



Second Periodic Review

Bingo Fuel Stop
Facility/Site ID #: 388
Cleanup Site ID #: 4902

Exit 101 and Interstate 90
Thorp, Washington 98946

Prepared by:
Washington State Department of Ecology
Central Regional Office
Toxics Cleanup Program

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1.0 INTRODUCTION

This document is the Department of Ecology's review of site conditions and monitoring data to assure that human health and the environment are being protected at the Bingo Fuel Stop property located at Exit 101 off of Interstate 90 (Site). Cleanup at this Site was implemented under the Model Toxics Control Act (MTCA), Chapter 173-340 WAC. This is the second periodic review conducted for this Site. The first periodic review was completed in June 2011. This periodic review will evaluate the period from June 2011 through June 2017.

Cleanup actions at this Site are being conducted under Agreed Order No. DE 02TCPCR-3976. The cleanup actions have resulted in residual concentrations of petroleum hydrocarbons (TPH) exceeding MTCA Method A cleanup levels for soil and groundwater established under WAC 173-340-740(2). The MTCA Method A cleanup levels for soil are established under WAC 173-340-740(2). The MTCA Method A cleanup levels for groundwater are established under WAC 173-340-720(3). WAC 173-340-420 (2) requires that Ecology conduct a periodic review of a site every five years under the following conditions:

1. Whenever the department conducts a cleanup action
2. Whenever the department approves a cleanup action under an order, agreed order or consent decree
3. Or, as resources permit, whenever the department issues a no further action opinion
4. 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
 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 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 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 SITE CONDITIONS

2.1 Site Description and History

The Bingo Fuel Stop Site is located at the southwest corner of the exit 101 at Interstate 90 south of Thorp, Kittitas County, Washington. The Site is located in a rural area with agricultural land located to the south and west. Four-lane Interstate 90 is located to the north, and the Thorp Highway is located to the east. A vicinity map is available as Appendix 6.1 and a Site plan is available as Appendix 6.2.

The Site was operated as a car and truck fueling station from 1968 until 1992. In February 1992, Ecology received a report of a flash fire during underground storage tank (UST) excavation activities at the Site. Ecology personnel conducted a Site visit on February 7, 1992. During this visit, Ecology personnel observed petroleum product floating on groundwater within open excavations, resulting in explosive concentrations of gasoline vapors while the facility was open for business.

Ecology issued Enforcement Order No. DE-92TC-C109 on February 11, 1992, directing fuel dispensing activities at the Site to stop and requiring preparation and implementation of an Emergency Remedial Action Work Plan. Following the emergency remedial action, the parties entered into Agreed Order No. DE 93TC-C171 to conduct a Remedial Investigation/Feasibility Study (RI/FS). Following the completion of the RI/FS, Agreed Order No. DE 95TC-C236 was entered into to direct the final remedial action which was selected through the RI/FS. In 2002, Agreed Order No. DE 02TCPCR-3976 was entered to guide long-term operation, maintenance, and monitoring at the Site.

2.2 Remedial Actions and Investigations

2.2.1 Emergency Remedial Action

Applied Geotechnology Inc. (AGI) prepared and submitted an Emergency Remedial Action Work Plan on March 5, 1992. Five of seven USTs at the Site were removed during the Emergency Remedial Action. Hydrocarbon contamination in soil and groundwater was encountered in each of the UST excavations. Soil samples were collected and submitted for analyses in accordance with Ecology's 1991 *Guidance for Site Checks and Site Assessment for Underground Storage Tanks*. Sample results indicated that remaining soil in the UST excavations and associated piping trenches contained petroleum hydrocarbon contamination at concentrations above Washington State Method A soil cleanup levels.

During the emergency remedial action a groundwater pump and treat system was installed and operated to recover free product and treat contaminated groundwater. Petroleum hydrocarbon-contaminated groundwater was recovered, treated to reduce concentrations of dissolved hydrocarbons, and reintroduced into an open UST excavation.

Water samples were collected from potentially affected surface and groundwater sources and submitted for chemical analyses. Domestic water supply wells were within federal drinking water standards, as were potentially affected surface waters.

2.2.2 Remedial Investigation/Feasibility Study (RI/FS)

Twelve soil borings were drilled during the Remedial Investigation (RI) and completed as 12 groundwater monitoring wells and one piezometer. Soil and groundwater samples were collected from the borings and wells and submitted to a laboratory for analysis. Two surface water samples and two sediment samples were also collected during the RI and submitted to a laboratory for analysis.

The results of the analyses indicated soil and groundwater downgradient of the former USTs and dispenser islands contained petroleum hydrocarbons above MTCA Method A cleanup levels. In addition, one sediment sample northeast of the Site contained petroleum hydrocarbons above cleanup levels, likely a result of surface spills in the past.

Risk-based soil and groundwater cleanup levels were developed for chemicals of concern. Cleanup levels for chemicals present above draft cleanup levels are discussed in Section 2.3. The Feasibility Study (FS) identified three alternatives for Site cleanup. Alternative 3 was selected, which consisted of product recovery, source area and downgradient petroleum-contaminated soil (PCS) excavation and treatment, and groundwater extraction and treatment.

PCS was to be remediated using Solid Phase treatment and re-used as backfill at the Site. Recovered groundwater was treated in an aboveground bioreactor to at or near drinking water standards and discharged to the subsurface at the Site.

2.2.3 Cleanup Action

The cleanup action at Bingo Fuel Stop was directed by Agreed Order No. DE 95TC-C236 and was conducted in multiple phases. Each phase consisted of one or more of the following activities:

- Excavation of PCS from source areas and downgradient
- Aboveground Solid Phase treatment of PCS
- Product and groundwater recovery and reintroduction trench installation
- Product and contaminated groundwater recovery
- Groundwater treatment system operation and maintenance
- Groundwater treatment system monitoring
- Vapor extraction system (VES) installation and operation
- Groundwater monitoring following the completion of Site cleanup

2.2.3.1 Source Removal

Remedial activities at the Site included excavation and on-site treatment of approximately 15,700 cubic yards of PCS. Excavated soils were stockpiled on a treatment pad and allowed to aerate and bioremediate. Following passive treatment, the stockpiles were sampled to confirm that contamination had remediated below cleanup levels prior to reuse as backfill. Soil sample analyses of samples collected from excavation sidewalls and bases indicated that all soil containing PCS at concentrations exceeding MTCA Method A cleanup levels was removed from

the subsurface within the property boundaries. PCS could not be excavated from beneath the I-90 off-ramp right-of-way or under the Thorp Highway right-of-way without risking structural damage to the roadway.

2.2.3.2 Groundwater Treatment

Prior to the first phase of soil excavation, groundwater extraction and reintroduction trenches were installed to extend the recovery network. Expanded groundwater recovery and treatment for one season reduced the total volume of impacted soil requiring excavation and treatment.

Recovery trenches were installed near MW3 and east of Thorp Highway. A groundwater reintroduction trench was installed along the northeast side of the property. The recovery/reintroduction trenches were used to flush mobile hydrocarbons from beneath Thorp Highway to the recovery trench, and to stimulate in situ biological activity to degrade any remaining hydrocarbons beneath Thorp Highway.

Recovered product and groundwater were piped to an oil/water separator and an aboveground bioreactor. Recovered product and groundwater were routed through the 1,100-gallon oil/water separator, and discharge water was routed to the bioreactor. The bioreactor consists of a 10,000-gallon reactor, segmented into two chambers. Each chamber is supplied with oxygen by a set of diffuser pads. A regenerative blower provides sufficient air to the bioreactor diffuser pads to maintain the concentration of dissolved oxygen in the bioreactor at approximately 10 parts per million.

Discharge from the groundwater treatment system was monitored in accordance with the Temporary State Waste Discharge Permit No. ST-9172. Monitoring consisted of periodically collecting samples from the treatment system discharge and submitting the samples for chemical analyses for benzene, ethylbenzene, toluene and total xylenes (BETX) and TPH.

2.2.3.3 Vapor Extraction System

A soil VES was installed to address gasoline-range petroleum-contaminated soil east of the former gasoline UST excavation beneath Thorp Highway. The VES consisted of 4-inch diameter slotted PVC piping extending along the eastern edge of the Bingo Fuel Stop property. The piping was buried approximately 6 feet below ground surface and was connected to an aboveground blower. Extracted vapors were treated using the aboveground bioreactor or activated carbon filters.

The VES discharge was monitored on a monthly basis. Volatile organic compounds in the air stream were measured using a photoionization detector.

2.3 Cleanup Levels

MTCA Method B was used in the RI/FS to develop risk-based Site specific cleanup levels. Method B was appropriate for determining cleanup levels at Bingo Fuel stop due to the presence of hazardous substances not listed in Method A cleanup tables. Cleanup levels are available in the table below.

Table 1

| <u>Contaminant</u> | <u>Cleanup Levels</u> | |
|--------------------|-----------------------|---------------------------|
| | <u>Soil in ppm</u> | <u>Groundwater in ppb</u> |
| TPH, Gas | 400.0** | 1000.0 |
| TPH, Diesel | 400.0** | 1000.0 |
| Benzene | 0.5 | 5.0 |
| Ethylbenzene | 40.0 | 400.0 |
| Toluene | 80.0 | 800.0 |
| Total xylenes | 800.0 | 8000.0 |
| Anthracene | N/A* | 4800.0 |
| Fluorene | 32.0 | 320.0 |
| Naphthalene | 32.0 | 320.0 |
| Lead | 250.0 | 3.2 |

* not applicable.

** for those portions of the site within 20 feet of surface water, or where saturated conditions are encountered due to surface water influence, soil cleanup levels for TPH are method A: 100ppm for TPH gasoline and 200ppm for TPH diesel.

2.4 Points of Compliance

Points of compliance for soil are throughout the Site, and were demonstrated at the perimeter of excavations where concentrations of TPH in soil are below CULs. In addition, the completeness of soil cleanup will be further evaluated during groundwater compliance monitoring.

Points of compliance for groundwater are throughout the Site, and will be demonstrated by samples obtained from selected on- and off-site groundwater monitoring wells. Samples collected from monitoring wells provide information to evaluate the completeness of soil and groundwater remediation.

2.5 Groundwater Monitoring

The Cleanup Action Plan (CAP) specified that a Compliance Monitoring Plan (CMP) would be developed based on results of soil and groundwater sample analyses obtained during the Cleanup Action. The CMP initiated quarterly groundwater performance monitoring in 1996, and required groundwater monitoring until contaminants were no longer detected at concentrations exceeding Site-specific cleanup levels. It was anticipated that groundwater monitoring would be required for two years after the completion of the Cleanup Action.

Ecology stated, in a February 5, 2001 letter, that soil and groundwater remediation within the legal boundaries of the property is complete. Monitored natural attenuation coupled with institutional controls was selected as the remediation alternative for the areas adjacent to (and downgradient of) the Former Bingo Fuel Stop and underlying the Interstate 90 and Thorp Highway rights-of-way. Natural attenuation occurs passively to reduce the concentration of contaminants in soil and groundwater without further active remediation.

Efforts to monitor natural attenuation include:

- Measuring water levels and collecting samples from three off-site monitoring wells (MW6A, MW8, and MW12).
- Measuring field parameters (pH, temperature, conductivity, oxidation/reduction potential (ORP), dissolved oxygen, and turbidity) prior to collecting groundwater samples and at 5-minute intervals during sampling.
- Submitting groundwater samples to an analytical laboratory for analysis of gasoline and diesel-range petroleum hydrocarbons; benzene, ethylbenzene, toluene, and total xylenes (BTEX); and nitrate and sulfate.

As of the most recent reported groundwater monitoring event in August 2016, monitoring results indicate that only MW-6A contained contaminants at concentrations exceeding Site-specific cleanup levels with a benzene concentration of 5.5 micrograms per liter (ug/L). Natural attenuation parameters (nitrate and sulfate) were not analyzed.

Groundwater monitoring data is available as Appendix 6.3.

2.6 Natural Attenuation

Natural attenuation processes are evaluated following the decision flow chart presented in the August 15, 2002 Operation and Maintenance Plan. Per the flow chart, groundwater monitoring shall continue until TPH and BTEX concentrations are below cleanup levels for 2 consecutive events. Benzene remains above cleanup levels, so groundwater monitoring shall continue at the Site. The decision flow chart is available as Appendix 6.4.

Following the 2011 natural attenuation monitoring event, natural attenuation parameters were no longer analyzed. Though the 2016 monitoring event was documented as a Natural Attenuation Monitoring Report, that report title is misleading as samples were only analyzed for petroleum hydrocarbons and BTEX; however, because contaminant concentrations continue to decline, and chemical oxidants are being placed in the monitoring wells, it is not critical that monitored natural attenuation parameters be analyzed at this time.

2.7 Institutional Controls

The CAP states that “A restrictive covenant will be placed on the property preventing activities which may result in a release of hazardous substances present on the property or exposure of human health or the environment to hazardous substances remaining on the property, if any remain. The covenant was to be recorded with the registrar of deeds for Kittitas County. The covenant will require notice to and approval by Ecology for any future excavation activities.”

Additionally, Agreed Order No. DE 02TCPCR-3976 requires that within thirty (30) calendar days from the effective date of the Order, Burns Brothers shall implement institutional controls for the petroleum contaminated soil under the eastbound I-90 off-ramp and under the Thorp Highway right-of-way.

The area beneath Interstate 90 and the Thorp Highway where soil contamination remains is not deeded property. An environmental covenant cannot be implemented for these locations. As a result, it was necessary to implement an alternative institutional control. Following discussions with the Washington State Department of Transportation (WSDOT) and the Kittitas County Public Works Department, it was determined that these agencies could use internal notification systems as an alternative institutional control. Both agencies agreed to the following procedures:

- 1) Include a copy of this notification letter in your contaminated site file database.
- 2) Implement a procedure to review your contaminated site file database as part of the right-of-way permit approval process, for construction related work in the right-of-way area of concern.
- 3) Contact the following persons prior to planning any type of construction work within the right-of-way area of concern.
 - a) Bruce Burns of Burns Brothers, Inc. at (503) 534-2500
 - b) Jeff Newschwander of Ecology at (509) 454-7842

The WSDOT notification is available as Appendix 6.5.

3.0 PERIODIC REVIEW

3.1 Effectiveness of completed cleanup actions

Ecology conducted a Site visit on March 13, 2017. The Site continues to be vacant and accessible to the public. The former Bingo Fuel Stop building was demolished prior to remedial actions. The Site surface continues to be covered by compacted gravel, asphalt and native soils. A photo log is available as Appendix 6.6.

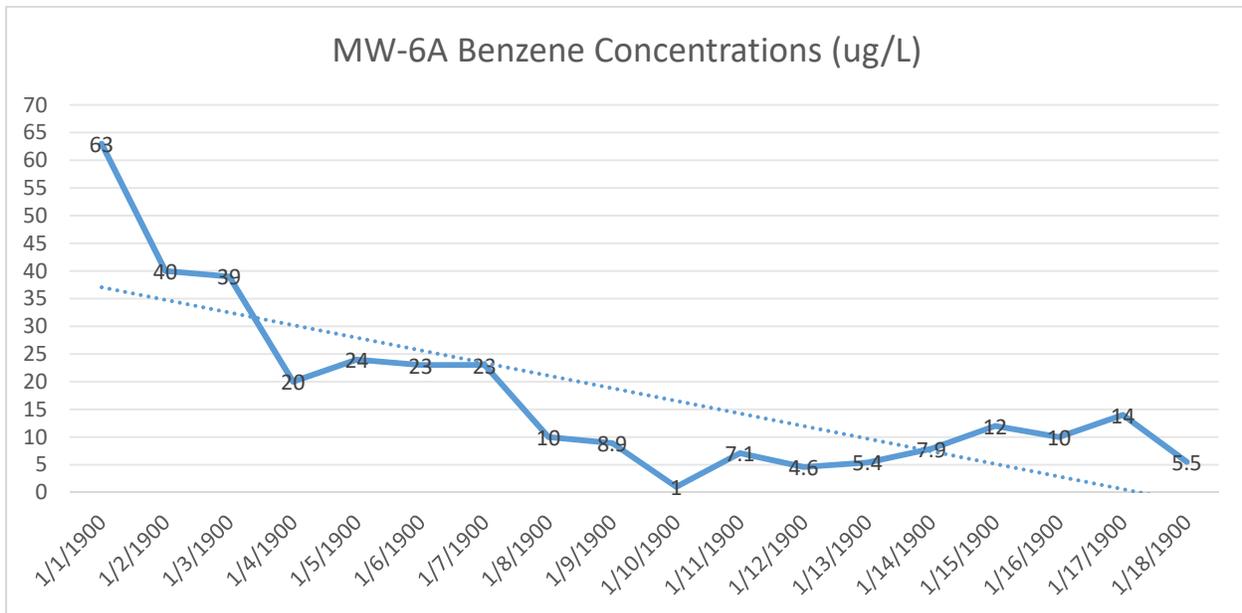
3.1.1 Direct Contact

There were no observed indications that the integrity of the remedial action has been compromised. Exposure pathways to residual contaminated soils (ingestion, direct contact) continue to be reduced by previous remedial excavations and by the presence of paved roadway and median that is not legally accessible by the general public. The Site is not physically restricted from public access.

3.1.2 Groundwater

Groundwater monitoring has continued at the Site following application of ORC to groundwater. Benzene concentrations continue to exceed MTCA Method A cleanup levels in MW-6A.

The chart below indicates the trend in benzene in MW-6A since 2000.



Groundwater monitoring will continue at the Site on an annual basis. Once benzene concentrations are below cleanup levels, compliance monitoring will resume.

3.1.3 Institutional Controls

Institutional controls are required at the Site. These institutional controls could not be implemented through a restrictive covenant (now called environmental covenant) because the areas requiring restriction are not deeded property. Institutional controls were implemented through an internal notification system for WSDOT and the Kittitas County Public Works Department. In the event that soils need to be disturbed in the restricted areas, Ecology will be contacted and consulted. Ecology has received copies of notification letters to both WSDOT and Kittitas County Public Works Department.

Ecology has recently implemented an agreement with WSDOT to formalize alternative institutional controls on WSDOT property. Ecology will pursue this method of alternative institutional controls prior to the next periodic review.

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

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

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

Site-specific cleanup levels were implemented at the Site. Several relevant MTCA Method A and Method B cleanup levels have been modified since the cleanup action was conducted; however, WAC 173-340-702(12) (a) [2001 ed.] provides that,

“For cleanup actions conducted by the department, or under an order or decree, the department shall determine the cleanup level that applies to a release based on the rules in effect under this chapter at the time the department issues a final cleanup action plan for that release.”

The cleanup levels specified in the CAP for the Site will be used to determine whether cleanup actions successfully protect human health and the environment.

3.4 Current and projected Site use

Based on a Site visit conducted on March 13, 2017, the former Bingo Fuel Stop property remains vacant. The Site has a mixture of asphalt and compacted gravel or soil surfaces. Grasses and noxious weeds are growing throughout the Site. 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 remedial excavation, active groundwater treatment and product recovery and monitored natural attenuation. Other treatment technologies may be successful at remediating remaining soil and groundwater contamination, but they would be cost prohibitive.

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 Site-specific cleanup levels for the contaminants of concern. The presence of improved analytical techniques would not affect decisions or recommendations made for the Site.

4.0 CONCLUSIONS

- The cleanup actions completed at the Site appear to be protective of human health and the environment.
- Soil cleanup levels have not been met at the Site; however, the cleanup action for the Property is determined to comply with cleanup standards under WAC 173-340-740(6) (f), since the long-term integrity of the containment system is ensured and the requirements for containment technologies have been met.
- The alternative institutional controls for the site are in place and will be effective in protecting public health and the environment from exposure to hazardous substances and protecting the integrity of the cleanup action.

Based on this periodic review, the Department of Ecology has determined that the requirements for closure of the Site are being followed. No additional remedial actions are required by the property owner. It is the property owner's responsibility to continue to inspect the Site to assure that the integrity of the cap is maintained.

5.0 REFERENCES

Ecology. *Enforcement Order No. DE 92TC-C109*. February 11, 1992.

Applied Geotechnology, Inc. *Emergency Remedial Action Report for Bingo Fuel Stop*.
June 5, 1992.

Ecology. *Agreed Order No. 93TC-C171*. March 17, 1993.

Applied Geotechnology, Inc. *Remedial Investigation Report*. March 31, 1994.

Ecology. *Agreed Order No. 95TC-C236*. January 10, 1996.

Ecology. *Agreed Order No. 02TCPCR-3976*. June 3, 2002.

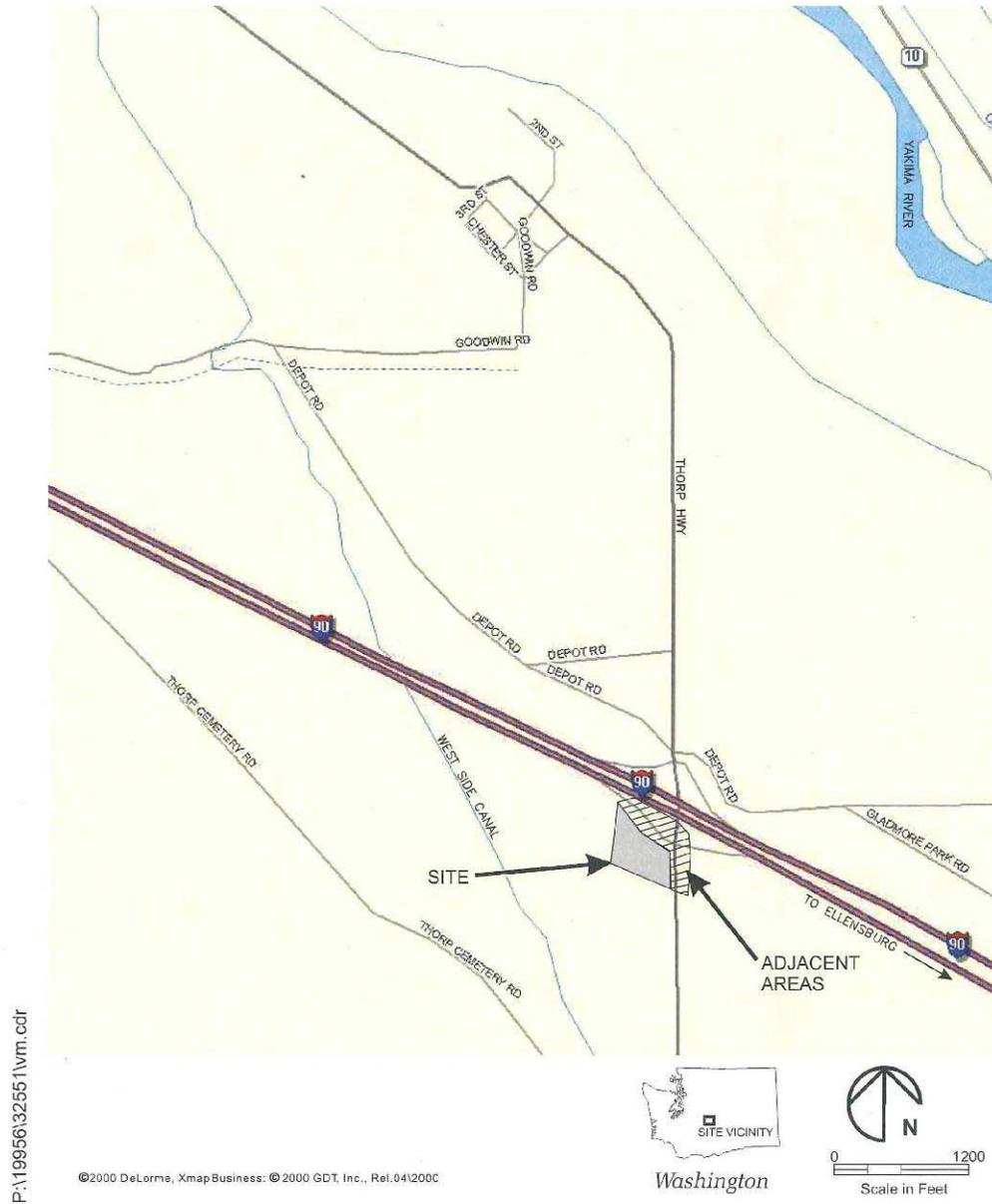
CDM. *2010 Natural Attenuation Monitoring Report*. April 7, 2010.

CDM/Smith. *2016 Natural Attenuation Monitoring Report*. June 5, 2017.

Ecology. *Site Visit*. March 13, 2017.

6.0 APPENDICIES

6.1 Vicinity Map

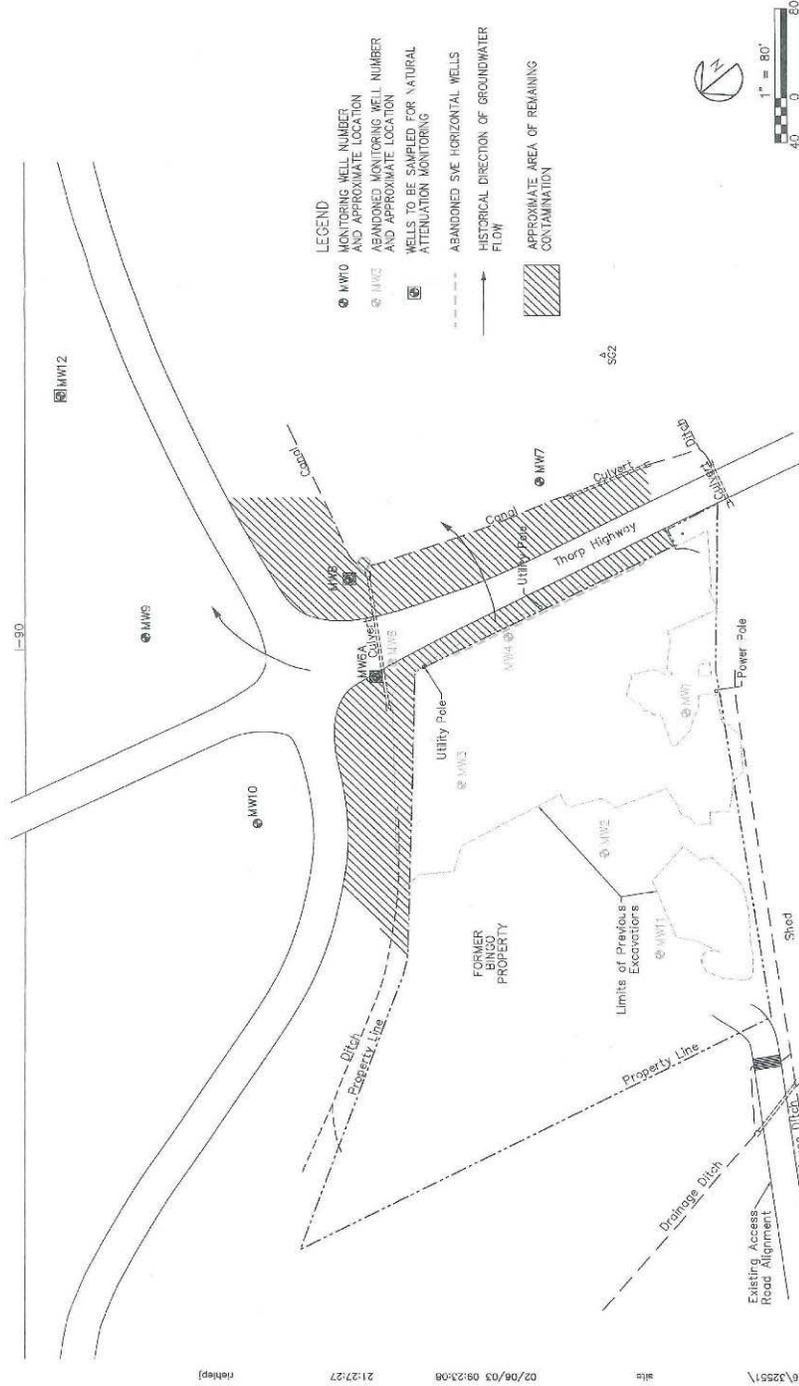


BURNS BROTHERS, INC. / BINGO FUEL STOP
NATURAL ATTENUATION MONITORING REPORT
THORP, WASHINGTON

Figure No. 1
Vicinity Map



6.2 Site Plan



6.3 Groundwater Monitoring Data

Table 2
Summary of Chemical Analyses - Groundwater
Burns Bros./Bingo Fuel Stop Cleanup Action
Thorp, Washington

| Well I.D. | Sample I.D. | Date | EPA Method 8021 | | | | TPH | |
|-----------|----------------|----------|-----------------|--------------|---------|---------|-------------|---------------------|
| | | | Benzene | Ethylbenzene | Toluene | Xylenes | Gasoline | Diesel ^a |
| | | | µg/L | | | | mg/L | |
| MW6A | MW6A | 09/21/99 | 72 | 1,000 | 96 | 3,650 | 34 | 5.1/<0.50 |
| | MW6A | 12/16/99 | 190 | 610 | 1,000 | 2,300 | 26 | <0.25/<0.50 |
| | MW6A | 03/23/00 | 84 | 100 | 47 | 1,600 | 18 | 3.3/<0.50 |
| | MW6A | 06/15/00 | 63 | 28 | 50 | 1,580 | 14 | <0.25/<0.50 |
| | MW6A | 11/20/00 | 39 | 230 | 21 | 465 | 7.5 | 2.1/<0.50 |
| | MW6A | 03/08/01 | 40 | 190 | 30 | 660 | 10.0 | 1.2/<0.50 |
| | MW6A Duplicate | 03/08/01 | 39 | 200 | 33 | 720 | 10.0 | 1.6/<0.50 |
| | MW6A | 07/13/01 | 20 | 2.0 | <1.0 | 11.1 | 0.63 | <0.25/<0.50 |
| | MW-6A-2/02 | 02/28/02 | 24 | 110 | 11 | 250 | 2.5 | <0.25/<0.50 |
| | MW-6A | 01/15/03 | 23 | 87 | 14 | 240 | 2.3 | 0.6/<0.41 |
| | MW-6A | 02/10/04 | 23 | 120 | 19 | 250 | 2.2 | <0.26/<0.41 |
| | MW-6A | 02/15/05 | 10 | 110 | 13 | 263 | 2.1 | <0.25/<0.40 |
| | MW6A | 02/15/06 | 8.9 | 190 | 29 | 740 | 4.3 | <0.25/<0.40 |
| | MW6A | 02/16/07 | <1.0 | 6.6 | <1.0 | 14.4 | <0.1 | <0.25/<0.40 |
| | MW6A | 03/19/08 | 7.1 | 220 | 7.4 | 534 | 2.1 | <0.25/<0.40 |
| | MW6A | 02/09/09 | 4.6 | 170 | 7.9 | 477 | 3.0 | <0.26/<0.41 |
| | MW6A | 02/11/10 | 5.4 | 130 | 3.4 | 286 | 2.3 | <0.28/<0.41 |
| | MW6A | 03/30/11 | 7.9 | 180 | 12.0 | 730 | 4.0 | <0.36/<0.41 |
| | MW6A | 03/29/12 | 12.0 | 110 | <4.0 | 292 | 2.2 | <0.28/<0.42 |
| | MW6A | 06/20/13 | 10 | 24 | 1.4 | 76 | 0.930 | <0.6/0.44 |
| MW6A | 01/30/15 | 14 | 7.0 | <1.0 | 4.9 | 1.000 | -- | |
| MW6A | 08/19/16 | 5.5 | 8.2 | <1.0 | 12.1 | 0.590 | 0.64/<0.41 | |
| MW8 | MW8-10/93 | 10/29/93 | 2,800 | 410 | 79 | 950 | 3.0 | <1.0 |
| | MW8-4/95 | 04/06/95 | 1,500 | 330 | 19 | 490 | 3.3 | <0.24 |
| | MW8-01/96 | 01/31/96 | 1,920 | 536 | 33 | 874 | 6.32 | <0.25/<0.75 |
| | MW8-05/96 | 05/30/96 | 267 | 72 | 4 | 58 | 0.63 | <0.25/ 0.76 |
| | MW8-08/96 | 08/29/96 | 72.5 | 17 | <1.0 | 2 | 0.12 | <0.25/<0.75 |
| | MW8-11/96 | 11/25/96 | 1,360 | 338 | 36 | 630 | 2.89 | <0.25/<0.75 |
| | MW8-02/97 | 02/26/97 | 24.8 | 8 | <1.0 | <1.0 | 0.05 | NA |
| | MW8-5/28/97 | 05/28/97 | 799.0 | 199 | 11 | 200 | 1.84 | <0.25/<0.75 |
| | MW8 | 08/28/97 | 385 | 128 | 3 | 60 | 0.87 | <0.25 |
| | MW8 | 11/18/97 | 411 | 136 | 3 | 41 | 0.90 | 0.28 |
| | MW8 | 02/17/98 | 47 | 28 | <1.0 | <1.0 | 0.27 | <0.25/<0.50 |
| | MW8 | 03/27/98 | 760 | 300 | 7.5 | 80 | 2.4 | <0.25/<0.50 |
| | MW8 | 04/27/98 | 520 | 230 | <1.0 | 6.6 | 1.5 | <0.25/<0.50 |
| | MW8 | 05/22/98 | 200 | 75 | <1.0 | <5.0 | 0.51 | <0.25 |
| | MW8 | 06/18/98 | 490 | 180 | 21 | 101 | 1.60 | <0.25/<0.50 |
| | MW8 | 09/28/98 | 74 | 19 | 9.6 | 10 | 0.19 | <0.25/<0.50 |
| | MW8 | 12/09/98 | 380 | 120 | 10.0 | 113 | 1.10 | <0.25/<0.50 |
| | MW8 | 03/10/99 | 320 | 210 | 17 | 200 | 1.50 | <0.25/<0.50 |
| | MW8 | 06/16/99 | 250 | 98 | 5.3 | 44 | 0.70 | <0.25/<0.50 |
| | MW8 | 09/21/99 | 260 | 65 | 5.6 | 43 | 0.59 | <0.25/<0.50 |
| | MW8 | 12/16/99 | 1,700 | 680 | 33 | 640 | 7.1 | <0.25/<0.50 |
| | MW8 | 03/23/00 | 700 | 490 | 22 | 414 | 3.9 | <0.25/<0.50 |
| | MW8 | 06/15/00 | 94 | 9.5 | <1.0 | <1.0 | <0.10 | <0.25/<0.50 |
| | MW8 | 11/20/00 | 550 | 150 | 6.6 | 18.8 | 1.2 | <0.25/<0.50 |
| | MW8 | 03/08/01 | 850 | 250 | 26 | 130.0 | 2.9 | <0.25/<0.50 |
| | MW8 | 07/13/01 | 120 | <5.0 | <5.0 | <5.0 | <0.5 | <0.25/<0.50 |
| | MW8 Duplicate | 07/13/01 | 100 | <5.0 | 5.5 | <5.0 | <0.5 | <0.25/<0.50 |
| MW8-2/02 | 02/28/02 | 960 | 56 | 6.1 | 12.0 | 1.0 | <0.25/<0.50 | |
| MW8 | 01/14/03 | 1,100 | 580 | 81 | 499 | 5.2 | <0.25/<0.50 | |



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Table 2
Summary of Chemical Analyses - Groundwater

Burns Bros./Bingo Fuel Stop Cleanup Action
Thorp, Washington

| Well I.D. | Sample I.D. | Date | EPA Method 8021 | | | | TPH | |
|--------------------------------|------------------|----------|-----------------|--------------|---------|---------|------------|---------------------|
| | | | Benzene | Ethylbenzene | Toluene | Xylenes | Gasoline | Diesel ^a |
| | | | µg/L | | | | mg/L | |
| | MW8A (Duplicate) | 01/14/03 | 1,100 | 590 | 89 | 516 | 5.6 | <0.25/<0.50 |
| | MW8 | 02/10/04 | 640 | 530 | 81 | 820 | 6.2 | <0.26/<0.41 |
| | MW8A (Duplicate) | 02/10/04 | 660 | 550 | 86 | 840 | 6.5 | <0.26/<0.41 |
| | MW8 | 02/15/05 | 120 | 1.2 | <1.0 | <1.0 | 0.38 | <0.26/<0.41 |
| | MW8A (Duplicate) | 02/15/05 | 120 | <1.0 | <1.0 | <1.0 | 0.28 | <0.26/<0.41 |
| | MW8 | 02/15/06 | 340 | 130 | 26 | 55.0 | 1.1 | <0.26/<0.41 |
| | MW8A (Duplicate) | 02/15/06 | 360 | 140 | 29 | 58.0 | 1.1 | <0.26/<0.41 |
| | MW8 | 02/16/07 | 100 | 10 | 5.0 | 1.8 | 0.35 | <0.25/<0.40 |
| | MW8A (Duplicate) | 02/16/07 | 120 | 11 | 5.7 | 1.9 | 0.38 | <0.25/<0.40 |
| | MW8 | 03/18/08 | 180 | 52 | 5.7 | 5.3 | 0.47 | <0.25/<0.41 |
| | MW8A (Duplicate) | 03/18/08 | 190 | 59 | 6.3 | 6.3 | 0.52 | <0.25/<0.40 |
| | MW8 | 02/09/09 | 210 | 100 | 14.0 | 118.4 | 1.4 | <0.25/<0.40 |
| | MW8 | 02/11/10 | <1.0 | <1.0 | <1.0 | <1.0 | <0.10 | <0.26/<0.41 |
| | MW8 (Duplicate) | 02/11/10 | <1.0 | <1.0 | <1.0 | <1.0 | <0.10 | <0.25/<0.40 |
| | MW8 | 03/30/11 | 28 | 25 | 4.6 | 30.3 | 0.29 | <0.26/<0.41 |
| | MW8 (Duplicate) | 03/30/11 | 30 | 28 | 5.1 | 33.6 | 0.32 | <0.26/<0.42 |
| | MW8 | 03/29/12 | 6.9 | 1.1 | <1.0 | <2.0 | <0.10 | <0.26/<0.41 |
| | MW8A (Duplicate) | 03/29/12 | 8.5 | 1.0 | <1.0 | <1.0 | <0.10 | <0.26/<0.41 |
| | MW8 | 06/20/13 | 2.7 | <1.0 | <1.0 | <2.0 | <0.10 | <0.27/<0.43 |
| | MW8A (Duplicate) | 06/20/13 | 3.4 | <1.0 | <1.0 | <2.0 | <0.10 | <0.27/<0.44 |
| | MW8 | 08/19/16 | <1.0 | <1.0 | <1.0 | <1.0 | <0.10 | <0.26/<0.41 |
| MW12 | MW12 | 07/14/01 | <1.0 | <1.0 | <1.0 | <1.0 | <0.10 | <0.25/<0.50 |
| | MW12-2/02 | 02/28/02 | <1.0 | <1.0 | <1.0 | <1.0 | <0.10 | <0.25/<0.50 |
| | MW12 | 01/15/03 | <1.0 | <1.0 | <1.0 | <1.0 | <0.10 | <0.25/<0.40 |
| | MW12 | 02/10/04 | <1.0 | <1.0 | <1.0 | <1.0 | <0.10 | <0.26/<0.41 |
| | MW12 | 02/15/05 | <1.0 | <1.0 | <1.0 | <1.0 | <0.10 | <0.26/<0.41 |
| | MW12 | 02/15/06 | <1.0 | <1.0 | <1.0 | <1.0 | <0.10 | <0.26/<0.41 |
| | MW12 | 02/16/07 | <1.0 | <1.0 | <1.0 | <1.0 | <0.10 | <0.26/<0.41 |
| | MW12 | 03/18/08 | <1.0 | <1.0 | <1.0 | <1.0 | <0.10 | <0.26/<0.41 |
| | MW12 | 02/09/09 | <1.0 | <1.0 | <1.0 | <1.0 | <0.10 | <0.25/<0.40 |
| | MW12 | 02/11/10 | <1.0 | <1.0 | <1.0 | <1.0 | <0.10 | <0.25/<0.40 |
| | MW12 | 03/30/11 | <1.0 | <1.0 | <1.0 | <1.0 | <0.10 | <0.26/<0.42 |
| | MW12 | 03/29/12 | <1.0 | <1.0 | <1.0 | <1.0 | <0.10 | <0.26/<0.41 |
| | MW12 | 06/20/13 | <1.0 | <1.0 | <1.0 | <1.0 | <0.10 | <0.26/<0.42 |
| | MW12 | 08/19/16 | <1.0 | <1.0 | <1.0 | <1.0 | <0.10 | <0.26/<0.41 |
| Bingo Fuel Stop Cleanup Levels | | | 5.0 | 400 | 800 | 8,000 | 1.0 | 1.0 |

Notes:

Bold values indicate the reported concentration exceeds the cleanup level.

Well MW6 was replaced in September 1999 by well MW6A.

a) Northwest Method NWTPH-Dx, quantified as diesel/oil.

mg/L - milligrams per liter.

µg/L - micrograms per liter.

NA - not analyzed.

TPH-G and TPH-D analyses in 1993 performed using EPA 8015 Modified.

< - analyte not detected at/or greater than the stated concentration.



6.4 Monitored Natural Attenuation Decision Flow Chart

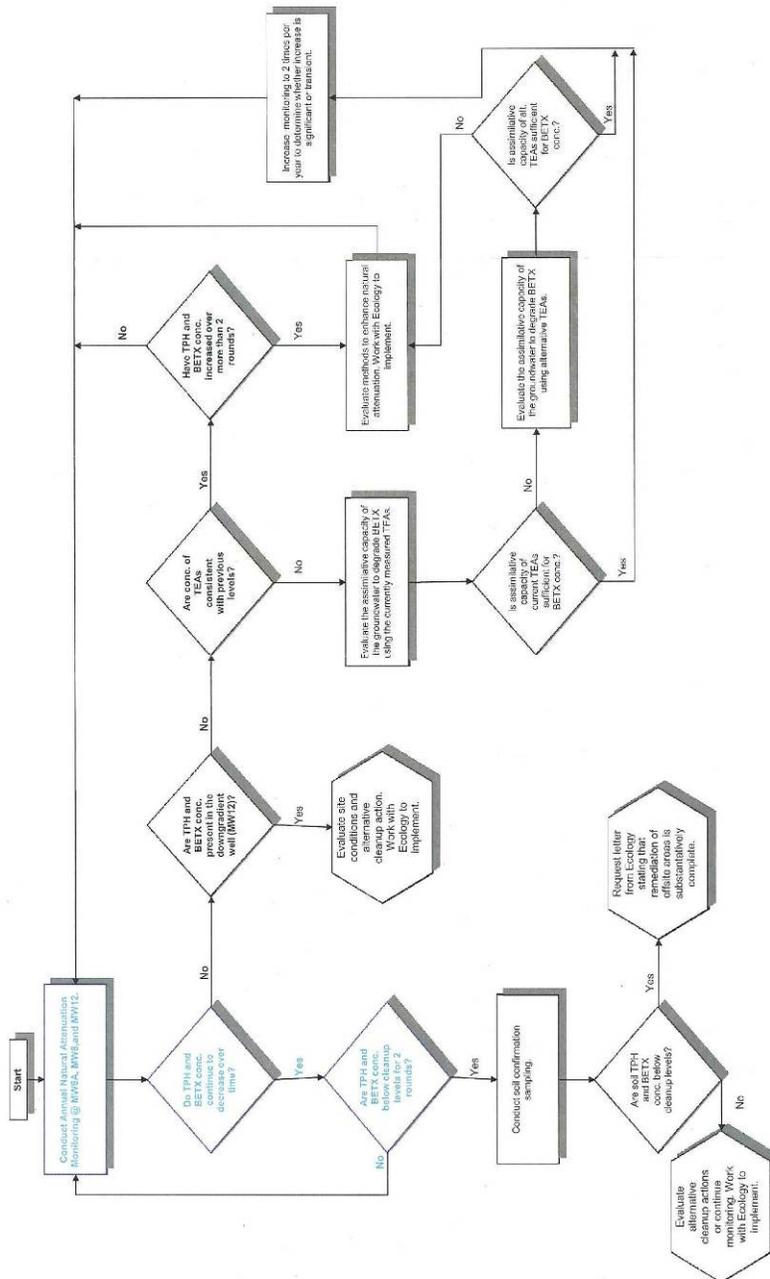


Figure No. 3
Natural Attenuation
Decision Flow Chart

BURNS BROTHERS, INC./BINGO FUEL STOP NATURAL ATTENUATION MONITORING REPORT
THORP, WASHINGTON



CD-996-Burns 3/06/14 13/Figure 3 NA Decision Flowchart

6.5 WSDOT Notification Letter

March 21, 2012

Mr. Mike Stevens
Washington State Department of Transportation
PO Box 47316
Olympia, WA 98504-7316

Subject: Institutional Controls for a Portion of the Right-of-Way at the Intersection of Interstate 90 and the Thorp Highway, adjacent to the Former Bingo Fuel Stop Site in Thorp, Washington

Dear Mr. Stevens:

The purpose of this correspondence is to inform you of ongoing natural attenuation (i.e., remediation) of petroleum-contaminated soil and groundwater adjacent to the Burns Brothers former Bingo Fuel Stop site located in Thorp, Washington and to request notification if you have crews working in the area. More specifically, the site is located on the southwest corner of the intersection of Interstate 90 and the Thorp Highway as shown on the enclosed map. Notification to local agencies of soil exceeding state cleanup levels is being provided in accordance with Washington Administrative Code (WAC) 173-340-440.

Background

From 1992 through 1999, the Former Bingo Fuel Stop site underwent cleanup of petroleum-contaminated soil and groundwater under an Agreed Order with the Washington Department of Ecology (Ecology). Analytical results show successful removal and/or treatment of contaminated soil and groundwater at the site; however, contaminated groundwater was left under the eastbound I-90 off-ramp right-of-way and under the Thorp Highway right-of-way adjacent to the site. Although groundwater underlying the adjacent areas has concentrations of benzene and gasoline above the state cleanup levels, the concentrations have been decreasing over time. The following table shows the concentrations of contaminants remaining in groundwater underlying the right-of-way areas; these same compounds are the contaminants of concern for soil underlying the right-of-way areas.

Ecology has found that monitored natural attenuation of groundwater coupled with institutional controls for residual soil contamination in these two areas fulfills the threshold requirements of WAC 173-340-360 and is protective of human health and the environment at the site. An annual natural attenuation groundwater monitoring program has been conducted from 2001 through the present, and is ongoing. The purpose of natural attenuation monitoring is to demonstrate that natural attenuation continues to occur at the site and that the mass, toxicity, mobility, volume, and concentrations of contaminants continue to be stable or are decreasing over time.

Mr. Mike Stevens
March 21, 2012
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Summary of Contaminants Remaining in Groundwater underlying the Right-of-Way Areas:

| Well ID | Benzene ug/L | Ethylbenzene ug/L | Toluene ug/L | Xylenes ug/L | Gasoline mg/L | Diesel/Oil mg/L |
|------------------|-----------------|----------------------|-----------------|-----------------|------------------|--------------------|
| MW6 | 7.9 | 180 | 12 | 730 | 4.0 | <0.25/<0.50 |
| MW8 | 30 | 28 | 5.1 | 33.6 | 0.32 | <0.25/<0.50 |
| MW12 | <1.0 | <1.0 | <1.0 | <1.0 | <0.10 | <0.25/<0.50 |
| Cleanup Level | 5.0 | 400 | 800 | 8,000 | 1.0 | 1.0 |

Institutional Controls and Notification Requirements

Until cleanup goals are met, institutional controls will be implemented as part of the Agreed Order. Such controls will be in effect until the soil points of compliance have been met as determined by Ecology, after public notice has been given. At that time, you will receive further notice indicating the institutional controls have been removed. Institutional controls to be implemented include use restrictions requiring the cleanup of contaminated subsurface soils disturbed or removed during road maintenance, maintaining monitoring wells, periodic inspections of highway conditions to ensure contaminated soils remain capped, and sending educational/notification letters to local agencies. Burns Brothers, Inc. will maintain existing monitoring wells and periodically inspect the area to ensure contaminated soils remain capped.

To ensure that proper soil handling and health and safety precautions are taken during construction or road maintenance activities in the right-of-way area of concern we request that WSDOT perform the following actions:

1. Include a copy of this notification letter in your contaminated site file database.
2. Implement a procedure to review your contaminated site file database as part of the right-of-way permit approval process, for construction related work in the right-of-way area of concern.
3. Contact the following persons prior to planning any type of construction work within the right-of-way area of concern.
 - a. Bruce Burns of Burns Brothers, Inc. at (503) 534-2500
 - b. Jeff Newschwander of Ecology at (509) 454-7842

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Upon notification, Burns Brothers and Ecology will help coordinate the assistance, soil handling, soil transport and disposal, or oversight required for your specific project. During such work, crews should follow proper health and safety procedures.

Please respond in writing to the undersigned and Ecology to acknowledge receipt of this notification letter and confirmation of how WSDOT will implement the use restriction and notification process described. If you have other questions or issues concerning this site, please call the undersigned at 503/534-2500.

Sincerely,

Bruce Burns
Chairman and CEO

cc: Jeff Newschawander
Toxics Cleanup Program
Washington Department of Ecology
15 West Yakima Ave, Suite 200
Yakima, WA 98902

6.6 Photo log

Photo 1: Bingo Site – from the east



Photo 2: Thorp Highway and I-90 Overpass – from the south



Photo 3: Thorp Highway and I-90 Overpass – from the west.



Photo 4: Monitoring Well MW-9 – from the southeast

