Third Periodic Review
McCollum Park

600 128th St SE, Everett, Snohomish County
Facility Site ID: 2732, Cleanup Site ID: 3992

Toxics Cleanup Program, Northwest Region

Washington State Department of Ecology
Shoreline, Washington

December 2023

Document Information

This document is available on the Department of Ecology's McCollum Park cleanup site page.[1]

Related Information

- Facility Site ID: 2732
- Cleanup Site ID: 3992

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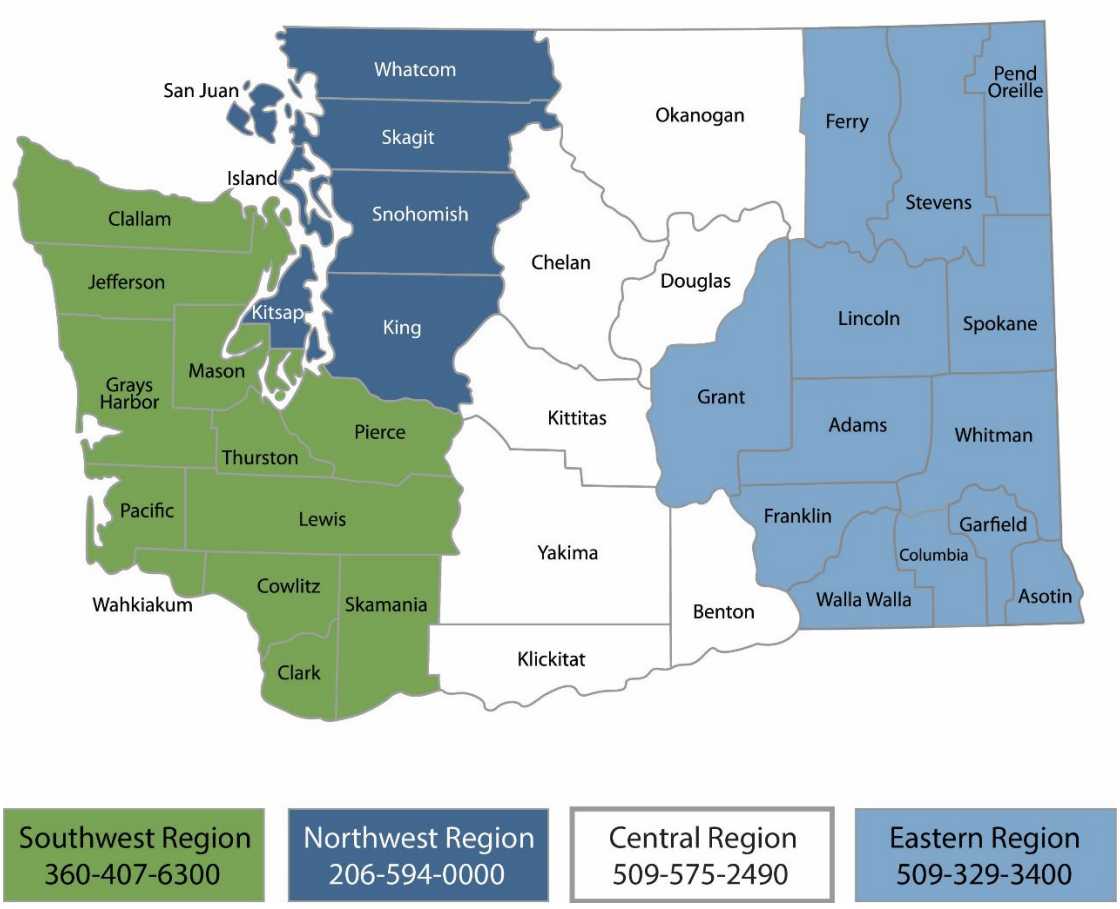
[1] https://apps.ecology.wa.gov/cleanupsearch/site/3992
[2] https://ecology.wa.gov/About-us/Who-we-are/Our-Programs/Toxics-Cleanup
[3] https://ecology.wa.gov/About-us/Accountability-transparency/Our-website/Accessibility

Department of Ecology's Regional Offices

Map of Counties Served



Southwest Region 360-407-6300	Northwest Region 206-594-0000	Central Region 509-575-2490	Eastern Region 509-329-3400

Region	Counties served	Mailing Address	Phone
Southwest	Clallam, Clark, Cowlitz, Grays Harbor, Jefferson, Mason, Lewis, Pacific, Pierce, Skamania, Thurston, Wahkiakum	PO Box 47775 Olympia, WA 98504	360-407-6300
Northwest	Island, King, Kitsap, San Juan, Skagit, Snohomish, Whatcom	PO Box 330316 Shoreline, WA 98133	206-594-0000
Central	Benton, Chelan, Douglas, Kittitas, Klickitat, Okanogan, Yakima	1250 W Alder St Union Gap, WA 98903	509-575-2490
Eastern	Adams, Asotin, Columbia, Ferry, Franklin, Garfield, Grant, Lincoln, Pend Oreille, Spokane, Stevens, Walla Walla, Whitman	4601 N Monroe Spokane, WA 99205	509-329-3400
Headquarters	Across Washington	PO Box 46700 Olympia, WA 98504	360-407-6000

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Introduction

The Washington State Department of Ecology (Ecology) reviewed post-cleanup site conditions and monitoring data to ensure human health and the environment are being protected at the McCollum Park cleanup site (Site). Site cleanup was implemented under the Model Toxics Control Act (MTCA) regulations, Chapter 173-340 Washington Administrative Code (WAC). This is the third periodic review conducted for this Site. Ecology completed the last periodic review in November 2016.

Cleanup activities at this Site were completed under an Agreed Order (DE 96 TC-N126). Residual concentrations of petroleum hydrocarbons, volatile and semi-volatile organic compounds, metals, and chlorinated compounds that exceeded MTCA cleanup levels remain on the property. The MTCA cleanup levels for soil and groundwater are established under WAC 173-340-740[4] and WAC 173-340-720,[5] respectively.

Ecology determined institutional controls in the form of a restrictive covenant would be required as part of the cleanup action for the Site. WAC 173-340-420(2)[6] requires Ecology to conduct a periodic review of certain sites every five years. For this Site, a periodic review is required because the cleanup activities were completed under an Agreed Order and institutional controls were required as part of the cleanup action.

When evaluating whether human health and the environment are being protected, Ecology must consider the following factors (WAC 173-340-420(4)):

a) The effectiveness of ongoing or completed cleanup actions, including the effectiveness of engineered controls and institutional controls in limiting exposure to hazardous substances remaining at the site

b) New scientific information for individual hazardous substances or mixtures present at the site

c) New applicable state and federal laws for hazardous substances present at the site

d) Current and projected site and resource uses

e) The availability and practicability of more permanent remedies

f) The availability of improved analytical techniques to evaluate compliance with cleanup levels

Ecology publishes a notice of all periodic reviews in the *Site Register* and provides an opportunity for public comment.

[4] https://app.leg.wa.gov/WAC/default.aspx?cite=173-340-740
[5] https://app.leg.wa.gov/WAC/default.aspx?cite=173-340-720
[6] https://app.leg.wa.gov/wac/default.aspx?cite=173-340-420

Summary of Site Conditions

Site description and history

The McCollum Park Site, also known as Emander Landfill, is located at 600 128th Street SE, approximately 1/2 mile east of Interstate 5 on 128th Street SE in Snohomish County (County), Washington in an unincorporated area near the city limits of Mill Creek. McCollum Park includes Snohomish County parcel numbers 28053000302400, 28053000302100, and 28053100200200 (the Property).

The Emander Landfill (landfill) comprises most of the northern half of the 78-acre park. The limits of the landfill extend beneath 128th Street SE to the north, across Dumas Road to the east, and is bordered by North Creek to the west and wooded parkland to the south. The Remedial Investigation (RI) considered the landfill and a larger "study area," which encompassed the park, portions of the landfill that extend into a public right-of-way, areas in which groundwater and surface water monitoring stations have been installed, residences along Heatherwood Drive (located south of the landfill), and a trailer park located north of the landfill across 128th Street SE.

The landfill occupies property that was acquired by the County in 1922. Gravel mining operations commenced in 1929. The gravel pit was used by the County for refuse disposal from about 1947 to 1967 and was known as the Emander Landfill during and following landfill operations. Landfilling operations were substantially completed by 1967, and a soil cover was installed. The Site was subsequently turned over to the Snohomish County Parks and Recreation Department for development as McCollum County Park, and a transit Park and Ride at 620 128th Street SE was developed over the north part of the landfill.

Little documentation is available regarding disposal operations at the landfill; however, pre-RI and RI drilling encountered refuse typical of municipal solid waste landfills, including glass, plastic, paper, wood, metal, and concrete demolition debris. This refuse was mixed with soil in varying percentages throughout the landfill and contained petroleum hydrocarbons in several areas. Former truck drivers indicated fuel storage tank bottoms were disposed of at the landfill. In addition, anecdotal information suggests septic tank contents and ship bilge water were also disposed of at the landfill.

The ground surface currently slopes gently downward from the northern portion of the landfill to the east, west, and south.

A Park and Ride is located on the north side of the landfill. A swimming pool, associated clubhouse/locker rooms, and parking lot are located near the western edge of the landfill. A segment of Dumas Road crosses the eastern portion of the landfill. Two County Parks and Recreation buildings leased by Washington State University Extension Services and a building occupied by Northwest Stream Center are located immediately southwest of the landfill. A dirt bike track is also located on the landfill. The dirt track, swimming pool, and clubhouse/locker rooms are no longer in use.

Surface water features near McCollum Park include: North Creek and its tributaries; a pond on the golf driving range (driving range pond) north of the landfill; a seep on the adjacent property south of the landfill (seep); and stormwater retention ponds east and south of the landfill. North Creek provides spawning and rearing habitat for numerous resident and anadromous fish species (fish that ascend rivers from the sea to breed).

Residential development borders the park to the east, west, and south, and a golf driving range is located to the north across 128th Street SE. Several trailer homes are located across 128th Street SE, northeast of McCollum Park.

The Silver Lake and Alderwood Water Districts serve McCollum Park and most of the surrounding area. Six residences on Heatherwood Drive, over 1,000 feet south of the landfill, were supplied drinking water by domestic wells in the past. It is unknown if these wells are still in use.

A vicinity map is in Appendix A, and a Site plan is in Appendix B.

Site investigations

As part of the County's Master Plan Implementation for McCollum Park, an Environmental Impact Statement (EIS) was issued in April 1993. It identified potential environmental impacts from landfill gas and landfill contents encountered in the landfill during environmental investigations. The EIS established mitigation measures, including additional fill soil over the landfill, a partial synthetic cover, a limited landfill gas management system, and long-term groundwater monitoring.

Ecology completed a Site Hazard Assessment in 1995 and placed the landfill on the Washington State Hazardous Sites List. The County originally undertook the Remedial Investigation/Feasibility Study (RI/FS) as an independent cleanup action. In April 1995, the County entered negotiations with Ecology for an Agreed Order.

Revised draft reports of the RI and FS were issued in November and October 1995, respectively, after Ecology's review of the first draft reports. The County Executive signed the Agreed Order on October 25, 1995.

Historical investigations and remediation began with the installation of several landfill gas vents/flares in the 1970s and 1980s. Environmental and geotechnical investigations undertaken by the County as a part of the Master Plan between 1985 and January 20, 1995 (pre-RI investigations) identified the extent and thickness of landfill contents, and assessed the impacts on groundwater, surface water, and air quality. The results of these pre-RI investigations are summarized as follows:

- Landfill contents - Refuse thickness ranged from approximately 3 to 19 feet. Prior to the 1995 construction season, refuse was overlain by a 1-to-6-foot soil cover (the cover was mixed with minor amounts of domestic refuse in the southern portion of the landfill). Refuse within parts of the landfill was found to be impacted with petroleum hydrocarbons. Black, sludge-like liquid was encountered in the landfill's south-central

portion. Landfill sludge samples revealed concentrations of volatile and semi-volatile organic compounds (VOCs, SVOCs), metals, and total petroleum hydrocarbons (TPH).

- Groundwater - VOCs and metals were detected in groundwater. Groundwater sampled from monitoring wells downgradient of the landfill exceeded state groundwater quality standards (WAC 173-200) and/or MTCA Method A cleanup levels for benzene, vinyl chloride, 1,2-dichloroethane, trichloroethene, arsenic, chromium, and lead.
- Surface Water - North Creek water samples were analyzed for various water quality parameters as part of a larger study of surface water quality in southern Snohomish County. Results indicated exceedances of several ambient water quality criteria; however, these exceedances were not attributed to landfill impacts.
- Air Quality - VOCs were detected in soil gas samples; concentrations were below state Acceptable Source Impact Levels (ASIL) for all compounds. ASILs for benzene, ethylbenzene, toluene, and xylenes (BETX), TPH diesel, and hydrogen sulfide were exceeded in an air sample collected directly above exposed sludge. Note that ASILs are different than MTCA air cleanup levels.

The RI evaluated the nature and extent of landfill sludge and potential landfill-related impacts to groundwater, surface water, and sediment. The landfill was investigated with borings and test pits. Sludge samples and hydrocarbon-contaminated refuse (HCR) samples were analyzed for VOCs, SVOCs (including polycyclic aromatic hydrocarbons [PAHs]), organochlorine pesticides, polychlorinated biphenyls (PCBs), metals, and TPH. Two classes of VOCs (BETX and chlorinated hydrocarbons) were detected in sludge and refuse samples. BETX compounds were more prevalent, with higher concentrations occurring in sludge than in HCR. Several SVOCs, including a variety of PAHs, were detected in sludge and refuse samples; concentrations were higher in sludge than in HCR. A single PCB compound was detected in two HCR samples collected in the base of a stormwater pond excavation in the southern portion of the landfill. No PCBs were detected in sludge. Various organochlorine pesticides were detected in several sludge and HCR samples. Arsenic, barium, copper, lead, and zinc were detected in sludge and HCR samples, generally at higher concentrations in sludge. Detected TPHs extended from the gasoline to heavy oil range, with widely varying concentrations.

The total volume of sludge was approximately 4,100 cubic yards. HCR overlaid and surrounded the sludge. Deeper portions of the sludge were below the water table year-round; HCR encountered during the RI was above the water table. A single unconfined aquifer was identified at the Site, with groundwater gradients generally oriented to the south and southwest.

Three sources of groundwater contamination were identified during the RI: sludge, HCR, and domestic refuse. Contaminants from all three of these sources migrate to groundwater via the infiltration of precipitation. Sludge and domestic refuse were identified in the saturated zone in some locations, allowing contaminants to directly leach into groundwater. The landfill impacted groundwater in the upper portion of the aquifer south/southwest of the landfill; contaminants include VOCs, PAHs, TPH, and metals. Contaminants generally had higher concentrations in

shallow wells than deep wells, with one exception. MW16 and MW18 contained vinyl chloride one to two orders of magnitude greater than the shallow well detections.

A residential well on Heatherwood Drive was sampled during the RI. No VOCs, SVOCs, PAHs, PCBs, or fuel hydrocarbons were detected. Copper, lead, and zinc were detected in the residential well at concentrations greater than those measured both upgradient and downgradient of the landfill. Concentrations were well within drinking water standards. It is likely these compounds were being introduced into the sample via the well casing, pump column, or distribution piping. It is unknown if this well is still in use, but it did not appear to be impacted by the landfill in any case.

The RI found that surface water data did not indicate a landfill impact to North Creek during the wet season. North Creek was dry and no groundwater was observed discharging to it during the third round of RI sampling (August 1995). According to the Cleanup Action Plan (CAP), detected compounds in sediment were attributed to stormwater runoff, with minimal apparent impacts from the landfill. The seep did not appear to be impacted by the landfill and is recharged by surface water runoff from nearby roadways.

The RI found that the landfill is still actively generating landfill gas. Landfill gas samples from the Site contained methane, hydrogen sulfide, and various halogenated and nonhalogenated VOCs, including benzene, trichloroethene, and vinyl chloride.

The RI did not fully characterize the extent of contaminated groundwater, except that it was not impacting drinking water wells. Impacts to adjacent properties are unknown.

Cleanup actions

Cleanup actions incorporated several Presumptive Remedy components common to landfill cleanup actions, including grading, landfill capping, gas management, and compliance monitoring. In situ solidification/stabilization of the sludge was also included.

Solidification encapsulated the sludge into a solid material of sufficient structural integrity to allow construction on top of the solidified material. Stabilization converted the sludge contaminants into a less mobile and less leachable form.

The landfill surface was graded to direct surface water runoff away from the landfill surface prior to cap placement. Grading included minor excavation and filling to reach the designed landfill cap grade.

The landfill area was capped to minimize infiltration and landfill leachate production. The landfill cap design included a leveling course, 60-mil textured high-density polyethylene (HDPE) liner, a protection/drainage soil layer, and a topsoil layer.

Vegetative growth was reestablished over graded areas or areas exposed as a result of cleanup activities. Revegetation helps to mitigate surface erosion.

The landfill gas management system was likely installed around 1996 or 1997 and consists of two separate piping systems: a perimeter system and a system covering the interior landfill

area. Off-gases exhaust to a fenced remote flare pad and are treated by thermal oxidation before discharge to the atmosphere.

Compliance monitoring of groundwater, surface water, and sediment were implemented after other cleanup actions were completed in accordance with the compliance monitoring plan. Compliance monitoring is still being performed to confirm the cleanup action attains cleanup standards.

Ecology has not yet issued written notification of satisfaction of the Agreed Order requirements. There is insufficient documentation of the landfill closure. It was determined that a new Agreed Order may be necessary, which has not yet been done.

Groundwater monitoring

Long term groundwater monitoring is ongoing at McCollum Park and is performed by Snohomish County. The most recent four quarters of sampling data available to Ecology (second quarter of 2022 [2Q22] – first quarter of 2023 [1Q23]) indicates that arsenic, iron, manganese, and vinyl chloride remain on Site above cleanup levels (CULs).

Arsenic was detected above the CUL in five to six wells (BH-05, BH-06, BH-07, MW-16, MW-17, and/or MW-18) in each of the four quarters. The maximum concentration was 0.0232 milligrams per liter (mg/L) and the CUL is 0.005 mg/L. Iron was detected above the CUL in three to five wells (BH-05, BH-06, BH-07, MW-16, and/or MW-18) in each of the four quarters. The maximum concentration was 18 mg/L and the CUL is 0.3 mg/L. Manganese was detected above the CUL in eight wells (BH-03A, BH-05, BH-06, BH-07, MW-14, MW-16, MW-17, and MW-18) in each of the four quarters. The maximum concentration was 4.22 mg/L and the CUL is 0.02 mg/L. Vinyl chloride was detected above the CUL in two to six wells (BH-03A, BH-06, BH-07, MW-16, MW-18, and/or MW-19) in three of the four quarters. The maximum concentration was 7.26 micrograms per liter (µg/L) and the CUL is 0.2 µg/L.

It should be noted that the monitoring data has been submitted as Excel spreadsheets only (without reports, figures, analytical laboratory data, trend analysis, recommendations, etc.), which does not appear to comply with the Compliance Monitoring Plan (CMP) that was attached to the 1996 CAP. Also, the monitoring submittals reference drinking water standards, not MTCA cleanup levels. This Periodic Review references the selected MTCA cleanup levels for groundwater from the CMP.

Cleanup standards

Cleanup standards include cleanup levels, the location where these cleanup levels must be met (point of compliance), and any other regulatory requirements that apply to the Site. WAC 173-340-704[7] states MTCA Method A may be used to establish cleanup levels at sites that have few hazardous substances, are undergoing a routine cleanup action, and where numerical standards

[7] https://app.leg.wa.gov/WAC/default.aspx?cite=173-340-704

are available for all indicator hazardous substances in the media for which the Method A cleanup level is being used. Method B may be used at any site and is the most common method for setting cleanup levels when sites are contaminated with substances not listed under Method A. Method C cleanup levels may be used to set soil and air cleanup levels at industrial sites.

Development of most cleanup levels was based on the MTCA Method B criteria and initially involved compilation of available data, identification of contaminants of potential concern (COPC), and identification of primary receptors and pathways assuming implementation of the Presumptive Remedy. Chemicals of concern (COCs) were then selected from the COPCs based on potential exposure, available toxicity information, and comparison to background (upgradient or upstream) concentrations. Cleanup levels were determined for most COCs based on calculations considering cancer risk in WAC 173-340-720 and/or identifying its most stringent applicable or relevant and appropriate requirement (ARAR). The more stringent of these values was selected as the cleanup level unless the practical quantitation limit (PQL) was greater than this value, in which case the PQL was selected due to technical limitations. The cleanup level for petroleum hydrocarbons was based on MTCA Method A.

The point of compliance is the area where the cleanup levels must be attained. For most sites, the point of compliance is generally defined as throughout the site (standard point of compliance). Unless a site qualifies for a conditional point of compliance, cleanup levels must be met at the standard point of compliance for each media.

The 1996 CAP and CMP did not indicate the point of compliance for this Site, but generally landfill sites have a conditional point of compliance. For the remedy to be protective of human health and the environment, the conditional point of compliance would need to be within the property boundaries that are included in the covenant.

Restrictive Covenant

Ecology determined that institutional controls would be required as part of the cleanup action. On May 7, 1996, institutional controls in the form of an restrictive covenant[8] (Covenant) were recorded for the Site.

The Covenant recorded for the Site imposes the following limitations:

- No ground water may be taken for domestic, agricultural, commercial, industrial or any other purpose from any well on the property; except monitoring wells in conjunction with ongoing environmental evaluation.

[8] https://apps.ecology.wa.gov/cleanupsearch/document/83678

Periodic Review

Effectiveness of completed cleanup actions

Ecology conducted a Site visit on May 18, 2023. The Site is currently operating as a county park and a transit park and ride. The existing buildings are occupied by Washington State University Extension Services and Northwest Stream Center. There is also a pool, associated clubhouse / locker rooms, and BMX dirt bike track that are not currently in use. A photo log is in Appendix C.

Direct contact

The cleanup actions were intended to eliminate exposure to contaminated soil and groundwater at the Site. Exposure pathways to contaminated soils by ingestion and direct contact were reduced by the landfill cap. The cap appears to be in satisfactory condition.

However, there did not appear to be adequate closure slope gradients. The regulation when this landfill was closed required: "the grade of surface slopes shall not be less than two percent, nor the grade of side slopes more than thirty-three percent" (WAC 173-304-460). Some areas of the landfill appeared to have a slope of less than two percent.

Protection of groundwater

Soils with TPH, VOCS, SVOCs, and metals at concentrations exceeding MTCA cleanup levels remain at the Site; however, most of the contaminated soil source material has been stabilized. Quarterly groundwater monitoring is performed at the Site. Arsenic, iron, manganese, and vinyl chloride remain above groundwater CULs, including near property boundaries. The current groundwater monitoring network is not sufficient to determine if contamination extends off of the property.

Landfill Gas

The cleanup actions included active landfill gas collection and thermal treatment. As part of ongoing system monitoring and maintenance, the system was eventually converted to a passive landfill gas system (reportedly approximately 15 years ago). Ongoing monitoring of the discharges from the landfill gas system is performed by Snohomish County.

Vapor Intrusion

The potential for vapor intrusion to impact buildings at McCollum Park was assessed in 2021 and summarized in the *McCollum Park & Emander Landfill Vapor Intrusion Risk Assessment Summary* (Parametrix, 2021). The assessment included 2021 data from Parametrix, Aspect, and EMB Consulting. As part of the risk assessment, sub-slab vapor samples and indoor air samples were collected from the two Washington State University Extension Services buildings, Northwest Stream Center building, pool clubhouse, and BMX building.

The sub-slab vapor samples did not exceed screening levels for any COCs. While there were some exceedances of indoor air cleanup levels, they did not correlate with the sub-slab soil gas

data. The evaluation determined that vapor intrusion was not causing the indoor air exceedances in the buildings.

Parametrix recommended installing methane detectors in the buildings to protect against landfill gas collection system malfunction so that occupants would be alerted, since methane can be used as a tracer contaminant to evaluate potential vapor intrusion. Parametrix also indicated that some of the existing gas probes located in areas with high groundwater may not be suitable for monitoring landfill gas, and therefore installation of additional gas probes in other locations to monitor landfill gas conditions near on-site buildings should be considered. It is unknown whether Parametrix's recommendations were done.

The vapor intrusion assessment did not include any adjacent properties that may be impacted by the Site (given that the nature and extent of contamination does not appear to have been characterized).

Institutional controls

Institutional controls in the form of a Covenant were implemented at the Site in 1996. The Covenant remains active and discoverable through Snohomish County Recording. Ecology found no evidence a new instrument has been recorded that impacts the effectiveness or applicability of the Covenant.

However, this Covenant only prohibits groundwater extraction. There are no restrictions on the release or exposure of other contaminated media, no land use restrictions, and no requirement to maintain the landfill cap or gas management system. This Covenant does not ensure the long-term integrity of the cleanup action will be protected, because it only relates to groundwater extraction.

In addition, the Covenant restriction on groundwater extraction applies only to the McCollum Park Property (Snohomish County parcel numbers 28053000302400, 28053000302100, and 28053100200200). There are no restrictions on any adjacent properties that may be impacted by the Site. The extent of contaminated groundwater is unknown.

New scientific information for individual hazardous substances or mixtures present at the Site

In January 2022, Ecology published a study on Natural Background Groundwater Arsenic Concentrations in Washington State (Ecology, 2022). A statistical analysis was conducted on groundwater arsenic data from public supply wells throughout the state. The study calculated a background threshold value for arsenic in groundwater in the Puget Sound Basin of 8 µg/L. The current MTCA Method A level is 5 µg/L; both of these concentrations are considered to be within the range of natural background of 5 to 15 µg/L (Ecology, 2022).

Ecology's recommendations in the 2022 study included: "Ecology should develop an implementation memo to provide guidance on how to use data from this study. This memo

would be used to make site-specific decisions and demonstrate the appropriate use of background levels as targets for cleanup."

The Site's groundwater CUL for arsenic (from the 1996 CAP) is 5 µg/L, which is slightly below natural background, but within the range of values. It would be appropriate in the future for Ecology to consider a request from the PLP to change the groundwater CUL for arsenic to natural background as allowed in WAC 173-340-700. However, due to the small difference between the current CUL and the updated natural background, the impact of such a change would likely be minimal at this time since the Site concentrations still exceed the updated natural background value.

New applicable state and federal laws for hazardous substances present at the Site

There are no new applicable or relevant state or federal laws for hazardous substances remaining at the Site.

Current and projected site and resource uses

Current uses

The Site is currently used for commercial and recreational purposes.

Community Transit has been constructing new facilities at the existing park and ride on the Site as part of the Swift Bus Rapid Transit service expansion. The construction project is on the northern portion of the capped landfill area of the Site.

Ecology's Water Quality Program (WQP) issued penalties in August 2023 to Community Transit and its contractor, CA Carey, for stormwater permit violations identified in October 2022. The construction project reportedly included digging into the landfill cap and cutting through the liner to excavate below. The permit violations were for incorrectly stating on their construction stormwater permit application (submitted to the WQP) that they were unaware of any contamination at the work site, and for not reporting the encountered contamination to Ecology.

Future uses

Snohomish County indicated that they are in the planning process to construct a food and farming center, which would include an indoor farmers market, commercial kitchen, and equipment and infrastructure for the processing and distribution of agricultural products. Construction activities and new buildings at the Site, particularly on the landfill itself, could have an impact on the protectiveness of the cleanup action. Ecology will evaluate whether the redevelopment will be protective of human health and the environment (during and after the construction activities) once a work plan is submitted by Snohomish County.

Availability and practicability of more permanent remedies

The remedy implemented included containing hazardous substances. It is unknown if the remedy will be protective of human health and the environment in the long-term due to inadequate institutional controls and the lack of data beyond the property boundaries. More permanent remedies may be available, but it is unknown whether or not they are practicable at this Site.

Availability of improved analytical techniques to evaluate compliance with cleanup levels

The analytical methods used at the time of the cleanup action were capable of detection below the selected MTCA cleanup levels. The presence of improved analytical techniques would not affect decisions or recommendations made for the Site.

Conclusions

The periodic review concluded that the cleanup may not be protective of human health and the environment. The findings include:

- Groundwater compliance monitoring at the Site indicates that arsenic, iron, manganese, and vinyl chloride remain above cleanup levels. The current groundwater monitoring network is not sufficient to determine if contamination extends off of the Property, and the Site does not appear to have been fully characterized. Potential impacts to adjacent residences and other properties are unknown (including potential vapor intrusion).
- The Covenant for the property is in place, but only restricts groundwater extraction. It is not effective in protecting human health and the environment from exposure to hazardous substances since there are no restrictions on the release or exposure of other contaminated media, no land use restrictions, and no requirement to maintain the landfill cap or gas management system. Snohomish County currently maintains the Site to ensure the cleanup actions remain effective, but the long-term integrity of the cleanup action is not ensured by the Covenant.
- The Covenant restriction on groundwater extraction applies only to the subject Property. There are no restrictions on any adjacent properties that may be impacted by the Site.
- Community Transit has been constructing new facilities at the existing park and ride, which is on the northern portion of the capped landfill area of the Site. Ecology's WQP recently issued penalties for stormwater permit violations. The construction project reportedly included digging into the landfill cap and cutting through the liner to excavate below.
- Future quarterly monitoring data should be submitted in a technical memorandum format. This would include text discussing the work performed, a discussion of the results, data tables, figures, trend analysis, analytical laboratory data, and conclusions/recommendations. Currently, groundwater monitoring data is submitted as a spreadsheet only.
- Snohomish County is planning to construct a food and farming center. Construction activities and new buildings at the Site, particularly on the landfill itself, could have an impact on the protectiveness of the cleanup action. Ecology will evaluate whether the redevelopment will be protective of human health and the environment (during and after the construction activities) once a work plan is submitted by Snohomish County.

Snohomish County should continue to work with Ecology to determine if the issues identified are best addressed under the existing Agreed Order, or if another mechanism may be more appropriate.

Snohomish County is responsible for continuing to inspect the Site to ensure the integrity of the cleanup action is maintained, including maintaining the landfill cap, ongoing groundwater monitoring, and the landfill gas collection system.

Next review

Ecology will schedule the next review for the Site five years from the date of this periodic review. If additional cleanup actions or institutional controls are required, the next periodic review will be scheduled five years after those activities are completed.

References

Ecology. *Final Cleanup Action Plan, McCollum Park / Emander Landfill, Snohomish County, Washington*. April 1996.

Ecology. *First Periodic Review*. July 2011.

Ecology. *Natural Background Groundwater Arsenic Concentrations in Washington State.* January 2022.

Ecology. *Restrictive Covenant*. May 1996.

Ecology. *Second Periodic Review*. November 2016.

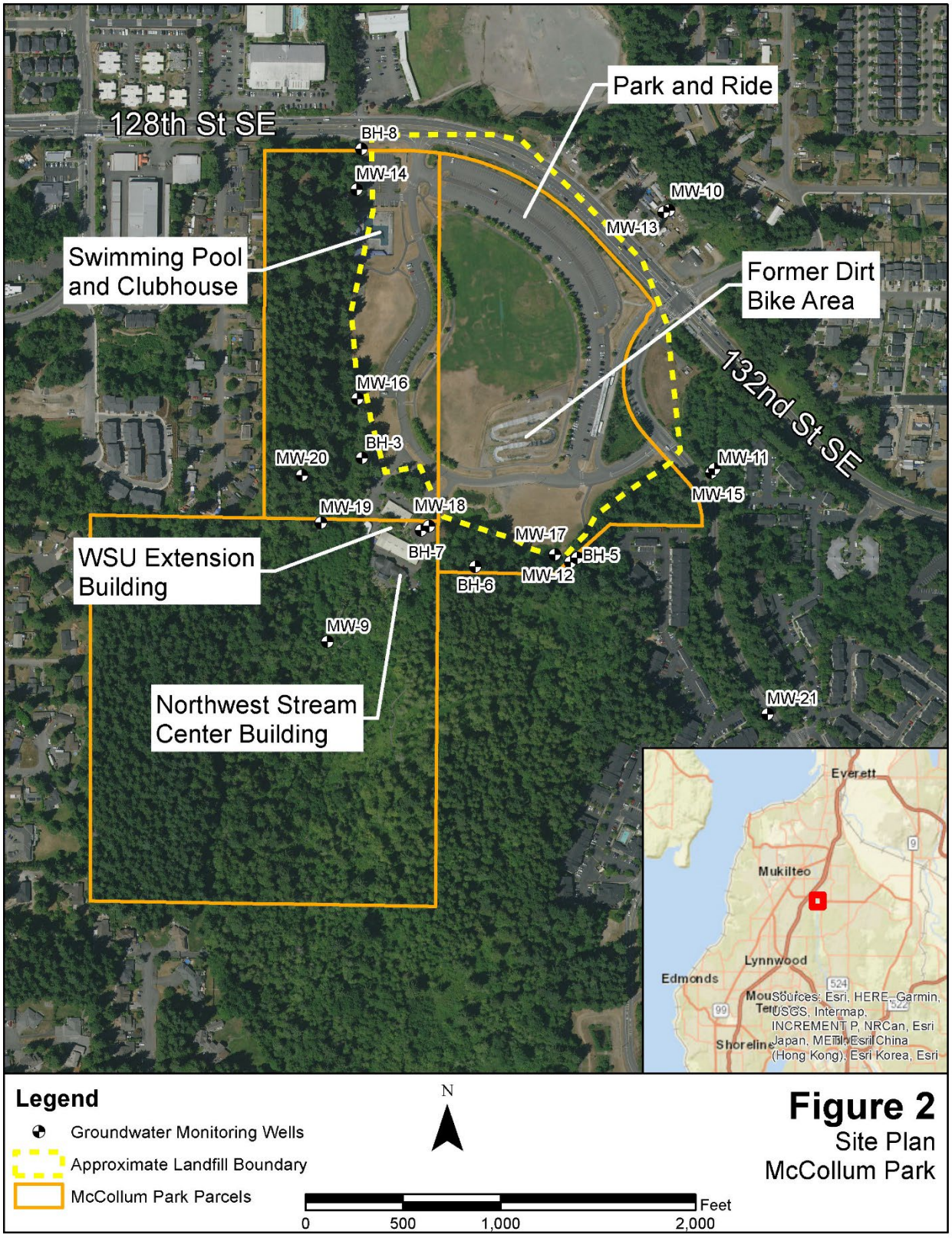
Ecology. Site Visit. May 2023.

Parametrix. *McCollum Park & Emander Landfill Vapor Intrusion Risk Assessment Summary*. November 2021.

Snohomish County. *McCollum Park Groundwater Monitoring Data 1Q17 – 1Q23*. May 2023.

Appendix A. Vicinity Map (Ecology, 2023)

Appendix B. Site Plan (Ecology, 2023)



Appendix C. Photo Log

Photo 1: Park with former dirt bike track beyond, facing East.

Photo 2: The pool and clubhouse at McCollum Park, facing West.

Photo 3: Construction at the park and ride, facing East.

Photo 4: Monitoring wells BH-07 and MW-18, facing South.

Photo 5: WSU buildings, facing West.

Photo 6: WSU buildings and Northwest Stream Center, facing South.

Photo 7: Lift station, facing West.