



WASHINGTON STATE DEPT OF
**NATURAL
RESOURCES**

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

NAME OF COMPANY OR INDIVIDUAL APPLICANT(S) Same as name of the exploration permit holder. (Type or print in ink.) MTA Holdings, L.L.C.	TOTAL ACREAGE AND DEPTH OF PERMIT AREA (Include all acreage to be disturbed by mining, setbacks, and buffers, and associated activities during the life of the mine.) (See SM-8A.) Total area permitted will be <u>86</u> acres Maximum vertical depth below pre-mining topographic grade is <u>95</u> feet Maximum depth of excavated mine floor is <u>1,900</u> feet relative to mean sea level																																		
	COUNTY <u>Kittitas</u> No attachments will be accepted. Legal description of permit area:																																		
MAILING ADDRESS 910 Anderson Road Ellensburg, WA 98926 Telephone 509-866-0508	<table border="1"> <thead> <tr> <th>1/4</th> <th>1/4</th> <th>Section</th> <th>Township</th> <th>Range</th> </tr> </thead> <tbody> <tr> <td>NW</td> <td>SW</td> <td>22</td> <td>17N</td> <td>18E</td> </tr> <tr> <td>NE</td> <td>SW</td> <td>22</td> <td>17N</td> <td>18E</td> </tr> <tr> <td>SW</td> <td>SW</td> <td>22</td> <td>17N</td> <td>18E</td> </tr> <tr> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> </tbody> </table>					1/4	1/4	Section	Township	Range	NW	SW	22	17N	18E	NE	SW	22	17N	18E	SW	SW	22	17N	18E										
	1/4	1/4	Section	Township	Range																														
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	NE	SW	22	17N	18E																														
	SW	SW	22	17N	18E																														

Proposed subsequent use of site upon completion of reclamation

Residential

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Signature of company representative or individual applicant(s) 	Name and title of company representative (please print) Alan Fite Facilities Mgr	Date signed 12/15/23
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TO BE COMPLETED BY THE APPROPRIATE COUNTY OR MUNICIPALITY:

Please answer the following questions 'yes' or 'no'.

- Has the proposed surface mine been approved under local zoning and land-use regulations?
- Is the proposed subsequent use of the land after reclamation consistent with the local land-use plan/designation?

Yes	No
<input checked="" type="checkbox"/>	<input type="checkbox"/>
<input checked="" type="checkbox"/>	<input type="checkbox"/>

When complete, return this form to the Department of Natural Resources.

Name of planning director or administrative official (please print) Jamey Ayling	Address 411 N Ruby St. Suite 2 Ellensburg, WA 98926
Signature 	
Title (please print) Planning manager	
Telephone 509 962-7065	Date 12-5-23
FOR DEPARTMENT USE ONLY:	
DNR Reclamation Permit No. 70-013297	



**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) MTA Holdings, L.L.C.			
2. MAILING ADDRESS 910 Anderson Road Ellensburg, WA 98926			
3. Telephone (509) 866-0508		Email Alan.Fife@anderson-hay.com	
4. NAME OF MINE Umptanum Road Quarry			
5. Street address and milepost of surface mine 5243 Umptanum Road Ellensburg, WA 98926			
6. Distance (miles) 3	7. Direction from South	8. Nearest community Ellensburg	
9. COUNTY Kittitas No attachments will be accepted. Legal Description of permit area:			
1/4 SW	Section 22	Township 17N	Range 18E
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? <input type="checkbox"/> yes <input checked="" type="checkbox"/> 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? <input type="checkbox"/> yes <input type="checkbox"/> no Have you ever had a surface mine operating or reclamation permit revoked? <input type="checkbox"/> yes <input checked="" type="checkbox"/> no Have you ever had a reclamation security forfeited? <input type="checkbox"/> yes <input checked="" type="checkbox"/> no If you answered yes to either of the above, give permit number(s):			

12. TOTAL ACREAGE OF PERMIT AREA APPLIED FOR: (Include all acreage to be permitted. See Form SM-6.) <u>86</u> 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: <u>~35</u> acres. Area to be disturbed in next 36 months: <u>~15</u> acres.	
14. Maximum vertical depth (thickness) mined below pre-mining topographic grade will be <u>95</u> feet.	
15. Lowest elevation of excavated mine will be <u>1,900</u> feet relative to mean sea level. Highest elevation of excavated mine will be <u>2,180</u> feet relative to mean sea level.	
16. Type of proposed or existing mine: <input type="checkbox"/> pit <input checked="" type="checkbox"/> quarry	
17. Material(s) to be mined: <input type="checkbox"/> sand and gravel <input checked="" type="checkbox"/> rock or stone <input type="checkbox"/> clay <input type="checkbox"/> metal <input type="checkbox"/> limestone <input type="checkbox"/> silica <input type="checkbox"/> other _____	
18. Deposit type: <input type="checkbox"/> glacial <input type="checkbox"/> river floodplain (alluvial) <input type="checkbox"/> river channel deposits <input type="checkbox"/> talus <input checked="" type="checkbox"/> bedrock <input type="checkbox"/> lode <input type="checkbox"/> other _____	
19. Expected start date of mining: 2024 (previously through County grading permit)	20. Estimated number of years: 15-20
21. Total quantity to be mined over life of mine (estimated): 1,271,000 <input type="checkbox"/> tons or <input checked="" type="checkbox"/> cu yds	22. Estimated annual production: 60,000-80,000 <input type="checkbox"/> tons or <input checked="" type="checkbox"/> cu yds
23. Subsequent land use: <input type="checkbox"/> industrial <input type="checkbox"/> commercial <input checked="" type="checkbox"/> residential <input type="checkbox"/> agricultural <input type="checkbox"/> forestry <input type="checkbox"/> wetlands and lakes <input type="checkbox"/> other	
County or Municipality Approval for Surface Mining (Form SM-6) attached? <input checked="" type="checkbox"/> yes <input type="checkbox"/> no	
24. Reclaimed elevation of floor of mine: <u>1,900</u> feet relative to mean sea level Reclaimed elevation is shown on cross sections? <input checked="" type="checkbox"/> yes <input type="checkbox"/> no	
25. SEPA Checklist required? <input checked="" type="checkbox"/> yes <input type="checkbox"/> no	
26. Application fee for a new reclamation permit is herewith attached? <input checked="" type="checkbox"/> yes <input type="checkbox"/> no	

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22. SEGMENTAL RECLAMATION	
Permit area has been divided into segments for mining and a mining schedule has been developed? If no, explain:	<input checked="" type="checkbox"/> yes <input type="checkbox"/> no
Permit area has been divided into segments for reclamation and a reclamation schedule has been developed? If no, explain:	<input checked="" type="checkbox"/> yes <input type="checkbox"/> no
23. SITE PREPARATION	
23A. Saving Topsoil, Subsoil, and Overburden for Reclamation	
Thickness of topsoil is <u>0-0.25</u> feet Thickness of subsoil is <u>0-3</u> feet (loess) Depth to bedrock is <u>0-3</u> feet Total volume of topsoil is <u>5,000</u> cubic yards Total volume of subsoil is <u>±</u> cubic yards *possibly 5,000+ cu yd Volume of stored topsoil/subsoil is <u>1,000</u> cubic yards and will require <u>1</u> acres for storage. but unknown across site	
Storage areas are shown on maps and will be marked on the ground with permanent boundary markers? If no, explain:	<input checked="" type="checkbox"/> yes <input type="checkbox"/> no
Topsoil will be salvaged? If no, explain:	<input checked="" type="checkbox"/> yes <input type="checkbox"/> no
Topsoil and overburden will be moved to reclaim an adjacent depleted segment? If no, explain:	<input checked="" type="checkbox"/> yes <input type="checkbox"/> no
Before materials are moved, vegetation will be cleared and drainage planned for soil storage areas? If no, explain:	<input checked="" type="checkbox"/> yes <input type="checkbox"/> no
Soil storage areas will be stabilized with vegetation to prevent erosion if materials will be stored for more than one season? If no, explain:	<input checked="" type="checkbox"/> yes <input type="checkbox"/> no
23B. Permit and Disturbed Area Boundaries	
Boundary of the permit area will be marked on the ground with permanent boundary markers? Explain boundary markers: Metal T posts and wire fences	<input checked="" type="checkbox"/> yes <input type="checkbox"/> no
23C. Setbacks Screens and Buffers	
Are Screens required and are shown on maps? The reclamation setback for this site will be <u>30</u> feet wide.	<input type="checkbox"/> yes <input checked="" type="checkbox"/> no
Is a permanent, undisturbed buffer planned for this site? If no, explain: No buffer is necessary.	<input type="checkbox"/> yes <input checked="" type="checkbox"/> no
Setbacks and buffers are shown on maps and have been marked on the ground with permanent boundary markers? If no, explain:	<input checked="" type="checkbox"/> yes <input type="checkbox"/> no
23D. Buffers to Protect Streams and Flood Plains	
Will the site include a stream or flood plain? If yes, see "Additional Requirements for Mines in Flood Plains" in "Instructions for SM-8A". If no, skip to 23E.	<input type="checkbox"/> yes <input checked="" type="checkbox"/> no
A stream buffer of at least 200 feet has been marked on the ground with permanent boundary markers?	<input type="checkbox"/> yes <input type="checkbox"/> no
A buffer of at least 200 feet from the 100-year flood plain has been marked on the ground with permanent boundary markers? If no, explain:	<input type="checkbox"/> yes <input type="checkbox"/> no
Copy of Shoreline Permit from local government or the Department of Ecology is attached?	<input type="checkbox"/> yes <input type="checkbox"/> no
Hydraulic Project Approval from the Department of Fish and Wildlife is attached?	<input type="checkbox"/> yes <input type="checkbox"/> no

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23E. Conservation Buffers	
Are there any conservation buffers?	<input type="checkbox"/> yes <input checked="" type="checkbox"/> no
If no, skip to 23F	
Conservation buffers will be established for the following purpose(s): <i>(Check all that apply)</i> <input type="checkbox"/> unstable slopes <input type="checkbox"/> wildlife habitat <input type="checkbox"/> water quality <input type="checkbox"/> 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?	<input type="checkbox"/> yes <input type="checkbox"/> no
23F. Ground Water	
High water table depth is <u>~1,770</u> feet <input checked="" type="checkbox"/> relative to mean sea level, <input type="checkbox"/> below original surface, or <input type="checkbox"/> unknown. Low water table depth is <u>~1,630</u> feet <input checked="" type="checkbox"/> relative to mean sea level, <input type="checkbox"/> below original surface, or <input type="checkbox"/> unknown. Annual fluctuation of water table is from <u>unknown</u> feet on to <u>unknown</u> feet on .	
Are well logs attached?	<input checked="" type="checkbox"/> yes <input type="checkbox"/> no
The shallowest aquifer is <input type="checkbox"/> confined <input checked="" type="checkbox"/> unconfined	
The site will be mined: <input type="checkbox"/> wet <input checked="" type="checkbox"/> dry <input type="checkbox"/> both Describe mining method: Mine to grade, some blasting may be required.	
The site is in a: <input type="checkbox"/> critical aquifer recharge area <input type="checkbox"/> sole source aquifer <input type="checkbox"/> public water supply watershed <input type="checkbox"/> wellhead protection area <input type="checkbox"/> special protection area <input type="checkbox"/> designated aquifer protection area <i>If checked above, see "Additional Requirements for Mines in Hydrologically Sensitive Areas" in "Instructions for SM-8A".</i>	
Ground water study attached?	<input type="checkbox"/> yes <input checked="" type="checkbox"/> no
<i>If no, explain: Mining will be significantly above the groundwater table.</i>	
23G. Archeology	
Are archeological/cultural resource sites present?	<input type="checkbox"/> yes <input checked="" type="checkbox"/> no
If yes, describe how you will protect these resources:	
24. MINING PRACTICES TO FACILITATE RECLAMATION	
24A. Soil Replacement	
Topsoil and (or) subsoil will be restored?	<input checked="" type="checkbox"/> yes <input type="checkbox"/> no
If "no", explain:	
Subsoil will be replaced to an approximate depth of <u>0*</u> feet on the pit floor and a depth of <u>0</u> feet on slopes. (*included with topsoil) Topsoil will be replaced to an approximate depth of <u>0.5</u> feet on the pit floor and a depth of <u>0</u> feet 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?	<input checked="" type="checkbox"/> yes <input type="checkbox"/> no
If no, explain:	
Topsoil will be moved when conditions are not overly wet or dry?	<input checked="" type="checkbox"/> yes <input type="checkbox"/> no
If no, explain:	
Topsoil will be restored to promote effective revegetation and to stabilize slopes and mine floor?	<input type="checkbox"/> yes <input checked="" type="checkbox"/> no
If "no", explain: "Yes" for mine floor except over building pads for residences. "No" for slopes due to naturally short supply of topsoil and exposed rock being a natural feature of the area.	
Topsoil will be replaced with equipment that will minimize compaction, or it will be plowed, disked, or ripped following placement?	<input checked="" type="checkbox"/> yes <input type="checkbox"/> no
If no, explain:	
Topsoil will be immediately stabilized with grasses and legumes to prevent loss by erosion, slumping, or crusting?	<input checked="" type="checkbox"/> yes <input type="checkbox"/> no
If no, explain:	

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Segmental topsoil removal and replacement is shown on maps? If no, explain:	<input checked="" type="checkbox"/> yes <input type="checkbox"/> no
Topsoil will be imported? If yes, describe source. Estimated volume is _____ cubic yards.	<input type="checkbox"/> yes <input checked="" type="checkbox"/> no
Synthetic topsoil made from compost, biosolids, or other amendments will be used and (or) made on site to supplement existing topsoil?	<input type="checkbox"/> yes <input checked="" type="checkbox"/> no
Materials such as till, loess, and (or) silt are available on site that could be used to supplement topsoil for reclamation. If yes, explain: Loess is available onsite and can be used to supplement topsoil for growth medium.	<input checked="" type="checkbox"/> yes <input type="checkbox"/> no
Silt from settling ponds or a filter press will be used for reclamation?	<input type="checkbox"/> yes <input checked="" type="checkbox"/> no
Settling pond clay slurries will be pumped or hauled to other segments for reclamation? If yes, explain:	<input type="checkbox"/> yes <input checked="" type="checkbox"/> no
24B. Removal of Vegetation	
Vegetation will be removed sequentially from areas to be mined to prevent unnecessary erosion? If no, explain:	<input checked="" type="checkbox"/> yes <input type="checkbox"/> no
Small trees and other transplantable vegetation will be salvaged for use in revegetating other segments? If yes, give details. If no, explain: There are no trees to salvage.	<input type="checkbox"/> yes <input checked="" type="checkbox"/> no
Wood and other organic debris will be: <input checked="" type="checkbox"/> recycled <input type="checkbox"/> removed from site <input type="checkbox"/> chipped <input type="checkbox"/> burned <input type="checkbox"/> buried <input type="checkbox"/> used to synthesize topsoil or mulch <input type="checkbox"/> other (<i>explain</i>)	
Solid waste disposal, burning, and land use permits are attached?	<input type="checkbox"/> yes <input checked="" type="checkbox"/> no
Some coarse wood (logs, stumps) and other large debris will be salvaged for fish and wildlife habitats? If yes, give details. If no, explain: Large debris is not available at this site.	<input type="checkbox"/> yes <input checked="" type="checkbox"/> no
24C. Stormwater and Erosion control for Reclamation	
Pit floor will slope at gentle angles toward highwall, sediment retention pond, or proper drainage? If yes, give details. If no, explain: The mine floor in each segment will slope towards the highwall.	<input checked="" type="checkbox"/> yes <input type="checkbox"/> no
Revegetation, sheeting, and (or) matting will be used to protect areas susceptible to erosion? If yes, give details. If no, explain: Revegetation will be used on the floor to stabilize replaced topsoil and mitigate erosion.	<input checked="" type="checkbox"/> yes <input type="checkbox"/> no
Water control systems used during segmental reclamation will:	
Divert clean water around pit?	<input checked="" type="checkbox"/> yes <input type="checkbox"/> no
Trap sediment-laden runoff before it enters a stream?	<input checked="" type="checkbox"/> yes <input type="checkbox"/> no
Be established to prevent erosion of setbacks and neighboring properties?	<input checked="" type="checkbox"/> yes <input type="checkbox"/> no
Be removed or reclaimed?	<input checked="" type="checkbox"/> yes <input type="checkbox"/> no
If any answers are no, explain:	
Stormwater system design will be capable of carrying the peak flow of the 25-year, 24-hour precipitation event? (Data are available at the National Oceanic And Atmospheric Administration (NOAA)) If yes, are calculations attached?	<input checked="" type="checkbox"/> yes <input type="checkbox"/> no <input type="checkbox"/> yes <input checked="" type="checkbox"/> no
If yes, give details. If no, explain: The site will be developed so all storm water drains and infiltrates at the base of each highwall segment. Infiltration areas could manage an entire year's worth of rainfall and have been effective in Segment M-1 for years.	
Natural and other drainage channels will be kept free of equipment, wastes, stockpiles, and overburden? If no, explain:	<input checked="" type="checkbox"/> yes <input type="checkbox"/> no

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25. RECLAMATION TOPOGRAPHY	
25A. Final Slopes	
Final slopes will be created using the cut-and-fill method? Explain procedure to be used:	<input type="checkbox"/> yes <input checked="" type="checkbox"/> no
Slopes will be created by mining to the final slope using the cut method? Explain procedure to be used: The site will be mined to grade using ripping, blasting, and other typical mining techniques.	<input checked="" type="checkbox"/> yes <input type="checkbox"/> no
Slopes will vary in steepness? If no, explain:	<input checked="" type="checkbox"/> yes <input type="checkbox"/> no
Slopes will have a sinuous appearance in both profile and plan view? If no, explain:	<input checked="" type="checkbox"/> yes <input type="checkbox"/> no
Large rectilinear (that is, right angle, or straight, planar) areas will be eliminated? If no, explain:	<input checked="" type="checkbox"/> yes <input type="checkbox"/> no
Where reasonable, tracks of the final equipment pass will be preserved and oriented to trap moisture, soil, and seeds, and to inhibit erosion? If no, explain:	<input checked="" type="checkbox"/> yes <input type="checkbox"/> no
25B. Slope Requirements for Pits and Overburden/Waste Rock Dumps (non-saleable products)	
<i>If the mine is a quarry or in hard rock, skip to Quarry section (25C).</i>	
Slopes will vary between 2 and 3 feet horizontal to 1 foot vertical or flatter, except in limited areas where steeper slopes are necessary to create sinuous topography and control drainage? If no, explain:	<input type="checkbox"/> yes <input type="checkbox"/> no
For pits, slopes will not exceed 2 feet horizontal to 1 foot vertical except as necessary to blend with adjacent natural slopes? Give details:	<input type="checkbox"/> yes <input type="checkbox"/> no
Review "Additional Requirements for Mines with Steep or Potentially Unstable Slopes" in "Instructions for SM-8A".	
Slope stability analysis required? If yes, attach analysis.	<input type="checkbox"/> yes <input type="checkbox"/> no
25C. Slope Requirements for Quarries and Hardrock Metal Mines	
<i>If mine is a pit in unconsolidated materials covered by Section 25B, go to Section 25D</i>	
Check the appropriate box(es) <input checked="" type="checkbox"/> Slopes will not exceed 2 feet horizontal to 1 foot vertical. <input type="checkbox"/> Slopes steeper than 1 foot horizontal to 1 foot vertical are an acceptable subsequent land use as confirmed on Form SM-6. <input type="checkbox"/> Hazardous slopes or cliffs are indigenous to the immediate area and already present a potential threat to human life. Photo and maps attached to document presence of cliffs. <input type="checkbox"/> Geologic or topographic characteristics of the site preclude slopes being reclaimed at a flatter angle and are an acceptable subsequent land use as confirmed on Form SM-6.	
Review "Additional Requirements for Mines with Steep or Potentially Unstable Slopes" in "Instructions for SM-8A".	
Slope stability analysis required? If yes, attach analysis.	<input type="checkbox"/> yes <input checked="" type="checkbox"/> no
Measures will be taken to limit access to the top and bottom of hazardous slopes? Describe measures, or if no, explain: No hazardous slopes will remain after reclamation other than naturally occurring steep slopes outside the mined area.	<input type="checkbox"/> yes <input checked="" type="checkbox"/> no

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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? Blasting plan attached? If no, explain: Resource extraction is expected to be completed via excavator with ripping teeth. Blasting may be needed at deeper depths, in which case selective blasting will be used to reclaim slopes to 2H:1V.	<input type="checkbox"/> yes <input checked="" type="checkbox"/> no <input type="checkbox"/> yes <input checked="" type="checkbox"/> no
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? Blasting plan is attached? If no, explain: See previous response.	<input type="checkbox"/> yes <input checked="" type="checkbox"/> no <input type="checkbox"/> yes <input checked="" type="checkbox"/> no
Access to benches will be maintained for reclamation blasting? If no, explain: If necessary.	<input checked="" type="checkbox"/> yes <input type="checkbox"/> no
Small portions of benches will be left to provide habitat for raptors and other cliff-dwelling birds?	<input type="checkbox"/> yes <input checked="" type="checkbox"/> no
25D. Backfilling	
The site will require backfilling? If no, skip to 25E. Maximum depth of backfilling is _____ feet.	<input type="checkbox"/> yes <input checked="" type="checkbox"/> no
Backfill will be <input type="checkbox"/> onsite materials <input type="checkbox"/> imported materials <input type="checkbox"/> both Provide a written screening method that ensures importation of acceptable soil for reclamation.	<input type="checkbox"/> yes <input type="checkbox"/> no
Backfilling plan is attached? If no, explain:	<input type="checkbox"/> yes <input type="checkbox"/> no
Backfill stockpiles are shown on maps and will be marked on the ground with markers?	<input type="checkbox"/> yes <input type="checkbox"/> no
All grading/backfilling will be done with non-noxious, non-combustible, and relatively incompactible solids? If no, explain:	<input type="checkbox"/> yes <input type="checkbox"/> no
Backfill will require compaction? If no, explain:	<input type="checkbox"/> yes <input type="checkbox"/> no
Will you be backfilling to create slopes? Is slope stability analysis attached? If no, explain.	<input type="checkbox"/> yes <input type="checkbox"/> no <input type="checkbox"/> yes <input type="checkbox"/> no
25E. Mine Floors	
Flat areas will be formed into gently rolling mounds? If yes, give details. If no, explain: Flat areas will largely be left flat for residential development.	<input type="checkbox"/> yes <input checked="" type="checkbox"/> no
Mine floor will be gently graded into sinuous drainage channels to preclude sheetwash erosion during intense precipitation? If yes, give details. If no, explain: The final floor will be gently sloped towards the highwall.	<input checked="" type="checkbox"/> yes <input type="checkbox"/> no
Mine floor and other compacted areas will be bulldozed, plowed, ripped, or blasted to foster revegetation? If yes, give details. If no, explain: Compacted areas will be ripped for revegetation except for future building pad areas.	<input checked="" type="checkbox"/> yes <input type="checkbox"/> no
25F. Lakes, Ponds, and Wetlands	
Is water currently present in the area or will the mining penetrate the water table? If no, go to Section 25G.	<input type="checkbox"/> yes <input checked="" type="checkbox"/> no
Reclaimed areas below the permanent low water table in soil, sand, gravel, and other unconsolidated material will have a slope no steeper than 1.5 feet horizontal to 1 foot vertical? If yes, give details. If no, explain:	<input type="checkbox"/> yes <input type="checkbox"/> no

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If not already present, soils, silts, and clay-bearing material will be placed below water level to enhance revegetation?	<input type="checkbox"/> yes <input type="checkbox"/> 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?	<input type="checkbox"/> yes <input type="checkbox"/> no
Armored spillways or other measures to prevent undesirable overflow or seepage will be provided to stabilize bodies of water and adjacent slopes?	
If yes, give details. If no, explain:	
Wildlife habitat will be developed, incorporating such measures as:	
Sinuous and irregular shorelines?	<input type="checkbox"/> yes <input type="checkbox"/> no
Varied water depths?	<input type="checkbox"/> yes <input type="checkbox"/> no
Shallow areas less than 18 inches deep?	<input type="checkbox"/> yes <input type="checkbox"/> no
Islands and peninsulas?	<input type="checkbox"/> yes <input type="checkbox"/> no
Give details:	
Ponds or basins will:	
Be located in stable areas?	<input type="checkbox"/> yes <input type="checkbox"/> no
Have sufficient volume for expected runoff?	<input type="checkbox"/> yes <input type="checkbox"/> no
Have an emergency overflow spillway?	<input type="checkbox"/> yes <input type="checkbox"/> no
Spillways and outfalls will be protected (for example, rock armor) to prevent failure and erosion?	<input type="checkbox"/> yes <input type="checkbox"/> no
If any answers are no, explain:	
Proper measures will be taken to prevent seepage from water impoundments that could cause flooding outside the permitted area or adversely affect the stability of impoundment dams or adjacent slopes?	
If yes, give details. If no, explain:	
Written approval from other agencies with jurisdiction to regulate impoundment of water is attached?	
If no, explain:	
25G. Final Drainage Configuration	
Drainages will be constructed on each reclaimed segment to control surface water, erosion, and siltation?	
Result in essentially natural conditions of volume, velocity, and turbidity?	
Clean runoff is directed to a safe outlet?	
If yes, give details. If no, explain: Each mine reclamation segment will largely manage its own stormwater and infiltrate to ground or evaporate. Access road stormwater will be managed via ditches with check dams where it will also infiltrate or be routed to mine floors, as needed.	
Are these shown on maps?	
<input checked="" type="checkbox"/> yes <input type="checkbox"/> no	
26. SITE CLEANUP AND PREPARATION FOR REVEGETATION	
26A. Dealing with Hazardous Materials	
Hazardous materials are present at the mine site?	
If no, go to Section 26B	
The final ground surface drains away from any hazardous natural materials?	
If yes, give details. If no, explain:	
Plan for handling hazardous mineral wastes indigenous to the site is attached?	
If no, written approval from all appropriate solid waste regulatory agencies attached?	
26B. Removal of Debris	
All debris (garbage, 'bone piles', treated wood, old mining equipment, etc.) will be removed from the mine site?	
All sheds, scale houses, and other structures will be removed from the site?	
If either answer is yes, give details. If no, explain: All temporary structures and debris will be removed from the site, as the post-mining use is for individual residential lots.	

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27. REVEGETATION

The mine site is in: eastern Washington Revegetation area is: wet dry both
 western Washington

The average precipitation is **8.9 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: **Reseeding will be done during the proper growing season.**

The site will not be revegetated because:

It is a rural area with a rainfall exceeding 30 inches annually and erosion will not be a problem (requires approval of DNR).
 Revegetation is inappropriate for the approved subsequent use of this surface mine.

Explain: **Residential building pads and final slopes will not require revegetation.**

27A. Recommended Pioneer Species

In the Sections below, check the species that will be planted at your mine site:
** indicates nitrogen-fixing species*

Western Washington Dry Areas

- | | | | |
|--|--|--|---|
| <input type="checkbox"/> alfalfa* | <input type="checkbox"/> lupine* | <input type="checkbox"/> clover* | <input type="checkbox"/> orchard grass |
| <input type="checkbox"/> cereal rye | <input type="checkbox"/> perennial rye | <input type="checkbox"/> colonial bent grass | <input type="checkbox"/> ponderosa pine |
| <input type="checkbox"/> creeping red fescue | <input type="checkbox"/> red alder* | <input type="checkbox"/> Douglas fir | <input type="checkbox"/> shore pine |
| <input type="checkbox"/> ground cover | <input type="checkbox"/> shrubs | <input type="checkbox"/> other | |

Western Washington Wet Areas

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

Eastern Washington Dry Areas

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

Eastern Washington Wet Areas

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

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

Describe weed control plan:
The weed control plan will be consistent with Kittitas County's Noxious Weed Control Board requirements.

27B. Planting Techniques

Revegetation at this site will require:

Ripping and tilling?	<input checked="" type="checkbox"/> yes	<input type="checkbox"/> no
Blasting to create permeability?	<input type="checkbox"/> yes	<input checked="" type="checkbox"/> no
Mulching?	<input type="checkbox"/> yes	<input checked="" type="checkbox"/> no
Irrigation?	<input type="checkbox"/> yes	<input checked="" type="checkbox"/> no
Fertilization?	<input type="checkbox"/> yes	<input checked="" type="checkbox"/> no
Importation of clay- or humus-bearing soils?	<input type="checkbox"/> yes	<input checked="" type="checkbox"/> no
Other soil conditioners or amendments?	<input type="checkbox"/> yes	<input checked="" type="checkbox"/> no

Give details: **Compacted areas will be ripped except for future building pad areas.**

APPLICATION FOR RECLAMATION PERMIT AND PLAN

Trees and shrubs will be planted in topsoil or in subsoil amended with generous amounts of organic matter? If yes, give details. If no, explain: Trees and shrubs will not be used for revegetation.	<input type="checkbox"/> yes	<input checked="" type="checkbox"/> no
Mulch will be piled around the base of trees and shrubs?	<input type="checkbox"/> yes	<input checked="" type="checkbox"/> no
High quality stock will be used?	<input type="checkbox"/> yes	<input checked="" type="checkbox"/> no
Trees and shrubs will be planted while they are dormant?	<input type="checkbox"/> yes	<input checked="" type="checkbox"/> no
Stock will be properly handled, kept cool and moist, and planted as soon as possible?	<input type="checkbox"/> yes	<input checked="" type="checkbox"/> no
Seeds will be covered with topsoil or mulch no deeper than one-half inch?	<input checked="" type="checkbox"/> yes	<input type="checkbox"/> no
If any answers are no, explain: Trees and shrubs will not be used for revegetation.		
28. FINAL CHECKLIST		
All required maps are attached? (<i>See "Instructions for SM-8A" for detailed requirements.</i>)	<input checked="" type="checkbox"/> yes	<input type="checkbox"/> no
All required cross sections are attached? (<i>See "Instructions for SM-8A" for detailed requirements.</i>)	<input checked="" type="checkbox"/> yes	<input type="checkbox"/> no
Geologic map attached (if required)? (<i>See "Instructions for SM-8A" for detailed requirements.</i>)	<input type="checkbox"/> yes	<input checked="" type="checkbox"/> no
All documents submitted have the date, the name and address of the permit holder, and the application number?	<input checked="" type="checkbox"/> yes	<input type="checkbox"/> no
Have you completed the SM-6 and has it been signed by the local jurisdiction?	<input checked="" type="checkbox"/> yes	<input type="checkbox"/> no
Have you provided the SEPA checklist?	<input checked="" type="checkbox"/> yes	<input type="checkbox"/> no
Have you provided a copy of the SEPA determination (DNS, MDNS, or DS)?	<input type="checkbox"/> yes	<input checked="" type="checkbox"/> no
Have you attached photographs (as needed)?	<input checked="" type="checkbox"/> yes	<input type="checkbox"/> no
Are additional supplemental studies included?	<input type="checkbox"/> yes	<input checked="" type="checkbox"/> no
If yes, check the appropriate box(es) below:		
<input type="checkbox"/> Archeological	<input type="checkbox"/> Geohydrologic	<input type="checkbox"/> Backfill
<input type="checkbox"/> Topsoil	<input type="checkbox"/> Flood plain	<input type="checkbox"/> Conservational
<input type="checkbox"/> Other		<input type="checkbox"/> Slope stability
		<input type="checkbox"/> Vegetation
Other permits required? <input checked="" type="checkbox"/> yes <input type="checkbox"/> no		
If yes, check the appropriate box(es) below:		
<input type="checkbox"/> Shoreline Permit	<input type="checkbox"/> Water Discharge Permit	<input type="checkbox"/> Solid Waste Permit
<input type="checkbox"/> Air Quality Permit	<input checked="" type="checkbox"/> NPDS or General Discharge Permit	<input type="checkbox"/> Hydraulic Project Approval
<input type="checkbox"/> Special or Conditional Use Permit	<input type="checkbox"/> 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): **MTA Holdings, L.L.C.**

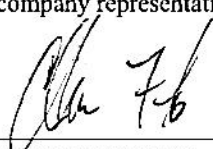
Address(es): **910 Anderson Road
Ellensburg, WA 98926**

RECEIVED
December 19, 2023
Washington Geological Survey

APPLICANT ACKNOWLEDGMENT


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), SM-6, 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) Alan Fife Facilities Manager	Date signed 12/17/23
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LANDOWNER(S)

As landowner, I MARK T ANDERSON (name) authorize the applicant to extract minerals from my land using surface mining methods and I approve this reclamation plan.

Signature:  Date signed: 12/17/23

FOR DEPARTMENTAL USE ONLY			
Date accepted	Accepted by:	Title:	Reclamation Permit No.

SURFACE MINE RECLAMATION PERMIT APPLICATION

UMPTANUM ROAD QUARRY

Applicant:

MTA Holdings, L.L.C.

Operator:

MTA Holdings, L.L.C.

Mailing Address:

910 Anderson Road
Ellensburg, WA 98926

Physical Location:

5243 Umptanum Road
Ellensburg, WA 98926
Kittitas County

Permitting Contact:

Alan Fife
(509) 866-0508

December 18, 2023

Washington State Department of Natural Resources
Washington Geological Survey

Prepared by:



17600 Pacific Highway, Unit 357
Marylhurst, Oregon 97036

Project: 023.01.01

1.0 INTRODUCTION

On behalf of MTA Holdings, L.L.C. (MTA), Fulcrum GeoResources LLC has prepared this surface mine reclamation permit application for the DNR Washington Geological Survey Surface Mine Reclamation Program intended to satisfy DNR requirements pursuant to Chapter 78.44 Revised Code of Washington. This reclamation permit application includes this narrative, Figures 1 through 6, and the following appendices:

- Appendix A – DNR form SM-8A, Application for Reclamation Permit
- Appendix B – DNR form SM-6, County or Municipality Approval for Surface Mining
- Appendix C – SEPA Environmental Checklist, dated December 13, 2023
- Appendix D – Well Logs

Acronyms and abbreviations used herein are defined in Section 9.0 of this document.

2.0 SITE DESCRIPTION

2.1 SITE LOCATION

Umptanum Road Quarry is located approximately 3 miles south of Ellensburg in Kittitas County, Washington. Access to the quarry is at 5243 Umptanum Road. The mine permit area is located in the NW, NE, and SW quarters of the SW quarter of Section 22, Township 17 North, Range 18 East of the Willamette Meridian and includes tax parcels 278833, 288833, 308833, 618833, and 268833 (Figures 1 and 2).

2.2 BACKGROUND

The site is located on a moderately steep to steep, north-facing hillside along Manastash Ridge near the southwestern edge of the Kittitas Valley. The hillside in the site vicinity ranges in elevation from about 1,700 to 2,300 feet MSL. The ridge is cross-cut by steep-sided canyons eroded by seasonal streams and drainages. Two such canyons flank the site hillside: Long Tom Canyon to the northwest, and Shushuskin Canyon to the east. Seasonal flows drain northward into the agricultural valley through a network of natural streams and manmade irrigation canals and ditches that eventually drain into the Yakima River. The site is sparsely vegetated with grasses and low shrubs with isolated, taller bushes.

The site and adjacent properties to the south, west, and north have previously been used as open rangeland. Three small bedrock mines are located west and south of the site. Agricultural fields are located further north. Rural residences are located to the northeast, east, and southeast including the ridge east of the site.

MTA previously graded two building pads in the northern site under a Kittitas County grading permit, as indicated by the existing disturbance area on Figure 3. MTA plans to grade additional lots and sell the excavated bedrock material as aggregate for local construction projects. This will require a surface mining reclamation permit from DNR. The site is zoned Forest and Range, which allows mining as an outright permitted use in Kittitas County. As such, DNR will issue the

permit for the proposed mine project, requiring a SEPA environmental review. A SEPA checklist is provided in Appendix C.

2.3 SUBSEQUENT USE

At final reclamation, the quarry will be reclaimed to rural residential use with individual lots corresponding to the parcels shown on Figure 2. Kittitas County approved this subsequent use in the DNR Form SM-6, County or Municipality Approval for Surface Mining, which is presented in Appendix B.

3.0 GEOLOGY AND HYDROGEOLOGY

3.1 GEOLOGY

The bedrock in the site vicinity and underlying much of Manastash Ridge consists of the Miocene Grande Ronde Basalt of the CRBG (approximately 15 million years old; Bentley and Campbell, 1983; Walsh, 1986). Manastash Ridge represents an uplifted, folded belt of CRBG strata formed from the compressional tectonics of the region. The northern edge of the ridge is inferred to be a blind reverse fault where the Grande Ronde Basalt was thrust up onto volcanoclastic bedrock units of the Ellensburg Formation (Bentley and Campbell, 1983; Swanson et al., 1979; Smith et al., 1998). The fault is inferred to lie mostly north of the site and dips to the southwest, buried by eolian loess of the Palouse Formation deposited during Pleistocene glaciation (less than 1 million years old). The thrust fault is considered to possibly have been active within the past 1.6 million years (Lidke et al., 2016).

3.2 HYDROGEOLOGY

There is one water supply well located on site in the northeast lot. The corresponding well installation log reports static water level at 215 feet BGS or about 1,685 feet MSL. The final mine floor will be 1,900 feet MSL in this area, as discussed below. Other installation logs are available for two wells in the site vicinity from the Washington Department of Ecology's Well Report Viewer. Reported static water levels range from about 1,770 to 1,630 feet MSL. The inferred water table underlying the site is shown on the cross sections on Figure 6.

Two Type U streams are mapped offsite to the northwest and east, flowing northeast through Long Tom Canyon and Shushuskin Canyon, respectively. Wetlands are also mapped along the stream channel east of Umptanum Road in Shushuskin Canyon. The Long Tom drainage is blocked in several places by historical fill and thus has limited flow into the irrigation canal to the north (West Side Canal). The Shushuskin drainage flows into an irrigation ditch further north (Fogarty Ditch).

4.0 MINING AND RECLAMATION

The basalt bedrock will be mined for aggregate resource. The permit boundary for this site includes 86 acres. Approximately 5.2 acres within the permit boundary have been previously disturbed by grading operations based on aerial imagery from Google Earth Pro dated April 17, 2021, as shown on the existing topography map on Figure 3. The proposed overall mining

disturbance is approximately 35 acres, as shown on the reclamation sequence map on Figure 4 and the final topography map on Figure 5. Cross sections showing existing and final topography are provided on Figure 6.

Mining-related activities will consist of soil excavation and storage in designated storage areas; rock extraction; temporary stockpiling of material; hauling to and from the processing area; and operation of earthwork equipment. Past bedrock extraction at the site has not required blasting due to the inherent fracturing of the rock, but deeper extraction beyond the current limits may require some drilling and blasting.

Mining is projected to occur over the next 15 to 20 years and will include removal of approximately 1,271,000 cubic yards of material. The maximum depth of mining at any given point is approximately 95 feet below original ground surface, which will occur in Mining Segment M-1. Final floor elevation at this segment will be 1,900 feet MSL, and successive segments will step upward in roughly 60-foot increments from M-2 through M-4.

Reclamation will occur concurrently as mining segments are completed and at the completion of mining. Mine floors will be capped with topsoil and revegetated as described below. Final mined slopes will be graded to a finished gradient at 2H:1V. Final slopes will generally be left as graded, rocky slopes due to the naturally short supply of topsoil and exposed rock being indigenous to the area.

Site grading and drainages will direct stormwater and seasonal snowmelt to the mine floor for each mine segment where it will readily infiltrate into the underlying fractured basalt. Figure 5 illustrates the final configuration of the reclaimed mine area upon completion of mining activities.

4.1 TOPSOIL AND SUBSOIL PLAN

The U.S. Department of Agriculture – Natural Resources Conservation Service’s (NRCS) Web Soil Survey maps soils in the project vicinity. Most of the site is mapped as Vantage very cobbly loam, 3 to 15 percent slopes, and Clerf-Vantage-Cheviot complex, 30 to 60 percent slopes. The north slope area is mapped as Tanksel-Patron-Camaspach complex, 30 to 70 percent slopes. A small area in the northwest is mapped as Volinger-Mozen complex, 15 to 30 percent slopes. In general, the typical profile descriptions for these soils include up to 12 inches of A horizons and up to 48 inches of B horizons developed in loess and basalt colluvium parent material.

Topsoil depth observed in the currently graded areas on site is approximately 3 inches thick overlying silt loess. Loess was observed to range from 0 to 3 feet thick around the excavation perimeters. Topsoil is very thin or absent over much of the central and southern site with significant surface exposures of weathered basalt, indicating loess is largely absent.

Topsoil and loess will be salvaged where encountered and saved for use at reclamation. An estimated 5,000 cubic yards of topsoil will be available at the completion of mining with a potentially similar volume of recovered loess for use as additional growth medium. At final

reclamation it is expected enough topsoil and loess will be salvaged to cover the mine floors to a combined depth of approximately 6 inches. Compacted areas will be ripped prior to topsoil placement. If future residential building pad locations are known at the time of final reclamation, the pads will not be ripped nor receive topsoil.

4.2 SETBACKS AND BUFFERS

Setbacks of 30 feet are established and will be maintained around the permit boundary. Setbacks are shown on Figures 4 and 6. Some disturbance such as for access roads or topsoil storage may occur in setback areas and will be reclaimed along with the rest of the completed mine site unless the access routes are necessary for post-mining site development and use.

5.0 EROSION CONTROL

5.1 EXISTING STORMWATER

Stormwater runoff for the currently disturbed areas in Mine Segment M-1 is controlled via slope and floor grading. This method has successfully contained and infiltrated seasonal precipitation into fractured basalt exposed in the mined floors.

Future mining will continue to use this control method so all stormwater drains and infiltrates at the base of each highwall segment. Soil stockpiles will be seeded with an erosion control mix to stabilize the piles and prevent erosion.

5.2 POST-MINING STORMWATER

Post-mining stormwater will be contained within the permit boundary of the mine. It will collect on the segmental mine floors and infiltrate or evaporate. Access road stormwater will be managed via ditches with check dams where it will infiltrate or be routed to mine floors.

6.0 REVEGETATION PLAN

Grasses will be established on the final mine floors at the site to provide a base for productive, diverse, and successful revegetation. Seed should be broadcast (40 pounds per acre application) or mechanically drilled (20 pounds per acre application) at a shallow depth (less than 0.5 inch) with the topsoil covering the seed.

Table 1 summarizes specifications for a native seed mix for rangeland revegetation. This mix can be modified with similar native seed mixes, depending on local seed availability at the time of revegetation. Native species should be selected for diversity and erosion control.

Table 1. Rangeland Revegetation Specifications

Species Common Name	Scientific Name	Planting Method	Planting Density (percent)	Planting Season
Bluebunch wheatgrass	<i>Pseudoroegneria spicata</i>	Broadcast/drilled	40	Late spring or early fall
Idaho fescue	<i>Festuca idahoensis</i>	Broadcast/drilled	40	Late spring or early fall
Sandbergs bluegrass	<i>Poa secunda sandbergii</i>	Broadcast/drilled	20	Late spring or early fall

7.0 REFERENCES

Bentley, R.D., and Campbell, N.P., 1983, Geologic map of the Ellensburg quadrangle, Washington. Washington Division of Geology and Earth Resources, Geologic Map GM-28, scale 1:62,500.

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Smith, G. A., Shafiqullah, M., Campbell, N. P., and Deacon, M. W., 1998, Geochronology of the Ellensburg Formation-Constraints on Neogene Volcanism and Stratigraphic Relationships in Central Washington. *Isochron/West, Bulletin of Isotopic Geochronology*, vol. 53: pp. 28 – 32.

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8.0 LIMITATIONS

The services described in this narrative were provided consistent with generally accepted professional consulting principles and practices. Our narrative, conclusions, and interpretations should not be construed as warranty of the subsurface conditions and are not applicable to areas other than the subject site. 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. Fulcrum GeoResources LLC is not responsible for the impacts of changes in environmental standards, practices, or regulations after the date of this narrative. Fulcrum GeoResources LLC does not warrant the accuracy of information that was supplied by others as incorporated in this permit application.

Our interpretations of the mining and geologic conditions are based on discussions with the client, review of publicly available information, and exposures of soil and rock within the quarry area. The accuracy of outside information is beyond our control.

Within the limitations of scope, schedule, and budget, our services have been executed in accordance with generally accepted practices in this area at the time this narrative was prepared. No warranty, express or implied, should be understood.

9.0 ACRONYMS AND ABBREVIATIONS

BGS	below ground surface
CRBG	Columbia River Basalt Group
DNR	Washington State Department of Natural Resources
H:V	horizontal to vertical
MSL	mean sea level
SEPA	Washington State Environmental Policy Act

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