



ASSOCIATED
ENVIRONMENTAL
GROUP, LLC

DRAFT
Revised Corrective Action Plan

Conducted on:

**Smitty's Conoco #140-Toppenish
(Former Spirit Gas Station)**
102 East Toppenish Avenue
Toppenish, Washington 98948-1359
EPA ICIS ID: 1800041282
EPA Docket No.: RCRA-10-2010-0136

Prepared for:

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1.0 INTRODUCTION AND BACKGROUND

This report presents a Revised Corrective Action Plan (CAP) generated by Associated Environmental Group, LLC (AEG) for the Smitty's Conoco #140 Toppenish, referred to as Smitty's Toppenish (Site). The original CAP, dated September 30, 2011, included a plan to treat residual impacts to soil and groundwater utilizing enhanced bioremediation. Since implementation of that CAP, groundwater concentrations have not responded as expected, and a revised CAP is presented in this report. This report is a follow-up to a Feasibility Study generated by AEG and approved by the U.S. Environmental Protection Agency (EPA) on September 11, 2015.

1.1 Site Location and Regulatory Jurisdiction

1.1.1 Site Location

The Site has also been known as Toppenish Pik-A-Pop, Toppenish Smitty's Store #141, and is currently known as the Old Western Market. The Old Western Market property (Smitty's Property) is located at 102 East Toppenish Avenue, in Toppenish, Washington, and is assigned Yakima County parcel number 20100334510 (Figure 1, *Vicinity Map*). The Site is defined by the extent of contamination and, in addition to the Smitty's Property, includes portions of adjacent properties to the east, and adjacent City of Toppenish right-of-ways (ROWs). Figures 8, 9, and 10 illustrate the extent of contamination in soil and groundwater.

1.1.2 Regulatory Jurisdiction

The Smitty's Property is currently owned by R.H. Smith Distributing Company, Inc. (R.H. Smith), and located on the reservation of the Confederated Tribes and Bands of the Yakama Nation in Central Washington. Appendix A, *Legal Description and Previous Owners*, contains a table showing the deed and sales history for the Smitty's Property as was obtained online from the Yakima County Assessor's office.

Because the Site is located within the Yakama Nation reservation, EPA has regulatory jurisdiction for implementing federal laws and regulations on this Site. While EPA has regulatory and oversight jurisdiction, it has decided, with the concurrence of the Yakama Nation, that the general investigation, remediation processes, and cleanup standards under the Washington State Department of Ecology (Ecology) Model Toxics Control Act (MTCA) can be applied at this Site. EPA identifies the Site as Smitty's Conoco #140 – Toppenish (Former Spirit Gas Station) with the following EPA Integrated Compliance Information System database (ICIS) number:

- ICIS ID: 1800041282

The Site is currently under an EPA Administrative Order on Consent (AOC) with a docket number of "RCRA-10-2010-0136". The AOC requires that R.H. Smith:

- *"Develop a Site Assessment Plan for the facility;*
- *"Submit... an approvable Corrective Action Plan ("CAP")... that will prevent or mitigate any migration of petroleum constituents released from the USTs formerly located at the facility;*
- *"Implement the approved CAP at the facility; and*
- *"Submit quarterly progress Reports".*

This report is being prepared and submitted in partial fulfillment of that AOC.

1.2 Background

A Noll Environmental, Inc. report (July 2005) indicates that the Site may have been used as an automotive repair shop prior to 1974, but records substantiating this activity have not been obtained. The EPA Region 10 office records indicate that an 8,000-gallon gasoline fuel underground storage tank (UST) and a 6,000-gallon gasoline fuel UST were installed at the Site in 1974. A 4,000-gallon UST was installed in 1976.

Also, according to EPA records, the USTs were lined in 1998, and had cathodic protection installed in 2004. The EPA did not have records of, nor were they aware of, the existence of a 1,000-gallon UST and a 500-gallon UST encountered by AEG during soil excavation activities at the Site in November 2009.

The service station building was converted into a convenience store in 1984, and the gasoline station ceased operations in November 2009. Currently, the Site is occupied only by a convenience store and associated parking area.

2.0 PROPERTY DEVELOPMENT AND HISTORY

2.1 Facility Uses and Zoning

The Smitty's Property is currently zoned by Yakima County as "*Retail-Food*", and is used as a convenience store.

2.2 Historical Uses

According to historical references, the Smitty's Property was utilized as an automotive service station and as a retail fueling station beginning in 1974, and remained a retail fueling station until fuel operations ceased in November 2009. The former service station building was converted to a convenience store in 1984. Neighboring areas include commercial and retail development north, south, east, and west of the Site, with a city park directly west of the Site and the town's "Stock Yard" located southeast of the Site (Figure 1, *Vicinity Map*).

2.3 Transportation/Roads

East Toppenish Avenue runs east to west directly north of the Site. To the west, southwest, and south of the Site is Asotin Avenue, which runs northwest southeast. A City park owned by the Burlington Northern/Central Washington Railway is located to the west across Asotin Avenue. The railroad is located west of the park and runs north-south.

2.4 Utilities

Water and sewer for the Site are provided by the City of Toppenish and enters the Site from the north. The water main and sewer are located along Toppenish Avenue with the depth to the sewer being approximately 6 to 7 feet below ground surface (bgs). Gas is provided by Cascade Natural Gas and enters the Site from the south. Power to the Site is provided by Pacific Power and the power lines are located overhead. Storm water from the Site and in the area either goes to dry wells or to the City of Toppenish sewer system.

2.5 Potential Sources of Site Contamination

The source for the contamination identified at the Site has been linked to a leaking product line. Other potential sources could include:

- Overfilling of the Site's USTs during fuel delivery.
- Spillage during vehicle fueling.
- Leaking from historical product lines.
- Leaking and/or corroded USTs, which have been removed.

3.0 NATURAL CONDITIONS

Based on the investigations conducted at the Site, the following natural conditions were observed:

3.1 Physiographic setting:

The City of Toppenish is situated within the Yakima River Basin along the western margin of the Columbia Plateau region and is adjacent to the eastern foothills of the Cascade Mountain Range (Cascades). The Yakima River Basin is bounded on the west by the Cascades, on the north by the Wenatchee Mountains, on the east by the Rattlesnake Hills, and on the south by the Horse Haven Hills.

While the headwaters of the Yakima River are based in the Cascades, much of the river basin is located in a semi-arid climate creating a large demand on river water and groundwater resources during summer months for agricultural irrigation. Annual precipitation in the area is approximately 8 inches per year. This is due to the rain shadow effect created by the mountains to the west (US Department of Interior, 2002).

Generally, there are three aquifer systems within the Yakima River Basin, including:

- A shallow aquifer composed of alluvium.
- A deeper, confined gravel aquifer called the Ellensburg aquifer.
- A deep basalt bedrock comprised aquifer (USGS, 1987).

3.2 Site Geology and Hydrogeology

Subsurface conditions at the Site, at locations of investigation, generally consist of alluvium deposits. These deposits general consist of brown, loose to medium dense silty sand, silty sand with gravel, very dense sandy gravel with local cobbles, and gray coarse clean sand to the maximum depth explored of 30 feet bgs. Boring logs from the soil borings and monitoring wells drilled/installed by AEG throughout the Site are attached in Appendix B, *Supporting Documents, Boring Logs 2010-2011; Boring Logs 2015*.

The direction of shallow groundwater is primarily to the southeast, based on groundwater elevations measured at the Site during AEG's March 2015 groundwater monitoring activities (Figure 2, *March 2015 Groundwater Contour Map*). Previous groundwater flow maps have shown a flow direction to the east with a southeasterly component near monitoring wells MW-9 and MW-10.

The direction of surface water flow follows the regional topography of the Yakima River Valley to the south and southeast. The Yakima River is located approximately 2 miles northeast of the Site. Based on water level measurements obtained at different times of the year, the water levels fluctuate approximately 1½ feet to 2 feet seasonally, with the highest water levels occurring during the summer months when irrigation is ongoing (Table 1, *Summary of Groundwater Elevations*).

4.0 PREVIOUS ENVIRONMENTAL INVESTIGATION/INTERIM ACTION SUMMARY

4.1 Phase II ESA Subsurface Assessment – June 2004

On June 14, 2004, DLH Environmental Consulting (DLH) conducted a Phase II Environmental Site Assessment (ESA) at the Site to determine if the subsurface soils and groundwater had been impacted by petroleum hydrocarbons from potential leaks in the UST system, and/or overfilling during fuel delivery. Results from five push-probe borings revealed:

- Elevated concentrations of gasoline-range total petroleum hydrocarbons (TPH) in soil above the MTCA Method A cleanup levels from samples collected at approximately 12 feet bgs, with concentrations up to 2,200 milligrams per kilogram (mg/kg).
- Gasoline-associated volatile organic compounds (VOCs), including benzene, toluene, ethylbenzene, and total xylenes (BTEX), were also present in the soil at concentrations above their respective MTCA cleanup levels.
- Diesel-range TPH was present in soil at concentrations below the MTCA Method A cleanup level.
- Lead was present in soil at concentrations below the MTCA cleanup level (DLH, 2004).
- Groundwater was encountered during the subsurface investigation at approximately 12 feet bgs.
- Groundwater samples indicated elevated concentrations of gasoline-range TPH exceeding Ecology's MTCA Method A cleanup level at 20,000 micrograms per liter ($\mu\text{g}/\text{l}$) and 23,000 $\mu\text{g}/\text{l}$.
- Diesel-range TPH concentrations above the MTCA Method A cleanup level ranging from 11,000 $\mu\text{g}/\text{l}$ to 54,000 $\mu\text{g}/\text{l}$, were also detected in the groundwater.
- BTEX and naphthalene in the groundwater samples were present at concentrations exceeding their respective cleanup levels.
- Lead was detected in groundwater at a concentration exceeded its Ecology MTCA Method A cleanup level at 15.4 $\mu\text{g}/\text{l}$.

4.2 Monitoring Well Installation and Subsurface Media Sampling – 2005

In July 2005, Noll Environmental, Inc. (NEI) installed three groundwater monitoring wells at the Site to a depth of approximately 19 feet bgs. Monitoring well MW-1 was installed in the southern portion of the Site adjacent to the convenience store. MW-2 was installed in the western portion of the Site near the intersection of East Toppenish Avenue and Asotin Avenue, and MW-3 was

placed in the north-northeast portion of the Site adjacent to the eastern gasoline fuel dispenser island and East Toppenish Avenue (Figure 3, *Site Map*).

Analytical results of groundwater samples from the three monitoring wells indicated the presence of the following contaminants:

- Gasoline-range TPH (13,000 µg/l to 39,000 µg/l).
- Benzene (24 µg/l to 1,400 µg/l).
- Toluene (290 µg/l to 2,600 µg/l).
- Ethylbenzene (180 µg/l to 430 µg/l).
- Total xylenes (1,200 µg/l to 4,700 µg/l).
- Total lead (18 µg/l).

These concentrations were all above their respective MTCA Method A cleanup levels for groundwater. Diesel-range TPH was not detected in the samples collected.

Based on surveyed data, groundwater elevations during the July 2005 sampling event indicated a southeasterly groundwater flow direction (NEI, 2005).

4.3 Proposed Corrective Action Plan – 2008

On October 3, 2008, White Shield, Inc. (WSI) submitted a proposed Corrective Action Plan (CAP) to R.H. Smith. The purpose of the CAP was to:

- Present WSI's plan to remediate the petroleum hydrocarbons contamination within the Site's subsurface, specifically soil and groundwater; and
- To serve as a report for two groundwater monitoring/sampling events completed at the Site (August 2006 and October 2007).

WSI proposed the installation of three additional groundwater monitoring wells at the Site and bioremediation via placement of Regenesis company's Oxygen Releasing Compound® (ORC®) socks in the wells on Site. ORC® is designed to accelerate the microbial degradation of petroleum hydrocarbons in the impacted vadose zone and groundwater.

In the proposed CAP, WSI reported the results from the August 2006 and October 2007 groundwater sampling. The results showed elevated concentrations of gasoline-related petroleum products similar to previous results.

Groundwater contour maps, constructed based on depth to water measurements taken during these sampling events, indicated an easterly groundwater flow direction at the Site in August 2006, and a southeasterly direction in October 2007 (WSI, 2008).

4.4 Helium Tank Tightness Testing – May 2009

On May 18, 2009, Northwest Tank and Environmental Services, Inc. was retained by R.H. Smith to conduct a helium test on the Site's USTs and associated product lines. The helium test indicated that a release point existed in the vicinity of the southern dispenser of the eastern dispenser island.

4.5 AEG Initial Site Work – August 2009/September 2009

On August 16, 2009, AEG conducted an initial reconnaissance at the Site. During this visit, AEG collected soil samples adjacent to the two pumps on the eastern-most fuel dispensing island, pump #1/2 and pump #3/4. Soil samples (SB-1 through SB-3) were collected at 4 feet bgs via a hand auger. Laboratory analytical results indicated no detectable concentrations of gasoline-range TPH or gasoline-associated VOCs, including BTEX.

On September 2, 2009, AEG conducted groundwater monitoring/sampling in monitoring wells MW-1 through MW-3 (Figure 3, *Site Map*). Concentrations of gasoline-related petroleum products were detected at concentrations above their respective MTCA Method A cleanup levels in monitoring wells MW-1 and MW-3 (Table 2, *Summary of Groundwater Analytical Results*).

Based on the elevated concentrations of gasoline-range TPH and VOCs detected in groundwater during AEG's sampling event and former sampling events completed by WSI, R.H. Smith directed AEG to supervise the removal of the fuel dispenser islands and expose the product lines to visually inspect their integrity and connections to the UST system.

On September 26, 2009, AEG collected soil samples adjacent to the dispenser sumps for fuel dispensers #1/2 and #3/4 on the eastern most dispenser island, at a depth of approximately 1 foot bgs. The laboratory analytical results indicated concentrations of gasoline-related petroleum products above their respective MTCA Method A soil cleanup levels.

Based on these results and subsequent correspondences with EPA, AEG recommended decommissioning and removal of the three fuel USTs and associated product lines at the Site.

4.6 EPA Groundwater Sampling Event – October 2009

In October 2009, EPA representatives conducted a groundwater-sampling event and submitted three groundwater samples for analysis of VOCs via EPA Method 8260C. VOC concentrations in groundwater during this event were comparable to previous groundwater monitoring/sampling events conducted by AEG and WSI (EPA, 2009).

4.7 Interim Remedial Action (UST Decommissioning) – November 2009

From November 9, 2009, through November 20, 2009, AEG, along with subcontractor Belsaas & Smith Construction (Belsaas), completed decommissioning and removal of the following USTs:

- One 8,000-gallon gasoline fuel UST.
- One 6,000-gallon gasoline fuel UST.
- One 4,000-gallon diesel fuel UST.
- One 1,000-gallon UST.
- One 500-gallon waste oil UST.

Two of the tanks had not been previously identified at the Site. The 1,000-gallon UST had been closed-in-place by being filled with Controlled Density Fill (CDF), and the fill port on the 500-gallon UST had been removed. The 500-gallon UST also contained approximately 300 gallons of waste oil. All of the USTs appeared to be slightly corroded; however, no obvious holes were found in any of the tanks.

Petroleum-contaminated soil (PCS) was encountered in the overburden soil around the fill ports of the 4,000-gallon, 6,000-gallon, and 8,000-gallon USTs, near the turbines, and beneath the USTs, to a depth of approximately 12 feet bgs where groundwater was encountered. A total of 1,535 tons of PCS was excavated and removed from the Site.

Soil samples collected from the sidewalls and base of the excavation revealed that TPH contamination remained above the MTCA Method A cleanup level in both the sidewalls and base of the excavation. Concentrations of TPH contamination ranged as follows:

- Northern sidewall of the excavation - Non-detect to 14,600 mg/kg.
- Western sidewall of the excavation - 4,320 mg/kg to 6,390 mg/kg.
- Southwestern sidewall of the excavation - Non-detect to 5,070 mg/kg.
- Southern sidewall of the excavation - Non detect.
- Eastern sidewall of the excavation - Non-detect to 7,170 mg/kg.
- Base of the excavation - 46 mg/kg to 18,500 mg/kg.

Excavation was limited horizontally by the City of Toppenish's ROWs and by the building on the Site, and vertically by the presence of groundwater. Monitoring wells MW-2 and MW-3, located in the western and northeastern areas of the Site, were removed during soil excavation activities.

4.8 Administrative Order on Consent (Docket No. RCRA-10-2010-0136) – April 2010

On April 19, 2010, R.H. Smith and EPA entered into an agreed order referred to as an Administrative Order on Consent (AOC), which required R.H. Smith to perform the following scope of work:

- *Develop a Site Assessment Plan for the facility.*
- *Submit an approvable Corrective Action Plan (CAP) that will prevent or mitigate any migration of petroleum constituents released from the USTs formerly located at the Site.*
- *Implement the approved CAP at the facility.*
- *Submit Quarterly Progress Reports.*

The AOC was modified on March 14, 2011, to change the schedule for the work to be performed. The work described below was performed pursuant to the AOC.

4.9 AEG Off Property Preliminary Investigation – July 2010

AEG conducted off property characterization of the dissolved-phase petroleum hydrocarbons plume associated with the Site in July 2010. Twelve borings were advanced to a maximum depth of 15 feet bgs via a direct-push probe drilling rig at locations of environmental concern inferred to be downgradient, cross-gradient, and adjacent to the Smitty's Property (Figure 4, *Off Property Push Probe Boring Locations*).

Based on the soil and groundwater analytical results from this investigation, it was determined that the dissolved-phase plume had impacted areas at least 300 feet east of the Smitty's Property towards B Street. Areas south and southeast of the Smitty's Property did not appear adversely impacted based on findings from borings advanced in these areas. Table 3, *Summary of Soil Analytical Results - Off Property Soil Borings*, and Table 4, *Summary of Off Property Borings - Groundwater Analytical Data* present the results of the analyses.

4.10 AEG Supplemental Remedial Investigation – January and February 2011

In January and February 2011, AEG conducted a Supplemental Remedial Investigation to further characterize the lateral and vertical extent of the dissolved-phase gasoline-range TPH in off-property areas downgradient and cross-gradient of the Smitty's Property. Seven soil borings, subsequently converted to 2-inch diameter groundwater monitoring wells (MW-4 through MW-10), were advanced to a depth of approximately 25 feet bgs (Figure 3, *Site Map*). The newly installed monitoring wells included the following locations:

- Southeast of the Smitty's Property on Asotin Avenue (MW-6).
- East of the Smitty's Property on the El Charrito restaurant property (MW-5 and MW-7).

- East of the El Charrito property (MW-9 and MW-10).
- East Toppenish Avenue ROW (MW-8).
- Adjacent to the Smitty's Property to the west in Asotin Avenue ROW (MW-4).

Findings from these investigations confirmed that:

"...soil remedial activities during the UST decommissioning and product lines removal have eliminated the bulk of petroleum contaminated soil at the Site; however, residual PCS remains at depths greater than 10 feet bgs, and will continue to serve as a source of residual contamination to groundwater" (AEG, 2011).

"...the lateral extent of the dissolved phase petroleum hydrocarbons extends from the west area of the property (in the vicinity of the previous USTs) to off-property areas to the east of the facility, including the adjoining El Charrito restaurant property, and B Street. However, based on the lack of detectable concentrations of these analytes in the February 2011 quarterly groundwater sampling event, it appears that diesel-range TPH and halogenated volatile organic compounds (VOCs) are not constituents of concern associated with the Site" (AEG, 2011).

4.11 Second Phase Interim Remedial Action – 2012

In December 2011 and March 2012, AEG performed a "Second Phase Interim Remedial Action (IRA)" at the Site. The Second Phase IRA was to continue remediation of the soil and groundwater at the Site, following the removal and excavation of PCS during the UST decommissioning. This was to be accomplished using in-situ chemical oxidation (ISCO) and enhancing any aerobic bioremediation through the addition of oxygen into the subsurface. The ISCO was accomplished using Regensis company's RegenOx[®] product, and the enhanced aerobic bioremediation was accomplished using Regensis' Oxygen Releasing Compound-Advanced[®] formula (ORC-A[®]) product.

4.11.1 In-situ Chemical Oxidation

From December 5 through 10, 2011, AEG injected 4,590 pounds of RegenOx[®] product through 24 injection points (Figure 5, *RegenOx[®] Injection Points*) at depths of approximately 4 to 15 feet bgs, to in-situ chemically oxidize the contaminants within the affected shallow soil and lower smear zone. The RegenOx[®] was used to reduce sorbed and soil-matrix-bound TPH in the vadose zone and saturated zone, as well as in the dissolved phase in groundwater.

4.11.2 Enhanced Aerobic Bioremediation

To further assist the microbial degradation of remaining TPH in the impacted vadose zone and groundwater, a secondary stage of in-situ treatment was conducted at the Site in March 2012 (three

months after the initial stage of RegenOx[®] treatment). Approximately 1,400 pounds of ORC-A[®] was injected (Figure 6, *ORC-A[®] Injection Points*). ORC-A[®] was injected throughout the Site at depths of 4 to 15 feet bgs, and at lateral intervals of approximately 10 to 20 feet. Three angled injections were completed on the north, south, and west side of the building at the Site at depths of approximately 7 to 18 feet bgs.

4.12 Post-ORC-A[®] Quarterly Groundwater Monitoring – 2012 to present

Following the treatment with ORC-A[®], AEG began conducting quarterly groundwater monitoring at the Site. Table 2, *Summary of Groundwater Monitoring Analytical Data*, presents the results of the quarterly groundwater monitoring. This monitoring has shown the following:

- Both the RegenOx[®] and ORC-A[®] appear to have caused the contaminant plume to stabilize migration of contaminants in the downgradient direction while the RegenOx[®] and ORC-A[®] were active.
- The concentrations of the contaminants have decreased but remain above the MTCA Method A cleanup levels.
- As the groundwater elevation decreases, the concentration of TPH increases (Figure 7, *Gasoline-Range TPH and Groundwater vs Time*).

4.13 Supplemental Site Characterization - February 2015

Based on the results of the groundwater monitoring, EPA and AEG concurred that additional characterization of the Site was needed to better define the location of the contaminants in the soil and groundwater, both on the Smitty's Property and in off-property locations. This additional characterization allows for better determination of the remedial action alternatives at the Site, as well as for a better engineering design for those activities.

In partial fulfillment of the AOC, AEG submitted a *Supplemental Site Characterization Work Plan* on October 17, 2014, for review and comment. Comments from Mr. Robert Rau at EPA were received on November 5, 2014, and addressed in a *Revised Supplemental Site Characterization Work Plan* submitted on November 25, 2014.

On February 12, 2015, AEG completed the additional subsurface investigation. The objectives of the work included the following:

- To explore the extent of contamination beneath the building.
- To explore potential upgradient sources north and northwest of the Site.
- To define the extent of contamination of known areas exceeding their respective MTCA Method A cleanup levels.

To accomplish the objectives, AEG advanced six soil borings, and drilled and installed seven monitoring wells (Figure 3, *Site Map*). This work is described in detail in a report entitled “*Supplemental Site Characterization Report (Revised Draft of May 15, 2015 Report)*” and dated July 15, 2015.

Based on the results of the samples collected (Table 5, *Summary of Soil Analytical Results SSC February 2015*) and observations made during the investigation, AEG concluded the following:

- The contaminants of concern remained under the current building, with the highest concentrations of gasoline-range TPH beneath the western portion of the building.
- The contamination in soils and groundwater found in the western portion of the Site and beneath the building was likely a result of contamination left in place after the excavation of the USTs and associated PCS in 2009.
- The highest concentrations of contaminants in the soil were directly west of the building, cross and downgradient of the former pump islands (Figure 8, *Soil Contamination Concentration Map – TPH-Gas*).
- The highest concentrations of gasoline-range TPH in groundwater were near MW-4 and MW-7 (Figure 9, *Groundwater Contamination Concentration Map – TPH-Gas*).
- The contamination found in well MW-7 appeared to attenuate before reaching well MW-16 and is not present in well MW-10.
- Based on newly installed upgradient groundwater-monitoring wells, there did not appear to be an off-Site source for contamination found in well MW-4.
- It appears that there may have been migration of the contamination to the west toward well MW-17. It is not known how the contamination observed in the soil sample from a depth of 10 and 20 feet bgs migrated to the area near monitoring well MW-17. The contamination is comprised of gasoline-range TPH in the soil with the highest concentration, 62 mg/kg, at a depth of 10 bgs. This could be from infiltration of storm water from the surface or storm water migrating through the unsaturated zone before or during the excavation at the Site. The analyses of groundwater samples from MW-17 have not detected any of the constituents of concern from the Site.
- Characterization at the Site is complete and that a feasibility study could be prepared.

5.0 CONTAMINANT OCCURANCE AND MOVEMENT

Based on AEG's investigations, the soil and groundwater at the Site are contaminated with gasoline-range TPH and BTEX compounds, with the known source being leaking product lines at the Site. Minor amounts of diesel-range TPH are also present beneath the building on the Site. It appears the contamination is primarily located between 11 to 25 feet bgs at the Site in a zone of coarse sandy gravel and cobbles that lies below a silty sand to sandy silt layer that occurs from the surface to approximately 6 to 10 feet bgs. Visual observations and samples of soil collected from the monitoring well borings and boring B-13 indicate that the contamination does not appear to extend below 25 feet bgs.

At approximately 25 feet bgs in boring B-13 and well MW-16, there is a sand layer, which is interpreted to exist beneath the entire Site. This sand layer may contain a higher silt percentage than was observed because of the drilling method used, which makes it difficult to determine the silt contents in sands and gravel.

The maximum extent of the remaining soil contamination at the Site is shown in Figure 8, *Soil Contamination – TPH-Gas*. The majority of these impacts occur at or below the water table.

The primary migration direction of the contamination in groundwater is to the east-southeast. Figure 9, *Groundwater Contamination Concentration Map – TPH-Gas*, and Figure 10, *Groundwater Contamination Concentration Map – Benzene*, shows the current extent of groundwater contamination. These figures represent the updated information from the February 2015, Supplemental Site Characterization.

6.0 CONCEPTUAL MODEL

This section provides a conceptual understanding of the Site derived from the results of the subsurface investigations and previous remedial actions performed at the Site. This Conceptual Site Model (CSM) is limited to release from the leaking product lines at the Site and will assist in determining the best remedial approach for the Site. The CSM is dynamic and may be refined as additional information becomes available. A summary of the CSM is presented in Figure 11, *Conceptual Site Model*.

6.1 Constituents of Concern and Affected Media

Soil, groundwater, and air are media at the Site that have been, or could potentially be, affected by the constituents of concern (COCs) identified at the Site. The COCs at this Site are primarily gasoline-range TPH and BTEX compounds, with a secondary component of diesel-range TPH. The soil and groundwater contamination present at the Site is a result of leaking product lines with the exact timeframe of the release being unknown. It is assumed that the release occurred before 2005, and continued until the UST system was decommissioned in 2009. The volume of product released is not known.

Based on the depth of the soil contamination observed and its location downgradient from the source area, it is thought that the deeper and downgradient soil contamination is a result of migration of the gasoline with the groundwater away from the release location. This migration most likely included advective transport as well as dispersion and diffusion in the soil and groundwater. Lastly, it is likely that soil vapor impacts exist within the vadose zone due to volatilization of the gasoline-range TPH and BTEX in soil and groundwater.

6.2 Environmental Fate of TPH and BTEX in the Subsurface

TPH and BTEX compounds are soluble in groundwater and will migrate with the water. Benzene is the most soluble component and will migrate faster than the rest of the BTEX compounds. It may migrate farther and, if present, be used as an indicator parameter for the contamination.

Gasoline-range TPH and BTEX compounds are also volatile and can be volatilized under the appropriate conditions. In the subsurface, this volatilization releases COCs into the soil vapor where, if conditions are right, it can migrate beneath or into structures. As the more soluble and more volatile components of the gasoline-range TPH are either dissolved or volatilized, the heavier components of the TPH remain in the soil. These degraded components are less volatile, and less likely to impact soil vapors.

TPH and BTEX compounds are also readily biodegraded in the subsurface by naturally occurring aerobic and anaerobic bacteria. The aerobic biodegradation is the most efficient of the biological

activities and is the basis for a Monitored Natural Attenuation remedial action at gasoline-contaminated sites.

6.3 Potential Exposure Pathways

The Ecology MTCA regulations has a good definition for exposure pathway that is also applicable to sites under EPA jurisdiction. WAC 173-340-200 states that:

“...An exposure pathway describes the path a hazardous substance takes or could take from a source to an exposed organism. An exposure pathway describes the mechanism by which an individual or population is exposed or has the potential to be exposed to hazardous substances at or originating from a site...”

6.3.1 *Potential Soil Exposure Pathways*

Direct ingestion of, or dermal contact with, soil containing TPH and BTEX is considered a potential exposure pathway. Also, inhalation of soil vapor via vapor intrusion to indoor air, or via soil disturbance during construction/utility work, is considered a potential exposure pathway. The soil in the area near the leaking product lines and under the convenience store building have the highest concentrations of the COCs. Currently, this area is covered by asphalt and the building, which would preclude stormwater runoff, erosion, or wind as a transport mechanism. Only construction/utility workers are likely to be exposed if the area were disturbed.

6.3.2 *Potential Groundwater Exposure Pathways*

Direct contact and ingestion of groundwater containing TPH and BTEX is considered a potential exposure pathway. Although the groundwater in the area of the Site is not currently used for drinking water, it is considered a potential future source of drinking water for the purposes of establishing cleanup levels for this Site. Further, there is potential for direct contact for construction/utility workers because of the shallow depth of its occurrence. Lastly, inhalation of vapors produced through volatilization of gasoline-range TPH and BTEX in the groundwater through the soil column is considered a potential exposure pathway. There are no surface water bodies in proximity to the Site that would be expected to be impacted via groundwater-to-surface water migration.

6.3.3 *Potential Air Exposure Pathways*

Both soil and groundwater beneath the Site are impacted with gasoline-range TPH and BTEX, which have the potential to volatilize and create a potential exposure pathway via inhalation. Vapors generated via impacts to soil and groundwater have the potential to migrate through the subsurface and into nearby structures. No residences are located within 100 feet of soil and/or groundwater impacts, nor is it likely a residence would be constructed within 100 feet of impacts given the commercial land use within the vicinity of the Site. As such, residents are not likely to be exposed.

However, commercial/retail/restaurant workers within the on-Site and nearby structures have the potential to be exposed. Specifically, the primary buildings that have the potential to be affected by vapor intrusion would include the convenience store building and the restaurant building to the east, both of which are located within areas of impacted soil and/or groundwater. To a lesser extent, other buildings located within 100 feet of soil and/or groundwater impacts include the commercial buildings south of the restaurant, and northeast and northwest of the convenience store across East Toppenish Avenue.

Exposure to outside ambient air impacts are less likely given the presence of asphalt and buildings covering much of the ground surface, as well as the presence of natural ventilation that goes with being outside.

6.3.4 Potential Receptors

Potential human exposure to TPH and BTEX in the soil, groundwater, and air is considered a risk to human receptors, including employees, construction/utility workers, customers, and trespassers, who may be exposed to soil, groundwater, and air at the Site.

The majority of the Site is covered by asphalt paving or buildings, and it is not anticipated that ecological receptors would be at risk. Further, there is currently less than 1.5 acres of contiguous undeveloped land on or within 500 feet of any area of the Site, which would exclude the Site from further terrestrial ecological evaluation under MTCA.

7.0 CLEANUP STANDARDS

The following sections identify remedial action objectives and preliminary cleanup standards for the Site, which were developed to address EPA's requirements for cleanup. These requirements address conditions relative to potential human receptor impacts. Together, the remedial action objectives and cleanup standards provide the framework for evaluating remedial alternatives.

7.1 Remedial Action Objectives

The primary objective for a cleanup action focuses on substantially eliminating, reducing, and/or controlling unacceptable risks to human health and the environment posed by the COCs, to the greatest extent practicable.

7.2 Cleanup Standards

Because this Site is under EPA oversight, federal cleanup requirements are applicable. However, EPA has agreed to use the cleanup standards developed under Ecology's MTCA regulations. The cleanup standards include cleanup levels and points of compliance (POCs). Cleanup standards must also incorporate other federal regulatory requirements as applicable.

7.2.1 *Cleanup Levels*

MTCA Method A cleanup levels for soil and groundwater will be used for this Site. These cleanup levels are based on the most stringent values for each exposure pathway, and are considered appropriate for the Site COCs. The MTCA Method A cleanup levels for the Site COCs are:

Soil:	TPH-Gasoline	30 mg/kg
	Benzene	0.03 mg/kg
	Toluene	7 mg/kg
	Ethylbenzene	6 mg/kg
	Total Xylenes	9 mg/kg
	TPH-Diesel	2,000 mg/kg
Groundwater:	TPH-Gasoline	800 µg/L
	Benzene	5 µg/L
	Toluene	1,000 µg/L
	Ethylbenzene	700 µg/L
	Total Xylenes	1,000 µg/L
	TPH-Diesel	500 µg/L

7.2.2 Point of Compliance

For this Site, it is assumed that the standard POC will be applied.

- Soil – Direct Contact: For soil cleanup levels based on human exposure via direct contact, the POC is throughout the Site from the ground surface to 15 feet bgs.
- Soil – Leaching: For soil cleanup levels based on protection of groundwater, the POC is throughout the Site.
- Groundwater: For groundwater, the POC is throughout the Site from the uppermost level of the saturated zone extending vertically to the lowest most depth that could potentially be affected by the Site.
- Indoor Air/Soil Gas: The POC is ambient and indoor air throughout the Site.

8.0 AREAS REQUIRING CLEANUP

The highest concentrations of contaminants remaining in the soil, following the November 2009 excavation, appear to be directly west of the building, and cross and downgradient of the former pump islands, as shown in Figure 8, *Soil Contamination Concentration Map - TPH-Gas*. The majority of these impacts occur at or below the water table.

The highest concentrations of gasoline-range TPH and benzene in groundwater appear to be near MW-4 and MW-7 as shown in Figure 9, *Groundwater Contamination Concentration Map - TPH-Gas*, and Figure 10, *Groundwater Contamination Concentration Map - Benzene*.

Based on the distribution of contaminants, it appears that the remaining contamination requiring cleanup is located within the base and sidewalls of the former excavation limits, within the saturated zone, and within the smear zone of the groundwater plume.

9.0 CORRECTIVE ACTION PLAN

In accordance with the EPA-approved Feasibility Study, dated September 10, 2015, the selected remedy for the Site is In-Situ Heat-Enhanced Bioremediation.

Bioremediation is a natural process that relies on bacteria, fungi, and plants to alter contaminants as these organisms carry out their normal life functions. Metabolic processes of these organisms are capable of using chemical contaminants as an energy source, rendering the contaminants harmless or less toxic products in most cases.

Temperature influences the rate of biodegradation by controlling the rate of enzymatic reactions within microorganisms. Generally, “...*speed of enzymatic reactions in the cell approximately doubles for each 10° C [degrees Celsius (50 degrees Fahrenheit (° F)] rise in temperature...*” (Nester et al., 2001).

There is an upper limit to the temperature that microorganisms can withstand. Most bacteria found in soil, including many bacteria that degrade petroleum hydrocarbons, have an optimum temperature ranging from 25° C (77° F) to 45° C (113° F) (Nester et al., 2001). Thermophilic bacteria (those that survive and thrive at relatively high temperatures), which are normally found in hot springs and compost heaps, exist indigenously in cool soil environments and can be activated to degrade hydrocarbons with an increase in temperature to 60° C (140° F).

For the Toppenish Site, In-Situ Heat-Enhanced Bioremediation would use the “*Dissolved Oxygen In-Situ Treatment (DO-IT™) system*”. This system utilizes extracted groundwater as a carrier for high levels of dissolved oxygen (>35 parts per million) and biological enhancements. The DO-IT™ system recovers groundwater from the contaminant plume area and downgradient of the plume. Oxygen is added to the water by using small amounts of peroxide or ozone and then oxygenated treatment water is re-distributed to the subsurface to support high rates of in-situ microbial degradation. In this way, the bioremediation methods can work efficiently to degrade TPH/BTEX, while also facilitating hydraulic control and capture of the contaminant plume.

The system will be coupled with a boiler and a heat exchanger to take the extracted groundwater and heat it to 90° F prior to re-injection into the injection wells. It is expected that the groundwater in the treatment zone will increase in temperature by 10 to 30° F. This increased temperature will enhance desorption, increase solubility, and increase biodegradation rates by an order of magnitude, resulting in a significantly faster remedial timeframe capable of reaching low concentration goals (i.e., MTCA Method A cleanup levels).

As outlined in the Feasibility Study, this alternative meet the MTCA threshold screening criteria for selecting remedial options as follows:

Ability to meet MTCA Method A Cleanup Standards in Soil and Groundwater

- This alternative addresses gasoline contamination in the saturated and unsaturated soil above the water table, which can act as an ongoing source of groundwater contamination.
- Over an extended period of time, this alternative should be able to meet MTCA Method A cleanup standards for groundwater and soil.
- Because this alternative destroys the contaminant, it is high on Ecology's "long-term effectiveness" scale.

Timeliness of Implementation

- Before implementation a pilot test would need to be conducted to properly design the system. This pilot test would last approximately 6 months.
- A permit from the Yakama Nation is required to perform any work at the Site. This typically can take up to 60 to 90 days to obtain.
- This remedial option will require the installation of hot water injection wells in addition to several downgradient extraction wells. The wells would then need to be connected to the treatment system through underground piping. It is estimated that it will take 2 weeks to install the wells and to construct the associated piping system. Roughly 1 week will be needed for startup testing and system optimization.
- Certain portions of the Site's operations could be temporarily limited during the installation of the extraction and injection wells.
- It is possible that the pilot testing may meet the cleanup levels for Site in 6 to 12 months and closure granted after an additional eight quarters of groundwater sampling.

Technical Feasibility

- Before implementation, a pilot test would need to be conducted to properly design the system.
- A permit from the Yakama Nation is required to perform any work at the Site.
- This option is more complicated to implement than the In-Situ Chemical Oxidation (ISCO) using RegenOx[®] and Enhanced Biodegradation using an Oxygen Releasing Compound alternative but less complicated than the ozone ISCO and AS/SVE alternatives because there may not need to be as many treatment system wells on the Site. The wells used for the pilot test may be sufficient to treat the Site to the point of closure.

- This alternative will require the contractor to obtain construction permits from local authorities. Site utilities will need to be carefully assessed prior to the start of construction.
- Additional electrical power may need to be brought to the Site by the local utility district to run the treatment system.
- Natural gas will need to be connected to the treatment system boiler.
- There would not be the need to discharge extracted water to the City of Toppenish sewer system for disposal.

Ability to Address Future Spills

- Since the Site is no longer being used for a gasoline fueling station, the ability to address future spills is not a consideration.

Cost

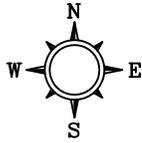
- Because the pilot test may be sufficient to treat the Site, the costs presented are for the six-month pilot testing, and quarterly groundwater monitoring for two years after the pilot testing. The costs also include costs to closure assuming the six-month pilot testing achieves cleanup. The costs are estimated to be in the range of \$600,000 to \$700,000, and are significantly less than the other alternatives. Should cleanup not be achieved during the six-month pilot testing, the costs will increase.

10.0 LIMITATIONS

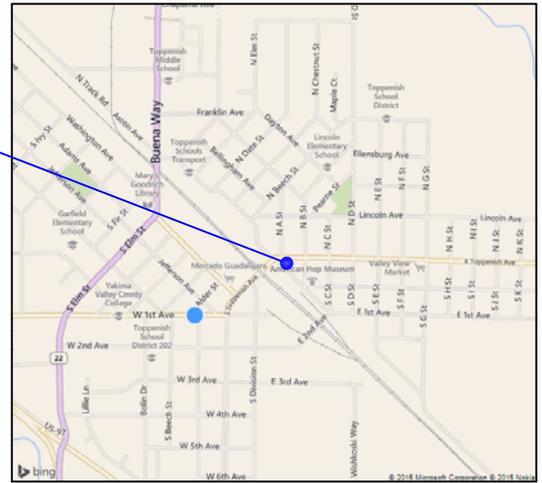
Recommendations, opinions, Site history, and proposed actions contained in this report apply to conditions and information available at the time this report was completed. To the extent that preparation of this Revised CAP has required the application of best professional judgment and the application of scientific principles, certain results of this work have been based on subjective interpretation. Since conditions and regulations beyond our control can change at any time after completion of this report, or our proposed work, we are not responsible for any impacts of any changes in conditions, standards, practices, and/or regulations subsequent to our performance of services. We make no warranties express or implied, including and without limitation, warranties as to merchantability, or fitness for a particular purpose. The information provided in this Revised CAP is not to be construed as legal advice.

This Revised CAP has been prepared on behalf of R.H. Smith Distributing Company, Inc., in partial fulfillment of the AOC (Docket No. RCRA-10-2010-0136), as modified.

FIGURES AND TABLES



PROJECT LOCATION



VICINITY MAP

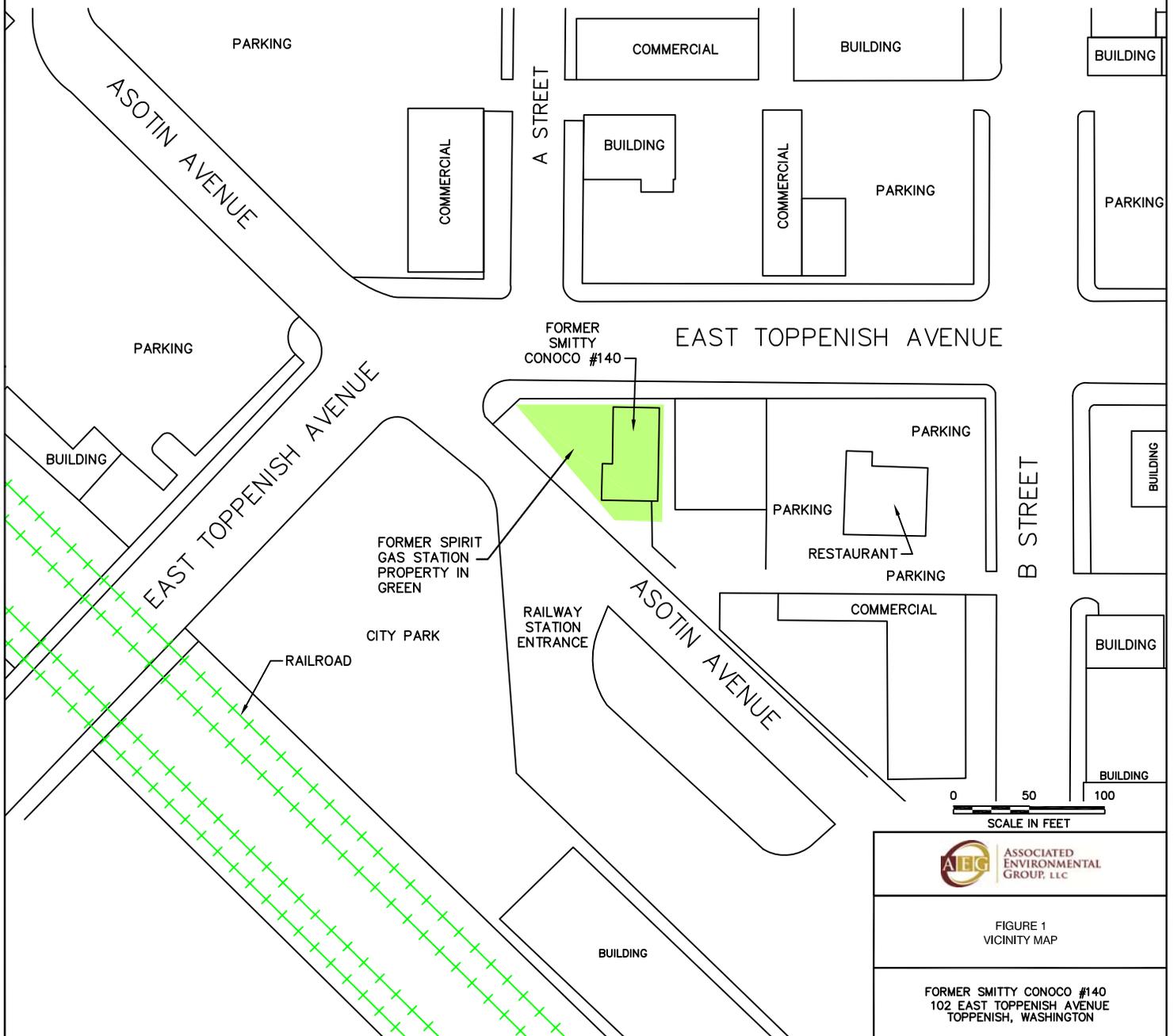
NOT TO SCALE

NOTES

1. THE LOCATIONS OF ALL FEATURES SHOWN ARE APPROXIMATE
2. THIS DRAWING IS FOR INFORMATION PURPOSES. IT IS INTENDED TO ASSIST IN SHOWING FEATURES DISCUSSED IN AN ATTACHED DOCUMENT.

REFERENCE

DRAWING CREATED FROM AERIAL PHOTOGRAPH AND NOTES PROVIDED BY AEG, LLC.

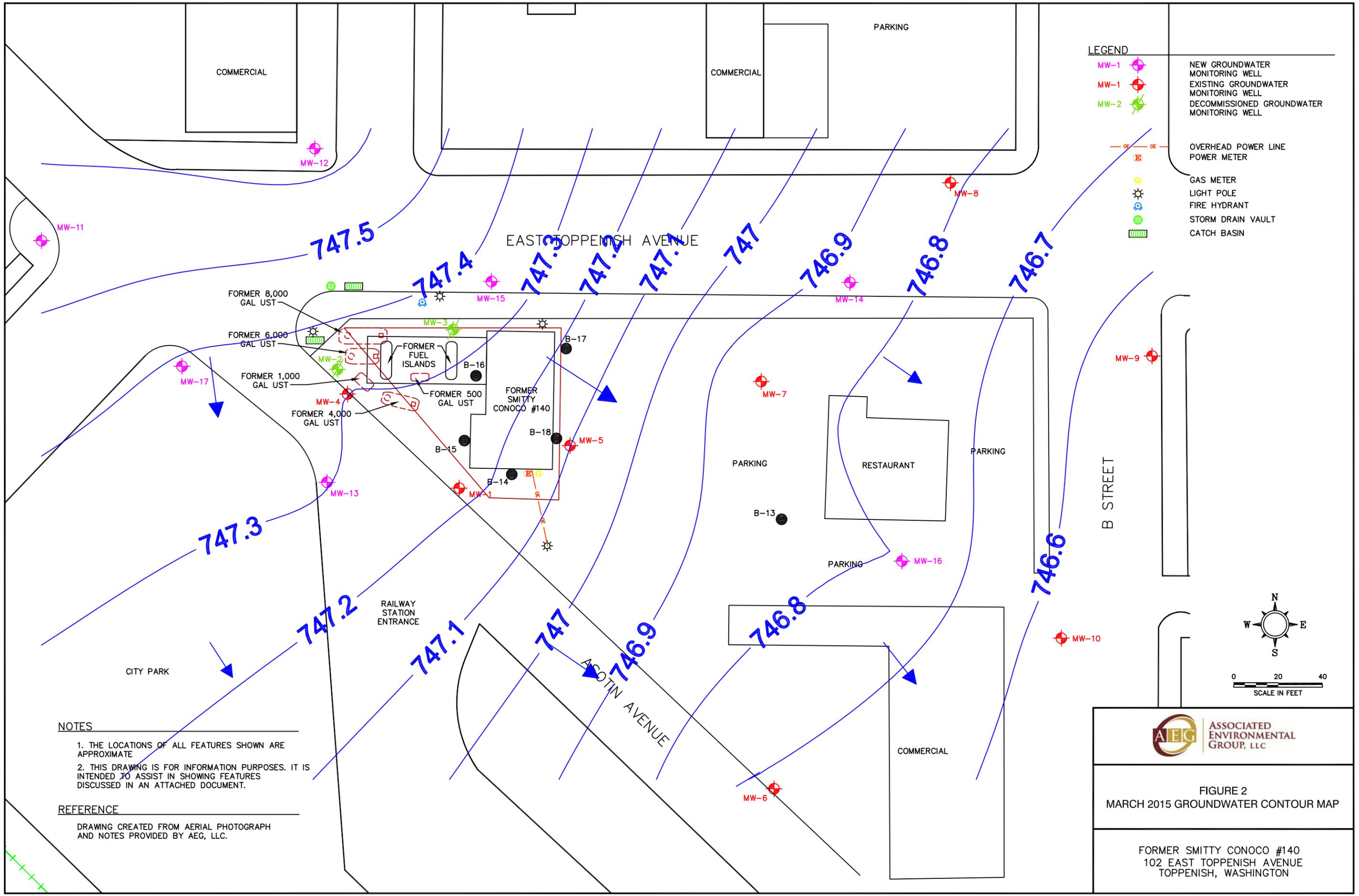


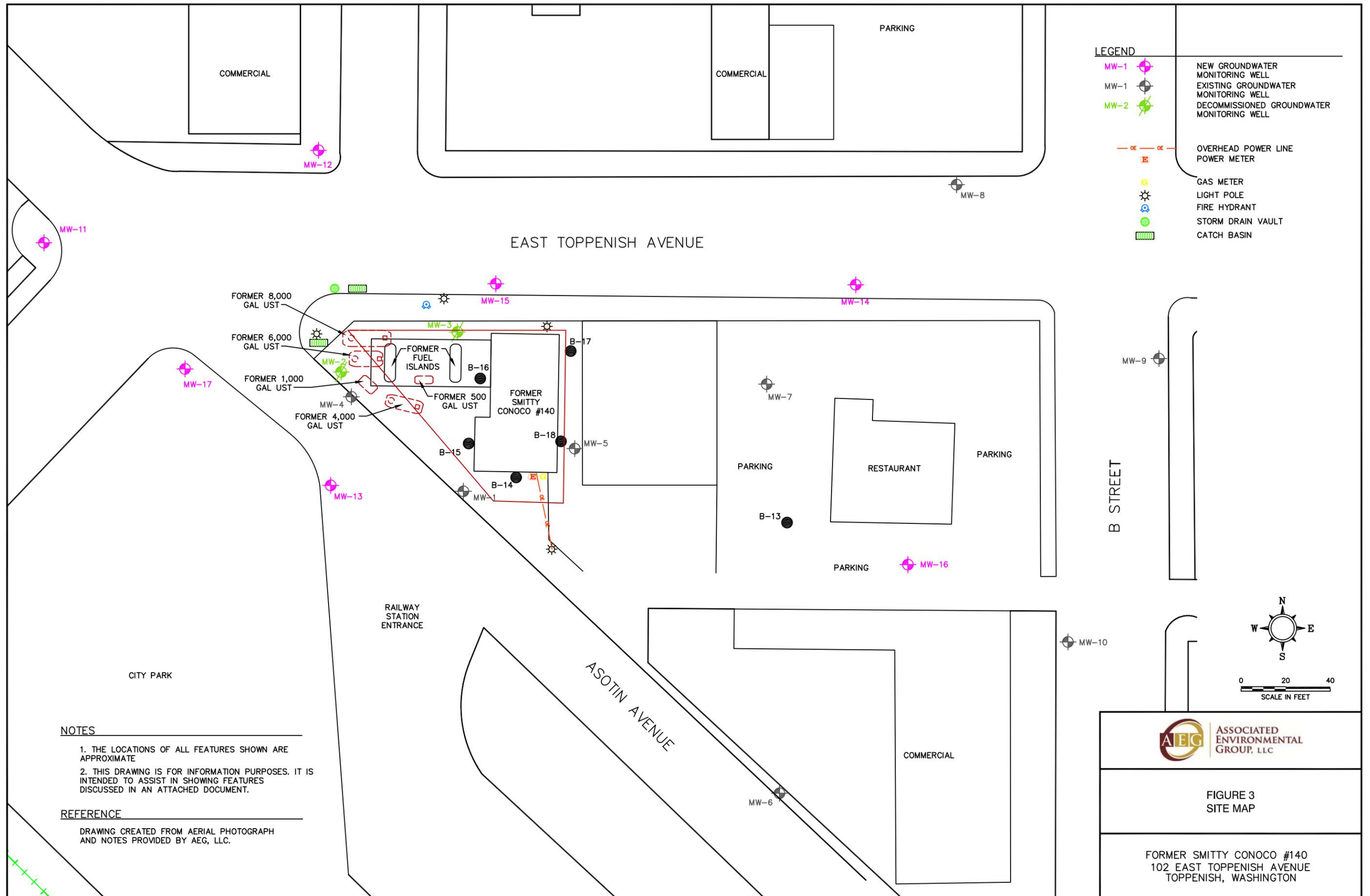
0 50 100
SCALE IN FEET



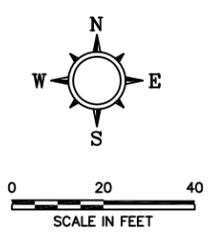
FIGURE 1
VICINITY MAP

FORMER SMITTY CONOCO #140
102 EAST TOPPENISH AVENUE
TOPPENISH, WASHINGTON





LEGEND	
MW-1	NEW GROUNDWATER MONITORING WELL
MW-1	EXISTING GROUNDWATER MONITORING WELL
MW-2	DECOMMISSIONED GROUNDWATER MONITORING WELL
— OE — OE	OVERHEAD POWER LINE
⊞	POWER METER
G	GAS METER
☼	LIGHT POLE
⊞	FIRE HYDRANT
⊞	STORM DRAIN VAULT
⊞	CATCH BASIN



NOTES

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AEG ASSOCIATED ENVIRONMENTAL GROUP, LLC

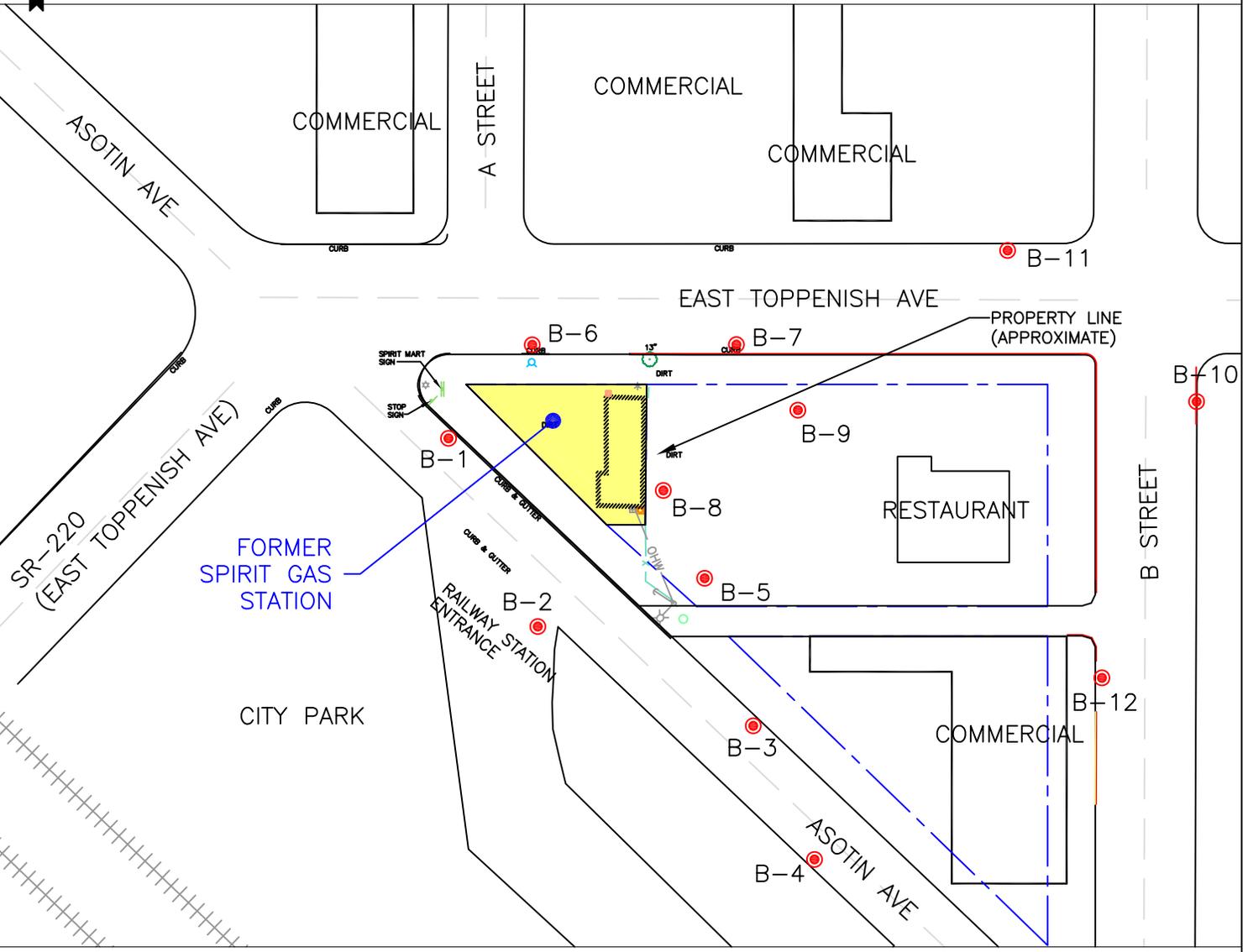
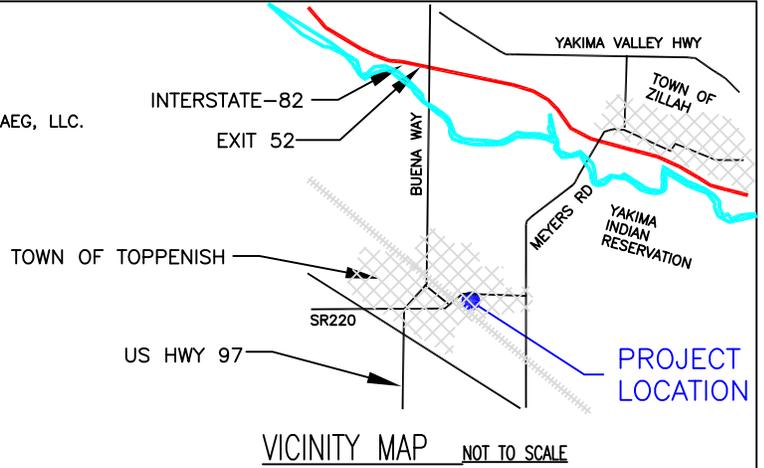
FIGURE 3
SITE MAP

FORMER SMITTY CONOCO #140
102 EAST TOPPENISH AVENUE
TOPPENISH, WASHINGTON

Notes:

- (1) The locations of all features shown are approximate.
- (2) This drawing is for information purposes. It is intended to assist in showing features discussed in an attached document.

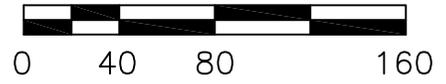
Reference: Drawing created from satellite photograph and notes provided by AEG, LLC.



LEGEND

● PUSH PROBE BORING LOCATION

SCALE: 1"=80 FEET



A ASSOCIATED ENVIRONMENTAL GROUP, LLC
 605 11th Avenue Suite 201
 Olympia, WA 98501
 (360) 352-9835 Fax (360) 352-8164

FIGURE 4 – OFF PROPERTY
 PUSH PROBE BORING LOCATIONS

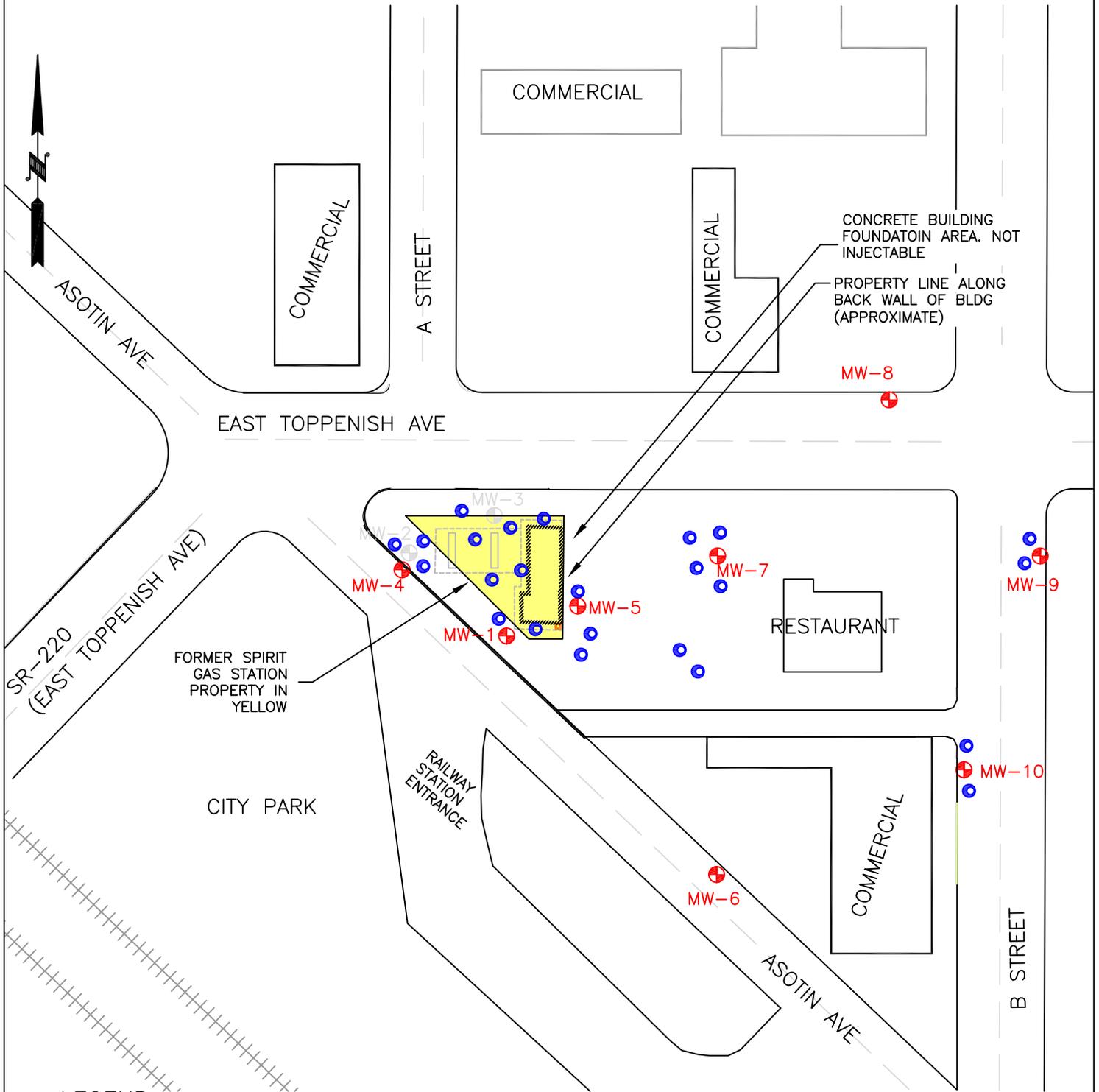
SMITTY CONOCO #140
 102 E TOPPENISH AVE
 TOPPENIISH, WA

Project# 09-171	Date: 2/18/2011
File: SMITTY'S T	Sheet

Notes:

- (1) The locations of all features shown are approximate.
- (2) This drawing is for information purposes. It is intended to assist in showing features discussed in an attached document.

Reference: Drawing created from satellite photograph and notes provided by AEG, LLC.



LEGEND

- ⊕ MW-1 REGENOX BIOREMEDIATION INJECTION POINTS
- ⊕ MW-1 MONITORING WELLS

SCALE: 1"=80 FEET



FIGURE 5
REGENOX
INJECTION POINTS

SMITTY CONOCO #140
102 E. TOPPENISH AVE
TOPPENISH, WA

Project# 09-171

Date: 12/17/2013

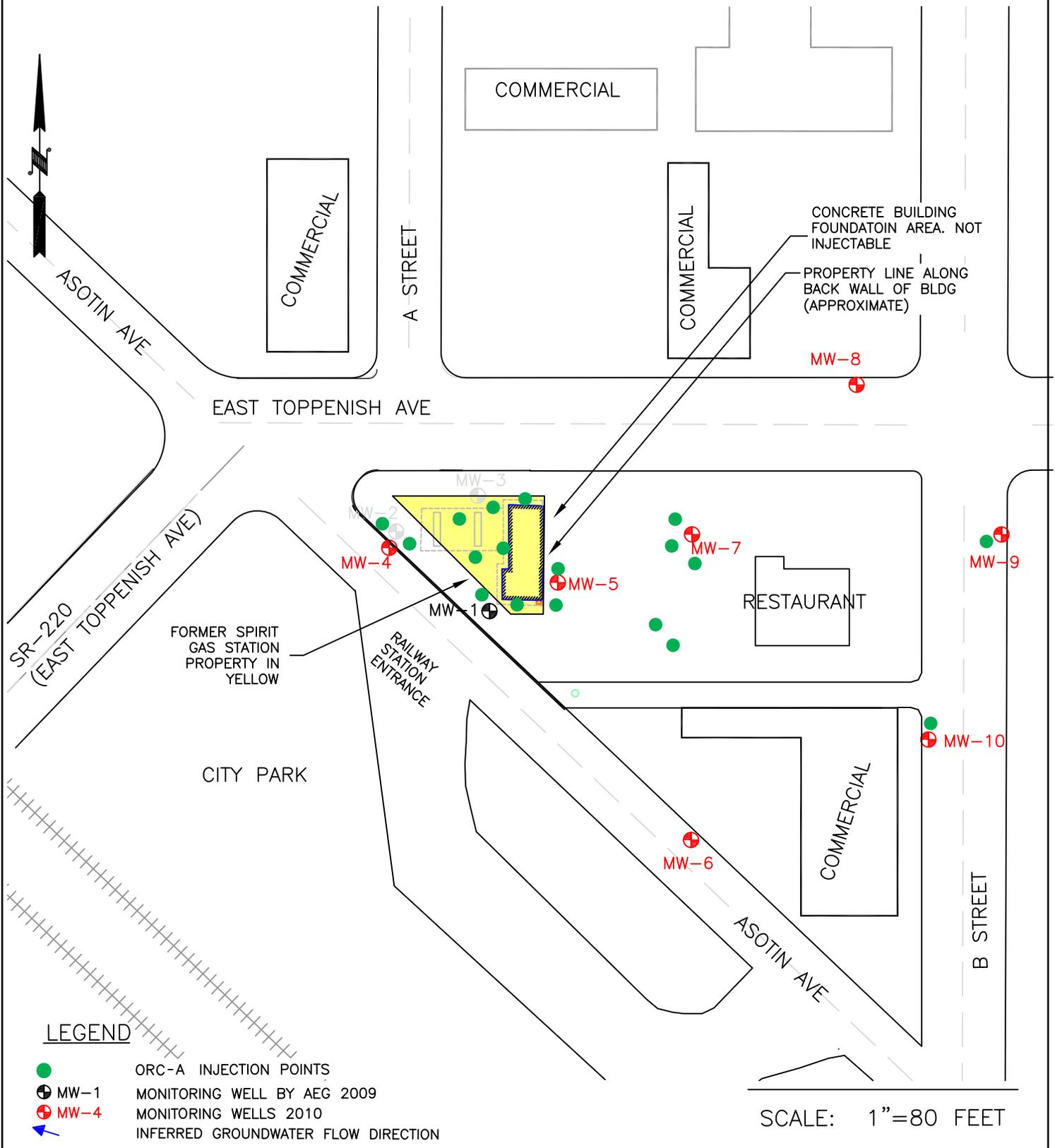
File: FILE NAME

Sheet

Notes:

- (1) The locations of all features shown are approximate.
- (2) This drawing is for information purposes. It is intended to assist in showing features discussed in an attached document.

Reference: Drawing created from satellite photograph and notes provided by AEG, LLC.



LEGEND

- ORC-A INJECTION POINTS
- ⊕ MW-1 MONITORING WELL BY AEG 2009
- ⊕ MW-4 MONITORING WELLS 2010
- ➔ INFERRED GROUNDWATER FLOW DIRECTION

SCALE: 1"=80 FEET



FIGURE 6
ORC - A
INJECTION POINTS

SMITTY CONOCO #140
102 E. TOPPENISH AVE
TOPPENISH, WA

Project#	Date: 03/12/2012
File: FILE NAME	Sheet 1 OF 1

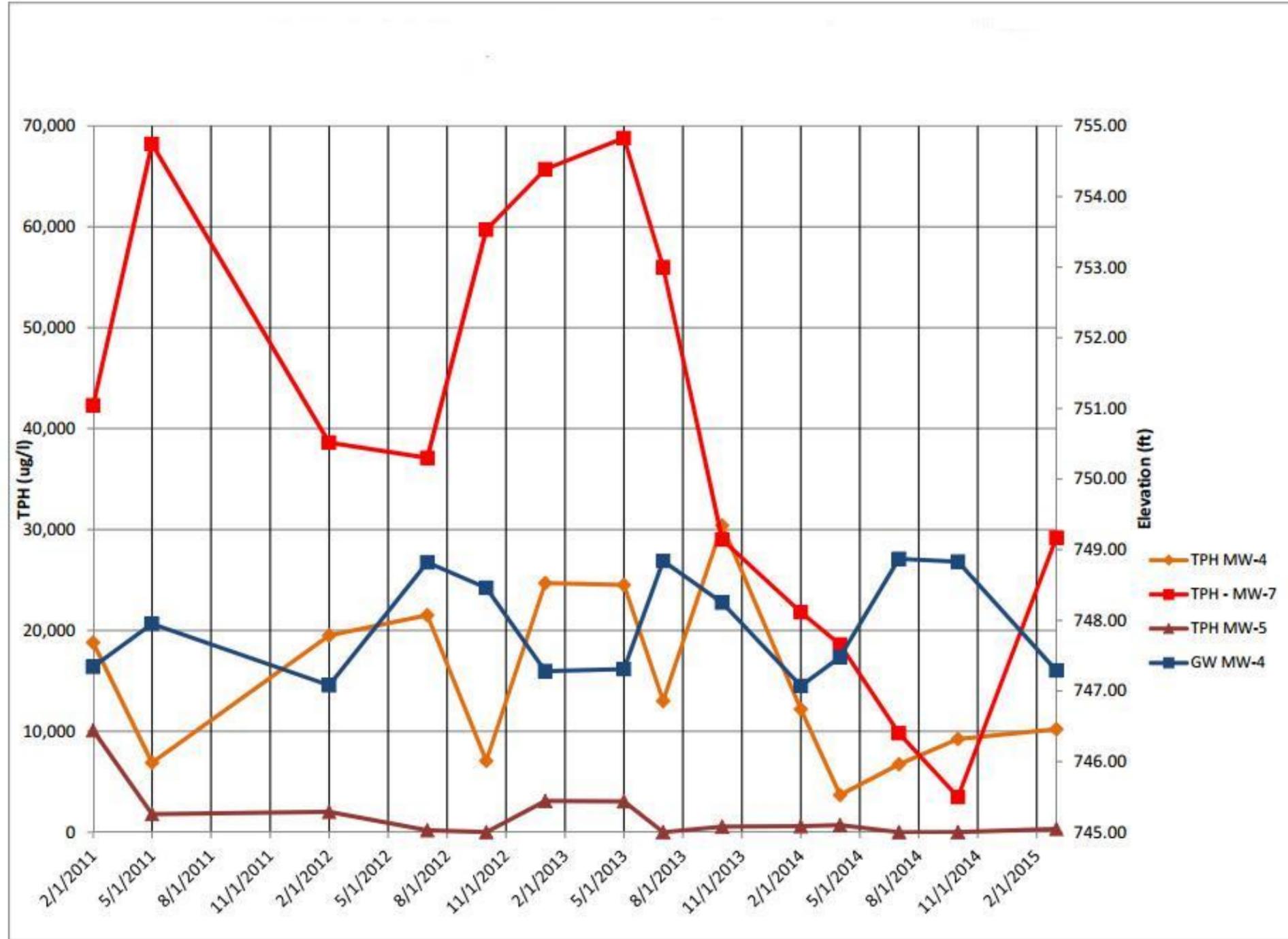
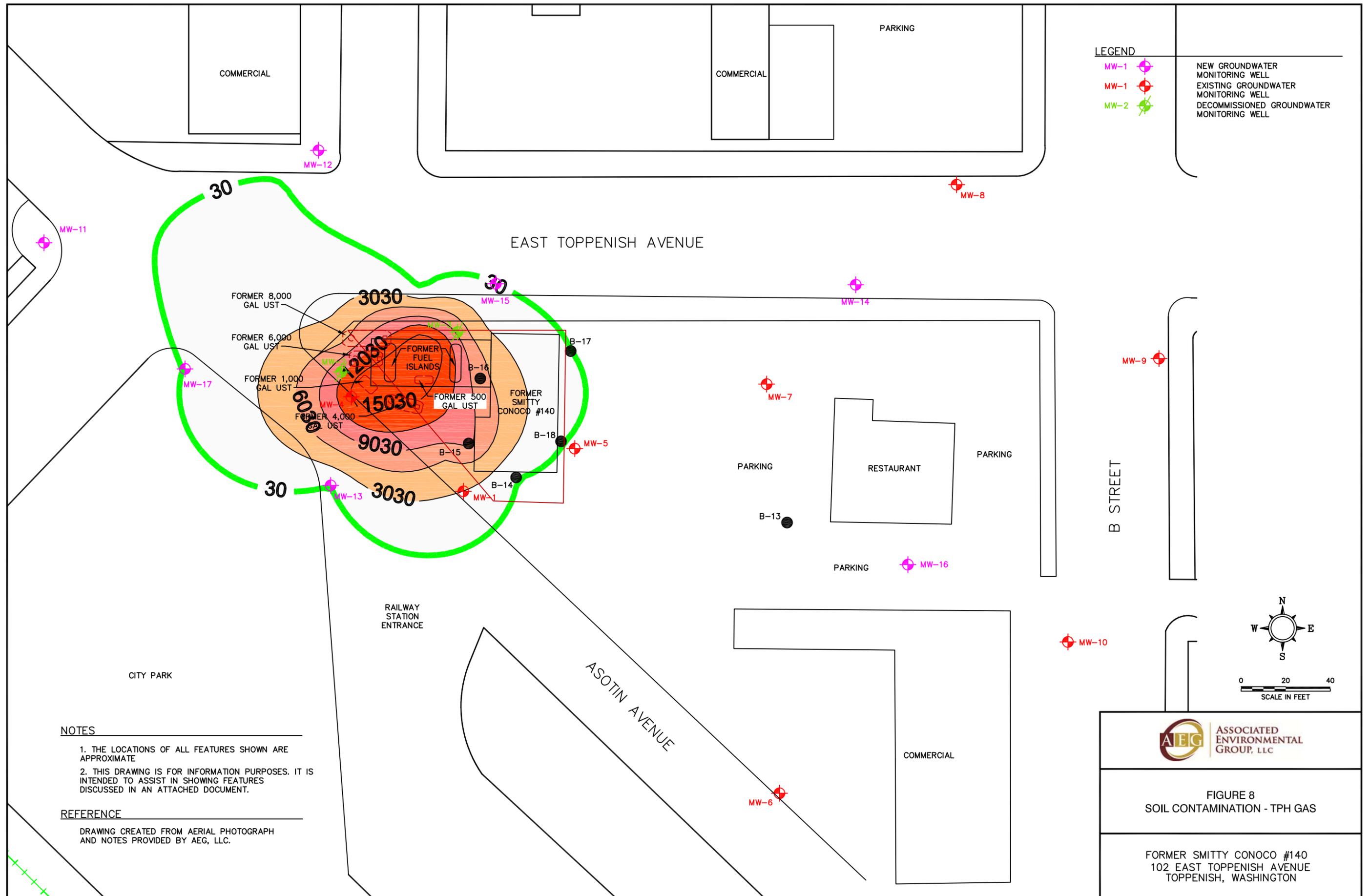


FIGURE 7
GASOLINE-RANGE
TPH AND GROUNDWATER vs TIME

FORMER SMITTY CONOCO #140
102 EAST TOPPENISH AVENUE
TOPPENISH, WASHINGTON



LEGEND		
MW-1		NEW GROUNDWATER MONITORING WELL
MW-1		EXISTING GROUNDWATER MONITORING WELL
MW-2		DECOMMISSIONED GROUNDWATER MONITORING WELL

NOTES

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REFERENCE

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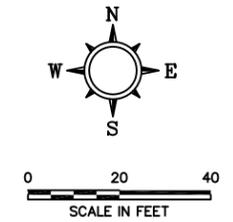
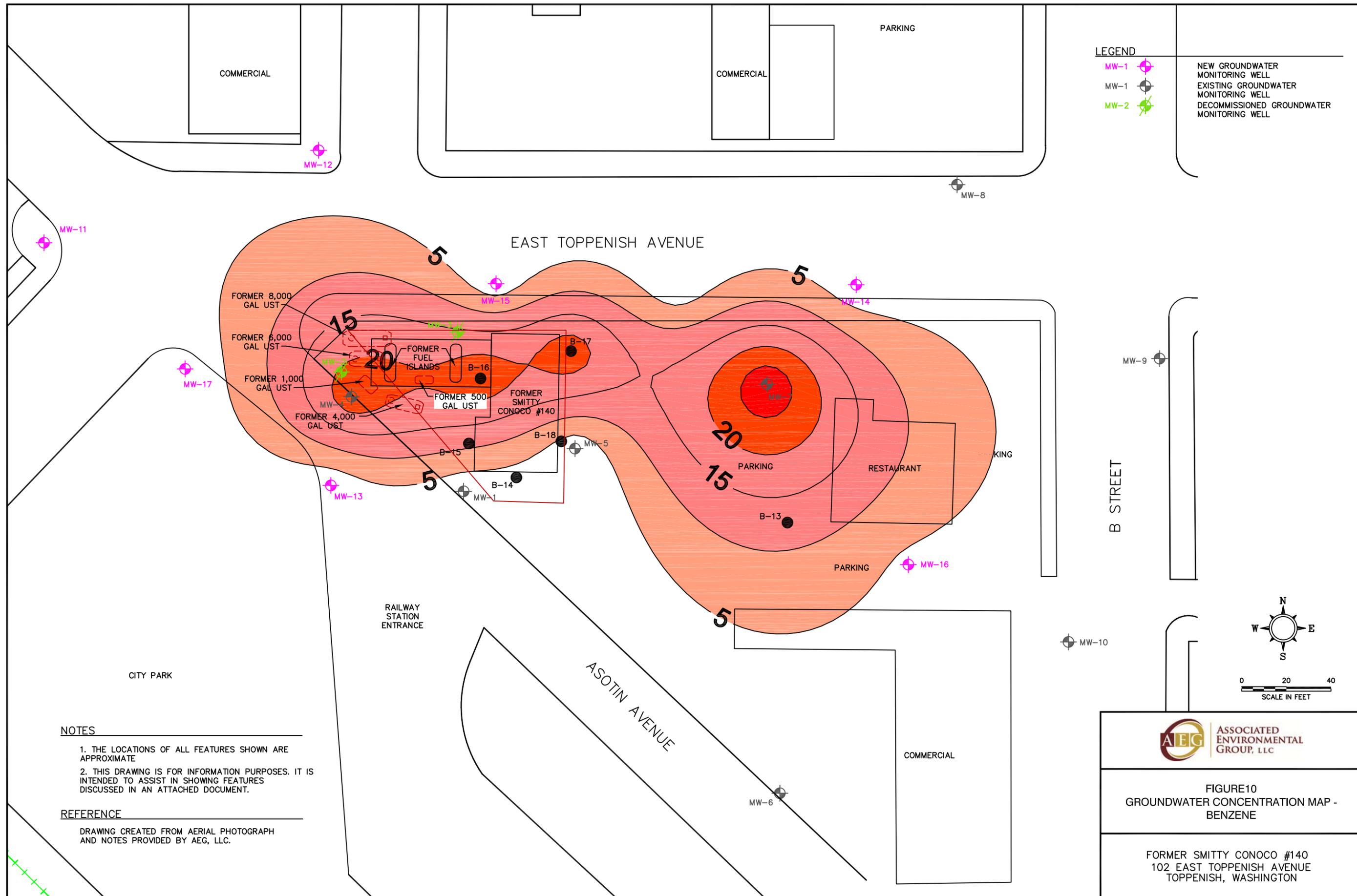
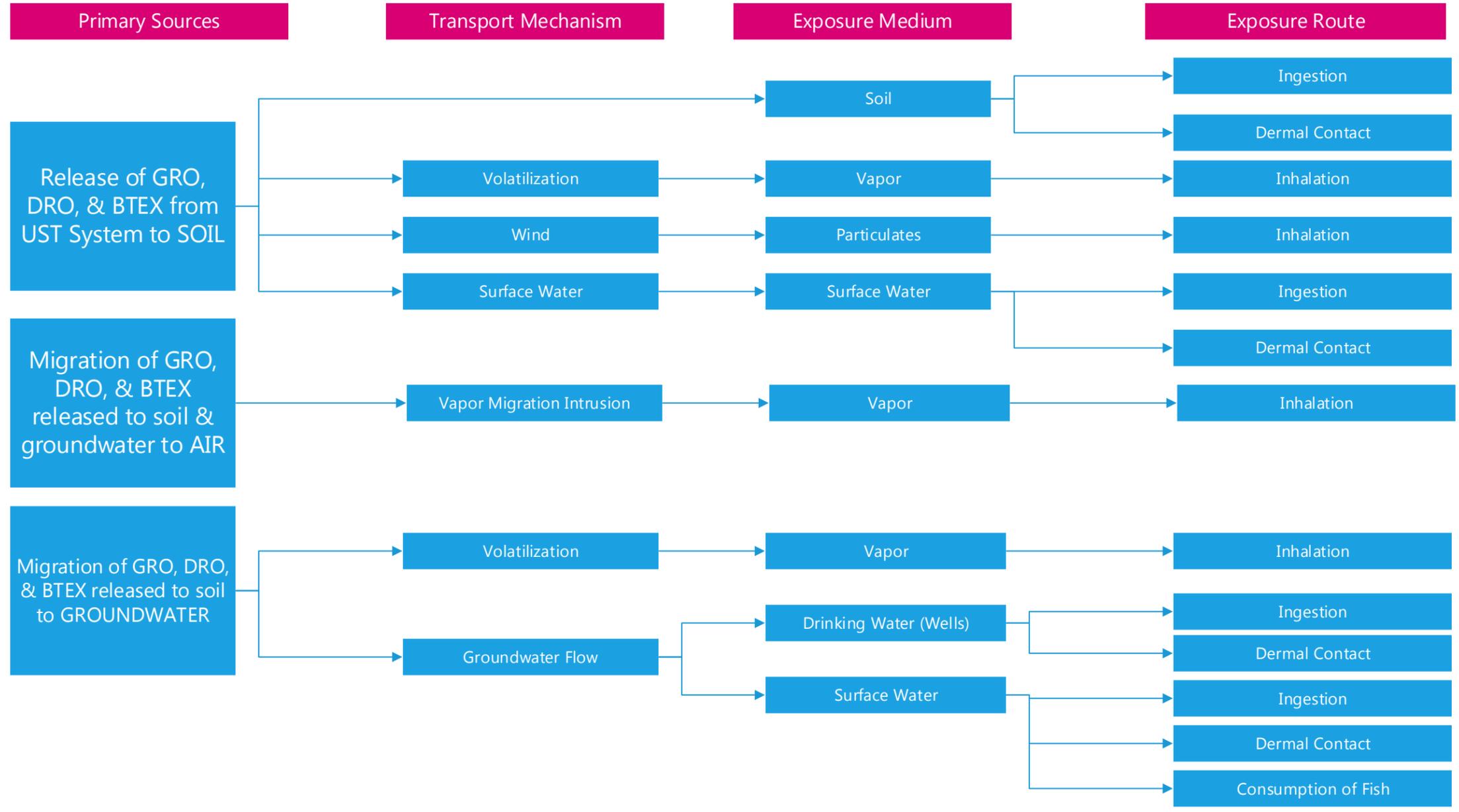


FIGURE 8
SOIL CONTAMINATION - TPH GAS

FORMER SMITTY CONOCO #140
102 EAST TOPPENISH AVENUE
TOPPENISH, WASHINGTON







Pathway Potentially Complete?

Residents	Employees	Customers/ Trespassers	Utility Workers	Terrestrial Organisms	Aquatic Organisms
-	-	-	Yes	-	-
-	-	-	Yes	-	-
-	Yes	Yes	Yes	-	-
-	-	-	-	-	-
-	-	-	-	-	-
-	Yes	Yes	Yes	-	-
-	Yes	Yes	Yes	-	-
Yes	Yes	Yes	-	-	-
Yes	Yes	Yes	-	-	-
-	-	-	-	-	-
-	-	-	-	-	-
-	-	-	-	-	-



Figure 11
Conceptual Site Model

Former Smitty's Conoco #140
102 East Toppenish Avenue
Toppenish, Washington

Table 1 - Summary of Groundwater Elevations
Former Smitty Conoco #140 (Former Spirit Gas Station)
Toppenish, Washington

Well Number/ TOC Elevation (feet)	Date of Measurement	Depth to Water (feet)	Depth to Liquid Phase Hydrocarbons (feet)	Thickness Liquid Phase Hydrocarbons (feet)	Groundwater Elevation (feet)	Change in Groundwater Elevation (feet)
MW-1	07/19/05	--	--	--	--	--
759.05	08/22/06	--	--	--	--	--
	10/09/07	--	--	--	--	--
	09/08/09	--	--	--	--	--
	10/13/09	--	--	--	--	--
	02/01/11	11.80	--	--	747.25	--
	05/18/11	11.18	--	--	747.87	0.62
	02/28/12	12.06	--	--	746.99	-0.88
	07/18/12	10.31	--	--	748.74	1.75
	10/23/12	10.70	--	--	748.35	-0.39
	01/29/13	11.88	--	--	747.17	-1.18
	05/01/13	11.82	--	--	747.23	0.06
	07/30/13	10.29	--	--	748.76	1.53
	10/29/13	10.92	--	--	748.13	-0.63
	02/13/14	12.11	--	--	746.94	-1.19
	04/24/14	11.65	--	--	747.40	0.46
	07/23/14	10.27	--	--	748.78	1.38
	10/22/14	10.32	--	--	748.73	-0.05
	03/03/15	11.84	--	--	747.21	-1.52
	05/20/15	10.89	--	--	748.16	0.95
MW-4	02/01/11	11.25	--	--	747.34	--
758.59	05/18/11	10.64	--	--	747.95	0.61
	02/28/12	11.51	--	--	747.08	-0.87
	07/18/12	9.77	--	--	748.82	1.74
	10/23/12	10.13	--	--	748.46	-0.36
	01/29/13	11.31	--	--	747.28	-1.18
	05/01/13	11.28	--	--	747.31	0.03
	07/30/13	9.75	--	--	748.84	1.53
	10/29/13	10.34	--	--	748.25	-0.59
	02/13/14	11.52	--	--	747.07	-1.18
	04/24/14	11.11	--	--	747.48	0.41
	07/23/14	9.72	--	--	748.87	1.39
	10/22/14	9.76	--	--	748.83	-0.04
	03/03/15	11.30	--	--	747.29	-1.54
	05/20/15	10.35	--	--	748.24	0.95
MW-5	02/01/11	12.34	--	--	746.96	--
759.3	05/18/11	11.74	--	--	747.56	0.60
	02/28/12	12.49	--	--	746.81	-0.75
	07/18/12	10.56	--	--	748.74	1.93
	10/23/12	10.96	--	--	748.34	-0.40
	01/29/13	12.35	--	--	746.95	-1.39
	05/01/13	12.31	--	--	746.99	0.04
	07/30/13	10.53	--	--	748.77	1.78
	10/29/13	11.14	--	--	748.16	-0.61
	02/13/14	12.52	--	--	746.78	-1.38
	04/24/14	12.11	--	--	747.19	0.41
	07/23/14	10.52	--	--	748.78	1.59
	10/22/14	10.58	--	--	748.72	-0.06
	03/03/15	12.20	--	--	747.10	-1.62
	05/20/15	11.10	--	--	748.20	1.10
MW-6	02/01/11	11.19	--	--	746.68	--
757.87	05/18/11	10.54	--	--	747.33	0.65
	02/28/12	11.38	--	--	746.49	-0.84
	07/18/12	9.65	--	--	748.22	1.73
	10/23/12	10.07	--	--	747.80	-0.42
	01/29/13	11.20	--	--	746.67	-1.13
	05/01/13	11.14	--	--	746.73	0.06
	07/30/13	9.68	--	--	748.19	1.46
	10/29/13	10.29	--	--	747.58	-0.61
	02/13/14	11.37	--	--	746.50	-1.08
	04/24/14	10.96	--	--	746.91	0.41
	07/23/14	9.62	--	--	748.25	1.34
	10/22/14	9.68	--	--	748.19	-0.06
	03/03/15	11.17	--	--	746.70	-1.49
	05/20/15	10.21	--	--	747.66	0.96
MW-7	02/01/11	12.08	--	--	746.83	--
758.91	05/18/11	11.54	--	--	747.37	0.54
	02/28/12	12.25	--	--	746.66	-0.71
	07/18/12	10.59	--	--	748.32	1.66
	10/23/12	10.98	--	--	747.93	-0.39
	01/29/13	12.09	--	--	746.82	-1.11
	05/01/13	12.05	--	--	746.86	0.04
	07/30/13	10.58	--	--	748.33	1.47
	10/29/13	11.19	--	--	747.72	-0.61
	02/13/14	12.28	--	--	746.63	-1.09
	04/24/14	11.85	--	--	747.06	0.43
	07/23/14	10.50	--	--	748.41	1.35
	10/22/14	10.55	--	--	748.36	-0.05
	03/03/15	12.08	--	--	746.83	-1.53
	05/20/15	11.13	--	--	747.78	0.95

Table 1 - Summary of Groundwater Elevations
Former Smitty Conoco #140 (Former Spirit Gas Station)
Toppenish, Washington

Well Number/ TOC Elevation (feet)	Date of Measurement	Depth to Water (feet)	Depth to Liquid Phase Hydrocarbons (feet)	Thickness Liquid Phase Hydrocarbons (feet)	Groundwater Elevation (feet)	Change in Groundwater Elevation (feet)
MW-8	02/01/11	11.58	--	--	746.82	--
758.4	05/18/11	11.05	--	--	747.35	0.53
	02/28/12	11.78	--	--	746.62	-0.73
	07/18/12	10.14	--	--	748.26	1.64
	10/23/12	10.56	--	--	747.84	-0.42
	01/29/13	11.64	--	--	746.76	-1.08
	05/01/13	11.60	--	--	746.80	0.04
	07/30/13	10.12	--	--	748.28	1.48
	10/29/13	10.76	--	--	747.64	-0.64
	02/13/14	11.82	--	--	746.58	-1.06
	04/24/14	11.41	--	--	746.99	0.41
	07/23/14	10.04	--	--	748.36	1.37
	10/22/14	10.16	--	--	748.24	-0.12
	03/03/15	11.60	--	--	746.80	-1.44
	05/20/15	10.69	--	--	747.71	0.91
MW-9	02/01/11	11.34	--	--	746.62	--
757.96	05/18/11	10.68	--	--	747.28	0.66
	02/28/12	11.42	--	--	746.54	-0.74
	07/18/12	9.79	--	--	748.17	1.63
	10/23/12	10.22	--	--	747.74	-0.43
	1/29/13	11.29	--	--	746.67	-1.07
	05/01/13	11.23	--	--	746.73	0.06
	07/30/13	9.80	--	--	748.16	1.43
	10/29/13	10.41	--	--	747.55	-0.61
	02/13/14	11.45	--	--	746.51	-1.04
	04/24/14	11.04	--	--	746.92	0.41
	07/23/14	9.71	--	--	748.25	1.33
	10/22/14	--	--	--	--	--
	03/03/15	11.22	--	--	746.74	-1.51
	05/20/15	10.33	--	--	747.63	0.89
MW-10	02/01/11	11.68	--	--	746.52	--
758.20	05/18/11	11.09	--	--	747.11	0.59
	02/28/12	11.84	--	--	746.36	-0.75
	07/18/12	10.21	--	--	747.99	1.63
	10/23/12	10.62	--	--	747.58	-0.41
	1/29/13	11.70	--	--	746.50	-1.08
	05/01/13	11.64	--	--	746.56	0.06
	07/30/13	10.22	--	--	747.98	1.42
	10/29/13	11.84	--	--	746.36	-1.62
	02/13/14	11.87	--	--	746.33	-0.03
	04/24/14	11.47	--	--	746.73	0.40
	07/23/14	10.15	--	--	748.05	1.32
	10/22/14	10.25	--	--	747.95	-0.10
	03/03/15	11.64	--	--	746.56	-1.39
	05/20/15	10.73	--	--	747.47	0.91
MW-11	03/03/15	11.76	--	--	747.56	--
759.32	05/20/15	10.78	--	--	748.54	0.98
MW-12	03/03/15	11.59	--	--	747.67	--
759.26	05/20/15	10.61	--	--	748.65	0.98
MW-13	03/03/15	11.40	--	--	747.33	--
758.73	05/20/15	10.41	--	--	748.32	0.99
MW-14	03/03/15	12.16	--	--	746.87	--
759.03	05/20/15	11.24	--	--	747.79	0.92
MW-15	03/03/15	11.44	--	--	747.36	--
758.80	05/20/15	10.44	--	--	748.36	1.00
MW-16	03/03/15	12.84	--	--	746.80	--
759.64	05/20/15	11.94	--	--	747.70	0.90
MW-17	03/03/15	12.46	--	--	747.36	--
759.82	05/20/15	11.47	--	--	748.35	0.99

Notes:

TOC = Top of casing elevation relative to assigned benchmark.

-- = Not applicable

Table 2 - Summary of Groundwater Analytical Results
Former Smitty Conoco #140 (Former Spirit Gas Station)
Toppenish, WA

Well Number	Date Sampled	Gasoline TPH (ug/L)	Volatile Organic Compounds (ug/l)								Total Lead (ug/L)	Dissolved Lead (µL)	Diesel TPH Extended (ug/L)			Metals (mg/L)						
			Benzene	Toluene	Ethylbenzene	Total Xylenes	EDC	EDB	Total Naphthalenes	MTBE			Diesel	Heavy Oil	Mineral Oil	Dissolved Iron	Disolved Manganese	Iron	Manganese	Nitrate	Sulfate	
MW-1	7/19/2005	23,000	24	<1.0	200	1,300	--	--	--	--	15	--	<200	<400	--	--	--	--	--	--	--	
	8/22/2006	12,000	50	16	92	460	--	--	--	--	--	--	<200	<400	--	--	--	--	--	--	--	
	10/9/2007	4,900	45	<1.0	35	94	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
	9/8/2009	657	64.4	21.7	<1.0	39.5	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
	10/13/2009		58	2.6	23	9.0	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
	2/1/2011	<100	<1.0	<1.0	2.2	7.2	<1.0	<0.01	<5.0	<5.0	<5.0	--	--	--	--	--	--	--	--	--	--	--
	5/18/2011	<100	<1.0	<1.0	<1.0	<1.0	<1.0	<0.01	<5.0	<5.0	<5.0	--	--	--	--	--	--	--	--	--	--	--
	2/18/2012	<100	<1.0	<1.0	<1.0	<1.0	<1.0	<0.01	<5.0	<5.0	<5.0	--	--	--	--	--	--	--	--	--	--	--
	7/18/2012	<100	<1.0	<1.0	<1.0	<1.0	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	10/23/2012	<100	<1.0	<2.0	<1.0	<3.0	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	1/29/2013	839	1.5	<2.0	<1.0	5.6	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	5/1/2013	1,130	<1.0	<2.0	1.33	2.34	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	7/30/2013	<100	<1.0	<2.0	<1.0	<1.0	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	10/29/2013	570	<1.0	<2.0	<1.0	<2.0	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	2/13/2014	270	<1.0	<2.0	<1.0	<3.0	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	4/24/2014	130	<1.0	<2.0	<1.0	<2.0	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	7/23/2014	<100	<1.0	<2.0	<1.0	<2.0	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	10/22/2014	<100	<1.0	<2.0	<1.0	<2.0	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
3/4/2015	<100	<1.0	<2.0	<1.0	<2.0	--	--	--	--	<5.0	<5.0	<200	--	--	<0.015	0.093	0.384	0.171	0.78	12	--	
5/21/2015	243	<1.0	<2.0	<1.0	<3.0	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
MW-2*	7/19/2005	39,000	220	290	180	1,200	--	--	--	--	--	--	<200	<400	--	--	--	--	--	--	--	
	8/22/2006	40,000	42	96	34	269	--	--	--	--	--	--	<200	<400	--	--	--	--	--	--	--	
	10/9/2007	45,000	25	31	36	275	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
	9/8/2009	108	2.3	3.2	<1.0	5.8	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
	10/13/2009	--	14	10	31	130	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
MW-3*	7/19/2005	39,000	1,400	2,600	430	4,700	--	--	--	--	--	--	<200	<400	--	--	--	--	--	--	--	
	8/22/2006	40,000	2,400	4,800	420	4,100	--	--	--	--	--	--	<200	<400	--	--	--	--	--	--	--	
	10/9/2007	45,000	730	2,900	630	6,300	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
	9/8/2009	84,900	2,500	4,800	639	7,450	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
	10/13/2009	--	1,500	3,600	440	4,100	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	

Table 2 - Summary of Groundwater Analytical Results
Former Smitty Conoco #140 (Former Spirit Gas Station)
Toppenish, WA

Well Number	Date Sampled	Gasoline TPH (ug/L)	Volatile Organic Compounds (ug/l)								Total Lead (ug/L)	Dissolved Lead (µ/L)	Diesel TPH Extended (ug/L)			Metals (mg/L)					
			Benzene	Toluene	Ethylbenzene	Total Xylenes	EDC	EDB	Total Naphthalenes	MTBE			Diesel	Heavy Oil	Mineral Oil	Dissolved Iron	Disolved Manganese	Iron	Manganese	Nitrate	Sulfate
MW-4	2/1/2011	18,800	22.4	62.8	435	2,730	<1.0	<0.01	115	<5.0	<5.0	--	--	--	--	--	--	--	--	--	--
	5/18/2011	6,880	13.9	15.9	<1.0	688	<1.0	<0.01	10.8	<5.0	<5.0	--	--	--	--	--	--	--	--	--	--
	2/18/2012	19,500	25.3	38.2	119	1,060	<1.0	0.06	278	<5.0	<5.0	--	--	--	--	--	--	--	--	--	--
	7/18/2012	21,500	45.2	37	292	1,690	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	10/23/2012	7,070	35.6	15.2	142	251	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	1/29/2013	24,700	44.0	43	397	1,100	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	5/1/2013	24,500	25.6	24	364	928	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	7/30/2013	13,000	11.0	5.2	<1.0	660	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	10/29/2013	30,400	17.0	29	570	1,430	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	2/13/2014	12,200	26.3	17.3	248	575.0	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	4/24/2014	3,690	1.6	2.1	<1.0	112	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	7/23/2014	6,740	2.7	7.7	33	419	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	10/22/2014	9,230	2.0	7.0	193	744	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	3/4/2015	10,200	24	18	168	652	--	--	--	--	<5.0	<5.0	<200	--	--	2.18	0.71	2.43	0.724	0.12	10
5/21/2015	3,870	2	4	80	162	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
MW-5	2/1/2011	10,100	11.9	5.6	186	242	<1.0	<0.01	155	<5.0	<5.0	--	<200	<400	<400	--	--	--	--	--	--
	5/18/2011	1,790	<1.0	<1.0	<1.0	4.1	<1.0	<0.01	5.4	<5.0	8.2	--	<200	<400	<400	--	--	--	--	--	--
	2/18/2012	2,010	1.8	3.8	2.4	4.3	<1.0	<0.01	<5.0	<5.0	<5.0	--	--	--	--	--	--	--	--	--	--
	7/18/2012	180	1.2	<1.0	<1.0	<1.0	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	10/23/2012	<100	<1.0	<2.0	<1.0	<3.0	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	1/29/2013	3,100	8.4	<2.0	21	37	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	5/1/2013	3,050	0.9	<2.0	1.89	<2.0	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	7/30/2013	<100	<1.0	<2.0	<1.0	<1.0	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	10/29/2013	540	<1.0	<2.0	<1.0	<2.0	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	2/13/2014	602	1.8	<2.0	1.6	<3.0	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	4/24/2014	709	<1.0	<2.0	<1.0	<2.0	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	7/23/2014	<100	<1.0	<2.0	<1.0	<2.0	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	10/22/2014	<100	<1.0	<2.0	<1.0	<2.0	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	3/4/2015	329	<1.0	<2.0	<1.0	<2.0	--	--	--	--	<5.0	<5.0	<200	--	--	0.221	0.609	0.508	0.649	0.62	47.3
5/21/2015	151	<1.0	<2.0	<1.0	<3.0	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	

Table 2 - Summary of Groundwater Analytical Results
Former Smitty Conoco #140 (Former Spirit Gas Station)
Toppenish, WA

Well Number	Date Sampled	Gasoline TPH (ug/L)	Volatile Organic Compounds (ug/l)								Total Lead (ug/L)	Dissolved Lead (µ/L)	Diesel TPH Extended (ug/L)			Metals (mg/L)					
			Benzene	Toluene	Ethylbenzene	Total Xylenes	EDC	EDB	Total Naphthalenes	MTBE			Diesel	Heavy Oil	Mineral Oil	Dissolved Iron	Disolved Manganese	Iron	Manganese	Nitrate	Sulfate
MW-6	2/1/2011	<100	<1.0	<1.0	<1.0	<1.0	<1.0	<0.01	<5.0	<5.0	<5.0	--	--	--	--	--	--	--	--	--	--
	5/18/2011	<100	<1.0	<1.0	<1.0	<1.0	<1.0	<0.01	<5.0	<5.0	<5.0	--	--	--	--	--	--	--	--	--	--
	2/18/2012	<100	<1.0	<1.0	<1.0	<1.0	<1.0	<0.01	<5.0	<5.0	<5.0	--	--	--	--	--	--	--	--	--	--
	7/18/2012	<100	<1.0	<1.0	<1.0	<1.0	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	10/23/2012	<100	<1.0	<2.0	<1.0	<3.0	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	1/29/2013	<100	<1.0	<2.0	<1.0	<3.0	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	5/1/2013	<100	<1.0	<2.0	<1.0	<2.0	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	7/30/2013	<100	<1.0	<2.0	<1.0	<2.0	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	10/29/2013	<100	<1.0	<2.0	<1.0	<2.0	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	2/13/2014	<100	<1.0	<2.0	<1.0	<3.0	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	4/24/2014	<100	<1.0	<2.0	<1.0	<2.0	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	7/23/2014	<100	<1.0	<2.0	<1.0	<2.0	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	10/22/2014	<100	<1.0	<2.0	<1.0	<2.0	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	3/4/2015	<100	<1.0	<2.0	<1.0	<2.0	--	--	--	--	--	--	--	--	--	--	--	--	--	3.6	--
5/21/2015	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
MW-7	2/1/2011	42,300	215.0	692	1,570	11,500	<1.0	<0.01	311	<5.0	7.9	--	<200	<400	<400	--	--	--	--	--	--
	5/18/2011	68,200	90.5	120	411	15,500	<1.0	<0.01	1,540	<5.0	11.5	--	<200	<400	<400	--	--	--	--	--	--
	2/18/2012	38,600	61.5	53.8	234	6,760	<1.0	<0.01	364	<5.0	26.7	--	--	--	--	--	--	--	--	--	
	7/18/2012	37,100	124.0	165	626	9,370	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
	10/23/2012	59,700	293.0	150	502	4,600	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
	1/29/2013	65,700	84.0	140	478	5,730	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
	5/1/2013	68,800	23.0	31	323	1,790	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
	7/30/2013	56,000	22.0	36	43	5,100	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
	10/29/2013	29,000	14.0	34	350	2,420	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
	2/13/2014	21,800	16.9	38.5	71.6	2,660	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
	4/24/2014	18,600	14.0	52	439	2,840	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
	7/23/2014	9,810	4.3	14	64	1,770	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
	10/22/2014	3,490	<2.0	<2.0	28	98	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
	3/4/2015	29,200	30	80.4	530	2,130	--	--	--	--	<5.0	<5.0	<200	--	--	8.27	2.3	10.5	2.35	0.03	30
5/21/2015	26,300	4.6	54	578	2,950	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	

Table 2 - Summary of Groundwater Analytical Results
Former Smitty Conoco #140 (Former Spirit Gas Station)
Toppenish, WA

Well Number	Date Sampled	Gasoline TPH (ug/L)	Volatile Organic Compounds (ug/l)								Total Lead (ug/L)	Dissolved Lead (µ/L)	Diesel TPH Extended (ug/L)			Metals (mg/L)					
			Benzene	Toluene	Ethylbenzene	Total Xylenes	EDC	EDB	Total Naphthalenes	MTBE			Diesel	Heavy Oil	Mineral Oil	Dissolved Iron	Disolved Manganese	Iron	Manganese	Nitrate	Sulfate
MW-8	2/1/2011	1,440	<1.0	2.2	18.6	164	<1.0	<0.01	35	<5.0	<5.0	--	--	--	--	--	--	--	--	--	--
	5/18/2011	<100	<1.0	1.4	<1.0	4.8	<1.0	<0.01	16.8	<5.0	<5.0	--	--	--	--	--	--	--	--	--	--
	2/18/2012	<100	<1.0	<1.0	<1.0	<1.0	<1.0	<0.01	<5.0	<5.0	43.2	--	--	--	--	--	--	--	--	--	--
	7/18/2012	380	1.4	2.1	<1.0	39.9	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	10/23/2012	<100	<1.0	<2.0	<1.0	<3.0	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	1/29/2013	<100	<1.0	<2.0	<1.0	<3.0	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	5/1/2013	<100	<1.0	<2.0	<1.0	<2.0	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	7/30/2013	<100	<1.0	<2.0	<1.0	<2.0	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	10/29/2013	<100	<1.0	<2.0	<1.0	<2.0	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	2/13/2014	<100	<1.0	<2.0	<1.0	<3.0	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	4/24/2014	<100	<1.0	<2.0	<1.0	<2.0	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	7/23/2014	<100	<1.0	<2.0	<1.0	<2.0	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	10/22/2014	<100	<1.0	<2.0	<1.0	<2.0	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	3/4/2015	<100	<1.0	<2.0	<1.0	<2.0	--	--	--	--	--	--	--	--	--	--	--	--	--	3.2	--
5/21/2015	<100	<1.0	<2.0	<1.0	<2.0	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
MW-9	2/1/2011	660	9.0	<1.0	9.2	24.7	<1.0	<0.01	<5.0	<5.0	8.6	--	--	--	--	--	--	--	--	--	--
	5/18/2011	<100	<1.0	<1.0	<1.0	<1.0	<1.0	<0.01	<5.0	<5.0	<5.0	--	--	--	--	--	--	--	--	--	--
	2/18/2012	<100	<1.0	<1.0	<1.0	<1.0	<1.0	<0.01	<5.0	<5.0	<5.0	--	--	--	--	--	--	--	--	--	--
	7/18/2012	<100	<1.0	<1.0	<1.0	<1.0	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	10/23/2012	<100	<1.0	<2.0	<1.0	<3.0	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	1/29/2013	<100	<1.0	<2.0	<1.0	<3.0	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	5/1/2013	<100	<1.0	<2.0	<1.0	<2.0	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	7/30/2013	<100	<1.0	<2.0	<1.0	<2.0	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	10/29/2013	190	<1.0	<2.0	<1.0	<2.0	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	2/13/2014	<100	<1.0	<2.0	<1.0	<3.0	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	4/24/2014	<100	<1.0	<2.0	<1.0	<2.0	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	7/23/2014	<100	<1.0	<2.0	<1.0	<2.0	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	10/22/2014	Did not sample										--	--	--	--	--	--	--	--	--	--
	3/4/2015	<100	<1.0	<2.0	<1.0	<2.0	--	--	--	--	--	--	--	--	--	--	--	--	--	3.1	--
5/21/2015	162	<1.0	<2.0	<1.0	<1.0	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	

Table 2 - Summary of Groundwater Analytical Results
Former Smitty Conoco #140 (Former Spirit Gas Station)
Toppenish, WA

Well Number	Date Sampled	Gasoline TPH (ug/L)	Volatile Organic Compounds (µg/l)								Total Lead (ug/L)	Dissolved Lead (µL)	Diesel TPH Extended (ug/L)			Metals (mg/L)					
			Benzene	Toluene	Ethylbenzene	Total Xylenes	EDC	EDB	Total Naphthalenes	MTBE			Diesel	Heavy Oil	Mineral Oil	Dissolved Iron	Disolved Manganese	Iron	Manganese	Nitrate	Sulfate
MW-10	2/1/2011	<100	<1.0	<1.0	<1.0	<1.0	<1.0	<0.01	<5.0	<5.0	<5.0	--	--	--	--	--	--	--	--	--	--
	5/18/2011	<100	<1.0	<1.0	<1.0	<1.0	<1.0	<0.01	<5.0	<5.0	<5.0	--	--	--	--	--	--	--	--	--	--
	2/18/2012	<100	<1.0	<1.0	<1.0	<1.0	<1.0	<0.01	<5.0	<5.0	<5.0	--	--	--	--	--	--	--	--	--	--
	7/18/2012	<100	<1.0	<1.0	<1.0	<1.0	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	10/23/2012	<100	<1.0	<2.0	<1.0	<3.0	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	1/29/2013	<100	<1.0	<2.0	<1.0	<3.0	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	5/1/2013	<100	<1.0	<2.0	<1.0	<2.0	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	7/30/2013	<100	<1.0	<2.0	<1.0	<2.0	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	10/29/2013	<100	<1.0	<2.0	<1.0	<2.0	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	2/13/2014	<100	<1.0	<2.0	<1.0	<3.0	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	4/24/2014	<100	<1.0	<2.0	<1.0	<2.0	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	7/23/2014	<100	<1.0	<2.0	<1.0	<2.0	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	10/22/2014	Did not sample										--	--	--	--	--	--	--	--	--	--
	3/4/2015	<100	<1.0	<2.0	<1.0	<2.0	--	--	--	--	--	--	--	--	--	--	--	--	--	1.4	--
5/21/2015	<100	<1.0	<2.0	<1.0	<2.0	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
MW-11	3/4/2015	<100	<1.0	<2.0	<1.0	<2.0	--	--	--	--	<5.0	<5.0	<200	--	--	<0.015	<0.002	<0.015	<0.002	3.2	12
	5/21/2015	<100	<1.0	<2.0	<1.0	<2.0	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MW-12	3/4/2015	<100	<1.0	<2.0	<1.0	<2.0	--	--	--	--	<5.0	<5.0	<200	--	--	<0.015	<0.002	<0.015	0.003	3.4	11
	5/21/2015	<100	<1.0	<2.0	<1.0	<2.0	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MW-13	3/4/2015	<100	<1.0	<2.0	<1.0	<2.0	--	--	--	--	<5.0	<5.0	<200	--	--	<0.015	<0.002	0.065	0.014	3.9	13
	5/21/2015	<100	<1.0	<2.0	<1.0	<2.0	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MW-14	3/4/2015	<100	<1.0	<2.0	<1.0	<2.0	--	--	--	--	<5.0	<5.0	<200	--	--	<0.015	<0.002	<0.015	<0.015	3.2	11
	5/21/2015	707	<1.0	<2.0	<1.0	4.2	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MW-15	3/4/2015	<100	<1.0	<2.0	<1.0	<2.0	--	--	--	--	<5.0	<5.0	<200	--	--	<0.015	0.184	<0.015	0.198	2	14
	5/21/2015	147	<1.0	<2.0	<1.0	<2.0	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

Table 2 - Summary of Groundwater Analytical Results
Former Smitty Conoco #140 (Former Spirit Gas Station)
Toppenish, WA

Well Number	Date Sampled	Gasoline TPH (ug/L)	Volatile Organic Compounds (µg/l)								Total Lead (ug/L)	Dissolved Lead (µ/L)	Diesel TPH Extended (ug/L)			Metals (mg/L)					
			Benzene	Toluene	Ethylbenzene	Total Xylenes	EDC	EDB	Total Naphthalenes	MTBE			Diesel	Heavy Oil	Mineral Oil	Dissolved Iron	Disolved Manganese	Iron	Manganese	Nitrate	Sulfate
MW-16	3/4/2015	627	3.8	<2.0	1.9	2.4	--	--	--	--	<5.0	<5.0	<200	--	--	1.89	1.04	3.14	1.08	1.7	19
	5/21/2015	566	<1.0	<2.0	<1.0	<2.0	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MW-17	3/4/2015	<100	<1.0	<2.0	<1.0	<2.0	--	--	--	--	<5.0	<5.0	<200	--	--	<0.015	<0.002	<0.015	<0.002	3.9	12
	5/21/2015	<100	<1.0	<2.0	<1.0	<2.0	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
PQL		100	1.0	1.0 or 2.0	1.0	1.0 or 2.0 or 3.0	1.0	0.01	5.0	5.0	5.0	5.0	200	400	400	<0.015	<0.002	<0.015	<0.002	--	<2.0
Ecology MTCA Method A Clean Up Levels		800 **	5	1,000	700	1,000	5	0.010	160	20	15	--	500	500	500	--	--	--	--	--	--

Notes:

EDC = 1,2-Dichloroethane

EDB = 1,2-Dibromoethane

MTBE = methyl tertiary-butyl ether

MTCA = Model Toxics Control Act

ug/L= micrograms per liter

-- Not analyzed for constituent

< Not detected at the listed laboratory detection limits

PQL = Practical Quantification Limit (laboratory detection limit)

* Monitoring wells decommissioned in 2009 due to UST removal/soil excavation activities.

** Groundwater results from White Shield, Inc.'s and US EPA's sampling activities.

Red Bold indicates the detected concentration exceeds Ecology MTCA Method A cleanup level

Bold indicates the detected concentration is below Ecology MTCA Method A cleanup levels

Table 3 - Summary of Soil Analytical Results Off Property Borings

Former Smitty Conoco #140
Toppenish, WA

Sample Number ¹	Date Sampled	Depth Sampled (feet)	Gasoline TPH ² (mg/Kg)	Select Volatile Organic Compounds ³ (mg/Kg)				Diesel Extended TPH ⁴ (mg/Kg)			HCID ⁵ (mg/Kg)			
				Benzene	Toluene	Ethyl-benzene	Total Xylenes	Diesel	Heavy Oil	Mineral Oil	Gasoline	Diesel	Heavy Oil	Mineral Oil
B1-S3-12.0	7/13/2010	12.0	108	0.15	0.15	0.71	0.23	<25	<40	<40	--	--	--	--
B2-S3-11.5	7/13/2010	11.5	<10	<0.02	<0.10	<0.05	<0.15	<25	<40	<40	--	--	--	--
B3-S3-11.5	7/13/2010	11.5	<10	<0.02	<0.10	<0.05	<0.15	<25	<40	<40	--	--	--	--
B4-S2-7.0	7/13/2010	7.0	--	<0.02	<0.10	<0.05	<0.15	--	--	--	<20	<50	<100	<100
B5-S4-15.0	7/13/2010	15.0	<10	<0.02	<0.10	<0.05	<0.15	<25	<40	<40	--	--	--	--
B6-S3-12.0	7/13/2010	12.0	<10	<0.02	<0.10	<0.05	<0.15	<25	<40	<40	--	--	--	--
B7-S4-15.0	7/13/2010	15.0	--	<0.02	<0.10	<0.05	<0.15	--	--	--	<20	<50	<100	<100
B8-S4-15.0	7/13/2010	15.0	14	0.025	<0.10	0.08	0.2	<25	<40	<40	--	--	--	--
B9-S3-12.0	7/13/2010	12.0	2,340	0.24	0.71	13.3	82.9	<25	<40	<40	--	--	--	--
B10-S4-13.0	7/13/2010	13.0	821	0.031	0.16	0.97	1.75	--	--	--	--	--	--	--
B11-S4-15.0	7/13/2010	15.0	<10	<0.02	<0.10	<0.05	<0.15	--	--	--	--	--	--	--
B12-S4-13.0	7/13/2010	13.0	<10	<0.02	<0.10	<0.05	<0.15	--	--	--	--	--	--	--
PQL			10	0.02	0.10	0.05	0.15	25	40	40	20	50	100	100
Ecology MTCA Method A Clean Up Levels			30 ⁶	0.03	7	6	9	2,000	2,000	4,000	100	2,000	2,000	4,000

Notes:

¹ Approximate sample locations are shown in figure 2

² Gasoline range total petroleum hydrocarbons (TPH). Analyzed by NWTPH-Gx

³ Select Volatile Organic Compounds. Analyzed by EPA Method 8021B

⁴ Diesel extended range TPH. Analyzed by Northwest Method NWTPH-D/Dx

⁵ Hydrocarbon Identification (HCID). Analyzed by Northwest Method NWTPH-HCID

⁶ Cleanup level with presence of benzene

mg/Kg = milligrams per kilograms

PQL= practical quantitation l

-- = not analyzed for this constituent

< = not detected above laboratory limits

* Ecology has not designated a cleanup level for this constituent

Bold red indicates the detected concentration exceeds Ecology MTCA Method A cleanup level

Table 4 - Summary of Off Property Boring Groundwater Analytical Data

Former Smitty Conoco #140
Toppenish, WA

Sample Number	Date Sampled	Gasoline TPH ² (µg/L)	Select Volatile Organic Compounds ³ (µg/L)				Diesel Extended TPH ⁴ (µg/L)			HCID ⁵ (µg/L)			
			Benzene	Toluene	Ethyl-benzene	Total Xylenes	Diesel	Heavy Oil	Mineral Oil	Gasoline	Diesel	Heavy Oil	Mineral Oil
B1-W	7/14/2010	31,600	49	66.5	560	397	<200	<400	<400	--	--	--	--
B2-W	7/14/2010	<100	<1	<2	<1	<3	<200	<400	<400	--	--	--	--
B3-W	7/14/2010	<100	<1	<2	<1	<3	<200	<400	<400	--	--	--	--
B4-W	7/14/2010	--	--	--	--	--	--	--	--	<200	<500	<500	<500
B5-W	7/14/2010	<100	<1	<2	<1	<3	<200	<400	<400	--	--	--	--
B6-W	7/14/2010	<100	<1	<2	<1	<3	<200	<400	<400	--	--	--	--
B7-W	7/14/2010	--	--	--	--	--	--	--	--	<200	<500	<500	<500
B8-W	7/14/2010	21,400	155	75	205	458	<200	<400	<400	--	--	--	--
B9-W	7/14/2010	148,000	322	442	1,390	11,300	<200	<400	<400	--	--	--	--
B10-W	7/14/2010	821	<1	<2	2.9	4.7	<200	<400	<400	--	--	--	--
B11-W	7/14/2010	<100	<1	<2	<1	<3	<200	<400	<400	--	--	--	--
B12-W	7/14/2010	287	<1	<2	<1	4.7	<200	<400	<400	--	--	--	--
PQL		100	1	2	1	3	200	400	400	200	500	500	500
MTCA Method A Clean Up Levels		800 ⁶	5	1,000	700	1,000	500	500	500	1,000	500	500	500

Notes:

²Gasoline range total petroleum hydrocarbons (TPH). Analyzed by Northwest Method NWTPH-Gx

³Select Volatile Organic Compounds. Analyzed by EPA Method 8021B

⁴Diesel extended range TPH. Analyzed by Northwest Method NWTPH-D/Dx

⁵Hydrocarbon Identification (HCID). Analyzed by Northwest Method NWTPH-HCID

⁶Cleanup level with presence of benzene

Bold red indicates the detected concentration exceeds Ecology MTCA Method A cleanup level

Bold font indicates the concentration is below MTCA Method A cleanup levels

PQL= practical quantitation limit

< = not detected above laboratory limits

-- = Not analyzed for this constituent

(µg/l) = micrograms per liter

Table 5 - Summary of Soil Analytical Results SSC February 2015

Smitty's Toppenish
Toppenish, Washington

Sample Number	Depth Collected (feet)	Date Collected	BTEX (mg/kg)				Total Petroleum Hydrocarbons (TPH) (mg/kg)		Metals (mg/Kg)		
			Benzene	Toluene	Ethylbenzene	Xylenes	Gasoline	Diesel	Sulfate	Total Iron	Total Manganese
Soil Borings											
B13-S1-10	10.0	2/10/2014	<0.02	<0.10	<0.05	0.25	10	<50	<200*	22,000	306
B13-S2-16.5	16.5	2/10/2014	<0.02	<0.10	<0.05	<0.15	19	<50	<200*	22,200	338
B13-S3-20	20.0	2/10/2014	<0.02	<0.10	<0.05	<0.15	<10	<50	<200*	26,100	283
B13-S4-25	25.0	2/10/2014	<0.02	0.15	0.25	0.15	66	<50	<200*	17,000	204
B13-S5-30	30.0	2/10/2014	<0.02	<0.10	<0.05	<0.15	<10	<50	<200*	26,600	434
B14-S1-13(15)	10*	2/10/2014	<0.02	<0.10	<0.05	<0.15	<10	<50	<200*	29,400	417
B14-S2-18(20)	14*	2/10/2014	<0.02	<0.10	<0.05	<0.15	<10	<50	<200*	23,500	467
B14-S3-22	15*	2/10/2014	<0.02	<0.10	<0.05	<0.15	<10	<50	<200*	28,200	442
B14-S4-25	17*	2/10/2014	<0.02	<0.10	<0.05	<0.15	106	<50	<200*	24,000	413
B15-S1-16.0	11*	2/11/2015	<0.02	<0.10	0.12	0.58	12	<50	<200*	22,200	254
B15-S2-18	13*	2/11/2015	<0.08	<0.40	3.92	30.1	1,810 E	115	<200*	20,200	276
B15-S3-21	14*	2/11/2015	<0.50	<2.5	48	296	9,670 E	610	<200*	20,700	222
B16-S1-18	13*	2/11/2015	<0.02	<0.10	0.14	0.59	<10	<50	<200*	20,200	236
B16-S2-19	13*	2/11/2015	<0.50	<2.5	76.7	401	7,150	2,340	<200*	18,400	178
B16-S3-25	17*	2/11/2015	<0.02	<0.10	0.13	0.66	80	96	<200*	22,300	363
B17-S1-22	15*	2/11/2015	<0.02	<0.10	<0.05	<0.15	<10	<50	<200*	20,300	178
B17-S2-14	10*	2/11/2015	<0.02	<0.10	<0.05	0.29	<10	<50	<200*	23,600	267
B17-S3-18	13*	2/11/2015	0.023	<0.10	0.17	0.45	45	<50	1350	18,400	265
B18-S1-18	13*	2/12/2015	<0.02	<0.10	<0.05	0.27	16	<50	<200*	23,900	361
B18-S3-20	14*	2/12/2015	<0.02	<0.10	0.36	2.19	152	<50	<200*	16,800	265
B18-S2-25	17*	2/12/2015	<0.02	<0.10	<0.05	<0.15	<10	<50	<200*	23,300	246
Monitoring Wells											
MW11-S2-7.0	12.0	2/9/2015	<0.02	<0.10	<0.05	<0.15	<10	<50	<200*	21,400	320
MW11-S3-12.0	12.0	2/9/2015	<0.02	<0.10	<0.05	<0.15	<10	<50	<200*	21,600	370
MW11-S4-19.0	19.0	2/9/2015	<0.02	<0.10	<0.05	<0.15	<10	<50	<200*	22,700	338
MW11-S5-22.0	22.0	2/9/2015	<0.02	<0.10	<0.05	<0.15	<10	<50	<200*	19,100	355
MW11-S6-25.0	25.0	2/9/2015	<0.02	<0.10	<0.05	<0.15	<10	<50	<200*	24,100	358
MW12-S3-12.0	12.0	2/9/2015	<0.02	<0.10	<0.05	<0.15	<10	<50	<200*	22,400	364
MW12-S4-18.0	18.0	2/9/2015	<0.02	<0.10	<0.05	<0.15	<10	<50	<200*	24,900	349
MW12-S5-20.0	20.0	2/9/2015	<0.02	<0.10	<0.05	<0.15	<10	<50	<200*	21,400	235
MW12-S6-25.0	25.0	2/9/2015	<0.02	<0.10	<0.05	<0.15	<10	<50	<200*	16,900	275
MW13-S1-10	10.0	2/9/2015	<0.02	<0.10	<0.05	<0.15	<10	<50	<200*	24,200	427
MW13-S2-20	20.0	2/9/2015	<0.02	<0.10	<0.05	<0.15	<10	<50	<200*	24,800	376
MW13-S3-25	25.0	2/9/2015	<0.02	<0.10	<0.05	<0.15	<10	<50	<200*	27,200	360
MW14-S1-10	10.0	2/10/2015	<0.02	<0.10	<0.05	<0.15	<10	<50	<200*	24,900	278
MW14-S2-16	16.0	2/10/2015	<0.02	<0.10	<0.05	0.24	11	<50	<200*	21,300	271
MW14-S3-18	18.0	2/10/2015	<0.02	<0.10	<0.05	<0.15	<10	<50	<200*	20,900	220
MW14-S4-22	22.0	2/10/2015	<0.02	<0.10	<0.05	0.15	11	<50	<200*	24,000	241
MW15-S1-10	10.0	2/10/2015	<0.02	<0.10	<0.05	<0.15	<10	<50	<200*	26,800	390
MW15-S2-18	18.0	2/10/2015	<0.02	<0.10	<0.05	<0.15	<10	<50	<200*	21,400	239
MW15-S4-21	21.0	2/10/2015	<0.02	<0.10	<0.05	<0.15	<10	<50	<200*	23,500	290
MW15-S5-25	25.0	2/10/2015	<0.02	<0.10	<0.05	<0.15	<10	<50	<200*	33,400	516
MW16-S6-10	20.0	2/11/2015	<0.02	<0.10	<0.05	<0.15	<10	<50	280	24,300	234
MW16-S3-15	15.0	2/11/2015	<0.02	<0.10	<0.05	<0.15	<10	<50	<200*	30,100	307
MW16-S2-20	20.0	2/11/2015	<0.02	<0.10	<0.05	<0.15	<10	<50	<200*	27,000	268
MW16-S5-26	26.0	2/11/2015	<0.02	<0.10	<0.05	<0.15	<10	<50	<200*	27,700	409
MW17-S1-10	10.0	2/11/2015	<0.02	<0.10	<0.05	0.17	62	<50	<200*	25,500	347
MW17-S3-20	20.0	2/11/2015	<0.02	<0.10	<0.05	0.16	13	<50	<200*	23,000	324
MW17-S4-25	25.0	2/11/2015	<0.02	<0.10	<0.05	<0.15	<10	<50	<200*	22,200	449
PQL (mg/kg)			0.02	0.10	0.05	0.15	10	50			
MTCA Method A Cleanup Levels (mg/kg)			0.03	7	6	9	30/100**	2,000			

Notes:

* wells drilled at a 45 degree angle depths are true vertical depth as adjusted.

mg/kg = milligrams per kilogram

< Not detected at the listed laboratory detection limits

PQL = Practical Quantification Limit (laboratory detection limit)

Red Bold indicates the detected concentration exceeds Ecology MTCA Method A cleanup level

Bold indicates the detected concentration is below Ecology MTCA Method A cleanup levels

"E" Reported result is an estimate because it exceeds the calibration range

**Elevated detection limit due to sample matrix interferences.

APPENDIX A

Legal Description and Previous Owners

Deed and Sales History from Yakima County Assessor's Office

Deed Date	Type	Description	Grantor	Grantee	Sale Price	Excise Number	Deed Number
09/25/2001	Quit Claim	Quit Claim Deed	Smith		\$0.00	339217	2120402325

Abbreviated Legal Description from Yakima County Assessor's Office

Property ID	Owner	Location Address	Abbreviated Legal Description
201003-34510	R h Smith Distributing Company Inc	102 E Toppenish Ave	TOPPENSIH LAND CO'S 1 ST ADD. TOPPENISH: FR. LOTS 7,8, & 9 BLK 7 EXS 36.76 FT MEAS N OF SE COR OF LOT 10

APPENDIX B

Supporting Documents

Boring Logs 2010 – 2011; Boring Logs 2015



PROJECT: Smitty's Toppenish - Preliminary Offsite Investigation	JOB # 09-171	BORING # B-1	PAGE 1 OF 1
Location: On Asotin Avenue, Toppenish, WA	Approximate Elevation:		
Subcontractor/Equipment: Pacific NW Probe - Carlos Trujillo	Drilling Method: Direct Push Probe		
Date: 7/13/2010	Logged By: Y. Van		

Depth (ft)	Soil Description	Unified Soil Symbol	Sample Type	Sample Recovery	Sample Number	Time	Blows/Foot	PID Reading	Sheen	Monitoring Well
	Asphalt, 2 inch, underlain by Pea gravel and silty SAND with gravel to approximately 2 feet. (FILL)	SM				0925	N/A			N/A
	Gray-brown-black, dry, soft to medium stiff, silty CLAY; Asphalt odor.	CL								
5	Gray-brown, dry, medium dense, silty, gravelly SAND to silty, sandy GRAVEL, fine to coarse grained sand, medium to large size gravel, angular to subangular.	SM/GW			B1-S1-4.0	0935		0		
					B1-S2-8.0	0942		0	Not Observed	
10										
	At 12 feet: becomes moist to wet. Medium petroleum fuel odor.				B1-S3-12.0	0950			Sheen	
	At 13 feet: becomes saturated. Strong petroleum fuel odor at 13 feet to 15 feet.									
15	At 15 feet: tough drilling. Refusal.									
	TD at 15 feet bgs. Refusal drilling. Groundwater encountered at ~12 feet bgs ATD. Installed temporary screen at 10 feet to 14 feet to collect groundwater. Boring backfilled with bentonite chips.									
20										
25										

Explanation



2-inch O.D. split spoon sample



No Recovery



Contact located approximately



ATD

Groundwater level at time of drilling or date of measurement

Monitoring Well

Clean Sand

Bentonite

Grout/Concrete

Screened Casing

Blank Casing



PROJECT: Smitty's Toppenish - Preliminary Offsite Investigation	JOB # 09-171	BORING # B-2	PAGE 1 OF 1
Location: On Asotin Avenue, Toppenish, WA	Approximate Elevation:		
Subcontractor/Equipment: Pacific NW Probe - Carlos Trujillo	Drilling Method: Direct Push Probe		
Date: 7/13/2010	Logged By: Y. Van		

Depth (ft)	Soil Description	Unified Soil Symbol	Sample Type	Sample Recovery	Sample Number	Time	Blows/Foot	PID Reading	Sheen	Monitoring Well
	Dark brown - black/brown, dry, medium dense, silty SAND with gravel. (FILL)	SM			B2-S1-2.0	1110	N/A			N/A
	Medium brown, moist, medium stiff, silty CLAY, medium plasticity. No petroleum fuel odor.	CL				1115		0		
5										
	Gray-brown, dry, medium dense to dense, silty, sandy GRAVEL, fine to coarse grained sand, fine to coarse size gravel, subangular to angular. No petroleum fuel odor.	GW			B2-S2-7.0	1121		0		
10										
	At 11-1/2 feet: becomes moist to wet. At 12 feet: becomes saturated.	▼			B2-S3-11.5	1128		0	Not Observed	
	At 13 feet: 2 inch lense of well sorted sand, coarse gravel.									
15	At 15 feet: tough drilling. Refusal.				B2-S4-15.0	1133		0	Not Observed	
	TD at 15 feet bgs. Groundwater encountered at ~11-1/2 feet bgs ATD. Installed temporary PVC screen at 10 feet to 15 feet to collect groundwater. Boring backfilled with bentonite chips.									
20										
25										

Explanation

	2-inch O.D. split spoon sample		Monitoring Well
	No Recovery		Clean Sand
	Contact located approximately		Bentonite
	Groundwater level at time of drilling or date of measurement		Grout/Concrete
			Screened Casing
			Blank Casing



PROJECT: Smitty's Toppenish - Preliminary Offsite Investigation	JOB # 09-171	BORING # B-3	PAGE 1 OF 1
Location: On Asotin Avenue, Toppenish, WA	Approximate Elevation:		
Subcontractor/Equipment: Pacific NW Probe - Carlos Trujillo	Drilling Method: Direct Push Probe		
Date: 7/13/2010	Logged By: Y. Van		

Depth (ft)	Soil Description	Unified Soil Symbol	Sample Type	Sample Recovery	Sample Number	Time	Blows/Foot	PID Reading	Sheen	Monitoring Well
	Asphalt, 2 inch, underlain by Gray-black to black-brown, dry, loose to medium dense, silty SAND with gravel. (FILL)	SM			B3-S1-2.0	1150	N/A			N/A
	Dark brown, dry, medium stiff, silty CLAY, low plasticity.	CL				1158		0		
5	At 4 feet: grades to medium brown, medium plasticity.									
	Gray-brown, dry, medium dense to dense, silty, sandy GRAVEL, fine to coarse grained sand, fine to coarse size gravel, subangular to	GW			B3-S2-6.5	1206		0		
10	At 11-1/2 feet: becomes moist to wet. No petroleum fuel odor.	▼			B3-S3-11.5	1213		0	Not Observed	
	At 13 feet: becomes saturated									
15	At 15 feet: tough drilling. Refusal.				B3-S4-15.0			0	Not Observed	
	TD at 15 feet bgs. Groundwater encountered at ~11-1/2 feet bgs ATD. Installed temporary PVC screen at 10 feet to 15 feet to collect groundwater. Boring backfilled with bentonite chips.									
20										
25										

Explanation

	2-inch O.D. split spoon sample		Monitoring Well
	No Recovery		Clean Sand
	Contact located approximately		Bentonite
	Groundwater level at time of drilling or date of measurement		Grout/Concrete
			Screened Casing
			Blank Casing



PROJECT: Smitty's Toppenish - Preliminary Offsite Investigation	JOB # 09-171	BORING # B-4	PAGE 1 OF 1
Location: On Asotin Avenue, Toppenish, WA	Approximate Elevation:		
Subcontractor/Equipment: Pacific NW Probe - Carlos Trujillo	Drilling Method: Direct Push Probe		
Date: 7/13/2010	Logged By: Y. Van		

Depth (ft)	Soil Description	Unified Soil Symbol	Sample Type	Sample Recovery	Sample Number	Time	Blows/Foot	PID Reading	Sheen	Monitoring Well
	Asphalt, 2 inch, underlain by Gray-black to black-brown, dry, loose to medium dense, silty SAND with gravel. (FILL)	SM				1250	N/A			N/A
	Black-brown, dry, soft to medium stiff, silty CLAY, low plasticity.	CL								
5	At 4 feet: becomes medium brown, moderate plasticity.				B1-S1-4.0	1257		0		
					B4-S2-7.0	1304		0		
	Gray-brown, dry, medium dense to dense, silty, sandy GRAVEL, fine to coarse grained sand, fine to coarse gravel, subangular to angular.	GW								
10	At 11-1/2 feet: becomes moist to wet. No petroleum fuel odor.				B4-S3-12.0	1312		0	Not Observed	
	At 13 feet: becomes saturated.									
15	At 15 feet: tough drilling. Refusal.				B4-S4-15.0	1321		0	Not Observed	
	TD at 15 feet bgs. Groundwater encountered at ~11-1/2 feet bgs ATD. Installed temporary PVC screen at 10 feet to 15 to collect groundwater. Boring backfilled with bentonite chips.									
20										
25										

Explanation

	2-inch O.D. split spoon sample		Monitoring Well
	No Recovery		Clean Sand
	Contact located approximately		Bentonite
	Groundwater level at time of drilling or date of measurement		Grout/Concrete
			Screened Casing
			Blank Casing



PROJECT: Smitty's Toppenish - Preliminary Offsite Investigation	JOB # 09-171	BORING # B-5	PAGE 1 OF 1
Location: On Asotin Avenue, Toppenish, WA	Approximate Elevation:		
Subcontractor/Equipment: Pacific NW Probe - Carlos Trujillo	Drilling Method: Direct Push Probe		
Date: 7/13/2010	Logged By: Y. Van		

Depth (ft)	Soil Description	Unified Soil Symbol	Sample Type	Sample Recovery	Sample Number	Time	Blows/Foot	PID Reading	Sheen	Monitoring Well
	Asphalt, 2 inch, underlain by Gray, dry, loose to medium dense, silty SAND with gravel. (FILL)	SM				1400	N/A			N/A
5	Medium to dark brown, dry, soft to medium stiff, silty CLAY. Low plasticity.	CL			B5-S1-4.0	1408		0		
					B5-S2-7.0	1413		0.2		
10	Gray-brown, dry, medium dense to dense, silty, sandy GRAVEL, fine to coarse grained sand, fine to coarse gravel subangular to angular.	GW								
	At 11-1/2 feet: becomes moist to wet. No petroleum fuel odor	▼			B5-S3-11.5	1421		0.3	Not Observed	
15	At 14 feet: becomes saturated. Slight petroleum fuel odor at 15 feet. Drilling refusal .				B5-S4-15.0	1425		0.6	Not Observed	
20	TD at 15 feet bgs. Groundwater encountered at ~11-1/2 feet bgs ATD. Installed temporary PVC screen at 10 feet to 15 feet to collect groundwater. Boring backfilled with bentonite chips.									
25										

Explanation

	2-inch O.D. split spoon sample		Monitoring Well
	No Recovery		Clean Sand
	Contact located approximately		Bentonite
	Groundwater level at time of drilling or date of measurement		Grout/Concrete
			Screened Casing
			Blank Casing



PROJECT: Smitty's Toppenish - Preliminary Offsite Investigation	JOB # 09-171	BORING # B-6	PAGE 1 OF 1
Location: On Asotin Avenue, Toppenish, WA	Approximate Elevation:		
Subcontractor/Equipment: Pacific NW Probe - Carlos Trujillo	Drilling Method: Direct Push Probe		
Date: 7/13/2010	Logged By: Y. Van		

Depth (ft)	Soil Description	Unified Soil Symbol	Sample Type	Sample Recovery	Sample Number	Time	Blows/Foot	PID Reading	Sheen	Monitoring Well
	Asphalt, 2 inch, underlain by Pea gravel and silty SAND with gravel. (FILL)	SM				1506	N/A			N/A
	Gray-black to dark brown, dry, soft to medium stiff, silty CLAY, low to medium plasticity.	CL			B6-S1-4.0	1511		0.2		
5	At 6-1/2 feet: 3 inch lense well sorted sand. Moist.				B6-S2-6.5	1518		0.3		
	Gray-brown, dry, medium dense to dense, silty, sandy GRAVEL, fine to coarse grained sand, fine to coarse size grave, subangular to angular.	GW								
10	At 11-1/2 feet: becomes moist to wet. No petroleum fuel odor	▼			B6-S3-12.0	1527		0.5	Not Observed	
	At 13 feet: 2 inch lense well sorted sand. Becomes									
15					B6-S4-15.0	1532			Not Observed	
	TD at 15 feet bgs. Groundwater encountered at ~11-1/2 feet bgs ATD. Installed temporary PVC screen at 10 feet to 15 feet to collect groundwater. Boring backfilled with bentonite chips									
20										
25										

Explanation



2-inch O.D. split spoon sample



No Recovery



Contact located approximately



ATD

Groundwater level at time of drilling or date of measurement

Monitoring Well

Clean Sand

Bentonite

Grout/Concrete

Screened Casing

Blank Casing



PROJECT: Smitty's Toppenish - Preliminary Offsite Investigation	JOB # 09-171	BORING # B-7	PAGE 1 OF 1
Location: On Asotin Avenue, Toppenish, WA	Approximate Elevation:		
Subcontractor/Equipment: Pacific NW Probe - Carlos Trujillo	Drilling Method: Direct Push Probe		
Date: 7/13/2010	Logged By: Y. Van		

Depth (ft)	Soil Description	Unified Soil Symbol	Sample Type	Sample Recovery	Sample Number	Time	Blows/Foot	PID Reading	Sheen	Monitoring Well
	Asphalt, 2 inch, underlain by Pea gravel and silty SAND with gravel. (FILL)	SM				1550	N/A			N/A
	Light brown, dry, soft, sandy SILT/SILT, fine grained sand.	ML			B7-S1-4.0	1558		0		
5										
	Gray-brown, dry, medium dense to dense, silty, sandy GRAVEL, fine to coarse grained sand, fine to coarse size gravel, subangular to	GW			B7-S2-6.5	1604		0		
10										
	At 11-1/2 feet: becomes moist to wet. No petroleum fuel odor.	▼			B7-S3-11.5	1613		0.2	Not Observed	
	At 13 feet: becomes saturated.									
15										
	At 14 to 15 feet: Petroleum fuel odor. Drilling refusal.				B7-S4-15.0	1620		0.3	Not Observed	
	TD at 15 feet bgs. Groundwater encountered at ~11-1/2 feet bgs ATD. Installed temporary PVC screen at 10 feet to 15 feet to collect groundwater. Boring backfilled with bentonite chips									
20										
25										

Explanation

	2-inch O.D. split spoon sample		Monitoring Well
	No Recovery		Clean Sand
	Contact located approximately		Bentonite
	Groundwater level at time of drilling or date of measurement		Grout/Concrete
			Screened Casing
			Blank Casing



PROJECT: Smitty's Toppenish - Preliminary Offsite Investigation	JOB # 09-171	BORING # B-8	PAGE 1 OF 1
Location: On Asotin Avenue, Toppenish, WA	Approximate Elevation:		
Subcontractor/Equipment: Pacific NW Probe - Carlos Trujillo	Drilling Method: Direct Push Probe		
Date: 7/13/2010	Logged By: Y. Van		

Depth (ft)	Soil Description	Unified Soil Symbol	Sample Type	Sample Recovery	Sample Number	Time	Blows/Foot	PID Reading	Sheen	Monitoring Well
	Dirt surface: Light brown, dry, medium dense, silty SAND with gravel.	SM				0840	N/A			N/A
5	Gray-brown, dry, medium dense to dense, silty, sandy GRAVEL, fine to coarse grained sand, fine to coarse size gravel, subangular to angular.	GW			B8-S1-4.0	0846		0		
10	Medium brown, moist, medium stiff, silty CLAY to CLAY, medium plasticity.	CL			B8-S2-6.5	0852		0		
15	Gray-brown, dry, medium dense to dense, silty, sandy GRAVEL, fine to coarse grained sand, fine to coarse size gravel, subangular to angular. At 12 feet: becomes moist to wet. Slight to medium petroleum fuel odor. At 15 feet: strong fuel odor. Becomes saturated. Drilling	GW			B8-S3-12.0	0905		0	Not Observed	
15					B8-S4-15.0	0950		Wet	Slight Sheen	
20	TD at 15 feet bgs. Groundwater encountered at ~12 feet bgs ATD. Installed temporary PVC screen at 10 feet to 15 feet to collect groundwater. Boring backfilled with bentonite chips.									
25										

Explanation



2-inch O.D. split spoon sample



No Recovery



Contact located approximately



ATD

Groundwater level at time of drilling or date of measurement

Monitoring Well

Clean Sand

Bentonite

Grout/Concrete

Screened Casing

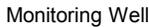
Blank Casing



PROJECT: Smitty's Toppenish - Preliminary Offsite Investigation	JOB # 09-171	BORING # B-9	PAGE 1 OF 1
Location: On Asotin Avenue, Toppenish, WA	Approximate Elevation:		
Subcontractor/Equipment: Pacific NW Probe - Carlos Trujillo	Drilling Method: Direct Push Probe		
Date: 7/13/2010	Logged By: Y. Van		

Depth (ft)	Soil Description	Unified Soil Symbol	Sample Type	Sample Recovery	Sample Number	Time	Blows/Foot	PID Reading	Sheen	Monitoring Well
	Asphalt, 2 inch, underlain by Black-brown, dry, loose, silty SAND, local gravel, minor clay, (FILL)	SM				1001	N/A			N/A
5	Dark brown-black, dry, soft to medium stiff, sandy CLAY, low to medium plasticity.	CL			B9-S1-4.0	1008		0		
10	Gray-brown, dry, medium dense to dense, silty, sandy GRAVEL, fine to coarse grained sand, fine to coarse size gravel, subangular to angular. At 10 feet: slight petroleum fuel odor	GW			B9-S2-7.5	1015		0		
15	At 12 feet: becomes moist to wet. Moderate petroleum fuel odor. At 14 feet: becomes saturated. Strong petroleum fuel odor. At 15 feet: drilling refusal.	▼			B9-S3-12.0	1021			Not Observed	
15					B9-S4-15.0	1030			Slight Sheen	
20	TD at 15 feet bgs. Groundwater encountered at ~12 feet bgs ATD. Installed temporary PVC screen at 10 feet to 15 feet to collect groundwater. Boring backfilled with bentonite chips.									
25										

Explanation

	2-inch O.D. split spoon sample		Monitoring Well
	No Recovery		Clean Sand
	Contact located approximately		Bentonite
	Groundwater level at time of drilling or date of measurement		Grout/Concrete
ATD			Screened Casing
			Blank Casing



PROJECT: Smitty's Toppenish - Preliminary Offsite Investigation	JOB # 09-171	BORING # B-10	PAGE 1 OF 1
Location: On Asotin Avenue, Toppenish, WA	Approximate Elevation:		
Subcontractor/Equipment: Pacific NW Probe - Carlos Trujillo	Drilling Method: Direct Push Probe		
Date: 7/13/2010	Logged By: Y. Van		

Depth (ft)	Soil Description	Unified Soil Symbol	Sample Type	Sample Recovery	Sample Number	Time	Blows/Foot	PID Reading	Sheen	Monitoring Well
	Asphalt, 2 inch, underlain by Pea gravel and silty SAND with gravel. (FILL)	SM			B10-S1-2.0	1115	N/A			N/A
	Dark brown-black, dry, soft to medium stiff, silty CLAY, low plasticity.	CL				1122		0		
5										
	Gray-brown, dry, medium dense to dense, silty, sandy GRAVEL, fine to coarse grained sand, fine to coarse size gravel, subangular to angular.	GW			B10-S2-7.0	1129		0		
10										
	At 13 feet: becomes moist to wet. Slight petroleum fuel odor .	▼			B10-S3-12.0	1137		0		
					B10-S4-13.0	1146			Not Observed	
15	At 15 feet: tough drilling. Refusal.									
	TD at 15 feet bgs. Groundwater encountered at ~13 feet bgs ATD. Installed temporary PVC screen at 10 feet to 15 feet to collect groundwater. Boring backfilled with bentonite chips.									
20										
25										

Explanation



2-inch O.D. split spoon sample



No Recovery



Contact located approximately



ATD

Groundwater level at time of drilling or date of measurement

Monitoring Well

Clean Sand

Bentonite

Grout/Concrete

Screened Casing

Blank Casing



PROJECT: Smitty's Toppenish - Preliminary Offsite Investigation	JOB # 09-171	BORING # B-11	PAGE 1 OF 1
Location: On Asotin Avenue, Toppenish, WA	Approximate Elevation:		
Subcontractor/Equipment: Pacific NW Probe - Carlos Trujillo	Drilling Method: Direct Push Probe		
Date: 7/13/2010	Logged By: Y. Van		

Depth (ft)	Soil Description	Unified Soil Symbol	Sample Type	Sample Recovery	Sample Number	Time	Blows/Foot	PID Reading	Sheen	Monitoring Well	
	Asphalt, 2 inch, underlain by Pea gravel and silty SAND with gravel.	SM				1235	N/A			N/A	
5	Gray-brown, dry, medium dense to dense, silty, sandy GRAVEL, fine to coarse grained sand, fine to coarse size gravel, subangular to angular. At 12 feet: becomes moist to wet. At 15 feet: tough drilling. Refusal.	GW			B11-S1-4.0	1242		0			
					B11-S2-8.0	1257		0			
10					B11-S3-12.0	1258		0	Not Observed		
					B11-S4-15.0	1306		0	Not Observed		
20	TD at 15 feet bgs. Groundwater encountered at ~12 feet bgs ATD. Installed temporary PVC screen at 10 feet to 15 feet to collect groundwater. Boring backfilled with bentonite chips.										
25											

Explanation



2-inch O.D. split spoon sample



No Recovery



Contact located approximately



Groundwater level at time of drilling or date of measurement

Monitoring Well

Clean Sand

Bentonite

Grout/Concrete

Screened Casing

Blank Casing



PROJECT: Smitty's Toppenish - Preliminary Offsite Investigation	JOB # 09-171	BORING # B-12	PAGE 1 OF 1
Location: On Asotin Avenue, Toppenish, WA	Approximate Elevation:		
Subcontractor/Equipment: Pacific NW Probe - Carlos Trujillo	Drilling Method: Direct Push Probe		
Date: 7/13/2010	Logged By: Y. Van		

Depth (ft)	Soil Description	Unified Soil Symbol	Sample Type	Sample Recovery	Sample Number	Time	Blows/Foot	PID Reading	Sheen	Monitoring Well
	Asphalt, 2 inch, underlain by Pea gravel and silty SAND with gravel. (FILL)	SM				1413	N/A			N/A
	Dark brown, dry, medium stiff, silty CLAY, low plasticity.	CL								
5	At 4 feet: grades to medium brown, medium plasticity.				B12-S1-4.0	1421		0		
10					B12-S2-8.0	1430		0		
	Gray-brown, dry, medium dense to dense, silty, sandy GRAVEL, fine to coarse grained sand, fine to coarse size gravel, subangular to	GW			B12-S3-10.5	1442		0		
	At 13 feet: becomes moist to wet. Medium petroleum fuel odor.	▼			B12-S4-13.0	1450			Not Observed	
15	At 15 feet: tough drilling. Refusal.									
	TD at 15 feet bgs. Groundwater encountered at ~13 feet bgs ATD. Installed temporary PVC screen at 10 feet to 15 feet to collect groundwater. Boring backfilled with bentonite chips.									
20										
25										

Explanation



2-inch O.D. split spoon sample



No Recovery



Contact located approximately



Groundwater level at time of drilling or date of measurement

Monitoring Well

Clean Sand

Bentonite

Grout/Concrete

Screened Casing

Blank Casing



PROJECT: Smitty's Toppenish Supplemental RI - 2nd Phase	JOB # 09-171	BORING # MW-4	PAGE 1 OF 1
Location: 102 East Toppenish Avenue, Toppenish, WA		Approximate Elevation:	
Subcontractor/Equipment: Western States Drilling - Richard Wiggins		Drilling Method: CME 75 Hollow Stem Auger	
Date: 1/24/2011		Logged By: D. Brentlinger	

Depth (ft)	Soil Description	Unified Soil Symbol	Sample Type	Sample Recovery	Sample Number	Time	Blows/Foot	PID Reading	Sheen	Monitoring Well
	Asphalt and roadway, 0 to 18 inches, underlain by Gray-brown, dry, silty CLAY.	CL				0925				
5	Gray-brown, moist, very dense, sandy GRAVEL, subrounded gravel	GW			MW4-S1-3.0-5.0	0945	14/23/28/29	0.9	Not Observed	
10	At 10 feet: grades to brown-black. Sheen observed on soil sample.				MW4-S2-8.0-10.0	1015	28/35/48/48	419	Sheen Observed	
	Strong petroleum odor in soil continued to ~ 12 feet bgs..				MW4-S3-10.0-12.0	1030	28/40/48/50		Sheen Observed	
15	At 14 feet: becomes moist to wet.									
20										
25	TD at 25 feet bgs. Groundwater encountered at approximately 14 feet bgs ATD. Boring completed as Monitoring Well MW-4. Well Schematics: Prepacked screen: 10 feet to 25 feet, 0.010-inch slot, 2 inches Sch 40 PVC. Colorado Silica Sand, 10 x 20: 8 feet to 25 feet. Bentonite chips: 2 feet to 8 feet. Cement grout: 0 feet to 2 feet. Ecology Well Tag No. APL-729					1120				

Explanation



2.5-inch O.D. split spoon sample



No Recovery



Contact located approximately



Groundwater level at time of drilling or date of measurement

Monitoring Well

Clean Sand

Bentonite

Grout/Concrete

Screened Casing

Blank Casing



PROJECT: Smitty's Toppenish Supplemental RI - 2nd Phase	JOB # 09-171	BORING # MW-5	PAGE 1 OF 1
Location: 102 East Toppenish Avenue, Toppenish, WA		Approximate Elevation:	
Subcontractor/Equipment: Western States Drilling - Richard Wiggins		Drilling Method: CME 75 Hollow Stem Auger	
Date: 1/27/2011		Logged By: D. Brentlinger	

Depth (ft)	Soil Description	Unified Soil Symbol	Sample Type	Sample Recovery	Sample Number	Time	Blows/Foot	PID Reading	Sheen	Monitoring Well
	Asphalt and roadway, 0 to 18 inches, underlain by Dark brown to black, moist, silty CLAY, slight plasticity.	CL				1300				
5	Gray-brown, dry, medium dense to dense, silty, sandy GRAVEL, fine to coarse grained sand, fine to coarse size gravel, subangular to angular.	GW								
10										
	Brown, moist, very dense, sandy GRAVEL with cobbles. Strong petroleum fuel odor.	GW		H	MW5-S1-10.0-12.0	1400	23/23/23/23		Sheen Observed	
15	At 14 feet: becomes moist to wet.			H	MW5-S2-12.0-14.0	1430	23/33/38/45		Sheen Observed	
20										
25	TD at 25 feet bgs. Groundwater encountered at approximately 14 feet bgs ATD. Boring completed as Monitoring Well MW-5. Well Schematics: Prepacked screen: 10 feet to 25 feet, 0.010-inch slot, 2 inches Sch 40 PVC. Colorado Silica Sand, 10 x 20: 8 feet to 25 feet. Bentonite chips: 2 feet to 8 feet. Cement grout: 0 feet to 2 feet. Ecology Well Tag No. APL-774					1530				

Explanation



2.5-inch O.D. split spoon sample



No Recovery



Contact located approximately



Groundwater level at time of drilling or date of measurement

Monitoring Well

Clean Sand

Bentonite

Grout/Concrete

Screened Casing

Blank Casing



PROJECT: Smitty's Toppenish Supplemental RI - 2nd Phase	JOB # 09-171	BORING # MW-6	PAGE 1 OF 1
Location: 102 East Toppenish Avenue, Toppenish, WA		Approximate Elevation:	
Subcontractor/Equipment: Western States Drilling - Richard Wiggins		Drilling Method: CME 75 Hollow Stem Auger	
Date: 1/24/2011		Logged By: D. Brentlinger	

Depth (ft)	Soil Description	Unified Soil Symbol	Sample Type	Sample Recovery	Sample Number	Time	Blows/Foot	PID Reading	Sheen	Monitoring Well
	Asphalt and roadway, 0 to 18 inches, underlain by Brown, moist, silty SAND with coarse, well sorted angular gravel.	SM				1330				
5	Yellow-brown, moist, soft, silty CLAY. Slight plasticity.	CL			MW6-S1-5.0-7.0	1345	1/2/2/2		Not Observed	
10	Yellow to gray-brown, moist, very dense, sandy GRAVEL with cobbles, well sorted gravel, subrounded.	GW			MW6-S2-10.0-12.0	1400	22/3233/35		Not Observed	
15	At 14 feet: becomes moist to wet.				MW6-S3-12.0-14.0	1415	29/30/4026		Not Observed	
20										
25	TD at 25 feet bgs. Groundwater encountered at approximately 14 feet bgs ATD. Boring completed as Monitoring Well MW-6. Well Schematics: Prepacked screen: 10 feet to 25 feet, 0.010-inch slot, 2 inches Sch 40 PVC. Colorado Silica Sand, 10 x 20: 8 feet to 25 feet. Bentonite chips: 2 feet to 8 feet. Cement grout: 0 feet to 2 feet. Ecology Well Tag No. APL-770					1530				

Explanation



2.5-inch O.D. split spoon sample



No Recovery



Contact located approximately



Groundwater level at time of drilling or date of measurement

Monitoring Well

Clean Sand

Bentonite

Grout/Concrete

Screened Casing

Blank Casing



PROJECT: Smitty's Toppenish Supplemental RI - 2nd Phase	JOB # 09-171	BORING # MW-7	PAGE 1 OF 1
Location: 102 East Toppenish Avenue, Toppenish, WA		Approximate Elevation:	
Subcontractor/Equipment: Western States Drilling - Richard Wiggins		Drilling Method: CME 75 Hollow Stem Auger	
Date: 1/27/2011		Logged By: D. Brentlinger	

Depth (ft)	Soil Description	Unified Soil Symbol	Sample Type	Sample Recovery	Sample Number	Time	Blows/Foot	PID Reading	Sheen	Monitoring Well
0	Asphalt and roadway, 0 to 18 inches, underlain by Yellow-brown, moist, silty CLAY, slight plasticity.	CL				0745				
5										
10	Gray-brown, dry, medium dense to dense, silty, sandy GRAVEL, fine to coarse grained sand, fine to coarse size gravel, subangular to angular.	GW								
12	At 12 feet: petroleum odor				MW7-S1-10.0-12.0	0900	46/50/48/60	298	Sheen Observed	
14	At 14 feet: becomes moist to wet. Sheen observed on soil sample				MW7-S2-10.0-14.0	0915	50/5		Sheen Observed	
15										
20										
25	TD at 25 feet bgs. Groundwater encountered at approximately 14 feet bgs ATD. Boring completed as Monitoring Well MW-7. Well Schematics: Prepacked screen: 10 feet to 25 feet, 0.010-inch slot, 2 inches Sch 40 PVC. Colorado Silica Sand, 10 x 20: 8 feet to 25 feet. Bentonite chips: 2 feet to 8 feet. Cement grout: 0 feet to 2 feet. Ecology Well Tag No. APL-790					1230				

Explanation



2.5-inch O.D. split spoon sample



No Recovery



Contact located approximately



Groundwater level at time of drilling or date of measurement

Monitoring Well

Clean Sand

Bentonite

Grout/Concrete

Screened Casing

Blank Casing



PROJECT: Smitty's Toppenish Supplemental RI - 2nd Phase	JOB # 09-171	BORING # MW-8	PAGE 1 OF 1
Location: 102 East Toppenish Avenue, Toppenish, WA		Approximate Elevation:	
Subcontractor/Equipment: Western States Drilling - Richard Wiggins		Drilling Method: CME 75 Hollow Stem Auger	
Date: 1/26/2011		Logged By: D. Brentlinger	

Depth (ft)	Soil Description	Unified Soil Symbol	Sample Type	Sample Recovery	Sample Number	Time	Blows/Foot	PID Reading	Sheen	Monitoring Well
0	Asphalt and roadway, 0 to 18 inches, underlain by Yellow-brown, moist, silty, sandy CLAY, slight plasticity.	CL				0845				
5										
10	Grey-black, moist, very dense, sandy GRAVEL with cobbles, subround gravel.	GW								
12					MW8-S1-10.0-12.0	0900	36/38/42/48		Not Observed	
14	At 14 feet: becomes moist to wet.									
15					MW8-S2-12.0-14.0	0930	48/60/102		Not Observed	
20										
25	TD at 25 feet bgs. Groundwater encountered at approximately 14 feet bgs ATD. Boring completed as Monitoring Well MW-8. Well Schematics: Prepacked screen: 10 feet to 25 feet, 0.010-inch slot, 2 inches Sch 40 PVC. Colorado Silica Sand, 10 x 20: 8 feet to 25 feet. Bentonite chips: 2 feet to 8 feet. Cement grout: 0 feet to 2 feet. Ecology Well Tag No. APL-778					1145				

Explanation



2.5-inch O.D. split spoon sample



No Recovery



Contact located approximately



Groundwater level at time of drilling or date of measurement

Monitoring Well

Clean Sand

Bentonite

Grout/Concrete

Screened Casing

Blank Casing



PROJECT: Smitty's Toppenish Supplemental RI - 2nd Phase	JOB # 09-171	BORING # MW-9	PAGE 1 OF 1
Location: 102 East Toppenish Avenue, Toppenish, WA		Approximate Elevation:	
Subcontractor/Equipment: Western States Drilling - Richard Wiggins		Drilling Method: CME 75 Hollow Stem Auger	
Date: 1/25/2011		Logged By: D. Brentlinger	

Depth (ft)	Soil Description	Unified Soil Symbol	Sample Type	Sample Recovery	Sample Number	Time	Blows/Foot	PID Reading	Sheen	Monitoring Well
0	Asphalt and roadway, 0 to 18 inches. Underlain dark brown, moist, silty, sandy CLAY	CL				1300				
5	Yellow-brown, moist, dense, silty CLAY with cobbles and gravel.	CL								
10	Grey-black, moist to wet, very dense, sandy GRAVEL with cobbles, subrounded gravel.	GW			MW9-S1-10.0-12.0	1330	13/14/22/27		Not Observed	
15	At 14 feet: becomes moist to wet.				MW9-S2-12.0-14.0	1345	43/48/60/52		Not Observed	
20										
25	TD at 25 feet bgs. Groundwater encountered at approximately 14 feet bgs ATD. Boring completed as Monitoring Well MW-9. Well Schematics: Prepacked screen: 10 feet to 25 feet, 0.010-inch slot, 2 inches Sch 40 PVC. Colorado Silica Sand, 10 x 20: 8 feet to 25 feet. Bentonite chips: 2 feet to 8 feet. Cement grout: 0 feet to 2 feet. Ecology Well Tag No. APL-772					1615				

Explanation



2.5-inch O.D. split spoon sample



No Recovery



Contact located approximately



Groundwater level at time of drilling or date of measurement

Monitoring Well

Clean Sand

Bentonite

Grout/Concrete

Screened Casing

Blank Casing



PROJECT: Smitty's Toppenish Supplemental RI - 2nd Phase	JOB # 09-171	BORING # MW-10	PAGE 1 OF 1
Location: 102 East Toppenish Avenue, Toppenish, WA		Approximate Elevation:	
Subcontractor/Equipment: Western States Drilling - Richard Wiggins		Drilling Method: CME 75 Hollow Stem Auger	
Date: 1/25/2011		Logged By: D. Brentlinger	

Depth (ft)	Soil Description	Unified Soil Symbol	Sample Type	Sample Recovery	Sample Number	Time	Blows/Foot	PID Reading	Sheen	Monitoring Well
0	Asphalt and roadway, 0 to 18 inches. (FILL) Underlain by dark brown, moist, medium stiff, silty, sandy CLAY	CL				0845				
5										
10	Yellow-brown, moist to very moist, medium stiff, silty, sandy CLAY. Slight plasticity.	CL		I	MW10-S1-8.0-10.0	0850	3/7/17/24			
13	At 13 feet: strong petroleum fuel odor									
15	Gray-black, wet, very dense, sandy GRAVEL with cobbles, subrounded gravels	GW		I	MW10-S2-12.0-14.0	0900	11/18/27/30			
20										
25	TD at 25 feet bgs. Groundwater encountered at approximately 14 feet bgs ATD. Boring completed as Monitoring Well MW-10. Well Schematics: Prepacked screen: 10 feet to 25 feet, 0.010-inch slot, 2 inches Sch. 40 PVC. Colorado Silica Sand, 10 x 20: 8 feet to 25 feet. Bentonite chips: 2 feet to 8 feet. Cement grout: 0 feet to 2 feet. Ecology Well Tag No. APL-771					1115				

Explanation



2.5-inch O.D. split spoon sample



No Recovery



Contact located approximately



Groundwater level at time of drilling or date of measurement

Monitoring Well

Clean Sand

Bentonite

Grout/Concrete

Screened Casing

Blank Casing

PROJECT: <i>Smitty's Toppenish</i>	JOB # 09-171	BORING # B-13	PAGE 1 OF 2
Location: 102 East Toppenish Ave, Toppenish, Washington		Approximate Elevation: 759 AML	
Subcontractor / Driller: Holt's Drilling/Brian		Equipment / Drilling Method: Sonic Rig	
Date: February 10, 2015		Logged By: B. Dilba	

Boring Depth (feet)	Soil Description	Unified Soil Symbol	Sample Depth	Sample Recovery	Sample Number	Time	Blows/Foot	PID Reading	Sheen	Observations
0	3" of asphalt underlain by;		1			8:27	N/A			
1			2							
2			3							
3	Brown, moist, medium stiff, <u>CLAYEY SILT</u>	ML	4					3.1		
4			5							
5			6					0.0		
6			7							
7			8							
8			9							
9	Light gray-brown, moist, dense, <u>SANDY GRAVEL</u> ; fine to coarse grain gravel, fine to coarse grain sand	GP	10		B13-S1-10	8:38		0.0		
10			11							
11			12							
12			13							
13			14							
14			15							
15		▼	16		B13-S2-16.5	8:50		8.4	No	
16	at 16.5 feet; wet		17							
17	at 17.0 feet; light gray (discolored)		18							
18			19							
19			20		B13-S3-20	8:50		3.4		
20			21							
21			22							
22			23							
23			24							
24			25		B13-S4-25	9:00		1.5		↓ Strong Odor
25										

Explanation


Sample Advance / Recovery



No Recovery



Contact located approximately



Groundwater level at time of drilling or date of measurement

ATD

PROJECT: <i>Smitty's Toppenish</i>	JOB # 09-171	BORING # B-13	PAGE 2 OF 2
Location: <i>102 East Toppenish Ave, Toppenish, Washington</i>	Approximate Elevation: 759 AML		
Subcontractor / Driller: Holt's Drilling/Brian		Equipment / Drilling Method: Sonic Rig	
Date: <i>February 10, 2015</i>	Logged By: <i>B. Dilba</i>		

Boring Depth (feet)	Soil Description	Unified Soil Symbol	Sample Depth	Sample Recovery	Sample Number	Time	Blows/Foot	PID Reading	Sheen	Observations
at 25.0 feet; brown			26							No odor
			27							↓
			28							
			29							
30			30		B13-S5-30	9:00		2.2		

Boring terminated at 30.0 feet; backfilled with bentonite and covered with an asphalt patch. Groundwater encountered at 16.5 feet

Explanation



Sample Advance / Recovery



No Recovery



Contact located approximately



ATD

Groundwater level at time of drilling or date of measurement

PROJECT: <i>Smitty's Toppenish</i>	JOB # 09-171	BORING # B-14	PAGE 1 OF 1
Location: 102 East Toppenish Ave, Toppenish, Washington	Approximate Elevation: 759 AML		
Subcontractor / Driller: Holt's Drilling/Brian	Equipment / Drilling Method: Sonic Rig		
Date: February 10, 2015	Logged By: B. Dilba		

Boring Depth (feet)	Soil Description	Unified Soil Symbol	Sample Depth	Sample Recovery	Sample Number	Time	Blows/Foot	PID Reading	Sheen	Observations
	3" of asphalt underlain by;									
	Brown, moist, stiff, <u>CLAYEY SILT</u> (TVD .707)	ML	1			17:10	N/A			
			2							
			3							
			4							
5	Brown, moist, medium dense, <u>SANDY GRAVEL</u> ; fine to coarse gravel, fine to coarse sand (TVD 2.82)	GP	5							
			6							
			7							
			8			17:18		0		
			9							
10			10							
			11							
			12							
			13							
			14							
15	TVD (10.605)		15		B14-S1-13(15)	17:18		0		
			16							
			17							
			18			17:18				
			19							
20	TVD (14.14)		20		B14-S2-18 (20)	17:42		0.3		
			21							
	TVD (15.55)		22		B14-S3-22	17:42		3.3		
			23						No	
	at 23.0 feet; wet, light gray (discolored) (TVD 16.26)	▼	24							
			25							
25	TVD (17.675)				B14-S4-25	17:42		26.6		Hydrocarbon Odor ↓

<p>Explanation</p> <p> Sample Advance / Recovery</p> <p> No Recovery</p> <p>----- Contact located approximately</p> <p> Groundwater level at time of drilling or date of measurement</p> <p>ATD</p>	<p>Boring terminated at 25.0 feet (TVD 17.675) at a 45° angle; backfilled with bentonite with an asphalt patch.</p> <p>Groundwater encountered at 16.26 feet TVD</p>
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PROJECT: <i>Smitty's Toppenish</i>	JOB # 09-171	BORING # B-15	PAGE 1 OF 1
Location: 102 East Toppenish Ave, Toppenish, Washington		Approximate Elevation: 759 AML	
Subcontractor / Driller: Holt's Drilling/Brian		Equipment / Drilling Method: Sonic Rig	
Date: February 11, 2015		Logged By: B. Dilba	

Boring Depth (feet)	Soil Description	Unified Soil Symbol	Sample Depth	Sample Recovery	Sample Number	Time	Blows/Foot	PID Reading	Sheen	Observations
3	3" of asphalt underlain by;		1			11:25	N/A			
5	Brown, moist, stiff, <u>SANDY SILT</u> ; fine grained sand (TVD 2.121)	ML	2							
10	Brown, moist, loose, <u>SANDY GRAVEL</u> ; fine to coarse grain gravel, fine to coarse grain sand (TVD 7.07)	GP	3							
15	(TVD 11.312)		4							
20	At 17.0 feet; light gray (discolored) (TVD 12.02) (TVD 12.726)		5		B15-S1-16	11:34				
25	at 20.0 feet; wet (TVD 14.14) (TVD 14.847)	▼	6							
	at 24.5 feet; medium dense; medium grain sand (TVD 17.32)		7		B15-S1-18	11:34		43.6		Strong hydrocarbon odor
			8						Yes	
			9		B15-S3-21	11:45		166		
			10							
			11							
			12							
			13							
			14							
			15							
			16							
			17							
			18							
			19							
			20							
			21							
			22							
			23							
			24							
			25			11:45		4.8		

Explanation


Sample Advance / Recovery



No Recovery



Contact located approximately



Groundwater level at time of drilling or date of measurement

ATD

Boring terminated at 25.0 feet (TVD 17.675 feet) at a 45° angle; backfilled with bentonite and covered with a concrete patch. Groundwater encountered at 14.14 feet TVD.

PROJECT: <i>Smitty's Toppenish</i>	JOB # 09-171	BORING # B-16	PAGE 1 OF 1
Location: 102 East Toppenish Ave, Toppenish, Washington		Approximate Elevation: 759 AML	
Subcontractor / Driller: Holt's Drilling/Brian		Equipment / Drilling Method: Sonic Rig	
Date: February 11, 2015		Logged By: B. Dilba	

Boring Depth (feet)	Soil Description	Unified Soil Symbol	Sample Depth	Sample Recovery	Sample Number	Time	Blows/Foot	PID Reading	Sheen	Observations
	3" of asphalt underlain by;		1			12:24	N/A			
			2							
			3							
			4							
5	Dark brown, moist, loose, <u>SANDY SILT</u> ; fine grain sand (TVD 3.535)	ML	5							
	At 6.0 feet; brown (TVD 4.242)		6							
			7			12:29		0.0		
			8							
			9							
10			10							
			11							
			12							
			13							
			14							
15	Brown, dry, loose, <u>SANDY GRAVEL</u> ; fine to coarse grain gravel, fine to coarse grain gravel (TVD 9.898)	GP	15							
			16							
			17							
			18		B16-S1-18	12:33		0.0		No odor
	(TVD 12.726)		19		B16-S2-19	12:39		1223	Yes	Hydrocarbon Odor
	at 19.0 feet; light gray (discolored), wet (TVD 13.433)		20							
			21							
			22							
			23							
			24							
25	at 24.0 feet; brown (TVD 16.968) (TVD 17.675)		25		B16-S3-25	12:39		6.9		

Explanation

Sample Advance / Recovery

No Recovery

----- Contact located approximately

Groundwater level at time of drilling or date of measurement

ATD

Boring terminated at 25.0 feet (TVD 17.675 feet) at a 45° angle; backfilled with bentonite and covered with a concrete patch. Groundwater encountered at 13.433 feet TVD.

PROJECT: <i>Smitty's Toppenish</i>	JOB # 09-171	BORING # B-17	PAGE 1 OF 1
Location: 102 East Toppenish Ave, Toppenish, Washington		Approximate Elevation: 759 AML	
Subcontractor / Driller: Holt's Drilling/Brian		Equipment / Drilling Method: Sonic Rig	
Date: February 11, 2015		Logged By: B. Dilba	

Boring Depth (feet)	Soil Description	Unified Soil Symbol	Sample Depth	Sample Recovery	Sample Number	Time	Blows/Foot	PID Reading	Sheen	Observations
5	Brown, moist, stiff, <u>SANDY SILT</u> ; fine grain sand (TVD 1.414)	ML	1			15:12	N/A			
			2							
			3							
			4							
			5							
	Dark brown, moist, loose, <u>SANDY GRAVEL</u> ; fine to coarse grain gravel, fine to coarse grain sand (TVD 4.595)	GP	6							
	at 6.5 feet; gray (TVD 4.595)		7							
			8			15:18		0.0		
			9							
			10							
	at 11.0 feet; brown (TVD 7.777)		11							
			12							
			13							
			14		B17-S2-14	15:25		0.0		
			15							
			16							
			17							
			18		B17-S3-18	15:25		0.0		
			19							
			20							
			21							
	Gray, wet, loose, <u>SAND</u> ; fine to medium grain sand (TVD 14.847)	SP	22		B17-S3-22	15:34		0.0	Yes	Odor
	(TVD 15.554)		23							
			24							
	Gray, wet, loose, <u>SANDY GRAVEL</u> ; fine to coarse grain gravel, fine to coarse grain sand (TVD 16.261)	GP	25			15:34		0.0		

Explanation

 Sample Advance / Recovery
 No Recovery
 - - - - - Contact located approximately
 Groundwater level at time of drilling or date of measurement
 ATD

Boring terminated at 25.0 feet (TVD 17.675 feet) at a 45° angle; backfilled with bentonite and covered with a concrete patch. Groundwater encountered at 14.847 feet TVD.

PROJECT: <i>Smitty's Toppenish</i>	JOB # 09-171	BORING # B-18	PAGE 1 OF 1
Location: 102 East Toppenish Ave, Toppenish, Washington		Approximate Elevation: 759 AML	
Subcontractor / Driller: Holt's Drilling/Brian		Equipment / Drilling Method: Sonic Rig	
Date: February 12, 2015		Logged By: B. Dilba	

Boring Depth (feet)	Soil Description	Unified Soil Symbol	Sample Depth	Sample Recovery	Sample Number	Time	Blows/Foot	PID Reading	Sheen	Observations
5	Dark brown, moist, loose, <u>SANDY GRAVEL</u> ; fine to coarse grain sand, fine to medium grain gravel (TVD 2.121)	GP	1			8:58	N/A			
			2							
			3							
			4							
			5							
			6							
			7							
	at 7.0 feet; fine to coarse grain gravel (TVD 5.4439)		8			9:05				
	Brown, moist, stiff, <u>SILT</u> (TVD 6.363)	ML	9							
			10							
			11							
			12							
			13							
			14							
15	Brown, moist, loose, <u>SANDY GRAVEL</u> ; fine to coarse grain gravel, fine to coarse grain, sand (TVD 9.898)	GP	15							
			16							
			17							
			18		B18-S1-18	9:11		2.4		Hydrocarbon Odor
	(TVD 12.726)		19							↓
20	at 20.0 feet; light gray (discolored), wet (TVD 14.14)	▼	20		B18-S2-20	9:22		80.3	Yes	
			21							
			22							
			23							
			24							
25	Gray, wet, loose, <u>GRAVELLY SAND</u> ; fine to coarse grain gravel, coarse grain sand (TVD 17.3215)	SP	25		B18-S2-25	9:22		0		

<p>Explanation</p> <p> Sample Advance / Recovery</p> <p> No Recovery</p> <p>----- Contact located approximately</p> <p> Groundwater level at time of drilling or date of measurement</p> <p>ATD</p>	<p>Boring terminated at 25.0 feet (TVD 17.675 feet) at a 45° angle; backfilled with bentonite and covered with a concrete patch. Groundwater encountered at 14.14 feet TVD.</p>
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LOG OF BOREHOLE

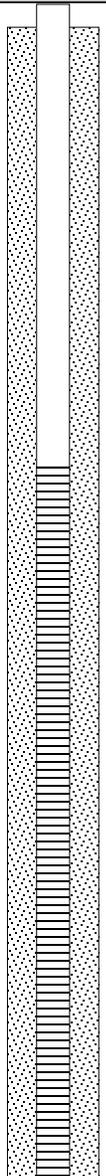
PROJECT: <i>Smitty's Toppenish</i>	JOB # 09-171	Monitoring Well # MW-11	PAGE 1 OF 1
Location: 102 East Toppenish Ave, Toppenish, WA	Approximate Elevation: 759 AMSL		
Subcontractor / Driller: Holt's Services/ Brian	Equipment / Drilling Method: Sonic Drill Rig		
Date: February 9, 2015	Logged By: B. Dilba		

Boring Depth (feet)	Soil Description	Unified Soil Symbol	Sample Depth	Sample Recovery	Sample Number	Time	Observations	PID Reading	Sheen	Monitoring Well Construction
	18" of concrete with rebar underlain by:					11:57				
	Dark brown, moist, stiff, <u>CLAYEY SILT</u>	ML	1-4					0.0		
5	Gray, dry, dense, <u>SANDY GRAVEL</u> ; fine to coarse sand, fine to coarse gravel	GP	5-6		MW11-S1-5	12:29		0.0		
			7-8		MW11-S2-7	12:29		3.7		
10			9-10							
	at 12.0 feet; wet	▼	12		MW11-S3-12	12:29		0.9	No	
15			15-16							
20			19-20		MW11-S4-19	12:35		43.1		
			21-22		MW11-S5-22	12:35		0.9		
25			25		MW11-S6-25	12:40		0.0		

Explanation	Monitoring Well Construction	Ecology Tag # BIK 245
Sample Advance / Recovery	Grout/Concrete	Boring terminated at 25.0 feet; converted to MW-11 with 15 feet of 0.01 PVC slotted screen set from 15.0 to 25.0 feet BGS, and 10 feet of blank PVC from 0.0 to 10.0
No Recovery	3/4-inch bentonite chips	
--- Contact located approximately	Silica sand	
Groundwater level at time of drilling or date of measurement	2-inch diameter blank PVC casing from	
	2-inch diameter PVC 0.01 slotted screen	

LOG OF BOREHOLE

PROJECT: <i>Smitty's Toppenish</i>	JOB # 09-171	Monitoring Well # MW-12	PAGE 1 OF 1
Location: 102 East Toppenish Ave, Toppenish, WA	Approximate Elevation: 759 AMSL		
Subcontractor / Driller: Holt's Services/ Brian	Equipment / Drilling Method: Sonic Drill Rig		
Date: February 9, 2015	Logged By: B. Dilba		

Boring Depth (feet)	Soil Description	Unified Soil Symbol	Sample Depth	Sample Recovery	Sample Number	Time	Observations	PID Reading	Sheen	Monitoring Well Construction
	18" of concrete and rebar underlain by;		1			14:15				
			2							
			3							
	Brown, moist, stiff, <u>CLAYEY SILT</u>	ML	4							
5			5							
			6		MW12-S1-6	14:23		0		
			7							
	Gray, dry, dense, <u>SANDY GRAVEL</u> ; fine to coarse sand, fine to coarse gravel	GP	8							
			9		MW12-S2-9	14:23		0		
10			10							
			11							
		▼	12		MW12-S3-12	14:23		2.9	No	
	at 12.0 feet; wet		13							
			14							
15			15							
			16							
			17							
			18		MW12-S4-18	14:36		13.6		
			19							
			20		MW12-S5-20	14:36		7.2		
20			21							
			22							
			23			14:36		0.3		
			24							
25			25		MW12-S6-25	14:50		0.6		

<p>Explanation</p> <p> Sample Advance / Recovery</p> <p> No Recovery</p> <p>----- Contact located approximately</p> <p> Groundwater level at time of drilling ATD or date of measurement</p>	<p>Monitoring Well Construction</p> <p> Grout/Concrete</p> <p> 3/4-inch bentonite chips</p> <p> Silica sand</p> <p> 2-inch diameter blank PVC casing from</p> <p> 2-inch diameter PVC 0.01 slotted screen</p>	<p>Ecology Tag # BIK 246</p> <p>Boring terminated at 25.0 feet; converted to MW-12 with 15 feet of 0.01 PVC slotted screen set from 15.0 to 25.0 feet BGS, and 10 feet of blank PVC from 0.0 to 10.0</p>
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LOG OF BOREHOLE

PROJECT: <i>Smitty's Toppenish</i>	JOB # 09-171	Monitoring Well # MW-13	PAGE 1 OF 1
Location: 102 East Toppenish Ave, Toppenish, WA	Approximate Elevation: 759 AMSL		
Subcontractor / Driller: Holt's Services/Brian	Equipment / Drilling Method: Sonic Drill Rig		
Date: February 9, 2015	Logged By: B. Dilba		

Boring Depth (feet)	Soil Description	Unified Soil Symbol	Sample Depth	Sample Recovery	Sample Number	Time	Observations	PID Reading	Sheen	Monitoring Well Construction
5	Brown, moist, medium dense, <u>SILTY SAND</u> ; fine to medium sand (Fill) Brown, moist, medium stiff, <u>CLAYEY SILT</u>	SM SP	1 2 3 4			16:20				
			5			16:25		0.0		
	Gray, dry, dense, <u>SANDY GRAVEL</u> ; fine to coarse grain sand, fine to coarse grain gravel	GP	6 7 8 9			16:25		0.0		
10			10		MW13-S1-10	16:25		0.0		
			11 12 13 14							
15			15							
			16							
			17 18 19							
20	at 20.0 feet; wet		20		MW13-S2-20	16:37		0.0		
			21 22 23 24							
25			25		MW13-S3-25	16:50		12.5		

<p>Explanation</p> <p> Sample Advance / Recovery</p> <p> No Recovery</p> <p>--- Contact located approximately</p> <p> Groundwater level at time of drilling or date of measurement</p>	<p>Monitoring Well Construction</p> <p> Grout/Concrete</p> <p> 3/4-inch bentonite chips</p> <p> Silica sand</p> <p> 2-inch diameter blank PVC casing from</p> <p> 2-inch diameter PVC 0.01 slotted screen</p>	<p>Ecology Tag # BIK 247</p> <p>Boring terminated at 25.0 feet; converted to MW-13 with 15 feet of 0.01 PVC slotted screen set from 15.0 to 25.0 feet BGS, and 10 feet of blank PVC from 0.0 to 10.0</p>
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LOG OF BOREHOLE

PROJECT: *Smitty's Toppenish* **JOB #** 09-171 **Monitoring Well #** MW-14 **PAGE 1 OF 1**

Location: 102 East Toppenish Ave, Toppenish, WA **Approximate Elevation:** 759 AMSL

Subcontractor / Driller: Holt's Services/Brian **Equipment / Drilling Method:** Sonic Drill Rig

Date: February 10, 2015 **Logged By:** B. Dilba

Boring Depth (feet)	Soil Description	Unified Soil Symbol	Sample Depth	Sample Recovery	Sample Number	Time	Observations	PID Reading	Sheen	Monitoring Well Construction
0	3" of asphalt underlain by;		1			1015				
	Brown, moist, medium stiff, <u>CLAYEY SILT</u>	ML	2							
			3							
5	Gray, dry, dense, <u>GRAVELLY SAND</u> ; fine to coarse grain sand, fine to coarse grain gravel	SP	4							
			5							
			6							
			7							
			8							
10	Gray, dry, medium dense, <u>SANDY GRAVEL</u> ; fine to coarse grain gravel, fine to coarse grain sand	GP	9		MW14-S1-10	1035		1.4		
			10							
			11							
			12							
			13							
15			14							
	at 17.0 feet; light gray (discolored)		15		MW14-S2-16	1055				
			16							
			17							
			18		MW14-S3-18	1055		169		
			19				Strong hydrocarbon odor		No	
20	Brown, wet, medium stiff, <u>SILTY GRAVEL</u> ; fine to coarse grain gravel	GM	20			1055				
	Brown, wet, medium dense, <u>SANDY GRAVEL</u> ; fine to coarse grain gravel, fine to coarse grain sand	GP	21							
			22		MW14-S4-22	1105	No hydrocarbon odor	3.2		
			23							
			24							
25			25			1105		25.7		

Explanation		Monitoring Well Construction		Ecology Tag # BIK 248
Sample Advance / Recovery	No Recovery	Grout/Concrete	3/4-inch bentonite chips	Boring terminated at 25.0 feet; converted to MW-14 with 15 feet of 0.01 PVC slotted screen set from 15.0 to 25.0 feet BGS, and 10 feet of blank PVC from 0.0 to 10.0
----- Contact located approximately	Groundwater level at time of drilling or date of measurement	Silica sand	2-inch diameter blank PVC casing from	
		2-inch diameter PVC 0.01 slotted screen		

LOG OF BOREHOLE

PROJECT: <i>Smitty's Toppenish</i>	JOB # 09-171	Monitoring Well # MW-15	PAGE 1 OF 1
Location: 102 East Toppenish Ave, Toppenish, WA	Approximate Elevation: 759 AMSL		
Subcontractor / Driller: Holt's Services/Brian	Equipment / Drilling Method: Sonic Drill Rig		
Date: February 10, 2015	Logged By: B. Dilba		

Boring Depth (feet)	Soil Description	Unified Soil Symbol	Sample Depth	Sample Recovery	Sample Number	Time	Observations	PID Reading	Sheen	Monitoring Well Construction
	3" asphalt underlain by;									
	Brown, dry, soft, <u>SILTY SAND</u> ; fine grain sand	SM	1			1453				
			2							
	Brown, dry, medium dense, <u>SILTY GRAVEL</u> ; fine to medium grain gravel	GM	3							
			4							
5	Light gray, dry, loose, <u>SANDY GRAVEL</u> ; fine to medium grain sand, fine to medium grain gravel	GP	5			1506		0.9		
	at 5.0 feet; brown		6							
	at 5.5 feet; light gray		7							
			8							
	at 7.0 feet; brown, fine to coarse grain sand, fine to coarse grain gravel		9							
			10		MW15-S1-10	1506		0		
10			11							
	at 11.0 feet; wet		12							
	at 12.0 feet; cobbles		13							
			14							
15			15				Slight hydrocarbon odor		No	
			16		MW15-S2-16	1520				
			17							
	at 17.0 feet; moist		18		MW15-S3-18	1520		88.6		
			19							
20			20		MW15-S4-20	1520		0.1		
	at 20.0 feet; wet		21					0.4		
	Brown, wet, loose, <u>GRAVEL</u> ; fine to medium gravel		22							
			23							
	Brown, wet, medium dense, <u>SANDY GRAVEL</u> ; fine to coarse grain sand, fine to coarse grain gravel		24							
			25		MW15-S5-25	1533		0		

<p>Explanation</p> <p> Sample Advance / Recovery</p> <p> No Recovery</p> <p>----- Contact located approximately</p> <p> Groundwater level at time of drilling or date of measurement</p>	<p>Monitoring Well Construction</p> <p> Grout/Concrete</p> <p> 3/4-inch bentonite chips</p> <p> Silica sand</p> <p> 2-inch diameter blank PVC casing from</p> <p> 2-inch diameter PVC 0.01 slotted screen</p>	<p>Ecology Tag # BIK 249</p> <p>Boring terminated at 25.0 feet; converted to MW-15 with 15 feet of 0.01 PVC slotted screen set from 15.0 to 25.0 feet BGS, and 10 feet of blank PVC from 0.0 to 10.0</p>
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LOG OF BOREHOLE

PROJECT: **Smitty's Toppenish** JOB # **09-171** Monitoring Well # **MW-16** PAGE 1 OF 2

Location: **102 East Toppenish Ave, Toppenish, WA** Approximate Elevation: **759 AMSL**

Subcontractor / Driller: **Holt's Services/Brian** Equipment / Drilling Method: **Sonic Drill Rig**

Date: **February 11, 2015** Logged By: **B. Dilba**

Boring Depth (feet)	Soil Description	Unified Soil Symbol	Sample Depth	Sample Recovery	Sample Number	Time	Observations	PID Reading	Sheen	Monitoring Well Construction
	3" asphalt underlain by;		1			850				
5	Brown, moist, loose, <u>SILTY SAND</u> ; fine to medium grain sand (fill)	SM	2							
	Brown, moist, stiff, <u>SANDY SILT</u> ; fine grain sand	ML	3							
10			4							
			5							
			6							
			7							
			8							
			9							
			10		MW16-S6-10	910		0.0		
	Brown, moist, loose, <u>SANDY GRAVEL</u> ; fine to coarse grain sand, fine to coarse grain gravel	GP	11							
			12							
			13							
			14							
15			15		MW16-S3-15	925		7.9	No	
	at 15.5 feet; light gray (discolored), wet		16							
			17							
			18							
			19							
20			20		MW16-S2-20	925	Hydrocarbon odor	0.0		
			21							
			22							
			23							
			24							
25	at 24.0 feet; brown		25		MW16-S1-25	948		0.0		

Explanation

- Sample Advance / Recovery
- No Recovery
- Contact located approximately
- Groundwater level at time of drilling or date of measurement

Monitoring Well Construction

- Grout/Concrete
- 3/4-inch bentonite chips
- Silica sand
- 2-inch diameter blank PVC casing from
- 2-inch diameter PVC 0.01 slotted screen

Ecology Tag # BIK 250

LOG OF BOREHOLE

PROJECT: **Smitty's Toppenish** JOB # **09-171** Monitoring Well # **MW-16** PAGE 2 OF 2

Location: **102 East Toppenish Ave, Toppenish, WA** Approximate Elevation: **759 AMSL**

Subcontractor / Driller: **Holt's Services/Brian** Equipment / Drilling Method: **Sonic Drill Rig**

Date: **February 11, 2015** Logged By: **B. Dilba**

Boring Depth (feet)	Soil Description	Unified Soil Symbol	Sample Depth	Sample Recovery	Sample Number	Time	Observations	PID Reading	Sheen	Monitoring Well Construction
			26		MW16-S5-26	950		0.0		
	Brown, wet, dense, SAND; medium grain sand		27							
	Brown, wet, dense, SILTY GRAVEL; fine to coarse grain gravel		28							
			29							
30			30							
			31							
			32							
			33							
			34							
35			35							
			36							
			37							
			38							
			39							
40			40							
			41							
			42							
			43							
			44							
45			45							
			46							
			47							
			48							
			49							
50			50							

Explanation

-  Sample Advance / Recovery
-  No Recovery
- Contact located approximately
-  Groundwater level at time of drilling
AT or date of measurement

Monitoring Well Construction

-  Grout/Concrete
-  3/4 inch bentonite chips
-  Silica sand
-  2-inch diameter PVC blank casing
-  2-inch diameter PVC 0.010" slotted casing

Boring terminated at 25.0 feet; converted to MW-16 with 15 feet of 0.01 PVC slotted screen set from 15.0 to 25.0 feet BGS, and 10 feet of blank PVC from 0.0 to 10.0

LOG OF BOREHOLE

PROJECT: <i>Smitty's Toppenish</i>	JOB # 09-171	Monitoring Well # MW-17	PAGE 1 OF 1
Location: 102 East Toppenish Ave, Toppenish, WA	Approximate Elevation: 759 AMSL		
Subcontractor / Driller: Holt's Services/Brian	Equipment / Drilling Method: Sonic Drill Rig		
Date: February 11, 2015	Logged By: B. Dilba		

Boring Depth (feet)	Soil Description	Unified Soil Symbol	Sample Depth	Sample Recovery	Sample Number	Time	Blows/Foot	PID Reading	Sheen	Monitoring Well Construction
	Brown, moist, medium dense, <u>SILTY SAND</u> ; fine to medium sand	SM	1-4	✓		1313				
5	Brown, moist, stiff, <u>SANDY SILT</u> ; fine grain sand	ML	4-5	✓						
	Gray, dry, loose, <u>SANDY GRAVEL</u> ; fine to coarse grain sand, fine to coarse grain gravel	GP	5-10	✓	MW17-S1-10	1317	0.3			
10			10-11	✓						
			11-12	✓						
			12-13	✓						
			13-14	✓						
15	at 15.0 feet; wet		14-15	✓		1323			No	
			15-16	✓					No	
			16-17	✓						
			17-18	✓						
			18-19	✓						
20			19-20	✓	MW17-S3-20	1323		0.0		
			20-21	✓						
			21-22	✓						
			22-23	✓						
			23-24	✓						
25			24-25	✓	MW17-S4-25	1345		0.0		

<p>Explanation</p> <p> Sample Advance / Recovery</p> <p> No Recovery</p> <p>--- Contact located approximately</p> <p> Groundwater level at time of drilling or date of measurement</p>	<p>Monitoring Well Construction</p> <p> Grout/Concrete</p> <p> 3/4-inch bentonite chips</p> <p> Silica sand</p> <p> 2-inch diameter blank PVC casing from</p> <p> 2-inch diameter PVC 0.01 slotted screen</p>	<p>Ecology Tag # BIK 251</p> <p>Boring terminated at 25.0 feet; converted to MW-17 with 15 feet of 0.01 PVC slotted screen set from 15.0 to 25.0 feet BGS, and 10 feet of blank PVC from 0.0 to 10.0</p>
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