Ueland Tree Farm
Mineral Resources Development
Access Feasibility Analysis

May 22, 2009

Prepared for

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UELAND TREE FARM
MINERAL RESOURCES DEVELOPMENT
ACCESS FEASIBILITY ANALYSIS

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I. INTRODUCTION

The primary purpose of this report is to evaluate the feasibility of a single access point for the Ueland Tree Farm (UTF) Mineral Resources Development. In the Environmental Impact Statement (EIS) submitted to Kitsap County for this project, the Northlake Way/Lebers Lane NW intersection was analyzed by Parametrix in their report, "Traffic Study – Ueland Tree Farm Mineral Resource Development" dated December, 2007. This intersection and the Lebers Lane roadway were deemed to be a viable option as a single access location for the project. Through the EIS public comment period, Kitsap County received comments from the public about the access location. As a result, the County requested that a south roadway option be analyzed for viability. This report is in response to the County's request and analyzes two south access roadway alignments (Options 1 and 2) and compares them to the north access road alternative described in the project's EIS.

II. PROJECT DESCRIPTION

Ueland Tree Farm is a 1,716-acre property situated west of Kitsap Lake, approximately 5 miles south of Silverdale, and 5 miles northwest of Port Orchard. Specifically, it is located in Sections 12, 13, 24, and 25, Township 24N, Range 1W, and Sections 7, 18, 19, Township 24N, Range 1E (see Vicinity Map, Figure 1). The project proposes to develop two gravel mines and three basalt quarry areas located mainly on the northeast and southeast portions of the property.

III. SOUTH ACCESS ROAD FEASIBILITY ANALYSIS

Similar to the north access road, two south access road alternatives were analyzed using the American Association of State Highway and Transportation Officials (AASHTO) Green Book criteria in accordance with the Kitsap County Code. The potential south access road is classified as a recreational and resource recovery roadway with a design speed of 20 MPH for mountainous terrain. The at-grade railroad crossings are regulated by the Federal Railroad Administration standards which require the roadway to have less than 3 inches of grade change within 30 feet on either side of the railroad tracks.

The basis for selecting the two south roadway alternatives for analysis was as follows:

1. To provide the most direct route from existing roads on the south side of the project to UTF and the adjacent 440-acre property.
2. To avoid impacts to existing water bodies (i.e. lakes, streams, and wetlands).
3. To work with the existing topography in order to minimize grading impacts, especially within steep slope sensitive areas.
4. To make use of existing access roads where possible in order to minimize impacts to the environment.

Based on these criteria, two south road alternatives were analyzed. Other possible alignments were rejected on the basis of not meeting the above criteria. In both options, Werner Road was chosen to provide the connection from the existing roadway system to UTF and the adjacent 440-acre property. Werner Road provides the most direct connection to State Route 3 and keeps truck traffic away from large residential areas as much as possible.

The South Access Road (Option 1) alignment provides the most direct route from Werner Road to UTF and the adjacent 440-acre property while avoiding sensitive areas directly

south of Kitsap Lake. The alignment west of the railroad makes use of the existing access road which serves the BPA easement.

The South Access Road (Option 2) alignment attempts to avoid extensive grading within steep slope sensitive areas and work more with the existing topography especially along the west side of the railroad tracks. In order to accomplish this, the alignment has to cross the railroad approximately one mile south of the Option 1 crossing. When possible, the alignment utilizes existing roadways and avoids major sensitive areas such as Heinz Lake and Alexander Lake.

The following sections analyze the two south alternatives for construction feasibility as they relate to the grading of the roadways, the railroad crossing, storm drainage, sensitive area disturbance, and construction costs.

Roadway and Storm Drainage

Option 1

The South Access Road (Option 1) alignment would require purchasing eight (8) properties totaling approximately 236 acres in order to provide right-of-way access to UTF via the 440-acre adjacent site. The length of this roadway alignment from Werner Road to the south side of the adjacent 440-acre site is approximately 7,700 lineal feet (1.5 miles, see Figure 2). Within the adjacent 440-acre property, there are existing logging roads in easements that would allow trucks to access the UTF Mineral Resources Development project. The widths and grades of the logging roads would have to be adjusted to accommodate the truck traffic from the UTF project.

The roadway would require a maximum road grade of approximately 15% within steep slope areas. This would require approximately 50 to 60 feet of cut in areas near the railroad tracks. At the railroad crossing a design speed of 20 MPH would be required in order to meet the Federal Railroad Administration standards for an at grade railroad crossing and Kitsap County's standard for roadway grades and speed.

Storm drainage management for this access road would be difficult and expensive because of the steep slopes surrounding the roadway. Additional land would have to be purchased in order to accommodate the required detention and water quality facilities, disturbing more undeveloped land.

The cost of this roadway is based on three main factors: actual construction of roadway including materials and labor, property acquisition, and haul costs. Roadway construction is estimated to be $450 per lineal foot for a total cost of $3,500,000. The cost to purchase the eight (8) properties is estimated at $2,774,390 based on their assessed value. The actual value is dependent upon the market conditions and the willingness of the property owners to sell. The haul costs are directly affected by the type of road being traveled and the time that it takes to get from the work site to State Route Highway 3. The mineral resources development project would contribute 154 daily truck trips over 51 weeks per year for 50 years for a total of approximately 2.75 million truck trips over the life of the project. The cost to operate a truck including taxes and labor is approximately $2 per mile. This equates to approximately $22,550,000 hauling costs for a total haul distance from Gravel Mine A to State Route Highway 3 of 4.1 miles (2.7 miles on gravel; 1.4 miles on pavement). The overall cost of the South Access Road (Option 1) is estimated at $28,824,390.

Option 2

The South Access Road (Option 2) alignment would require purchasing six (6) properties totaling approximately 175 acres and permission to pass through the Bremerton Watershed in order to provide right-of-way access to UTF via the 440-acre adjacent site. The length of this roadway alternative from Werner Road to the south side of the 440-acre site totals approximately 13,200 lineal feet (2.5 miles, see Figure 2). As mentioned in Option 1, within the adjacent 440-acre property, there are existing logging roads in easements that would allow trucks to pass to the UTF Mineral Resources Development project. The widths and grades of the logging roads would have to be adjusted to accommodate the truck traffic from the UTF project.

The roadway would require a maximum road grade of approximately 15% within the steep slope areas. This would require approximately five to ten feet of cut in some areas of the roadway. At the railroad crossing a design speed of 20 MPH would be required in order to meet the Federal Railroad Administration standards for an at grade railroad crossing and Kitsap County's standard for roadway grades and speed.

Similar to Option 1, storm drainage management for this access road would be difficult and expensive due to the steep slopes surrounding the roadway. Additional land would have to be purchased in order to accommodate the required detention and water quality facilities, disturbing more undeveloped land.

The cost of this roadway is based on three main factors: actual construction of the roadway (including materials and labor), property acquisition, and Washington State regulated haul costs. Roadway construction is estimated to be $450 per lineal foot for a total cost of $5,900,000. The cost to purchase the six (6) properties is estimated at $2,367,780 based on their assessed value. The actual value is dependent upon market conditions and the willingness of the property owners to sell. The haul costs are directly affected by the type of road being traveled and the time that it takes to get from the work site to State Route Highway 3. The mineral resources development project would contribute 154 daily truck trips over 51 weeks per year for 50 years for a total of approximately 2.75 million truck trips over the life of the project. The cost to operate a truck including taxes and labor is approximately $2 per mile. This equates to approximately $30,800,000 hauling costs for a total haul distance from Gravel Mine A to State Route Highway 3 of 5.6 miles (4.2 miles on gravel; 1.4 miles on pavement). The overall cost of the South Access Road (Option 2) is estimated at $39,067,780.

Sensitive Areas

The south portions of the UTF property and the properties east of the railroad have extensive sensitive areas such as streams, wetlands, watershed corridors, and steep slopes. The roadway alternatives for access from the south have no option but to disturb these sensitive areas. Also, the majority of the land proposed for these alternatives is currently undeveloped, so impacts on wildlife would have to be considered. This is especially true for Option 2 due to the alignment which would need to avoid disturbing Heinz Lake, Alexander Lake, and various steep slopes. Figure 2 shows the locations of the sensitive areas in relation to the proposed roadway alignments.

The Option 1 road access alternative takes the most direct route from Werner Road to the 440-acre property while avoiding potential wetland sensitive areas. It does, however,

require considerable grading measures in order to provide an access road at the railroad crossing and across the steep slope area to the 440-acre property. In addition to the difficult grading required for this road, this alignment also disturbs a large amount of undeveloped area.

The Option 2 road access alignment attempts to avoid the steep slopes located near the railroad tracks. Unfortunately the closest location where the steep slopes veer away from the railroad tracks occurs approximately a mile south of the Option 1 railroad crossing. This would require the roadway to pass through the Bremerton Watershed, cross multiple steep slope areas, and a stream located on the project site. Similar to Option 1, this alignment also disturbs a large amount of undeveloped area.

Summary

Of the two south access road alternatives, the most feasible is Option 1. It has less lineal footage of roadway, less impact to sensitive areas, less impact to undeveloped land, and a lower cost to develop.

IV. NORTH ACCESS ROAD FEASIBILITY REVIEW

The north access road, as analyzed by Parametrix and shown in Figure 3, can utilize the existing Lebers Lane roadway for access to the project. The intersection of Lebers Lane and Northlake Way would require some improvements to bring the current configuration up to County standards for sight distance. As noted by Parametrix, the north access roadway alignment adjacent and east of the railroad would require 20 MPH design speed (a deviation from the County standards), in order to accommodate the existing grading constraints, existing properties and driveways, and an existing railroad grade. In order to increase public safety, Lebers Lane appears to warrant slower speeds due to its proximity to the railroad and Northlake Way intersection in order to increase public safety. For both the north and south access alternatives, the additional traffic that is anticipated to leave the project is approximately 186 daily trips and 35 PM Peak hour trips. According to Kitsap County standards, these volumes do not warrant additional offsite roadway improvements because of the minimal effect the project would have on the overall traffic corridor.

All improvements for the north access road would occur either in public right-of-way or within property owned by UTF. In addition, there are no reported sensitive areas other than the steep slopes located within the north gravel mine area These slopes would presumably be reduced once the gravel mine operation begins.

The cost of the north roadway is based on three main factors, actual construction of roadway including materials and labor, property acquisition, and Washington State regulated haul costs. Roadway construction is estimated to be approximately $1,600,000. The cost to purchase property is zero because all work would be performed on property owned by UTF. The haul costs are directly affected by the type of road being traveled and the time that it takes to get from the work site to State Route Highway 3. The mineral resources development project would contribute 154 daily truck trips over 51 weeks per year for 50 years for a total of approximately 2.75 million truck trips over the life of the project. The cost to operate a truck including taxes and labor is approximately $2 per mile. This equates to approximately $18,700,000 hauling costs for a total haul distance from Basalt Quarry C to State Route Highway 3 of 3.40 miles (1.65 miles on gravel; 1.75 miles on pavement). The cost of the overall roadway is estimated at $20,300,000.

V. NORTH ACCESS VERSUS SOUTH ACCESS

The north access road alignment, as noted above, is located outside of any known sensitive areas and all construction would be located in either public right-of-way or property owned by UTF.

The south access road alternatives, on the other hand, would have a considerable effect on the surrounding properties and environment. The South Access Road Alternatives, Option 1 and Option 2, require the construction of 5,500 feet and 7,500 feet of roadway on properties that are not owned by the UTF and are undeveloped forested land. In addition, the roadway construction within these properties and UTF would require extensive grading in sensitive areas and on steep slopes. Construction would also require logging roads within the adjacent 440-acre property to be widened and graded in order to accommodate the truck traffic for the project.

The following tables summarize the north and south roadway alternatives based on impacts to sensitive areas and associated costs.

Table 1: Sensitive Area Impact of Each Access Alternative:

Roadway Alternative	Sensitive Area Impact			
	Wetland or Lakes	Steep Slopes	Undeveloped Land	Bremerton Watershed
North Access Road	-	-	-	-
South Access Road (Option 1)	X	X	X	-
South Access Road (Option 2)	X	X	X	X

Table 2: Estimated Cost Impact of Each Access Alternative:

Roadway Alternative	Travel Miles*	Related Costs			
		Construction	Property Acquisition	Hauling	Overall
North Access Road	3.4	$1,600,000	$ -	$18,700,000	$ 20,300,000
South Access Road (Option 1)	4.1	$3,500,000	$ 2,774,390	$22,550,000	$ 28,824,390
South Access Road (Option 2)	5.6	$5,900,000	$ 2,367,780	$30,800,000	$ 39,067,780

*Travel Miles are based on the farthest distance within the UTF Mineral Resources Development Project to State Route 3.

It is ESM's opinion that the overall environmental impacts and cost of the south access road alternatives are far greater than that of the north access road. In addition, the north access road appears to benefit the adjacent properties, increasing the sight distance up to current Kitsap County Standards. The south access road would also adversely impact the overall environment to a larger extent than the north access road.

Disclaimer: This GIS data was obtained from an outside source and is intended for reference purposes only.
ESM makes no guarantee of its accuracy.

NORTH ACCESS ROAD

UTF PROPERTY

KITSAP LAKE

UTF PROPERTY

SOUTH ACCESS ROAD ALTERNATIVES

N

SCALE: 1" = 1500'

VICINITY MAP
FIGURE 1

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UTF PROPERTY BOUNDARY (TYP)

440-ACRE PROPERTY

STREAM TYPE Ns (INTERMITTENT) W/ 50' BUFFERS

UTF PROPERTY BOUNDARY (TYP)

KITSAP LAKE

KITSAP LAKE ROAD NW

PRICE ROAD NW

WERNER ROAD

RAILROAD

ROAD CONNECTION REQUIRED BY BOTH OPTIONS

SOUTH ROAD OPTION #1

SOUTH ROAD OPTION #2

APPROXIMATE STEEP SLOPE AREA (TYP)

HEINZ LAKE

ALEXANDER LAKE

125' BPA EASEMENT

N

SCALE: 1" = 800'

LEGEND

- UELAND TREE FARM PROPERTY
- ROAD CONNECTION FOR BOTH ALTERNATIVES
- SOUTH ROAD OPTION #1
- SOUTH ROAD OPTION #2
- EXISTING STREAM
- EXISTING LOGGING ROAD
- WETLANDS (BASED ON GIS INFORMATION)
- STEEP SLOPE AREA
- WATER BODY / LAKE
- BREMERTON WATERSHED

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SOUTH ACCESS ROAD ALTERNATIVES

FIGURE 2

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UTF PROPERTY BOUNDARY (TYP)

125' BPA EASEMENT

NORTH ACCESS ROAD

440-ACRE PROPERTY

RAILROAD

NW GROVER LN

NW LEBER ROAD

NORTHLAKE WAY NW

CHICO WAY NW

NORTHLAKE WAY NW

KITSAP WAY

WEST KITSAP LAKE RD NW

RAILROAD

KITSAP LAKE

N

SCALE: 1" = 400'

LEGEND

- UELAND TREE FARM PROPERTY
- NORTH ACCESS ROAD
- EXISTING LOGGING ROAD
- WETLANDS (BASED ON GIS INFORMATION)
- STEEP SLOPE AREA
- WATER BODY / LAKE

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NORTH ACCESS ROAD

FIGURE 3