

Bull Run Filtration Projects

Land Use Applications

Multnomah County: Pipelines- Erosion and Sediment Control Application Narrative

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Representative:	Winterbrook Planning 610 SW Alder Street, Suite 810 Portland, Oregon 97205
Contact:	Tim Brooks, ASLA or Jesse Winterowd, AICP, PMP
Site Address:	Raw water pipelines are proposed from existing conduits in Lusted Road to the filtration site. Finished water pipelines are proposed from the filtration facility to (a) the Lusted Hill Treatment Facility, (b) the finished water intertie (intertie), and (c) existing conduits near Pipeline Road. The pipelines connect the filtration facility site on Carpenter Lane to the existing Bull Run conduit system.
Map & Tax Lot Numbers:	1S4E22DB -00300, 1S4E23C -01400, 1S4E23C -01500, 1S4E23C -02200, 1S4E21A -00900, 1S4E22BA -00200, 1S4E22BA -00100, 1S4E15C -00801, 1S4E23C -00800
Property ID:	R994220850, R649716640, R649716620, R238000610, R994210630, R994220300, R994221120, R994150140, R994230150
Proposal:	Construction of raw and finished water pipelines connecting to the existing Bull Run conduit system in support of a drinking water filtration facility.
Land Use Review:	Erosion and Sediment Control Permit

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Introduction

Ground disturbing activity proposed in this ESC Permit supports the development of:

- Two raw water pipelines that extend approximately 0.4 miles from existing conduits in Lusted Road to the proposed Bull Run filtration facility;
- Two finished water pipelines that extend approximately 1.3 miles from the filtration facility to the finished water intertie vault;
- A below-grade vault with pipeline flow metering, flow control valves, and intertie piping;
- Three pipelines that extend from the intertie vault various distances to connect with existing conduits; and
- A separate local water transmission main connection from the new pipelines in Dodge Park Boulevard to the existing main adjacent to the Lusted Hill Treatment Facility on Cottrell Road.

The filtration facility project and associated pipelines are necessary to comply with U.S. Environmental Protection Agency (EPA) and Oregon Health Authority (OHA) drinking water requirements.

The filtration facility and pipelines project applications, with supporting narratives and appendices, are submitted under Case #T3-2022-16220, and were approved on 11/29/2023.

The submitted plan set depicts each grid in four distinct phases of construction activities. Drawings are organized for each project area in these phases:

1. Existing Conditions and Demolition: Depicts demolitions, clearing, grading, excavating and land development phase.
2. Utility Work: Depicts street and utilities phase.
3. Vertical Construction: Depicts vertical construction phase, applicable only to the finished water intertie site.
4. Final Stabilization and Landscape: Depicts final landscaping and site stabilization phase.

Multiple stages may be represented which correspond to construction sequencing, such that 1200-C erosion control phase is duplicated for multiple construction stages.

Applicable ESC Permit standards are reviewed in this narrative.

Attachments

- **Completeness Response Memo-Pipelines**
- **Geotechnical Memo-Steep Slopes-Pipelines**

The following attachments are also submitted as technical appendices under Case #T3-2022-16220, are particularly relevant to and support the findings and conclusions in this section:

- **Finished Water Intertie Stormwater Report** (Appendix H.2)
- **Pipelines Stormwater Report** (Appendix H. 3)
- **Geotechnical Engineering Report Summaries** (Appendix I.1)

39.6225 Erosion and Sediment Control Permit

(A) An application for an Erosion and Sediment Control permit shall include two copies of each of the following:

(1) A scaled site plan showing the following, both existing and proposed:

(a) Property lines;

(b) Buildings, structures, driveways, roads and right-of-way boundaries;

(c) Location of wells, utility lines, site drainage measures, stormwater disposal, sanitary tanks and drainfields (primary and reserve);

(d) Trees and vegetation proposed for removal and planting and an outline of wooded areas

(e) Water bodies;

(f) Boundaries of ground disturbing activities;

(g) Location and height of unsupported finished slopes;

(h) Location for wash out and cleanup of concrete equipment;

(i) Storage location and proposed handling and disposal methods for potential sources of non-erosion pollution including pesticides, fertilizers, petrochemicals, solid waste, construction chemicals, and wastewaters;

(j) Ground topography contours (contour intervals no greater than 10 feet); and

(k) Erosion and sediment control measures.

Response: This ESC application package contains all of the above elements:

- A scaled site plan set is included in this application on sheets MUL-CE-1001 through 1004, RWP-CE- 1001 through 1006, FWP-CE-1001 through FWP-CE-1041, FWI-CE-1001 through FWI-CE 1004.

- Property lines are shown on sheets MUL-CE-1001 through 1004, RWP-CE- 1001 through 1006, FWP-CE-1001 through FWP-CE-1041, FWI-CE-1001 through FWI-CE 1004.
- Buildings, structures, driveways, roads and right-of-way boundaries are shown on sheets MUL-CE-1001 through 1004, RWP-CE- 1001 through 1006, FWP-CE-1001 through FWP-CE-1041, FWI-CE-1001 through FWI-CE 1004.
- Location of wells, utility lines, site drainage measures, stormwater disposal, sanitary tanks and drainfields (primary and reserve) are shown on sheets MUL-CE-1001 through 1004, RWP-CE-1001 through 1006, FWP-CE-1001 through FWP-CE-1041, FWI-CE-1001 through FWI-CE 1004.
- A general tree plan is shown in ESC-003. MUL-CE-1001 through 1004, RWP-CE- 1001 through 1006, FWP-CE-1001 through FWP-CE-1041, FWI-CE-1001 through FWI-CE 1004 show trees to be removed and preserved, and tree protection fencing. Final stabilization sheets throughout the plan set show proposed plantings.
- Ponds are shown on RWP-CE-1001,1003,1005, FWP-CE-1010, 1024, 1036.
- Streams are shown on RWP-CE-1001, FWP-CE-1002, 1014,1028, 1003, 1015, 1029, 1005, 1017, 1031, 1007, 1019, 1021, 1033, 1010, 1024, 1036.
- Boundaries of ground disturbing activities are shown on sheets MUL-CE-1001 through 1004, RWP-CE- 1001 through 1006, FWP-CE-1001 through FWP-CE-1041, FWI-CE-1001 through FWI-CE 1004.
- There are no unsupported finished slopes on the site.
- Locations for wash out and cleanup of concrete equipment are shown on MUL-CE-1002, RWP-CE-1002,1004, FWP-CE-1007, 1013, 1019, 1021
- Material and waste staging areas are shown on RWP-CE-1001, 1002, 1003, 1004, FWP-CE-1017, 1019,1013, 1021, FWI-CE-1002,1003. Erosion control measures to protect material and waste storage areas will comply with the erosion control construction details on ESC-201, ESC-202 and ESC 203. Material storage and handling details are found in notes 14, 15, 17, 20, and 24 on ESC-004.
- Ground topography contours (contour intervals no greater than 5 feet) are shown on sheets MUL-CE-1001 through 1004, RWP-CE- 1001 through 1006, FWP-CE-1001 through FWP-CE-1041, FWI-CE-1001 through FWI-CE 1004.
- Erosion and sediment control measures are shown on sheets MUL-CE-1001 through 1004, RWP-CE- 1001 through 1006, FWP-CE-1001 through FWP-CE-1041, FWI-CE-1001 through FWI-CE 1004.

(2) Calculations of the total area of proposed ground disturbance (square feet), volume of proposed cut (cubic yards) and fill (cubic yards), total volume of fill that has been deposited on the site over the 20 year period preceding the date of application, and existing and proposed slopes in areas to be disturbed (percent slope). Such calculations are not required for fill physically supporting and/or protecting a structure or access road for essential and public facilities subject to earthquake or tsunami building code requirements of the Oregon Structural Specialty Code. For purposes of this subsection, the term "site" shall mean either a single lot of record or contiguous lots of record under same ownership, whichever results in the largest land area;

Response:

The Multnomah County definition of fill follows.

***Fill** – The deposit (noun or verb) of any earth materials by motorized means for any purpose, including, but not limited to, stockpiling, storage, dumping, raising elevation or topography, and tracking materials such as mud onto a road surface with vehicle tires. Work conducted by hand without the use of motorized equipment is not filling. For the purposes of this code, fill does not include materials included in a design by a registered professional engineer to physically support and/or protect a structure or access road for essential and public facilities subject to earthquake or tsunami building code requirements of the Oregon Structural Specialty Code.” (MCC 39.2000).*

For purposes of this application, we use the terms “regulated fill” and “structural fill”. Regulated fill meets the MCC definition of “Fill” above. As noted throughout the application, no regulated fill is proposed to be brought to the project site.

Calculations for the total area of proposed ground disturbance, volume of proposed cut and fill, total volume of fill that has been deposited on the pipeline disturbance areas over the 20-year period is found on ESC-005. Existing slopes greater than 3:1 are shown on RWP-CE-1005, FWP-CE-1027, 1028, 1029, 1030, 1031, 1032, 1019, 1033, 1020, 1036, FWI-CE-1004. Slope percentages are shown every 100 ft on all plan sheets.

(3) A written description of the ground disturbing activity and any associated development, including:

(a) Specific timelines for all phases of work;

(b) With respect to fill:

(i) Description of fill materials, compaction methods, and density specifications (with calculations). The planning director may require additional studies or information or work regarding fill materials and compaction.

(ii) Statement of the total daily number of fill haul truck trips, loaded haul truck weight, and haul truck travel route(s) to be used from any fill source(s) to the fill deposit site.

(c) A description of the use that the ground disturbing activity will support or help facilitate.

Response: Proposed ground disturbing activity is clearing and grubbing, mass grading and excavation. The Filtration Pipelines project includes the construction of pipelines by open cut excavation, by trenchless construction, and by tunnelling. A flow control and metering facility, the Finished Water Intertie, comprises a small site located along the pipelines and includes a buried vault and an above-grade electrical building.

Construction of the pipelines by open cut involves excavation from the surface to the depth of the pipeline trench, installation of the pipeline, and backfill of the trench. Ground disturbance for construction of pipeline by open cut includes the width of the pipeline trench for the length of the open cut pipeline, plus the associated construction zones adjacent to the pipeline trench for construction equipment, temporary public traffic or access, and erosion and sedimentation control measures.

Ground disturbance for construction of pipeline by trenchless construction includes an excavation at the beginning and end of the pipeline segment to deploy the trenchless construction technology such as horizontal directional drill, plus the associated construction zones adjacent to the pipeline entry and exit excavations for construction equipment, temporary public traffic or access, and erosion and sedimentation control measures, but there is no ground disturbance along the length of a trenchless construction zones in between the entry and exit excavations.

Ground disturbance for construction of pipeline tunnel is the same as that of the trenchless method in that a tunnel portal is excavated where the tunnel begins and a tunnel exit shaft is excavated where the tunnel ends. Between the entry portal and exit shaft there is no ground disturbance.

At the Finished Water Intertie facility site, ground disturbance includes that for pipeline construction by open cut as well as excavation for the buried vault and site grading and drainage improvements., utility installation, street construction and final stabilization measures.

- Specific timelines for all phases of work are found on ESC-004 of the plan set.
Construction Activity will consist of:
 - A) Clearing and Grubbing- 2024
 - B) Mass Grading- April, 2024-2027
 - C) Utility Construction- 2024-2028
 - D) Vertical Construction-2024-2025
 - E) Final Stabilization- 2025-2028

Project Timeline: Beginning Date: March, 2024

Completion Date: March, 2028

- No regulated fill will be hauled to and deposited on the site; the project site is not a fill deposit site.
- Ground disturbing activity in this project supports the development of:
 - Two raw water pipelines that extend approximately 0.4 miles from existing conduits in Lusted Road to the proposed Bull Run filtration facility;
 - Two finished water pipelines that extend approximately 1.3 miles from the filtration facility to the finished water intertie vault;
 - A below-grade vault with pipeline flow metering, flow control valves, and intertie piping;
 - Three pipelines that extend from the intertie vault various distances to connect with existing conduits; and
 - A separate local water transmission main connection from the new pipelines in Dodge Park Boulevard to the existing main adjacent to the Lusted Hill Treatment Facility on Cottrell Road.
- The filtration facility project and associated pipelines are necessary to comply with U.S. Environmental Protection Agency (EPA) and Oregon Health Authority (OHA) drinking water requirements.

(4) Surcharges to sanitary drainfields have been reviewed by the City of Portland Sanitarian or other agencies authorized to review waste disposal systems; and

(5) Any new discharges into public right-of ways have complied with the governing agencies discharge review process;

Response: This application proposes no new discharges to sanitary drainfields or new discharges into public right of ways.

(6) Written findings, together with any supplemental plans, maps, reports, or other information necessary to demonstrate compliance of the proposal with all applicable provisions of the Multnomah County code including Erosion and Sediment Control permit standards in subsection (B). Necessary reports, certifications, or plans may pertain to: engineering, soil characteristics, stormwater drainage control, stream protection, erosion and sediment control, and replanting.

Response: Findings demonstrating compliance of the proposal with all applicable provisions of Multnomah County Code are provided in this document, as well as notes in ESC-004, notes on the sheets of the plan set, and details in ESC-201, ESC-202, and ESC-203. A geotechnical memorandum and stormwater reports have been submitted with the main land use application for the project (see Appendix I.1, Appendix H.2, and Appendix H.3) and are attached.

An overview of the tunnel engineering proposed is:

“two each 9’ diameter 1240’ long parallel tunnels, with 9’ of separation between tunnels, will be excavated from a portal shaft with invert 33’ below ground surface at the start of the tunnel and 232’ below ground surface at the end of the tunnel deep vertical shaft. The tunnel excavation opening will be continuously supported by steel sets and lagging installed immediately following the excavation shield to minimize convergence” (General Sheet Notes).

(7) Approval of any new stormwater surcharges to sanitary drainfields by the City of Portland Sanitarian and any other agency having authority over the matter; and

(8) Approval of any new stormwater discharges into public right-of-ways by each governing agency having authority over the matter.

Response: This application proposes no new discharges to sanitary drainfields or new discharges into public right of ways.

(B) An Erosion and Sediment Control (ESC) permit shall not be issued unless the application for such permit establishes compliance with MCC 39.6210 and satisfaction of the following standards:

(1) The total cumulative deposit of fill, excluding agricultural fill pursuant to an Agricultural Fill permit, on the site for the 20-year period preceding the date of the ESC permit application, and including the fill proposed in the ESC permit application, shall not exceed 5,000 cubic yards. Fill physically supporting and/or protecting a structure or access road for essential and public facilities subject to earthquake or tsunami building code requirements of the Oregon Structural Specialty Code is not included in this 5,000 cubic yard calculation. For purposes of this section, the term “site” shall mean either a single lot of record or contiguous lots of record under same ownership, whichever results in the largest land area.

Response: No regulated fill is proposed to be deposited on pipeline project areas. There is no documentation of fill deposited on pipeline project areas for the 20-year period preceding the date of this ESC permit application. Calculations showing total cuts and fill are found on ESC-005 .

(2) Fill shall be composed of earth materials only.

(3) Cut and fill slopes shall not exceed 33 percent grade (3 Horizontal; 1 Vertical) unless a Certified Engineering Geologist or Geotechnical Engineer certifies in writing that a grade in excess of 33 percent is safe (including, but not limited to, not endangering or disturbing adjoining property), and suitable for the proposed development.

(4) Unsupported finished cuts and fills greater than 1 foot in height and less than or equal to 4 feet in height at any point shall meet a setback from any property line of a distance at least twice the height of the cut or fill unless a Certified Engineering Geologist or Geotechnical Engineer certifies in writing that the cuts or fill will not endanger or disturb adjoining property. All unsupported finished cuts and fills greater than 4 feet in height at any point shall require a Certified Engineering Geologist or Geotechnical Engineer to certify in writing that the cuts and fills will not endanger or disturb adjoining property.

Response: No regulated fill will be brought into pipeline project areas. Within the rights-of-way of SE Dodge Park Boulevard and SE Lusted Road there are existing (pre-construction) slopes established with the construction of the county roads which exceed 33 percent grade. These slopes, which are less than ten feet in height, were observed during site reconnaissance to be stable with well-established vegetation. The proposed pipeline construction will impact some of those steep slopes by excavating and restoring the slopes to similar or flatter grades than existing, followed by reestablishment of vegetative cover. Slopes exceeding 33% are shown on RWP-CE-1005, FWP-CE-1027, 1028, 1029, 1030, 1031, 1032, 1019, 1033, 1020, 1036, FWI-CE-1004. There are no proposed slopes exceeding 33 percent grade in public utility easements on private property or at the Finished Water Intertie facility site as a part of the project design. Further information on slopes is found in the geotechnical memorandum attached. There are no finished unsupported cuts and fills.

(5) Fills shall not encroach on any water body unless an Oregon licensed Professional Engineer certifies that the altered portion of the water body will continue to provide equal or greater flood carrying capacity for a storm of 10-year design frequency.

Response: No fill is proposed within water bodies. The pipes are being constructed using trenchless methods under ponds so there will be no disturbance from the pipes in these areas. Trenchless notes are added to clarify the pipe construction on sheets RWP-CE-1003, FWP-CE-1013, 1016, 1017, 1025, 1026. The temporary road on sheet RWP CE-1001, 1003, 1005 is being constructed using geotextile wrapped rock and a timber crane mat through the pond crossing which sits on existing ground to ensure there is no grading within the water body areas. A sediment fence is placed at road limits to ensure no soil goes into ponds.

(6) Fill generated by dredging may be deposited on Sauvie Island only to assist in flood control or to improve a farm's soils or productivity, except that it may not be deposited in any SEC overlay, WRG overlay, or designated wetland.

(7) On sites within the Tualatin River drainage basin, erosion, sediment and stormwater drainage control measures shall satisfy the requirements of OAR 340-041-0345(4) and shall be designed to perform as prescribed in the most recent edition of the City of Portland Erosion and Sediment Control Manual and the City of Portland Stormwater Management Manual. Ground disturbing activities within the Tualatin Basin shall provide a 100-foot undisturbed buffer from

the top of the bank of a stream, or the ordinary high watermark (line of vegetation) of a water body, or within 100 feet of a wetland: unless a mitigation plan consistent with OAR 340-041-0345(4) is approved for alterations within the buffer area.

Response: No fill generated by dredging is proposed for this project. Pipeline project areas are not within the Tualatin River Drainage Basin.

(8) Ground disturbing activity shall be done in a manner which will minimize soil erosion, stabilize the soil as quickly as practicable, and expose the smallest practical area at any one time during construction.

Response: Proposed ground disturbing activity shall be done in a manner which will minimize soil erosion, stabilize the soil as quickly as practicable, and expose the smallest practical area at any one time during construction by measures described on ESC-004 including:

- Sequencing clearing and grading to the maximum extent practical to prevent exposed inactive areas from becoming a source of erosion to the maximum extent possible. (Note 5, ESC-004)
- Applying temporary and/or permanent soil stabilization measures immediately on all disturbed areas as grading progresses. (Note 13, ESC-004). Soil stabilization measures shown on sheets MUL-CE-1001 through 1004, RWP-CE- 1001 through 1006, FWP-CE-1001 through FWP-CE-1041, and FWI-CE-1001 through FWI-CE 1004 include grass seeding and permanent erosion control blankets, sediment fences, filter sock or straw waddles, and roadside seeding. Details are found on ESC 201, 202 and 203.
- Temporarily stabilizing soils with blown straw and a tackifier, loose straw, or an adequate covering of compost mulch at the end of the shift before holidays and weekends, if needed. The registrant is responsible for ensuring that soils are stable during rain events at all times of the year as needed based on weather conditions (Note 25, ESC-004).
- Stabilizing or covering soil stockpiles at the end of each workday as needed based on weather conditions to prevent discharges to surface waters or conveyance systems leading to surface waters (Note 26, ESC-004).
- Temporarily stabilizing portions of the site where construction activities cease for 14 days with a covering of blown straw and a tackifier, loose straw, or an adequate covering of compost mulch until work resumes on that portion of the site. Applying temporary seeding of sterile wheat grass-regreen, quickguard, or an approved equal at the rate of 50 lbs/acre or hordeum vulgare var. poco-poco barley at a rate of 60 lbs/acre (Note 33, ESC-004)
- Not removing temporary sediment control practices until permanent vegetation or other cover of exposed areas is established. Once construction is complete and the site is stabilized, all temporary erosion controls and retained soils will be removed and disposed of properly, unless needed for long term use following termination of permit coverage. (Note 34, ESC-004)
- Removing trapped sediment from the sediment fence before it reaches one third of the above ground height and before fence removal. Sediment will be removed to an approved disposal site. (Note 27, ESC-004) Removing trapped sediment from other sediment barriers such as biobags before it reaches two inches depth above ground height and before bmp removal. Sediment will be removed to an approved disposal site. (Note 28, ESC 004)
- Cleaning Catch Basins before retention capacity has been reduced by fifty percent. Removing trapped sediments from sediment basins and sediment traps before design capacity has been

reduced by fifty percent and at the completion of the project. Sediment will be removed to an approved disposal site. (Note 29, ESC 004)

- Initiating temporary stabilization measures discussed in Note 25, final vegetation cover, or permanent stabilization measures immediately whenever any land disturbing activities have permanently ceased or will be temporarily inactive on any portion of the site for 14 or more calendar days. The day activities cease, and the location of the land disturbing activities will be documented in the visual monitoring report. The installation of stabilization measures will be completed as soon as practicable, and no later than seven calendar days after stabilization has been initiated (Note 38, ESC 004)

(9) Development plans shall minimize cut or fill operations and ensure conformity with topography so as to create the least erosion potential and adequately accommodate the volume and velocity of surface runoff.

Response: As shown on ESC segment plans, no significant topographic changes are proposed. Areas where the pipeline will be laid are generally within the existing right of way and will be configured to maintain the existing topography. The Finished Water Intertie site layout was configured to minimize cut and fill within the hydraulic design constraints of the Finished Water Pipelines which pass through the site. Stormwater management facilities are described in the Stormwater Report attached. Energy dissipators in the form of gravel riprap areas are proposed to spread flows, reduce release water velocity and avoid point discharge. (Note 37, ESC-004).

(10) Temporary vegetation and/or mulching shall be used to protect exposed critical areas during development.

Response: Temporary stabilization will be provided for that portion of the site where construction activities cease for 14 days with a covering of blown straw and a tackifier, loose straw, or an adequate covering of compost mulch until work resumes on that portion of the site (Note 33, ESC-004). Temporary stabilization measures are discussed in Note 25, final vegetation cover, or permanent stabilization measures will be initiated immediately whenever any land disturbing activities have permanently ceased or will be temporarily inactive on any portion of the site for 14 or more calendar days. The day activities cease, and the location of the land disturbing activities will be documented in the visual monitoring report. The installation of stabilization measures will be completed as soon as practicable, and no later than seven calendar days after stabilization has been initiated (Note 38, ESC 004) Temporary sediment control practices will not be removed until permanent vegetation or other cover of exposed areas is established (Note 34, ESC-004).

Temporary and/or permanent soil stabilization measures, such as grass seeding, permanent erosion control blankets, sediment fences, filter sock or straw wattles, and roadside seeding (see ESC-101-117), will be applied immediately on all disturbed areas as grading progresses (Note 13, ESC-004). Temporary seeding will be sterile wheatgrass-regreen, quick guard, or approved equal at a rate of 50 lbs/acre, or Hordeum Vulgare var. Poco-Poco barley at a rate of 60 lbs/acre (Note 33, ESC-004).

(11) Whenever feasible, natural vegetation shall be retained, protected, and supplemented;

(a) A 100-foot undisturbed buffer of natural vegetation shall be retained from the top of the bank of a stream, or from the ordinary high watermark (line of vegetation) of a water body, or within 100 feet of a wetland;

(b) The buffer required in subsection (11)(a) may only be disturbed upon the approval of a mitigation plan which utilizes erosion, sediment and stormwater control measures designed to perform as effectively as those prescribed in the most recent edition of the City of Portland Erosion and Sediment Control Manual and the City of Portland Stormwater Management Manual and which is consistent with attaining equivalent surface water quality standards as those established for the Tualatin River drainage basin in OAR 340-0410-345(4).

Response: Sheet ESC-003 of the plan set shows the tree plan, which retains existing trees when feasible. Sheets MUL-CE-1001 through 1004, RWP-CE- 1001 through 1006, FWP-CE-1001 through FWP-CE-1041, FWI-CE-1001 through FWI-CE 1004 show protected trees and tree protection fencing. Tree protection details are shown on ESC-202. Every tree within disturbance areas has been individually evaluated to determine whether it is feasible to retain. Retained trees will be protected with tree protection fencing shown on ESC-202. All vegetation outside of the right of ways or easements will be protected. Landscaping and seeding is shown on the final stabilization sheets of the plan set.

Plans show encroachment into the 100 ft buffer around Beaver Creek shown on FWP-CE-1010, 1024,1036. and encroachment upon the 100 ft buffer of two ponds shown on RWP-CE-1001,1003,1005, These encroachment areas have been mitigated in compliance with the City of Portland Erosion and Sediment Control Manual and the City of Portland Stormwater Management Manual.

Erosion control BMPS used in the encroachment of the 100-ft buffer of Beaver Creek shown on FWP-CE-1010, 1024, and 1036 have been designed to reduce the construction phase sediment load within the 100 ft stream buffer to less than 1 ton per acre per year. BMPS include sediment fences and straw wattles at the limits of disturbance and dewatering sediment bag for stormwater runoff within pipeline excavation. (Note 7, FWP-CE-1010) A dewatering plan will be prepared and submitted by the contractor for accumulated water from precipitation and uncontaminated groundwater seepage in excavations. Dewatering systems will be required to filter the discharge through at least two sediment barriers including a filter bag and sediment fence. Dewatering systems will be required to limit discharge quantity as specified for each stormwater basin (Note 2, ESC-004). Construction runoff will be contained and treated within the trenched area (Note 10 FWP-CE-1036).

The pipes are being constructed using trenchless methods under ponds on sheets RWP-CE-1001,1003,1005, so there will be no disturbance to ponds. Trenchless pipes have 6 to 12 feet of cover, there is no surface disturbance or tree disturbance from the pipes. The temporary road is being constructed using geotextile wrapped rock and a timber crane mat through the water body crossing which sit on existing ground to make sure there is no grading within the water body areas. Erosion Control BMPS have been designed to reduce the construction phase sediment load within the 100-ft pond buffer to less than 1 ton per acre per year. BMPS include sediment fences and straw wattles. (Note 9, RWP-CE-1003)

(12) Permanent plantings and any required structural erosion control and drainage measures shall be installed as soon as practical.

Response: Temporary and/or permanent soil stabilization measures, including grass seeding and permanent erosion control blankets, sediment fences, filter sock or straw wattles, and roadside seeding will be applied immediately on all disturbed areas as grading progresses. Permanent plantings and landscaping are shown on the final stabilization sheets of each grid. Disturbance areas not receiving pavement or gravel shall be restored with grass seeding. Proposed seed mixes are identified on sheet ESC-002 and ESC-004. Upon project completion, gravel surfacing from all staging areas will be removed, restored with topsoil and seeded.

Permanent plantings and any required erosion control and drainage measures shall be installed as soon as practical in compliance with Note 38. (Note 36, ESC-004). Temporary stabilization measures discussed in Note 25, final vegetation cover, or permanent stabilization measures will be initiated immediately whenever any land disturbing activities have permanently ceased or will be temporarily inactive on any portion of the site for 14 or more calendar days. The day activities cease, and the location of the land disturbing activities will be documented in the visual monitoring report. The installation of stabilization measures will be completed as soon as practicable, and no later than seven calendar days after stabilization has been initiated (Note 38, ESC-004)

(13) Provisions shall be made to effectively accommodate increased runoff caused by altered soil and surface conditions during and after development. The rate of surface water runoff shall be structurally retarded where necessary.

Response: Both peak flow rates and total stormwater volume will be controlled to minimize erosion at outlets and downstream channels and streambanks through stormwater controls shown in the stormwater report submitted with the land use application (Appendix H.2 and H3). Control of stormwater runoff during construction will be by dispersion through wattles and sediment barriers adjacent to construction activities. Energy dissipators in the form of gravel riprap areas are proposed to spread flows, reduce release water velocity and avoid point discharge. (Note 37, ESC-004).

Erosion at outlets and channels will be minimized through filter socks or wattles (Note 10, ESC-004). Steep slope areas where construction activities are not occurring will be delineated by a sediment fence to prevent disturbance. (Note 18, ESC-004)

Temporary sediment control practices will not be removed until permanent vegetation or other cover of exposed areas is established. Once construction is complete and the site is stabilized, all temporary erosion controls and retained soils will be removed and disposed of properly, unless needed for long term use following termination of permit coverage (Note 34, ESC-004).

(14) Sediment in the runoff water shall be trapped by use of debris basins, silt traps, or other measures until the disturbed area is stabilized.

Response: Sediment fences, stormwater basins, conveyance swales, and compost filter sock or wattles will trap sediment in stormwater runoff as shown on sheets MUL-CE-1001 through 1004, RWP-CE- 1001 through 1006, FWP-CE-1001 through FWP-CE-1041, FWI-CE-1001 through FWI-CE 1004 of the plan set (Note 10, ESC-004). Details for these measures are shown on ESC-201, ESC-202, and ESC-203 of the plan set.

Perimeter sediment control will be installed in the segment of construction, including storm drain inlet protection as well as all sediment basins, traps, and barriers prior to land disturbance in that segment of

construction (Note 9 ESC-004). Sediment will be controlled along the site perimeter and at all operational internal storm drain inlets (FWP-CE-1007, 1019, 1021, 1033, FWI-CE-1001, 1002) at all times during construction (Note 11, ESC-004).

(15) Provisions shall be made to prevent surface water from damaging the cut face of excavations or the sloping surface of fills by installation of temporary or permanent drainage across or above such areas, or by other suitable stabilization measures such as mulching or seeding.

Response: Temporary and/or permanent soil stabilization measures will be applied immediately on all disturbed areas as grading progresses (Note 25 and 33, ESC-004), per details on ESC-201, ESC 202, and ESC-203 and shown on sheets MUL-CE-1001 through 1004, RWP-CE- 1001 through 1006, FWP-CE-1001 through FWP-CE-1041, FWI-CE-1001 through FWI-CE 1004.

(16) All drainage measures shall be designed to prevent erosion and adequately carry existing and potential surface runoff to suitable drainageways such as storm drains, natural water bodies, drainage swales, or an approved drywell system.

Response: Construction of the pipelines by open cut involves excavation from the surface to the depth of the pipeline trench, installation of the pipeline, and backfill of the trench. Details of pipe excavation material protection are shown on ESC-203.

On RWP-CE-1001, RWP-CE-1003, and RWP-CE-1005 a sediment fence is shown around the entire staging area. On RWP-CE-1003 there is a temporary trench drain to prevent water from draining into the tunnel portal which discharges into an existing ditch in the area. A sediment fence is placed between the ponds and temporary roads. Biofilter bags are placed in the existing ditch.

The pipeline construction by open cut trench will be completed in segments. There are no downstream ends through which surface water drainage will be conveyed out of the excavation nor are there downhill sides of the pipeline trench excavation across which surface water drainage will be conveyed out of the excavation. An open pipeline trench will not become a channel for surface drainage during a storm event during construction, rather the open pipeline trench excavation will capture and hold rainwater and surface drainage during a storm even during construction. Water encountered within excavations, either groundwater intrusion or surface water runoff into the excavation, will be evacuated by pumps and hoses and passed through sediment trap bags as shown in detail 3125-306 on sheet ESC-203. Water pumped through sediment bags is dispersed across the length of the bag and passes through at least two additional sediment control barriers prior to final discharge to drainage swales or water bodies.

Existing and potential surface runoff will be carried to storm drains with perimeter sediment control. Sediment fences, stormwater basins, conveyance swales, and compost filter sock or wattles will trap sediment in stormwater runoff as shown on ESC-101 through ESC-117 of the plan set (Note 10, ESC-004). Details for these measures are shown on ESC-201 and ESC-202 of the plan set. Perimeter sediment control will be installed in the segment of construction, including storm drain inlet protection as well as all sediment basins, traps, and barriers prior to land disturbance in that segment of construction (Note 9 ESC-004). Sediment will be controlled along the site perimeter and at all

operational internal storm drain inlets (FWP-CE-1007, 1019, 1021, 1033, FWI-CE-1001, 1002) at all times during construction (Note 11, ESC-004).

The intertie area shown on FWI-CE-1001 through 1004 has a conveyance swale, stormwater basin and inlet with an inlet protection. All disturbance areas not receiving pavement or gravel, unless otherwise shown, shall be restored with grass seeding per general sheet notes. Slopes steeper than 3:1 will receive grass seeding and permanent erosion control blankets as specified in sheet ESC-201 (general sheet Notes). Vegetative seed mixtures are detailed on ESC-002 and ESC-004.

(17) Where drainage swales are used to divert surface waters, they shall be vegetated or protected as required to minimize potential erosion.

Response: A proposed stormwater conveyance swale is shown at the Finished Water Intertie site on FWI-CE-1003. All disturbed areas shall be restored with grass seeding as specified on ESC-201 (general sheet Notes,). Seed mixtures are detailed on ESC-002 and ESC-004.

(18) Erosion and sediment control measures must be utilized such that no visible or measurable erosion or sediment shall exit the site, enter the public right-of-way or be deposited into any water body or storm drainage system. Control measures which may be required include, but are not limited to:

(a) Energy absorbing devices to reduce runoff water velocity;

(b) Sedimentation controls such as sediment or debris basins. Any trapped materials shall be removed to an approved disposal site on an approved schedule;

(c) Dispersal of water runoff from developed areas over large undisturbed areas.

Response: Perimeter sediment control will be installed, including storm drain inlet protection as well as sediment fences, filter socks or straw wattles, and biofilter bags per the details shown on sheets ESC 201, 202, and 203, prior to land disturbance (Note 9, ESC-004).

Construction of the pipelines by open cut involves excavation from the surface to the depth of the pipeline trench, installation of the pipeline, and backfill of the trench. Ground disturbance for construction of pipeline by open cut includes the width of the pipeline trench for the length of the open cut pipeline, plus the associated construction zones adjacent to the pipeline trench for construction equipment, temporary public traffic or access, and erosion and sedimentation control measures. Details of pipe excavation material protection are shown on ESC-203.

On RWP-CE-1001, RWP-CE-1003, and RWP-CE-1005 a sediment fence is shown around the entire staging area. On RWP-CE-1003 there is a temporary trench drain to prevent water from draining into the tunnel portal which discharges into an existing ditch in the area. A sediment fence is also placed between the ponds and temporary roads. Biofilter bags are placed in the existing ditch as well.

The pipeline construction by open cut trench will be completed in segments. There are no downstream ends through which surface water drainage will be conveyed out of the excavation nor are there downhill sides of the pipeline trench excavation across which surface water drainage will be conveyed out of the excavation. An open pipeline trench will not become a channel for surface drainage during a storm event during construction, rather the open pipeline trench excavation will capture and hold rainwater and surface drainage during a storm even during construction. Water encountered within

excavations, either groundwater intrusion or surface water runoff into the excavation, will be evacuated by pumps and hoses and passed through sediment trap bags as shown in detail 3125-306 on drawing ESC-203. Water pumped through sediment bags is dispersed across the length of the bag and passes through at least two additional sediment control barriers prior to final discharge to drainage swales or water bodies.

Control of stormwater runoff during construction will be by dispersion through wattles and sediment barriers adjacent to construction activities. Energy dissipators in the form of gravel riprap areas are proposed to spread flows, reduce release water velocity and avoid point discharge. (Note 37, ESC-004). Temporary ESC BMPs are appropriately designed for the design storm for each temporary drainage basin. Erosion at outlets and channels will be minimized through filter socks of wattles (Note 10, ESC-004). Sediment control device details are found on ESC-201, ESC-202, and ESC-203. Trapped sediment will be removed from sediment fences before it reaches one third of the above ground fence height and before fence removal. Trapped sediment will be removed to an approved disposal site (Note 27, ESC 004).

Tracking of sediment onto public or private roads will be preventing using construction entrances (MUL-CE-1002, 1003, RWP-CE-1002, 1004 FWP-CE-1001, 1007, 1021, FWI-CE-1001, 1002, 1003), graveled or paved exits and parking areas, gravel on all unpaved roads located onsite or exit tire washes (MUL-CE-1002, RWP-CE-1002, 1004, FWP-CE-1007, 1019, 1021). (Note 16, 17, ESC 004)

Dust control will be addressed by water spraying and covering of soil piles to mitigate wind-blown soil. (Note 23, ESC 004)

No washing of sediment into storm sewers or drainage ways is proposed. Vacuuming or dry sweeping and material pickup will be used to cleanup released sediments. (Note 31, ESC-004). Temporary stabilization will be provided for that portion of the site where construction activities cease for 14 days with a covering of blown straw and a tackifier, loose straw, or an adequate covering of compost mulch until work resumes on that portion of the site. (Note 33, ESC-004) Temporary sediment control practices will not be removed until permanent vegetation or other cover of exposed areas is established once construction is complete and the site is stabilized (Note 34, ESC-004).

Erosion and sediment will not enter the public right of way or be deposited into any water body. No visible or measurable erosion or sediment can enter the roadway or be deposited in waterbodies when working in the public right of way (Note 35, ESC-004).

(19) Disposed spoil material or stockpiled topsoil shall be prevented from eroding into water bodies by applying mulch or other protective covering; or by location at a sufficient distance from water bodies or by other sediment reduction measures.

Response: Clearing and grading will be sequenced to the maximum extent practical to prevent exposed inactive areas from becoming a source of erosion (Note 5, ESC-004). Material and soil staging areas are established on FWP-CE-1017, 1019, FWI-CE-1002, 1003. Pipe excavation material protection is shown in detail on ESC-203 and shows a protective lining over pipe excavation material. Water bodies are protected from erosion by the establishment of erosion control measures described in this narrative response to MCC 39.6225(B)(11).

(20) Such non-erosion pollution associated with construction such as pesticides, fertilizers, petrochemicals, solid wastes, construction chemicals, or wastewaters shall be prevented from leaving the construction site through proper handling, disposal, continuous site monitoring and clean-up activities.

Response: Material and waste staging areas will be established as shown on RWP-CE-1001, 1002, 1003, 1004, FWP-CE-1013, 1017, 1019, 1021FWI-CE-1002,1003 (Note 14, ESC-004). Waste container lids will be kept closed when not in use and closed at the end of the business day for those containers that are actively used throughout the day. (Note 15, ESC-004) Prohibited discharges will be prevented from leaving the construction site through the use of concrete wash-outs (Note 17, ESC-004). Contractor best management practices including secondary containment will be used to prevent or minimize stormwater exposure to pollutants from spills; vehicle and equipment fueling, maintenance, and storage; other cleaning and maintenance activities; and waste handling activities. These pollutants include fuel, hydraulic fluid, and other oils from vehicles and machinery, as well as debris, fertilizer, pesticides and herbicides, paints, solvents, curing compounds and adhesives from construction operations. A written spill prevention plan will be prepared and submitted by the contractor addressing response procedures, employee training on spill prevention and proper disposal procedures, spill kits in all vehicles, regular maintenance schedule for vehicles and machinery, material delivery and storage controls, training and signage, and covered storage areas for waste and supplies (Note 20, ESC-004).

(21) Ground disturbing activities within a water body shall use instream best management practices prescribed in the most recent edition of the City of Portland Erosion and Sediment Control Manual.

Response: No ground disturbing activities within a water body is proposed. The pipes are being constructed using trenchless methods under ponds on sheets RWP-CE-1001,1003,1005, FWP-CE-1010, 1024, 1036 so there will be no disturbance to ponds. The temporary road is being constructed using geotextile wrapped rock and a timber crane mat through the existing water body crossing which sits on existing ground to make sure there is no grading within the water body areas. A sediment fence is placed at road limits to ensure no soil goes into ponds.

(22) The total daily number of fill haul truck trips shall not cause a transportation impact (as defined in the Multnomah County Road Rules) to the transportation system or fill haul truck travel routes.

Response: No regulated fill is proposed to be deposited on the pipeline project areas. No fill haul truck trips are proposed.

(23) Fill trucks shall be constructed, loaded, covered, or otherwise managed to prevent any of their load from dropping, sifting, leaking, or otherwise escaping from the vehicle. No fill shall be tracked or discharged in any manner onto any public right-of-way.

Response: No regulated fill is proposed to be deposited on the pipeline project areas. No fill haul truck trips are proposed. Tire washes will be provided on SE Lusted Road at the Multnomah Connection (See Sheet MUL-CE-1001) and on SE Lusted Road at the finished water intertie (See Sheet FWI-CE-1001) will be provided to prevent tracking of sediment onto public roads. Public Roads will be swept daily. Private

farm roads utilized during construction will be improved with gravel prior to land disturbing activities. These BMPS must be in place prior to land-disturbing activities (Note 16, ESC-004)

(24) No compensation, monetary or otherwise, shall be received by the property owner for the receipt or placement of fill.

Response: No regulated fill is proposed to be deposited on the pipeline project areas. PWB will not receive compensation for structural fill used in this project.