraction}$	Manning n	Assumed Hydraulic Radius (ft)	Vel. (ft/min)	$t_{c,\ minutes}$
Forested (steep)	0	70	40	--	--	--	--	0.00
Gravel	550	89	1	--	--	--	--	14.39
Ditch stones/weeds (full)	400	--	1	0.03	0.035	0.3	198.26	2.02
Pipe 12" cpp (full)	0	--	--	0.04	0.024	0.25	295.65	0.00
							Total $t_{c,\ minutes}$	16.41

Steel Formula (CERM Eq. 20.14) region 7

I = K/(tc+b)

Storm Frequency (years)	K	b	$t_{c,\ minutes}$	Max Intensity (in/hr)
2	32	11	16.41	1.17
4	48	12	16.41	1.69
10	60	13	16.41	2.04
25	67	10	16.41	2.54
50	65	8	16.41	2.66
100	77	10	16.41	2.92

Rational Method Peak Runoff (CERM Eq. 20.36) 25 year

Q = CIA

Storm Frequency (years)	$C_{weighted\ avg}$	I_{max} (in/hr)	$t_{c,\ minutes}$	Q_{max} (cfs)
2	0.1	1.17	16.41	4.90
4	0.1	1.69	16.41	7.10
10	0.1	2.04	16.41	8.57
25	0.1	2.54	16.41	10.66
50	0.1	2.66	16.41	11.18
100	0.1	2.92	16.41	12.25

Rational Peak Flow - Basin B

Surface Type	Area (A) (Acres)	Curve Number	A*CN	Runoff C Coeff.	A*C
Forested (steep)	0.00	70	0.00	0.08	0.00
Rock Outcrops	0	98	0.00	0.80	0.00
Brush Cover	15.67	72	1128.24	0.09	1.41
Gravel	3.5	89	311.50	0.50	1.75
Roof/Impervious	0	98	0.00	0.95	0.00
Totals	**19.17**		**1439.74**		**3.16**
Weighted Avg. CN	**75.1**				
Weighted Avg. C	**0.16**				

Maximum t_c: *(see CERM Eq. 20.11)*

Pathway	$L_{o,\ ft}$	CN	$S_{percent}$	$S_{fraction}$	Manning n	Assumed Hydraulic Radius (ft)	Vel. (ft/min)	$t_{c,\ minutes}$
Forested (steep)	0	70	40	--	--	--	--	0.00
Gravel	300	89	1	--	--	--	--	8.86
Ditch stones/weeds (full)	700	--	1	0.03	0.035	0.3	198.26	3.53
Pipe 12" cpp (full)	0	--	--	0.04	0.024	0.25	295.65	0.00
							Total $t_{c,\ minutes}$	12.39

Steel Formula (CERM Eq. 20.14) region 7

I = K/(tc+b)

Storm Frequency (years)	K	b	$t_{c,\ minutes}$	Max Intensity (in/hr)
2	32	11	12.39	1.37
4	48	12	12.39	1.97
10	60	13	12.39	2.36
25	67	10	12.39	2.99
50	65	8	12.39	3.19
100	77	10	12.39	3.44

Rational Method Peak Runoff (CERM Eq. 20.36) 25 year

Q = CIA

Storm Frequency (years)	$C_{weighted\ avg}$	I_{max} (in/hr)	$t_{c,\ minutes}$	Q_{max} (cfs)
2	0.2	1.37	12.39	4.32
4	0.2	1.97	12.39	6.22
10	0.2	2.36	12.39	7.47
25	0.2	2.99	12.39	9.46
50	0.2	3.19	12.39	10.07
100	0.2	3.44	12.39	10.87

Rational Peak Flow - Basin C

Surface Type	Area (A) (Acres)	Curve Number	A*CN	Runoff C Coeff.	A*C
Forested (steep)	0.00	70	0.00	0.08	0.00
Rock Outcrops	0	98	0.00	0.80	0.00
Brush Cover	12.37	72	890.64	0.09	1.11
Gravel	2.6	89	231.40	0.50	1.30
Roof/Impervious	0	98	0.00	0.95	0.00
Totals	**14.97**		**1122.04**		**2.41**
Weighted Avg. CN	**75.0**				
Weighted Avg. C	**0.16**				

Maximum t_c: *(see CERM Eq. 20.11)*

Pathway	$L_{o,\ ft}$	CN	$S_{percent}$	$S_{fraction}$	Manning n	Assumed Hydraulic Radius (ft)	Vel. (ft/min)	$t_{c,\ minutes}$
Forested (steep)	0	70	40	--	--	--	--	0.00
Gravel	500	89	5	--	--	--	--	5.96
Ditch stones/weeds (full)	1,100	--	1	0.03	0.035	0.3	198.26	5.55
Pipe 12" cpp (full)	0	--	--	0.04	0.024	0.25	295.65	0.00
							Total $t_{c,\ minutes}$	11.51

Steel Formula (CERM Eq. 20.14) region 7

I = K/(tc+b)

Storm Frequency (years)	K	b	$t_{c,\ minutes}$	Max Intensity (in/hr)
2	32	11	11.51	1.42
4	48	12	11.51	2.04
10	60	13	11.51	2.45
25	67	10	11.51	3.11
50	65	8	11.51	3.33
100	77	10	11.51	3.58

Rational Method Peak Runoff (CERM Eq. 20.36) 25 year

Q = CIA

Storm Frequency (years)	$C_{weighted\ avg}$	I_{max} (in/hr)	$t_{c,\ minutes}$	Q_{max} (cfs)
2	0.2	1.42	11.51	3.43
4	0.2	2.04	11.51	4.93
10	0.2	2.45	11.51	5.91
25	0.2	3.11	11.51	7.52
50	0.2	3.33	11.51	8.04
100	0.2	3.58	11.51	8.64

Rational Peak Flow - Basin D

Surface Type	Area (A) (Acres)	Curve Number	A*CN	Runoff C Coeff.	A*C
Forested (steep)	0.00	70	0.00	0.08	0.00
Rock Outcrops	0	98	0.00	0.80	0.00
Brush Cover	8.63	72	621.36	0.09	0.78
Gravel	1.3	89	115.70	0.50	0.65
Roof/Impervious	0	98	0.00	0.95	0.00
Totals	**9.93**		**737.06**		**1.43**
Weighted Avg. CN	**74.2**				
Weighted Avg. C	**0.14**				

Maximum t_c: *(see CERM Eq. 20.11)*

Pathway	$L_{o,\,ft}$	CN	$S_{percent}$	$S_{fraction}$	Manning n	Assumed Hydraulic Radius (ft)	Vel. (ft/min)	$t_{c,\,minutes}$
Forested (steep)	0	70	40	--	--	--	--	0.00
Gravel	400	89	5	--	--	--	--	4.99
Ditch stones/weeds (full)	0	--	1	0.03	0.035	0.3	198.26	0.00
Pipe 12" cpp (full)	0	--	--	0.04	0.024	0.25	295.65	0.00
							Total $t_{c,\,minutes}$	4.99

Steel Formula (CERM Eq. 20.14) region 7

I = K/(tc+b)

Storm Frequency (years)	K	b	$t_{c,\,minutes}$	Max Intensity (in/hr)
2	32	11	4.99	2.00
4	48	12	4.99	2.83
10	60	13	4.99	3.34
25	67	10	4.99	4.47
50	65	8	4.99	5.00
100	77	10	4.99	5.14

Rational Method Peak Runoff (CERM Eq. 20.36) 25 year

Q = CIA

Storm Frequency (years)	$C_{weighted\ avg}$	I_{max} (in/hr)	$t_{c,\,minutes}$	Q_{max} (cfs)
2	0.1	2.00	4.99	2.86
4	0.1	2.83	4.99	4.03
10	0.1	3.34	4.99	4.76
25	0.1	4.47	4.99	6.38
50	0.1	5.00	4.99	7.14
100	0.1	5.14	4.99	7.33

Rational Peak Flow - Basin E

Surface Type	Area (A) (Acres)	Curve Number	A*CN	Runoff C Coeff.	A*C
Forested (steep)	0.00	70	0.00	0.08	0.00
Rock Outcrops	0	98	0.00	0.80	0.00
Brush Cover	8.66	72	623.52	0.09	0.78
Gravel	1.1	89	97.90	0.50	0.55
Roof/Impervious	0	98	0.00	0.95	0.00
Totals	**9.76**		**721.42**		**1.33**
Weighted Avg. CN	**73.9**				
Weighted Avg. C	**0.14**				

Maximum t_c: *(see CERM Eq. 20.11)*

Pathway	$L_{o,\ ft}$	CN	$S_{percent}$	$S_{fraction}$	Manning n	Assumed Hydraulic Radius (ft)	Vel. (ft/min)	$t_{c,\ minutes}$
Forested (steep)	0	70	40	--	--	--	--	0.00
Gravel	200	89	25	--	--	--	--	1.28
Ditch stones/weeds (full)	0	--	1	0.03	0.035	0.3	198.26	0.00
Pipe 12" cpp (full)	0	--	--	0.04	0.024	0.25	295.65	0.00
							Total $t_{c,\ minutes}$	1.28

Steel Formula (CERM Eq. 20.14) region 7

I = K/(tc+b)

Storm Frequency (years)	K	b	$t_{c,\ minutes}$	Max Intensity (in/hr)
2	32	11	1.28	2.61
4	48	12	1.28	3.61
10	60	13	1.28	4.20
25	67	10	1.28	5.94
50	65	8	1.28	7.00
100	77	10	1.28	6.83

Rational Method Peak Runoff (CERM Eq. 20.36) 25 year

Q = CIA

Storm Frequency (years)	$C_{weighted\ avg}$	I_{max} (in/hr)	$t_{c,\ minutes}$	Q_{max} (cfs)
2	0.1	2.61	1.28	3.46
4	0.1	3.61	1.28	4.80
10	0.1	4.20	1.28	5.59
25	0.1	5.94	1.28	7.90
50	0.1	7.00	1.28	9.31
100	0.1	6.83	1.28	9.07

CHANNELS

Channel No.	Slope	Tributary Area			Avg. Runoff Coefficient C	t_c (min)	Runoff Intensity (I, in/hr)	Flow Rate (Q, cfs)	Total For Channel		Channel Characteristics (2H:1V Sides)			
		Sub-Basin	(Ft^2)	Acres					cfs	gpm	Manning's n	Flow Depth (ft)	Bottom Width (ft)	Flow Capacity (cfs)
1	0.08	A	1,299,126	29.82	0.14	16.41	2.92	12.25	12.25	5,497	0.045	0.60	3.0	13.69
2	0.16	B	834,681	19.16	0.16	12.39	3.44	10.55	10.55	4,733	0.045	0.45	3.0	11.52
3	0.13	C	652,120	14.97	0.16	11.51	3.58	8.58	8.58	3,849	0.045	0.45	3.0	10.38
4	0.18	D	432,567	9.93	0.14	4.99	5.14	7.15	7.15	3,207	0.045	0.35	3.0	7.83
5	0.10	E	425,178	9.76	0.14	1.28	6.83	9.33	9.33	4,189	0.045	0.50	3.0	11.00

SPILLWAYS

Spillway to Channel No.	100-Yr. Flow Rate (Q, cfs)	1.6 Factor Flow Rate (Q, cfs)	Assumed H (ft)	L (ft)
1	12.25	19.60	0.35	28.64582
2	10.55	16.87	0.31	29.71275
3	8.58	13.72	0.28	28.17632
4	7.15	11.43	0.25	27.89454
5	15.72	25.15	0.41	28.8644

$L = [Q/(3.21(H^{1.5}))] - 2.4H$

TRENCH

L	500	ft
W	25	ft
D	4	ft
n	0.35	
V	17,500	ft3
	130,900	gal

Infiltration Calculation - 100 Year Event
Nutter Corporation - Washougal Pit
Nutter-6-01

Calculation #1: Total Rain Volume				
Collection Basin Area		Design Rainfall Depth (100-Year; 24-Hour)		Total Rain Volume
(Ft^2)	(Acres)	(In)	(Ft)	(Ft3)
3,675,699	84.4	8.0	0.67	2,450,466

$$Volume = Area * Depth$$

Calculation #2: Infiltration Ponds- Infiltration Capacity				
Field-Measured (Unfactored) Infiltration Rate	Correction Factors			Factored Infiltration Rate (v)
(Ft/Hr)	CF_v	CF_t	CF_m	(Ft/Hr)
0.75	0.5	0.5	0.90	0.17

$$CF_T = CFy * CFt * CF_m$$

$$I_{factored} = Iunfactored * CFT$$

Correction factors from Stormwater Management Manual for Western Washington; August 2012; Table 3.3.1

Calculation #3: Soil Storage and Net Runoff

Gross Rain (P_g) (In)	Storage (In)	Net Runoff Depth Q_{in}		Net Runoff Volume (Ft^3)	91% of Net Runoff Volume (Ft^3)
		(In)	(Ft)		
8.0	Assume Zero	8.00	0.67	2,450,466	2,229,924

Calculation #4: Infiltration Areas and Duration *(Requirement: Infiltrate 91% of Net Runoff in 48 hours)*

Infiltration Areas	Infiltration Flow Rate Requirement (Ft^3/Hr)	Linear Factored Rate (v) (Ft/Hr)	Required Infiltratin Pond Size	
			Ft^2	Acres
Infiltraton Pond	46,457	0.17	275,299	6.32

$$Q = Av$$

APPENDIX E

File Original and First Copy with Department of Ecology
Second Copy - Owner's Copy
Third Copy - Driller's copy

WATER WELL REPORT
STATE OF WASHINGTON

Start Card No. W 096627
Unique WELL I.D. # AEH 834
Water Right Permit No.

(1) OWNER: Name Lloyd Dunn Address 3221 N.E. 158th Ct., Vancouver, WA 98682

(2) LOCATION OF WELL: County Clark - NE 1/4 SW 1/4 Sec 10 T. 1N N.,R 4E W.M.

(2a) STREET ADDRESS OF WELL (or nearest address) Approx. 35933 Sunset View Rd.

(3) PROPOSED USE: [X] Domestic [ ] Industrial [ ] Municipal [ ] Irrigation [ ] DeWater [ ] Test Well [ ] Other

(4) TYPE OF WORK: Owner's number of well (if more than one)
Abandoned [ ] New Well [X] Method: Dug [ ] Bored [ ]
Deepened [ ] Cable [ ] Driven [ ]
Reconditioned [ ] Rotary [X] Jetted [ ]

(5) DIMENSIONS: Diameter of well 6 inches.
Drilled 327 feet. Depth of completed well 327 ft.

(6) CONSTRUCTION DETAILS:
Casing Installed: 6 " Diam. from +.5 ft. to 315 ft.
Welded [X] 4.5 " Diam. from 307 ft. to 327 ft.
Liner installed [X]
Threaded [ ] " Diam. from ft. to ft.

Perforations: Yes [X] No [ ]
Type of perforator used Drill
SIZE of perforations .250 in. by in.
40 perforations from 317 ft. to 327 ft.
perforations from ft. to ft.
perforations from ft. to ft.

Screens: Yes [ ] No [X]
Manufacturer's Name
Type Model No.
Diam. Slot size from ft. to ft.
Diam. Slot size from ft. to ft.

Gravel packed: Yes [ ] No [X] Size of gravel
Gravel placed from ft. to ft.

Surface seal: Yes [X] No [ ] To what depth? 18 ft.
Material used in seal Bentonite,3/8 HolePlug
Did any strata contain unusable water? Yes [ ] No [X]
Type of water? Depth of strata
Method of sealing strata off

(7) PUMP: Manufacturer's Name
Type: H.P.

(8) WATER LEVELS: Land-surface elevation above mean sea level ft.
Static level 186 ft. below top of well Date 3/17/99
Artesian pressure lbs. per square inch Date
Artesian water is controlled by (Cap, valve, etc)

(9) WELL TESTS: Drawdown is amount water level is lowered below static level
Was a pump test made? Yes [ ] No [X] If yes, by whom?
Yield: gal./min. with ft. drawdown after hrs.

Recovery data (time taken as zero when pump turned off) (water level measured from well top to water level)

Time	Water Level	Time	Water Level	Time	Water Level

Date of test
Bailer test gal./min. with ft. drawdown after hrs.
Airtest 25 gal./min. with stem set at 314 ft. for 1 hrs.
Artesian flow g.p.m. Date 3/17/99
Temperature of water Was a chemical analyses made? Yes [ ] No [X]

(10) WELL LOG or ABANDONMENT PROCEDURE DESCRIPTION:
Formation: Describe by color, character, size of material and structure, and show thickness of aquifers and the kind and nature of the material in each stratum penetrated, with at least one entry for each change of information

MATERIAL	FROM	TO
Sandy soil and gravel	0	1
See next line	1	33
Gravel,med,sand,fine,brown,occ. cobble		
Fine brown sand and silt	33	41
Gravel,med	41	62
Sand,fine,very silty,Dk. brown	62	68
Sand,fine,brown	68	75
Gravel,med+fine brown sand	75	111
Sand,fine,brown	111	116
Gravel,med+fine brown sand	116	133
See next line	133	183
Sand,fine,brown w/occ layer med. gravel		
Gravel,cem.,clean,dry	183	211
Gravel,cem.,sandy,little water	211	221
Gravel,cem.,black,hard,dry	221	325
Gravel,cem.,black,water	325	327

RECEIVED
MAY 13 1999
DEPARTMENT OF ECOLOGY
WELL DRILLING UNIT

Work Started 3/11/99 , 19. Completed 3/17/99 , 19

WELL CONSTRUCTOR CERTIFICATION:
I constructed and/or accept responsibility for construction of this well, and its compliance with all Washington well construction standards. Materials used and the information reported above are true to my best knowledge and belief.

NAME Zent Drilling, Inc.
(PERSON, FIRM, OR CORPORATION) (TYPE OR PRINT)
Address 7310 St. Johns Road, Vancouver, WA 98665
(Signed) (WELL DRILLER) License No. 2385 2491
Contractor's Registration No. ZENTDI*027BF Date 3-22 , 19 99

(USE ADDITIONAL SHEETS IF NECESSARY)

Ecology is an Equal Opportunity and Affirmative Action employer. For special accommodation needs, contact the Water Resources Program at (360) 407-6600. The TDD number is (360) 407-6006.

File Original and First Copy with Department of Ecology
Second Copy — Owner's Copy
Third Copy — Driller's Copy

WATER WELL REPORT

STATE OF WASHINGTON

Start Card No. W096452

UNIQUE WELL I.D. # AEA265

Water Right Permit No. _____

C/O Del-West Const.

(1) **OWNER:** Name Danny & Kathy Gaudren Address 105 W. Main St. Battle Ground, Wa. 98604

(2) **LOCATION OF WELL:** County Clark - NW 1/4 SE 1/4 Sec 10 T. 1N N. R. 4E W.M.

(2a) **STREET ADDRESS OF WELL** (or nearest address) Wooding Rd. 36401 SE Wooding Rd. Washougal, Wa.

(3) **PROPOSED USE:** [X] Domestic [ ] Industrial [ ] Municipal [ ] Irrigation [ ] Test Well [ ] Other [ ] DeWater

(4) **TYPE OF WORK:** Owner's number of well (If more than one) _____

Abandoned [ ] New well [X] Method: Dug [ ] Bored [ ] Deepened [ ] Cable [ ] Driven [ ] Reconditioned [ ] Rotary [X] Jetted [ ]

(5) **DIMENSIONS:** Diameter of well 6" inches. Drilled 250 feet. Depth of completed well 250 ft.

(6) **CONSTRUCTION DETAILS:**

Casing Installed: 6" Diam. from +6" ft. to 237'2" ft.
Welded [X]
Liner Installed [ ] _____" Diam. from _____ ft. to _____ ft.
Threaded [ ] _____" Diam. from _____ ft. to _____ ft.

Perforations: Yes [ ] No [X]
Type of perforator used _____
SIZE of perforations _____ in. by _____ in.
_____ perforations from _____ ft. to _____ ft.
_____ perforations from _____ ft. to _____ ft.
_____ perforations from _____ ft. to _____ ft.

Screens: Yes [X] No [ ]
Manufacturer's Name _____
Type PVC Model No. _____
Diam. 4" Slot size .040 from 230 ft. to 250 ft.
Diam. _____ Slot size _____ from _____ ft. to _____ ft.

Gravel packed: Yes [X] No [ ] Size of gravel _____
Gravel placed from 231 ft. to 250 ft.

Surface seal: Yes [X] No [ ] To what depth? 19" ft.
Material used in seal 3/4" Hole plug
Did any strata contain unusable water? Yes [ ] No [X]
Type of water? _____ Depth of strata _____
Method of sealing strata off _____

(7) **PUMP:** Manufacturer's Name _____
Type: _____ H.P. _____

(8) **WATER LEVELS:** Land-surface elevation above mean sea level _____ ft.
Static level 193 ft. below top of well Date 2-10-98
Artesian pressure _____ lbs. per square inch Date _____
Artesian water is controlled by _____ (Cap, valve, etc.)

(9) **WELL TESTS:** Drawdown is amount water level is lowered below static level
Was a pump test made? Yes [ ] No [X] If yes, by whom? _____
Yield: _____ gal./min. with _____ ft. drawdown after _____ hrs.
" " " "
" " " "

Recovery data (time taken as zero when pump turned off) (water level measured from well top to water level)

Time	Water Level	Time	Water Level	Time	Water Level

Date of test _____
Bailer test 10 gal./min. with 12 ft. drawdown after 1 hrs.
Airtest 15 gal./min. with stem set at 250 ft. for ½ hrs.
Artesian flow _____ g.p.m. Date _____
Temperature of water _____ Was a chemical analysis made? Yes [X] No [ ]

(10) **WELL LOG or ABANDONMENT PROCEDURE DESCRIPTION**

Formation: Describe by color, character, size of material and structure, and show thickness of aquifers and the kind and nature of the material in each stratum penetrated, with at least one entry for each change of information.

MATERIAL	FROM	TO
Top soil	0	1
Cemented gravel clay and boulders	1	40
Brown silt and gravel	40	80
Cemented gravel loose layers of sand and gravel	80	220
Cemented gravel and water	220	250
Hardness 4		
Iron 1.2		
PH 7.7		

RECEIVED
'98 MAR -2 AM 11:35
WASH. DEPT. OF ECOLOGY
S.W. REGIONAL OFFICE

Work Started 2-9-98 19. Completed 2-10-98 19

WELL CONSTRUCTOR CERTIFICATION:

I constructed and/or accept responsibility for construction of this well, and its compliance with all Washington well construction standards. Materials used and the information reported above are true to my best knowledge and belief.

NAME Hansen Drilling Co., Inc. (PERSON, FIRM, OR CORPORATION) (TYPE OR PRINT)

Address 6711 NE 58th Ave. Vancouver, Wa. 98661

(Signed) Mark Hansen (WELL DRILLER) License No. 2296

Contractor's Registration No. HANSED*377NT Date 2-11-98 19

(USE ADDITIONAL SHEETS IF NECESSARY)

File Original and First Copy with Department of Ecology
Second Copy — Owner's Copy
Third Copy — Driller's Copy

WATER WELL REPORT

STATE OF WASHINGTON

Start Card No. W 055384

UNIQUE WELL I.D. # AAI 770

Water Right Permit No. _____

(1) **OWNER:** Name Wayne Ritter Address 35604 SE Evergreen Way Washougal, Wa 98671

(2) **LOCATION OF WELL:** County Clark - SW 1/4 NW 1/4 Sec 15 T. 1N N., R 4E W.M.

(2a) **STREET ADDRESS OF WELL** (or nearest address) Same

(3) **PROPOSED USE:** [XX] Domestic [ ] Industrial [ ] Municipal [ ] Irrigation [ ] Test Well [ ] Other [ ] DeWater

(4) **TYPE OF WORK:** Owner's number of well (if more than one) _____

Abandoned [ ] New well [XX] Method: Dug [ ] Bored [ ] Deepened [ ] Cable [ ] Driven [ ] Reconditioned [ ] Rotary [XX] Jetted [ ]

(5) **DIMENSIONS:** Diameter of well 6 inches. Drilled 78 feet. Depth of completed well 78 ft.

(6) **CONSTRUCTION DETAILS:**

Casing installed: 6 " Diam. from + 2'8" ft. to 78 ft.
Welded [XX] _____ " Diam. from _____ ft. to _____ ft.
Liner installed [ ]
Threaded [ ] _____ " Diam. from _____ ft. to _____ ft.

Perforations: Yes [ ] No [XX]
Type of perforator used _____
SIZE of perforations _____ in. by _____ in.
_____ perforations from _____ ft. to _____ ft.
_____ perforations from _____ ft. to _____ ft.
_____ perforations from _____ ft. to _____ ft.

Screens: Yes [ ] No [XX]
Manufacturer's Name _____
Type _____ Model No. _____
Diam. ____ Slot size _____ from _____ ft. to _____ ft.
Diam. ____ Slot size _____ from _____ ft. to _____ ft.

Gravel packed: Yes [ ] No [XX] Size of gravel _____
Gravel placed from _____ ft. to _____ ft.

Surface seal: Yes [XX] No [ ] To what depth? 18 ft.
Material used in seal Bentonite & Hole plug
Did any strata contain unusable water? Yes [ ] No [XX]
Type of water? _____ Depth of strata _____
Method of sealing strata off _____

(7) **PUMP:** Manufacturer's Name _____
Type: _____ H.P. _____

(8) **WATER LEVELS:** Land-surface elevation above mean sea level _____ ft.
Static level 35 ft. below top of well Date 10-5-94
Artesian pressure _____ lbs. per square inch Date _____
Artesian water is controlled by _____ (Cap, valve, etc.)

(9) **WELL TESTS:** Drawdown is amount water level is lowered below static level
Was a pump test made? Yes [ ] No [XX] If yes, by whom? _____
Yield: _____ gal./min. with _____ ft. drawdown after _____ hrs.

" " " "
" " " "

Recovery data (time taken as zero when pump turned off) (water level measured from well top to water level)

Time	Water Level	Time	Water Level	Time	Water Level

Date of test _____
Bailer test 15 gal./min. with 23 ft. drawdown after 1 hrs.
Airtest 15 gal./min. with stem set at 78 ft. for 1 hrs.
Artesian flow _____ g.p.m. Date _____
Temperature of water _____ Was a chemical analysis made? Yes [XX] No [ ]

(10) **WELL LOG or ABANDONMENT PROCEDURE DESCRIPTION**

Formation: Describe by color, character, size of material and structure, and show thickness of aquifers and the kind and nature of the material in each stratum penetrated, with at least one entry for each change of information.

MATERIAL	FROM	TO
Top soil	0	3
Clay w/boulders	3	6
Cemented gravel w/boulders	6	18
Boulders & loose gravel	18	55
Loose & cemented layers of gravel & sand w/water	55	78
Hardness: 4		
Iron 1.5		
PH 7.5		

RECEIVED '94 NOV 30 P3:21 WA. DEPT. OF ECOLOGY SW REGIONAL OFFICE

Work Started 10-5-94 19. Completed 10-5-94 19

WELL CONSTRUCTOR CERTIFICATION:

I constructed and/or accept responsibility for construction of this well, and its compliance with all Washington well construction standards. Materials used and the information reported above are true to my best knowledge and belief.

NAME Hansen Drilling Co. Inc. (PERSON, FIRM, OR CORPORATION) (TYPE OR PRINT)

Address 6711 NE. 58th Ave. Vancouver, Wa. 98661

(Signed) Lewis Tisdale (WELL DRILLER) License No. 1921

Contractor's Registration No. HANSED*377NT Date Oct. 6, 1994

(USE ADDITIONAL SHEETS IF NECESSARY)

File: Orig. & First Copy - Dept of Ecology
Second Copy - Owner; Third Copy - Driller

WATER WELL REPORT
State of Washington

Start Card No. W061269
Water Right Permit No. Uniq ACA 708
Page 1 of 1

(1) OWNER: Name Earl Palmer Address 36206 SE Evergreen Blvd Washougal WA 98671
(2) LOCATION OF WELL: County Clark SE 1/4 NW 1/4 Sec 15 T 1 N R 4 EM
(2a) STREET ADDRESS OF WELL (or nearest address) 36206 SE Evergreen Blvd Washougal WA 98671

(3) PROPOSED USE: DOMESTIC Owner Well ID 1
(4) Type of work: NEW WELL
Method: ROTARY

(5) DIMENSIONS: Diameter of well 6 inches.
Drilled 101 feet. Depth of completed well 94 ft.

(6) CONSTRUCTION DETAILS:
Casing instld: 6 " Diam. from 0 ft. to 77 ft.
Welded X PVC 4 " Diam. from 70 ft. to 94 ft.
Liner _ _____" Diam. from ____ ft. to ____ ft.
Threaded _

Perforations: Yes X No _
Type of perforator used DRILL
Size of perforations 1/2 in. by Holes in.
88 perforations from 84 ft. to 94 in.
_____ perforations from _____ ft. to _____ in.
_____ perforations from _____ ft. to _____ in.

Screens: Yes _ No X
Manufacturer's Name _____
Type _____ Model No _____
Diam _____ Slot size _____ from _____ ft. to _____ ft.
Diam _____ Slot size _____ from _____ ft. to _____ ft.

Gravel packed: Yes _ No X Size of gravel _____
Gravel placed from _____ ft. to _____ ft.

Surface seal: Yes X No _ To what depth? 18 ft.
Material used in seal BENTONITE
Did any strata contain unusable water? Yes _ No X
Type of water? _____ Depth of strata _____
Method of sealing strata off _____

(7) PUMP: Manufacturer's Name _____
Type _____ H.P. _____

(8) WATER LEVELS: Surface elev above mean sea level _____ ft.
Static level 50 ft. below top of well Date 07/31/95
Artesian pressure _____ lbs. per sq. in. Date
Artesian pressure is controlled by _____

(9) WELL TESTS: Pump test made? ___ By whom? _____
Yield _____ gal./min. with ___ ft. drawdown after ___ hrs
Yield _____ gal./min. with ___ ft. drawdown after ___ hrs
Yield _____ gal./min. with ___ ft. drawdown after ___ hrs
Recovery data:

Time	Wtr. Lvl.	Time	Wtr. Lvl.	Time	Wtr. Lvl.

Date of test
Bailer test _____ gal/min with ___ ft. drawdown after ___ hr
Airtest 18 gal/min with stem set at 90 ft. for 1 hrs
Artesian flow _____ gal/min Date
Temperature of water _____ Was chemical analysis made? YES

(10) WELL LOG or ABANDONMENT PROCEDURE DESCRIPTION

Material	From	To
Topsoil and subsoil	0	4
Clay, brown, sandy	4	10
Sand, brown	10	14
Sand, brown, with trace of water	14	18
Gravel and sand, with trace of water	18	30
Sand, brown, wet	30	40
Gravel, black and brown, cemented	40	48
Gravel, black and brown, partially cemented	48	49
Gravel, dark, tough, cemented	49	56
Gravel, dark, with dark gray sand, partially Cemented	56	59
Gravel, dark, with dark gray sand, loose	59	62
Gravel, dark, with dark gray sand, partially cemented	62	72
Gravel, dark, cemented, very tough	72	94
Gravel, dark, with dark coarse to fine sand water bearing	94	101
Water test Iron - 3 ppm Hardness - 3 gpg PH 7.5		
Shale trap at 72' with vents		

Work Started 07/27/95 Completed 07/31/95

WELL CONSTRUCTOR CERTIFICATION:
I constructed and/or accept responsibility for construction of this well, and its compliance with all Washington well construction standards. Materials used and the information reported above are true to my best knowledge and belief.
Name RITOLA WELL DRILLING INC.
Address 14214 NE 202nd Avenue Brush Prairie WA 98606
(Signed) _____ License No 1501
(Well Driller)
Contractor's Registration No. RITOLWD077RO Date 08/04/95
Based on form ECY 050 1-20 (10/87) -1329- by Speed Systems Corp.

File Original and First Copy with Department of Ecology
Second Copy - Owner's Copy
Third Copy - Driller's copy 159461

WATER WELL REPORT

STATE OF WASHINGTON

Notice of Intent W 157243
UNIQUE WELL I.D. # AHL 807
Water Right Permit No.

(1) OWNER: Name Paul and Jodi Akers Address 35570 SE Evergreen Blvd., Camas, WA

(2) LOCATION OF WELL: County Clark - NW 1/4 NW 1/4 Sec 15 T. 1 N.,R 4E W.M.

(2a) STREET ADDRESS OF WELL (or nearest address) 35570 SE Evergreen Blvd., Camas WA (up 356th Ave. N of Evergreen)

TAX PARCEL NO.

(3) PROPOSED USE: [X] Domestic [ ] Industrial [ ] Municipal [ ] Irrigation [ ] Test Well [ ] Other [ ] DeWater

(4) TYPE OF WORK: Owner's number of well (if more than one)
[X] New Well Method: [ ] Deepened [ ] Dug [ ] Bored [ ] Reconditioned [ ] Cable [ ] Driven [ ] Decommission [X] Rotary [ ] Jetted

(5) DIMENSIONS: Diameter of well 6 inches. Drilled 174 feet. Depth of completed well 173 ft.

(6) CONSTRUCTION DETAILS:
Casing Installed:
[X] Welded 6 " Diam. from +.5 ft. to 154 ft.
[X] Liner installed 4 " Diam. from 151 ft. to 173 ft.
[ ] Threaded " Diam. from ft. to ft.

Perforations: [X] Yes [ ] No
Type of perforator used Drill
SIZE of perforations .5 hole in. by in.
20 perforations from 163 ft. to 173 ft.
perforations from ft. to ft.
perforations from ft. to ft.

Screens: [ ] Yes [X] No [ ] K-Pac Location
Manufacturer's Name
Type Model No.
Diam. Slot size from ft. to ft.
Diam. Slot size from ft. to ft.

Gravel/Filter packed: [ ] Yes [X] No [ ] Size of gravel/sand
Material placed from ft. to ft.

Surface seal: [X] Yes [ ] No To what depth? 18 ft.
Material used in seal Bentonite chips
Did any strata contain unusable water? [ ] Yes [X] No
Type of water? Depth of strata
Method of sealing strata off

(7) PUMP: Manufacturer's Name
Type: H.P.

(8) WATER LEVELS: Land-surface elevation above mean sea level ft.
Static level 103 ft. below top of well Date 12/29/2002
Artesian pressure lbs. per square inch Date
Artesian water is controlled by (Cap, valve, etc)

(9) WELL TESTS: Drawdown is amount water level is lowered below static level
Was a pump test made? [ ] Yes [X] No If yes, by whom?
Yield: gal./min. with ft. drawdown after hrs.
Yield: gal./min. with ft. drawdown after hrs.
Yield: gal./min. with ft. drawdown after hrs.

Recovery data (time taken as zero when pump turned off) (water level measured from well top to water level)

Time	Water Level	Time	Water Level	Time	Water Level

Date of test
Bailer test gal./min. with ft. drawdown after hrs.
Airtest 20 gal./min. with stem set at 158 ft. for 1 hrs.
Artesian flow g.p.m. Date 12/29/2002
Temperature of water Was a chemical analyses made? [X] Yes [ ] No

(10) WELL LOG or DECOMMISSIONING PROCEDURE DESCRIPTION:
Formation: Describe by color, character, size of material and structure, and the kind and nature of the material in each stratum penetrated, with at least one entry for each change of information. Indicate all water encountered.

MATERIAL	FROM	TO
Iron 1.5, Hardness 4, ph 8		
Topsoil	0	1
Subsoil,sandy,occ rocks	1	3
Sand,some gravel,gray	3	15
Sand ang gravel,multi-colored	15	32
Sand,brown,silty	32	53
Sand,gravel,loose	53	109
Clay,gray-brown	109	115
Gravel,semi-cemented	115	120
Gravel and sand,semi-cemented	120	135
Gravel,small to med.,loose,little water	135	137
Clay,gray	137	139
Gravel,cemented,little water	139	171
Gravel,hard,possibly a boulder	171	172
Gravel and water,loose	172	174

RECEIVED
MAR 2 2 2004
Washington State Department of Ecology

Work Started 12/26/2002 , 19. Completed 12/29/2002 , 19

WELL CONSTRUCTION CERTIFICATION:
I constructed and/or accept responsibility for construction of this well, and its compliance with all Washington well construction standards. Materials used and the information reported above are true to my best knowledge and belief.

Type or Print Name Marlin Zent (Licensed Driller/Engineer) License No. 0547
Trainee Name License No.
Drilling Company Zent Drilling Inc.
(Signed) Marlin Zent (Licensed Driller/Engineer) License No.
Address 7310 St. Johns Road, Vancouver, WA 98665
Contractor's Registration No. ZENTDI027BF Date 1/9/2003 , 19

(USE ADDITIONAL SHEETS IF NECESSARY)

Ecology is an Equal Opportunity and Affirmative Action employer. For special accommodation needs, contact the Water Resources Program at (360) 407-6600. The TDD number is (360) 407-6006.

WATER WELL REPORT

Original & 1st copy – Ecology, 2nd copy – owner, 3rd copy – driller

Construction/Decommission *("x" in circle)*

- [x] Construction
- [ ] Decommission *ORIGINAL INSTALLATION Notice of Intent Number* 259317

PROPOSED USE: [x] Domestic [ ] Industrial [ ] Municipal [ ] DeWater [ ] Irrigation [ ] Test Well [ ] Other

TYPE OF WORK: Owner's number of well (if more than one)

[x] New well [ ] Reconditioned [ ] Deepened — *Method:* [ ] Dug [ ] Bored [ ] Driven [ ] Cable [x] Rotary [ ] Jetted

DIMENSIONS: Diameter of well 6 inches, drilled 136 ft.
Depth of completed well 135 ft.

CONSTRUCTION DETAILS

Casing Installed: [x] Welded 6 " Diam. from +1/2 ft. to 133 ft.
[ ] Liner installed " Diam. from ft. to ft.
[ ] Threaded " Diam. from ft. to ft.

Perforations: [ ] Yes [x] No
Type of perforator used
SIZE of perfs in. by in. and no. of perfs from ft. to ft.

Screens: [ ] Yes [x] No [ ] K-Pac Location
Manufacturer's Name
Type Model No.
Diam. Slot size from ft. to ft.
Diam. Slot size from ft. to ft.

Gravel/Filter packed: [ ] Yes [x] No [ ] Size of gravel/sand
Materials placed from ft. to ft.

Surface Seal: [x] Yes [ ] No To what depth? 20 ft.
Material used in seal
Did any strata contain unusable water? [ ] Yes [x] No
Type of water? Depth of strata
Method of sealing strata off

PUMP: Manufacturer's Name
Type: H.P.

WATER LEVELS: Land-surface elevation above mean sea level ft.
Static level 60 ft. below top of well Date 1/29/07
Artesian pressure lbs. per square inch Date
Artesian water is controlled by (cap, valve, etc.)

WELL TESTS: Drawdown is amount water level is lowered below static level
Was a pump test made? [ ] Yes [x] No If yes, by whom?
Yield: gal./min. with ft. drawdown after hrs.
Yield: gal./min. with ft. drawdown after hrs.
Yield: gal./min. with ft. drawdown after hrs.

Recovery data (time taken as zero when pump turned off) (water level measured from well top to water level)

Time	Water Level	Time	Water Level	Time	Water Level

Date of test
Bailer test gal./min. with ft. drawdown after hrs.
Airtest 10 gal./min. with stem set at 127 ft. for 1 hrs.
Artesian flow g.p.m. Date 1/26/2007
Temperature of water Was a chemical analysis made? [x] Yes [ ] No

CURRENT

Notice of Intent No. W 205749
Unique Ecology Well ID Tag No. ALL 490
Water Right Permit No.
Property Owner Name Woody and Loree Quarles
Well Street Address 35560 SE Evergreen Blvd
City Washougal County Clark
Location SW 1/4-1/4 SW 1/4 Sec 10 Twn 1N R 4 EWM or WWM [x] check one
(Lat/Long (s, t, r Still **REQUIRED**) Lat Deg Lat Min/Sec
Long Deg Long Min/Sec
Tax Parcel No.

CONSTRUCTION OR DECOMMISSION PROCEDURE

Formation: Describe by color, character, size of material and structure, and the kind and nature of the material in each stratum penetrated, with at least one entry for each change of information. (USE ADDITIONAL SHEETS IF NECESSARY.)

MATERIAL	FROM	TO
Clay, Brown, Silty, Medium	0	18
Gravel, Silt and Sand	18	48
Sandstone, Brown	48	51
Gravel, Med. to Small, Silty, Sandy	51	65
Gravel, Med. to Large, Silty, Sandy	65	70
Sand, Fine, Brown, little water	70	76
Gravel, Semi-cemented, dry	76	79
Gravel, Brown Sand, Water	79	84
Sandstone, Green	84	87
Gravel, Green, Semi-cemented	87	102
Clay, Gray-Brown	102	103
Gravel,Green, Med., lightly cemented	103	114
Gravel, Medium, loose	114	115
Gravel, Green, Med. to Large, Cemented, Water	115	125
Gravel, Green, Cemented, dry	125	130
Gravel, Black and Green, Large, Water	130	136
Iron 3, Hardness 4, ph 7.5		

APR 2 2007
Washington State
Department of Ecology

Start Date 1/25/2007 Completed Date 1/29/2007

WELL CONSTRUCTION CERTIFICATION: I constructed and/or accept responsibility for construction of this well, and its compliance with all Washington well construction standards. Materials used and the information reported above are true to my best knowledge and belief.

[x] Driller [ ] Engineer [ ] Trainee Name (Print) Mark Zent
Driller/Engineer/Trainee Signature Mark Zent
Driller or trainee License No. 1652

If TRAINEE,
Driller's Licensed No.
Driller's Signature

Drilling Company Zent Drilling Inc.
Address 7310 St. Johns Road
City, State, Zip Vancouver, WA 98665
Contractor's Registration No. ZENTDI*027BF Date 1/31/2007

File Original and First Copy with Department of Ecology
Second Copy — Owner's Copy
Third Copy — Driller's Copy

WATER WELL REPORT

STATE OF WASHINGTON

Start Card No. 044247

UNIQUE WELL I.D. # AAJ 709

Water Right Permit No.

(1) OWNER: Name Judy Zimmerly Address 22806 NW 67 Ave., Ridgefield, WA 98642

(2) LOCATION OF WELL: County Clark SE 1/4 SW 1/4 Sec. 10 T. 1 N, R 4 W.M.

(2a) STREET ADDRESS OF WELL (or nearest address) Washougal Plc

(3) PROPOSED USE: [X] Domestic [ ] Industrial [ ] Municipal [ ] Irrigation [ ] Test Well [ ] Other [ ] DeWater

(4) TYPE OF WORK: Owner's number of well (if more than one)

Abandoned [ ] New well [X] Method: Dug [ ] Bored [ ] Deepened [ ] Cable [X] Driven [X] Reconditioned [ ] Rotary [X] Jetted [ ]

(5) DIMENSIONS: Diameter of well 8 inches, Drilled 337 feet. Depth of completed well 337 ft.

(6) CONSTRUCTION DETAILS:

Casing Installed: 8" Diam. from +2 ft. to 283'2" ft.
Welded [ ]
Liner Installed [ ] Diam. from ft. to ft.
Threaded [ ] Diam. from ft. to ft.

Perforations: Yes [ ] No [X]
Type of perforator used
SIZE of perforations in. by in.
perforations from ft. to ft.
perforations from ft. to ft.
perforations from ft. to ft.

Screens: Yes [X] No [ ]
Manufacturer's Name Stainless steel
Type Model No.
Diam. 6" Slot size 60 from 284 ft. to 309 ft.
Diam. 6" Slot size 60 from 332 ft. to 337 ft.
relief 6 100 275 290

Gravel packed: Yes [X] No [ ] Size of gravel Colorado 6 x 9
Gravel placed from 0 ft. to 279 ft.

Surface seal: Yes [X] No [ ] To what depth? 18 ft.
Material used in seal Hole plug & bentonite
Did any strata contain unusable water? Yes [ ] No [X]
Type of water? Depth of strata
Method of sealing strata off

(7) PUMP: Manufacturer's Name
Type H.P.

(8) WATER LEVELS: Land-surface elevation above mean sea level ft.
Static level 169 ft. below top of well Date 5-31-94
Artesian pressure lbs. per square inch Date
Artesian water is controlled by (Cap, valve, etc.)

(9) WELL TESTS: Drawdown is amount water level is lowered below static level
Was a pump test made? Yes [ ] No [X] If yes, by whom?
Yield: gal./min. with ft. drawdown after hrs.
" " " "
" " " "

Recovery data (time taken as zero when pump turned off) (water level measured from well top to water level)

Time	Water Level	Time	Water Level	Time	Water Level

Date of test 5-30-94
Bailer test 30 gal./min. with 15 ft. drawdown after 1 hrs.
Airtest 30 gal./min. with stem set at 330 ft. for 1 hrs.
Artesian flow g.p.m. Date
Temperature of water Was a chemical analysis made? Yes [ ] No [X]

(10) WELL LOG or ABANDONMENT PROCEDURE DESCRIPTION

Formation: Describe by color, character, size of material and structure, and show thickness of aquifers and the kind and nature of the material in each stratum penetrated, with at least one entry for each change of information.

MATERIAL	FROM	TO
Cemented gravel	0	11
Brown sand, slightly cemented	11	16
Sand & gravel	16	21
Mucky sand	21	45
Cemented gravel	45	54
Sand & gravel	54	60
Cemented gravel	60	78
Silty sand & gravel	78	103
Cemented sand	103	108
Sand & gravel	108	113
Silty brown sand	113	121
Cemented sand, loose layers	121	131
Cemented gravel	131	169
Sand & gravel	169	173
Cemented sand & gravel, loose layers	173	196
Sand & gravel	196	203
Grey cemented gravel (B)	203	242
Sand & gravel	242	252
Cemented gravel, loose layers	252	337

Work Started 5-19-94 19 Completed 5-31-94 19

WELL CONSTRUCTOR CERTIFICATION:

I constructed and/or accept responsibility for construction of this well, and its compliance with all Washington well construction standards. Materials used and the information reported above are true to my best knowledge and belief.

NAME Hansen Drilling Co., Inc. (PERSON, FIRM, OR CORPORATION) (TYPE OR PRINT)

Address 6711 NE 58 Ave., Vancouver, WA 98661

(Signed) (WELL DRILLER) License No. 1342

Contractor's Registration No. HANSED*377NT Date 6-1-94 19

(USE ADDITIONAL SHEETS IF NECESSARY)

APPENDIX F

APPENDIX F

GENERAL ACCEPTANCE REQUIREMENTS FOR FILL MATERIAL

To ensure that unacceptable materials are not disposed of at the Washougal Pit fill site, the following general conditions shall be applied to all incoming fill material. Material that meets these general conditions will be further evaluated by using the General Fill Material Information Form.

1. ACCEPTABLE MATERIALS
   - Native wet or dry soil and clean, uncontaminated fill dirt, clay, silt, sand, gravel, and rock

2. UNACCEPTABLE MATERIALS
   - Asphalt or concrete grindings
   - Cold mix asphalt
   - Garbage, organics (e.g., sod, wood waste and tree stumps), demolition or construction waste, plastics, rubber or tires, and other waste materials
   - Vacuum truck content
   - Hazardous substances or contaminated materials as defined in RCW Chapter 70.105D, WAC Chapter 173-350-410 (Inert Waste Landfills)

3. MATERIALS DELIVERED DETERMINED TO BE UNACCEPTABLE
   The Washougal Pit operator/owner reserves the right to reject any material delivered. The material may be rejected outright based on lack of information, observations made, or testing performed by mine personnel. All costs associated with rejected loads shall be paid by the importing party. If contamination is suspected with a load that has been dumped, mine personnel may either direct the transporter to remove the material or require sampling and laboratory testing. The testing is based on field observations (e.g., odor, staining) and any other information that may be available regarding the source of the soil. Testing may include, but not be limited to, TPH as gasoline, diesel, and oil. As appropriate, soil may also be subjected to testing for metals and VOCs such as BTEX. If laboratory testing indicates that the material is unacceptable, the importer shall be directed to return to the site and retrieve the material.

APPENDIX G

APPENDIX G

GENERAL FILL MATERIAL INFORMATION FORM

Material Owner

Name:	
Address:	
Contact:	
Phone:	
Title:	

Soil Removal Contractor

Company Name:	
Company Address:	
Contact:	
Phone:	
Driver's License #:	

Site Information

Site Address:	
Description:	
Residential	
Commercial/ Industrial	
Rural	
Roadway	
Other	

ACRONYMS AND ABBREVIATIONS

ACRONYMS AND ABBREVIATIONS

BGS	below ground surface
BTEX	benzene, toluene, ethylbenzene, and xylenes
DNR	Washington State Department of Natural Resources
MSL	mean sea level
MTCA	Model Toxics Control Act
RCW	Revised Code of Washington
SEPA	Washington State Environmental Policy Act
TPH	total petroleum hydrocarbon
USDA	U.S. Department of Agriculture
VOC	volatile organic compound
WAC	Washington Administrative Code