PERIODIC REVIEW

McCollum County Park, formerly the Emander Landfill Facility SiteID#: 2732

600 and 620 128th Street SE, Snohomish County, Washington

Northwest Region Office

TOXICS CLEANUP PROGRAM

July 2011

1.0 INTRODUCTION

This document is a review by the Washington State Department of Ecology (Ecology) of post-cleanup Site conditions and monitoring data to ensure that human health and the environment are being protected at the McCollum Park (Site). Cleanup at this Site was implemented under the Model Toxics Control Act (MTCA) regulations, Chapter 173-340 Washington Administrative Code (WAC).

Cleanup activities at this Site were implemented under an Agreed Order, 96 TC-N126. The cleanup actions resulted in concentrations of petroleum hydrocarbons, volatile and semi-volatile organic compounds, metals, and chlorinated compounds remaining at the Site which exceed MTCA cleanup levels. The MTCA cleanup levels for soil are established under WAC 173-340-740. The MTCA cleanup levels for groundwater are established under WAC 173-340-720. WAC 173-340-420 (2) requires that Ecology conduct a periodic review of a Site every five years under the following conditions:

(a) Whenever the department conducts a cleanup action
(b) Whenever the department approves a cleanup action under an order, agreed order or consent decree
(c) Or, as resources permit, whenever the department issues a no further action opinion, and one of the following conditions exists:

    1. Institutional controls or financial assurance are required as part of the cleanup;
    2. Where the cleanup level is based on a practical quantitation limit; or
    3. Where, in the department's judgment, modifications to the default equations or assumptions using Site-specific information would significantly increase the concentration of hazardous substances remaining at the Site after cleanup or the uncertainty in the ecological evaluation or the reliability of the cleanup action is such that additional review is necessary to assure long-term protection of human health and the environment.

When evaluating whether human health and the environment are being protected, the factors the department shall consider include [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 of mixtures present at the Site;
(c) New applicable state and federal laws for hazardous substances present at the Site;
(d) Current and projected Site use;
(e) Availability and practicability of higher preference technologies; and
(f) The availability of improved analytical techniques to evaluate compliance with cleanup levels.

The Department shall publish a notice of all periodic reviews in the Site Register and provide an opportunity for public comment.

2.0 SUMMARY OF SITECONDITIONS

2.1 Site Description and History

McCollum County Park, known in Ecology records as McCollum Park, is located at 600 128th Street SE, approximately 1/2 mile east of Interstate 5 on 128th Street SE in Snohomish County, Washington. It's an unincorporated area near the city limits of Mill Creek. The Emander Landfill (landfill) comprised most of the northern half of the 78-acre park. The landfill extended 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 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 acquired by the County beginning 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 AGI's 1995 RI encountered refuse typical of municipal solid waste landfills, including glass, plastic, paper, wood, metal, and concrete demolition debris. This refuse is mixed with soil in varying percentages throughout the landfill, and contains petroleum hydrocarbons in several areas. Former truck drivers indicate fuel storage tank bottoms were disposed of at the approximate location where the sludge was encountered. In addition, anecdotal information suggests septic tank contents and ship bilge water were also disposed of at the landfill.

As of February 1995 (prior to the 1995 construction season), surface elevations varied across the landflll from approximately 383 to 405 feet above Mean Sea Level. The ground surface currently slopes gently downward from the northern portion of the landfill to the east, west, and south. Most of the landfill surface was stripped of vegetation and partially filled/graded in preparation for McCollum Park Master Plan improvements. A swimming pool, park ranger's residence, maintenance buildings, and parking lot are located near the landfill's western edge, and a newly realigned segment of Dumas Road crosses the landfill's eastern portion. Two County Parks and recreation buildings leased by Washington State University (WSU) Extension Services are located immediately southeast of the landfill.

Principal study area surface water features 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 the landfill (seep); and stormwater retention ponds east and south of the landfill.

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

North Creek provides spawning and rearing habitat for numerous resident and anadromous fish species (fish that ascend rivers from the sea to breed); however, the number of anadromous fish using the creek has declined considerably over the past two decades and the creek habitat within McCollum Park is typically limited by low flows during the summer.

The Silver Lake and Alderwood Water Districts serve McCollum Park and most of the surrounding area. Six residences on Heatherwood Drive, south of the landfill, are supplied drinking water by domestic wells.

2.2 Site Investigations and Sample Results

Snohomish County improved McCollum Park as part of the County's Master Plan Implementation. An Environmental Impact Statement (EIS), issued in April1993, 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.

A wet, sludge-like material (sludge) rose to ground surface in November 1994 during fill placement near the middle of the landfill. Chemical analysis of the sludge revealed elevated concentrations of petroleum hydrocarbons, volatile organic compounds (VOCs), polycyclic aromatic hydrocarbons (PAHs), and metals. In April and June 1995, sludge emerged at two additional locations near the first emergence.

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. While negotiations proceeded, the County and Ecology entered into a Prepayment Agreement. This allowed Ecology to review and comment regarding the ongoing remedial investigation. This was done for two reasons: to allow park construction to proceed on schedule and to ensure the independent action taken by the County was in concurrence with the Order being negotiated.

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.

Several landfill gas vents/flares were installed in the 1970s and 1980s to mitigate landfill gas generation. 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 landfill's impacts on groundwater, surface water, and air quality. The results of these pre-RI investigations are summarized as follows:

- Landfill content - Refuse thickness ranged from approximately 3 to 19 feet. Prior to the 1995 construction season, refuse was overlain by a 1to 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 (VOC, SVOC) ranging from 2.3 to 690 milligrams per kilogram (mg/kg), metals ranging from 4.4 to 6,800 mg/kg, and petroleum hydrocarbons ranging from 580 mg/kg (gasoline) to 230,000 mg/kg (oil).
- 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.

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 PAHs), organochlorine, pesticides, polychlorinated biphenyls (PCB), metals, and petroleum hydrocarbons. 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 at concentrations <1 mg/kg. Elevated trace metal concentrations (arsenic, barium, copper, lead, and zinc) were detected in sludge and HCR samples, generally at higher concentrations in sludge. Detected fuel hydrocarbons extended from gasoline to heavier oils, with widely varying concentrations (4,700 to 160,000 mg/kg).

The total volume of sludge is approximately 4,100 cubic yards. HCR overlies and surrounds the sludge. Deeper portions of the sludge are below the water table year-round; HCR encountered during the RI was above the water table.

Two rounds of groundwater samples (February and March 1995) were collected from eight shallow monitoring wells completed in the upper portion of the aquifer and five deep wells completed in the lower portion of the aquifer. The RI also incorporated Snohomish Health District (SHD) groundwater sampling data from two residential supply wells on Heatherwood Drive. For the third groundwater sampling round (August 1995), four deep monitoring wells, one intermediate monitoring well, and one Heatherwood Drive residential supply well were sampled in addition to the wells sampled in the first and second rounds. Monitoring well samples were analyzed for VOCs, SVOCs (including PAHs), PCBs, metals, fuel hydrocarbons, and general water quality parameters. Pre-RI residential well samples were analyzed for VOCs, SVOCs, and metals by SHD; in the third round the residential well was sampled and analyzed using the same methods as the monitoring wells.

- Shallow Well Results: Various fuel-related and chlorinated VOCs were detected, primarily in wells downgradient of the landfill (BH-5, -6, -7, and MW9). Concentrations ranged from 0.2 micrograms per liter (ug/L) (various compounds) to 5.8 ug/L (chlorobenzene). Bis(2-ethylltexyl)phthalate was detected at 5.0 and 9.0 ug/L in BH-7 in Rounds 1 and 2 only; trace levels of the PAHs acenaphthylene, fluorene, or both were detected in BH-5, -6, and -7. No PCBs were detected. Eighteen metals were detected; downgradient (BH-5, BH-6, BH-7, and/or MW9) concentrations of arsenic, barium, chromium, manganese, and nickel were significantly elevated compared to their respective upgradient concentrations (BH-8 and MW10). Gasoline- and diesel-range fuel hydrocarbons were detected at concentrations near their respective detection limits in BH-5, -6, and -7 during the first sampling round; diesel range hydrocarbons were detected in BH-5 and BH-7 in Rounds 2 and 3, and gasoline range hydrocarbons were detected in BH-6 in Round 2. General water quality indicators chloride, chemical oxygen demand (COD), ammonia, sulfate, and total organic carbon (TOC), were generally elevated in BH-5, -6, and -7 compared to upgradient concentrations.
- Deep Well Results: Vinyl chloride was detected in MW16 and MW18 (sampled in Round 3 only); concentrations ranged from 14 to 45 ug/L. No SVOCs, PAHs, or PCBs were detected. The metals detected in shallow well samples were also detected in deep well samples, generally at lower concentrations. Significant elevations of arsenic, manganese, and nickel were noted in downgradient wells (MW12, MW16, MW18, MW19, and/or MW20) when compared to upgradient wells (MW13 and MW14). Diesel- and oil-range hydrocarbons were detected at concentrations just above their respective detection limits in the first round sample from MW14; no fuel hydrocarbons were detected in second or third round samples. Downgradient water quality parameters were significantly elevated in MW18 compared to upgradient parameters.
- Residential Well Results: A residential well on Heatherwood Drive was sampled during the third round of groundwater sampling. No VOCs, SVOCs, PAHs, PCBs, or fuel hydrocarbons were detected. Copper, lead, and zinc were detected at ug/L concentrations significantly exceeding concentrations both upgradient and downgradient of the landfill. Concentrations are well within drinking water standards. It is likely these compounds are being introduced into the sample via the well casing, pump column, or distribution piping. These results are consistent with pre-RI groundwater sampling data collected by

the Snohomish Health District (SHD) from this and another Heatherwood Drive residential well.

- Two rounds of surface water samples (February and March 1995) were collected from North Creek and two creek tributaries. Samples were analyzed for VOCs, SVOCs, PCBs, metals, and fuel hydrocarbons. North Creek was dry during the third round (August, 1995). No VOCs, SVOCs, or PCBs were detected. Aluminum, barium, calcium, iron, lead, magnesium, manganese, potassium, sodium, and zinc were each detected in at least one sample (lead was only detected once, near its detection limit in the second round SW4 sample). Concentrations showed no significant differences between upstream (SW1), downstream (SW3, SW5), and tributary (SW2, SW4) samples. The source of the vast majority of North Creek surface water in the Study Area is stormwater detention basins upstream or feeding tributaries. Surface water samples were collected from the seep in March and August 1995. Elevated major cation concentrations indicate groundwater flowing from the seep is impacted by the landfill. No VOCs were detected at the seep and metals concentrations were similar to those found in shallow groundwater monitoring wells upgradient of the landfill.
- RI sediment samples were collected in March and August 1995 from North Creek, two creek tributaries, and the seep. Samples were analyzed for SVOCs, PCBs, metals, and TOC. Micro- and macroorganisms were also evaluated. The SVOCs benzyl alcohol, benzoic acid, carbazole, and various PAHs were detected in upstream (SD1, -8, and -9) and downstream (SD3, -5, and -6) North Creek samples. Concentrations were higher in the upstream samples. The tributary samples contained only bis(2-ethylliexyl)phthalate and fluoranthene, at concentrations lower than the North Creek samples. PCB (Aroclor 1254) was detected in downstream North Creek and seep samples at 23 to 140 ug/kg; no other PCBs were detected. Metals concentrations were generally highest in the upstream North Creek samples. The type and distribution of SVOCs/PAHs and metals indicates the source of this contamination observed in North Creek sediment is stormwater runoff draining into North Creek upstream of the Study Area. The source of PCB 1254 is likely surface water runoff during historical operations. Micro- and macroorganisms were present in North Creek and its tributaries with little difference between upstream and downstream locations.
- The landfill is still actively generating landfill gas. Landfill gas samples from the Site contain methane, hydrogen sulfide, and various halogenated and nonhalogenated VOCs, including benzene, trichloroethene, and vinyl chloride.

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 are also beneath the groundwater in some locations, allowing contaminants to directly leach into groundwater. The landfill impacts groundwater in the upper portion of the aquifer south/southwest of the landfill; contaminants include low concentrations of VOCs (aromatic hydrocarbons and chlorinated ethenes), PAHs, fuel hydrocarbons, and metals. The lower portion of the aquifer south/southwest of the landfill generally shows less impact than the upper portion, with one exception. MW16 and MW18 contain vinyl chloride one to two orders of magnitude greater than the shallow well detections.

Surface water data do not indicate landfill impact on North Creek during the wet season. North Creek was dry and no groundwater was observed discharging to it during the third round of sampling (August 1995). Sediment data indicate landfill impact on the creek is minimal. The seep does not appear to be impacted by the landfill, and is recharged by surface water runoff from nearby roadways. The landfill is generating landfill gas, including methane and VOCs, below state ASILs.

2.3 Cleanup Actions

AGI initially conducted a bench-scale treatability study to evaluate feasible alternatives for sludge solidification/stabilization. Sludge was characterized as containing elevated concentrations of barium, lead, and TPH, and low concentrations of SVOCs (PAHs) and VOCs. Treatability study results indicated barium, lead, TPH, and PAHs can be solidified/stabilized with cement and sand. The solidified sludge is physically competent to support planned construction and chemically stabilized such that Toxicity Characteristic Leaching Procedure (TCLP) leachate does not exceed regulatory standards.

AGI evaluated specific solidification reagents to optimize the volume addition and cost while maintaining a chemically stable and structurally sound material (Sludge Solidification/Stabilization Optimization Study, July 17, 1995). The optimal reagent was determined to be Type I/II Portland cement, which was added at a rate of 30 percent by weight (e.g., 30 lbs of cement was added for every 100 lbs of sludge).

Proposed cleanup actions incorporate 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 is also included.

Sludge was treated in situ using solidification/stabilization. Solidification encapsulates the sludge into a solid material of sufficient structural integrity to allow construction on top of the solidified material. Stabilization will convert the sludge contaminants into a less mobile and less leachable form.

The landfill area surface was graded to direct surface water runoff from the landfill surface prior to cap placement. Grading included minor excavation and filling to reach design landfill cap grade. Dust control was implemented as necessary during excavation and grading. It included wetting the work areas to minimize wind entrainment of dust generated during Site activities.

Re-vegetation established vegetative growth over graded areas or areas exposed as a result of cleanup activities. Re-vegetation helps to mitigate surface erosion.

The landfill area was capped to minimize stormwater 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.

The landfill gas management system 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 being performed to confirm the cleanup action attains cleanup standards.

Groundwater extraction within the park may cause accelerated migration of contaminants. Accordingly, the County recorded a petition to restrict groundwater use within Park property. These restrictions will be periodically reviewed by Ecology. If monitoring results indicate contaminants decrease to acceptable levels, restrictions could be removed.

A Final Cleanup Report is being prepared to document these cleanup actions, and it is expected prior to finalizing this Periodic Review. Ecology has not yet issued written notification of satisfaction of the Agreed Order requirements.

2.4 Cleanup Levels

Cleanup levels were developed using a combination of the approaches taken in EPA's Presumptive Remedy, MTCA (Methods A and B), and Risk Assessment Guidance for Superfund (RAGS). The Presumptive Remedy incorporates experience gained from previous Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) landfill investigations and cleanups. Presumptive Remedy components for McCollum Park include grading for surface water control, a landfill cap, a landfill gas management system, and long-term groundwater and surface water monitoring.

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 by calculating each chemical's carcinogenic risk using MTCA risk assessment guidance (WAC 173-340-708) and/or identifying its most stringent applicable or relevant and appropriate requirement (ARAR). The more stringent of these values (as applicable) 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, as required by current Ecology policy. COC concentrations detected during the RI were then compared to cleanup levels to identify exceedances requiring cleanup actions.

2.5 Restrictive Declaration

Based on the Site use, surface cover and cleanup levels, it was determined that the Site was eligible for a successful remedy determination if a Declaration of Protective Covenants Conditions and Restrictions was recorded for the property. Such a Declaration was recorded for the Site in 1996 which imposed 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.

The Declaration is available as Appendix 6.4.

3.0 PERIODIC REVIEW

3.1 Effectiveness of completed cleanup actions

The Restrictive Declaration for the Site was recorded and is in place. This Restrictive Declaration prohibits groundwater withdrawal, and prohibits any use of the property that is inconsistent with the Declaration, but may not prohibit all activities that will result in the release of contaminants at the Site without Ecology's approval. This Restrictive Declaration serves to ensure the long term integrity of the remedy.

Based upon the Site visit conducted on May 11, 2011, the engineered part of the remedy at the Site continues to eliminate exposure to contaminated soils by ingestion and contact. The remedy appears in satisfactory condition and no repair, maintenance, or contingency actions have been required. The Site is still operating as a county park and a transit Park and Ride. A photo log is available as Appendix 6.5.

Soils and groundwater with TPH, volatile and semi-volatile organic compounds, chlorinated compounds, and metals concentrations higher than MTCA cleanup levels are still present at the Site. However, the remedy prevents human exposure to this contamination by ingestion and direct contact with soils. The Restrictive Declaration for the property may not ensure that the contamination remaining is contained and controlled, but it does prevent the withdrawal of groundwater.

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

There is no new scientific information for the contaminants related to the Site.

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

The cleanup at the Site was governed by Chapter 173-340 WAC. WAC 173-340-702(12) (c) [2001 ed.] provides that,

"A release cleaned up under the cleanup levels determined in (a) or (b) of this subsection shall not be subject to further cleanup action due solely to subsequent amendments to the provision in this chapter on cleanup levels, unless the department determines, on a case-by-case basis, that the previous cleanup action is no longer sufficiently protective of human health and the environment."

Although cleanup levels changed for petroleum hydrocarbon compounds as a result of modifications to MTCA in 2001, contamination remains at the Site above the new MTCA Method A and B cleanup levels. Even so, the cleanup action is still protective of human health

and the environment. A table comparing MTCA cleanup levels from 1991 to 2001 is available below.

Analyte	1991 MTCA Method A Soil Cleanup Level (ppm)	2001 MTCA Method A Soil Cleanup Level (ppm)	1991 MTCA Method A Groundwater Cleanup level (ppb)	2001 MTCA Method A Groundwater Cleanup Level (ppb)
Cadmium	2	2	5	5
Lead	250	250	5	15
TPH	NL	NL	1000	NL
TPH-Gas	100	100/30	NL	1000/800
TPH-Diesel	200	2000	NL	500
TPH-Oil	200	2000	NL	500

NL = None listed

3.4 Current and projected Site use

The Site is currently used for commercial and recreational purposes. There have been no changes in current or projected future Site or resource uses.

3.5 Availability and practicability of higher preference technologies

The remedy implemented included containment of hazardous substances, and it continues to be protective of human health and the environment. While higher preference cleanup technologies may be available, they are still not practicable at this Site.

3.6 Availability of improved analytical techniques to evaluate compliance with cleanup levels

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

4.0 CONCLUSIONS

The following conclusions have been made as a result of this periodic review:

- The cleanup actions engineered at the Site appear to be protective of human health and the environment.

- Soils and groundwater cleanup levels have not been met at the standard point of compliance for the Site; however, the cleanup action has been determined to comply with cleanup standards since the long-term integrity of the containment system is ensured, and the requirements for containment technologies are being met.

- The Restrictive Declaration for the property is in place and continues to be effective in preventing groundwater withdrawal, but provides no additional protection of public health and the environment from exposure to hazardous substances by protecting the integrity of the cleanup action. It is possible that more complete Environmental Covenant to protect human health and the environment will be necessary.

Based on this periodic review, the Department of Ecology has determined that the requirements of the Restrictive Declaration continue to be met. No additional cleanup actions are required at this time by the property owner. It is the property owner's responsibility to continue to inspect the Site to assure that the integrity of the remedy is maintained.

4.1 Next Review

The next review for the Site will be scheduled five years from the date of this periodic review. In the event that additional cleanup actions or institutional controls are required, the next periodic review will be scheduled five years from the completion of those activities.

5.0 REFERENCES

Work Plan, McCollum Park, dated October 13, 1995, by AGI Technologies;

Final Cleanup Action Plan, McCollum Park/Emander Landfill, dated April 1996, by AGI Technologies;

Quarterly Groundwater Compliance Monitoring Reports, 1997 to present, submitted by Snohomish County;

Various other reports and information form Ecology files;

Final Cleanup Report (expected);

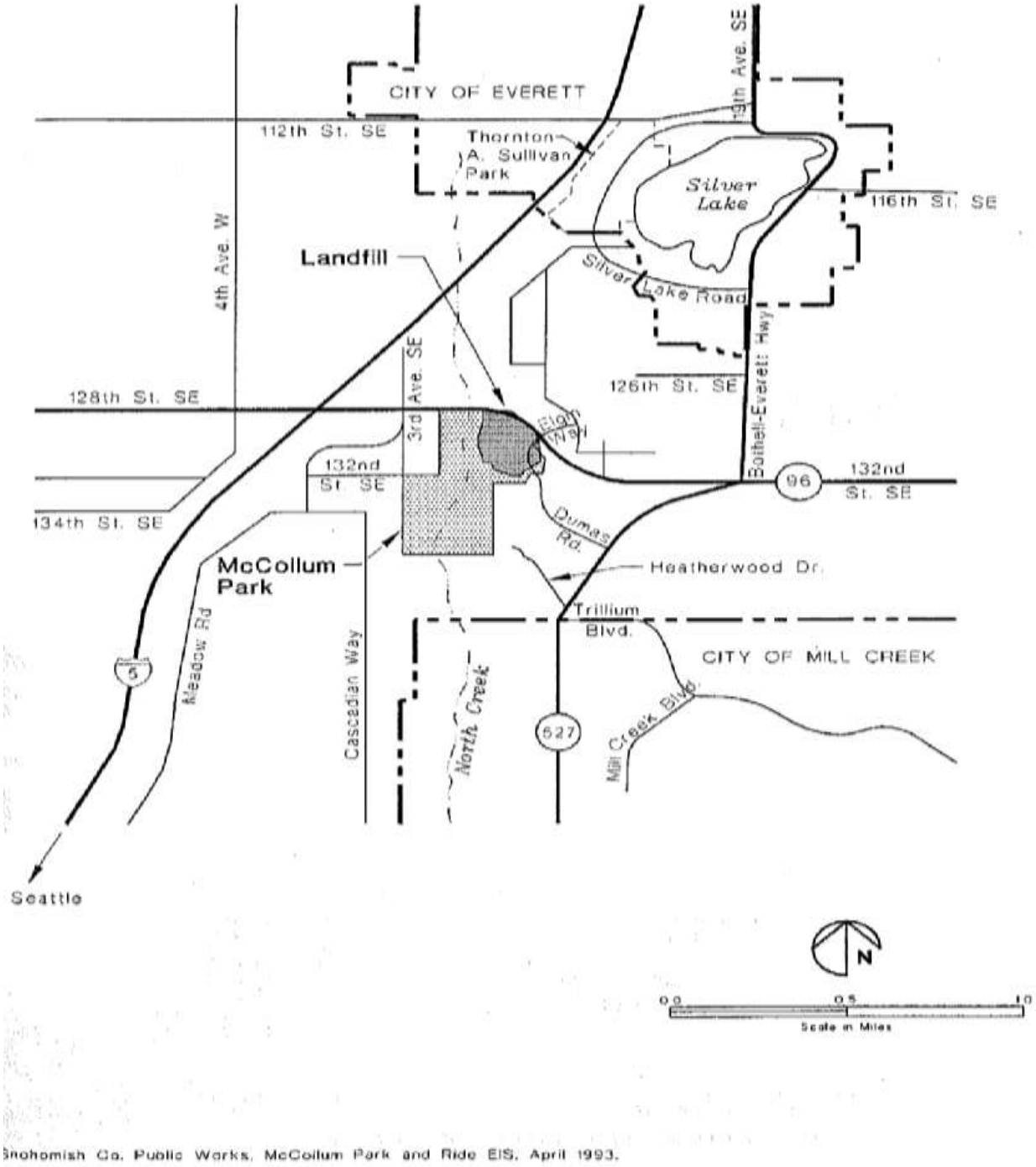
Agreed Order, 1996, 96 TC-N126;

1996 Restrictive Declaration;

Ecology, 2011 SiteVisit.

6.0 APPENDICES

6.1 Vicinity Map

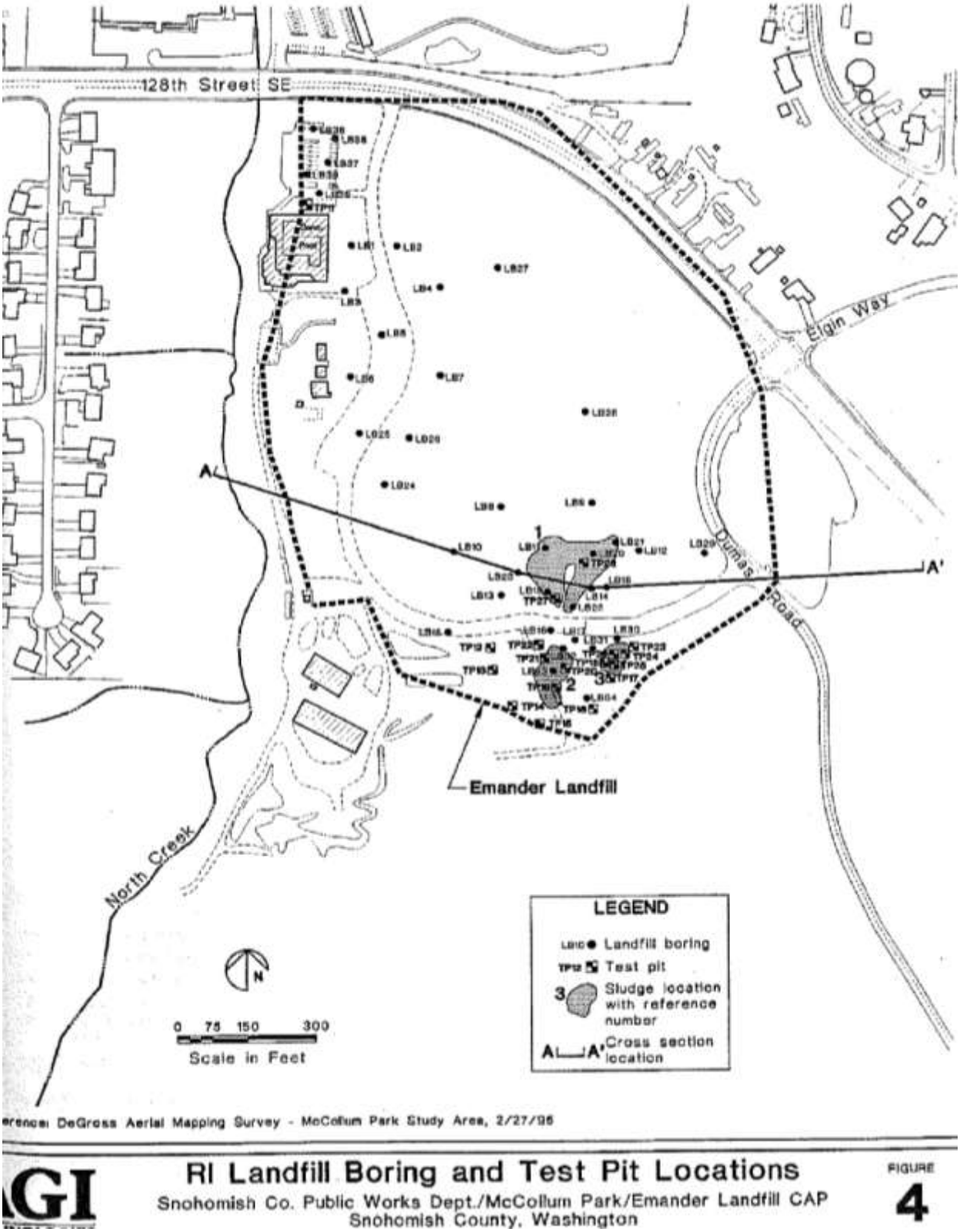


Snohomish Co. Public Works, McCollum Park and Ride EIS, April 1993.

Vicinity Map

Snohomish Co. Public Works Dept./McCollum Park/Emander Landfill CAP
Snohomish County, Washington

6.2 Site Plan


128th Street SE
Elgin Way
Dumas Road
A
A'
Emander Landfill
North Creek
N
0 75 150 300
Scale in Feet
LEGEND
Landfill boring
Test pit
Sludge location with reference number
Cross section location
rence: DeGross Aerial Mapping Survey - McCollum Park Study Area, 2/27/95
GI
RI Landfill Boring and Test Pit Locations
Snohomish Co. Public Works Dept./McCollum Park/Emander Landfill CAP
Snohomish County, Washington
FIGURE
4

6.3 TPH-Dx Concentration Map

not available

6.4 Environmental Declaration

Rec'd by WDOE 5/17/96

Sit 8.3.2

9605070285

After recording return to:
Property Management
3000 Rockefeller MS 404
Everett WA 98201

**DECLARATION OF PROTECTIVE COVENANTS
CONDITIONS AND RESTRICTIONS FOR
MCCOLLUM PARK
SNOHOMISH COUNTY, WASHINGTON**

This Declaration is made this date by Snohomish County, a political subdivision of the State of Washington, which is the owner of that certain real property located in Snohomish County, Washington, commonly known as McCollum Park and more particularly described on the attached Exhibit A.

Snohomish County hereby declares that all of the real property described in Exhibit A shall be held, sold and conveyed subject to the following restrictions, covenants, and conditions, which shall burden the real property described in Exhibit A and shall pass with the property and each and every lot thereof, and shall apply to, and bind the owners of the property and owners of each and every lot therein, their legal representatives, grantees, heirs, successors and assigns, in perpetuity:

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.

IN WITNESS THEREOF, Snohomish County has executed this Declaration this 7th day of May, 1996.

SNOHOMISH COUNTY

**RON MARTIN, DIRECTOR
PARKS AND RECREATION**

ACKNOWLEDGEMENT

STATE OF WASHINGTON)
)SS
COUNTY OF SNOHOMISH)

On this 7th day of May, 1996, before me, the undersigned, a Notary Public and for the State of Washington, duly commissioned and sworn, personally appeared Ron Martin, the Director of Parks and Recreation of the County of Snohomish, who executed the foregoing instrument, and acknowledged the said instrument to be the free and voluntary act and deed of said corporation for the uses and purposes therein mentioned, and on oath stated that he was authorized to execute said instrument.

Witness my hand and official seal hereto affixed the day and year above written.

Notary Public in and for
the State of Washington

MARCIE A. ALLEN
COMMISSION EXPIRES
NOTARY
PUBLIC
4-1-99
STATE OF WASHINGTON

LEGAL DESCRIPTION
MCCOLLUM PARK

EXHIBIT A

THAT PORTION Of SECTION 30, TOWNSHIP 28 NORTH, RANGE 5 EAST, W. M, DESCRIBED AS FOLLOWS:

THE EAST HALF OF GOVERNMENT LOT 4;
LESS ROADS.

AND

THAT PORTION OF THE SOUTHEAST QUARTER OF THE SOUTHWEST QUARTER OF SECTION 30, TOWNSHIP 28 NORTH, RANGE 5 EAST, W.M., IN SNOHOMISH COUNTY, WASHINGTON, LYING WESTERLY OF THE COUNTY ROAD, AS CONVEYED TO SNOHOMISH COUNTY BY DEED RECORDED NOVEMBER 20, 1964 UNDER RECORDING NO. 1741032;
AND ALSO THAT PORTION OF THE NORTHEAST QUARTER OF THE NORTHWEST QUARTER OF SECTION 31, TOWNSHIP 28 NORTH, RANGE 5 EAST, W.M., DESCRIBED AS FOLLOWS:
BEGINNING AT THE NORTHWEST CORNER OF THE NORTHEAST QUARTER OF THE NORTHWEST QUARTER OF SECTION 31, TOWNSHIP 28 NORTH, RANGE 5 EAST, W.M., BEING THE TRUE POINT OF BEGINNING;
THENCE SOUTH 87°57'05" EAST ALONG THE NORTH LINE OF SAID SECTION A DISTANCE OF 593.64 FEET;
THENCE SOUTH 49°21'58" WEST A DISTANCE OF 258.14 FEET;
THENCE NORTH 87°57'05" WEST A DISTANCE OF 402.02 FEET;
THENCE NORTH 01°26'31" EAST A DISTANCE OF 175.01 FEET TO THE TRUE POINT OF BEGINNING.
EXCEPT THAT PORTION VACATED BY SNOHOMISH COUNTY RESOLUTION NO. 79-347.
AND EXCEPT THAT PORTION CONVEYED FOR ROAD RIGHT OF WAY BY SNOHOMISH COUNTY ORDINANCE NO. 94-034.

AND

SECTION 31, TOWNSHIP 28 NORTH, RANGE 5 EAST, W.M., DESCRIBED AS FOLLOWS:

GOVERNMENT LOT 1.

SITUATE IN THE COUNTY OF SNOHOMISH, STATE OF WASHINGTON.

6.5 Photo log

Photo 1: Entrance to the Park

Photo 2: Part of capped area looking towards 128th (north) – Park and ride visible

Photo 3: Lift station for sewer system adjacent to the Site, scheduled for replacement

Photo 4: Work notice – activities are not expected to impact the remedy