DRAFT CLEANUP ACTION PLAN

North Colfax Petroleum Contamination

Facility Site Number 4272

Cleanup Site ID 11557

Colfax, WA

December 2012
Washington Department of Ecology
Toxics Cleanup Program
Eastern Regional Office
Spokane, WA

North Colfax Petroleum Contamination Site

Draft Cleanup Action Plan

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ACRONYMS

bgs	below ground surface
BTEX	benzene, toluene, ethylbenzene, total xylenes
B26	soil boring designed to collect soil samples for evaluation purposes.
CAP	Cleanup Action Plan
DRPH	diesel range petroleum hydrocarbons
EDB	ethylene dibromide
EDC	ethylene dichloride
^{o}F	degrees Fahrenheit
GRPH	gasoline range petroleum hydrocarbons
MTBE	methyl-tertiary-butyl-ether
MW26	monitoring well (for example, #26)
NCPC	North Colfax Petroleum Contamination
ORPH	oil range petroleum hydrocarbons
PLP	potential liable party
SES	Sound Environmental Strategies also known as SoundEarth Strategies
Site	NCPC
SP-1	soil probe (for example, #1)
SVE	Soil Vapor Extraction

1.0 INTRODUCTION:

This report presents the Washington State Department of Ecology's (Ecology) proposed cleanup action for the North Colfax Petroleum Contamination (NCPC) site, Facility Site Number #4272. The NCPC Site (Site) is located in Colfax, Whitman County, Washington (Figure 1) and is comprised of the following Facilities and Potential Liable Parties (PLPs), identified in Agreed Order #4599 dated September 6, 2007 and Amendment 1 to Agreed Order #4599 dated July 23, 2008:

- PetroSun West, LLC, Facility Site Number 96954884, 804 N Main Street
  - TOC Holdings Company (formerly Time Oil Company Food Mart 041)
  - Bedrock Oil, Inc.
  - PetroSun West, LLC
    - West Pack Consulting, member
    - Golden States Oil, LLC, member
    - Sunrise Petroleum LLC, member
- Colfax Grange Supply, Facility Site Number 99996985, 105 East Harrison Street
- Colfax Grange Supply Inc. (Cenex Cardtrol), Main & Tyler, Facility Site Number 21984243, 102 East Tyler Street
  - CHS Inc.

The Cleanup Action Plan (CAP) is required as part of the Site cleanup process under the Model Toxics Control Act (MTCA), Ch. 70.105D, Revised Code of Washington (RCW), implemented by Ecology. The cleanup action is based on the Remedial Investigation and Feasibility Study (RI/FS) and other relevant documents in the administrative records.

The Cleanup Action Plan includes the following elements:

- The history of Site operations and ownership
- The nature and extent of contamination as presented in the RI
- Cleanup levels that are appropriate for the protection of human health and the environment
- The selected cleanup action for the Site
- Any institutional controls or monitoring required

1.1 DECLARATION

Ecology selected the remedy because it will be protective of human health and the environment. Additionally, the cleanup action is consistent with the intent of the State of Washington as stated in Ch.70.105D.30 (1) (b) RCW for permanent solutions.

1.2 APPLICABILITY

The selected remedy for cleanup of NCPC is based on the findings presented in the administrative records; as such the remedy is only applicable for the Site as defined in the record. The remedy was part of a formal process under MTCA with oversight by Ecology and as such does not imply the remedy is applicable for other areas or sites.

1.3 ADMINISTRATIVE RECORD

The documents used to make the decisions discussed in this cleanup action plan are on file in the administrative record for the Site. Major documents are listed in the reference section. The entire administrative record for the Site is available for public review by appointment at Ecology's Eastern Regional Office, located at 4601 N. Monroe Street, Spokane, WA 99205-1295. Results from applicable studies and reports are summarized to provide background information pertinent to the CAP. These studies and reports include:

PETROSUN PARCEL

- Preliminary Subsurface Investigation & Limited Remediation Report, GeoEngineers 5/22/2000
- Supplemental Subsurface Assessment Report, GeoEngineers 5/17/2001
- Annual Groundwater Monitoring Reports, GeoEngineers 2002, 2003, 2004, 2005
- Quarterly Groundwater Monitoring Reports, Sound Environmental Strategies/SoundEarth Strategies (SES) 2006 to present,
- Site Conceptual Model & Remedial Investigation Work Plan, SES 1/25/2008
- Remedial Investigation Report, SES 1/4/2010
- Final Remedial Investigation Addendum & Draft Disproportionate Cost Analysis, SES 03/16/12

COLFAX GRANGE SUPPLY/CENEX CARDTROL PARCEL

- Soil analytical results and Groundwater analytical results, Quantum Engineering 10/14/2004
- Groundwater analytical results, Quantum Engineering November 2004
- Groundwater analytical results, Quantum Engineering December 2004
- Groundwater quarterly sampling, Quantum Engineering report 2005, 2006
- Groundwater quarterly sampling, SES 2006 to present
- Site Conceptual Model & Remedial Investigation Work Plan, SES 1/25/2008
- Remedial Investigation Report, SES 1/4/2010
- Final Remedial Investigation Addendum & Draft Disproportionate Cost Analysis, SES 03/16/12

1.4 CLEANUP PROCESS

Cleanups conducted under the formal MTCA process require preparation of specific documents prepared by the PLP's and Ecology. The resulting documents and citation from MTCA along with a brief description are listed below:

- Remedial Investigation and Feasibility Study (RI/FS) - WAC 173-340-350

  The RI/FS documents the investigations and evaluations conducted at the Site from the discovery phase to the RI/FS document. The RI collects and presents information on the nature and extent of contamination, and the risks posed by the contamination. The FS presents and evaluates Site cleanup alternatives and proposes a preferred cleanup alternative. The document is prepared by the PLP's, approved by Ecology, and undergoes public comment.

- Cleanup Action Plan (CAP) - WAC 173-340-380

  The CAP sets cleanup levels and standards for the Site, and identifies the selected cleanup actions intended to achieve the cleanup levels (Table 6). The document is prepared by Ecology, and undergoes public comment.

- Engineering Design Report, Construction Plans and Specifications - WAC 173-340-400

  The Engineering Design Report outlines details of the selected cleanup action, including any engineered systems and design components from the CAP. These may include construction plans and specifications with technical drawings. The document is prepared by the PLP's and approved by Ecology. Public comment is optional.

- Operation and Maintenance Plan(s) - WAC 173-340-400

  These plans summarize the requirements for inspection and maintenance of cleanup actions. They include any actions required to operate and maintain equipment, structures, or other remedial systems. The document is prepared by the PLP's and approved by Ecology. Public comment is optional.

- Cleanup Action Report - WAC 173-340-400

  The Cleanup Action Report is completed following implementation of the cleanup action, and provides details on the cleanup activities along with documentation of adherence to or variance from the CAP. The document is prepared by the PLP's and approved by Ecology. Public comment is optional.

- Compliance Monitoring Plan - WAC 173-340-410

  The Compliance Monitoring Plans provide details on the completion of monitoring activities required to ensure the cleanup action is performing as intended. It is prepared by the PLP's and approved by Ecology. Public comment is optional.

2.0 SITE BACKGROUND

2.1 SITE HISTORY

The Site consists of three separate parcels of land with distinct addresses in Colfax, WA (Figure 2). The individual parcels making up the Site include the following:

- PetroSun West LLC/ Time Oil parcel is located at 804 N Main Street and has been associated with petroleum products since 1939. Prior to 1939 the Site was occupied by a cabin and several small buildings. According to the 1939 Sanborn Fire Insurance maps, the Site was the location of a building identified as "Gas & Oils" and "Greases". In 1956 the property became a Phillips 66 station with a building along the eastern edge of the property, two pump islands located toward Main Street and five underground storage tanks. The property operated as a Phillips 66 station until purchased by Time Oil Company in 1976. The parcel was reconfigured in 1999 into the present configuration. An 8,000 gallon tank was added near the southern end of the property. The Site currently has four underground storage tanks and two pump islands. Groundwater has been tested on portions of the Site annually since the discovery of petroleum contamination during upgrade of the Time Oil parcel in 1999. In December 2007, Time Oil Co. informed Ecology of the sale of Food Mart 041 and the rights to the Time Oil Co. name. Ecology was also informed that effective November 16, 2007, the entity formerly named Time Oil Co. changed to TOC Holdings Co. The former Food Mart 041 was purchased by PetroSun West, LLC and Bedrock Oil, Inc., and subsequently named PetroSun West No. 1041. The managing members of PetroSun West, LLC are West Pack Consulting, Golden States Oil, LLC, and Sunrise Petroleum, LLC. Through the remainder of the document the parcel will be referred to as PetroSun/Time Oil Co Parcel.

- The Cenex Cardtrol parcel is located at 102 East Tyler Street and has been the location of several small residential buildings located on the north side of the railroad Right-of-Way (ROW) prior to 1902. In 1902 a railroad depot was noted on fire insurance maps. According to information provided by Colfax Grange, the parcel was used as a city park, sales lot for farm equipment, vacant land and in 1985 it was redeveloped into the Colfax Grange Supply Cardtrol facility. In 2006 the Site was decommissioned and the current Cenex Cardtrol facility was constructed.
- The Colfax Grange Supply Company parcel is located at 105 East Harrison Street, south of the railroad ROW. The parcel's early history was residential from 1893 until 1912. The parcel of land remained vacant until 1939 when a small building was built on the Northeast corner of Harrison and North Main Streets. The building was identified as "Gas & Oil" on the Sanborn Fire Insurance Maps of the area. The current structure on 105 East Harrison was reportedly constructed in 1953. The building has been remodeled several times over the years into the present configuration.

2.2 SITE INVESTIGATIONS

PetroSun /Time Oil Co Parcel: The property includes all of Whitman County tax parcel number 1-0135-00-01-04-000 and occupies lots 2, 3, 4 and 5 of Block 1 of Perkins Prescott Riverside Addition. The area encompasses approximately 19,000 square feet. In 1999 Time Oil Company redeveloped the property into the present configuration. The old service station building, dispenser pumps, and pump islands were removed. A new underground storage tank was also installed on the southern portion of the property. During the installation of the underground storage tank, petroleum contamination above the cleanup standards was identified in the form of gasoline and xylenes. In addition to contamination identified with the tank installation, petroleum contamination in the form of oil-range petroleum hydrocarbons was detected after the old service station building was removed. The contamination appeared to be associated with an oil-water separator discovered during the investigation. GeoEngineers, the consultant at the time, also discovered two buried 50-gallon drums believed to be another oil-water separator or possibly new /used oil storage. Not all of the soil contamination was removed due to the new pump islands and canopy installed during the upgrade of the station. The historic reports document contaminated soils were shipped to RemTech, Inc. near Spokane, WA for low temperature thermal destruction.

Colfax Grange Supply (Cenex Cardtrol Parcel): The parcel is described as lot 1, block 1 of Perkins Prescott Riverside Addition 1-0135-00-01-01-0000. The Cenex site also includes the northern portion of Whitman Co tax parcel number 8-0195-00-00-00-0323. The property includes approximately 12,000 square feet. In September 2004, Colfax Grange retained Quantum Engineering to install three monitoring wells on the parcel to further investigate gasoline contaminated groundwater reported in offsite monitoring wells installed by GeoEngineers on behalf of Time Oil Company. The objective being to determine if the observed groundwater contamination was from the Cenex Cardtrol parcel. Initial soil samples collected during the investigation did not detect the presence of petroleum product. Groundwater samples were collected from the newly installed monitoring wells. Analytical results from CMW01 and CMW02 did detect benzene contamination in groundwater above cleanup standards; however, analytical results from CMW03 did not detect the presence of any petroleum products.

In October of 2004 a Cenex delivery truck overfilled the unleaded gasoline tank during a fuel delivery. The amount of fuel spilled was never determined. In November of 2004 Quantum Engineering conducted an initial response to the October release using an industrial vacuum truck to remove contamination after the fill port of the unleaded tank was exposed. At the same time the Colfax Grange authorized Quantum Engineering to install two additional monitoring wells on the parcel down gradient of the release. Monitoring wells CMW04 and CMW05 were installed near the parcel boundary along Tyler Street. Soil samples collected from the two monitoring wells during drilling did not detect the presence of petroleum contamination. Groundwater petroleum contamination was present above cleanup standards in monitoring wells CMW01, 02, 04, and 05.

In 2006 Colfax Grange Supply authorized the upgrade of the Cenex Cardtrol facility by removal/decommissioning of the 1985 vintage underground storage tank system and constructing a new system in the same general area. During removal of the UST system, petroleum contaminated fill material was discovered above cleanup standards and removed to an offsite property for treatment by land farming. At the conclusion of the work, Quantum Engineering's report with the laboratory analytical results document soil contamination remained around the perimeter of the excavation. According to the RI documentation, Quantum Engineering representative stated soils contaminated above cleanup standards following tank removal were removed to accommodate the new tank installation. However, clearance sampling was never conducted to demonstrate these claims.

After the upgrade of the Cenex Cardtrol system, Colfax Grange Supply applied to Ecology's Voluntary Cleanup Program with the goal of receiving a No Further Action designation regarding the cleanup of the gasoline contamination discovered during the tank upgrade. The request to enter the Voluntary Cleanup Program was denied by Ecology due to groundwater monitoring results documenting comingling of the gasoline releases from the Cenex Cardtrol and PetroSun/Time Oil Co. parcels.

Colfax Grange Supply Parcel: The parcel is described as lot 14, 15, and the southern half of lot BR, block 1 of Perkins Prescott, Riverside Addition. The parcels are described as all of Whitman tax parcel 1-0135-00-01-15-0000 and the southern portion of tax parcel 8-0195-00-00-00-0323. The property encompasses approximately 27,000 square feet. Prior to the Agreed Order for the RI/FS no known cleanups or environmental investigations were conducted on the property.

2.3 PHYSICAL CHARACTERISTICS

2.3.1 CLIMATE

The climate for Colfax, Washington is mild during summer, with the average temperatures in the 60s, and cold during winter, with temperatures in the 30s. August is the warmest month of the year with temperatures averaging 83 degrees Fahrenheit (°F), while January is the coldest month with average minimum temperatures of 24 °F.

Temperature variations between night and day tend to be relatively broad during summer months with an average difference of 33 °F, and fairly limited during winter months with an average difference of 15 °F. The annual average precipitation for Colfax, Washington is 20.04 inches. Rainfall is fairly evenly distributed throughout the year. The wettest month of the year is December with an average rainfall of 2.93 inches (SES 2010).

2.3.2 GEOLOGY AND HYDROGEOLOGY

The Site is mantled by a thin veneer of alluvial and colluvial deposits, which are underlain by several thousand feet of basalt bedrock of the Grande Ronde Formation of the Columbia River Basalt Group. Numerous soil borings completed by GeoEngineers, Inc., Quantum Engineering, and Sound Environmental Strategies show the Site to be underlain by native, soft to medium stiff silt-rich soils (Unified Soil Classification System [USCS] Classification ML) locally with interbedded sand that extends to depths of about 7 to 15 feet below ground surface (bgs). These soils are interpreted to be low-energy overbank deposits that resulted from ancestral flooding of the Palouse and South Fork of the Palouse River. These upper soils were locally underlain by medium dense to dense sandy gravel to gravelly with variable silt (GM/GP) that extended to depths ranging from about 10 to 16 feet bgs, at which depth basalt rubble and or bedrock was encountered and extended to the maximum depth explored at the Site of up to 20.5 feet bgs (SES 2010).

Near-surface groundwater at the Site occurs within the silt and underlying sand, silty sand, and gravels that mantle the basalt bedrock to depths of up to about 16 feet beneath the Site and immediate vicinity. The upper water-bearing zone appears to be unconfined in nature, with the basalt bedrock forming an underlying confining unit. The saturated thickness of this water-bearing zone varies seasonally from about 6 to 10 feet.

Periodic monitoring of near-surface groundwater conditions completed by GeoEngineers, Inc, Quantum Engineering, and Sound Environmental Strategies has documented depths generally ranging from about 6 feet to 10 feet bgs. Depths to groundwater in individual wells have seasonally varied between approximately 2 to 3.5 feet. Ground water monitoring has consistently documented a groundwater flow migration toward the northwest to north-northwest, with a gradient that ranges from about 0.008 feet/foot to 0.019 feet/foot.

The Site is part of the eastern portion of the Columbia River Basalt Group. A number of different basalt flows make up the Columbia River Basalt Group. The flows vary in thickness from several feet to more than 1,000 feet thick. The different basalt flows make up the framework for the groundwater beneath the Columbia Basin. Inter-beds of sand and gravels between the flows provide the deeper groundwater supplies in the area. The groundwater in the deeper basalt aquifers generally flow from the margins of the basalt flows toward the major water bodies, the Columbia River and the Snake River. The near surface aquifer beneath the Site is an unconfined aquifer. Typically the shallow unconfined aquifers tend to parallel the basalt surfaces (Golder Associates, 2008). The work conducted throughout the Remedial Investigation, and other investigations conducted prior to the formal Site status, documents the shallow unconfined aquifer beneath the Site parallels the basalt surface. The basalt layer acts as a confining layer restricting communication between the shallow and deeper aquifers.

2.3.3 TOPOGRAPHY

The Site is located in Colfax along a valley floor which provides the main course of the Palouse River and the South Fork of the Palouse River. The elevation of the Site is approximately 1940 feet above sea level. The Colfax valley floor varies between 1900 to 2000 feet above sea level. The course of the Palouse River and the South Fork of the Palouse River are directed through a concrete channel in the Colfax area designed to manage flooding and minimize erosion of the river banks. A railroad ROW bisects the Cenex Cardtrol parcel and the Colfax Grange parcels forming the topographic high for the immediate area and the Site. The southern portion of the Site bordering Harrison Street has a gentle slope away from the railroad ROW toward the south to southwest. The portion of the Site north of the railroad ROW has a gentle slope toward the north to northwest.

2.3.4 SITE SPECIFIC CHARACTERISTICS

PetroSun/Time Oil Co Parcel: Property improvements on the parcel include a single story slab-on-grade convenience store located near the northern end of the property. Vehicle service entrances from Main and Tyler Streets provide access to the two pump islands located on the central portion of the property. The Site includes four underground storage tanks: one 8,000-gallon double wall steel clad corrosion resistant tank; one 12,000-gallon single wall steel tank; one 8,000-gallon single wall steel tank; and one 6,000-gallon steel single wall tank. The three single walled steel tanks have cathodic protection to reduce metal corrosion of the tanks. All dispenser supply lines were upgraded during 1999 to double wall fiberglass piping which is corrosion resistant. Containment sumps are located at the dispenser pumps and at the tanks' turbine pumps. The pump islands have two fuel dispensers each allowing for eight fueling locations. The dispenser islands are located underneath a canopy. Overall leak detection is provided by an electronic level indicator capable of monitoring the tank contents as well as the fuel system piping. In addition, the electronic level indicator conducts leak tests to check the system's integrity. With the exception of the landscaped areas, the property is covered by the building and concrete or asphalt pavement. The overall surface of the parcel is flat with little or no relief. Surface runoff is reportedly directed to a catchment basin/oil-water separator before being discharged to the City of Colfax's storm drainage system.

Colfax Grange (Cenex Cardtrol Parcel): The property is bordered to the north by Tyler Street, to the east by a city ROW, to the south by railroad ROW and to the west by N Main Street. Access to the property is from N Main and Tyler Streets. The eastern driveway provides direct access to Morton Street. Property improvements include the 2006 underground storage tank system. The system includes three 12,000-gallon double wall corrosion resistant underground storage tanks, with double wall piping servicing the dispenser pumps. Containment sumps are located at the turbine pumps, and beneath the dispensers. Electronic sensors are located in the sumps, providing a portion of the leak detection for the underground storage tank system. Leak detection for the underground storage tanks system is performed by an electronic level indicator capable of monitoring the tank contents as well as the system piping. In addition, the electronic level indicator is capable of conducting leak tests to check the system's integrity. After the 2006 underground storage tank installation, the parcel was covered in concrete and/or asphalt pavement north of the railroad to the Tyler Street ROWs. The surface of the Site slopes toward Tyler Street and all surface drainage is directed to the street where it enters the storm drainage system near the intersection of Tyler and Main Streets. The facility has two pump islands. The main pump island located in the central portion of the parcel has two dispenser pumps providing four fueling locations. This pump island is covered by a canopy. The second smaller pump island is located toward the eastern end of the parcel. The pump island is designed to supply fuel to larger commercial vehicles. Two pumps supply the island with diesel fuel and unleaded gasoline.

Colfax Grange Supply Parcel: The property is bordered to the north by the railroad ROW, to the west by North Main Street, to the south by Harrison Street, and to the east by Colfax Grange Supply Building No. 2. The hardware/warehouse building fronts along Harrison Street. The main building is a 7,680 square foot concrete block, steel sided building constructed slab-on-grade. The driveway on the north side of the building and south of the railroad ROW allows for circle navigation of the building for pick up or delivery to the warehouse. A concrete slab installed along the north side of the building provides drainage to the Colfax storm drainage network located to the northeast of the building. The concrete slab was installed following the removal of a heating oil tank and investigation of above ground storage tanks previously located along the north side of the building. The western portion of the parcel along North Main Street is the site of a historic service station located on the northeast corner of Harrison and North Main Streets. Landscaping along North Main Street on the Colfax Grange parcel includes lawn and a water feature. The area in front of the building is covered with concrete and asphalt pavement. The eastern end of the building has access to the warehouse through large overhead doors. Access to this area is gained from a service driveway from Harrison. The service drive is covered in concrete pavement.

3.0 CONCEPTUAL SITE MODEL/REMEDIAL INVESTIGATION

The remedial investigation was completed for the known petroleum releases to assess the nature and extent of the contamination in soils and groundwater associated with the facilities.

3.1 POTENTIAL AND SUSPECTED SOURCES OF CONTAMINATION

The Site conceptual model developed as part of the RI work plan included review of historic documents, reports and interviews concerning the documented releases of petroleum at the PetroSun/Time Oil Co. parcel located at 804 North Main Street, and Cenex Cardtrol facility located at 102 East Tyler Street. Historical research documented the presence of a service station on the Colfax Grange Supply property located at 105 E Harrison Street. The following describes the Site conceptual model findings regarding each parcel:

PetroSun/Time Oil Co. Parcel: Soil contamination remaining after the upgrade of the current system was included as a possible source of ongoing contamination, requiring further investigation. The operation of the current fueling system was also included in the investigation of contamination.

Colfax Grange (Cenex Cardtrol Parcel): The conceptual model for the parcel identified a rind of soil contamination remaining after decommissioning the 1985 underground storage tank system. The railroad ROW was considered a potential source of contamination as was the historic site use of the current Grange building on Harrison Street and the former service station identified on Sanborn Fire Insurance maps from 1939.

Colfax Grange Supply Parcel: The Site conceptual model for the Colfax Grange Supply Harrison Street parcel identified several potential sources of contamination south of the railroad tracks that included: one abandoned heating oil tank, several above ground storage tanks used to dispense solvent and other chemicals, one underground storage tank which dispensed gasoline on the northeast corner of the building, and one gasoline tank closed in place beneath the warehouse area of the grange building. The parcel was also the site of a historic gasoline station located on the northeast corner of Harrison and Main Streets. These sources are located in an up gradient position from the Cenex Cardtrol release.

The results of the review and development of the potential and suspected sources of contamination allowed for a list of chemicals of concern to be developed for the Site.

3.2 CHEMICALS OF CONCERN

The chemicals of concern (COCs) identified for the Site are based on a list of chemicals associated with retail fueling stations:

- Petroleum hydrocarbons: Gasoline Range Petroleum Hydrocarbons (GRPH), Diesel Range Petroleum Hydrocarbons (DRPH), and heavy Oil Range Petroleum Hydrocarbons(ORPH)
- Benzene, toluene, ethylbenzene, and total xylenes (BTEX)
- Poylnuclear aromatic hydrocarbons (PAHs)
- Lead
- Oxygenates:

  Methyl tertiary-butyl ether (MTBE)

  Ethylene dibromide (EDB)

  Ethylene dichloride (EDC)

The COCs at the conclusion of the RI/FS investigation are:

- Petroleum hydrocarbons GRPH, DRPH, and ORPH
- BTEX
- MTBE

3.3 MEDIA OF CONCERN

Prior to completion of the RI, the media of concern were identified as soil, groundwater, soil vapor, indoor air quality and surface water. At the completion of the RI, remaining media of concern were groundwater and residual soil contamination remaining on the three parcels within the Site boundaries: PetroSun/Time Oil Co., Cenex Cardtrol, and Colfax Grange Supply parcels. Subsequent sampling does not indicate any exceedance of cleanup standards for groundwater.

3.4 SOIL INVESTIGATION

During the remedial investigation a total of forty one soil borings were installed throughout the Site and adjoining areas, three test pits were excavated, and soil samples for laboratory analytical testing were collected to determine the lateral and vertical extent of the soil contamination associated with the PetroSun/Time Oil Co., Cenex Cardtrol and Colfax Grange Supply parcels. Figure 3 documents the extent of the residual soil contamination remaining on each parcel within the Site boundaries. Subsequently, twenty of the borings were converted to groundwater monitoring wells to evaluate the extent of the groundwater impact from the identified releases.

3.4.1 PETROSUN/TIME OIL CO PARCEL

Soil samples collected throughout the Site during the RI/FS documented the presence of soil contamination above the cleanup action levels on the parcels. SP-01 though SP-08, SP-17, B22/MW22, B26/MW26 and SP-18 and SP-19 were installed to evaluate interim action activities and determine the lateral and vertical extent of residual soil contamination remaining on the parcel. Soil contamination was identified above the cleanup action levels in SP-02, SP-04, and SP-05 at various depths. Laboratory results document soil contamination with gasoline range petroleum hydrocarbons, benzene, toluene, ethylbenzene, total xylenes and MTBE above cleanup action levels in some or all of the samples collected from sample intervals ranging from 3-4 and 10-11 feet below ground surface (bgs). Table 1 summarizes the soil analytical results for the parcel.

3.4.2 COLFAX GRANGE (CENEX CARDTROL) PARCEL

Soil contamination was documented around the perimeter of the 2006 excavation at the Cenex Cardtrol parcel. Soil borings SP-09 through SP-16 and SP-18, SP-19, B21/MW21 and B23/MW23 were installed to evaluate the extent of residual soil contamination remaining after removal and replacement of the tanks in 2006.

SP-11, SP-12 and SP-14 through SP-15 detected gasoline or benzene above the cleanup action levels in soil samples collected during the investigation. SP-11 was installed in Tyler Street ROW to assess off site migration of petroleum from the Cenex Cardtrol parcel. Benzene was detected above MTCA method 'A' cleanup action levels in two samples from this direct push boring. Sample depths were from 3-4 feet bgs and 5-6 feet bgs respectively. Gasoline, as well as other volatile compounds, was detected below the cleanup action levels in both samples. Lead was detected above the cleanup action level in the sample from 3-4 feet bgs. All other lead samples analyzed during previous investigations and during the RI were below detection levels or cleanup actions levels. The lead result was attributed to construction of the road bed for Tyler Street and not investigated any further. A down-gradient monitoring well (B21/MW21) was placed at the NW corner of Tyler and North Morton Streets. Contamination was not detected above the respective cleanup action levels in either soil or groundwater samples collected during or after well installation of B2/MW21. The soil sample results from the boring B21, as well as the groundwater monitoring results from MW21, document the northeastern limit of the Site near Tyler and Morton Streets.

SP-18 and SP-19 were installed in August 2010 to address deficiencies identified in the Draft FS dated September 7, 2010. The soil borings were installed to assess the potential for vapor intrusion into the residences to the northeast of the Site. Soil samples did not detect the presence of petroleum contamination in the borings from field screening or laboratory analytical results. Table 2 summarizes the laboratory results for the Cenex Cardtrol parcel.

3.4.3 COLFAX GRANGE SUPPLY PARCEL

Soil samples collected from B17, B18, and B19 located between the identified contaminated areas at the Cenex Cardtrol and Colfax Grange parcels did not detect the presence of petroleum contamination in soils above the method 'A' cleanup action levels. Soil contamination was found associated with a gasoline station which formerly operated on the northeast corner of Harrison and Main Streets in Colfax. B16/MW16 documented petroleum soil contamination from a sample collected between 11-12 feet bgs. B16 is in a down-gradient location from the former gasoline service station. Test pits excavated in the area of the former service station on the Colfax Grange parcel identified petroleum contamination above soil cleanup action levels in the saturated zone. Soils in the vadose zone did not contain petroleum contamination which suggests the former service station tanks were removed and clean fill was used to backfill the excavation or current site improvements are covering the tanks and they were never investigated due to restricted access. Table 3 summarizes the laboratory analytical results for soil samples collected during the RI on this parcel.

3.4.4 SUMMARY OF SOIL INVESTIGATION

Residual soil contamination remains on all three parcels within the Site. The soil contamination remaining on the PetroSun/Time Oil Co and the Cenex Cardtrol parcels are restricted to vadose zone soils. The soil to groundwater pathway is complete on both parcels. The vapor intrusion pathway on the PetroSun/Time Oil Co parcel was found to be complete. However, based on the current use of the property the risk is based on onsite worker exposure at the convenience store. Soil samples from the PetroSun/Time Oil Co and Cenex Cardtrol parcels document the vapor pathway to nearby residences is incomplete and does not pose a risk. Soil sample results from the Colfax Grange parcel did not contain volatile organic compounds; therefore the vapor pathway is incomplete for the historic gasoline station.

3.5 GROUNDWATER INVESTIGATION

Groundwater has been tested on portions of the Site annually since the discovery of petroleum contamination during upgrade of the Time Oil parcel in 1999. Groundwater samples have been collected quarterly from the Site since the effective date of the Agreed Order, September 6, 2007. Groundwater flow direction has consistently been toward the north northwest with a flow rate ranging from about 0.008 feet/foot to 0.019 feet/foot on the PetroSun West LLC/Time Oil Co, Cenex Cardtrol and Colfax Grange Supply parcels.

Groundwater sample results from the wells installed by PetroSun/Time Oil Co prior to the Agreed Order were commonly above the cleanup action levels for gasoline, diesel, benzene, toluene, ethylbenzene, xylenes, MTBE and often naphthalene. After Colfax Grange replaced the Cenex Cardtrol fueling system in 2006, groundwater monitoring results continued to improve with results exceeding cleanup action levels less frequently. Prior to the Agreed Order, the groundwater network included twelve monitoring wells installed on behalf of Time Oil by GeoEngineers: MW-1 though MW-12 located on the PetroSun West LLC/Time Oil parcel, North Main, and East Tyler Streets. Colfax Grange Supply authorized Quantum Engineering to install three monitoring wells during October of 2006 CMW-01 through CMW-03. Two additional monitoring wells were authorized in December (CMW-04 and CMW-05). During the upgrade of the UST system on the Cenex Cardtrol parcel, CMW-01 was decommissioned.

After all parties signed the Agreed Order, groundwater sample collection was completed on a quarterly basis throughout the Site. Currently, groundwater samples collected from the defined boundary of the Site seldom exceed cleanup action levels for the petroleum constituents of concern. The exceptions are groundwater samples collected from MW26, located in the Main Street ROW adjacent to the PetroSun/Time Oil Co parcel, which document the presence of heavy oil range petroleum hydrocarbons and benzene above the cleanup action levels four of the last eleven quarters. Samples collected during March and June of 2010, and February and November of 2011, were above the cleanup action levels. Table 4 summarizes the groundwater analytical results for the parcels since the finalization of the RI on January 4, 2010. After implementing the Agreed Order a total of 20 monitoring wells were added to the network to identify groundwater contamination associated with the known releases and help understand the hydrogeologic characteristics of the shallow groundwater aquifer beneath the Site. The groundwater network included 36 wells being sampled at the height of the Remedial Investigation. As the groundwater plume at the Site continued to improve over the course of the RI/FS, the number of groundwater monitoring wells being sampled has been reduced as noted in Table 5. Those monitoring wells with laboratory analytical results below the cleanup action levels for four or more consecutive quarters have not been analyzed for chemicals of concern (COC's). Section 3.3 presents the COC's identified in the conceptual site model prior to the investigation and COC's at the conclusion of the RI investigation.

3.5.1 SUMMARY OF GROUNDWATER INVESTIGATION

Based on the groundwater monitoring results for the Site, groundwater conditions in the shallow unconfined aquifer have improved to the present conditions, where only one monitoring well (MW26) sporadically exceeds the cleanup levels at PetroSun/Time Oil Co parcel within the Site boundaries. Based on the RI/FS reports, groundwater at MW26 is predicted to fall below cleanup levels and remain there by the fourth quarter of 2012.

3.6 SOIL VAPOR PATHWAY & VAPOR INTRUSION CONSIDERATIONS

Soil samples were collected from borings SP-18 and SP-19 to resolve the uncertainty regarding the extent of impacts encountered in boring SP-11, including the potential existence of a vapor intrusion pathway into the residences located to the north of East Tyler Street and east of the PetroSun/Time Oil parcel. The soil samples collected from borings SP-18 and SP-19 did not exhibit concentrations of GRPH, DRPH, or ORPH that exceeded the laboratory's lower reporting limit; evidence of petroleum hydrocarbon impacts, including staining, odors, or significant field instrument readings were not observed in soil samples collected from any of the borings. Therefore, the potential risk for vapor intrusion was determined to be low.

The primary locations of residual VOCs (benzene impacts) include the western portion of the PetroSun/Time Oil and the former tank locations on the Cenex Cardtrol parcels. Both the PetroSun/Time Oil and Cenex Cardtrol parcels are operating gas stations. As stated in Section 1.2 of the 2009 Ecology draft document *Guidance for Evaluating Soil Vapor Intrusion in Washington State: Investigation and Remedial Action,* worker exposure to the use of chemicals of concern is greater than the risk associated with vapor intrusion. Worker safety is regulated by both the Washington Department of Labor and Industries and the Occupational Safety and Health Administration (OSHA) regulations. Therefore, vapor intrusion does not apply to these portions of the Site since worker exposure to use of chemicals of concern is greater than the risk associated with vapor intrusion (Ecology 2009).

Finally, the risk of vapor intrusion into the Colfax Grange building is mitigated by the absence of benzene in soil and groundwater (SES 2010a, SoundEarth 2011). As stated in Section 1.4.1 of *Guidance for Evaluating Soil Vapor Intrusion in Washington State: Investigation and Remedial Action* Ecology (2009), "if the chemicals present at the site are not sufficiently toxic and volatile, there is no further need to evaluate the pathway"(SoundEarth 2011).

3.6.1 SUMMARY VAPOR INTRUSION OBSERVATIONS

The vapor intrusion pathway evaluation concluded the worker exposure at the PetroSun/Time Oil parcel was the only complete pathway. The exposure is based on worker exposure to the COC's remaining on the parcel. The vapor intrusion pathway was not complete at the Cenex Cardtrol or Colfax Grange parcels. Therefore, vapor intrusion pathway will not be evaluated or considered any further during the cleanup action at the Site.

3.7 SURFACE WATER

After the Cenex Cardtrol parcel underground storage tanks were removed and replaced, the detection of COC's in down gradient monitoring well MW-11 became less frequent. To address this and determine if soil and groundwater contamination was located further toward the Palouse River, MW-13 was installed farther toward the river. Soil samples collected at the time of installation did not detect petroleum contamination in the soil column and there have been no exceedance of cleanup standards in MW-11 or MW-13 from groundwater samples since the signing of the Agreed Order. Therefore, the surface water pathway is not complete based on groundwater monitoring results. Surface water will not be evaluated further in the cleanup action plan or subsequent cleanup action at the Site.

4.0 CLEANUP STANDARDS

MTCA requires the establishment of cleanup standards for individual parcels. The two primary components of cleanup standards are cleanup levels and points of compliance. Cleanup levels determine the concentration at which a substance does not threaten human health or the environment. All material exceeding a cleanup level is addressed through a remedy preventing exposure to the material. Points of compliance represent the locations on the Site where cleanup levels must be met.

4.1 OVERVIEW

The process for establishing cleanup levels involves the following:

- Determining which method to use.
- Developing cleanup levels for individual contaminants in each media.
- Determining which contaminants contribute to the majority of the overall risk in each media (indicators).
- Adjusting the cleanup levels downward based on total site risk.

The MTCA Cleanup Regulation provides three methods for establishing cleanup levels: Methods A, B, and C:

- Method A may be used to establish cleanup levels at routine sites or sites with relatively few hazardous substances.
- Method B is the standard method for establishing cleanup levels and may be used to establish cleanup levels at any site.
- Method C is a conditional method used when a cleanup level under Method A or B is technically impossible to achieve or may cause significantly greater environmental harm. Method C also may be applied to qualifying industrial properties.

The MTCA Cleanup Regulation defines the factors used to determine whether a substance should be retained as an indicator for the Site. When defining cleanup levels at a site contaminated with several hazardous substances, Ecology may eliminate from consideration those contaminants that contribute a small percentage of the overall threat to human health and the environment. WAC 173-340-703(2) provides that a substance may be eliminated from further consideration based on:

- The toxicological characteristics of the substance which govern its ability to adversely affect human health or the environment relative to the concentration of the substance.
- The chemical and physical characteristics of the substance which govern its tendency to persist in the environment.
- The chemical and physical characteristics of the substance which govern its tendency to move into and through the environment.
- The natural background concentration of the substance.
- The thoroughness of testing for the substance.
- The frequency of detection.
- The degradation by-products of the substance.

MTCA also considers the limits of analytical chemistry. If the practical quantitation limit of a substance is greater than the risk-based cleanup level, then the cleanup level can be set equal to that limit.

MTCA requires the total risk from all contaminated media not exceed certain levels. The total site cancer risk cannot exceed $1x10^{-5}$, and the hazard index (calculated for chemicals with similar non-carcinogenic toxicity endpoints) cannot exceed 1. After the cleanup level for each media is developed, the risks from each chemical and media are summed. If the total site cancer risk and/or hazard index exceeds the levels listed above, then the cleanup levels are adjusted downward until cancer risk is less than $1x10^{-5}$ and the hazard index is less than or equal to 1 for each endpoint. MTCA does not specify how the risks can be adjusted, as long as the individual cleanup level standard for each chemical is not violated.

4.2 TERRESTRIAL ECOLOGICAL EVALUATION

WAC 173-340-7490 requires sites to perform a terrestrial ecological evaluation (TEE) to determine the potential effects of soil contamination on ecological receptors. A simplified process for the TEE may be followed as long as the requirements of WAC 173-340-7491 are met. The Site meets the simplified exclusion; there is less than 1.5 acres of contiguous undeveloped land on the site or within 500 feet of any area of the site. The Site is located in a commercial/residential area where there are no contiguous open spaces 1.5 acres in size. Therefore, the Site qualifies for simplified TEE based on the developed land use and the location within the city limits of Colfax.

The habitat rating for supporting wildlife or migration of wildlife through the parcels is relatively low since the Site is covered in asphalt and concrete pavement and the only landscaping is the lawn/water feature located on the Colfax Grange parcel and the lawn along the sidewalk fronting North Main Street adjacent to the PetroSun parcel. Human activity in the immediate area also precludes the parcels from sustaining wildlife. All three parcels are active businesses and two of the parcels support a 24hr self service fuel station.

4.3 SITE CLEANUP LEVELS

The RI/FS and previous studies conducted on the Site document the presence of contamination in soil and groundwater. The result of the investigations and cleanups conducted at the Site and the residual soil contamination are identified in the RI report dated January 2010.

The Model Toxics Control Act Cleanup Regulations establish specific procedures for setting cleanup levels for petroleum contaminated sites (WAC 173-340-700 (8)). The cleanup levels are established for releases of total petroleum hydrocarbons and associated hazardous substances.

The PetroSun/Time Oil, Cenex Cardtrol and Colfax Grange parcels which make up the Site meet the requirements established for using Method 'A' cleanup action level for petroleum contaminated sites. As noted in 4.2 above, the Site qualified for a simplified TEE. The PLPs' consultant evaluated the contaminants associated with petroleum release, including other hazardous substances associated with petroleum releases as noted in MTCA Table 830-1, and found all COC's associated with the Site have established cleanup levels. No other contaminants were identified during the investigation. Based on the results of the RI and previous investigations, the use of method 'A' cleanup action levels can be appropriate for the Site.

Soil and groundwater levels have been established under Method A cleanup levels for all of the identified chemicals of concern on the Site and will be used to establish the points of compliance for soil and groundwater (Table 6).

Method B cleanup action levels were also evaluated as part of the RI. Method B cleanup levels calculated for soils remaining beneath the Site for protection of human health via direct contact for PetroSun/Time Oil Co., Cenex Cardtrol, and Colfax Grange parcels are 2,892 mg/Kg, 2,345 mg/Kg and 2,221 mg/Kg respectively. Sample results presented in Table 1 through 3 demonstrate soils remaining beneath the PetroSun Time Oil Co. parcel exceed the direct contact Method B cleanup action levels, where as Cenex Cardtrol and Colfax Grange Supply parcels meet the Method B cleanup levels.

Method B cleanup levels calculated for protection of human health via petroleum contamination leaching to groundwater for PetroSun/Time Oil Co., Cenex Cardtrol, and Colfax Grange parcels are 81mg/kg, 17mg/kg and 61mg/kg respectively. Groundwater sample results document theses levels are exceeded on a regular basis.

Currently groundwater beneath the Site is in compliance with Method A cleanup action levels. Soil beneath the Site exceeds the Method A cleanup action levels at the Site. Method A cleanup action levels for soil and ground water will be used to meet the cleanup levels at the Site.

4.4 POINT OF COMPLIANCE

MTCA Cleanup Regulations defines the point of compliance as the point where cleanup levels shall be attained. Once cleanup action levels are attained at the point(s) of compliance, the Site is no longer considered a threat to human health or the environment.

WAC 173-340-740(6) sets the point of compliance requirements for soil. Where cleanup levels are based on the protection of groundwater, the point of compliance is established in all soil throughout the Site. Method A cleanup action levels are published for all of the identified chemicals of concern on the Site; therefore, the soil point of compliance is throughout the Site.

WAC 173-340-720(8) defines the point of compliance requirements for method A groundwater cleanup levels. The groundwater point of compliance is established for the Site from the top of the saturated zone (approximately 8 feet bgs) to a lower potentially affected portion of the aquifer at approximately 21 feet bgs.

5.0 CLEANUP ACTION SELECTION

5.1 REMEDIAL ACTION OBJECTIVES

The remedial action objectives describe the actions necessary for the protection of human health and the environment through the elimination, reduction, or otherwise control of risks posed through each exposure pathway and migration route. Objectives are developed by evaluating the characteristics of the contaminated media, the characteristics of the hazardous substances present, migration and exposure pathways, and potential receptor points.

Soil and groundwater have been contaminated as a result of past activities at the Site. People can be exposed to contaminated soil via dermal contact or ingestion, and to groundwater by dermal contact or ingestion. Potential receptors include onsite workers, trespassers, customers, residents of nearby neighborhoods, passersby and nearby off-site workers.

Past interim actions have mitigated most of the risks at this Site; however, potential exposure pathways remain. The following remedial action objectives are intended to address these remaining risks:

- Prevent or minimize direct contact or ingestion of contaminated soil by humans or ecological receptors.
- Prevent or minimize direct contact or ingestion of contaminated groundwater by humans or ecological receptors.
- Prevent or minimize the potential for migration of contaminants from soil to groundwater.

5.2 CLEANUP ACTION ALTERNATIVES

Cleanup alternatives are evaluated as part of the Remedial Investigation/Feasibility Study (RI/FS) for the Site. Alternatives are composed of various remedial technologies combined to address contaminated media. Technologies are initially screened to determine which are possible at the Site. The FS evaluated the following alternatives, individually or in combination:

- PetroSun/Time Oil Co
    - Maintenance of a containment cap
    - Monitored natural attenuation
    - Institutional controls / restrictive covenant – including management plan
    - Contaminant contingency plan for residual PCS
    - In situ bioremediation of soils in the unsaturated zone through soil vapor extraction
    - Excavation with shoring and off-site disposal
- Colfax Grange (Cenex Cardtrol)
    - Maintenance of a containment cap
    - Monitored natural attenuation
    - Institutional controls / restrictive covenant – including management plan
    - Contaminant contingency plan for residual PCS
    - In situ bioremediation of soils in the unsaturated zone through soil vapor extraction
    - Excavation with shoring and off-site disposal
- Colfax Grange Supply
    - Installation and maintenance of a containment cap
    - Monitored Natural Attenuation
    - Institutional Controls / Restrictive Covenant – including Management Plan
    - Contaminant contingency plan for residual PCS
    - In situ bioremediation of soils and groundwater via chemical oxidation
    - Excavation with shoring and off-site disposal of PCS

These remedial action options were combined to develop three alternatives, each addressing all contaminated media at the Site (Table 7). The alternatives are then scored and ranked using relevant criteria as described in WAC 173-340-360. The following alternatives are based on the proposals made in the FS as authored by SoundEarth Strategies:

5.2.1 ALTERNATIVE 1 - MONITORED NATURAL ATTENUATION

Monitored Natural Attenuation (MNA) is the PLPs' preferred remedial option for the Site. Source removal was conducted on the parcels as interim cleanup actions at different times. Groundwater monitoring will continue at the Site until cleanup action levels are attained in the soil and groundwater beneath each parcel where residual contamination remains above the established cleanup levels. Groundwater monitoring will include the COC's. Secondary lines of evidence will include geochemical indicators identified in *Guidance for the Remediation of Petroleum-Contaminated Ground Water By Natural Attenuation (July 2005).* For this Site, the secondary lines of evidence include the geochemical indicators of petroleum hydrocarbon biodegradation: O2, $NO3^-$, Mn^+2, Fe^+2, $SO4^{-2}$, CH_4, Redox potential ($\mathbf{E_H}$), and Alkalinity. Alternative 1 includes maintenance of a containment cap for each parcel affected with residual soil contamination and implementation of a contaminant contingency plan for the residual petroleum contaminated soils. The contaminant contingency plan would identify protocols limiting

access to areas of residual soil contamination and establish procedures to address the handling of residual soil contamination encountered at the time of subsurface work. The parcels at the Site will require a restrictive covenant recorded with the county of record until each parcel at the Site has attained cleanup levels. The cleanup levels will need to be documented through soil and groundwater sample analysis. The FS predicts a ten year period to achieve final cleanup under this alternative.

PetroSun/Time Oil Co: Residual soil contamination remains after the upgrade of the Site in 1999. This alternative includes maintaining a containment cap (currently asphalt and concrete) over the parcel and implementation of a contaminant contingency plan. Groundwater monitoring, including laboratory analysis and secondary lines of evidence would be used to document that natural attenuation is occurring beneath the parcel at a reasonable rate.

Colfax Grange (Cenex Cardtrol): The rind of soil contamination remaining around the excavation after replacement of the 1985 underground storage tank system defines the extent of petroleum contamination. This alternative includes maintaining a containment cap (currently asphalt and concrete) over the parcel and implementation of a management plan or contaminant contingency plan. Groundwater monitoring, including laboratory analysis and secondary lines of evidence would be used to document natural attenuation is occurring beneath the parcel at a reasonable rate.

Colfax Grange Supply: A release of petroleum was discovered during the RI associated with the operation of a historic gasoline service station on the southwest portion of the property. The soil contamination discovered is in the saturated soils beneath the parcel. The extent of the contamination is between MW-29 and MW-16. This alternative includes installation and maintenance of a containment cap, implementation of a contaminant contingency plan, and monitored natural attenuation to document that the natural attenuation is occurring beneath the parcel at a reasonable rate.

5.2.2 ALTERNATIVE 2 - IN SITU REMEDIATION

Treatment of the residual soil contamination by soil vapor extraction and maintenance of a containment cap were retained for further evaluation for PetroSun and Cenex Cardtrol parcels. During the upgrade of the PetroSun West LLC/Time Oil parcel in 1999 the owner directed the consultant to install infrastructure for a soil vapor extraction system (SVE). The SVE infrastructure is still present, but would need to be inspected to make sure it is still usable. Seven monitoring wells were used as the infrastructure for the SVE system. Current groundwater monitoring wells would be converted to SVE wells or passive venting wells to accommodate the SVE operation. The FS predicts a three year period to achieve final cleanup under this alternative.

The Cenex Cardtrol parcel does not have infrastructure for an SVE system. The PLPs' would need to install the SVE system using existing monitoring wells and adding new monitoring wells to treat residual soil contamination in the vadose zone. The FS conceptually included monitoring well CMW03 in the SVE system along with six newly installed SVE wells. The parcel is covered by asphalt or concrete pavement limiting downward migration of surface water runoff. Current surface runoff is directed to Tyler Street where it eventually enters the Colfax storm drainage system. Human contact with residual COCs trapped beneath the Site in the vadose zone soils is restricted due to the current surface cover.

The cleanup action would also require groundwater sampling continue throughout implementation of the remedy. A restrictive covenant would be recorded with the county of record until such time as soil and groundwater sample analyses document cleanup levels have been attained.

Chemical oxidation was retained for further evaluation as an alternative to address residual petroleum contamination of the saturated soils, associated with the Colfax Grange Supply parcel on Harrison Street. This treatment requires construction of injection points on 10 foot centers to inject pH activated sodium persulfate marketed by FMC Corporation under the trade name *Klōzur*®. In addition, a containment cap would be installed to restrict contact and reduce the impact of downward migration of storm events into the saturated zone. The FS predicts a three year period to achieve final cleanup under this alternative.

5.2.3 ALTERNATIVE 3 - OVER EXCAVATION & OFFSITE DISPOSAL

Excavation and disposal of the residual petroleum contaminated soils offsite was retained for further evaluation on all three parcels. Contaminated soil above the cleanup standards would be excavated and removed off site to a licensed disposal facility from PetroSun/Time Oil Co, Cenex Cardtrol and Colfax Grange parcels. The table below summarizes the amount of soils requiring removal along with soil contamination to be removed for offsite disposal:

Parcel	Total Soil Excavated	Total Contaminated Soil Removed for Offsite Disposal
PetroSun West LLC/Time Oil Co	1,550 cubic yards	900 cubic yards
Colfax Grange/Cenex Cardtrol	4,875 cubic yards	2,240 cubic yards
Colfax Grange Supply	1,680 cubic yards	779 cubic yards
TOTAL YARDAGE	**8,105 cubic yards**	**3,919 cubic yards**

The RI/FS indicates approximately 8,105 cubic yards of material would need to be excavated from the parcels. A total of 3,919 cubic yards of contaminated material would require shipment for disposal at a subtitle D landfill. This work would require installation of shoring in the excavations, detours around the construction, disruption of utility services on- and-offsite as well as various safety hazards. In the case of 102 East Tyler Street parcel, the current underground storage tank system would be removed and decommissioned and replaced with a new system after completion of the work.

Excavation of residual contamination from beneath each parcel would result in cleanup of the Site. The cleanup has no variability in the time until cleanup is attained. Groundwater sampling would be required for at least four quarters after completion of the excavation work to document cleanup levels have been attained in the shallow aquifer. The FS predicts a one year period to achieve final cleanup under this alternative.

5.3 REGULATORY REQUIREMENTS

The MTCA Cleanup Regulation sets minimum requirements and procedures for selecting a cleanup action. A cleanup action must meet each of the minimum requirements specified in WAC 173-340-360(2), including certain threshold and other requirements. The requirements are outlined below.

5.3.1 THRESHOLD REQUIREMENTS

WAC 173-340-360(2)(a) requires the cleanup action shall:

- Protect human health and the environment.
- Comply with cleanup standards (see Section 5.0).
- Comply with applicable state and federal laws (see Section 5.3.5).
- Provide for compliance monitoring.

5.3.2 OTHER REQUIREMENTS

In addition, WAC 173-340-360(2)(b) states the cleanup action shall:

- Use permanent solutions to the maximum extent practicable.
- Provide for a reasonable restoration time frame.
- Consider public concerns.

WAC 173-340-360(3) describes the specific requirements and procedures for determining whether a cleanup action uses permanent solutions to the maximum extent practicable. A permanent solution is defined as one where cleanup levels can be met without further action being required at the site other than disposal of residue from the treatment of hazardous substances. To determine whether a cleanup action uses permanent solutions to the maximum extent practicable, a disproportionate cost analysis is conducted. This analysis compares the costs and benefits of the cleanup action alternatives and involves the consideration of several factors, including:

- Protectiveness.
- Permanent reduction of toxicity, mobility and volume.
- Cost.
- Long-term effectiveness.
- Short-term risk.
- Implementation.
- Consideration of public concerns.

The comparison of benefits and costs may be quantitative but will often be qualitative and require the use of best professional judgment.

WAC 173-340-360(4) describes the specific requirements and procedures for determining whether a cleanup action provides for a reasonable restoration time frame.

5.3.3 GROUNDWATER CLEANUP ACTION REQUIREMENTS

At sites with contaminated groundwater, WAC 173-340-360(2)(c) requires the cleanup action meet certain additional requirements. Permanent cleanup actions shall be used when possible, and if a nonpermanent action must be used, the regulation requires the following two requirements be met:

- Treatment or removal of the source of the release shall be conducted for liquid wastes, areas of high contamination, areas of highly mobile contaminants, or substances that cannot be reliably contained.
- Groundwater containment (such as barriers) or control (such as pumping) shall be implemented to the maximum extent practicable to avoid expansion of the contaminated area.

5.3.4 CLEANUP ACTION EXPECTATIONS

WAC 173-340-370 sets forth the following expectations for the development of cleanup action alternatives and the selection of cleanup actions. These expectations represent the types of cleanup actions Ecology considers likely results of the remedy selection process; however, Ecology recognizes there may be some sites where cleanup actions conforming to these expectations are not appropriate.

- Treatment technologies will be emphasized at sites with liquid wastes, areas with high concentrations of hazardous substances, or with highly mobile and/or highly treatable contaminants.
- To minimize the need for long-term management of contaminated materials, hazardous substances will be destroyed, detoxified, and/or removed to concentrations below cleanup levels throughout sites with small volumes of hazardous substances.
- Engineering controls, such as containment, may need to be used at sites with large volumes of materials with relatively low levels of hazardous substances where treatment is impracticable.
- To minimize the potential for migration of hazardous substances, active measures will be taken to prevent precipitation and runoff from coming into contact with contaminated soil or waste materials.
- When hazardous substances remain onsite at concentrations which exceed cleanup levels, they will be consolidated to the maximum extent practicable where needed to minimize the potential for direct contact and migration of hazardous substances.
- For sites adjacent to surface water, active measures will be taken to prevent/minimize releases to that water; dilution will not be the sole method for demonstrating compliance.
- Natural attenuation of hazardous substances may be appropriate at sites where 1) source control is conducted to the maximum extent practicable; 2) leaving contaminants onsite does not pose an unacceptable risk; 3) there is evidence natural degradation is occurring and will continue to occur; and 4) appropriate monitoring is taking place.
- Cleanup actions will not result in a significantly greater overall threat to human health and the environment than other alternatives.

5.3.5 APPLICABLE, RELEVANT, AND APPROPRIATE, AND LOCAL REQUIREMENTS

WAC 173-340-710(1) requires all cleanup actions comply with all applicable state and federal laws. It further states the term "applicable state and federal laws" shall include legally applicable requirements and those requirements Ecology determine "…are relevant and appropriate requirements." This section discusses applicable state and federal laws, relevant and appropriate requirements, and local permitting requirements which were considered and were of primary importance in selecting cleanup requirements. If other requirements are identified at a later date, they will be applied to the cleanup actions at that time.

MTCA provides an exemption from the procedural requirements of several state laws and from laws authorizing local government permits or approvals for remedial actions conducted under a Consent Decree, Order, or Agreed Order [RCW 70.105D.090]. However, the substantive requirements of a required permit must be met. The procedural requirements of the following state laws are exempted:

- Ch. 70.94 RCW, Washington Clean Air Act.
- Ch. 70.95 RCW, Solid Waste Management, Reduction, and Recycling.
- Ch. 70.105 RCW, Hazardous Waste Management.
- Ch. 75.20 RCW, Construction Projects in State Waters.
- Ch. 90.48 RCW, Water Pollution Control.
- Ch. 90.58 RCW, Shoreline Management Act of 1971.

Ecology shall ensure compliance with the substantive provisions of these laws and any other laws requiring local government permits or approvals. WAC 173-340-710(4) sets forth the criteria that Ecology evaluates when determining whether certain requirements are relevant and appropriate for a cleanup action. Table 8 lists the state and federal laws containing the applicable or relevant and appropriate requirements that apply to the cleanup action at the Site. Local laws, which may be more stringent than specified state and federal laws, will govern where applicable.

5.4 EVALUATION OF CLEANUP ACTION ALTERNATIVES

The requirements and criteria outlined in Section 5.3 are used to conduct a comparative evaluation of alternatives one through three for each area where residual soil contamination remains and to select a cleanup action from those alternatives.

5.4.1 THRESHOLD REQUIREMENTS

5.4.1.1 PROTECTION OF HUMAN HEALTH AND THE ENVIRONMENT

Alternative 1 restricts access to the contamination through a containment cover, and management plan and/or contingency plan to manage the residual contamination. Alternative 2 also restricts access to the residual soil contamination by maintaining or installing a containment cover and implementation of a management plan and/or contingency plan. Alternative 2 uses an active process through soil vapor extraction or chemical injection to address the residual soil contamination remaining on the parcels. Alternative 3 includes removal of residual soil contamination from the parcels. This alternative requires excavation of non-contaminated soils as well as contaminated soils. The contaminated soils would be removed from the parcels and transported offsite for disposal. All three alternatives protect human health and the environment. The time frame to achieve each alternative is different.

5.4.1.2 COMPLIANCE WITH CLEANUP STANDARDS

Alternative 1 is based on natural attenuation of the residual contamination, and has the least assurance of achieving cleanup within a reasonable time frame. The FS predicts this alternative will attain cleanup standards in 10 years. Cleanup alternatives 2 and 3 will address residual soil contamination in an active fashion which will require less time to achieve cleanup standards.

5.4.1.3 COMPLIANCE WITH STATE AND FEDERAL LAWS

It is expected all three alternatives will eventually meet the soil and groundwater cleanup levels established by state and federal laws. Groundwater sample results from MW26 currently exceed cleanup action levels for oil range organics and benzene. The residual groundwater contamination observed in MW26 is predicted through modeling to attain cleanup standards and remain there by the fourth quarter of 2012.

5.4.1.4 PROVISION FOR COMPLIANCE MONITORING

All three alternatives provide provisions for compliance monitoring during the construction, operation and maintenance phases for each of the alternatives.

5.4.2 OTHER REQUIREMENTS

5.4.2.1 USE OF PERMANENT SOLUTIONS TO THE MAXIMUM EXTENT PRACTICABLE

WAC 173-340-360(3) outlines the specific requirements and procedures to determine whether a cleanup action uses permanent solutions to the maximum extent practicable. A permanent solution is defined as cleanup levels can be met without further action being required at the Site other than disposal of residue from the treatment of hazardous substances. To determine whether a cleanup action uses permanent solutions to the maximum extent practicable, a disproportionate cost analysis is conducted. This analysis compares the costs and benefits of the cleanup action alternatives and involves consideration of other factors, including:

- Protectiveness

Protectiveness measures the degree to which existing risks are reduced, time to reduce risk and attain cleanup standards, on- and off-site risks resulting from implementing the alternative, and improvement of overall environment.

Alternatives 1, 2 and 3 for each parcel are protective. Alternative 3 at each parcel, removal and offsite disposal of impacted soils, is the most protective with regards to time to reduce risk and attain cleanup standards, and improvement of overall environment. However, Alternative 3 also would be the most invasive and the least protective of human health and the environment in the short term, and has the largest impact to the established businesses and the community in general. Alternative 2 is also protective and would require onsite construction on each parcel which would disturb onsite and offsite businesses for a shorter time period. Alternative 1 is protective and presents the least amount of short-term risk to human health and the environment for each of the parcels. Alternative 1 will likely address the residual contamination remaining on each parcel and will be the least disruptive to onsite and offsite businesses and the general populace.

- Permanent Reduction of Toxicity, Mobility and Volume

Permanence measures adequacy of the alternative in destroying the hazardous substances, the reduction or elimination of releases or sources of releases, the degree of irreversibility of any treatment process, and the characteristics and quantity of any treatment residuals.

Each of the alternatives provides a permanent solution for the reduction of toxicity, volume, or mobility of the COC's through biological or physical means of treatment. Alternative 3 would provide an immediate solution by removal of the residual contamination. Alternative 2 would provide a similar solution, however the time frame to attain cleanup would be longer since no contamination is immediately removed. Alternative 1 will likely attain the reduction in toxicity, mobility and volume of the COC's, but will require the longest time frame to attain cleanup standards.

- Cleanup Costs

Cleanup costs are approximated based on specific design assumptions for each of the alternatives presented in the FS. Although the costs provided by the PLP's consultant are estimated based on design assumptions that could change during implementation of a cleanup alternative, the relative costs can be used for the evaluation. For the detailed descriptions of the cost requirements for each alternative please refer to the Feasibility Study report for North Colfax Petroleum Contamination Site.

Parcel	Alternative 1	Alternative 2	Alternative 3
PetroSun/Time Oil Co	$238,145	$362,978	$1,020,910
Colfax Grange (Cenex Cardtrol)	$238,145	$520,908	$1,175,907
Colfax Grange Supply	$249,945	$281,683	$846,422
Total Site Cleanup Costs	**$726,235**	**$1,165,569**	**$3,043,239**

- Long-Term Effectiveness

Long-term effectiveness measures the degree of success, reliability of the alternative during the period hazardous substances will remain above cleanup levels, the magnitude of residual risk after implementation, and the effectiveness of controls required to manage the waste.

The long-term effectiveness of Cleanup Alternatives 1 and 2 would be less than Cleanup Alternative 3 due to the uncertainty with respect to the time required to achieve the specified cleanup levels at each of the parcels.

- Short-Term Risk

Short-term risk measures the risks related to each alternative during construction and implementation, and the effectiveness of measures to manage such risks. The risks during construction for the cleanup alternatives could include: inhalation of dust, dermal contact of contamination, and ingestion.

The short-term risks associated with Cleanup Alternative 1 are less than Alternative 2. The short-term risks associated with both Alternatives 1 and 2 would be significantly lower than Cleanup Alternative 3 as the latter involves invasive activities and material handling hazards.

- Implementation

Implementation considers whether the alternative is technically possible, the availability of necessary offsite facilities, services, and materials, administrative and regulatory requirements, scheduling, size, complexity, monitoring requirements, access for operations and monitoring, and integrations with existing facility operations.

Implementation of Cleanup Alternative 1 would be more straightforward than Cleanup Alternatives 2 and 3. Alternatives 2 and 3 would require state and local permits along with invasive construction activities.

- Consider Public Concern

The cleanup alternatives allow for the public to provide input after review of the proposed plans. Ecology did not receive any public comments during the January 31 to February 29, 2012 public comment period for the draft RI/FS. Public comment will be considered in the final Cleanup Action Plan (CAP).

5.4.2.2 PROVIDE A REASONABLE RESTORATION TIME FRAME

The alternatives evaluated for the cleanup of residual soil and groundwater contamination remaining on the parcels will result in concentrations that eventually fall below the cleanup standards. The contamination remaining has attenuated to the current conditions through the active remedial actions conducted on the parcels as well as natural attenuation. Alternative 1 would require the longest time frame to attain cleanup at each parcel. The predicted time frame to attain cleanup is 2018. Alternatives 2 and 3 will include construction on each parcel potentially exposing human and environmental receptors to contamination from the parcels. Alternative 2 would provide a more active approach to cleanup by using active in situ remediation technology for vadose zone soils and chemical injection for soils in the saturated zone. The time frame for alternative 2 to attain cleanup is 3 years from the time the cleanup action is initiated. If cleanup was initiated during 2013, the Site is predicted to attain cleanup by 2016. Alternative 3 would provide for the fastest cleanup of the residual contamination by excavation of the soils and off-site disposal. However Alternative 3 would also impose the greatest risk to human health and the environment for exposure to COC's associated with each parcel. Alternative 3 would take one year from the time construction is completed to attain cleanup. If cleanup was initiated during 2013, the Site is predicted to attain cleanup by 2014.

5.4.3 GROUNDWATER CLEANUP ACTION REQUIREMENTS

Groundwater cleanup actions must meet the specific requirements previously described in Section 4 of this report. All three alternatives evaluated for each of the parcels with residual contamination are expected to eventually meet the cleanup action requirements for groundwater. Alternatives 2 and 3 will achieve cleanup faster than Alternative 1. Soil contamination remaining beneath the parcels is the result of residual soil contamination left after interim actions were conducted at the parcels. Alternatives 1, 2 and 3 meet the permanent solution for cleanup of the site.

5.4.4 CLEANUP ACTION EXPECTATIONS

- All three alternatives address residual soil contamination remaining on the parcels. Based on the Remedial Investigation the estimated time to achieve cleanup of the NCPC Site is estimated to be: ten-years for Alternative 1, three-years for Alternative 2, and one-year for alternative 3. The projected cleanup times are based on SES's experience conducting similar cleanup actions. The time frames presented for the purpose of the FS and DCAP are an estimate to achieve cleanup.
- Alternative 3 addresses residual soil contamination remaining at each parcel by source removal through excavation, offsite disposal and importing clean backfill material
- Alternative 2 addresses residual soil contamination through soil vapor extraction at the PetroSun West LLC/Time Oil Co and Cenex Cardtrol parcels. Residual soil contamination remaining in the saturated zone on the Colfax Grange parcel would be treated using chemical oxidation.
- Alternative 1 addresses residual soil contamination remaining on the parcels by natural attenuation as the sole treatment.
- Since replacement of the UST system at Colfax Grange (Cenex Cardtrol) parcel, groundwater monitoring results have documented the reduction of the petroleum plume historically observed at the Site.

  The Remedial Investigation documents groundwater contamination has continued to improve to the point that only one groundwater monitoring well sporadically exceeds the cleanup action levels for heavy oils and/or benzene.

6.0 SELECTED CLEANUP ACTION

Ecology has selected Alternative 1, Monitored Natural Attenuation (MNA), as the cleanup action protective of human health and the environment. The selected cleanup action meets the MTCA requirements and expectations. The cleanup time frame for Alternative 1 is estimated to be completed 10 years from the time soil samples were collected in 2008; therefore, completion of the cleanup is estimated during 2018.

Independent cleanup actions resulted in a rind of petroleum contaminated soils remaining at the PetroSun West LLC/Time Oil Co and Colfax Grange (Cenex Cardtrol) parcels. Documented soil contamination remains in the saturated zone soils in the area of a historic gasoline station on the Colfax Grange Supply parcel. MNA will be used at all three locations of the Site for the final cleanup action.

6.1 POINT OF COMPLIANCE

MTCA Cleanup Regulations defines the point of compliance as the point where cleanup levels shall be attained. Once cleanup action levels are attained at the point(s) of compliance, the Site is no longer considered a threat to human health or the environment.

WAC 173-340-740(6) sets the point of compliance requirements for soil. Where cleanup levels are based on protection of groundwater, the point of compliance is established in all soil throughout the Site. Method A cleanup action levels are published for all of the identified chemicals of concern on the Site; therefore, the soil point of compliance is throughout the Site.

WAC 173-340-720(8) defines the point of compliance requirements for method A groundwater cleanup levels. The groundwater point of compliance is established for the Site from the top of the saturated zone (approximately 8 feet bgs) to a lower potentially affected portion of the aquifer at approximately 21 feet bgs.

6.2 GROUNDWATER MONITORING

Currently groundwater monitoring results document that near surface groundwater is in compliance with the cleanup levels, with the exception of one monitoring well, MW26, which occasionally exceeds the cleanup levels for heavy oil and/or benzene. Quarterly groundwater monitoring will continue at the Site during the implementation of the cleanup action. The COC's identified for the Site will be monitored throughout the cleanup action as well as the geochemical indicators indentified in Section 5.2.1. Groundwater monitoring will be completed in accordance with the Ecology approved Compliance Monitoring Plan for the cleanup action.

6.3 SOIL SAMPLING

Soil samples collected in 2008 document residual soil contamination above the MTCA Method A cleanup action levels remain on all three parcels. Modeling conducted as part of the RI/FS predicts soil contamination will attenuate to below the cleanup action levels within ten years. Based on the modeling results presented in the Feasibility Study, soil sampling will be conducted at each of the three parcels to confirm the soil cleanup action levels are attained. Soil sampling will occur during the year cleanup is predicted (2018).

6.4 INSTITUTIONAL CONTROLS

Institutional controls are measures undertaken to limit or prohibit activities that may interfere with the integrity of a cleanup action or result in exposure to hazardous substances at the Site. Institutional controls are required for continued protection of human health and the environment as well as integrity of the cleanup action. The cleanup standards established throughout the Site require implementation of institutional controls to limit activities that could impact performance of the selected remedy. The institutional controls for this Site will include a contaminant contingency plan, a containment cap maintenance plan, and an environmental covenant.

6.5 FINANCIAL ASSURANCES

WAC 173-340-440 (11) states financial assurance mechanisms shall be required at sites where the cleanup action includes engineered and/or institutional controls. Institutional controls are a part of the remedial action therefore, financial assurance will be required.

6.6 PERIODIC REVIEW

As long as groundwater conditions and residual soil contamination remains on the parcels above the established cleanup standards, and institutional controls remain in place, a Periodic Review of the effectiveness of the selected cleanup action will be conducted in accordance with WAC 173-340-320.

7.0 REFERENCES CITED

Preliminary Subsurface Investigation & Limited Remediation Report, GeoEngineers 5/22/2000

Supplemental Subsurface Assessment Report, GeoEngineers 5/17/2001

Annual Groundwater Monitoring Reports, GeoEngineers 2002, 2003, 2004, 2005

Soil analytical results and Groundwater analytical results, Quantum Engineering 10/14/2004

Groundwater analytical results, Quantum Engineering November 2004

Groundwater analytical results, Quantum Engineering December 2004

Groundwater quarterly sampling report, Quantum Engineering 2005 through 2006

Quarterly Groundwater Monitoring, Sound Environmental Strategies/SoundEarth Strategies Reports 2006 to present

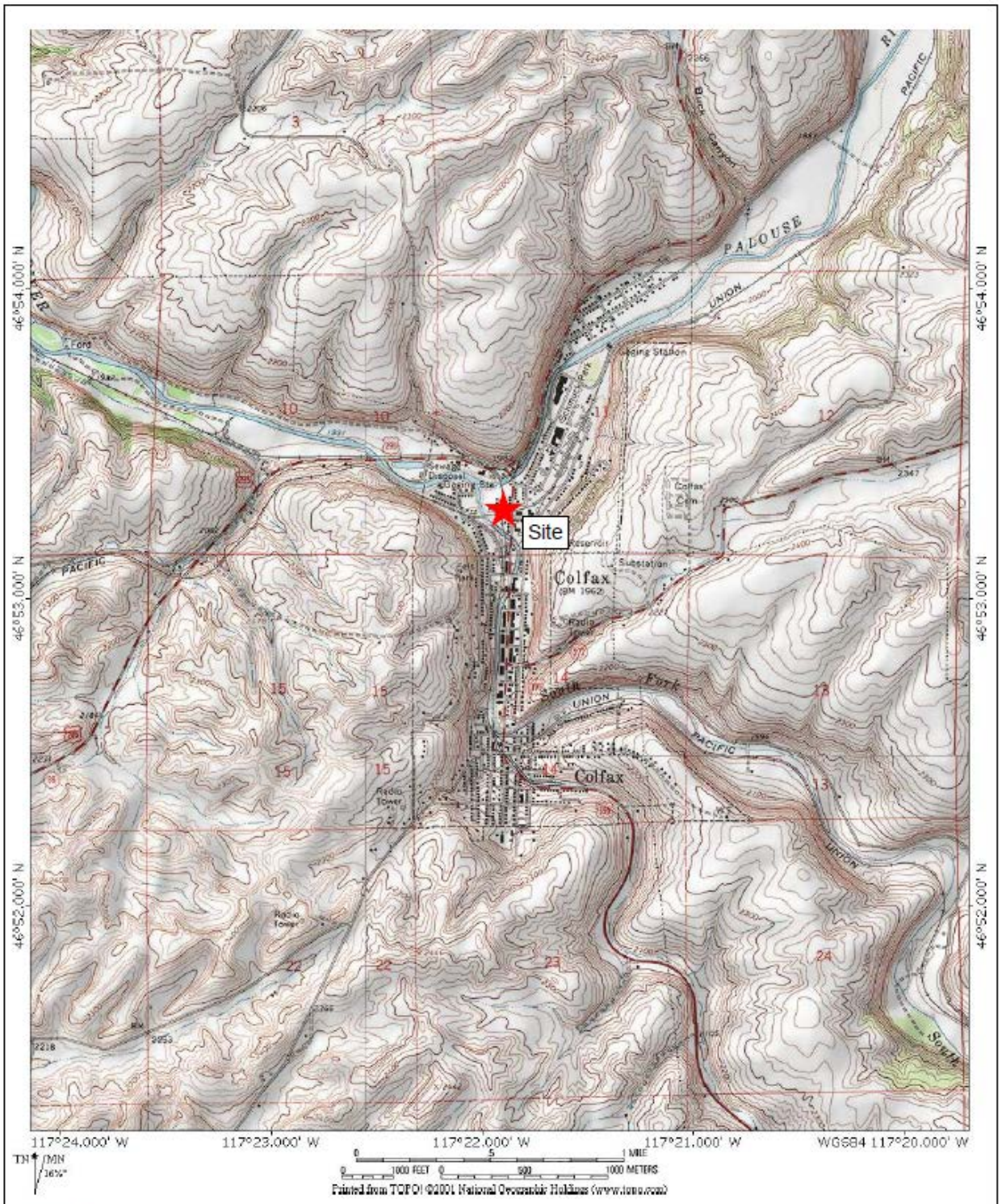
Site Conceptual Model & Remedial Investigation Work Plan 1/25/2008 Sound Environmental Strategies

Remedial Investigation Report 1/4/2010 Sound Environmental Strategies

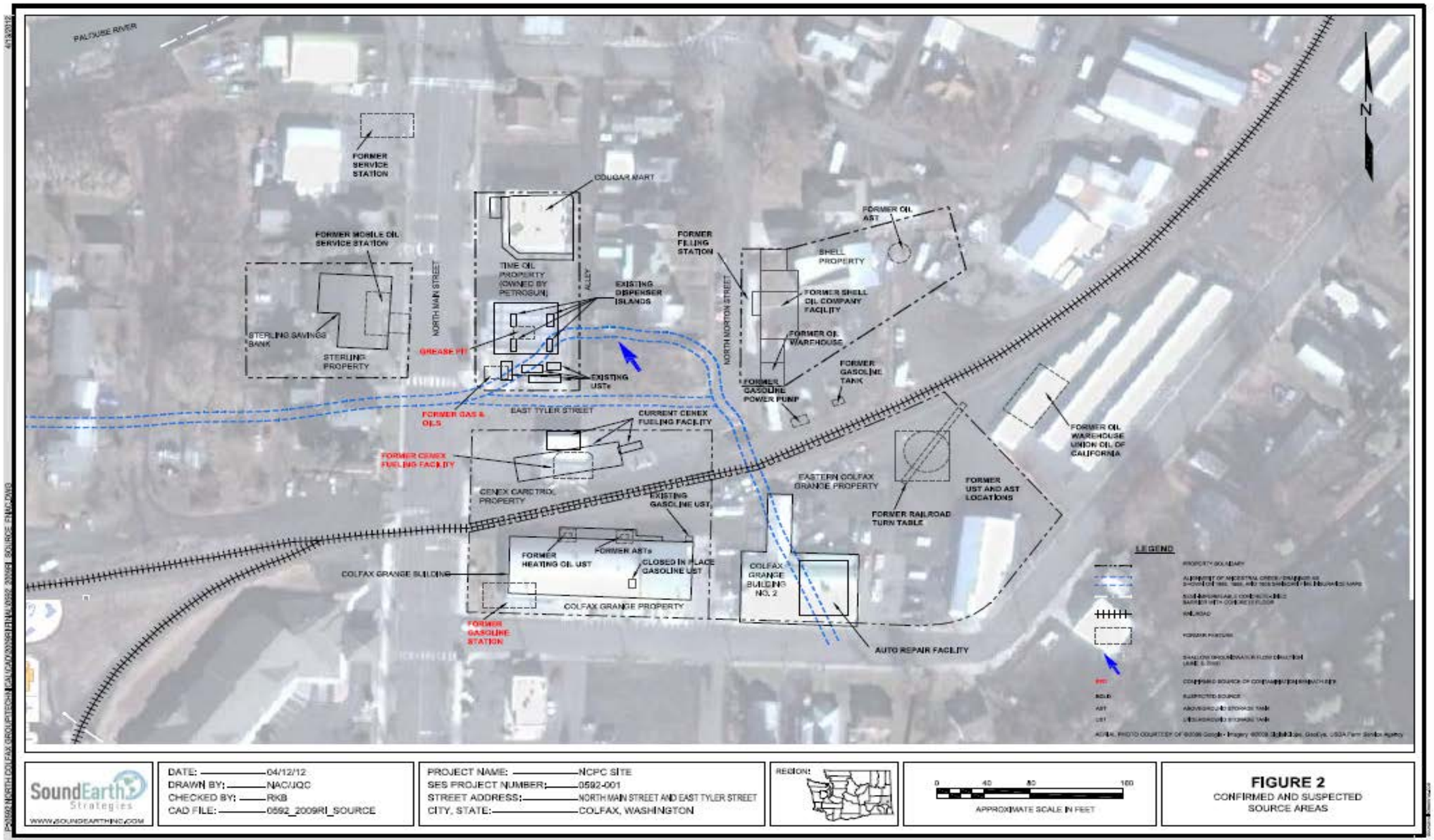
Draft Final Remedial Investigation, Addendum & Draft Disproportionate Cost Analysis, SoundEarth Strategies 10/14/11

Phase II – Level 1 Technical Assessment for the Palouse Basin (WRIA 34) Golder Associates December 8, 2004

FIGURES



SOUND ENVIRONMENTAL STRATEGIES www.soundenvironmental.com	N	Date: August 19, 2008 Drawn By: RLH Chk By: RKB SES Project No.: 0592-001 File ID: 0592_fig1_to.doc	North Colfax Petroleum Contamination Site North Main Street and East Tyler Street Colfax, Washington	**FIGURE 1** Site Location Map



SoundEarth Strategies
WWW.SOUNDEARTHINC.COM

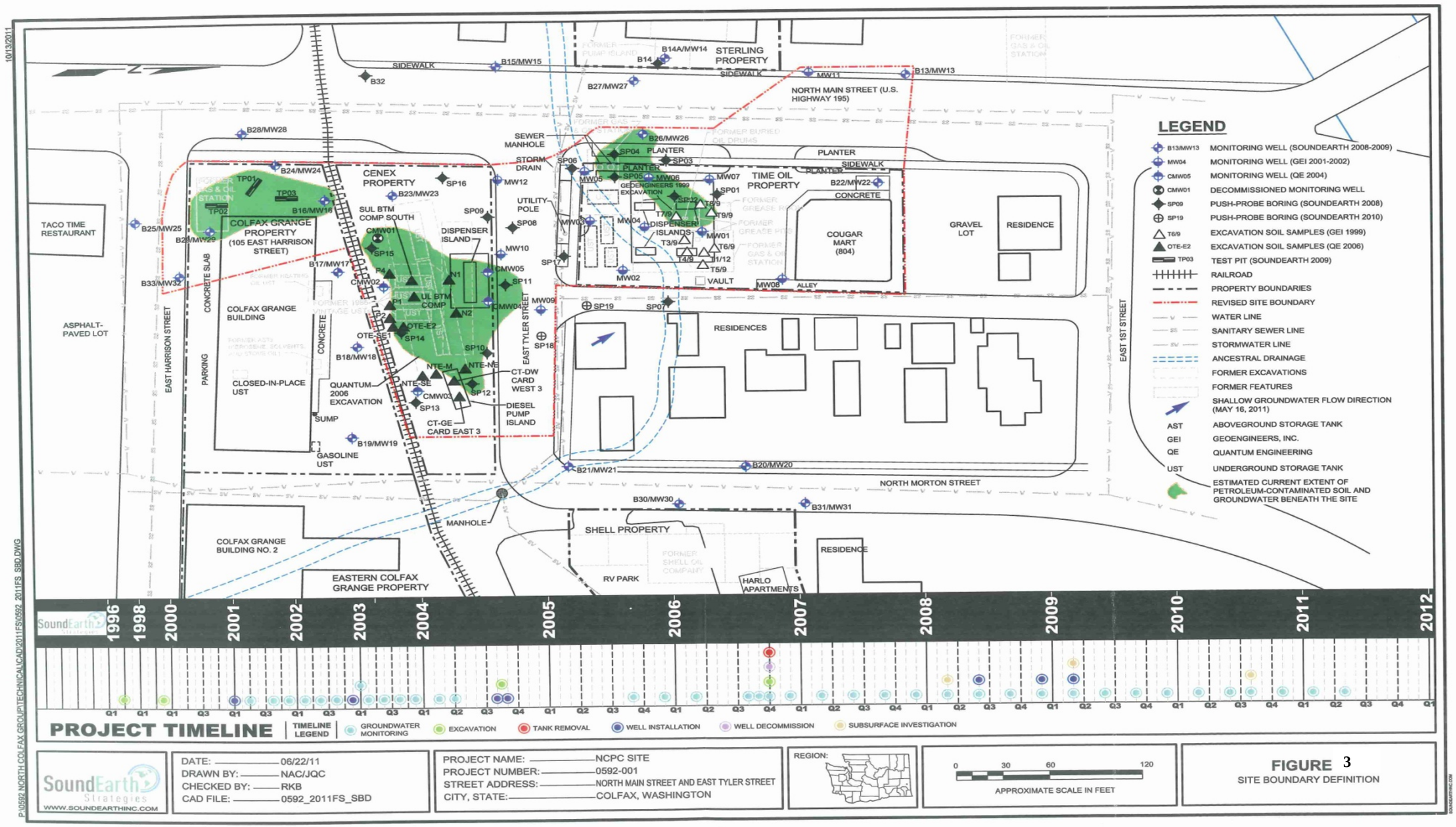
DATE: 04/12/12
DRAWN BY: NAC/JQC
CHECKED BY: RKB
CAD FILE: 0592_2009RI_SOURCE

PROJECT NAME: NCPC SITE
SES PROJECT NUMBER: 0592-001
STREET ADDRESS: NORTH MAIN STREET AND EAST TYLER STREET
CITY, STATE: COLFAX, WASHINGTON

REGION:

0 40 80 160
APPROXIMATE SCALE IN FEET

FIGURE 2
CONFIRMED AND SUSPECTED SOURCE AREAS


10/13/2011
SIDEWALK
B15/MW15
B32
B14A/MW14
B14
STERLING PROPERTY
SIDEWALK
MW11
B13/MW13
B27/MW27
NORTH MAIN STREET (U.S. HIGHWAY 195)
B28/MW28
B24/MW24
TP01
TP03
TP02
B16/MW16
B25/MW25
B23/MW23
SP16
MW12
SEWER MANHOLE
STORM DRAIN
UTILITY POLE
B26/MW26
SP04
PLANTER
SP06
SP03
SIDEWALK
MW05
SP05
MW06
MW07
TIME OIL PROPERTY
B22/MW22
CONCRETE
GEOENGINEERS 1999 EXCAVATION
SP01
SP12
T9/9
T7/9
T9/9
MW03
MW04
DISPENSER ISLANDS
MW01
T3/9
T6/9
T4/9
T11/12
T5/9
VAULT
MW08
ALLEY
COUGAR MART (804)
GRAVEL LOT
RESIDENCE
TACO TIME RESTAURANT
CENEX PROPERTY
SUL BTM COMP SOUTH
CMW01
SP15
DISPENSER ISLAND
SP09
SP08
MW10
CMW05
SP11
SP17
MW02
COLFAX GRANGE PROPERTY (105 EAST HARRISON STREET)
B17/MW17
B33/MW32
CONCRETE SLAB
P4
CMW02
N1
P1
UL BTM COMP
N2
CMW04
MW09
SP19
SP07
ASPHALT-PAVED LOT
COLFAX GRANGE BUILDING
CONCRETE
OTE-SE1
OTE-E2
SP14
SP18
EAST TYLER STREET
RESIDENCES
EAST 1ST STREET
EAST HARRISON STREET
PARKING
B18/MW18
SP10
NTE-M
NTE-NE
CT-DW CARD WEST 3
CLOSED-IN-PLACE UST
QUANTUM 2006 EXCAVATION
NTE-SE
CMW03
SP12
SP13
DIESEL PUMP ISLAND
SUMP
CT-GE CARD EAST 3
B19/MW19
GASOLINE UST
B21/MW21
B20/MW20
NORTH MORTON STREET
B30/MW30
B31/MW31
MANHOLE
SHELL PROPERTY
FORMER SHELL OIL COMPANY
RESIDENCE
COLFAX GRANGE BUILDING NO. 2
EASTERN COLFAX GRANGE PROPERTY
RV PARK
HARLO APARTMENTS
LEGEND
B13/MW13 MONITORING WELL (SOUNDEARTH 2008-2009)
MW04 MONITORING WELL (GEI 2001-2002)
CMW05 MONITORING WELL (QE 2004)
CMW01 DECOMMISSIONED MONITORING WELL
SP09 PUSH-PROBE BORING (SOUNDEARTH 2008)
SP19 PUSH-PROBE BORING (SOUNDEARTH 2010)
T6/9 EXCAVATION SOIL SAMPLES (GEI 1999)
OTE-E2 EXCAVATION SOIL SAMPLES (QE 2006)
TP03 TEST PIT (SOUNDEARTH 2009)
RAILROAD
PROPERTY BOUNDARIES
REVISED SITE BOUNDARY
WATER LINE
SANITARY SEWER LINE
STORMWATER LINE
ANCESTRAL DRAINAGE
FORMER EXCAVATIONS
FORMER FEATURES
SHALLOW GROUNDWATER FLOW DIRECTION (MAY 16, 2011)
AST ABOVEGROUND STORAGE TANK
GEI GEOENGINEERS, INC.
QE QUANTUM ENGINEERING
UST UNDERGROUND STORAGE TANK
ESTIMATED CURRENT EXTENT OF PETROLEUM-CONTAMINATED SOIL AND GROUNDWATER BENEATH THE SITE
SoundEarth
1996 1998 2000 2001 2002 2003 2004 2005 2006 2007 2008 2009 2010 2011 2012
Q1 Q1 Q1 Q3 Q1 Q3 Q1 Q3 Q1 Q3 Q1 Q2 Q3 Q4 Q1 Q2 Q3 Q4 Q1 Q2 Q3 Q4 Q1 Q2 Q3 Q4 Q1 Q2 Q3 Q4 Q1 Q2 Q3 Q4 Q1 Q2 Q3 Q4 Q1 Q2 Q3 Q4 Q1
PROJECT TIMELINE
TIMELINE LEGEND
GROUNDWATER MONITORING
EXCAVATION
TANK REMOVAL
WELL INSTALLATION
WELL DECOMMISSION
SUBSURFACE INVESTIGATION
SoundEarth Strategies
WWW.SOUNDEARTHINC.COM
DATE: 06/22/11
DRAWN BY: NAC/JQC
CHECKED BY: RKB
CAD FILE: 0592_2011FS_SBD
PROJECT NAME: NCPC SITE
PROJECT NUMBER: 0592-001
STREET ADDRESS: NORTH MAIN STREET AND EAST TYLER STREET
CITY, STATE: COLFAX, WASHINGTON
REGION:
0 30 60 120
APPROXIMATE SCALE IN FEET
FIGURE 3
SITE BOUNDARY DEFINITION
P:\0592 NORTH COLFAX GROUP\TECHNICAL\CAD\2011FS\0592_2011FS_SBD.DWG

TABLES

TABLE 1
SOIL SAMPLE ANALYTICAL RESULTS
PETROSUN WEST LLC/TIME OIL CO
RESULTS IN PARTS PER-MILLION (PPM)

SAMPLE ID	DEPTH	DRPH	ORPH	GRPH	BENZENE	TOLUENE	ETHYLBENZENE	XYLENES	MTBE	NAPHTHALENE
MTCA METHOD 'A'		**2000**	**2000**	**100/30**	**0.03**	**7**	**6**	**9**	**0.1**	**5**
GP-01	2	<25	280	0	0	0	0	0	0	-
GP-02	10-11	<25	173	0	0	0	0	0	0	-
GP-03	10-11	75.8	1900	0	<0.005	0.093	<0.005	0.037	0	-
T7/9	9	<25	**2770**	0	0	0	0	0	0	-
T8/9	9	<25	**3260**	0	0	0	0	0	0	-
T9/6	6	<25	157.6	0	0	0	0	0	0	-
STOCKPILE	0	<25	0	**2370**	**0.083**	0.0292	**14.2**	**34.4**	0	-
COMPOSITE	0	<25	0	**148**	0.029	0.013	1.3	2.2	0	-
SS-010100 199	0	<25	<100	0	0	0	0	0	0	-
MW2	7	<10	<25	<5	<0.05	<0.05	<0.05	<0.1	0	-
MW3	5	34.5	27.7	<5	<0.05	<0.05	<0.05	<0.1	0	-
MW3	10	<10	<25	<5	<0.05	<0.05	<0.05	<0.1	0	-
MW4	5	<10	<25	<5	<0.05	<0.05	<0.05	<0.1	0	-
MW5	5	15.9	30.9	40.3	<0.05	<0.05	<0.05	<0.1	0	-
MW6	5	464	<579	**4300**	**2.09**	2.09	**7.11**	**30.1**	0	-
MW7	5	<10	<25	<5	<0.05	<0.05	<0.05	<0.1	0	-
SP-01	6.5-7.5	<50	<250	<20	0	0	0	0	0	-
	11-12	<50	<250	<20	0	0	0	0	0	-
	13-14	<50	<250	<20	0	0	0	0	0	-
SP-02	3-4	150	<250	**670**	**1.6**	**11**	**10**	**64**	0	**15**
	7-8	850	<250	**3300**	**3.3**	**62**	**78**	**480**	0	**9.1**
	13-14	<50	<250	<2	<0.02	<0.02	<0.02	<0.06	0	-
SP-03	7-8	<50	<250	<20	0	0	0	0	0	-
	10-11	<50	<250	<20	0	0	0	0	0	-
	12-13	<50	<250	<20	0	0	0	0	0	-
SP-04	7-8	<50	<250	**34**	<0.02	<0.03	<0.12	<0.35	0	-
	10-11	160	<250	**1100**	<0.02	1.2	**24**	**24**	0	-
	12-13	<50	<250	<2	<0.02	<0.02	<0.02	<0.06	0	-
SP-05	7-8	1200	<250	**2400**	<0.03	<0.05	0.48	<0.15	0	-
	10-11	120	<250	**280**	<0.02	<0.12	3.5	2	0	-
	13-14	<50	<250	<2	<0.02	<0.02	<0.02	<0.06	0	-
SP-06	3-4	<50	<250	<20	0	0	0	0	0	-
	7-8	<50	<250	<20	0	0	0	0	0	-
	11-12	<50	<250	<20	0	0	0	0	0	-
SP-07	3-4	<50	<250	<20	0	0	0	0	0	-
	7-8	<50	<250	<20	0	0	0	0	0	-
	12.5-13.5	<50	<250	<20	0	0	0	0	0	-
SP-17	5-7	<50	<250	<20	0	0	0	0	0	-
	10-11	<50	<250	<20	0	0	0	0	0	-
SP-18	4-5	<50	<250	<20	0	0	0	0	0	-
	9-10	<50	<250	<20	0	0	0	0	0	-
SP-19	3-4	<50	<250	<20	0	0	0	0	0	-
	7-8	<50	<250	<20	0	0	0	0	0	-
B22/MW22	5-6	<50	<250	<20	0	0	0	0	0	-
	7-8	<50	<250	<20	0	0	0	0	0	-
	11-12	<50	<250	<20	0	0	0	0	0	-
B26/MW26	4	<50	<250	<20	0	0	0	0	0	-
	10	<50	<250	<20	0	0	0	0	0	-
	14	<50	<250	<20	0	0	0	0	0	-

BOLD ANALYTICAL RESULTS EXCEED MTCA METHOD 'A' CLEANUP ACTION LEVELS

< SYMBOL INDICATES RESULTS ARE LESS THAN THE LABORATORY PRACTICAL QUANTIFICATION LIMIT (PQL)

TABLE 2
SOILS SAMPLE ANALYTICAL RESULTS
COLFAX GRANGE (CENEX CARDTROL)
RESULTS IN PARTS PER-MILLION (PPM)

SAMPLE ID	DEPTH	DRPH	ORPH	GRPH	BENZENE	TOLUENE	ETHYLBENZENE	XYLENES	MTBE	NAPHTHALENE
MTCA METHOD 'A'		**2000**	**2000**	**100/30**	**0.03**	**7**	**6**	**9**	**0.1**	**5**
CMW4	5-6	0	0	<10	<0.025	<0.02	<0.02	<0.06	0	-
	7.5-9	0	0	<10	<0.025	<0.02	<0.02	<0.06	0	-
	12-13.5	0	0	<10	<0.025	<0.02	<0.02	<0.06	0	-
CMW5	5-6	0	0	<10	<0.025	<0.02	<0.02	<0.06	0	-
	8-9	0	0	<10	<0.025	<0.02	<0.02	<0.06	0	-
	10-10.5	0	0	<10	<0.025	<0.02	<0.02	<0.06	0	-
ULIP-06	0.5	0	0	**1820**	**7.24**	**59.5**	**24.5**	**158**	0	-
ULIP-15	1	0	0	**1690**	2.69	**25.8**	**15.7**	**145**	0	-
SULIP1	0-6	0	0	<10	<0.025	<0.02	<0.02	<0.06	0	-
SULIP15	1	0	0	<10	<0.025	<0.02	<0.02	<0.06	0	-
SULI PUMP	0-6"	0	0	<10	<0.025	<0.02	<0.02	<0.06	0	-
UL PUMP	0-6"	0	0	**524**	**0.397**	0.237	0.596	3.19	0	-
SUL-IP	VAULT	0	0	<10	<0.025	<0.02	<0.02	<0.02	0	-
DSL IP	VAULT	178	<25	**990**	<0.025	<0.02	2.73	**93.6**	0	-
SUL	TURBINE	0	0	24.6	**0.0685**	<0.02	<0.02	<0.06	0	-
E DIESEL	AFTER	59.8	<25	<10	**0.1**	<0.8	<0.8	<2.4	0	-
W DIESEL	AFTER	70.8	25	**231**	**0.25**	<2	<2	8.89	0	-
ULIP	VAULT	0	0	**604**	**0.25**	<2	<2	**22.2**	0	-
DIESEL	TURBINE	**7660**	1450	**595**	**0.395**	1.25	90.981	12.9	0	-
UL TURBINE	1.5	0	0	**5030**	**4.28**	**30.1**	**16.4**	**205**	0	-
SUP UL	10	0	0	**188**	**0.053**	0.424	0.424	1.27	**<0.106**	-
UL TUR	1.5	0	0	11.3	0.0282	0.226	0.226	0.677	**<0.113**	-
UL BTN	10	0	0	**1230**	**0.264**	5.36	**10.2**	**69.3**	**<2.11**	-
D PUMP	1.5	1640	394	0	**0.269**	**23.7**	**20.1**	**129**	0	-
DSL TNK BTN N	10	780	27.9	0	**0.329**	4.39	**7.35**	**18.6**	0	-
DSL TNK BTM S	10	**3860**	165	0	**3.86**	**44**	**27.5**	**128**	0	-
WEST DISPENSER	1.5	0	0	**1730**	**3.92**	**40.7**	**229**	**161**	**<0.252**	-
CENTER DISPENSER	1.5	0	0	**235**	**0.263**	<0.21	<0.21	<2.5	**<0.105**	-
EAST DISPENSER	1.5	0	0	**600**	**0.267**	**10.7**	**10.6**	**73.2**	**<0.107**	
WEST CARD DSL	1.5	3850	601	0	<0.0182	<0.243	<0.243	<0.729	0	-
EAST CARD DSL	1.5	0	0	20.7	**0.0311**	<0.249	<0.0249	<0.747	**<0.125**	-
UL FILL	1.5	0	0	10.4	<0.0261	<0.209	<0.209	<0.626	**<0.104**	-
UL IP	1.5	0	0	10.6	0.0265	<0.212	<0.212	<0.636	**<0.106**	-
UL TURBINE 2	2	0	0	**3260**	**13**	**189**	**68.7**	**397**	**<2.18**	-
DSL FILL	1.5	735	286	0	<0.0165	<0.22	<0.22	<0.661	0	-
DSL IP	1.5	43.5	<26.1	<0.0157	<0.0209	<0.0209	<0.0209	<0.627	0	-
DROP ISL	2	23.2	214	11.5	0.0286	0.229	0.229	0.687	**<0.115**	-
P1	5-10	24.2	44.8	22.2	**<0.0321**	<0.256	<0.256	<0.769	**<0.128**	-
P2	9-11	898	43.6	**145**	0.0267	<0.213	<0.213	<0.64	**<0.107**	-
P4	5-10	0	0	<12.3	**<0.0308**	<0.247	<0.247	<0.74	**<0.123**	-
P5/P6	4-8	0	0	<13.1	**<0.0327**	<0.262	<0.262	<0.785	**<0.131**	-
P9	9-11	0	0	**41.5**	**<0.031**	<0.248	<0.248	<0.743	**<0.124**	-
P10	10-11	0	0	<12.9	**<0.0321**	<0.257	<0.257	<0.711	**<0.129**	-
P11	5-10	141	428	**1050**	**0.0561**	0.352	2.45	**17.2**	**<1.3**	-
P12	10-11	<15.2	<37.9	<12.8	**<0.032**	<0.256	<0.256	<0.767	**<0.128**	-
OTE-SE1	6	<25	<100	**139**	0.013	0.021	0.108	1.802	<0.01	-
OTE-E2	11	<25	<100	7.1	**0.063**	0.01	0.02	0.062	<0.01	-
OTE-E3	6	<25	<100	18.2	**0.131**	0.059	0.056	0.352	<0.01	-

BOLD ANALYTICAL RESULTS EXCEED MTCA METHOD 'A' CLEANUP ACTION LEVELS

< SYMBOL INDICATES RESULTS ARE LESS THAN THE LABORATORY PRACTICAL QUANTIFICATION LIMIT (PQL)

TABLE 2
SOILS SAMPLE ANALYTICAL RESULTS
COLFAX GRANGE (CENEX CARDTROL)
RESULTS IN PARTS PER-MILLION (PPM)

SAMPLE ID	DEPTH	DRPH	ORPH	GRPH	BENZENE	TOLUENE	ETHYLBENZENE	XYLENES	MTBE	NAPHTHALENE
MTCA METHOD 'A'		**2000**	**2000**	**100/30**	**0.03**	**7**	**6**	**9**	**0.1**	**5**
OTE-4	6	<25	102	**39.6**	**0.544**	0.322	0.336	1.329	<0.01	-
OTE-W6	6	<25	<100	11	**0.052**	0.032	0.014	0.03	<0.01	-
OTE-SE1	11	<25	<100	7.6	0.027	0.012	0.005	0.067	<0.01	-
OTE-E2	6	<25	173	8	0.023	0.014	0.009	0.084	<0.01	-
OTE-W5	5	<25	<100	9.7	0.029	0.015	0.011	0.093	<0.01	-
	10	<25	<100	9.5	0.026	0.025	0.015	0.097	<0.01	-
OTE-W6	11	<25	<100	6.4	0.016	0.006	<0.005	0.017	<0.01	-
N1	11	465	<100	**642**	**0.099**	0.249	1.14	7.16	<0.025	-
N2	11	<25	<100	**46.2**	**0.058**	0.074	0.15	0.636	<0.025	-
CT-DW	3	<25	<100	<2.5	<0.025	<0.025	<0.025	<0.075	<0.025	-
CT-GE	3	0	0	<2.5	<0.025	<0.025	<0.025	<0.075	<0.025	-
NTE-NE	3-6	<25	<100	<2.5	**0.083**	0.058	<0.025	<0.075	<0.025	-
	6-9	<25	<100	4.29	**0.288**	0.483	0.03	0.175	<0.025	-
NTE-M	3-6	<25	<100	10.5	**0.49**	1.3	0.073	0.806	<0.025	-
	6-9	<25	<100	<2.5	**0.044**	0.101	<0.025	<0.075	<0.025	-
NTE-SE	3-6	<25	<100	3.27	<0.025	<0.025	<0.025	<0.075	<0.025	-
	6-9	<25	<100	<2.5	<0.025	0.031	<0.025	<0.075	<0.025	-
CARD WEST	3	77.6	<45	<12	<0.0299	<0.239	<0.239	<0.718	0	-
CARD EAST	3	13.1	<29.7	<11.9	<0.0297	<0.237	<0.237	<0.712	0	-
SP-08	5-6	<50	<250	<10	-	-	-	-	-	-
	10-11	<50	<250	<10	-	-	-	-	-	-
	13-14	<50	<250	<10	-	-	-	-	-	-
SP-09	5-6	<50	<250	<10	-	-	-	-	-	-
	9-10	<50	<250	<10	-	-	-	-	-	-
	13-14	<50	<250	<10	-	-	-	-	-	-
SP-10	5-6	<50	<250	<10	-	-	-	-	-	-
	9-10	<50	<250	<10	-	-	-	-	-	-
	14-15	<50	<250	<10	-	-	-	-	-	-
SP-11	3-4	<50	<250	11	**0.37**	0.02	0.05	0.59	-	-
	5-6	<50	<250	6	**0.29**	<0.05	<0.02	<0.15	<0.05	-
	9.5-10.5	<50	<250	2	<0.02	<0.02	<0.02	<0.06	-	-
	13-14	<50	<250	2	<0.02	<0.02	<0.02	<0.06	-	-
SP-12	6.5-8	<50	<250	<2	<0.02	<0.02	<0.02	<0.06	-	-
	10-12	<50	<250	**140**	**0.034**	<0.05	0.75	2.97	<0.05	-
	13-14	<50	<250	**66**	0.02	0.26	0.6	2.9	-	-
	14-15	<50	<250	<2	<0.02	0.02	0.02	0.06	-	-
SP-13	5.5-6.5	<50	<250	<20	-	-	-	-	-	-
	9-10	<50	<250	<20	-	-	-	-	-	-
	12.5-13.5	<50	<250	<20	-	-	-	-	-	-
SP-14	4.5-5.5	<50	<250	3	**0.11**	0.02	0.02	0.06	-	-
	7-8	<50	<250	<2	**0.074**	<0.05	<0.05	<0.15	<0.05	-
	13-14	<50	<250	<2	<0.02	<0.02	<0.02	<0.06	-	-
SP-15	6-7	<50	<250	3	**0.21**	<0.05	<0.05	0.29	<0.05	-
	10-11	<50	<250	<2	<0.03	<0.02	<0.02	<0.06	-	-
	13-14	<50	<250	<2	<0.02	<0.02	<0.02	<0.06	-	-
SP-16	9.5-10	<50	<250	<20	-	-	-	-	-	-
	13-14	<50	<250	<20	-	-	-	-	-	-
B23 MW23	6-7	<50	<250	<20	-	-	-	-	-	-
	13-14	<50	<250	<20	-	-	-	-	-	-
SP18	4-5	<50	<250	<20	-	-	-	-	-	-
	9-10	<50	<250	<20	-	-	-	-	-	-

BOLD ANALYTICAL RESULTS EXCEED MTCA METHOD 'A' CLEANUP ACTION LEVELS

< SYMBOL INDICATES RESULTS ARE LESS THAN THE LABORATORY PRACTICAL QUANTIFICATION LIMIT (PQL)

TABLE 3
SOILS SAMPLE ANALYTICAL RESULTS
COLFAX GRANGE SUPPLY
RESULTS IN PARTS PER-MILLION (PPM)

SAMPLE ID	DEPTH	DRPH	ORPH	GRPH	BENZENE	TOLUENE	ETHYLBENZENE	XYLENES	MTBE	NAPHTHALENE
MTCA METHOD 'A'		**2000**	**2000**	**100/30**	**0.03**	**7**	**6**	**9**	**0.1**	**5**
B16 MW16	6-7	<50	<250	<2	<0.02	<0.02	<0.02	<0.06	-	-
	11-12	<50	<250	**140**	<0.03	<0.05	0.26	<0.06	<0.05	-
	14-15	<50	<250	<2	<0.02	<0.02	<0.02	<0.06	-	-
B17 MW17	6-7	<50	<250	<20	-	-	-	-	-	-
	9.5-10.5	<50	<250	<20	-	-	-	-	-	-
	13-14	<50	<250	<20	-	-	-	-	-	-
B18 MW18	6-7	<50	<250	<20	-	-	-	-	-	-
	7-8	<50	<250	<20	-	-	-	-	-	-
	13-14	<50	<250	<20	-	-	-	-	-	-
B19 MW19	6-7	<50	<250	<2	<0.02	<0.02	<0.02	<0.06	-	-
	7-8	<50	<250	<2	<0.02	<0.02	<0.02	<0.06	-	-
	11.5-12.5	<50	<250	<2	<0.02	<0.02	<0.02	<0.06	<0.05	-
B25 MW25	5	<50	<250	<20	-	-	-	-	-	-
	7.5	<50	<250	<20	-	-	-	-	-	-
	12.5	<50	<250	<20	-	-	-	-	-	-
B28 MW28	4	<50	<250	<20	-	-	-	-	-	-
	10.5	<50	<250	<20	-	-	-	-	-	-
	15	<50	<250	13	<0.02	<0.03	<0.02	<0.07	-	-
B29 MW29	4	<50	<250	<20	-	-	-	-	-	-
	11	<50	<250	**310**	<0.02	0.91	3.9	2.7	-	-
	15	<50	<250	<20	-	-	-	-	-	-
B32	4	<50	<250	<20	-	-	-	-	-	-
	8	<50	<250	<20	-	-	-	-	-	-
	12	<50	<250	<20	-	-	-	-	-	-
	15	<50	<250	<20	-	-	-	-	-	-
B33 MW32	4	<50	<250	<20	-	-	-	-	-	-
	11	<50	<250	<20	-	-	-	-	-	-
	14	<50	<250	<20	-	-	-	-	-	-
TP-01	7	<50	<250	<20	-	-	-	-	-	-
	12	390	<250	**700**	<0.03	<0.05	<0.05	<0.15	<0.05	-
TP-02	4	<50	<250	<20	-	-	-	-	-	-
	9.5	<50	<250	<20	-	-	-	-	-	-
	12.5	<50	<250	**190**	<0.03	<0.05	<0.05	<0.15	<0.05	-
TP-03	7.5	<50	<250	<20	-	-	-	-	-	-
	11	<50	<250	16	<0.03	<0.05	<0.05	<0.15	<0.05	-
SP18	4-5	<50	<250	<20	-	-	-	-	-	-
	9-10	<50	<250	<20	-	-	-	-	-	-
SP19	3-4	<50	<250	<20	-	-	-	-	-	-
	7-8	<50	<250	<20	-	-	-	-	-	-

BOLD ANALYTICAL RESULTS EXCEED MTCA METHOD 'A' CLEANUP ACTION LEVELS

< SYMBOL INDICATES RESULTS ARE LESS THAN THE LABORATORY PRACTICAL QUANTIFICATION LIMIT (PQL)

TABLE 4

MONITORING WELL SAMPLING SUMMARY NCPC

Well ID	Water Level	GASOLINE	DIESEL	OIL	BTEX
PETROSUN/TIME OIL CO PARCEL					
MW-1	X		X	X	
MW-2	X				
MW-3	X				
MW-4	X				
MW-5	X				
MW-6	X				
MW-7	X				
MW-8	X				
TYLER STREET-PETROSUN/TIME OIL CO UP GRADIENT WELLS					
MW-9	X		X	X	
MW10	X		X	X	
NORTH MAIN STREET PETROSUN/ TIME OIL CO DOWN GRADIENT WELL					
MW-11	X	X	X	X	X
TYLER STREET-PETROSUN/TIME OIL CO UP GRADIENT WELL					
MW-12	X				
NORTH MAIN STREET SITE DOWN GRADIENT WELL					
MW-13	X	X	X	X	X
STERLING SAVINGS BANK PARCEL					
MW-14	Monitoring well decommissioned October 2009				
NORTH MAIN STREET WEST SIDE NORTH OF STERLING SAVINGS					
MW-15	X				
COLFAX GRANGE PARCEL					
MW-16	X	X	X	X	X
MW-17	X	X	X	X	X
MW-18	X	X	X	X	X
MW-19	X	X	X	X	X
NORTH MORTON STREET – SHELL SITE					
MW-20	X		X	X	
MW-21	X				
PETROSUN WEST LLC/TIME OIL CO PARCEL NORTHERN MOST WELL WESTSIDE OF PARCEL					
MW-22	X				
COLFAX GRANGE (CENEX CARDTROL) PARCEL REPLACEMENT FOR CMW-1					
MW-23	X				
COLFAX GRANGE PARCEL FORMER SERVICE STATION					
MW-24	X				
HARRISON STREET - COLFAX GRANGE PARCEL UP GRADIENT WELL					
MW-25	X				
MAIN STREET – PETROSUN PARCEL/TIME OIL CO					
MW-26	X	X	X	X	X
MAIN STREET – STERLING SAVINGS BANK					
MW-27	X	X	X	X	X
COLFAX GRANGE PARCEL – NORTH MAIN STREET					
MW-28	X	X	X	X	X

TABLE 4

MONITORING WELL SAMPLING SUMMARY NCPC

COLFAX GRANGE PARCEL FORMER SERVICE STATION					
MW-29	X	X	X	X	X
NORTH MORTON STREET – SHELL SITE					
MW-30	X	X	X	X	X
MW-31	X	X	X	X	X
COLFAX GRANGE SUPPLY HARRISON STREET					
MW-32	X	X	X	X	X
CENEX CARDTROL PARCEL					
CMW-1	Monitoring well decommissioned January 2007				
CMW-2	X				
CMW-3	X				
CMW-4	X				
CMW-5	X				

TABLE 5
GROUNDWATER ANALYTICAL RESULTS NCPC

Well ID	Date	TPHG	TPHD	ORPH	Benzene	Toluene	Ethylbenzene	Total Xylenes
MTCA Method 'A'		**1000/800µg/L**	**500µg/L**	**500µg/L**	**5µg/L**	**1000µg/L**	**700µg/L**	**1000µg/L**
MW01	3/10/10	< 100	140	410	<1	<1	<1	<3
	6/9/10	-	64	<250	-	-	-	-
	8/17/10	-	<50	<250	-	-	-	-
	11/18/10	-	<50	<250	-	-	-	-
	2/16/11	-	<50	<250	-	-	-	-
	5/17/11	-	<50	<250	-	-	-	-
	8/17/11	-	<50	<250	-	-	-	-
	11/16/11	-	84	<250	-	-	-	-
	2/15/12		300	270	-	-	-	-
	5/15/12	-	<50	<250	-	-	-	-
	8/15/12	-	57	<250	-	-	-	-
MW09	3/9/30	-	160	310	-	-	-	-
	6/9/10	-	160	410	-	-	-	-
	8/18/10	-	<50	<250	-	-	-	-
	11/16/10	-	290	330	-	-	-	-
	2/16/11	-	53	250	-	-	-	-
	5/18/11	-	140	<250	-	-	-	-
	8/17/11	-	130	<250	-	-	-	-
	11/16/11	-	220	<250	-	-	-	-
	2/15/12		200	280	-	-	-	-
	5/26/12	-	86	310	-	-	-	-
	8/14/12	-	100	<250	-	-	-	-
MW10	3/9/10	-	<50	<250	-	-	-	-
	6/9/10	-	95	<250	-	-	-	-
	8/17/10	-	<50	<250	-	-	-	-
	11/16/10	-	80	<250	-	-	-	-
	2/16/11	-	56	<250	-	-	-	-
	5/17/11	-	88	<250	-	-	-	-
	8/16/11	-	81	<250	-	-	-	-
	11/15/11	-	64	<250	-	-	-	-
	2/14/12		110	290	-	-	-	-
	5/15/12	-	<50	<250	-	-	-	-
	8/14/12	-	65	<250	-	-	-	-
MW11	3/10/10	150	240	<250	<1	4	<1	3
	6/8/10	110	360	<250	<1	1.6	<1	<3
	8/18/10	270	180	<250	<1	11	1.7	5.8
	11/17/11	170	63	<250	<1	3.1	<1	<3
	2/16/11	<100	63	<250	<1	2.1	<1	<3
	5/18/11	<100	<50	<250	<1	<1	<1	<3
	8/17/11	200	250	<250	<1	3.5	<1	<3
	11/15/11	380	130	<250	<1	3.6	<1	<3
	2/14/12	100	123	<250	<1	2.1	2.1	4.0
	5/15/12	100	70	350	<1	<1	<1	<3
	8/15/12	100	<50	<250	<1	1.3	<1	<3

Bold numbers exceed MTCA method 'A' cleanup action

TABLE 5
GROUNDWATER ANALYTICAL RESULTS NCPC

Well ID	Date	TPHG	TPHD	ORPH	Benzene	Toluene	Ethylbenzene	Total Xylenes
MTCA Method 'A'		**1000/800µg/L**	**500µg/L**	**500µg/L**	**5µg/L**	**1000µg/L**	**700µg/L**	**1000µg/L**
MW13	3/9/10	<100	140	<250	<1	2	<1	<3
	6/8/10	110	190	<250	<1	1.9	<1	<3
	8/17/10	<100	99	<250	<1	2.4	<1	<3
	11/17/10	<100	86	<250	<1	1.6	<1	<3
	2/16/11	<100	<50	<250	<1	1.2	<1	<3
	5/18/11	<100	<50	<250	<1	<1	<1	<3
	8/15/11	<100	<50	<250	<1	1.2	<1	<3
	11/17/11	<100	92	<250	<1	1.1	<1	<3
	2/15/12	<100	<50	<250	<1	1.1	<1	<3
	5/16/12	<100	<50	<250	<1	<1	<1	<3
	8/15/12	<100	<50	<250	<1	<1	<1	<3
MW16	3/9/10	<100	95	<250	<1	<1	<1	<3
	6/8/10	<100	<50	<250	<1	<1	<1	<3
	8/17/10	<100	72	<250	<1	<1	<1	<3
	11/16/10	<100	<50	<250	<1	<1	<1	<3
	2/15/11	<100	<50	<250	<1	<1	<1	<3
	5/18/11	<100	86	<250	<1	<1	<1	<3
	8/17/11	<100	130	<250	<1	<1	<1	<3
	11/16/11	<100	<50	<250	<1	<1	<1	<3
	2/14/12	<100	<50	<250	<1	<1	<1	<3
	5/15/12	<100	87	<250	<1	<1	<1	<3
	8/14/12	<100	<50	<250	<1	<1	<1	<3
MW17	3/9/10	<100	110	<250	<1	<1	<1	<3
	6/8/10	<100	180	<250	<1	<1	<1	<3
	8/17/10	<100	240	<250	<1	<1	<1	<3
	11/16/10	<100	300	<250	<1	<1	<1	<3
	2/15/11	<100	<50	<250	<1	<1	<1	<3
	5/17/11	<100	130	<250	<1	<1	<1	<3
	8/17/11	<100	150	<250	<1	<1	<1	<3
	11/15/11	<100	340	<250	<1	<1	<1	<3
	2/14/12	<100	440	<250	<1	<1	<1	<3
	5/15/12	<100	57	<250	<1	<1	<1	<3
	8/14/12	<100	300	250	<1	<1	<1	<3
MW18	3/9/10	<100	240	<250	<1	<1	<1	<3
	6/8/10	<100	270	320	<1	<1	<1	<3
	8/18/10	<100	190	<250	<1	<1	<1	<3
	11/16/10	<100	280	<250	<1	<1	<1	<3
	2/15/11	<100	120	<250	<1	<1	<1	<3
	5/17/11	<100	79	<250	<1	<1	<1	<3
	8/17/11	<100	130	<250	<1	<1	<1	<3
	11/15/11	<100	120	<250	<1	<1	<1	<3
	2/14/12	<100	210	410	<1	<1	<1	<3
	5/15/12	<100	<50	<250	<1	<1	<1	<3
	8/14/12	<100	130	<250	<1	<1	<1	<3

Bold numbers exceed MTCA method 'A' cleanup action

TABLE 5
GROUNDWATER ANALYTICAL RESULTS NCPC

Well ID	Date	TPHG	TPHD	ORPH	Benzene	Toluene	Ethylbenzene	Total Xylenes
MTCA Method 'A'		**1000/800µg/L**	**500µg/L**	**500µg/L**	**5µg/L**	**1000µg/L**	**700µg/L**	**1000µg/L**
MW19	3/9/10	<100	260	<250	<1	<1	<1	<3
	6/8/10	<100	320	430	<1	<1	<1	<3
	8/18/10	<100	240	<250	<1	<1	<1	<3
	11/16/10	<100	200	<250	<1	<1	<1	<3
	2/16/11	<100	<50	<250	<1	<1	<1	<3
	5/17/11	<100	<50	<250	<1	<1	<1	<3
	8/16/11	<100	94	<250	<1	<1	<1	<3
	11/15/11	<100	<50	<250	<1	<1	<1	<3
	2/14/12	<100	74	<250	<1	<1	<1	<3
	5/15/12	<100	<50	<250	<1	<1	<1	<3
	8/14/12	<100	92	<250	<1	<1	<1	<3
MW26	2/14/12	<100	290	**830**	<1	<1	<1	<3
	6/8/10	<100	400	**540**	<1	<1	<1	<3
	8/17/10	<100	220	<250	<1	<1	<1	<3
	11/17/10	<100	50	<250	<1	<1	<1	<3
	2/17/11	<100	250	**760**	<1	<1	<1	<3
	5/17/11	<100	220	390	<1	<1	<1	<3
	8/16/11	<100	130	<250	<1	<1	<1	<3
	11/16/11	<100	160	<250	**14**	1.6	<1	<3
	2/14/12	<100	180	<250	<1	<1	<1	<3
	5/15/12	<100	130	<250	<1	<1	<1	<3
	8/14/12	<100	130	<250	<1	<1	<1	<3
MW32	3/9/10	<100	330	310	<1	<1	<1	<3
	6/9/10	<100	410	460	<1	<1	<1	<3
	8/18/10	<100	250	<250	<1	<1	<1	<3
	11/16/10	<100	300	260	<1	<1	<1	<3
	2/15/11	<100	290	<250	<1	<1	<1	<3
	5/18/11	<100	380	280	<1	<1	<1	<3
	8/17/11	<100	340	<250	<1	<1	<1	<3
	11/16/11	<100	270	<250	<1	<1	<1	<3
	2/15/12	<100	270	<250	<1	<1	<1	<3
	5/16/12	<100	240	<250	<1	<1	<1	<3
	8/14/12	<100	380	350	<1	<1	<1	<3

Bold numbers exceed MTCA method 'A' cleanup action

TABLE 6
CLEANUP LEVELS ESTABLISHED FROM MTCA METHOD 'A'

CLEANUP STANDARDS-GROUNDWATER		
HAZARDOUS SUBSTANCE		CLEANUP LEVEL
GASOLINE ORGANICS WITH BENZENE PRESENT	WTPH-G	800 g/L
GASOLINE ORGANICS WITHOUT BENZENE	WTPH-G	1,000 µg/L
DIESEL RANGE ORGANICS	WTPH-D	500 µg/L
HEAVY OILS	WTPH-O	500 µg/L
BENZENE	BTEX	5 µg/L
TOLUENE		1,000 µg/L
ETHYLBENZENE		700 µg/L
XYLENES		1,000 µg/L
METHYL TERT-BUTYL ETHER	MTBE	20 µg/L
CLEANUP STANDARDS-SOIL		
HAZARDOUS SUBSTANCE		CLEANUP LEVEL
GASOLINE ORGANICS WITH BENZENE PRESENT	WTPH-G	30 mg/Kg
GASOLINE ORGANICS WITHOUT BENZENE	WTPH-G	100 mg/Kg
DIESEL RANGE ORGANICS	WTPH-D	2,000 mg/Kg
HEAVY OILS	WTPH-O	2,000 mg/Kg
BENZENE	BTEX	0.03 mg/Kg
TOLUENE		7 mg/Kg
ETHYLBENZENE		6 mg/Kg
XYLENES		9 mg/Kg
METHYL TERT-BUTYL ETHER	MTBE	0.1 mg/Kg

TABLE 7
CLEANUP ALTERNATIVE COMPONENTS

PETROSUN WEST LLC/TIME OIL
ALTERNATIVE 1 - MONITORED NATURAL ATTENUATION
CONTAMINANT CONTINGENCY PLAN
MAINTENANCE OF A CONTAINMENT CAP
INSTITUTIONAL CONTROLS
RESTRICTIVE COVENANT
MANAGEMENT PLAN
ALTERNATIVE 2 - IN SITU BIOREMEDIATION SOIL VAPOR EXTRACTION
CONTAMINANT CONTINGENCY PLAN
GROUNDWATER MONITORING PLAN
MAINTENANCE OF A CONTAINMENT CAP
INSTITUTIONAL CONTROLS
RESTRICTIVE COVENANT
MANAGEMENT PLAN
ALTERNATIVE 3 - EXCAVATION & DISPOSAL
SHORING
EXCAVATION OFFSITE DISPOSAL
GROUNDWATER MONITORING PLAN
MANAGEMENT PLAN
TRAFFIC CONTROL
COLFAX GRANGE (CENEX CARDTROL)
ALTERNATIVE 1 - MONITORED NATURAL ATTENUATION
CONTAMINANT CONTINGENCY PLAN
GROUNDWATER MONITORING PLAN
MAINTENANCE OF A CONTAINMENT CAP
INSTITUTIONAL CONTROLS
RESTRICTIVE COVENANT
MANAGEMENT PLAN
ALTERNATIVE 2 - IN SITU BIOREMEDIATION SOIL VAPOR EXTRACTION
CONTAMINANT CONTINGENCY PLAN
GROUNDWATER MONITORING PLAN
MAINTENANCE OF A CONTAINMENT CAP
INSTITUTIONAL CONTROLS
RESTRICTIVE COVENANT
MANAGEMENT PLAN
ALTERNATIVE 3 - EXCAVATION & DISPOSAL
SHORING
EXCAVATION OFFSITE DISPOSAL
GROUNDWATER MONITORING PLAN
MANAGEMENT PLAN
TRAFFIC CONTROL

TABLE 7
CLEANUP ALTERNATIVE COMPONENTS

COLFAX GRANGE SUPPLY
ALTERNATIVE 1 - MONITORED NATURAL ATTENUATION
GROUNDWATER MONITORING PLAN
CONTAMINANT CONTINGENCY PLAN
MAINTENANCE OF A CONTAINMENT CAP
INSTITUTIONAL CONTROLS
RESTRICTIVE COVENANT
MANAGEMENT PLAN
ALTERNATIVE 2 - IN SITU CHEMICAL OXIDATION
GROUNDWATER MONITORING PLAN
CONTAMINANT CONTINGENCY PLAN
MAINTENANCE OF A CONTAINMENT CAP
INSTITUTIONAL CONTROLS
RESTRICTIVE COVENANT
MANAGEMENT PLAN
ALTERNATIVE 3 - EXCAVATION & DISPOSAL
SHORING
EXCAVATION OFFSITE DISPOSAL
GROUNDWATER MONITORING PLAN
MANAGEMENT PLAN
TRAFFIC CONTROL

TABLE 8
APPLICABLE OR RELEVANT AND APPROPRIATE REQUIREMENT FOR THE CLEANUP ACTION
(STATE AND FEDERAL LAWS)

Cleanup Action Implementation	
Ch 18.104 RCW; Ch 173-160- WAC	Water Well Construction; Minimum Standards for Construction and Maintenance of Water Wells
Ch 173-162	Rules and Regulations Governing the Licensing of Well Contractors & Operators
Ch 70.105D RCW; Ch 173-340	Model Toxics Control Act; MTCA Cleanup Regulations
Ch 43-21C RCW; Ch 197-11 WAC	State Environmental Policy Act; SEPA Rule
29 CFR 1910	Occupational Safety and Health Act
Groundwater and Surface Water	
42 USC 300	Safe Drinking Water Act
33 USC 1251; 40 CFR 131; Ch 173-210A WAC	Clean Water Act; Water Quality Standards
Ch 70.105D RCW; Ch 173-340 WAC	Model Toxics Control Act; MTCA Cleanup Regulations
40 CFR 141; 40 CFR 143	National Primary Drinking Water Standards; National Secondary Drinking Water Standards
Ch 246-290 WAC	Department of Health Standards for Public Water Supplies
Ch 173-154 WAC	Protection of Upper Aquifer Zone
Air	
42 USC 7401; 40 CFR 50	Clean Air Act of 1977; National Ambient Air Quality Standards
Ch 70.94 RCW; Ch 43.21A RCW; Ch 173-470 WAC	Washington Clean Air Act; General Regulations for Air Pollution
Ch 173-460 WAC Ch 173-470 WAC	Controls for New Sources of Air Pollution Ambient Air Quality Standards for Particulate Matter
Ch 70.105D; Ch 173-340 WAC	Model Toxics Control Act; MTCA Cleanup Regulations