Appendix B

Summary of Subsurface Investigation of Planning Area 1

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To characterize subsurface conditions at Planning Area 1, Snoqualmie Mill Ventures LLC retained Farallon Consulting, L.L.C. to conduct a subsurface investigation in 2020 and 2021 that included installation of test pits, borings, and monitoring wells across Planning Area 1 of the Snoqualmie Mill property. The test pit, boring, and monitoring well locations are shown on Exhibit B-1.

The objectives of the subsurface investigation were to assess whether soil or groundwater in Planning Area 1 has been impacted by historical fill material placed in Planning Area 1, by releases from historical activities conducted in Planning Areas 2 or 3, or by releases from historical activities conducted in Planning Area 1. The subsurface investigation was also intended to address comments issued by the Washington State Department of Ecology (Ecology) and others on the Draft Environmental Impact Statement (Draft EIS) for the Snoqualmie Mill property pertaining to the environmental condition of Planning Area 1.

A formal report summarizing the results of the subsurface investigation has not yet been finalized (as of September 2021), but this summary provides an overview of the data and results. The only contaminants detected in soil or groundwater in Planning Area 1 at concentrations exceeding Method A cleanup levels established under the Washington Model Toxics Control Act (MTCA) were **arsenic and total petroleum hydrocarbons,** with the latter comprised of gasoline-range organics (GRO), diesel-range organics (DRO), and oil-range organics (ORO). The arsenic detected in native soil appears to be representative of natural background conditions, and not associated with the fill material or a release from historical activities conducted in Planning Area 1, 2, or 3. The data suggest that the elevated arsenic concentrations in soil underlying the fill material are naturally occurring background conditions on the property. No arsenic was detected in the fill material itself at concentrations exceeding the MTCA Method A cleanup level. The elevated arsenic concentrations in groundwater are either naturally occurring background conditions or representative of an upgradient source of arsenic off the property. The GRO detected in a single soil sample at a concentration exceeding the MTCA Method A cleanup level is attributed to naturally occurring terpenes produced from plant material. The ORO detected in the fill material appears to be predominantly of biogenic origin due to the woody organic material prevalent throughout Planning Area 1. The DRO and ORO detected in groundwater are also attributable to naturally occurring biogenic material, and do not appear to be associated with the fill material itself or a release from historical activities conducted in Planning Area 1, 2, or 3.

SUMMARY OF FIELD ACTIVITIES

A total of eight monitoring wells were installed as part of the subsurface investigation to assess groundwater quality and flow direction, including two installed entirely within the fill material.

The six deeper wells, MW-1 though MW-6, have well-screen intervals extending into the native soils underlying the fill material. Nine test pits, designated TP-1 through TP-9, were installed within the fill material to depths ranging from 8 to 12 feet below ground surface (bgs). In addition to the eight borings for the monitoring wells, three hand-auger borings, designated HA-1 through HA-3, were advanced within the fill material for collection of shallow soil samples. Abundant wood debris was encountered in the test pits and borings within the fill material, which ranged from 5 to greater than 16 feet in thickness. Field screening of soil samples from the test pits and borings did not detect unusual sheens, odors, or discoloration, or soil conditions characteristic of petroleum hydrocarbons, solvents, metals, ash fill, or other contaminants, except for a petroleum-like odor detected in one boring at a depth of approximately 15 feet bgs that was later attributed to the presence of terpenes, which are naturally occurring hydrocarbon compounds produced primarily by plants, conifer trees in particular.

Soil and groundwater samples collected during the subsurface investigation were submitted for laboratory analysis for one of more of the following:

- DRO and ORO by Northwest Method NWTPH-Dx with and without acid silica gel cleanup;
- GRO by Northwest Method NWTPH-Gx;
- Benzene, toluene, ethylbenzene, and xylenes (BTEX) by U.S. Environmental Protection Agency (EPA) Method 8021B;
- Methyl tert butyl ether (MTBE) by EPA Method 8021B (groundwater only);
- NWTPH-Hydrocarbon Identification (HCID) by Northwest Method NWTPH;
- Extractable petroleum hydrocarbons by Northwest Method NWEPH;
- Volatile petroleum hydrocarbons by Northwest Method NWVPH;
- Volatile organic compounds (VOCs) by EPA Method 8260D;
- Semivolatile organic compounds (SVOCs) by EPA Methods 8270E;
- Polycyclic aromatic compounds (PAHs) by 8270E/SIM; and
- Arsenic, cadmium, chromium, lead, and mercury by EPA Methods 6010D and 7471B (soil) and EPA Methods 200.8 and 7470A (groundwater).

The analyses were selected to provide a general characterization of soil and groundwater in Planning Area 1 and to satisfy the objectives of the subsurface investigation. To assess whether the fill material was a source of contamination, soil samples were collected from both the fill material and native soil underlying the fill material and submitted for analysis of total petroleum hydrocarbons, BTEX, metals, PAHs, and SVOCs. To assess whether historical activities conducted in Planning Area 1 were a source of contamination, soil and groundwater samples were collected from locations where logs were known to be stored and submitted for analysis of PAHs and SVOCs, including pentachlorophenol and cresols, which would be indicative of impacts from constituents used in wood-treating operations. Samples would have also been submitted for analysis of dioxins-furans if treated lumber had been encountered in the test pits,

but none was observed. To assess whether historical activities conducted in Planning Areas 2 and 3 were a source of contamination to Planning Area 1, soil and groundwater samples were collected from locations proximate to those planning areas and submitted for analysis of petroleum hydrocarbons, PAHs, and SVOCs.

ANALYTICAL RESULTS

Total Petroleum Hydrocarbons

Soil Samples

GRO was detected in a single soil sample at a concentration exceeding the MTCA Method A cleanup level during the subsurface investigation. The GRO detection in this sample was flagged by the laboratory as not similar to a typical gasoline standard, and additional sample volume stored at the laboratory was noted to have a "turpentine-like" odor. Additional analyses of the sample for VOCs did not detect any VOC constituents at concentrations exceeding the laboratory practical quantitation limits, except for P-Isopropyltoluene, which is a naturally occurring terpene produced primarily by plants, and especially in conifer trees. Based on the chromatographic evidence, olfactory observation, and the presence of terpenes and lack of gasoline-related VOCs in the sample, the flagged GRO detection in the sample is attributed to naturally occurring organic compounds related to the wood waste found in soil at Planning Area 1.

DRO was not detected in any soil samples at concentrations exceeding the MTCA Method A cleanup level.

ORO was not detected in any soil samples at concentrations exceeding the MTCA Method A cleanup level. ORO was detected at concentrations exceeding the MTCA Method A cleanup level in two shallow samples collected from fill material. Both samples contained significant amounts of visible organic material including woody debris at 30 to 100 percent of the sample. Accordingly, the samples were analyzed using an acid-silica gel cleanup procedure to remove polar organics that are characteristic of natural organic matter. After use of the acid-silica gel cleanup procedure, the ORO concentrations in both samples were well below the MTCA Method A cleanup level, indicating that most of the ORO detected in the samples was of biogenic origin as a result of woody organic material prevalent in the fill material throughout Planning Area 1.

Groundwater Samples

GRO was not detected at concentrations exceeding either the MTCA Method A cleanup level or the laboratory practical quantitation limits in any of the groundwater samples collected during the subsurface investigation.

DRO was not detected at concentrations exceeding the MTCA Method A cleanup level in any groundwater samples, with the exception of a sample collected from monitoring well MW-4. ORO was detected at concentrations exceeding the MTCA Method A cleanup level in

groundwater samples collected from monitoring wells MW-1, MW-3, MW-4, and MW-5. Due to the woody organic material prevalent in the fill material throughout Planning Area 1, the groundwater samples were analyzed using the acid-silica gel cleanup procedure. After use of the acid-silica gel cleanup procedure, DRO or ORO were not detected in the samples, indicating that the DRO and ORO was likely of biogenic origin. This conclusion is further supported by the absence of volatile petroleum hydrocarbons and extractable petroleum hydrocarbons in the groundwater samples. Aliphatic or aromatic hydrocarbons were not detected in any groundwater samples collected from monitoring wells MW-1 through MW-6, with the exception of one aromatics range (C21–C34) detected in the sample collected from monitoring well MW-1.

BTEX and MTBE

BTEX constituents, which would be indicative of petroleum contamination, were not detected in any soil or groundwater samples at concentrations exceeding MTCA Method A cleanup levels.

MTBE, which was evaluated in groundwater only, was not detected in any groundwater samples at concentrations exceeding the MTCA Method A cleanup level.

SVOCs

No SVOCs were detected in any soil or groundwater samples at concentrations exceeding MTCA cleanup levels.

Metals

Arsenic was the only metal analyzed that was detected at concentrations exceeding MTCA Method A cleanup levels in the soil and groundwater samples. The fill found on the site did not contain either arsenic or other metals at concentrations exceeding MTCA Method A cleanup levels.

Soil Samples

Arsenic was detected at concentrations exceeding the MTCA Method A cleanup level only in soil samples collected from native soil underlying the fill material. Soil samples collected from the fill material itself did not contain arsenic at concentrations exceeding MTCA Method A cleanup levels. The arsenic detected in the native soil is attributed to natural background concentrations in soil.

Groundwater Samples

Arsenic was detected at concentrations exceeding the MTCA Method A cleanup level in the groundwater samples collected from the six deeper monitoring wells, MW-1 through MW-6, which are screened primarily in the native soil beneath the fill material, but not in the groundwater samples collected from the two shallow monitoring wells MW-2S and MW-5S,

which are screened within the fill material and are located immediately adjacent to monitoring wells MW-2 and MW-5. The highest concentrations of arsenic were detected in monitoring wells MW-6 and MW-3, which are located on the western perimeter of Planning Area 1. The concentrations of total and dissolved arsenic exceeding the MTCA Method A cleanup level were nearly identical at each monitoring well, indicating that the arsenic concentrations in the groundwater samples are composed almost entirely of dissolved arsenic.

Total and dissolved arsenic were detected at concentrations less than the MTCA Method A cleanup level in shallow wells MW-2S and MW-5S, which are screened within the fill material and located immediately adjacent to monitoring wells MW-2 and MW-5, demonstrating that groundwater with arsenic concentrations exceeding the MTCA Method A cleanup level is not present within the saturated fill soil. The difference between the arsenic concentrations detected in the deeper and shallow monitoring wells indicates that the fill material is not the source of the arsenic in groundwater. This conclusion is supported by the analytical results of the soil samples, which identified arsenic at concentrations exceeding the MTCA Method A cleanup level only in native soil, not in fill material. Elevated concentrations of arsenic exceeding MTCA Method A cleanup levels were detected in groundwater within native soils in Planning Area 1 but not in shallow groundwater in the overlying fill material, which suggests that the elevated arsenic concentrations are likely naturally occurring background concentrations. The highest concentrations of arsenic in groundwater were detected in samples collected from upgradient monitoring wells MW-6 and MW-3, which are located on the western-perimeter of Planning Area 1, upgradient from other monitoring wells. The elevated arsenic in those upgradient wells is indicative of either an upgradient source of arsenic located off of the Snoqualmie Mill property or wide variability in background concentrations.

Groundwater Flow Direction

The groundwater flow direction in Planning Area 1 is generally to the southeast, as determined using groundwater elevation data from January 2021. Based on these data, Planning Area 1 is upgradient of Planning Areas 2 and 3, limiting the potential for migration of contaminated groundwater into Planning Area 1 from areas of historic releases in Planning Areas 2 and 3.

CONCLUSION

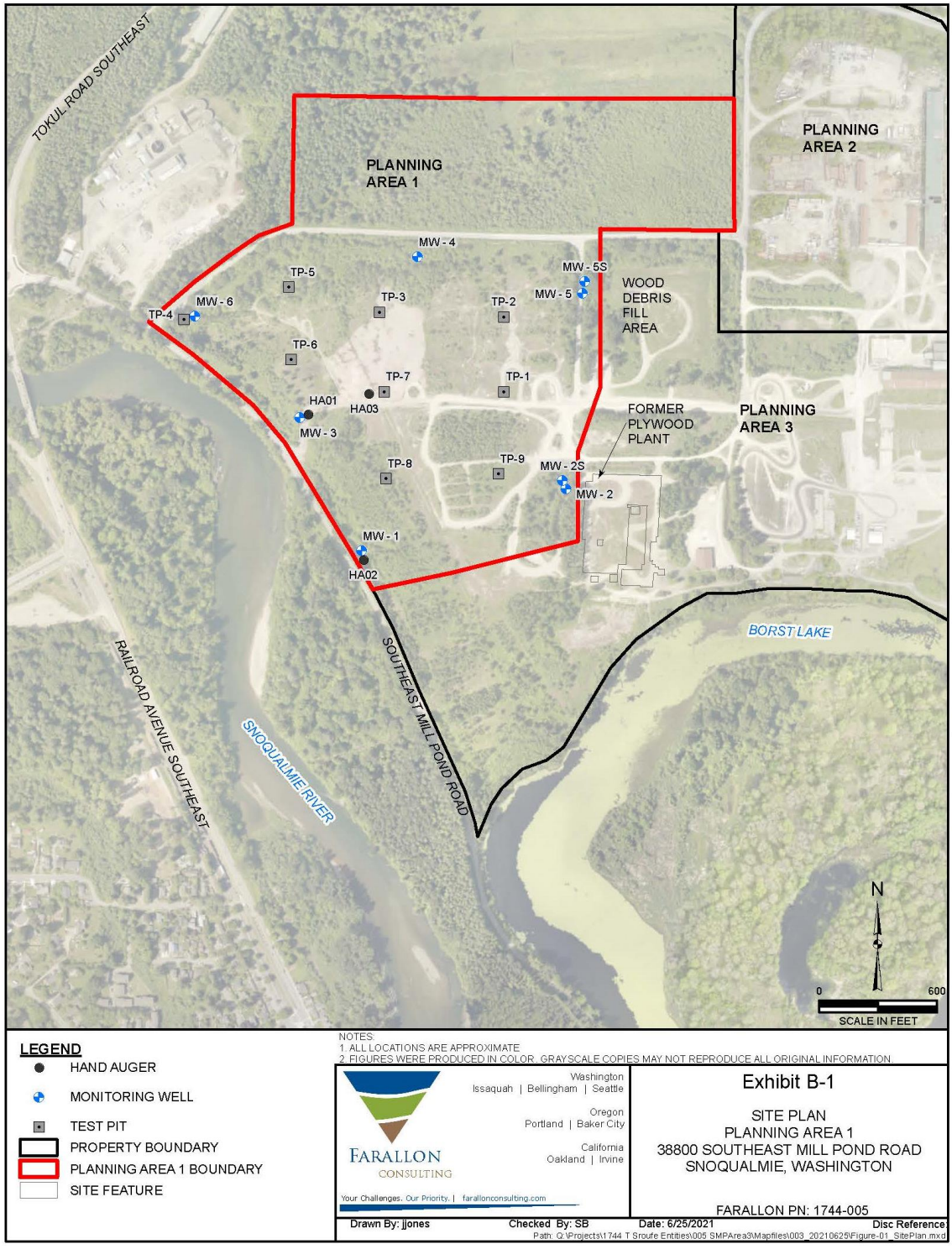
The subsurface investigation achieved the stated objectives of assessing whether soil or groundwater in Planning Area 1 has been impacted by historical fill material placed in Planning Area 1, by releases from historical activities conducted in Planning Area 2 or 3, or by releases from historical activities conducted in Planning Area 1.

The analytical results and field observations during the investigation did not find evidence that petroleum hydrocarbons or other constituents of potential concern are present at concentrations exceeding MTCA Method A cleanup levels in fill material in Planning Area 1, that contaminants have migrated into Planning Area 1 from Planning Area 2 or 3, or that historical activities in Planning Area 1 resulted in releases of hazardous substances to soil or groundwater at concentrations exceeding MTCA Method A cleanup levels. The only constituents detected at

concentrations exceeding MTCA cleanup levels in soil samples collected at Planning Area 1 appear to be either naturally occurring background concentrations or predominantly biogenic in origin based on several lines of evidence.

The groundwater analytical results for the two shallow and deeper monitoring well pairs (MW-2/MW-2S and MW-5/MW-5S) that were installed on the eastern perimeter of Planning Area 1, adjacent to Planning Areas 2 and 3, demonstrate that contaminated groundwater is not migrating into Planning Area 1 from Planning Area 2 or 3.

Exhibit B-1. Subsurface Investigation Site Plan



Source: Farallon Consulting, 2021.