

Five-Year Review Report

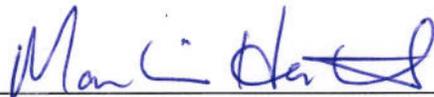
**First Five-Year Review Report
for**

Bountiful/Woods Cross 5th S. PCE Plume
EPA ID: UT0001119296

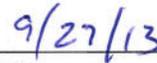
**Bountiful, West Bountiful and Woods Cross
Davis County, Utah**

September 2013

Prepared by
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Date

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List of Acronyms

AOC	Administrative Order on Consent
ARAR	Applicable or Relevant and Appropriate Requirement
BCI	Bountiful Cleaners Incorporated
bgs	below the ground surface
BHHRA	Baseline Human Health Risk Assessment
CAH	Chlorinated Aliphatic Hydrocarbon
CERCLA	Comprehensive Environmental Response, Compensation and Liability Act
CFR	Code of Federal Regulations
CIC	Community Involvement Coordinator
COC	Contaminant of Concern
DCE	Dichloroethene
DERR	Division of Environmental Response and Remediation
EAB	Enhanced Anaerobic Bioremediation
EOS®	Emulsified Oil Substrate
EPA	United States Environmental Protection Agency
FS	Feasibility Study
FYR	Five-Year Review
GPM	Gallons Per Minute
GWTS	Groundwater Treatment System
GAC	Granular/liquid Activated Carbon
HI	Hazard Index
HDR	HDR Engineering, Inc.
IC	Institutional Control
LTMP	Long Term Monitoring Plan
LTRA	Long Term Response Action
MCL	Maximum Contaminant Level
MCLG	Maximum Contaminant Level Goal
mg/kg	milligrams per kilogram or parts per million (ppm)
MTBE	Methyl Tertiary-Butyl Ether
MNA	Monitored Natural Attenuation
MW	Monitoring Well
NCP	National Oil and Hazardous Substances Pollution Contingency Plan
NPL	National Priorities List
OU	Operable Unit
O&M	Operation and Maintenance
PA	Preliminary Assessment
PCE	Tetrachloroethene
POTW	Publicly Owned Treatment Works
ppb	parts per billion
ppm	parts per million
PRP	Potentially Responsible Party
PWT	Pacific Western Technologies, Ltd.
QAPP	Quality Assurance Project Plan
RME	Reasonable Maximum Exposure
RfC	Reference Concentration
RA	Remedial Action

RAO	Remedial Action Objective
RBC	Risk-Based Concentrations
RD	Remedial Design
RI	Remedial Investigation
ROD	Record of Decision
RPM	Remedial Project Manager
START	Superfund Technical Assessment and Response Team
SVE	Soil Vapor Extraction
TCE	Trichloroethene
TMB	trimethylbenzene
µg/kg	micrograms per kilogram (ppb)
µg/L	micrograms per liter (ppb)
UDEQ	Utah Department of Environmental Quality
UPDES	Utah Pollutant Discharge Elimination System
VISL	Vapor Intrusion Screening Levels
VOC	Volatile Organic Compounds

Executive Summary

The Bountiful/Woods Cross 5th S. PCE Plume site (the Site) is located in southern Davis County, Utah, about 10 miles north of Salt Lake City, and covers an area of about 450 acres. In 1998, EPA investigations revealed groundwater contamination at the Site and the EPA divided the impacted areas into two operable units (OUs). OU1 is known as the trichloroethene (TCE) Groundwater Plume at the W.S. Hatch Company (Hatchco) property, formerly the “Woods Cross 800 West Plume.” OU1 includes contaminated subsurface soil and groundwater. OU2 is a tetrachloroethene (PCE) plume emanating from the Bountiful Family Cleaners property, currently owned by Bountiful Cleaners, Inc. (BCI) and the former David Early property. OU2 was formerly known as the “5th South PCE plume” with an unknown source or as the “*Unknown Source Plume*.”

The remedy at OU1 currently protects human health and the environment because no one is using contaminated groundwater for domestic uses. It should also be noted that there are no known vapor intrusion issues within residential or commercial buildings in the vicinity of OU1. However, in order for the remedy to be protective in the long-term, the following actions need to be taken:

- Better define the downgradient edge of the OU1 plume laterally and the entire plume vertically (e.g. develop cross sectional maps).
- Implement institutional controls to restrict groundwater use near the TCE plume, prohibit new well drilling for domestic use and recommend vapor intrusion mitigation in all permits for construction planned on or along the projected path of the contaminated plume.

The remedy at OU2 is expected to be protective of human health and the environment upon completion, and in the interim, exposure pathways that could result in unacceptable risks are being controlled.

Five-Year Review Summary Form

SITE IDENTIFICATION		
Site Name: Bountiful/Woods Cross 5th S. PCE Plume		
EPA ID: UT0001119296		
Region: 8	State: UT	City/County: Bountiful, West Bountiful, and Woods Cross/Davis
SITE STATUS		
NPL Status: Final		
Multiple OUs? Yes	Has the site achieved construction completion? No	
REVIEW STATUS		
Lead agency: EPA		
Author name: Sam Garcia and Treat Suomi		
Author affiliation: EPA Region 8 and Skeo Solutions		
Review period: 12/10/2012 – 09/15/2013		
Date of site inspection: 12/11/2012		
Type of review: Statutory		
Review number: 1		
Triggering action date: 09/15/2008		
Due date (five years after triggering action date): 09/15/2013		

Five-Year Review Summary Form (continued)

Issues/Recommendations

OU(s) without Issues/Recommendations Identified in the Five-Year Review:

None

Issues and Recommendations Identified in the Five-Year Review:

OU(s): OU1,OU2	Issue Category: Institutional Controls			
	Issue: Required institutional controls have not been implemented to restrict groundwater use at most of the properties above the contaminated groundwater plumes.			
	Recommendation: Implement institutional controls to restrict groundwater use and prohibit new well drilling for domestic use at properties above the contaminated groundwater plumes.			
Affect Current Protectiveness	Affect Future Protectiveness	Implementing Party	Oversight Party	Milestone Date
No	Yes	EPA/State	EPA	09/30/2015

OU(s): OU1,OU2	Issue Category: Institutional Controls			
	Issue: Required institutional controls have not been implemented to recommend vapor intrusion mitigation in all permits for construction of new commercial and/or residential buildings planned on or along the projected path of the contaminated groundwater.			
	Recommendation: Implement institutional controls to recommend vapor intrusion mitigation in all permits for construction of new commercial and/or residential buildings planned on or along the projected path of the contaminated groundwater.			
Affect Current Protectiveness	Affect Future Protectiveness	Implementing Party	Oversight Party	Milestone Date
No	Yes	EPA/State	EPA	09/30/2015

Five-Year Review Summary Form (continued)

OU(s): OU1	Issue Category: Monitoring			
	Issue: There is a lack of data for the downgradient edge of both the deep and shallow OU1 groundwater plumes, and for the vertical extent of the OU1 groundwater plume.			
	Recommendation: Obtain the necessary data to better define the downgradient edge of the OU1 plume laterally and the entire plume vertically (e.g. develop cross sectional maps).			
Affect Current Protectiveness	Affect Future Protectiveness	Implementing Party	Oversight Party	Milestone Date
No	Yes	EPA	EPA	09/30/2014

OU(s): OU2	Issue Category: Remedy Performance			
	Issue: There is potentially an unacceptable risk of chronic health effects due to long-term exposure to PCE in BCI basement indoor air.			
	Recommendation: Complete the ongoing comprehensive evaluation of potential soil vapor intrusion associated with the source area at OU2.			
Affect Current Protectiveness	Affect Future Protectiveness	Implementing Party	Oversight Party	Milestone Date
No	Yes	EPA	EPA	09/30/2014

OU(s): OU2	Issue Category: Remedy Performance			
	Issue: The toxicity values used to calculate the soil gas and groundwater cleanup goals for PCE and TCE have been revised, resulting in cleanup goals that no longer fall within the EPA's acceptable risk range.			
	Recommendation: Revise the cleanup goals for the OU2 source area.			
Affect Current Protectiveness	Affect Future Protectiveness	Implementing Party	Oversight Party	Milestone Date
No	Yes	EPA	EPA	09/30/2014

OU(s): OU2	Issue Category: Changed Site Conditions			
	Issue: A few domestic wells have shown increasing concentrations of COCs that exceed MCLs.			
	Recommendation: Update the well survey and ensure that the revised LTMP formalizes routine sampling and provides results to well owners regarding contaminant levels in wells and any related changes in risk.			
Affect Current Protectiveness	Affect Future Protectiveness	Implementing Party	Oversight Party	Milestone Date
No	Yes	EPA	EPA	09/30/2014

Five-Year Review Summary Form (continued)

OU(s): OU2	Issue Category: Monitoring			
	Issue: Additional data is needed to better define the OU2 groundwater plume vertically.			
	Recommendation: Compile or obtain the necessary data to better define the OU2 plume vertically.			
Affect Current Protectiveness	Affect Future Protectiveness	Implementing Party	Oversight Party	Milestone Date
No	Yes	EPA	EPA	09/30/2014

Protectiveness Statement(s)		
<i>Operable Unit:</i> OU1	<i>Protectiveness Determination:</i> Short-term Protective	<i>Addendum Due Date (if applicable):</i> Click here to enter date.
<i>Protectiveness Statement:</i> The remedy at OU1 currently protects human health and the environment because no one is using contaminated groundwater for domestic uses. However, in order for the remedy to be protective in the long-term, the following actions need to be taken: Better define the downgradient edge of the OU1 plume laterally and the entire plume vertically; Implement institutional controls to restrict groundwater use near the TCE plume, prohibit new well drilling for domestic use and recommend vapor intrusion mitigation in all permits for construction planned on or along the projected path of the contaminated plume.		
<i>Operable Unit:</i> OU2	<i>Protectiveness Determination:</i> Short-term Protective	<i>Addendum Due Date (if applicable):</i> Click here to enter date.
<i>Protectiveness Statement:</i> The remedy at OU2 is expected to be protective of human health and the environment upon completion, and in the interim, exposure pathways that could result in unacceptable risks are being controlled.		

First Five-Year Review Report for Bountiful/Woods Cross 5th S. PCE Plume Superfund Site

1.0 Introduction

The purpose of a five-year review (FYR) is to evaluate the implementation and performance of a remedy in order to determine if the remedy is protective of human health and the environment. FYR reports document FYR methods, findings and conclusions. In addition, FYR reports identify issues found during the review, if any, and document recommendations to address them.

The United States Environmental Protection Agency prepares FYRs pursuant to the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) Section 121 and the National Oil and Hazardous Substances Pollution Contingency Plan (NCP). CERCLA Section 121 states:

If the President selects a remedial action that results in any hazardous substances, pollutants, or contaminants remaining at the site, the President shall review such remedial action no less often than each 5 years after the initiation of such remedial action to assure that human health and the environment are being protected by the remedial action being implemented. In addition, if upon such review it is the judgment of the President that action is appropriate at such site in accordance with section [104] or [106], the President shall take or require such action. The President shall report to the Congress a list of facilities for which such review is required, the results of all such reviews, and any actions taken as a result of such reviews.

The EPA interpreted this requirement further in the NCP, 40 Code of Federal Regulations (CFR) Section 300.430(f)(4)(ii), which states:

If a remedial action is selected that results in hazardous substances, pollutants, or contaminants remaining at the site above levels that allow for unlimited use and unrestricted exposure, the lead agency shall review such action no less often than every five years after initiation of the selected remedial action.

Skeo Solutions, an EPA Region 8 contractor, conducted the FYR and prepared this report regarding the remedy implemented at the Bountiful/Woods Cross 5th S. PCE Plume Superfund site (the Site) in Bountiful City, Davis County, Utah. The EPA's contractor conducted this FYR from December 2012 to September 2013. The EPA is the lead agency for developing and implementing the remedy for the cleanup at the Site. Utah Department of Environmental Quality (UDEQ), as the support agency representing the State of Utah, has reviewed all supporting documentation and provided input to the EPA during the FYR process.

This is the first FYR for the Site. The triggering action for this statutory review is the on-site construction start date of the remedial action for operable unit (OU) 1. The FYR is required because hazardous substances, pollutants or contaminants remain at the Site above levels that

allow for unlimited use and unrestricted exposure. The Site consists of two OUs. This FYR addresses both site OUs.

2.0 Site Chronology

Table 1 lists the dates of important events for OU1 and OU2 at the Site.

Table 1: Chronology of Site Events

Event	Date
Golder Associates conducted an investigation at the Woods Cross Refinery where tetrachloroethene (PCE) was detected in groundwater both upgradient and downgradient of the refinery	May 1987
The EPA discovered contamination on site	June 22, 1995
The EPA's Superfund Technical Assessment and Response Team (START) took samples in the area of OU1 to identify the extent of groundwater contamination	1996
The EPA initiated a removal action to provide bottled water to several residential properties using contaminated groundwater for domestic use.	February 26, 1996
The EPA completed the bottled water removal action	May 24, 1996
UDEQ's Division of Environmental Response and Remediation (DERR) conducted a Preliminary Assessment (PA) for the OU2 PCE Plume	July 24, 1996
UDEQ/DERR's PA confirmed a considerable release of PCE contamination in groundwater, but a source was not identified for OU2	1996
The EPA initiated a second removal action to connect several homes using contaminated groundwater to a municipal water system	November 18, 1996
The EPA completed the second removal action	May 31, 1997
The EPA completed an initial/preliminary PRP search for the Site	July 23, 1997
W.S. Hatch Company (Hatchco) removed structures associated with potential past releases of contaminants of concern, OU1	1995-1998
The EPA and UDEQ conducted a PA of the Hatchco property, OU1	1998
The EPA and UDEQ's PA identified the wash rack and adjacent area of the Hatchco property as the primary sources of contamination for OU1	1998
The EPA proposed the Site for listing on the National Priorities List (NPL)	December 1, 2000
The EPA initiated an initial remedial investigation/feasibility study (RI/FS) at the Site	December 3, 2001
The EPA placed the Site on the NPL	September 13, 2001
The EPA and Hatchco entered into an Administrative Order on Consent (AOC) to conduct a RI/FS at OU1	September 28, 2001
The EPA issued a General Notice of Potential Liability letter to Bountiful Cleaners Incorporated (BCI) for OU2	September 23, 2002
The EPA and BCI entered into an AOC to conduct a RI/FS at OU2	April 1, 2003
The EPA initiated an RI to identify potential sources of volatile organic compounds (VOC) and to determine the extent of groundwater contamination in OU2	April 2, 2003
Hatchco completed the OU1 RI/FS, which confirmed the presence of hazardous substances, pollutants or contaminants on the Hatchco property subsurface soil and in OU1 groundwater	June 1, 2005
The EPA initiated an RI/FS at OU2	June 1, 2005
The EPA initiated a Pilot Study Implementation Plan at OU2	July 2005
The EPA completed the OU2 RI	August 30, 2006

Event	Date
The EPA's RI for the Site identified the subsurface soils at the BCI and the former David Early properties as the source of pollution at OU2	August 2006
The EPA completed the OU1 RI/FS	September 28, 2006
The EPA and UDEQ signed the Record of Decision (ROD) for OU1	September 28, 2006
The EPA began the remedial design (RD) for the Hatchco Property (OU1)	December 6, 2006
The EPA began the RD for OU2	April 10, 2007
The EPA completed the RD for the Hatchco property (OU1)	September 17, 2007
The EPA initiated the remedial action (RA) for OU1	September 19, 2007
The EPA signed the ROD for OU2	September 27, 2007
The EPA completed the initial RI/FS at the Site (OU1), which was started in 2001	September 27, 2007
The EPA initiated on-site RA construction for OU1	September 15, 2008
The EPA began installation of injection wells for biobarrier #1	December 2008
The EPA initiated RA construction for OU2	September 10, 2009
The EPA completed the RD for OU2	September 29, 2009
The EPA began construction of the OU2 groundwater treatment system	August 26, 2010
The EPA began installation of biobarriers #2 and #3	January 2011
The EPA completed construction of the OU2 groundwater treatment system	January 18, 2011
The EPA and UDEQ conducted final inspection of the OU2 groundwater treatment system, marking the start of the shakedown period	April 13, 2011
The EPA, Security Investment Ltd., and UDEQ entered into an environmental covenant (OU2)	October 31, 2011
The EPA and state determined the OU2 remedy to be operational and functional, beginning the long-term response action period	April 13, 2012
The EPA completed the Remedial Action Report for the OU2 downgradient groundwater RA	September 25, 2012

3.0 Sitewide Background

3.1 Sitewide Physical Characteristics

The Site is located in southern Davis County, Utah, about 10 miles north of Salt Lake City, and covers an area of about 450 acres (Figure 1). A mixture of land uses surrounds the Site. Over 84,000 people live within a four-mile radius of the Site.

In 1998, EPA investigations revealed groundwater contamination at the Site. After listing on the NPL, the EPA divided the impacted areas into two OUs for ease of investigation and cleanup. This FYR discusses the history and remedial status of OU1 and OU2 (Figure 2).

The topography around the Site slopes gently to the west and is 4,300 feet above mean sea level. The Site is located in the Basin and Range physiographic province on the southern portion of the East Shore Aquifer. In general, the East Shore Aquifer system is confined or semi-confined, with some unconfined areas along the mountain front to the east and in floodplain deposits along stream channels. Perched zones may be evident

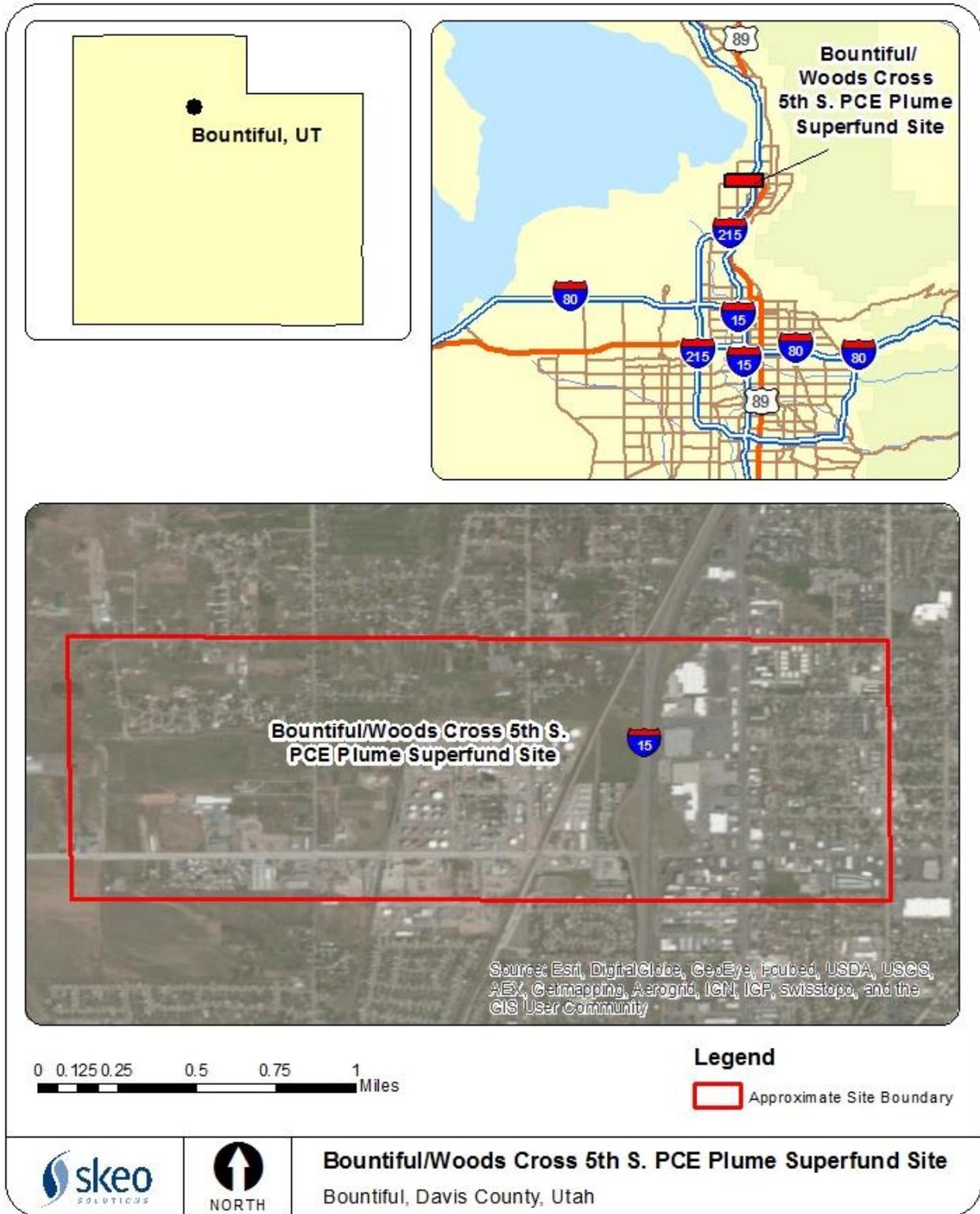
along the benches and in valley lowland areas. Groundwater flow is generally towards the west/northwest, following the topography towards the Great Salt Lake.

3.2 Sitewide Land and Resource Use

Private residences and agricultural land bound the Site to the west; commercial properties and residences bound it to the south; industrial sites and residences bound it to the north; and an interstate highway, railroad tracks and commercial properties bound it to the east. In addition, within the Site boundaries there are an interstate highway, railroad tracks, shopping mall and a petroleum refinery.

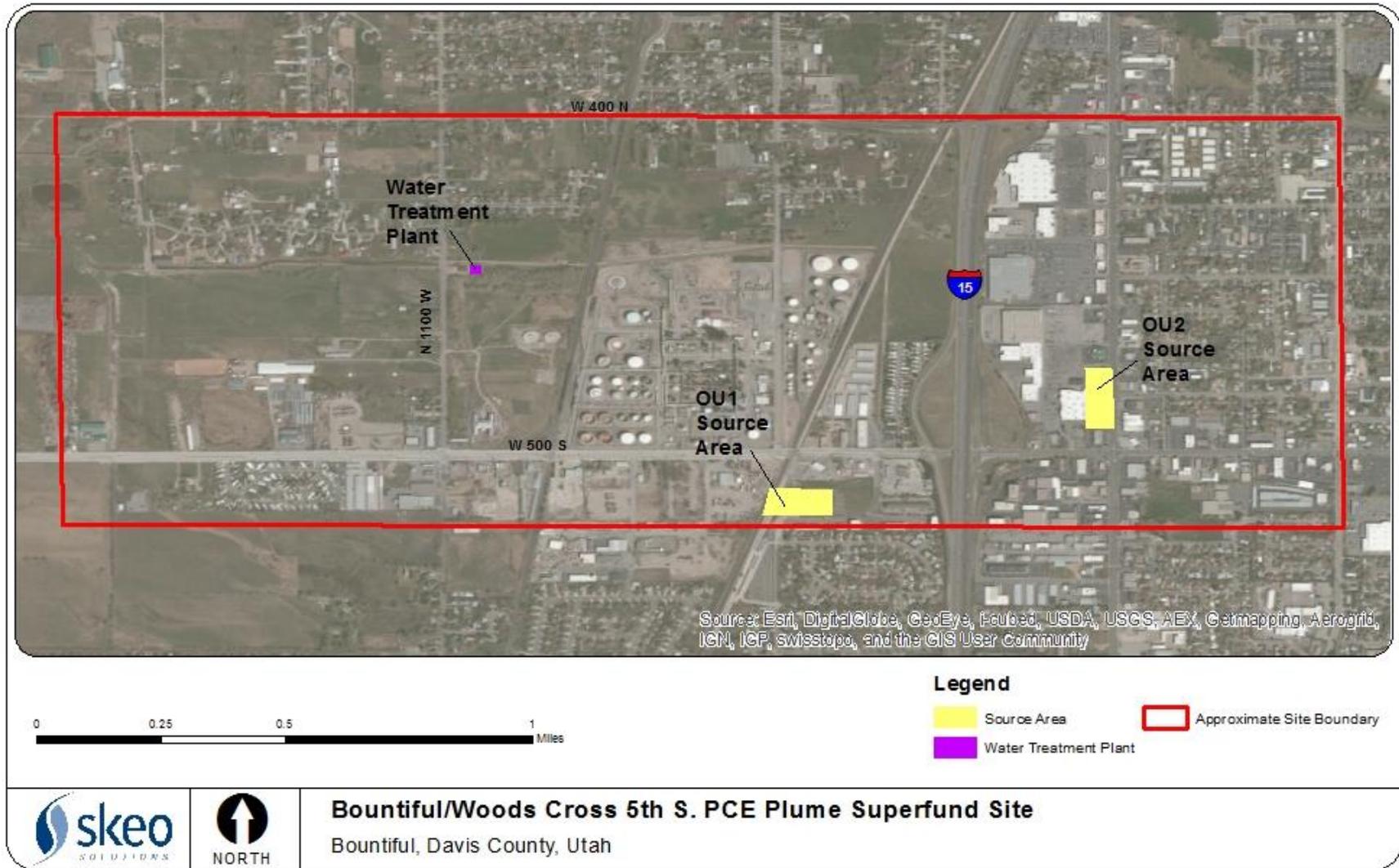
There are also industrial, agricultural and residential land uses in the area impacted by the contaminated groundwater. Many area residents and business owners have historic groundwater rights and use private wells for agricultural and household uses. In addition, municipal water is available in the area. As part of the remedy at the Site, the EPA connected a few area residents that had contaminated well water to the municipal water system. Site stakeholders anticipate future use of groundwater will be consistent with current use including irrigation and agricultural.

Figure 1: Site Location Map



Disclaimer: This map and any boundary lines within the map are approximate and subject to change. The map is not a survey. The map is for informational purposes only regarding the EPA's response actions at the Site.

Figure 2: Detailed Site Map



Disclaimer: This map and any boundary lines within the map are approximate and subject to change. The map is not a survey. The map is for informational purposes only regarding the EPA's response actions at the Site.

4.0 Background, Remedy Selection and Implementation and O&M: OU1

4.1 OU1 Physical Characteristics

OU1 is known as the trichloroethene (TCE) Groundwater Plume at the W.S. Hatch Company (Hatchco) property, formerly listed by the EPA as the “Woods Cross 800 West Plume”. OU1 includes contaminated subsurface soil and groundwater. The OU1 source area and contaminated plume area is rectangular in shape with the long axis oriented west to east.

OU1 includes the source area, between Interstate 15 and 800 West Street, and between 500 South and 750 South streets in Woods Cross, Davis County, Utah and the TCE groundwater plume. The OU1 property is in Section 25, Township 2N, Range 1W of the Salt Lake Base Line and Meridian. The street address is 643 South, 800 West.

4.2 OU1 Land and Resource Use

From 1936 to 1986, Hatchco operated on 13 acres of the Site as a specialized carrier of bulk petroleum; asphalt; and petroleum products and solvents, such as toluene and xylene. Hatch Service Company, a wholly owned subsidiary of Hatchco, also operated at this location and occasionally used Hatchco facilities to service, clean and park tractor-trailers and tank trucks. At the peak of operations, the facility was home to approximately 75 trucks, 200 trailers and 125 employees.

The eastern half of the property was originally covered with natural grasses. The western half was covered with asphalt and was occupied by buildings where semi-trucks and trailers were repaired and maintained.

Jack B. Kelley Inc. purchased all of Hatchco’s stock on December 10, 1986, and continued trucking operations on the property until February 1996. Hatchco sold 10 acres to Kalahari on December 30, 1997 and the remaining 3 acres were sold to the Utah Transit Authority (UTA) on July 25, 2008. The former Hatchco property, the OU1 source area, is currently a paved parking lot for the Utah Commuter Rail, owned by the UTA.

As of 2006, the closest domestic wells were within 1,000 feet of the leading edge of the TCE plume. Although no domestic groundwater use is currently known within the delineated OU1 groundwater plume, contaminated groundwater is flowing to the northwest where several domestic groundwater wells are located.

4.3 OU1 History of Contamination

The primary release mechanisms for contaminants at OU1 include leaks, spills, direct discharge and infiltration to the surface or subsurface. The Hatchco facility used grease and oils in on-site mechanics operations and used various solvents, including chlorinated solvents, to service, clean and maintain the trailers and tank trucks. Media affected by the potential releases include surface soil, subsurface soil, groundwater and air.

4.4 OU1 Initial Response

In 1995, Hatchco hired TRTech, a contractor, to perform a Phase I Environmental Survey on the original 13-acre Hatchco property. During the survey, TRTech identified several environmental issues, including chlorinated solvent contamination of the shallow aquifer.

In 1996, EPA's Superfund Technical Assessment and Response Team (START) took several samples in the area to identify the extent of groundwater contamination. Results of the START report confirmed the presence of chlorinated solvents in groundwater at the property.

From 1995 to 1998, Hatchco removed structures associated with potential past releases of contaminants of concern (COC), including an underground waste oil storage tank, a French drain, and an underground oil/water separator. During the French drain removal, the oil residue in the drain was tested and, although the sample contained chlorinated solvents, the workers reported the oil waste as nonhazardous.

Hatchco stored the waste from removal of these structures in a 200-gallon underground tank; Hatchco removed the tank in 1995. Before removal, Hatchco pumped material from the tank into 55-gallon drums for disposal. The material in the drums contained waste petroleum products, carbon disulfide, methylene chloride, TCE, lead and mercury. In 1996, the Utah Solid and Hazardous Waste Control Board issued a "no further corrective action" determination for the Site

Through a Cooperative Agreement with the EPA, UDEQ conducted a Preliminary Assessment (PA) of the Hatchco property in 1998. The PA confirmed that OU1 soils contained contaminants and that the wash rack (an area formerly used to wash vehicles) and adjacent area were the primary sources of contamination. Solvent-contaminated groundwater in the shallow aquifer presented the primary pathway for contaminants to migrate to potential receptors. The PA found the primary COCs were chlorinated solvents. Other potential contaminants in the area included: greases, oils, diesel fuel, waste fuel and waste oil.

In 1998, TRTech conducted a pilot test and operated a low-volume air sparging system to remove vinyl chloride from the shallow aquifer. The pilot test was effective in reducing PCE, TCE and vinyl chloride concentrations in groundwater near the source; however, TRTech did not release a report on the air sparging system results and groundwater impacts downgradient of the Hatchco property.

In July 1997, the EPA completed an initial/preliminary PRP search for the Site, augmented by the issuance of information request letters to Hatchco in January 2001 and February 2003. On September 28, 2001, the EPA and Hatchco entered into an Administrative Order on Consent (AOC) for a remedial investigation/feasibility study (RI/FS) at OU1. Hatchco completed the RI/FS in July 2004.

In December 2004, the EPA decided to complete the RI/FS for OU2 before issuing the Record of Decision (ROD) for OU1. This decision allowed for a broad assessment of the groundwater conditions at the Site prior to remedial selection.

4.5 OU1 Basis for Taking Action

In December 2000, the EPA proposed the Site for inclusion on the National Priorities List (NPL) and in September 2001, the EPA finalized the Site on the NPL.

The remedial investigations confirmed the presence of hazardous substances, pollutants or contaminants in the Hatchco property subsurface soil and groundwater. However, there are no COCs in surface soils. Surface soil data reveal volatile organic compounds (VOCs) at levels near or below the detection limits. This could be due to the volatility of the COCs (see Section 4.1 of this FYR) and the fact that the Hatchco property had been vacant and inactive for several years before the investigations. In addition, prior to the RI, between 1995 and 1998 Hatchco excavated, treated and removed hot spots of contaminated surface soils.

The investigations also confirmed VOCs in groundwater at concentrations above maximum contaminant levels (MCLs). The baseline risk assessment, included in the 2003 Remedial Investigation Final Report, concluded that the contaminated groundwater should not be used for drinking water or indoor domestic use. In addition, the Hatchco risk assessment determined that the subsurface soil at the Hatchco property is contaminated, but does not pose a direct exposure concern to human health. However, the subsurface soil was a source of contamination to groundwater.

Based on the current and likely future land uses in the area of the contaminated groundwater plume, current and future residents, and current and future workers in area businesses are the most susceptible to future exposures. Potential exposure pathways by which residents and workers could be exposed to VOCs in groundwater include the following:

- Direct ingestion of the water (from a well) as drinking water.
- Dermal contact with the water while showering or bathing.
- Inhalation of VOCs that are released from indoor water uses to indoor air.
- Inhalation of VOCs that are released from groundwater and migrate through soil into indoor air.
- Inhalation of VOCs that are released from groundwater and migrate through soil into outdoor air.
- Incidental ingestion of groundwater that occurs at the surface (e.g., into streams, lakes or wetlands).

The 2003 OU1 RI included information from the Baseline Human Health Risk Assessment (BHHRA) that evaluated soil, subsurface soil and groundwater. The BHHRA did not evaluate surface water, as there are no surface water features present in OU1.

For human receptors, the EPA determined there was a need to remediate groundwater contamination to drinking water standards. Because the concentration of contaminants in groundwater tends to decrease with increasing distance from the source and because most groundwater users draw their water from a single well, the BHHRA evaluated human exposure on a well-by-well basis. The BHHRA determined that residents living near OU1 could be impacted in the future by contaminants migrating downgradient from the Hatchco property. The BHHRA concluded that most workers or residents do not drink water from the shallow aquifer; therefore, the BHHRA considered the exposure pathway by groundwater ingestion mainly hypothetical, although some exceptions may occur.

In October 2005, the EPA and UDEQ conducted interviews to assess if any property owners with domestic wells located downgradient from the Hatchco property were using their wells for drinking groundwater. Results from the interviews indicate that there are up to seven residences where well water is used for drinking; however, in all cases, the contamination levels at these wells are below the MCLs. None of the well owners interviewed were interested in connecting to municipal water wells as long as the contaminant levels remained below screening levels. Two other wells are contaminated at levels above the MCLs; however, these wells are used for livestock watering only.

For ecological receptors, the 2004 ecological risk assessment determined that exposure can only occur if groundwater is discharged at the surface (e.g., into streams, lakes or wetlands). The risk assessment calculated screening-level risks for aquatic receptors as if water from upper aquifer wells might reach the surface. Wildlife could be exposed to groundwater expressed at the surface by ingestion as drinking water, and by ingestion of aquatic food web items. The risk assessment determined that because VOCs tend to be rapidly lost from surface water and do not tend to build up in the food chain, and because limited data suggested that VOCs were not detectable in surface waters collected on or near the site, these pathways were judged unlikely to be of concern.

The OU1 RI only investigated the nature and extent of the groundwater plume from the Hatchco property to the suspected secondary source location area (near MW-14S) (Figure 4). The EPA addressed the suspected secondary source during the OU2 RI/FS and found subsequent OU2 sampling did not indicate an additional source area.

4.6 OU1 Remedial Actions

In accordance with CERCLA and the NCP, remedial actions are required to protect human health and the environment and to comply with applicable or relevant and appropriate requirements (ARARs). A number of remedial alternatives were considered for the Site, and final selection was made based on an evaluation of each alternative against nine evaluation criteria that are specified in Section 300.430(e)(9)(iii) of the NCP. The nine criteria are:

1. Overall Protection of Human Health and the Environment
2. Compliance with ARARs
3. Long-Term Effectiveness and Permanence

4. Reduction of Toxicity, Mobility or Volume through Treatment
5. Short-Term Effectiveness
6. Implementability
7. Cost
8. State Acceptance
9. Community Acceptance

4.7 OU1 Remedy Selection

The remedy selection at the Site occurred in two RODs, one each for OU1 and OU2. OU1 is the TCE groundwater plume at the Hatchco property.

The EPA developed Remedial Action Objectives (RAOs) for OU1 based on sitewide sampling data, the BHHRA, fate and transport evaluations, and ARARs.

The EPA selected the OU1 remedy as detailed in the OU1 ROD, which was signed on September 28, 2006. The selected remedy for OU1 addresses both subsurface soil and groundwater contaminated with PCE, TCE, cis-1,2-dichloroethene (cis-1,2-DCE), vinyl chloride and other VOCs at the Hatchco property.

The 2006 ROD listed the following RAOs for OU1:

- Reduce the potential of the subsurface, saturated zone soils to act as a source of groundwater contamination (i.e., to reduce the potential for contaminant migration from subsurface soils to groundwater).
- Prevent unacceptable exposure to current and future human populations posed by ingestion of contaminated groundwater, and prevent potential inhalation of VOCs released during the indoor use of contaminated groundwater.
- Return groundwater to beneficial use if possible or practicable.

The selected remedy for OU1 includes the following major components:

- Institutional controls to eliminate potential direct exposure and indirect exposure (e.g., vapor intrusion) to groundwater to ensure protectiveness of the remedy.
- Injection of chemical/biological agents (food-grade compounds and microbes) into the contaminated subsurface soil and the saturated zone to enhance the rates of COC biodegradation.
- Groundwater monitoring to track VOCs and natural attenuation parameters until the MCLs are achieved.

The OU1 ROD established the groundwater cleanup goals reported in Table 2.

Table 2: OU1 ROD Groundwater COC Cleanup Goals

COC	Remediation Goal (Drinking Water MCL) (µg/L)
PCE	5
TCE	5
Vinyl Chloride	2
Cis-1,2-DCE	70
Benzene	5
Naphthalene	6.5*
1,2,4-trimethylbenzene	70
OU1 COCs listed in this table taken from the Groundwater Cleanup Levels Table listed in Section 13.2 of the OU1 ROD.	
*There is no MCL for naphthalene; the cleanup level is the preliminary remediation goal listed in the ROD.	

4.8 OU1 Remedy Implementation

The selected remedy for the TCE groundwater plume includes monitored natural attenuation (MNA) with institutional controls and enhanced in-situ biological/chemical remediation.

The EPA started the OU1 remedial design in December 2006. During design and implementation of the remedy, the EPA's remedial action contractor, CDM, determined that the groundwater contamination was observed at a depth of 70-80 feet. The RI previously completed by HDR had only characterized groundwater contamination in the shallow portion of the aquifer to a depth of approximately 50 feet. The remedy implementation therefore had injection wells that included shallow wells, paired wells at shallow and deep intervals, and deep wells. Remedial design was completed in October 2007, and the on-site remedial action began on September 15, 2008 (the triggering date for the current FYR). Remedial action contractors for the EPA conducted baseline sampling in October and November 2008. Subsequently, the source area and biobarrier #1 injection wells were installed between December 2008 and February 2009. The contractor performed the first Emulsified Oil Substrate (EOS®) injection in the source area and biobarrier #1, from December 2008 to February 2009¹. Following EOS® injections, bioaugmentation was performed in the source area and biobarrier #1. The EPA determined the need for biobarriers #2 and #3 based on the pre-remedial action characterization data, as well as four quarters of groundwater monitoring conducted from downgradient wells between May 2009 and January 2010. Procurement, installation of biobarriers #2 and #3, and EOS® injections were completed between January and July 2011. The contractor completed phase 1 bioaugmentation at biobarriers #2 and #3 in

¹ For additional information on how the Emulsified Oil Substrate electron donor works, see *Use of Bioremediation at Superfund Sites*, U.S. EPA 2001 at <http://www.clu-in.org/download/remed/542r01019.pdf>.

December 2011 and phase 2 in June 2012. The contractor conducted the addition of more EOS® in the source area (at hot spots) to provide a long-term source of electron donor, and addition of sodium lactate to provide rapidly utilized substrate to increase reaction rates.

The contractor is continuing to work with the EPA and UDEQ to reach the operational and functional determination at OU1. Additional remedial work may include:

- Addition of more emulsified oil in the source area (at hot spots) to provide a long-term source of electron donor, and addition of sodium lactate to provide rapidly utilized substrate to increase reaction rates.
- Additional EOS® injection events for the biobarriers (may include additional bioaugmentation).
- Additional groundwater monitoring will be conducted until cleanup goals are achieved.
- Groundwater monitoring and MNA will continue until the performance standards are reached for a period of two consecutive years.

4.9 OU1 Operation and Maintenance (O&M)

OU1 has not entered the O&M phase. The contractor is working with the EPA and the state to finalize an O&M plan and make an operational and functional determination for OU1. For OU1, determination of “operational and functional” is dependent on the performance monitoring data collected near EOS® injection locations.

5.0 Background, Remedy Selection and Implementation and O&M: OU2

5.1 OU2 Physical Characteristics

OU2 is a tetrachloroethene (PCE) plume emanating from the Bountiful Family Cleaners property, which is owned by Bountiful Cleaners, Inc. (BCI) and the former David Early property. OU2 is 400 acres and was formerly known as the “5th South PCE Plume” with an unknown source or as the “*Unknown Source Plume*.”

The boundaries of OU2 are approximately from 300 North to 750 South streets and from 500 West to 1400 West streets. OU2 includes the BCI property, the former David Early property and the PCE groundwater plume. The OU2 terrain slopes to the west toward the Great Salt Lake.

5.2 OU2 Land and Resource Use

The OU2 source area includes the former David Early property and a small shopping center that includes the Bountiful Family Cleaners and two other commercial establishments that lease their stores from BCI. The parking lots at the OU2 source area are paved and the properties are zoned for commercial use.

In addition to the industrial uses, the land at OU2 is utilized for commercial, agricultural and residential purposes. A dry cleaning business has operated on a portion of the OU2 source area since the early 1940s.

A total of 37 groundwater production wells have been identified in the vicinity of the PCE plume. Of these 37 wells, one is a municipal supply well (West Bountiful 5th South Well), two are industrial supply wells (Woods Cross Refining Co. Well #2 and Well #3), and the remaining 34 wells are domestic supply wells (DW01 through DW34; DW12 was abandoned in April 2013).

5.3 OU2 History of Contamination

On April 13, 1966, the South Davis County Sewer Improvement District issued a permit to connect the BCI dry cleaning facility to the main sewer lateral. The permit was to connect a “Solvent Saver Unit” and one dryer to the main sewer lateral. A “Solvent Saver Unit” is a machine attached to a clothes dryer that is used to reclaim PCE. Prior to the lateral connection, the wastewater from the dry cleaning facility likely discharged to a septic system.

Local records discovered during the later BCI investigation support this conclusion. Records indicate that the BCI property was the location of a former septic drain field; however, BCI did not operate the septic drain field. When BCI purchased the property in 1967, the building had already been connected to the city sewer system. The most likely release mechanisms for contaminants at OU2 include the wastewater from the Solvent Saver Unit discharging into the septic system and potentially some leaks and spills that occurred through operations at the facility.

5.4 OU2 Initial Response

In 1996, through a cooperative agreement with the EPA, UDEQ/Division of Environmental Response and Remediation (DERR) conducted a PA to identify a source for the contaminated groundwater. Although it did not pinpoint a source, PA sampling found PCE concentrations ranging from 7 to 30 micrograms per liter ($\mu\text{g/L}$) at depths as shallow as 24 feet and as deep as 140 feet. The plume covered an area of approximately 160 acres and the EPA determined groundwater to be the primary medium that could result in a completed exposure pathway. The PA identified the refinery, several dry cleaners (including BCI), and various automotive maintenance facilities as potential sources of the PCE contamination in groundwater.

Through EPA removal actions, in 1996, bottled water was provided to area residents that were determined to have private wells affected by the contamination. In 1997, the EPA had affected residents permanently connected to the municipal water supply.

In July 1997, the EPA completed a PRP search for the Site, augmented by the issuance of information request letters to parties of interest in January 2001, June 2002 and February 2003. On September 23, 2002, the EPA issued a General Notice of Potential Liability

letter to BCI. The EPA subsequently concluded that the septic drain field was the source of the PCE groundwater contamination and that the release of PCE from the property occurred prior to BCI's ownership.

5.5 OU2 Basis for Taking Action

In April 2003, the EPA and BCI entered into an AOC to conduct an RI at the BCI property. During the same time, the EPA was conducting an RI to identify other potential VOC sources and to determine the nature and extent of groundwater contamination emanating from the BCI property. The EPA RI covered an area of approximately 400 acres. The EPA completed the sitewide RI/FS in August 2006.

The EPA RI confirmed the presence of hazardous substances, pollutants and contaminants in subsurface soils at the BCI and Hatchco properties (the source). The VOC groundwater plume starts at the source (BCI) and extends approximately 1.6 miles to the northwest. The main COC is PCE. The PCE plume covers an area of approximately 400 acres. The OU2 RI identified 26 domestic wells and a municipal water supply well downgradient of the source and within the PCE groundwater plume. Seven of these domestic wells had PCE concentrations above the MCL.

Ecological risks to aquatic receptors were determined to be below a level of concern. The risk assessment based this conclusion on the low potential for contaminated groundwater to discharge to surface water; the lack of suitable natural habitat in the area; and the residential, industrial/commercial, and agricultural land uses at OU2. Aquatic impacts are unlikely due to the distance between the Site and the Great Salt Lake (approximately 2.5 miles).

Surface soils are not contaminated above a level of concern; therefore, surface soils do not pose a threat to human health and the environment. The surface at the source area (north parking lot of BCI property) is paved.

5.6 OU2 Remedial Actions

In accordance with CERCLA and the NCP, remedial actions are required to protect human health and the environment and to comply with applicable or relevant and appropriate requirements (ARARs). A number of remedial alternatives were considered for the Site, and final selection was made based on an evaluation of each alternative against nine evaluation criteria that are specified in Section 300.430(e)(9)(iii) of the NCP. The nine criteria are:

1. Overall Protection of Human Health and the Environment
2. Compliance with ARARs
3. Long-Term Effectiveness and Permanence
4. Reduction of Toxicity, Mobility or Volume through Treatment
5. Short-Term Effectiveness
6. Implementability

7. Cost
8. State Acceptance
9. Community Acceptance

5.7 OU2 Remedy Selection

OU2 is a PCE plume emanating from the Bountiful Family Cleaners property, currently owned by BCI.

The groundwater at the Site is a potential source of drinking water for residents and communities. The volatilization of PCE from shallow soils and soil under the BCI building pose a potential health threat to current and future workers. Therefore, the EPA selected a remedy for OU2 as described in the OU2 ROD, signed on September 27, 2007. The 2007 OU2 ROD listed the following RAOs:

- Prevent direct ingestion of untreated groundwater as drinking water.
- Prevent exposure via inhalation of VOCs in contaminated groundwater that are released to indoor air during indoor water use.
- Prevent exposure via inhalation of VOCs from groundwater and soils that migrate upward through soil into indoor and sub-slab air.
- Restore groundwater to its beneficial use.

The selected remedy for OU2 includes the following major components:

- Institutional controls to eliminate potential direct exposure and indirect exposure (e.g., vapor intrusion) to groundwater.
- PCE source area cleanup through excavation and disposal of shallow contaminated soil and soil vapor extraction for deeper contaminated soil.
- Provision of alternate drinking water supply to impacted residents.
- Cleanup and hydraulic containment through installation of an extraction and injection groundwater treatment. As necessary, the extracted groundwater will be cleaned using granular/liquid activated carbon (GAC) and clean water will be injected into the aquifer, as necessary.
- Groundwater monitoring to ensure the remedy responds as designed over time and all the wells not selected for long-term monitoring will be abandoned according to the State of Utah's well abandonment requirements.

The OU2 ROD established cleanup levels for soil gas (vapor intrusion pathway), soil gas (vapor transfer to groundwater pathway), groundwater (vapor intrusion pathway), groundwater (ingestion) and soil (contaminants leaching to groundwater). Table 3 lists the core chemical compounds (COCs, degradation products or chemicals exceeding cleanup levels) detected in groundwater at the Site. The COCs driving the risk and remedy selection are:

- Groundwater: PCE, TCE, vinyl chloride and benzene.
- Indoor air at the source: PCE; TCE; vinyl chloride; 1,2,4-trimethylbenzene; 1,3,5-trimethylbenzene; and benzene.

Table 3: Table A from the OU2 ROD, Cleanup Levels

RECORD OF DECISION							
Bountiful/Woods Cross 5th South PCE Plume NPL Site - Operable Unit 2							
September 2007							
CASN	Exposure Setting >	Commercial (Source Area) Cancer Risk Level = 10 ⁻⁴ Hazard Quotient = 1.0				Residential Lower of Cancer Risk Level 10 ⁻⁴ or Hazard Quotient = 1.0	Residential
	Pathway >	Vapor Intrusion		Vapor Transfer to Ground Water	Leaching to Ground Water	Vapor Intrusion	Ingestion
	Chemical Name	Target Soil Gas Conc. (ug/m ³)	Target Ground Water Conc. (ug/L)	Target Soil Gas Conc. (ug/m ³)	Target Soil Conc. (mg/kg)	Target Ground Water Conc. (ug/L)	Drinking Water MCL/MCLG (ug/L)
71432	Benzene	1,314	932	705	0.03	221	5 / 0
75354	Dichloroethylene, 1,1-	8,760	1,195	5,130	0.06	285	7 / 7
156592	Dichloroethylene, cis-1,2-	nvt	nvt	7,420	0.4	nvt	70 / 70
156605	Dichloroethylene, trans-1,2-	2,628	1,041	25,243	0.7	248	100 / 100
100414	Ethylbenzene	43,800	24,648	124,393	13	5,868	700 / 700
127184	Tetrachloroethylene	2,079	484	2,148	0.06	96	5 / 0
108883	Toluene	219,000	137,941	158,768	12	32,843	1000/1000
79016	Trichloroethylene	6,132	2,403	1,276	0.06	477	5 / 0
95636	Trimethylbenzene, 1,2,4-	74	59	1,524	324	14	12 ^a
108678	Trimethylbenzene, 1,3,5-	74	61	1,457	324	15	12 ^a
75014	Vinyl chloride	1,394	169	1,647	0.01	34	2 / 0
108383	Xylene, m-	4,380	2,661	1,645,708	210	634	10,000
95476	Xylene, o-	4,380	3,797	1,153,415	190	904	10,000
106423	Xylene, p-	4,380	2,549	1,718,136	200	607	10,000

nvt - Not sufficiently volatile or toxic to pose an inhalation risk for the vapor intrusion pathway

a - Risk based HQ = 1

5.8 OU2 Remedy Implementation

The EPA started remedial design in April 2007 and completed it in September 2009. The EPA began remedial action construction activities at OU2 in September 2009 and completed activities in 2012, as documented in the September 25, 2012 Remedial Action Report. In 2007, the EPA and UDEQ determined the reinjection activities would not be required to support the hydraulic containment remedy. Remedial action contractors began construction of the groundwater remedy in the summer of 2010. Multiple contractors and subcontractors were used during the various phases of remedy construction. Contractors installed the groundwater extraction wells, constructed the groundwater treatment facility, installed the underground process piping, and installed the treatment system. The contractors also installed additional monitoring wells as part of the monitoring well network for OU1. The EPA began construction of the groundwater treatment building in the summer of 2010. Pacific Western Technologies, Ltd. (PWT), the EPA's contractor, conducted operational testing of the groundwater treatment system in February 2011. The system was deemed operational on February 11, 2011. The EPA and UDEQ conducted the final inspection of the water treatment system on April 13, 2011. This began the shakedown period.

Based on low PCE surface and subsurface soil concentrations near the BCI facility, sampled during the RI, the EPA determined that soil vapor extraction (SVE) and enhanced anaerobic bioremediation (EAB) pilot testing and full-scale implementation of SVE and EAB systems in the source area were not necessary. In addition, direct-push soil sampling in the area north of the BCI building indicated that subsurface soil contaminant concentrations are below remedial objectives. Ground penetrating radar and utility location activities also confirmed that a former septic tank (possible source for the contamination) is not located in the area north of the BCI building. The potential source area (i.e., process water sumps located in the BCI basement) was excavated and sampled and the sample results indicated no COC concentrations above the cleanup criteria established in the ROD. Therefore, in 2009, the EPA delayed implementation of the selected remedy for the source area while performing additional investigations. The EPA is in the process of completing a comprehensive evaluation of potential soil vapor intrusion associated with the source area at OU2.

The groundwater treatment system has two main components: the extraction system and the treatment system (Appendix G). The groundwater extraction wells are in the middle aquifer zone of the shallow East Shore Aquifer and are located approximately along the centerline of the dissolved PCE plume. The treatment system removes PCE and other site contaminants from the groundwater using GAC.

Under the state water rights allocation for OU2, the groundwater treatment system can extract up to 160-acre feet (52,136,229 gallons) of water per year, which equates to a continuous flow rate of approximately 100 gallons per minute (gpm) per year. The treated groundwater is released into the A-1 Extension canal and flows to the A-1 Canal, where it is placed into beneficial use in a wetlands mitigation project (Appendix G).

5.9 OU2 Operation and Maintenance (O&M)

The Site has not yet entered O&M. The groundwater remedy at OU2 is currently in the long term response action (LTRA) phase. Construction of the OU2 groundwater remedy was completed on September 25, 2012. LTRA activities are occurring according to the 2009 O&M plan, the 2011 revised long-term monitoring plan tables, and the 2011 Groundwater Treatment System O&M Manual. LTRA activities are designed to ensure the effectiveness of the groundwater treatment system. The effectiveness of the groundwater treatment system is measured by evaluating hydraulic control of the middle aquifer zone to ensure that hydraulic plume control is being maintained, and by monitoring water quality influent and effluent data to ensure the treatment system is performing in accordance with design specifications and meeting effluent water quality standards. Specific LTRA activities include:

- Groundwater monitoring.
- Continuous monitoring of water elevation with electronic water-level data loggers.
- Routine inspections and evaluations.
- Regular groundwater treatment system LTRA site visits.

The EPA's contractor performs the majority of site-wide LTRA tasks and the South Davis Sewer District performs the majority of the groundwater treatment system LTRA tasks. The South Davis Sewer District took over operation of the water treatment system on August 29, 2011. The South Davis Sewer District provides quarterly reports to the EPA detailing LTRA activities and the contractor provides technical reports to the EPA on a semi-annual basis detailing monitoring results and system performance.

A few issues have arisen since the LTRA period started. One 5,000-pound GAC vessel was expected to last approximately seven years based on carbon usage calculations for contaminant breakthrough, but is now in need of replacement due to PCE breakthrough. The EPA, UDEQ, PWT and the South Davis Sewer District are working to identify the most economical solution for refurbishing or replacing the GAC. Other system maintenance has included configuring a backwash system for GAC vessels, and repairing and replacing system parts as necessary (i.e., flow meters and bags). In addition, in December 2012, the South Davis Sewer District personnel discovered a problem with the computer system at the water treatment plant. The system was found to have been hacked and was being used as a server for online computer gaming. The EPA worked with the LTRA contractors to resolve the situation by reinstalling the operating system and software, installing a reliable firewall device, and installing antivirus and protection software. Other activities at the water treatment plant include general grounds and building maintenance. A required upgrade included installing a gas heater in the water treatment building.

6.0 Progress since the Last Five-Year Review

This FYR addresses OU1 and OU2 and is the first FYR for the Site.

7.0 Five-Year Review Process

7.1 Administrative Components

EPA Region 8 initiated the FYR in December 2012 and scheduled its completion by September 2013. EPA remedial project manager (RPM) Sam Garcia led the EPA site review team, which also included EPA community involvement coordinator (CIC) Peggy Linn and contractor support provided to the EPA by Skeo Solutions. The review schedule established consisted of the following activities:

- Community notification.
- Document review.
- Data collection and review.
- Site inspection.
- Local interviews.
- FYR Report development and review.

7.2 Community Involvement

In February 2013, the EPA published a public notice in the Davis County Clipper newspaper announcing the commencement of the FYR process for the Site, providing contact information for EPA RPM Sam Garcia, EPA CIC Peggy Linn, UDEQ CIC Dave Allison and UDEQ Project Manager Michael Storck, and inviting community participation. The press notice is available in Appendix B. No one contacted the EPA as a result of the advertisement. Several community members and local officials were contacted and invited to participate in interviews for the FYR. Interviews for those community members that opted to participate are in Appendix C and summarized in Section 7.6 below.

The EPA will make the final FYR Report available to the public. The EPA will place copies of the document in the designated site repository: Davis County Library, South Branch 725 South Main Street, Bountiful, Utah 84010.

7.3 Document Review

ARARs Review

This FYR included a review of relevant, site-related documents, including the RODs, an interim remedial action report and recent monitoring data. A complete list of the documents reviewed is in Appendix A.

Remedial actions are required to comply with the ARARs identified in the ROD. In performing the FYR any newly promulgated standards, including revised chemical-specific requirements (such as MCLs, ambient water quality criteria), revised action and location-specific requirements, and State standards if they were considered ARARs in the

ROD, are reviewed to establish whether the new requirement indicates that the remedy is no longer protective.

OU1

Groundwater ARARs

According to the Site’s 2006 OU1 ROD, the chemical-specific groundwater ARARs for OU1 are the National Primary Drinking Water Standards (40 CFR Part 141). The ROD also identified Utah chemical-specific groundwater ARARs for the Site; specifically, Utah Rule R309-200 Drinking Water Standards. The State of Utah’s drinking water quality standards, as applicable to this Site, are consistent with federal standards. As shown in Table 4, groundwater ARARs have not changed.

Table 4: OU1 Previous and Current ARARs for Groundwater COCs

COC ^a	2006 ARARs (µg/L)	Current ARARs ^{b, d} (µg/L)	ARARs Change
PCE	5	5	None
TCE	5	5	None
Vinyl Chloride	2	2	None
Cis-1,2-DCE	70	70	None
Benzene	5	5	None
Naphthalene	NA ^c	NA ^c	None
1,2,4-trimethylbenzene	NA ^e	NA ^e	None

Notes:
a – COCs from 2006 ROD
b – Based on federal MCL
c – There is no MCL for naphthalene; the cleanup level of 6.5 µg/L is the preliminary remediation goal listed in the ROD.
d – Federal primary MCLs are available at <http://water.epa.gov/drink/contaminants/index.cfm> (last accessed 4/1/2013).
e – There is no MCL for 1,2,4-trimethylbenzene; the current cleanup level is 70 µg/L.

OU2

Groundwater ARARs

According to the Site’s 2007 OU2 ROD, the chemical-specific groundwater ARARs for OU2 are the National Primary Drinking Water Standards (40 CFR Part 141). The ROD also identified Utah chemical-specific groundwater ARARs for the Site. The State of Utah’s drinking water quality standards, as applicable to this Site, are consistent with federal standards. As shown in Table 5, drinking water standards have not changed.

Table 5: OU2 Previous and Current ARARs for Groundwater COCs

COC ^a	2007 ARARs (µg/L)	Current ARARs ^{b, e} (µg/L)	ARARs Change
Benzene	5	5	None
1,1-DCE	7	7	None
Cis -1,2-DCE	70	70	None
Trans-1,2-DCE	100	100	None
Ethylbenzene	700	700	None
PCE	5	5	None
Toluene	1,000	1,000	None
TCE	5	5	None
1, 2, 4-Trimethylbenzene	NA ^c	NA ^c	None
1, 3, 5-Trimethylbenzene,	NA ^c	NA ^c	None
Vinyl chloride	2	2	None
Total Xylene	10,000 ^d	10,000 ^d	None

Notes:
a – Contaminants from Table A in the 2007 ROD
b – Based on federal MCL
c – There is no MCL for trimethylbenzene; the cleanup level based on the hazard quotient of 1.0 is 12 µg/L.
d – The OU2 ROD listed m-xylene, o-xylene and p-xylene as COCs with MCLs of 10,000 µg/L. There is no MCL for m-xylene, o-xylene and p-xylene; therefore, total xylene is listed in the table, with its MCL of 10,000 µg/L.
e – Federal primary MCLs are available at <http://water.epa.gov/drink/contaminants/index.cfm> (last accessed 4/2/2013).

Institutional Control Review

Both the 2006 OU1 ROD and the 2007 OU2 ROD call for institutional controls to protect public health and the environment.

In addition, combined institutional control objectives listed in the RODs for both OU1 and OU2 include:

- Restrict the use of groundwater as a drinking water source until MCLs are met.
- Restrict new well development for drinking water and domestic use along the projected path of the contaminated groundwater plumes until MCLs are met.
- Recommend vapor intrusion mitigation in all permits for construction of new commercial (office space) and/or residential buildings plans on or along the projected path of the contaminated plumes.

It was not anticipated that land use controls would be needed for the OU2 source area because the remedy calls for the remedial action to return the source area to unrestricted use. Remedy design and implementation are still ongoing at the source area for OU2. Upon completion of the OU2 source area remedy, the EPA may need to evaluate whether or not additional institutional controls are needed.

To meet the objective of the institutional controls related to vapor intrusion, the EPA intends to work with UDEQ to recommend to local permitting officials that vapor intrusion mitigation be included in new permits. This would be an informational

institutional control that would require the EPA and UDEQ to periodically send information to the permitting officials regarding the plumes and recommend that they include vapor intrusion mitigation in any permit within the boundaries of the plume. It should be noted that there are no known vapor intrusion issues within residential or commercial buildings in the vicinity of the Site.

To date neither the State of Utah nor the local governments have implemented any institutional controls restricting groundwater use in the area. The EPA is considering implementing an informational institutional control that periodically notifies property owners and residents in the vicinity of the contaminated groundwater that there is a risk if they use the groundwater for domestic uses.

Currently, only a few property parcels at the Site have institutional controls in place (Table 6, Figure 3). Tables 7 and 8 below summarize the current state of institutional controls at the Site.

Table 6: Institutional Controls in Place

Owner	Impacted Parcel(s) ^a	Instrument in Place	Use Restriction
Davis County	06-034-0070 (A) 06-034-0071 (B)	Environmental covenant filed 12/20/2011	The Property will not be used in any manner that would interfere with or adversely affect the implementation, integrity, or protectiveness of the response actions performed or to be performed at the Site.
Security Investment Ltd.	06-034-0097 (C) 06-034-0098 (D) 06-034-0019 (E) 06-033-0046 (F)	Environmental covenant filed 02/15/2012	The Property will not be used in any manner that would interfere with or adversely affect the implementation, integrity, or protectiveness of the response actions performed or to be performed at the Site.
Utah Transit Authority	06-167-0003(G)	Environmental covenant filed 05/17/2006	The property is required to have active or passive organic vapor intrusion mitigation for structures constructed for commercial or residential purposes. The installation of wells, except for monitoring, is prohibited until MCLs are met.
<p>Notes</p> <p>a. The letter in parenthesis after the parcel number corresponds to the parcel key letter in Figure 3.</p>			

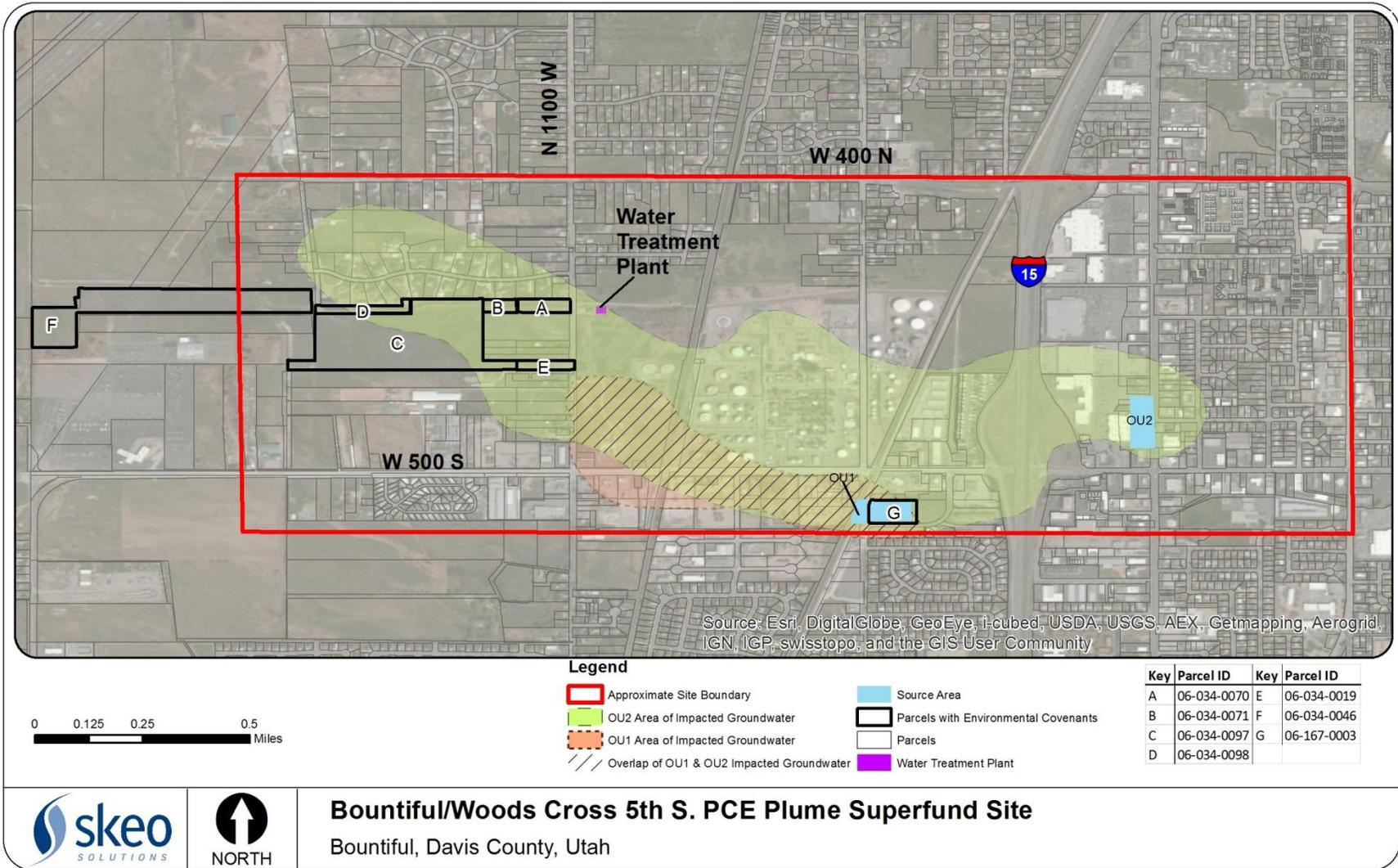
Table 7: OU1 Institutional Control (IC) Summary Table

Area of Interest – OU1 Groundwater and Source Contamination						
Media	ICs Needed	ICs Called for in the Decision Documents	Impacted Parcel(s)	IC Objective	Instrument in Place	Notes
Ground-water	Yes	Yes	Properties above the TCE plume emanating from the Hatchco Property. Hatchco Property Parcel 06-167-0003	Restrict installation of groundwater wells and recommend vapor intrusion mitigation in all permits for construction of new buildings planned on or along the projected path of the contaminated plumes.	Environmental covenant at the Hatcho property that requires vapor intrusion mitigation and restricts installation of groundwater wells.	ICs are needed for properties along the TCE plume
Subsurface soil at the source area	No	No	Hatchco Property Parcel 06-167-0003	ICs are not currently needed.	None	The EPA determined that although contaminated soil is present, it is at a depth that does not pose unacceptable risk via a direct ingestion pathway. The environmental covenant in place does not limit disturbance of the impacted soil.

Table 8: OU2 Institutional Control Summary Table

Area of Interest – OU2 Groundwater and Source Contamination						
Media	ICs Needed	ICs Called for in the Decision Documents	Impacted Parcel(s)	IC Objective	Instrument in Place	Notes
Groundwater	Yes	Yes	Properties above the PCE plume emanating from the BCI property	Restrict installation of new groundwater wells and indoor use of groundwater from existing wells. Recommend vapor intrusion mitigation in all permits for construction of new buildings planned on or along the projected path of the contaminated plumes.	There is an environmental covenant in place for the properties owned by Security Investment Ltd. and Davis County that restricts installation of new groundwater wells and indoor use of groundwater.	ICs are needed for properties along the PCE plume
Soil	No	No	BCI property	ICs are not currently needed. If the selected remedy changes, the EPA may need to evaluate the future need for soil ICs.	None	None

Figure 3: Institutional Control Base Map



Disclaimer: This map and any boundary lines within the map are approximate and subject to change. The map is not a survey. The map is for informational purposes only regarding the EPA’s response actions at the Site. This map was created using maps from PWT and CDM Annual Reports.

7.4 Data Review

OU1

Groundwater monitoring at OU1 includes analysis of TCE, PCE, cis-1,2-DCE, trans-1,2-DCE, vinyl chloride, ethene and ethane. According to the April 26, 2012 *Final Long-Term Groundwater and Soil Vapor Monitoring Plan – Revision 2*, following the first year of sampling, the determination was made that concentrations of naphthalene and 1,2,4-trimethylbenzene were below remediation goals within the source area, and sampling for those parameters was discontinued.

Overall, sampling data from the review period indicate that the selected remedy is performing as designed. Data analysis verifies the presence of reducing conditions and strongly suggests that the biobarriers are successfully degrading the contaminant mass as it passes through. Appendix H includes detailed discussions of data review findings according to well location and type (Figure 4).

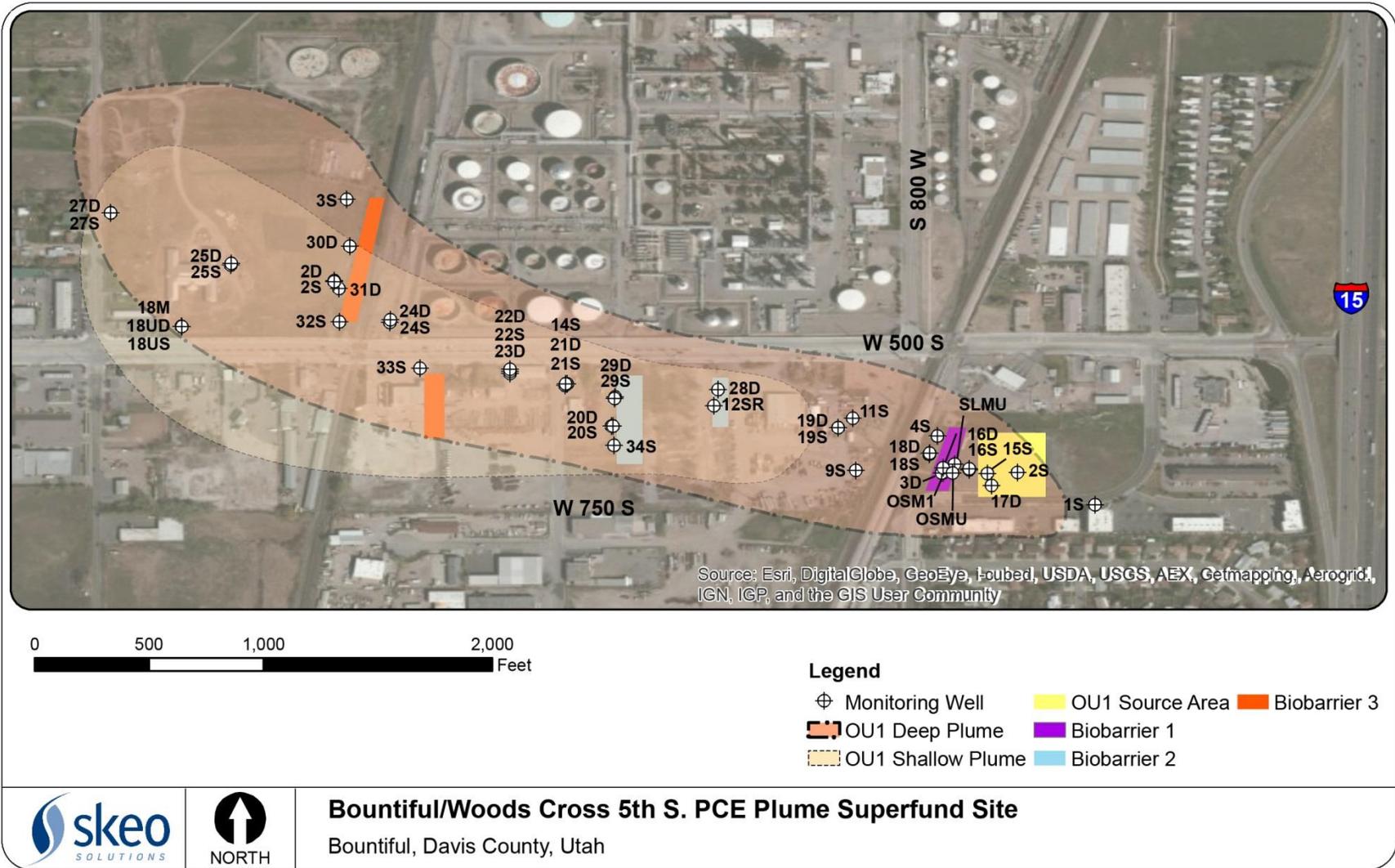
With the exception of a hot spot at HMW-17D and at HMW-16D, sampling data indicates that VOC concentrations in the source area monitoring wells have remained low with limited exceedences of maximum contaminant levels (MCLs) observed. This data review also examined COC concentrations in relation to an active treatment criterion of 200 parts per billion (ppb) for total chlorinated aliphatic hydrocarbon (CAH) concentrations. Total CAH concentrations represent the total groundwater concentrations of PCE, TCE, DCE and VC. As described in CDM's 2008 revised final remedial design, the design concentration criterion for active treatment of contaminated groundwater, consistent with the pilot study report (CDM 2006), was the 200 microgram per liter ($\mu\text{g/L}$) contour for total CAH compounds. This groundwater concentration was selected for active treatment because it provides sufficient concentration reduction to allow for subsequent MNA processes to achieve target cleanup levels. Additionally, this remedial criterion will be used with data generated during the quarterly groundwater monitoring events to evaluate the need for additional EOS® injections. Other than at HMW-17D, all monitoring wells located in the source area have VOC concentrations below the 200 ppb active treatment criterion.

Data analysis identified an issue with contaminant concentrations at HMW-23D (down gradient from the source area). HMW-23D had a PCE concentration of 28 $\mu\text{g/L}$ and a TCE concentration of 17 $\mu\text{g/L}$ during the November 2011 sampling event. The screening interval for this well is 79 to 94 feet below ground surface and is the lowest screening levels of the existing wells. This well was not sampled during the March 2012 event. These detections of VOCs indicate that the ability to define the plume vertically is limited. Therefore, additional monitoring will be necessary to observe long-term trends, better define the plume and ensure the effectiveness of the implemented remedy.

This data review included OU1 data from the October/November 2008 baseline sampling event through March 2012 (Appendix G). In reviewing the data presented in the OU1 *Third Annual Monitoring Report* (2013), reviewers observed that there were some inconsistencies throughout the data review period in reported detection and reporting

limits. Although detection limits were not presented, reporting limits were sometimes reported higher than MCLs. Because of changing reporting limits and no information on the detection limits, the EPA should work on revising the Quality Assurance Project Plan (QAPP) for OU1. This will ensure that future data meets the data quality objectives for the Site to support trend analyses over time and to ensure the analytical methods are sensitive enough for determining whether MCLs are achieved or exceeded.

Figure 4: OU1 Detail



Disclaimer: This map and any boundary lines within the map are approximate and subject to change. The map is not a survey. The map is for informational purposes only regarding the EPA's response actions at the Site. This map was created using maps from CDM Annual Reports.

OU2

The EPA has conducted groundwater monitoring activities at OU2 periodically since March 2003. In November 2010, prior to start-up of the groundwater treatment system (GWTS), a groundwater monitoring event took place, which consisted of gauging and sampling the entire OU2 monitoring well network. This data review examined groundwater monitoring results from the 2010 baseline sampling event (August 2010-February 2011) through the annual 2012 sampling event (November 5-20, 2012).

Site groundwater contaminants include: benzene, 1,1-DCE, cis-1,2-DCE, trans-1,2-DCE, ethylbenzene, PCE, toluene, TCE, 1,2,4-trimethylbenzene (TMB), 1,3,5-trimethylbenzene, vinyl chloride, m-xylene, o-xylene and p-xylene. Data provided for review during this FYR was from the monitoring reports and included analytical results for only the following COCs: PCE, TCE, cis-1,2-DCE, trans-1,2-DCE, vinyl chloride and benzene. Analysis was performed for all other COCs, but are not all reported in the monitoring reports because they are not primary risk drivers in groundwater or are not detected at significant concentrations in groundwater. In 2011, the EPA revised the long-term monitoring plan by removing the natural attenuation parameters from the groundwater sample analysis plan.

Overall, the number of COC MCL exceedances across all zones has decreased since the 2010 baseline sampling event. A comparison of 2012 PCE plume maps of the three different zones and data from the 2010 baseline sampling event through the annual 2012 sampling event indicate that the plume location has remained relatively stable since 2010 (Appendix G). This suggests that the hydraulic containment system is effectively preventing downgradient plume migration.

The GWTS has been operational at the Site since February 11, 2011, pumping and treating groundwater from four extraction wells (EW-1 through EW-4) (Figure 5 and Appendix G). The current OU2 groundwater monitoring plan consists of tri-annual monitoring during the first year of GWTS operation (2011) and semi-annual events from 2012 to 2015 with a reduced number of wells monitored during non-annual events. From 2016 forward, groundwater monitoring will be conducted annually. The existing monitoring network includes 54 groundwater monitoring wells (Figure 5).

The Upper (U), Middle (M), and Lower (L) zones for OU2 wells are all within the shallow aquifer of the East Shore Aquifer. The Upper Zone is typically considered less than 80-feet below ground surface, the Middle Zone is nominally 80- to 160-feet below ground surface, and the Lower Zone is greater than 160-feet below ground surface. The data review examines contaminant concentrations within each of the three zones.

PCE is the most prevalent and highly concentrated COC in the OU2 groundwater. The analytical results from the review period indicate that the down-gradient PCE plume with concentrations above the MCL extends west of the Holly Refinery in the Middle and Lower Zones. Analytical data indicate decreasing levels of PCE in the Upper Zone from east to west away from the source as it migrates downgradient. In general, the PCE contamination in the Upper Zone of the aquifer is well delineated, with the highest levels

of contamination centered near the source close to well MW-16U. PCE contamination is virtually absent in the Upper Zone from the Warm Springs Fault to the west (Figure 5).

Conversely, the Middle and Lower Zones demonstrate higher concentrations of PCE to the west as the contaminant plume migrates vertically between aquifer zones, and moves laterally within the Middle and Lower confined artesian aquifer zones. The extent of the dissolved PCE plume, as defined by the furthest detected value of PCE, is approximately 1.6 miles west-northwest from the source. This plume direction matches the regional groundwater flow. PCE MCL exceedances are shown per zone in Table 9.

Table 9: OU2 PCE MCL Exceedances in the Upper, Middle and Lower Zones

Well ID	Nov-10	May-11	Aug-11	Nov-11	May-12
	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)
Upper Zone					
BC01U	33	NS	NS	25	NS
MW02U	8.6	NS	NS	0.96	NS
MW05U	64	NS	NS	79	NS
MW09U	ND	NS	NS	1.3	7.1
MW10U	9.1	NS	NS	3.3	NS
MW15U	21	NS	NS	11	NS
MW16U	11	NS	NS	100	78
MW18US*	14	NS	NS	NS	NS
Middle Zone					
MW03M	49	NS	NS	19	NS
MW04M	6.7	NS	NS	4.6	NS
MW08M	8.9	NS	NS	19	NS
MW14M	29	18.7	22	14	9
MW20M	ND	3.86	6	ND	5.1
MW21M	2.8	2.33	11	ND	6.4
PMW-22	ND	NS	NS	24	NS
PMW-23	2.9	NS	NS	20	NS
PMW-24	ND	8.63	26	16	13
PMW-25	20	21.9	21	ND	3
Lower Zone					
MW01L	5.1	5.15	10	6.5	5.5
MW03L	30	NS	NS	11	NS
MW13L	2.6	6.87	9.4	5.3	4.2
MW14L	10	6.56	20	7.2	7.7
<p>Shaded cells and bold values indicate PCE concentrations in exceedance of the 5 µg/L PCE MCL. NS - Not sampled ND - Not detected * Analytical results for this wells are included in this table because the well was included in the OU2 baseline monitoring event and because the results provide additional data to evaluate the OU2 groundwater plume.</p>					

Domestic Groundwater Well Monitoring

Although there are many domestic wells in the area, the RI/FS determined that COCs at the Site affected very few wells used for potable uses. Domestic groundwater well sampling, in addition to sampling Site monitoring wells, has been conducted by the EPA

periodically since June 2003. This data review included domestic well data from 2003 to 2011 (Table 10). Dissolved PCE has been detected in many of the domestic wells at concentrations as high as 58 µg/L (DW25 in 2007), which is significantly above the MCL of 5.0 µg/L. However, institutional controls restrict the use of groundwater for human consumption within the plume area. According to the Annual 2012 Groundwater Monitoring and System Performance Report, the majority of the domestic wells are used only for irrigation and livestock. However, the report also states that some of the wells were previously used for drinking water.

Table 10: OU2 Domestic Well PCE MCL Exceedances, 2003-2012

Well ID	Aquifer Zone	Jun-03	Sep-03	Dec-03	Apr-05	May-06	May-07	May-08	May-09	Oct-09	May-10	May-11	Nov-11	Nov-12
DW05	middle				6	7.5	7.4	6.1		5.4				
DW11	lower						6.9		6.2		7.6			
DW12	middle	6	22	24	18	17	27	12	15	16.8			11	12
DW14	middle	9.3	33	22			29	23	13	18.2		13.7		
DW15L	lower						15	15		13.7				
DW15D	lower						14	11		6.2	12	10.3		12
DW16	middle		46	7.9	38		45	35	26	34	26	26.7	21	
DW17	lower	10	9.8		8.6		18	6.9				5.3		
DW18	middle						6.4							
DW19	middle						6.5							
DW22	middle					30	36	34						
DW23	middle							5.2						
DW25	middle			28	16	35	58	36	36	27.8	19	31.5	32	
DW26	lower						10	5.6						
DW28	middle						11	9.5	9.3	8.86	8.9	6.25		
DW32	middle											14.3		

Note:

This table only displays values in exceedance of the PCE MCL of 5.0 µg/L.

Shaded cells indicate that PCE concentrations were either not detected or were below the MCL.

Groundwater Treatment System Performance Monitoring

The GWTS began intermittent operation on February 2, 2011, and began operating continuously on February 11, 2011. The effectiveness of the GWTS is measured by evaluating hydraulic control of the middle aquifer zone to ensure that hydraulic plume control is being maintained, and by monitoring influent and effluent water quality data to ensure the treatment system is meeting applicable effluent water quality standards.

This data review included treatment system data from February 2, 2011 through December 31, 2012. Treatment system samples are analyzed for the full list of VOCs which includes the following constituents: PCE, TCE, cis-1,2-DCE, vinyl chloride, MTBE, benzene, toluene, ethylbenzene, total xylenes and naphthalene. As expected, system influent routinely has PCE concentrations above the MCL. However, the GWTS influent PCE concentrations have remained relatively stable over the review period with only minor variations. Treatment system effluent samples collected during the review period were below maximum allowable discharge limits. During the review period, there were no exceedances of effluent discharge limits for any of the analytes listed in the Utah Pollutant Discharge Elimination System (UPDES) equivalent permit.

As of December 26, 2012, the GWTS has treated approximately 77,561,983 gallons of PCE-contaminated groundwater and removed an estimated PCE mass of 9.08 pounds (lbs) from the subsurface. The GWTS data indicates that the system is operating within its designed capacity and effectively removing PCE from the Site's groundwater.

Soil gas and indoor air sampling

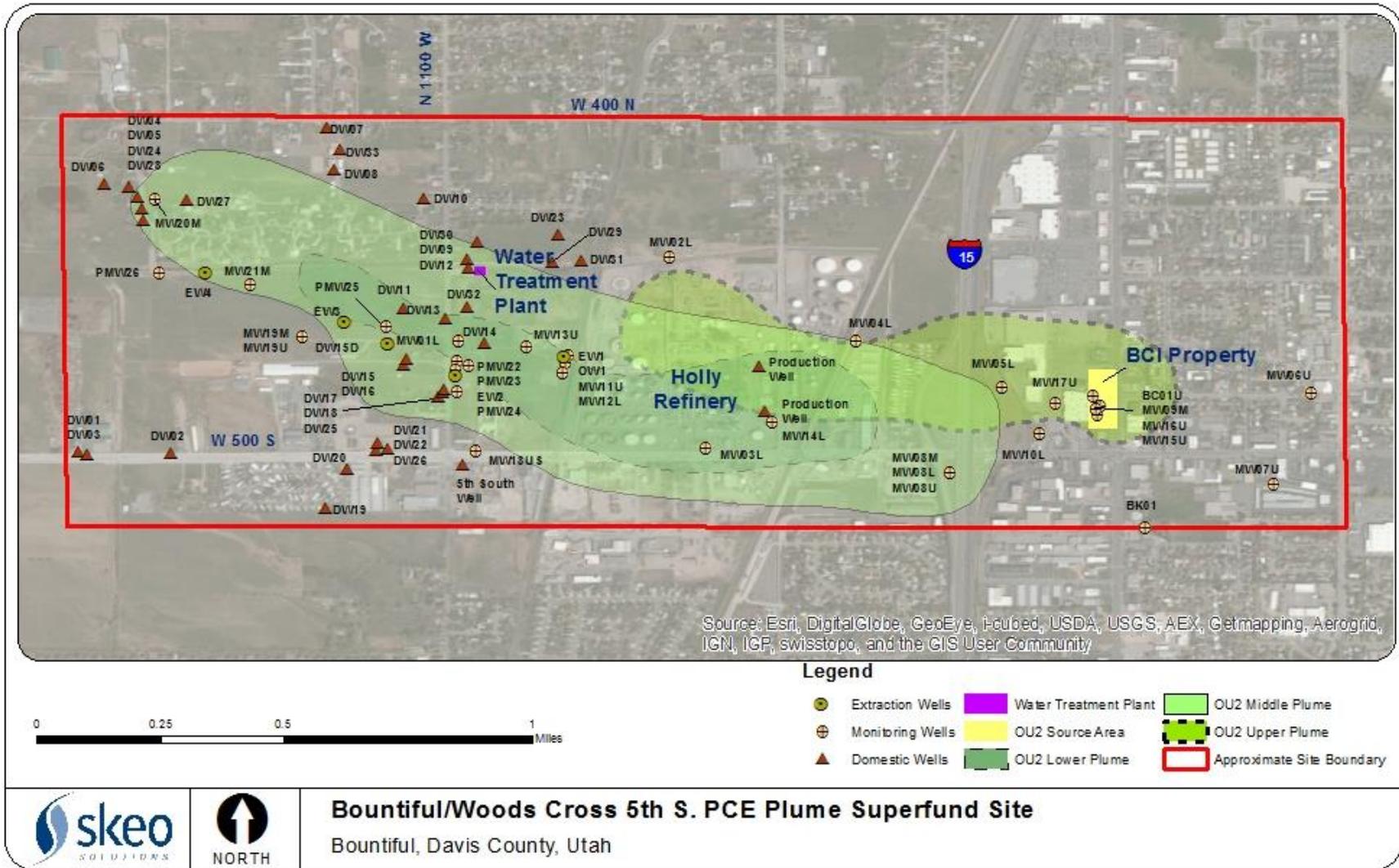
The EPA has conducted multiple investigations related to vapor intrusion and the OU2 source area. The EPA's contractor conducted additional vapor intrusion investigation activities on the BCI property in July 2012 to evaluate if the existing building on the property could be at risk from subsurface vapor intrusion and to assess whether operational changes at the Bountiful Family Cleaners have influenced indoor air concentrations observed during the previous sampling events.

Based on the recent indoor air data, the levels of PCE in indoor air on the main floor of the BCI building are below the reference concentration (RfC). The levels of PCE in indoor air in the basement of the BCI building are above the RfC. These results imply there is potentially an unacceptable risk of chronic health effects due to long-term exposure to PCE in basement indoor air.

The September 2012 PWT study of soil gas and indoor air sampling at the BCI property stated that an additional cold month sampling event is needed to comply with current EPA guidance requiring multiple sampling events to characterize long-term exposure risks. Following the receipt of additional data from the next groundwater, soil gas and indoor air sampling event, the EPA plans to complete a comprehensive evaluation of potential soil vapor intrusion associated with the source area at OU2.

Appendix H includes additional detailed discussions of OU2 data review findings.

Figure 5: OU2 Detail



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7.5 Site Inspection

A site inspection was conducted on December 11, 2012. Participants included Sam Garcia, EPA; Eric Marsh and Treat Suomi, Skeo Solutions; Aaron Baird, PWT; Dal Wayment, Eric Nemcek and Matt Meyers, South Davis Sewer District; and Michael Storck, UDEQ. The Site Inspection Checklist is in Appendix D and the site photographs are in Appendix E.

Site inspection participants met at the South Davis Sewer District offices and started with an overview of the Site and status of the remedial components. Site visit participants drove and walked relevant portions of the Site, including the water treatment plant, extraction wells, monitoring wells, capped areas and source areas. Upon inspecting the water treatment plant at OU2, participants observed DW-12, located in front of the building, was leaking (see photo in Appendix E). Site visit participants discussed that the land lessee uses DW-12 well to water livestock and that a potential solution might be to abandon the well and seek alternative water sources for the landowner. In addition, the EW-4 well vault had condensation and a couple of inches of water observed on the floor of the vault. Site inspection participants also inspected the OU1 source area, the location of the biobarriers and OU1 monitoring wells.

Following the site inspection, Skeo Solutions staff reviewed the documents made available to the public in the site repository, the Davis County Library, South Branch. Several documents were available for the Site, including a 2005 RI, a 2005 focused feasibility study and a 2006 FS. There were also several risk assessment documents available. The only decision document available was the 2007 OU2 ROD. The library staff indicated that they would prefer to have the site documents on a CD, as opposed to printed copies. The EPA will work with the library to ensure materials are updated and available to the public.

7.6 Interviews

The FYR process included interviews with parties affected by the Site, including the current landowners and regulatory agencies involved in Site activities or aware of the Site. The purpose was to document any perceived problems or successes with the phases of the remedy implemented to date. Interviews took place during the site inspection on December 11, 2012, via email and by phone. The interviews are summarized below. Appendix C provides the complete interviews.

Aaron G. Baird: Mr. Baird completed his interview on December 11, 2012, at the OU2 groundwater treatment facility. He is a LTRA contractor with PWT. Mr. Baird believes that the project is going well; the remedial components are functioning as designed. South Davis Sewer District maintains the facility and provides a consistent presence on the Site. Mr. Baird described an issue with a sediment crust layer that formed on the GAC surface in the lead GAC vessel. To mediate this issue, contractors re-piped the filter bags in the system, but Mr. Baird noted additional work regarding this issue may be necessary

in the future. Mr. Baird also recommends that site stakeholders consider additional remedies to address residual PCE contamination in the source area.

Matt Myers: Mr. Myers completed his interview via email on December 17, 2012. He is a LTRA contractor and District Engineer at the South Davis Sewer District. Mr. Myers performs site reporting activities and tracks budget and funding. He believes that there are sufficient operational resources and funds available for remediation, and that site stakeholders are managing these funds in a cost-effective way. Mr. Myers states that the facility is effectively removing PCE from the confined aquifer and discharging water appropriately. The South Davis Sewer District has fixed, or is planning to fix, some minor issues involving transfer pumps, winter heating, bag filters, network security and backwashing of activated carbon tanks.

Nathan Smith: Mr. Smith completed his interview on December 18, 2012 by phone. He is a remedial action contractor with CDM. Mr. Smith believes that the project is going well; the bioremediation at the source area is resulting in contaminant concentrations below or near detection with the exception of some hot spots. Mr. Smith believes it is now a matter of monitoring for the expected results. Mr. Smith expects slower degradation in the downgradient area than at the source area but still expects good degradation. Mr. Smith thinks that moving into semi-annual sampling is a good idea, but that it still makes sense to collect samples after injections are completed in order to monitor the progress of leachate remediation.

Dal Wayment: Mr. Wayment completed his interview over the phone on March 8, 2013. He is the South Davis Sewer District manager, and was involved with the Site as a LTRA contractor since the plume was first located. Mr. Wayment reports that remediation with the activated carbon filter is going smoothly, and that he is well informed about the Site at all times. Mr. Wayment mentioned that he has conducted an informational tour of the activated carbon cleaning system for representatives of North Salt Lake. North Salt Lake is a small incorporated town located between Salt Lake City and Woods Cross that is dealing with PCE contamination in town wells.

Michael Storck: Mr. Storck completed his interview by email on March 25, 2013. He works for the UDEQ/DERR. Overall, he is confident in the remedial activities at OU1 and the LTRA activities at OU2. He noted that quarterly reports are prepared in a timely manner by the South Davis Sewer District. He reports that the remedy at OU2 is going well, and the remedy at OU1 is still undergoing evaluation. He has not heard of any concerns or inquiries regarding environmental issues or remedial activities at the Site. Mr. Storck is satisfied with the institutional controls.

Mayor Parry and Gary Uresk: Mayor Parry and City Manager Gary Uresk completed their interview over the phone on March 12, 2013. They are aware of site activities and consider themselves well informed by the EPA regarding the remedial progress. They are not aware of any changes of local regulations or state laws that may affect the protectiveness of the Site's remedy. Mayor Parry and Gary Uresk have received no comments from residents about the Site.

Local Business Representative 1: A local business representative completed his interview via email on December 7, 2012. The local business representative is unaware of any remedial activity at the Site, but is aware that the EPA and contractors have been conducting testing to determine the most appropriate remedy. The local business representative does not think the Site has affected the surrounding community. He feels well informed about the Site, but notes that there are large gaps of time during which the EPA does not supply him with site information.

Local Business Representative 2: Local Business Representative 2 completed his interview by phone on March 8, 2013. He works with Holly Refinery, a local business. Local Business Representative 2 believes cleanup activities are going well with no adverse effects on the surrounding community. Holly Refinery owns several wells used for industrial purposes. He noted that they switched from potable wells to the West Bountiful water lines. This switch was not because of the site plume, but in response to a recent mandate from the State of Utah to use chlorine in the water-treatment process.

Utah Transit Authority Representative: A Utah Transit Authority representative completed her interview by phone on March 11, 2013. The Utah Transit Authority representative works for the Utah Transit Authority, which recently built a park and ride lot at OU1. She mentioned that monitoring wells were installed when the lot was built, but they have not received any updates since. Though she is aware of the environmental issues at the Site, she indicated a general desire to receive periodic emails about the Site and related activities.

Resident 1: Resident 1 completed his interview by phone on March 13, 2013. Resident 1, a livestock farmer, is aware of activities and voiced several concerns regarding well water supply. In addition to providing water for horses, cows and other livestock, Resident 1's home receives well water. Resident 1 is concerned about the possibility of a depleted water supply due to refinery activities, and the potential financial expenses of connecting the property to the city water supply. Resident 1 has only spoken with two EPA representatives since construction commenced. Resident 1 indicates that he receives drinking water from a well that was tested once a year and his well water is not currently exceeding MCLs.

8.0 Technical Assessment

8.1 Question A: Is the remedy functioning as intended by the decision documents?

Yes, the remedy implemented at OU1 is functioning as intended and the remedy implemented at OU2 is functioning as intended.

The EPA has installed biobarriers and performed EOS® injections at OU1. The EPA is working to revise the O&M plan and achieve an operational and functional determination for OU1. The operational and functional determination for OU1 is dependent on the evaluation of performance monitoring data that have been collected near EOS® injection

well locations. Overall, sampling data from the review period indicate that the selected remedy is performing as designed. Data analysis verifies the presence of reducing conditions and suggests that the biobarriers are successfully degrading the contaminant mass as it passes through. Additional monitoring will be necessary to observe long-term trends, better define the plume and ensure the effectiveness of the implemented remedy. Review of the LTRA reports indicate there were variances in the reporting limits, questions regarding detection limits and variations between reports in historical data. The EPA should work on revising the QAPP for OU1 to ensure that future data is consistent and available for trend analysis over time and that analysis allows for review of whether or not MCLs are achieved or exceeded. Institutional controls are needed to restrict groundwater use near the TCE plume, prohibit new well drilling for domestic use and recommend vapor intrusion mitigation in all permits for construction of new buildings planned on or along the projected path of the contaminated groundwater.

The EPA continues to operate the water treatment system at OU2 to treat and hydrologically contain the PCE plume. Overall, the number of COC MCL exceedances across all zones has decreased since the 2010 baseline sampling event. With the exception of the significant change in concentrations in wells MW-16U and MW-17U (attributed to significant changes in groundwater elevation), PCE concentrations across the site have remained relatively consistent with previous sampling events. In 2010, wells within all the three zones had PCE, TCE, benzene and vinyl chloride exceedances. Since 2010, no benzene or vinyl chloride exceedances have been observed, and TCE exceedances have only been detected in two Upper Zone wells (MW-12U and MW-16U) and one Middle Zone well (MW08M). In 2012, TCE was not detected in any of the Lower Zone wells, and trans-1,2-DCE, 1,1-DCE, vinyl chloride, benzene, toluene, ethylbenzene, and xylenes were not detected in any wells.

PCE concentrations within the middle and lower zones remained relatively stable during the review period. A comparison of 2012 PCE plume maps of the three different zones and data from the review period indicate that the plume location has remained relatively stable since 2010. This suggests that the hydraulic containment system is effectively preventing downgradient plume migration. As of December 26, 2012, the GWTS has treated approximately 77,561,983 gallons of PCE-contaminated groundwater and removed an estimated PCE mass of 9.08 pounds (lbs) from the subsurface. In addition, the GAC at the GWTS did not last as long as expected but was replaced in 2013 by the South Davis Sewer District. Additional evaluation of the GWTS may identify improvements that could increase the amount of mass removed and determine improvements that might lengthen the life of the GAC.

In 2009, the EPA delayed implementation of the selected remedy for the OU2 source area, but continued monitoring soil gas, indoor air, and groundwater concentrations in the source area. The EPA is in the process of completing a comprehensive evaluation of potential soil vapor intrusion associated with the source area at OU2 and evaluating what additional remedial actions may be needed.

Land use controls are not expected to be needed at OU2 source area because the selected remedy was expected to return the source area to unrestricted use. Institutional controls are required to restrict groundwater use, prohibit new well drilling for domestic use and include vapor intrusion mitigation in all permits for construction of new buildings planned on or along the projected path of the contaminated groundwater plume. Remedy design and implementation are still ongoing at the source area for OU2. Upon completion of the remedy for the OU2 source area, the EPA may need to use the remedy selection process to evaluate whether or not additional institutional controls are required.

The EPA identified several wells that will require maintenance. During the site inspection, EW-04 was observed to have condensation on the walls and floor of the well box. EW-4 has been regularly inspected since the site inspection and found to have no leaks and no additional water is accumulating. Well DW12 (located just west of the treatment building) was leaking due to a corroded well casing. The EPA abandoned the well on February 12, 2013. Holly Refinery staff damaged MW02 while conducting grading activities on the Holly Refinery Property. MW02 was repaired in April 2013.

Between 2008 and 2011, a few domestic wells have shown PCE concentrations that exceed the 5.0 µg/L MCL. Greatest PCE concentrations were routinely observed at DW16 and DW25. DW25 experienced increasing PCE concentrations between May 2010 (19 µg/L) and November 2011(32 µg/L). The EPA previously worked with property well owners and users to ensure that no contaminated well water was being used for human consumption. The EPA also connected required residences to municipal water. The current LTRA contractor for OU2 communicates regularly with residents utilizing domestic wells. In order to ensure long term protectiveness, the EPA should consider updating the well survey and ensuring that the revised LTMP plan formalizes routine sampling and results be provided to well owners regarding contaminant levels in wells and any related changes in risk.

8.2 Question B: Are the exposure assumptions, toxicity data, cleanup levels and remedial action objectives (RAOs) used at the time of remedy selection still valid?

No, the exposure assumptions, toxicity data and cleanup levels used at the time of the OU1 and OU2 remedy selection are no longer valid. The RAOs used at the time of the remedy selection remain valid.

For OU2, the EPA based cleanup goals on the MCLs or RBCs based on a hazard index (HI) of one (HI=1) and a cancer risk factor of 1E-4 (1 in 10,000) or 10⁻⁴, assuming a Reasonable Maximum Exposure (RME) through ingestion of contaminated groundwater and inhalation of soil and groundwater vapor via the vapor intrusion pathway. In addition, the EPA selected soil cleanup levels protective of the soil vapor transfer to indoor spaces, soil vapor transfer to groundwater, and contamination leaching to groundwater. As noted in the OU2 ROD, the risk drivers for groundwater are PCE, TCE, vinyl chloride, and benzene while the risk drivers for indoor air at the source are PCE, TCE, vinyl chloride, 1,2,4 trimethylbenzene, 1,3,5-trimethylbenzene and benzene. The OU2 ROD used a version of the Vapor Intrusion Screening Levels (VISL) table available

at the time; the current FYR compared the cleanup goals for these COCs to 2013 VISLs to determine if the goals remain valid. Based on this comparison, the soil gas and groundwater cleanup goals in the source area for TCE and PCE exceed current screening levels at the source area and therefore no longer fall within the EPA’s acceptable risk range and TCE exceeds the noncancer HI of 1 (Table 11). In addition, the downgradient vapor intrusion-based cleanup goals for residential areas exceed current screening levels and therefore no longer fall within the EPA’s acceptable risk range.

Table 11: Comparison of Cleanup Goals and VISLs

Commercial Exposure (Source Area) Target Risk: 1.00E-04 or HI=1 Average groundwater temperature 15° C					Residential Exposure Target Risk: 1.00E-04 or HI=1 Average groundwater temperature 15° C	
COC	2007 ROD Target Soil Gas Conc. (µg/m ³)	2013 VISL Target Soil Gas Conc. (µg/m ³) ^a	2007 ROD Target GW Conc. (µg/L)	2013 VISL Target GW Conc. (µg/L)	2007 ROD Target GW Conc. (µg/L)	2013 VISL Target GW Conc. (µg/L)
Benzene	1,314	1,300	932	930	221	220
PCE	2,079	1,800	484	420	96	100
TCE	6,132	88	2,403	36	477	8.5
1,2,4 trimethylbenzene	74	310	59	240	14	57
1,3,5- trimethylbenzene	74	NA	61	NA	14	NA
Vinyl chloride	1,394	2,800	169	330	34	19
a. 2013 VISLs can be found at: http://www.epa.gov/oswer/vaporintrusion/guidance.html b. Bold values are current screening levels that are more stringent than the cleanup goals and therefore no longer fall within the EPA’s acceptable risk range. c. NA=not applicable, there is no 2013 VISL target.						

Additionally, cleanup levels set for this site were developed in the 2007 OU2 ROD. Because these documents were developed prior to the EPA’s 2009 Risk Assessment Guidance for Superfund, Part F, the exposure assumptions for the inhalation exposure pathway were conducted differently than they would be today. The exposure metric that was used in the ROD and for calculating preliminary remediation goals utilized inhalation concentrations that were based on ingestion rate and body weight (mg/kg-day). The updated methodology in the 2009 Risk Assessment Guidance for Superfund, Part F uses the concentration of chemical in the air, with the exposure metric of ug/m³. While there may be no significant change in clean-up levels, it is important to present the most current methodology for the Inhalation pathway.

The EPA had PWT conduct a comprehensive review of soil gas and indoor air sampling at the BCI property in September 2012. The review determined that additional investigation activities were necessary to re-evaluate indoor air concentrations following

removal of a PCE dry cleaning machine, to re-evaluate the soil gas to indoor air exposure pathway in the BCI building and to determine whether VOCs are present in soil gas at concentrations above risk-based target levels. After collecting July 2012 indoor air data, the EPA determined the levels of PCE in indoor air on the main floor of the BCI building are below the RfC, and the levels of PCE in indoor air in the basement of the BCI building are above the RfC. These results imply that there is potentially an unacceptable risk of chronic health effects due to long-term exposure to PCE in basement indoor air. The VOCs found in indoor air at the BCI building could originate from volatilization from sources within the building, intrusion of vapors released from contaminated soil or groundwater beneath the building, or contamination in ambient air. The EPA determined that an additional cold-month sampling event is needed to comply with current EPA guidance requiring multiple sampling events to characterize long-term exposure risks. Following the receipt of additional data from the next groundwater, soil gas and indoor air sampling event, the EPA plans to complete a comprehensive evaluation of potential soil vapor intrusion associated with the source area at OU2.

8.3 Question C: Has any other information come to light that could call into question the protectiveness of the remedy?

No other information come to light that could call into question the protectiveness of the remedy.

8.4 Technical Assessment Summary

The OU1 remedy is performing as designed and implemented. The enhanced anaerobic bioremediation (EAB) remedy included installing biobarriers near the source area (Biobarrier 1) and downgradient (Biobarriers 2 and 3). Additional monitoring will be necessary to observe long-term trends, better define the plume and ensure the effectiveness of the implemented remedy. Institutional controls are needed to restrict groundwater use near the OU1 TCE plume and prohibit new well drilling for domestic use. In addition, institutional controls are needed to recommend vapor intrusion mitigation in all construction permits for new buildings planned on or along the projected path of the contaminated plume. The EPA and UDEQ are working together to achieve RA completion and enter the LTRA phase. No additional information has become available that could call into question the protectiveness of the OU1 remedy.

Components of the remedy implemented at OU2 are performing as intended. The EPA continues to operate the water treatment system at OU2 to treat and hydrologically contain the PCE plume; however, additional monitoring will be necessary to better define the plume vertically. There are source area components selected in the OU2 ROD that have not yet been implemented and may require modification. Institutional controls are needed to restrict groundwater use, prohibit new well drilling for domestic use and to recommend vapor intrusion mitigation in all permits for construction of new buildings planned on or along the projected path of the contaminated plume. Remedy implementation is ongoing at the source area for OU2.

The EPA should consider updating the well survey and ensuring that the revised LTMP plan for OU2 formalizes routine sampling and provides results to well owners regarding contaminant levels in wells and any related changes in risk.

There is potentially an unacceptable risk of chronic health effects due to long-term exposure to PCE in BCI building basement indoor air. The soil gas and groundwater cleanup goals in the OU2 source area for TCE and PCE exceed current screening levels at the source area and no longer fall within the EPA’s acceptable risk range. To ensure long-term protectiveness, the EPA is in the process of completing a comprehensive evaluation of potential soil vapor intrusion associated with the source area at OU2. In addition, the vapor intrusion-based cleanup goals for groundwater, beneath residential areas, exceed current screening levels and therefore no longer fall within the EPA’s acceptable risk range.

9.0 Issues

Table 12 summarizes the current site issues.

Table 12: Current Site Issues

OU	Issue	Affects Current Protectiveness?	Affects Future Protectiveness?
OU1, OU2	Required institutional controls have not been implemented to restrict groundwater use at most of the properties above the contaminated groundwater plumes.	No	Yes
OU1, OU2	Required institutional controls have not been implemented to recommend vapor intrusion mitigation in all permits for construction of new commercial and/or residential buildings planned on or along the projected path of the contaminated groundwater.	No	Yes
OU1	There is a lack of data for the downgradient edge of both the deep and shallow OU1 groundwater plumes, and for the vertical extent of the OU1 groundwater plume.	No	Yes
OU2	There is potentially an unacceptable risk of chronic health effects due to long-term exposure to PCE in BCI basement indoor air.	No	Yes
OU2	The toxicity values used to calculate the soil gas and groundwater cleanup goals for PCE and TCE have been revised, resulting in cleanup goals that no longer fall within the EPA’s acceptable risk range.	No	Yes
OU2	A few domestic wells have shown increasing concentrations of COCs that exceed MCLs.	No	Yes
OU2	Additional data is needed to better define the OU2 groundwater plume vertically.	No	Yes

10.0 Recommendations and Follow-up Actions

Table 13 provides recommendations to address the current site issues.

Table 13: Recommendations to Address Current Site Issues

Issue	Recommendation / Follow-Up Action	Party Responsible	Oversight Agency	Milestone Date	Affects Protectiveness?	
					Current	Future
Required institutional controls have not been implemented to restrict groundwater use at most properties above the contaminated groundwater plumes.	Implement institutional controls to restrict groundwater use and prohibit new well drilling for domestic use at properties above the contaminated groundwater plumes.	EPA	EPA	09/30/2015	No	Yes
Required institutional controls have not been implemented to recommend vapor intrusion mitigation in all permits for construction of new commercial and/or residential buildings planned on or along the projected path of the contaminated groundwater.	Implement institutional controls to recommend vapor intrusion mitigation for construction of new commercial and/or residential buildings planned on or along the projected path of the contaminated groundwater.	EPA	EPA	09/30/2015	No	Yes
There is a lack of data for the downgradient edge of both the deep and shallow OU1 groundwater plumes, and for the vertical extent of the OU1 groundwater plume.	Obtain the necessary data to better define the downgradient edge of the OU1 plume laterally and the entire plume vertically (e.g. develop cross sectional maps).	EPA	EPA	09/30/2014	No	Yes

Issue	Recommendation / Follow-Up Action	Party Responsible	Oversight Agency	Milestone Date	Affects Protectiveness?	
					Current	Future
There is potentially an unacceptable risk of chronic health effects due to long-term exposure to PCE in BCI basement indoor air.	Evaluate potential soil vapor intrusion associated with the source area at OU2.	EPA	EPA	09/30/2014	No	Yes
The toxicity values used to calculate the soil gas and groundwater cleanup goals for PCE and TCE have been revised, resulting in cleanup goals that no longer fall within the EPA's acceptable risk range.	Revise the cleanup goals for the OU2 source area.	EPA	EPA	09/30/2014	No	Yes
A few domestic wells have shown increasing concentrations of COCs that exceed MCLs.	Update the well survey and ensure that the revised LTMP formalizes routine sampling and provides results to well owners regarding contaminant levels in wells and any related changes in risk.	EPA	EPA	09/30/2014	No	Yes
Additional data is needed to better define the OU2 groundwater plume vertically.	Compile or obtain the necessary data to better define the OU2 plume vertically.	EPA	EPA	09/30/2014	No	Yes

The following additional items, though not expected to affect protectiveness, warrant additional follow-up:

- The EPA should work on revising the QAPP for OU1.
- Additional evaluation of the GWTS may identify improvements that could increase the amount of mass removed and determine improvements that might lengthen the life of the GAC.
- The EPA will work with the local document repository to ensure materials are updated and available to the public.

- The EPA will provide periodic updates on relevant Site activities to interested stakeholders.

11.0 Protectiveness Statements

The remedy at OU1 currently protects human health and the environment because no one is using contaminated groundwater for domestic uses. However, in order for the remedy to be protective in the long term, the following actions need to be taken:

- Better define the downgradient edge of the OU1 plume laterally and the entire plume vertically.
- Implement institutional controls to restrict groundwater use near the TCE plume, prohibit new well drilling for domestic use and recommend vapor intrusion mitigation in all permits for construction planned on or along the projected path of the contaminated plume.

The remedy at OU2 is expected to be protective of human health and the environment upon completion, and in the interim, exposure pathways that could result in unacceptable risks are being controlled.

12.0 Next Review

The next FYR will be due within five years of the signature/approval date of this FYR.

Appendix A: List of Documents Reviewed

Additional Monitoring Well Installation Activities Technical Memorandum. Prepared by CDM Federal Programs Corporation for EPA Region 8. November 30, 2009.

Administrative Order on Consent for Remedial Investigation/Feasibility Study for Respondent W.S. Hatch Company. September 26, 2001.

Annual 2011 Groundwater Monitoring and System Performance Report for Bountiful/Woods Cross 5th South PCE Plume Site. Prepared by Pacific Western Technologies, Ltd., March 2012.

Annual 2012 Groundwater Monitoring and System Performance Report for Bountiful/Woods Cross 5th South PCE Plume Site. Prepared by Pacific Western Technologies, Ltd., March 2013.

Baseline Groundwater Monitoring Event Summary for Bountiful/Woods Cross. Prepared by CDM Federal Programs for EPA Region 8. February 6, 2009.

Baseline Human Health and Ecological Risk Assessment for the Bountiful/Woods Cross Site Bountiful, Utah. Prepared by EPA Region 8. April 1, 2004.

Baseline Human Health and Ecological Risk Assessment for the Bountiful/Woods Cross Site Bountiful, Utah OU2. Prepared by EPA Region 8. May 1, 2005.

Bountiful/Woods Cross 5th South PCE Plume Superfund Site OU2 Water Treatment Plant Completed and Operational. Announcement, prepared by EPA Region 8, September 2011.

CERCLA Information System Site Information accessed from website <http://cumulis.epa.gov/supercpad/cursites/csitinfo.cfm?id=0801528>. Accessed October 2012 - February 2013.

Draft Final Remedial Investigation Volume 1 for OU2 Bountiful/Woods Cross 5th South PCE Plume Site. Prepared for EPA Region 8, July 2004.

EPA Record of Decision: OU1 Bountiful/Woods Cross 5th South PCE Plume, Utah. Prepared by EPA Region 8, September 2006.

EPA Record of Decision: OU2 Bountiful/Woods Cross 5th South PCE Plume, Utah. Prepared by EPA Region 8, September 2007.

Environmental Covenant for Bountiful/Woods Cross 5th South PCE Plume Site between Davis County, the EPA, and Utah DEQ. Utah Code Ann. §§ 57-25-101. January 2012.

Final Focused Feasibility Study Report for OU2 Bountiful/Woods Cross 5th South PCE Plume Site. Prepared for EPA Region 8, July 2005.

Final Interim Remedial Action Report for OU2 Bountiful/Woods Cross 5th South PCE Plume Site. Prepared for EPA Region 8, September 2012.

Final Long-Term Monitoring Plan for Groundwater, Soil Vapor, Operations and Maintenance, Site Management, and Construction Quality Assurance for Bountiful/Woods Cross 5th South PCE Plume NPL Site. Prepared by CDM Federal Programs Corporation for EPA Region 8. September 29, 2009.

Final Remedial Investigation Addendum Report for OU2 Bountiful/Woods Cross 5th South PCE Plume Site. Prepared for EPA Region 8, July 2005. Prepared by CDM Federal Programs Corporation for EPA Region 8. January 2008.

Final Remedial Investigation Report for OU2 Bountiful/Woods Cross 5th South PCE Plume Site. Prepared for EPA Region 8, July 2005.

Final Sampling and Analysis Plan for Treatability Testing and Groundwater Sampling for Bountiful/Woods Cross 5th South PCE Plume Davis County, Utah.

First Annual Monitoring Report for Bountiful/Woods Cross 5th South PCE Plume OU1 Davis County, Utah. Prepared by CDM Federal Programs Corporation for EPA Region 8. January 14, 2010.

Groundwater Treatment System Monthly O&M Report for Bountiful/Woods Cross 5th South PCE Plume NPL Site OU2. Prepared by Pacific Western Technologies, Ltd for EPA Region 8. May 27, 2011.

Hydrogeologic Characterization Report for Phillips 66 Company – Woods Cross Refinery Davis County, Utah. Prepared by Dames & Moore, Salt Lake City, Utah. November 1, 1991.

Industrial Wastewater Discharge Permit for CDM, Inc. Prepared by South Davis Sewer District. October 16, 2008.

Initial System Performance Evaluation Report for Bountiful/Woods Cross. Prepared by PWT for EPA Region 8. October 14, 2011.

Interim Report for the Enhanced Anaerobic Bioremediation Pilot Test for Bountiful/Woods Cross Superfund Site. Prepared by the U.S. Department of the Interior. April 2006.

Long Term Monitoring Program Groundwater Monitoring Schedule for OU2 Bountiful/Woods Cross 5th South PCE Plume Site. Prepared by Pacific Western Technologies, Ltd., Submitted for Reference December 2012.

Operations and Maintenance Plan Revision 1 for Bountiful/Woods Cross. Prepared by CDM Federal Programs for EPA Region 8. December 30, 2011.

Phase 1 Environmental Site Assessment on the W.S. Hatch (Hatchco) Truck Terminal, in Woods Cross, Utah. Prepared by TRTech, Inc. April 14, 1997.

Phase 2 Environmental Site Assessment for Jack Kelley Trucking in Woods Cross, Utah. Prepared by PSI, Salt Lake City, Utah. December 10, 1997.

Preliminary Assessment Decision for Bountiful/Woods Cross PCE Plume prepared by EPA Region 8. July 24, 1996.

Preliminary Assessment for Bountiful/Woods Cross 5th South PCE Plume, West Bountiful/Bountiful/Woods Cross, Utah. Prepared by Utah Department of Environmental Quality Division of Environmental Response and Remediation. July 24, 1996.

Proposed Cleanup Plan for OU2 Bountiful/Woods Cross 5th South PCE Plume Site, Announcement, Prepared by EPA Region 8, September 2006.

Public Health Assessment for Bountiful/ Woods Cross 5th South PCE Plume Davis County, Utah. Prepared by Utah Department of Health Bureau of Epidemiology under cooperative agreement with The Agency for Toxic Substances and Disease Registry. September 16, 2002.

Quarterly Reporting Period Ending June 30, 2011 – Status Report for Bountiful/Woods Cross 5th South PCE Plume Site. Prepared by South Davis Sewer District, July 2011.

Quarterly Reporting Period Ending September 30, 2011 – Status Report for Bountiful/Woods Cross 5th South PCE Plume Site. Prepared by South Davis Sewer District, October 2011.

Quarterly Reporting Period Ending December 31, 2011 – Status Report for Bountiful/Woods Cross 5th South PCE Plume Site. Prepared by South Davis Sewer District, February 2012.

Quarterly Reporting Period Ending March 31, 2012 – Status Report for Bountiful/Woods Cross 5th South PCE Plume Site. Prepared by South Davis Sewer District, May 2012.

Quarterly Reporting Period Ending June 30, 2012 – Status Report for Bountiful/Woods Cross 5th South PCE Plume Site. Prepared by South Davis Sewer District, August 2012.

Quarterly Reporting Period Ending September 30, 2012 – Status Report for Bountiful/Woods Cross 5th South PCE Plume Site. Prepared by South Davis Sewer District, November 2012.

Record of Decision for Bountiful/Woods Cross/5th South PCE Plume NPL Site Operable Unit 1. Prepared by EPA Region 8. September 28, 2006.

Record of Decision for Bountiful/Woods Cross/5th South PCE Plume NPL Site Operable Unit 2. Prepared by EPA Region 8. September 27, 2007.

Region 8 Regional Website information accessed from website <http://www.epa.gov/region8/superfund/ut/bountifulwoods/index.html>. Accessed October 2012 - February 2013.

Remedial Investigation Final Report, W.S. Hatch Co., Woods Cross, Utah. Prepared by HDR Engineering, Inc. December 2003.

Remedial Investigation/Feasibility Study for W.S. Hatch Co. Woods Cross, Utah. Prepared by HDR Engineering, Inc. January 29, 2004.

Risk Assessment Report for Woods Cross Refinery, Light Oil Dock, Woods Cross, Utah. Prepared by Environmental Resources Management for Holly Refining and Marketing Company. April 25, 2007

Second Annual Monitoring Report for Bountiful/Woods Cross 5th South PCE Plume UO1 Davis County, Utah. Prepared by CDM Federal Programs Corporation for EPA Region 8. August 19, 2011.

Semi-Annual 2012 Monitoring Report for Bountiful/Woods Cross 5th South PCE Plume Site. Prepared for EPA Region 8, August 2012.

Soil Gas and Indoor Air Sampling at the BCI Property. Prepared by Pacific Western Technologies, Ltd, September 2012.

Source Area Data Assessment for ROD Amendment Evaluation. Prepared by Pacific Western Technologies, Ltd, May 2012.

Subsurface Investigation Report for Former Hatchco Trucking, Woods Cross, Utah. Prepared by ROCS, Inc. for Vicor Realty. November 11, 1998.

Third Annual Monitoring Report for Bountiful/Woods Cross 5th South PCE Plume OU1 Davis County, Utah. Prepared by CDM Federal Programs Corporation for EPA Region 8. March 25, 2013.

Trip Report for November 2011 Monitoring Event Bountiful/Woods Cross Operable Unit 1, Work Assignment #319-RARA-088G, CDM Project No. 79171.3383.319. Prepared by CDM Federal Programs. December 6, 2011.

Work To Begin On the Phase 2 Pilot Study, Volume 1 Issue 5 for OU2 Bountiful/Woods Cross 5th South PCE Plume Site. Prepared by EPA Region 8, April 2008.

Appendix B: Press Notice



EPA Five-Year Review Planned for the Bountiful/Woods Cross 5th S. PCE Plume Superfund Site



The U.S. Environmental Protection Agency (EPA) is conducting the first Five-Year Review of remedial actions performed under the Superfund program for operable unit (OU) 1 and OU2 at the Bountiful/Woods Cross 5th S. PCE Plume Superfund site (the Site) in Bountiful, Utah. The purpose of the Five-Year Review is to make sure the cleanup actions selected for OU1 and OU2 remain protective of human health and the environment. It is scheduled to be completed by September 2013.

The 150-acre Site is located in Davis County, Utah, north of Salt Lake City. Commercial and industrial operations at the Site contaminated the groundwater. EPA selected a cleanup plan for OU1 in 2006 and a cleanup plan for OU2 in 2007.

More information is available at the Site's Information Repository and on EPA's website:

Davis County Library, South Branch
725 South Main Street
Bountiful, UT 84010
801-295-8732

<http://www.epa.gov/region8/superfund/ut/bountifulwoods>

EPA invites community participation in the Five-Year Review process: Community members are encouraged to contact EPA staff members with any information that may help the Agency make its determination regarding the protectiveness and effectiveness of the remedies at the Site.

Peggy Linn
Community Involvement Coordinator
EPA Region 8
303-312-6622
Email: linn.peggy@epa.gov

Dave Alison
Community Involvement Coordinator
Utah Department of Environmental Quality
801-536-4479
Email: dallison@utah.gov

Sam Garcia
Remedial Project Manager
EPA Region 8
303-312-6247
Email: garcia.sam@epa.gov

Michael Storck
Project Manager
Utah Department of Environmental Quality
801-536-4100
Email: mstork@utah.gov

Appendix C: Interview Forms

Bountiful/Woods Cross 5th South PCE Plume Superfund Site Five-Year Review Interview Form

Site Name:	<u>Bountiful/Woods Cross 5th South PCE Plume</u>	EPA ID No.:	<u>UT0001119296</u>
Interviewer Name:	<u>Suomi, Treat</u>	Affiliation:	<u>Skeo Solutions</u>
Subject Name:	<u>Baird, Aaron G.</u>	Affiliation:	<u>Pacific Western Technologies, LTD.</u>
Subject Contact Information:			<u>720-202 2664</u>
Time:	<u>1 PM MST</u>	Date:	<u>12/11/2012</u>
Interview Location:	<u>OU-2 Groundwater Treatment Facility</u>		
Interview Format (circle one):	<u>In Person</u>	Phone	Mail Other:

Interview Category: **LTRA Contractor**

1. What is your overall impression of the project, including cleanup, maintenance and reuse activities (as appropriate)?

I think the project is going well. The remedy implemented to address the down-gradient dissolved PCE groundwater plume (groundwater extraction and treatment) is functioning as designed, it is being maintained very well by the operator, and the system effluent water is being placed into beneficial use. Additional remedies should be considered to address the residual PCE contamination in the source area.

2. What is your assessment of the current performance of the remedy in place at the Site?

The remedy extracts and treats PCE-contaminated groundwater in accordance with remedial action objectives. The treatment system has been effective in removing Site contaminants and is compliant with effluent discharge requirements. We have been able to observe hydraulic control of the dissolved PCE plume, but we have not been operating long enough and do not have enough data to have observed significant decreasing trends in contaminant concentrations.

The groundwater extraction and treatment remedy does not address the residual contaminant mass in soil at the source area, and will take decades to address the elevated dissolved PCE concentrations that have recently been observed in Upper Zone source area wells.

3. What are the findings from the monitoring data? What are the key trends in contaminant levels that are being documented over time at the Site?

Groundwater monitoring data indicates considerable groundwater drawdown in monitoring wells near extraction wells. PCE concentrations in the extraction wells and in the combined treatment system influent have remained relatively stable with only minor variations. A few monitoring wells have indicated a decreasing trend in PCE concentrations, but as stated above, it is still too early to effectively evaluate

concentration trends over time.

A significant increase in dissolved PCE concentrations has recently been observed in Upper Zone source area wells MW-16U and MW-17U.

4. Is there a continuous on-site O&M presence? If so, please describe staff responsibilities and activities. Alternatively, please describe staff responsibilities and the frequency of site inspections and activities if there is not a continuous on-site O&M presence.

Yes, there is a continuous on-site O&M presence. The EPA has a contract with the South Davis Sewer District to operate and maintain the system. The system operation goal set by the EPA requires a minimum system operational uptime of 90 percent and it has been greater than 99 percent since start-up. The EPA's expectations for on-site O&M presence are weekly O&M site visits and the ability to respond to emergencies within three hours. The operator has been able to adhere to this requirement and is now even conducting brief treatment facility inspections on an almost daily basis. Weekly on-site O&M visits include the collection of system operational data, including pressure at multiple points in the system, individual extraction well flow rates, combined groundwater influent flow rates and volumes, treated groundwater effluent flow rates and volumes, water levels in extraction wells and water tanks, and transfer pump run times. More extensive system testing and monitoring activities are conducted on a monthly and quarterly basis.

5. Have there been any significant changes in site O&M requirements, maintenance schedules or sampling routines since start-up or in the last five years? If so, do they affect the protectiveness or effectiveness of the remedy? Please describe changes and impacts.

There have not been any significant changes since system start-up almost two years ago, with the exception of the reduced system sampling frequency. Reduced system sampling frequency went from monthly during the first year to quarterly thereafter. After receipt of analytical results from initial treatment system water samples, some minor reductions in analytes were implemented.

6. Have there been unexpected O&M difficulties or costs at the Site since start-up or in the last five years? If so, please provide details.

A sediment crust layer formed on the surface of the GAC in the lead GAC vessel quicker than expected and the bag filters were re-piped to operate in series to mediate the issue. It was expected that the carbon would begin to clog up due to solids buildup or biofouling; and therefore, the pressure differential across the carbon would likely govern required change out before contaminant breakthrough occurred. However, we just recently observed contaminant breakthrough above discharge limits for PCE in the lead GAC vessel and the GAC will need to be replaced in the near future. Based on current influent PCE concentration levels, flow rates, and carbon use calculations, carbon change out frequency for a 5000 lb GAC vessel was anticipated to be every 7 to 8 years. I am unable to speak to costs in this interview because all system costs are monitored and paid for by the system operator.

7. Have there been opportunities to optimize O&M activities or sampling efforts? Please describe changes and any resulting or desired cost savings or improved efficiencies.

There has been some O&M optimization. We bypassed the effluent equalization tank and as a result, we are able to operate the treatment system with one transfer pump rather than two. We have also increased pumping rates to the maximum allowable rate under the water rights allocation for the Site, which currently is near our maximum achievable pumping rates. These changes were implemented in mid-2012 following the one-year Operational and Functional Period.

8. Do you have any comments, suggestions or recommendations regarding O&M activities and schedules at the Site?

After the first two years of system operation, the majority of the “kinks” in the system should be worked out and the system should operate relatively consistently. The system is automated; there are sensors and alarms for nearly every possible issue and it can be effectively monitored remotely. There may be an opportunity to reduce on-site visits in the future.

There is an opportunity to adjust the system sampling schedule. The memorandum we received from the State regarding the treated water discharge requirements for the Site did not specify a sampling frequency or any reporting requirements. System performance and compliance groundwater samples are collected to evaluate the progress of the system and to confirm that the treatment system effluent is in conformance with the discharge requirements. Currently, water samples are collected from the extraction wells, treatment system influent, lead GAC vessel effluent, and effluent discharge on quarterly sampling schedule, but there could be more judgment in the necessity of the samples. For example, it took about two years to get contaminant breakthrough on the lead GAC vessel; given this, after the lead GAC is replaced, maybe you don't need to sample the lead GAC every quarter for the first year, or maybe you only need sample after the lead GAC vessel and not the effluent.

As the system continues to operate and as additional data become available, there may be an opportunity to take extraction well EW-4 off-line. EW-4 has low flow rates that are typically less than 10 gallons per minute and low PCE concentrations that have been at or below the Maximum Contaminant Level (MCL). The mass removed from this well is very minimal and because of its distance from the treatment plant, it requires a significant amount of energy to transport the water to the treatment plant. Well EW-4 is the furthest well down gradient and extraction wells EW-1, EW-2, and EW-3 should have sufficient radius of influence to capture the plume moving down gradient from the source area in the future.

**Bountiful/Woods Cross 5th South PCE
Plume Superfund Site**

Five-Year Review Interview Form

Site Name: Bountiful/Woods Cross 5th South
PCE Plume

EPA ID No.: UT0001119296

Interviewer Name: Suomi, Treat

Affiliation: Skeo Solutions

Subject Name: Local Business Owner 1

Affiliation: Local Business Owner 1

Date: 12/07/2012

Interview Format (circle one): In Person

Phone **Mail** **Other:** email

Interview Category: Local Business

1. What is your overall impression of the remedial activities at the Site?

I was unaware that there were any remedial activities going on at BFC, unless that means testing and such to determine what would be the best remedy.

2. What have been the effects of this Site on the surrounding community, if any?

I don't know of any effects on the surrounding community.

3. What is your assessment of the current performance of the remedy in place at the Site?

My assessment of the current performance is that it is a very, very slow process. There has been some kind of testing going on at our plant for just over 11 years now.

4. Are you aware of any complaints or inquiries regarding environmental issues or the remedial action from residents since implementation of the cleanup?

No, I am not aware of any complaints or injuries.

5. Do you feel well-informed regarding the Site's activities and remedial progress? If not, how might the EPA convey site-related information in the future?

Yes, for the most part I feel informed, but there are large spaces of time that pass before I hear or see anything.

6. Do you have any comments, suggestions or recommendations regarding the management or operation of the Site's remedy?

No, Mario and yourself have been great to work with.

**Bountiful/Woods Cross 5th South
PCE Plume Superfund Site**

Five-Year Review Interview Form

Site Name:	<u>Bountiful/Woods Cross 5th South PCE Plume</u>	EPA ID No.:	<u>UT000119296</u>
Interviewer Name:	<u>Suomi, Treat</u>	Affiliation:	<u>Skeo Solutions</u>
Subject Name:	<u>Myers, Matt</u>	Affiliation:	<u>South Davis Sewer District</u>
Subject Contact Information:	<u>801-295-3469</u>		<u>mmyers@sdsd.us</u>
Time:	<u>10:30AM</u>	Date:	<u>12/17/12</u>
Interview Format (circle one):	<u>In Person</u>	Phone	Mail Other <u>email</u>

Interview Category: LTRA Contractor

1. What is your overall impression of the project, including cleanup, maintenance and reuse activities (as appropriate)?

We have sufficient operational resources and funds, and are managing them in a cost-effective way. The facility is well attended to.

2. What is your assessment of the current performance of the remedy in place at the Site?

The remedy is effectively removing PCE from the confined aquifer and discharging to the negotiated receiving water. The groundwater treatment facility (GWTF) was well-designed for this purpose, but for some minor issues that South Davis Sewer District (SDSD) has remedied or is planning to remedy: (a) adequate balancing and aligning of transfer pumps, (b) adequate winter heating, (c) versatility to run bag filters in series or parallel, (d) adequate network security, (e) ability to backwash granular activated carbon tanks (SDSD is putting this off until it becomes clear whether re-plumbing the bag filters and operating in series fixes this issue).

3. What are the findings from the monitoring data? What are the key trends in contaminant levels that are being documented over time at the Site?

This monitoring well-related question is better suited to PWT to answer.

4. Is there a continuous on-site O&M presence? If so, please describe staff responsibilities and activities. Alternatively, please describe staff responsibilities and the frequency of site inspections and activities if there is not a continuous on-site O&M presence.

SDSD O&M staff is literally minutes away as they perform O&M activities for the district. Staff performs a detailed inspection and routine maintenance at least weekly. Due to recent issues (leaks in water heater, culinary plumbing and in process equipment) staff has been inspecting daily so that any such issue is identified, and either corrected or mitigated, until corrective action can be taken. District staff involvement is as follows: (a) Dal Wayment (General Manager) – Executive contact, oversees entire OU2

operations program, (b) Ed Marsing (Operations Superintendent) oversees all O&M activities at OU2, (c) Eric Nemcek (Assistant Superintendent) primary operator of OU2, (d) Tim Munden (Operator) assists Eric as directed in operation of OU2, (e) Matt Myers (District Engineer) coordinates with operations, management, the EPA, PWT and other contractors as needed, performs all reporting activities, tracks budget and funding. Other SDSD staff is included in O&M activities as necessary.

5. Have there been any significant changes in site O&M requirements, maintenance schedules or sampling routines since start-up or in the last five years? If so, do they affect the protectiveness or effectiveness of the remedy? Please describe changes and impacts.

See Question 2 for summary of several O&M requirements. Sampling routines have changed from monthly to quarterly, but this affects the operation very little. Most recent lab results seem to indicate breakthrough between GAC vessels 1 & 2, at a much earlier than anticipated time frame. If after data vetting this turns out to be the case, and if this is any indication of the interval for GAC change-out, O&M operations would be impacted. This will increase costs, but the District is operating at well under the established budget thus far.

6. Have there been unexpected O&M difficulties or costs at the Site since start-up or in the last five years? If so, please provide details.

Copied from Question 2: (a) Adequate balancing and aligning of transfer pumps (b) adequate winter heating, (c) versatility to run bag filters in series or parallel, (d) adequate network security, (e) ability to backwash granular activated carbon tanks (SDSD is putting this off until it becomes clear whether re-plumbing the bag filters and operating in series fixes this issue). These issues are relatively minor and were simple enough to correct by district personnel within the budget.

7. Have there been opportunities to optimize O&M activities or sampling efforts? Please describe changes and any resulting or desired cost savings or improved efficiencies.

With the elimination of one of the earlier planned discharge alternatives, it became possible to maintain enough head to push water through the system and the discharge without using the second set of transfer pumps. The GWTF is now operating with only one set of transfer pumps and the second essentially serving as spare for now. Eliminating the discharge pumps is estimated to save approximately \$65-75/month depending on volume being pumped. Plumbing the bag filters in series better protects the GAC media from blinding off with fine particles and extends the media's useful life. It is difficult to calculate a cost savings until further operating data is available.

8. Do you have any comments, suggestions or recommendations regarding O&M activities and schedules at the Site?

Nothing more than has already been written.

**Bountiful/Woods Cross 5th South PCE
Plume Superfund Site**

Five-Year Review Interview Form

Site Name: Bountiful/Woods Cross 5th
South PCE Plume **EPA ID No.:** UT0001119296

Interviewer Name: Suomi, Treat **Affiliation:** Skeo Solution
Subject Name: Smith, Nathan **Affiliation:** CDM
Subject Contact Information: SmithNT@cdm.com
Time: 1:00 PM **Date:** 12/18/2012
Interview Location: Conference Call

Interview Format (circle one): In Person Phone Mail Other:

Interview Category: Remedial Action Contractor

1. What is your overall impression of the project, including cleanup, maintenance and reuse activities (as appropriate)?

Overall it seems to be going extremely well, if not better.

2. What is your assessment of the current performance of the remedy in place at the Site?

I am extremely pleased with the bioremediation resulting in contaminants below MCL or near detection. There are a few hot spots. Source material being cleaned up is resulting in down gradient wells having reductions in COC concentrations. Down gradient plume - 2nd and 3rd bio-barriers are installed and are performing well. Done with bio-augmentation and it is now a “wait and see” until we see something.

3. What are the findings from the monitoring data? What are the key trends in contaminant levels that are being documented over time at the Site?

Initial November data shows concentrations declining. We do not expect to see as rapid degradation down gradient as with the source material. Bio barriers set to treat groundwater as it moves through so we expect lower but good degradation.

4. Is there a continuous on-site O&M presence? If so, please describe staff responsibilities and activities. Alternatively, please describe staff responsibilities and the frequency of site inspections and activities if there is not a continuous on-site O&M presence.

Now all wells are installed. Routine injection work with source injection started in July 2012. We will be doing maintenance work injections in hot spots in source area in January, then quarterly. Hot spot near 18D declined substantially. 17D still has “a lot” of elevated concentrations.

Upkeep of wells - In the past we had issues with plows shearing off well caps. Wasatch Environmental is the subcontractor that takes care of needs as they arise.

5. Have there been any significant changes in site O&M requirements, maintenance schedules or sampling routines since start-up or in the last five years? If so, do they affect the protectiveness or effectiveness of the remedy? Please describe changes and impacts.

Overall we have completed work as in the RD and have mostly completed things as laid out and now backing off to semi-annual sampling.

6. Have there been unexpected O&M difficulties or costs at the Site since start-up or in the last five years? If so, please provide details.

No major issues since initial work in the source area. We had issues with the 3rd biobarrier, some wells didn't perform well, so we replaced them. West of biobarrier #3 there were also a few wells that were replaced. Holly wanted to put in new buildings so Holly paid for and moved those wells.

Biobarrier #3 - Because wells are artesian, ball valves on top of the well have frozen and broken. They are checked during injections.

7. Have there been opportunities to optimize O&M activities or sampling efforts? Please describe changes and any resulting or desired cost savings or improved efficiencies.

We started using passive diffusion bags for sampling in source area prior to injection wells. This has saved money. Deployed 54 or 55 PDS within a day and then sampled within a day. Previously that would have taken 5-6 days of sampling. Did initial test in 2011 annual samples event and then deployed and used in April 2012.

Design called for gravity feed injections. Then went out there and realized it would not work and switched to pressure injections. It saved thousands of man hours.

Biobarriers #2 and #3 installations – DPT instead of hollow stem auger saved money and time. We installed up to 10 per day.

As we transition the operating remedy in the source area, may want to think about passive diffusion bags where MNA data is not needed – maybe where VOC data is all that [needs]. We may consider hydrosleeve bags for sampling where MNA data is [needed]. Source area will continue to just treat hot spots and target areas needing to be addressed.

8. Do you have any comments, suggestions or recommendations regarding O&M activities and schedules at the Site?

Not really anything or additional comments. Moving into semi-annual schedules but it makes sense to collect samples after injections to monitor progress of leachate remediation.

**Bountiful/Woods Cross 5th South PCE
Plume Superfund Site**

Five-Year Review Interview Form

Site Name: Bountiful/Woods Cross 5th EPA ID No.: UT0001119296
South PCE Plume

Interviewer Name: Suomi, Treat Affiliation: Skeo Solutions
Subject Name: Storck, Michael Affiliation: _____

Subject Contact Information: 801-536-4179

Time: 3:45 P.M. Date: March 25, 2013

Interview Location: office

Interview Format (circle one): In Person Phone Mail Other email

Interview Category: State Agency Division of Environmental Response and Remediation

1. What is your overall impression of the project, including cleanup, maintenance and reuse activities (as appropriate)?

Overall, I feel the remediation efforts for both OUs have been successful. OU2 maintenance activities are conducted by the South Davis Sewer District and they have done a very good job in conducting activities and the preparation of quarterly reports.

2. What is your assessment of the current performance of the remedy in place at the Site?

The remedy at OU2, pump and treat, is performing as designed and expected. The remedy at OU1 is still ongoing as injection of the wells with emulsified oil substrate is still being evaluated.

3. Are you aware of any complaints or inquiries regarding site-related environmental issues or remedial activities from residents in the past five years?

No

4. Has your office conducted any site-related activities or communications in the past five years? If so, please describe the purpose and results of these activities.

No.

5. Are you aware of any changes to state laws that might affect the protectiveness of the Site's remedy?

No.

6. Are you comfortable with the status of the institutional controls at the Site? If not, what are the associated outstanding issues?

The ICs being implemented through the State Engineers office are effective.

7. Are you aware of any changes in projected land use(s) at the Site?

None

8. Do you have any comments, suggestions or recommendations regarding the management or operation of the Site's remedy?

Not at this time as I am satisfied with the remedial action at OU1 and the LTRA at OU2.

**Bountiful/Woods Cross 5th S. PCE Plume Five-Year Review Interview Form
Superfund Site**

Site Name: Bountiful/Woods Cross 5th S. PCE Plume EPA ID No.: UT000119296
Interviewer Name: Sarah Alfano Affiliation: Skeo Solutions
Subject Name: Mary DeLoretto Affiliation: Utah Transit Authority
Subject Contact Information: 801-741-8808
Time: 3:30pm EST Date: 3/11/2013
Interview Format (circle one): In Person Phone Mail Other:

Interview Category: **Local Government**

1. Are you aware of the former environmental issues at the Site and the cleanup activities that have taken place to date?
Yes
2. Do you feel well-informed regarding the Site's activities and remedial progress? If not, how might the EPA convey site-related information in the future?
Once we put our park and ride lot at the site, they installed wells. I have not gotten any updates since that happened. There is another person who works on the site with me but I do not think he has received any recent updates either. I have not had any updates in a couple years. Email follow-up would be preferable. It should say in the subject what it pertains to so that it is not deleted as junk mail.
3. Have there been any problems with unusual or unexpected activities at the Site, such as emergency response, vandalism or trespassing?
No.
4. Are you aware of any changes to state laws or local regulations that might affect the protectiveness of the Site's remedy?
No.
5. Are you aware of any changes in projected land use(s) at the Site?
No, we only know about our park and ride lot.
6. Has the EPA kept involved parties and surrounding neighbors informed of activities at the Site? How can the EPA best provide site-related information in the future?
I have not heard anything and I am not aware of what surrounding neighbors and other parties have been told.
7. Do you have any comments, suggestions or recommendations regarding the project?
No, however, we would like to receive updates so we know what is going on at the site.

**Bountiful/Woods Cross 5th South PCE
Plume Superfund Site**

Five-Year Review Interview Form

Site Name: Bountiful/Woods Cross 5th
South PCE Plume

EPA ID No.: UT000119296

Interviewer Name: Sarah Alfano

Affiliation: Skeo Solutions

Subject Name: Dal Wayment

Affiliation: South Davis County Sewer

Subject Contact Information: 801-295-3469

Time: 1:00 PM

Date: 3/8/2013

Interview Format (circle one): In Person Phone Mail Other:

Interview Category: **LTRA Contractor/Local Government**

1. Are you aware of the former environmental issues at the Site and the cleanup activities that have taken place to date?
Yes
2. Do you feel well-informed regarding the Site's activities and remedial progress? If not, how might the EPA convey site-related information in the future?
I do feel informed.
3. Have there been any problems with unusual or unexpected activities at the Site, such as emergency response, vandalism or trespassing?
There have been none.
4. Are you aware of any changes to state laws or local regulations that might affect the protectiveness of the Site's remedy?
No, I am not
5. Are you aware of any changes in projected land use(s) at the Site?
No
6. Has the EPA kept involved parties and surrounding neighbors informed of activities at the Site? How can the EPA best provide site-related information in the future?
We have been kept informed. We are operating the activated carbon filter. As manager of the sewer district, I have been involved back since the days of sampling to locate the plume. Because we have been involved and notified directly, we are very well informed at all times. We do not have responsibility for extensive notice and we have had pretty good participation for the community meetings. Beyond newspaper notices and flyers, they had messages in the city newsletters and things like that. Short of going door to door, I do not know what else could be done.
7. Do you have any comments, suggestions or recommendations regarding the project?
No we have been involved the whole time. The project seems to be going well, the plume is responding to the pumping, and it seems to be working though we are not the ones that determine that. There is a consulting firm monitoring the wells and doing the monitoring. We have exhibited the facility several times. The City of Woods Cross and the City of North Salt Lake are dealing with PCE in their wells. The other city is looking at doing activated

carbon cleaning as well. We have hosted tours for that city. They are a small town between Salt Lake City and Woods Cross. It is an incorporated town.

**Bountiful/Woods Cross 5th South PCE
Plume Superfund Site**

Five-Year Review Interview Form

Site Name: Bountiful/Woods Cross 5th South PCE Plume EPA ID No.: UT0001119296

Interviewer Name: Sarah Alfano Affiliation: Skeo Solutions

Subject Name: Local Business Representative 2 Affiliation: Holly Refinery

Subject Contact Information:
Time: 1:30 P.M. Date: 3/8/2013

Interview Format (circle one): In Person Phone Mail Other:

Interview Category: **Local Business**

1. Are you aware of the former environmental issues at the Site and the cleanup activities that have taken place to date?
Yes.
2. What is your overall impression of the project, including cleanup, maintenance and reuse activities (as appropriate)?
I think they are going well.
3. What have been the effects of this Site on the surrounding community, if any?
None.
4. Have there been any problems with unusual or unexpected activities at the Site, such as emergency response, vandalism or trespassing?
No.
5. Has the kept involved parties and surrounding neighbors informed of activities at the Site?
How can the EPA best provide site-related information in the future?
They are doing a good job now.
6. Do you own a private well in addition to or instead of accessing city/municipal water supplies? If so, for what purpose(s) is your private well used?
We own several wells and we use them for industrial purposes. We had potable wells but we took them out and connected to the West Bountiful. I decided to switch, not due to the site plume, but because Utah is moving toward mandatory treatment with chlorine and I did not want chlorine in the water.
7. Do you have any comments, suggestions or recommendations regarding any aspects of the project?
No, it has gone well.

**BOUNTIFUL/WOODS CROSS 5TH S. PCE
PLUME Superfund Site**

Five-Year Review Interview Form

Site Name: BOUNTIFUL/WOODS CROSS
5TH S. PCE PLUME

EPA ID No.: UT0001119296

Interviewer Name: Peggy Linn

Affiliation: EPA

Subject Name: Mayor Parry and City
Manager Gary Uresk

Affiliation: Woods Cross

Subject Contact Information:

Time: 12PM

Date: 3/12/2013

Interview Format (circle one): In Person Phone Mail Other:

Interview Category: Local Government

1. Are you aware of the former environmental issues at the Site and the cleanup activities that have taken place to date?

Yes, we are aware.

2. Do you feel well-informed regarding the Site's activities and remedial progress? If not, how might the EPA convey site-related information in the future?

We have been kept up-to date and what the ongoing status is.

In a timely manner?

Sure, I do not have anything to compare it to.

Any suggestions on how it might be better, is the same format ok?

When it was first kicked off, we were in the loop. There might have been some lag but it has been pretty good. We know how to contact you if we have any questions.

3. Have there been any problems with unusual or unexpected activities at the Site, such as emergency response, vandalism or trespassing?

No, not that we are aware of.

4. Are you aware of any changes to state laws or local regulations that might affect the protectiveness of the Site's remedy?

We are pretty much on top of that for local regulations and we are trying to keep up with state regulations as well. It is not as easy but I think we are abreast on those things.

5. Are you aware of any changes in projected land use(s) at the Site?

No, that is not an issue.

6. Has the EPA kept involved parties and surrounding neighbors informed of activities at the Site? How can the EPA best provide site-related information in the future?

There has not been a lot of work at the site. There have been drillings at the plume but I think people have been informed; I have not had any comments from residents.

7. Do you have any comments, suggestions or recommendations regarding the project?

I know it is a matter of time as far as the remediation goes, I don't think we would have any recommendations. The issue with all of these environmental issues is the time it takes to clean them up. It is frustrating but we understand all the steps that you have to move through with testing etc. I think I understand why it has to carry on so long. Is this the remediation with the biochem bugs?

Yes some of that was in OU1. We are seeing decreasing concentrations, it is having a positive effect. There were concerns with another local site but not related to the FYR for this site.

Appendix D: Site Inspection Checklist

FIVE-YEAR REVIEW SITE INSPECTION CHECKLIST															
I. SITE INFORMATION															
Site Name: Bountiful/Woods Cross 5th S. PCE Plume		Date of Inspection: 12/11/2012													
Location and Region: Bountiful, Utah Region 8		EPA ID: UTD980952840													
Agency, Office or Company Leading the Five-Year Review: EPA Region 8		Weather/Temperature: Mostly Cloudy/36°F													
Remedy Includes: (Check all that apply) <table style="width: 100%; border: none;"> <tr> <td><input checked="" type="checkbox"/> Landfill cover/containment</td> <td><input type="checkbox"/> Monitored natural attenuation</td> </tr> <tr> <td><input type="checkbox"/> Access controls</td> <td><input checked="" type="checkbox"/> Groundwater containment</td> </tr> <tr> <td><input checked="" type="checkbox"/> Institutional controls</td> <td><input checked="" type="checkbox"/> Vertical barrier walls</td> </tr> <tr> <td><input checked="" type="checkbox"/> Groundwater pump and treatment</td> <td></td> </tr> <tr> <td><input type="checkbox"/> Surface water collection and treatment</td> <td></td> </tr> <tr> <td><input type="checkbox"/> Other: _____</td> <td></td> </tr> </table>				<input checked="" type="checkbox"/> Landfill cover/containment	<input type="checkbox"/> Monitored natural attenuation	<input type="checkbox"/> Access controls	<input checked="" type="checkbox"/> Groundwater containment	<input checked="" type="checkbox"/> Institutional controls	<input checked="" type="checkbox"/> Vertical barrier walls	<input checked="" type="checkbox"/> Groundwater pump and treatment		<input type="checkbox"/> Surface water collection and treatment		<input type="checkbox"/> Other: _____	
<input checked="" type="checkbox"/> Landfill cover/containment	<input type="checkbox"/> Monitored natural attenuation														
<input type="checkbox"/> Access controls	<input checked="" type="checkbox"/> Groundwater containment														
<input checked="" type="checkbox"/> Institutional controls	<input checked="" type="checkbox"/> Vertical barrier walls														
<input checked="" type="checkbox"/> Groundwater pump and treatment															
<input type="checkbox"/> Surface water collection and treatment															
<input type="checkbox"/> Other: _____															
Attachments: <input checked="" type="checkbox"/> Inspection team roster attached <input type="checkbox"/> Site map attached															
II. INTERVIEWS (check all that apply)															
1. O&M Contractor	<u>Baird, Aaron G.</u> Name	<u>Pacific Western Technologies, LTD.</u> Title OU2 O&M Contractor	<u>12/11/2012</u> Date												
Interviewed <input checked="" type="checkbox"/> at site <input type="checkbox"/> at office <input type="checkbox"/> by phone Phone: <u>720-202-2664</u> Problems/suggestions <input checked="" type="checkbox"/> Report attached: _____															
2. O&M Contractor	<u>Myers, Matt</u> Name	<u>South Davis Sewer District</u> Title: O&M Contractor	<u>12/17/2012</u> Date												
Interviewed <input type="checkbox"/> at site <input type="checkbox"/> at office <input checked="" type="checkbox"/> by email Phone: <u>801-295-3469</u> Problems/suggestions <input checked="" type="checkbox"/> Report attached: _____															
3. Local Business	<u>Bangerter, Bryce</u> Name	<u>Bountiful Family Cleaners</u> Title:	<u>12/07/2012</u> Date												
Interviewed <input type="checkbox"/> at site <input type="checkbox"/> at office <input checked="" type="checkbox"/> by email Phone: _____ Problems/suggestions <input checked="" type="checkbox"/> Report attached: _____															
4. O&M Contractor	<u>Smith, Nathan</u> Name	<u>CDM</u> Title:	<u>12/18/2012</u> Date												
Interviewed <input type="checkbox"/> at site <input type="checkbox"/> at office <input type="checkbox"/> by email <input checked="" type="checkbox"/> Phone: _____ Problems/suggestions <input checked="" type="checkbox"/> Report attached: _____															
5. State Agency	<u>Storck, Michael</u> Name	_____ Title:	<u>03/25/2013</u> Date												
Interviewed <input type="checkbox"/> at site <input type="checkbox"/> at office <input checked="" type="checkbox"/> by mail Phone: _____ Problems/suggestions <input checked="" type="checkbox"/> Report attached: _____															

4.	Permits and Service Agreements	<input type="checkbox"/> Air discharge permit	<input type="checkbox"/> Readily available	<input type="checkbox"/> Up to date	<input checked="" type="checkbox"/> N/A
		<input type="checkbox"/> Effluent discharge	<input checked="" type="checkbox"/> Readily available	<input checked="" type="checkbox"/> Up to date	<input type="checkbox"/> N/A
		<input type="checkbox"/> Waste disposal, POTW	<input checked="" type="checkbox"/> Readily available	<input checked="" type="checkbox"/> Up to date	<input type="checkbox"/> N/A
		<input type="checkbox"/> Other permits: _____	<input type="checkbox"/> Readily available	<input type="checkbox"/> Up to date	<input type="checkbox"/> N/A
Remarks: <u>The state approved the Effluent Discharge in a letter.</u>					
5.	Gas Generation Records		<input type="checkbox"/> Readily available	<input type="checkbox"/> Up to date	<input checked="" type="checkbox"/> N/A
Remarks: _____					
6.	Settlement Monument Records		<input type="checkbox"/> Readily available	<input type="checkbox"/> Up to date	<input checked="" type="checkbox"/> N/A
Remarks: _____					
7.	Groundwater Monitoring Records		<input checked="" type="checkbox"/> Readily available	<input checked="" type="checkbox"/> Up to date	<input type="checkbox"/> N/A
Remarks: _____					
8.	Leachate Extraction Records		<input type="checkbox"/> Readily available	<input type="checkbox"/> Up to date	<input checked="" type="checkbox"/> N/A
Remarks: _____					
9.	Discharge Compliance Records				
		<input type="checkbox"/> Air	<input type="checkbox"/> Readily available	<input type="checkbox"/> Up to date	<input checked="" type="checkbox"/> N/A
		<input type="checkbox"/> Water (effluent)	<input checked="" type="checkbox"/> Readily available	<input checked="" type="checkbox"/> Up to date	<input type="checkbox"/> N/A
Remarks: _____					
10.	Daily Access/Security Logs		<input checked="" type="checkbox"/> Readily available	<input checked="" type="checkbox"/> Up to date	<input type="checkbox"/> N/A
Remarks: _____					
IV. O&M COSTS					
1.	O&M Organization				
		<input type="checkbox"/> State in-house	<input type="checkbox"/> Contractor for state		
		<input type="checkbox"/> PRP in-house	<input type="checkbox"/> Contractor for PRP		
		<input type="checkbox"/> Federal facility in-house	<input type="checkbox"/> Contractor for Federal facility		
		<input checked="" type="checkbox"/> Contractor for the EPA			

2. **O&M Cost Records**

Readily available Up to date
 Funding mechanism/agreement in place Unavailable
Original O&M cost estimate: _____ Breakdown attached

Total annual cost by year for review period if available

From: <u>mm/dd/yyyy</u>	To: <u>mm/dd/yyyy</u>	_____	<input type="checkbox"/> Breakdown attached
Date	Date	Total cost	
From: <u>mm/dd/yyyy</u>	To: <u>mm/dd/yyyy</u>	_____	<input type="checkbox"/> Breakdown attached
Date	Date	Total cost	
From: <u>mm/dd/yyyy</u>	To: <u>mm/dd/yyyy</u>	_____	<input type="checkbox"/> Breakdown attached
Date	Date	Total cost	
From: <u>mm/dd/yyyy</u>	To: <u>mm/dd/yyyy</u>	_____	<input type="checkbox"/> Breakdown attached
Date	Date	Total cost	
From: <u>mm/dd/yyyy</u>	To: <u>mm/dd/yyyy</u>	_____	<input type="checkbox"/> Breakdown attached
Date	Date	Total cost	

Remarks: See Section 4.3 of the current FYR report for an explanation of O&M. OU1 is not yet in the O&M phase and OU2 only begun in late 2012. Therefore, O&M costs will be considered during the next FYR.

3. **Unanticipated or Unusually High O&M Costs during Review Period**
Describe costs and reasons: _____

V. ACCESS AND INSTITUTIONAL CONTROLS Applicable N/A

A. Fencing

1. **Fencing Damaged** Location shown on site map Gates secured N/A
Remarks: _____

B. Other Access Restrictions

1. **Signs and Other Security Measures** Location shown on site map N/A
Remarks: _____

C. Institutional Controls (ICs)

1. Implementation and Enforcement			
Site conditions imply ICs not properly implemented	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> N/A
Site conditions imply ICs not being fully enforced	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> N/A
Type of monitoring (e.g., self-reporting, drive by): _____			
Frequency: _____			
Responsible party/agency: _____			
Contact _____	_____	<u>mm/dd/yyyy</u> _____	_____
Name	Title	Date	Phone no.
Reporting is up to date	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input checked="" type="checkbox"/> N/A
Reports are verified by the lead agency	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input checked="" type="checkbox"/> N/A
Specific requirements in deed or decision documents have been met	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> N/A
Violations have been reported	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No	<input type="checkbox"/> N/A
Other problems or suggestions: <input checked="" type="checkbox"/> Report attached			
Remarks: <u>See section 6.3 of the current FYR</u>			
2. Adequacy <input type="checkbox"/> ICs are adequate <input checked="" type="checkbox"/> ICs are inadequate <input type="checkbox"/> N/A			
Remarks: <u>See section 6.3 of the current FYR</u>			
D. General			
1. Vandalism/Trespassing <input type="checkbox"/> Location shown on site map <input checked="" type="checkbox"/> No vandalism evident			
Remarks: _____			
2. Land Use Changes On Site <input checked="" type="checkbox"/> N/A			
Remarks: _____			
3. Land Use Changes Off Site <input checked="" type="checkbox"/> N/A			
Remarks: _____			
VI. GENERAL SITE CONDITIONS			
A. Roads <input type="checkbox"/> Applicable <input checked="" type="checkbox"/> N/A			
1. Roads Damaged <input type="checkbox"/> Location shown on site map <input type="checkbox"/> Roads adequate <input type="checkbox"/> N/A			
Remarks: _____			
B. Other Site Conditions			
Remarks: <u>In general, the site is well maintained.</u>			
VII. LANDFILL COVERS <input type="checkbox"/> Applicable <input type="checkbox"/> N/A			
A. Landfill Surface			
1. Settlement (low spots) <input type="checkbox"/> Location shown on site map <input checked="" type="checkbox"/> Settlement not evident			
Aerial extent: _____		Depth: _____	
Remarks: _____			

2.	Cracks	<input type="checkbox"/> Location shown on site map	<input checked="" type="checkbox"/> Cracking not evident
	Lengths: _____	Widths: _____	Depths: _____
	Remarks: _____		
3.	Erosion	<input type="checkbox"/> Location shown on site map	<input checked="" type="checkbox"/> Erosion not evident
	Arial extent: _____		Depth: _____
	Remarks: _____		
4.	Holes	<input type="checkbox"/> Location shown on site map	<input checked="" type="checkbox"/> Holes not evident
	Arial extent: _____		Depth: _____
	Remarks: _____		
5.	Vegetative Cover	<input type="checkbox"/> Grass	<input checked="" type="checkbox"/> Cover properly established
	<input type="checkbox"/> No signs of stress	<input type="checkbox"/> Trees/shrubs (indicate size and locations on a diagram)	
	Remarks: _____		
6.	Alternative Cover (e.g., armored rock, concrete)	<input type="checkbox"/> N/A	
	Remarks: <u>Asphalt cover at OU1 is in good condition.</u>		
7.	Bulges	<input type="checkbox"/> Location shown on site map	<input checked="" type="checkbox"/> Bulges not evident
	Arial extent: _____		Height: _____
	Remarks: _____		
8.	Wet Areas/Water Damage	<input checked="" type="checkbox"/> Wet areas/water damage not evident	
	<input type="checkbox"/> Wet areas	<input type="checkbox"/> Location shown on site map	Arial extent: _____
	<input type="checkbox"/> Ponding	<input type="checkbox"/> Location shown on site map	Arial extent: _____
	<input type="checkbox"/> Seeps	<input type="checkbox"/> Location shown on site map	Arial extent: _____
	<input type="checkbox"/> Soft subgrade	<input type="checkbox"/> Location shown on site map	Arial extent: _____
	Remarks: _____		
9.	Slope Instability	<input type="checkbox"/> Slides	<input type="checkbox"/> Location shown on site map
	<input checked="" type="checkbox"/> No evidence of slope instability		
	Arial extent: _____		
	Remarks: _____		
B. Benches			
	<input type="checkbox"/> Applicable	<input checked="" type="checkbox"/> N/A	
(Horizontally constructed mounds of earth placed across a steep landfill side slope to interrupt the slope in order to slow down the velocity of surface runoff and intercept and convey the runoff to a lined channel.)			
1.	Flows Bypass Bench	<input type="checkbox"/> Location shown on site map	<input type="checkbox"/> N/A or okay
	Remarks: _____		
2.	Bench Breached	<input type="checkbox"/> Location shown on site map	<input type="checkbox"/> N/A or okay
	Remarks: _____		

3.	Bench Overtopped	<input type="checkbox"/> Location shown on site map	<input type="checkbox"/> N/A or okay
Remarks: _____			
C. Letdown Channels <input type="checkbox"/> Applicable <input checked="" type="checkbox"/> N/A			
(Channel lined with erosion control mats, riprap, grout bags or gabions that descend down the steep side slope of the cover and will allow the runoff water collected by the benches to move off of the landfill cover without creating erosion gullies.)			
1.	Settlement (Low spots)	<input type="checkbox"/> Location shown on site map	<input type="checkbox"/> No evidence of settlement
Aerial extent: _____		Depth: _____	
Remarks: _____			
2.	Material Degradation	<input type="checkbox"/> Location shown on site map	<input type="checkbox"/> No evidence of degradation
Material type: _____		Aerial extent: _____	
Remarks: _____			
3.	Erosion	<input type="checkbox"/> Location shown on site map	<input type="checkbox"/> No evidence of erosion
Aerial extent: _____		Depth: _____	
Remarks: _____			
4.	Undercutting	<input type="checkbox"/> Location shown on site map	<input type="checkbox"/> No evidence of undercutting
Aerial extent: _____		Depth: _____	
Remarks: _____			
5.	Obstructions	Type: _____	<input type="checkbox"/> No obstructions
<input type="checkbox"/> Location shown on site map		Aerial extent: _____	
Size: _____			
Remarks: _____			
6.	Excessive Vegetative Growth	Type: _____	
<input type="checkbox"/> No evidence of excessive growth			
<input type="checkbox"/> Vegetation in channels does not obstruct flow			
<input type="checkbox"/> Location shown on site map		Aerial extent: _____	
Remarks: _____			
D. Cover Penetrations <input type="checkbox"/> Applicable <input checked="" type="checkbox"/> N/A			
1.	Gas Vents	<input type="checkbox"/> Active	<input type="checkbox"/> Passive
<input type="checkbox"/> Properly secured/locked		<input type="checkbox"/> Functioning	<input type="checkbox"/> Routinely sampled
<input type="checkbox"/> Evidence of leakage at penetration		<input type="checkbox"/> Needs maintenance	<input type="checkbox"/> Good condition
		<input type="checkbox"/> N/A	
Remarks: _____			

2.	Gas Monitoring Probes	<input type="checkbox"/> Properly secured/locked	<input type="checkbox"/> Functioning	<input type="checkbox"/> Routinely sampled	<input type="checkbox"/> Good condition
		<input type="checkbox"/> Evidence of leakage at penetration		<input type="checkbox"/> Needs maintenance	<input type="checkbox"/> N/A
	Remarks: _____				
3.	Monitoring Wells (within surface area of landfill)	<input type="checkbox"/> Properly secured/locked	<input type="checkbox"/> Functioning	<input type="checkbox"/> Routinely sampled	<input type="checkbox"/> Good condition
		<input type="checkbox"/> Evidence of leakage at penetration		<input type="checkbox"/> Needs maintenance	<input type="checkbox"/> N/A
	Remarks: _____				
4.	Extraction Wells Leachate	<input type="checkbox"/> Properly secured/locked	<input type="checkbox"/> Functioning	<input type="checkbox"/> Routinely sampled	<input type="checkbox"/> Good condition
		<input type="checkbox"/> Evidence of leakage at penetration		<input type="checkbox"/> Needs maintenance	<input type="checkbox"/> N/A
	Remarks: _____				
5.	Settlement Monuments	<input type="checkbox"/> Located	<input type="checkbox"/> Routinely surveyed	<input type="checkbox"/> N/A	
	Remarks: _____				
E. Gas Collection and Treatment		<input type="checkbox"/> Applicable	<input checked="" type="checkbox"/> N/A		
1.	Gas Treatment Facilities	<input type="checkbox"/> Flaring	<input type="checkbox"/> Thermal destruction	<input type="checkbox"/> Collection for reuse	
		<input type="checkbox"/> Good condition	<input type="checkbox"/> Needs maintenance		
	Remarks: _____				
2.	Gas Collection Wells, Manifolds and Piping	<input type="checkbox"/> Good condition	<input type="checkbox"/> Needs maintenance		
	Remarks: _____				
3.	Gas Monitoring Facilities (e.g., gas monitoring of adjacent homes or buildings)	<input type="checkbox"/> Good condition	<input type="checkbox"/> Needs maintenance	<input type="checkbox"/> N/A	
	Remarks: _____				
F. Cover Drainage Layer		<input type="checkbox"/> Applicable	<input checked="" type="checkbox"/> N/A		
1.	Outlet Pipes Inspected	<input type="checkbox"/> Functioning	<input type="checkbox"/> N/A		
	Remarks: _____				
2.	Outlet Rock Inspected	<input type="checkbox"/> Functioning	<input type="checkbox"/> N/A		
	Remarks: _____				
G. Detention/Sedimentation Ponds		<input type="checkbox"/> Applicable	<input checked="" type="checkbox"/> N/A		
1.	Siltation	Area extent: _____	Depth: _____	<input type="checkbox"/> N/A	
	<input type="checkbox"/> Siltation not evident				
	Remarks: _____				

2.	Erosion	Area extent: _____	Depth: _____
	<input type="checkbox"/> Erosion not evident		
	Remarks: _____		
3.	Outlet Works	<input type="checkbox"/> Functioning	<input type="checkbox"/> N/A
	Remarks: _____		
4.	Dam	<input type="checkbox"/> Functioning	<input type="checkbox"/> N/A
	Remarks: _____		
H. Retaining Walls		<input type="checkbox"/> Applicable	<input checked="" type="checkbox"/> N/A
1.	Deformations	<input type="checkbox"/> Location shown on site map	<input type="checkbox"/> Deformation not evident
	Horizontal displacement: _____	Vertical displacement: _____	
	Rotational displacement: _____		
	Remarks: _____		
2.	Degradation	<input type="checkbox"/> Location shown on site map	<input type="checkbox"/> Degradation not evident
	Remarks: _____		
I. Perimeter Ditches/Off-Site Discharge		<input checked="" type="checkbox"/> Applicable	<input type="checkbox"/> N/A
1.	Siltation	<input type="checkbox"/> Location shown on site map	<input checked="" type="checkbox"/> Siltation not evident
	Area extent: _____	Depth: _____	
	Remarks: _____		
2.	Vegetative Growth	<input type="checkbox"/> Location shown on site map	<input checked="" type="checkbox"/> N/A
	<input type="checkbox"/> Vegetation does not impede flow		
	Area extent: _____	Type: _____	
	Remarks: _____		
3.	Erosion	<input type="checkbox"/> Location shown on site map	<input checked="" type="checkbox"/> Erosion not evident
	Area extent: _____	Depth: _____	
	Remarks: _____		
4.	Discharge Structure	<input checked="" type="checkbox"/> Functioning	<input type="checkbox"/> N/A
	Remarks: _____		
VIII. VERTICAL BARRIER WALLS		<input checked="" type="checkbox"/> Applicable	<input type="checkbox"/> N/A
1.	Settlement	<input type="checkbox"/> Location shown on site map	<input checked="" type="checkbox"/> Settlement not evident
	Area extent: _____	Depth: _____	
	Remarks: _____		

2.	Performance Monitoring	Type of monitoring: <u>Groundwater monitoring</u>
	<input type="checkbox"/> Performance not monitored	
	Frequency: _____	<input type="checkbox"/> Evidence of breaching
	Head differential: _____	
	Remarks: <u>See section 6.4 of the current report.</u>	
IX. GROUNDWATER/SURFACE WATER REMEDIES <input checked="" type="checkbox"/> Applicable <input type="checkbox"/> N/A		
A. Groundwater Extraction Wells, Pumps and Pipelines <input checked="" type="checkbox"/> Applicable <input type="checkbox"/> N/A		
1.	Pumps, Wellhead Plumbing and Electrical	
	<input checked="" type="checkbox"/> Good condition <input checked="" type="checkbox"/> All required wells properly operating	<input type="checkbox"/> Needs maintenance <input type="checkbox"/> N/A
	Remarks: <u>EW-4 has condensation. Source is unknown but under investigation.</u>	
2.	Extraction System Pipelines, Valves, Valve Boxes and Other Appurtenances	
	<input checked="" type="checkbox"/> Good condition	<input type="checkbox"/> Needs maintenance
	Remarks: _____	
3.	Spare Parts and Equipment	
	<input checked="" type="checkbox"/> Readily available	<input type="checkbox"/> Good condition <input type="checkbox"/> Requires upgrade <input type="checkbox"/> Needs to be provided
	Remarks: _____	
B. Surface Water Collection Structures, Pumps and Pipelines <input type="checkbox"/> Applicable <input checked="" type="checkbox"/> N/A		
1.	Collection Structures, Pumps and Electrical	
	<input type="checkbox"/> Good condition	<input type="checkbox"/> Needs maintenance
	Remarks: _____	
2.	Surface Water Collection System Pipelines, Valves, Valve Boxes and Other Appurtenances	
	<input type="checkbox"/> Good condition	<input type="checkbox"/> Needs maintenance
	Remarks: _____	
3.	Spare Parts and Equipment	
	<input type="checkbox"/> Readily available	<input type="checkbox"/> Good condition <input type="checkbox"/> Requires upgrade <input type="checkbox"/> Needs to be provided
	Remarks: _____	
C. Treatment System <input checked="" type="checkbox"/> Applicable <input type="checkbox"/> N/A		

<p>1. Treatment Train (check components that apply)</p> <p><input type="checkbox"/> Metals removal <input type="checkbox"/> Oil/water separation <input type="checkbox"/> Bioremediation</p> <p><input type="checkbox"/> Air stripping <input checked="" type="checkbox"/> Carbon adsorbers</p> <p><input type="checkbox"/> Filters: _____</p> <p><input type="checkbox"/> Additive (e.g., chelation agent, flocculent): _____</p> <p><input type="checkbox"/> Others: _____</p> <p><input checked="" type="checkbox"/> Good condition <input type="checkbox"/> Needs maintenance</p> <p><input type="checkbox"/> Sampling ports properly marked and functional</p> <p><input type="checkbox"/> Sampling/maintenance log displayed and up to date</p> <p><input checked="" type="checkbox"/> Equipment properly identified</p> <p><input checked="" type="checkbox"/> Quantity of groundwater treated: <u>53,543,600 gallons</u></p> <p><input type="checkbox"/> Quantity of surface water treated annually: _____</p> <p>Remarks: <u>The GAC is not lasting as long as it was originally projected.</u></p>
<p>2. Electrical Enclosures and Panels (properly rated and functional)</p> <p><input type="checkbox"/> N/A <input checked="" type="checkbox"/> Good condition <input type="checkbox"/> Needs maintenance</p> <p>Remarks: _____</p>
<p>3. Tanks, Vaults, Storage Vessels</p> <p><input type="checkbox"/> N/A <input checked="" type="checkbox"/> Good condition <input type="checkbox"/> Proper secondary containment <input type="checkbox"/> Needs maintenance</p> <p>Remarks: _____</p>
<p>4. Discharge Structure and Appurtenances</p> <p><input type="checkbox"/> N/A <input checked="" type="checkbox"/> Good condition <input type="checkbox"/> Needs maintenance</p> <p>Remarks: _____</p>
<p>5. Treatment Building(s)</p> <p><input type="checkbox"/> N/A <input checked="" type="checkbox"/> Good condition (esp. roof and doorways) <input type="checkbox"/> Needs repair</p> <p><input checked="" type="checkbox"/> Chemicals and equipment properly stored</p> <p>Remarks: _____</p>
<p>6. Monitoring Wells (pump and treatment remedy)</p> <p><input checked="" type="checkbox"/> Properly secured/locked <input checked="" type="checkbox"/> Functioning <input checked="" type="checkbox"/> Routinely sampled <input type="checkbox"/> Good condition</p> <p><input type="checkbox"/> All required wells located <input type="checkbox"/> Needs maintenance <input type="checkbox"/> N/A</p> <p>Remarks: <u>MW-2 on Holly Refinery property was damaged during normal work by Holly Refinery. Part of the well casing collapsed and needs to be replaced.</u></p>
<p>D. Monitoring Data</p>
<p>1. Monitoring Data</p> <p><input type="checkbox"/> Is routinely submitted on time <input checked="" type="checkbox"/> Is of acceptable quality</p>

2. Monitoring Data Suggests: <input checked="" type="checkbox"/> Groundwater plume is effectively contained <input type="checkbox"/> Contaminant concentrations are declining
E. Monitored Natural Attenuation
1. Monitoring Wells (natural attenuation remedy) <input checked="" type="checkbox"/> Properly secured/locked <input checked="" type="checkbox"/> Functioning <input checked="" type="checkbox"/> Routinely sampled <input checked="" type="checkbox"/> Good condition <input type="checkbox"/> All required wells located <input type="checkbox"/> Needs maintenance <input type="checkbox"/> N/A Remarks: <u>See the report for specifics regarding DW-12, EW-4 and MW-2.</u>
X. OTHER REMEDIES
If there are remedies applied at the site and not covered above, attach an inspection sheet describing the physical nature and condition of any facility associated with the remedy. An example would be soil vapor extraction.
XI. OVERALL OBSERVATIONS
A. Implementation of the Remedy Describe issues and observations relating to whether the remedy is effective and functioning as designed. Begin with a brief statement of what the remedy is designed to accomplish (e.g., to contain contaminant plume, minimize infiltration and gas emissions). <u>See protectiveness statement in section 10.0 of the current FYR.</u>
B. Adequacy of O&M Describe issues and observations related to the implementation and scope of O&M procedures. In particular, discuss their relationship to the current and long-term protectiveness of the remedy. <u>OU1 has not yet entered the O&M phase. See section 4.3 of the current FYR for a discussion of the OU2 O&M activities.</u>
C. Early Indicators of Potential Remedy Problems <u>None identified.</u>
D. Opportunities for Optimization <u>Additional evaluation of the GWTS may identify improvements that could increase the amount of mass removed and determine improvements that might lengthen the life of the GAC.</u>

Appendix E: Photographs from Site Inspection Visit



Bag filters 1 and 2 inside the groundwater treatment facility



Operations equipment, including flow meters, located next to the contaminated groundwater tank



Leaking domestic monitoring well (DW-12) in front of groundwater treatment facility. The well is leaking groundwater containing PCE concentrations of up to 12 $\mu\text{g/L}$



Treated groundwater discharge point alongside weir located west of the groundwater treatment facility



Extraction well (EW-4). Note build-up of moisture



Hatchco property now a paved parking lot (facing south)



Monitoring well (IW-25) on Hatchco property with secured cover



East entrance of Bountiful Family Cleaners



Sign on fence in front of the groundwater treatment facility



Entrance to groundwater treatment facility (facing east)



Utah Commuter Rail stop located southwest of the Hatcho property (the Utah Commuter Rail Parking Lot)

Appendix F: Environmental Covenant

ENVIRONMENTAL COVENANT

This Environmental Covenant is entered into by Security Investment Ltd. ("Owner"), the United States Environmental Protection Agency ("EPA"), and the Utah Department of Environmental Quality ("DEQ"), (collectively "Parties") pursuant to Utah Code Ann. §§ 57-25-101 et seq. ("Act") and concerns the Property described in Paragraph B.2 below. The EPA and DEQ each enter this Environmental Covenant in their capacity as an Agency as defined in the Act. The EPA and DEQ assume no affirmative obligations through the execution of this Environmental Covenant.

A. Environmental Response Project

1. EPA's studies at the Bountiful/Woods Cross 5th South PCE Plume Site ("Site") located in Bountiful, West Bountiful, and Woods Cross, Utah have determined that a tetrachloroethylene (PCE)-contaminated groundwater plume (PCE Plume), from past drycleaning operations at 344 South 500 West in Bountiful, extends from the source west under the Holly Refinery property to beyond 1100 West Street in West Bountiful and then under Owner's property at approximately 145 South 1100 West, West Bountiful, Utah. The PCE Plume is designated as Operable Unit 2 ("OU 2") at the Site.
2. In September 2007 EPA issued, with DEQ concurrence, the Record of Decision for the cleanup of OU2. The cleanup plan included a groundwater extraction and treatment system that proposed placing extraction wells west of 1100 West Street in West Bountiful and 2 extraction wells and the treatment buildings on Holly Refinery property. The pipeline from the extraction well to the treatment building will cross the Owner's property.
3. Records regarding the Site are available at the Davis County Library, South Branch, 725 South Main Street, Bountiful, Utah 84010 (801-295-8732) and the EPA Superfund Record Center, 1595 Wynkoop Street, Denver, Colorado 80202 (1-800-277-8917, Ext. 6473).

B. Covenant

Now therefore, the Parties agree to the following:

1. Environmental Covenant This instrument is an environmental covenant developed and executed pursuant to the Act.
2. Property This Environmental Covenant concerns real property, located at approximately 150 South 1100 West in West Bountiful, Davis County, Utah, and more particularly described in Exhibit A attached hereto and hereby incorporated by reference herein ("Property").
3. Owner Security Investment Ltd., a Utah Limited Partnership, whose offices are located at 138 South Main, P.O. Box 190, Bountiful, Utah 84010 is the owner of the Property in fee simple. Consistent with Paragraph B7 of this Environmental Covenant, the obligations of the Owner are

imposed on assigns, successors in interest, including without limitation future owners of an interest in fee simple, mortgagees, lenders, easement holders, lessees, and the like ("Transferee").

4. Holder Owner, whose address is listed above, is the Holder of this Environmental Covenant.

5. Agency DEQ and EPA are each an "Agency", as defined in Section 57-25-102(2) of the Utah Act, in regards to this Environmental Covenant. EPA and DEQ may be referred to herein collectively as the "Agencies".

6. Activity and Use Limitations As part of the Environmental Response Project described above, the Owner hereby imposes and agrees to implement, administer, and maintain the following activity and use limitations. In the event the Owner conveys or transfers an interest in the Property or any portion thereof to another party, the Owner shall take necessary measures to ensure that the Transferee will implement, administer, and maintain the following activity and use limitations:

The Property will not be used in any manner that would interfere with or adversely affect the implementation, integrity, or protectiveness of the response actions performed or to be performed at the Site.

7. Running with the Land This Environmental Covenant shall be binding upon the Owner and any Transferee during that person's period of control, occupation, or ownership interest, and shall run with the land, pursuant to the Act and subject to amendment or termination as set forth herein.

8. Compliance Enforcement This Environmental Covenant may be enforced pursuant to the Act. Failure to timely enforce compliance with this Environmental Covenant or the activity and use limitations contained herein by any party shall not bar subsequent enforcement by such party, and shall not be deemed a waiver of the party's right to take action to enforce any non-compliance. Nothing in this Environmental Covenant shall restrict the DEQ or EPA from exercising any authority under applicable law.

9. Rights of Access Owner hereby grant to the Agencies, their agents, contractors, and employees the right of access to the Property for inspection, implementation, or enforcement of this Environmental Covenant and for construction, operation and maintenance of the Environmental Response Project described above.

10. Compliance Reporting Upon request, Owner or any Transferee or Holder shall submit written documentation to the DEQ and EPA verifying that the activity and use limitations remain in place and are being followed.

11. Notice upon Conveyance Each instrument hereafter conveying any interest in the **Property or any portion of the Property shall be substantially in the following form:**

THE INTEREST CONVEYED HEREBY IS SUBJECT TO AN ENVIRONMENTAL COVENANT, DATED 20_, RECORDED IN THE DEED OR OFFICIAL RECORDS OF THE COUNTY RECORDER ON , 20_, IN [DOCUMENT , or BOOK , PAGE ,J. THE ENVIRONMENTAL COVENANT CONTAINS THE FOLLOWING ACTIVITY AND USE LIMITATIONS:

The Property will not be used in any manner that would interfere with or adversely affect the implementation, integrity, or protectiveness of the response actions performed or to be performed at the Site.

Owner shall notify the Agencies within ten (10) days after each conveyance of an interest in any portion of the Property. Owner's notice shall include the name, address, and telephone number of the Transferee, a copy of the deed, or other documentation evidencing the conveyance, and an unsurveyed plat that shows the boundaries of the property being transferred.

12. Representations and Warranties Owner hereby represents and warrants to the other signatories hereto:

- A. that the Owner is the sole owner of the Property;
- B. that the Owner holds fee simple title to the Property which is subject to the interests or encumbrances identified in Exhibit B (Ownership and Encumbrance Title Abstract) attached hereto and incorporated by reference herein;
- C. that the Owner has the power and authority to enter into this Environmental Covenant, to grant the rights and interests herein provided and to carry out all obligations hereunder;

13. Amendment or Termination This Environmental Covenant may be amended or terminated pursuant to the Act. The requesting party shall reimburse the DEQ for costs associated with DEQ's review of a request for amendment or termination.

14. Effective Date. Severability and Governing Law The effective date of this Environmental Covenant shall be the date upon which the fully executed Environmental Covenant has been recorded as a document of record for the Property with the County Recorder. If any provision of this Environmental Covenant is found to be unenforceable in any respect, the validity, legality, and enforceability of the remaining provisions shall not in any way be affected or impaired. This Environmental Covenant shall be governed by and interpreted in accordance with the laws of the State of Utah.

15. Recordation and Distribution of Environmental Covenant Within *thirty* (30) days after the date of the final required signature upon this Environmental Covenant, EPA shall file this Environmental Covenant for recording in the same manner as a deed to the Property, with the Davis County Recorder's Office. The EPA shall distribute a file- and date-stamped copy of the recorded Environmental Covenant to: the DEQ; EPA; the City of West Bountiful; and, each person holding a recorded interest in the Property.

16. Notice Unless otherwise notified in writing by or on behalf of the current owner, DEQ, or EPA any document or communication required by this Environmental Covenant shall be submitted to:

DEQ:

Project Manager (Bountiful/Woods Cross 5th South PCE Plume Site)
Division of Environmental Response and Remediation
DEQ
P.O. Box 144840
Salt Lake City, Utah 84114-4840

EPA:

Regional Institutional Control Coordinator
U.S. EPA-Region 8
Mail Code: 8EPR-SR
1595 Wynkoop Street
Denver, CO 80202

Remedial Project Manager (Bountiful/Woods Cross 5th South PCE Plume Site)
U.S EPA - Region 8
Mail Code: 8EPR-SR
1595 Wynkoop Street
Denver, CO 80202

Owner:

Alice S. Johnson or Mary S. Hepworth. Partners
138 South Main
P.O. Box 190
Bountiful, Utah 84010

17. Governmental Immunity In executing this covenant, the DEQ does not waive governmental immunity afforded by law. The Owner, for itself and its successors, assigns, and Transferees, hereby fully and irrevocably releases and covenants not to sue the State of Utah, its agencies, successors, departments, agents, and employees ("State") from any and all claims, damages, or causes of action arising from, or on account of the activities carried out pursuant to this Environmental Covenant except for an action to amend or terminate the Environmental Covenant pursuant to sections 57-25-109 and 57-25-110 of the Utah Code Ann. or for a claim against the State arising directly or indirectly from or out of actions of employees of the State that would result in (i) liability to the State of Utah under Section 63G-7-301 of the Governmental Immunity Act of Utah, Utah Code Ann. Section 63G-7-101 et seq. or (ii) individual liability for actions not covered by the Governmental Immunity Act as indicated in Sections 63G-7-202 and -902 of the Governmental Immunity Act, as determined in a court of law.

{Remainder of page intentionally left blank}

The undersigned representatives of Owner represents and certifies that they are authorized to execute this Environmental Covenant.

IT IS SO AGREED:

Security Investment Ltd.

By: Alice S. Johnson, gen. partner 10/31/11
Alice S. Johnson, General Partner Date
P.O. Box 190
Bountiful, Utah 84011-0190
801-295-3351

And

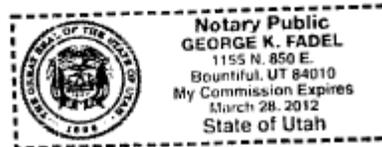
By: Mary S. Hepworth, gen. partner 10/31/11
Mary S. Hepworth, General Partner Date
P.O. Box 190
Bountiful, Utah 84011-0190
801-295-3351

State of UTAH)
) : ss.
County of DAVIS)

Before me, a notary public, in and for said county and state, personally appeared Alice S. Johnson and Mary S. Hepworth, duly authorized representatives of Security Investment, Ltd., who acknowledged to me that they did execute the foregoing instrument on behalf of Security Investment Ltd. this 5th day of January, 20~~11~~ 2012

IN TESTIMONY WHEREOF, I have subscribed my name and affixed my official seal this 5th day of January, 20~~11~~ 2012

George K. Fadel
Notary Public



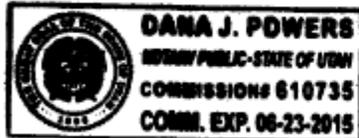
UTAH DEPARTMENT OF ENVIRONMENTAL QUALITY

The Utah Department of Environmental Quality authorized representative identified below hereby approves the foregoing Environmental Covenant pursuant to Utah Code Ann. Sections 57-25-102(2) and 57-25-104(1)(e).

By: Brent H. Everett
Name: Brent H. Everett Date: 14 FEBRUARY 2012
Title: Director, Division of Environmental Response and Remediation
Utah Department of Environmental Quality

STATE OF UTAH)
: ss.
County of Salt Lake)

Before me, a notary public, in and for said county and state, personally appeared Brent H. Everett, an authorized representative of the Utah Department of Environmental Quality, who acknowledged to me that he did execute the foregoing instrument this 14 day of February, 2012



Dana J. Powers
Notary Public
My Commission expires: 6/23/2015

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY



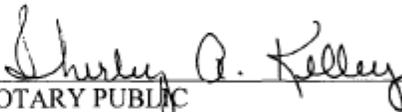
Bill Murray, Director
Superfund Remedial Response Program
Office of Ecosystems and Remediation
U.S. Environmental Protection Agency, Region 8

1/18/12
Date

STATE OF COLORADO)
 : ss.
COUNTY OF DENVER)

On this 18th day of January, 2012, before me, a notary public, in and for said county and state, personally appeared Bill Murray, Director of the Superfund Remedial Response Program, Office of Ecosystems Protection and Remediation at the United States Environmental Protection Agency, Region 8, who acknowledged to me that he did execute the foregoing instrument.

IN TESTIMONY WHEREOF, I have subscribed my name and affixed my official seal this 18th day of January, 2012.



NOTARY PUBLIC



EXHIBIT A
AS SURVEYED LEGAL DESCRIPTIONS OF PROPERTY

BEGINNING AT A POINT WHICH IS SOUTH 00°02'56" EAST 1,182.92 FEET ALONG SECTION LINE (BASIS OF BEARING 2646.53' SECTION MON. TO SECTION MON.) FROM THE CENTER OF SECTION 23 "AN EXISTING DAVIS COUNTY BRASS CAP IN CONCRETE" TOWNSHIP 2 NORTH, RANGE 1 WEST, SALT LAKE BASE & MERIDIAN.

THENCE ALONG THE SOUTHERLY BOUNDARY OF MILL CREEK MEADOWS SUBDIVISION THE FOLLOWING 3 COURSES: (1) EAST, A DISTANCE OF 806.53 FEET; (2) NORTH 00°02'57" WEST, A DISTANCE OF 85.80 FEET; (3) SOUTH 89°50'55" EAST, A DISTANCE OF 760.96 FEET TO THE WESTERLY BOUNDS OF DAVIS COUNTY PARCEL; THENCE SOUTH 00°0r33" WEST, ALONG SAID PARCEL AMONG OTHER AD-JOINERS DISTANCE OF 749.54 FEET; THENCE NORTH 89°48'22" EAST, GENERALLY ALONG A WIRE FENCE A DISTANCE OF 797.62 FEET TO THE WESTERLY R.O.W. OF 1100 WEST STREET; THENCE SOUTH 00°16'24" EAST ALONG SAID R.O.W., A DISTANCE OF 109.53 FEET TO ADJOINER; THENCE NORTH 89°5r53' WEST, GENERALLY ALONG A WIRE FENCE A DISTANCE OF 2,582.73 FEET MORE OR LESS TO AD-JOINER THENCE NORTH 00.08'07" EAST, A DISTANCE OF 110.00 FEET; THENCE SOUTH 89°51'53" EAST, A DISTANCE OF 217.82 FEET TO DESCRIBED ABOVE QUARTER SECTION LINE; THENCE NORTH 00°02'56" WEST, ALONG SECTION LINE A DISTANCE OF 657.00 FEET TO THE POINT OF BEGINNING.

CONTAINING 31.65 ACRES, MORE OR LESS. TOGETHER WITH AN EXISTING MILL CREEK R.O.W. EASEMENT DESCRIPTION BOOK 3862 PAGE 862

BEGINNING AT A POINT WHICH IS SOUTH 00°02'56" EAST 1,182.92 FEET ALONG SECTION LINE (BASIS OF BEARING 2646.53' SECTION MON. TO SECTION MON.) FROM THE CENTER OF SECTION 23 "AN EXISTING DAVIS COUNTY BRASS CAP IN CONCRETE" TOWNSHIP 2 NORTH, RANGE 1 WEST, SALT LAKE BASE & MERIDIAN.

THENCE EAST, ALONG MILL CREEK MEADOWS SUB., A DISTANCE OF 806.53 FEET; THENCE NORTH 00°02'57" WEST ALONG SAID SUB. BOUNDARY, A DISTANCE OF 10.00 FEET TO THE POINT OF A NON TANGENT CURVE TO THE LEFT, OF WHICH THE RADIUS POINT LIES NORTH 00°19'55" EAST, A RADIAL DISTANCE OF 225.00 FEET ALONG THE ARC, THROUGH A CENTRAL ANGLE OF 28°54'41", A DISTANCE OF 113.56 FEET TO A POINT OF REVERSE CURVE TO THE RIGHT HAVING A RADIUS OF 390.41 FEET AND A CENTRAL ANGLE OF 28°43'51"; THENCE EASTERLY ALONG THE ARC, A DISTANCE OF 195.80 FEET TO THE SOUTHERLY BOUNDARY OF SAID SUBDIVISION; THENCE SOUTH 89°50'55" EAST, A DISTANCE OF 464.08 FEET TO THE WESTERLY BOUNDARY OF DAVIS COUNTY'S PARCEL; THENCE SOUTH 00°01'33" WEST, ALONG SAID PARCEL, A DISTANCE OF 85.00 FEET; THENCE NORTH 89°50'55" WEST, A DISTANCE OF

464.29 FEET TO THE POINT OF A CURVE OF TANGENCY TO THE LEFT, OF WHICH THE RADIUS POINT LIES SOUTH 00°02'54" EAST, A RADIAL DISTANCE OF 305.41 FEET; THENCE WESTERLY ALONG THE ARC, THROUGH A CENTRAL ANGLE OF 28°20'08" A DISTANCE OF 153.17 FEET TO A POINT OF REVERSE CURVE TO THE RIGHT HAVING A RADIUS OF 310.0 FEET AND A CENTRAL ANGLE OF 28°23'01"; THENCE WESTERLY ALONG THE ARC, A DISTANCE OF 154.65 FEET; THENCE WEST, A DISTANCE OF 826.70 FEET; THENCE NORTH 00°02'56" WEST, A DISTANCE OF 285.81 FEET; THENCE EAST, A DISTANCE OF 20.00 FEET TO DESCRIBED ABOVE QUARTER SECTION LINE; THENCE SOUTH 00°02'56" EAST, A DISTANCE OF 210.81 FEET TO THE POINT OF BEGINNING. CONTAINING 3.03 ACRES, MORE OR LESS.

ALSO TOGETHER WITH AN EXISTING MILL CREEK R.O.W. EASEMENT DESCRIPTION BOOK 4356 PAGE 1138

BEGINNING AT A POINT WHICH IS SOUTH 00°02'56" EAST 1257.92 FEET ALONG SECTION LINE (BASIS OF BEARING 2646.53" SECTION MON. TO SECTION MON.) AND WEST 20.00 FEET FROM THE CENTER OF SECTION 23 "AN EXISTING DAVIS COUNTY BRASS CAP IN CONCRETE" TOWNSHIP 2 NORTH, RANGE 1 WEST, SALT LAKE BASE & MERIDIAN.

THENCE NORTH 88°56'14" WEST, A DISTANCE OF 335.53 FEET TO THE EASTERLY BOUNDARY LINE OF THE BUREAU OF RECLAMATION 90 FOOT WIDE EASEMENT AS DESCRIBED IN BOOK 81 PAGE 634 OF DAVIS COUNTIES' RECORDS; THENCE NORTH 31°48'00" WEST, ALONG SAID BOUNDARY LINE A DISTANCE OF 132.97 FEET TO THE POINT OF CURVE OF A NON TANGENT CURVE TO THE LEFT, OF WHICH THE RADIUS POINT LIES NORTH 58°11'50" EAST, A RADIAL DISTANCE OF 47.00 FEET; THENCE SOUTHEASTERLY ALONG THE ARC, THROUGH A CENTRAL ANGLE OF 58°12'00", A DISTANCE OF 47.75 FEET; THENCE EAST, A DISTANCE OF 365.51 FEET; THENCE SOUTH 00°02'56" EAST, A DISTANCE OF 97.00 FEET, TO POINT OF BEGINNING.

CONTAINING 0.7841 ACRES, MORE OR LESS.

EXHIBIT B
OWNERSHIP AND ENCUMBRANCE TITLE ABSTRACT'

ATTACHMENT 2 – OWNERSHIP AND ENCUMBRANCE TITLE ABSTRACT
TO-032 BOUNTIFUL
January 4, 2011

Parcel ID	Tax Info	Instrument	Instrument Type	Grantor	Grantee	Instrument Date	Recorded Date	Description
06-033-0046	T-002	# 2510046 B4956/P858 B-001	Memorandum of Lease	Security Investment Ltd.	Manheim Services Corporation	12/03/2009	2/05/2009	Memorandum of Amended and Restated Ground Lease gives notice that Amended and Restated Ground Lease dated as of March 20, 2009 by and between Security Investment, Ltd., a Utah limited partnership and Manheim Services Corporation, a Delaware corporation d/b/a Manheim Utah and d/b/a Total Resources Auctions leased real estate with improvements with an initial term that will continue not more than three years from execution of ground lease. If the ground lease continues after the initial term, a primary term will continue for five years. The tenant also has the right to extend the ground lease for up to three successive five-year extension periods.
		# 2391975 B4613/P801 B-007	Judgment	Second Judicial District Court in and for Davis County, Utah	William R. Smith and Ludean A. Smith, as Trustees of the Smith Family Revocable Trust; Mack G. Smith and Carolyn Smith, as Trustees of the Mack G. and Carolyn Smith Revocable Trust; J. Lynn Smith as Trustee of the J. Lynn Smith Living Trust; and Cindy S. Hatch	9/04/2008	9/11/2008	Final Order, Judgment and Decree Quieting Title to Plaintiffs, issued by the Second Judicial District Court in and for Davis County, Utah. The Plaintiffs are listed as: William R. Smith and Ludean A. Smith, as Trustees of the Smith Family Revocable Trust; Mack G. Smith and Carolyn Smith, as Trustees of the Mack G. and Carolyn Smith Revocable Trust; J. Lynn Smith as Trustee of the J. Lynn Smith Living Trust; and Cindy S. Hatch. The parcel of land subject to this judgment is 06-030-0010. This parcel number has since been deleted from Davis County records, but was once part of the current parcel # 06-033-0046.
		# 2301948 B4356/P1138 B-008	R/W and Easement Grant	Security Investment Ltd.	Davis County, UT	8/21/2007	8/29/2007	Right-of-Way and Easement for a Storm Drain. Security Investment Ltd. grants to Davis County, UT a perpetual right-of-way and easement for the purpose of digging and constructing a flood and storm water disposal system and operating, maintaining, repairing, inspecting, protecting and replacing a storm water disposal system over and across the subject property.
		# 2299645 B4351/P848 B-009	Agreement	William R. Smith, as Trustee of the Smith Family Revocable Trust; Mack G. Smith, as Trustee of the Mack G. and Carolyn Smith Revocable Trust; J. Lynn Smith as Trustee of the J. Lynn Smith Living Trust; and Cindy S. Hatch	ConocoPhillips Company	5/15/2007	8/22/2007	Pipeline Termination and Surface Damages Agreement made between ConocoPhillips Company, a Delaware corporation, and William R. Smith, as Trustee of the Smith Family Revocable Trust; Mack G. Smith, as Trustee of the Mack G. and Carolyn Smith Revocable Trust; J. Lynn Smith as Trustee of the J. Lynn Smith Living Trust; and Cindy S. Hatch (the "Owners"). The parties agreed to terminate an easement created when a predecessor-in-interest of the Owners entered into a Right-of-Way Agreement with ConocoPhillips Company's predecessor-in-interest, Wasatch Oil Refining Company, dated July 29, 1932. ConocoPhillips Company no longer needed the pipeline and abandoned what part of the pipeline that remained after portions had been removed. The parties also expressed their desire to resolve claims for surface damages resulting from ConocoPhillips Company's cleaning of portions of the pipeline from the property, and to settle the Owners' claims for compensation resulting from such cleaning.

**ATTACHMENT 2 – OWNERSHIP AND ENCUMBRANCE TITLE ABSTRACT
TO-032 BOUNTIFUL
January 4, 2011**

Parcel ID	Tax Info	Instrument	Instrument Type	Grantor	Grantee	Instrument Date	Recorded Date	Description
06-033-0046 (con't)	T-002 (con't)	# 2017602 B3623/P1144 B-002	Resolution	Davis County Commission	South Davis Recreation Special Service District	6/15/2004	9/14/2004	A Resolution Establishing and Organizing the South Davis Recreation Special Service District, Establishing the Boundaries of Said District, Designating the Type of Service to be Performed Within the Boundaries of the District, Providing for the Appointment of an Initial Administrative Control Board of the District and Prescribing and Setting Forth Other Details and Matters in Connection Therewith.
		#1840262 B3242/P720 B-010	Easement	Manheim Services Corp.	West Bountiful City	2/25/2003	3/07/2003	Grant of Waterline Easement. Manheim Services Corp. granted, bargained and conveyed to West Bountiful City a twenty-foot wide perpetual easement and right-of-way, together with the right of ingress and egress for the construction, ownership, operation, maintenance, repair and ultimate replacement of an underground water transmission pipeline and appurtenant facilities on, over, across, under and through the subject property.
		# 1535451 B2539/P17 B-003	Easement	Security Investment Ltd.	West Bountiful City	7/28/1999	7/29/1999	Grant of a twenty-foot wide perpetual easement and right-of-way, together with the right of ingress and egress for the construction, ownership, operation, maintenance, repair and ultimate replacement of an underground water transmission pipeline and appurtenant facilities on, over, across, under and through grantor's land.
		# 1522019 B2514/P252 B-004	Ordinance	West Bountiful City Corp.		5/18/1999	6/08/1999	Ordinance Annexing Specific Property to West Bountiful, Utah. The ordinance stipulated that the property was to be zoned Light Industrial and Agricultural. That portion lying west of the projection of the existing 1450 West Street was to be Light Industrial, and that portion lying to the east of said projection was to be Agricultural.
		# 1387942 B2254/P1167 B-011	Application for Green Belt	Security Investment Ltd.				Application for Assessment and Taxation of Agricultural Land. This document indicates that this parcel was being leased by George Bros. at the time.
		# 1364261 B2209/P1768 B-012	Quitclaim Deed	Security Investment Company	Security Investment Ltd.	11/30/1997	12/01/1997	Conveyed parcel from Security Investment Company, a Utah corporation, to Security Investment Ltd., a Utah limited partnership. Deed was signed by Nora A. Stahle as President of Security Investment Company.
		# 1360544 B2202/P1010 B-013	Affidavit	New State Inc.				In this affidavit, Owen Kent Covey, President of New State, Inc., deposed and stated that the Jordan Fur and Reclamation Company had changed its name to New State, Inc. It is unclear why Davis County lists this document on the title abstract for this property.

ATTACHMENT 2 – OWNERSHIP AND ENCUMBRANCE TITLE ABSTRACT
TO-032 BOUNTIFUL
January 4, 2011

Parcel ID	Tax Info	Instrument	Instrument Type	Grantor	Grantee	Instrument Date	Recorded Date	Description
06-033-0046 (con't)	T-002 (con't)	# 831954 81247/P761 B-014	Easement	Security Investment Company	South Davis Co. Sewer Improvement District	1/11/1988	7/28/1988	Security Investment Company conveyed to the South Davis County Sewer Improvement District a thirty-foot wide perpetual easement to construct, reconstruct, operate, repair, replace and maintain a sewer main collection line and appurtenant structures including mains, submains and building sewers.
06-034-0019	T-003	# 2171215 84042/P1170 B-015	Quitclaim Deed	Woods Cross Refining Company LLC	West Bountiful City	5/22/2006	5/25/2006	Woods Cross Refining Company LLC, a Delaware limited liability company, quitclaimed to West Bountiful City a tract of land described as: Beginning at a point which is 11.95 chains (788.7 feet) North, 30.58 feet West, Salt Lake Base and Meridian in the Town of West Bountiful, and running thence South 112 feet; thence East 26.47 feet, more or less, to the East right-of-way line of 1100 West; thence North 112 feet along said right-of-way line; thence West 25.93, more or less, feet to the point of beginning, containing 0.067 acre.
		# 2017602 83623/P1144 B-002	Resolution	Davis County Commission	South Davis Recreation Special Service District	6/15/2004	9/14/2004	A Resolution Establishing and Organizing the South Davis Recreation Special Service District, Establishing the Boundaries of Said District, Designating the Type of Service to be Performed Within the Boundaries of the District, Providing for the Appointment of an Initial Administrative Control Board of the District and Prescribing and Setting Forth Other Details and Matters in Connection Therewith.
		# 1387945 82254/P1170 B-016	Application for Green Belt	Security Investment Ltd.		3/12/1998	3/12/1998	Application for Assessment and Taxation of Agricultural Land. This document indicates that this parcel was being leased by George Bros. at the time.
		# 1364259 82209/P1765 B-017	Quitclaim Deed	Security Investment Company	Security Investment Ltd.	11/30/1997	12/01/1997	Conveyed parcel from Security Investment Company, a Utah corporation, to Security Investment Ltd., a Utah limited partnership. Deed was signed by Nora A. Stahle as President of Security Investment Company.
06-034-0097	T-004	# 2102111 83862/P862 B-018	R/W and Easement Grant	Security Investment Ltd.	Davis County, UT	8/15/2005	9/01/2005	In this Right-of-Way and Easement for a Storm Drain, Security Investment Ltd. conveyed to Davis County a perpetual right-of-way and easement for the purpose of digging and constructing a flood and storm water disposal system and operating, maintain, repairing, inspecting, protecting and replacing a storm water disposal system over and across the subject property.
		# 2017602 83623/P1144 B-002	Resolution	Davis County Commission	South Davis Recreation Special Service District	6/15/2004	9/14/2004	A Resolution Establishing and Organizing the South Davis Recreation Special Service District, Establishing the Boundaries of Said District, Designating the Type of Service to be Performed Within the Boundaries of the District, Providing for the Appointment of an Initial Administrative Control Board of the District and Prescribing and Setting Forth Other Details and Matters in Connection Therewith.

ATTACHMENT 2 – OWNERSHIP AND ENCUMBRANCE TITLE ABSTRACT
TO-032 BOUNTIFUL
January 4, 2011

Parcel ID	Tax Info	Instrument	Instrument Type	Grantor	Grantee	Instrument Date	Recorded Date	Description
06-034-0097 (con't)	T-004 (con't)	# 1755964 B3050/P287 B-019	Application for Green Belt	Security Investment Ltd.		5/23/2002	5/23/2002	Application for Assessment and Taxation of Agricultural Land. This document indicates that this parcel was being leased by George Bros. at the time.
		# 1716912 B2956/P1447 B-020	Warranty Deed	Security Investment Ltd.	Davis County, UT	12/28/2001	1/02/2002	Security Investment Ltd. conveyed to Davis County parcel # 06-034-0014, more particularly described as: Beginning at the Southwest Corner of Lot 14, Millcreek Meadows Being a Part of the South Half of Section 23, Township 2 North, Range 1 West, Salt Lake Base and Meridian, West Bountiful City, Davis County, Utah, Said Point of Beginning is Given as North 0°02'56" West 1463.29 Feet Along the Quarter Section Line and East 50.00 Feet From the South Quarter Corner of Said Section 23, and Running Thence East 757.84 Feet Along the South Line of Millcreek Meadows, Thence North 0°02'57" West 85.80 Feet Along the East Line of Lot 18 Millcreek Meadows, Thence South 89°50'55" East 75.00 Feet Along the South Line of Lot 19 Millcreek Meadows, Thence South 0°02'57" East 160.60 Feet, Thence West 882.84 Feet to the Quarter Section Line, Thence North 0°02'57" West 75.00 Feet Along the Quarter Section Line, Thence East 50.00 Feet to the Point of Beginning. Parcel # 06-034-0014 has since been deleted from Davis County records, but it was once part of the parcel currently known as parcel # 06-034-0097.
		# 1535451 B2539/P17 B-003	Easement	Security Investment Ltd.	West Bountiful City	7/28/1999	7/29/1999	Grant of a twenty-foot wide perpetual easement and right-of-way, together with the right of ingress and egress for the construction, ownership, operation, maintenance, repair and ultimate replacement of an underground water transmission pipeline and appurtenant facilities on, over, across, under and through grantor's land.
		# 1522019 B2514/P252 B-004	Ordinance	West Bountiful City Corp.		5/18/1999	6/08/1999	Ordinance Annexing Specific Property to West Bountiful, Utah. The ordinance stipulated that the property was to be zoned Light Industrial and Agricultural. That portion lying west of the projection of the existing 1450 West Street was to be Light Industrial, and that portion lying to the east of said projection was to be Agricultural.
		# 1387944 B2254/P1169 B-021	Application for Green Belt	Security Investment Ltd.		3/12/1998	3/12/1998	Application for Assessment and Taxation of Agricultural Land. This document indicates that this parcel was being leased by George Bros. at the time.
		# 1364260 B2209/P1766 B-022	Quitclaim Deed	Security Investment Company	Security Investment Ltd.	11/30/1997	12/01/1997	Conveyed parcel from Security Investment Company, a Utah corporation, to Security Investment Ltd., a Utah limited partnership. Deed was signed by Nora A. Stahle as President of Security Investment Company.

**ATTACHMENT 2 – OWNERSHIP AND ENCUMBRANCE TITLE ABSTRACT
TO-032 BOUNTIFUL
January 4, 2011**

Parcel ID	Tax Info	Instrument	Instrument Type	Grantor	Grantee	Instrument Date	Recorded Date	Description
06-034-0097 (con't)	T-004 (con't)	# 1207020 B1929/P906 B-023	Easement	Security Investment Company	Amoco Pipeline Company	9/02/1995	10/24/1995	Security Investment Company granted, sold, conveyed and warranted to Amoco Pipeline Company, a Maine corporation, a permanent easement, 30 feet in width for the purpose, from time to time, of constructing, operating, inspecting, maintaining, protecting, marking, relocating, repairing, replacing, changing the size of, and removing a pipeline, and appurtenances, equipment, and facilities useful or incidental to or for the operation or protection thereof, for the transportation of oil, hydrocarbons, gas, water, and any other substances whether fluid or solid, any products and derivatives of any of the foregoing, and any combinations and mixtures of any of the foregoing, upon and along a route to be selected by Grantee on, over and through the subject property. A survey illustrating the easement is included with this document as Exhibit A.
		# 749828 B1108/P460 B-024	Easement Agreement	Davis County, UT et al	Security Investment Company et al	8/27/1986	8/27/1986	Davis County, UT; Rex L. George and Margaret A. George as Trustees of the Rex L. George and Margaret A. George family trust; and Security Investment Company, conveyed to Rex L. George and Margaret A. George as Trustees of the Rex L. George and Margaret A. George family trust and Security Investment Company a ten-foot wide easement for the construction and maintenance of an irrigation pipeline together with all appurtenant boxes, gates and turn-outs. A survey illustrating the easement is included with this document as Exhibit A.
06-034-0098	T-005	#2195575 B4103/P655 B-026	Application for Green Belt	Security Investment Ltd.		8/21/2006	8/24/2006	Application for Assessment and Taxation of Agricultural Land. There is no lessee listed on this document, only the owner, Security Investment Ltd.
		# 2102111 B3862/P862 B-018	R/W and Easement Grant	Security Investment Ltd.	Davis County, UT	8/15/2005	9/01/2005	In this Right-of-Way and Easement for a Storm Drain, Security Investment Ltd. conveyed to Davis County a perpetual right-of-way and easement for the purpose of digging and constructing a flood and storm water disposal system and operating, maintain, repairing, inspecting, protecting and replacing a storm water disposal system over and across the subject property.

ATTACHMENT 2 – OWNERSHIP AND ENCUMBRANCE TITLE ABSTRACT
TO-032 BOUNTIFUL
January 4, 2011

Parcel ID	Tax Info	Instrument	Instrument Type	Grantor	Grantee	Instrument Date	Recorded Date	Description
06-034-0098 (con't)	T-005 (con't)	# 2102109 B3862/P856 B-025	Quitclaim Deed	Davis County, UT	Security Investment Ltd.	8/30/2005	9/01/2005	Davis County, UT quitclaimed to Security Investment Ltd. a 1.67 acre parcel of land described as: Beginning at the S.W. corner of Lot 14, Mill Creek Meadows; being a part of the South ½ of Section 23, Township 2 North, Range 1 West, Salt Lake Base Meridian, said point of beginning is given as N 0°02'56" W 1463.29 feet along the ¼ section line and East 50.00 feet from the South ¼ corner of Section 23, and running, thence East 757.84 feet along the south line of Mill Creek Meadows; thence N 0°02'57" W 85.80 feet along the East line of Lot 18, Mill Creek Meadows; thence S 89°50'55" E 75.00 feet along the southerly line of Lot 19; thence S 0°02'57" E 160.60 feet; thence West 882.84 feet to the ¼ section line; thence N 0°02'57" W 75.00 feet along the ¼ section line; thence East 50.00 feet to the point of beginning. This appears to be the same property conveyed on Dec. 28, 2001 to Davis County from Security Investment Ltd. (B-020). That deed described the parcel as 06-034-0014. This number has since been deleted from Davis County records, but it was once part of the current parcel 06-034-0098.
		# 2017602 B3623/P1144 B-002	Resolution	Davis County Commission	South Davis Recreation Special Service District	6/15/2004	9/14/2004	A Resolution Establishing and Organizing the South Davis Recreation Special Service District, Establishing the Boundaries of Said District, Designating the Type of Service to be Performed Within the Boundaries of the District, Providing for the Appointment of an Initial Administrative Control Board of the District and Prescribing and Setting Forth Other Details and Matters in Connection Therewith.
		# 1716912 B2956/P1447 B-020	Warranty Deed	Security Investment Ltd.	Davis County, UT	12/28/2001	1/02/2002	Security Investment Ltd. conveyed to Davis County parcel # 06-034-0014, more particularly described as: Beginning at the Southwest Corner of Lot 14, Millcreek Meadows Being a Part of the South Half of Section 23, Township 2 North, Range 1 West, Salt Lake Base and Meridian, West Bountiful City, Davis County, Utah, Said Point of Beginning is Given as North 0°02'56" West 1463.29 Feet Along the Quarter Section Line and East 50.00 Feet From the South Quarter Corner of Said Section 23, and Running Thence East 757.84 Feet Along the South Line of Millcreek Meadows, Thence North 0°02'57" West 85.80 Feet Along the East Line of Lot 18 Millcreek Meadows, Thence South 89°50'55" East 75.00 Feet Along the South Line of Lot 19 Millcreek Meadows, Thence South 0°02'57" East 160.60 Feet, Thence West 882.84 Feet to the Quarter Section Line, Thence North 0°02'57" West 75.00 Feet Along the Quarter Section Line, Thence East 50.00 Feet to the Point of Beginning. See the note above and in the report about parcel # 06-034-0014.

**ATTACHMENT 2 – OWNERSHIP AND ENCUMBRANCE TITLE ABSTRACT
TO-032 BOUNTIFUL
January 4, 2011**

Parcel ID	Tax Info	Instrument	Instrument Type	Grantor	Grantee	Instrument Date	Recorded Date	Description
06-034-0098 (con't)	T-005 (con't)	# 1535451 B2539/P17 B-003	Easement	Security Investment Ltd.	West Bountiful City	7/28/1999	7/29/1999	Grant of a twenty-foot wide perpetual easement and right-of-way, together with the right of ingress and egress for the construction, ownership, operation, maintenance, repair and ultimate replacement of an underground water transmission pipeline and appurtenant facilities on, over, across, under and through grantor's land.
		# 1522019 B2514/P252 B-004	Ordinance	West Bountiful City Corp.		5/18/1999	6/08/1999	Ordinance Annexing Specific Property to West Bountiful, Utah. The ordinance stipulated that the property was to be zoned Light Industrial and Agricultural. That portion lying west of the projection of the existing 1450 West Street was to be Light Industrial, and that portion lying to the east of said projection was to be Agricultural.
		#1387944 B2254/P1169 B-021	Application for Green Belt	Security Investment Ltd.		3/12/1998	3/12/1998	Application for Assessment and Taxation of Agricultural Land. This document indicates that this parcel was being leased by George Bros. at the time.
		# 1364260 B2209/P1766 B-022	Quitclaim Deed	Security Investment Company	Security Investment Ltd.	11/30/1997	12/01/1997	Conveyed parcel from Security Investment Company, a Utah corporation, to Security Investment Ltd., a Utah limited partnership. Deed was signed by Nora A. Stahle as President of Security Investment Company.
		# 1207020 B1929/P906 B-023	Easement	Security Investment Company	Amoco Pipeline Company	9/02/1995	10/24/1995	Security Investment Company conveyed to Amoco Pipeline Company, a Maine corporation, a permanent easement, 30 feet in width for the purpose, from time to time, of constructing, operating, inspecting, maintaining, protecting, marking, relocating, repairing, replacing, changing the size of, and removing a pipeline, and appurtenances, equipment, and facilities useful or incidental to or for the operation or protection thereof, for the transportation of oil, hydrocarbons, gas, water, and any other substances whether fluid or solid, any products and derivatives of any of the foregoing, and any combinations and mixtures of any of the foregoing, upon and along a route to be selected by Grantee on, over and through the subject property. A survey illustrating the easement is included with this document as Exhibit A.
		# 749828 B1108/P460 B-024	Easement Agreement	Davis County, UT, et al	Security Investment Company, et al	8/27/1986	8/27/1986	Davis County, UT; Rex L. George and Margaret A. George as Trustees of the Rex L. George and Margaret A. George family trust; and Security Investment Company, conveyed to Rex L. George and Margaret A. George as Trustees of the Rex L. George and Margaret A. George family trust and Security Investment Company a ten-foot wide easement for the construction and maintenance of an irrigation pipeline together with all appurtenant boxes, gates and turn-outs. A survey illustrating the easement is included with this document as Exhibit A.

06/14/2006

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1879-1959

SDMS Document ID



1023264

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Bret F. Randall
Direct Dial: (801) 320-6755
randall@chapman.com

June 14, 2006

Richard L. Sisk 8ENF-L
Enforcement Attorney
U.S. Environmental Protection Agency
999 18th Street, Suite 300
Denver, CO 80202-2466

Re: Woods Cross NPL Site - Environmental Notice and Institutional Control

Dear Richard:

Enclosed is a copy of the file stamped copy from the Davis County Recorder of the Environmental Notice and Institutional Control relating to the W.S. Hatch site located at 766 West 700 South in Woods Cross, Utah.

Please contact me at your earliest convenience if you have any questions or comments.

Very truly yours,

Chapman and Cutler LLP

Bret F. Randall

BFR:pw

Enclosure

18
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After recording, return to:

Kevin R. Murray, Esq.
Chapman and Cutler LLP
136 South Main, Suite 1000
Salt Lake City, UT 84101

With copy to:

Division Director
Division of Environmental Response and Remediation
Utah Department of Environmental Quality
168 North 1950 West
P. O. Box 144840
Salt Lake City, UT 84114-4840

Bountiful / Woods Cross 5th South PCE Plume NPL Site
W.S. Hatch Company, Inc. Property
Location: 766 West 700 South, Woods Cross, Utah

PARCEL NUMBER: 06-167-0003

E 2168749 B 4036 P 134-138
RICHARD T. MAUGHAN
DAVIS COUNTY, UTAH RECORDER
05/17/2006 08:16 AM
FEE \$18.00 Pgs: 5
DEP RT REC'D FOR CHAPMAN AND CUTLE
R

ENVIRONMENTAL NOTICE AND INSTITUTIONAL CONTROL

Pursuant to the Utah Environmental Institutional Control Act (Utah Code Sections 19-10-101, et seq.), W.S. Hatch Co. Inc. ("Owner herein), owner of the property located in Woods Cross, in Davis County, State of Utah ("Property"), with a street address of 766 West 700 South, and as more particularly described as:

All of Lot 3, WOODS CROSSING COMMERCIAL PARK, as recorded in the office of the County Recorder for Davis County, Utah

hereby makes and imposes upon the Property the following described Institutional Control, subject to the terms and conditions herein stated:

1. Notice is hereby given that the Property is contaminated with hazardous materials as described below and, therefore, institutional control(s) must be imposed to mitigate the risk to the public health, safety and/or the environment:

Volatile organic compounds are present in subsurface soils at concentrations exceeding EPA Region 3 Residential Risk Based Concentrations (adjusted to be equivalent to a 1E-4 cancer risk). However, due to the depth of occurrence, subsurface soils do not pose an unacceptable human health risk via the direct ingestion pathway. Volatile organic vapors originating in subsurface soil

Appendix G: Data and Maps

TABLE 1
GROUNDWATER DATA
BOUNTIFUL/WOODS CROSS NPL SITE, OPERABLE UNIT 1

Well ID	Parameter/CAS	VOC - Mass Concentrations																		Other Parameters																						
		PCE		TCE		cis-1,2-DCE		trans-1,2-DCE		Total 1,2-DCE		Vinyl Chloride		Total VOCs		Ethene		Ethane		Alkalinity		Chemical Oxygen Demand		Chloride		Dissolved Oxygen		Ferrous Iron		Methane		Nitrate/Nitrite as N		Sulfate as SO4								
		µg/L	Q	µg/L	Q	µg/L	Q	µg/L	Q	µg/L	Q	µg/L	Q	µg/L	Q	µg/L	Q	µg/L	Q	mg/L	Q	mg/L	Q	mg/L	Q	mg/L	Q	mg/L	Q	mg/L	Q	mg/L	Q	mg/L	Q							
HMW11S	8/1/2006	--		5.2		24		--		24		7.6		36.8		--		--		--		--		--		--		--		--		--		--		--						
HMW11S	10/31/2006	--		5		15		1.1		16.1		5.4		24.5		10		10		566.5		15		240		0.47		0.23		66		0.05		160								
HMW11S	10/29/2009	0.5	U	12.2		69.3		2.98		7.33		37		91.11		10		10		494.5		16		200		0.17		0.42		96		0		220								
HMW11S	11/12/2010	0.5	U	4.2		37		2.3		39.3		3.7		43.3		1		1		339.5		0		160		0.3		0.235		360		0.5		216								
HMW11S	11/15/2011	5	U	5		0.95		5		0.95		5		0.95		5		5		289		5.9		6.96		MCQD		1		0.1		0.9		0.597		520		D				
HMW12SR	11/5/2006	0.65		39		150		6.2		156.2		12		208.05		10		10		544		15		230		0.84		0.05		250		0.05		180								
HMW12SR	10/30/2009	1.27	J	47.3		180		5.43		155.43		15.8		229.6		10		10		501.5		15		280		0.22		0.135		160		0.35		190								
HMW12SR	11/5/2010	1.5	U	45		130		5.2		135.2		15		195.2		0		0		459		72		271		MCQD		0.47		0.035		127		1.25		205						
HMW12SR	11/8/2011	0.63	J	25		66		4.2		90.2		11		126.83		0		0		374		0		246		MCQD		0.5		0		14.3		3.83		212		MD				
HMW14S	10/29/2006	--		130		660		29		909		65		1104		1.7		10		433.5		15		220		0.45		0.32		120		0.05		160								
HMW14S	10/29/2009	0.5	U	7.79		912		31		943		44.3		995.09		1		10		399.5		15		220		0.16		0.66		83		0		160								
HMW14S	11/11/2010	0.92	U	110		440		18		458		35		603		0		0		365.5		0		222		MCQD		0.94		1.46		67.5		0		305						
HMW14S	4/25/2011	0	U	43.8		668		32.4		720.4		49		813.2		2.49		2.2		408		29		207		MD		-0.29		1.16		452		0		153		MD				
HMW14S	9/2/2011	40	U	180		1300		63		1363		83		1626		0.67		0		408		7.9		207		MD		5.39		0.31		98		0		188		D				
HMW14S	11/14/2011	5	U	84		670		34		604		49		737		3		3		425		29		207		MD		0.9		0.14		35.4		0.5		194						
HMW14S	3/28/2012	5	U	44		670		34		704		43		791		0		0		425		0		204		M		0.13		0.17		71.3		0		208						
HMW15S	11/5/2006	24	JD	410		300		1.2		301.2		37		772.2		1.7		10		323		15		240		2.34		0.005		360		12		310								
HMW15S	5/18/2009	0.5	U	3.7		1200		3.7		1200		110		1310		12		3.4		816		240		250		1.77		3.3		1300		0		4.8								
HMW15S	8/20/2009	5	U	7.4		57		5		57		14		78.4		91		J	200	782		1200		290		1.26		3.3		11000		0.05		5.1								
HMW15S	11/5/2009	0.5	U	0.7		2.6		3.64		6.24		5.15		11.39		120		J	200	829		140		190		0.27		3.3		1200		0		1.1								
HMW15S	2/10/2010	0.5	U	2.1		2.5		12		14.3		1.6		17.1		99		19		344		27		140		0.34		3.3		14000		0.05		1.6								
HMW15S	11/12/2010	0.5	U	0.5		1.1		JD		22.1		1.1		23.2		67		5.5		552.5		15		180		0.75		3.3		12000		0.05		91								
HMW15S	11/17/2010	0.5	U	1.4		3.3		4.9		8.2		4		13.6		7.82		1		782		57		276		0.84		2.935		1110		0.5		5.44								
HMW15S	4/28/2011	0	U	1.63		6.05		3.03		9.08		6.73		17.44		18.4		Y	10.4	73.1		70		309		MD		2.82		2.43		9520		0		13.3		M				
HMW15S	8/25/2011	5	U	5		1.9		J		3.8		J		9.6		3.9		0		748		38		385		MD		1.79		3.3		3600		0		62.1		M				
HMW15S	11/17/2011	5	U	6		2.1		J		2.3		J		4.4		9.2		3		697		27		382		MD		0.6		3.3		15000		BD		0.5		101		D		
HMW15S	3/27/2012	5	U	5.5		2		J		2.6		J		4.8		8.1		0		578		4		320		D		0.6		1.62		16200		0		157						
HMW16D	11/4/2006	17	D	83		5.4		D		5.4		--		105.4		10		U	10	238		15		170		2		0.025		1.2		J		4		130						
HMW16D	5/17/2009	12	D	67		6.7		JD		0.5		U		6.7		0.5		U	10	323		15		160		1.35		1.06		4.1		J		0.2		96						
HMW16D	8/20/2009	14	D	50		5.2		D		2		U		5.2		2		U	10	289		15		240		2.43		0.24		46		2.9		100								
HMW16D	11/3/2009	16.5	D	120		24.5		0.51		24.5		0.7		163		10		U	10	340		15		180		2.15		0.475		540		0.075		110								
HMW16D	2/10/2010	15	D	79		15		D		0.5		U		15		0.5		U	10	245.5		15		170		3.75		0.25		2400		1.3		110								
HMW16D	5/12/2010	14	D	100		14		D		0.5		U		14		0.5		U	10	245.5		15		170		3.72		0.275		6400		1.5		120								
HMW16D	11/17/2010	23	D	150		24		BD		0.5		U		24		0.69		U	10	306		0		176		D		2.39		0.31		549		0.676		125						
HMW16D	4/28/2011	10.7		100		16.6		0		16.6		1.11		128.61		0		YU	0	295		16		165		MD		3.93		0.32		2150		H1D		1.44		133		MD		
HMW16D	8/24/2011	6.6		66		17		5		17		5		109.6		0		U	0	272		89		162		MD		9.14		0.93		1100		0.56		126		MD				
HMW16D	11/16/2011	2.2	J	120		43		0.95		43.95		2.6		170.36		3		U	3	425		7.9		168		MD		2		3.03		9170		BD		0.5		XU		179		D
HMW16D	3/27/2012	0.91	J	32		83		0.76		83.76		2.7		119.37		9		U	9	323		10		181		M		1.92		2.21		18900		0		170						
HMW16S	11/6/2006	9.1	JD	220		210		D		2.1		JD		449.9		1.8		J	1.3	J		331.5		15		U	170		1.9		0.035		21		5.8		380					
HMW16S	5/17/2009	5	U	210		920		D		7.2		U		920		94		J	10	697		96		290		1.82		1.119		220		0.1		220								
HMW16S	8/20/2009	5	U	21		110		D		5.1		D		115.1		19		D	100	1003		260		320		1.12		3.3		7900		0.05		U		11						
HMW16S	11/3/2009																																									

TABLE 1
GROUNDWATER DATA
BOUNTIFULWOODS CROSS NPL SITE, OPERABLE UNIT 1

Well ID	Parameter/CAS	VOC - Mass Concentrations																				Other Parameters															
		PCE		TCE		cis-1,2-DCE		trans-1,2-DCE		Total 1,2-DCE		Vinyl Chloride		Total VOCs		Ethene		Ethane		Alkalinity		Chemical Oxygen Demand		Chloride		Dissolved Oxygen		Ferrous Iron		Methane		Nitrate/Nitrite as N		Sulfate as SO4			
		µg/L	Q	µg/L	Q	µg/L	Q	µg/L	Q	µg/L	Q	µg/L	Q	µg/L	Q	µg/L	Q	µg/L	Q	µg/L	Q	Alk	Q	mg/L	Q	mg/L	Q	mg/L	Q	mg/L	Q	mg/L	Q	mg/L	Q	mg/L	Q
HMW16D	11/6/2006	55	E	2300	D	270	D	11		281		110	E	2745		1.4	J	10	U	346.5		15	U	240		1.05		0.05		20		3.3		0		160	
HMW16D	5/14/2009	0.5	U	53	JD	3800	D	7.5	U	3800		56	JD	3921		6.5	J	50	U	374		78		230		0.6		2.87		5000		0	U	12			
HMW16D	6/24/2009	400	U	400	U	4600	D	400	U	4600		400	U	4600		200	U	200	U	493		210		200		3.66		3.3		14000		0.05	U	1	U		
HMW16D	11/2/2009	0.5	U	2.56	J	3400	D	6.11		3405.11		42.8		3451.29		200	U	200	U	399.5		97		150		0.64		2.95		15000		0	U	2.7			
HMW16D	2/9/2010	0.5	U	150	D	2100	D	4.2	U	2100		120	JD	2370		10	U	10	U	297.5		26		150		1.66		3.3		11000		0.05	U	19			
HMW16D	5/11/2010	0.5	U	120	D	920	D	0.5	U	920		1600	D	2640		66		10	U	340		13	J	200		0.75		3.3		14000		0.05	U	26			
HMW16D	11/16/2010	0.5	U	1.6	D	26	BD	45	D	71		29	D	101.6		1	U	1	U	340		120		204	D	0.9		3.3		2760		0.5	U	0.516	J		
HMW16D	4/26/2011	0	U	45.5		1060	D	99.2		1159.2		1360	D	2564.7		57.7	Y	0	U	289		250		207	MD	2.36		2.56		1720	RROR	0	U	51.1	M		
HMW16D	6/25/2011	60	U	590	D	1900	D	200	D	2100		530	D	3220		86		0	U	374		25		213	MD	0.32		3.3		3700		0	U	66.8	M		
HMW16D	11/17/2011	5	U	19		640	D	350	D	1190		990	D	2159		212		3	U	340		17		242	MD	1		3.3		13000	BD	0.5	U	74.4	D		
HMW16D	3/30/2012	5	U	3.1	J	67		370	D	437		700	D	1140.1		343		0	U	442		62		230	D	1.26		3.33		16300	D	0	U	54.3	D		
HMW16S	11/6/2006	8.2		160	D	280	D	3.4		283.4		16	JD	489.6		12		7.4	J	391		15	U	210		2.56		0.065		31		1.6		240			
HMW16S	5/14/2009	0.74	JD	17	D	20	D	0.5	U	20		4.2	D	41.94		5.6	J	10	U	391		19		310		1.59		0.18		530		24		1000			
HMW16S	6/24/2009	0.45	J	6.1		6.2		0.5	U	6.2		1.4		18.15		10	U	10	U	337		16		210		3.81		2.3		300		16		640			
HMW16S	11/2/2009	0.5	U	13.2		15.7		1.27	J	17.97		2.45	J	39.82		1.5	J	10	U	450.5		17		220		0.58		2.5		690		0.76		640			
HMW16S	2/9/2010	0.59	U	18	D	42	D	8.1	D	50.1		3.5	D	71.5		10	U	10	U	578		20		270		0.88		3.3		4300		0.05	U	550			
HMW16S	5/11/2010	0.5	U	12	D	34	D	5.4	D	39.4		2.8	D	54.2		19	U	10	U	697		8.1	J	250		0.77		3.3		5300		1.4		620			
HMW16S	11/16/2010	0.27	J	2.5		7.2	B	0.87		8.97		0.5	U	10.64		1	U	1	U	1028.5		280		156	D	1.6		3.3		1160		0.5	U	1.22			
HMW16S	4/26/2011	0	U	1.6		3.22		0.53	J	3.75		0.32	J	5.67		0	U	0	U	340		240		309	MD	4.03		0.53		3920	HTD	4.52		1340			MD
HMW16S	6/25/2011	5	U	1.7	J	2.8	J	5	U	2.8		5	U	4.5		0	U	0	U	595		62		416	MD	1.36		0.96		4900		0	U	0	MD		
HMW16S	11/17/2011	5	U	1.4	J	4	J	0.75	J	4.75		1.3	J	7.45		3	U	3	U	663		14		447	MD	0.9		1.59		13700	BD	0.5	U	1250	D		
HMW16S	3/30/2012	5	U	1.3	J	2.1	J	1.6	J	3.9		5	U	5.2		0	U	0	U	646		55		462	D	0.2		2.67		9190	HTD	0	U	721	D		
HMW19D	11/1/2006	16	JD	290	D	200	D	6.4		206.4		23	JD	535.4		3.7	J	10	U	391		15	U	280		0.51		0.14		450		0.99		190			
HMW19D	5/13/2009	9.1	JD	270	D	190	D	5.7	JD	195.7		49	D	523.8		2.7	J	10	U	362.5		15	U	290		0.59		0.105		470		0.65		220			
HMW19D	6/21/2009	20	U	260	D	200	D	20	U	200		38	D	516		1.9	J	10	U	467.5		15	U	290		4.45		0.26		490		0.75		260			
HMW19D	10/29/2009	11.7		350	D	212	D	6.83		218.83		41.2		621.73		2	J	10	U	348.5		15	U	280		0.33		0.08		450		0.78		220			
HMW19D	11/9/2010	19	D	370	D	190	D	6.1	U	190		46	D	625		0	U	0	U	399.5		0	U	304	MCD	1.59		0.035		255		0.813	N	235			
HMW19D	11/15/2011	6.9		200		92		3.6	J	95.6		19		321.5		3	U	3	OXU	408		10	U	280	MCD	4		0		99.4		1.41	X	236			MD
HMW19D	3/30/2012	8.9		240	D	120		3.7	J	123.7		32		404.6		0	U	0	U	391		39		295	D	0.71		0		72.4		1.56		239			
HMW19S	11/1/2006	--		11	D	21	D	--		21		14		46		5.6	J	5.2	J	501.5		15	U	220		0.46		0.07		64		0.05		160			
HMW19S	5/13/2009	0.5	U	8.3	D	62	D	2.7	JD	84.7		16	D	111		10	U	2.4	J	561		15	U	170		0.54		0.68		70		0	U	360			
HMW19S	6/21/2009	20	U	33	D	320	D	20	U	320		46	D	399		1.3	J	10	U	637.5		15	U	100		2.05		0.465		75		0.05	U	660			
HMW19S	10/29/2009	0.62	J	49.2		146	D	40.7		152.07		15		216.89		10	U	10	U	544		15	U	170		0.19		0.62		90		0	U	350			
HMW19S	11/9/2010	0.5	U	1.5		6.3		0.22	J	8.52		0.5	U	10.02		0	U	0	U	280.5		110		13.3	M	5.97		0.144		0	U	3.4	N	63.1			
HMW19S	11/15/2011	5	U	4.6	J	15		2.1	J	17.1		4.9	J	26.5		3	U	3	OXU	561		6.1	J	227	MCD	0.56		0.6		570		0.5	XU	443			MD
HMW19S	3/30/2012	5	U	5	U	2.8	J	5	U	2.8		3.2	J	5		0	U	0	U	595		50		269	D	0.43		0.33		110		0	U	369			D
HMW19S	5/13/2009	37	D	0.81	JD	0.5	U	0.5	U	0		0.5	U	37.61		10	U	10	U	289		15	U	200		4.27		0		1.2	J	16		170			
HMW19S	11/16/2010	17		5	U	5	U	5	U	5		5	U	17		3	U	3	U	306		10	U	193	MD	3.3		0		2.34	JB	24	D	169			D
HMW20D	11/1/2006	5.6	D	21	D	9.8	D	--		9.8		--		36.4		10	U	10	U	238		15	U	120		2.38		0.045		1.5	J	2.8		100			
HMW20D	5/13/2009	8.3	D	94	D	29	D	1.2	JD	30.2		0.88	JD	91.38		10	U	10	U	255		15	U	150		3.6		0.095		1.6	J	3.1		140			
HMW20D	6/19/2009	4.1	D	26	D	7.1	D	1	U	7.1		1	U	37.2		10	U	10	U	289		15	U	140		5.3		0.585		1.9	J	3.2		120			
HMW20D	10/30/2009	5.12		23.8		3.86		0.51	U	3.86		0.7	U	32.78		10	U	10	U	221		15	U	150		2.07		0.13		2.4	J	2.9		140			
HMW20D	11/11/2010	8.6	D	29	D	1.7	D	0.5	U	1.7		0.5	U	39.3		1	U	1	U	263																	

TABLE 1
GROUNDWATER DATA
BOUNTIFUL/WOODS CROSS NPL SITE, OPERABLE UNIT 1

Well ID	Parameter/CAS	VOC - Mass Concentrations														Other Parameters																					
		PCE		TCE		cis-1,2-DCE		trans-1,2-DCE		Total 1,2-DCE		Vinyl Chloride		Total VOCs		Ethere		Ethane		Alkalinity		Chemical Oxygen Demand		Chloride		Dissolved Oxygen		Ferrous Iron		Methane		Nitrate/Nitrite as N		Sulfate as SO4			
		127-18-4	79-01-6	156-59-2	156-60-5	74-85-1	75-01-4	74-85-1	74-84-0	Alk	COD	16887-00-6	DO	Fe2+	74-82-6	ADR-04-003	SasSO4																				
	Sample Date	µg/L	Q	µg/L	Q	µg/L	Q	µg/L	Q	µg/L	Q	µg/L	Q	µg/L	Q	µg/L	Q	mg/L	Q	mg/L	Q	mg/L	Q	mg/L	Q	mg/L	Q	mg/L	Q	mg/L	Q	mg/L	Q				
HMW21S	10/29/2006	1.6	U	92	D	170	D	4.8	JD	174.5	16	266.4	10	U	10	U	467.5	15	U	230	Q	6.93	0.15	0	30	0	0.5	U	150	Q	0	U	160	Q			
HMW21S	3/13/2009	0.96	U	67	D	200	D	8.2	JD	236.2	23	316.2	10	U	10	U	476	15	U	230	Q	0.6	0.305	46	30	0	0.385	46	0	0.5	U	170	Q	0	U	160	Q
HMW21S	8/18/2009	10	U	93	D	230	D	6.6	JD	236.6	16	345.6	10	U	10	U	476	15	U	220	Q	0.36	0.365	46	30	0	0.385	46	0	0.5	U	170	Q	0	U	160	Q
HMW21S	10/29/2009	0.93	J	139	D	304	D	11.1	J	315.1	20	475.03	10	U	10	U	425	15	U	220	Q	0.28	0.545	30	0	0	0.545	30	0	0.5	U	160	Q	0	U	160	Q
HMW21S	11/11/2010	1	U	150	D	400	D	16	JD	416	29	595	0	U	0	U	391	0	U	215	MOD	0.26	0.53	36.9	0	0.448	0	0.5	U	209	Q	0	U	209	Q		
HMW21S	4/25/2011	1.44	U	74.1	D	99.4	D	7.19	JD	106.59	8.03	150.16	0	U	0	U	408	30	U	196	MOD	3.56	0	1.11	0	1.26	0	1.26	0	2.22	0	2.22	0	2.22	0		
HMW21S	9/2/2011	5	U	27	D	49	D	1.8	J	41.8	4.4	73.2	0	U	0	U	459	12	U	134	MOD	4.03	0.61	4.6	J	0	0	0	0	0	0	0	0	0	0		
HMW21S	11/14/2011	0.64	J	29	D	51	D	2.7	J	53.7	5.8	90.14	3	U	3	OXU	646	10	U	156	Q	1	0.33	20.2	0.5	XU	69.8	0	0.5	U	69.8	0	0.5	U	69.8	0	
HMW21S	3/26/2012	5	U	7.8	D	63	D	3.5	J	65.5	5.5	79.8	0	U	0	U	493	0	U	165	M	0.33	0	613	0	0	0	0	0	0	0	0	0	0	0		
HMW22D	10/30/2006	7.9	JD	260	D	300	D	3.9	JD	303.9	37	628.6	10	U	10	U	433.5	15	U	250	Q	4.09	0.195	16	0.23	0	0.195	16	0.23	0	0.195	16	0.23	0	0.195	16	
HMW22D	5/13/2009	5.7	JD	200	D	180	D	3.4	JD	183.4	30	419.1	10	U	10	U	408	15	U	270	Q	0.4	0.055	35	0.31	0	0.055	35	0.31	0	0.055	35	0.31	0	0.055	35	
HMW22D	8/19/2009	5.8	JD	210	D	200	D	10	U	200	24	439.6	10	U	10	U	425	15	U	250	Q	0.93	0.165	41	1.3	0	0.165	41	1.3	0	0.165	41	1.3	0	0.165	41	
HMW22D	10/27/2009	6.25	JD	235	D	202	D	4.23	JD	206.23	24.2	472.66	10	U	10	U	391	15	U	250	Q	0.72	0.21	37	0.19	0	0.21	37	0.19	0	0.21	37	0.19	0	0.21	37	
HMW22D	11/12/2010	14	JD	290	D	210	D	4.8	JD	214.8	30	546.6	1	U	1	U	391	77	U	251	MOD	0.68	0.415	1	U	0.5	0.415	1	U	0.5	0.415	1	U	0.5	0.415	1	
HMW22D	11/19/2011	5.4	JD	210	D	170	D	4.3	J	174.3	24	413.7	3	U	3	OXU	406	10	U	252	MOD	0.7	0	17.1	0.5	XU	159	0	0.5	XU	159	0	0.5	XU	159	0	
HMW22S	10/30/2006	2.6	JD	120	D	190	D	4.6	JD	194.6	20	337.2	10	U	10	U	399.5	15	U	220	Q	4.34	0.095	9.3	J	0.14	0.095	9.3	J	0.14	0.095	9.3	J	0.14	0.095	9.3	
HMW22S	5/13/2009	2.9	JD	80	D	120	D	4.6	U	120	15	217.9	10	U	10	U	416.5	15	U	260	Q	0.39	0.05	25	0.075	0	0.05	25	0.075	0	0.05	25	0.075	0	0.05	25	
HMW22S	8/19/2009	6.2	JD	320	D	360	D	14	JD	364	50	972.2	10	U	10	U	433.5	15	U	240	Q	0.96	0.05	26	0.05	0	0.05	26	0.05	0	0.05	26	0.05	0	0.05	26	
HMW22S	10/27/2009	2.66	JD	102	D	165	D	4.99	JD	169.99	16.7	291.37	10	U	10	U	391	15	U	230	Q	0.2	0.02	24	0	0	0.02	24	0	0	0	0	0	0	0	0	
HMW22S	11/12/2010	3.7	JD	143	D	250	D	9.7	JD	259.7	26	431.4	1	U	1	U	393.5	79	U	234	MOD	0.96	0.17	649	0.3	U	0.17	649	0.3	U	0.17	649	0.3	U	0.17	649	
HMW22S	11/15/2011	1.9	J	82	D	110	D	3.5	J	115.5	13	216.4	3	U	3	OXU	391	10	U	205	MOD	0.3	0	6.77	0.908	X	253	0	0.908	X	253	0	0.908	X	253		
HMW23D	10/30/2006	19	U	3.5	D	1.3	D	--	J	1.3	--	23.8	10	U	10	U	245.5	19	U	94	Q	1.71	0	1.3	J	1.3	0	1.3	J	1.3	0	1.3	J	1.3			
HMW23D	5/13/2009	5.3	U	1.1	D	0.61	D	0.5	U	0.61	0.5	0.7	10	U	10	U	204	15	U	65	Q	1.53	0.165	1.6	J	1.5	0.165	1.6	J	1.5	0.165	1.6	J	1.5			
HMW23D	8/19/2009	11	U	1.7	D	0.95	D	0.5	U	0.95	0.5	13.66	10	U	10	U	263.5	15	U	73	Q	2.21	0.035	1.7	J	3.2	0.035	1.7	J	3.2	0.035	1.7	J	3.2			
HMW23D	10/27/2009	4.99	JD	1.66	J	1.92	J	0.51	U	1.92	0.7	8.17	10	U	10	U	176.5	15	U	55	Q	1.97	0.095	1	J	2.6	0.095	1	J	2.6	0.095	1	J	2.6			
HMW23D	11/12/2010	0.66	J	3	D	0.7	D	0.12	J	6.82	0.5	12.46	1	U	1	U	161.5	0	U	50	M	1.06	0.095	1	U	2.17	0.095	1	U	2.17	0.095	1	U	2.17			
HMW23D	11/15/2011	28	U	17	D	2.9	D	5	U	2.9	5	47.9	3	U	3	OXU	306	10	U	144	MOD	3.5	0	3	U	5.14	X	85.3	MD	85.3	MD	85.3	MD	85.3			
HMW24D	10/31/2006	11	JD	230	D	210	D	4.9	JD	214.9	15	470	10	U	10	U	408	15	U	220	Q	0.57	0.15	11	0.66	0	0.15	11	0.66	0	0.15	11	0.66	0	0.15	11	
HMW24D	5/17/2009	6.9	JD	200	D	170	D	3.1	JD	173.1	24	404	10	U	10	U	450.5	15	U	250	Q	3.04	0.05	19	0.76	0	0.05	19	0.76	0	0.05	19	0.76	0	0.05	19	
HMW24D	8/19/2009	7.5	JD	210	D	170	D	10	U	170	16	403.5	10	U	10	U	416.5	15	U	240	Q	0.69	0.435	16	0.66	0	0.435	16	0.66	0	0.435	16	0.66	0	0.435	16	
HMW24D	11/5/2009	6.41	JD	264	D	161	D	3.62	JD	164.62	16.3	475.33	0.9	J	10	U	357	15	U	240	Q	0.26	0.065	25	0.62	0	0.065	25	0.62	0	0.065	25	0.62	0	0.065	25	
HMW24D	11/12/2010	16	JD	310	D	190	D	4.4	JD	194.4	26	546.4	1	U	1	U	374	0	U	246	MOD	0.52	0.025	20.7	0.5	U	0.025	20.7	0.5	U	0.025	20.7	0.5	U	0.025	20.7	
HMW24D	4/27/2011	7.53	JD	168	D	143	D	3.99	JD	146.99	17.2	359.72	0	U	0	U	391	310	U	229	MOD	3.39	0.24	13.4	0.574	0	0.24	13.4	0.574	0	0.24	13.4	0.574	0	0.24	13.4	
HMW24D	9/2/2011	6.4	JD	270	D	200	D	3.8	JD	203.8	14	486.2	0	U	0	U	391	0	U	227	MOD	2.94	0	2.2	J	0.455	J	0.455	J	0.455	J	0.455	J	0.455			
HMW24D	11/14/2011	7.2	JD	240	D	160	D	3.4	J	163.4	6.4	417	3	U	3	OXU	340	10	U	208	Q	1	0.08	253	J	0.866	X	130	MD	130	MD	130	MD	130			
HMW24D	3/30/2012	6.2	JD	190	D	130	D	2.9	J	132.9	5	329.1	0	U	0	U	269	35	U	166	D	0.77	0	0	U	1.16	0	1.16	0	1.16	0	1.16	0	1.16			
HMW24S	10/31/2006	--	U	15	D	96	D	3.1	JD	103.1	--	116.1	10																								

TABLE 1
GROUNDWATER DATA
BOUNTLEV/WOODS CROSS NPL SITE, OPERABLE UNIT 1

Well ID	Parameter/CAS	VOC - Mass Concentrations																Other Parameters																	
		PCE		TCE		cis-1,2-DCE		trans-1,2-DCE		Total 1,2-DCE		Vinyl Chloride		Total VOCs		Ethene		Ethane		Alkalinity		Chemical Oxygen Demand		Chloride		Dissolved Oxygen		Ferrous/Iron		Methane		Nitrate/Nitrite as N		Sulfate as SO4	
		127-16-4	79-01-6	156-59-2	156-50-5	75-01-4	75-01-4	74-85-1	74-84-0	Alk	COD	16867-00-6	DO	Fe2+	74-82-6	ADR-04-003	SasSO4																		
HMW25S	11/2/2006	1	66	81	81	81	81	4.1	154.1	10	U	10	U	346.5	15	U	160	0.27	0	0	0	0	0	0	0	0	0	0.05	U	53	U	73			
HMW25S	5/16/2009	1.9	77	81	7	81	9.2	JD	167.2	10	U	10	U	357	15	U	200	2.47	0.025	42	0	0	0	0	0	0	0	0.05	U	100	U	61			
HMW25S	6/2/2009	25	55	85	25	85	25	U	86	25	U	10	U	391.5	15	U	210	1.45	0.05	55	0	0	0	0	0	0	0	0.05	U	100	U	61			
HMW25S	10/28/2009	2.72	85	94.5	2.95	97.16	9.82	U	106.12	10	U	10	U	331.5	15	U	200	0.09	0.05	49	0	0	0	0	0	0	0	0	0	0	0	68.4			
HMW25S	11/10/2010	4.7	59	59	3	59	3	JD	92	11	JD	198.7	0	U	331.5	0	U	159	M	3.8	0.013	42.8	0	0	0	0	0	0	0	0	0	68.4			
HMW25S	11/11/2011	0.95	43	58	1.9	57.9	5.1	U	105.95	3	U	3	XU	323	10	U	292	MOD	4	0	0	0	0	0	0	0	0	0	0	0	0	78.4			
HMW27D	11/10/2010	0.5	23	17	0.5	17	0.5	U	41	0	U	0	U	176.5	0	U	40.8	M	4.69	0.49	367	0	0	0	0	0	0	0	0	0	0	0	11.9		
HMW27D	11/14/2011	3.2	140	100	2.5	102.5	6.6	U	254.3	3	U	3	OXU	272	10	U	140	M	0.6	1.25	61.3	0	0	0	0	0	0.62	X	74.3	U	79.6				
HMW27S	11/10/2010	1.3	JD	150	3.3	163.3	16	D	400.6	0	U	0	U	260.5	0	U	176	MOD	6.85	0.585	35.2	0	0	0	0	0	0	0	0	0	0	0	79.6		
HMW27S	11/14/2011	0.25	J	130	3.6	123.6	12	U	265.66	3	U	3	OXU	269	10	U	173	M	0.7	0.52	33.9	0	0	0	0	0	0	0	0	0	0	0	76.9		
HMW26D	4/25/2011	16	460	D	117	D	1.67	U	118.67	3.21	U	0	U	167	29	U	220	MD	1.62	0.18	0	U	1.3	0	0	0	0	0	0	0	0	0	69.5		
HMW26D	6/31/2011	15	JD	390	D	130	D	20	U	525	0	U	0	U	221	6.9	U	239	MOD	1.74	0	0	U	1.11	0	0	0	0	0	0	0	0	66.6		
HMW26D	11/6/2011	8.6	300	D	74	1.1	J	75.1	1.4	J	385.1	3.37	U	0	U	170	0	U	212	MOD	1	0	0	1.03	J	0	0	0	0	0	0	0	60.6		
HMW26D	3/26/2012	13	450	D	100	1.6	J	101.6	1.4	J	365	0	U	0	U	170	0	U	230	M	0.67	0	0	0	0	0	0	0	0	0	0	0	74.4		
HMW29D	4/27/2011	3.41	135	D	124	D	1.75	U	125.75	13.5	U	0	U	305	33	U	143	MD	2.64	0.22	7.7	0	0	0	0	0	0	0	0	0	0	0	62.2		
HMW29D	9/1/2011	2.7	J	94	95	1.6	J	95.6	6.5	U	0	U	0	U	323	27	U	133	MD	1.83	0.19	1.4	J	0	0	0	0	0	0	0	0	0	42.1		
HMW29D	11/6/2011	0.81	J	24	22	5	U	22	0.77	J	47.98	0	U	0	U	272	37	U	161	MOD	1	0.36	14.5	0	0	0	0	0	0	0	0	0	29.8		
HMW29D	3/29/2012	0.41	J	13	16	5	U	16	5	U	29.41	0	U	0	U	238	55	U	53.5	D	3.37	0.97	4.68	0	0	0	0	0	0	0	0	0	12.6		
HMW29S	4/27/2011	1.25	36.5	29	1.3	30.13	2.35	U	70.24	0	U	0	U	323	18	U	106	M	5.03	0.16	4.34	0	0	0	0	0	0	0	0	0	0	0	29.8		
HMW29S	9/1/2011	1.4	J	56	46	2.4	J	48.4	3.2	J	199	0	U	0	U	391	130	U	197	MD	3.94	1.49	0	U	0.935	0	0	0	0	0	0	0	224		
HMW29S	11/6/2011	1.2	J	49	49	2.5	J	42.5	3.3	J	96	0	U	0	U	306	21	J	131	MOD	0.3	0.42	8.67	0	0	0	0	0	0	0	0	0	26.9		
HMW29S	3/29/2012	1.5	J	67	48	2.6	J	50.6	4.3	J	123.4	0	U	0	U	306	46	U	125	MOD	0.7	0	0	0	0	0	0	0	0	0	0	0	23.1		
HMW2S	7/27/2006	9.4	JD	200	D	1200	D	8.4	1208.4	79	D	1498.6	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--			
HMW2S	11/5/2006	23	180	D	1000	D	14	U	1014	59	D	1275	3.1	J	10	U	425	15	U	270	2.6	0	0	0	0	0	0	0	0	0	0	0	0	190	
HMW2S	5/19/2009	7.4	U	460	D	4100	D	40	JD	4140	500	D	5050	12	2.2	J	629	97	U	250	2	3.3	850	0	0	0	0	0	0	0	0	0	11		
HMW2S	6/24/2009	400	U	8400	D	400	U	5400	450	D	5920	16	J	50	U	773.5	140	U	240	2.96	3.3	4600	0.05	U	5	0	0	0	0	0	0	0			
HMW2S	11/4/2009	1.64	J	220	JD	4650	D	43.4	4693.4	690	D	5605.24	67	50	U	535.5	140	U	290	0.45	3.3	9100	0	0	0	0	0	0	0	0	0	0	17		
HMW2S	2/9/2010	0.5	U	24	D	150	D	2.1	U	150	D	190	10	U	362.5	56	U	200	1.06	1.54	15000	0.053	U	27	0	0	0	0	0	0	0	0	0		
HMW2S	5/12/2010	0.5	U	1.9	JD	19	D	9.6	D	28.6	D	92.5	150	10	U	--	97	U	230	1.13	--	19000	0.05	U	5	0	0	0	0	0	0	0			
HMW2S	11/17/2010	0.5	U	0.49	J	4.3	B	4.9	3.1	U	12.49	7.85	1	U	850	330	U	260	D	1.15	2.79	10500	0.5	U	0.42	J	0	0	0	0	0	0			
HMW2S	4/29/2011	0	U	6.26	7.91	5.82	13.33	7.4	27.01	16.4	Y	0	U	0	U	561	17	H	241	MD	0.74	3.3	6640	D	0	0	0	0	0	0	0	0	49.3		
HMW2S	6/25/2011	5	U	5	U	12	17.7	5.1	22.8	12	U	0	U	--	71	U	241	MD	0	--	4600	0	0	0	0	0	0	0	0	0	0	0	2.45		
HMW2S	11/17/2011	5	U	5	U	1.3	J	12	13.3	4	J	17.3	121	3	U	616	23	U	262	MD	0.9	3.3	17300	BD	0.5	U	4.98	JD	0	0	0	0			
HMW2S	3/27/2012	5	U	5	U	1	J	8.3	9.5	5	U	9.5	11.5	0	U	799	76	U	271	D	1	2.28	16700	D	0	0	0	0	0	0	0	0	1.05		
HMW30D	6/3/2011	5	U	8.4	11	5	U	11	1.1	J	20.5	0	U	0	U	170	0	U	49.4	MOD	1.01	0	0	0	0	0	0	0	0	0	0	0	14.6		
HMW30D	11/10/2011	1.4	J	26	30	1	J	31	4	J	64.4	3	U	3	U	221	15	U	82.9	MOD	0.6	0	4.4	0	0	0	0	0	0	0	0	0	9.6		
HMW30D	3/26/2012	0.74	J	2.1	J	47	0.9	J	47.9	4	J	54.74	0	U	0	U	221	29	U	85.4	D	2.71	0.07	582	0	0	0	0	0	0	0	0	1.04		
HMW31D	6/3/2011	4.3	J	35	5	U	35	1.6	J	55.9	0	U	0	U	306	0	U	76.8	M	7.27	0.12	0	U	0.788	0	0	0	0	0	0	0	0	40.4		
HMW31D	11/10/2011	5.3	J	16	14	0.58	J	14.38	5	U	37.88	3	U	3	U	238	10	U	70.6	MOD	3.5	0.13	3	U	0.77	0	0	0	0	0	0	0	0	47.2	
HMW31D	3/26/2012	5	U	15	11	5	U	11	5	U	32	0	U	0	U	306	0	U	64	D	1.21	0.66	0	U	1.11	0	0	0	0	0	0	0	45.3		
HMW32S	4/27/2011	0.95	J	47.6	371	D	14	U	385	25.8	U	0	U	0	U	374	53	U	242	MD	1.44	0.42	102	0	0	0	0	0	0	0	0	0	0	176	
HMW32S	6/30/2011	13	U	36	J	290	U	11	U	0	19	U	36	0	U	0	U	510	130	U	235	MD	-2.34	0.92	20	0	0								

TABLE 1
GROUNDWATER DATA
BOUNTIFUL/WOODS CROSS NPL SITE, OPERABLE UNIT 1

Well ID	Parameter/CAS	VOC - Mass Concentrations												Other Parameters																					
		PCE		TCE		cis-1,2-DCE		trans-1,2-DCE		Total 1,2-DCE		Vinyl Chloride		Total VOCs		Ethene		Ethane		Alkalinity		Chemical Oxygen Demand		Chloride		Dissolved Oxygen		Ferrous Iron		Methane		Nitrate/Nitrite as N		Sulfate as SO4	
		127-16-4	79-01-6	156-59-2	156-60-5	75-01-4	74-85-1	74-84-0	Alk	COD	18887-00-6	DO	Fe2+	74-82-8	ADR-04-003	SasSO4																			
	Sample Date	µg/L	Q	µg/L	Q	µg/L	Q	µg/L	Q	µg/L	Q	µg/L	Q	µg/L	Q	µg/L	Q	mg/L	Q	mg/L	Q	mg/L	Q	mg/L	Q	mg/L	Q	mg/L	Q	mg/L	Q	mg/L	Q		
HMW4S	1/28/2006	--		8.3		8.3		8.3		8.3		8.3		8.3		8.3		576		15	U	210		0.52		0		220		0.51		34			
HMW4S	5/14/2009	2.2		76	D	110	D	1.5		111.5	12	201.7	10	U	10	U	576		15	U	210		0.52		0		220		0.51		34				
HMW4S	5/14/2009	2.5	JD	86	D	98	D	1.9	JD	99.9	17	187.4	--	--	--	--	--	--	--	--	--	--	0.81	--	--	--	--	--	--	--	--	--			
HMW4S	11/2/2009	0.5	U	9.41		123	D	2.48	J	123.48	41.3	176.19	17	U	10	U	722.5		15	U	190		0.37		0.05		3700		0	U	10				
HMW4S	11/16/2010	0.087	J	11		19		3.6		22.6	3.5	37.167	1	U	1	U	597		27		199	D	0.88		0.525		2050		0.5	U	72.6				
HMW4S	11/17/2011	5	U	0.95	J	3.8	J	1.5	J	5.3	3.2	9.45	3	U	3	U	799		30		287	MD	0.8		2.91		1880	ED	0.5	U	385	D			
HMW9S	11/19/2011	0.38	J	0.59	J	5	U	5	U	0	5	0.97	3	U	3	GXU	204		7.2	J	144	D	0.9		0	3	U	49.7	D	452	D				
IW17S	8/28/2009	5	U	5	U	79	D	5	U	79	12	91	--	--	--	--	510		170		--	--	6.37		0.81		--	--	--	--	--	--			
IW216D	9/1/2011	5	U	6.5		33		5	U	33	3	42.5	1.1	U	1.4	1068		6200		--	--	4.7		3.3		6.5	0	U	0	U					
IW216D	11/8/2011	5	U	13		44		0.69	J	44.59	3.6	61.29	--	--	--	--	--	--	--	--	--	--	1.23		--	--	--	--	--	--	--	--			
IW216S	9/1/2011	5	U	39		42		1.8	J	43.8	3.4	66.2	0	U	0	U	493		560		--	--	6.56		3.3	0	U	0	U	1.75					
IW216S	11/8/2011	0.74	J	34		32		1.7	J	33.7	3.7	72.14	--	--	--	--	--	--	--	--	--	--	1.03		--	--	--	--	--	--	--	--			
IW220D	3/29/2012	5	U	5	U	5	U	0.5	J	0.5	1.7	J	2.2	U	0	U	--		--	--	--	--	0.33		1.66		10100	D	--	--	--	--			
IW222D	3/29/2012	4.1	J	130		140		2.5	J	142.5	11	267.6	0	U	0	U	--		--	--	--	--	0.13		0.4		2590	H1D	--	--	--	--			
IW232S	3/29/2012	5	U	4.6	J	510	D	50		560	20	564.6	1.73	J	0	U	--		--	--	--	--	0.39		1.43		10000	D	--	--	--	--			
IW237S	8/30/2011	5	U	7.6		5.3		5	U	5.3	5	12.9	1.1	U	2.8		425		16000		--	--	6.49		2.76		1.6	J	0	U	0	MDU			
IW237S	11/9/2011	5	U	47		79		1.8	J	80.8	6.1	135.9	--	--	--	--	--	--	--	--	--	--	0.04		--	--	--	--	--	--	--	--			
IW23D	8/20/2009	5	U	5	U	76	D	5	U	76	5	76	--	--	--	544		450		--	--	3.1		3.3		--	--	--	--	--	--	--			
IW241D	3/28/2012	5	U	0.54	J	5	U	1.9	J	1.9	2.4	4.84	39.3	0	U	--	--	--	--	--	--	--	0.45		2.05		12700	D	--	--	--	--			
IW246D	8/31/2011	5	U	5	U	1.3	J	5	U	1.3	5	1.3	0.98	J	0.54	J	653		1900		--	--	1.54		3.3		120	0	U	0	MDU				
IW246D	11/8/2011	5	U	4.3	J	9		5	U	9	5	13.3	--	--	--	--	--	--	--	--	--	--	1.37		--	--	--	--	--	--	--	--			
IW335D	8/30/2011	5	U	79		130		2.6	J	132.6	6.2	219.6	0	U	0	U	476		300		--	--	6.02		0.24		47	0	U	7.71	M				
IW335D	11/10/2011	2.6	J	170		140		3.2	J	143.2	9.9	325.7	--	--	--	--	--	--	--	--	--	--	0.12		--	--	--	--	--	--	--	--			
IW335S	8/30/2011	13	U	60	D	280	D	8.4	JD	288.4	27	375.4	0	U	0	U	408		1200		--	--	6.31		1.31		1.6	J	0	U	0	MDU			
IW335S	11/10/2011	5	U	51		410	D	13		423	42	516	--	--	--	--	--	--	--	--	--	--	1.07		--	--	--	--	--	--	--	--			
IW335S	3/29/2012	5	U	5	U	12		12		4.9	J	16.9	101	0	U	--	--	--	--	--	--	--	0.28		0.26		4230	D	--	--	--	--			
IW337S	3/29/2012	1	J	170		430	D	22		432	52	675	2.46	J	0	U	--	--	--	--	--	--	0.23		2.36		675	D	--	--	--	--			
IW339D	3/28/2012	5.2		180		140		3.9	J	143.9	17	345.1	9.54		26.1		--	--	--	--	--	--	0.24		2.12		1300	D	--	--	--	--			
IW351D	8/30/2011	5.7		110		61		1.3	J	62.3	3.3	161.3	0	U	0	U	476		470		--	--	5.73		3.3		2.2	J	0	U	1.17	MJ			
IW351D	11/9/2011	6.9		100		47		1.3	J	48.3	3.4	196.6	--	--	--	--	--	--	--	--	--	--	0.06		--	--	--	--	--	--	--	--			
IW351D	3/28/2012	2.4	J	14		4.3	J	1.2	J	5.5	6.5	30.4	15.5	0	U	--	--	--	--	--	--	--	0.26		1.7		13700	D	--	--	--	--			
IW351S	8/30/2011	5	U	1.1	J	3.8	J	5	U	4.9	1.4	4.9	1.4	5.1		512		7800		--	--	--	7.49		2.35		6.5	0	U	0	MDU				
IW351S	11/9/2011	5	U	5.2		56	J	1.8	J	57.8	4.5	67.5	--	--	--	--	--	--	--	--	--	--	0.03		--	--	--	--	--	--	--	--			
IW47S	8/28/2009	5	U	14	D	81	D	5	U	81	4.8	99.8	--	--	--	--	969		--	--	--	--	31.16		3.3		--	--	--	--	--	--			
IW48D	8/28/2009	2	U	8.1	D	21	D	2	U	21	4.9	32	--	--	--	1054		2000		--	--	7.07		3.3		--	--	--	--	--	--	--			
IW55S	8/24/2009	10	U	10	U	130	D	19	D	149	11	150	500	U	500	U	--	1200		210		--	7.25		--	--	15000	0.05	U	1	U				
IW50D	8/24/2009	10	U	10	U	120	D	10	U	120	6.1	126.1	500	U	500	U	--	2000		220		--	3.56		--	--	22000	0.05	U	1	U				
MW18M	11/11/2011	1.6	J	5	U	5	U	5	U	0	5	1.8	9.92	3	XU	204		10	U	87.4	MOD	0.7		6.03		0.5	U	92.6	MD						
MW18UD	11/11/2011	5	U	5	U	5	U	5	U	0	5	0	3	U	3	XU	187		10	U	37.7	MOD	0.7		0.16		31.5	0.5	U	24.7	M				
MW18US	11/11/2011	6.1		140		48		1.2	J	49.2	1.5	198.8	3	U	3	XU	221		10	U	162	MOD	0.9		1.06		135	J	0.5	U	204	MD			
MW2D	11/7/2006	8.9		120	D	150	D	--	--	150	14	292.9	10	U	10	U	340		15	U	210		--		0		6.6	J	0.49		97				
MW2D	10/28/2009	6.5		213	D	225	D	3.25		228.25	11.4	459.15	10	U	10	U	391		15	U	210		6.25		0		5.2	J	0.52		110				
MW2D	11/10/2010	9	JD	190	D	7	JD	2	JD	9	10	206	0	U	0	U	331.5		0	U	224	MOD	3.6		0		0	U	0.576		113				
MW2D	4/27/2011	7.11		243	D	195	D	3.42		196.42	14.8	463.33	0	U	0	U	340		220	MD	2.36		0.01		11.5		0.46	J	131	MD					
MW2D	6/31/2011	3.2	J	120		150		2.8	J	152.8	13	289	0	U	0	U	425		61		--	--	6.74		0.84		3	J	0	U	55.7	M			
MW2D	11/10/2011	3.9	J	150		150		3.4	J	153.4</																									

TABLE 1
GROUNDWATER DATA
BOUNTIFUL/WOODS CROSS NPL SITE, OPERABLE UNIT 1

		VOC - Mass Concentrations														Other Parameters																			
		PCE		TCE		cis-1,2-DCE		trans-1,2-DCE		Total 1,2-DCE		Vinyl Chloride		Total VOCs		Ethene		Ethane		Alkalinity		Chemical Oxygen Demand		Chloride		Dissolved Oxygen		Ferrous Iron		Methane		Nitrate/Nitrite as N		Sulfate as SO4	
Well ID	Parameter/CAS	127-18-4		79-01-6		156-59-2		156-59-5		75-01-4		74-85-1		74-84-0		Alk		COD		16887-00-6		DO		Fe2+		74-82-8		ADR-04-003		SasSO4					
	Sample Date	µg/L	Q	µg/L	Q	µg/L	Q	µg/L	Q	µg/L	Q	µg/L	Q	µg/L	Q	mg/L	Q	mg/L	Q	mg/L	Q	mg/L	Q	mg/L	Q	mg/L	Q	mg/L	Q	mg/L	Q	mg/L	Q		
OSMU	7/27/2008	16	JD	390	D	620	D	--		620	54	D	1090	--		--		--		--		--		--		--		--		--		--		--	
OSMU	11/4/2008	8.8	JD	720	D	170	D	6.3		175.3	6.3	JD	913.4	10	U	10	U	340		15	U	270		1.22		0		32		1.6		470			
OSMU	5/17/2009	0.5	U	4.2	JD	150	D	2.4	JD	152.4	48	D	204.5	15	J	80	U	1358.5		1200		180		1.86		3.3		4500		0	U	36			
OSMU	8/20/2009	1	U	1	U	2	D	1	JD	3	11	D	4.1	56	J	200	U	932		340		390		9.71		3.3		13000		0.05	U	1.7			
OSMU	11/3/2009	0.5	U	0.74	J	3.15		2.21	J	5.34	1.78	J	7.65	200	U	200	U	790.5		55		350		0.33		3.3		13000		0.05	U	1	U		
OSMU	2/10/2010	0.5	U	0.42	J	0.65		9.2		10.05	0.32	J	10.8	5.6	J	10	U	630		15	U	440		0.57		3.3		16000		0.05	U	2.5			
OSMU	5/12/2010	0.5	U	0.65		1.2		13		14.2	11		15.95	6.6	J	10	U	782		16		370		0.95		3.155		11000		0.05	U	610			
OSMU	11/17/2010	0.5	U	0.8		1.2		4		5.2	0.58		6.58	3.04		1	U	722.5		52		417	D	1.25		2.15		12400		0.5	U	115			
OSMU	4/28/2011	0	U	1.21		1.42		0.7	J	2.12	1.15		4.45	0	YU	0	U	308		240		188	MD	0.65		2.79		1720	H1D	0	U	806	MD		
OSMU	8/25/2011	5	U	1.5	J	2.6	J	2	J	4.6	1.6	J	7.9	1.1	U	0	U	527		21		372	MD	-0.44		3.3		4600		0	U	545	MD		
OSMU	11/16/2011	5	U	0.58	J	2.5	J	1.4	J	3.9	5	U	4.48	3	U	3	OXU	544		18		567	MD	0.5		2.45		7300	BD	0.5	U	1050	D		
OSMU	3/27/2012	5	U	0.44	J	2.1	J	3.3	J	5.4	2.6	J	8.44	0	U	0	U	475		0	U	213	D	1		2.25		10000	D	0	U	378	D		
SLMU	7/27/2008	16	JD	670	D	1000	D	12		1012	110	D	2008	--		--		--		--		--		--		--		--		--		--		--	
SLMU	11/4/2008	21	JD	330	D	530	D	3		533	22	JD	996	10	U	10	U	340		15	U	190		1.21		0		55		6.8		400			
SLMU	5/17/2009	2.4	U	55	D	420	D	3.1	U	420	45	D	521	2.9	J	10	U	850		60		220		0.95		3.3		1100		0	U	110			
SLMU	8/20/2009	5	U	17	D	150	D	8.8	D	158.8	32	D	187.8	320		100	U	909.5		41		330		0.71		3.3		5600		0.05	U	84			
SLMU	11/3/2009	0.5	U	5.7		19.2		11.6		30.8	3.82		40.32	250		100	U	773.5		50		340		0.24		3.3		10000		0.05	U	13			
SLMU	2/10/2010	0.5	U	7	D	23	D	5.7	D	28.7	4.8	D	40.5	68		10	U	969		210		240		1.09		3.3		5600		0.05	U	27			
SLMU	5/12/2010	0.5	U	4.3		16		11		27	3.9		35.2	160		2.9	J	1020		3.3	J	270		0.83		3.3		19000		0.05	U	40			
SLMU	11/17/2010	0.047	J	2.3		16		4		22	3.4		27.747	2.22	J	1	U	815		40		525	D	0.77		2.665		11800		0.5	U	332			
SLMU	4/28/2011	0	U	1.03		0.81	J	0.35	J	1.16	0.47	J	2.66	0	YU	0	U	289		250		400	MD	3.34		3.3		1130	H1D	0	U	1000	MD		
SLMU	8/31/2011	5	U	5.9		26		1.9	J	27.9	3.5	J	37.4	1.3	U	0	U	799		62		514	MCD	6.04		3.3		5000		0	U	405	MD		
SLMU	11/16/2011	5	U	1.5	J	4.4	J	0.99	J	5.39	0.96	J	7.65	2.25	J	3	OXU	510		40		901	MD	0.4		3.3		6090	BD	0.5	U	1230	D		
SLMU	3/27/2012	5	U	3.3	J	15		1.9	J	16.9	2.3	J	22.5	0	U	0	U	646		21		242	D	0.6		3.3		10100	D	0	U	235	D		

TABLE 3
HISTORICAL GROUNDWATER ANALYTICAL RESULTS
Bountiful/Woods Cross 5th South PCE Plume, OU2
Davis County, Utah

Well	Sample Name	CLP Sample Name	Sample Date	PCE (µg/L)	TCE (µg/L)	cis-1,2 DCE (µg/L)	trans-1,2 DCE (µg/L)	Vinyl Chloride (µg/L)	Benzene (µg/L)	MTBE (µg/L)
BFC02	02B-BFC02-GW-001	--	6/22/2002	164	ND<1.0	ND<1.0	ND<1.0	ND<1.0	ND<1.0	--
BFC05	02B-BFC05-GW-001	--	6/28/2002	264	23.8	1.7	ND<1.0	ND<1.0	ND<1.0	--
BFC12	02B-BFC12-GW-001	--	7/10/2002	1.0	ND<1.0	ND<1.0	ND<1.0	ND<1.0	ND<1.0	--
BC01U (BC1-SS-13 MW-1)	BC1 MW-1	--	12/23/03	88	ND<2.0	8.5	ND<2.0	ND<1.0	ND<2.0	ND<2.0
BC01U	BC1 MW-1 DUP	--	12/23/03	79	ND<2.0	8.2	ND<2.0	ND<1.0	ND<2.0	ND<2.0
BC01U	--	--	April 2005	100	2.4	--	--	--	--	--
BC01U	--	--	May 2006	91	2.3	--	--	--	--	--
BC01U	08B-BC01U-N-0512-1	--	05/12/08	66	3.7	40	0.19 J	ND<0.5	--	ND<0.5
BC01U	08B-BC01U-N-0728-01	H27T9	07/28/08	93	5.0	66	0.22 J	ND<0.5	ND<0.5	ND<0.5
BC01U	1008B-BC01-N-1107-01	H2945	11/07/08	15	0.37 J	2.3	ND<0.5	ND<0.5	--	ND<0.5
BC01U	09B-BC01-N-0515-01	--	05/15/09	82	6.2	46	0.12 J	ND<0.5	ND<0.5	ND<0.5
BC01U	1110B2-BC01U-GW-00	H36A6	11/12/10	33	0.95	7.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5
BC01U	1111B2-BC01U-GW-00	H0AS9	11/23/11	25	1.3 J	6.8	ND<5.0	ND<5.0	ND<5.0	ND<5.0
BK01U	--	--	March 2003	ND<0.5	ND<0.5	--	--	--	--	--
BK01U	--	--	June 2003	ND<0.5	ND<0.5	--	--	--	--	--
BK01U	--	--	Sept. 2003	0.086 J	ND<0.5	--	--	--	--	--
BK01U	--	--	Dec. 2003	ND<0.5	ND<0.5	--	--	--	--	--
BK01U	--	--	April 2005	ND<0.5	ND<0.5	--	--	--	--	--
BK01U	1110B2-BK01U-GW-00	H36A5	11/12/10	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5
BK01U	1111B2-BK01U-GW-00	H0AS8	11/23/11	ND<5.0	ND<5.0	ND<5.0	ND<5.0	ND<5.0	ND<5.0	ND<5.0
MW01U	--	--	March 2003	ND<0.5	ND<0.5	--	--	--	--	--
MW01U	--	--	June 2003	ND<0.5	ND<0.5	--	--	--	--	--
MW01U	--	--	Sept. 2003	ND<0.5	ND<0.5	--	--	--	--	--
MW01U	--	--	Dec. 2003	ND<0.5	ND<0.5	--	--	--	--	--

TABLE 3
HISTORICAL GROUNDWATER ANALYTICAL RESULTS
Bountiful/Woods Cross 5th South PCE Plume, OU2
Davis County, Utah

Well	Sample Name	CLP Sample Name	Sample Date	PCE (µg/L)	TCE (µg/L)	cis-1,2 DCE (µg/L)	trans-1,2 DCE (µg/L)	Vinyl Chloride (µg/L)	Benzene (µg/L)	MTBE (µg/L)
MW01U	--	--	April 2005	ND<0.5	ND<0.5	--	--	--	--	--
MW01U	--	--	May 2006	ND<0.5	ND<0.5	--	--	--	--	--
MW01U	08B-MW01U-N-0726-01	H27R7	07/26/08	ND<0.5	ND<0.5	0.22 J	ND<0.5	ND<0.5	ND<0.5	0.21 J
MW01U	09B-MW01U-N-0516-01	--	05/16/09	ND<0.5	0.11 J	0.33 J	ND<0.5	ND<0.5	ND<0.5	0.7
MW01U	1110B2-MW01U-GW-00	H36A7	11/11/10	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	1.7
MW01U	0511B2-MW01U-GW-00	--	05/06/11	1.28	ND<1.0	ND<1.0	ND<1.0	ND<1.0	ND<1.0	7.51
MW01U	0811B2-MW01U-GW-00	H0AJ5	08/30/11	ND<5.0	ND<5.0	ND<5.0	ND<5.0	ND<5.0	ND<5.0	23
MW01U	1111B2-MW01U-GW-00	H0AS6	11/15/11	ND<5.0	ND<5.0	0.49 J	ND<5.0	ND<5.0	ND<5.0	24
MW01U	0512B2-MW01U-GW-00	H0AA2	05/03/12	ND<5.0	ND<5.0	ND<5.0	ND<5.0	ND<5.0	ND<5.0	57
MW01M	--	--	March 2003	41	2.1 J	--	--	--	--	--
MW01M	--	--	June 2003	7.7	0.23 J	--	--	--	--	--
MW01M	--	--	Sept. 2003	46	1.5	--	--	--	--	--
MW01M	--	--	Dec. 2003	48	1.0	--	--	--	--	--
MW01M	--	--	April 2005	35	0.76	--	--	--	--	--
MW01M	--	--	May 2006	28	ND<0.5	--	--	--	--	--
MW01M	08B-MW01M-N-0512-1	--	05/12/08	36	0.72 J	ND<0.5	ND<0.5	ND<0.5	--	0.4 J
MW01M	08B-MW01M-N-0726-01	H27R6	07/26/08	26	0.55	ND<0.5	ND<0.5	ND<0.5	ND<0.5	2.3
MW01M	0512B2-MW01M-GW-00	H0AD8	05/07/12	ND<5.0	ND<5.0	ND<5.0	ND<5.0	ND<5.0	ND<5.0	ND<5.0
MW01L	--	--	March 2003	2.7 J	0.090 J	--	--	--	--	--
MW01L	--	--	June 2003	2.9	ND<0.5	--	--	--	--	--
MW01L	--	--	Sept. 2003	2.4	0.076 J	--	--	--	--	--
MW01L	--	--	Dec. 2003	2.9	ND<0.5	--	--	--	--	--
MW01L	--	--	April 2005	3.4	0.13 J	--	--	--	--	--
MW01L	--	--	May 2006	4.1	ND<0.5	--	--	--	--	--
MW01L	08B-MW01L-N-0512-1	--	05/12/08	5.8	ND<0.5	ND<0.5	ND<0.5	ND<0.5	--	ND<0.5

TABLE 3
HISTORICAL GROUNDWATER ANALYTICAL RESULTS
Bountiful/Woods Cross 5th South PCE Plume, OU2
Davis County, Utah

Well	Sample Name	CLP Sample Name	Sample Date	PCE (µg/L)	TCE (µg/L)	cis-1,2 DCE (µg/L)	trans-1,2 DCE (µg/L)	Vinyl Chloride (µg/L)	Benzene (µg/L)	MTBE (µg/L)
MW01L	08B-MW01L-N-0726-01	H27R5	07/26/08	5.6	0.21 J	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5
MW01L	09B-MW01L-N-0516-01	--	05/16/09	5.9	6.0	ND<0.5	ND<0.5	ND<0.5	6.2	ND<0.5
MW01L	1110B2-MW01L-GW-00	H36A8	11/11/10	5.1	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5
MW01L	0511B2-MW01L-GW-00	--	05/05/11	5.15	ND<1.0	ND<1.0	ND<1.0	ND<1.0	ND<1.0	ND<1.0
MW01L	0811B2-MW01L-GW-00	H0AJ4	08/30/11	10	ND<5.0	ND<5.0	ND<5.0	ND<5.0	ND<5.0	ND<5.0
MW01L	1111B2-MW01L-GW-00	H0AS7	11/14/11	6.5	ND<5.0	ND<5.0	ND<5.0	ND<5.0	ND<5.0	ND<5.0
MW01L	0512B2-MW01L-GW-00	H0AA0	05/03/12	5.5	ND<5.0	ND<5.0	ND<5.0	ND<5.0	ND<5.0	ND<5.0
MW02U	--	--	March 2003	0.50 J	ND<0.5	--	--	--	--	--
MW02U	--	--	June 2003	0.87	ND<0.5	--	--	--	--	--
MW02U	--	--	Sept. 2003	0.93 J	0.055 J	--	--	--	--	--
MW02U	--	--	Dec. 2003	0.48 J	ND<0.5	--	--	--	--	--
MW02U	--	--	April 2005	1.2	ND<0.5	--	--	--	--	--
MW02U	--	--	May 2006	0.59	ND<0.5	--	--	--	--	--
MW02U	08B-MW02U-N-0726-01	H27S0	07/26/08	2.1	0.59	0.26 J	ND<0.5	ND<0.5	ND<0.5	0.24 J
MW02U	1110B2-MW02U-GW-00	H36A9	11/17/10	8.6	3.6	1.6	ND<0.5	ND<0.5	ND<0.5	2.8 J
MW02U	1111B2-MW02U-GW-00	H0AT9	11/17/11	0.96 J	ND<5.0	ND<5.0	ND<5.0	ND<5.0	ND<5.0	ND<5.0
MW02U	1111B2-MW02U-GW-30	H0AZ7	11/17/11	0.89 J	ND<5.0	ND<5.0	ND<5.0	ND<5.0	ND<5.0	ND<5.0
MW02M	--	--	March 2003	1.1 J	ND<0.5	--	--	--	--	--
MW02M	--	--	June 2003	ND<0.5	ND<0.5	--	--	--	--	--
MW02M	--	--	Sept. 2003	0.62	ND<0.5	--	--	--	--	--
MW02M	--	--	Dec. 2003	0.51	ND<0.5	--	--	--	--	--
MW02M	--	--	April 2005	0.50	ND<0.5	--	--	--	--	--
MW02M	--	--	May 2006	0.70	ND<0.5	--	--	--	--	--
MW02M	08B-MW02M-N-0726-01	H27R9	07/26/08	0.51	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5
MW02M	1110B2-MW02M-GW-00	H36B0	11/17/10	0.69	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5

TABLE 3
HISTORICAL GROUNDWATER ANALYTICAL RESULTS
Bountiful/Woods Cross 5th South PCE Plume, OU2
Davis County, Utah

Well	Sample Name	CLP Sample Name	Sample Date	PCE (µg/L)	TCE (µg/L)	cis-1,2 DCE (µg/L)	trans-1,2 DCE (µg/L)	Vinyl Chloride (µg/L)	Benzene (µg/L)	MTBE (µg/L)
MW02M	1111B2-MW02M-GW-00	H0AW0	11/17/11	0.48 J	ND<5.0	ND<5.0	ND<5.0	ND<5.0	ND<5.0	ND<5.0
MW02L	--	--	March 2003	ND<0.5	0.50 J	--	--	--	--	--
MW02L	--	--	June 2003	ND<0.5	ND<0.5	--	--	--	--	--
MW02L	--	--	Sept. 2003	0.30 J	0.080 J	--	--	--	--	--
MW02L	--	--	Dec. 2003	ND<0.5	ND<0.5	--	--	--	--	--
MW02L	--	--	April 2005	ND<0.5	ND<0.5	--	--	--	--	--
MW02L	--	--	May 2006	0.24 J	4.6	--	--	--	--	--
MW02L	08B-MW02L-N-0726-01	H27R8	07/26/08	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5
MW02L	1110B2-MW02L-GW-00	H36B1	11/17/10	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5
MW02L	1111B2-MW02L-GW-00	H0AW1	11/17/11	ND<5.0	ND<5.0	ND<5.0	ND<5.0	ND<5.0	ND<5.0	ND<5.0
MW03U	--	--	March 2003	1.3 J	0.50 J	--	--	--	--	--
MW03U	--	--	June 2003	0.25 J	ND<0.5	--	--	--	--	--
MW03U	--	--	Sept. 2003	0.11 J	0.11 J	--	--	--	--	--
MW03U	--	--	Dec. 2003	ND<0.5	ND<0.5	--	--	--	--	--
MW03U	--	--	April 2005	ND<0.5	0.76	--	--	--	--	--
MW03U	--	--	May 2006	ND<10	9.9 J	--	--	--	--	--
MW03U	08B-MW03U-N-0728-01	H27T0	07/28/08	ND<0.5	0.27 J	3.7	ND<0.5	1.1	0.29 J	1,700
MW03U	1110B2-MW03U-GW-00	H36B2	11/16/10	ND<0.5	25	ND<0.5	ND<0.5	ND<0.5	ND<0.5	660
MW03U	1111B2-MW03U-GW-00	H0AW2	11/21/11	ND<5.0	ND<5.0	ND<5.0	ND<5.0	ND<5.0	ND<5.0	430
MW03M	--	--	March 2003	25	1.0	--	--	--	--	--
MW03M	--	--	June 2003	4.5	0.16 J	--	--	--	--	--
MW03M	--	--	Sept. 2003	24 J	1.0 J	--	--	--	--	--
MW03M	--	--	Dec. 2003	26	1.0	--	--	--	--	--
MW03M	--	--	April 2005	38	1.1	--	--	--	--	--
MW03M	--	--	May 2006	25	1.3	--	--	--	--	--

TABLE 3
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Bountiful/Woods Cross 5th South PCE Plume, OU2
Davis County, Utah

Well	Sample Name	CLP Sample Name	Sample Date	PCE (µg/L)	TCE (µg/L)	cis-1,2 DCE (µg/L)	trans-1,2 DCE (µg/L)	Vinyl Chloride (µg/L)	Benzene (µg/L)	MTBE (µg/L)
MW03M	08B-MW03M-N-0728-01	H27S9	07/28/08	29	1.1	ND<0.5	ND<0.5	ND<0.5	ND<0.5	0.22 J
MW03M	09B-MW03M-N-0519-01	--	05/19/09	19	0.83	ND<0.5	ND<0.5	ND<0.5	ND<0.5	0.21 J
MW03M	1110B2-MW03M-GW-00	H36B3	11/16/10	49	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5
MW03M	1111B2-MW03M-GW-00	H0AW3	11/21/11	19	0.68 J	ND<5.5	ND<5.5	ND<5.5	ND<5.5	ND<5.5
MW03L	--	--	March 2003	6.9	0.87	--	--	--	--	--
MW03L	--	--	June 2003	12	1.7	--	--	--	--	--
MW03L	--	--	Sept. 2003	14	2.1	--	--	--	--	--
MW03L	--	--	Dec. 2003	9.0 J	1.1 J	--	--	--	--	--
MW03L	--	--	April 2005	14	1.9	--	--	--	--	--
MW03L	--	--	May 2006	16	2.8	--	--	--	--	--
MW03L	08B-MW03L-N-0728-01	H27S8	07/28/08	25	2.4	0.2 J	ND<0.5	ND<0.5	ND<0.5	ND<0.5
MW03L	09B-MW03L-N-0519-01	--	05/19/09	16	1.4	0.13 J	ND<0.5	ND<0.5	ND<0.5	ND<0.5
MW03L	1110B2-MW03L-GW-00	H36B4	11/16/10	30	2.0	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5
MW03L	1111B2-MW03L-GW-00	H0AW4	11/21/11	14	1.4 J	ND<5.0	ND<5.0	ND<5.0	ND<5.0	ND<5.0
MW03L	1111B2-MW03L-GW-31	H0AZ8	11/21/11	11	1.2 J	ND<5.0	ND<5.0	ND<5.0	ND<5.0	ND<5.0
MW04U	--	--	March 2003	6.3 J	ND<0.5	--	--	--	--	--
MW04U	--	--	June 2003	9.6	0.45 J	--	--	--	--	--
MW04U	--	--	Sept. 2003	11	0.66	--	--	--	--	--
MW04U	--	--	Dec. 2003	8.1	0.55	--	--	--	--	--
MW04U	--	--	April 2005	3.6	0.33 J	--	--	--	--	--
MW04U	--	--	May 2006	7.6	0.85	--	--	--	--	--
MW04U	08B-MW04U-N-0725-01	H27P9	07/25/08	4.8	0.61	1.2	ND<0.5	ND<0.5	ND<0.5	ND<0.5
MW04U	1110B2-MW04U-GW-00	H36B5	11/19/10	4.9	1.0	1.4	ND<0.5	ND<0.5	ND<0.5	ND<0.5
MW04U	1111B2-MW04U-GW-00	H0AW5	11/17/11	3.3 J	0.71 J	0.99 J	ND<5.0	ND<5.0	ND<5.0	ND<5.0

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HISTORICAL GROUNDWATER ANALYTICAL RESULTS
Bountiful/Woods Cross 5th South PCE Plume, OU2
Davis County, Utah

Well	Sample Name	CLP Sample Name	Sample Date	PCE (µg/L)	TCE (µg/L)	cis-1,2 DCE (µg/L)	trans-1,2 DCE (µg/L)	Vinyl Chloride (µg/L)	Benzene (µg/L)	MTBE (µg/L)
MW04M	--	--	March 2003	11	ND<0.5	--	--	--	--	--
MW04M	--	--	June 2003	7.2	ND<0.5	--	--	--	--	--
MW04M	--	--	Sept. 2003	9.1	0.032 J	--	--	--	--	--
MW04M	--	--	Dec. 2003	6.5	ND<0.5	--	--	--	--	--
MW04M	--	--	April 2005	4.6	ND<0.5	--	--	--	--	--
MW04M	--	--	May 2006	8.5	ND<0.5	--	--	--	--	--
MW04M	08B-MW04M-N-0725-01	H27P8	07/25/08	5.1	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5
MW04M	1110B2-MW04M-GW-00	H36B6	11/19/10	6.7	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5
MW04M	1111B2-MW04M-GW-00	H0AW6	11/17/11	4.6 J	ND<5.0	ND<5.0	ND<5.0	ND<5.0	ND<5.0	ND<5.0
MW04L	--	--	March 2003	1.1	ND<0.5	--	--	--	--	--
MW04L	--	--	June 2003	0.57	ND<0.5	--	--	--	--	--
MW04L	--	--	Sept. 2003	0.70	0.048 J	--	--	--	--	--
MW04L	--	--	Dec. 2003	0.61	ND<0.5	--	--	--	--	--
MW04L	--	--	April 2005	0.26 J	ND<0.5	--	--	--	--	--
MW04L	--	--	May 2006	0.32 J	ND<0.5	--	--	--	--	--
MW04L	08B-MW04L-N-0725-01	H27P7	07/25/08	0.26 J	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5
MW04L	1110B2-MW04L-GW-00	H36B7	11/19/10	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5
MW04L	1111B2-MW04L-GW-00	H0AW7	11/17/11	ND<5.0	ND<5.0	ND<5.0	ND<5.0	ND<5.0	ND<5.0	ND<5.0
MW05U	--	--	March 2003	32	0.30 J	--	--	--	--	--
MW05U	--	--	June 2003	4.2	ND<0.5	--	--	--	--	--
MW05U	--	--	Sept. 2003	54	0.049 J	--	--	--	--	--
MW05U	--	--	Dec. 2003	22	ND<0.5	--	--	--	--	--
MW05U	--	--	April 2005	21	ND<0.5	--	--	--	--	--
MW05U	--	--	May 2006	47	ND<0.5	--	--	--	--	--
MW05U	08B-MW05U-0513-N-1	--	05/13/08	68	ND<0.5	ND<0.5	ND<0.5	ND<0.5	--	ND<0.5

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HISTORICAL GROUNDWATER ANALYTICAL RESULTS
Bountiful/Woods Cross 5th South PCE Plume, OU2
Davis County, Utah

Well	Sample Name	CLP Sample Name	Sample Date	PCE (µg/L)	TCE (µg/L)	cis-1,2 DCE (µg/L)	trans-1,2 DCE (µg/L)	Vinyl Chloride (µg/L)	Benzene (µg/L)	MTBE (µg/L)
MW05U	08B-MW05U-N-0727-01	H27Q6	07/27/08	47	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5
MW05U	1110B2-MW05U-GW-00	H36B8	11/15/10	64	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5
MW05U	1111B2-MW05U-GW-00	H0AW8	11/18/11	79	0.59 J	ND<5.0	ND<5.0	ND<5.0	ND<5.0	ND<5.0
MW05M	--	--	March 2003	1.5	ND<0.5	--	--	--	--	--
MW05M	--	--	June 2003	2.3	ND<0.5	--	--	--	--	--
MW05M	--	--	Sept. 2003	2.4	ND<0.5	--	--	--	--	--
MW05M	--	--	Dec. 2003	1.4	ND<0.5	--	--	--	--	--
MW05M	--	--	April 2005	2.8	ND<0.5	--	--	--	--	--
MW05M	--	--	May 2006	3.0	ND<0.5	--	--	--	--	--
MW05M	08B-MW05M-0513-N-1	--	05/13/08	2.1	ND<0.5	ND<0.5	ND<0.5	ND<0.5	--	ND<0.5
MW05M	08B-MW05M-N-0727-01	H27Q5	07/27/08	1.9	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5
MW05M	1110B2-MW05M-GW-00	H36B9	11/15/10	1.8	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5
MW05M	1111B2-MW05M-GW-00	H0AW9	11/18/11	1.7 J	ND<5.0	ND<5.0	ND<5.0	ND<5.0	ND<5.0	ND<5.0
MW05L	--	--	March 2003	0.63	ND<0.5	--	--	--	--	--
MW05L	--	--	June 2003	ND<0.5	ND<0.5	--	--	--	--	--
MW05L	--	--	Sept. 2003	0.54	ND<0.5	--	--	--	--	--
MW05L	--	--	Dec. 2003	0.38 J	ND<0.5	--	--	--	--	--
MW05L	--	--	April 2005	0.39 J	ND<0.5	--	--	--	--	--
MW05L	--	--	May 2006	0.41 J	ND<0.5	--	--	--	--	--
MW05L	08B-MW05L-0513-N-1	--	05/13/08	0.48 J	ND<0.5	ND<0.5	ND<0.5	ND<0.5	--	ND<0.5
MW05L	08B-MW05L-N-0727-01	H27Q4	07/27/08	0.35 J	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5
MW05L	1110B2-MW05L-GW-00	H36C0	11/15/10	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5
MW05L	1110B2-MW05L-GW-34	H36C1	11/15/10	0.61	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5
MW05L	1111B2-MW05L-GW-00	H0AX0	11/18/11	0.36 J	ND<5.0	ND<5.0	ND<5.0	ND<5.0	ND<5.0	ND<5.0

TABLE 3
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Bountiful/Woods Cross 5th South PCE Plume, OU2
Davis County, Utah

Well	Sample Name	CLP Sample Name	Sample Date	PCE (µg/L)	TCE (µg/L)	cis-1,2 DCE (µg/L)	trans-1,2 DCE (µg/L)	Vinyl Chloride (µg/L)	Benzene (µg/L)	MTBE (µg/L)
MW06U	--	--	March 2003	ND<0.5	ND<0.5	--	--	--	--	--
MW06U	--	--	June 2003	ND<0.5	ND<0.5	--	--	--	--	--
MW06U	--	--	Sept. 2003	2.1 J	ND<0.5	--	--	--	--	--
MW06U	--	--	Dec. 2003	0.92 J	ND<0.5	--	--	--	--	--
MW06U	--	--	April 2005	3.5	ND<0.5	--	--	--	--	--
MW06U	08B-MW06U-N-0724-01	H27N9	07/24/08	0.93	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5
MW06U	1110B2-MW06U-GW-00	H36C2	11/13/10	1.3	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5
MW07U	--	--	March 2003	ND<0.5	ND<0.5	--	--	--	--	--
MW07U	--	--	June 2003	ND<0.5	ND<0.5	--	--	--	--	--
MW07U	--	--	Sept. 2003	0.068 J	1.3 J	--	--	--	--	--
MW07U	--	--	Dec. 2003	ND<0.5	ND<0.5	--	--	--	--	--
MW07U	--	--	April 2005	ND<0.5	ND<0.5	--	--	--	--	--
MW07U	08B-MW07U-N-0724-01	H27N8	07/24/08	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5
MW07U	1110B2-MW07U-GW-00	H36C3	11/13/10	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5
MW08U	--	--	April 2005	ND<0.5	ND<0.5	--	--	--	--	--
MW08U	--	--	May 2006	ND<0.5	ND<0.5	--	--	--	--	--
MW08U	08B-MW08U-N-0514-1	--	05/14/08	0.47 J	ND<0.5	ND<0.5	ND<0.5	ND<0.5	--	ND<0.5
MW08U	08B-MW08U-N-0724-01	H27P2	07/24/08	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5
MW08U	1110B2-MW08U-GW-00	H36C4	11/18/10	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5
MW08U	1111B2-MW08U-GW-00	H0AX1	11/18/11	ND<5.0	ND<5.0	ND<5.0	ND<5.0	ND<5.0	ND<5.0	ND<5.0
MW08M	--	--	April 2005	8.9	1.9	--	--	--	--	--
MW08M	--	--	May 2006	8.5	6.8	--	--	--	--	--
MW08M	08B-MW08M-N-0514-1	--	05/14/08	21	4.4	0.67 J	0.26 J	ND<0.5	--	ND<0.5
MW08M	08B-MW08M-N-0724-01	H27P1	07/24/08	18	5.4	0.66	0.26 J	ND<0.5	ND<0.5	0.11 J
MW08M	1110B2-MW08M-GW-00	H36C5	11/19/10	8.9	2.1	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5

TABLE 3
HISTORICAL GROUNDWATER ANALYTICAL RESULTS
Bountiful/Woods Cross 5th South PCE Plume, OU2
Davis County, Utah

Well	Sample Name	CLP Sample Name	Sample Date	PCE (µg/L)	TCE (µg/L)	cis-1,2 DCE (µg/L)	trans-1,2 DCE (µg/L)	Vinyl Chloride (µg/L)	Benzene (µg/L)	MTBE (µg/L)
MW08M	1111B2-MW08M-GW-00	H0AX2	11/18/11	19	4.5 J	ND<5.0	ND<5.0	ND<5.0	ND<5.0	ND<5.0
MW08M	1111B2-MW08M-GW-32	H0AZ9	11/18/11	14	3.7 J	ND<5.0	ND<5.0	ND<5.0	ND<5.0	ND<5.0
MW08L	--	--	April 2005	1.4	0.23 J	--	--	--	--	--
MW08L	--	--	May 2006	3.1	0.54	--	--	--	--	--
MW08L	08B-MW08L-N-0514-1	--	05/14/08	2.9	0.91 J	0.16 J	ND<0.5	ND<0.5	--	ND<0.5
MW08L	08B-MW08L-N-0724-01	H27P0	07/24/08	2.9	0.78	0.17 J	ND<0.5	ND<0.5	ND<0.5	ND<0.5
MW08L	1110B2-MW08L-GW-00	H36C6	11/11/10	3.3	1.1	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5
MW08L	1111B2-MW08L-GW-00	H0AX3	11/18/11	1.9 J	0.75 J	ND<5.0	ND<5.0	ND<5.0	ND<5.0	ND<5.0
MW-09 - SP	08B-MW09-SP-0426-100	--	04/26/08	4.4	ND<0.5	ND<0.5	ND<0.5	ND<0.5	--	ND<0.5
MW-09 - SP	08B-MW09-SP-0427-200	--	04/27/08	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	--	ND<0.5
MW-09U	08B-MW09U-N-0506-1	--	05/06/08	0.86 J	ND<0.5	ND<0.5	ND<0.5	ND<0.5	--	ND<0.5
MW-09U	08B-MW09U-N-0516-01	--	05/16/08	1.4	ND<0.5	ND<0.5	ND<0.5	ND<0.5	--	ND<0.5
MW-09U	08B-MW09U-N-0727-01	H27R0	07/27/08	13	0.14 J	0.29 J	ND<0.5	ND<0.5	ND<0.5	ND<0.5
MW-09U	08B-MW09U-N-1105-01	H2948	11/05/08	9.2	ND<0.5	ND<0.5	ND<0.5	ND<0.5	--	ND<0.5
MW-09U	09B-MW09U-N-0518-01	--	05/18/09	6.4	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5
MW-09U	1110B2-MW09U-GW-00	H36C7	11/09/10	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5
MW-09U	1111B2-MW09U-GW-00	H0AT0	11/19/11	1.3 J	ND<5.0	ND<5.0	ND<5.0	ND<5.0	ND<5.0	ND<5.0
MW-09U	0512B2-MW09U-GW-00	H0AA3	05/01/12	7.1	ND<5.0	ND<5.0	ND<5.0	ND<5.0	ND<5.0	ND<5.0
MW-09M	08B-MW09M-N-0505-1	--	05/05/08	0.56 J	ND<0.5	ND<0.5	ND<0.5	ND<0.5	--	ND<0.5
MW-09M	08B-MW09M-N-0727-01	H27Q9	07/27/08	1.0	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5
MW-09M	08B-MW09M-N-1105-01	H2947	11/05/08	0.97	ND<0.5	ND<0.5	ND<0.5	ND<0.5	--	ND<0.5
MW-09M	09B-MW09M-N-0515-01	--	05/15/09	1.3	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5
MW-09M	1110B2-MW09M-GW-00	H36C8	11/09/10	1.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5
MW-09M	1111B2-MW09M-GW-00	H0AT1	11/19/11	0.74 J	ND<5.0	ND<5.0	ND<5.0	ND<5.0	ND<5.0	ND<5.0

TABLE 3
HISTORICAL GROUNDWATER ANALYTICAL RESULTS
Bountiful/Woods Cross 5th South PCE Plume, OU2
Davis County, Utah

Well	Sample Name	CLP Sample Name	Sample Date	PCE (µg/L)	TCE (µg/L)	cis-1,2 DCE (µg/L)	trans-1,2 DCE (µg/L)	Vinyl Chloride (µg/L)	Benzene (µg/L)	MTBE (µg/L)
MW-09L	08B-MW09L-N-0505-1	--	05/05/08	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	--	ND<0.5
MW-09L	08B-MW09L-N-0515-01	--	05/15/08	0.24 J	ND<0.5	ND<0.5	ND<0.5	ND<0.5	--	ND<0.5
MW-09L	08B-MW09L-N-0727-01	H27Q7	07/27/08	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5
MW-09L	08B-MW09L-N-1105-01	H2946	11/05/08	0.16 J	ND<0.5	ND<0.5	ND<0.5	ND<0.5	--	ND<0.5
MW-09L	09B-MW09L-N-0515-01	--	05/15/09	0.12 J	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5
MW-09L	1110B2-MW09L-GW-00	H36C9	11/09/10	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5
MW-09L	1111B2-MW09L-GW-00	H0AT2	11/19/11	ND<5.0	ND<5.0	ND<5.0	ND<5.0	ND<5.0	ND<5.0	ND<5.0
MW-10U	08B-MW10U-N-0516-01	--	05/16/08	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	--	ND<0.5
MW-10U	08B-MW10U-N-0727-01	H27R4	07/27/08	9.6	0.35 J	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5
MW-10U	08B-MW10U-N-1108-01	H2952	11/08/08	12	0.31 J	ND<0.5	ND<0.5	ND<0.5	--	ND<0.5
MW-10U	09B-MW10U-N-0520-01	--	05/20/09	3.9	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5
MW-10U	1110B2-MW10U-GW-00	H36D0	11/10/10	9.1	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5
MW-10U	1111B2-MW10U-GW-00	H0AT3	11/22/11	3.3 J	ND<5.0	ND<5.0	ND<5.0	ND<5.0	ND<5.0	ND<5.0
MW-10M	08B-MW10M-N-0522-01	--	05/22/08	2.2	0.19 J	ND<0.5	ND<0.5	ND<0.5	--	ND<0.5
MW-10M	08B-MW10M-N-0727-01	H27R2	07/27/08	2.8	0.14 J	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5
MW-10M	08B-MW10M-N-1108-01	H2951	11/08/08	1.4	ND<0.5	ND<0.5	ND<0.5	ND<0.5	--	ND<0.5
MW-10M	09B-MW10M-N-0520-01	--	05/20/09	2.2	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5
MW-10M	1110B2-MW10M-GW-00	H36D1	11/10/10	2.1	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5
MW-10M	1111B2-MW10M-GW-00	H0AT4	11/22/11	1.2 J	ND<5.0	ND<5.0	ND<5.0	ND<5.0	ND<5.0	ND<5.0
MW-10L	08B-MW10L-N-0522-01	--	05/22/08	0.42 J	ND<0.5	ND<0.5	ND<0.5	ND<0.5	--	ND<0.5
MW-10L	08B-MW10L-N-0727-01	H27R1	07/27/08	0.20 J	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5
MW-10L	08B-MW10L-N-1108-01	H2949	11/08/08	0.32 J	ND<0.5	ND<0.5	ND<0.5	ND<0.5	--	ND<0.5
MW-10L	09B-MW10L-N-0520-01	--	05/20/09	0.35 J	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5
MW-10L	1110B2-MW10L-GW-00	H36D2	11/10/10	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5
MW-10L	1111B2-MW10L-GW-00	H0AT5	11/22/11	ND<5.0	ND<5.0	ND<5.0	ND<5.0	ND<5.0	ND<5.0	ND<5.0

TABLE 3
HISTORICAL GROUNDWATER ANALYTICAL RESULTS
Bountiful/Woods Cross 5th South PCE Plume, OU2
Davis County, Utah

Well	Sample Name	CLP Sample Name	Sample Date	PCE (µg/L)	TCE (µg/L)	cis-1,2 DCE (µg/L)	trans-1,2 DCE (µg/L)	Vinyl Chloride (µg/L)	Benzene (µg/L)	MTBE (µg/L)
MW-11U	08B-MW11U-N-0725-01	H27P5	07/25/08	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	2,200
MW-11U	09B-MW11U-N-0516-01	--	05/16/09	ND<10	ND<10	ND<10	ND<10	ND<10	ND<10	2,400
MW-11U	1110B2-MW11U-GW-00	H36D3	11/10/10	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	630
MW-11U	1111B2-MW11U-GW-00	H0AX4	11/16/11	ND<5.0	ND<5.0	ND<5.0	ND<5.0	ND<5.0	ND<5.0	750
MW-11M	08B-MW11M-N-0725-01	H27P4	07/25/08	1.1	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	0.19 J
MW-11M	09B-MW11M-N-0516-01	--	05/16/09	2.1	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	0.14 J
MW-11M	1110B2-MW11M-GW-00	H36D4	11/13/10	0.85	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5
MW-11M	1111B2-MW11M-GW-00	H0AX5	11/16/11	2.7 J	0.41 J	ND<5.0	ND<5.0	ND<5.0	ND<5.0	ND<5.0
MW-11L	08B-MW11L-N-0725-01	H27P3	07/25/08	1.3	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5
MW-11L	09B-MW11L-N-0516-0	--	05/16/09	1.8	ND<0.5	ND<0.5	ND<0.5	0.11 J	ND<0.5	ND<0.5
MW-11L	1110B2-MW11L-GW-00	H36D5	11/13/10	2.1	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5
MW-11L	1111B2-MW11L-GW-00	H0AX6	11/15/11	ND<5.0	ND<5.0	ND<5.0	ND<5.0	ND<5.0	ND<5.0	ND<5.0
MW-12U	08B-MW12U-N-0725-01	H27Q0	07/25/08	ND<0.5	5.0	8.2	0.15 J	ND<0.5	ND<0.5	130
MW-12U	1110B2-MW12U-GW-00	H36D6	11/13/10	ND<0.5	6.0	10	ND<0.5	0.93	ND<0.5	240
MW-12U	0511B2-MW12U-GW-00	--	05/06/11	ND<1.0	4.49	8.18	0.30 J	0.44 J	ND<1.0	326
MW-12U	0811B2-MW12U-GW-00	H0AL6	08/31/11	ND<5.0	6.5	13	ND<5.0	ND<5.0	ND<5.0	380
MW-12U	1111B2-MW12U-GW-00	H0AX7	11/16/11	ND<5.0	4.6 J	11	ND<5.0	ND<5.0	ND<5.0	320
MW-12U	0512B2-MW12U-GW-00	H0AA6	05/02/12	ND<5.0	4.0 J	9.7	ND<5.0	ND<5.0	ND<5.0	350
MW-12M	08B-MW12M-N-0725-01	H27Q1	07/25/08	1.3	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	0.92
MW-12M	1110B2-MW12M-GW-00	H36D7	11/13/10	0.93	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5
MW-12M	0511B2-MW12M-GW-00	--	05/06/11	ND<1.0	ND<1.0	ND<1.0	ND<1.0	ND<1.0	ND<1.0	ND<1.0
MW-12M	0811B2-MW12M-GW-00	H0AL7	08/31/11	1.8 J	ND<5.0	ND<5.0	ND<5.0	ND<5.0	ND<5.0	ND<5.0
MW-12M	1111B2-MW12M-GW-00	H0AX8	11/16/11	ND<5.0	ND<5.0	ND<5.0	ND<5.0	ND<5.0	ND<5.0	ND<5.0
MW-12M	0512B2-MW12M-GW-00	H0AA5	05/02/12	ND<5.0	ND<5.0	ND<5.0	ND<5.0	ND<5.0	ND<5.0	ND<5.0

TABLE 3
HISTORICAL GROUNDWATER ANALYTICAL RESULTS
Bountiful/Woods Cross 5th South PCE Plume, OU2
Davis County, Utah

Well	Sample Name	CLP Sample Name	Sample Date	PCE (µg/L)	TCE (µg/L)	cis-1,2 DCE (µg/L)	trans-1,2 DCE (µg/L)	Vinyl Chloride (µg/L)	Benzene (µg/L)	MTBE (µg/L)
MW-12L	08B-MW12L-N-0725-01	H27Q2	07/25/08	1.6	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5
MW-12L	--	--	11/13/10	--	--	--	--	--	--	--
MW-12L	0511B2-MW12L-GW-00	--	05/06/11	1.79	ND<1.0	ND<1.0	ND<1.0	ND<1.0	ND<1.0	ND<1.0
MW-12L	0811B2-MW12L-GW-00	H0AJ8	08/31/11	2.3 J	ND<5.0	ND<5.0	ND<5.0	ND<5.0	ND<5.0	ND<5.0
MW-12L	1111B2-MW12L-GW-00	H0AX9	11/16/11	2.0 J	ND<5.0	ND<5.0	ND<5.0	ND<5.0	ND<5.0	ND<5.0
MW-12L	0512B2-MW12L-GW-00	H0AD7	05/02/12	ND<5.0	ND<5.0	ND<5.0	ND<5.0	ND<5.0	ND<5.0	ND<5.0
MW-13U	08B-MW13U-N-0726-01	H27S3	07/26/08	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	350
MW-13U	1110B2-MW13U-GW-00	H36D9	11/09/10	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	220
MW-13U	0411B2-MW13U-GW-00	--	04/28/11	ND<1.0	ND<1.0	ND<1.0	ND<1.0	ND<1.0	ND<1.0	472
MW-13U	0811B2-MW13U-GW-00	H0AJ9	08/29/11	ND<5.0	ND<5.0	ND<5.0	ND<5.0	ND<5.0	ND<5.0	570
MW-13U	1111B2-MW13U-GW-00	H0AY0	11/15/11	ND<5.0	ND<5.0	ND<5.0	ND<5.0	ND<5.0	ND<5.0	450
MW-13U	0512B2-MW13U-GW-00	H0AB0	05/02/12	ND<5.0	ND<5.0	ND<5.0	ND<5.0	ND<5.0	ND<5.0	1100
MW-13M	08B-MW13M-N-0726-01	H27S2	07/26/08	1.4	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5
MW-13M	1110B2-MW13M-GW-00	H36E0	11/09/10	ND<0.5	ND<0.5	ND<0.5	ND<0.5	3.9	ND<0.5	ND<0.5
MW-13M	1110B2-MW13M-GW-30	H36E1	11/09/10	ND<0.5	ND<0.5	ND<0.5	ND<0.5	2.4	ND<0.5	ND<0.5
MW-13M	0411B2-MW13M-GW-00	--	04/28/11	3.43	ND<1.0	ND<1.0	ND<1.0	ND<1.0	ND<1.0	ND<1.0
MW-13M	0811B2-MW13M-GW-00	H0AK0	08/29/11	4.5 J	ND<5.0	ND<5.0	ND<5.0	ND<5.0	ND<5.0	ND<5.0
MW-13M	1111B2-MW13M-GW-00	H0AY1	11/15/11	3.1 J	ND<5.0	ND<5.0	ND<5.0	ND<5.0	ND<5.0	0.18 J
MW-13M	0512B2-MW13M-GW-00	H0AA9	05/02/12	2.8 J	ND<5.0	ND<5.0	ND<5.0	ND<5.0	ND<5.0	ND<5.0
MW-13L	08B-MW13L-N-0726-01	H27S1	07/26/08	3.6	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5
MW-13L	1110B2-MW13L-GW-00	H36E2	11/09/10	2.6	ND<0.5	ND<0.5	ND<0.5	3.9	ND<0.5	ND<0.5
MW-13L	0411B2-MW13L-GW-00	--	04/28/11	6.87	ND<1.0	ND<1.0	ND<1.0	ND<1.0	ND<1.0	ND<1.0
MW-13L	0811B2-MW13L-GW-00	H0AK1	08/29/11	9.4	ND<5.0	ND<5.0	ND<5.0	ND<5.0	ND<5.0	ND<5.0
MW-13L	1111B2-MW13L-GW-00	H0AY2	11/15/11	5.3	ND<5.0	ND<5.0	ND<5.0	ND<5.0	ND<5.0	ND<5.0
MW-13L	0512B2-MW13L-GW-00	H0AA7	05/02/12	4.2 J	ND<5.0	ND<5.0	ND<5.0	ND<5.0	ND<5.0	ND<5.0

TABLE 3
HISTORICAL GROUNDWATER ANALYTICAL RESULTS
Bountiful/Woods Cross 5th South PCE Plume, OU2
Davis County, Utah

Well	Sample Name	CLP Sample Name	Sample Date	PCE (µg/L)	TCE (µg/L)	cis-1,2 DCE (µg/L)	trans-1,2 DCE (µg/L)	Vinyl Chloride (µg/L)	Benzene (µg/L)	MTBE (µg/L)
MW-14U	08B-MW14U-N-0726-01	H27S7	07/26/08	ND<0.5	ND<0.5	0.14 J	ND<0.5	0.15 J	ND<0.5	1,300
MW-14U	1110B2-MW14U-GW-00	H36E3	11/16/10	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	13	1,100
MW-14U	0411B2-MW14U-GW-00	--	05/05/11	ND<1.0	ND<1.0	ND<1.0	ND<1.0	ND<1.0	ND<1.0	4,520
MW-14U	0811B2-MW14U-GW-00	H0AK2	08/24/11	ND<5.0	ND<5.0	ND<5.0	ND<5.0	ND<5.0	ND<5.0	5,200
MW-14U	1111B2-MW14U-GW-00	H0AY3	11/21/11	ND<5.0	ND<5.0	ND<5.0	ND<5.0	ND<5.0	ND<5.0	2,300
MW-14U	0512B2-MW14U-GW-00	H0AB4	05/08/12	ND<5.0	ND<5.0	ND<5.0	ND<5.0	ND<5.0	ND<5.0	3,000
MW-14M	08B-MW14M-N-0726-01	H27S6	07/26/08	20	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	77
MW-14M	1110B2-MW14M-GW-00	H36E4	11/16/10	29	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5
MW-14M	0411B2-MW14M-GW-00	--	05/05/11	18.7	ND<1.0	ND<1.0	ND<1.0	ND<1.0	ND<1.0	0.33 J
MW-14M	0811B2-MW14M-GW-00	H0AK3	08/24/11	22	ND<5.0	ND<5.0	ND<5.0	ND<5.0	ND<5.0	ND<5.0
MW-14M	1111B2-MW14M-GW-00	H0AY4	11/21/11	14	ND<5.0	ND<5.0	ND<5.0	ND<5.0	ND<5.0	2.2 J
MW-14M	1111B2-MW14M-GW-33	H0B00	11/21/11	13	ND<5.0	ND<5.0	ND<5.0	ND<5.0	ND<5.0	2.2 J
MW-14M	0512B2-MW14M-GW-33	H0AB3	05/08/12	9.0	ND<5.0	ND<5.0	ND<5.0	ND<5.0	ND<5.0	ND<5.0
MW-14L	08B-MW14L-N-0726-01	H27S5	07/26/08	9.4	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5
MW-14L	1110B2-MW14L-GW-00	H36E5	11/18/10	10	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5
MW-14L	0411B2-MW14L-GW-00	--	05/05/11	6.56	ND<1.0	ND<1.0	ND<1.0	ND<1.0	ND<1.0	ND<1.0
MW-14L	0811B2-MW14L-GW-00	H0AK4	08/24/11	20	ND<5.0	ND<5.0	ND<5.0	ND<5.0	ND<5.0	ND<5.0
MW-14L	1111B2-MW14L-GW-00	H0AY5	11/21/11	7.2	ND<5.0	ND<5.0	ND<5.0	ND<5.0	ND<5.0	ND<5.0
MW-14L	0512B2-MW14L-GW-00	H0AB1	05/08/12	7.7	ND<5.0	ND<5.0	ND<5.0	ND<5.0	ND<5.0	ND<5.0
MW-15U	08B-MW15U-N-0616-01	--	06/16/08	19	4.6	0.43 J	0.24 J	ND<0.5	--	ND<0.5
MW-15U	08B-MW15U-N-0728-01	H27T2	07/28/08	51	28	1.8	2.2	ND<0.5	0.23 J	ND<0.5
MW-15U	08B-MW15U-N-1107-01	H29S3	11/07/08	38	23	2.1	4.9	ND<0.5	--	ND<0.5
MW-15U	09B-MW15U-N-0515-01	--	05/15/09	17	15	1.9	3.0	ND<0.5	ND<0.5	ND<0.5
MW-15U	1110B2-MW15U-GW-00	H36E6	11/12/10	21	17	2.1	3.4	ND<0.5	ND<0.5	ND<0.5
MW-15U	1110B2-MW15U-GW-32	H36E7	11/12/10	21	17	1.9	3.0	ND<0.5	ND<0.5	ND<0.5

TABLE 3
HISTORICAL GROUNDWATER ANALYTICAL RESULTS
Bountiful/Woods Cross 5th South PCE Plume, OU2
Davis County, Utah

Well	Sample Name	CLP Sample Name	Sample Date	PCE (µg/L)	TCE (µg/L)	cis-1,2 DCE (µg/L)	trans-1,2 DCE (µg/L)	Vinyl Chloride (µg/L)	Benzene (µg/L)	MTBE (µg/L)
MW-15U	1111B2-MW15U-GW-00	H0AT6	11/23/11	11	12	ND<5.0	ND<5.0	ND<5.0	ND<5.0	ND<5.0
MW-16U	08B-MW16U-N-0618-01	--	06/18/08	13	ND<0.5	0.11 J	ND<0.5	ND<0.5	--	ND<0.5
MW-16U	08B-MW016U-N-0723-1	H27N7	07/23/08	7.0	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5
MW-16U	08B-MW16U-N-1108-01	H2954	11/08/08	8.6	0.18 J	ND<0.5	ND<0.5	ND<0.5	--	ND<0.5
MW-16U	09B-MW16U-N-0515-01	--	05/15/09	12	0.92	0.19 J	0.35 J	ND<0.5	ND<0.5	ND<0.5
MW-16U	1110B2-MW16U-GW-00	H36E8	11/09/10	11	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5
MW-16U	1110B2-MW16U-GW-31	H36E9	11/09/10	11	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5
MW-16U	1111B2-MW16U-GW-00	H0AT7	11/19/11	100	12	1.1 J	2.4 J	ND<5.0	ND<5.0	ND<5.0
MW-16U	0112B2-MW16U-GW-00	H0B93	01/09/12	89	7.4	ND<5.0	1.9 J	ND<5.0	ND<5.0	ND<5.0
MW-16U	0512B2-MW16U-GW-00	H0AD4	05/01/12	74	4.1 J	ND<5.0	ND<5.0	ND<5.0	ND<5.0	ND<5.0
MW-16U	0512B2-MW16U-GW-30	H0AB8	05/01/12	78	4.3 J	ND<5.0	ND<5.0	ND<5.0	ND<5.0	ND<5.0
MW-17U	08B-MW17U-N-0617-01	--	06/17/08	22	0.84 J	ND<0.5	ND<0.5	ND<0.5	--	ND<0.5
MW-17U	08B-MW017U-N-0728-01	H27T3	07/28/08	92	4.4	0.12 J	0.26 J	ND<0.5	ND<0.5	ND<0.5
MW-17U	08B-MW17U-N-1107-01	H2955	11/07/08	2.0	ND<0.5	ND<0.5	ND<0.5	ND<0.5	--	ND<0.5
MW-17U	09B-MW17U-N-0515-01	--	05/15/09	26	1.2	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5
MW-17U	1110B2-MW17U-GW-00	H36F1	11/10/10	1.9	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5
MW-17U	1111B2-MW17U-GW-00	H0AT8	11/22/11	2.0 J	ND<5.0	ND<5.0	ND<5.0	ND<5.0	ND<5.0	ND<5.0
MW-18US*	1110B2-MW18US-GW-00	H36F2	11/18/10	14	200	68	1.8	2.6	ND<0.5	ND<0.5
MW-18US*	1110B2-MW18US-GW-00	H36F2	11/18/10	14	220	80	1.9	2.7	ND<0.5	ND<0.5
MW-18UD*	1110B2-MW18UD-GW-00	H36F3	11/10/10	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5
MW-18M*	1110B2-MW18M-GW-00	H36F4	11/10/10	3.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5
MW-18M*	1111B1-MW18M-GW-00	H0AH7	11/11/11	1.8 J	ND<5.0	ND<5.0	--	ND<5.0	--	--
MW-19**	09B-MW19-017-110209	--	11/02/09	ND<2.5	ND<2.5	ND<2.5	ND<2.5	ND<2.5	--	ND<2.5
MW-19**	09B-MW19-030-110309	--	11/03/09	ND<2.5	ND<2.5	ND<2.5	ND<2.5	ND<2.5	--	ND<2.5
MW-19**	09B-MW19-069-110309	--	11/03/09	ND<2.5	ND<2.5	ND<2.5	ND<2.5	ND<2.5	--	ND<2.5

TABLE 3
HISTORICAL GROUNDWATER ANALYTICAL RESULTS
Bountiful/Woods Cross 5th South PCE Plume, OU2
Davis County, Utah

Well	Sample Name	CLP Sample Name	Sample Date	PCE (µg/L)	TCE (µg/L)	cis-1,2 DCE (µg/L)	trans-1,2 DCE (µg/L)	Vinyl Chloride (µg/L)	Benzene (µg/L)	MTBE (µg/L)
MW-19**	09B-MW19-109-110309	--	11/03/09	ND<2.5	2.17 J	ND<2.5	ND<2.5	ND<2.5	--	ND<2.5
MW-19**	09B-MW19-120-110309	--	11/03/09	ND<2.5	ND<2.5	ND<2.5	ND<2.5	ND<2.5	--	ND<2.5
MW-19**	09B-MW19-RB-110309	--	11/03/09	ND<2.5	ND<2.5	ND<2.5	ND<2.5	ND<2.5	--	ND<2.5
MW-19**	09B-MW19-130-110409	--	11/04/10	ND<2.5	0.71 J	ND<2.5	ND<2.5	ND<2.5	--	ND<2.5
MW-19**	09B-MW19-145-110509	--	11/05/09	ND<2.5	ND<2.5	ND<2.5	ND<2.5	ND<2.5	--	ND<2.5
MW-19**	09B-MW19-163-110509	--	11/05/09	ND<2.5	ND<2.5	ND<2.5	ND<2.5	ND<2.5	--	ND<2.5
MW-19**	09B-MW19-213-110509	--	11/05/09	ND<2.5	ND<2.5	ND<2.5	ND<2.5	ND<2.5	--	ND<2.5
MW-19U	09B-MW19U-PD-111109	--	11/11/09	ND<2.5	ND<2.5	ND<2.5	ND<2.5	ND<2.5	--	ND<2.5
MW-19U	1110B2-MW19U-GW-00	H36F5	11/12/10	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5
MW-19U	0411B2-MW19U-GW-00	--	05/05/11	ND<1.0	ND<1.0	ND<1.0	ND<1.0	ND<1.0	ND<1.0	ND<1.0
MW-19U	0811B2-MW19U-GW-00	H0AK5	08/23/11	ND<5.0	ND<5.0	ND<5.0	ND<5.0	ND<5.0	ND<5.0	ND<5.0
MW-19U	1111B2-MW19U-GW-00	H0AY6	11/10/11	ND<5.0	ND<5.0	ND<5.0	ND<5.0	ND<5.0	ND<5.0	ND<5.0
MW-19U	0512B2-MW19U-GW-00	H0AB9	05/09/12	ND<5.0	ND<5.0	ND<5.0	ND<5.0	ND<5.0	ND<5.0	ND<5.0
MW-19M	09B-MW19M-PD-111009	--	11/10/09	ND<2.5	ND<2.5	ND<2.5	ND<2.5	ND<2.5	--	ND<2.5
MW-19M	1110B2-MW19M-GW-00	H36F6	11/12/10	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5
MW-19M	0411B2-MW19M-GW-00	--	05/05/11	ND<1.0	ND<1.0	ND<1.0	ND<1.0	ND<1.0	ND<1.0	ND<1.0
MW-19M	0811B2-MW19M-GW-00	H0AK6	08/23/11	ND<5.0	ND<5.0	ND<5.0	ND<5.0	ND<5.0	ND<5.0	ND<5.0
MW-19M	0811B2-MW19M-GW-30	H0AK7	08/23/11	ND<5.0	ND<5.0	ND<5.0	ND<5.0	ND<5.0	ND<5.0	ND<5.0
MW-19M	1111B2-MW19M-GW-00	H0AY7	11/10/11	ND<5.0	ND<5.0	ND<5.0	ND<5.0	ND<5.0	ND<5.0	ND<5.0
MW-19M	0512B2-MW19M-GW-00	H0AB7	05/09/12	ND<5.0	ND<5.0	ND<5.0	ND<5.0	ND<5.0	ND<5.0	ND<5.0
MW-19L	09B-MW19L-PD-111009	--	11/10/09	ND<2.5	ND<2.5	ND<2.5	ND<2.5	ND<2.5	--	ND<2.5
MW-19L	09B-MW19L-PDD-111009	--	11/10/09	ND<2.5	ND<2.5	ND<2.5	ND<2.5	ND<2.5	--	ND<2.5
MW-19L	1110B2-MW19L-GW-00	H36F7	11/12/10	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5
MW-19L	0411B2-MW19L-GW-00	--	05/05/11	ND<1.0	ND<1.0	ND<1.0	ND<1.0	ND<1.0	ND<1.0	ND<1.0
MW-19L	0811B2-MW19L-GW-00	H0AK8	08/23/11	ND<5.0	ND<5.0	ND<5.0	ND<5.0	ND<5.0	ND<5.0	ND<5.0

TABLE 3
HISTORICAL GROUNDWATER ANALYTICAL RESULTS
Bountiful/Woods Cross 5th South PCE Plume, OU2
Davis County, Utah

Well	Sample Name	CLP Sample Name	Sample Date	PCE (µg/L)	TCE (µg/L)	cis-1,2 DCE (µg/L)	trans-1,2 DCE (µg/L)	Vinyl Chloride (µg/L)	Benzene (µg/L)	MTBE (µg/L)
MW-19L	1111B2-MW19L-GW-00	H0AY8	11/10/11	ND<5.0	ND<5.0	ND<5.0	ND<5.0	ND<5.0	ND<5.0	ND<5.0
MW-19L	0512B2-MW19L-GW-00	H0AB5	05/09/12	ND<5.0	ND<5.0	ND<5.0	ND<5.0	ND<5.0	ND<5.0	ND<5.0
MW-20M**	09B-MW20-048-102509	--	10/26/09	ND<2.5	ND<2.5	ND<2.5	ND<2.5	ND<2.5	--	ND<2.5
MW-20M**	09B-MW20-082-102609	--	10/26/09	21.7	ND<2.5	ND<2.5	ND<2.5	ND<2.5	--	ND<2.5
MW-20M**	09B-MW20-102-102609	--	10/26/09	16.3	ND<2.5	ND<2.5	ND<2.5	ND<2.5	--	ND<2.5
MW-20M**	09B-MW20-128-102609	--	10/26/09	5.11	1.48 J	ND<2.5	ND<2.5	ND<2.5	--	ND<2.5
MW-20M**	09B-MW20-139-102609	--	10/27/09	6.97	0.75 J	ND<2.5	ND<2.5	ND<2.5	--	ND<2.5
MW-20M**	09B-MW20-149-102709	--	10/27/09	6.22	0.70 J	ND<2.5	ND<2.5	ND<2.5	--	ND<2.5
MW-20M**	09B-MW20-159-102709	--	10/27/09	3.85	1.19 J	ND<2.5	ND<2.5	ND<2.5	--	ND<2.5
MW-20M	09B-MW20-PD-110509	--	11/05/09	3.47	2.12 J	ND<2.5	ND<2.5	ND<2.5	--	ND<2.5
MW-20M	1110B2-MW20M-GW-00	H36F8	11/12/10	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5
MW-20M	0411B2-MW20M-GW-00	--	05/04/11	3.86	1.66	ND<1.0	ND<1.0	ND<1.0	ND<1.0	ND<1.0
MW-20M	0411B2-MW20M-GW-31	--	05/04/11	3.76	1.67	ND<1.0	ND<1.0	ND<1.0	ND<1.0	ND<1.0
MW-20M	0811B2-MW20M-GW-00	H0AK9	08/25/11	6.0	2.8 J	ND<5.0	ND<5.0	ND<5.0	ND<5.0	ND<5.0
MW-20M	1111B2-MW20M-GW-00	H0AY9	11/09/11	ND<5.0	ND<5.0	ND<5.0	ND<5.0	ND<5.0	ND<5.0	ND<5.0
MW-20M	0512B2-MW20M-GW-00	H0AC0	05/01/12	5.1	2.3 J	ND<5.0	ND<5.0	ND<5.0	ND<5.0	ND<5.0
MW-21M**	09B-MW21-080-110809	--	11/09/09	ND<2.5	ND<2.5	ND<2.5	ND<2.5	ND<2.5	--	ND<2.5
MW-21M**	09B-MW21-100-110809	--	11/09/09	2.24 J	ND<2.5	1.00 J	ND<2.5	ND<2.5	--	ND<2.5
MW-21M**	09B-MW21-117-110909	--	11/09/09	ND<2.5	ND<2.5	ND<2.5	ND<2.5	ND<2.5	--	ND<2.5
MW-21M**	09B-MW21-140-110909	--	11/09/09	ND<2.5	ND<2.5	ND<2.5	ND<2.5	ND<2.5	--	ND<2.5
MW-21M**	09B-MW21-150-110909	--	11/09/09	ND<2.5	ND<2.5	ND<2.5	ND<2.5	ND<2.5	--	ND<2.5
MW-21M	09B-MW21M-PD-111109	--	11/11/09	5.16	ND<2.5	0.64 J	ND<2.5	ND<2.5	--	ND<2.5
MW-21M	1110B2-MW21M-GW-00	H36F9	11/18/10	2.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5
MW-21M	1110B2-MW21M-GW-35	H36G1	11/18/10	2.8	0.37 J	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5
MW-21M	0511B2-MW21M-GW-00	--	05/06/11	2.33	2.48	1.11	ND<1.0	ND<1.0	ND<1.0	ND<1.0

TABLE 3
HISTORICAL GROUNDWATER ANALYTICAL RESULTS
Bountiful/Woods Cross 5th South PCE Plume, OU2
Davis County, Utah

Well	Sample Name	CLP Sample Name	Sample Date	PCE (µg/L)	TCE (µg/L)	cis-1,2 DCE (µg/L)	trans-1,2 DCE (µg/L)	Vinyl Chloride (µg/L)	Benzene (µg/L)	MTBE (µg/L)
MW-21M	0811B2-MW21M-GW-00	H0AL0	08/25/11	11	2.5 J	ND<5.0	ND<5.0	ND<5.0	ND<5.0	ND<5.0
MW-21M	1111B2-MW21M-GW-00	H0AZ0	11/09/11	ND<5.0	ND<5.0	ND<5.0	ND<5.0	ND<5.0	ND<5.0	ND<5.0
MW-21M	0512B2-MW21M-GW-00	H0AC1	05/07/12	6.4	ND<5.0	ND<5.0	ND<5.0	ND<5.0	ND<5.0	ND<5.0
OW-1 (DEW-02U)	08B-DEW01-N-0711-01	--	07/11/08	27	ND<5.0	ND<5.0	ND<5.0	ND<5.0	--	4.0 J
OW-1	08B-DEW-01M-N-0826-01	--	08/26/08	36	ND<5.0	ND<5.0	ND<5.0	ND<5.0	--	3.2 J
OW-1	08B-DEW-01M-N-0826-02	--	08/26/08	37	ND<5.0	ND<5.0	ND<5.0	ND<5.0	--	3.2 J
OW-1	DEW01-PUMP-091108	--	09/11/08	30	1.0 J	ND<5.0	ND<5.0	ND<5.0	--	2.8 J
OW-1	DEW01-PUMP-091408	--	09/14/08	14	ND<5.0	ND<5.0	ND<5.0	ND<5.0	--	2.6 J
OW-1	1110B2-OW01-GW-00	H36G7	11/13/10	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	510
OW-1	1110B2-OW01-GW-33	H36G8	11/13/10	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	500
OW-1	1111B2-OW01-GW-00	H0AZ1	11/15/11	ND<5.0	ND<5.0	ND<5.0	ND<5.0	ND<5.0	ND<5.0	720
PMW-22	1110B2-PMW22-GW-00	H36G2	11/11/10	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5
PMW-22	1111B2-PMW22-GW-00	H0AZ2	11/14/11	24	ND<5.0	ND<5.0	ND<5.0	ND<5.0	ND<5.0	0.42 J
PMW-23	1110B2-PMW23-GW-00	H36G3	11/11/10	2.9	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5
PMW-23	1111B2-PMW23-GW-00	H0AZ3	11/14/11	19	ND<5.0	2.2 J	ND<5.0	ND<5.0	ND<5.0	64
PMW-23	1111B2-PMW23-GW-34	H0B01	11/14/11	20	ND<5.0	1.8 J	ND<5.0	ND<5.0	ND<5.0	49
PMW-24	1110B2-PMW24-GW-00	H36G4	11/11/10	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5
PMW-24	0511B2-PMW24-GW-00	--	05/05/11	8.63	1.34	ND<1.0	ND<1.0	ND<1.0	ND<1.0	34.3
PMW-24	0811B2-PMW24-GW-00	H0AL1	08/26/11	20	3.0 J	1.5 J	ND<5.0	ND<5.0	ND<5.0	15
PMW-24	0811B2-PMW24-GW-31	H0AN5	08/26/11	26	3.8 J	1.8 J	ND<5.0	ND<5.0	ND<5.0	20
PMW-24	1111B2-PMW24-GW-00	H0AZ4	11/14/11	16	ND<5.0	1.1 J	ND<5.0	ND<5.0	ND<5.0	18
PMW-24	0512B2-PMW24-GW-00	H0AC3	05/03/12	11	ND<5.0	ND<5.0	ND<5.0	ND<5.0	ND<5.0	8.8
PMW-24	0512B2-PMW24-GW-31	H0AC4	05/03/12	13	ND<5.0	ND<5.0	ND<5.0	ND<5.0	ND<5.0	10

TABLE 3
HISTORICAL GROUNDWATER ANALYTICAL RESULTS
Bountiful/Woods Cross 5th South PCE Plume, OU2
Davis County, Utah

Well	Sample Name	CLP Sample Name	Sample Date	PCE (µg/L)	TCE (µg/L)	cis-1,2 DCE (µg/L)	trans-1,2 DCE (µg/L)	Vinyl Chloride (µg/L)	Benzene (µg/L)	MTBE (µg/L)
PMW-25	1110B2-PMW25-GW-00	H36G5	11/11/10	20	0.61	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5
PMW-25	0511B2-PMW25-GW-00	--	05/05/11	20.8	ND<1.0	ND<1.0	ND<1.0	ND<1.0	ND<1.0	0.50 J
PMW-25	0511B2-PMW25-GW-32	--	05/05/11	21.9	ND<1.0	ND<1.0	ND<1.0	ND<1.0	ND<1.0	0.59 J
PMW-25	0811B2-PMW25-GW-00	H0AL2	08/26/11	21	ND<5.0	ND<5.0	ND<5.0	ND<5.0	ND<5.0	ND<5.0
PMW-25	1111B2-PMW25-GW-00	H0AZ5	11/10/11	ND<5.0	ND<5.0	ND<5.0	ND<5.0	ND<5.0	ND<5.0	ND<5.0
PMW-25	0512B2-PMW25-GW-00	H0AC5	05/04/12	3.0 J	ND<5.0	ND<5.0	ND<5.0	ND<5.0	ND<5.0	ND<5.0
PMW-26	1110B2-PMW26-GW-00	H36G6	11/11/10	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5
PMW-26	0511B2-PMW26-GW-00	--	05/06/11	ND<1.0	ND<1.0	ND<1.0	ND<1.0	ND<1.0	ND<1.0	ND<1.0
PMW-26	0811B2-PMW26-GW-00	H0AL3	08/24/11	ND<5.0	ND<5.0	ND<5.0	ND<5.0	ND<5.0	ND<5.0	ND<5.0
PMW-26	1111B2-PMW26-GW-00	H0AZ6	11/09/11	ND<5.0	ND<5.0	ND<5.0	ND<5.0	ND<5.0	ND<5.0	ND<5.0
PMW-26	0512B2-PMW26-GW-00	H0AC7	05/07/12	ND<5.0	ND<5.0	ND<5.0	ND<5.0	ND<5.0	ND<5.0	ND<5.0

NOTES:

PCE = Tetrachloroethene

TCE = Trichloroethene

DCE = Dichloroethene

µg/L = Micrograms per liter

SP = SimulProbe® sample

J = J flag laboratory data qualifier indicates result is an estimated value between the MDL and the reporting limit

ND< = Analyte not detected at or above stated method detection limit

-- = Not available

Data presented in bold represents data collected during the most recent groundwater monitoring event (Semi-Annual 2012)

* MW-18US/UD/M are OU1 wells; analytical results for these wells are included in this table because they were included in the OU2 baseline monitoring event and because they provide additional data to evaluate the OU2 groundwater plume

**depth-discrete samples collected during well installation

Sample identification code: 0512B2 = May 2012, Bountiful OU2

MW19L = Monitoring well number

GW = Groundwater

00 = Target sample 30 = Duplicate Sample

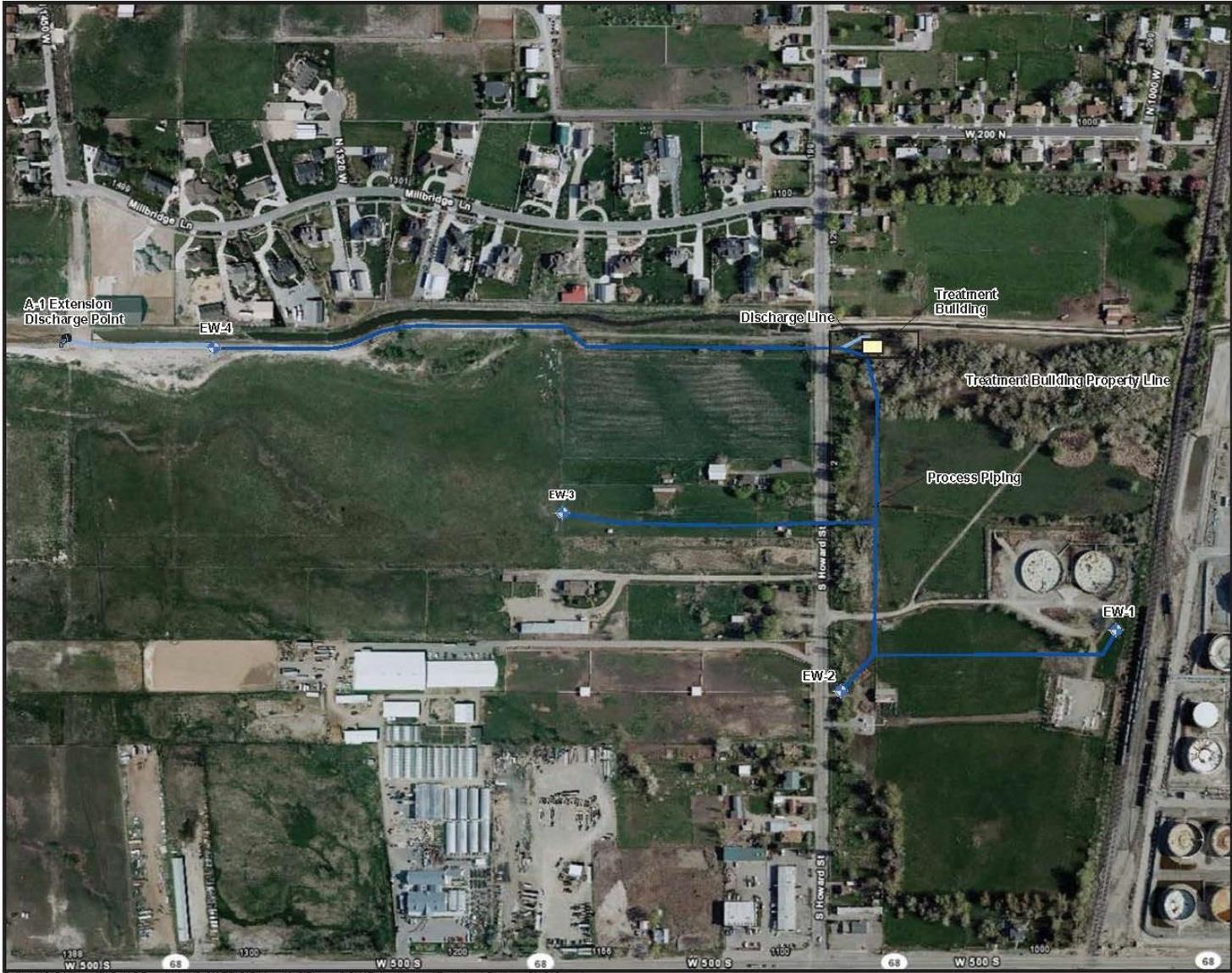


FIGURE 3
GROUNDWATER
EXTRACTION
AND TREATMENT
SYSTEM

Bountiful/Woods Cross
 5th South PCE Plume
 Operable Unit 2

LEGEND

-  Groundwater Extraction Well
-  Process Piping
-  Discharge Line



0 200 400
 Scale in Feet

State Plane Coordinate System
 Utah North Zone - NAD 83

Aerial Photography Provided by
 6251 Lockheed, Ustick Park, ID 83405
 AEA, GeoEye, GeoIntelligence, AeroGRID and KOP



Path: K:\GIS Library\15_115 Bountiful-WC GW\FGIS\Mapstg3\Figure 3 GWE extraction and Treatment System_011912.mxd



FIGURE 7

**DISSOLVED PCE PLUME
IN THE UPPER ZONE**

Bountiful/Woods Cross
5th South PCE Plume
Operable Unit 2

LEGEND

- MW06U Groundwater Monitoring Well
- EW-4 Groundwater Extraction Well
- PCE Concentration in micrograms/liter (µg/L)
- Analyte not detected at or above Reporting Limit
- Warm Springs Fault
- Dissolved PCE Isoconcentration (Dashed where inferred)
- Dissolved PCE 10 µg/L
- Dissolved PCE 5.0 µg/L (Maximum Contaminant Level)
- OU2 Source Area

NOTES

- 1) Data from only OU2 wells
* = Wells MW-18 US/UD and PMW-27 US/UD are OU1 wells
- 2) Date range for measurements: 5/1/2012 to 5/9/2012
- 3) Historical data considered in placement of isoconcentration lines

Scale in Feet
0 500 1,000

**State Plane Coordinate System
Utah North Zone - NAD 83**

Aerial Photography Provided by
ESRI, Utah, USGS, FEMA, USACE,
AEC, Geoscan, GeoInformation, AeroGRID KIP

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FIGURE 8
DISSOLVED PCE PLUME
IN THE MIDDLE ZONE
 Bountiful/Woods Cross
 5th South PCE Plume
 Operable Unit 2

LEGEND

- MW02M Groundwater Monitoring Well
- EW-2 Groundwater Extraction Well
- DW05 Domestic Groundwater Production Well
- 11 PCE Concentration in micrograms/liter (µg/L)
- ND<5.0 Analyte not detected at or above Reporting Limit
- 3.0 J J indicates estimated value between MDL and Reporting Limit
- Warm Springs Fault
- Dissolved PCE Isoconcentration (Dashed where inferred)
- Dissolved PCE 10 µg/L
- Dissolved PCE 5.0 µg/L (Maximum Contaminant Level)
- Source Area

NOTES

- 1) Screen intervals of DW wells unknown. Aquifer zones for DW wells provided by previous contractor
- 2) Date range for measurements: 5/1/2012 to 5/14/2012
- 3) Historical data considered in placement of isoconcentration lines

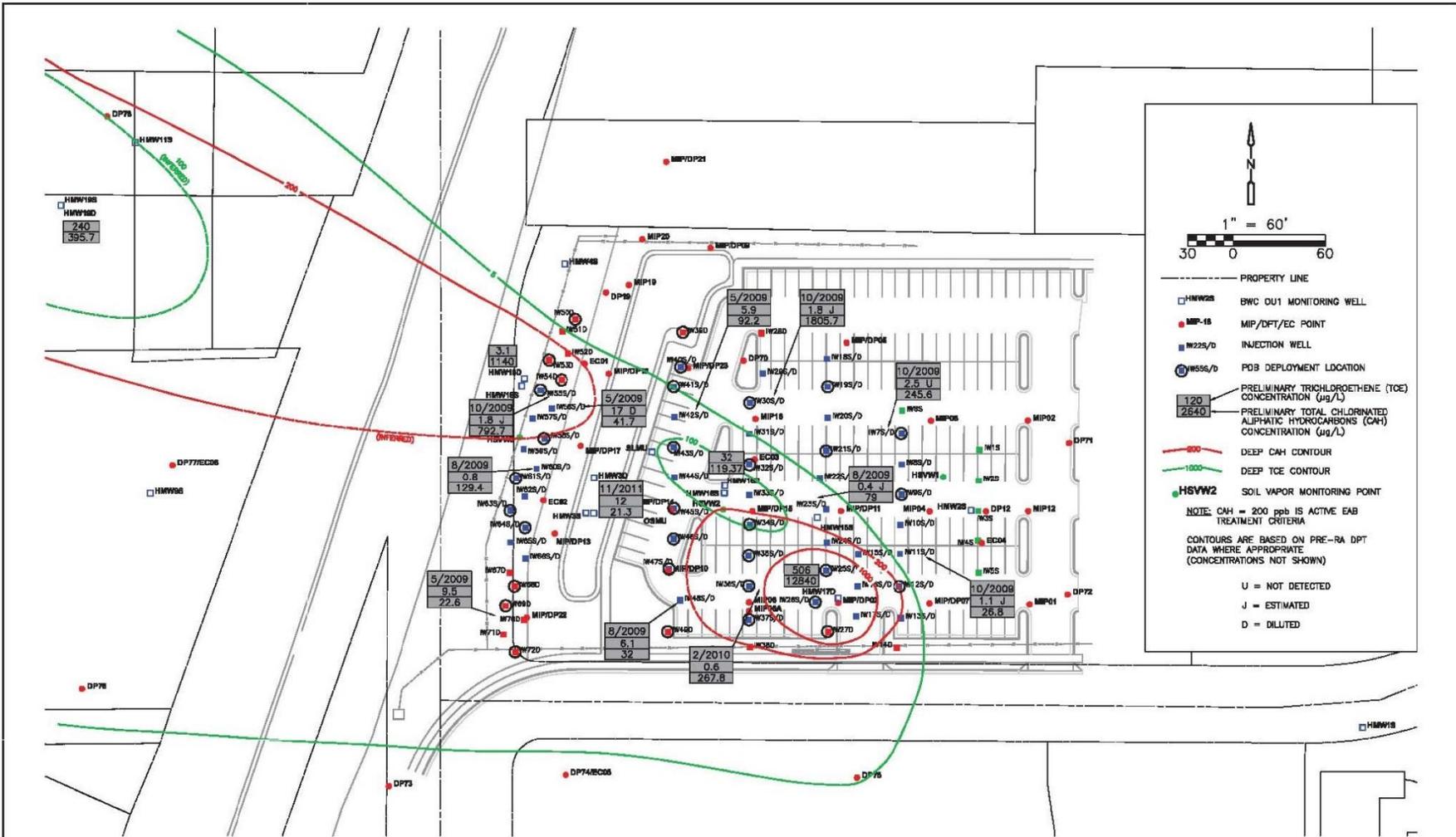
* = Well MW-18M is an OU1 well

Scale in Feet
State Plane Coordinate System
Utah North Zone - NAD 83
Aerial Photography Provided by
 ESRI, scaled, USDA FSA, USGS,
 AEC, Geotyne, Geomapping, Aergrid and KSP

Path: K:\GIS Library\015_115 Bountiful-WC GWTF\GIS\Maps\fig8\Figure 8_Middle_Zone_PCE_Plume_06192012.mxd

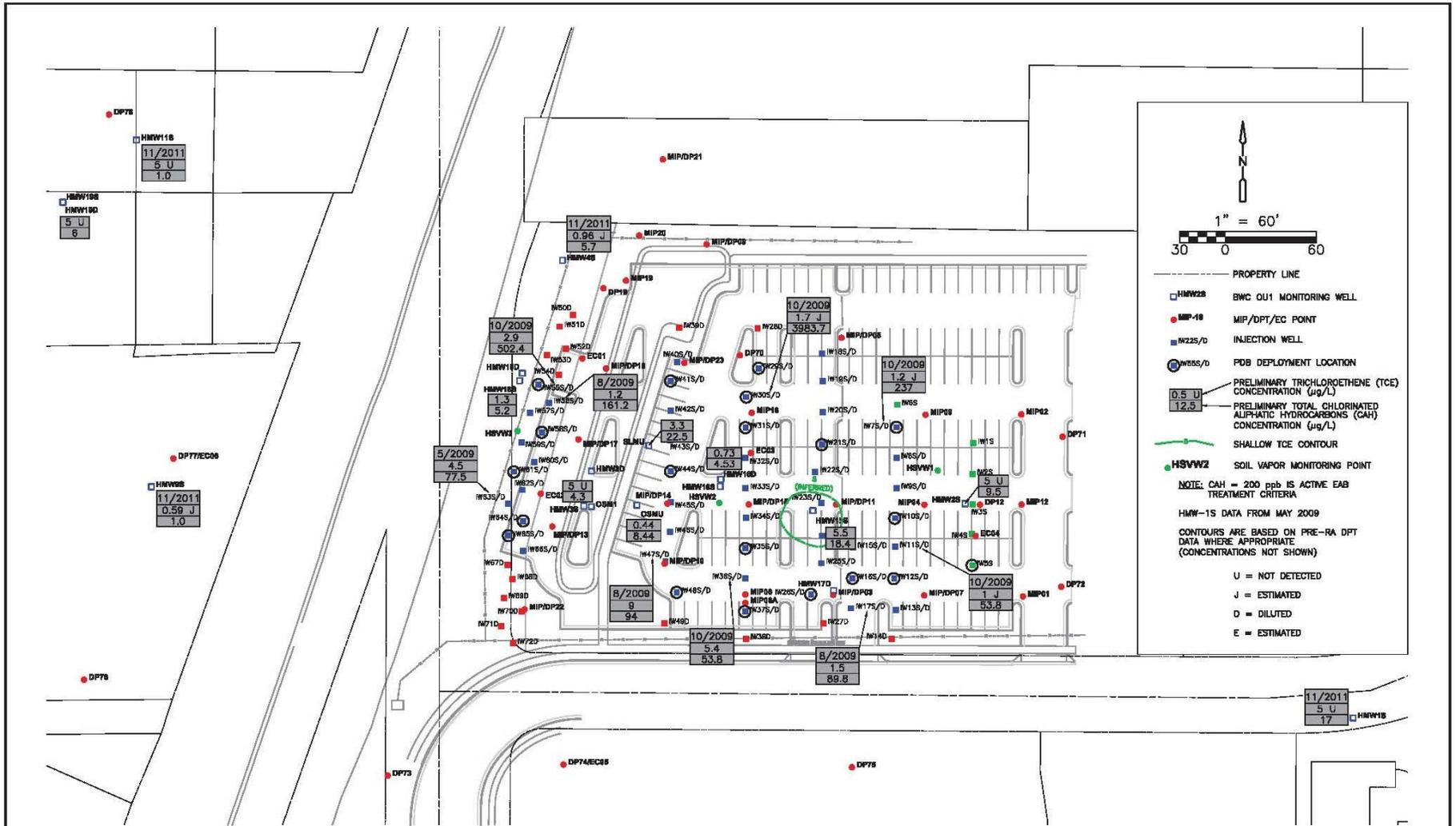


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BOUNTIFUL / WOODS CROSS NPL SITE
 OPERABLE UNIT 1
 3RD ANNUAL MONITORING REPORT - ADDENDUM
 PAST INJECTION WELL AND CURRENT MONITORING WELL
 TCE AND CAH EXTENT IN GROUNDWATER AND PDB LOCATIONS - DEEP PORTION SOURCE AREA

DESIGNED: NTS	DRAWN: MK	FIGURE NO. A-2
CHECKED: RW	DATE: May 2012	
FILE: FIG A-2.pdf	SCALE: 1"=60'	



BOUNTIFUL / WOODS CROSS NPL SITE
 OPERABLE UNIT 1
 3RD ANNUAL MONITORING REPORT - ADDENDUM
 PAST INJECTION WELL AND CURRENT MONITORING WELL
 TCE AND CAH EXTENT IN GROUNDWATER AND PDB LOCATIONS - SHALLOW PORTION SOURCE AREA

DESIGNED: NTS	DRAWN: MK	FIGURE NO. A-1
CHECKED: RW	DATE: May 2012	
FILE: FIG A-1.pdf	SCALE: 1"=60'	

Appendix H: Detailed Data Review Findings for OU1 and OU2

OU1

Source Area Monitoring Wells

VOC concentrations in the source area monitoring wells have remained low with the exception of a hot spot at HMW-17D and at HMW-16D. Other than at HMW-17D, all monitoring wells have VOC concentrations below the 200 ppb active treatment criterion. TCE was detected at OSMU, SLMU, HMW-15S, and HMW-16S, but only exceeded the MCL at HMW-15S (5.5 µg/L). Cis-1,2-DCE and vinyl chloride were also detected at most source area monitoring wells, but cis-1,2-DCE concentrations were well below the MCL and vinyl chloride concentrations were below or slightly above the MCL.

The only well outside of the hot spot with a substantial increase in any of the COCs was HMW-16D. At HMW-16D, the concentration of cis-DCE nearly doubled between 2011 (48 µg/L) and 2012 (83 µg/L), while the concentration of TCE declined nearly 75 percent since November 2011. These observations suggest that reductive dechlorination has been established near the well. According to the 2012 annual monitoring report, the establishment of reducing conditions and progress of dechlorination at this well provide promising results from the electron donor injection.

During the review period, HMW-17D hot spot results reflect a transition via reductive dechlorination from TCE to DCE, vinyl chloride and ethene. The dechlorination of TCE to ethene is the measure used to determine the effectiveness and success of the remedy. TCE concentrations remained below the detection limit and cis-DCE declined by an order of magnitude, from 31,000 µg/L to 3,600 µg/L from November 2011 to March 2012. Benzene concentrations have only exceeded the MCL three times over the review period. The highest benzene concentration observed was barely above the MCL at 7 µg/L in August 2011. In addition, vinyl chloride declined from 16,000 µg/L to 9,000 µg/L, while ethene increased from 939 µg/L to 1,440 µg/L in the same timeframe. This represents the largest decline to date in COC concentrations, coupled with the highest concentration of ethene observed during the monitoring program. The total CAH concentration at the well is now 12,840 ppb, less than 20 percent of the all-time high of nearly 65,000 ppb in May 2010. These results indicate that the combination of emulsified oil and sodium lactate injections has produced a highly-reducing environment that is allowing for sustained dechlorination to ethene.

Biobarrier #1 Monitoring Wells

At HMW-18S, VOC concentrations during the March 2012 event remained low, which has been the case since 2010. At the HMW-18D hot spot, TCE and cis-1,2-DCE concentrations dropped below MCLs, and vinyl chloride (although still well above the MCL at 530 µg/L) decreased by over 25 percent since November 2011. Decreases in COC concentrations were coupled with a greater than 50 percent increase in ethene concentrations. The ethene concentration of 343 µg/L in HMW-18S during March 2012 was the highest concentration observed at the well to date. These observations, along with the reducing conditions observed, suggest that the biobarrier is successfully degrading the contaminant mass as it passes through. Similar to HMW-17D, it is critical to maintain this high rate of dechlorination until the total CAH concentrations at this well decline, at least to less than the active treatment criterion.

Downgradient of biobarrier #1, COC concentrations remained low at HMW-19S. COC concentrations at this well declined by November 2010 and have remained at, near or below MCLs since then. Although still above the MCL of 2 µg/L, vinyl chloride concentrations in HMW-19S declined from 4.9 µg/L at the November 2011 sampling to 3.2 µg/L in March 2012. At HMW-19D, COC concentrations are still well above MCLs and increased slightly since November 2011, but remained at least 25 percent lower than the highest concentrations observed at the well.

Biobarrier #2 and #3 Monitoring Wells

Within biobarrier #2, VOC concentrations declined from 2009 through 2011 but remained relatively constant in 2011 and 2012 at HMW-20D and HMW-29D. In 2012, concentrations of TCE and vinyl chloride were above MCLs at both wells. In addition, cis-1,2-DCE concentrations in HMW-29D exceeded the MCL. Concentrations for all COCs but PCE remained well above MCLs at HMW-20S and HMW-34S. TCE concentrations decreased at these locations, while concentrations of degradation products (cis-DCE and vinyl chloride at HMW-34S, and cis-DCE at HMW-20S) increased, indicating that conversion of TCE may be occurring at these locations. VOC concentrations remained relatively constant at HMW-28D and HMW-29S.

By March 2012, TCE concentrations at biobarrier #3, MW-2D decreased and vinyl chloride concentrations increased. Most notably, ethene was detected in MW-2D during March 2012, indicating that dechlorination is occurring at this location. At MW-2S, a slight decrease in TCE occurred by March 2012, combined with a slight increase in vinyl chloride. At HMW-30D, the TCE concentration decreased and cis-DCE concentration increased, indicating that some degradation is occurring at these locations as well. The remaining biobarrier #3 monitoring wells (HMW-31D, HMW-32S, and HMW-33S) did not exhibit notable changes in VOC concentrations during the most recent sampling event.

HMW-23D had a PCE concentration of 28 µg/L and a TCE concentration of 17 µg/L during the November 2011 sampling event. The screening interval for this well is 79 to 94 feet below ground surface and is the lowest screening levels of the existing wells. This well was not sampled during the March 2012 event. These detections of VOCs indicate that the ability to define the plume vertically is limited.

Overall, sampling data from the review period indicate that the selected remedy is performing as designed. Data analysis verifies the presence of reducing conditions and strongly suggests that the biobarriers are successfully degrading the contaminant mass as it passes through. Additional monitoring will be necessary to observe long-term trends better define the plume and ensure the effectiveness of the implemented remedy.

OU2

PCE is the most prevalent and highly concentrated COC in the OU2 groundwater. The analytical results from the review period indicate that the down-gradient PCE plume with concentrations above the MCL extends west of the Holly Refinery in the Middle and Lower Zones. Analytical data indicate decreasing levels of PCE in the Upper Zone from east to west away from the source as it migrates downgradient. In general, the PCE contamination in the Upper Zone of the aquifer is well delineated, with the highest levels of contamination centered near the source close to well

MW-16U. PCE concentrations at MW-16U increased between the baseline 2010 sampling event (11 µg/L) and the annual 2011 sampling event (100 µg/L). The groundwater elevation rose approximately 14 feet in Upper Zone OU2 source area wells in 2011. The significant increase in the PCE concentration observed in well MW-16U appears to be related to the rise in groundwater to approximately 68 feet bgs, which caused the water to come in contact with contaminated soil. During the November 2012 monitoring event, a significant decrease in groundwater elevation (11.7 foot drop) was observed in MW-16U, when compared to the groundwater elevation from the November 2011 monitoring event, along with a significant decrease in PCE concentrations, from 100 µg/L in November 2011 to 14 µg/L in November 2012. During that time, a significant increase in PCE concentrations has occurred in well MW-17U, located approximately 375 feet west (down-gradient) from well MW-16U. A PCE concentration of 84 µg/L was detected in the MW-17U sample, which is slightly lower, but comparable, to the 100 µg/L PCE detected in the sample collected from MW-16U during the annual groundwater sampling event in November 2011. PCE contamination is virtually absent in the Upper Zone from the Warm Springs Fault to the west (Figure 5).

Conversely, the Middle and Lower Zones demonstrate higher concentrations of PCE to the west as the contaminant plume migrates vertically between aquifer zones, and moves laterally within the Middle and Lower confined artesian aquifer zones. The extent of the dissolved PCE plume, as defined by the furthest detected value of PCE, is approximately 1.6 miles west-northwest from the source. This plume direction matches the regional groundwater flow.

Overall, the number of COC MCL exceedances across all zones has decreased since the 2010 baseline sampling event. With the exception of the significant change in concentrations in wells MW-16U and MW-17U, PCE concentrations across the site remained relatively consistent with the previous sampling events. In 2010, wells within all the three zones had PCE, TCE, benzene and vinyl chloride exceedances. Since 2010, no benzene or vinyl chloride exceedances have been observed, and TCE exceedances have been minimal. TCE exceedances have been detected in two Upper Zone wells since 2010, MW-12U (6.5 µg/L [8/31/2011] and 6.6 µg/L [11/14/2012]) and MW-16U (12 µg/L [11/19/2011] and 7.4 µg/L [1/9/2012]). A single TCE exceedance was observed at the Middle Zone well MW08M on 11/20/2012 at a concentration of 5.4 µg/L. In 2012, TCE was not detected in any of the Lower Zone wells, and trans-1,2-DCE, 1,1-DCE, vinyl chloride, benzene, toluene, ethylbenzene, and xylenes were not detected in any wells.

A comparison of 2012 PCE plume maps of the three different zones and data from the 2010 baseline sampling event through the annual 2012 sampling event indicate that the plume location has remained relatively stable since 2010 (Appendix G). This suggests that the hydraulic containment system is effectively preventing downgradient plume migration.

Soil gas and indoor air samples are analyzed for 1,2,4- and 1,3,5-TMB, but groundwater samples are not because the EPA does not currently consider TMB a primary risk driver in groundwater and because it is not available in the standard VOC analysis through the EPA Contract Laboratory Program.

Domestic Groundwater Well Monitoring

The ROD called for residences with affected domestic wells to be connected to municipal water supplies. At the time of the OU2 ROD, only seven domestic wells were determined to be affected by PCE contamination. Although there are many domestic wells in the area, the RI/FS determined that COCs at the Site affected very few wells used for potable uses. Domestic groundwater well sampling has been conducted by the EPA periodically since June 2003. This data review included domestic well data from 2003 to 2012. Dissolved PCE has been detected in many of the domestic wells at concentrations as high as 58 µg/L (DW25 in 2007), which is significantly above the MCL of 5.0 µg/L. The highest PCE concentrations are routinely observed in wells within the middle aquifer zone. Wells DW25 and DW16 routinely had the highest PCE concentrations over the review period. Both of those wells are located in the southwestern corner of the middle zone PCE plume, west of the Warm Springs Fault (Appendix G). DW25 experienced increasing PCE concentrations between May 2010 (19 µg/L) and November 2011 (32 µg/L). However, institutional controls restrict the use of groundwater for human consumption within the plume area. According to the Annual 2012 Groundwater Monitoring and System Performance Report, the majority of the domestic wells are used only for irrigation and livestock. However, the report also states that some of the wells were previously used for drinking water.

Groundwater Treatment System Performance Monitoring

This data review included treatment system data from February 2, 2011 through December 31, 2012. Treatment system samples are analyzed for the full list of VOCs which includes the following constituents: PCE, TCE, cis-1,2-DCE, vinyl chloride, MTBE, benzene, toluene, ethylbenzene, total xylenes and naphthalene. As expected, system influent routinely has PCE concentrations above the MCL. However, the GWTS influent PCE concentrations have remained relatively stable over the review period with only minor variations. Treatment system effluent samples collected during the review period were below maximum allowable discharge limits. During the review period, there were no exceedances of effluent discharge limits for any of the analytes listed in the Utah Pollutant Discharge Elimination System (UPDES) equivalent permit.

As of December 26, 2012, the GWTS has treated approximately 77,561,983 gallons of PCE-contaminated groundwater and removed an estimated PCE mass of 9.08 pounds (lbs) from the subsurface. Approximately 1.68 lbs of PCE mass have been removed at EW-1, 4.10 lbs at EW-2, 2.57 lbs at EW-3, and 0.24 lbs at EW-4. Under the state water rights allocation, the GWTS can extract up to 160 acre-feet (52,136,229 gallons) of water per year, which approximates a continuous flow rate of 100 gpm. The GWTS extracts groundwater from the four extraction wells at flow rates within water rights extraction limits. On August 15, 2012, following the third quarter GWTS sampling event, the combined system extraction rate was increased to maximize groundwater pumping volume under the water rights allocation. Following the pumping increase, EW-1 averaged 8.9 gpm, EW-2 averaged 53 gpm, EW-3 averaged 27 gpm, and EW-4 averaged 8.2 gpm and the treatment system operated at an average combined groundwater influent flow rate of approximately 94 gpm. The GWTS data indicates that the system is operating within its designed capacity and effectively removing PCE from the Site's groundwater.

Soil gas and indoor air sampling

The EPA had PWT conduct a comprehensive review of soil gas and indoor air sampling at the BCI property in September 2012. The report details all soil gas and indoor air sampling that has occurred at the OU2 source area. Historical investigations identified trace levels of PCE in shallow soil beneath the existing BCI building and to the north and west of the building, and in deeper (>60 feet bgs) soils to the south of the building. PCE in soil beneath the source area has been delineated horizontally and vertically.

The EPA conducted multiple investigations related to vapor intrusion and the OU2 source area. On December 20, 2011, the EPA submitted a letter to the owner of BCI providing the results from the October 20, 2011 indoor air sampling event. The letter stated that the PCE concentrations detected in indoor air in Suites 2 and 3 presented a potential unacceptable exposure risk to workers in those suites and requested that BCI take the appropriate steps to eliminate the exposure. Accordingly, BCI removed a PCE dry cleaning machine, thought to be contributing to the results, from the Bountiful Family Cleaners on January 28, 2012. Additional investigation activities are necessary to re-evaluate indoor air concentrations following removal of the PCE dry cleaning machine, to re-evaluate the soil gas to indoor air exposure pathway in the BCI building, and to determine whether VOCs are present in soil gas at concentrations above risk-based target levels.

The EPA's contractor conducted additional vapor intrusion investigation activities on the BCI property in July 2012 to evaluate if the existing building on the property could be at risk from subsurface vapor intrusion and to assess whether operational changes at the Bountiful Family Cleaners have influenced indoor air concentrations observed during the previous sampling events. The EPA determined that cancer risks from indoor air at the BCI building are almost entirely due to concentrations of PCE in air, with much smaller contributions from TCE and other VOCs. Based on the July 2012 concentrations of PCE and other VOCs in basement indoor air, cancer risks to workers in the BCI building basement slightly exceed the more conservative target cancer risk level of 1E-06 (one in one-million), but do not exceed the target cancer risk level of 1E-04. Based on the recent indoor air data, the levels of PCE in indoor air on the main floor of the BCI building are below the reference concentration (RfC). The levels of PCE in indoor air in the basement of the BCI building are above the RfC. These results imply there is potentially an unacceptable risk of chronic health effects due to long-term exposure to PCE in basement indoor air.

The September 2012 PWT study of soil gas and indoor air sampling at the BCI property stated that an additional cold month sampling event is needed to comply with current EPA guidance requiring multiple sampling events to characterize long-term exposure risks. Following the receipt of additional data from the next groundwater, soil gas and indoor air sampling event, the EPA plans to complete a comprehensive evaluation of potential soil vapor intrusion associated with the source area at OU2.