



Third Periodic Review

South Wilbur Petroleum Contamination Site

Front Ave. & Anne St., Wilbur, Lincoln County
Facility Site ID: 7096, Cleanup Site ID: 1949

Toxics Cleanup Program, Eastern Region

Washington State Department of Ecology
Spokane, Washington

August 2025

Document Information

This document is available on the Department of Ecology's [South Wilbur Petroleum Site cleanup site page](#).¹

Related Information

- Facility Site ID: 7096
- Cleanup Site ID: 1949

Contact Information

[Toxics Cleanup Program](#)²

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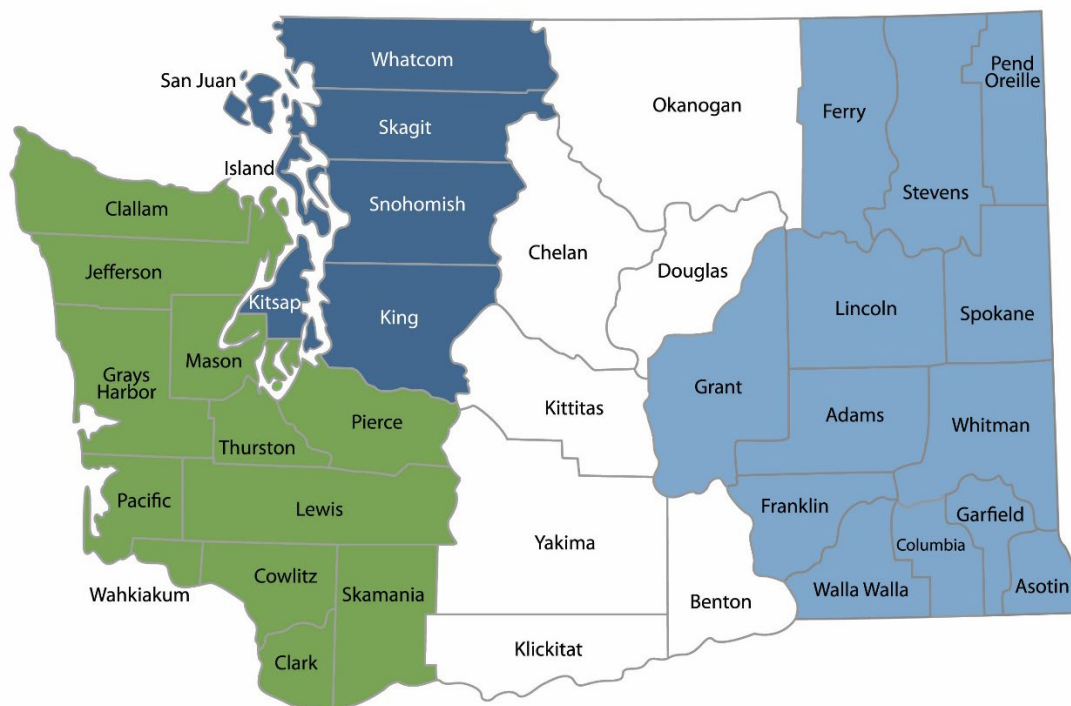
¹ <https://apps.ecology.wa.gov/cleanupsearch/site/1949>

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

Table of Contents

Introduction.....	1
Summary of Site Conditions.....	1
Site description and history	1
Site investigations	2
Nature and Extent of Contamination.....	3
Cleanup Action Plan.....	4
Cleanup standards	4
Cleanup actions	4
Environmental Covenant	5
Periodic Review	6
Effectiveness of completed cleanup actions	6
New scientific information for individual hazardous substances or mixtures present at the Site	8
New applicable state and federal laws for hazardous substances present at the Site.....	8
Current and projected Site and resource uses	8
Availability and practicability of more permanent remedies	9
Availability of improved analytical techniques to evaluate compliance with cleanup levels.....	9
Conclusions.....	9
Next review	9
References.....	10
Appendix A. Figures	11
Figure 1. Area Map	11
Figure 2. Site Plan	12
Figure 3. Remedial Action Locations.....	13
Figure 4. Gasoline Concentrations in Groundwater	14
Figure 5. Benzene Concentrations in Groundwater	15
Figure 6. Toluene Concentrations in Groundwater	16
Figure 7. Ethylbenzene Concentrations in Groundwater	17
Figure 8. Xylene Concentrations in Groundwater	18
Figure 9. Diesel Concentrations in Groundwater.....	19
Appendix B. Tables	20
Table 1: Groundwater Contaminant Concentrations	20

Table 2: Groundwater Cleanup Levels	26
Table 3: Mann-Kendall Tau Value Analysis	26
Appendix C. Photo Log.....	27
Photo 1: View Northwest of former WSDOT property	27
Photo 2: View East of former Lincoln Mutual #3 property from Lincoln County maintenance yard	27
Photo 3: View North of paved portion of Lincoln County maintenance yard	28
Photo 4: View Northeast of Lincoln County maintenance yard and buildings	28
Photo 5: View along Goose Creek to the East, with the Lincoln County maintenance yard on the south bank	29

Introduction

The Washington Department of Ecology (Ecology) reviewed post-cleanup site conditions and monitoring data to ensure human health and the environment are being protected at the South Wilbur Petroleum 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 first periodic review in April 2012, and the second periodic review in February 2019.

Cleanup activities at this Site were completed in 2005. These actions addressed contaminated soils, but residual soil and groundwater contamination remains at the Site. Groundwater monitoring has been ongoing since completing the cleanup action, and institutional controls are in place to ensure the remedy remains protective. WAC 173-340-420(2) requires a periodic review at sites under a consent decree where an institutional control is required, which is the case at this Site.

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 of Ecology-supervised sites in the *Contaminated Site Register* and provides an opportunity for public comment.

Summary of Site Conditions

Site description and history

The Site is approximately one block south of downtown at the intersection of SE Front Avenue and SE Anne Street. (Figure 1). It is comprised of three separate properties: the former Washington State Department of Transportation (WSDOT) Maintenance Facility, the Lincoln County Maintenance Facility, and the former Lincoln Mutual No. 3 fueling station. It is bounded

to the north by Goose Creek, to the west by the City Park, to the south by Front Avenue and a railroad yard, and to the east by Brace Street.

WSDOT operated its maintenance facility from the 1930s through the early 1970s, when major maintenance activities moved to Davenport. Major activities included vehicle maintenance, fueling, and storage of road maintenance supplies. Diesel and gasoline were stored in underground storage tanks (USTs). By 1996, all remaining equipment and personnel had been relocated to a different facility, and the Town of Wilbur leased the property for equipment storage. In 2001, Lincoln County purchased the Site.

The Lincoln County maintenance facility was in operation from the 1930s through the present. Site activities were similar to the WSDOT facility, including vehicle fueling and maintenance and supply storage. Four USTs were on the Site stored diesel, gasoline, and waste oil. All these tanks were decommissioned and removed between 1990 and 1992.

The former Lincoln Mutual No. 3 property was the location of a fueling station, and is estimated from aerial photographs to have operated from the 1950s through the 1980s. The property contained a fueling island, a 1,900-gallon diesel aboveground storage tank, and is inferred from photographs to have had two USTs near the fueling island. Fueling operations were discontinued prior to purchase by the present owners. Currently, the Site building is used as office space and the surrounding land is now paved and used for parking. Figure 2 shows the three properties and approximate locations of petroleum discharges (in areas where tanks were formerly located, listed as “source areas” in the figure).

Site investigations

A series of investigations have taken place to aid in determining the type, amount, extent, and source of the petroleum hydrocarbon contamination. Reports documenting these investigations can be found at Ecology’s Eastern Region Office in Spokane.

In 1990, three USTs on the Lincoln County maintenance facility property were decommissioned. We do not know if releases came from these USTs. In 1992, one more UST was removed. Soil samples collected from the excavation showed diesel and benzene, toluene, ethylbenzene, and xylene (BTEX) compounds were not present above cleanup levels.

The WSDOT property was first investigated in June 1991, when soil contamination was discovered during the removal of two USTs. A June 1992 WSDOT investigation also noted a sump in the shop building was full of oily water.

In 1995, the Lincoln County Highway Department completed a limited Phase II Investigation on four Lincoln County maintenance facility properties, including the one in Wilbur. Results for the Site showed no petroleum contamination adjacent to and just below the asphalt wash pads, to a depth of one foot below ground surface (bgs).

In February 1995, a Phase I and Phase II Environmental Site Assessment was completed for the WSDOT property to determine potential sources and possible extent of contamination at the

Site. A drywell was excavated in October of 1996, and the majority of contaminated soil was removed; however, gasoline contamination was still present in the bottom and north wall of the excavation.

In July 1996, the WSDOT performed a soil and groundwater investigation. Four monitoring wells were installed on-Site, and soil and groundwater samples were collected. Results indicated soil was contaminated with gasoline to a depth of around 15 feet bgs, and groundwater had concentrations of gasoline and BTEX above cleanup levels.

WSDOT completed a second site characterization in May 1997 to investigate the extent of petroleum contamination beyond their property. Three additional wells were installed on the Lincoln County property, and soil and groundwater samples were again collected. Results showed soil exceedances for gasoline, benzene, and xylene; groundwater showed levels of gasoline, BTEX, and diesel above cleanup levels. A third investigation was undertaken by WSDOT because the plume appeared to be larger than originally thought. A direct-push sampling rig was used to investigate areas upgradient of both properties. Groundwater and soil results again showed soil contaminated with gasoline and xylene, and groundwater contaminated with gasoline, benzene, toluene, and xylene. Impacted areas were located to the southeast and east of the Site.

In 1999, Ecology completed a limited site investigation of the WSDOT property, the Lincoln County property, and the former Lincoln Mutual No. 3 property, which lies upgradient of the two maintenance facilities. Soil samples were collected upgradient of both maintenance facilities to help characterize other potential sources. Soil sampling showed gasoline contamination, and groundwater samples had concentrations of gasoline, diesel, and BTEX above cleanup levels on all three properties.

In 2001, Lincoln County completed the Remedial Investigation/Feasibility Study (RI/FS). The RI/FS further evaluated the nature and extent of soil and groundwater contamination at all three properties comprising the Site. Results showed soil and groundwater contamination with gasoline, diesel, and BTEX at concentrations above cleanup levels. Surface water and sediment samples did not show any petroleum-related contamination. Results indicated potential source areas located near former USTs. These areas are shown in gray on Figure 2.

Nature and extent of contamination

The Site has soil and groundwater contamination above MTCA Method A cleanup levels for gasoline, diesel, and BTEX.

Cleanup Action Plan

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](https://app.leg.wa.gov/WAC/default.aspx?cite=173-340-704)⁴ 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 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.

Ecology decided MTCA Method A cleanup levels were appropriate for contaminants at this Site.

The point of compliance is the area where the cleanup levels must be attained. For soil cleanup levels based on the protection of groundwater, as they are for this Site, the point of compliance is established as soils throughout the Site (standard point of compliance). The groundwater point of compliance is the saturated zone of the subsurface throughout the Site.

Cleanup actions

Remedial actions were completed under the Cleanup Action Plan (CAP) for the Site, and under Consent Decree #05-2-00143-8 between Ecology and Lincoln County. The selected remedy consisted of removing approximately 2,182 tons of petroleum-contaminated soil from three source areas in 2005. The first area was to the north and west of the Lincoln County Garage building, the second was in the area of former fuel dispensers on the Lincoln Mutual No. 3 property, and the third was to the east of the fuel dispensers (shown in figures 1 and 3). This represents all accessible contaminated soil at the Site. Ecology did not require contaminated soil potentially under buildings to be removed.

Once contaminated soil was removed, a slurry of oxygen-releasing compound was mixed with clean backfill and placed into each excavation and along the downgradient edge of the property. The oxygen-releasing compound was placed at depths designed to interact with the upper surface of groundwater where residual petroleum was present. This barrier was intended to interact with and help remediate residual contaminated groundwater that had already moved past the excavation treatment zones and prevent it from leaving the Site.

A phytoremediation barrier consisting of willow trees was also installed at the downgradient boundary of the three contaminated properties. The trees were intended to provide additional

⁴ <https://app.leg.wa.gov/WAC/default.aspx?cite=173-340-704>

protection of downgradient groundwater and surface water by intercepting contaminated groundwater before it left the Site. Figure 3 shows the locations of all remedial actions.

Institutional controls were also placed on all three properties to minimize the potential for exposure to remaining contamination. Controls included fencing to limit Site access, and deed restrictions to restrict activities that may interfere with the integrity of the cleanup action or cause an exposure to contamination.

The cleanup action required quarterly monitoring of all 12 monitoring wells at the Site. Samples were collected for all Site indicators, which included gasoline, diesel, and BTEX. Additionally, parameters to track the biological breakdown of contaminants were measured, including dissolved oxygen, nitrate, ferrous iron, and sulfate.

Based on recommendations from the first periodic review, Lincoln County evaluated newer technologies that would be applicable in low permeability environments. That evaluation resulted in the pilot testing of a lance injection technology using chemical and biological oxidants to increase contaminant degradation in 2013. This technology was able to access contaminated soils below building foundations.

Additionally, several changes were made to the Compliance Monitoring Plan for the Site, based on requests from Lincoln County beginning in spring 2016:

- Sampling will occur annually instead of quarterly, in the spring.
- Cleanup levels have been met at wells MW7, MW8, MW11, and MW12. These wells had at least four consecutive monitoring events without exceeding site contaminants. These wells will no longer be sampled.

Environmental Covenant

Ecology determined that institutional controls would be required as part of the cleanup action to document the remaining contamination, protect the cleanup action, and protect human health and the environment. On July 5, 2005, institutional controls in the form of an [environmental covenant](#)⁵ (Covenant) were recorded for the Site.

The Covenant recorded for the Site imposes the following limitations (the Site is referred to as the Property within the Covenant):

1. No groundwater may be taken for any use unless the groundwater removal is part of monitoring activities associated with an Ecology-approved compliance monitoring plan.
2. Any activity on the Property that may result in the release or exposure to the environment of a hazardous substance that remains on the Property as part of the Cleanup Action, or that may create a new exposure pathway, is prohibited. Such prohibited activities include, but are not limited to, drilling, digging, placement of any

⁵ <https://apps.ecology.wa.gov/cleanupsearch/document/19381>

objects or use of any equipment which deforms or stresses the surface beyond its load bearing capability, piercing the surface with a rod, spike or similar item, bulldozing or earthwork (allowing for minor utility work or grading by trained professionals, as detailed in the Covenant).

3. Any activity on the Property that may interfere with the Cleanup Action, operation and maintenance, monitoring, or other measures necessary to assure the integrity of the Cleanup Action and continued protection of human health and the environment is prohibited.
4. The Owner of the Property must give thirty (30) day advance written notice to Ecology of the Owner's intent to convey any interest in the Property. No conveyance of title, easement, lease, or other interest in the Property shall be consummated by the Owner without adequate and complete provision for continued monitoring, operation, and maintenance of the Cleanup Action on the Property, and for continued compliance with the Covenant.
5. The Owner must restrict leases to uses and activities consistent with the Covenant and notify all lessees of the restrictions on the use of the Property.
6. The Owner must include notice of the Covenant in any instrument conveying any interest in any portion of the Property.
7. The Owner must notify and obtain approval from Ecology prior to any use of the Property that is inconsistent with the terms of the Covenant. Ecology may approve an inconsistent use only after an opportunity for public notice and comment is provided. If Ecology, after public notice and opportunity for comment, approves the proposed change, the Covenant shall be amended to reflect the change.
8. The Owner shall allow Ecology and its authorized representatives the right to enter the Property at reasonable times for the purpose of evaluating the Cleanup Action, to take samples, to inspect remedial actions conducted at the Property, and to inspect records that are related to the Cleanup Action.

Periodic Review

Effectiveness of completed cleanup actions

During the Site visit Ecology conducted on May 1, 2025, the remedy appeared to be functioning as intended. Wells remain accessible and in good condition. No substantial changes have been made to buildings, ground surfaces, or Site use. Fences separating the Site from the neighboring public park are in good condition. The Site continues to be used for maintenance vehicle storage and equipment storage in the buildings. A photo log is in Appendix C.

Direct contact

The cleanup actions were intended to eliminate exposure to contaminated soil at the Site, since not all contaminated soil was accessible for excavation and removal. Exposure pathways to contaminated soils by ingestion and direct contact are controlled by asphalt and concrete barriers (paving), and institutional controls requiring their maintenance and upkeep. All barriers appear to be appropriately maintained and continue to serve as direct contact barriers. Annual reports are submitted to Ecology with the results of visual site inspection to ensure the maintenance of barriers and compliance with the environmental covenant.

Groundwater cleanup

Groundwater has been monitored since completing the remedial action in 2005. Monitoring occurred quarterly through 2016, and annually from 2016 through the present (as noted in the “Cleanup actions” section). Samples are collected from MW1, MW2, MW3, MW4, MW6, MW9, and MW10 for total petroleum hydrocarbons (TPH)-gasoline, TPH-diesel, and BTEX. Ecology reviewed the results from 2018 through 2025 for this report and included a trend evaluation for the entirety of the data collected since 2006.

Groundwater monitoring is performed to document contaminant trends. When a contaminant is no longer detected at all monitored wells for four consecutive groundwater monitoring events, it can be determined to be remediated and no longer included in site monitoring. Table B.1 shows the data from when remediation occurred to present for the six monitored wells at the Site. Table B.2 shows the cleanup levels for the Site. MW9 is included as a background well; no Site contaminants have been detected there and so no results are included here. Toluene has been below cleanup levels for all monitoring events since remediation occurred, ethylbenzene has been below cleanup levels since 2014, and xylene has been below cleanup levels since 2015. Therefore, monitoring for all three of these contaminants can end. Graphs of the concentrations for these are in figures A.6, A.7, and A.8.

TPH-diesel has not been detected at any well since 2015. This may be due to the use of the lance injections in 2013. Therefore, monitoring for TPH-diesel can also be ceased. A graph of the TPH-diesel concentrations is in Figure A.9.

Gasoline and benzene are still above cleanup levels at the Site. A Mann-Kendall statistical test for trend was performed for those contaminants; results are in Table B.3. This same test was performed in previous periodic reviews; each test was for that periodic review’s data set. In this periodic review, a trend analysis was also done for the entire data set.

For this current periodic review data set, gasoline trends are down at MW1, MW3, and MW4, did not change at MW2 and MW6, and are increasing at MW10. For the entire data set since 2006, all wells are either trending down or have no change. However, concentrations in MW10 still remain significantly above the gasoline cleanup level (up to 17,300 micrograms per liter [ug/L]; the cleanup level is 500 ug/L). All other wells are near to or downgradient of areas with soil and/or groundwater remediation. MW10 is cross and slightly upgradient of those areas, which may be why decreases haven’t been observed. It’s also possible that MW10 is being impacted by an unknown area of contamination.

Benzene concentrations are also either below cleanup levels (trends are not needed), or decreasing for this periodic review data set. Trends for the entire data set for benzene have all been decreasing. Concentrations in MW2 and MW6 still remain significantly above cleanup levels (up to 293 ug/L; the cleanup level is 5 ug/L). Two wells (MW1 and MW10) were below cleanup levels for the entirety of the monitoring period.

Other than MW10 gasoline, all trends are stable or improving for this monitoring period. Due to the documented site conditions, slow groundwater natural attenuation is expected. Site risks appear to be managed during this long restoration time frame.

Institutional controls

Institutional controls in the form of a Covenant were implemented at the Site in 2005. The Covenant remains active and discoverable through the Lincoln County Auditor. Ecology found no evidence a new instrument has been recorded that limits the effectiveness or applicability of the Covenant. This Covenant prohibits activities that will result in the release of contaminants contained as part of the cleanup action and prohibits any use of the property that is inconsistent with the Covenant, unless approved by Ecology in advance. This Covenant ensures the long-term integrity of the cleanup action will be protected.

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

There is no new relevant scientific information for the hazardous substances remaining in soil and groundwater at the Site.

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

Lincoln County still owns the County maintenance facility and the former WSDOT maintenance facility. Both are still used for the storage, maintenance, and repair of county vehicles. The use has not changed since the remedy, and is not expected to change.

The former Lincoln Mutual No. 3 property ownership and usage has not changed. The building remains in use as storage, and the rest of the facility remains paved and empty.

Groundwater under the Site is not used as a drinking water supply; that is not expected to change.

Availability and practicability of more permanent remedies

A “permanent” cleanup action is defined in MTCA as a cleanup action in which cleanup standards can be met without further action being required. Soil removal was performed as a part of the remedy because it was determined to be a permanent cleanup action.

No permanent remedies were available for groundwater due to the low permeability of the soil. However, some remedies are considered more permanent than others. At the time of the remedial action, an oxygen-releasing compound was the most appropriate technology to encourage bioremediation of chemicals in groundwater, but later monitoring indicated the oxygen-releasing compound was no longer effective. Additional technologies were evaluated, and lance injection of chemical and biological oxidants was determined to be practicable and was implemented. However, its effectiveness is still limited by the soil permeability.

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 cleanup actions completed at the Site remain protective of human health and the environment.
- Gasoline and benzene still significantly exceed groundwater cleanup levels. Trends are mostly stable or improving, with MW10 being the notable exception.
- Diesel, toluene, ethylbenzene, and xylene have met cleanup levels and will no longer be monitored.
- The Covenant for the property is in place and is effective in protecting human health and the environment from exposure to hazardous substances.

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

CH2MHill, 2002, Lincoln County Remedial Investigation/Feasibility Study Report, South Wilbur Petroleum Contamination Site.

GeoEngineers, 2006, Cleanup Action Report, South Wilbur Petroleum Contamination Site.

Washington State Department of Ecology, 2007, Model Toxics Cleanup Act Regulation Chapter 173-340 WAC.

Appendix A. Figures

Figure 1. Area Map

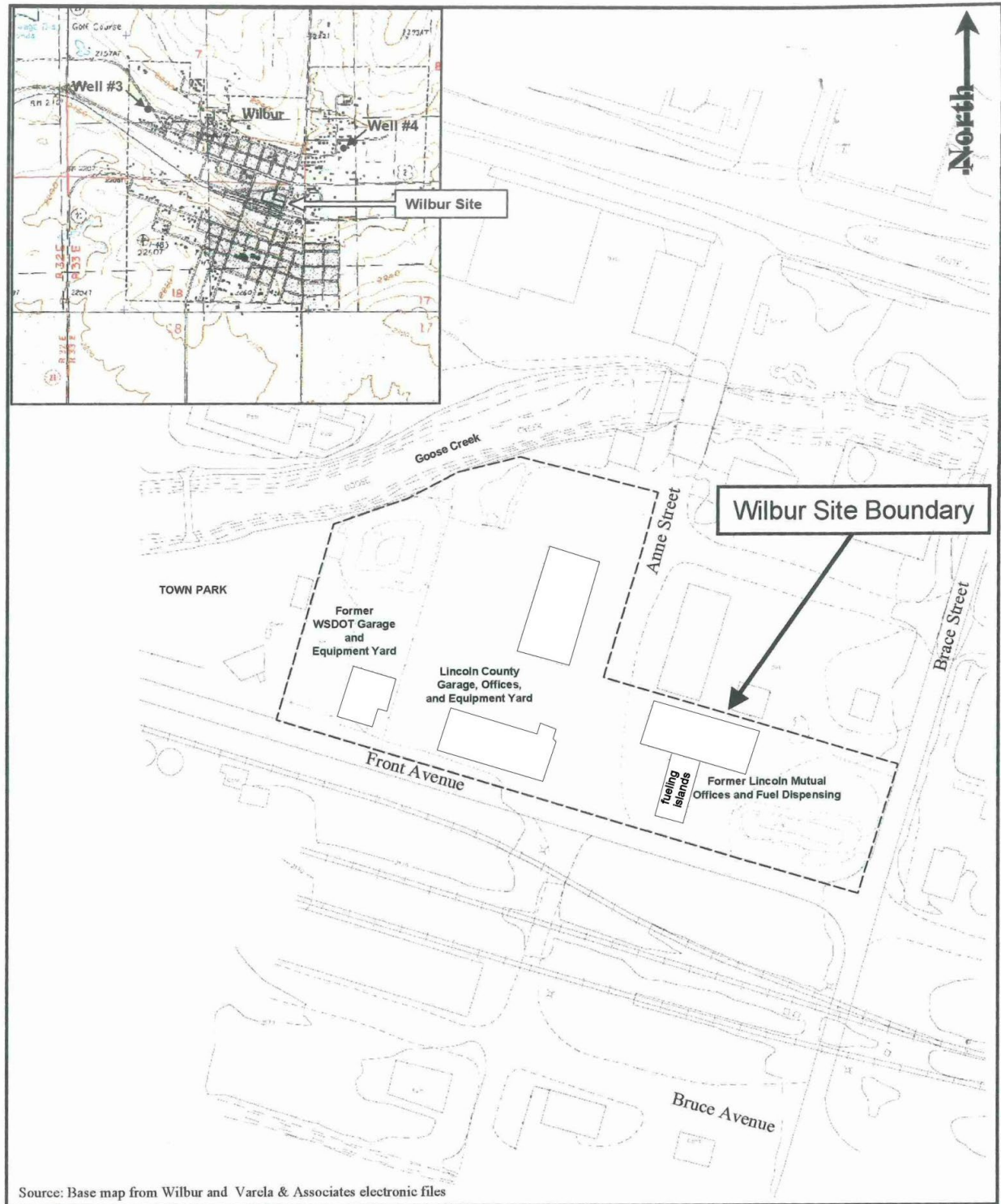


Figure 2. Site Plan

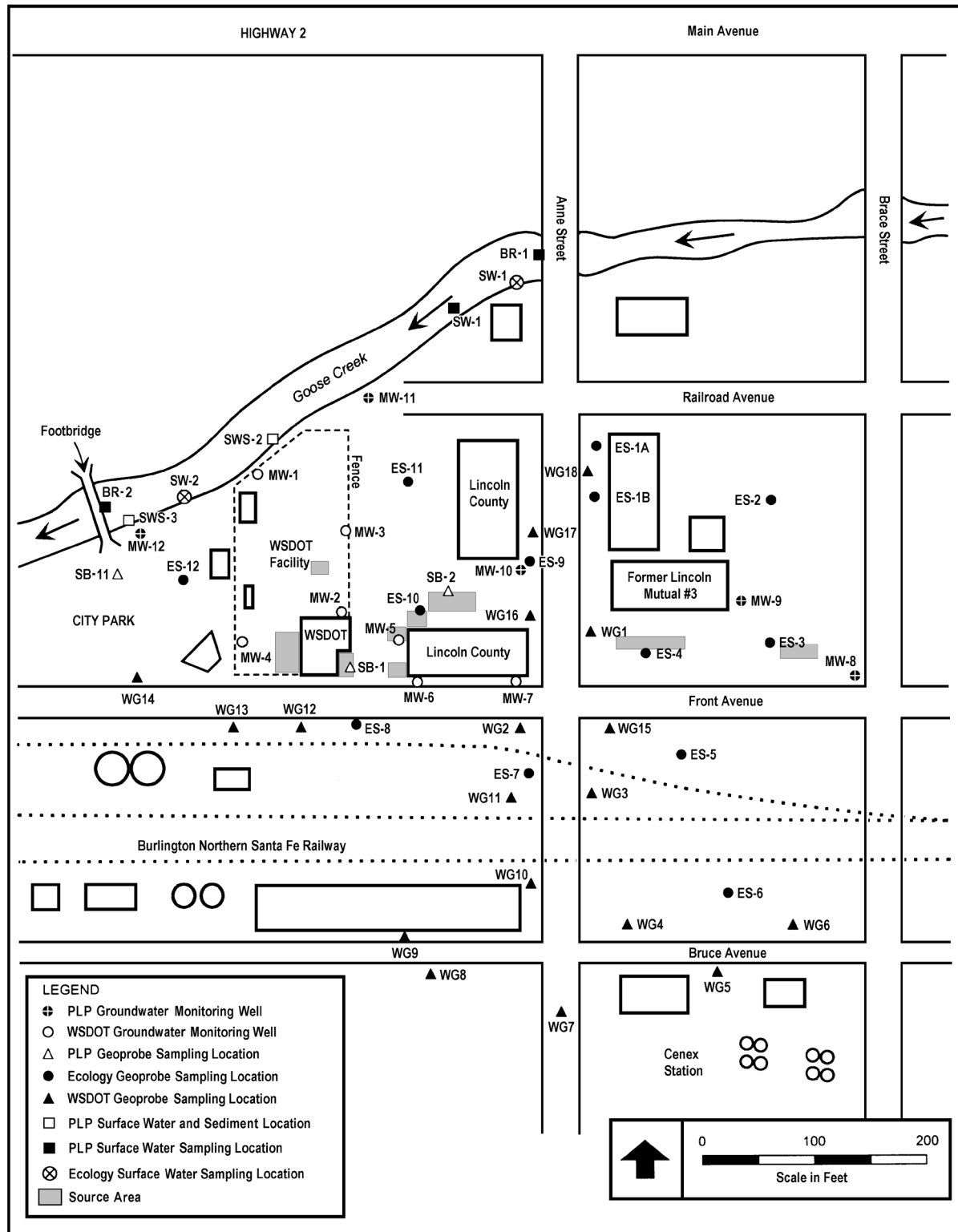


Figure 3. Remedial Action Locations

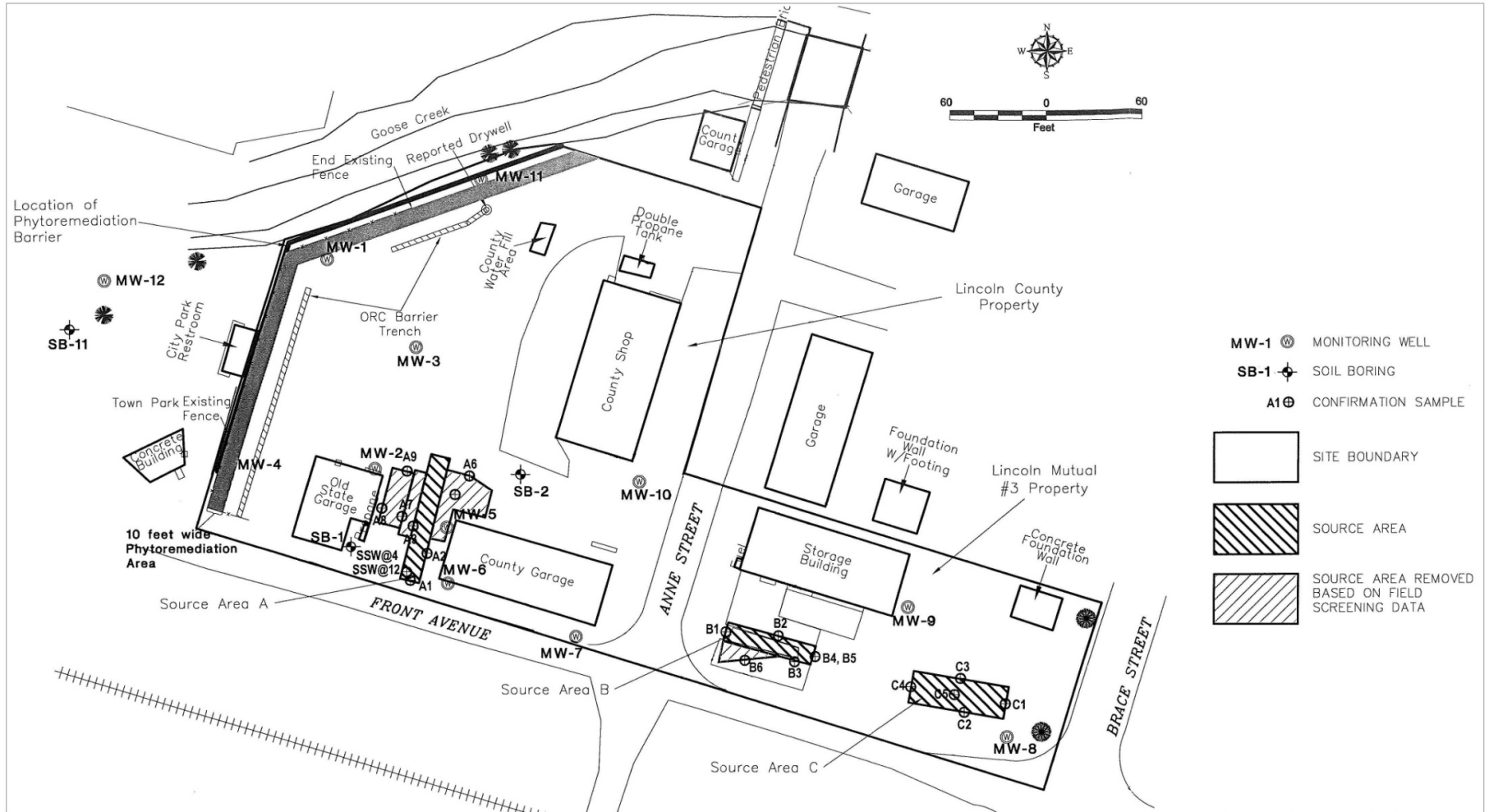


Figure 4. Gasoline Concentrations in Groundwater

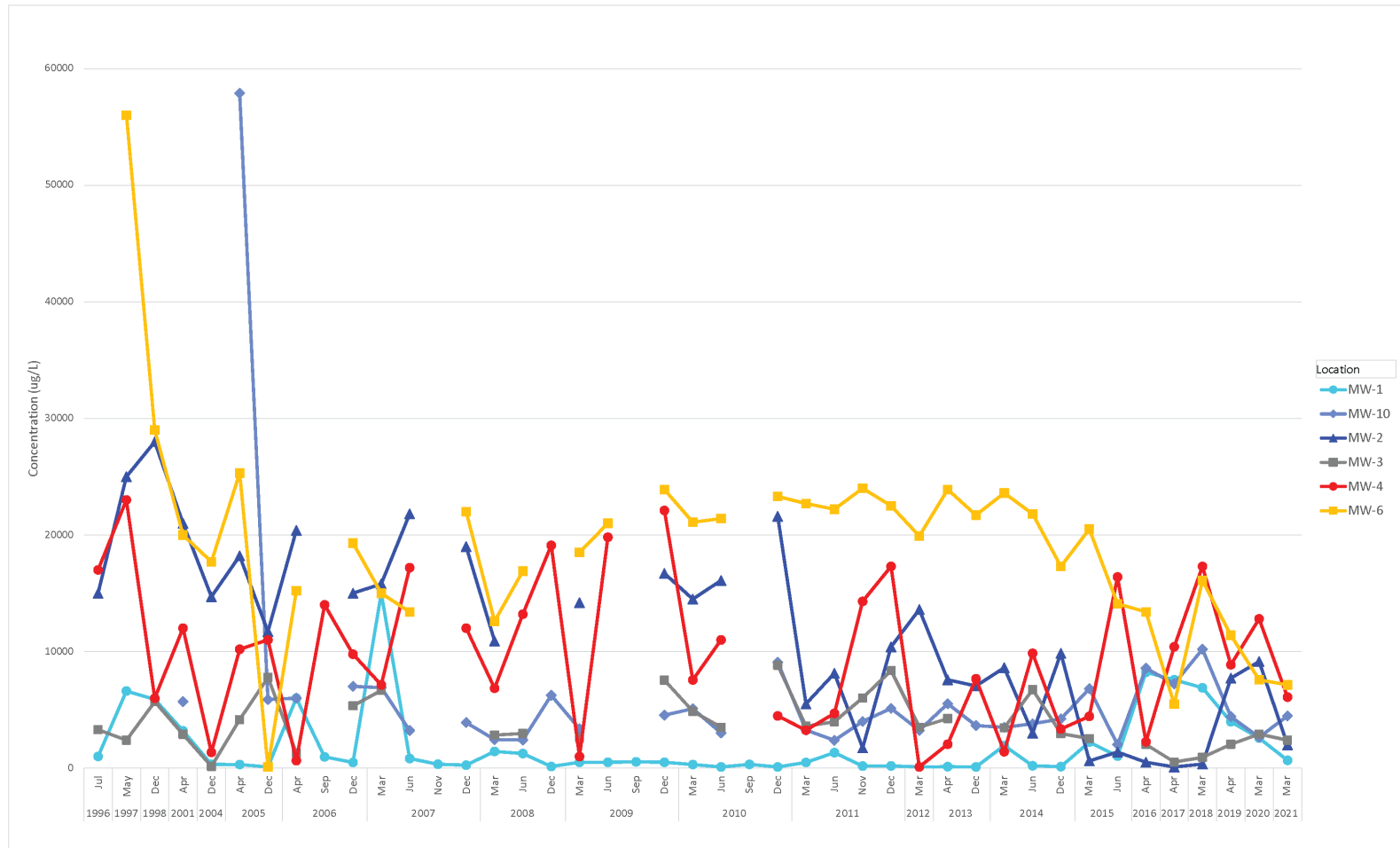


Figure 5. Benzene Concentrations in Groundwater

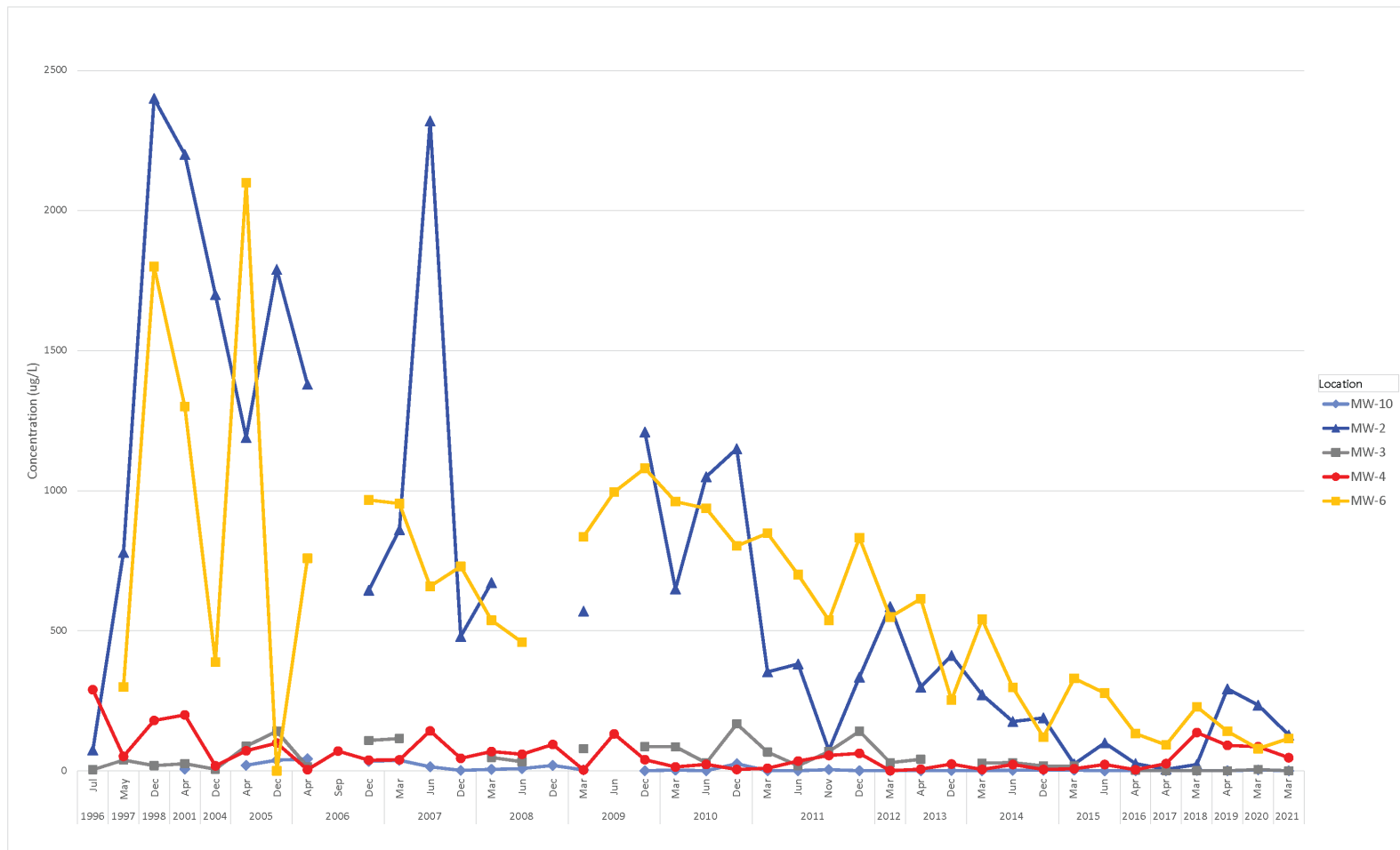


Figure 6. Toluene Concentrations in Groundwater

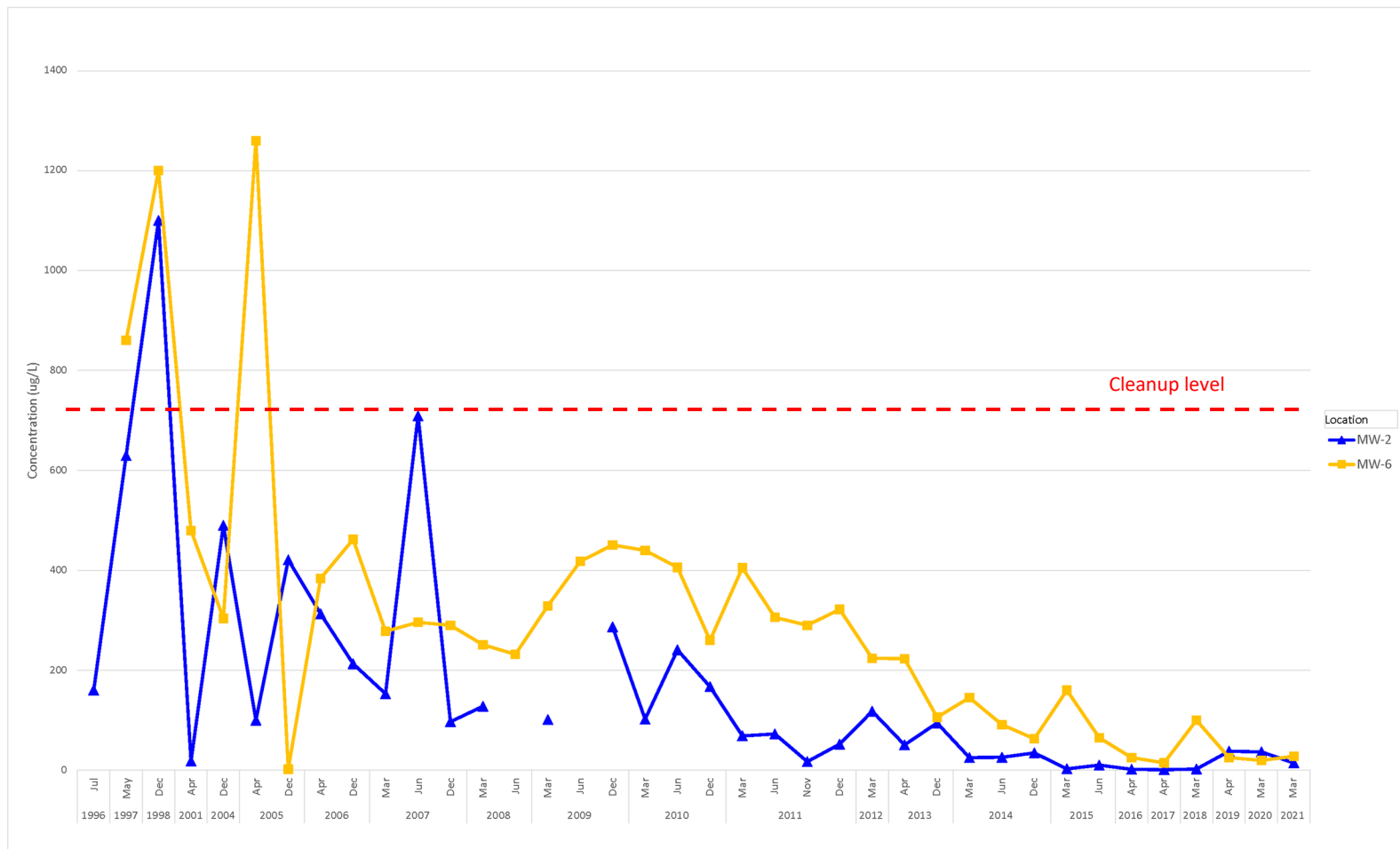


Figure 7. Ethylbenzene Concentrations in Groundwater

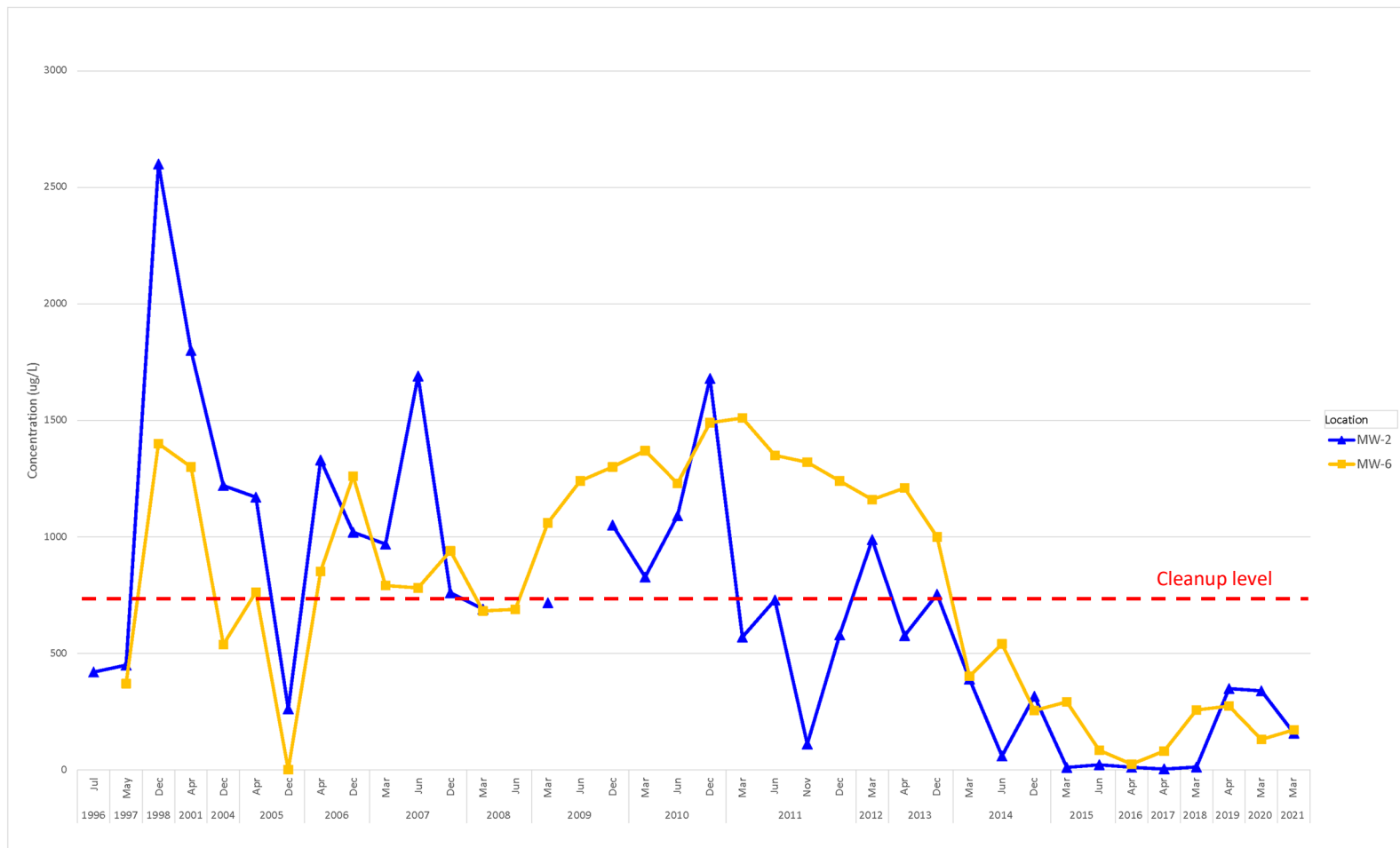


Figure 8. Xylene Concentrations in Groundwater

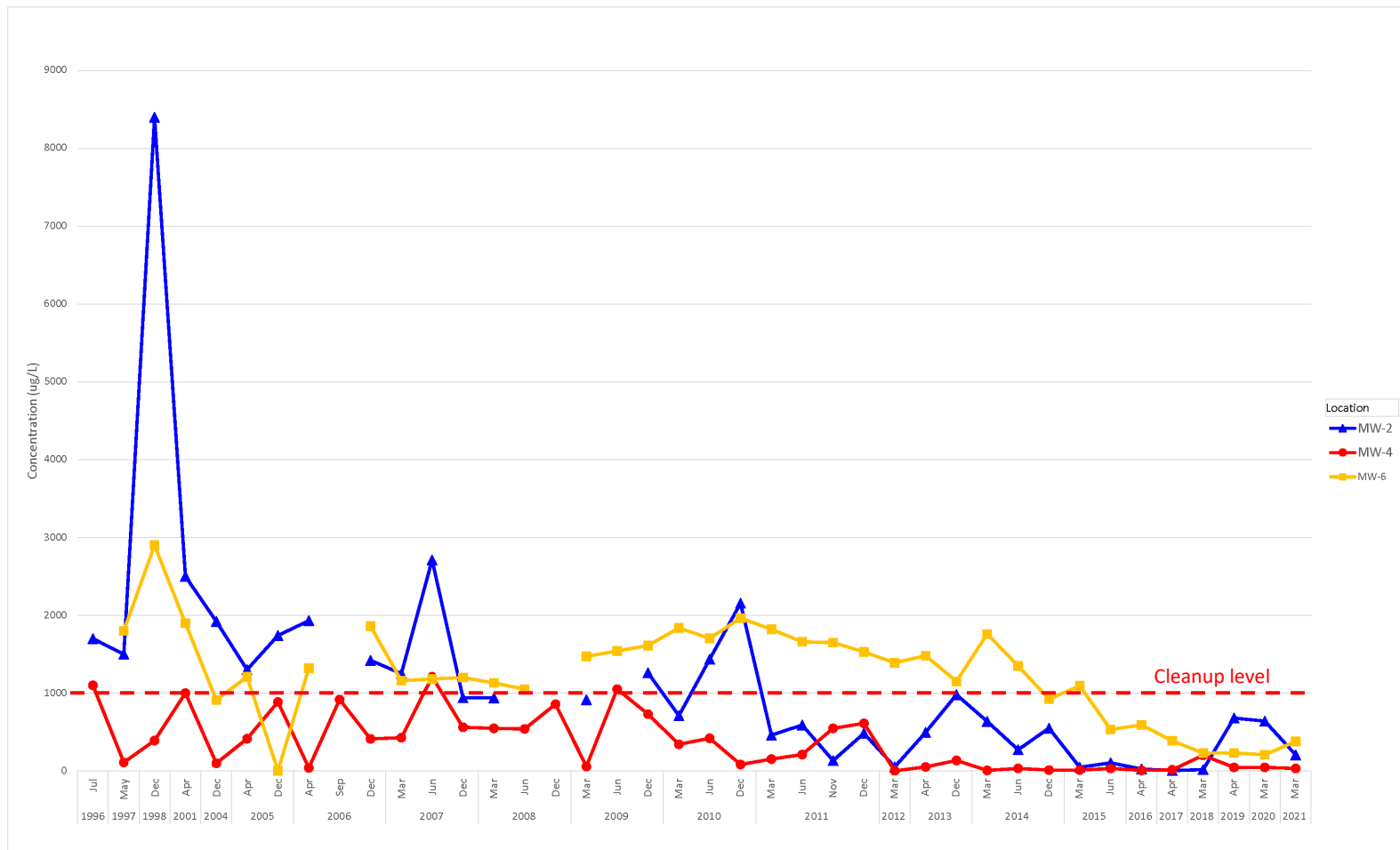
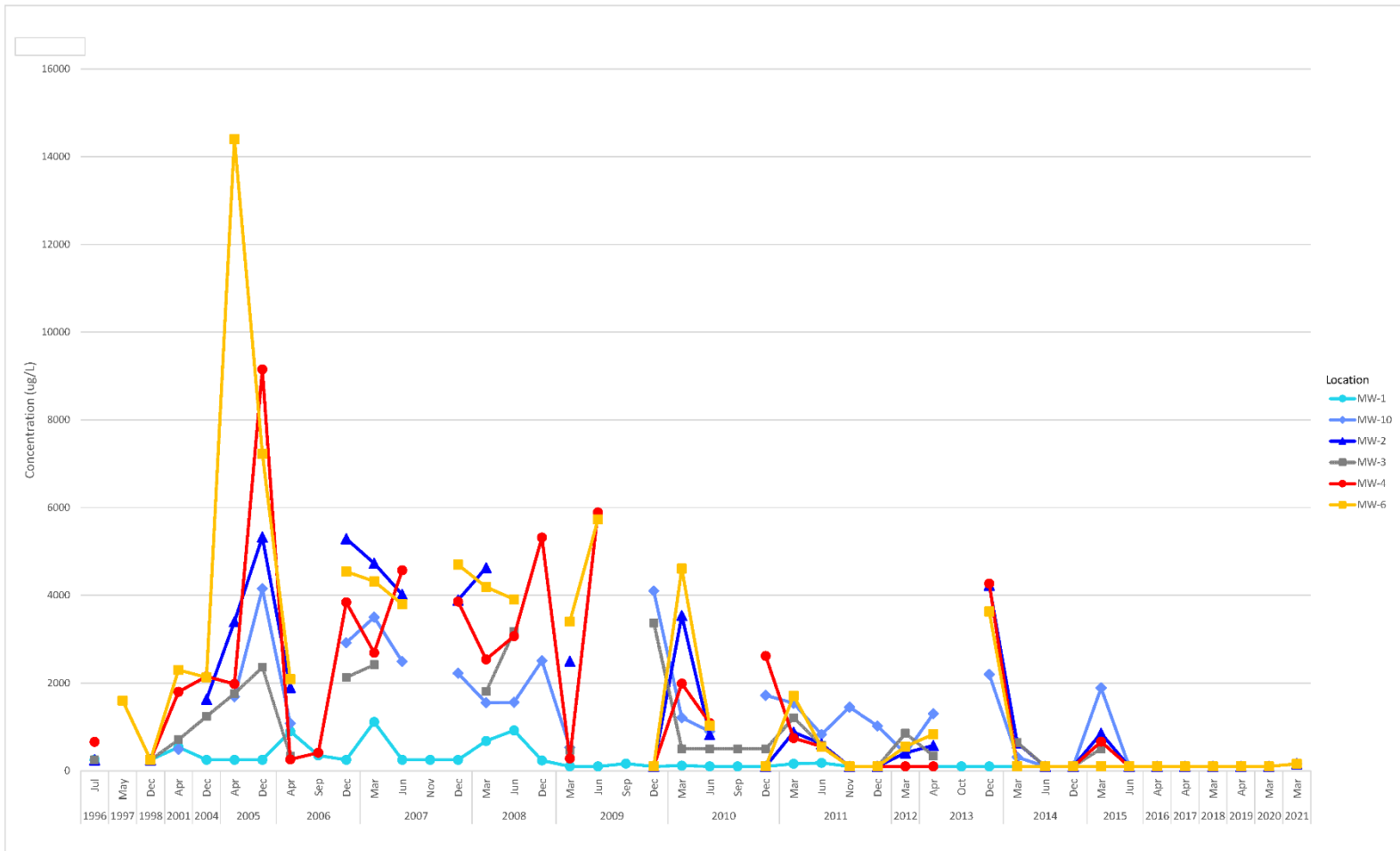


Figure 9. Diesel Concentrations in Groundwater



Appendix B. Tables

Table 1: Groundwater Contaminant Concentrations

Contaminant	Date	MW1	MW2	MW3	MW4	MW6	MW10
Gasoline (ug/L)	3/19/2007	15000	15800	6670	7140	15000	6900
	6/26/2007	819	21800		17200	13400	3220
	11/2/2007	333					
	12/12/2007	ND	19000		12000	22000	3900
	3/27/2008	1430	10900	2840	6850	12600	2450
	6/4/2008	1240		2970	13200	16900	2410
	12/3/2008	132			19100		6240
	3/25/2009	ND	14200	2630	981	18500	3370
	6/26/2009	ND			19800	21000	
	9/29/2009	535					
	12/10/2009	ND	16700	7550	22100	23900	4540
	3/24/2010	301	14500	4880	7560	21100	5100
	6/17/2010	ND	16100	3510	11000	21400	3020
	9/14/2010	314					
	12/7/2010	ND	21600	8820	4470	23300	9090
	3/24/2011	483	5510	3600	3250	22700	3260
	6/21/2011	1320	8130	3980	4700	22200	2380
	11/22/2011	176	1730	6030	14300	24000	4000
	12/28/2011	185	10400	8380	17300	22500	5120
	3/16/2012	ND	13600	3500	ND	19900	3230
	4/1/2013	128	7580	4260	2050	23900	5520
	12/17/2013	ND	7040		7670	21700	3650
	3/17/2014	1930	8610	3470	1400	23600	3490
	6/4/2014	195	3000	6740	9840	21800	3800
	12/15/2014	126	9850	2960	3350	17300	4210
	3/18/2015	2230	612	2540	4430	20500	6810
	6/9/2015	1030	1380		16400	14100	2020
	4/13/2016	8220	500	2030	2250	13400	8570
	4/19/2017	7580	102	518	10400	5480	7220
	3/14/2018	6890	340	926	17300	16100	10200
	4/12/2019	3970	7710	2040	8870	11400	4410
	3/13/2020	2580	9130	2920	12800	7570	2640
	3/4/2021	668	1990	2400	6090	7140	4480
	5/5/2022	266	8500	266	912	4640	4750
	3/31/2023	1180	10100	200	3900	8200	3770
	4/1/2024	1000	2800	400	4300	8300	6600

Contaminant	Date	MW1	MW2	MW3	MW4	MW6	MW10
Benzene (ug/L)	3/19/2007	2170	861	116	39.5	954	37.8
	6/26/2007	27.6	2320		143	659	14.9
	11/2/2007	ND					
	12/12/2007	ND	480		45	730	1.9
	3/27/2008	14.8	672	47.9	69	538	5.57
	6/4/2008	19.7		33	59.5	459	8.07
	12/3/2008	ND			94.6		19.6
	3/25/2009	ND	570	79.2	3.5	836	3.6
	6/26/2009	ND			132	995	
	9/29/2009	ND					
	12/10/2009	ND	1210	87	40.3	1080	ND
	3/24/2010	ND	649	86.6	14	961	2.87
	6/17/2010	ND	1050	29	23.5	937	ND
	9/14/2010	ND					
	12/7/2010	ND	1150	168	5	803	25.4
	3/24/2011	ND	353	67.3	9.48	848	ND
	6/21/2011	8.23	382	18.6	35.4	701	ND
	11/22/2011	ND	73.2	69.7	55.3	538	4.35
	12/28/2011	ND	335	142	62.4	832	ND
	3/16/2012	ND	587	29.9	ND	549	ND
	4/1/2013	ND	299	41.7	6.16	614	ND
	12/17/2013	ND	412		24.4	253	1.18
	3/17/2014	ND	272	28.1	5.16	541	0.74
	6/4/2014	ND	176	29.7	23.1	298	2.5
	12/15/2014	ND	189	18.2	5.21	121	2.5
	3/18/2015	0.95	24.4	17.3	7.97	330	2.86
	6/9/2015	2.4	100		22.9	278	0.5
	4/13/2016	15	26	2.5	4.17	133	0.74
	4/19/2017	5.4	6	ND	26.3	93	ND
	3/14/2018	ND	22.8	1.27	137	229	1.41
	4/12/2019	2.7	293	ND	91.3	141	ND
	3/13/2020	2.15	235	5	86.2	79.3	3.51
	3/4/2021	ND	128	ND	47.1	116	ND
	5/5/2022	0.1	216	ND	3.3	101	ND
	3/31/2023	0.75	209	ND	12.1	141	0.5
	4/1/2024	0.5	120	ND	14	98.5	0.5

Contaminant	Date	MW1	MW2	MW3	MW4	MW6	MW10
Diesel (ug/L)	3/19/2007	1114	4730	2420	2690	4320	3500
	6/26/2007	ND	4020		4570	3800	2490
	11/2/2007	ND					
	12/12/2007	ND	3890		3860	4700	2222
	3/27/2008	680	4630	1810	2540	4190	1550
	6/4/2008	921		3180	3070	3910	1560
	12/3/2008	236			5320		2510
	3/25/2009	ND	2500	471	280	3400	533
	6/26/2009	ND			5890	5730	
	9/29/2009	164					
	12/10/2009	ND	ND	3370	ND	ND	4100
	3/24/2010	119	3540	ND	1990	4610	1210
	6/17/2010	ND	823	ND	1090	1030	897
	9/14/2010	ND		ND			
	12/7/2010	ND	ND	ND	2620	ND	1720
	3/24/2011	161	881	1210	746	1710	1540
	6/21/2011	182	616	581	552	541	829
	11/22/2011	ND	ND	ND	ND	ND	1450
	12/28/2011	ND	ND	ND	ND	ND	1020
	3/16/2012	ND	408	855	ND	554	394
	4/1/2013	ND	577	344	ND	831	1300
	10/16/2013	ND					
	12/17/2013	ND	4230		4270	3630	2200
	3/17/2014	ND	634	646	ND	ND	311
	6/4/2014	ND	ND	ND	ND	ND	ND
	12/15/2014	ND	ND	ND	ND	ND	ND
	3/18/2015	ND	857	504	664	ND	1890
	6/9/2015	ND	ND		ND	ND	ND
	4/13/2016	ND	ND	ND	ND	ND	ND
	4/19/2017	ND	ND	ND	ND	ND	ND
	3/14/2018	ND	ND	ND	ND	ND	ND
	4/12/2019	ND	ND	ND	ND	ND	ND
	3/13/2020	ND	ND	ND	ND	ND	ND
	3/4/2021	ND	ND	ND	ND	ND	ND
	5/5/2022	ND	ND	ND	ND	ND	ND
	3/31/2023	ND	ND	ND	ND	ND	ND

Contaminant	Date	MW1	MW2	MW3	MW4	MW6	MW10
Toluene (ug/L)	3/19/2007	615	153	43.1	2	278	16.8
	6/26/2007	ND	709		46.2	296	6.39
	11/2/2007	ND					
	12/12/2007	ND	97		7.6	290	1.4
	3/27/2008	2.73	128	10	10	251	2.48
	6/4/2008	3.77		20	18	232	3.9
	12/3/2008	ND			11.8		12.6
	3/25/2009	ND	101	20.9	1.4	329	17.1
	6/26/2009	ND			31	418	
	9/29/2009	ND					
	12/10/2009	ND	287	42.5	19.8	451	ND
	3/24/2010	ND	102	32.3	6.05	440	ND
	6/17/2010	ND	241	14.9	9.1	406	ND
	9/14/2010	ND					
	12/7/2010	ND	167	39	6.2	260	7.7
	3/24/2011	1.16	68.6	14.8	3.04	405	3.99
	6/21/2011	2.42	72.6	7.92	4.87	306	3.27
	11/22/2011	ND	17	17.6	23	290	5.64
	12/28/2011	ND	52.1	37.1	11.5	322	6.4
	3/16/2012	ND	118	8.86	ND	224	3.78
	4/1/2013	1.11	50.6	10.9	2.58	223	5.55
	10/16/2013	ND					
	12/17/2013	ND	94.6		5.37	106	1.36
	3/17/2014	ND	25	5.38	0.97	145	ND
	6/4/2014	ND	25.8	12.5	5.37	91.1	2.5
	12/15/2014	ND	34.4	5	5	62.8	2.5
	3/18/2015	1.38	2.52	4.23	3.32	160	3.14
	6/9/2015	ND	10		10	64.9	ND
	4/13/2016	4.5	1.5	2.5	2.5	25	1.12
	4/19/2017	2.9	ND	ND	5	14.7	2.59
	3/14/2018	ND	2.31	1.16	ND	ND	5.67
	4/12/2019	1.94	37.8	2.06	11.9	25.3	2.64
	3/13/2020	1.22	36.5	2.5	11.6	19.3	2.18
	3/4/2021	1.08	14.3	2.44	5.15	27.8	2.82
	5/5/2022	ND	32.5	ND	ND	11.1	11.5
	3/31/2023	ND	29.6	ND	ND	26.8	0.5
	4/1/2024	ND	18.4	ND	5	31	0.5

Contaminant	Date	MW1	MW2	MW3	MW4	MW6	MW10
Ethylbenzene (ug/L)	3/19/2007	3860	969	292	182	791	42
	6/26/2007	31.2	1690		602	781	20.2
	11/2/2007	2.44					
	12/12/2007	ND	760		280	940	16
	3/27/2008	34.2	690	140	251	682	4.29
	6/4/2008	25		152	262	689	9.58
	12/3/2008	ND			423		24.5
	3/25/2009	1.3	717	164	28.2	1060	18.6
	6/26/2009	ND			545	1240	
	9/29/2009	ND					
	12/10/2009	ND	1050	298	390	1300	23.8
	3/24/2010	ND	828	286	172	1370	30.4
	6/17/2010	ND	1090	136	210	1230	13.1
	9/14/2010	2.1					
	12/7/2010	ND	1680	447	24.8	1490	231
	3/24/2011	6.2	570	184	83.7	1510	21.3
	6/21/2011	24.8	729	185	114	1350	10.8
	11/22/2011	ND	111	291	286	1320	17.8
	12/28/2011	ND	579	468	318	1240	26.6
	3/16/2012	ND	988	153	1	1160	10.3
	4/1/2013	ND	576	174	55.4	1210	22.8
	10/16/2013	ND					
	12/17/2013	ND	754		259	1000	16.1
	3/17/2014	ND	390	134	48.9	402	5.17
	6/4/2014	ND	59.7	263	271	541	11.8
	12/15/2014	ND	316	44.5	61.6	255	9.16
	3/18/2015	26.2	10.6	85	72.7	292	20.9
	6/9/2015	12.6	22		252	84	4.56
	4/13/2016	101	11	16.1	63.9	25	26.7
	4/19/2017	77	4	1.1	181	81	12
	3/14/2018	ND	12.5	3.27	506	257	27
	4/12/2019	ND	349	3.7	337	274	11.9
	3/13/2020	4.4	339	11.8	306	131	8.96
	3/4/2021	6.12	158	15.8	260	172	26.3
	5/5/2022	1.83	380	1.8	6	132	11.8
	3/31/2023	1.69	403	0.5	87.5	220	16
	4/1/2024	0.56	184	1	69.7	181	18.5

Contaminant	Date	MW1	MW2	MW3	MW4	MW6	MW10
Xylene (ug/L)	3/19/2007	4720	1250	410	427	1160	139
	6/26/2007	13	2710		1210	1180	57.5
	11/2/2007	3.46					
	12/12/2007	1.5	940		560	1200	55
	3/27/2008	30.9	938	196	548	1130	12
	6/4/2008	8.63		212	540	1050	23.6
	12/3/2008	1.5			857		61.2
	3/25/2009	ND	913	229.5	57.5	1472	59.1
	6/26/2009	ND			1050	1540	
	9/29/2009	ND					
	12/10/2009	ND	1260	428.8	730	1610	71.2
	3/24/2010	1.25	709	393	341	1837	114
	6/17/2010	ND	1435	188	419	1704	35.8
	9/14/2010	1.9					
	12/7/2010	ND	2154	634	81.5	1963	486
	3/24/2011	3.18	460	246	152	1820	62.6
	6/21/2011	11.4	590	243	210	1660	45.6
	11/22/2011	ND	132	348	547	1650	65.3
	12/28/2011	ND	484	533	611	1530	96.6
	3/16/2012	ND	51.8	159	ND	1390	43.1
	4/1/2013	ND	494	84.7	52.2	1480	87.4
	10/16/2013	ND	979		134	1150	54
	12/17/2013	ND	637	44.8	7.23	1760	19.2
	3/17/2014	ND					
	6/4/2014	ND	272	44.4	32.5	1350	34.6
	12/15/2014	ND	550	24.5	10	922	33.9
	3/18/2015	29.04	46.74	33.1	11.38	1093	120.4
	6/9/2015	4.9	104		31	532	18.9
	4/13/2016	94.5	24	9.3	7.5	591	89.9
	4/19/2017	55	5	3	14	387	65.6
	3/14/2018	200	16.5	1.18	200	229	71.2
	4/12/2019	45.8	678	6.42	46	231.8	34.9
	3/13/2020	5.33	640	4.06	45.4	207.2	9.71
	3/4/2021	2.67	206	9.34	31.7	378.4	15.72
	5/5/2022	3	577.5	3	3	281.3	22
	3/31/2023	2.67	596.9	0.5	7.1	318.3	6.22
	4/1/2024	1.2	164.5	2	5.9	327.4	6.39

ug/L = micrograms/liter

ND = not detected

blank = not sampled

Table 2: Groundwater Cleanup Levels

Contaminant	Method A Cleanup Level, ug/L
TPH-gasoline	800
TPH-diesel	500
Benzene	5
Toluene	1000
Ethylbenzene	700
Xylene	1000

ug/L = micrograms per liter

Table 3: Mann-Kendall Tau Value Analysis

Well	First PR Tau	Second PR Tau	Third PR Tau	All Data Tau
MW1 gasoline	-0.385 ↓	0.556 ↑	-0.467 ↓	-0.027 →
MW2 gasoline	-0.41 ↓	-0.644 ↓	0.067 →	-0.57 ↓
MW3 gasoline	0.363 ↑	-0.571 ↓	-0.467 ↓	-0.278 ↘
MW4 gasoline	0.076 →	0.467 ↑	-0.467 ↓	-0.168 ↘
MW6 gasoline	0.574 ↑	-0.733 ↓	-0.067 →	-0.292 ↘
MW10 gasoline	-0.132 ↘	0.467 ↑	0.467 ↑	-0.021 →
MW1 benzene	-0.238 ↘	0.6 ↑	All below CUL	-0.244 ↘
MW2 benzene	-0.429 ↓	-0.778 ↓	-0.733 ↓	-0.598 ↓
MW3 benzene	0.077 →	-0.5 ↓	All below CUL	-0.424 ↓
MW4 benzene	-0.076 →	0.244 ↗	-0.6 ↓	-0.297 ↘
MW6 benzene	-0.081 →	-0.511 ↓	-0.133 ↘	-0.536 ↓
MW10 benzene	-0.529 ↓	All below CUL	All below CUL	Not applicable

Tau value of <0.1 = no change = →

Tau value between 0.1 and 0.3 = slight change = ↗ or ↘

Tau value over 0.3 = change, more significant the closer to 1 = ↑ or ↓

CUL = cleanup level

Appendix C. Photo Log

Photo 1: View northwest of former WSDOT property



Photo 2: View east of former Lincoln Mutual No. 3 property from Lincoln County maintenance yard



Photo 3: View north of paved portion of Lincoln County maintenance yard



Photo 4: View northeast of Lincoln County maintenance yard and buildings



Photo 5: View along Goose Creek to the east, with the Lincoln County maintenance yard on the south bank

