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tel: 206.292.2078 fax: 206.682.7867

September 1, 2016

Mr. John Mefford
Washington State Department of Ecology
1250 West Alder Street
Union Gap, WA 98903-0009

SUBJECT: INTERIM ACTION WORK PLAN
Big B Mini Mart
1611 Canyon Road
Ellensburg, Washington

Dear Mr. Mefford:

Floyd|Snider has prepared this Interim Action Work Plan in response to the Washington State Department of Ecology (Ecology) letter dated June 9, 2016, concerning the need for an interim action (IA) at the Big B Mini Mart Site (Site) located in Ellensburg, Washington. The proposed IA described below has been revised significantly from the prior plan submitted to Ecology on July 15, 2016. This plan details the activities to remove light non-aqueous phase liquids (LNAPL) with the objective, as stated in Ecology's June 9 letter, "to reduce or remove the LNAPL mass and stop LNAPL migration or mobility." We believe that the proposed IA will satisfy this goal, as explained below.

The IA activities will be performed in accordance with the Agreed Order (DE 10813) between Ecology and the Potentially Liable Parties. This Interim Action Work Plan contains all of the submittal requirements outlined in Washington Administrative Code (WAC) 173-340-430(7).

DESCRIPTION

The IA will consist of two activities: removal of any LNAPL observed in the tank pits following underground storage tank (UST) decommissioning; and following that, installation of a LNAPL recovery trench constructed along the southern property boundary as shown in Figure 1.

The trench will be located close the presumed southern extent of the main LNAPL mass on the Big B Site and so will act to intercept any further LNAPL migration occurring along the southern property boundary. The trench is not designed to recover LNAPL that lays more than approximately 25 feet upgradient of the trench, nor from LNAPL that may extend off-site onto adjacent properties, should any exist. The extent of off-property LNAPL will be the subject of a subsequent investigation and the recovery of any off-site LNAPL will be evaluated in the Feasibility Study.

The trench will passively recover mobile LNAPL using the existing natural gradient at the Site. The advantage of a trench is that the mobile LNAPL (i.e., greater than residual saturation values) within soils in contact with the trench walls will flow unimpeded into the trench where it can be easily recovered with skimmers. Inducing a gradient by groundwater pumping is not proposed at this time due to the complexity and cost of groundwater treatment. We recognize that an induced gradient typically results in greater LNAPL recovery volumes as compared to passive recovery. However, nothing in this IA precludes the addition of groundwater pumping to induce gradients in the future, if conditions warrant.

Major activities for the LNAPL skimming during UST decommissioning will include the following:

- Pumping (with either a vacuum truck or trash pump) any observed free product off of the groundwater surface within each of the UST pits the day following UST removals.
- If a trash pump is used, the water/oil mixture would be stored on-site in a double-walled 1,000-gallon fiberglass aboveground storage tank that will be brought on-site for this project.
- If little free product is observed in any of the tank pits, then oil-adsorbent pads may be used instead of a pump.

Major activities for the trench installation will include the following:

- Conducting public and private utility locates and disconnecting any utilities within the trench footprint.
- Excavating and stockpiling visually clean overburden from the upper 3 feet of the trench.
- Excavating LNAPL-containing soil from the smear zone within the trench from 3 to 7 feet below ground surface (bgs).
- Backfilling the trench with pea gravel from 3 to 7 feet bgs.
- Installing two LNAPL recovery sumps at the locations shown on Figure 1.
- Backfilling the trench to grade with the clean overburden.
- Outfitting the recovery sumps with a pneumatically operated LNAPL skimmers.
- Installation of a compressor to operate the skimmer pumps and setting up a power supply to the compressor.
- Directing flow from the skimmer to the 1,000-gallon double-walled fiberglass containment tank.
- Pumping out the containment tank when full via a vacuum truck service.
- Submitting an Interim Action Report.

HOW THE PROPOSED INTERIM ACTION MEETS THE CRITERIA

The above activities meet the Model Toxics Control Act (MTCA) criteria by providing a partial cleanup for a part of the Site. The IA is not intending to achieve cleanup standards. Achievement of cleanup standards will be accomplished through performance of the final cleanup action of the Site, a completion date that is not currently known. However, this IA will not foreclose reasonable alternatives for the final cleanup action. In fact, it may do the opposite by allowing for additional remedial alternatives to be considered that could allow for a quicker restoration timeframe to the extent allowed under provisions of the Agreed Order.

DESCRIPTION OF EXISTING SITE CONDITIONS

The Site is located on approximately 1.5 acres of rectangular paved land. The southern half of the property includes two inactive pump islands (northern and southern), a closed convenience store, two inactive 10,000-gallon steel USTs, an inactive 4,000-gallon steel UST on the north side of the former convenience store, and an inactive 12,000-gallon baffled steel UST (split into 8,000 gallons of diesel storage and 4,000 gallons of unleaded gasoline storage) on the south end of the store.

Floyd|Snider recently completed initial and supplemental site investigation activities in order to fully delineate hydrocarbon impacts within the property boundary and to investigate groundwater quality and flow direction. Key findings are as follows:

- The primary contaminants of concern in soil at the Site are gasoline-range organics (GRO), diesel-range organics (DRO), benzene, toluene, ethylbenzene, and xylenes (BTEX), and naphthalene
- GRO has been detected up to 3,700 milligrams per kilograms (mg/kg) and DRO up to 24,000 mg/kg. The greatest concentrations occur in the saturated “Smear Zone” soils across a 2- to 3-foot interval.
- Petroleum-impacted soil is encountered at depths ranging between 3.5 and 7 feet bgs. The most heavily impacted areas are within the center of the property, east-northeast of the station building between the central USTs and fuel dispensers, and at the southern portion of the property.
- LNAPL thickness is greatest in the southern portion of the property with up to 1 foot recently measured in wells along the southern property line.
- The LNAPL comprises both diesel and gasoline, with diesel being dominant.
- Groundwater flow direction during the three monitoring events in May, July, and October 2015 show that groundwater flow is to the southeast. However, during the March 2016 event, groundwater flow direction was to the southwest.

- Seasonally, groundwater varies in depth by approximately 1 foot, with the lowest levels occurring in the late summer and fall.

The total amount of LNAPL in the southern part of the Site is estimated to be approximately 500 to 1,000 gallons, depending on the methodology used. Calculations supporting this estimate, using two methodologies, are included in Attachment 1.

ALTERNATIVES CONSIDERED

Another alternative considered was a soil-cement barrier well placed along the southern property boundary to contain the southern LNAPL pool from further migration. However, while stopping the possibility of further LNAPL migration, the barrier wall would not remove LNAPL and so is not as aggressive a solution as the proposed IA. Active recovery wells with hydraulic pumping of water was also considered, but was rejected due to the high cost and added project complexity for groundwater treatment and disposal. Also rejected was soil excavation to remove the LNAPL body with land farming to treat the excavated soil due to high overall project cost and limited seasonality in which the project could be successfully conducted. Soil vapor extraction (SVE) was also considered, but was rejected due to the dominantly diesel-range composition of the LNAPL. SVE is also ineffective in the seasonally saturated smear zone where the bulk of the LNAPL at this Site resides.

HEALTH AND SAFETY

The existing Health and Safety Plan (HASP) has been updated (Attachment 2) to include the activities in this work plan, and also includes activities that are likely going to occur in the future (e.g., off-site investigations and monitoring). The provisions and procedures outlined by the HASP apply only to all Floyd|Snider personnel on-site. The UST removal contractor will prepare a separate HASP specific to their activities.

UTILITY LOCATE AND PERMITS

Prior to initiating cleanup actions, Ecology will submit this plan for public comment. If significant comments are received, the plan will be revised to address those comments prior to initiation of work. A public utility locate notification will be completed in accordance with state law at least 3 business days prior to the start of the IA work. Public utility locate information will be provided to the contractor prior to the start of work. In addition, a private locate will be performed within the entire property and utilities with the potential to be within the trench footprint will be removed, including an electrical conduit to a light standard. Of concern is the sewer line that runs underneath the IA area at a depth of approximately 8 feet bgs. The sewer utility will be marked out and staked to help in identifying its location and depth. The light standard power line will be decommissioned by an electrician. The UST removal contractor will obtain all appropriate permits, such as clearing and grading and demolition permits, prior to decommissioning activities.

UNDERGROUND STORAGE TANK DECOMMISSIONING

Floyd|Snider personnel will only conduct oversight activities during the decommissioning of the USTs. The contractor will remove four USTs remaining on the property. During UST removal activities, LNAPL may be encountered within the baffled UST excavation in the southern portion of the property. Any observed free product on the groundwater surface within each of the UST pits will be pumped, with either a vacuum truck or trash pump, the day following UST removal. Any recovered LNAPL/water mixture will be stored on-site in a double-walled, 1,000-gallon, fiberglass, aboveground storage tank that will be brought on-site for this project. Oil-adsorbent pads may be used instead of a pump if little free product is observed.

Up to approximately 1,500 cubic yards of material may be excavated during UST removal activities. The contractor is responsible for removing and transporting contaminated soil off-site for disposal. Any additional excavation beyond the UST basins will be filled with pit run gravel from local quarries. Alternatively, the upper 3 feet of clean overburden may be used as backfill material if stockpile testing indicates that it meets MTCA Method A cleanup levels. During excavation and trenching activities, best management practices, such as covering soil stockpiles, the use of berms and hay bales, sweeping, silt fencing, and storm drain socks will be implemented to keep soil confined to the property as wells as to prevent soil from entering the stormwater system.

EXISTING WELLS AND PIEZOMETERS

The location of the trench is not expected to result in the need to decommission any of the existing wells or piezometers. However, several piezometers will likely need to be removed to allow for both the construction of the IA and the UST decommissioning to occur. The need for replacement piezometers will be coordinated with Ecology while the trench is being installed and the re-installation will be performed immediately following installation of the trench. The piezometers that are likely to be removed as part of this work are shown on Figure 1.

TRENCH EXCAVATION

The trench will be placed approximately 40 feet south of the baffled UST, which will be removed (by others under separate authority and permitting), along with the other existing USTs. The trench will be approximately 90 feet in length and extend across most of the southern property line with the exception of a small segment along the eastern extent of the trench where there is an interfering foundation for a light standard. The trench will be 24 inches in width and extend to a minimum depth of 7 feet bgs. Given that this will require excavation to 2 feet below the typical water table depth, this IA should occur within the late summer or fall months when the seasonal water table is the lowest.

The upper 3 feet of excavated soil, approximately 30 cubic yards (CY), will be collected from the excavator bucket and field screened for volatile hydrocarbons using odor, sheen test, and a

photoionization detector (PID). Any soil with field indications of contamination will be screened out and placed in a separate stockpile. Following removal of the clean overburden, excavation of the approximately 45 CY of LNAPL-containing soils will begin. These contaminated soils will be stockpiled on plastic sheeting until loaded for off-site disposal. Any stockpiles will be covered with plastic at the end of a work shift and also surrounded by hay bales or similar barrier. Any free liquids draining off the soil stockpile will be vacuumed with a trash pump and the water will be placed into the LNAPL storage tank.

Backfill Requirements

The excavation will be backfilled in stages. Pea gravel will be used immediately to backfill trench segments dug from 3 to 7 feet bgs. After placement of the pea gravel, the remaining excavation will be backfilled and compacted with the stockpile of clean overburden soil excavated from the upper 3 feet of the Site.

SUMP INSTALLATION

Two LNAPL recovery sumps will be placed in the trench during backfilling with pea gravel. The trench will be dug slightly deeper, to 8 feet bgs, in the location of the sumps. The sumps will consist of 5 feet of 8-inch-diameter 20-slotted well screen placed from 3 to 8 feet bgs connected to 5 feet of blank riser that will extent to 2 feet above ground surface. Figure 1 shows a cross section of the trench and the sumps. Based on prior investigations, the soil type that the sumps will be screened across are loose sands and gravel. A silt layer also occurs in this area but is located above the sands and gravel.

SKIMMING EQUIPMENT

A specific-gravity floating skimmer will be placed within each of the sumps. The skimmers will be connected to a pneumatically operated bladder pump that will induce a vacuum within the skimmer, which will cause LNAPL to be drawn from the skimmer into the bladder. After a set amount of cycle time, typically 30 seconds, the pump will change cycles and the bladder will be filled with compressed air forcing the LNAPL into a LNAPL discharge line connected to a vented, double-walled, fiberglass, 1,000-gallon holding tank. The holding tank was formerly used to store waste oil but was pumped and cleaned following removal. The holding tank will be equipped with a Tank Full Shut Off (TFSO) monitor, which will cut off compressed air to the bladder pump if tripped by a high tank fluid level. The compressor and TFSO will be placed inside the existing building or, alternatively, a locked shed or similar secure structure. Power and light will be established within the structure by an electrician.

Cut sheets of the proposed skimming equipment are included as Attachment 3.

DISPOSAL OF WASTES

The contaminated soil generated during excavation of the trench will be loaded on trucks and transported off-site for disposal to the Anderson Rock and Demolition Pits landfill in Yakima, Washington. The soil in the five existing drums and soil stockpile on-site will be loaded on trucks for off-site disposal as well. Any waste water or LNAPL generated, including the purge water in the two existing drums, will be pumped to the NAPL storage tank for pickup by vacuum truck, which will be documented regarding volume transported and disposal facility used. Documentation will be provided to Ecology for verification of receipt, quantities, and transportation and disposal dates. Oil-adsorbent pads will be placed in sealed drums and sent off-site for disposal as solid waste.

OPERATIONS AND MAINTENANCE

Operations and maintenance (O&M) of the system will consist of the following elements:

- Weekly measurements of the amount of LNAPL recovered.
- Monthly measurements of LNAPL thickness in all existing wells and piezometers.
- Monthly testing the TFSO functionality.
- Weekly walk around safety inspections.

System performance, recovered volumes, LNAPL thicknesses, Depth to Water measurements, and other pertinent information will be documented in a field logbook that will be kept at the Site. Documentation of O&M performance and weekly/monthly measurements will be provided to Ecology upon request.

SCHEDULE

This Interim Action Work Plan summarizes the proposed activities. Once the plan is approved by Ecology, a detailed construction schedule will be provided to Ecology. The skimming equipment requires a 4- to 5-week order and delivery time.

VARIANCE FROM PLAN

If any of the major elements of this plan are not expected to be followed, Ecology will receive a request for variance stating the proposed change and the reason for the change. Additional actions may be taken based on Ecology's review and the nature of the proposed changes.

PREPARATION OF AN INTERIM ACTION REPORT

Within 30 days following completion of the proposed IA activities, a report documenting the activities will be prepared. The report will include the following:

- A detailed description of the work performed
- A site figure with the as-built limits of the trench
- Initial results

PERFORMANCE EVALUATION

The performance of the recovery trench will be assessed over a 6-month period primarily by the amount of LNAPL that is recovered, the rate of decline of recovery, and the change in LNAPL thickness in the surrounding wells and piezometers.

Sincerely yours,
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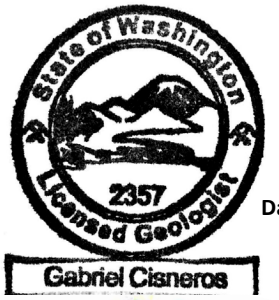


Date: 09/01/2016

Gabe Cisneros
Geologist

Tom Colligan, LHG
Sr. Hydrogeologist & Associate Principal

Encl.: Figure 1 – Site Plan
Attachment 1 – LNAPL Volume Calculations
Attachment 2 – Health and Safety Plan
Attachment 3 – Cut Sheets

Cc: Josh Lipsky, Cascadia Law Group PLLC
Valerie K. Fairwell, Cascadia Law Group PLLC
Surgit Singh, Big B LLC
Scott MacDonald, BNSF Railway Company
Mike Chait, Montgomery Scarp, PLLC
Gurinder Bains, Short Stop LLC

Figures

Legend

- Proposed 8-inch Sump
- Monitoring Well
- Piezometer
- G —— Gas
- P —— Power
- SS —— Sanitary Sewer
- W —— Water
- × —— Fence
- Approximate Property Line
- -0.07 – Extent of LNAPL (Dashed Where Inferred)
- 0.10 LNAPL Thickness in Feet
- LNAPL Thickness Contour in Intervals of 0.01 Feet, 0.10 Feet, and 1.00 Feet
- Groundwater Flow Direction
- Approximate Extent of Proposed Recovery Trench Backfilled with Peagravel and Clean Overburden

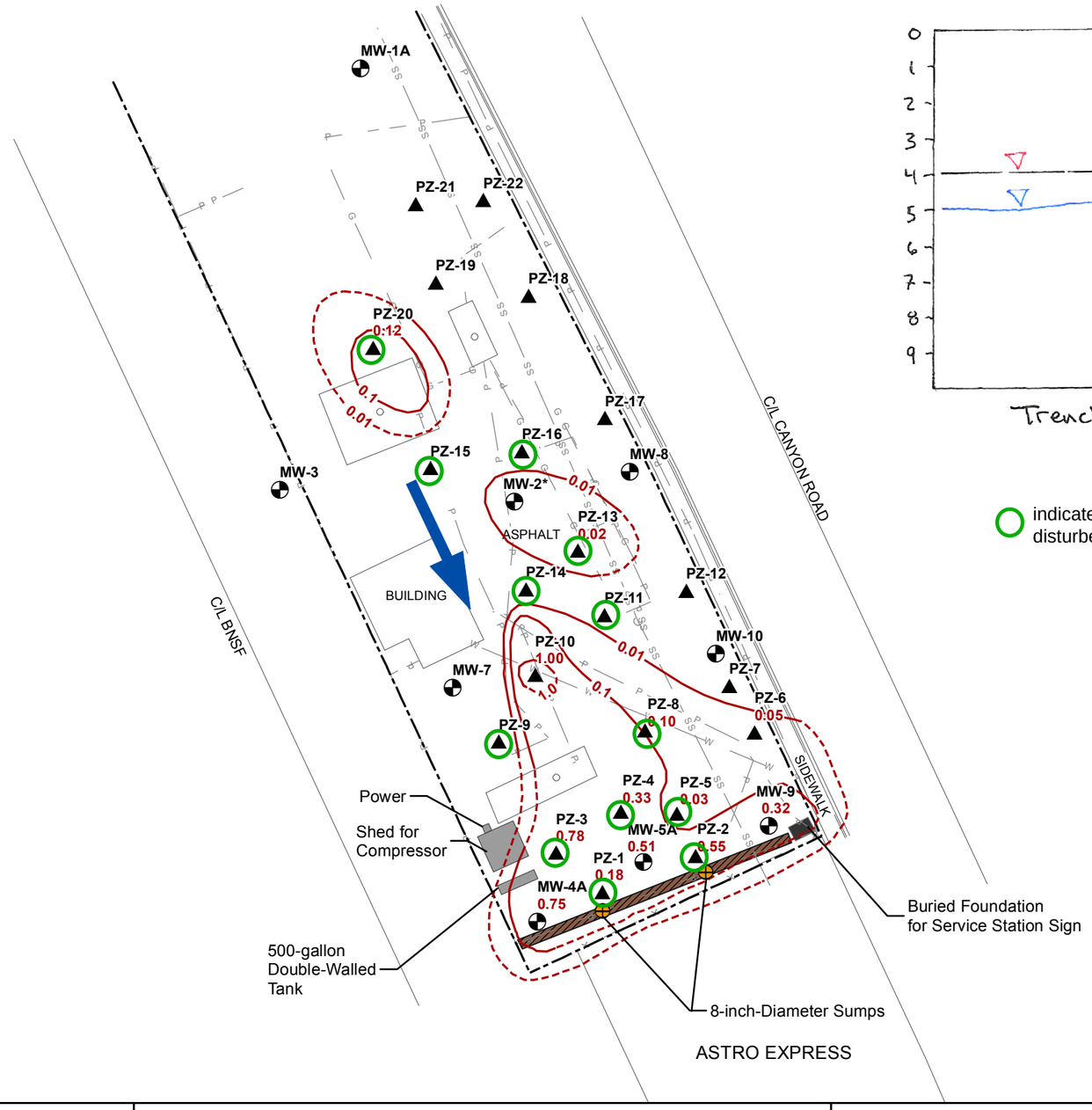
Note:
* No measurement due to LNAPL sock in well.
· LNAPL was gauged for but not detected in four piezometers installed on the North end of the Astro Express Site. Piezometer locations had not yet been surveyed and so were unavailable for overlay on this figure.
· CAD basemap provided by Cruse & Associates. May 15, 2015.

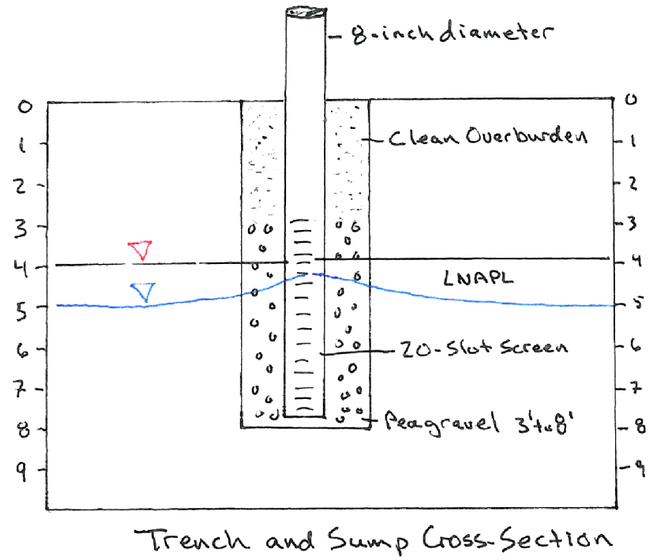
Abbreviation:
LNAPL = Light Non-Aqueous Phase Liquid

N

0 20 40 80

Scale in Feet





Trench and Sump Cross-Section

○ indicates piezometer likely to be disturbed during Interim Action

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Interim Action Work Plan
Big B Mini Mart
Ellensburg, Washington

Figure 1
Site Plan

I:\GIS\Projects\CL-Ellensburg\MXD\Interim Action Work Plan\Figure 1 Site Plan.mxd
8/18/2016

Attachment 1
LNAPL Volume Calculations

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☒ Calculation
☐ Meeting Notes
☐ Phone Call Notes
☐ Memorandum

Date: 8/18

Project No.: CL-Ellensburg

Created by: G. Cisneros

Reviewed by:

Subject: LNAPL Volume estimate Method 1

Using LNAPL thicknesses

Method 1 uses LNAPL thicknesses from the last monitoring event. LNAPL thicknesses are only used with the southern portion of the lot, south of the southern USTs. See associated figure w/ contours & areas.

Area (ft^2)	LNAPL thickness		Volume (soil saturated)
1,560 ft^2	0.80 ft	=	1,248 ft^3
498 ft^2	0.33 ft	=	164 ft^3
924 ft^2	0.05 ft	=	46 ft^3
359 ft^2	0.32 ft	=	115 ft^3
962 ft^2	0.55 ft	=	529 ft^3
		Total =	2,102 ft^3

Soil saturated with LNAPL in southern portion = 2,102 ft^3

Assume 35% porosity $2{,}102\ ft^3 \times 0.35 = 735.7\ ft^3$

Assume a maximum saturation for sand and gravel @ 10% for LNAPL.

$735.7\ ft^3 \times 0.10 = 74\ ft^3$

$74\ ft^3 \times \frac{7.48052\ gallons}{1\ ft^3} = 554$ gallons of LNAPL

Legend

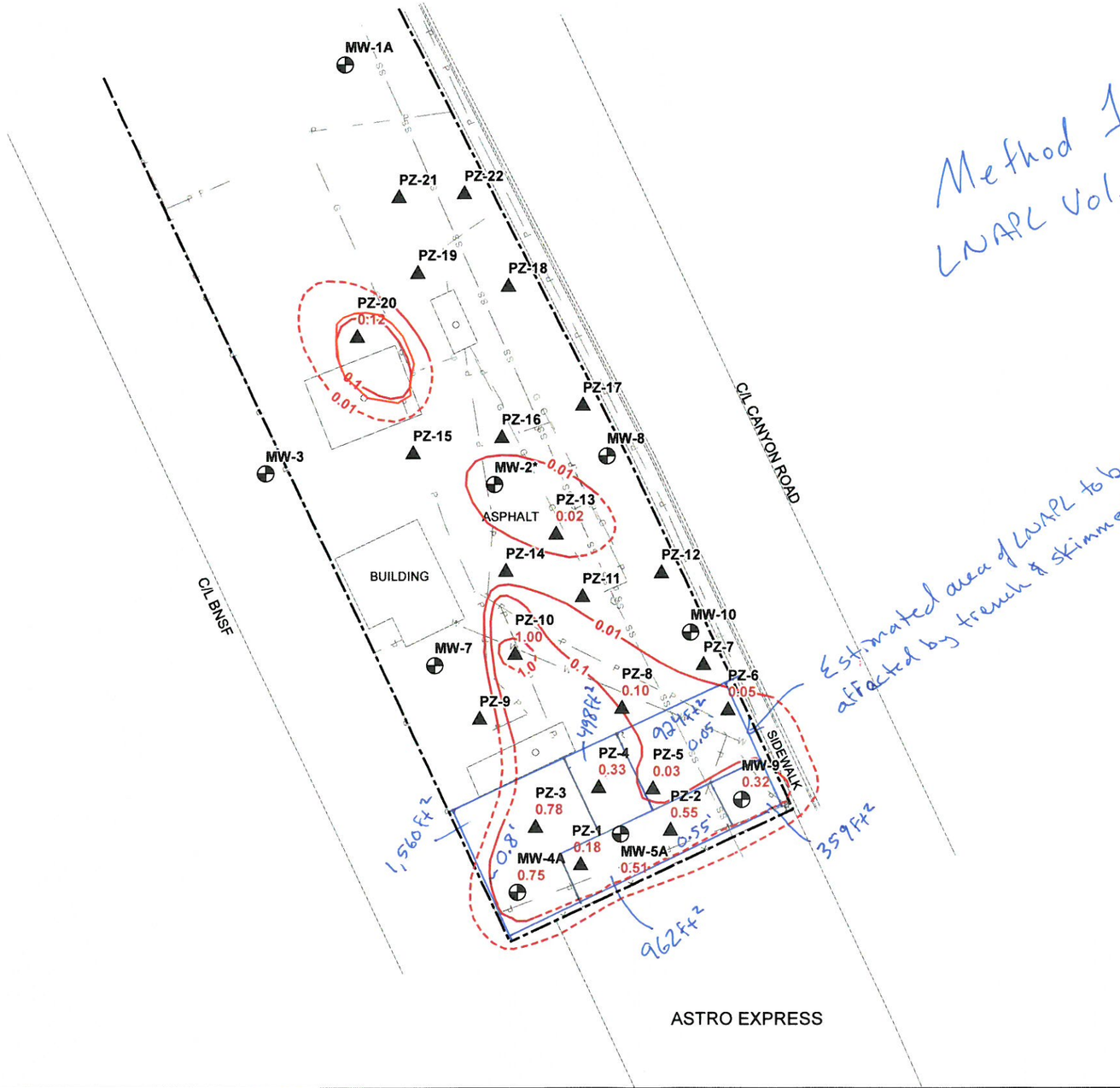
- Monitoring Well
- Piezometer
- G —— Gas
- P —— Power
- SS —— Sanitary Sewer
- W —— Water
- × — Fence
- Approximate Property Line
- Extent of LNAPL (Dashed Where Inferred)
- 0.07 LNAPL Thickness in Feet
- –0.10– LNAPL Thickness Contour in Intervals of 0.01 Feet, 0.10 Feet, and 1.00 Feet

Note:
* No measurement due to LNAPL sock in well.
· LNAPL was gauged for but not detected in four piezometers installed on the North end of the Astro Express Site. Piezometer locations had not yet been surveyed and so were unavailable for overlay on this figure.
· CAD basemap provided by Cruse & Associates. May 15, 2015.

Abbreviation:
LNAPL = Light Non-Aqueous Phase Liquid

N

0 20 40 80
Scale in Feet



Method 1
LNAPL Vol. calc.

Estimated area of LNAPL to be affected by trench & skimmer.

498ft²
924ft²
1,560ft²
359ft²
962ft²
0.8'
0.55'

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Remedial Investigation/Feasibility Study
Big B Mini Mart
Ellensburg, Washington

Figure 3.3
LNAPL Thickness and Extent on June 16, 2016

I:\GIS\Projects\CL-Ellensburg\MXD\RIFS\Figure 3.3 LNAPL Thickness and Extent on June 16, 2016.mxd
6/23/2016

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☒ Calculation
☐ Meeting Notes
☐ Phone Call Notes
☐ Memorandum

Date: 8/18/16
Project No.: CL-Ellensburg

Created by: G. Cisneros
Reviewed by:

Subject: LNAPL Volume Estimate to be intercepted by trench/skimmer.

Method 2 TPH concentrations

Method 2 uses known TPH concentrations in the southern portion of the property, south of the southern USTs.

Volume of soil within southern portion with potential LNAPL
$= 4,300 ft^3 \longrightarrow 160$ cubic yards (cy)

160 cy = Approximately 239 tons of LNAPL saturated soil.
1 cy = 1.5 tons

239 tons = 216,817 kilograms of LNAPL saturated soil
1 ton = 907.185 kg

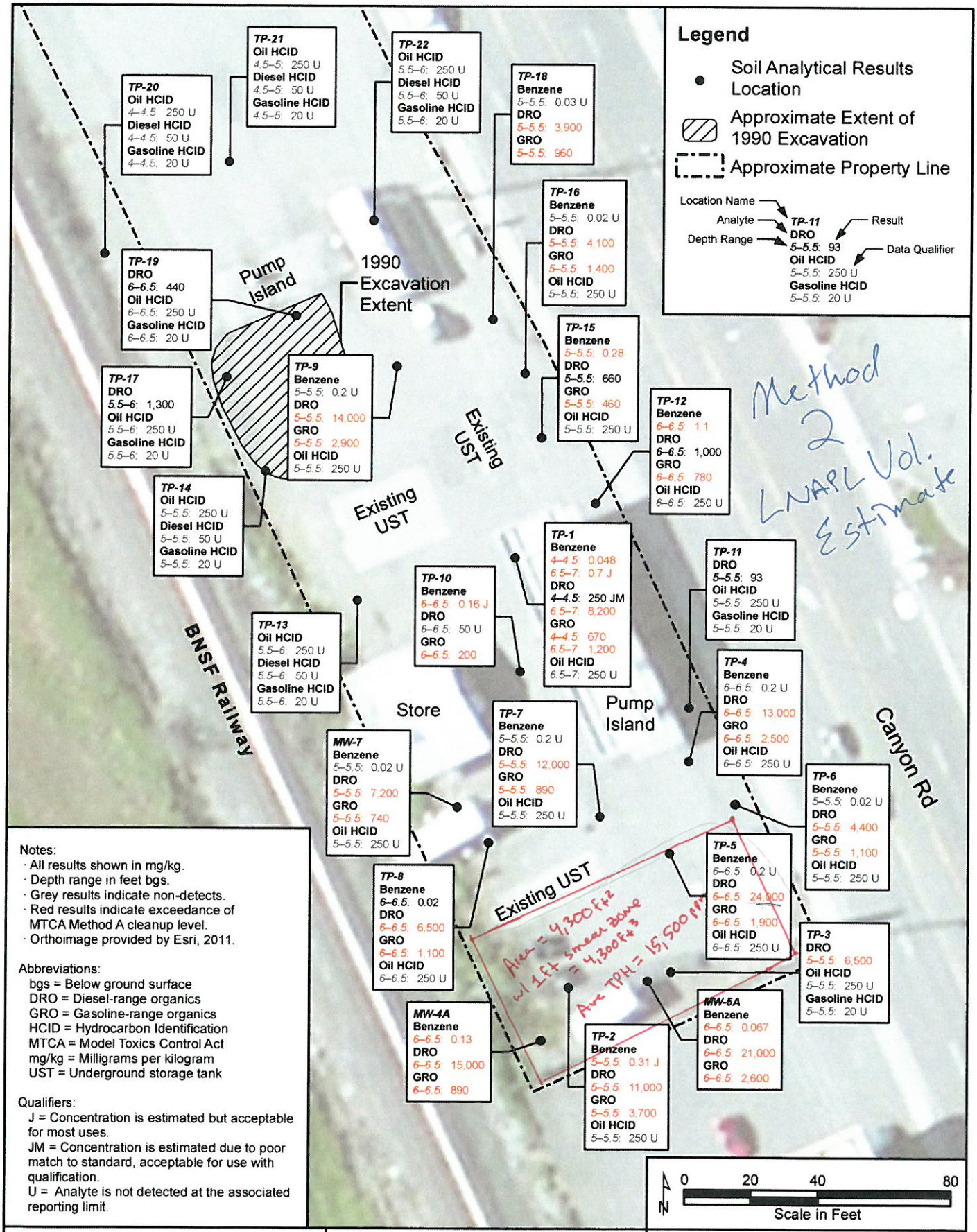
Average TPH concentration in selected area = 15,500 mg/kg
$15,500 mg/kg = 15.5 g/kg$

$$\frac{15.5 g}{1 kg} \times 216,817 kg = 3,360,664 g \text{ of LNAPL}$$

850 g = 1 Liter (diesel) (Uses a diesel density of 0.85 kg/L)

$$3,360,664 g \times \frac{1 Liter}{850 g} = 3953.7 \text{ Liters}$$

$$3953.7 \text{ Liters} \times \frac{0.26417 gals}{1 Liter} = 1,044 \text{ gallons}$$



Notes:
- All results shown in mg/kg.
- Depth range in feet bgs.
- Grey results indicate non-detects.
- Red results indicate exceedance of MTCA Method A cleanup level.
- Orthoimage provided by Esri, 2011.

Abbreviations:
bgs = Below ground surface
DRO = Diesel-range organics
GRO = Gasoline-range organics
HCID = Hydrocarbon Identification
MTCA = Model Toxics Control Act
mg/kg = Milligrams per kilogram
UST = Underground storage tank

Qualifiers:
J = Concentration is estimated but acceptable for most uses.
JM = Concentration is estimated due to poor match to standard, acceptable for use with qualification.
U = Analyte is not detected at the associated reporting limit.

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Site Investigation Summary and Supplemental Work Plan
Big B Mini Mart
Ellensburg, Washington

Figure 5
Soil Analytical Results

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1/5/2016

Attachment 2
Health and Safety Plan

Table of Contents

List of Appendices

List of Acronyms and Abbreviations

Acronym/ Abbreviation	Definition
bgs	Below ground surface
COC	Contaminant of concern
CRZ	Contamination reduction zone
EZ	Exclusion zone
HSO	Health and Safety Officer
HASP	Health and Safety Plan
HAZWOP	Hazardous Waste Operations
LNAPL	Light non-aqueous phase liquid
PID	Photoionization detector
PM	Project Manager
PPE	Personal protective equipment
SS	Site Supervisor
SSO	Site Safety Officer
STEL	Short-Term Exposure Limit
SZ	Support zone
TWA	Time-Weighted Average
UST	Underground Storage Tank
VOC	Volatile organic compound
WAC	Washington Administrative Code

1.0 Plan Objectives and Applicability

This Health and Safety Plan (HASP) has been written to comply with the standards prescribed by the Occupational Safety and Health Act (OSHA) and the Washington Industrial Safety and Health Act (WISHA).

The purpose of this HASP is to establish protection standards and mandatory safe practices and procedures for all personnel involved with investigation activities at Big B Mini Mart Service Station (Site). This HASP assigns responsibilities, establishes standard operating procedures, and provides for contingencies that may occur during field work activities. This plan consists of site descriptions, a summary of work activities, an identification and evaluation of chemical and physical hazards, monitoring procedures, personnel responsibilities, a description of site zones, decontamination and disposal practices, emergency procedures, and administrative requirements.

The provisions and procedures outlined by this HASP apply to all Floyd|Snider personnel on-site. Contractors, subcontractors, other oversight personnel, and all other persons involved with the field work activities described herein are required to develop and comply with their own HASP. All Floyd|Snider staff conducting field activities are required to read this HASP and indicate that they understand its contents by signing the Health and Safety Officer/Site Supervisors' (HSO/SS') copy of this plan.

It should be noted that this HASP is based on information that was available as of the date indicated on the title page. It is possible that additional hazards that are not specifically addressed by this HASP may exist at the work site, or may be created as a result of on-site activities. It is the firm belief of Floyd|Snider that active participation in health and safety procedures and acute awareness of on-site conditions by all workers is crucial to the health and safety of everyone involved. Should project personnel identify a site condition that is not addressed by this HASP and have any questions or concerns about site conditions, they should immediately notify the HSO/SS and an addendum will be provided to this HASP.

The HSO/SS has field responsibility for ensuring that the provisions outlined herein adequately protect worker health and safety and that the procedures outlined by this HASP are properly implemented. In this capacity, the HSO/SS will conduct regular site inspections to ensure that this HASP remains current with potentially changing site conditions. The HSO/SS has the authority to make health and safety decisions that may not be specifically outlined in this HASP, should site conditions warrant such actions. In the event that the HSO/SS leaves the site while work is in progress, an alternate Site Safety Officer (SSO) will be designated. Personnel responsibilities are further described in Section 4.0.

This HASP has been reviewed by the Project Manager (PM) and the HSO/SS prior to commencement of work activities. All Floyd|Snider personnel shall review the plan and be familiar with on-site health and safety procedures. A copy of the HASP will be on-site at all times.

2.0 Emergency Contacts and Information

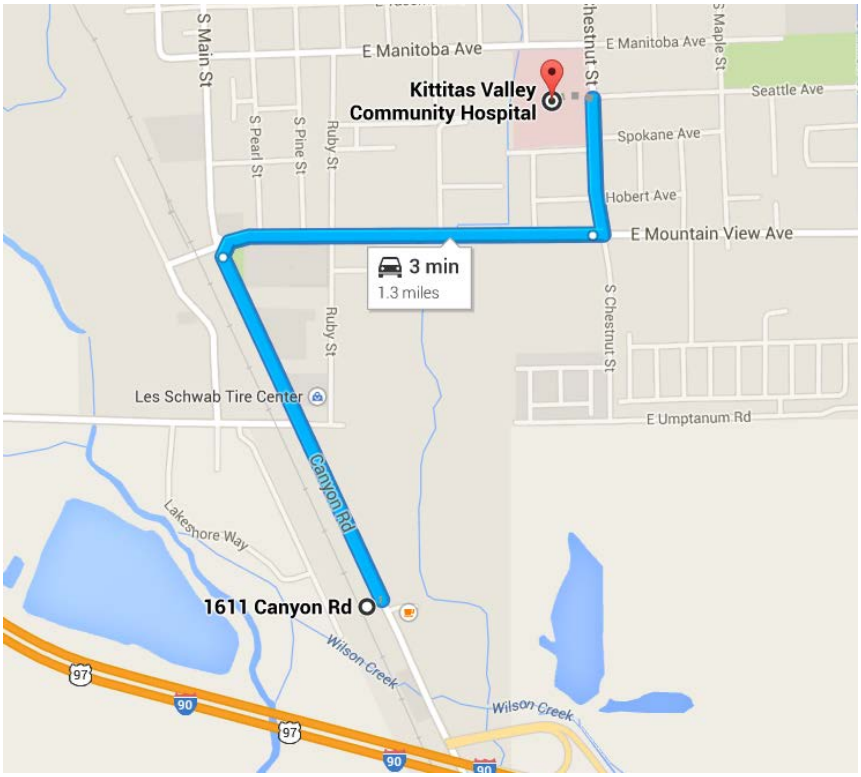
2.1 DIAL 911

In the event of any emergency, dial 911 to reach fire, police, and first aid.

2.2 HOSPITAL AND POISON CONTROL

Nearest Hospital Location and Telephone: Refer to Figure 1 below for map and directions to the hospital.	Kittitas Valley Community Hospital 603 South Chestnut Street Ellensburg, WA 98926 (509) 962-9841
Washington Poison Control Center:	(800) 222-1222

Figure 1 - Hospital Directions



1. Start at: 1611 Canyon Road in Ellensburg, WA 98926
2. Head north-northwest on Canyon Road toward Umptanum Road 0.5 mi
3. Turn right onto W Mountain View Ave 0.5 mi
4. Turn left onto S Chestnut Street 0.2 mi
5. Arrive at: Kittitas Valley Community Hospital-ER; 603 S Chestnut Street, Ellensburg, Washington

2.3 PROVIDE INFORMATION TO EMERGENCY PERSONNEL

All Floyd|Snider project personnel should be prepared to give the following information:

Information to Give to Emergency Personnel	
Site Location:	Big B Mini Mart Service Station 1611 Canyon Road Ellensburg, WA 98926 **Nearest Cross Street:** I-90 to the south or Umptanum Rd to the north
Number that You are Calling from:	This information can be found on the phone you are calling from.
Type of Accident or Type(s) of Injuries:	Describe accident and/or incident and number of personnel needing assistance.

2.4 FLOYD|SNIDER AND BIG B MINI MART EMERGENCY CONTACTS

After contacting emergency response crews as necessary, contact the Floyd|Snider project manager and a Floyd|Snider principal to report the emergency. The Floyd|Snider project manager may then contact Surgit Singh, or direct the field staff to do so.

Floyd|Snider Emergency Contacts:

Contact	Office Phone Number	Cell Phone Number
Tom Colligan, PM	(206) 292-2078	(206) 276-8527
Gabe Cisneros, HSO/SS		(206) 582-8223
Kate Snider, Principal		(206) 375-0762

Big B Mini Mart Emergency Contacts:

Contact	Office Phone Number	Cell Phone Number
Surgit Singh	N/A	(509) 560-1111

Utility Company Emergency Contacts:

Contact	Normal Business Hours Phone Numbers (8 a.m. to 5 p.m.)	After Hours Emergency Phone Number
Puget Sound Energy – Electric	(888) 728-9343	(888) 225-5773
Puget Sound Energy – Natural Gas	(888) 728-9343	(888) 225-5773
City of Ellensburg – Water, Gas, Electric	(509) 962-7230	(509) 962-7230
Ellensburg Energy SVCS	(509) 962-7124	(509) 962-7224
Ellensburg Telephone	(509) 985-1203	(509) 925-1425

3.0 Background Information

3.1 SITE BACKGROUND

The property is located at 1611 Canyon Road in Ellensburg, WA and is currently a temporarily closed gasoline service station with upgrades planned for the near future. The property is approximately 1.5 acres and includes two pump islands, a convenience store, two steel 10,000-gallon underground storage tanks (USTs), a 4,000-gallon steel UST on the north side of the store, and a 12,000-gallon baffled steel UST (8,000 gallons of diesel and 4,000 gallons of unleaded gasoline) on the south end of the property. The planned upgrades envision the removal of all tanks, dispensers, and product lines and replacement with upgraded tanks, lines, and dispensers.

The property is on the west side of Canyon Road, just north of Interstate 90, and is surrounded by commercial use properties to the north, south, and east, and a BNSF railway to the west. An Astro gasoline service station is adjacent to the south and a Shell station is located across Canyon Road to the east. Canyon Road is a four-lane major throughway with off- and on-ramp access to I-90, just southeast of the property. Entrances to the property are located northeast and southeast of the fuel dispensers along Canyon Road. The property includes a large undeveloped area on the north side; ecology blocks have been placed in the driveways to prevent truckers from using this portion of the property to park their rigs and containers. The entire southern portion of the property is fenced.

3.2 SCOPE OF WORK

The activities outlined in this revised HASP are in addition to previous activities performed at the Site, which are still applicable and are included in this HASP. The purpose of the interim action activities is to perform UST decommissioning activities and to install a trench to remove light non-aqueous phase liquids (LNAPLs) with the objective to reduce or remove the LNAPL mass and stop LNAPL migration or mobility. In addition, this plan covers investigation of down-gradient soil and groundwater conditions. Floyd|Snider will perform the following scope of work:

- Oversight of UST decommissioning performed by NES Inc., a tank removal contractor, hired by the potentially liable parties
- Oversight of the excavation of a trench from 3 to 7 feet below ground surface (bgs).
- Oversight of the backfilling the trench with pea gravel from 3 to 7 feet bgs.
- Oversight of the installing of two LNAPL recovery sumps within the trench.
- Outfitting the recovery sumps with a pneumatically operated LNAPL skimmers.
- Collect soil samples for analysis.
- Collect groundwater samples and a product sample.

4.0 Primary Responsibilities and Requirements

4.1 PROJECT MANAGER

The PM will have overall responsibility for the completion of the project, including the implementation and review of this HASP. The PM will review health and safety issues as needed and as consulted, and will have authority to allocate resources and personnel to safely accomplish the field work.

The PM will direct all Floyd|Snider personnel involved in field work at the Site. If the project scope changes, the PM will notify the HSO/SS so that the appropriate addendum will be included in the HASP. The PM will ensure that all Floyd|Snider personnel on-site have received the required training, are familiar with the HASP, and understand the procedures to follow should an accident and/or incident occur on-site.

4.2 HEALTH AND SAFETY OFFICER AND SITE SUPERVISOR

The HSO/SS will approve this HASP and any amendments thereof, and will ultimately be responsible for full implementation of all elements of the HASP.

The HSO/SS will advise the PM and project personnel on all potential health and safety issues of the field investigation activities to be conducted at the site. The HSO/SS will specify required exposure monitoring to assess site health and safety conditions, modify the site HASP based on field assessment of health and safety accidents and/or incidents, and recommend corrective action if needed. The HSO/SS will report all accidents and/or incidents to the PM. If the HSO/SS observes unsafe working conditions by Floyd|Snider personnel or any contractor personnel, the HSO/SS will suspend all work until the hazard has been addressed.

4.3 SITE SAFETY OFFICER

The SSO may be a person dedicated to assisting the HSO/SS during field work activities. The SSO will ensure that all personnel have appropriate personal protective equipment (PPE) on-site and PPE is properly used. The SSO will assist the HSO/SS in field observation of Floyd|Snider personnel safety. If a health or safety hazard is observed, the SSO shall suspend all work activity. The SSO will conduct on-site safety meetings daily before work commences. All health and safety equipment will be calibrated daily and records kept in the daily field logbook. The SSO may perform exposure monitoring if needed and will ensure that equipment is properly maintained.

4.4 FLOYD|SNIDER PROJECT PERSONNEL

All Floyd|Snider project personnel involved in field work activities will take precautions to prevent accidents and/or incidents from occurring to themselves and others in the work areas. Employees will report all accidents and/or incidents or other unsafe working conditions to the HSO/SS or SSO immediately. Employees will inform the HSO/SS or SSO of any physical conditions that could impact their ability to perform field work.

4.5 TRAINING REQUIREMENTS

All Floyd|Snider project personnel must comply with applicable regulations specified in Washington Administrative Code (WAC) Chapter 296-843, Hazardous Waste Operations (HAZWOP), administered by the Washington State Department of Labor and Industries (L&I). Project personnel will be 40-hour HAZWOP trained and maintain their training with an annual 8-hour refresher. Personnel with limited tasks and minimal exposure potential will be required to have 24-hour training and a site hazard briefing and be escorted by a trained employee. Personnel with defined tasks that do not include potential contact with disturbed site soils, waste, groundwater, or dust (e.g., surveying, utility locating) are not required to have any level of hazardous waste training beyond a site emergency briefing and hazard orientation by HSO/SS. Floyd|Snider project personnel will fulfill the medical surveillance program requirements.

In addition to the 40-hour course and 8-hour refreshers, the HSO/SS will have completed an 8-hour HAZWOP Supervisor training as required by WAC 296-843-20015. At least one person on-site during field work will have current CPR/First Aid certification. All field personnel will have a minimum of 3 days of hazardous materials field experience under the direction of a skilled supervisor. Documentation of all required training will be maintained on site.

Additional site-specific training that covers on-site hazards, PPE requirements, use and limitations, decontamination procedures, and emergency response information as outlined in this HASP will be given by the HSO/SS before on-site work activities begin. Daily health and safety meetings will be documented on the Daily Tailgate Safety Meeting Form included in this HASP as Appendix A.

4.6 MEDICAL SURVEILLANCE

All Floyd|Snider field personnel are required to participate in Floyd|Snider's medical surveillance program, which includes biennial audiometric and physical examinations for employees involved in HAZWOP projects. The program requires medical clearance before respirator use or participating in HAZWOP activities. Medical examinations must be completed before conducting field work activities and on a biennial basis. These medical monitoring programs must be in compliance with all applicable worker health and safety regulations.

5.0 Hazard Evaluation and Risk Analysis

In general, there are three broad hazard categories that may be encountered during site work: chemical exposure hazards, fire/explosion hazards, and physical hazards. Sections 5.1 through 5.3 discuss the specific hazards that fall within each of these broad categories.

5.1 CHEMICAL EXPOSURE HAZARDS

This section describes potential chemical hazards associated with soil sample collection. Based on previous site investigation information, the chemicals present at this site that have been retained as site contaminants of concern (COCs) are gasoline and diesel range hydrocarbons in soil and gasoline and diesel range hydrocarbons, benzene, toluene, and total xylenes in groundwater.

Human health hazards are presented in the table below. This information covers potential toxic effects that might occur if relatively significant acute and/or chronic exposure were to happen. This information does not mean that such effects will occur from the planned site activities. Potential routes of exposure include inhalation, dermal contact, ingestion, and eye contact. The primary exposure route of concern during site work is ingestion of contaminated soil, though such exposure is considered unlikely and highly preventable. In general, the chemicals that may be encountered at this site are not expected to be present at concentrations that could produce significant exposures. The types of planned work activities and use of monitoring procedures and protective measures will limit potential exposures at this site. The use of appropriate PPE and decontamination practices will assist in controlling exposure through all pathways to the contaminants listed in the table below. In addition a 10.6 eV Photoionization Detector (PID), or equivalent device, will be used to monitor the concentration of organic vapors in workers' breathing zones. Suspend work if the concentration of vapors is measured at 5 ppm or greater over a period of 1 minute, and wait for concentrations to decrease before restarting work or move the work area upwind. If vapor concentrations within the breathing zone remain above these levels, a respirator will be donned. Contractors will follow their own health and safety protocol when concerning elevated organic vapor concentrations during UST decommissioning and trenching activities.

Chemical Hazard	Department of Safety and Health Permissible Exposure Limits (8-hour TWA/STEL)	Highest Concentration	Routes of Exposure	Potential Toxic Effects
Gasoline Range Hydrocarbons	300 ppm/500 ppm	3,700 mg/kg in soil. 2,400 µg/L in groundwater.	Inhalation, skin absorption, ingestion, skin/eye contact	Irritation to eyes, skin, mucus membranes; headache; fatigue; blurred vision; dizziness; slurred speech; confusion; convulsions; liver, kidney damage.

Chemical Hazard	Department of Safety and Health Permissible Exposure Limits (8-hour TWA/STEL)	Highest Concentration	Routes of Exposure	Potential Toxic Effects
Diesel Range Hydrocarbons	N/A	24,000 mg/kg in soil. 3,400 µg/L in groundwater.	Inhalation, skin absorption, ingestion, skin/eye contact	Irritation to eyes, skin, mucus membranes; headache; fatigue; blurred vision; dizziness; slurred speech; confusion; convulsions; liver, kidney damage.
Benzene	1 ppm/5 ppm	1.1 mg/kg in soil. 270 µg/L in groundwater.	Inhalation, skin absorption, ingestion, skin/eye contact	Irritation to eyes, skin, mucus membranes, resp. sys.; headache; fatigue; nausea, staggered gait; blurred vision; dizziness; slurred speech; bone marrow cancer [carc.]
Toluene	200 ppm/300 ppm	11 mg/kg in soil. 3.1 µg/L in groundwater.	Inhalation, skin absorption, ingestion, skin/eye contact	Irritation to eyes, skin, mucus membranes, resp. sys.; confusion; headache; euphoria; dilated pupils; dizziness; anxiety; insomnia; liver and kidney damage
Ethylbenzene	100 ppm/125 ppm	15 mg/kg in soil. 84 µg/L in groundwater.	Inhalation, skin absorption, ingestion, skin/eye contact	Irritation to eyes, skin, resp. sys.; throat irritation; dizziness; weakness; drowsiness; narcosis; kidney damage; hemorrhage of lung tissue.
Xylenes	100 ppm/150 ppm	47 mg/kg in soil. 78 µg/L in groundwater.	Inhalation, skin absorption, ingestion, skin/eye contact	Irritation to eyes, skin, nose, throat; excitement; drowsy; staggered gait; nausea; vomit; abdomen pain; liver and kidney damage

Abbreviations:
STEL Short-Term Exposure Limit
TWA Time-Weighted Average

5.2 FIRE AND EXPLOSION HAZARDS

Flammable and combustible liquid hazards may occur from buried in-place USTs. When on-site storage is necessary, such material will be stored in containers approved by the Washington State Department of Transportation in a location not exposed to strike hazards and provided with secondary containment. A minimum 2-A:20-B fire extinguisher will be located within 25 feet of

the storage location and where refueling occurs. Any subcontractors bringing flammable and combustible liquid hazards to the site are responsible for providing appropriate material for containment and spill response, and the handling of these provisions should be addressed in their respective HASP. Transferring of flammable liquids (e.g., gasoline) will occur only after making positive metal-to-metal connection between the containers, which may be achieved by using a bonding strap. Storage of ignition and combustible materials will be kept away from fueling operations.

5.3 PHYSICAL HAZARDS

When working in or around any hazardous, or potentially hazardous, substances or situations, all site personnel should plan all activities before starting any task. Site personnel shall identify health and safety hazards involved with the work planned and consult with the HSO/SS as to how the task can be performed in the safest manner, and if personnel have any reasons for concern or uncertainty.

All field personnel will adhere to general safety rules including wearing appropriate PPE—hard hats, steel-toed boots, high-visibility vests, safety glasses, gloves, and hearing protection, as appropriate. Eating, drinking, and/or use of tobacco or cosmetics will not be permitted in work areas. Personnel will prevent splashing of liquids containing chemicals and minimize dust emissions.

The following table summarizes a variety of physical hazards that may be encountered at the Site during work activities. For convenience, these hazards have been categorized into several general groupings with recommended preventative measures.

Hazard	Cause	Preventative Measures
Head strike	Falling and/or sharp objects, bumping hazards.	Hard hats will be worn by all personnel at all times when overhead hazards exist, such as during drilling activities and around large, heavy equipment. Maintain a safe distance from equipment that is equivalent to the full, extended reach of all moving parts. Maintain visual contact with equipment operators. Be mindful of your position and keep out of the intended pathway(s) of moving vehicles.
Foot/ankle twist, crush, slip/trip/fall	Sharp objects, dropped objects, uneven, and/or slippery surfaces.	Steel-toed boots must be worn at all times on-site while heavy equipment is present. Pay attention to footing on uneven or wet terrain and do not run. Keep work areas organized and free from unmarked trip hazards. Do not place body parts in areas where articulated or moving parts are present; unless parts have been locked and/or blocked.

Hazard	Cause	Preventative Measures
Engulfment/entrapment from the collapse of an excavation or trench	Excavation collapse	An excavation competent person or someone that has experience around excavations should be on site to enforce safety requirements. Do not enter any excavation or trench that is deeper than 4 ft from the ground surface. Keep equipment away from the edge of a trench or excavation to prevent collapse of the wall of the excavation. Do not stand or walk within 6 ft of the edge of any excavation.
Collect a soil sample from a piece of heavy equipment	Being struck by moving or mobile equipment	Approach equipment to collect environmental samples after the equipment has been grounded and moving parts have been secured, the operator has granted permission, and the operator has removed his/her hands from the controls.
Hand cuts, splinters, and chemical contact	Hands or fingers pinched or crushed, chemical hazards including dermal exposure to laboratory sample preservatives. Cut or splinters from handling sharp/rough objects and tools.	Nitrile safety gloves will be worn to protect the hands from dust and chemicals. Leather or cotton outer gloves will be used when handling sharp-edged rough materials or equipment. Do not collect soil samples from the excavator bucket until the bucket is resting on the ground at least 6 feet away from the test pit, the thumb on the bucket is lowered, eye contact is made with the operator, and the operator's hands are off the controls. Refer to preventive measures for mechanical hazards below.
Eye damage from flying materials, or splash hazards	Sharp objects, poor lighting, exposure due to flying debris or splashes.	Safety glasses will be worn at all times on-site. Care will be taken during decontamination procedures to avoid splashing, or dropping equipment into decontamination water. Face shields may be worn over safety glasses if splashing is occurring during sampling or decontamination.
Electrical hazards	Underground utilities, overhead utilities. Electrical cord hazards, such as well development pumps.	Utility locator service will be used prior to any investigation to locate all underground utilities. Visual inspection of work areas will be conducted prior to starting work. Whenever possible, avoid working under overhead high voltage lines. Make sure that no damage to extension cords occurs. If an extension cord is used, make sure it is the proper size for the load that is being served and rated SJOW or STOW (an "-A" extension is acceptable for either) and inspected prior to use for defects. The plug connection on each end should be of good integrity. Insulation must be intact and extend to the plugs at either end of the cord.

Hazard	Cause	Preventative Measures
Mechanical hazards	Heavy equipment such as drill rigs, excavator, service trucks, etc. Conducting work in road right-of-ways (on the road shoulder).	Ensure the use of competent operators, backup alarms, "kill" switches, regular maintenance, daily mechanical checks on all hoses and cables, and proper guards. Verify that "whip checks" or similar securing devices are installed on "quick-connections," where the failure of high-pressure connections could lead to the whipping of hoses. Discuss the need for plastic sheeting or other methods to contain drips (hydraulic oil, motor oil, etc.) to determine if measures are needed to prevent releases to the ground. Subcontractors will supply their own HASP. All project personnel will make eye contact with operator and obtain a clear OK before approaching or working within swing radius of heavy equipment, staying clear of swing radius. Obey on-site speed limits.
Traffic hazards	Vehicle traffic and hazards when working near right-of-ways.	Multiple field staff will work together (buddy system) and spot traffic for each other. Avoid working with your back to traffic whenever possible. Set up fencing to prevent third parties from entering site.
Noise damage to hearing	Machinery creating more than 85 decibels TWA, less than 115 decibels continuous noise, or peak at less than 140 decibels.	Wear earplugs or protective ear covers when a conversational level of speech is difficult to hear at a distance of 3 feet or if an employee must shout to be understood by nearby coworkers; when in doubt, a sound level meter may be used on-site to document noise exposure.
Strains from improper lifting	Injury due to improper lifting techniques, over-reaching/overextending, lifting overly heavy objects.	Use proper lifting techniques and mechanical devices where appropriate. The proper lifting procedure first involves testing the weight of the load by tipping it. If in doubt, ask for help. Do not attempt to lift a heavy load alone. Take a good stance and plant your feet firmly with legs apart, one foot farther back than the other. Turn the forward foot and point it in the direction of the eventual movement. Make sure you stand on a level area with no slick spots or loose gravel. Use as much of your hands as possible, not just your fingers. Keep your back straight, almost vertical. Bend at the hips, holding load close to your body. Keep the weight of your body over your feet for good balance. Use large leg muscles to lift. Push up with the foot positioned in the rear as you start to lift. Avoid quick, jerky movements and twisting motions. Never try to lift more than you are accustomed to lifting.

Hazard	Cause	Preventative Measures
Cold stress	Cold temperatures and related exposure.	Workers will wear appropriate clothing, and take breaks in a heated environment when working in cold temperatures. **Further detail on cold stress is provided in Section 5.3.1.**
Accidents due to inadequate lighting	Improper illumination.	Work will proceed during daylight hours only, or under sufficient artificial light.
Perform operation and maintenance of a remediation system	General hazards	Operate equipment according to established procedures and/or the manufacturer's recommendations. Inspect and evaluate the exterior and interior of the treatment system enclosure for potential, unanticipated hazards prior to beginning work. Use approved, intrinsically-safe equipment, appliances, and associated switches in hazardous locations. Do not place ignition sources within treatment enclosures or near monitoring points. Post warnings, such as, 'no smoking or open flames' signs, if unauthorized/untrained personnel may approach the system. Keep a spill kit within the compressor shed.

5.3.1 Cold Stress

Field work is expected to be completed in winter or spring months; therefore, exposure to cold temperatures may occur. Exposure to moderate levels of cold can cause the body's internal temperature to drop to a dangerously low level, causing hypothermia. Symptoms of hypothermia include: slow, slurred speech; mental confusion; forgetfulness; memory lapses; lack of coordination; and drowsiness.

To prevent hypothermia, site personnel will stay dry and avoid exposure. Site personnel will have access to a warm, dry area, such as a vehicle, to take breaks from the cold weather and warm up. Site personnel will be encouraged to wear sufficient clothing in layers such that outer clothing is wind- and waterproof and inner layers retain warmth (wool or polypropylene), if applicable. Personnel will wear water-protective gear, such as rain coats and pants, during sediment sampling to avoid getting clothing wet. Site personnel will keep hands and feet well-protected at all times. The signs and symptoms and treatment for hypothermia are summarized below.

Signs and Symptoms

- Mild hypothermia (body temperature of 98–90 °F)
  - Shivering
  - Lack of coordination, stumbling, fumbling hands

  - Slurred speech
  - Memory loss
  - Pale, cold skin
- Moderate hypothermia (body temperature of 90–86 °F)
  - Shivering stops
  - Unable to walk or stand
  - Confused and irrational
- Severe hypothermia (body temperature of 86–78 °F)
  - Severe muscle stiffness
  - Very sleepy or unconscious
  - Ice cold skin
  - Death

Treatment of Hypothermia—Proper Treatment Depends on the Severity of the Hypothermia

- Mild hypothermia
  - Move to warm area.
  - Stay active.
  - Remove wet clothes and replace with dry clothes or blankets and cover the head.
  - Drink warm (not hot) sugary drinks.
- Moderate hypothermia
  - All of the above, plus:
    - call 911 for an ambulance.
    - cover all extremities completely.
    - place very warm objects, such as hot packs or water bottles, on the victim's head, neck, chest, and groin.
- Severe hypothermia
  - Call 911 for an ambulance.
  - Treat the victim very gently.
  - Do not attempt to re-warm—the victim should receive treatment in a hospital.

Frostbite

Frostbite occurs when the skin freezes and loses water. In severe cases, amputation of the frostbitten area may be required. While frostbite usually occurs when the temperatures are 30 °F or lower, wind chill factors can allow frostbite to occur in above-freezing temperatures. Frostbite typically affects the extremities, particularly the feet and hands. Frostbite symptoms include cold, tingling, stinging, or aching feeling in the frostbitten area followed by numbness and skin discoloration from red to purple, then white or very pale skin. Should any of these symptoms be

observed, wrap the area in soft cloth, do not rub the affected area, and seek medical assistance. Call 911 if the condition is severe.

Protective Clothing

Wearing the right clothing is the most important way to avoid cold stress. The type of fabric also makes a difference. Cotton loses its insulation value when it becomes wet. Wool, on the other hand, retains its insulation even when wet. The following are recommendations for working in cold environments:

- Wear *at least three layers* of clothing.
  - An outer layer to break the wind and allow some ventilation (like Gortex or nylon)
  - A middle layer of down or wool to absorb sweat and provide insulation even when wet
  - An inner layer of cotton or synthetic weave to allow ventilation
- Wear a hat—up to 40 percent of body heat can be lost when the head is left exposed.
- Wear insulated boots.
- Keep a change of dry clothing available in case work clothes become wet.
- Do not wear tight clothing—loose clothing allows better ventilation.

Work Practices

- Drinking—Drink plenty of liquids, avoiding caffeine and alcohol. It is easy to become dehydrated in cold weather. Workers will be provided access to at least 1 quart of drinking water per hour.
- Work Schedule—If possible, heavy work should be scheduled during the warmer parts of the day. Take breaks out of the cold in heated vehicles.
- Buddy System—Try to work in pairs to keep an eye on each other and watch for signs of cold stress.

5.3.2 Biohazards

Bees and other insects may be encountered during the field work tasks. Persons with allergies to bees will make the HSO/SS aware of their allergies and will avoid areas where bees are identified. Controls such as repellents, hoods, nettings, masks, or other PPE may be used. Report any insect bites or stings to the HSO/SS and seek first aid, if necessary. Inspect the work area for hazardous plants, medical waste (syringes and similar items), and indications of hazardous organisms, and avoid such areas if possible.

Site personnel will maintain a safe distance from any urban wildlife encountered, including stray dogs, raccoons, and rodents, to preclude a bite from a sick or injured animal.

5.3.3 Traffic Hazards

For work being conducted near or alongside a roadway, signs, signals, and barricades should be utilized. Because signs, signals, and barricades do not always provide appropriate protection, spotters will be used to ensure traffic is monitored during work activities along roadways. All workers will wear high visibility reflective neon/orange vests. Although lane closures are not anticipated for off-site work, traffic control plans and city-issued permits will be required for any lane closures. If lane closures are required, an addendum to this HASP will be required to document the health and safety procedures associated with lane closure and use of flaggers.

6.0 Site Monitoring

The following sections describe site monitoring techniques and equipment that are to be used during site field activities. The HSO/SS, or a designated alternate, is responsible for site control and monitoring activities.

6.1 SITE MONITORING

All noise-generating activities will be conducted during the allowable noise-generating hours as stated by the City of Ellensburg. Construction Noise Hours for the City of Ellensburg are between 7:00 a.m. and 9:00 p.m. Monday through Friday.

Visual monitoring for dust will be conducted by the HSO/SS to ensure that inhalation of contaminated soil particles does not occur. If visible dust is present in the work area, either work will cease, and the area will be cleared until the dust settles, or dust masks will be worn. Water may be used to suppress any dust clouds generated during work activities.

A PID will be used on-site for characterization of soil samples collected. This PID will also be used to monitor vapor concentrations in breathing air of total volatile organic compounds (VOCs) in parts per million. Should the PID read a sustained concentration of total VOCs greater than 5 parts per million (ppm) over a period of 1 minute, the HSO/SS will stop work and evacuate the area until vapor concentrations return to background levels. If necessary, actions may be taken to reduce vapor concentrations in the work area by covering exposed soil in drums, or drilling cuttings, moving upwind, or using fans or foam to dissipate vapors from the work area. If vapor concentrations within the breathing zone remain above these levels, a respirator will be donned.

The HSO/SS will visually inspect the work site at least daily to identify any new potential hazards. If new potential hazards are identified, immediate measures will be taken to eliminate or reduce the risks associated with these hazards.

7.0 Hazard Analysis by Task

The following section identifies potential hazards associated with each task listed in Section 3.2 of this HASP.

Task	Potential Hazard
Oversight of UST decommissioning activities, trenching and sump installation with an excavator	Exposure to loud noise; overhead hazards; head, foot, ankle, hand, and eye hazards; electrical and mechanical hazards; lifting hazards; dust inhalation hazards; potential dermal or eye exposure to site contaminants in soil; fall hazards; engulfment; traffic hazards; being struck by heavy equipment (excavator bucket, company vehicles); and heat and cold exposure hazards. Other hazards may include contact with utilities or damage to utilities, incorrectly functioning excavator/fluid release from equipment, pinch points from handling tools and equipment, falling equipment, malfunctioning high-pressure fittings (whip checks) and hydraulic lines, biological hazards, and third parties being in close proximity to work zones.
Collection of soil samples from the excavator bucket	Chemical hazards include potential dermal or eye exposure to site contaminants in soil. Physical hazards include slip, trip, or fall hazards, failing and engulfment into a test pit with excavation collapse, falling equipment, being struck by moving or mobile equipment, pinch points, noise hazards, malfunctioning high pressure pneumatic and hydraulic lines; heat and cold exposure hazards; and biological hazards. Pinch points in areas where articulated or moving parts are present, unless locked and/or blocked.
Oversight of drilling activities and installation of monitoring wells	Exposure to loud noise; overhead hazards; head, foot, ankle, hand, and eye hazards; electrical and mechanical hazards; lifting hazards; dust inhalation hazards; potential dermal or eye exposure to site contaminants in soil; fall hazards; engulfment; traffic hazards; being struck by heavy equipment (drill rig, company vehicles); and heat and cold exposure hazards. Other hazards may include contact with utilities or damage to utilities, incorrectly functioning excavator/fluid release from equipment, pinch points from handling tools and equipment, falling equipment, malfunctioning high-pressure fittings (whip checks) and hydraulic lines, exposure to chemicals; biological hazards, and third parties being in close proximity to work zones.
Development of monitoring wells	Being struck by vehicles, encroachment of the work zone by third parties, pinch points, slip, trip falls, cuts and contusions from handling/moving equipment, lifting hazards and musculoskeletal injuries, electric shock from the use of corded electrical tools and equipment; potential dermal or eye exposure to site contaminants in groundwater; accidental release to ground.

Task	Potential Hazard
Collection of groundwater and floating product samples	Being struck by vehicles, encroachment of the work zone by third parties, pinch points, slip, trip falls, cuts and contusions from handling sample bottles or moving equipment, lifting hazards and musculoskeletal injuries, electric shock from the use of corded electrical tools and equipment; potential dermal or eye exposure to site contaminants in groundwater and floating product; accidental release to ground.
Performing operation and maintenance of the skimmer system	Fire/explosions from ignition sources; release of hazardous energy (electrical, mechanical, pressure); falls from ladders; exposure to chemicals; pinch/crush points, cuts and concussions, and musculoskeletal injuries associated with the removal and replacements of lids or moving heavy objects.

8.0 Personal Protective Equipment

All work involving heavy equipment and drilling will proceed in Level D PPE, which shall include hard hat, high-visibility vest/jacket, steel-toed boots, hearing protection, eye protection, and nitrile gloves.

All personnel will be properly fitted and trained in the use of PPE. The level of protection will be upgraded by the HSO/SS whenever warranted by conditions present in the work area. The HSO/SS will periodically inspect equipment such as gloves and hard hats for defects.

9.0 Site Control and Communication

9.1 SITE CONTROL

Pedestrians and other unauthorized personnel will not be allowed in the work areas. Access to the work site will be restricted to designated personnel. The purpose of site control is to minimize the public's potential exposure to site hazards, to prevent vandalism in the work area, to prevent access by unauthorized persons, and to provide adequate facilities for workers. If members of the public enter the work area, field staff will stop work until the public have left the work area. The site will be fenced to prevent potential third party injuries.

Work area controls and decontamination areas will be provided to limit the potential for chemical exposure associated with site activities, and transfer of contaminated media from one area of the site to another. The support zone (SZ) for the site includes all areas outside the work area and decontamination areas. An exclusion zone/contamination reduction zone (EZ/CRZ) and SZ will be set up for work being conducted within the limits of the site. Only authorized personnel shall be permitted access to the EZ/CRZ. For work being conducted outside the limits of the site (road shoulders), the EZ/CRZ around work locations will be demarcated with cones and/or barrier hazard tape as needed to effectively limit unauthorized access. Staff will decontaminate all equipment and gear as necessary prior to exiting the CRZ. Decontamination areas will be constructed with plastic sheeting on the ground, to reduce transport of contaminated soils from the EZ to the SZ.

9.2 COMMUNICATION

All site work will occur in teams and the primary means of communication on-site and with off-site contacts will be via cell phones. An agreed-upon system of alerting via air horns and/or vehicle horns may be used around heavy equipment to signal an emergency if shouting is ineffective.

10.0 Decontamination

Decontamination procedures will be strictly followed to prevent off-site spread of contaminated soil or water. The HSO/SS will assess the effectiveness of decontamination procedures by visual inspection.

10.1 CONTAMINATION PREVENTION

To avoid personal contact with contaminants, do the following:

- Do not walk through areas of obvious or known contamination.
- Do not directly handle or touch contaminated materials.
- Make sure all PPE have no cuts or tears prior to donning.
- Fasten all closures on suits, and cover with tape, if necessary.
- Take particular care to protect any skin injuries.
- Stay upwind of airborne contaminants.
- Do not carry cigarettes, gum, food, drinks, or similar items into contaminated areas.

To avoid spreading equipment and sample contamination:

- Take care to limit contact with heavy equipment and vehicles.
- If contaminated tools are to be placed on non-contaminated equipment/vehicles for transport to the decontamination pad, use plastic to keep the non-contaminated equipment clean.
- Bag sample containers prior to emplacement of sample material.

The PM and SSO will specify the decontamination requirements for personnel and equipment to be implemented for each task. The exclusion zone and the work site in general must include an established SZ and personnel and equipment decontamination areas. The minimum decontamination that will be required for all field operations will consist of Level D decontamination as described below.

10.2 DECONTAMINATION

The majority of field activities are expected to be conducted using Level D or modified Level D PPE. Decontamination for activities requiring Level D protection will consist of the following:

- Remove and dispose of gloves.

Decontamination procedures are described below:

Decontamination Measures for Soiled PPE

Station Number	Operation	Procedure
1	Equipment Drop	Deposit equipment used on-site (tools, sampling devices and containers, monitoring instruments, radios, clipboards, etc.) on plastic drop cloths. Segregation at the drop reduces the probability of cross-contamination.
2	Glove Removal	Remove gloves. Deposit in container with plastic liner.
3	Field Wash	Hands and face are thoroughly washed. Shower as soon as possible.

11.0 Emergency Response and Contingency Plan

This section defines the emergency action plan for the Site. It will be rehearsed with all site personnel and reviewed whenever the plan is modified or the HSO/SS believes that site personnel are unclear about the appropriate emergency actions.

A muster point of refuge (that is clear of adjacent hazards and not located downwind of site investigation activities) will be identified by the HSO/SS and communicated to the field team each day. In an emergency, all site personnel and visitors will evacuate to the muster point for roll call. It is important that each person on-site understand their role in an emergency, and that they remain calm and act efficiently to ensure everyone's safety.

After each emergency is resolved, the entire project team will meet and debrief on the incident—the purpose is not to fix blame, but to improve the planning and response to future emergencies. The debriefing will review the sequence of events, what was done well, and what could be improved. The debriefing will be documented in a written format and communicated to the PM. Modifications to the emergency plan will be approved by the PM.

Reasonably foreseeable emergency situations include medical emergencies, accidental release of hazardous materials (such as gasoline or diesel) or hazardous waste, and general emergencies such as vehicle accident, fire, thunderstorm, and earthquake. Expected actions for each potential incident are outlined below.

11.1 MEDICAL EMERGENCIES

In the event of a medical emergency, the following procedures should be used:

1. Stop any imminent hazard if you can safely do so.
2. Remove ill, injured, or exposed person(s) from immediate danger if moving them will clearly not cause them harm and no hazards exist to the rescuers.
3. Evacuate other on-site personnel to a safe place in an upwind or cross-wind direction until it is safe for work to resume.
4. If serious injury or a life-threatening condition exists, call **911** for paramedics, fire department, and police.
    a. Clearly describe the location, injury, and conditions to the dispatcher. Designate a person to go to the site entrance and direct emergency equipment to the injured person(s). Provide the responders with a copy of this HASP to alert them to chemicals of potential concern.
5. Trained personnel may provide first aid/cardiopulmonary resuscitation if it is necessary and safe to do so. Remove contaminated clothing and PPE only if this can be done without endangering the injured person.
6. Call the PM and HSO/SS.
7. Immediately implement steps to prevent recurrence of the accident.

Refer to Figure 1 in Section 2.2 for a map showing the nearest hospital location with phone number and address.

11.2 ACCIDENTAL RELEASE OF HAZARDOUS MATERIALS OR WASTES

The steps to follow after the accidental release of hazardous materials or wastes are as follows:

1. Evacuate all on-site personnel to a safe place in an upwind direction until the HSO/SS determines that it is safe for work to resume.
2. Instruct a designated person to contact the PM and confirm a response.
3. Contain the spill, if it is possible and can be done safely.
4. If the release is not stopped, contact 911 to alert the fire department.
5. Contact the Washington Emergency Management Division at 1-800-258-5990 and the National Response Center at 1-800-424-8802 to report the release. In addition, notify the Washington State Department of Ecology's Central Regional Office at 1-509-575-2490.
6. Initiate cleanup.
7. The PM will submit a written report to the Washington State Department of Ecology in the event of a reportable release of hazardous materials or wastes.

11.3 GENERAL EMERGENCIES

In the case of fire, explosion, earthquake, or imminent hazards, work shall be halted and all on-site personnel will be immediately evacuated to a safe place. The local police/fire department shall be notified if the emergency poses a continuing hazard, by calling 911.

In the event of a thunderstorm, outdoor work will be discontinued until the threat of lightning has abated. During the incipient phase of a fire, the available fire extinguisher(s) may be used by persons trained in putting out fires, if it is safe for them to do so. Contact the fire department as soon as feasible.

11.4 EMERGENCY COMMUNICATIONS

In the case of an emergency, an air horn or vehicle horn will be used as needed to signal the emergency. One long (5-second) blast will be given as the emergency/stop work signal. If the air horn is not working, a vehicle horn and/or overhead waving of arms will be used to signal the emergency. In any emergency, all personnel will evacuate to the designated refuge area and await further instruction.

11.5 EMERGENCY EQUIPMENT

The following minimum emergency equipment will be readily available on-site and functional at all times:

- First Aid Kit—contents approved by the HSO/SS
- Portable fire extinguisher (2-A:10 B/C min)
- Spill Kit
- Flashlight

12.0 Administrative Requirements

12.1 RECORDKEEPING

The HSO/SS, or a designated alternate, will be responsible for keeping attendance lists of personnel present at site health and safety meetings, accident reports, and signatures of all personnel who have read this HASP.

13.0 Approvals

Project Manager	Date
Project Health & Safety Officer	Date

14.0 Signature Page

I have read this Health and Safety Plan and understand its contents. I agree to abide by its provisions and will immediately notify the HSO/SS if site conditions or hazards not specifically designated herein are encountered.

Name (Print)	Signature	Date	Company/Affiliation

Appendix A
Daily Tailgate Safety Meeting and Debrief Form

DAILY TAILGATE SAFETY MEETING AND DEBRIEF FORM

Instructions:
To be completed by supervisor prior to beginning of work each day, when changes in work procedures occur, or when additional hazards are present. Please maintain a copy of this form with the site-specific HASP for the record.

PROJECT NAME AND ADDRESS:	**WORK COMPLETED/TOOLS USED:**

TOPICS/HAZARDS DISCUSSED:

Chemicals of concern:
Slip, trip, fall:
Heat or cold stress:
Required PPE:
Other Potential Hazards:
• Environmental:
• Physical:
• Biological:
• Other :

INFORMAL TRAINING CONDUCTED (Name, topics):

NAMES OF EMPLOYEES:

ADDITIONAL HAZARDS IDENTIFIED AT END OF WORK DAY:

Near Misses/Incidents? If so proceed to Page 2 Near Miss and Incident Reporting Form

Supervisor's Signature/Date: _____

NEAR MISS AND INCIDENT REPORTING FORM

INCIDENTS:

INJURIES:

NEAR MISSES:

CORRECTIVE ACTIONS:

Supervisor's Signature/Date: _____

Attachment 3
Cut Sheets

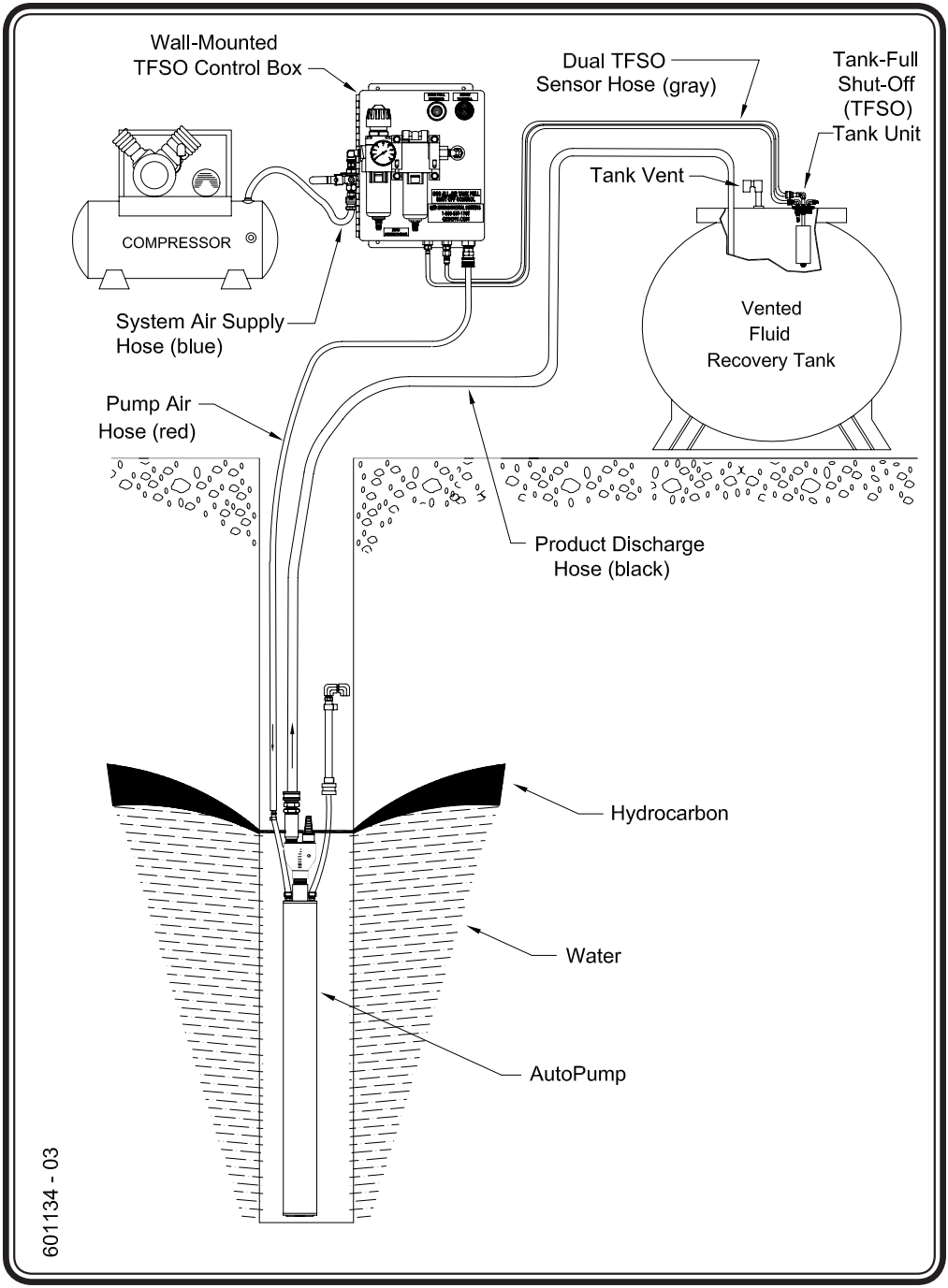


Figure 3 - Wall-Mount TFSO with AutoPump Downwell System

4” SPG4 AutoGenie™

4” SPG4 AutoGenie™ Skimmers

The 4” SPG4 AutoGenie™ is a safe, reliable and complete system for removing free product layers from wells. The 4” SPG4 AutoGenie system consists of an air-powered pumping unit with a floating inlet that tracks changes in the water level. The SPG float uses specific gravity to avoid water intake and includes multiple inlet hole positions to allow fine-tuning of the inlet level as the floating layer thickness is reduced. The special Genie bladder pump with high suction capacity delivers proven reliability and durability. The AutoGenie uses an integral pneumatic timer to control the bladder pump fill and discharge times. A complete line of matched accessories is available to help installation and performance, including in-well tubing, well caps, LNAPL collection tank full shutoffs and other items.

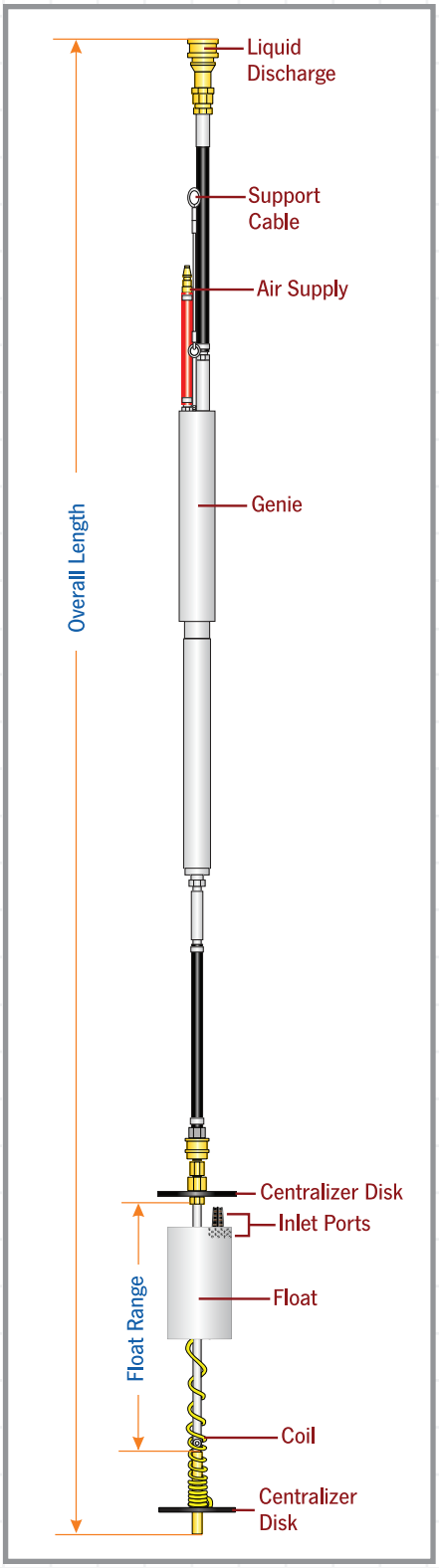
Warranty

SPG4 AutoGenies are warranted for one (1) year.

Advantages

1. **Specialized bladder pump is extremely durable, provides high suction to maintain flow, and eliminate contact of drive air with pumped fluid.**
2. **Continuous, automatic operation that is 100% air powered.**
3. **Available in a range of flow rates and float travel ranges.**
4. **Low air consumption.**

4” SPG4 AutoGenie™



The 4” SPG4 AutoGenie™ is available in 8 different models with varying inlet float travel ranges and pumping rates. Why so many options? QED has found that each free product site and well can have its own challenges in terms of well depth, liquid column depth, water level fluctuation and desired LNAPL pumping rate. For example, the model with the longest pump and float travel range may be too long for some wells. Check the dimensions and flow rates below, or just call QED to help select the best match for your project.

Specifications

AutoGenie Model	Maximum LNAPL Recovery Rate*	Float Travel Range	Overall Length	Minimum Liquid Column
AG2424L SPG4	160 gpd (605 Lpd)	24 in. (61 cm)	124 in. (315 cm)	31 in. (79 cm)
AG2424C SPG4	160 gpd (605 Lpd)	24 in. (61 cm)	109 in. (277 cm)	15 in. (38 cm)
AG2445 SPG4	160 gpd (605 Lpd)	45 in. (114 cm)	129 in. (329 cm)	15 in. (38 cm)
AG2460 SPG4	160 gpd (605 Lpd)	60 in. (152 cm)	145 in. (368 cm)	16 in. (41 cm)
AG4824L SPG4	320 gpd (1,211 Lpd)	24 in. (61 cm)	148 in. (376 cm)	31 in. (79 cm)
AG4824C SPG4	320 gpd (1,211 Lpd)	24 in. (61 cm)	133 in. (338 cm)	15 in. (38 cm)
AG4845 SPG4	320 gpd (1,211 Lpd)	45 in. (114 cm)	153 in. (389 cm)	15 in. (38 cm)
AG4860 SPG4	320 gpd (1,211 Lpd)	60 in. (152 cm)	169 in. (429 cm)	16 in. (41 cm)

Minimum Well ID	4 in. (10 cm)
Maximum OD	3.79 in. (9.63 cm)
Maximum Depth	150 ft. (45.7 m)
Air Supply Pressure (min/max)	40/100 psi (2.7/6.9 bar)
LNAPL Fluid Density	< .85 SG
Kinematic Viscosity	1-1000 centistokes
Recommended Initial LNAPL Layer	> 3 in. (> 7.6 cm)
Residual LNAPL Layer	≥ 0.25 in. (.64 cm)
Suitable Types of LNAPL	Gasoline, diesel, jet fuels, kerosene, #2 - #5 fuel oils, light weight motor oil and hydraulic fluid
Materials	Brass, Tygon®, stainless steel, Viton®, Teflon®
Fitting Type	Quick-connect
Hose or Tubing	Both are available

Tygon is a registered trademark of Saint Gobain - Norton. Viton is registered trademark of DuPont Dow Elastomers.
Teflon is a registered trademark of Dupont.
* gpd = gallons per day, Lpd = liters per day

P.O. Box 3726 Ann Arbor, MI 48106 USA **800-624-2026** **F 734-995-1170** info@qedenv.com www.qedenv.com