VOLUNTARY REMEDIATION WORK PLAN
FORMER GEM LAUNDRY SITE
TWIN FALLS, IDAHO

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prepared for

IDAHO DEPARTMENT OF ENVIRONMENTAL QUALITY
1410 NORTH HILTON
BOISE, IDAHO 83706

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Burns & McDonnell Project No. 54592

prepared by

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Bloomington, Minnesota

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SIGNATURE PAGE

SIGNATURES OF ENVIRONMENTAL PROFESSIONALS

The following environmental professionals were responsible for this Voluntary Remediation Work Plan for the Former Gem Laundry Site located at 201 2nd Avenue West, Twin Falls, Idaho:

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LIST OF ACRONYMS AND ABBREVIATIONS

AmeriPride	AmeriPride Services Inc.
Bgs	Below Ground Surface
Burns & McDonnell	Burns & McDonnell Engineering Company, Inc.
ChemOx	Chemical Oxidation
CHHSLs	California Human Health Screening Levels
COCs	Chemicals of Concern
DCE	Dichloroethene
GW	Groundwater
HAZWOPER	Hazardous Waste Operations Emergency Response
HI	Hazard Index
IDEQ	Idaho Department of Environmental Quality
IDTLs	Initial Default Target Levels
ISCO	In-Situ Chemical Oxidation
MCLs	Maximum Contaminant Levels
µg/L	Micrograms per liter
µg/m³	Micrograms per cubic meter
mg/kg	Milligrams per kilogram
mg/l	Milligrams per liter
Msl	Mean Sea Level
OSHA	Occupational Safety and Health Administration
PCE	Tetrachloroethene
PID	Photoionization Detector
POE	Point of Exposure
RATLs	Remedial Action Target Levels
RE	Risk Evaluation
REM	Risk Evaluation Manual
STEL	Short Term Exposure Limit
SVE	Soil Vapor Extraction
Site	201 2nd Avenue West, Twin Falls, Idaho
TCE	Trichloroethene
TCLP	Toxicity Characteristic Leaching Procedure
UCL	Upper Confidence Limit
UST	Underground Storage Tank
US EPA	United States Environmental Protection Agency
VCP	Voluntary Cleanup Program
VOCs	Volatile Organic Compounds
VRWP	Voluntary Remediation Work Plan

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1.0 INTRODUCTION

1.1 PURPOSE AND AUTHORIZATION

Burns & McDonnell Engineering Company, Inc. (Burns & McDonnell) has prepared this Voluntary Remediation Work Plan (VRWP) on behalf of AmeriPride Services Inc. (AmeriPride) for the Former Gem Laundry Site (Site) located at 201 2nd Avenue West, Twin Falls, Idaho. The Site is currently enrolled in the Idaho Department of Environmental Quality's (IDEQ) Voluntary Cleanup Program (VCP).

1.2 SCOPE OF WORK

The scope of work for this VRWP includes a summary of previous activities performed at the Site and a discussion of the proposed remedial action to meet the site-specific cleanup standards established for the Site. Specific components include:

- Site characterization and assessment;
- Risk evaluation, including the establishment of cleanup objectives and goals;
- Selection of the recommended remedial action; and
- Development of a statement of work, including schedule and deliverables for the recommended remedial action.

1.3 REPORT STRUCTURE

- **Section 1.0 Introduction** provides an overview and description of the purpose and scope of the VRWP.

- **Section 2.0 Background** includes a brief Site description and history, presentation of physical characteristics of the Site, and a summary of previous investigation activities.

- **Section 3.0 Risk Evaluation** includes a discussion of current and future land use for the Site, identification of the contaminants of concern, and discussion of cleanup objectives and goals.

- **Section 4.0 Selection of Corrective Action for On-Site Soil Alternative** identifies and discusses the selected remedial action to address on-site soil impacts.

- **Section 5.0 Selection of Corrective Action for On-Site Groundwater Alternative** identifies and discusses the selected remedial action to address on-site groundwater.

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- **Section 6.0 Phase I: Implementation of Soil Vapor Extraction** provides a brief summary of the system implementation goals including timeline and monitoring.

- **Section 7.0 Phase II: Implementation of In-Situ Chemical Oxidation of Groundwater** provides a brief summary of the injection implementation goals including timeline and monitoring.

- **Section 8.0 Health and Safety** discusses health and safety considerations to be applied in the Site Health and Safety Plan.

- **Section 9.0 References** provides references for reports and sources utilized in the VRWP.

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2.0 BACKGROUND

2.1 SITE LOCATION AND DESCRIPTION

The Site is located north of the intersections of Gooding Street West and 3rd Avenue West. The location of the Site is shown on **Figure 1**. The center of the site is located at approximately 42°33'21" North and 114°28'20" West. The Site is approximately 180 feet by 270 feet and the property perimeter is encompassed by a fence with a locked gate. Properties adjoined to the Site are commercial, while properties in the surrounding area are a mix of commercial and residential. The Site and surrounding land use are shown on **Figure 2**.

2.2 SITE HISTORY

A water wash laundry operated at the Site from approximately 1922 to 1992. During part of that time dry cleaning operations were conducted. An above-ground storage tank was used to store PCE for dry cleaning operation. In addition, the following three underground storage tanks (USTs) were associated with the facility:

1. One 10,000-gallon gasoline UST, installed in 1971 and used through at least 1986;
2. One 10,000-gallon #4 burner oil tank, installed in 1946 and taken out of service in 1950; and
3. One 500-gallon gasoline tank, installed in 1956 and taken out of service in 1968 when the tank was filled in place under the building.

Documentation from the Twin Falls Department of Public Safety dated November 11, 1987, indicated that "all underground storage tanks used for storage of flammable liquids" were removed from the Site on November 4, 1987. However, the size and number of tanks removed was not specified.

Wastewater generated by the facility was discharged to the city sewer system. Dry cleaning operations ceased by 1983 or 1984. The Site has been vacant since the facility was demolished in 1994.

2.3 LOCAL RELIEF AND GEOLOGY

The elevation of the Site is approximately 3,750 feet above mean sea level (msl). Topography of the Site is relatively flat with a slight slope to the northwest.

Soils encountered in soil borings associated with the Site generally consist of a mix of silt and fine-grained sand with a little clay to depths ranging from 4.75 feet to 10 feet below grade surface (bgs), underlain by a non-continuous layer of caliche of varying thickness, over basalt bedrock. Basalt bedrock is present to a

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depth of 70 feet bgs, the depth of the deepest boring advanced as part of this investigation. According to area geology sources, the uppermost basalt unit is Pleistocene- or Pliocene-age Basalt of Stricker Butte, described as light gray to gray, medium- to coarse-grained, dense basalt with small plagioclase laths. Varying degrees of weathering were observed in bedrock samples, and discontinuous layers of what appears to be weathered tuff and reddish-colored basalt or lacustrine deposits are present at varying depths. A cross section location map and geologic cross section based on all of the borings advanced on and around the site are included as **Figures 3A** and **Figure 3B**, respectively.

Groundwater was first encountered on-site during drilling at boring MW-1 at an approximate depth of 68 feet bgs, and then rose to 45 feet bgs. Groundwater is present in monitoring wells on-site and off-site at depths ranging from 41 to 54 feet bgs (**Table 1**). Depth to groundwater and well survey data were used to prepare the groundwater gradient map presented as **Figure 4**. As shown in **Figure 4**, groundwater elevation data for the September 2010 event indicates northwesterly horizontal groundwater flow.

2.4 SITE CHARACTERIZATION

The following is a timeline of investigation events associated with the Site:

- November 2005 through February 2006: A Phase I EA was conducted.
- November 2005: A passive soil gas survey using GORE® modules was conducted.
- July 2006: Three groundwater monitoring wells (MW-1, MW-3, and MW-5) were installed at the Site. MW-2 and MW-4 were scheduled for installation, however, installation was delayed due to the driller's scheduling conflicts.
- August 2006: AmeriPride submitted an application to the IDEQ Voluntary Remediation Program.
- December 2007: Additional investigation was conducted by advancing eleven soil borings (B-1 through B-11) in order to further delineate the extent of on-site soil impacts, the results of the soil samples collected from these borings are presented in **Table 2**. In addition, four off-site monitoring wells were installed in order to further define the extent of groundwater impacts.
- January 2008: A Voluntary Remediation Agreement between AmeriPride and the IDEQ was signed.
- March 2008: Details of field activities completed in July 2006 and December 2007 are submitted to the IDEQ in the *Initial Default Target Level Evaluation Report*, dated March 27, 2008.
- May 2008: In response to the *Initial Default Target Level Evaluation Report*, the IDEQ requests sub-slab soil sampling and indoor air sampling at the U.S. Post Office located directly northwest of the Site

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- July 2008: Additional investigation was conducted by advancing eight soil borings (B-12 through B-19) in order to further delineate the extent of soil impacts. Three soil vapor monitoring points (VP-1, VP-2, and VP-3) were installed off-site, and soil vapor sampling was completed for all of the soil vapor monitoring points (VP-1 through VP-3).
- December 2008: Four groundwater monitoring wells were installed off-site (MW-11 through MW-14). Two soil vapor monitoring points (VP-4 and VP-5) were installed off-site. Groundwater sampling was completed for all groundwater monitoring wells (MW-1 through MW-14), and soil vapor sampling was completed for all of the soil vapor monitoring points (VP-1 through VP-5).
- December 2008: A Land Use and Receptor Survey was also completed during the December 2008 field event **(Appendix A)**. The survey identified nearby water supply wells and ecological receptors located within one-half mile of the groundwater plume (as of July 2008) associated with the Site; identified public water supply wells within one mile of the groundwater plume; and identified future use of properties within 1,000 feet of the groundwater plume. The results of the survey indicated there are no public water supply wells within one mile of the Site and identified the following receptors:
    - one water supply well located with one-half mile of Site,
    - a dewatering well located approximately one-third mile southwest (upgradient) to the Site; and
    - one ecological receptor within one-half mile of the Site, a wetland located approximately 0.4 miles southwest (upgradient) of the site.

  Zoning restrictions preclude new residential development and any future redevelopment will be limited to commercial in nature.
- June 2009: Four groundwater monitoring wells were installed off-site (MW-15 through MW-18). One soil vapor monitoring points (VP-6) was installed off-site. Groundwater sampling was completed for all groundwater monitoring wells (MW-1 through MW-18), and soil vapor sampling was completed for all of the soil vapor monitoring points (VP-1 through VP-6).
- Slug testing was completed in an on-site monitoring well (MW-3) and in off-site wells (MW-2, MW-12, and MW-18) during September 2009. The slug testing results described below will likely be used in the future to plan the groundwater remediation pilot injection and determine potential risk to off-site groundwater receptors.

  All in-situ hydraulic conductivity testing ("slug test") field data is provided in the slug test data files provided in **Appendix B**. Slug tests were performed by removing one bailer volume of water

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from the well (slug) and recording data utilizing a in-situ Level Troll 700®. Data was collected in the field on a hand held unit running Win-situ 5 mobile®. The subsequent water level displacement versus time data recordings for the slug tests are documented on the forms.

Hydraulic conductivities were computed using AQTESOLV® computer software by inputting the data gathered from the in-situ slug tests performed in the field. The AQTESOLV® computer program generated hydraulic conductivity calculations. The results, along with time vs. displacement plots, are provided in **Appendix C**. Analysis of slug test data was performed using the Kansas Geological Survey (KGSs) Model method for confined aquifer conditions in the AQTESOLV® computer program. Hydraulic conductivities ranged from 1.8 to 8.7 feet/day with an average of 4.0 ft/day.

- September/October 2010: Four groundwater monitoring wells were installed off-site (MW-19 through MW-22). Three soil vapor extraction (SVE) wells (SVE-1 through SVE-3) and three soil vapor observation wells (SVO-1 through SVO-3) were installed to enable implementation of a soil vapor extraction pilot test. Slug testing was performed at select monitoring wells (MW-2, MW-3, MW-12, and MW-18). Groundwater sampling was completed for all groundwater monitoring wells (MW-1 through MW-22), and soil vapor sampling was completed for all of the soil vapor monitoring points (VP-1 through VP-6). The results of the groundwater and soil vapor sampling are illustrated on **Figures 5 and 6**, respectively. The groundwater and soil vapor results are also included with historical data in **Tables 3 and 4**, respectively.

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3.0 RISK EVALUATION

3.1 LAND USE

As stated previously, the Site was formerly used as an industrial laundry facility from at least 1922 to 1992, with on-site dry cleaning operations until approximately 1983 or 1984. The dry cleaning process utilized a dry cleaning solvent containing tetrachloroethene (PCE), which was stored on-site in an above-ground storage tank. The facility was demolished around 1994, and the property has been vacant since that time. The unpaved vacant lot currently has a locked, woven wire field fence around the perimeter.

The Site property is currently zoned CB, commercial central business, and it is assumed that the future land use at the Site will remain commercial; however, a deed restriction may be required in the future to attain site closure. Properties adjoining the Site are currently zoned commercial and manufacturing, while the surrounding area is a mix of commercial, manufacturing, and residential. **Figure 2** depicts the Site and surrounding area properties.

3.2 IMPACTED MEDIA

Based on results from site investigation activities, the impacted media of concern includes the following:

- Surficial soil: on-site
- Subsurface soil: on-site
- Groundwater: on-site and off-site
- Soil vapor: off-site

Although no on-site soil vapor data has been collected to date, baseline soil vapor sampling will be conducted at all on-site SVE wells prior to implementation of the SVE pilot test discussed in **Section 4.1**. This soil vapor data will be used in the future when developing soil vapor clean up goals. Although the potential for indoor air inhalation is not applicable at this time, it could become applicable depending on future land use. Surface water impacts are unlikely given the depth to groundwater and the direction of groundwater flow.

Previous site characterizations and risk assessments identified PCE as the primary chemical of concern (COC). A dissolved phase plume consisting of PCE and its daughter compounds of trichloroethene (TCE) and cis-1,2-dichloroethene (cis-1,2-DCE) extends off-site from the source area, as shown on **Figure 5**. This plume is migrating with groundwater through the fractured basalt or interflow sedimentary units

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toward the north-northwest.

3.3 POTENTIAL RECEPTORS

For the purposes of the risk evaluation, the following potential receptors have been identified for current and future land use.

- On-site:
  - Non-residential workers
  - Construction workers
- Off-site:
  - Residents – children
  - Residents – age adjusted adults
  - Non-residential workers

3.4 EXPOSURE PATHWAYS

The following exposure pathways were taken into account for the risk evaluation:

- Inhalation, dermal contact, and ingestion of surficial soils;
- Leaching to groundwater from surficial and subsurface soil impacts; and
- Inhalation of soil vapors from volatilization of contaminants in soils and groundwater.

Groundwater concentrations for PCE, TCE, and cis-1,2-DCE exceeded the respective maximum contaminant levels (MCLs) for drinking water on-site and off-site. Domestic supply wells were identified down-gradient of the Site during the receptor survey. The nearest potential groundwater receptor is a domestic water supply well (No. 391728) located approximately 3,300 feet northwest of the site and 1,100 feet west-northwest of the groundwater plume's leading edge. No municipal water supply wells are located within one mile of the Site.

3.5 SITE RISK EVALUATION

Exposures were evaluated using *the Idaho Risk Evaluation Manual* (REM) dated July 2004, and *the Risk Evaluation Computational Software* developed by the Risk Assessments and Management Group, Inc. v.1.0 (June 2004). Risk Evaluation-1 (RE-1) and Risk Evaluation-2 (RE-2) models calculate the carcinogenic site risk and site hazard index (HI) for each exposure pathway and receptor. The HI assesses the potential chronic non-carcinogenic adverse health effects resulting from exposure to the COCs. In

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accordance with the IDEQ REM, a total site risk of less than 1.0E-5 and a HI of less than 1.0 are unlikely to result in adverse health effects. In addition to calculating the site risk and HI, the RE-1 and RE-2 models establish the potential site-specific remedial action target levels (RATLs).

RE-1 and RE-2 Model Parameters

The on-site RE-1 model was used to evaluate the on-site risks associated with the detected surficial soil impacts, subsurface soil impacts, and groundwater impacts for non-residential site workers and construction workers. The off-site RE-1 model was used to evaluate the off-site risks associated with groundwater impacts for residential receptors (child and age-adjusted adults) and non-residential receptors. The off-site RE-2 model was used to evaluate the off-site risks associated with soil vapor detections for residential receptors (child and age-adjusted adults) and non-residential receptors.

For modeling purposes, surficial soils consist of soils 0 to 2 feet bgs and subsurface soils represent soils from 2 feet bgs to the water table. Soils from 0 to 15 feet bgs were used to represent the depths at which construction activities are likely to occur.

The COCs were selected based on exceedances of the IDEQ Initial Default Target Levels (IDTLs) for soil and groundwater or the California Human Health Screening levels (CHHSLs) for soil vapor. The selection of COCs and the maximum detected concentrations are presented in **Table 5**.

The 95% upper confidence limit (UCL) of the mean was calculated from the available analytical data and used for the representative concentrations of the impacted media. The *ProUCL Version 4.00.05 software*, available on the EPA website, computes the 95% UCL from data sets including non-detect observations. For data sets with insufficient detected values to accurately calculate the 95% UCL, the maximum detected concentration was used as the representative concentration for a conservative estimate. The representative exposure concentrations used in the models are presented in **Table 6**.

Default model parameters for physical properties, chemical properties, and exposure factors were used. Modifications to the model's fate and transport parameters were made to more accurately reflect the site-specific conditions. Fate and transport parameters that differ from the default parameters, including explanations, are presented in **Table 7**.

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RE-1 and RE-2 Summary Results

The on-site RE-1 model results indicate that the cumulative site risk for on-site non-residential site workers exceeded the upper threshold of carcinogenic risk of 1.0E-05. Surficial soil impacts and subsurface soil impacts yielded unacceptable results for non-residential site workers, with site risks of 8.61E-05 and 1.26E-05, respectively. The HI was not exceeded for non-residential receptors, and both the HI and site risk were not exceeded for construction worker receptors. The input and output data for the RE-1 model is presented in **Appendix D**.

The off-site RE-1 model results indicate that the risk to off-site child and age-adjusted residential receptors exceeded the 1.0E-5 risk threshold due to the potential inhalation of soil gas originating from the groundwater. The site risk for child receptors and age-adjusted adult receptors was 1.11E-05 and 1.87E-05, respectively. The HI was not exceeded for residential receptors, and both the HI and site risk were acceptable for non-residential receptors (**Appendix D**).

Although the off-site RE-1 model results indicated potential risk concerning the inhalation of soil gas originating from groundwater, the off-site RE-2 model results indicated no unacceptable risk for residential and non-residential receptors. The HI and site risk were not exceeded. The input and output data for the RE-2 model is presented in **Appendix D.**

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3.6 REMEDIAL ACTION TARGET LEVELS (RATLs)

Based on the RE-1 and RE-2 model results, the following proposed remedial action target levels (RATLs) were calculated.

Table 3.6.1: Remedial Action Target Levels

	ON-SITE			OFF-SITE	
CHEMICALS OF CONCERN	**SURFICIAL SOIL**	**SUB-SURFACE SOIL**	**GROUND WATER**	**SOIL VAPOR**	**GROUND WATER**
	Inhalation of vapors and particulates, dermal contact, and accidental ingestion	Indoor inhalation of vapor emissions	Allowable groundwater concentration protective of POE	Indoor inhalation of vapor emissions	Allowable groundwater concentration protective of POE
	mg/kg	mg/kg	µg/L	µg/m^3	µg/L
Carbon Tetrachloride	NA	NA	NA	1,070	NA
Chloroform	NA	NA	1.8	NA	NA
cis-1,2-Dichloroethene (cis-1,2-DCE)	17.4	1.5	70	NA	70
Tetrachloroethene (PCE)	9.6	1.1	5.0	5,210	5.0
Trichloroethene (TCE)	1.4	0.11	5.0	NA	5.0

NA = Not applicable

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In situations when multiple RATLs were calculated for the same media but for separate receptors or exposure pathways, the lowest RATLs were used in the table for a conservative assessment.

MCLs will be used for the proposed groundwater RATLs for the protection of potential exposures via ingestion, since the DEQ requires that MCLs be met at the nearest potential point of exposure (POE) or the downgradient property boundary, whichever is closer. Currently, the nearest point of exposure for groundwater ingestion is the domestic water supply well located approximately 1,100 feet west-northwest of the groundwater plume's leading edge. For modeling purposes, the nearest potential location of a water supply well is the Post Office property, so the Site boundary to the west-northwest (100 feet) was used as the POE.

Although not required, potential off-site soil vapor RATLs were established for Carbon Tetrachloride and PCE. When comparing the available soil vapor analytical data to the proposed soil vapor RATLS, no

Carbon Tetrachloride or PCE concentrations have exceeded these proposed RATLs to date.

Although no on-site soil vapor data has been collected to date, baseline soil vapor sampling will be conducted at all on-site SVE wells prior to implementation of the SVE pilot test discussed in **Section 4.1**. This soil vapor data will be used in the future when developing soil vapor clean up goals.

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4.0 SELECTION OF CORRECTIVE ACTION FOR ON-SITE SOIL ALTERNATIVE

4.1 SOIL VAPOR EXTRACTION

Soil vapor extraction (SVE) is the selected remedial action for the Site. A SVE system with a regenerative blower will be connected to SVE wells constructed in the shallow vadose zone above bedrock. The regenerative blower will apply vacuum through the SVE wells to remove soil vapors from the vadose zone. This will allow for direct removal of the contaminant mass in the soil vapor, as well as accelerate volatilization of PCE adsorbed to the soil in the vadose zone above the bedrock. The use of this technology should effectively address the soil and soil vapor impacts at the Site. In order to comply with the IDEQ air emissions requirements, Granulated activated carbon (GAC) vessels will likely be utilized to treat the extracted soil vapor, prior to discharging to the atmosphere.

Prior to installation of a full-scale SVE system, a SVE pilot test will be completed to refine the design of the SVE system. Three existing SVE wells (SVE-1 through SVE-3), one proposed horizontal SVE well (HW-1), and three soil vapor observation (SVO) wells (SVO-1 through SVO-3) located in the area with the highest soil impacts will be used for the pilot test. SVE-1 through SVE-3 and HW-1 will be utilized for full-scale implementation of the SVE system. The locations of the extraction and observation wells are shown on **Figure 7**. During the pilot test, vacuum will be applied to the soil vapor extraction points (SVE-1, SVE-3, and HW-1), and vacuum will be measured at the soil vapor observation points and non-operating extraction wells. Based on the vacuum results measured during the pilot test, the SVE system design will be refined to adequately address the impacted soil. Refinement of the design will include determining the size of blower needed to achieve the required flow rate and vacuum, and determining the radius of influence which will determine the spacing and number of additional soil vapor extraction points required. In addition, during full-scale SVE system implementation extraction from the basalt above the water table will be piloted in the area of the highest groundwater impacts (MW-1) to verify if treatment in the fracture basalt is feasible. If significant mass is able to be removed from the basalt, additional SVE points would likely be added to extract from the basalt.

All on-site soil in excess of the RATLs will be targeted for full-scale SVE system implementation (**Figures 8A and 8B**). Although concentrations in on-site borings did not exceed the RATLs at depths greater than 6 feet bgs (**Figure 8C**), full-scale SVE system implementation will still target depths down to bedrock. It

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is anticipated that SVE should be able to successfully meet the RATLs presented in **Section 3.6**. In addition, baseline soil vapor sampling will be conducted at all on-site SVE wells prior to implementation of the SVE pilot test. This soil vapor data will be used in the future when developing soil vapor clean up goals.

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5.0 SELECTION OF CORRECTIVE ACTION FOR ON-SITE GROUNDWATER ALTERNATIVE

5.1 IN-SITU CHEMICAL OXIDATION

Given the site RATLs, *in-situ* chemical oxidation (ISCO) has been selected to address the on-site groundwater impacts. Pilot scale testing is planned to assess ISCO effectiveness for full-scale implementation on the AmeriPride property. This alternative will focus on reducing the elevated dissolved VOC impacts in the bedrock aquifer. The ISCO technology has been proven to successfully treat dissolved chlorinated VOCs *in-situ*. ISCO consists of the injection of a chemical oxidation agent (oxidant) into the subsurface. The oxidant converts chlorinated VOCs to non-hazardous ions and compounds. The oxidant selected for the Site is permanganate which is available as potassium permanganate ($KMnO_4$) and sodium permanganate ($NaMnO_4$). The form of permanganate used for the pilot and full scale injections will be selected based on the scale of design and overall cost.

5.2 ISCO CONCEPTUAL IMPLEMENTATION

A pilot injection will be completed utilizing one injection well and observation points used to confirm the radius of influence, dosage, and other various injection parameters.

Prior to implementation of the pilot injection, an outline detailing the pilot injection will be submitted to IDEQ for review. The pilot study will involve the installation of an injection point screened across the impacted groundwater bearing zone in proximity to MW-1 (**Figure 5**) with observation points surrounding the injection well. MW-1 will also be incorporated as an observation point, if possible.

Implementation of the ISCO technology will be designed to address on-site groundwater impacts beneath the source area. Based on the pilot injection, an outline detailing the full-scale injection will be submitted to the IDEQ prior to implementation. Results of groundwater monitoring after the full-scale injection will determine if additional injection events are necessary for sufficient treatment of the source area groundwater.

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6.0 PHASE I: IMPLEMENTATION OF SOIL VAPOR EXTRACTION

SVE has been identified as the alternative that can best achieve the RATLs developed for this site. This section presents a general overview work plan for implementing this technology; an outline detailing the SVE pilot test and full-scale implementation will be submitted to the IDEQ prior to implementation.

6.1 CONSTRUCTION OF SOIL VAPOR EXTRACTION SYSTEM

No construction shall begin on-site until the public comment period has ended, the necessary permits have been obtained, and all regulatory approvals have been granted.

6.2 TIMELINE

An estimated timeline for the work to be completed at the Site is included in **Figure 8**. The schedule is tentative and several uncertainties could cause adjustments in the timeline including: availability of materials, regulatory review, permitting, and weather.

6.3 MONITORING

Following the SVE system installation and prior to startup, a full round of baseline monitoring will be performed, including the collection of groundwater samples from the existing monitoring wells and the collection of soil vapor samples from the existing soil vapor monitoring points and soil vapor extraction wells. Upon SVE system startup, air samples from the SVE system's influent will be collected to determine baseline system performance. In addition, monitoring of the SVE system's stack effluent will be performed in order to demonstrate compliance with the established air emissions requirements. An initial startup report will be submitted to the IDEQ following the system installation, this report will also include results of the baseline monitoring event.

Monitoring frequency will initially be quarterly for soil gas sampling. The sampling events will initially include a full round of soil vapor sample collection from all existing soil vapor monitoring and extraction points. Air samples from the SVE system's influent and between the GAC vessels will be collected to determine system performance. A detailed monitoring plan will be submitted with the outline for full-scale SVE system implementation.

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Coinciding with the established monitoring events, annual monitoring reports will be submitted to the IDEQ, which will include a summary and discussion of analytical results and progress toward the RATLs.

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7.0 PHASE II: IMPLEMENTATION OF IN-SITU CHEMICAL OXIDATION OF GROUNDWATER

In-situ chemical oxidation has been identified as the alternative that can best achieve the RATLs developed for this site. This section presents a general overview work plan for implementing this technology. An outline detailing the pilot and full-scale injection will be submitted to IDEQ for review prior to implementation.

7.1 DESIGN AND CONSTRUCTION FOR IN-SITU CHEMICAL OXIDATION OF GROUNDWATER

Design of the groundwater remediation will be determined based on the results of the pilot injection described in **Section 5.3.** Implementation of the full-scale injection plan will proceed upon final determination of the radius of influence, optimum dosage, and other various injection parameters from the pilot injection. Initial tasks will include preparation of bid plans and specifications, selection of a qualified subcontractor, and obtaining appropriate approvals and permits. Installation of all on-site injection points will be completed prior to proceeding with oxidant injection. Following the injection, effectiveness monitoring will be conducted. Based on the injection process and monitoring results a determination will be made as to whether additional injection events are necessary for sufficient treatment of the source area groundwater.

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7.2 TIMELINE

Implementation of the ISCO treatment of groundwater will follow the installation of the SVE system. An estimated timeline for the work to be completed at the Site is included in **Figure 8**. The schedule is tentative, and several uncertainties could cause adjustments in the timeline including: availability of materials, regulatory review, permitting, and weather.

7.3 MONITORING

Following injection events, groundwater will be sampled on a regular basis to determine the effectiveness of remedial actions. Monitoring reports will be completed on a regular basis and submitted to the IDEQ. Reports will include analytical results, groundwater parameters, groundwater gradient figures, and discussion of the results in comparison to previous results and RATLs. A detailed monitoring plan will be

submitted with the outline for pilot and full-scale injection implementation.

* * * * *

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8.0 HEALTH AND SAFETY

All contractor personnel completing the work must have Certification of Occupational Safety and Health Administration (OSHA) 40-hour Hazardous Waste Operations and Emergency Response (HAZWOPER) training that satisfies OSHA requirements under CFR 1910.120, including 8-hour refresher training certificates. A Site Health and Safety Plan (HASP) has been prepared in compliance with CFR 1910.120, and contractor's on-site personnel will be required to review, sign, and date the HASP prior to the commencement of any work.

* * * * *

DRAFT

9.0 REFERENCES

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* * * * *

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FIGURES

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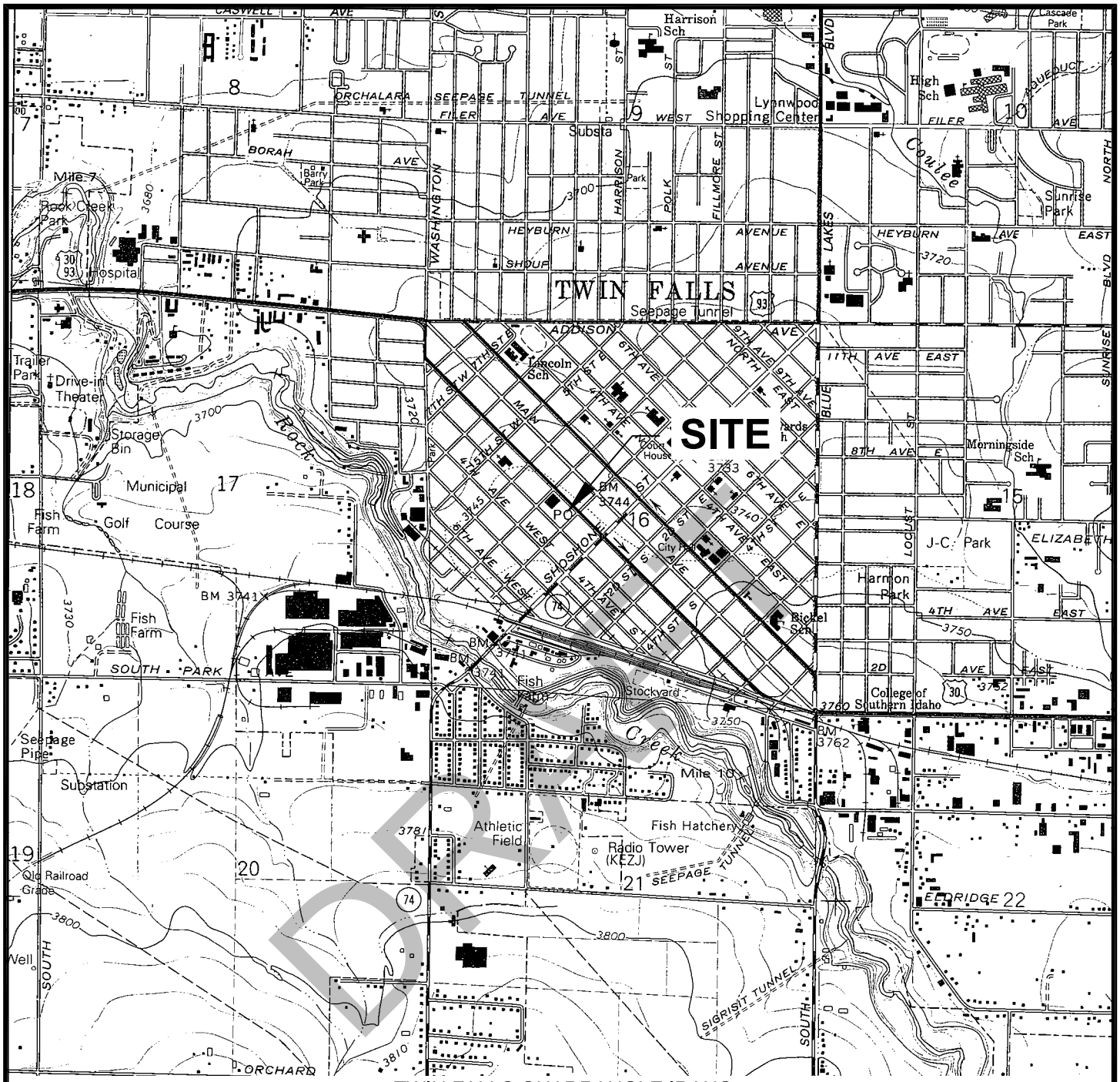
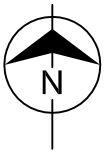


TWIN FALLS QUADRANGLE IDAHO
7.5 MINUTE SERIES (TOPOGRAPHIC)

QUADRANGLE LOCATION



0 2000' 4000'

SCALE IN FEET

Burns & McDonnell SINCE 1898

date FEBRUARY 2010

designed R. UNKE

Figure 1
SITE LOCATION MAP
FORMER GEM LAUNDRY SITE
201 2ND AVENUE WEST
TWIN FALLS, IDAHO

project 54592

contract AMERIPRIDE SERVICES INC

54592LOC-MAP FIG1.dwg

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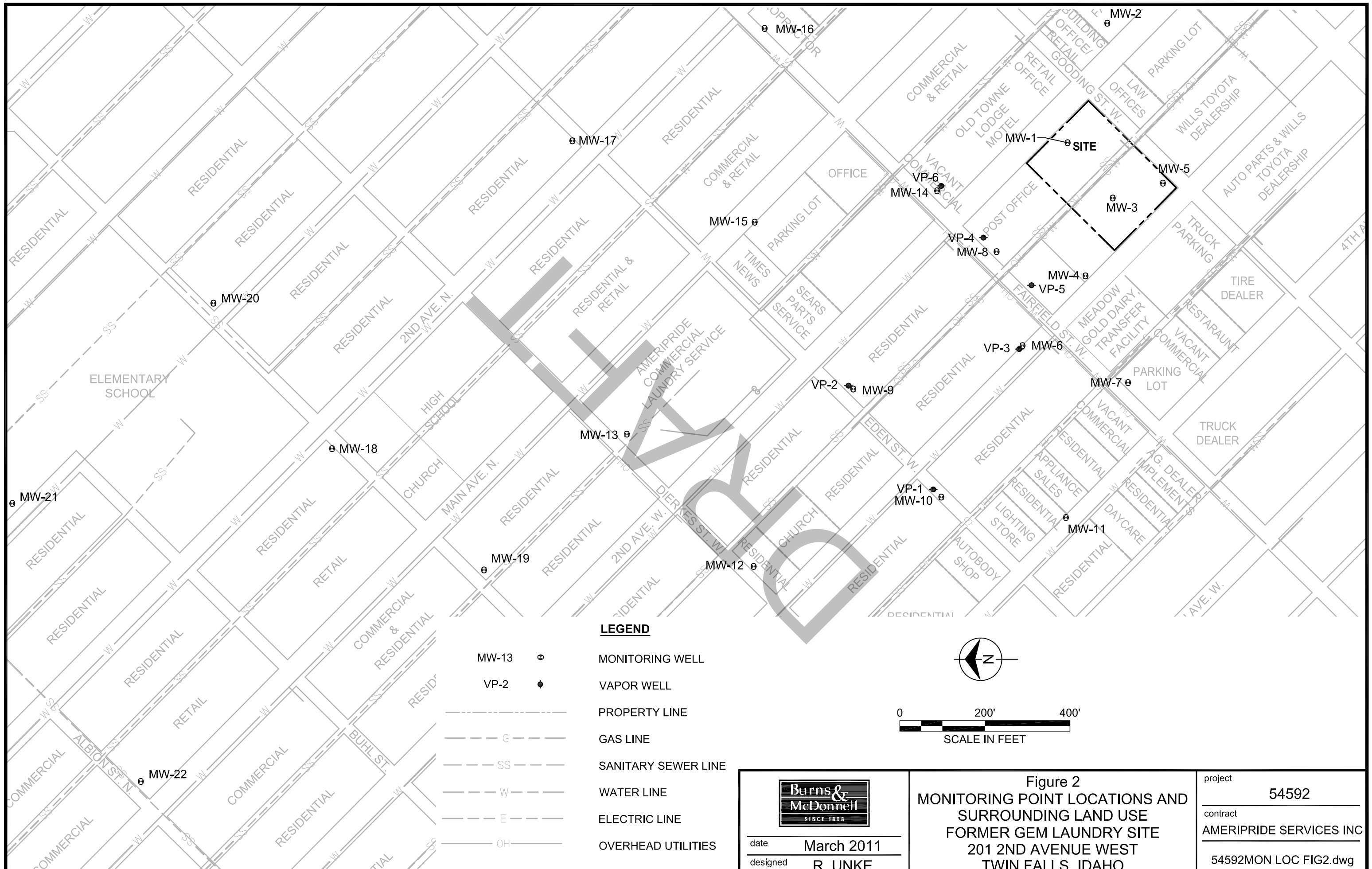

Burns & McDonnell SINCE 1898

date March 2011

designed R. UNKE

Figure 2
MONITORING POINT LOCATIONS AND SURROUNDING LAND USE
FORMER GEM LAUNDRY SITE
201 2ND AVENUE WEST
TWIN FALLS, IDAHO

project 54592

contract AMERIPRIDE SERVICES INC

54592MON LOC FIG2.dwg

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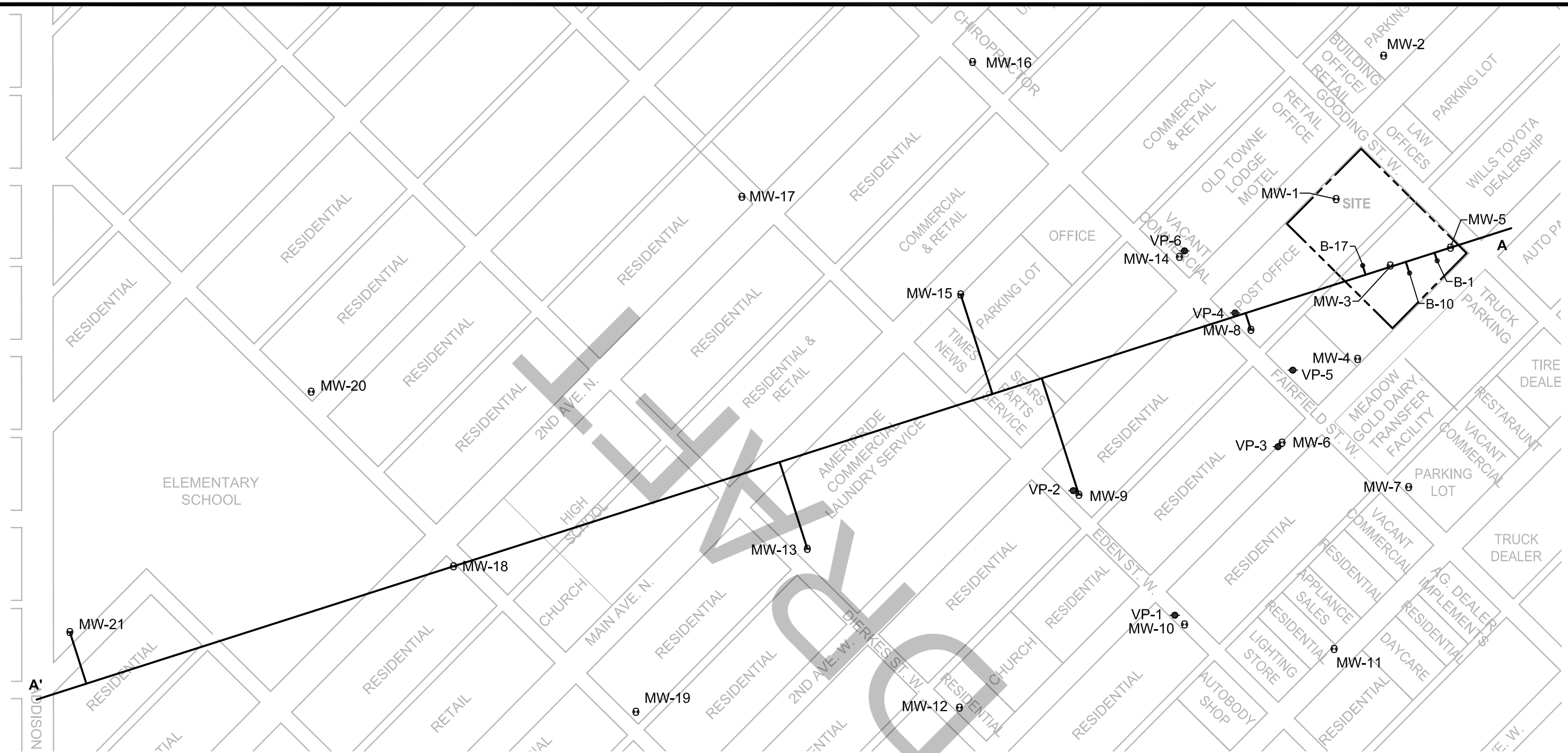

LEGEND

MW-13 •	SOIL BORING
MW-13 ⊖	MONITORING WELL
VP-2 ♦	VAPOR WELL
—·—·—	PROPERTY LINE
— — G — —	GAS LINE
— — SS — —	SANITARY SEWER LINE
— — W — —	WATER LINE
— — E — —	ELECTRIC LINE
—— OH ——	OVERHEAD UTILITIES

N

0 200' 400'
SCALE IN FEET

Burns & McDonnell SINCE 1898

date MARCH 2011
designed R. UNKE

Figure 3A
CROSS SECTION
LOCATION MAP
FORMER GEM LAUNDRY SITE
201 2ND AVENUE WEST
TWIN FALLS, IDAHO

project 54592
contract AMERIPRIDE SERVICES INC
54592XSECT FIG3A.dwg

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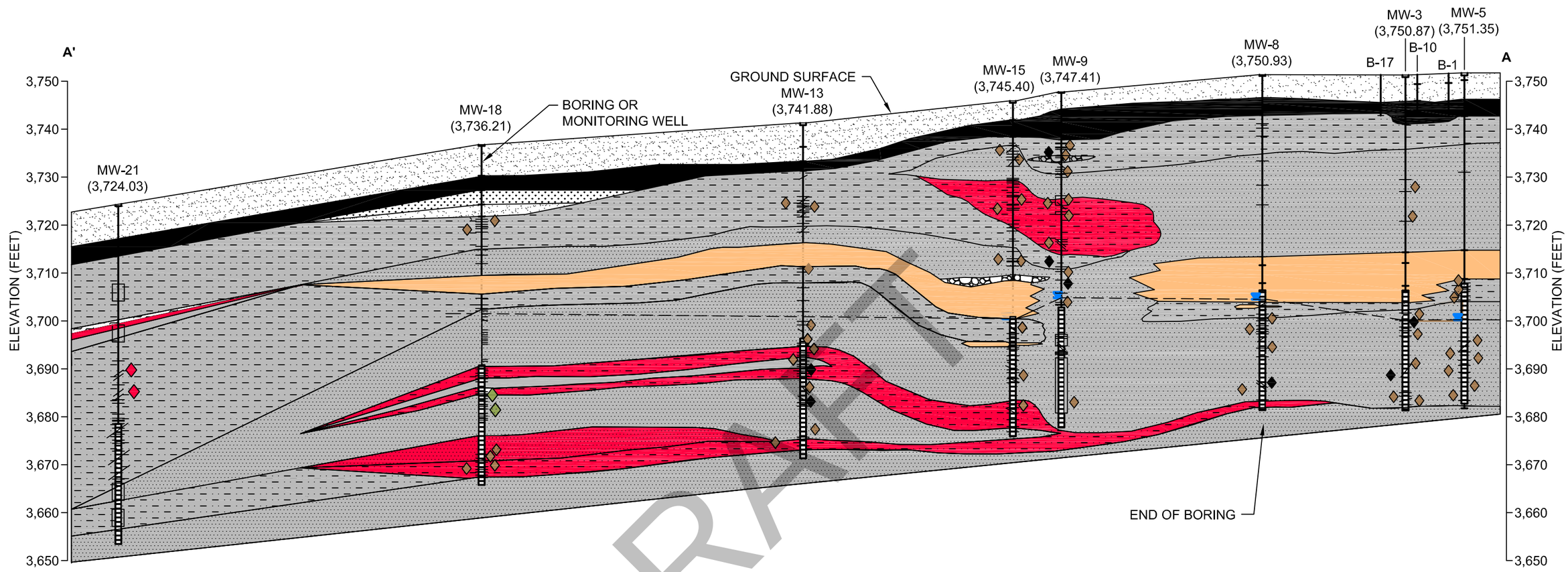

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HORIZONTAL 0 200' 400'
SCALE IN FEET

VERTICAL 0 10' 20' 40'
SCALE IN FEET

LEGEND:

- GREEN OR YELLOW MINERALIZATION IN FRACTURES AND/OR VESICLES
- TAN MINERALIZATION IN FRACTURES AND/OR VESICLES
- WHITE MINERALIZATION IN FRACTURES AND/OR VESICLES
- RED MINERALIZATION
- SAND
- SILTY SAND
- SILT
- CALICHE
- BLACK BASLT
- RED BASALT
- INTERFLOW SEDIMENTARY DEPOSITS
- MEDIUM TO LARGE VESICLES
- PINPOINT VESICLES
- CRUMBLED BEDROCK
- (3,734.03) SURFACE ELEVATION (FEET)
- FRACTURES
- MULTIPLE FRACTURES
- WATER LEVEL AFTER DEVELOPMENT
- SCREEN INTERVAL

NOTE:

1. ELEVATIONS SURVEYED RELATIVE TO MEAN SEA LEVEL.

Burns & McDonnell SINCE 1898

date	MARCH 2011
designed	R. UNKE

Figure 3B
GEOLOGIC CROSS SECTION
A - A'
FORMER GEM LAUNDRY SITE
201 2ND AVENUE WEST
TWIN FALLS, IDAHO

project	54592
contract	AMERIPRIDE SERVICES INC
	45492XSECT A FIG3B.dwg

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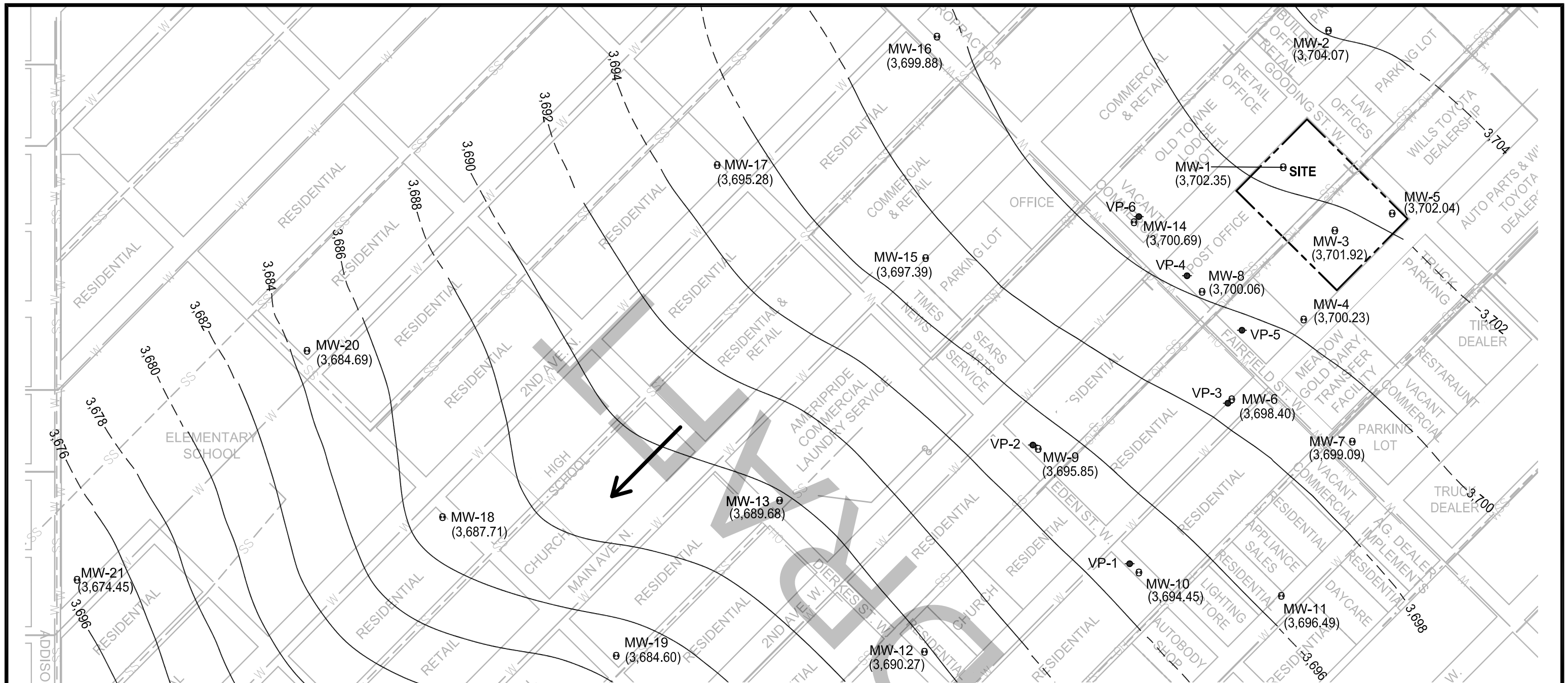

LEGEND

MW-13	MONITORING WELL	E	ELECTRIC LINE
VP-2	VAPOR WELL	OH	OVERHEAD UTILITIES
	PROPERTY LINE	(3,702.35)	GROUNDWATER ELEVATIONS (FEET ABOVE MEAN SEA LEVEL)
G	GAS LINE		
SS	SANITARY SEWER LINE	3,690 3,690	GROUNDWATER ELEVATION CONTOUR
W	WATER LINE		GROUNDWATER FLOW

N

0 200' 400'

SCALE IN FEET

Burns & McDonnell SINCE 1898

date FEBRUARY 2010

designed R. UNKE

Figure 4
GROUNDWATER GRADIENT
SEPTEMBER 2010
FORMER GEM LAUNDRY SITE
201 2ND AVENUE WEST
TWIN FALLS, IDAHO

project 54592

contract AMERIPRIDE SERVICES INC

54592GW-JUNE 09 FIG4.dwg

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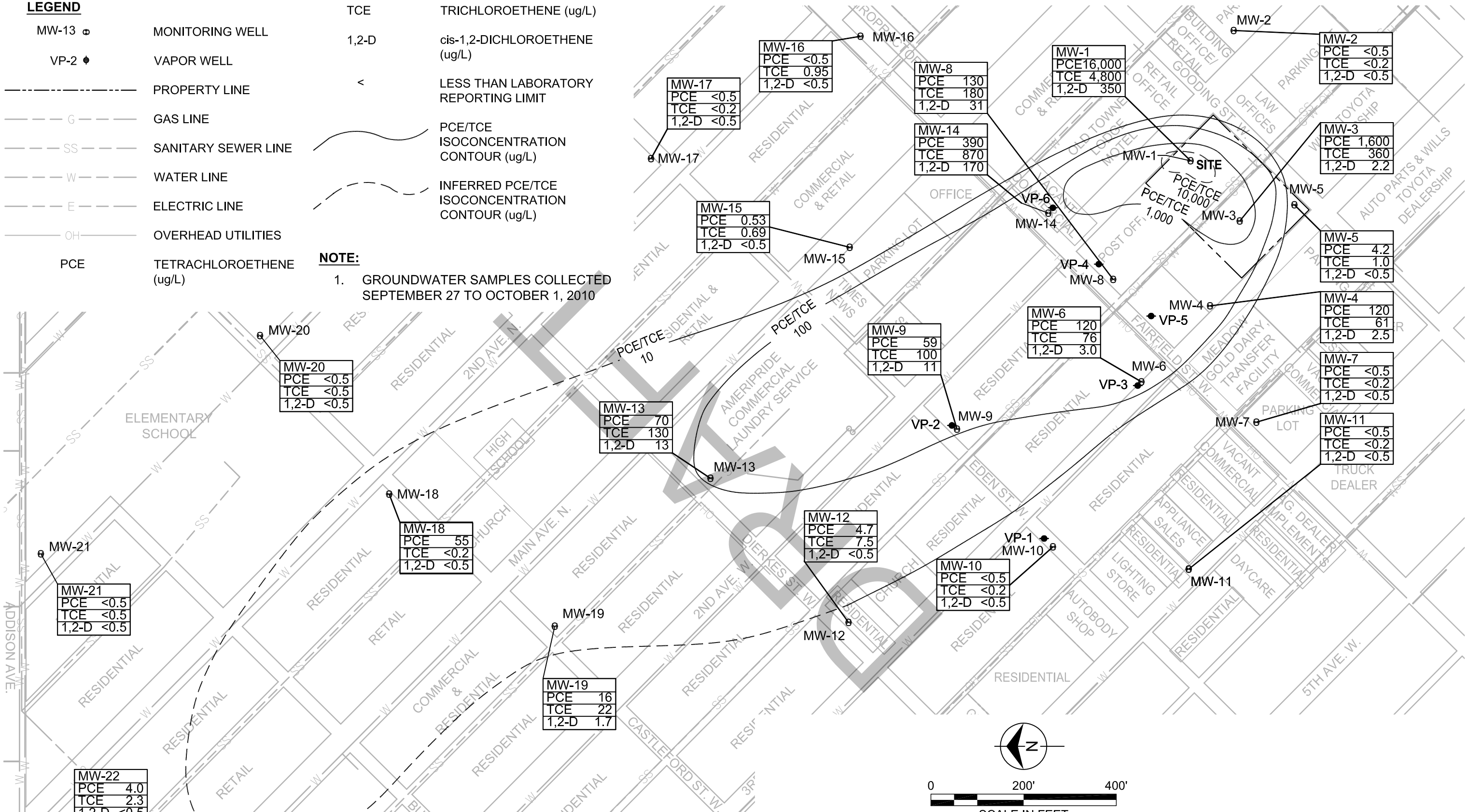
LEGEND

MW-13	MONITORING WELL
VP-2	VAPOR WELL
	PROPERTY LINE
G	GAS LINE
SS	SANITARY SEWER LINE
W	WATER LINE
E	ELECTRIC LINE
OH	OVERHEAD UTILITIES
PCE	TETRACHLOROETHENE (ug/L)
TCE	TRICHLOROETHENE (ug/L)
1,2-D	cis-1,2-DICHLOROETHENE (ug/L)
<	LESS THAN LABORATORY REPORTING LIMIT
	PCE/TCE ISOCONCENTRATION CONTOUR (ug/L)
	INFERRED PCE/TCE ISOCONCENTRATION CONTOUR (ug/L)

NOTE:

1. GROUNDWATER SAMPLES COLLECTED SEPTEMBER 27 TO OCTOBER 1, 2010



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date MAY 3, 2011

designed R. UNKE

Figure 5
CHEMICALS OF CONCERN IN GROUNDWATER SEPT / OCT 2010
FORMER GEM LAUNDRY SITE
201 2ND AVENUE WEST
TWIN FALLS, IDAHO

project 54592

contract AMERIPRIDE SERVICES INC

54592CHEM MAY11 FIG5.dwg

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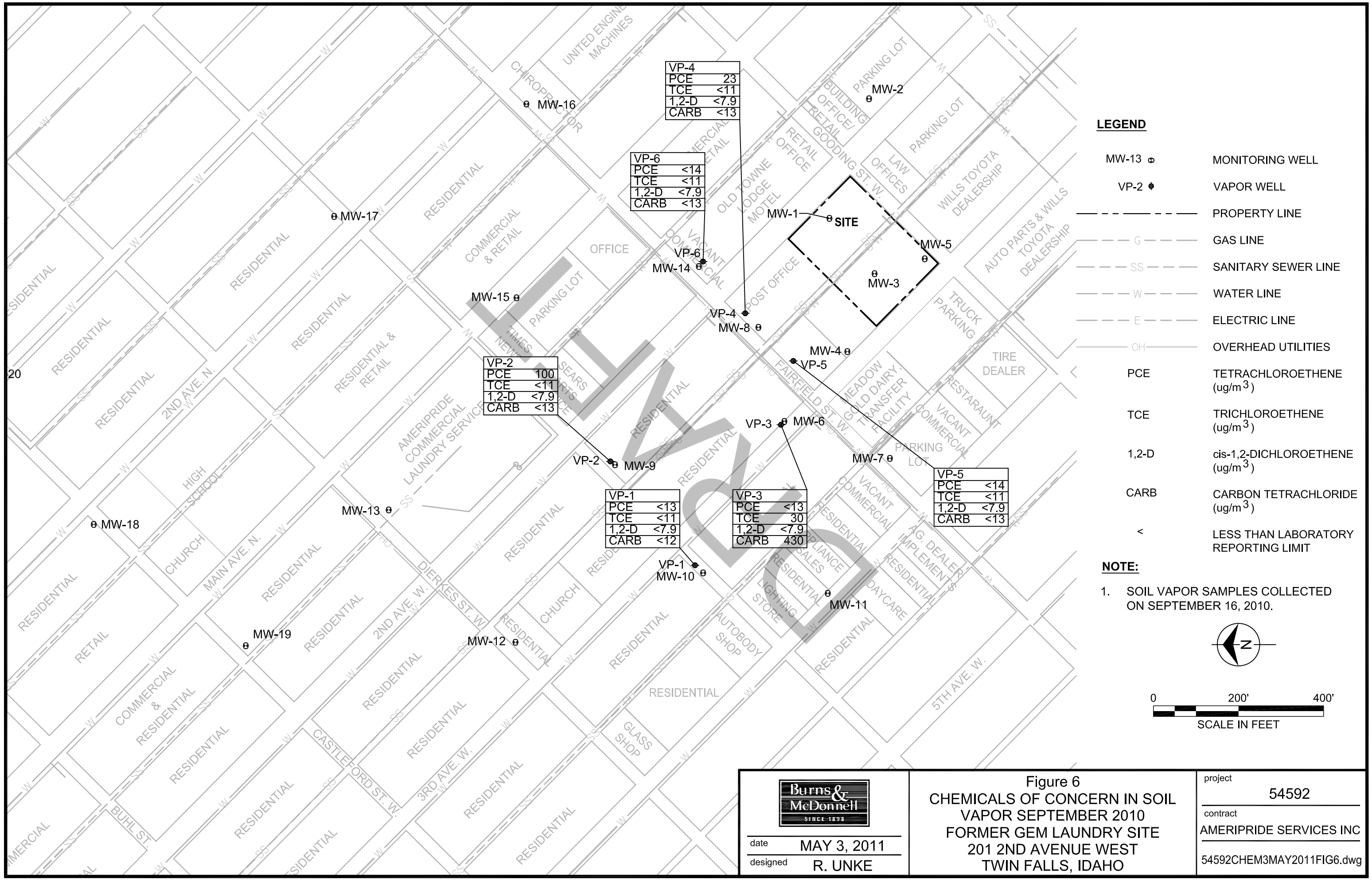

Burns & McDonnell SINCE 1898

date MAY 3, 2011

designed R. UNKE

Figure 6
CHEMICALS OF CONCERN IN SOIL VAPOR SEPTEMBER 2010
FORMER GEM LAUNDRY SITE
201 2ND AVENUE WEST
TWIN FALLS, IDAHO

project 54592

contract AMERIPRIDE SERVICES INC

54592CHEM3MAY2011FIG6.dwg

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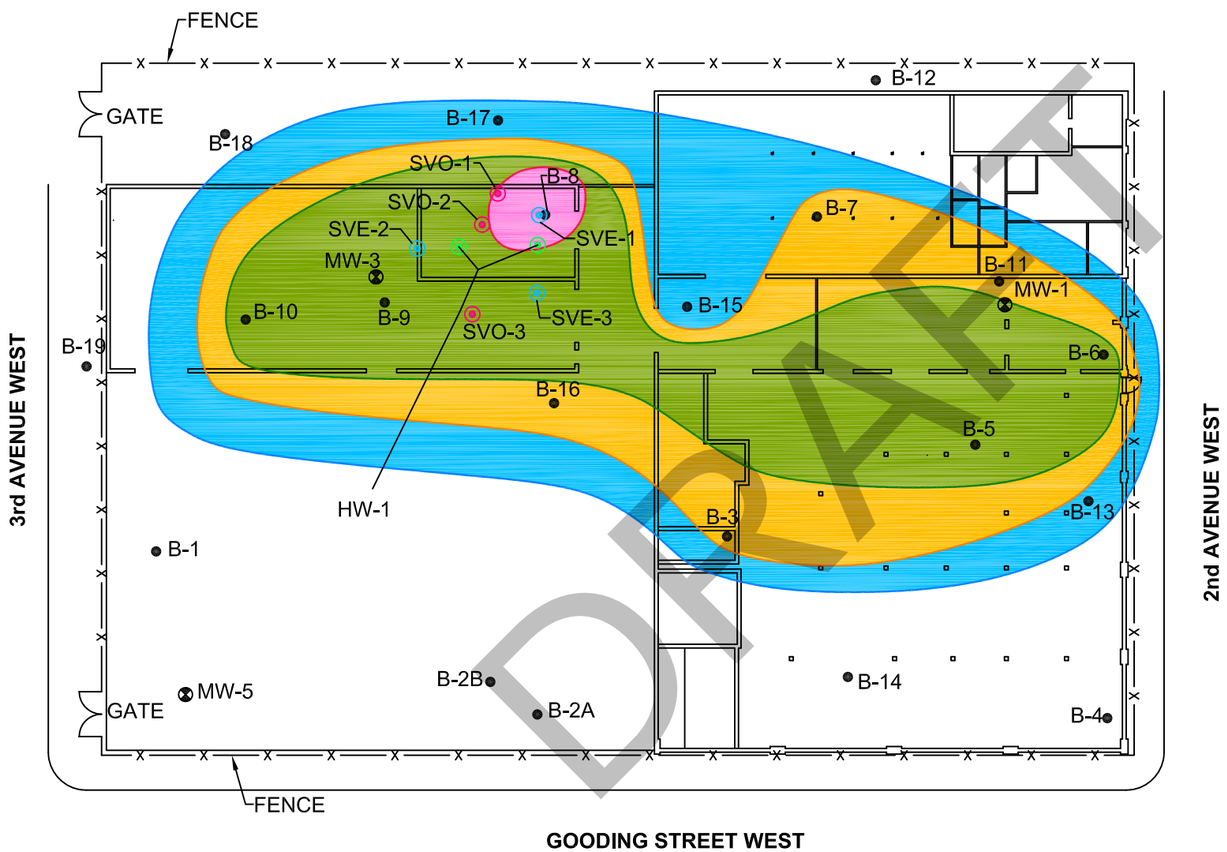

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LEGEND

- MONITORING WELL LOCATION
- SOIL BORING LOCATION
- 2" SVO WELL
- 4" SVE WELL
- 4" HORIZONTAL SVE WELL (PROPOSED, TO BE INSTALLED)

PCE LEVELS:

- >10 mg/kg
- 1.0-10 mg/kg
- 0.1-1.0 mg/kg
- 0.01-0.1 mg/kg

PCE	TETRACHLOROTHENE
SVE	SOIL VAPOR EXTRACTION
SVO	SOIL VAPOR OBSERVATION
HW	HORIZONTAL SVE WELL
mg/kg	MILLIGRAM PER KILOGRAM

NOTE:

1. CONTOUR SHOWN ON THIS FIGURE FROM SOIL SAMPLES COLLECTED BETWEEN 0 AND 2 FEET BELOW GROUND SURFACE. THIS HORIZON WAS USED BECAUSE IT BEST HIGHLIGHTS THAT PLACEMENT OF THE SVE/SVO WELLS IS IN THE AREA OF THE HIGHEST PCE CONCENTRATIONS IN SOIL.

N

0 20' 40' 80'

SCALE IN FEET

Burns & McDonnell SINCE 1898

date JUNE 13, 2011

designed R. UNKE

Figure 7
PROPOSED SVE PILOT TEST LOCATION
FORMER GEM LAUNDRY SITE
201 2ND AVENUE WEST
TWIN FALLS, IDAHO

project 54592

contract AMERIPRIDE SERVICES INC

54592-FG7.dwg

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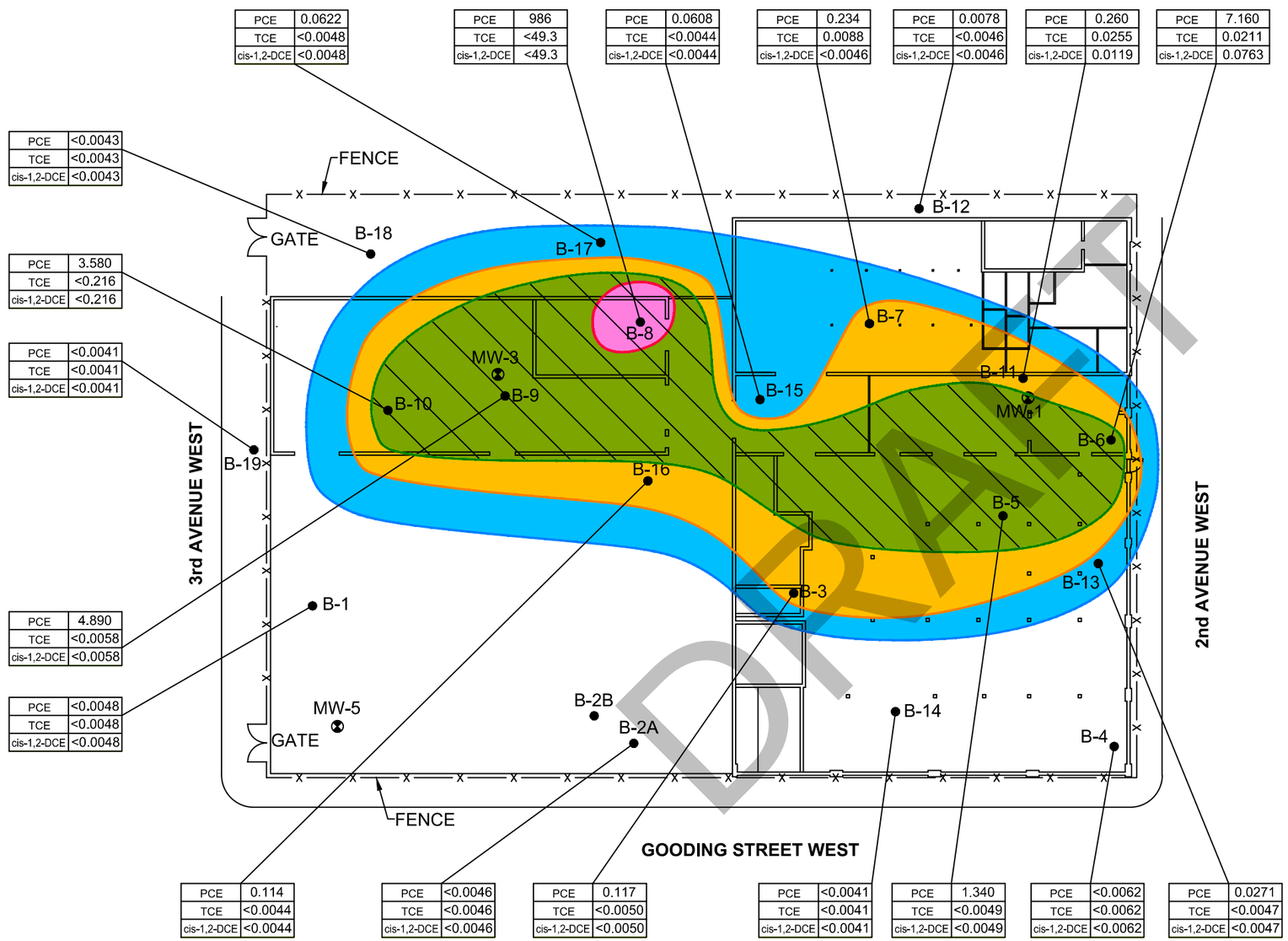

LEGEND

- MONITORING WELL LOCATION
- SOIL BORING LOCATION

PCE LEVELS:

- >10 mg/kg
- 1.0-10 mg/kg
- 0.1-1.0 mg/kg
- 0.01-0.1 mg/kg
- Target Area of SVE System

CIS-1,2-DCE	CIS-1,2-DICHLOROETHENE
PCE	TETRACHLOROTHENE
TCE	TRICHLOROETHENE
RATLs	REMEDIAL ACTION TARGET LEVELS
SVE	SOIL VAPOR EXTRACTION
mg/kg	MILLIGRAMs PER KILOGRAM

NOTE:

1. RATLs LISTED ARE FOR SUB-SURFACE SOIL

RATLs	
PCE	1.1
TCE	0.11
cis-1,2-DCE	1.5

0 20' 40' 80'

SCALE IN FEET

Burns & McDonnell SINCE 1898

date SEPTEMBER 2011

designed R. UNKE

Figure 8A
PROPOSED TARGET AREA
OF SVE SYSTEM: 0 - 2 FEET
FORMER GEM LAUNDRY SITE
201 2ND AVENUE WEST
TWIN FALLS, IDAHO

project 54592

contract AMERIPRIDE SERVICES INC

54592-FG8A.dwg

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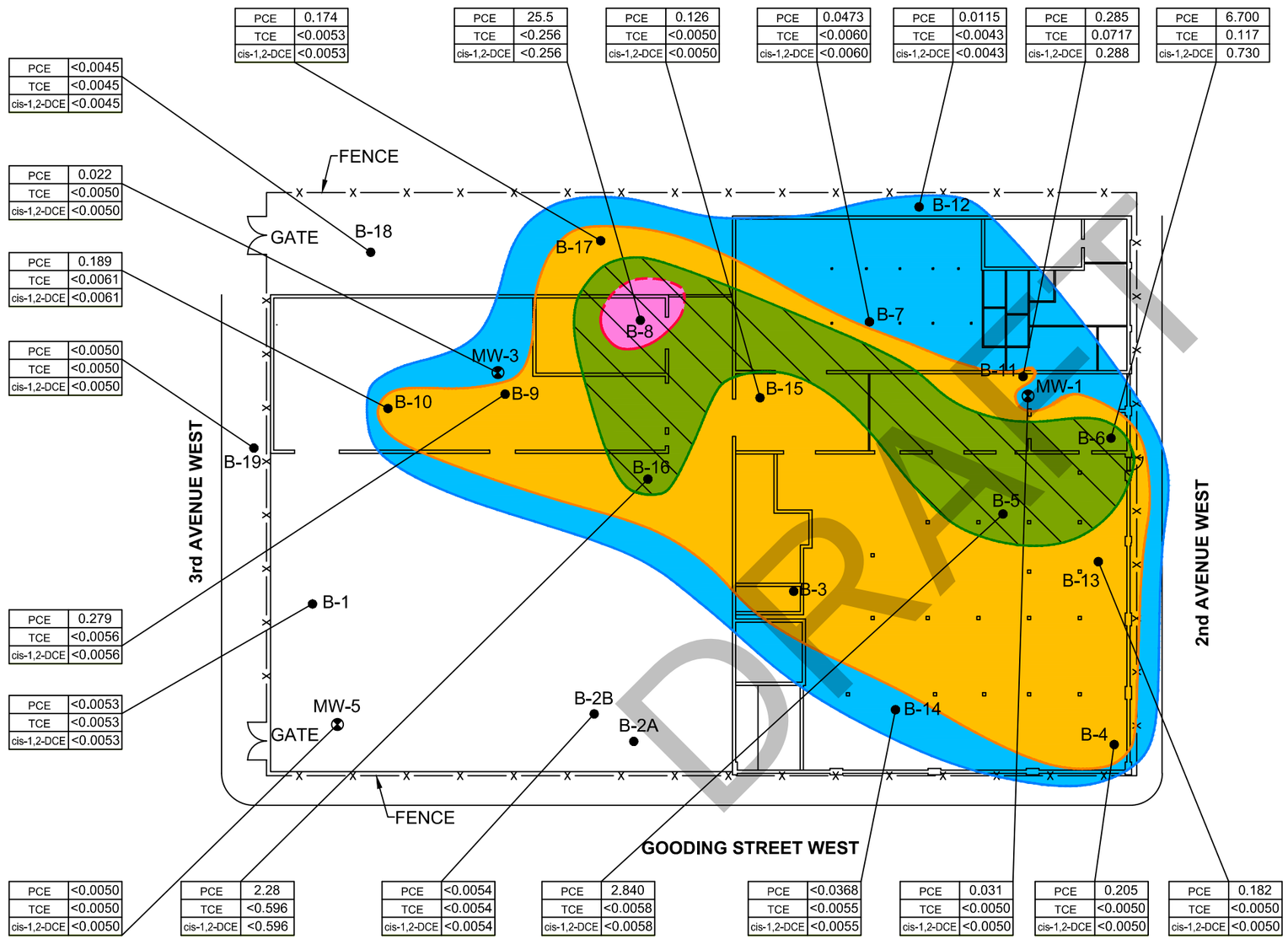

LEGEND

- MONITORING WELL LOCATION
- SOIL BORING LOCATION

PCE LEVELS:

- >10 mg/kg
- 1.0-10 mg/kg
- 0.1-1.0 mg/kg
- 0.01-0.1 mg/kg
- Target Area of SVE System

CIS-1,2-DCE	CIS-1,2-DICHLOROETHENE
PCE	TETRACHLOROTHENE
TCE	TRICHLOROETHENE
RATLs	REMEDIAL ACTION TARGET LEVELS
SVE	SOIL VAPOR EXTRACTION
mg/kg	MILLIGRAMs PER KILOGRAM

NOTE:

1. RATLs LISTED ARE FOR SUB-SURFACE SOIL

RATLs	
PCE	1.1
TCE	0.11
cis-1,2-DCE	1.5

0 20' 40' 80'

SCALE IN FEET

Burns & McDonnell SINCE 1898

date SEPTEMBER 2011

designed R. UNKE

Figure 8B
PROPOSED TARGET AREA
OF SVE SYSTEM: 4 - 6 FEET
FORMER GEM LAUNDRY SITE
201 2ND AVENUE WEST
TWIN FALLS, IDAHO

project 54592

contract AMERIPRIDE SERVICES INC

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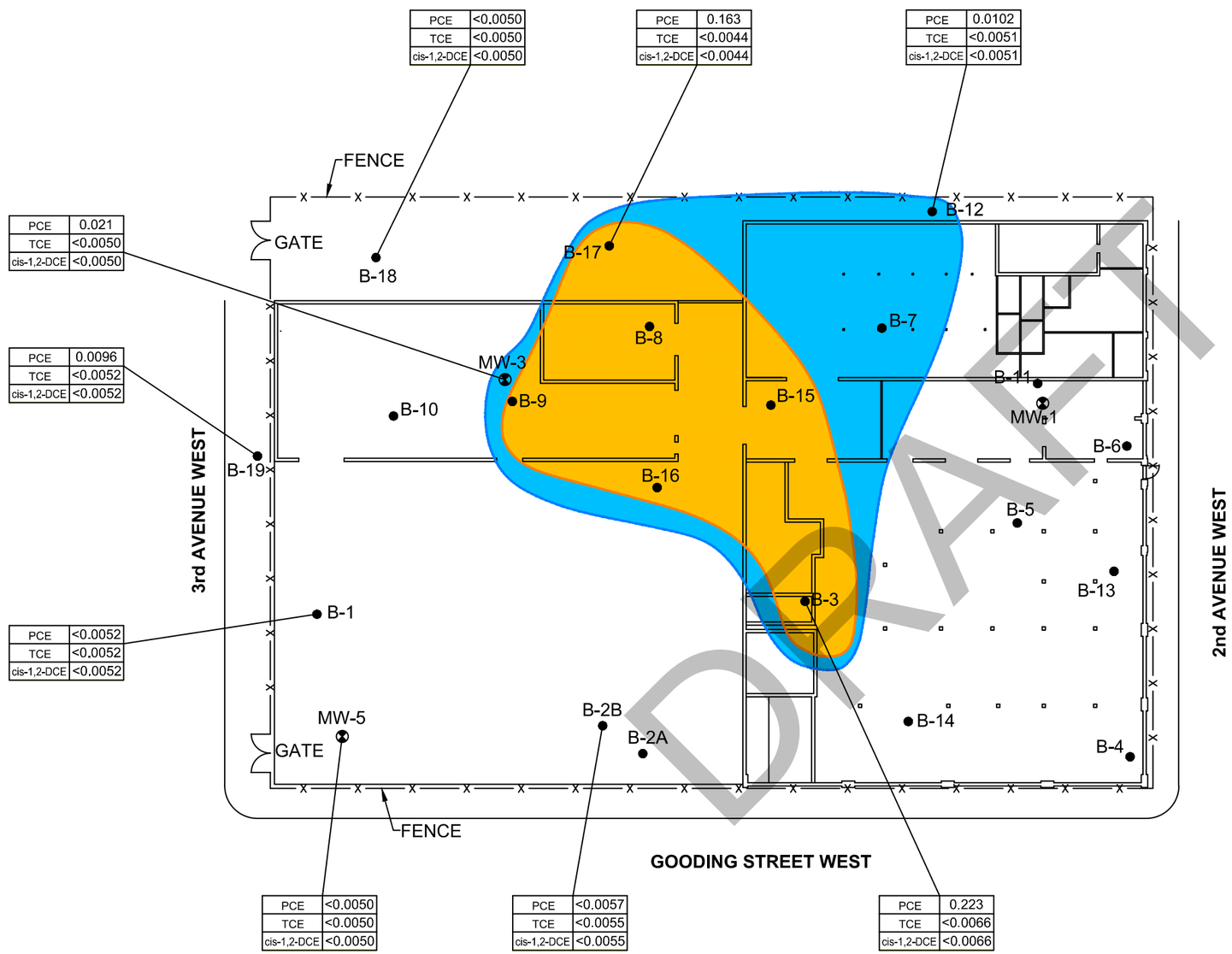

LEGEND

- MONITORING WELL LOCATION
- SOIL BORING LOCATION

PCE LEVELS:

- 0.1-1.0 mg/kg
- 0.01-0.1 mg/kg

CIS-1,2-DCE	CIS-1,2-DICHLOROETHENE
PCE	TETRACHLOROTHENE
TCE	TRICHLOROETHENE
RATLs	REMEDIAL ACTION TARGET LEVELS
SVE	SOIL VAPOR EXTRACTION
mg/kg	MILLIGRAMs PER KILOGRAM

NOTE:

1. RATLs LISTED ARE FOR SUB-SURFACE SOIL
2. ALTHOUGH SOIL CONCENTRATIONS DO NOT EXCEED THE RATLs AT DEPTHS GREATER THAN 6 FEET BGS, THE SVE SYSTEM WILL STILL TARGET DOWN TO BEDROCK.

RATLs	
PCE	1.1
TCE	0.11
cis-1,2-DCE	1.5

0 20' 40' 80'

SCALE IN FEET

Burns & McDonnell SINCE 1898

date SEPTEMBER 2011

designed R. UNKE

Figure 8C
PROPOSED TARGET AREA
OF SVE SYSTEM: >6 FEET
FORMER GEM LAUNDRY SITE
201 2ND AVENUE WEST
TWIN FALLS, IDAHO

project 54592

contract AMERIPRIDE SERVICES INC

54592-FG8C.dwg

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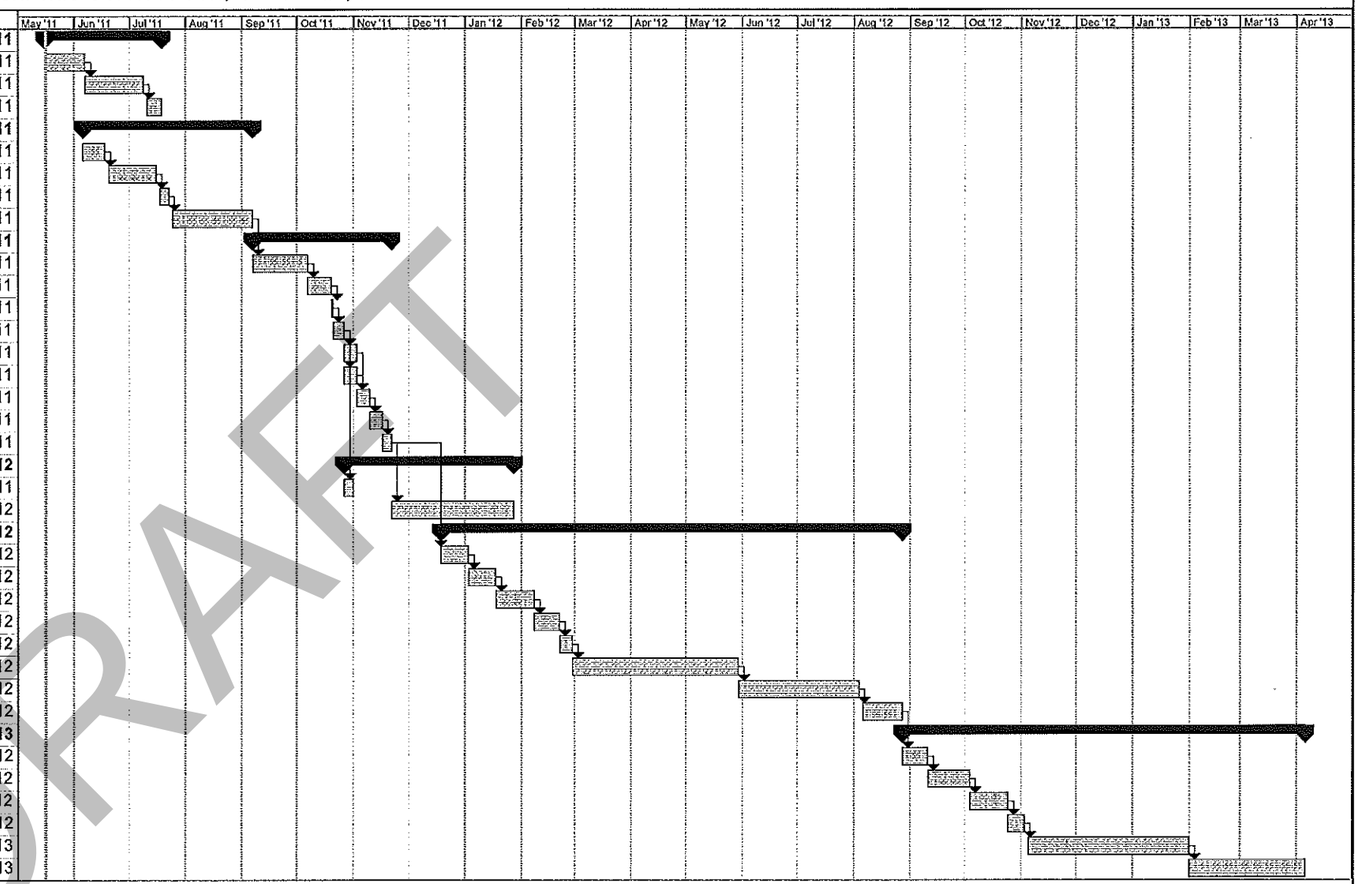
9

FIGURE 8: PROJECT TIMELINE
AmeriPride Services Inc., Twin Falls, Idaho

ID	Task Name	Duration	Start	Finish
1	**VRWP Preparation**	**46 days**	**Mon 5/16/11**	**Mon 7/18/11**
2	IDEQ Review of VRWP	16 days	Mon 5/16/11	Mon 6/6/11
3	Public Comment Period	24 days	Tue 6/7/11	Fri 7/8/11
4	Approval & Finalization of VRWP	6 days	Mon 7/11/11	Mon 7/18/11
5	**Phase I: SVE Pilot Test**	**67 days**	**Mon 6/6/11**	**Tue 9/6/11**
6	IDEQ Review of Pilot Test Outline	10 days	Mon 6/6/11	Fri 6/17/11
7	Pilot Test Coordination	20 days	Mon 6/20/11	Fri 7/15/11
8	Pilot Test Implementation	5 days	Mon 7/18/11	Fri 7/22/11
9	Review of Pilot Test Results & Refinement of SVE System Design	32 days	Mon 7/25/11	Tue 9/6/11
10	**Phase I:SVE System Installation**	**54 days**	**Wed 9/7/11**	**Mon 11/21/11**
11	Permit to Construct - Application & Approval	22 days	Wed 9/7/11	Thu 10/6/11
12	Installation Coordination	9 days	Fri 10/7/11	Wed 10/19/11
13	Private Utility Locate	1 day	Thu 10/20/11	Thu 10/20/11
14	Soil Vapor Extraction Point Installation	4 days	Fri 10/21/11	Wed 10/26/11
15	Trenching & Piping	5 days	Thu 10/27/11	Wed 11/2/11
16	SVE System Trailer Mobilization	5 days	Thu 10/27/11	Wed 11/2/11
17	SVE System Setup: Electrical & Mechanical	5 days	Thu 11/3/11	Wed 11/9/11
18	SVE System Startup & Testing	5 days	Thu 11/10/11	Wed 11/16/11
19	Startup Sampling & Training	3 days	Thu 11/17/11	Mon 11/21/11
20	**Phase I: Monitoring & Reporting**	**67 days**	**Thu 10/27/11**	**Fri 1/27/12**
21	Baseline Sampling	3 days	Thu 10/27/11	Mon 10/31/11
22	System Installation & Startup Report	49 days	Tue 11/22/11	Fri 1/27/12
23	**Phase II: Pilot ISCO Injection**	**181 days**	**Mon 12/19/11**	**Mon 8/27/12**
24	IDEQ Review of Pilot Injection Outline	11 days	Mon 12/19/11	Mon 1/2/12
25	Prepare Bid Specifications for Injection Well Installation	11 days	Tue 1/3/12	Tue 1/17/12
26	Award & Coordinate Well Installation Work	15 days	Wed 1/18/12	Tue 2/7/12
27	Install & Develop Injection Wells	10 days	Wed 2/8/12	Tue 2/21/12
28	Baseline Sampling Event	5 days	Wed 2/22/12	Tue 2/28/12
29	Groundwater Monitoring in Select Wells	65 days	Wed 2/29/12	Tue 5/29/12
30	Data Analysis & Preparation of Pilot Injection Letter Report	48 days	Wed 5/30/12	Fri 8/3/12
31	Receive Approval from IDEQ to Proceed with Full Scale Injection	16 days	Mon 8/6/12	Mon 8/27/12
32	**Phase II: Full Scale Injection**	**159 days**	**Tue 8/28/12**	**Fri 4/5/13**
33	Prepare Bid Specifications for Injection Well Installation	10 days	Tue 8/28/12	Mon 9/10/12
34	Award & Coordinate Well Installation Work	17 days	Tue 9/11/12	Wed 10/3/12
35	Install & Develop Injection Wells	15 days	Thu 10/4/12	Wed 10/24/12
36	Baseline Sampling Event	7 days	Thu 10/25/12	Fri 11/2/12
37	Groundwater Monitoring in Select Wells	64 days	Mon 11/5/12	Thu 1/31/13
38	Data Analysis & Preparation of Full Scale Injection Letter Report	46 days	Fri 2/1/13	Fri 4/5/13



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Project: Figure 8 Project Timeline
Date: Mon 5/16/11

Task | Split | Progress | Milestone | Summary | Project Summary | External Tasks | External Milestone | Deadline

TABLES

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TABLE 1
Groundwater Elevations
AmeriPride Services
Twin Falls, Idaho
Burns & McDonnell Project No. 54592

Monitoring Well ID	Top of Casing Elevation (feet msl)	Date Measured	Depth to Groundwater (feet)	Groundwater Elevation (feet msl)
MW-1	3749.01	7/8/2006	45.43	3703.58
	3749.01	12/19/2007	45.92	3703.09
	3749.01	7/23/2008	47.09	3701.92
	3749.01	12/10/2008	47.14	3701.87
	3749.01	6/15/2009	46.63	3702.38
	3749.01	9/28/2010	46.66	3702.35
MW-2	3747.26	12/19/2007	41.99	3705.27
	3747.26	7/22/2008	42.99	3704.27
	3747.26	12/10/2008	43.40	3703.86
	3747.26	6/15/2009	42.90	3704.36
	3747.26	9/27/2010	43.19	3704.07
MW-3	3750.37	7/8/2006	47.28	3703.09
	3750.37	12/19/2007	47.86	3702.51
	3750.37	7/23/2008	49.19	3701.18
	3750.37	12/10/2008	49.12	3701.25
	3750.37	6/15/2009	48.42	3701.95
	3750.37	9/29/2010	48.45	3701.92
MW-4	3751.72	12/19/2007	50.08	3701.64
	3751.72	7/22/2008	52.19	3699.53
	3751.72	12/10/2008	52.48	3699.24
	3751.72	6/15/2009	51.64	3700.08
	3751.72	9/28/2010	51.49	3700.23
MW-5	3750.65	7/8/2006	47.30	3703.35
	3750.65	12/19/2007	48.02	3702.63
	3750.65	7/22/2008	49.21	3701.44
	3750.65	12/10/2008	49.38	3701.27
	3750.65	6/15/2009	48.54	3702.11
	3750.65	9/28/2010	48.61	3702.04
MW-6	3751.02	12/19/2007	51.99	3699.03
	3751.02	7/22/2008	53.22	3697.80
	3751.02	12/10/2008	53.44	3697.58
	3751.02	6/15/2009	52.66	3698.36
	3751.02	9/28/2010	52.62	3698.40
MW-7	3752.55	12/19/2007	51.82	3700.73
	3752.55	7/21/2008	53.96	3698.59
	3752.55	12/10/2008	54.33	3698.22
	3752.55	6/15/2009	53.20	3699.35
	3752.55	9/27/2010	53.46	3699.09
MW-8	3750.66	7/23/2008	51.45	3699.21
	3750.66	12/10/2008	50.97	3699.69
	3750.66	6/15/2009	50.40	3700.26
	3750.66	9/27/2010	50.60	3700.06
MW-9	3747.07	7/22/2008	51.69	3695.38
	3747.07	12/10/2008	51.94	3695.13
	3747.07	6/15/2009	51.19	3695.88
	3747.07	9/27/2010	51.22	3695.85
MW-10	3747.37	7/23/2008	53.38	3693.99
	3747.37	12/10/2008	53.77	3693.60
	3747.37	6/15/2009	53.12	3694.25
	3747.37	9/27/2010	52.92	3694.45
MW-11	3750.57	12/10/2008	54.25	3696.32
	3750.57	6/15/2009	54.15	3696.42
	3750.57	9/27/2010	54.08	3696.49
MW-12	3742.00	12/10/2008	51.80	3690.20
	3742.00	6/15/2009	52.28	3689.72
	3742.00	9/27/2010	51.73	3690.27
MW-13	3741.41	12/10/2008	52.04	3689.37
	3741.41	6/15/2009	52.20	3689.21
	3741.41	9/27/2010	51.73	3689.68
MW-14	3749.03	12/10/2008	48.38	3700.65
	3749.03	6/15/2009	48.29	3700.74
	3749.03	9/28/2010	48.34	3700.69
MW-15	3744.98	6/15/2009	47.54	3697.44
	3744.98	9/27/2010	47.59	3697.39
MW-16	3740.48	6/15/2009	41.20	3699.28
	3740.48	9/27/2010	40.60	3699.88
MW-17	3736.61	6/15/2009	42.50	3694.11
	3736.61	9/27/2010	41.33	3695.28
MW-18	3736.01	6/15/2009	48.60	3687.41
	3736.01	9/27/2010	48.30	3687.71
MW-19	3737.11	9/27/2010	52.51	3684.60
MW-20	3727.93	9/27/2010	43.24	3684.69
MW-21	3723.62	9/27/2010	49.17	3674.45
MW-22	3729.92	9/27/2010	57.44	3672.48

Notes:
Elevations in feet above mean sea level (msl).
Monitoring wells MW-1 through MW-22 were surveyed by an Idaho licensed professional land surveyor in November 2010.

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TABLE 2
Soil Analytical Results
AmeriPride Services
Twin Falls, Idaho
Burns & McDonnell Project No. 54268

			PCE (mg/kg)	TCE (mg/kg)	cis-1,2-DCE (mg/kg)	Vinyl Chloride (mg/kg)	1,1,2-TCA (mg/kg)	Acetone (mg/kg)	2-Butanone (mg/kg)	Methylene Chloride (mg/kg)	TPH as Gasoline (mg/kg)	TPH as Diesel (mg/kg)
		IDEQ IDTL:	**0.0288**	**0.0029**	**0.1925**	**0.0096**	**0.0141**	**17.4051**	**11.7558**	**0.0169**	**NE**	**NE**
Sample ID	**Sample Date**	**Sample Depth (feet)**										
MW-1	7/6/06	5-6	**0.031**	<0.0050	<0.0050	<0.0050	<0.0050	<0.25	<0.050	<0.025	<0.50	<4.0
MW-2	12/16/07	5.5-7.5	NA	NA	NA	NA	NA	NA	NA	NA	<5.1	<10.7
MW-2	12/16/07	7.5-9.5	<0.0046	<0.0046	<0.0046	<0.0046	<0.0046	**0.0284**	<0.0092	<0.0046	NA	NA
MW-3	7/6/06	5-6	**0.022**	<0.0050	<0.0050	<0.0050	<0.0050	<0.25	<0.050	<0.025	<0.50	**6.0**
MW-3	7/6/06	10-11	**0.021**	<0.0050	<0.0050	<0.0050	<0.0050	<0.25	<0.050	<0.025	<0.50	**110**
MW-4	12/14/07	5-6	<0.0055	<0.0055	<0.0055	<0.0055	<0.0055	**0.0222**	<0.0110	<0.0055	<6.4	<12.7
MW-5	7/5/06	5-6	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.25	<0.050	**0.063**	<0.50	**9.8**
MW-5	7/7/06	10-11	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.25	<0.050	<0.025	<0.50	**16**
MW-6	12/18/07	5.5-7.5	NA	NA	NA	NA	NA	NA	NA	NA	NA	<12.9
MW-6	12/18/07	7.5-9	<0.0058	<0.0058	<0.0058	<0.0058	<0.0058	**0.0298**	<0.0116	<0.0058	<6.7	NA
MW-7	12/17/07	4-5	<0.0060	<0.0060	<0.0060	<0.0060	<0.0060	<0.0242	<0.0121	<0.0060	<6.3	<13.0
MW-8	7/17/08	7	<0.0053	<0.0053	<0.0053	<0.0053	<0.0053	**0.018**	<0.0053	<0.0053	<6.2	<12.2
MW-9	7/19/08	6	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<6.0	<12.1
MW-10	7/17/08	6	<0.0055	<0.0055	<0.0055	<0.0055	<0.0055	0.0086	<0.0055	<0.0055	<5.8	<11.5
B-1	12/13/07	0-2	<0.0048	<0.0048	<0.0048	<0.0048	<0.0048	**0.0826**	**0.0117**	<0.0048	<6.0	<11.8
B-1	12/13/07	5	<0.0053	<0.0053	<0.0053	<0.0053	<0.0053	**0.0257**	<0.0105	<0.0053	<6.4	<12.8
B-1	12/13/07	7.5-9	<0.0052	<0.0052	<0.0052	<0.0052	<0.0052	**0.0455**	**0.0105**	<0.0052	NA	NA
B-2A	12/13/07	0-2	<0.0046	<0.0046	<0.0046	<0.0046	<0.0046	**0.0411**	<0.0091	<0.0046	<5.3	**21.1**
B-2B	12/13/07	4-5.5	<0.0054	<0.0054	<0.0054	<0.0054	<0.0054	**0.0529**	<0.0108	<0.0054	<5.4	<10.7
B-2B	12/13/07	9.5-10	**0.0057**	<0.0055	<0.0055	<0.0055	<0.0055	**0.0272**	<0.0111	<0.0055	<6.8	NA
B-3	12/13/07	0-2	**0.117**	<0.0050	<0.0050	<0.0050	<0.0050	**0.0371**	<0.0100	<0.0050	<6.1	<12.2
B-3 (DUP-1)	12/13/07	0-2	**0.0059**	<0.0050	<0.0050	<0.0050	<0.0050	**0.0234**	<0.0100	<0.0050	<6.1	<12.1
B-3	12/13/07	5.5-7.5	**0.223**	<0.0066	<0.0066	<0.0066	<0.0066	<0.0263	<0.0132	<0.0066	<5.8	NA
B-4	12/13/07	0-2	<0.0062	<0.0062	<0.0062	<0.0062	<0.0062	**0.101**	**0.0341**	<0.0062	<5.6	<11.3
B-4	12/13/07	4-5.5	**0.205**	<0.0050	<0.0050	<0.0050	<0.0050	**0.0237**	<0.0100	<0.0050	<5.9	<11.9
B-5	12/14/07	0-2	**1.340**	<0.0049	<0.0049	<0.0049	<0.0049	**0.0306**	<0.0099	<0.0049	<6.2	<12.3
B-5	12/14/07	4-6	**2.840**	<0.0058	<0.0058	<0.0058	<0.0058	**0.0379**	<0.0116	<0.0058	<6.9	<13.6
B-6	12/14/07	0-2	**7.160**	**0.0211**	**0.0763**	<0.0048	<0.0048	**0.0527**	<0.0096	<0.0048	<6.1	<12.2
B-6	12/14/07	4-5.5	**6.700**	**0.117**	**0.730**	<0.0052	<0.0052	**0.0248**	<0.0104	<0.0052	<6.0	<12.1
B-7	12/14/07	0-2	**0.234**	**0.0088**	<0.0046	<0.0046	<0.0046	**0.0239**	<0.0092	<0.0046	<6.2	<12.4
B-7	12/14/07	4-5.5	**0.0473**	<0.0060	<0.0060	<0.0060	<0.0060	**0.0259**	<0.0119	<0.0060	<6.7	NA
B-7 (DUP-2)	12/14/07	4-5.5	**0.0362**	<0.0071	<0.0071	<0.0071	<0.0071	**0.0489**	<0.0143	<0.0071	NA	NA
B-8	12/14/07	0-2	**986**	<49.3	<49.3	<49.3	<49.3	<197	<98.5	<49.3	**26.2**	NA
B-8	12/14/07	4-5.5	**25.2**	<0.256	<0.256	<0.256	<0.256	<1.02	<0.512	<0.256	**10.3**	<12.4
B-9	12/14/07	0-2	**4.890**	<0.0058	<0.0058	<0.0058	<0.0058	**0.0447**	<0.0116	<0.0058	<6.3	<12.6
B-9	12/14/07	4-5.5	**0.279**	<0.0056	<0.0056	<0.0056	**0.0077**	**0.0262**	<0.0112	<0.0056	<6.1	<12.1
B-9 (DUP-3)	12/14/07	4-5.5	**0.192**	<0.0064	<0.0064	<0.0064	<0.0064	**0.0458**	<0.0128	<0.0064	<6.1	NA
B-9	12/14/07	5.5-7	**0.386**	<0.0063	<0.0063	<0.0063	<0.0063	**0.0291**	<0.0127	<0.0063	<5.8	<11.7
B-10	12/14/07	0-2	**3.580**	<0.216	<0.216	<0.216	<0.216	<0.864	<0.432	<0.216	<5.8	<11.6
B-10	12/14/07	4-5.5	**0.189**	<0.0061	<0.0061	<0.0061	<0.0061	**0.0244**	<0.0122	<0.0061	<6.4	<12.7
B-11	12/14/07	0-2	**0.260**	**0.0255**	**0.0119**	<0.0049	<0.0049	**0.166**	**0.0155**	<0.0049	<5.8	<12.0
B-11	12/14/07	4-5.5	**0.285**	**0.0717**	**0.288**	<0.0048	<0.0048	**0.0252**	<0.0096	<0.0048	<5.9	<11.9
B-12	7/20/08	1	**0.0078**	<0.0046	<0.0046	<0.0046	<0.0046	**0.0174**	<0.0046	<0.0046	<5.0	<10.3
B-12	7/20/08	5	**0.0115**	<0.0043	<0.0043	<0.0043	<0.0043	**0.0116**	<0.0043	<0.0043	<6.7	<13.1
B-12	7/20/08	6	**0.0102**	<0.0051	<0.0051	<0.0051	<0.0051	<0.0051	<0.0051	<0.0051	<5.9	<11.6

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TABLE 2
Soil Analytical Results
AmeriPride Services
Twin Falls, Idaho
Burns & McDonnell Project No. 54268

			PCE (mg/kg)	TCE (mg/kg)	cis-1,2-DCE (mg/kg)	Vinyl Chloride (mg/kg)	1,1,2-TCA (mg/kg)	Acetone (mg/kg)	2-Butanone (mg/kg)	Methylene Chloride (mg/kg)	TPH as Gasoline (mg/kg)	TPH as Diesel (mg/kg)
		IDEQ IDTL:	**0.0288**	**0.0029**	**0.1925**	**0.0096**	**0.0141**	**17.4051**	**11.7558**	**0.0169**	**NE**	**NE**
Sample ID	**Sample Date**	**Sample Depth (feet)**										
B-13	7/20/08	1	**0.0271**	<0.0047	<0.0047	<0.0047	<0.0047	**0.0091**	<0.0047	<0.0047	<5.8	<11.5
B-13	7/20/08	5	**0.182**	<0.0050	<0.0050	<0.0050	<0.0050	**0.0127**	<0.0050	<0.0050	<5.3	<10.7
B-14	7/20/08	1	<0.0041	<0.0041	<0.0041	<0.0041	<0.0041	**0.0078**	<0.0041	<0.0041	<5.3	<11.1
B-14	7/20/08	5	**0.0368**	<0.0055	<0.0055	<0.0055	<0.0055	**0.0149**	<0.0055	<0.0055	<5.7	<11.8
B-15	7/20/08	1	**0.0608**	<0.0044	<0.0044	<0.0044	<0.0044	**0.0066**	<0.0044	<0.0044	<5.5	<11.4
B-15	7/20/08	5	**0.126**	<0.0050	<0.0050	<0.0050	<0.0050	**0.0154**	<0.0050	<0.0050	<5.7	<11.4
B-16	7/20/08	1	**0.114**	<0.0044	<0.0044	<0.0044	<0.0044	**0.0397**	**0.0059**	<0.0044	<5.5	<10.9
B-16	7/20/08	5	**2.28**	<0.0596	<0.0596	<0.0596	<0.0596	<0.298	<0.298	<0.0596	<6.0	<11.9
B-17	7/20/08	2	**0.0622**	<0.0048	<0.0048	<0.0048	<0.0048	**0.0101**	<0.0048	<0.0048	<5.9	<12.3
B-17	7/20/08	5	**0.174**	<0.0053	<0.0053	<0.0053	<0.0053	**0.0261**	<0.0053	<0.0053	<6.4	**16.5**
B-17	7/20/08	8	**0.163**	<0.0044	<0.0044	<0.0044	<0.0044	**0.0284**	<0.0044	<0.0044	<5.6	<11.4
B-18	7/20/08	1	<0.0043	<0.0043	<0.0043	<0.0043	<0.0043	**0.0238**	<0.0043	<0.0043	<5.9	<11.9
B-18	7/20/08	6	<0.0045	<0.0045	<0.0045	<0.0045	<0.0045	**0.0228**	<0.0045	<0.0045	<6.4	<12.7
B-18	7/20/08	8	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	**0.0350**	<0.0050	<0.0050	<5.6	<11.3
B-19	7/20/08	1	<0.0041	<0.0041	<0.0041	<0.0041	<0.0041	**0.0315**	<0.0041	<0.0041	<5.9	<11.5
B-19	7/20/08	5	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	**0.0177**	<0.0050	<0.0050	<6.1	<12.4
B-19	7/20/08	6	**0.0096**	<0.0052	<0.0052	<0.0052	<0.0052	**0.0338**	<0.0052	<0.0052	<6.0	<11.9

Notes:
Only VOC analytes that have been detected in at least one sample are included in this table; refer to analytical report for analytes that have not been detected.
All values are expressed in milligrams per kilogram (mg/kg), which is equivalent to parts-per-million (ppm).
Non-detect results are expressed as "less than laboratory reporting limit."
NA: Not analyzed
Concentrations detected above the laboratory reporting limit are bolded.
Concentrations that exceed the IDEQ IDTL are shaded.
IDEQ IDTL: Idaho Department of Environmental Quality Initial Default Target Level
NE: No IDTL established
PCE: tetrachloroethene
TCE: trichloroethene
cis-1,2-DCE: cis-1,2-dichloroethene
1,1,2-TCA: 1,1,2-trichloroethane
TPH: total petroleum hydrocarbon

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TABLE 3
Groundwater Analytical Results
AmeriPride Services
Twin Falls, Idaho
Burns & McDonnell Project No. 54592

Sample Location	Sample Date	Tetrachloroethene (PCE)	Trichloroethene (TCE)	cis-1,2-Dichloroethene	trans-1,2-Dichloroethene	Vinyl chloride	Acetone	Benzene	Bromodichloromethane	Bromoform	Chloroform	Chloromethane	Dibromochloromethane	1,1-Dichloroethane	1,2-Dichloroethane	Ethylbenzene	Methylene Chloride	Napthalene	Toluene	1,2,4-Trimethylbenzene	1,3,5-Trimethylbenzene	TPH as Gasoline	TPH as Diesel
		(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/l)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)
	IDEQ IDTL:	5	3.32	70	100	2	9,385	5	1	7	1.8	4.3	0.67	1,040	5	700	7	209	1,000	439	304	NE	NE
MW-1	7/8/06	7300	4300	600	33	<25	<1200	<25	<25	<25	<120	<25	<25	<25	<25	<25	<120	<120	<120	<25	<25	4000	<100
MW-1	12/19/07	20400	5490	339	<200	<80.0	<1000	<200	<200	<800	<200	<200	<200	<200	<200	<200	<800	<200	<200	<200	<200	5800	<520
DUP WT (MW-1)	12/19/07	19300	5140	372	<200	<80.0	<1000	<200	<200	<800	<200	<200	<200	<200	<200	<200	<800	<200	<200	<200	<200	5820	<510
MW-1	7/23/08	16400	4750	398	72.3	<20.0	<500	<50.0	<50.0	<400	<50.0	<50.0	<50.0	<50	<50.0	<50.0	<200	<200	<50.0	<50.0	<50	5850	<540
DUP-1 (MW-1)	7/23/08	17800	4350	333	80.6	<20.0	<500	<50.0	<50.0	<400	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<200	<200	<50.0	<50.0	<50	6320	<570
MW-1	12/11/08	14500	4880	444	<200	<80.0	<2000	<200	<200	<1600	<200	<200	<200	<200	<200	<200	<800	<800	<200	<200	<200	5600	<570
MW-1	6/17/09	11000	4500	480	88	<0.20	<2.5	0.94	<0.20	<0.20	3.4	<0.50	<0.20	0.91	<0.50	<0.50	<1.0	NA	<0.50	0.23	0.21	3100	<540
MW-1	10/1/10	16000	4800	350	80	<0.20	<2.5	0.88	<0.20	<0.20	5.2	<0.30	<0.20	0.78	<0.50	<0.50	<1.0	NA	<0.50	<0.20	<0.20	7200	NA
MW-2	12/19/07	<1.0	<1.0	<1.0	<1.0	<4.0	17	1.3	<1.0	<4.0	1.1	<1.0	3.0	<1.0	1.6	9.9	<4.0	<1.0	1.5	1.2	<1.0	434	<510
MW-2	7/22/08	<1.0	<1.0	<1.0	<1.0	<0.40	<10.0	<1.0	<1.0	<8.0	<1.0	1.7	<1.0	<1.0	1.1	<1.0	<4.0	<4.0	<1.0	<1.0	<1.0	<100	<570
MW-2	12/11/08	<1.0	<1.0	<1.0	<1.0	<0.40	13	<1.0	<1.0	<8.0	<1.0	<1.0	<1.0	<1.0	1.3	14.7	<4.0	<4.0	<1.0	2.2	<1.0	504	<710
MW-2	6/17/09	<0.50	<0.20	<0.50	<0.50	<0.20	<2.5	<0.20	<0.20	<0.20	<0.30	<0.50	<0.20	<0.50	<0.50	<0.50	<1.0	NA	<0.50	<0.20	<0.20	<50	<550
MW-2	9/27/10	<0.50	<0.20	<0.50	<0.50	<0.20	3.1	0.47	<0.20	<0.20	<0.20	<0.30	<0.20	<0.50	0.78	8.4	<1.0	NA	<0.50	0.92	<0.20	120	NA
MW-3	7/8/06	1800	260	1.2	1.6	<1.0	<50	<1.0	<1.0	<1.0	<5.0	<1.0	<1.0	<1.0	<1.0	<1.0	<5.0	<5.0	<5.0	<1.0	<1.0	490	<100
MW-3	12/19/07	1630	299	<10.0	<10.0	<4.0	<50	<10.0	<10.0	<40.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<40.0	<10.0	<10.0	<10.0	<10.0	539	<510
MW-3	7/23/08	1210	230	1.5	2.2	<0.40	<10.0	<1.0	<1.0	<8.0	<1.0	1.9	<1.0	<1.0	<1.0	<1.0	<4.0	<4.0	<1.0	<1.0	<1.0	419	<560
MW-3	12/11/08	1860	324	<10.0	<10.0	<4.0	<100	<10.0	<10.0	<80.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<4.0	<4.0	<10.0	<10.0	<10.0	631	<710
MW-3	6/18/09	1500	310	<10	<10	<4.0	<50	<4.0	<4.0	<4.0	<6.0	<10	<4.0	<10	<10	<10	<20.0	NA	<10	<4.0	<4.0	400	<570
MW-3	10/1/10	1600	360	2.2	2.2	<0.20	<2.5	<0.20	<0.20	<0.20	1.0	<0.30	<0.20	<0.50	<0.50	<0.50	<1.0	NA	<0.50	<0.20	<0.20	560	NA
MW-4	12/19/07	172	66.6	2.1	1.2	<4.0	<5.0	<1.0	<1.0	<4.0	<1.0	<1.0	3.6	<1.0	<1.0	<1.0	<4.0	<1.0	5.7	<1.0	<1.0	<100	<510
MW-4	7/22/08	170	64.4	2.1	<1.0	<0.40	<10.0	<1.0	<1.0	<8.0	<1.0	2.1	<1.0	<1.0	<1.0	<1.0	<4.0	<4.0	<1.0	<1.0	<1.0	<100	<560
MW-4	12/11/08	197	88.7	3.2	1.8	<0.40	<10.0	<1.0	<1.0	<8.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<4.0	<4.0	<1.0	<1.0	<1.0	<100	<660
MW-4	6/16/09	160	100	4.6	1.5	<0.20	<2.5	<0.20	<0.20	<0.20	<0.30	<0.50	<0.20	<0.50	<0.50	<0.50	<1.0	NA	<0.50	<0.20	<0.20	<50	<560
MW-4	10/1/10	120	61	2.5	1.2	<0.20	<2.5	0.40	<0.20	<0.20	<0.20	<0.30	<0.20	<0.50	<0.50	<0.50	<1.0	NA	<0.50	<0.20	<0.20	<100	NA
MW-5	7/8/06	3.1	<1.0	<1.0	<1.0	<1.0	<50	<1.0	<1.0	<1.0	<5.0	<1.0	<1.0	<1.0	<1.0	<1.0	<5.0	<5.0	<5.0	<1.0	<1.0	<100	<100
MW-5	12/19/07	4.6	1.6	<1.0	<1.0	<0.40	<5.0	<1.0	<1.0	<4.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<4.0	<1.0	<1.0	<1.0	<1.0	<100	<510
MW-5	7/22/08	4.8	1.3	<1.0	<1.0	<0.40	<10.0	<1.0	<1.0	<8.0	<1.0	1.8	<1.0	<1.0	<1.0	<1.0	<4.0	<4.0	<1.0	<1.0	<1.0	<100	<530
MW-5	12/10/08	4.0	1.2	<1.0	<1.0	<0.40	<10.0	<1.0	<1.0	<8.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<4.0	<4.0	<1.0	<1.0	<1.0	<100	<610
MW-5	6/17/09	5.7	1.4	<0.50	<0.50	<0.20	<2.5	<0.20	<0.20	<0.20	<0.30	<0.50	<0.20	<0.50	<0.50	<0.50	<1.0	NA	<0.50	<0.20	<0.20	<50	<580
MW-5	9/30/10	4.2	1.0	<0.50	<0.50	<0.20	<2.5	<0.20	<0.20	<0.20	<0.20	<0.30	<0.20	<0.50	<0.50	<0.50	<1.0	NA	<0.50	<0.20	<0.20	<100	NA
MW-6	12/19/07	103	42.7	1.2	<1.0	<0.40	<5.0	<1.0	<1.0	<4.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<4.0	<1.0	10.4	<1.0	<1.0	<100	<510
MW-6	7/22/08	124	52.7	1.6	<1.0	<0.40	<10.0	<1.0	<1.0	<8.0	<1.0	1.0	<1.0	<1.0	<1.0	<1.0	<4.0	<4.0	<1.0	<1.0	<1.0	<100	<550
MW-6	12/11/08	142	69.6	2.2	<1.0	<0.40	<10.0	<1.0	<1.0	<8.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<4.0	<4.0	<1.0	<1.0	<1.0	<100	<670
MW-6	6/16/09	140	100	5.0	1.6	<0.20	<2.5	<0.20	<0.20	<0.20	<0.30	<0.50	<0.20	<0.50	<0.50	<0.50	<1.0	NA	<0.50	<0.20	<0.20	<50	<590
MW-6	10/1/10	120	76	3.0	1.0	<0.20	<2.5	1.4	<0.20	<0.20	<0.20	<0.30	<0.20	<0.50	<0.50	<0.50	<1.0	NA	<0.50	<0.20	<0.20	<100	NA
MW-7	12/19/07	<1.0	<1.0	<1.0	<1.0	<0.40	<5.0	<1.0	<1.0	<4.0	<1.0	<1.0	3.9	<1.0	<1.0	<1.0	<4.0	<1.0	3.1	<1.0	<1.0	<100	<520
MW-7	7/22/08	2.2	<1.0	<1.0	<1.0	<0.40	<10.0	<1.0	<1.0	<8.0	<1.0	2.2	<1.0	<1.0	<1.0	<1.0	<4.0	<4.0	<1.0	<1.0	<1.0	<100	<600
MW-7	12/10/08	1.4	<1.0	<1.0	<1.0	<0.40	<10.0	<1.0	<1.0	<8.0	1.2	<1.0	<1.0	<1.0	<1.0	<1.0	<4.0	<4.0	<1.0	<1.0	<1.0	<100	<570
MW-7	6/16/09	0.73	<0.20	<0.50	<0.50	<0.20	<2.5	<0.20	<0.20	<0.20	1.0	<0.50	<0.20	<0.50	<0.50	<0.50	<1.0	NA	<0.50	<0.20	<0.20	<50	<520
MW-7	9/30/10	<0.50	<0.20	<0.50	<0.50	<0.20	<2.5	<0.20	<0.20	<0.20	0.76	<0.30	<0.20	<0.50	<0.50	<0.50	<1.0	NA	<0.50	<0.20	<0.20	<100	NA
MW-8	7/23/08	119	171	35.4	30.6	<0.40	<10.0	<1.0	<1.0	<8.0	<1.0	2.6	<1.0	<1.0	<1.0	<1.0	<4.0	<4.0	<1.0	<1.0	<1.0	101	<540
MW-8	12/11/08	142	187	37.1	32.5	<0.40	<10.0	<1.0	<1.0	<8.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<4.0	<4.0	<1.0	<1.0	<1.0	135	<660
MW-8	6/16/09	120	170	30	21	<0.20	<2.5	<0.20	0.37	0.29	0.30	<0.50	0.83	<0.50	<0.50	<0.50	<1.0	NA	<0.50	<0.20	<0.20	79	<570
MW-8	10/1/10	130	180	31	24	<0.20	<2.5	<0.20	<0.20	<0.20	0.30	<0.30	<0.20	<0.50	<0.50	<0.50	<1.0	NA	<0.50	<0.20	<0.20	130	NA
MW-9	7/22/08	54.2	92.1	8.8	2.2	<0.40	<10.0	1.2	<1.0	<8.0	<1.0	2.5	<1.0	<1.0	<1.0	<1.0	<4.0	<4.0	<1.0	<1.0	<1.0	<100	<530
MW-9	12/10/08	133	184	18.7	4.3	<0.40	<10.0	<1.0	<1.0	<8.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<4.0	<4.0	<1.0	<1.0	<1.0	<100	<580
MW-9	6/16/09	99	140	15	3.2	<0.20	<2.5	<0.20	<0.20	<0.20	0.42	<0.50	<0.20	<0.50	<0.50	<0.50	<1.0	NA	<0.50	<0.20	<0.20	50	<590
MW-9	10/1/10	59	100	11	1.6	<0.20	<2.5	4.0	<0.20	<0.20	0.44	<0.30	<0.20	<0.50	<0.50	<0.50	<1.0	NA	0.52	<0.20	<0.20	<100	NA
Dup1 (MW-9)	10/1/10	60	100	12	1.6	<0.20	<2.5	4.0	<0.20	<0.20	0.43	<0.30	<0.20	<0.50	<0.50	<0.50	<1.0	NA	0.53	<0.20	<0.20	<100	NA

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TABLE 3
Groundwater Analytical Results
AmeriPride Services
Twin Falls, Idaho
Burns & McDonnell Project No. 54592

Sample Location	Sample Date	Tetrachloroethene (PCE)	Trichloroethene (TCE)	cis-1,2-Dichloroethene	trans-1,2-Dichloroethene	Vinyl chloride	Acetone	Benzene	Bromodichloromethane	Bromoform	Chloroform	Chloromethane	Dibromochloromethane	1,1-Dichloroethane	1,2-Dichloroethane	Ethylbenzene	Methylene Chloride	Napthalene	Toluene	1,2,4-Trimethylbenzene	1,3,5-Trimethylbenzene	TPH as Gasoline	TPH as Diesel
		(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/l)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)
	IDEQ IDTL:	5	3.32	70	100	2	9,385	5	1	7	1.8	4.3	0.67	1,040	5	700	7	209	1,000	439	304	NE	NE
MW-10	7/23/08	<1.0	<1.0	<1.0	<1.0	<0.40	<10.0	**1.1**	<1.0	<8.0	<1.0	**2.8**	<1.0	<1.0	<1.0	<1.0	<4.0	<4.0	<1.0	<1.0	<1.0	<100	<560
MW-10	12/10/08	<1.0	<1.0	<1.0	<1.0	<0.40	<10.0	<1.0	<1.0	<8.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<4.0	<4.0	<1.0	<1.0	<1.0	<100	<580
MW-10	6/15/09	<0.50	<0.20	<0.50	<0.50	<0.20	<2.5	**0.28**	<0.20	<0.20	<0.30	<0.50	<0.20	<0.50	<0.50	<0.50	<1.0	NA	<0.50	<0.20	<0.20	<50	<620
MW-10	9/30/10	<0.50	<0.20	<0.50	<0.50	<0.20	<2.5	<0.20	<0.20	<0.20	<0.20	<0.30	<0.20	<0.50	<0.50	<0.50	<1.0	NA	<0.50	<0.20	<0.20	<100	NA
MW-11	12/14/08	<1.0	<1.0	<1.0	<1.0	<0.40	<10.0	<1.0	**2.6**	<8.0	<1.0	<1.0	**5.6**	<1.0	<1.0	<1.0	<4.0	<4.0	**1.3**	<1.0	<1.0	<100	<570
MW-11	6/15/09	<0.50	**0.21**	<0.50	<0.50	<0.20	<2.5	<0.20	<0.20	<0.20	**0.72**	<0.50	<0.20	<0.50	<0.50	<0.50	<1.0	NA	<0.50	<0.20	<0.20	<50	<530
MW-11	9/30/10	<0.50	<0.20	<0.50	<0.50	<0.20	<2.5	<0.20	<0.20	<0.20	**0.58**	<0.30	<0.20	<0.50	<0.50	<0.50	<1.0	NA	<0.50	<0.20	<0.20	<100	NA
MW-12	12/14/08	**2.3**	**2.8**	<1.0	<1.0	<0.40	<10.0	<1.0	**2.2**	<8.0	<1.0	<1.0	**5.2**	<1.0	<1.0	<1.0	<4.0	<4.0	<1.0	<1.0	<1.0	<100	<560
MW-12	6/15/09	**6.5**	**9.4**	<0.50	<0.50	<0.20	<2.5	<0.20	<0.20	<0.20	**0.57**	<0.50	<0.20	<0.20	<0.50	<0.50	<1.0	NA	<0.50	<0.20	<0.20	<50	<550
MW-12	9/30/10	**4.7**	**7.5**	<0.50	<0.50	<0.20	<2.5	<0.20	<0.20	<0.20	**0.42**	<0.30	<0.20	<0.50	<0.50	<0.50	<1.0	NA	<0.50	<0.20	<0.20	<100	NA
MW-13	12/12/08	**16.8**	**27.3**	**2.2**	<1.0	<0.40	<10.0	<1.0	**1.3**	<8.0	<1.0	<1.0	**2.9**	<1.0	<1.0	<1.0	<4.0	<4.0	<1.0	<1.0	<1.0	<100	<560
Duplicate (MW-13)	12/12/08	**16.8**	**29.6**	**2.5**	<1.0	<0.40	<10.0	<1.0	**1.4**	<8.0	<1.0	<1.0	**3.2**	<1.0	<1.0	<1.0	<4.0	<4.0	<1.0	<1.0	<1.0	NA	NA
MW-13	6/17/09	**58**	**95**	**12**	**1.8**	<0.20	**9.3**	<0.20	<0.20	<0.20	**0.89**	<0.50	<0.20	<0.50	<0.50	<0.50	<1.0	NA	<0.50	<0.20	<0.20	<50	<580
Duplicate (MW-13)	6/17/09	**55**	**87**	**11**	**2.1**	<0.20	**11**	<0.20	<0.20	<0.20	**0.98**	<0.50	<0.20	<0.50	<0.50	<0.50	<1.0	NA	<0.50	<0.20	<0.20	NA	NA
MW-13	9/30/10	**70**	**130**	**13**	**1.9**	<0.20	<2.5	<0.20	<0.20	<0.20	**0.94**	<0.30	<0.20	<0.50	<0.50	<0.50	<1.0	NA	<0.50	<0.20	<0.20	<100	NA
MW-14	12/12/08	**389**	**821**	**172**	**28**	<0.40	<10.0	<1.0	<1.0	<8.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<4.0	<4.0	<1.0	<1.0	<1.0	**514**	<570
MW-14	6/17/09	**330**	**740**	**170**	**37**	<0.20	**2.6**	<0.20	<0.20	<0.20	**0.47**	<0.50	<0.20	<0.50	<0.50	<0.50	<1.0	NA	<0.50	<0.20	<0.20	**340**	<560
MW-14	10/1/10	**390**	**870**	**170**	**40**	<0.20	<2.5	<0.20	<0.20	<0.20	**0.45**	<0.30	<0.20	<0.50	<0.50	<0.50	<1.0	NA	<0.50	<0.20	<0.20	**550**	NA
MW-15	6/19/09	**0.99**	**0.55**	<0.50	<0.50	<0.20	<2.5	<0.20	<0.20	<0.20	<0.30	<0.50	<0.20	<0.50	<0.50	<0.50	<1.0	NA	<0.50	<0.20	<0.20	<50	<570
MW-15	9/30/10	**0.53**	**0.69**	<0.50	<0.50	<0.20	<2.5	<0.20	<0.20	<0.20	<0.20	<0.30	<0.20	<0.50	<0.50	<0.50	<1.0	NA	<0.50	<0.20	<0.20	<100	NA
MW-16	6/19/09	<0.50	**0.90**	<0.50	<0.50	<0.20	<2.5	<0.20	<0.20	<0.20	<0.30	<0.50	<0.20	<0.50	<0.50	<0.50	<1.0	NA	<0.50	<0.20	<0.20	<50	<520
MW-16	9/30/10	<0.50	**0.95**	<0.50	<0.50	<0.20	<2.5	<0.20	<0.20	<0.20	<0.20	<0.30	<0.20	<0.50	<0.50	<0.50	<1.0	NA	<0.50	<0.20	<0.20	<100	NA
MW-17	6/18/09	<0.50	<0.20	<0.50	<0.50	<0.20	<2.5	<0.20	<0.20	<0.20	**0.85**	<0.50	<0.20	<0.50	<0.50	<0.50	<1.0	NA	<0.50	<0.20	<0.20	<50	<570
MW-17	9/30/10	<0.50	<0.20	<0.50	<0.50	<0.20	<2.5	<0.20	<0.20	<0.20	**1.8**	<0.30	<0.20	<0.50	<0.50	<0.50	<1.0	NA	<0.50	<0.20	<0.20	<100	NA
MW-18	6/18/09	**55**	<0.20	<0.50	<0.50	<0.20	<2.5	<0.20	<0.20	<0.20	**0.89**	<0.50	<0.20	<0.50	<0.50	<0.50	<1.0	NA	<0.50	<0.20	<0.20	<50	<570
MW-18	9/30/10	**55**	<0.20	<0.50	<0.50	<0.20	<2.5	<0.20	<0.20	<0.20	**1.2**	<0.30	<0.20	<0.50	<0.50	<0.50	<1.0	NA	<0.50	<0.20	<0.20	<100	NA
MW-19	9/29/10	**16**	**22**	**1.7**	<0.50	<0.20	<2.5	<0.20	<0.20	<0.20	<0.20	<0.30	<0.20	<0.50	<0.50	<0.50	<1.0	NA	<0.50	<0.20	<0.20	<100	NA
MW-20	9/29/10	<0.50	<0.20	<0.50	<0.50	<0.20	<2.5	<0.20	<0.20	<0.20	**0.49**	<0.30	<0.20	<0.50	<0.50	<0.50	<1.0	NA	<0.50	<0.20	<0.20	<100	NA
MW-21	9/29/10	<0.50	<0.20	<0.50	<0.50	<0.20	<2.5	<0.20	<0.20	<0.20	<0.20	<0.30	<0.20	<0.50	<0.50	<0.50	<1.0	NA	<0.50	<0.20	<0.20	<100	NA
MW-22	9/29/10	**4.0**	**2.3**	<0.50	<0.50	<0.20	<2.5	<0.20	<0.20	<0.20	<0.20	<0.30	<0.20	<0.50	<0.50	<0.50	<1.0	NA	<0.50	<0.20	<0.20	<100	NA
Trip Blank	7/8/06	<1.0	<1.0	<1.0	<1.0	<1.0	<50	<1.0	<1.0	<4.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<5.0	<5.0	<5.0	<1.0	<1.0	NA	NA
Trip Blank	12/19/07	<1.0	<1.0	<1.0	<1.0	<0.40	<5.0	<1.0	<1.0	<4.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<4.0	<1.0	<1.0	<1.0	<1.0	<100	NA
Trip Blank	7/22/08	<1.0	<1.0	<1.0	<1.0	<0.40	<10.0	<1.0	<1.0	<8.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<4.0	<4.0	<1.0	<1.0	<1.0	<100	NA
Trip Blank	7/23/08	<1.0	<1.0	<1.0	<1.0	<0.40	<10.0	<1.0	<1.0	<8.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<4.0	<4.0	<1.0	<1.0	<1.0	<100	NA
Trip Blank	12/12/08	<1.0	<1.0	<1.0	<1.0	<0.40	<10.0	<1.0	<1.0	<8.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<4.0	NA	<1.0	<1.0	<1.0	NA	NA
Trip Blank	6/15/09	<0.50	<0.20	<0.50	<0.50	<0.20	<2.5	<0.20	<0.20	<0.20	<0.30	<0.50	<0.20	<0.50	<0.50	<0.50	<1.0	NA	<0.50	<0.20	<0.20	NA	NA
Trip Blank	9/27/10	<0.50	<0.20	<0.50	<0.50	<0.20	**48**	<0.20	<0.20	<0.20	<0.20	<0.30	<0.20	<0.50	<0.50	<0.50	<1.0	NA	<0.50	<0.20	<0.20	NA	NA
FB1	9/30/10	<0.50	<0.20	<0.50	<0.50	<0.20	<2.5	<0.20	<0.20	<0.20	<0.20	<0.30	<0.20	<0.50	<0.50	<0.50	<1.0	NA	<0.50	<0.20	<0.20	<100	NA
EQB1	10/1/10	<0.50	<0.20	<0.50	<0.50	<0.20	<2.5	<0.20	<0.20	<0.20	<0.20	<0.30	<0.20	<0.50	<0.50	<0.50	<1.0	NA	<0.50	<0.20	<0.20	<100	NA

Notes:
Only volatile organic compound (VOC) analytes that have been detected in at least one groundwater or air sample are included in this table; refer to analytical report for VOC analytes that have not been detected in any sample.
All values are expressed in micrograms per Liter (µg/L), which is equivalent to parts-per-billion (ppb)
Non-detect results are expressed as "less than laboratory reporting limit."
NA=Not analyzed
Concentrations detected above the laboratory reporting limit are bolded.
Concentrations that exceed the IDEQ IDTL are shaded.
IDEQ IDTL=Idaho Department of Environmental Quality Initial Default Target Level
NE=IDTL Not Established
TPH=total petroleum hydrocarbon
FB=field blank; EQB=equipment blank; MW=monitoring well; DUP=duplicate

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TABLE 4
SOIL VAPOR ANALYTICAL RESULTS
AmeriPride Services
Twin Falls, Idaho
Burns & McDonnell Project No. 54592

		THC as Gasoline	Tetrachloroethene (PCE)	Trichloroethene (TCE)	cis-1,2-Dichloroethene	Vinyl chloride	Acetone	Benzene	2-Butanone (Methyl Ethyl Ketone)	Carbon disulfide	Chloroform	Chloromethane	Cyclohexane	Carbon Tetrachloride	Dichlorodifluoromethane	Ethanol	Ethyl acetate	Ethylbenzene	4-Ethyltoluene	n-Heptane	n-Hexane	Methylene Chloride	4-Methyl-2-pentanone (MIBK)	Naphthalene	2-Propanol (isopropyl alcohol)	Tetrahydrofuran	Toluene	1,2,4-Trichlorobenzene	Trichlorofluoromethane	1,2,4-Trimethylbenzene	1,3,5-Trimethylbenzene	Xylene (Total)
		(ug/m^3)	(ug/m^3)	(ug/m^3)	(ug/m^3)	(ug/m^3)	(ug/m^3)	(ug/m^3)	(ug/m^3)	(ug/m^3)	(ug/m^3)	(ug/m^3)	(ug/m^3)	(ug/m^3)	(ug/m^3)	(ug/m^3)	(ug/m^3)	(ug/m^3)	(ug/m^3)	(ug/m^3)	(ug/m^3)	(ug/m^3)	(ug/m^3)	(ug/m^3)	(ug/m^3)	(ug/m^3)	(ug/m^3)	(ug/m^3)	(ug/m^3)	(ug/m^3)	(ug/m^3)	(ug/m^3)
CHHSLs, residential:		NE	180	528	15,900	13.3	NE	36.2	NE	NE	NE	NE	NE	25.1	NE	NE	NE	NE	NE	NE	NE	NE	NE	31.9	NE	NE	135,000	NE	NE	NE	NE	5,500
CHHSLs, non-residential:		NE	603	1,770	44,400	44.8	NE	122	NE	NE	NE	NE	NE	84.6	NE	NE	NE	NE	NE	NE	NE	NE	NE	106	NE	NE	378,000	NE	NE	NE	NE	7,700
Sample Location	**Sample Date**																																
VP-1	7/23/2008	<130	<5.5	<4.4	<3.2	<2.1	**6.28**	<2.6	<2.5	<2.4	<3.9	<1.6	<2.8	<5.1	<4	**5.36**	<2.9	<3.5	<4.1	<3.3	<2.9	**48.4**	<3.5	<4.1	<1.9	<2.4	<3.1	<6	<4.4	<3.9	<4	<10
VP-1	12/10/2008	NA	<2.1	<1.6	<1.2	<0.77	**26.4**	<0.96	**8.1**	<0.93	<1.5	**0.83**	<1.0	<1.9	**3.0**	<2.8	**2.5**	**3.3**	<3.7	**1.2**	<1.1	**1.8**	**1.6**	<4.0	**5.2**	<0.89	**17.5**	<1.5	**1.6**	<3.7	<3.7	**16.7**
VP-1	6/18/2009	NA	**1.6**	<1.1	<0.79	<0.51	<12	<0.64	<1.5	<1.6	**2.6**	<1.0	<0.69	<1.3	<2.5	NA	NA	<0.87	<0.98	<0.82	<1.8	<1.7	NA	<2.6	<12	<15	**1.3**	<3.7	**1.6**	<0.98	<0.98	<0.87
VP-1	9/16/2010	NA	<13	<11	<7.9	<5.1	<120	<6.3	<15	<15	<9.7	<10	<6.8	<12	<25	NA	NA	<8.6	<9.8	<8.1	<7.0	<17	NA	<26	<120	<150	**12**	<37	<11	<9.8	<9.8	<8.6
VP-1 Duplicate	9/16/2010	NA	<13	<11	<7.9	<5.1	<120	<6.3	<15	<15	<9.7	<10	<6.8	<12	<25	NA	NA	<8.6	<9.7	<8.1	<7.0	<17	NA	<26	<120	<150	**28**	<37	<11	<9.7	<9.7	**12**
VP-2	7/22/2008	<130	**90.3**	<4.4	<3.2	<2.1	**23.2**	<2.6	**8.99**	<2.4	**16.4**	<1.6	<2.8	<5.1	<4	<1.5	<2.9	<3.5	<4.1	<3.3	<2.9	<2.8	<3.5	<4.1	<1.9	<2.4	<3.1	<6	<4.4	<3.9	<4	<10
VP-2	12/10/2008	NA	**27.4**	<1.6	<1.2	<0.77	**78.8**	<0.96	**9.3**	**0.98**	**7.3**	<0.62	<1.0	<1.9	**3.0**	**4.7**	<1.1	<1.3	<3.7	<1.2	<1.1	**3.1**	<1.2	<4.0	**6.9**	<0.89	<1.1	<1.5	**1.6**	<3.7	<3.7	<3.9
VP-2	6/18/2009	NA	**58**	**5.1**	<0.79	<0.51	<12	<0.64	**1.5**	<1.6	**9.3**	<1.0	<0.69	<1.3	<2.5	NA	NA	<0.87	<0.98	<0.82	<1.8	**2.6**	NA	<2.6	<12	<15	<0.75	<3.7	**1.9**	<0.98	<0.98	<0.87
VP-2	9/16/2010	NA	**100**	<11	<7.9	<5.1	<120	<6.4	<15	<16	**11**	<10	<6.9	<13	<25	NA	NA	<8.7	<9.8	<8.2	<7.0	<17	NA	<26	<120	<150	**12**	<37	<11	<9.8	<9.8	<8.7
VP-3	7/22/2008	**155**	**12.4**	<4.4	<3.2	<2.1	**8.21**	<2.6	**3.9**	<2.4	**34.2**	<1.6	<2.8	<5.1	<4	**2.68**	<2.9	<3.5	<4.1	<3.3	<2.9	**7.77**	<3.5	**6.92**	<1.9	<2.4	**3.79**	**6.11**	<4.4	**13**	**4.6**	**23.8**
VP-3	12/10/2008	NA	**6.9**	<1.6	<1.2	<0.77	**108**	<0.96	**4.5**	<0.93	**39.6**	<0.62	**2.1**	<1.9	<1.5	**9.1**	<1.1	<1.3	<3.7	<1.2	**1.9**	**26.5**	<1.2	<4.0	**<3.7**	<0.89	**9.1**	<1.5	**<1.6**	<3.7	<3.7	**2.9**
VP-3	6/18/2009	NA	**6.6**	<4.3	<3.2	<2.0	<48	<2.6	**6.5**	<6.2	**34**	<4.1	<2.8	**480**	<9.9	NA	NA	<3.5	<3.9	<3.3	<7.0	<6.9	NA	<10	<49	<59	<3.0	<15	<4.5	<3.9	<3.9	<3.5
VP-3 Duplicate	6/18/2009	NA	**6.8**	<3.8	<2.8	<1.8	<43	<2.2	<5.3	<5.6	**37**	<4.7	<2.4	**500**	<8.9	NA	NA	<3.0	<3.4	<2.9	<6.3	<6.3	NA	<9.4	<44	<53	<2.6	<13	<3.9	<3.4	<3.4	<3.0
VP-3	9/16/2010	NA	<13	**30**	<7.9	<5.1	<120	<6.4	<15	<15	**190**	<10	<6.8	**430**	<25	NA	NA	<8.6	<9.8	<8.2	<7.0	<17	NA	<26	<120	<150	<7.5	<37	<11	<9.8	<9.8	<8.6
VP-4	12/10/2008	NA	**5.3**	<1.6	<1.2	<0.77	**36.7**	**23.4**	**10.3**	**1.3**	**2.4**	**0.75**	**4.9**	<1.9	**3.3**	**10.3**	<1.1	**170**	**17.9**	**18.5**	**8.8**	**24.2**	**7.9**	<4.0	**11.0**	**6.4**	**180**	<1.5	**1.6**	**54.4**	**15.2**	**819**
VP-4	6/18/2009	NA	**16**	<1.1	<0.79	<0.51	**19**	<0.64	**2.8**	<1.6	<0.98	<1.0	**1.4**	<1.3	<2.5	NA	NA	<0.87	<0.98	<0.82	<1.8	<1.7	NA	<2.6	**19**	<15	**6.8**	<3.7	**2.5**	<0.98	<0.98	<0.87
VP-4	9/16/2010	NA	**23**	<11	<7.9	<5.1	<120	<6.4	<15	<15	<9.8	<10	<6.9	<13	<25	NA	NA	<8.7	<9.8	<8.2	<7.0	<17	NA	<26	<120	<150	<7.5	<37	<11	<9.8	<9.8	<8.7
VP-5	12/10/2008	NA	**25.6**	<1.6	<1.2	<0.77	**26.8**	**33.6**	**2.8**	**0.94**	**2.0**	**0.73**	**4.7**	<1.5	**3.5**	**5.1**	<1.1	**145**	**8.6**	**37.9**	**7.1**	**22.5**	<1.2	<4.0	<3.7	<0.89	**211**	<1.5	**2.7**	**21.6**	**8.1**	**613**
VP-5	6/18/2009	NA	**110**	<1.1	<0.79	<0.51	<12	<0.64	**2.0**	<1.6	<0.98	<1.0	<0.69	<1.3	<2.5	NA	NA	<0.87	<0.98	<0.82	<1.8	<1.7	NA	<2.6	<12	<15	**0.75**	<3.7	**5.1**	<0.98	<0.98	<0.87
VP-5	9/16/2010	NA	<14	<11	<7.9	<5.1	<120	<6.4	<15	<16	<9.8	<10	<6.9	<13	<25	NA	NA	<8.7	<9.8	<8.2	<7.0	<17	NA	<26	<120	<150	<7.5	<37	<11	<9.8	<9.8	<8.7
VP-6	6/18/2009	NA	**1.5**	<1.1	<0.79	<0.51	**21**	**1.1**	**4.1**	**1.9**	<0.98	<1.0	<0.69	<1.3	**2.9**	NA	NA	**3.0**	<0.98	<0.82	<1.8	<1.7	NA	<2.6	<12	<15	**13**	<3.7	**1.7**	**9.3**	**3.7**	**28**
VP-6	9/16/2010	NA	<14	<11	<7.9	<5.1	<120	<6.4	<15	<16	<9.8	<10	<6.9	<13	<25	NA	NA	<8.7	<9.8	<8.2	<7.0	<17	NA	<26	<120	<150	<7.5	<37	<11	<9.8	<9.8	<8.7

Notes:
Only volatile organic compound (VOC) analytes that have been detected in at least one sample, and contaminants of concern, are included in this table; refer to analytical report for VOC analytes that have not been detected in any sample.
All values are expressed in micrograms per cubic meter (ug/m^3) unless otherwise noted.
Non-detect results are expressed as "less than laboratory reporting limit."
Concentrations detected above the laboratory reporting limit are bolded.
CHHSL=California Human Health Screening Levels for Shallow Soil Gas, residential and non-residential.
Concentrations that exceed the residential or non-residential NJDEP VISL are shaded.
NE=non-existent, no level defined.
NA=not analyzed.

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TABLE 5
SELECTION OF CHEMICALS OF CONCERN (COCs)
AmeriPride Services Inc.
Twin Falls, Idaho
Burns & McDonnell Project No. 54592

Selection of COCs for Soil (On-Site):

CHEMICAL	MAXIMUM CONCENTRATION (mg/kg)	IDEQ IDTL (mg/kg)	DETERMINATION
PCE	**986**	**0.288**	**COC**
TCE	**0.117**	**0.0029**	**COC**
cis-1,2-DCE	**0.73**	**0.193**	**COC**
1,1,2-TCA	0.0077	0.0141	Eliminated based on IDTL comparison
Acetone	0.166	17.4	Eliminated based on IDTL comparison
2-Butanone	0.0341	11.8	Eliminated based on IDTL comparison

Selection of COCs for Groundwater (On-Site - MW-1, MW-3, MW-5):

CHEMICAL	MAXIMUM CONCENTRATION (µg/L)	IDEQ IDTL (µg/L)	DETERMINATION
PCE	**20,400**	**5.0**	**COC**
TCE	**5,490**	**3.32**	**COC**
cis-1,2-DCE	**600**	**70**	**COC**
t-1,2-DCE	88	100	Eliminated based on IDTL comparison
Benzene	0.94	5.0	Eliminated based on IDTL comparison
Chloroform	**5.2**	**1.8**	**COC**
Chloromethane	1.9	4.3	Eliminated based on IDTL comparison
1,1-DCA	0.91	1,040	Eliminated based on IDTL comparison
1,2,4-TMB	0.23	439	Eliminated based on IDTL comparison
1,3,5-TMB	0.21	304	Eliminated based on IDTL comparison

Selection of COCs for Groundwater (Off-Site - All Wells Except MW-1, MW-3, MW-5):

CHEMICAL	MAXIMUM CONCENTRATION (µg/L)	IDEQ IDTL (µg/L)	DETERMINATION
PCE	**390**	**5.0**	**COC**
TCE	**870**	**3.32**	**COC**
cis-1,2-DCE	**172**	**70**	**COC**
t-1,2-DCE	40	100	Eliminated based on IDTL comparison
Acetone	17	9,385	Eliminated based on IDTL comparison
Benzene	4.0	5.0	Eliminated based on IDTL comparison
Bromodichloromethane	**2.6**	**1.0**	**Eliminated (1)**
Bromoform	0.29	7.0	Eliminated based on IDTL comparison
Chloroform	1.8	1.8	Eliminated based on IDTL comparison
Chloromethane	2.8	4.3	Eliminated based on IDTL comparison
Dibromochloromethane	**5.6**	**0.67**	**Eliminated (1)**
1,2-DCA	1.6	5.0	Eliminated based on IDTL comparison
Ethylbenzene	14.7	700	Eliminated based on IDTL comparison
Toluene	10.4	1,000	Eliminated based on IDTL comparison
1,2,4-TMB	2.2	439	Eliminated based on IDTL comparison

Selection of COCs for Soil Vapor (Off-Site):

CHEMICAL	MAXIMUM CONCENTRATION (µg/m^3)	CHHSL RESIDENTIAL/NON-RESIDENTIAL (µg/m3)	DETERMINATION
PCE	**110**	**180/603**	**COC based on frequency of detects**
TCE	30	528/1,770	Eliminated based on CHHSL comparison
Acetone	108	NE	Eliminated based on CHHSL comparison
Benzene	34	36.2/122	Eliminated based on CHHSL comparison
MEK	10	NE	Eliminated based on CHHSL comparison
Carbon disulfide	1.9	NE	Eliminated based on CHHSL comparison
Chloroform	190	NE	Eliminated based on CHHSL comparison
Chloromethane	0.83	NE	Eliminated based on CHHSL comparison
Cyclohexane	4.9	NE	Eliminated based on CHHSL comparison
Carbon Tetrachloride	**500**	**25.1/84.6**	**COC**
Dichlorodifluoromethane	3.5	NE	Eliminated based on CHHSL comparison
Ethanol	10	NE	Eliminated based on CHHSL comparison
Ethyl acetate	2.5	NE	Eliminated based on CHHSL comparison
Ethylbenzene	170	NE	Eliminated based on CHHSL comparison
4-Ethyltoluene	18	NE	Eliminated based on CHHSL comparison
n-Heptane	38	NE	Eliminated based on CHHSL comparison
n-Hexane	8.8	NE	Eliminated based on CHHSL comparison
Methylene Chloride	48	NE	Eliminated based on CHHSL comparison
MIBK	7.9	NE	Eliminated based on CHHSL comparison
Naphthalene	6.9	31.9/106	Eliminated based on CHHSL comparison
2-Propanol	19	NE	Eliminated based on CHHSL comparison
Tetrahydrofuran	6.4	NE	Eliminated based on CHHSL comparison
Toluene	211	135,000/378,000	Eliminated based on CHHSL comparison
1,2,4-Trichlorobenzene	6.1	NE	Eliminated based on CHHSL comparison
Trichlorofluoromethane	5.1	NE	Eliminated based on CHHSL comparison
1,2,4-TMB	54	NE	Eliminated based on CHHSL comparison
1,3,5-TMB	15	NE	Eliminated based on CHHSL comparison
Xylene (Total)	819	5,500/7,700	Eliminated based on CHHSL comparison

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Notes:

PCE = Tetrachloroethene; TCE = Trichloroethene; MEK = Methyl Ethyl Ketone; TMB = Trimethylbenzene; DCE = Dichloroethene; DCA = Dichloroethane; mg/kg = milligrams per kilogram; µg/L = micrograms per liter; µg/m3 = micrograms per cubic meter; IDEQ IDTL = Idaho Department of Environmental Quality Initial Default Target Level; CHHSL = California Human Health Screening Level.

NE = No established CHHSL. Assumed if CHHSL was not established, the chemical is not considered a health risk.

(1) With the exception of one occasion, concentrations of bromodichloromethane and dibromochloromethane were only detected above the IDTLs in wells during the initial sampling after well installation. The detections of bromodichloromethane and dibromochloromethane were likely caused from the purge water used when installing the wells; therefore, they are not considered COCs for the purposes of this risk evaluation.

TABLE 6
REPRESENTATIVE EXPOSURE CONCENTRATIONS USED IN RE-1 AND RE-2 MODELS
AmeriPride Services Inc.
Twin Falls, Idaho
Burns & McDonnell Project No. 54592

RE-1	Media	Units	Potential Receptor	PCE	TCE	cis-1,2-DCE	Chloroform	Carbon Tetrachloride
On-Site	Surficial Soil	mg/kg	Non-Residential Workers	575.4	0.0255	0.0763	NA	NA
	Subsurface Soil	mg/kg	Non-Residential Workers	8.3	0.117	0.73	NA	NA
	Soils 0-15 feet	mg/kg	Construction Workers	184.7	0.0304	0.304	NA	NA
	Groundwater	µg/L	Non-Residential Workers	16,685	2,907	251.5	5.2	NA
Off-Site	Groundwater	µg/L	Residents and Non-Residential Workers	141.1	316.9	23.6	NA	NA
RE-2	**Media**	**Units**	**Potential Receptor**	**PCE**	**TCE**	**cis-1,2-DCE**	**Chloroform**	**Carbon Tetrachloride**
Off-Site	Soil Vapor	µg/m^3	Residents and Non-Residential Workers	36.5	NA	NA	NA	500

Unless noted, maximum concentrations were used as representative concentrations.
95% upper confidence limit (UCL) calculated using the ProUCL Version 4.00.05 software available on the US EPA website.
NA = Not applicable; RE = Risk evaluation; PCE = Tetrachloroethene; TCE = Trichloroethene; DCE = Dichloroethene; mg/kg = milligrams per kilogram; µg/L = micrograms per liter; µg/m3 = micrograms per cubic meter.

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TABLE 7
FATE AND TRANSPORT PARAMETERS
AmeriPride Services Inc.
Twin Falls, Idaho
Burns & McDonnell Project No. 54592

RE-1 AND RE-2 MODEL PARAMETERS	SYMBOL	VALUE	UNITS	DESCRIPTION
Depth to sample from the bottom of the building	L_{TSV}	61	cm	Maximum impacted soil detected at approximately 2-feet bgs
Groundwater-building separation	L_{TGW}	2,119	cm	Depth to groundwater set at 70 feet bgs where apparent semi confining layer penetrated.
Stratum A - SCS soil type	-	Silty Sand	-	Based on soil boring logs
Stratum A - thickness	h_A	183	cm	Approximately 6 feet of silty sand based on soil boring logs
Vapor permeability	k_v	5.00E-08	cm^2	Vapor permeability selected based on mid-point of permeability for a silty sand (Freeze and Cherry, 1979)
Stratum B - Saturated rock type	-	Fractured Basalt	-	Based on soil boring logs
Stratum B - thickness	h_B	1,911	cm	Approximately 64 feet of fractured basalt and weathered basalt based on soil boring logs
Groundwater Darcy Velocity	U_{gw}	7,300	cm/year	Darcy velocity based on hydraulic conductivity (60 ft./day) and gradient (0.011) used in calibrated Groundwater Flow Model for Twin Falls, Idaho. This model was developed by the Idaho Water Resources Research Institute (IWRI), December 1997.
Infiltration Rate	I	2.5	cm/year	Precipitation averages between 5 and 10 inches per year. Infiltration rate assumes 10% of the maximum precipitation rate (25 cm/yr). The calibrated Flow Model for Twin Falls (IWRI, 1997) assumed 10% for infiltration from irrigation canals.
Dry soil bulk density - saturated zone soil	ρ_{ss}	2.35	g/cm^3	This is representative of the upper 75 feet of the Idaho Basalt bulk density - Idaho National Laboratory, April 2006
Fractional organic carbon content - saturated zone soil	foc_s	0.0001	g/C/g-soil	Basalt will have a lower presence of organic carbon vs. alluvium
Total soil porosity - saturated zone soil	θ_{Ts}	0.28	cm^3/cm^3	Mean porosity of fractured basalt - Freeze and Cherry, 1979
Dry soil bulk density - Stratum B	ρ_{sB}	2.35	g/cm^3	This is representative of the upper 75 feet of the Idaho Basalt bulk density - Idaho National Laboratory, April 2006
Fractional organic carbon content - Stratum B	foc_B	0.0001	g/C/g-soil	Basalt will have a lower presence of organic carbon vs. alluvium
Total soil porosity - Stratum B	θ_{TB}	0.28	cm^3/cm^3	Mean porosity of fractured basalt - Freeze and Cherry, 1979
Distance to point of exposure	$X_{poe,gw}$	100	feet	For on-site modeling - The nearest potential location of a water supply well is the Post Office Property, so the property boundary to the west-northwest was used for the POE.
Distance to point of compliance	$X_{poc,gw}$	100	feet	For on-site modeling -The nearest potential location of a water supply well is the Post Office Property, so the property boundary to the west-northwest was used for the POC.

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APPENDIX A

Land Use and Receptor Survey

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Map of 100-Series Sites	
100	Wells Fargo bank and drive-thru
101	Multi-tenant retail (132-162)
102	Multi-tenant retail (103-161)
103	Parking lot
104	Law Offices (131)
105	Multi-tenant retail (125-161)
106	Magic Valley Bank (113)
107	Multi-tenant retail (106-164)
108	Donnelly Sports (161)
109	Multi-tenant office (155)
110	Multi-tenant retail
111	HLJ Law Offices
112	Standard Printing
113	Commercial vacant (136)
114	Jensen Management
115	Law Offices (126)
116	The Cake Lady
117	US Bank
118	Babbel's Cleaners (222)
119	Attorney's offices, various (132)
120	St. Lukes Magic Valley
121	Sinclair & Co.
122	Beacon Burger & Brew (137)
123	Residential Apartments (151)
124	High Mountain Insurance

200	Business Brokers, Bella Terra Tile & Stone (163)	201	Furniture Outlet (127)	202	Pomerelle Portrait Studio (119)
203	Cargill Used Autos (210)	204	Wills Inc., Builders-Developers (222)	205	Red's Trading Post
206	Vacant retail	207	Riverrat Whitewater Toyz (138)	208	Fastenal (152)
209	Magic Glass & Interiors	210	Commercial, no signage (139)	211	Body IQ Fitness Center
212	Step-Ken Auto Parts, vacant	213	White Cloud Motel (134)	214	Vacant
215	Idaho Carpet Liquidators (305)	216	Wills Toyota Service Center	217	Wills Toyota, car sales
218	Commercial, no signage	219	Gold Metal Dairy Products (227)	220	Vacant commercial (255)
221	Lake City International (259)	222	Vacant commercial	223	Buffalo Café (218)
224	D&D Tire (206)	225	Walco International (213), Animal Health	226	Mountain Dairies, Girl Scouts, Tattoo Computers
227	Wilson Bates (140)	228	D&G Auto (former gas station)	229	Clear Creek Properties, multi-tenant office (409)
230	Kruzer's Night Club	231	Commercial, no signage	232	State Dept. of Agriculture (434)
233	Mac's Radiator & Air Conditioning	234	Senior Center	235	Commercial, no signage
236	Morrison Tire Co.	237	Commercial, no signage	238	Commercial, no signage
239	Plews Heating & Air Conditioning (235)	240	TFR&P Club (253)	241	AATCO Transmission (261)
242	Maverick Gas Station	243	Commercial, no signage	244	Commercial, no signage
245	Transmission City (240)	246	Farmer Brothers Coffee (258)	247	Custom Quality Heating & Air (260)
248	Twin Falls Street Department	249	Twin Falls Water Department	250	Service Master
251	JM Kitchens	252	USF Reddaway (304)	253	Commercial, no signage
254	A-1 Towing & Repair	255	Vacant commercial (312)	256	Vacant commercial
257	Vacant commercial				

300	Cains Home Furnishings (204)	301	The Dance Center	302	Magic Valley Auto Parts (226)
303	Dive Magic	304	Precision Video/Audio	305	Twin Falls School Dist. Extension Office (242)
306	Ace Printing	307	Garner Enterprise, auto dealer (264)	308	United Engine Machine
309	Idaho Health Center	310	Twin Falls County Service Center	311	Commercial vacant (239)
312	Twin Falls County Magistrate Probation (245)	313	Idaho District Court	314	Residential apartments (232)
315	Vacant	316	Residential apartments	317	Chiropractor (263)
318	Idaho Power (133)	319	Residential apartments	320	Idaho Coin Galleries
321	Stevens Pierde & Associates, CPA	322	Commercial vacant (350)	323	Main Street Bistro & Lounge (360)
324	Klover Klub Lounge	325	Vacant	326	Barbershop, vacant commercial
327	Magic Valley Floor Covering (464)	328	McClure Engineering, Denture Clinic (507)	329	Magic Valley High School (512)
330	The Word Christian Fellowship (556)				

400	Idaho Instrument (624)	401	Pawn Shop (321)	402	JM Kitchens
403	Motel (761)	404	Bar (717)	405	Tuck It Away Storage
406	Wholesale Carpets (762)	407	Bella's Books	408	Master Craft (736)
409	Wilson Bates	410	Harald Gerber AIA (632)	411	Enchantress (622)
412	Leah's Gifts (618)	413	The Repair Shop (612)	414	Organ Learning Center (610)
415	Windriders Pub & Grill	416	Lincoln Elementary School (238)	417	Magic Valley Collection & Recovery

500	Argus Electrical (420)	501	Commercial, no signage	502	Diamond Blades, granite fabrication (464)
503	Magic Valley Auto Body	504	Commercial, no signage (junk yard)	505	Metco Electric
506	Commercial, no signage	507	Commercial, no signage	508	Twin Falls County Park & Rec (450)
509	Commercial, no signage	510	OK Tire Team	511	Goodyear Tire Store (556)
512	Magic Valley Disposal	513	AAA Screen (502), Commercial vacant (504)	514	Snake River Glass (450)
515	Consolidated Electrical Distributor	516	Snake River Auto Body (419)	517	Kelly's Log Tavern (401)
518	Snake River Auto Body & Paint (404)	519	Commercial, no signage	520	LaPasada, restaurant (355)
521	Commercial, no signage (347)	522	ABC 123 Daycare (339)	523	Lighting Concepts (356)
524	Wilder Appliances (336)	525	Lake City Agricultural (303)	526	Commercial vacant
527	Christian Life Fellowship	528	AmeriPride Services	529	Sears Parts & Service (360)
530	Sun Times (former gas station)	531	Twin Falls School District Services (301)	532	Times News
533	U.S. Post Office	534	Commercial vacant	535	Old Towne Lodge
536	Multi-tenant retail (229-257)	537	Public School Admin (201)	538	Commercial vacant
539	Multi-tenant office building (184)				

	R-4	Residential Medium Density
	R-6	Residential Multi-Household
	CB	Commercial Central Business
	C-1	Commercial Highway
	M-1	Manufacturing – Light
	M-2	Manufacturing – Heavy
	OS	Open Space
	AP	Airport
	O-T	Old Town District

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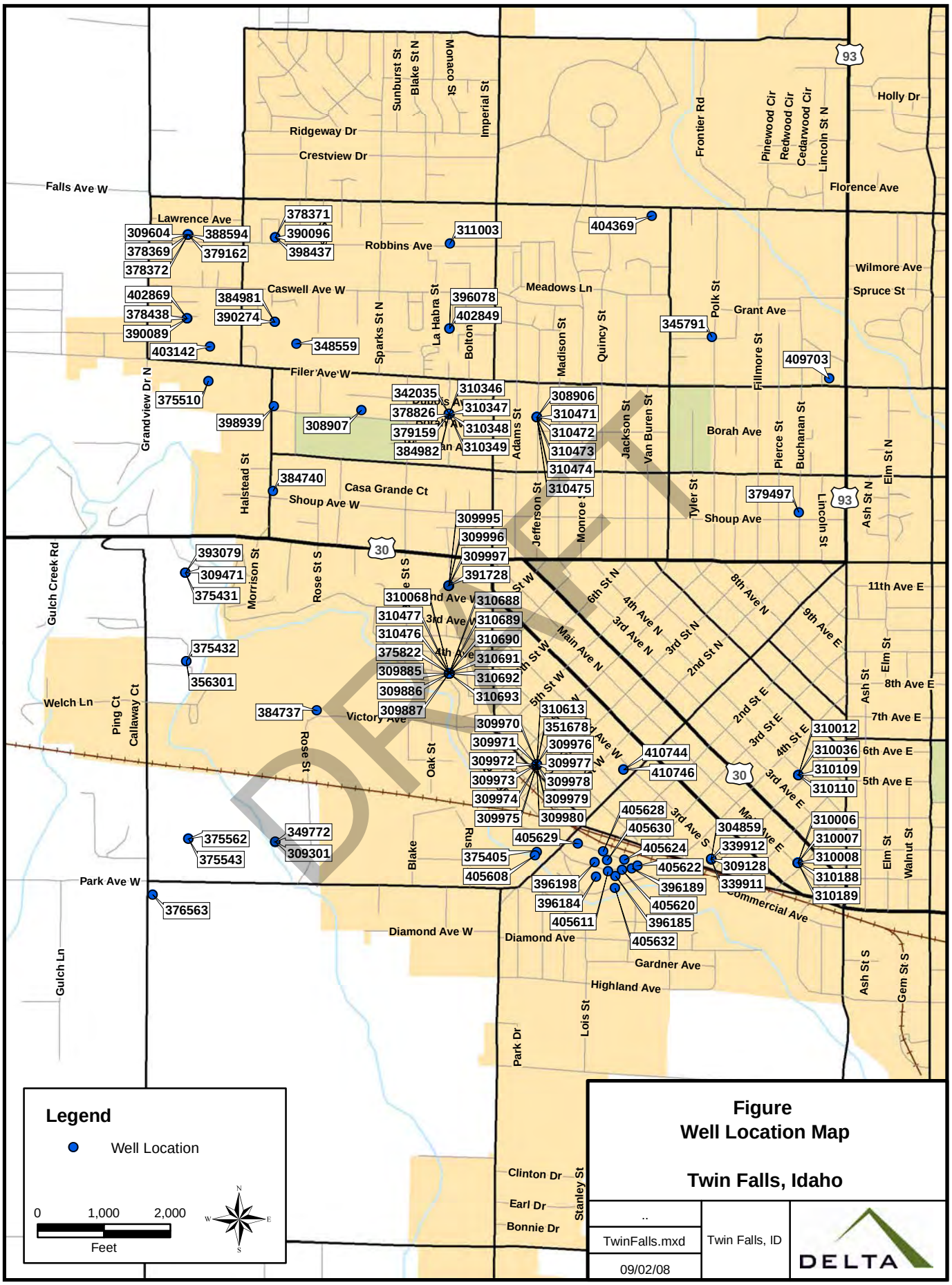
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Lincoln St N
Holly Dr
Florence Ave
Robbins Ave
Caswell Ave W
Meadows Ln
Wilmore Ave
Spruce St
Grant Ave
Polk St
Sparks St N
La Habra St
Bolton
Madison St
Quincy St
Filer Ave W
Fillmore St
Grandview Dr N
Adams St
Jackson St
Van Buren St
Borah Ave
Pierce St
Buchanan St
Elm St N
Halstead St
Casa Grande Ct
Shoup Ave W
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Tyler St
Shoup Ave
Lincoln St
Ash St N
Gulch Creek Rd
Morrison St
Rose St S
6th St N
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Callaway Ct
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Oak St
Blake
Park Ave W
Diamond Ave W
Diamond Ave
Gardner Ave
Highland Ave
Commercial Ave
Walnut St
Gulch Ln
Ash St S
Gem St S
Lois St
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Earl Dr
Bonnie Dr
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WELL ID	PERMIT ID	OWNER	TWP	RGE	SEC	QQQ	QQ	Q	WELL ADDRESS	WELL USE	STATIC WATER LEVEL (ft.)	SURFACE DIAM (in.)	CASING DIAM (in.)	CASING DEPTH (ft.)	TOTAL DEPTH (ft.)	CONSTR. DATE
309301	719419	ROCKY SLIGAR	10S	17E	17		SE	SW		Domestic-Single Res.	14	6	0	58	0	Oct 27 1995
309471	719576	ROBERT ADAMS	10S	17E	17		NW	NW		Domestic-Single Res.	27	6	0	38	0	Jul 1 1996
309604	718970	KENT T JENSEN	10S	17E	8		NW	NW	216 GULCH LANE	Domestic-Single Res.	12	6	0	19	0	Dec 1 1993
309885	0	ECOVA CORP	10S	17E	17		SE	NE	366 WASHINGTON ST	Commercial	0	0	0	0	0	
309885	0	MAVERICK COUNTRY STORES INC	10S	17E	17		SE	NE	366 WASHINGTON ST	Commercial	0	0	0	0	0	
309886	719226	ECOVA CORP	10S	17E	17		SE	NE	366 WASHINGTON ST	Commercial	0	0	0	0	0	
309886	719226	MAVERICK COUNTRY STORES INC	10S	17E	17		SE	NE	366 WASHINGTON ST	Commercial	0	0	0	0	0	
311003	718075	WILLIAM OLIVER	10S	17E	8		NE	NE		Domestic-Single Res.	50	6	0	40	0	Jun 5 1985
345791	773952	SHELBYS TRAILER COURT	10S	17E	9		SW	NE		Domestic	42	0	0	0	200	Jul 14 1981
348559	776719	ZAMBEZI GROUP VOLCO CO INC	10S	17E	8	SE	SE	NW	558 ROSE CIRCLE	Domestic	0	6	0	0	131	May 3 2002
349772	778020	ROGER D LEWIS	10S	17E	17		SE	SW		Domestic	13	0	0	0	78	May 11 1959
356301	785247	COMMUNITY CHRISTIAN CHURCH	10S	17E	17		SW	NW		Domestic	23	0	0	0	140	Jun 25 1987
375405	804523	FRED D JAYNES	10S	17E	16		SW	SW		Dewatering	9999	0	0	0	63	Oct 4 1965
375431	804549	BUD SMITH	10S	17E	17		NW	NW		Domestic	9999	0	0	0	32	Feb 5 1962
375432	804550	CUSTOM PACKING CO	10S	17E	17		SW	NW		Industrial	18	0	0	0	111	Jan 19 1957
375510	804631	HELEN KOLOUGH	10S	17E	8	NE	NW	SW	761 FILER AVE W	Domestic	27	6	0	0	63	Jul 8 2003
375543	804667	W A SONIUS	10S	17E	17		SW	SW		Domestic	11	0	0	0	75	Nov 16 1963
375562	804686	W A SONIUS	10S	17E	17		SW	SW		Domestic	30	0	0	0	115	Aug 7 1963
376563	805716	BEN OLIVER	10S	17E	20		NW	NW	133 GRANDVIEW DR S	Domestic	6	6	7	19	60	Aug 12 2003
378369	807561	DICK GEER	10S	17E	8		NW	NW		Domestic	43	0	0	0	85	Aug 15 1963
378371	807563	JAMES W BOEHM	10S	17E	8		NE	NW		Domestic	30	0	0	0	110	Jan 17 1964
378372	807564	J A OWINGS	10S	17E	8		NW	NW		Domestic	25	0	0	0	225	Sep 14 1963
378438	807630	GEORGE SMITH	10S	17E	8		SW	NW		Domestic	32	0	0	0	217	Oct 27 1970
378826	808029	W N OLIVER	10S	17E	8		NE	SE		Domestic	95	0	0	0	206	Feb 28 1975
379159	808364	MAURICE A BOWERS	10S	17E	8		NE	SE		Irrigation	38	0	0	0	150	May 4 1971
379162	808367	WALTER L BLAYLOCK	10S	17E	8		NW	NW		Domestic	34	0	0	0	115	May 16 1970
379497	808704	EUGENE W WALKER	10S	17E	9		SE	SE		Domestic	29	0	0	0	142	Dec 23 1965
384737	814048	L A TOLMAN	10S	17E	17			NW		Domestic	50	0	0	0	140	May 3 1966
384740	814051	FRANCIS E HOREJS	10S	17E	8		SE	SW		Domestic	18	0	0	0	42	Jun 22 1967
384981	814296	JACK RADTKE	10S	17E	8		SE	NW		Domestic	38	0	0	0	80	Apr 5 1963
384982	814297	C OLIVER	10S	17E	8		NE	SE		Domestic	50	0	0	0	145	May 4 1962
388594	817926	JACK RADTKE	10S	17E	8		NW	NW		Domestic	38	0	0	0	90	Dec 31 9999
390089	819421	ROBERT BURTON	10S	17E	8		SW	NW		Domestic	38	0	0	0	185	Jun 14 1966
390096	819428	TWIN FALLS SCHOOL DISTRICT # 411	10S	17E	8		NE	NW		Irrigation	32	0	0	0	150	Feb 5 1969
390274	819606	R A DRAKE	10S	17E	8		SE	NW		Domestic	30	0	0	0	150	Feb 2 1968
391728	821066	ED HEIL	10S	17E	17		NE	NE		Domestic	135	0	0	0	180	Jul 9 1975
393079	822421	VIRGIL COX	10S	17E	17		NW	NW		Domestic	13	0	0	0	50	Jul 14 1976
396078	825446	JOE T SHELBY	10S	17E	8		SE	NE			32	0	0	0	162	Jan 27 1976
398437	827822	JIM SCHMIDT	10S	17E	8		NE	NW		Domestic	30	0	0	0	105	Jun 11 1968
398939	828326	DOUG SCHMECKEL	10S	17E	8		NE	SW		Domestic	37	0	0	0	150	Jul 21 1978
402849	832258	M BOWERS	10S	17E	8		SE	NE		Domestic	36	0	0	0	150	Jul 1 1966
402869	832278	J ANDERSON	10S	17E	8		SW	NW		Domestic	9999	0	0	0	150	Apr 1 1967
403142	832552	EHM ENGINEERS	10S	17E	8	SE	SW	NW	1/8 S 1/8 W FILER & WENDELL	Domestic	0	5	0	0	38	Apr 15 2005
304859	723440	J M MONTGOMERY CONSULTING ENG.	10S	17E	16		SW	SE		Monitoring	0	0	0	0	0	
304859	723440	J R SIMPLOT CO	10S	17E	16		SW	SE		Monitoring	0	0	0	0	0	
308906	719783	GRAN MERCY	10S	17E	9		NW	SW	608 WASHINGTON ST NORTH, MW-9	Monitoring	38	2	0	68	0	Aug 19 1997
308907	719784	GRAN MERCY	10S	17E	8		NW	SE	608 WASHINGTON ST NORTH, MW-10	Monitoring	38	2	0	69	0	Aug 20 1997
309128	719995	E H M ENGINEERING INC	10S	17E	16		SW	SE	348 4TH AVENUE SOUTH	Monitoring	54	4	0	64	0	Oct 22 1998
309887	719227	ECOVA CORP	10S	17E	17		SE	NE	366 WASHINGTON ST, WELL MW-1	Monitoring	0	6	0	0	51	May 11 1995
309887	719227	MAVERICK COUNTRY STORES INC	10S	17E	17		SE	NE	366 WASHINGTON ST, WELL MW-1	Monitoring	0	6	0	0	51	May 11 1995
309887	804951	ECOVA CORP	10S	17E	17		SE	NE	366 WASHINGTON ST, WELL MW-1	Monitoring	0	6	0	0	51	Jul 17 2003
309887	804951	MAVERICK COUNTRY STORES INC	10S	17E	17		SE	NE	366 WASHINGTON ST, WELL MW-1	Monitoring	0	6	0	0	51	Jul 17 2003
309970	718591	ANR FREIGHT SYSTEM INC	10S	17E	16		NW	SW	560 3RD ST WEST, MW-1	Monitoring	99999	4	0	44	0	Dec 19 1991

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WELL ID	PERMIT ID	OWNER	TWP	RGE	SEC	QQQ	QQ	Q	WELL ADDRESS	WELL USE	STATIC WATER LEVEL (ft.)	SURFACE DIAM (in.)	CASING DIAM (in.)	CASING DEPTH (ft.)	TOTAL DEPTH (ft.)	CONSTR. DATE
309970	718591	COASTAL REMEDIATION CO	10S	17E	16		NW	SW	560 3RD ST WEST, MW-1	Monitoring	99999	4	0	44	0	Dec 19 1991
309971	718592	ANR FREIGHT SYSTEM INC	10S	17E	16		NW	SW	560 3RD ST WEST, MW-2	Monitoring	99999	4	0	43	0	Dec 17 1991
309971	718592	COASTAL REMEDIATION CO	10S	17E	16		NW	SW	560 3RD ST WEST, MW-2	Monitoring	99999	4	0	43	0	Dec 17 1991
309972	718593	ANR FREIGHT SYSTEM INC	10S	17E	16		NW	SW	560 3RD ST WEST, MW-3	Monitoring	99999	4	0	42	0	Dec 18 1991
309972	718593	COASTAL REMEDIATION CO	10S	17E	16		NW	SW	560 3RD ST WEST, MW-3	Monitoring	99999	4	0	42	0	Dec 18 1991
309973	718594	ANR FREIGHT SYSTEM INC	10S	17E	16		NW	SW	560 3RD ST WEST, MW-4	Monitoring	99999	4	0	39	0	Dec 18 1991
309973	718594	COASTAL REMEDIATION CO	10S	17E	16		NW	SW	560 3RD ST WEST, MW-4	Monitoring	99999	4	0	39	0	Dec 18 1991
309974	718595	ANR FREIGHT SYSTEM INC	10S	17E	16		NW	SW	560 3RD ST WEST, MW-5	Monitoring	99999	4	0	44	0	May 7 1992
309974	718595	COASTAL REMEDIATION CO	10S	17E	16		NW	SW	560 3RD ST WEST, MW-5	Monitoring	99999	4	0	44	0	May 7 1992
309975	718596	ANR FREIGHT SYSTEM INC	10S	17E	16		NW	SW	560 3RD ST WEST, MW-6	Monitoring	99999	4	0	44	0	May 5 1992
309975	718596	COASTAL REMEDIATION CO	10S	17E	16		NW	SW	560 3RD ST WEST, MW-6	Monitoring	99999	4	0	44	0	May 5 1992
309976	718597	ANR FREIGHT SYSTEM INC	10S	17E	16		NW	SW	560 3RD ST WEST, MW-7	Monitoring	99999	4	0	44	0	May 6 1992
309976	718597	COASTAL REMEDIATION CO	10S	17E	16		NW	SW	560 3RD ST WEST, MW-7	Monitoring	99999	4	0	44	0	May 6 1992
309977	718598	ANR FREIGHT SYSTEM INC	10S	17E	16		NW	SW	560 3RD ST WEST, MW-8	Monitoring	99999	4	0	44	0	May 5 1992
309977	718598	COASTAL REMEDIATION CO	10S	17E	16		NW	SW	560 3RD ST WEST, MW-8	Monitoring	99999	4	0	44	0	May 5 1992
309978	718599	ANR FREIGHT SYSTEM INC	10S	17E	16		NW	SW	560 3RD ST WEST, MW-9	Monitoring	99999	4	0	44	0	May 6 1992
309978	718599	COASTAL REMEDIATION CO	10S	17E	16		NW	SW	560 3RD ST WEST, MW-9	Monitoring	99999	4	0	44	0	May 6 1992
309979	718600	ANR FREIGHT SYSTEM INC	10S	17E	16		NW	SW	560 3RD ST WEST, MW-10	Monitoring	99999	2	0	39	0	May 7 1992
309979	718600	COASTAL REMEDIATION CO	10S	17E	16		NW	SW	560 3RD ST WEST, MW-10	Monitoring	99999	2	0	39	0	May 7 1992
309980	718601	ANR FREIGHT SYSTEM INC	10S	17E	16		NW	SW	560 3RD ST WEST	Monitoring	99999	2	0	44	0	Feb 12 1993
309980	718601	COASTAL REMEDIATION CO	10S	17E	16		NW	SW	560 3RD ST WEST	Monitoring	99999	2	0	44	0	Feb 12 1993
309995	718616	CH2M HILL	10S	17E	17		NE	NE	401 6TH AVE WEST, MW-5	Monitoring	54	4	0	34	0	Jan 4 1993
309995	718616	TWIN FALLS CANAL CO	10S	17E	17		NE	NE	401 6TH AVE WEST, MW-5	Monitoring	54	4	0	34	0	Jan 4 1993
309996	718617	CH2M HILL	10S	17E	17		NE	NE	401 6TH AVE WEST, MW-6	Monitoring	54	4	0	41	0	Jan 5 1993
309996	718617	TWIN FALLS CANAL CO	10S	17E	17		NE	NE	401 6TH AVE WEST, MW-6	Monitoring	54	4	0	41	0	Jan 5 1993
309997	718618	CH2M HILL	10S	17E	17		NE	NE	401 6TH AVE WEST, MW-7	Monitoring	54	4	0	74	0	Jan 5 1993
309997	718618	TWIN FALLS CANAL CO	10S	17E	17		NE	NE	401 6TH AVE WEST, MW-7	Monitoring	54	4	0	74	0	Jan 5 1993
310006	718627	DON NELSON	10S	17E	16		SE	SE	WELL B-3	Monitoring	18	0	0	0	0	Jan 16 1992
310006	718627	SITEX ENVIRONMENTAL INC	10S	17E	16		SE	SE	WELL B-3	Monitoring	18	0	0	0	0	Jan 16 1992
310007	0	DON NELSON	10S	17E	16		SE	SE	WELL B-1	Monitoring	18	0	0	0	0	
310007	0	SITEX ENVIRONMENTAL INC	10S	17E	16		SE	SE	WELL B-1	Monitoring	18	0	0	0	0	
310008	0	DON NELSON	10S	17E	16		SE	SE	WELL B-2	Monitoring	18	0	0	0	0	
310008	0	SITEX ENVIRONMENTAL INC	10S	17E	16		SE	SE	WELL B-2	Monitoring	18	0	0	0	0	
310012	718631	TWIN FALLS CANAL CO	10S	17E	16		NE	SE	401 6TH AE W	Monitoring	99999	0	0	74	0	Jan 27 1992
310036	718655	TWIN FALLS CANAL CO	10S	17E	16		NE	SE	401 6TH AVE W	Monitoring	99999	0	0	80	0	Mar 10 1992
310068	718683	GEOWEST GOLDEN INC	10S	17E	17		SE	NE	366 WASHINGTON ST S	Monitoring	0	0	0	0	53	May 5 1992

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WELL ID	PERMIT ID	OWNER	TWP	RGE	SEC	QQQ	QQ	Q	WELL ADDRESS	WELL USE	STATIC WATER LEVEL (ft.)	SURFACE DIAM (in.)	CASING DIAM (in.)	CASING DEPTH (ft.)	TOTAL DEPTH (ft.)	CONSTR. DATE
310068	804952	GEOWEST GOLDEN INC	10S	17E	17		SE	NE	366 WASHINGTON ST S	Monitoring	0	0	0	0	53	Jul 17 2003
310109	718720	TWIN FALLS CANAL CO	10S	17E	16		NE	SE	MW-3	Monitoring	99999	4	0	70	0	Jul 14 1992
310110	718721		10S	17E	16		NE	SE		Monitoring	99999	4	0	75	0	Jul 13 1992
310188	718792	DON NELSON	10S	17E	16		SE	SE	WELL B-1	Monitoring	18	0	0	0	0	Jan 16 1992
310188	718792	SITEX ENVIRONMENTAL INC	10S	17E	16		SE	SE	WELL B-1	Monitoring	18	0	0	0	0	Jan 16 1992
310189	718793	DON NELSON	10S	17E	16		SE	SE	WELL B-2	Monitoring	18	0	0	0	0	Jan 16 1992
310189	718793	SITEX ENVIRONMENTAL INC	10S	17E	16		SE	SE	WELL B-2	Monitoring	18	0	0	0	0	Jan 16 1992
310346	718197	M-K ENVIRONMENTAL SERVICES	10S	17E	8		NE	SE	PERMIT STATES: AND THE NW 1/4 SW 1/4 OF SECTION 9	Monitoring	0	0	0	0	0	
310346	718197	STATE OF IDAHO	10S	17E	8		NE	SE	PERMIT STATES: AND THE NW 1/4 SW 1/4 OF SECTION 9	Monitoring	0	0	0	0	0	
310347	718198	M-K ENVIRONMENTAL SERVICES	10S	17E	8		NE	SE	PERMIT STATES: AND THE NW 1/4 SW 1/4 OF SECTION 9	Monitoring	0	0	0	0	0	
310347	718198	STATE OF IDAHO	10S	17E	8		NE	SE	PERMIT STATES: AND THE NW 1/4 SW 1/4 OF SECTION 9	Monitoring	0	0	0	0	0	
310348	718199	M-K ENVIRONMENTAL SERVICES	10S	17E	8		NE	SE	PERMIT STATES: AND THE NW 1/4 SW 1/4 OF SECTION 9	Monitoring	0	0	0	0	0	
310348	718199	STATE OF IDAHO	10S	17E	8		NE	SE	PERMIT STATES: AND THE NW 1/4 SW 1/4 OF SECTION 9	Monitoring	0	0	0	0	0	
310349	718200	M-K ENVIRONMENTAL SERVICES	10S	17E	8		NE	SE	PERMIT STATES: AND THE NW 1/4 SW 1/4 OF SECTION 9	Monitoring	0	0	0	0	0	
310349	718200	STATE OF IDAHO	10S	17E	8		NE	SE	PERMIT STATES: AND THE NW 1/4 SW 1/4 OF SECTION 9	Monitoring	0	0	0	0	0	
310471	718319	STATE OF IDAHO	10S	17E	9		NW	SW		Monitoring	0	0	0	0	0	
310472	718320	STATE OF IDAHO	10S	17E	9		NW	SW		Monitoring	0	0	0	0	0	
310473	718321	STATE OF IDAHO	10S	17E	9		NW	SW		Monitoring	0	0	0	0	0	
310474	718322	STATE OF IDAHO	10S	17E	9		NW	SW		Monitoring	0	0	0	0	0	
310475	718323	STATE OF IDAHO	10S	17E	9		NW	SW		Monitoring	0	0	0	0	0	
310476	718324	ADD BENION CO	10S	17E	17		SE	NE	366 WASHINGTON ST, WELL MW-1	Monitoring	34	4	0	25	0	
310476	718324	MAVERICK COUNTRY STORES INC	10S	17E	17		SE	NE	366 WASHINGTON ST, WELL MW-1	Monitoring	34	4	0	25	0	
310477	718325	ADD BENION CO	10S	17E	17		SE	NE	366 WASHINGTON ST, WELL MW-1	Monitoring	34	4	0	25	0	
310477	718325	E H M ENGINEERING INC	10S	17E	17		SE	NE	366 WASHINGTON ST, WELL MW-1	Monitoring	34	4	0	25	0	
310477	718325	MAVERICK COUNTRY STORES INC	10S	17E	17		SE	NE	366 WASHINGTON ST, WELL MW-1	Monitoring	34	4	0	25	0	
310613	718453	BRAUN INTERTEC ENVIRONMENTAL INC	10S	17E	16		NW	SW	560 3RD ST WEST	Monitoring	0	0	0	0	0	
310688	718526	GEOWEST GOLDEN INC	10S	17E	17		SE	NE	366 WASHINGTON ST SOUTH, MW-2A	Monitoring	0	0	0	0	45	Jul 18 1991
310688	718526	MAVERICK COUNTRY STORES INC	10S	17E	17		SE	NE	366 WASHINGTON ST SOUTH, MW-2A	Monitoring	0	0	0	0	45	Jul 18 1991
310688	805013	GEOWEST GOLDEN INC	10S	17E	17		SE	NE	366 WASHINGTON ST SOUTH, MW-2A	Monitoring	0	0	0	0	45	Jul 17 2003
310688	805013	MAVERICK COUNTRY STORES INC	10S	17E	17		SE	NE	366 WASHINGTON ST SOUTH, MW-2A	Monitoring	0	0	0	0	45	Jul 17 2003
310689	718527	GEOWEST GOLDEN INC	10S	17E	17		SE	NE	366 WASHINGTON ST SOUTH, MW-2	Monitoring	99999	2	0	25	0	Jul 15 1991
310689	718527	MAVERICK COUNTRY STORES INC	10S	17E	17		SE	NE	366 WASHINGTON ST SOUTH, MW-2	Monitoring	99999	2	0	25	0	Jul 15 1991
310690	718528	GEOWEST GOLDEN INC	10S	17E	17		SE	NE	366 WASHINGTON ST SOUTH, MW-3	Monitoring	0	2	0	0	51	Jul 15 1991

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WELL ID	PERMIT ID	OWNER	TWP	RGE	SEC	QQQ	QQ	Q	WELL ADDRESS	WELL USE	STATIC WATER LEVEL (ft.)	SURFACE DIAM (in.)	CASING DIAM (in.)	CASING DEPTH (ft.)	TOTAL DEPTH (ft.)	CONSTR. DATE
310690	718528	MAVERICK COUNTRY STORES INC	10S	17E	17		SE	NE	366 WASHINGTON ST SOUTH, MW-3	Monitoring	0	2	0	0	51	Jul 15 1991
310690	804949	GEOWEST GOLDEN INC	10S	17E	17		SE	NE	366 WASHINGTON ST SOUTH, MW-3	Monitoring	0	2	0	0	51	Jul 17 2003
310690	804949	MAVERICK COUNTRY STORES INC	10S	17E	17		SE	NE	366 WASHINGTON ST SOUTH, MW-3	Monitoring	0	2	0	0	51	Jul 17 2003
310691	718529	GEOWEST GOLDEN INC	10S	17E	17		SE	NE	366 WASHINGTON ST, MW-4	Monitoring	0	0	0	0	42	Jul 16 1991
310691	718529	MAVERICK COUNTRY STORES INC	10S	17E	17		SE	NE	366 WASHINGTON ST, MW-4	Monitoring	0	0	0	0	42	Jul 16 1991
310691	804999	GEOWEST GOLDEN INC	10S	17E	17		SE	NE	366 WASHINGTON ST, MW-4	Monitoring	0	0	0	0	42	Jul 17 2003
310691	804999	MAVERICK COUNTRY STORES INC	10S	17E	17		SE	NE	366 WASHINGTON ST, MW-4	Monitoring	0	0	0	0	42	Jul 17 2003
310692	718530	GEOWEST GOLDEN INC	10S	17E	17		SE	NE	RUSSETT ST	Monitoring	41	2	0	30	0	Jul 17 1991
310693	718531	MAVERICK COUNTRY STORES INC	10S	17E	17		SE	NE		Monitoring	99999	2	0	25	0	Jul 15 1991
339911	767914	J R SIMPLOT CO	10S	17E	16		SW	SE	330 5TH SOUTH	Monitoring	0	4	4	0	14	Feb 8 2001
339912	767915	J R SIMPLOT CO	10S	17E	16		SW	SE	330 5TH SOUTH	Monitoring	0	4	4	0	47	Feb 8 2004
342035	770074	MK ENVIROMENTAL	10S	17E	8		NE	SE		Monitoring	0	2	0	0	35	Jul 23 2001
351678	780483	EL PASO CORP	10S	17E	16		NW	SW	560 3RD ST. WEST.	Monitoring	52	2	2	-45	60	Jul 17 2002
375822	804954	MAVERICK COUNTRY STORES INC	10S	17E	17		SE	NE	366 Washington	Monitoring	0	0	0	0	51	Jul 17 2003
396184	825555	CITY OF TWIN FALLS	10S	17E	16		SE	SW	MAXWELL AVENUE	Monitoring	47	2	2	42	76	Oct 22 2004
396185	825556	CITY OF TWIN FALLS	10S	17E	16		SE	SW	MAXWELL AVENUE	Monitoring	48	2	2	45	65	Oct 22 2004
396189	825560	CITY OF TWIN FALLS	10S	17E	16		SE	SW	MAXWELL AVENUE	Monitoring	49	2	2	45	65	Oct 25 2004
396198	825569	CITY OF TWIN FALLS	10S	17E	16		SE	SW	MAXWELL AVENUE	Monitoring	48	2	2	45	65	Oct 25 2004
405608	835087	TWIN FALLS URBAN RENEWAL AGENCY	10S	17E	16		SE	SW	WEST SIDE OF MAXWELL AVE	Monitoring	8	2	2	5	20	Aug 16 2005
405611	835090	TWIN FALLS URBAN RENEWAL AGENCY	10S	17E	16		SE	SW	MAXWELL AVE	Monitoring	51	2	2	40	65	Aug 16 2005
405620	835099	TWIN FALLS URBAN RENEWAL AGENCY	10S	17E	16		SE	SW	3RD STREET AVE	Monitoring	44	2	2	39	60	Aug 9 2005
405622	835101	TWIN FALLS URBAN RENEWAL AGENCY	10S	17E	16		SE	SW	RAILROAD AVENUE	Monitoring	47	2	2	40	65	Aug 15 2005
405624	835103	TWIN FALLS URBAN RENEWAL AGENCY	10S	17E	16		SE	SW	RAILROAD AVENUE	Monitoring	51	2	2	40	66	Aug 12 2005
405628	835107	TWIN FALLS URBAN RENEWAL AGENCY	10S	17E	16		SE	SW	RAILROAD AVENUE	Monitoring	51	2	2	40	65	Aug 15 2005
405629	835108	TWIN FALLS URBAN RENEWAL AGENCY	10S	17E	16		SE	SW	RAILROAD AVENUE	Monitoring	48	2	2	40	65	Aug 11 2005
405630	835109	TWIN FALLS URBAN RENEWAL AGENCY	10S	17E	16		SE	SW	IN THE ALLEY BEHIND B&B OIL COMPANY	Monitoring	50	2	2	39	65	Aug 10 2005
405632	835111	TWIN FALLS URBAN RENEWAL AGENCY	10S	17E	16		SE	SW	ROCKCREEK CANYON OFF OF MAXWELL AVENUE	Monitoring	50	2	2	39	65	Aug 9 2005
410744	840446	AMERI PRIDE SERVICES INC	10S	17E	16		NE	SW	201 2ND AVE WEST	Monitoring	46	2	2	45	70	Jul 7 2006
410746	840448	AMERI PRIDE SERVICES INC	10S	17E	16		NE	SW	201 2ND AVE WEST	Monitoring	47	2	2	44	69	Jun 7 2006

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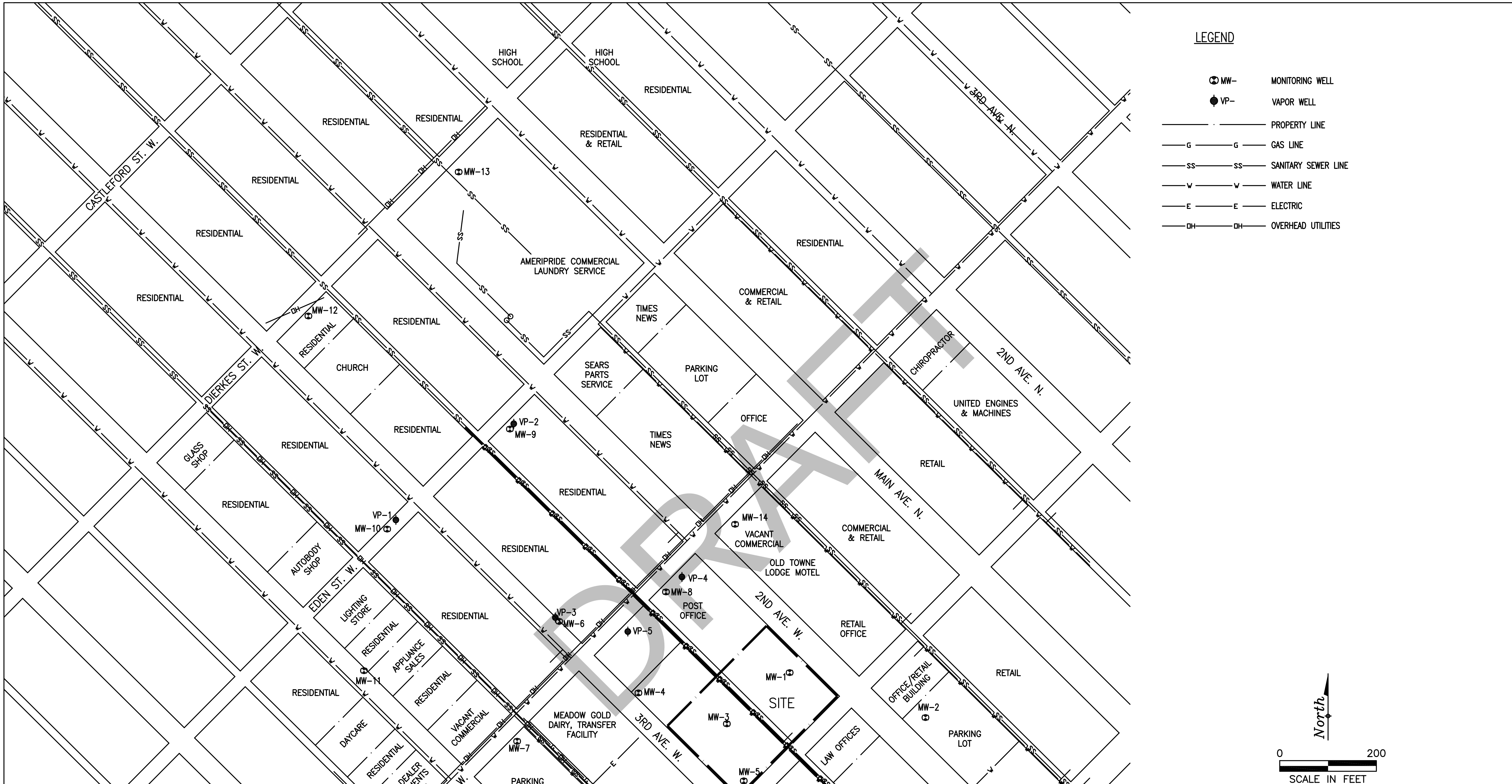


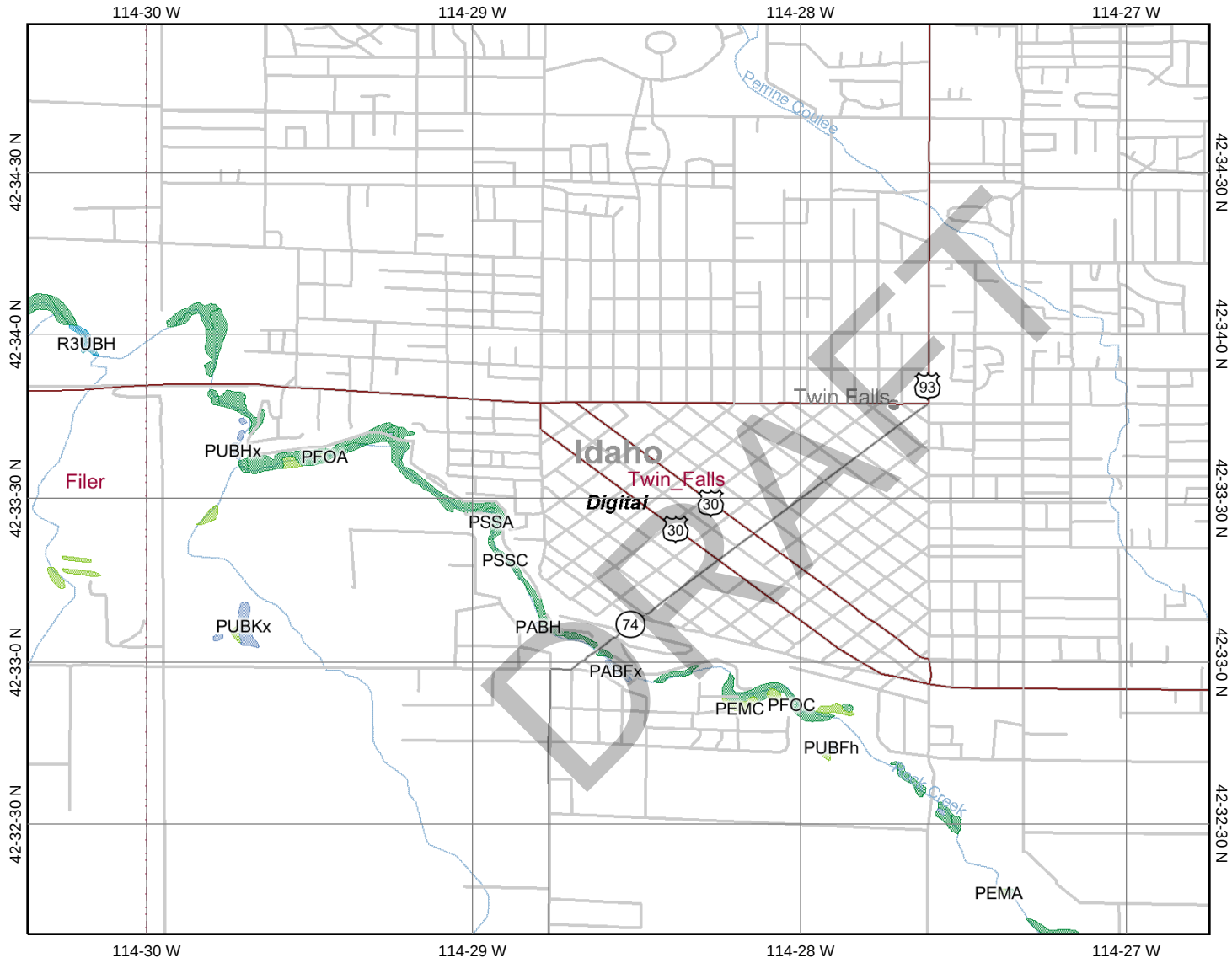
FIGURE 2
WELL LOCATION MAP

FORMER GEM LAUNDRY SITE
201 2ND AVENUE WEST
TWIN FALLS, IDAHO

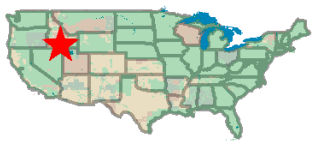
PROJECT NO.	PREPARED BY	DRAWN BY
0510-537-P	NR	DR/DD
DATE	REVIEWED BY	FILE NAME
2/2/09		Falls-Site

DELTA

USFWS Wetlands Map



Map center: 42° 33' 34" N, 114° 28' 33" W



Legend

- Interstate
- Major Roads
- Other Road
- Interstate
- State highway
- US highway
- Roads
- Cities
- USGS Quad Index 24K
- Lower 48 Wetland Polygons
  - Estuarine and Marine Deepwater
  - Estuarine and Marine Wetland
  - Freshwater Emergent Wetland
  - Freshwater Forested/Shrub Wetland
  - Freshwater Pond
  - Lake
  - Other
  - Riverine
- Lower 48 Available Wetland Data
  - Non-Digital
  - Digital
  - No Data
  - Scan
- NHD Streams
- Counties 100K
- States 100K
- South America
- North America

N

Scale: 1:36,160

This map is a user generated static output from an Internet mapping site and is for general reference only. Data layers that appear on this map may or may not be accurate, current, or otherwise reliable. THIS MAP IS NOT TO BE USED FOR NAVIGATION.

APPENDIX B

Slug Test Data Files

DRAFT

Report Date:	9/18/2010 14:59
Report User Name:	runke
Report Computer Name:	B217466

Log File Properties

File Name	mw-2_1 2010-09-18 13.13.29.wsl
Create Date	9/18/2010 13:13

Device Properties

Device	Level TROLL 700
Site	twin falls ameripride
Device Name	
Serial Number	164650
Firmware Version	2.08
Hardware Version	3

Log Configuration

Log Name	mw-2_1
Created By	Unknown
Computer Name	Field PC
Application	WinSituMobile.exe
Application Version	5.5.11.5
Create Date	9/18/2010 12:54
Notes Size(bytes)	4096
Type	True Logarithmic
Overwrite when full	Disabled
Scheduled Start Time	Manual Start
Scheduled Stop Time	No Stop Time
Max Interval	Days: 0 hrs: 00 mins: 01 secs: 00

Level Reference Settings At Log Creation

Level Measurement Mode	Level Depth To Water
Specific Gravity	0.999
Level Reference Mode:	Set new reference
Level Reference Value:	0 (ft)
Level Reference Head Pressure	11.1083 (PSI)
Head Pressure	11.1083 (PSI)
Temperature	15.9019 (C)
Depth of Probe	25.6486 (ft)

Log Notes:

Date and Time	Note
9/18/2010 12:54	Note Error
9/18/2010 12:54	Manual Start Command
9/18/2010 12:56	Log Download - Used Battery: 1% Used Memory: 20% Name: Unknown
9/18/2010 13:13	Note Error
9/18/2010 13:13	Manual Stop Command

Log Data:

Record Count	115	
Sensors	1	
	1	164650 Pressure/Temp 15 PSIG (11m/35ft)

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Time Zone: Central Daylight Time

Date and Time	Elapsed Time Milliseconds	Sensor: Pres(G) 35ft SN#: 164650 Level Depth To Water (ft)
9/18/2010 12:54	0	-0.010896
9/18/2010 12:54	0.25	5.749258
9/18/2010 12:54	0.5	0.231111
9/18/2010 12:55	0.75	-0.624405
9/18/2010 12:55	1	1.975231
9/18/2010 12:55	1.25	2.596895
9/18/2010 12:55	1.5	1.104037
9/18/2010 12:55	1.75	1.059279
9/18/2010 12:55	2	1.596574
9/18/2010 12:55	2.25	1.552774
9/18/2010 12:55	2.5	1.285885
9/18/2010 12:55	2.75	1.234188
9/18/2010 12:55	3	1.274311
9/18/2010 12:55	3.25	1.256369
9/18/2010 12:55	3.5	1.192141
9/18/2010 12:55	3.75	1.161863
9/18/2010 12:55	4	1.166052
9/18/2010 12:55	4.25	1.140211
9/18/2010 12:55	4.5	1.114511
9/18/2010 12:55	4.75	1.089596
9/18/2010 12:55	5	1.078628
9/18/2010 12:55	5.25	1.057909
9/18/2010 12:55	5.5	1.03586
9/18/2010 12:55	5.75	1.023831
9/18/2010 12:55	6	1.011821
9/18/2010 12:55	6.36	0.992307
9/18/2010 12:55	6.72	0.964355
9/18/2010 12:55	7.14	0.940886
9/18/2010 12:55	7.56	0.899627
9/18/2010 12:55	7.98	0.892133
9/18/2010 12:55	8.46	0.85475
9/18/2010 12:55	9	0.843872
9/18/2010 12:55	9.48	0.816807
9/18/2010 12:55	10.08	0.788439
9/18/2010 12:55	10.68	0.774284
9/18/2010 12:55	11.28	0.72998
9/18/2010 12:55	11.94	0.715281
9/18/2010 12:55	12.66	0.691863
9/18/2010 12:55	13.44	0.664074
9/18/2010 12:55	14.22	0.641404
9/18/2010 12:55	15.06	0.617202
9/18/2010 12:55	15.96	0.596395
9/18/2010 12:55	16.92	0.580114
9/18/2010 12:55	17.88	0.553853
9/18/2010 12:55	18.96	0.521245
9/18/2010 12:55	20.1	0.49272
9/18/2010 12:55	21.3	0.475005
9/18/2010 12:55	22.56	0.4574
9/18/2010 12:55	23.88	0.434695
9/18/2010 12:55	25.32	0.413475
9/18/2010 12:55	26.82	0.393315
9/18/2010 12:55	28.38	0.372346
9/18/2010 12:55	30.06	0.358101
9/18/2010 12:55	31.86	0.33812
9/18/2010 12:55	33.72	0.324038

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9/18/2010 12:55	35.76	0.303962
9/18/2010 12:55	37.86	0.289143
9/18/2010 12:55	40.08	0.271496
9/18/2010 12:55	42.48	0.256069
9/18/2010 12:55	45	0.246545
9/18/2010 12:55	47.64	0.22746
9/18/2010 12:55	50.46	0.215354
9/18/2010 12:55	53.46	0.20038
9/18/2010 12:55	56.64	0.187719
9/18/2010 12:55	60	0.163754
9/18/2010 12:56	63.6	0.166386
9/18/2010 12:56	67.2	0.154992
9/18/2010 12:56	71.4	0.146017
9/18/2010 12:56	75.731	0.138519
9/18/2010 12:56	79.8	0.130024
9/18/2010 12:56	84.73	0.116079
9/18/2010 12:56	90	0.112892
9/18/2010 12:56	94.8	0.108715
9/18/2010 12:56	100.8	0.099641
9/18/2010 12:56	106.8	0.089553
9/18/2010 12:56	112.8	0.086616
9/18/2010 12:56	119.4	0.080651
9/18/2010 12:57	126.6	0.07583
9/18/2010 12:57	134.4	0.077306
9/18/2010 12:57	142.2	0.071539
9/18/2010 12:57	150.6	0.06128
9/18/2010 12:57	159.6	0.062403
9/18/2010 12:57	169.2	0.056296
9/18/2010 12:57	178.8	0.054194
9/18/2010 12:58	189.6	0.046165
9/18/2010 12:58	201	0.04402
9/18/2010 12:58	213	0.04055
9/18/2010 12:58	225.6	0.03754
9/18/2010 12:58	238.8	0.036525
9/18/2010 12:59	253.498	0.032625
9/18/2010 12:59	268.501	0.0324
9/18/2010 12:59	283.8	0.03033
9/18/2010 13:00	300.6	0.025726
9/18/2010 13:00	318.6	0.023619
9/18/2010 13:00	337.564	0.024935
9/18/2010 13:00	357.6	0.023048
9/18/2010 13:01	378.6	0.018534
9/18/2010 13:01	400.8	0.020813
9/18/2010 13:02	424.8	0.019818
9/18/2010 13:02	450	0.016702
9/18/2010 13:02	476.4	0.017004
9/18/2010 13:03	504.6	0.014487
9/18/2010 13:03	534.6	0.014553
9/18/2010 13:04	566.4	0.013553
9/18/2010 13:04	599.999	0.01225
9/18/2010 13:05	635.999	0.011893
9/18/2010 13:06	671.999	0.011836
9/18/2010 13:06	713.999	0.009458
9/18/2010 13:07	755.999	0.010528
9/18/2010 13:08	797.999	0.008431
9/18/2010 13:09	845.999	0.00757
9/18/2010 13:09	899.999	0.009821
9/18/2010 13:10	947.999	0.005639
9/18/2010 13:11	1007.999	0.004701
9/18/2010 13:12	1067.999	0.004193

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Report Date:	9/18/2010 14:59
Report User Name:	runke
Report Computer Name:	B217466

Log File Properties

File Name	mw-3_1 2010-09-18 14.13.30.wsl
Create Date	9/18/2010 14:13

Device Properties

Device	Level TROLL 700
Site	twin falls ameripride
Device Name	
Serial Number	164650
Firmware Version	2.08
Hardware Version	3

Log Configuration

Log Name	mw-3_1
Created By	Unknown
Computer Name	Field PC
Application	WinSituMobile.exe
Application Version	5.5.11.5
Create Date	9/18/2010 14:00
Notes Size(bytes)	4096
Type	True Logarithmic
Overwrite when full	Disabled
Scheduled Start Time	Manual Start
Scheduled Stop Time	No Stop Time
Max Interval	Days: 0 hrs: 00 mins: 01 secs: 00

Level Reference Settings At Log Creation

Level Measurement Mode	Level Depth To Water
Specific Gravity	0.999
Level Reference Mode:	Set new reference
Level Reference Value:	0 (ft)
Level Reference Head Pressure	8.76879 (PSI)
Head Pressure	8.76864 (PSI)
Temperature	15.8192 (C)
Depth of Probe	20.2465 (ft)

Log Notes:

Date and Time	Note
9/18/2010 14:00	Note Error
9/18/2010 14:02	Manual Start Command
9/18/2010 14:03	Log Download - Used Battery: 2% Used Memory: 21% Name: Unknown
9/18/2010 14:12	Log Download - Used Battery: 2% Used Memory: 21% Name: Unknown
9/18/2010 14:13	Note Error
9/18/2010 14:13	Manual Stop Command

Log Data:

Record Count	106	
Sensors	1	
	1	164650 Pressure/Temp 15 PSIG (11m/35ft)

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Time Zone: Central Daylight Time

Date and Time	Elapsed Time Milliseconds	Sensor: Pres(G) 35ft SN#: 164650 Level Depth To Water (ft)
9/18/2010 14:02	0	1.71426
9/18/2010 14:02	0.251	1.644147
9/18/2010 14:02	0.501	1.632251
9/18/2010 14:02	0.751	1.548009
9/18/2010 14:02	1.001	1.501393
9/18/2010 14:02	1.251	1.480306
9/18/2010 14:02	1.501	1.420978
9/18/2010 14:02	1.751	1.39408
9/18/2010 14:02	2.25	1.290106
9/18/2010 14:02	2.469	1.259221
9/18/2010 14:02	2.688	1.219673
9/18/2010 14:02	2.907	1.20153
9/18/2010 14:02	3.126	1.169973
9/18/2010 14:02	3.346	1.141114
9/18/2010 14:02	3.565	1.108511
9/18/2010 14:02	3.784	1.081297
9/18/2010 14:02	4.003	1.05598
9/18/2010 14:02	4.251	1.020063
9/18/2010 14:02	4.501	1.000278
9/18/2010 14:02	4.751	0.96245
9/18/2010 14:02	5.001	0.946082
9/18/2010 14:02	5.251	0.917738
9/18/2010 14:02	5.501	0.866852
9/18/2010 14:02	5.982	0.849844
9/18/2010 14:02	6.202	0.828683
9/18/2010 14:02	6.425	0.791392
9/18/2010 14:02	6.846	0.785508
9/18/2010 14:02	7.141	0.771866
9/18/2010 14:02	7.561	0.754726
9/18/2010 14:02	7.98	0.735177
9/18/2010 14:02	8.461	0.70739
9/18/2010 14:02	9.001	0.682687
9/18/2010 14:02	9.48	0.66115
9/18/2010 14:02	10.081	0.641556
9/18/2010 14:02	10.681	0.627941
9/18/2010 14:02	11.281	0.603459
9/18/2010 14:02	11.94	0.586088
9/18/2010 14:02	12.661	0.561124
9/18/2010 14:02	13.441	0.547504
9/18/2010 14:02	14.221	0.526389
9/18/2010 14:02	15.061	0.508185
9/18/2010 14:02	15.961	0.489889
9/18/2010 14:02	16.921	0.47139
9/18/2010 14:02	17.881	0.4487
9/18/2010 14:02	18.961	0.433088
9/18/2010 14:02	20.101	0.415201
9/18/2010 14:02	21.301	0.39419
9/18/2010 14:02	22.561	0.378564
9/18/2010 14:02	23.88	0.358103
9/18/2010 14:02	25.321	0.33672
9/18/2010 14:02	26.821	0.324904
9/18/2010 14:02	28.381	0.302809
9/18/2010 14:02	30.061	0.285798
9/18/2010 14:02	31.86	0.27025

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9/18/2010 14:02	33.72	0.254206
9/18/2010 14:02	35.761	0.240937
9/18/2010 14:02	37.861	0.221442
9/18/2010 14:02	40.081	0.210549
9/18/2010 14:02	42.481	0.200191
9/18/2010 14:02	45	0.177226
9/18/2010 14:02	47.64	0.167297
9/18/2010 14:02	50.461	0.154257
9/18/2010 14:02	53.46	0.13476
9/18/2010 14:02	56.641	0.13149
9/18/2010 14:03	60.001	0.12076
9/18/2010 14:03	63.628	0.107227
9/18/2010 14:03	67.2	0.094149
9/18/2010 14:03	71.4	0.091821
9/18/2010 14:03	75.601	0.085473
9/18/2010 14:03	79.8	0.077196
9/18/2010 14:03	84.601	0.07007
9/18/2010 14:03	90	0.055596
9/18/2010 14:03	94.8	0.056382
9/18/2010 14:03	100.801	0.04868
9/18/2010 14:03	106.8	0.044963
9/18/2010 14:03	112.801	0.040484
9/18/2010 14:04	119.4	0.037388
9/18/2010 14:04	127.105	0.030471
9/18/2010 14:04	134.4	0.028146
9/18/2010 14:04	142.2	0.027585
9/18/2010 14:04	151.141	0.019818
9/18/2010 14:04	160.143	0.022905
9/18/2010 14:04	169.2	0.020659
9/18/2010 14:05	178.8	0.017724
9/18/2010 14:05	189.6	0.017808
9/18/2010 14:05	201	0.016412
9/18/2010 14:05	213	0.016268
9/18/2010 14:05	225.6	0.009299
9/18/2010 14:06	238.8	0.011431
9/18/2010 14:06	253.2	0.009015
9/18/2010 14:06	268.2	0.007568
9/18/2010 14:06	283.8	0.007502
9/18/2010 14:07	300.6	0.004334
9/18/2010 14:07	318.6	0.005408
9/18/2010 14:07	337.211	0.005056
9/18/2010 14:08	357.6	-0.004021
9/18/2010 14:08	378.6	-0.00504
9/18/2010 14:08	400.8	-0.000665
9/18/2010 14:09	424.8	-0.001227
9/18/2010 14:09	450	0.001999
9/18/2010 14:09	476.4	0.002794
9/18/2010 14:10	504.6	0.001568
9/18/2010 14:10	534.6	-0.002878
9/18/2010 14:11	566.4	0.001147
9/18/2010 14:12	600	-0.005697
9/18/2010 14:12	636	0.000559

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Report Date:	9/18/2010 14:59
Report User Name:	runke
Report Computer Name:	B217466

Log File Properties

File Name	mw-12_2 2010-09-18 12.10.39.wsl
Create Date	9/18/2010 12:10

Device Properties

Device	Level TROLL 700
Site	twin falls ameripride
Device Name	
Serial Number	164650
Firmware Version	2.08
Hardware Version	3

Log Configuration

Log Name	mw-12_2
Created By	Unknown
Computer Name	Field PC
Application	WinSituMobile.exe
Application Version	5.5.11.5
Create Date	9/18/2010 12:06
Notes Size(bytes)	4096
Type	True Logarithmic
Overwrite when full	Disabled
Scheduled Start Time	Manual Start
Scheduled Stop Time	No Stop Time
Max Interval	Days: 0 hrs: 00 mins: 01 secs: 00

Level Reference Settings At Log Creation

Level Measurement Mode	Level Depth To Water
Specific Gravity	0.999
Level Reference Mode:	Set new reference
Level Reference Value:	0 (ft)
Level Reference Head Pressure	7.34169 (PSI)
Head Pressure	7.34317 (PSI)
Temperature	14.7681 (C)
Depth of Probe	16.9552 (ft)

Log Notes:

Date and Time	Note
9/18/2010 12:06	Note Error
9/18/2010 12:07	Manual Start Command
9/18/2010 12:08	Log Download - Used Battery: 1% Used Memory: 18% Name: Unknown
9/18/2010 12:10	Note Error
9/18/2010 12:10	Manual Stop Command

Log Data:

Record Count	84	
Sensors	1	
	1	164650 Pressure/Temp 15 PSIG (11m/35ft)

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Time Zone: Central Daylight Time

Date and Time	Elapsed Time Milliseconds	Sensor: Pres(G) 35ft SN#: 164650 Level Depth To Water (ft)
9/18/2010 12:07	0	-0.255344
9/18/2010 12:07	0.25	2.281781
9/18/2010 12:07	0.732	1.040377
9/18/2010 12:07	0.951	1.42824
9/18/2010 12:07	1.171	1.450284
9/18/2010 12:07	1.663	1.182166
9/18/2010 12:07	1.882	1.189137
9/18/2010 12:07	2.102	1.150774
9/18/2010 12:07	2.323	1.084062
9/18/2010 12:07	2.644	1.092377
9/18/2010 12:07	2.863	1.04704
9/18/2010 12:07	3.082	0.997539
9/18/2010 12:07	3.301	0.98116
9/18/2010 12:07	3.521	0.953721
9/18/2010 12:07	3.74	0.923961
9/18/2010 12:07	3.958	0.892926
9/18/2010 12:07	4.177	0.87747
9/18/2010 12:07	4.396	0.853761
9/18/2010 12:07	4.614	0.830552
9/18/2010 12:07	4.833	0.804833
9/18/2010 12:07	5.052	0.786693
9/18/2010 12:07	5.271	0.764765
9/18/2010 12:07	5.5	0.74193
9/18/2010 12:07	5.75	0.731195
9/18/2010 12:07	6	0.700728
9/18/2010 12:07	6.36	0.672067
9/18/2010 12:07	6.72	0.647123
9/18/2010 12:07	7.14	0.613003
9/18/2010 12:07	7.56	0.583104
9/18/2010 12:07	7.98	0.559976
9/18/2010 12:07	8.46	0.528353
9/18/2010 12:07	9	0.496098
9/18/2010 12:07	9.48	0.474345
9/18/2010 12:07	10.08	0.443178
9/18/2010 12:07	10.68	0.421177
9/18/2010 12:07	11.28	0.390851
9/18/2010 12:07	11.94	0.365568
9/18/2010 12:07	12.66	0.340835
9/18/2010 12:07	13.44	0.313039
9/18/2010 12:07	14.22	0.291186
9/18/2010 12:07	15.06	0.270725
9/18/2010 12:07	15.96	0.249245
9/18/2010 12:07	16.92	0.222015
9/18/2010 12:07	17.88	0.204342
9/18/2010 12:07	18.96	0.184847
9/18/2010 12:07	20.1	0.163605
9/18/2010 12:07	21.3	0.149937
9/18/2010 12:07	22.56	0.136996
9/18/2010 12:07	23.88	0.112969
9/18/2010 12:07	25.32	0.104527
9/18/2010 12:07	26.82	0.091449
9/18/2010 12:07	28.38	0.081049
9/18/2010 12:07	30.06	0.073851
9/18/2010 12:07	31.86	0.064285
9/18/2010 12:07	33.72	0.056039

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9/18/2010 12:07	35.76	0.05123
9/18/2010 12:07	37.86	0.038892
9/18/2010 12:07	40.08	0.034767
9/18/2010 12:07	42.48	0.027309
9/18/2010 12:07	45	0.026807
9/18/2010 12:07	47.64	0.023654
9/18/2010 12:07	50.46	0.01424
9/18/2010 12:08	53.46	0.01258
9/18/2010 12:08	56.64	0.0087
9/18/2010 12:08	60	0.007848
9/18/2010 12:08	63.6	0.007134
9/18/2010 12:08	67.2	0.00798
9/18/2010 12:08	71.4	0.008506
9/18/2010 12:08	75.6	0.005917
9/18/2010 12:08	79.8	-0.00078
9/18/2010 12:08	84.6	0.006056
9/18/2010 12:08	90	0.001592
9/18/2010 12:08	95.045	-0.004644
9/18/2010 12:08	100.8	-0.009601
9/18/2010 12:08	106.8	-0.001262
9/18/2010 12:09	112.8	-0.00085
9/18/2010 12:09	119.4	-0.003349
9/18/2010 12:09	126.6	-0.004239
9/18/2010 12:09	134.4	-0.003655
9/18/2010 12:09	142.2	-0.006879
9/18/2010 12:09	150.6	-0.006445
9/18/2010 12:09	159.6	-0.012045
9/18/2010 12:09	169.336	-0.005153
9/18/2010 12:10	178.8	-0.01212

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Report Date:	9/18/2010 14:59
Report User Name:	runke
Report Computer Nam	B217466

Log File Properties

File Name	MW-18_3 2010-09-15 12.20.16.wsl
Create Date	9/15/2010 13:20

Device Properties

Device	Level TROLL 700
Site	twin falls ameripride
Device Name	
Serial Number	164650
Firmware Version	2.08
Hardware Version	3

Log Configuration

Log Name	MW-18_3
Created By	Unknown
Computer Name	Field PC
Application	WinSituMobile.exe
Application Version	5.5.11.5
Create Date	9/15/2010 13:09
Notes Size(bytes)	4096
Type	True Logarithmic
Overwrite when full	Disabled
Scheduled Start Time	Manual Start
Scheduled Stop Time	No Stop Time
Max Interval	Days: 0 hrs: 00 mins: 01 secs: 00

Level Reference Settings At Log Creation

Level Measuremer	Level Depth To Water
Specific Gravity	0.999
Level Reference M	Set first logged value to offset
Level Reference O	0 (ft)

Log Notes:

Date and Time	Note
9/15/2010 13:09	Note Error
9/15/2010 13:10	Manual Start Command
9/15/2010 13:15	Log Download - Used Battery: 1% Used Memory: 6% Name: Unknown
9/15/2010 13:19	Note Error
9/15/2010 13:19	Manual Stop Command

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Log Data:

Record Count	104		
Sensors	1		
	1	164650	Pressure/Temp 15 PSIG (11m/35ft)

Time Zone: Central Daylight Time

Date and Time	Elapsed Time Milliseconds	Sensor: Pres(G) 35ft SN#: 164650 Level Depth To Water (ft)
9/15/2010 13:10	0	0
9/15/2010 13:10	0.278	0.006734
9/15/2010 13:10	0.496	-0.048191
9/15/2010 13:10	0.751	-0.081584
9/15/2010 13:10	1.001	-0.122671
9/15/2010 13:10	1.251	-0.153425
9/15/2010 13:10	1.501	-0.217582
9/15/2010 13:10	1.87	-0.25316
9/15/2010 13:10	2.089	-0.289762
9/15/2010 13:10	2.321	-0.312658
9/15/2010 13:10	2.539	-0.336563
9/15/2010 13:10	2.757	-0.368175
9/15/2010 13:10	3.001	-0.393657
9/15/2010 13:10	3.251	-0.429723
9/15/2010 13:10	3.501	-0.447007
9/15/2010 13:10	3.751	-0.472579
9/15/2010 13:10	4.001	-0.503581
9/15/2010 13:10	4.251	-0.529364
9/15/2010 13:10	4.501	-0.561038
9/15/2010 13:10	4.751	-0.580479
9/15/2010 13:10	5.001	-0.600425
9/15/2010 13:10	5.251	-0.624182
9/15/2010 13:10	5.501	-0.645925
9/15/2010 13:10	5.751	-0.665833
9/15/2010 13:10	6.001	-0.677656
9/15/2010 13:10	6.361	-0.708625
9/15/2010 13:10	6.721	-0.729211
9/15/2010 13:10	7.141	-0.750086
9/15/2010 13:10	7.561	-0.770105
9/15/2010 13:10	7.981	-0.797178
9/15/2010 13:10	8.461	-0.817549
9/15/2010 13:10	9.001	-0.838191
9/15/2010 13:10	9.481	-0.866865
9/15/2010 13:10	10.081	-0.878157
9/15/2010 13:10	10.681	-0.904784

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9/15/2010 13:10	11.281	-0.9229
9/15/2010 13:10	11.941	-0.941637
9/15/2010 13:10	12.661	-0.966275
9/15/2010 13:10	13.441	-0.981907
9/15/2010 13:10	14.221	-1.00738
9/15/2010 13:10	15.06	-1.024339
9/15/2010 13:10	15.96	-1.045747
9/15/2010 13:10	16.92	-1.065552
9/15/2010 13:10	17.88	-1.083763
9/15/2010 13:10	18.96	-1.097142
9/15/2010 13:10	20.101	-1.122767
9/15/2010 13:10	21.301	-1.139799
9/15/2010 13:10	22.561	-1.159622
9/15/2010 13:10	23.881	-1.178473
9/15/2010 13:10	25.321	-1.199049
9/15/2010 13:10	26.82	-1.226488
9/15/2010 13:10	28.38	-1.238361
9/15/2010 13:10	30.06	-1.258421
9/15/2010 13:10	31.86	-1.277861
9/15/2010 13:10	33.721	-1.296285
9/15/2010 13:10	35.761	-1.317019
9/15/2010 13:10	37.861	-1.33809
9/15/2010 13:10	40.08	-1.354294
9/15/2010 13:10	42.48	-1.375724
9/15/2010 13:10	45	-1.391658
9/15/2010 13:10	47.641	-1.412082
9/15/2010 13:10	50.461	-1.429781
9/15/2010 13:10	53.46	-1.44721
9/15/2010 13:11	56.64	-1.465493
9/15/2010 13:11	60	-1.481678
9/15/2010 13:11	63.601	-1.496786
9/15/2010 13:11	67.2	-1.510654
9/15/2010 13:11	71.401	-1.527361
9/15/2010 13:11	75.601	-1.541921
9/15/2010 13:11	79.8	-1.55247
9/15/2010 13:11	84.601	-1.565537
9/15/2010 13:11	90	-1.578203
9/15/2010 13:11	94.8	-1.58864
9/15/2010 13:11	100.8	-1.598706
9/15/2010 13:11	106.945	-1.604462
9/15/2010 13:11	112.956	-1.617095
9/15/2010 13:12	119.4	-1.623562
9/15/2010 13:12	126.6	-1.631207
9/15/2010 13:12	134.822	-1.635026
9/15/2010 13:12	142.2	-1.640921
9/15/2010 13:12	150.6	-1.644585
9/15/2010 13:12	159.6	-1.649497
9/15/2010 13:12	169.2	-1.654111

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9/15/2010 13:13	179.327	-1.656693
9/15/2010 13:13	189.873	-1.659569
9/15/2010 13:13	201.29	-1.661073
9/15/2010 13:13	213	-1.664832
9/15/2010 13:13	225.6	-1.666314
9/15/2010 13:14	238.8	-1.667052
9/15/2010 13:14	253.2	-1.673032
9/15/2010 13:14	268.201	-1.668417
9/15/2010 13:14	284.322	-1.669425
9/15/2010 13:15	300.927	-1.669062
9/15/2010 13:15	318.6	-1.684756
9/15/2010 13:15	337.2	-1.673182
9/15/2010 13:16	357.6	-1.671674
9/15/2010 13:16	378.6	-1.673336
9/15/2010 13:16	400.8	-1.674618
9/15/2010 13:17	424.8	-1.673609
9/15/2010 13:17	450	-1.67041
9/15/2010 13:18	476.4	-1.675617
9/15/2010 13:18	505.081	-1.673098
9/15/2010 13:18	534.6	-1.675261
9/15/2010 13:19	566.4	-1.677353

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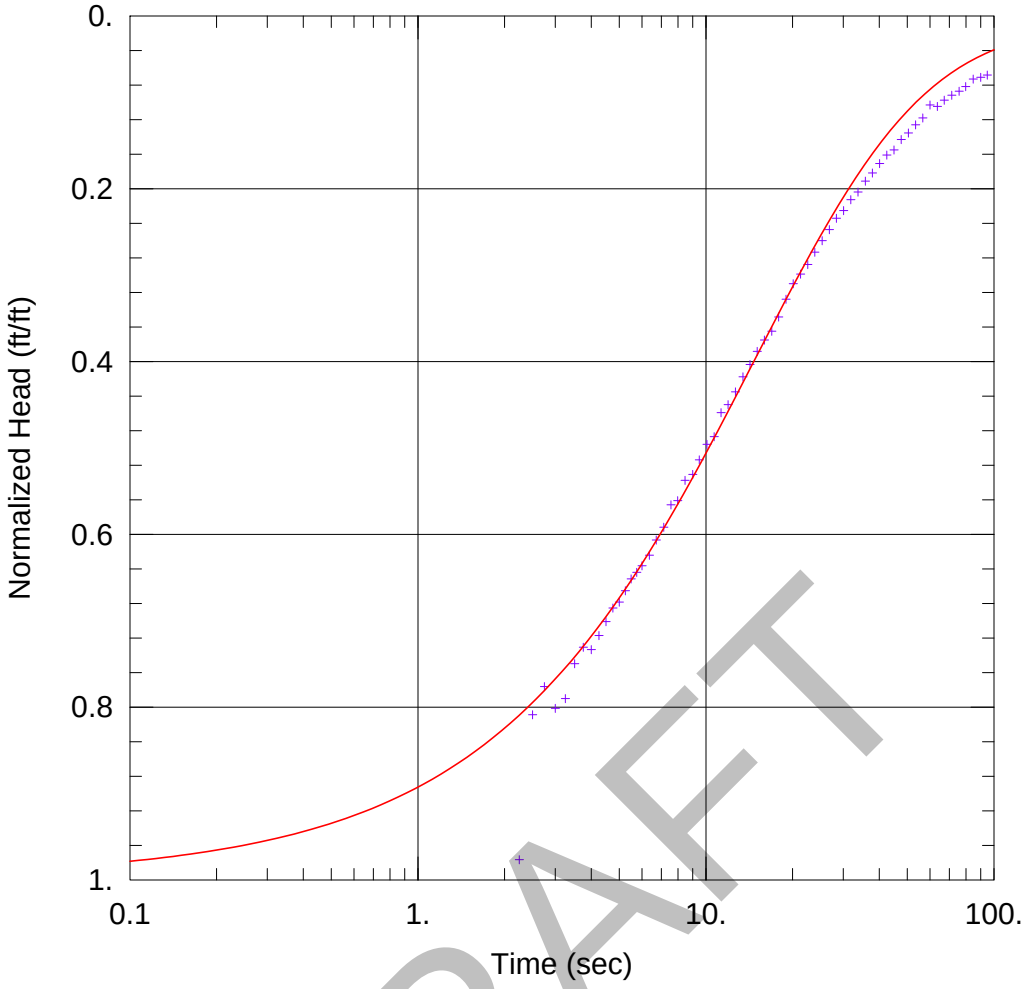
APPENDIX C

Slug Test Results



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SLUG TEST

Data Set: C:\Projects\AmeriPride\AP-TF\SlugTest data Ameri\MW-2 Uncon KGS.aqt
Date: 09/15/11 Time: 23:22:07

PROJECT INFORMATION

Company: BMCD
Client: AmeriPride
Project: 54592-10.01
Location: Twin Falls
Test Well: MW-2

AQUIFER DATA

Saturated Thickness: 28.58 ft

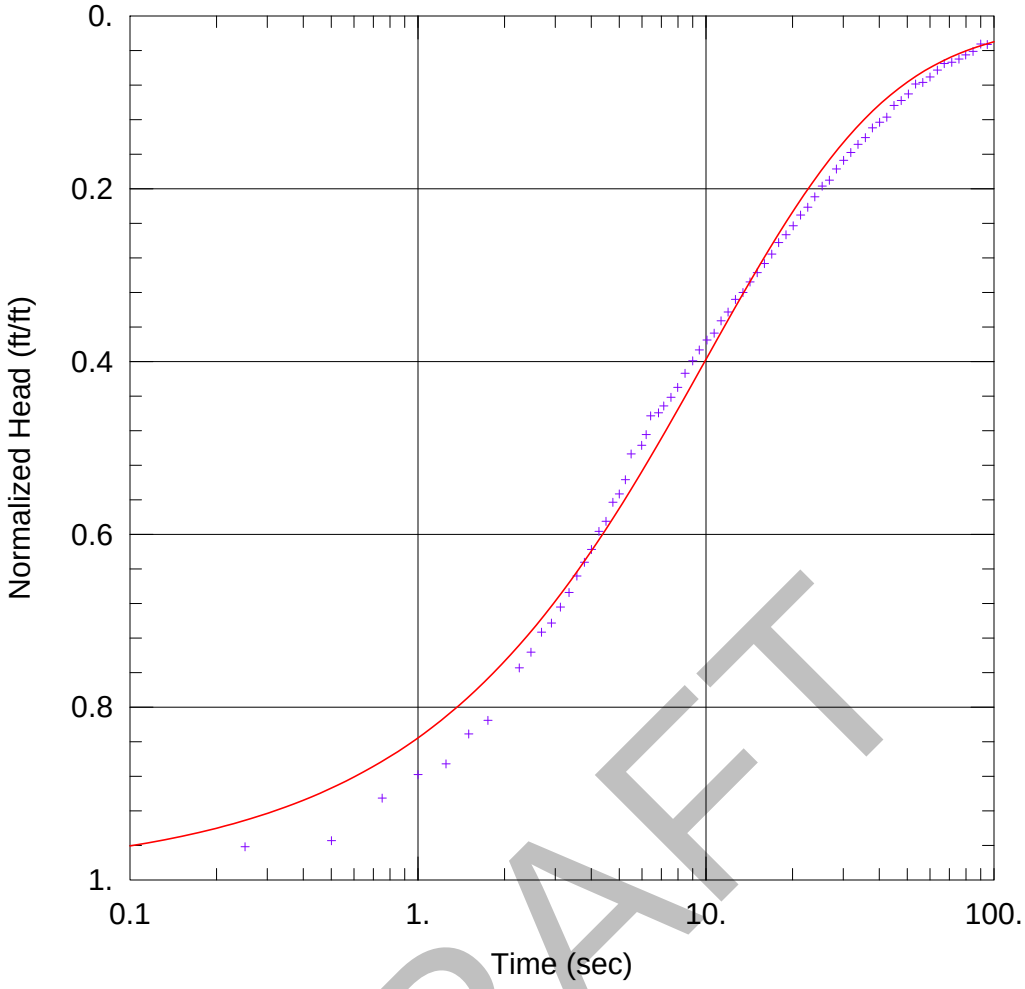
WELL DATA (MW-2)

Initial Displacement: 1.59 ft
Total Well Penetration Depth: 28.58 ft
Casing Radius: 0.0833 ft
Static Water Column Height: 28.58 ft
Screen Length: 25. ft
Well Radius: 0.083 ft

SOLUTION

Aquifer Model: Unconfined
Solution Method: KGS Model

Kr = 2.519 ft/day
Kz/Kr = 0.001
Ss = 0.0001304 ft^{-1}



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SLUG TEST

Data Set: C:\Projects\AmeriPride\AP-TF\SlugTest data Ameri\MW-3 Uncon KGS.aqt
Date: 09/15/11 Time: 23:25:51

PROJECT INFORMATION

Company: BMCD
Client: AmeriPride
Project: 54592-10.01
Location: Twin Falls
Test Well: MW-3

AQUIFER DATA

Saturated Thickness: 21.58 ft

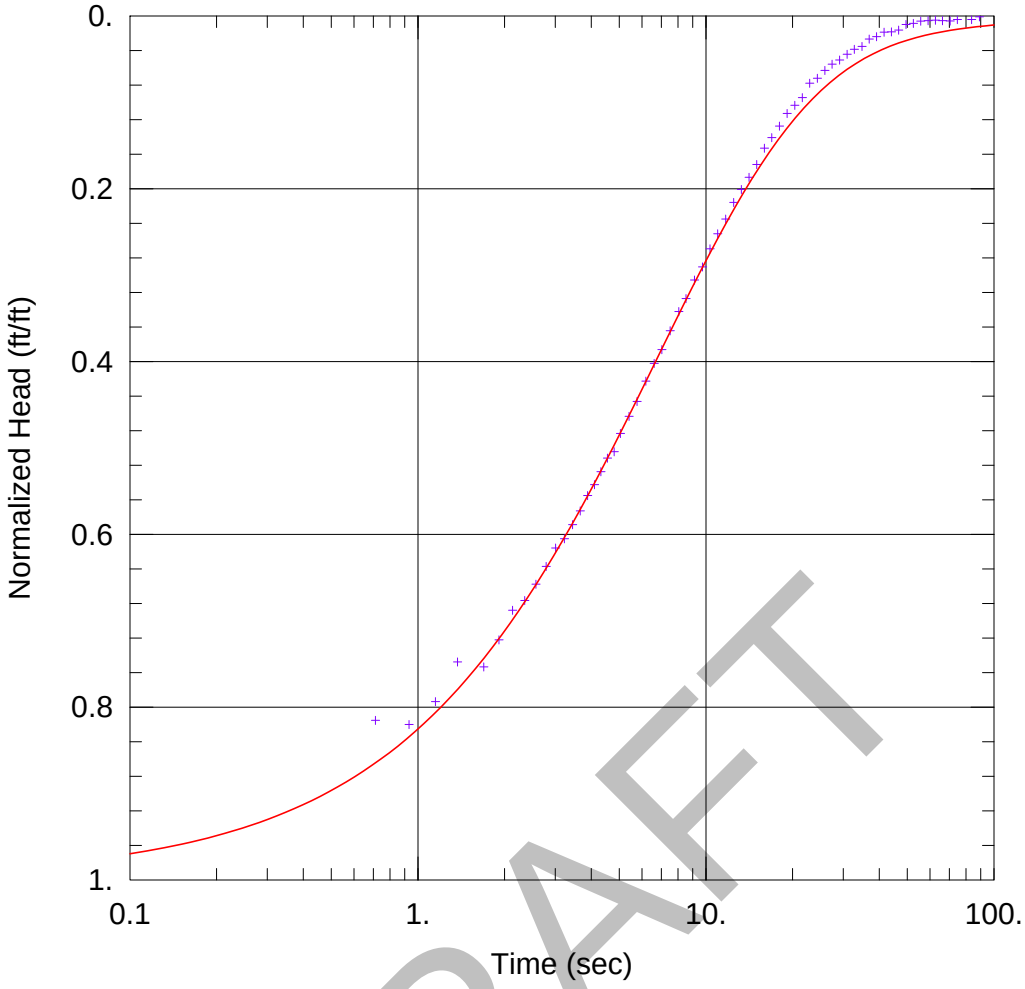
WELL DATA (MW-3)

Initial Displacement: 1.71 ft
Total Well Penetration Depth: 25. ft
Casing Radius: 0.0833 ft
Static Water Column Height: 21.58 ft
Screen Length: 25. ft
Well Radius: 0.083 ft

SOLUTION

Aquifer Model: Unconfined
Solution Method: KGS Model

Kr = 3.192 ft/day
Kz/Kr = 0.001
Ss = 0.0007157 ft^{-1}



DRAFT

SLUG TEST

Data Set: C:\Projects\AmeriPride\AP-TF\SlugTest data Ameri\MW-12 Uncon KGS.aqt
Date: 09/15/11 Time: 23:36:31

PROJECT INFORMATION

Company: BMCD
Client: AmeriPride
Project: 54592-10.01
Location: Twin Falls
Test Well: MW-12

AQUIFER DATA

Saturated Thickness: 19.36 ft

WELL DATA (MW-12)

Initial Displacement: 1.45 ft
Total Well Penetration Depth: 25. ft
Casing Radius: 0.0833 ft

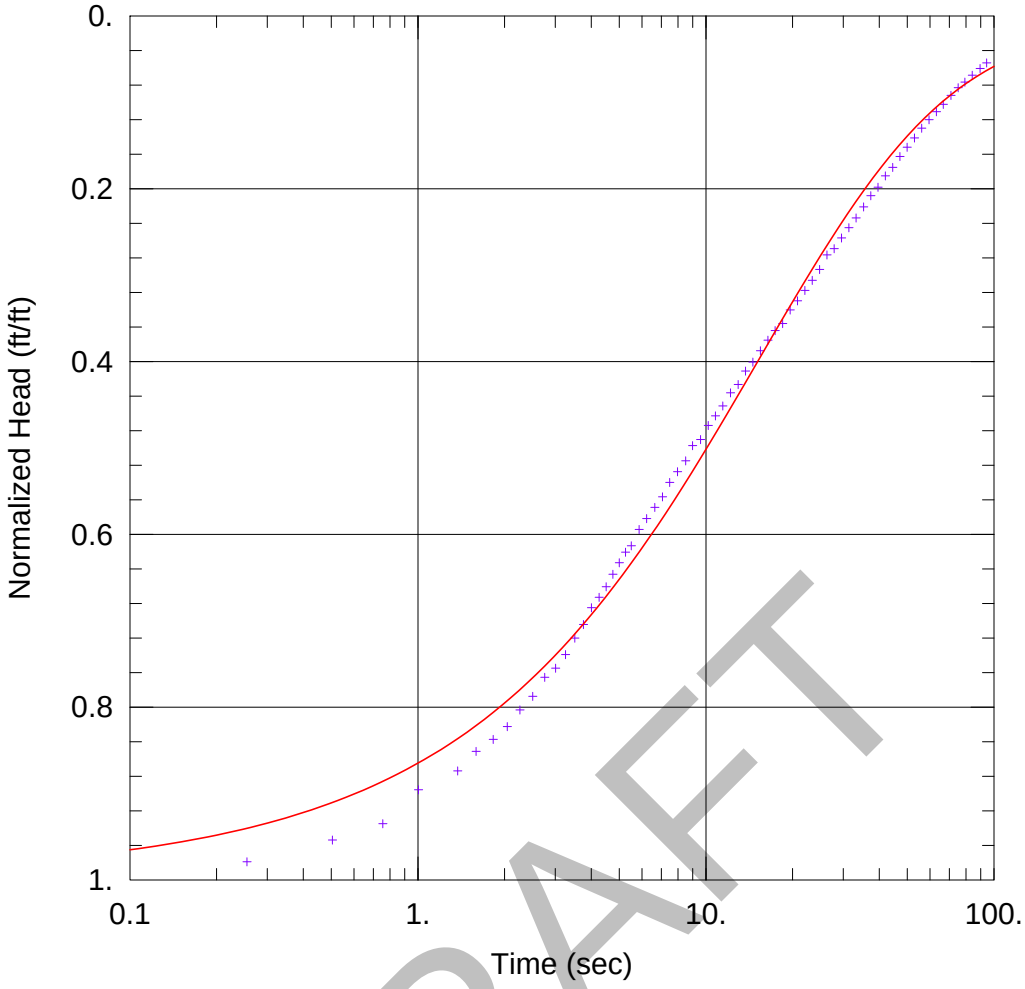
Static Water Column Height: 19.36 ft
Screen Length: 25. ft
Well Radius: 0.083 ft

SOLUTION

Aquifer Model: Unconfined
Solution Method: KGS Model

Kr = 8.678 ft/day
Kz/Kr = 0.001

Ss = 4.469E-5 ft^{-1}



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SLUG TEST

Data Set: C:\Projects\AmeriPride\AP-TF\SlugTest data Ameri\MW-18 Uncon KGS.aqt
Date: 09/15/11 Time: 23:33:54

PROJECT INFORMATION

Company: BMCD
Client: AmeriPride
Project: 54592-10.01
Location: Twin Falls
Test Well: MW-18

AQUIFER DATA

Saturated Thickness: 22.52 ft

WELL DATA (MW-18)

Initial Displacement: 1.63 ft
Total Well Penetration Depth: 25. ft
Casing Radius: 0.0833 ft

Static Water Column Height: 22.52 ft
Screen Length: 25. ft
Well Radius: 0.083 ft

SOLUTION

Aquifer Model: Unconfined
Solution Method: KGS Model

Kr = 1.774 ft/day
Kz/Kr = 0.001

Ss = 0.001138 ft^{-1}

APPENDIX D

Risk Evaluation Data

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IDAHO RISK EVALUATION SOFTWARE

PRINT MANAGER

EXIT

CHEMICALS OF CONCERN

RECEPTORS AND ROUTES OF EXPOSURE

☑ RISK EVALUATION - 1 (RE-1)

☐ RISK EVALUATION - 2 (RE-2)

CONTACT INFORMATION

Site Name: AmeriPride - Twin Falls (RE-1 Offsite)

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RECEPTOR(S) AND ROUTE(S) OF EXPOSURE

(Select by clicking the checkboxes)

SOURCE AND ROUTES OF EXPOSURES	RECEPTOR			
	RESIDENT		NON-RESIDENTIAL	CONSTRUCTION WORKER
	CHILD	AGE-ADJUSTED		
Surficial Soil Ingestion of Soil, Outdoor Inhalation of Vapor Emissions and Particulates, and Dermal Contact with Soil	☐	☐	☐	☐
Subsurface Soil Indoor Inhalation of Vapor Emissions	☐	☐	☐	
Groundwater Indoor Inhalation of Vapor Emissions	☑	☑	☑	
Soil-Vapor (RE-2 only) Indoor Inhalation of Vapor Emissions	☐	☐	☐	

☑ **Groundwater Protection**

☑ **Option 1.** **Groundwater with Current Use or High Probability of Future Use as Drinking Wate**r: The Maximum Contaminant Levels (MCLs) are used as the target concentrations at the POE. For chemicals without MCLs, risk-based ingestion standard for an age-adjusted adult is used.

☐ **Option 2.** **Groundwater with Low Probability of Future Use as Drinking Wate**r: Groundwater concentrations protective of off-site receptors resulting from exposure via pathways other than direct ingestion. These pathways include but are not limited to volatilization to indoor air, irrigation water use with crop uptake and ingestion, and irrigation water use without crop uptake.

☐ **Surface Water Protection**

If a surface water body is impacted or threatened, complete the following:

Surface water is used for drinking/water quality is appropriate for drinking water supplies?	☐
Surface water supports aquatic life?	☐
Surface water is used for recreational activities?	☐

If Ammonia is a potential COC for surface water, complete the following:

Surface water supports cold water aquatic species?	☐
Surface water supports warm water aquatic species?	☐

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RE-1 EXPOSURE FACTORS

(Page 1 of 2)

Parameter	Symbol	Unit	Default Value	Value Used	Comment
	AT_c	year	70	70	*Default*
	AT_{nc}	year	=ED	=ED	*Default*
Body Weight:					
Resident Child	BW_c	kg	15	15	*Default*
Resident Adolescent	BW_{as}	kg	55	55	*Default*
Resident Adult	BW_a	kg	70	70	*Default*
Non-residential	BW_{com}	kg	70	70	*Default*
Construction Worker	BW_{con}	kg	70	70	*Default*
Exposure Duration:					
Resident Child	ED_c	year	6	6	*Default*
Resident Adolescent	ED_{as}	year	9	9	*Default*
Resident Adult	ED_a	year	15	15	*Default*
Age-adjusted Resident	ED_{aa}	year	30	30	*Default*
Non-residential	ED_{com}	year	6.6	6.6	*Default*
Construction Worker	ED_{con}	year	1	1	*Default*
Exposure Frequency for Indirect Pathways:					
Resident Child	EF_c	day/year	350	350	*Default*
Resident Adolescent	EF_{as}	day/year	350	350	*Default*
Resident Adult	EF_a	day/year	350	350	*Default*
Non-residential	EF_{com}	day/year	250	250	*Default*
Construction Worker	EF_{con}	day/year	30	30	*Default*
Exposure Frequency for Direct Contact Pathways					
Resident Child	EF_{dc}	day/year	270	270	*Default*
Resident Adolescent	EF_{das}	day/year	270	270	*Default*
Resident Adult	EF_{da}	day/year	270	270	*Default*
Non-residential	EF_{dcom}	day/year	180	180	*Default*
Construction Worker	EF_{dcon}	day/year	30	30	*Default*
Indoor Exposure Time:					
Resident Child	$ET_{i\text{-}c}$	hrs/day	21	21	*Default*
Resident Adolescent	$ET_{i\text{-}as}$	hrs/day	15.8	15.8	*Default*
Resident Adult	$ET_{i\text{-}a}$	hrs/day	15	15	*Default*
Non-residential	$ET_{i\text{-}com}$	hrs/day	7.5	7.5	*Default*
Outdoor Exposure Time:					
Resident Child	$ET_{o\text{-}c}$	hrs/day	2	2	*Default*
Resident Adolescent	$ET_{o\text{-}as}$	hrs/day	2	2	*Default*
Resident Adult	$ET_{o\text{-}a}$	hrs/day	2	2	*Default*
Non-residential	$ET_{o\text{-}com}$	hrs/day	6	6	*Default*
Construction Worker	$ET_{o\text{-}con}$	hrs/day	10	10	*Default*
Soil Ingestion Rate:					
Resident Child	$IR_{s\text{-}c}$	mg/day	200	200	*Default*
Resident Adolescent	$IR_{s\text{-}as}$	mg/day	100	100	*Default*
Resident Adult	$IR_{s\text{-}a}$	mg/day	100	100	*Default*
Age-adjusted	**$IR_{s\text{-}aa}$**	**mg/kg**	**31804**	**31804**	***Default***
Non-residential	$IR_{s\text{-}com}$	mg/day	100	100	*Default*
Construction Worker	$IR_{s\text{-}con}$	mg/day	480	480	*Default*
Groundwater Ingestion Rate:					
Resident Child	$IR_{w\text{-}c}$	L/day	1.5	1.5	*Default*
Resident Adolescent	$IR_{w\text{-}as}$	L/day	1.7	1.7	*Default*
Resident Adult	$IR_{w\text{-}a}$	L/day	2	2	*Default*
Age-adjusted	**$IR_{w\text{-}aa}$**	**L/kg**	**457.36**	**457.36**	*Default*
Non-residential	$IR_{w\text{-}com}$	L/day	1	1	*Default*
Hourly Indoor Inhalation Rate:					
Resident Child	$IR_{ai\text{-}c}$	m^3/hr	0.7	0.7	*Default*
Resident Adolescent	$IR_{ai\text{-}as}$	m^3/hr	0.7	0.7	*Default*
Resident Adult	$IR_{ai\text{-}a}$	m^3/hr	0.7	0.7	*Default*
Non-residential	$IR_{ai\text{-}com}$	m^3/hr	1	1	*Default*
Hourly Outdoor Inhalation Rate:					
Resident Child	$IR_{ao\text{-}c}$	m^3/hr	1.1	1.1	*Default*
Resident Adolescent	$IR_{ao\text{-}as}$	m^3/hr	1.3	1.3	*Default*
Resident Adult	$IR_{ao\text{-}a}$	m^3/hr	1.3	1.3	*Default*
Non-residential	$IR_{ao\text{-}com}$	m^3/hr	1.6	1.6	*Default*
Construction Worker	$IR_{ao\text{-}con}$	m^3/hr	2.4	2.4	*Default*
Indoor Inhalation Rate:					
Resident Child	$IR_{ai\text{-}c}$	m^3/day	14.7	14.7	*Default*
Resident Adolescent	$IR_{ai\text{-}as}$	m^3/day	11.1	11.1	*Default*
Resident Adult	$IR_{ai\text{-}a}$	m^3/day	10.5	10.5	*Default*
Age-adjusted (calculated)	**$IR_{ai\text{-}aa}$**	**m^3/kg**	**3478.9**	**3478.9**	***Default***
Commercial Worker	$IR_{ai\text{-}com}$	m^3/day	7.5	7.5	*Default*

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EXPOSURE FACTORS

(Page 2 of 2)

Parameter	Symbol	Unit	Default Value	Value Used	Comment
Outdoor Inhalation Rate:					
Resident Child	IR_{ao-c}	m^3/day	2.2	2.2	*Default*
Resident Adolescent	IR_{ao-as}	m^3/day	2.6	2.6	*Default*
Resident Adult	IR_{ao-a}	m^3/day	2.6	2.6	*Default*
Age-adjusted	**IR_{ao-aa}**	**m^3/kg**	**502.9**	**502.9**	***Default***
Non-residential	IR_{ao-com}	m^3/day	9.6	9.6	*Default*
Construction Worker	IR_{ao-con}	m^3/day	24	24	*Default*
Skin Surface Area:					
Resident Child	SA_c	cm^2/day	2434	2434	*Default*
Resident Adolescent	SA_{as}	cm^2/day	2434	2434	*Default*
Resident Adult	SA_a	cm^2/day	5657	5657	*Default*
Age-adjusted	**SA_{aa}**	**mg/kg**	**393322.9**	**393322.9**	***Default***
Non-residential	SA_{com}	cm^2/day	3477	3477	*Default*
Construction Worker	SA_{con}	cm^2/day	3477	3477	*Default*
Soil to Skin Adherence Factor:					
Resident Child	M_c	mg/cm^2	1	1	*Default*
Resident Adolescent	M_{as}	mg/cm^1	0.3	0.3	*Default*
Resident Adult	M_a	mg/cm^2	0.3	0.3	*Default*
Non-residential	M_{com}	mg/cm^2	0.1	0.1	*Default*
Construction Worker	M_{con}	mg/cm^2	0.5	0.5	*Default*
Averaging Time for Vapor Flux:					
Resident Child	τ	s	1.89E+08	**1.89E+08**	***Calculated***
Resident Adolescent	τ	s	2.84E+08	**2.84E+08**	***Calculated***
Resident Adult	τ	s	4.73E+08	**4.73E+08**	***Calculated***
Age-adjusted Resident	τ	s	9.46E+08	**9.46E+08**	***Calculated***
Commercial Worker	τ	s	2.08E+08	**2.08E+08**	***Calculated***
Construction Worker	τ	s	3.15E+07	**3.15E+07**	***Calculated***
Target Site Risk	TR	--	1.00E-05	1.00E-05	*Default*
Target Site Hazard Quotient	THI	--	1	1	*Default*

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RE-1 FATE AND TRANSPORT PARAMETERS

(Page 1 of 3)

Parameter	Symbol	Unit	Default Value	Value Used	Comment
SOIL PARAMETERS:					
Source-building separation	L_{TS}	cm	30	30	*Default*
Source-bottom-building separation	L_{TS-B}	cm	183	183	*Default*
Number of distinct soil strata between the top of the source zone and the building foundation	n_S	-	1	1	*Default*
SOIL-VAPOR PARAMETERS:					
Depth to sample from the bottom of the building	L_{TSV}	cm	91	61	*Provide Justification*
GROUNDWATER PARAMETERS:					
Groundwater-building separation	L_{TGW}	cm	30	2119	*Provide Justification*
Number of distinct soil strata between the capillary fringe and the building foundation	n_{GW}	-	1	2	*Provide Justification*
AIR PARAMETERS:					
Viscosity of air	μ	g/cm-s	1.80E-04	1.80E-04	*Default*
ENCLOSED SPACE PARAMETERS:					
Area of the enclosed space below grade:					
Residential	A_B	cm^2	1561600	1561600	*Default*
Non-residential	A_B	cm^2	4782069	4782069	*Default*
Enclosed Space Foundation/Wall Thickness:					
Residential	L_{crack}	cm	15	15	*Default*
Non-residential	L_{crack}	cm	15	15	*Default*
Total area of cracks:					
Residential	A_{crack}	cm^2	484	484	*Default*
Non-residential	A_{crack}	cm^2	861	861	*Default*
Number of air exchanges per second:					
Residential	ER	1/sec	2.78E-04	2.78E-04	*Default*
Non-residential	ER	1/sec	5.56E-04	5.56E-04	*Default*
Length of enclosed space:					
Residential	L_B	cm	1220	1220	*Default*
Non-residential	L_B	cm	2157	2157	*Default*
Width of enclosed space:					
Residential	W_B	cm	1220	1220	*Default*
Non-residential	W_B	cm	2157	2157	*Default*
Height of enclosed space:					
Residential	H_B	cm	244	244	*Default*
Non-residential	H_B	cm	244	244	*Default*
Floor-wall seam perimeter:					
Residential	X_{crack}	cm^2/cm^2	4880	4880	*Default*
Non-residential	X_{crack}	cm^2/cm^2	8628	8628	*Default*
Crack depth below grade	Z_{crack}	cm	15	15	*Default*
Equivalent crack radius	r_{crack}	cm	0.1	0.1	*Default*
Pressure differential between enclosed space and soil surface beneath	ΔP	$g/cm\text{-}s^2$	40	40	*Default*
Building ventilation rate:					
Residential	$Q_{building}$	cm^3/s	1.01E+05	**1.01E+05**	***Calculated***
Non-residential	$Q_{building}$	cm^3/s	6.31E+05	**6.31E+05**	***Calculated***
Volumetric flow rate of soil gas into the enclosed space:					
Residential	Q_{soil}	cm^3/s	6.0E+01	**6.0E+01**	***Calculated***
Non-residential	Q_{soil}	cm^3/s	1.1E+02	**1.1E+02**	***Calculated***
COWHERD PARTICULATE EMISSION MODEL:					
Inverse of mean concentration in the middle of a sqaure source	**Q/C**	**$[g/m^2\text{-}s]/[kg/m^3]$**	**69.41**	**69.41**	***Calculated***
Fraction of Vegetative Cover	V	m^2/m^2	0.5	0.5	*Default*
Mean Annual Wind Speed	U_m	m/s	3.98	3.98	*Default*
Equivalent Threshold Value of Windspeed at 7m	U_t	m/s	11.32	11.32	*Default*
Windspeed Distribution Function from Cowherd et. al, 1985	F(x)	--	0.0495	0.0495	*Default*

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FATE AND TRANSPORT PARAMETERS

Parameter	Symbol	Unit	Default Value	Value Used	Comment
GROUNDWATER PROTECTION PARAMETERS:					
Groundwater Darcy Velocity	U_{gw}	cm/year	3340	7300	*Provide Justification*
Groundwater Mixing Zone Length	L_{mz}	cm	1220	1220	*Default*
Groundwater Mixing Zone Thickness	δ_{gw}	cm	153	153	*Default*
Groundwater Mixing Zone Width	W_{gw}	cm	1220	1220	*Default*
Infiltration Rate	I	cm/year	25	2.5	*Provide Justification*
Source Zone Soil Properties:					
Dry Soil Bulk Density of the source zone soil	ρ_s	g/cm^3	1.64	1.64	*Default*
Fractional Organic Carbon Content in the source zone soil	foc	g-C/g-soil	0.001	0.001	*Default*
Total Soil Porosity of the source zone soil	θ_T	cm^3/cm^3-soil	0.39	0.39	*Default*
Volumetric Water Content in the source zone soil	θ_{ws}	cm^3/cm^3	0.17	0.17	*Default*
Volumetric Air Content in the source zone soil	θ_{as}	cm^3/cm^3	0.22	**0.22**	***Calculated***
Saturated Zone Soil Properties:					
Dry Soil Bulk Density of the saturated zone soil	ρ_{ss}	g/cm^3	1.64	2.35	*Provide Justification*
Fractional Organic Carbon Content in the saturated zone soil	focs	g-C/g-soil	0.001	0.0001	*Provide Justification*
Total Soil Porosity in the saturated zone soil	θ_{Ts}	cm^3/cm^3-soil	0.39	0.28	*Provide Justification*
Distance to the Point of Exposure (Xpoe)	Xpoe,gw	ft	variable	100	*User-Defined*
Longitudinal dispersivity	α_x	**ft**	**variable**	**7.061**	***Calculated***
Transverse dispersivity	α_y	**ft**	**variable**	**0.706**	***Calculated***
Vertical dispersivity	α_z	**ft**	**variable**	**0.071**	***Calculated***
Distance to the Point of Compliance (Xpoc)	Xpoc,gw	ft	variable	100	*User-Defined*
Longitudinal dispersivity	α_x	**ft**	**variable**	**7.061**	***Calculated***
Transverse dispersivity	α_y	**ft**	**variable**	**0.706**	***Calculated***
Vertical dispersivity	α_z	**ft**	**variable**	**0.071**	***Calculated***
SURFACE WATER PROTECTION PARAMETERS:					
pH of the receiving surface water	pH	--	7	7	*Default*
Temperature of the receiving surface water	T	^0C	15	15	*Default*
Hardness of the receiving surface water	H	mg/L (as $CaCO_3$)	25	25	*Default*
Distance to the Point of Exposure (Xpoe)	Xpoe,sw	ft	variable	0	*User-Defined*
Longitudinal dispersivity	α_x	**ft**	**variable**	**0.000**	***Calculated***
Transverse dispersivity	α_y	**ft**	**variable**	**0.000**	***Calculated***
Vertical dispersivity	α_z	**ft**	**variable**	**0.000**	***Calculated***
Distance to the Point of Compliance (Xpoc)	Xpoc,sw	ft	variable	0	*User-Defined*
Longitudinal dispersivity	α_x	**ft**	**variable**	**0.000**	***Calculated***
Transverse dispersivity	α_y	**ft**	**variable**	**0.000**	***Calculated***
Vertical dispersivity	α_z	**ft**	**variable**	**0.000**	***Calculated***

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RE-1 FATE AND TRANSPORT PARAMETERS

Parameter	Symbol	Unit	Default Value	Value Used	Comment
Thickness of Soil Strata Between the Source and the Bottom of the Building:					
Stratum A (Immediately below the building)	h_A	cm	30	30	*Default*
Stratum B	h_B	cm	0	0	*Default*
Stratum C	h_C	cm	0	0	*Default*
Total thickness (should equal the source-building separation)	L_{TS}	cm	30	**30**	
Thickness of Soil Strata Between Groundwater and the Bottom of the Building:					
Stratum A (Immediately below the building)	h_A	cm	5	183	*Provide Justification*
Stratum B	h_B	cm	0	1911	*Provide Justification*
Stratum C	h_C	cm	0	0	*Default*
Stratum D (Capillary fringe)	h_{cap}	cm	25	**25**	***Calculated***
Total thickness (should equal the water table-building separation)	L_{TGW}	cm	30	**2119**	
Stratum-Specific Properties:					
Stratum A (Immediately below the building):					
Vapor permeability	k_v	cm^2	5.00E-09	5.00E-08	*Provide Justification*
Dry Soil Bulk Density	ρ_{sA}	g/cm^3	1.64	1.64	*Default*
Fractional Organic Carbon Content	foc_A	g-C/g-soil	0.001	0.001	*Default*
Total Soil Porosity	θ_{TA}	cm^3/cm^3-soil	0.39	0.39	*Default*
Volumetric Water Content in Stratum A	θ_{wsA}	cm^3/cm^3	0.17	0.17	*Default*
Volumetric Air Content in Stratum A	θ_{asA}	cm^3/cm^3	0.22	**0.22**	***Calculated***
Stratum B:					
Dry Soil Bulk Density	ρ_{sB}	g/cm^3	1.64	2.35	*Provide Justification*
Fractional Organic Carbon Content	foc_B	g-C/g-soil	0.001	0.0001	*Provide Justification*
Total Soil Porosity	θ_{TB}	cm^3/cm^3-soil	0.39	0.28	*Provide Justification*
Volumetric Water Content in Stratum B	θ_{wsB}	cm^3/cm^3	0.17	0.17	*Default*
Volumetric Air Content in Stratum B	θ_{asB}	cm^3/cm^3	0.22	**0.11**	***Calculated***
Stratum C:					
Dry Soil Bulk Density	ρ_{sC}	g/cm^3	1.64	1.64	*Default*
Fractional Organic Carbon Content	foc_C	g-C/g-soil	0.001	0.001	*Default*
Total Soil Porosity	θ_{TC}	cm^3/cm^3-soil	0.39	0.39	*Default*
Volumetric Water Content in Stratum C	θ_{wsC}	cm^3/cm^3	0.17	0.17	*Default*
Volumetric Air Content in Stratum C	θ_{asC}	cm^3/cm^3	0.22	**0.22**	***Calculated***
Stratum D (Capillary fringe):					
Mean particle diameter	D	cm	0.03	0.03	*Default*
van Genuchten curve shape factor	N	-	1.449	1.449	*Default*
Dry Soil Bulk Density	ρ_{sF}	g/cm^3	1.64	1.64	*Default*
Fractional Organic Carbon Content	foc_F	g-C/g-soil	0.001	0.001	*Default*
Total Soil Porosity	θ_{Tcap}	cm^3/cm^3-soil	0.39	0.39	*Default*
Residual water content in capillary fringe soil	θ_{rcap}	cm^3/cm^3	0.039	0.039	*Default*
Volumetric Water Content in capillary fringe	θ_{wcap}	cm^3/cm^3	0.322	**0.322**	***Calculated***
Volumetric Air Content in capillary fringe	θ_{acap}	cm^3/cm^3	0.068	0.068	***Calculated***

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RE-1 REPRESENTATIVE CONCENTRATIONS FOR RESIDENTIAL RECEPTORS

CHEMICALS OF CONCERN	SURFICIAL SOIL	SUB-SURFACE SOIL	GROUNDWATER	SOIL-VAPOR	GROUNDWATER AND/OR SURFACE WATER PROTECTION		
	Inhalation of Vapors and Particulates, Dermal Contact, and Accidental Ingestion	Indoor Inhalation of Vapor Emissions	Indoor Inhalation of Vapor Emissions	Indoor Inhalation of Vapor Emissions	Representative Groundwater Concentration at the Source [mg/L]	Representative Soil Concentration at the Source [mg/kg]	Representative Groundwater Concentration at the POC [mg/L]
	NOT REQUIRED-PATHWAY NOT COMPLETE	NOT REQUIRED-USING SOIL VAPOR	Representative Concentration [mg/L]	USE OF SOIL-VAPOR DATA IS NOT ALLOWED UNDER RE-1		NOT USED IN CALCULATIONS	
1,2-Dichloroethene-(cis)			2.36E-02		2.36E-02		
Tetrachloroethene			1.41E-01		1.41E-01		
Trichloroethene			3.17E-01		3.17E-01		

Notes:

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RE-1 REPRESENTATIVE CONCENTRATIONS FOR NON-RESIDENTIAL RECEPTORS

CHEMICALS OF CONCERN	SURFICIAL SOIL	SUB-SURFACE SOIL	GROUNDWATER	SOIL-VAPOR
	Inhalation of Vapors and Particulates, Dermal Contact, and Accidental Ingestion	Indoor Inhalation of Vapor Emissions	Indoor Inhalation of Vapor Emissions	Indoor Inhalation of Vapor Emissions
	NOT REQUIRED-PATHWAY NOT COMPLETE	NOT REQUIRED-USING SOIL VAPOR	Representative Concentration [mg/L]	USE OF SOIL-VAPOR DATA IS NOT ALLOWED UNDER RE-1
1,2-Dichloroethene-(cis)			2.36E-02	
Tetrachloroethene			1.41E-01	
Trichloroethene			3.17E-01	

Note:

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RE-1 RISK/HAZARD QUOTIENT FOR RESIDENTIAL RECEPTORS

CHEMICALS OF CONCERN	CHILD								AGE-ADJUSTED							
	SURFICIAL SOIL		SUB-SURFACE SOIL		GROUNDWATER		SOIL-VAPOR		SURFICIAL SOIL		SUB-SURFACE SOIL		GROUNDWATER		SOIL-VAPOR	
	Inhalation of Vapors and Particulates, Dermal Contact, and Accidental Ingestion		Indoor Inhalation of Vapor Emissions		Indoor Inhalation of Vapor Emissions		Indoor Inhalation of Vapor Emissions		Inhalation of Vapors and Particulates, Dermal Contact, and Accidental Ingestion		Indoor Inhalation of Vapor Emissions		Indoor Inhalation of Vapor Emissions		Indoor Inhalation of Vapor Emissions	
	Risk	HQ	Risk	HQ	Risk	HQ	Risk	HQ	Risk	HQ	Risk	HQ	Risk	HQ	Risk	HQ
1,2-Dichloroethene-(cis)					NTOX	1.60E-03							NTOX	5.40E-04		
Tetrachloroethene					7.48E-07	2.44E-03							1.26E-06	8.26E-04		
Trichloroethene					1.03E-05	5.74E-02							1.75E-05	1.94E-02		

Notes:

NPCP: A physical-chemical parameter, required in the calculation of the value, is not available.

NTOX: The toxicity parameter(s) required in the calculation of the value, is not available.

NCOC: The chemical is not a COC for the pathway because it was selected, but no representative concentration was entered.

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RE-1 RISK/HAZARD QUOTIENT FOR NON-RESIDENTIAL RECEPTORS

CHEMICALS OF CONCERN	SURFICIAL SOIL		SUB-SURFACE SOIL		GROUNDWATER		SOIL-VAPOR	
	Inhalation of Vapors and Particulates, Dermal Contact, and Accidental Ingestion		Indoor Inhalation of Vapor Emissions		Indoor Inhalation of Vapor Emissions		Indoor Inhalation of Vapor Emissions	
	Risk	HQ	Risk	HQ	Risk	HQ	Risk	HQ
1,2-Dichloroethene-(cis)					NTOX	6.08E-05		
Tetrachloroethene					3.13E-08	9.30E-05		
Trichloroethene					4.32E-07	2.18E-03		

Notes:

NPCP: A physical-chemical parameter, required in the calculation of the value, is not available.

NTOX: The toxicity parameter(s) required in the calculation of the value, is not available.

NCOC: The chemical is not a COC for the pathway because it was selected, but no representative concentration was entered.

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RE-1 SUMMARY OF CUMULATIVE RISK AND HAZARD INDEX

Routes of Exposure	RECEPTOR							
	RESIDENTIAL				NON-RESIDENTIAL		CONSTRUCTION WORKER	
	CHILD		AGE-ADJUSTED					
	Risk	Hazard Index	Risk	Hazard Index	Risk	Hazard Index	Risk	Hazard Index
Surface Soil: Inhalation of Vapors and Particulates, Dermal Contact, and Accidental Ingestion	NA	NA	NA	NA	NA	NA	NA	NA
Subsurface Soil: Indoor Inhalation of Vapor Emissions	NA	NA	NA	NA	NA	NA	Not Applicable	Not Applicable
Groundwater: Indoor Inhalation of Vapor Emissions	1.11E-05	6.14E-02	1.87E-05	2.08E-02	4.64E-07	2.34E-03	Not Applicable	Not Applicable
Soil-Vapor: Indoor Inhalation of Vapor Emissions from Soil and/or Groundwater	NA	NA	NA	NA	NA	NA	Not Applicable	Not Applicable
Site Risk	**1.11E-05**		**1.87E-05**		**4.64E-07**		**NA**	
Site Hazard Index		**6.14E-02**		**2.08E-02**		**2.34E-03**		**NA**
RATL-1/RATL-2 Required?	YES	NO	YES	NO	NO	NO	NA	NA

Notes:
NA: Not applicable because the chemical is not a COC for the pathway (no representative concentration entered) or its properties (toxicity and/or physical-chemical) are not available.

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RATL-1 FOR RESIDENTIAL RECEPTORS

CHEMICALS OF CONCERN	CHILD				AGE-ADJUSTED			
	SURFICIAL SOIL	SUB-SURFACE SOIL	GROUNDWATER	SOIL-VAPOR	SURFICIAL SOIL	SUB-SURFACE SOIL	GROUNDWATER	SOIL-VAPOR
	Inhalation of Vapors and Particulates, Dermal Contact, and Accidental Ingestion	Indoor Inhalation of Vapor Emissions	Indoor Inhalation of Vapor Emissions	Indoor Inhalation of Vapor Emissions	Inhalation of Vapors and Particulates, Dermal Contact, and Accidental Ingestion	Indoor Inhalation of Vapor Emissions	Indoor Inhalation of Vapor Emissions	Indoor Inhalation of Vapor Emissions
	[mg/kg]	[mg/kg]	[mg/L]	[ug/m3]	[mg/kg]	[mg/kg]	[mg/L]	[$\mu g/m^3$]
1,2-Dichloroethene-(cis)	NA	NA	4.92E+00	NA	NA	NA	1.46E+01	NA
Tetrachloroethene	NA	NA	9.44E-01	NA	NA	NA	5.58E-01	NA
Trichloroethene	NA	NA	1.53E-01	NA	NA	NA	9.07E-02	NA

Notes:

NA: Not applicable because the chemical is not a COC for the pathway (no representative concentration entered) or its properties (toxicity and/or physical-chemical) are not available.

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RATL-1 FOR NON-RESIDENTIAL RECEPTORS

RATLs NOT REQUIRED

CHEMICALS OF CONCERN	SURFICIAL SOIL	SUB-SURFACE SOIL	GROUNDWATER	SOIL-VAPOR
	Inhalation of Vapors and Particulates, Dermal Contact, and Accidental Ingestion	Indoor Inhalation of Vapor Emissions	Indoor Inhalation of Vapor Emissions	Indoor Inhalation of Vapor Emissions
	[mg/kg]	[mg/kg]	[mg/L]	[µg/m^3]
1,2-Dichloroethene-(cis)	NA	NA	1.29E+02	NA
Tetrachloroethene	NA	NA	2.25E+01	NA
Trichloroethene	NA	NA	3.67E+00	NA

Notes:

NA: Not applicable because the chemical is not a COC for the pathway (no representative concentration enetered) or its properties (toxicity and/or physical-chemical) are not available.

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RISK EVALUATION MAIN MENU | PRINT

RE-1 GROUNDWATER PROTECTION

CHEMICALS OF CONCERN	Groundwater Standard,Option 1 [mg/L]	First-Order Decay Rate [day^{-1}]	Saturated Zone Retardation	Unsaturated Zone DAF [--]	Mixing Zone DAF [--]	Saturated Zone DAF at POC [--]	Saturated Zone DAF at POE [--]	Overall DAF at POC [--]	Overall DAF at POE [--]	Allowable Groundwater concentration [mg/L] protective of POE: AT POC	Allowable Groundwater concentration [mg/L] protective of POE: AT SOURCE	Soil concentration directly beneath the source protective of GW at POE [mg/kg]	Predicted Groundwater Concentration at POC [mg/L]	Predicted Groundwater Concentration at POE [mg/L]
1,2-Dichloroethene-(cis)	7.00E-02	0.00E+00	1.02E+00	1	3.67E+02	1.35E+00	1.35E+00	4.94E+02	4.94E+02	7.00E-02	9.42E-02	5.36E+00	1.75E-02	1.75E-02
Tetrachloroethene	5.00E-03	0.00E+00	1.13E+00	1	3.67E+02	1.35E+00	1.35E+00	4.94E+02	4.94E+02	5.00E-03	6.73E-03	8.87E-01	1.05E-01	1.05E-01
Trichloroethene	5.00E-03	0.00E+00	1.08E+00	1	3.67E+02	1.35E+00	1.35E+00	4.94E+02	4.94E+02	5.00E-03	6.73E-03	6.27E-01	2.35E-01	2.35E-01

Notes:

NGWSTD: No groundwater standard is available or calculated for the chemical

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IDAHO RISK EVALUATION SOFTWARE

PRINT MANAGER

EXIT

CHEMICALS OF CONCERN

RECEPTORS AND ROUTES OF EXPOSURE

☑ RISK EVALUATION - 1 (RE-1)

☐ RISK EVALUATION - 2 (RE-2)

CONTACT INFORMATION

Site Name: AmeriPride - Twin Falls (RE-1 Onsite)

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RECEPTOR(S) AND ROUTE(S) OF EXPOSURE

(Select by clicking the checkboxes)

SOURCE AND ROUTES OF EXPOSURES	RECEPTOR			
	RESIDENT		NON-RESIDENTIAL	CONSTRUCTION WORKER
	CHILD	AGE-ADJUSTED		
Surficial Soil Ingestion of Soil, Outdoor Inhalation of Vapor Emissions and Particulates, and Dermal Contact with Soil	☐	☐	☑	☑
Subsurface Soil Indoor Inhalation of Vapor Emissions	☐	☐	☑	
Groundwater Indoor Inhalation of Vapor Emissions	☐	☐	☑	
Soil-Vapor (RE-2 only) Indoor Inhalation of Vapor Emissions	☐	☐	☐	

☑ **Groundwater Protection**

☑ **Option 1.** **Groundwater with Current Use or High Probability of Future Use as Drinking Wate**r: The Maximum Contaminant Levels (MCLs) are used as the target concentrations at the POE. For chemicals without MCLs, risk-based ingestion standard for an age-adjusted adult is used.

☐ **Option 2.** **Groundwater with Low Probability of Future Use as Drinking Wate**r: Groundwater concentrations protective of off-site receptors resulting from exposure via pathways other than direct ingestion. These pathways include but are not limited to volatilization to indoor air, irrigation water use with crop uptake and ingestion, and irrigation water use without crop uptake.

☐ **Surface Water Protection**

If a surface water body is impacted or threatened, complete the following:

Surface water is used for drinking/water quality is appropriate for drinking water supplies?	☐
Surface water supports aquatic life?	☐
Surface water is used for recreational activities?	☐

If Ammonia is a potential COC for surface water, complete the following:

Surface water supports cold water aquatic species?	☐
Surface water supports warm water aquatic species?	☐

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RE-1 EXPOSURE FACTORS

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Parameter	Symbol	Unit	Default Value	Value Used	Comment
	AT_c	year	70	70	*Default*
	AT_{nc}	year	=ED	=ED	*Default*
Body Weight:					
Resident Child	BW_c	kg	15	15	*Default*
Resident Adolescent	BW_{as}	kg	55	55	*Default*
Resident Adult	BW_a	kg	70	70	*Default*
Non-residential	BW_{com}	kg	70	70	*Default*
Construction Worker	BW_{con}	kg	70	70	*Default*
Exposure Duration:					
Resident Child	ED_c	year	6	6	*Default*
Resident Adolescent	ED_{as}	year	9	9	*Default*
Resident Adult	ED_a	year	15	15	*Default*
Age-adjusted Resident	ED_{aa}	year	30	30	*Default*
Non-residential	ED_{com}	year	6.6	6.6	*Default*
Construction Worker	ED_{con}	year	1	1	*Default*
Exposure Frequency for Indirect Pathways:					
Resident Child	EF_c	day/year	350	350	*Default*
Resident Adolescent	EF_{as}	day/year	350	350	*Default*
Resident Adult	EF_a	day/year	350	350	*Default*
Non-residential	EF_{com}	day/year	250	250	*Default*
Construction Worker	EF_{con}	day/year	30	30	*Default*
Exposure Frequency for Direct Contact Pathways					
Resident Child	EF_{dc}	day/year	270	270	*Default*
Resident Adolescent	EF_{das}	day/year	270	270	*Default*
Resident Adult	EF_{da}	day/year	270	270	*Default*
Non-residential	EF_{dcom}	day/year	180	180	*Default*
Construction Worker	EF_{dcon}	day/year	30	30	*Default*
Indoor Exposure Time:					
Resident Child	$ET_{i\text{-}c}$	hrs/day	21	21	*Default*
Resident Adolescent	$ET_{i\text{-}as}$	hrs/day	15.8	15.8	*Default*
Resident Adult	$ET_{i\text{-}a}$	hrs/day	15	15	*Default*
Non-residential	$ET_{i\text{-}com}$	hrs/day	7.5	7.5	*Default*
Outdoor Exposure Time:					
Resident Child	$ET_{o\text{-}c}$	hrs/day	2	2	*Default*
Resident Adolescent	$ET_{o\text{-}as}$	hrs/day	2	2	*Default*
Resident Adult	$ET_{o\text{-}a}$	hrs/day	2	2	*Default*
Non-residential	$ET_{o\text{-}com}$	hrs/day	6	6	*Default*
Construction Worker	$ET_{o\text{-}con}$	hrs/day	10	10	*Default*
Soil Ingestion Rate:					
Resident Child	$IR_{s\text{-}c}$	mg/day	200	200	*Default*
Resident Adolescent	$IR_{s\text{-}as}$	mg/day	100	100	*Default*
Resident Adult	$IR_{s\text{-}a}$	mg/day	100	100	*Default*
Age-adjusted	**$IR_{s\text{-}aa}$**	**mg/kg**	**31804**	**31804**	***Default***
Non-residential	$IR_{s\text{-}com}$	mg/day	100	100	*Default*
Construction Worker	$IR_{s\text{-}con}$	mg/day	480	480	*Default*
Groundwater Ingestion Rate:					
Resident Child	$IR_{w\text{-}c}$	L/day	1.5	1.5	*Default*
Resident Adolescent	$IR_{w\text{-}as}$	L/day	1.7	1.7	*Default*
Resident Adult	$IR_{w\text{-}a}$	L/day	2	2	*Default*
Age-adjusted	**$IR_{w\text{-}aa}$**	**L/kg**	**457.36**	**457.36**	*Default*
Non-residential	$IR_{w\text{-}com}$	L/day	1	1	*Default*
Hourly Indoor Inhalation Rate:					
Resident Child	$IR_{ai\text{-}c}$	m^3/hr	0.7	0.7	*Default*
Resident Adolescent	$IR_{ai\text{-}as}$	m^3/hr	0.7	0.7	*Default*
Resident Adult	$IR_{ai\text{-}a}$	m^3/hr	0.7	0.7	*Default*
Non-residential	$IR_{ai\text{-}com}$	m^3/hr	1	1	*Default*
Hourly Outdoor Inhalation Rate:					
Resident Child	$IR_{ao\text{-}c}$	m^3/hr	1.1	1.1	*Default*
Resident Adolescent	$IR_{ao\text{-}as}$	m^3/hr	1.3	1.3	*Default*
Resident Adult	$IR_{ao\text{-}a}$	m^3/hr	1.3	1.3	*Default*
Non-residential	$IR_{ao\text{-}com}$	m^3/hr	1.6	1.6	*Default*
Construction Worker	$IR_{ao\text{-}con}$	m^3/hr	2.4	2.4	*Default*
Indoor Inhalation Rate:					
Resident Child	$IR_{ai\text{-}c}$	m^3/day	14.7	14.7	*Default*
Resident Adolescent	$IR_{ai\text{-}as}$	m^3/day	11.1	11.1	*Default*
Resident Adult	$IR_{ai\text{-}a}$	m^3/day	10.5	10.5	*Default*
Age-adjusted (calculated)	**$IR_{ai\text{-}aa}$**	**m^3/kg**	**3478.9**	**3478.9**	***Default***
Commercial Worker	$IR_{ai\text{-}com}$	m^3/day	7.5	7.5	*Default*

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EXPOSURE FACTORS

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Parameter	Symbol	Unit	Default Value	Value Used	Comment
Outdoor Inhalation Rate:					
Resident Child	IR_{ao-c}	m^3/day	2.2	2.2	*Default*
Resident Adolescent	IR_{ao-as}	m^3/day	2.6	2.6	*Default*
Resident Adult	IR_{ao-a}	m^3/day	2.6	2.6	*Default*
Age-adjusted	**IR_{ao-aa}**	**m^3/kg**	**502.9**	**502.9**	***Default***
Non-residential	IR_{ao-com}	m^3/day	9.6	9.6	*Default*
Construction Worker	IR_{ao-con}	m^3/day	24	24	*Default*
Skin Surface Area:					
Resident Child	SA_c	cm^2/day	2434	2434	*Default*
Resident Adolescent	SA_{as}	cm^2/day	2434	2434	*Default*
Resident Adult	SA_a	cm^2/day	5657	5657	*Default*
Age-adjusted	**SA_{aa}**	**mg/kg**	**393322.9**	**393322.9**	***Default***
Non-residential	SA_{com}	cm^2/day	3477	3477	*Default*
Construction Worker	SA_{con}	cm^2/day	3477	3477	*Default*
Soil to Skin Adherence Factor:					
Resident Child	M_c	mg/cm^2	1	1	*Default*
Resident Adolescent	M_{as}	mg/cm^1	0.3	0.3	*Default*
Resident Adult	M_a	mg/cm^2	0.3	0.3	*Default*
Non-residential	M_{com}	mg/cm^2	0.1	0.1	*Default*
Construction Worker	M_{con}	mg/cm^2	0.5	0.5	*Default*
Averaging Time for Vapor Flux:					
Resident Child	τ	s	1.89E+08	**1.89E+08**	***Calculated***
Resident Adolescent	τ	s	2.84E+08	**2.84E+08**	***Calculated***
Resident Adult	τ	s	4.73E+08	**4.73E+08**	***Calculated***
Age-adjusted Resident	τ	s	9.46E+08	**9.46E+08**	***Calculated***
Commercial Worker	τ	s	2.08E+08	**2.08E+08**	***Calculated***
Construction Worker	τ	s	3.15E+07	**3.15E+07**	***Calculated***
Target Site Risk	TR	--	1.00E-05	1.00E-05	*Default*
Target Site Hazard Quotient	THI	--	1	1	*Default*

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RE-1 FATE AND TRANSPORT PARAMETERS

(Page 1 of 3)

Parameter	Symbol	Unit	Default Value	Value Used	Comment
SOIL PARAMETERS:					
Source-building separation	L_{TS}	cm	30	30	*Default*
Source-bottom-building separation	L_{TS-B}	cm	183	183	*Default*
Number of distinct soil strata between the top of the source zone and the building foundation	n_S	-	1	1	*Default*
SOIL-VAPOR PARAMETERS:					
Depth to sample from the bottom of the building	L_{TSV}	cm	91	61	*Provide Justification*
GROUNDWATER PARAMETERS:					
Groundwater-building separation	L_{TGW}	cm	30	2119	*Provide Justification*
Number of distinct soil strata between the capillary fringe and the building foundation	n_{GW}	-	1	2	*Provide Justification*
AIR PARAMETERS:					
Viscosity of air	μ	g/cm-s	1.80E-04	1.80E-04	*Default*
ENCLOSED SPACE PARAMETERS:					
Area of the enclosed space below grade:					
Residential	A_B	cm^2	1561600	1561600	*Default*
Non-residential	A_B	cm^2	4782069	4782069	*Default*
Enclosed Space Foundation/Wall Thickness:					
Residential	L_{crack}	cm	15	15	*Default*
Non-residential	L_{crack}	cm	15	15	*Default*
Total area of cracks:					
Residential	A_{crack}	cm^2	484	484	*Default*
Non-residential	A_{crack}	cm^2	861	861	*Default*
Number of air exchanges per second:					
Residential	ER	1/sec	2.78E-04	2.78E-04	*Default*
Non-residential	ER	1/sec	5.56E-04	5.56E-04	*Default*
Length of enclosed space:					
Residential	L_B	cm	1220	1220	*Default*
Non-residential	L_B	cm	2157	2157	*Default*
Width of enclosed space:					
Residential	W_B	cm	1220	1220	*Default*
Non-residential	W_B	cm	2157	2157	*Default*
Height of enclosed space:					
Residential	H_B	cm	244	244	*Default*
Non-residential	H_B	cm	244	244	*Default*
Floor-wall seam perimeter:					
Residential	X_{crack}	cm^2/cm^2	4880	4880	*Default*
Non-residential	X_{crack}	cm^2/cm^2	8628	8628	*Default*
Crack depth below grade	Z_{crack}	cm	15	15	*Default*
Equivalent crack radius	r_{crack}	cm	0.1	0.1	*Default*
Pressure differential between enclosed space and soil surface beneath	ΔP	$g/cm\text{-}s^2$	40	40	*Default*
Building ventilation rate:					
Residential	$Q_{building}$	cm^3/s	1.01E+05	**1.01E+05**	***Calculated***
Non-residential	$Q_{building}$	cm^3/s	6.31E+05	**6.31E+05**	***Calculated***
Volumetric flow rate of soil gas into the enclosed space:					
Residential	Q_{soil}	cm^3/s	6.0E+01	**6.0E+01**	***Calculated***
Non-residential	Q_{soil}	cm^3/s	1.1E+02	**1.1E+02**	***Calculated***
COWHERD PARTICULATE EMISSION MODEL:					
Inverse of mean concentration in the middle of a sqaure source	**Q/C**	**$[g/m^2\text{-}s]/[kg/m^3]$**	**69.41**	**69.41**	***Calculated***
Fraction of Vegetative Cover	V	m^2/m^2	0.5	0.5	*Default*
Mean Annual Wind Speed	U_m	m/s	3.98	3.98	*Default*
Equivalent Threshold Value of Windspeed at 7m	U_t	m/s	11.32	11.32	*Default*
Windspeed Distribution Function from Cowherd et. al, 1985	F(x)	--	0.0495	0.0495	*Default*

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FATE AND TRANSPORT PARAMETERS

Parameter	Symbol	Unit	Default Value	Value Used	Comment
GROUNDWATER PROTECTION PARAMETERS:					
Groundwater Darcy Velocity	U_{gw}	cm/year	3340	7300	*Provide Justification*
Groundwater Mixing Zone Length	L_{mz}	cm	1220	1220	*Default*
Groundwater Mixing Zone Thickness	δ_{gw}	cm	153	153	*Default*
Groundwater Mixing Zone Width	W_{gw}	cm	1220	1220	*Default*
Infiltration Rate	I	cm/year	25	2.5	*Provide Justification*
Source Zone Soil Properties:					
Dry Soil Bulk Density of the source zone soil	ρ_s	g/cm^3	1.64	1.64	*Default*
Fractional Organic Carbon Content in the source zone soil	foc	g-C/g-soil	0.001	0.001	*Default*
Total Soil Porosity of the source zone soil	θ_T	cm^3/cm^3-soil	0.39	0.39	*Default*
Volumetric Water Content in the source zone soil	θ_{ws}	cm^3/cm^3	0.17	0.17	*Default*
Volumetric Air Content in the source zone soil	θ_{as}	cm^3/cm^3	0.22	**0.22**	***Calculated***
Saturated Zone Soil Properties:					
Dry Soil Bulk Density of the saturated zone soil	ρ_{ss}	g/cm^3	1.64	2.35	*Provide Justification*
Fractional Organic Carbon Content in the saturated zone soil	focs	g-C/g-soil	0.001	0.0001	*Provide Justification*
Total Soil Porosity in the saturated zone soil	θ_{Ts}	cm^3/cm^3-soil	0.39	0.28	*Provide Justification*
Distance to the Point of Exposure (Xpoe)	Xpoe,gw	ft	variable	100	*User-Defined*
Longitudinal dispersivity	α_x	**ft**	**variable**	**7.061**	***Calculated***
Transverse dispersivity	α_y	**ft**	**variable**	**0.706**	***Calculated***
Vertical dispersivity	α_z	**ft**	**variable**	**0.071**	***Calculated***
Distance to the Point of Compliance (Xpoc)	Xpoc,gw	ft	variable	100	*User-Defined*
Longitudinal dispersivity	α_x	**ft**	**variable**	**7.061**	***Calculated***
Transverse dispersivity	α_y	**ft**	**variable**	**0.706**	***Calculated***
Vertical dispersivity	α_z	**ft**	**variable**	**0.071**	***Calculated***
SURFACE WATER PROTECTION PARAMETERS:					
pH of the receiving surface water	pH	--	7	7	*Default*
Temperature of the receiving surface water	T	^0C	15	15	*Default*
Hardness of the receiving surface water	H	mg/L (as $CaCO_3$)	25	25	*Default*
Distance to the Point of Exposure (Xpoe)	Xpoe,sw	ft	variable	0	*User-Defined*
Longitudinal dispersivity	α_x	**ft**	**variable**	**0.000**	***Calculated***
Transverse dispersivity	α_y	**ft**	**variable**	**0.000**	***Calculated***
Vertical dispersivity	α_z	**ft**	**variable**	**0.000**	***Calculated***
Distance to the Point of Compliance (Xpoc)	Xpoc,sw	ft	variable	0	*User-Defined*
Longitudinal dispersivity	α_x	**ft**	**variable**	**0.000**	***Calculated***
Transverse dispersivity	α_y	**ft**	**variable**	**0.000**	***Calculated***
Vertical dispersivity	α_z	**ft**	**variable**	**0.000**	***Calculated***

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RE-1 FATE AND TRANSPORT PARAMETERS

Parameter	Symbol	Unit	Default Value	Value Used	Comment
Thickness of Soil Strata Between the Source and the Bottom of the Building:					
Stratum A (Immediately below the building)	h_A	cm	30	30	*Default*
Stratum B	h_B	cm	0	0	*Default*
Stratum C	h_C	cm	0	0	*Default*
Total thickness (should equal the source-building separation)	L_{TS}	cm	30	**30**	
Thickness of Soil Strata Between Groundwater and the Bottom of the Building:					
Stratum A (Immediately below the building)	h_A	cm	5	183	*Provide Justification*
Stratum B	h_B	cm	0	1911	*Provide Justification*
Stratum C	h_C	cm	0	0	*Default*
Stratum D (Capillary fringe)	h_{cap}	cm	25	**25**	***Calculated***
Total thickness (should equal the water table-building separation)	L_{TGW}	cm	30	**2119**	
Stratum-Specific Properties:					
Stratum A (Immediately below the building):					
Vapor permeability	k_v	cm^2	5.00E-09	5.00E-08	*Provide Justification*
Dry Soil Bulk Density	ρ_{sA}	g/cm^3	1.64	1.64	*Default*
Fractional Organic Carbon Content	foc_A	g-C/g-soil	0.001	0.001	*Default*
Total Soil Porosity	θ_{TA}	cm^3/cm^3-soil	0.39	0.39	*Default*
Volumetric Water Content in Stratum A	θ_{wsA}	cm^3/cm^3	0.17	0.17	*Default*
Volumetric Air Content in Stratum A	θ_{asA}	cm^3/cm^3	0.22	**0.22**	***Calculated***
Stratum B:					
Dry Soil Bulk Density	ρ_{sB}	g/cm^3	1.64	2.35	*Provide Justification*
Fractional Organic Carbon Content	foc_B	g-C/g-soil	0.001	0.0001	*Provide Justification*
Total Soil Porosity	θ_{TB}	cm^3/cm^3-soil	0.39	0.28	*Provide Justification*
Volumetric Water Content in Stratum B	θ_{wsB}	cm^3/cm^3	0.17	0.17	*Default*
Volumetric Air Content in Stratum B	θ_{asB}	cm^3/cm^3	0.22	**0.11**	***Calculated***
Stratum C:					
Dry Soil Bulk Density	ρ_{sC}	g/cm^3	1.64	1.64	*Default*
Fractional Organic Carbon Content	foc_C	g-C/g-soil	0.001	0.001	*Default*
Total Soil Porosity	θ_{TC}	cm^3/cm^3-soil	0.39	0.39	*Default*
Volumetric Water Content in Stratum C	θ_{wsC}	cm^3/cm^3	0.17	0.17	*Default*
Volumetric Air Content in Stratum C	θ_{asC}	cm^3/cm^3	0.22	**0.22**	***Calculated***
Stratum D (Capillary fringe):					
Mean particle diameter	D	cm	0.03	0.03	*Default*
van Genuchten curve shape factor	N	-	1.449	1.449	*Default*
Dry Soil Bulk Density	ρ_{sF}	g/cm^3	1.64	1.64	*Default*
Fractional Organic Carbon Content	foc_F	g-C/g-soil	0.001	0.001	*Default*
Total Soil Porosity	θ_{Tcap}	cm^3/cm^3-soil	0.39	0.39	*Default*
Residual water content in capillary fringe soil	θ_{rcap}	cm^3/cm^3	0.039	0.039	*Default*
Volumetric Water Content in capillary fringe	θ_{wcap}	cm^3/cm^3	0.322	**0.322**	***Calculated***
Volumetric Air Content in capillary fringe	θ_{acap}	cm^3/cm^3	0.068	0.068	***Calculated***

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RE-1 REPRESENTATIVE CONCENTRATIONS FOR NON-RESIDENTIAL RECEPTORS

CHEMICALS OF CONCERN	SURFICIAL SOIL	SUB-SURFACE SOIL	GROUNDWATER	SOIL-VAPOR
	Inhalation of Vapors and Particulates, Dermal Contact, and Accidental Ingestion	Indoor Inhalation of Vapor Emissions	Indoor Inhalation of Vapor Emissions	Indoor Inhalation of Vapor Emissions
	Representative Concentration [mg/kg]	Representative Concentration [mg/kg]	Representative Concentration [mg/L]	USE OF SOIL-VAPOR DATA IS NOT ALLOWED UNDER RE-1
1,2-Dichloroethene-(cis)	7.63E-02	7.30E-01	2.52E-01	
Chloroform			5.20E-03	
Tetrachloroethene	5.75E+02	8.30E+00	1.67E+01	
Trichloroethene	2.55E-02	1.17E-01	2.91E+00	

Note:

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RE-1 RISK/HAZARD QUOTIENT FOR NON-RESIDENTIAL RECEPTORS

CHEMICALS OF CONCERN	SURFICIAL SOIL		SUB-SURFACE SOIL		GROUNDWATER		SOIL-VAPOR	
	Inhalation of Vapors and Particulates, Dermal Contact, and Accidental Ingestion		Indoor Inhalation of Vapor Emissions		Indoor Inhalation of Vapor Emissions		Indoor Inhalation of Vapor Emissions	
	Risk	HQ	Risk	HQ	Risk	HQ	Risk	HQ
1,2-Dichloroethene-(cis)	NTOX	4.38E-04	NTOX	4.89E-02	NTOX	6.48E-04		
Chloroform					3.01E-10	1.96E-04		
Tetrachloroethene	8.61E-05	2.33E-01	1.10E-05	3.27E-02	3.70E-06	1.10E-02		
Trichloroethene	2.61E-08	1.96E-04	1.55E-06	7.84E-03	3.97E-06	2.00E-02		

Notes:

NPCP: A physical-chemical parameter, required in the calculation of the value, is not available.

NTOX: The toxicity parameter(s) required in the calculation of the value, is not available.

NCOC: The chemical is not a COC for the pathway because it was selected, but no representative concentration was entered.

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RE-1 REPRESENTATIVE CONCENTRATIONS FOR CONSTRUCTION WORKER

CHEMICALS OF CONCERN	SOIL TO TYPICAL DEPTH OF CONSTRUCTION
	Inhalation of Vapors and Particulates, Dermal Contact, and Accidental Ingestion
	Representative Concentration [mg/kg]
1,2-Dichloroethene-(cis)	3.04E-01
Chloroform	
Tetrachloroethene	1.85E+02
Trichloroethene	3.04E-02

Note:

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RE-1 RISK/HAZARD QUOTIENT FOR CONSTRUCTION WORKERS

CHEMICALS OF CONCERN	SURFICIAL SOIL	
	Inhalation of Vapors and Particulates, Dermal Contact, and Accidental Ingestion	
	Risk	HQ
1,2-Dichloroethene-(cis)	NTOX	1.86E-03
Chloroform		
Tetrachloroethene	4.19E-06	7.62E-02
Trichloroethene	5.02E-09	2.29E-04

Notes:
NPCP: A physical-chemical parameter, required in the calculation of the value, is not available.

NTOX: The toxicity parameter(s) required in the calculation of the value, is not available.
NCOC: The chemical is not a COC for the pathway because it was selected, but no representative concentration was entered.

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RE-1 SUMMARY OF CUMULATIVE RISK AND HAZARD INDEX

Routes of Exposure	RECEPTOR							
	RESIDENTIAL				NON-RESIDENTIAL		CONSTRUCTION WORKER	
	CHILD		AGE-ADJUSTED					
	Risk	Hazard Index	Risk	Hazard Index	Risk	Hazard Index	Risk	Hazard Index
Surface Soil: Inhalation of Vapors and Particulates, Dermal Contact, and Accidental Ingestion	NA	NA	NA	NA	8.61E-05	2.34E-01	4.19E-06	7.83E-02
Subsurface Soil: Indoor Inhalation of Vapor Emissions	NA	NA	NA	NA	1.26E-05	8.95E-02	Not Applicable	Not Applicable
Groundwater: Indoor Inhalation of Vapor Emissions	NA	NA	NA	NA	7.67E-06	3.19E-02	Not Applicable	Not Applicable
Soil-Vapor: Indoor Inhalation of Vapor Emissions from Soil and/or Groundwater	NA	NA	NA	NA	NA	NA	Not Applicable	Not Applicable
Site Risk	**NA**		**NA**		**1.06E-04**		**4.19E-06**	
Site Hazard Index		**NA**		**NA**		**3.55E-01**		**7.83E-02**
RATL-1/RATL-2 Required?	NA	NA	NA	NA	YES	NO	NO	NO

Notes:
NA: Not applicable because the chemical is not a COC for the pathway (no representative concentration entered) or its properties (toxicity and/or physical-chemical) are not available.

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RATL-1 FOR NON-RESIDENTIAL RECEPTORS

CHEMICALS OF CONCERN	SURFICIAL SOIL	SUB-SURFACE SOIL	GROUNDWATER	SOIL-VAPOR
	Inhalation of Vapors and Particulates, Dermal Contact, and Accidental Ingestion	Indoor Inhalation of Vapor Emissions	Indoor Inhalation of Vapor Emissions	Indoor Inhalation of Vapor Emissions
	[mg/kg]	[mg/kg]	[mg/L]	[$\mu g/m^3$]
1,2-Dichloroethene-(cis)	1.74E+01	1.49E+00	3.88E+01	NA
Chloroform	NA	NA	2.66E+00	NA
Tetrachloroethene	9.55E+00	1.08E+00	6.44E+00	NA
Trichloroethene	1.40E+00	1.08E-01	1.05E+00	NA

Notes:

NA: Not applicable because the chemical is not a COC for the pathway (no representative concentration enetered) or its properties (toxicity and/or physical-chemical) are not available.

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RATL-1 FOR CONSTRUCTION WORKERS

RATLs NOT REQUIRED

CHEMICALS OF CONCERN	SURFICIAL SOIL Inhalation of Vapors and Particulates, Dermal Contact, and Accidental Ingestion [mg/kg]
1,2-Dichloroethene-(cis)	5.44E+01
Chloroform	NA
Tetrachloroethene	2.21E+02
Trichloroethene	3.03E+01

Notes:

NA: Not applicable because the chemical is not a COC for the pathway (no representative concentration enetered) or its properties (toxicity and/or physical-chemical) are not available.

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RISK EVALUATION MAIN MENU | PRINT

RE-1 GROUNDWATER PROTECTION

CHEMICALS OF CONCERN	Groundwater Standard,Option 1 [mg/L]	First-Order Decay Rate [day^{-1}]	Saturated Zone Retardation	Unsaturated Zone DAF [--]	Mixing Zone DAF [--]	Saturated Zone DAF at POC [--]	Saturated Zone DAF at POE [--]	Overall DAF at POC [--]	Overall DAF at POE [--]	Allowable Groundwater concentration [mg/L] protective of POE: AT POC	Allowable Groundwater concentration [mg/L] protective of POE: AT SOURCE	Soil concentration directly beneath the source protective of GW at POE [mg/kg]	Predicted Groundwater Concentration at POC [mg/L]	Predicted Groundwater Concentration at POE [mg/L]
1,2-Dichloroethene-(cis)	7.00E-02	0.00E+00	1.02E+00	1	3.67E+02	1.35E+00	1.35E+00	4.94E+02	4.94E+02	7.00E-02	9.42E-02	5.36E+00	0.00E+00	0.00E+00
Chloroform	1.80E-03	0.00E+00	1.04E+00	1	3.67E+02	1.35E+00	1.35E+00	4.94E+02	4.94E+02	1.80E-03	2.43E-03	1.57E-01	0.00E+00	0.00E+00
Tetrachloroethene	5.00E-03	0.00E+00	1.13E+00	1	3.67E+02	1.35E+00	1.35E+00	4.94E+02	4.94E+02	5.00E-03	6.73E-03	8.87E-01	0.00E+00	0.00E+00
Trichloroethene	5.00E-03	0.00E+00	1.08E+00	1	3.67E+02	1.35E+00	1.35E+00	4.94E+02	4.94E+02	5.00E-03	6.73E-03	6.27E-01	0.00E+00	0.00E+00

Notes:
NGWSTD: No groundwater standard is available or calculated for the chemical

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EXIT

CHEMICALS OF CONCERN

RECEPTORS AND ROUTES OF EXPOSURE

☐ RISK EVALUATION - 1 (RE-1)

☑ RISK EVALUATION - 2 (RE-2)

CONTACT INFORMATION

Site Name: AmeriPride - Twin Falls (RE-2 Offsite)

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RECEPTOR(S) AND ROUTE(S) OF EXPOSURE

(Select by clicking the checkboxes)

SOURCE AND ROUTES OF EXPOSURES	RECEPTOR			
	RESIDENT		NON-RESIDENTIAL	CONSTRUCTION WORKER
	CHILD	AGE-ADJUSTED		
Surficial Soil Ingestion of Soil, Outdoor Inhalation of Vapor Emissions and Particulates, and Dermal Contact with Soil	☐	☐	☐	☐
Subsurface Soil Indoor Inhalation of Vapor Emissions	☐	☐	☐	
Groundwater Indoor Inhalation of Vapor Emissions	☐	☐	☐	
Soil-Vapor (RE-2 only) Indoor Inhalation of Vapor Emissions	☑	☑	☑	

☑ **Groundwater Protection**

☑ **Option 1.** **Groundwater with Current Use or High Probability of Future Use as Drinking Wate**r: The Maximum Contaminant Levels (MCLs) are used as the target concentrations at the POE. For chemicals without MCLs, risk-based ingestion standard for an age-adjusted adult is used.

☐ **Option 2.** **Groundwater with Low Probability of Future Use as Drinking Wate**r: Groundwater concentrations protective of off-site receptors resulting from exposure via pathways other than direct ingestion. These pathways include but are not limited to volatilization to indoor air, irrigation water use with crop uptake and ingestion, and irrigation water use without crop uptake.

☐ **Surface Water Protection**

If a surface water body is impacted or threatened, complete the following:

Surface water is used for drinking/water quality is appropriate for drinking water supplies?	☐
Surface water supports aquatic life?	☐
Surface water is used for recreational activities?	☐

If Ammonia is a potential COC for surface water, complete the following:

Surface water supports cold water aquatic species?	☐
Surface water supports warm water aquatic species?	☐

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RE-2 EXPOSURE FACTORS

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Parameter	Symbol	Unit	Default Value	Value Used	Comment
	AT_c	year	70	70	*Default*
	AT_{nc}	year	=ED	=ED	*Default*
Body Weight:					
Resident Child	BW_c	kg	15	15	*Default*
Resident Adolescent	BW_{as}	kg	55	55	*Default*
Resident Adult	BW_a	kg	70	70	*Default*
Non-residential	BW_{com}	kg	70	70	*Default*
Construction Worker	BW_{con}	kg	70	70	*Default*
Exposure Duration:					
Resident Child	ED_c	year	6	6	*Default*
Resident Adolescent	ED_{as}	year	9	9	*Default*
Resident Adult	ED_a	year	15	15	*Default*
Age-adjusted Resident	ED_{aa}	year	30	30	*Default*
Non-residential	ED_{com}	year	6.6	6.6	*Default*
Construction Worker	ED_{con}	year	1	1	*Default*
Exposure Frequency for Indirect Pathways:					
Resident Child	EF_c	day/year	350	350	*Default*
Resident Adolescent	EF_{as}	day/year	350	350	*Default*
Resident Adult	EF_a	day/year	350	350	*Default*
Non-residential	EF_{com}	day/year	250	250	*Default*
Construction Worker	EF_{con}	day/year	30	30	*Default*
Exposure Frequency for Direct Contact Pathways					
Resident Child	EF_{dc}	day/year	270	270	*Default*
Resident Adolescent	EF_{das}	day/year	270	270	*Default*
Resident Adult	EF_{da}	day/year	270	270	*Default*
Non-residential	EF_{dcom}	day/year	180	180	*Default*
Construction Worker	EF_{dcon}	day/year	30	30	*Default*
Indoor Exposure Time:					
Resident Child	$ET_{i\text{-}c}$	hrs/day	21	21	*Default*
Resident Adolescent	$ET_{i\text{-}as}$	hrs/day	15.8	15.8	*Default*
Resident Adult	$ET_{i\text{-}a}$	hrs/day	15	15	*Default*
Non-residential	$ET_{i\text{-}com}$	hrs/day	7.5	7.5	*Default*
Outdoor Exposure Time:					
Resident Child	$ET_{o\text{-}c}$	hrs/day	2	2	*Default*
Resident Adolescent	$ET_{o\text{-}as}$	hrs/day	2	2	*Default*
Resident Adult	$ET_{o\text{-}a}$	hrs/day	2	2	*Default*
Non-residential	$ET_{o\text{-}com}$	hrs/day	6	6	*Default*
Construction Worker	$ET_{o\text{-}con}$	hrs/day	10	10	*Default*
Soil Ingestion Rate:					
Resident Child	$IR_{s\text{-}c}$	mg/day	200	200	*Default*
Resident Adolescent	$IR_{s\text{-}as}$	mg/day	100	100	*Default*
Resident Adult	$IR_{s\text{-}a}$	mg/day	100	100	*Default*
Age-adjusted	$\mathbf{IR_{s\text{-}aa}}$	**mg/kg**	**31804**	**31804**	***Default***
Non-residential	$IR_{s\text{-}com}$	mg/day	100	100	*Default*
Construction Worker	$IR_{s\text{-}con}$	mg/day	480	480	*Default*
Groundwater Ingestion Rate:					
Resident Child	$IR_{w\text{-}c}$	L/day	1.5	1.5	*Default*
Resident Adolescent	$IR_{w\text{-}as}$	L/day	1.7	1.7	*Default*
Resident Adult	$IR_{w\text{-}a}$	L/day	2	2	*Default*
Age-adjusted	$\mathbf{IR_{w\text{-}aa}}$	**L/kg**	**457.36**	**457.36**	*Default*
Non-residential	$IR_{w\text{-}com}$	L/day	1	1	*Default*
Hourly Indoor Inhalation Rate:					
Resident Child	$IR_{ai\text{-}c}$	m^3/hr	0.7	0.7	*Default*
Resident Adolescent	$IR_{ai\text{-}as}$	m^3/hr	0.7	0.7	*Default*
Resident Adult	$IR_{ai\text{-}a}$	m^3/hr	0.7	0.7	*Default*
Non-residential	$IR_{ai\text{-}com}$	m^3/hr	1	1	*Default*
Hourly Outdoor Inhalation Rate:					
Resident Child	$IR_{ao\text{-}c}$	m^3/hr	1.1	1.1	*Default*
Resident Adolescent	$IR_{ao\text{-}as}$	m^3/hr	1.3	1.3	*Default*
Resident Adult	$IR_{ao\text{-}a}$	m^3/hr	1.3	1.3	*Default*
Non-residential	$IR_{ao\text{-}com}$	m^3/hr	1.6	1.6	*Default*
Construction Worker	$IR_{ao\text{-}con}$	m^3/hr	2.4	2.4	*Default*
Indoor Inhalation Rate:					
Resident Child	$IR_{ai\text{-}c}$	m^3/day	14.7	14.7	*Default*
Resident Adolescent	$IR_{ai\text{-}as}$	m^3/day	11.1	11.1	*Default*
Resident Adult	$IR_{ai\text{-}a}$	m^3/day	10.5	10.5	*Default*
Age-adjusted (calculated)	$\mathbf{IR_{ai\text{-}aa}}$	**m^3/kg**	**3478.9**	**3478.9**	***Default***
Commercial Worker	$IR_{ai\text{-}com}$	m^3/day	7.5	7.5	*Default*

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EXPOSURE FACTORS

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Parameter	Symbol	Unit	Default Value	Value Used	Comment
Outdoor Inhalation Rate:					
Resident Child	IR_{ao-c}	m^3/day	2.2	2.2	*Default*
Resident Adolescent	IR_{ao-as}	m^3/day	2.6	2.6	*Default*
Resident Adult	IR_{ao-a}	m^3/day	2.6	2.6	*Default*
Age-adjusted	**IR_{ao-aa}**	**m^3/kg**	**502.9**	**502.9**	***Default***
Non-residential	IR_{ao-com}	m^3/day	9.6	9.6	*Default*
Construction Worker	IR_{ao-con}	m^3/day	24	24	*Default*
Skin Surface Area:					
Resident Child	SA_c	cm^2/day	2434	2434	*Default*
Resident Adolescent	SA_{as}	cm^2/day	2434	2434	*Default*
Resident Adult	SA_a	cm^2/day	5657	5657	*Default*
Age-adjusted	**SA_{aa}**	**mg/kg**	**393322.9**	**393322.9**	***Default***
Non-residential	SA_{com}	cm^2/day	3477	3477	*Default*
Construction Worker	SA_{con}	cm^2/day	3477	3477	*Default*
Soil to Skin Adherence Factor:					
Resident Child	M_c	mg/cm^2	1	1	*Default*
Resident Adolescent	M_{as}	mg/cm^1	0.3	0.3	*Default*
Resident Adult	M_a	mg/cm^2	0.3	0.3	*Default*
Non-residential	M_{com}	mg/cm^2	0.1	0.1	*Default*
Construction Worker	M_{con}	mg/cm^2	0.5	0.5	*Default*
Averaging Time for Vapor Flux:					
Resident Child	τ	s	1.89E+08	**1.89E+08**	***Calculated***
Resident Adolescent	τ	s	2.84E+08	**2.84E+08**	***Calculated***
Resident Adult	τ	s	4.73E+08	**4.73E+08**	***Calculated***
Age-adjusted Resident	τ	s	9.46E+08	**9.46E+08**	***Calculated***
Commercial Worker	τ	s	2.08E+08	**2.08E+08**	***Calculated***
Construction Worker	τ	s	3.15E+07	**3.15E+07**	***Calculated***
Target Site Risk	TR	--	1.00E-05	1.00E-05	*Default*
Target Site Hazard Quotient	THI	--	1	1	*Default*

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RE-2 FATE AND TRANSPORT PARAMETERS

(Page 1 of 3)

Parameter	Symbol	Unit	Default Value	Value Used	Comment
SOIL PARAMETERS:					
Source-building separation	L_{TS}	cm	30	30	*Default*
Source-bottom-building separation	L_{TS-B}	cm	183	183	*Default*
Number of distinct soil strata between the top of the source zone and the building foundation	n_S	-	1	1	*Default*
SOIL-VAPOR PARAMETERS:					
Depth to sample from the bottom of the building	L_{TSV}	cm	91	61	*Provide Justification*
GROUNDWATER PARAMETERS:					
Groundwater-building separation	L_{TGW}	cm	30	2119	*Provide Justification*
Number of distinct soil strata between the capillary fringe and the building foundation	n_{GW}	-	1	2	*Provide Justification*
AIR PARAMETERS:					
Viscosity of air	μ	g/cm-s	1.80E-04	1.80E-04	*Default*
ENCLOSED SPACE PARAMETERS:					
Area of the enclosed space below grade:					
Residential	A_B	cm^2	1561600	1561600	*Default*
Non-residential	A_B	cm^2	4782069	4782069	*Default*
Enclosed Space Foundation/Wall Thickness:					
Residential	L_{crack}	cm	15	15	*Default*
Non-residential	L_{crack}	cm	15	15	*Default*
Total area of cracks:					
Residential	A_{crack}	cm^2	484	484	*Default*
Non-residential	A_{crack}	cm^2	861	861	*Default*
Number of air exchanges per second:					
Residential	ER	1/sec	2.78E-04	2.78E-04	*Default*
Non-residential	ER	1/sec	5.56E-04	5.56E-04	*Default*
Length of enclosed space:					
Residential	L_B	cm	1220	1220	*Default*
Non-residential	L_B	cm	2157	2157	*Default*
Width of enclosed space:					
Residential	W_B	cm	1220	1220	*Default*
Non-residential	W_B	cm	2157	2157	*Default*
Height of enclosed space:					
Residential	H_B	cm	244	244	*Default*
Non-residential	H_B	cm	244	244	*Default*
Floor-wall seam perimeter:					
Residential	X_{crack}	cm^2/cm^2	4880	4880	*Default*
Non-residential	X_{crack}	cm^2/cm^2	8628	8628	*Default*
Crack depth below grade	Z_{crack}	cm	15	15	*Default*
Equivalent crack radius	r_{crack}	cm	0.1	0.1	*Default*
Pressure differential between enclosed space and soil surface beneath	ΔP	$g/cm\text{-}s^2$	40	40	*Default*
Building ventilation rate:					
Residential	$Q_{building}$	cm^3/s	1.01E+05	**1.01E+05**	***Calculated***
Non-residential	$Q_{building}$	cm^3/s	6.31E+05	**6.31E+05**	***Calculated***
Volumetric flow rate of soil gas into the enclosed space:					
Residential	Q_{soil}	cm^3/s	6.0E+01	**6.0E+01**	***Calculated***
Non-residential	Q_{soil}	cm^3/s	1.1E+02	**1.1E+02**	***Calculated***
COWHERD PARTICULATE EMISSION MODEL:					
Inverse of mean concentration in the middle of a sqaure source	**Q/C**	**$[g/m^2\text{-}s]/[kg/m^3]$**	**69.41**	**69.41**	***Calculated***
Fraction of Vegetative Cover	V	m^2/m^2	0.5	0.5	*Default*
Mean Annual Wind Speed	U_m	m/s	3.98	3.98	*Default*
Equivalent Threshold Value of Windspeed at 7m	U_t	m/s	11.32	11.32	*Default*
Windspeed Distribution Function from Cowherd et. al, 1985	F(x)	--	0.0495	0.0495	*Default*

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FATE AND TRANSPORT PARAMETERS

Parameter	Symbol	Unit	Default Value	Value Used	Comment
GROUNDWATER PROTECTION PARAMETERS:					
Groundwater Darcy Velocity	U_{gw}	cm/year	3340	7300	*Provide Justification*
Groundwater Mixing Zone Length	L_{mz}	cm	1220	1220	*Default*
Groundwater Mixing Zone Thickness	δ_{gw}	cm	153	153	*Default*
Groundwater Mixing Zone Width	W_{gw}	cm	1220	1220	*Default*
Infiltration Rate	I	cm/year	25	2.5	*Provide Justification*
Source Zone Soil Properties:					
Dry Soil Bulk Density of the source zone soil	ρ_s	g/cm^3	1.64	1.64	*Default*
Fractional Organic Carbon Content in the source zone soil	foc	g-C/g-soil	0.001	0.001	*Default*
Total Soil Porosity of the source zone soil	θ_T	cm^3/cm^3-soil	0.39	0.39	*Default*
Volumetric Water Content in the source zone soil	θ_{ws}	cm^3/cm^3	0.17	0.17	*Default*
Volumetric Air Content in the source zone soil	θ_{as}	cm^3/cm^3	0.22	**0.22**	***Calculated***
Saturated Zone Soil Properties:					
Dry Soil Bulk Density of the saturated zone soil	ρ_{ss}	g/cm^3	1.64	2.35	*Provide Justification*
Fractional Organic Carbon Content in the saturated zone soil	focs	g-C/g-soil	0.001	0.0001	*Provide Justification*
Total Soil Porosity in the saturated zone soil	θ_{Ts}	cm^3/cm^3-soil	0.39	0.28	*Provide Justification*
Distance to the Point of Exposure (Xpoe)	Xpoe,gw	ft	variable	100	*User-Defined*
Longitudinal dispersivity	α_x	**ft**	**variable**	**7.061**	***Calculated***
Transverse dispersivity	α_y	**ft**	**variable**	**0.706**	***Calculated***
Vertical dispersivity	α_z	**ft**	**variable**	**0.071**	***Calculated***
Distance to the Point of Compliance (Xpoc)	Xpoc,gw	ft	variable	100	*User-Defined*
Longitudinal dispersivity	α_x	**ft**	**variable**	**7.061**	***Calculated***
Transverse dispersivity	α_y	**ft**	**variable**	**0.706**	***Calculated***
Vertical dispersivity	α_z	**ft**	**variable**	**0.071**	***Calculated***
SURFACE WATER PROTECTION PARAMETERS:					
pH of the receiving surface water	pH	--	7	7	*Default*
Temperature of the receiving surface water	T	^0C	15	15	*Default*
Hardness of the receiving surface water	H	mg/L (as $CaCO_3$)	25	25	*Default*
Distance to the Point of Exposure (Xpoe)	Xpoe,sw	ft	variable	0	*User-Defined*
Longitudinal dispersivity	α_x	**ft**	**variable**	**0.000**	***Calculated***
Transverse dispersivity	α_y	**ft**	**variable**	**0.000**	***Calculated***
Vertical dispersivity	α_z	**ft**	**variable**	**0.000**	***Calculated***
Distance to the Point of Compliance (Xpoc)	Xpoc,sw	ft	variable	0	*User-Defined*
Longitudinal dispersivity	α_x	**ft**	**variable**	**0.000**	***Calculated***
Transverse dispersivity	α_y	**ft**	**variable**	**0.000**	***Calculated***
Vertical dispersivity	α_z	**ft**	**variable**	**0.000**	***Calculated***

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RE-2 FATE AND TRANSPORT PARAMETERS

Parameter	Symbol	Unit	Default Value	Value Used	Comment
Thickness of Soil Strata Between the Source and the Bottom of the Building:					
Stratum A (Immediately below the building)	h_A	cm	30	30	*Default*
Stratum B	h_B	cm	0	0	*Default*
Stratum C	h_C	cm	0	0	*Default*
Total thickness (should equal the source-building separation)	L_{TS}	cm	30	**30**	
Thickness of Soil Strata Between Groundwater and the Bottom of the Building:					
Stratum A (Immediately below the building)	h_A	cm	5	183	*Provide Justification*
Stratum B	h_B	cm	0	1911	*Provide Justification*
Stratum C	h_C	cm	0	0	*Default*
Stratum D (Capillary fringe)	h_{cap}	cm	25	**25**	***Calculated***
Total thickness (should equal the water table-building separation)	L_{TGW}	cm	30	**2119**	
Stratum-Specific Properties:					
Stratum A (Immediately below the building):					
Vapor permeability	k_v	cm^2	5.00E-09	5.00E-08	*Provide Justification*
Dry Soil Bulk Density	ρ_{sA}	g/cm^3	1.64	1.64	*Default*
Fractional Organic Carbon Content	foc_A	g-C/g-soil	0.001	0.001	*Default*
Total Soil Porosity	θ_{TA}	cm^3/cm^3-soil	0.39	0.39	*Default*
Volumetric Water Content in Stratum A	θ_{wsA}	cm^3/cm^3	0.17	0.17	*Default*
Volumetric Air Content in Stratum A	θ_{asA}	cm^3/cm^3	0.22	**0.22**	***Calculated***
Stratum B:					
Dry Soil Bulk Density	ρ_{sB}	g/cm^3	1.64	2.35	*Provide Justification*
Fractional Organic Carbon Content	foc_B	g-C/g-soil	0.001	0.0001	*Provide Justification*
Total Soil Porosity	θ_{TB}	cm^3/cm^3-soil	0.39	0.28	*Provide Justification*
Volumetric Water Content in Stratum B	θ_{wsB}	cm^3/cm^3	0.17	0.17	*Default*
Volumetric Air Content in Stratum B	θ_{asB}	cm^3/cm^3	0.22	**0.11**	***Calculated***
Stratum C:					
Dry Soil Bulk Density	ρ_{sC}	g/cm^3	1.64	1.64	*Default*
Fractional Organic Carbon Content	foc_C	g-C/g-soil	0.001	0.001	*Default*
Total Soil Porosity	θ_{TC}	cm^3/cm^3-soil	0.39	0.39	*Default*
Volumetric Water Content in Stratum C	θ_{wsC}	cm^3/cm^3	0.17	0.17	*Default*
Volumetric Air Content in Stratum C	θ_{asC}	cm^3/cm^3	0.22	**0.22**	***Calculated***
Stratum D (Capillary fringe):					
Mean particle diameter	D	cm	0.03	0.03	*Default*
van Genuchten curve shape factor	N	-	1.449	1.449	*Default*
Dry Soil Bulk Density	ρ_{sF}	g/cm^3	1.64	1.64	*Default*
Fractional Organic Carbon Content	foc_F	g-C/g-soil	0.001	0.001	*Default*
Total Soil Porosity	θ_{Tcap}	cm^3/cm^3-soil	0.39	0.39	*Default*
Residual water content in capillary fringe soil	θ_{rcap}	cm^3/cm^3	0.039	0.039	*Default*
Volumetric Water Content in capillary fringe	θ_{wcap}	cm^3/cm^3	0.322	**0.322**	***Calculated***
Volumetric Air Content in capillary fringe	θ_{acap}	cm^3/cm^3	0.068	0.068	***Calculated***

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RE-2 REPRESENTATIVE CONCENTRATIONS FOR RESIDENTIAL RECEPTORS

CHEMICALS OF CONCERN	SURFICIAL SOIL	SUB-SURFACE SOIL	GROUNDWATER	SOIL-VAPOR	GROUNDWATER AND/OR SURFACE WATER PROTECTION		
	Inhalation of Vapors and Particulates, Dermal Contact, and Accidental Ingestion	Indoor Inhalation of Vapor Emissions	Indoor Inhalation of Vapor Emissions	Indoor Inhalation of Vapor Emissions	Representative Groundwater Concentration at the Source [mg/L]	Representative Soil Concentration at the Source [mg/kg]	Representative Groundwater Concentration at the POC [mg/L]
	NOT REQUIRED-PATHWAY NOT COMPLETE	NOT REQUIRED-USING SOIL VAPOR	NOT REQUIRED-USING SOIL VAPOR	Representative Concentration [ug/m3]		NOT USED IN CALCULATIONS	
Carbon Tetrachloride				5.00E+02			
Tetrachloroethene				3.65E+01			

Notes:

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RE-2 REPRESENTATIVE CONCENTRATIONS FOR NON-RESIDENTIAL RECEPTORS

CHEMICALS OF CONCERN	SURFICIAL SOIL	SUB-SURFACE SOIL	GROUNDWATER	SOIL-VAPOR
	Inhalation of Vapors and Particulates, Dermal Contact, and Accidental Ingestion	Indoor Inhalation of Vapor Emissions	Indoor Inhalation of Vapor Emissions	Indoor Inhalation of Vapor Emissions
	NOT REQUIRED-PATHWAY NOT COMPLETE	NOT REQUIRED-USING SOIL VAPOR	NOT REQUIRED-USING SOIL VAPOR	Representative Concentration [ug/m3]
Carbon Tetrachloride				5.00E+02
Tetrachloroethene				3.65E+01

Note:

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RE-2 RISK/HAZARD QUOTIENT FOR RESIDENTIAL RECEPTORS

CHEMICALS OF CONCERN	CHILD								AGE-ADJUSTED							
	SURFICIAL SOIL		SUB-SURFACE SOIL		GROUNDWATER		SOIL-VAPOR		SURFICIAL SOIL		SUB-SURFACE SOIL		GROUNDWATER		SOIL-VAPOR	
	Inhalation of Vapors and Particulates, Dermal Contact, and Accidental Ingestion		Indoor Inhalation of Vapor Emissions		Indoor Inhalation of Vapor Emissions		Indoor Inhalation of Vapor Emissions		Inhalation of Vapors and Particulates, Dermal Contact, and Accidental Ingestion		Indoor Inhalation of Vapor Emissions		Indoor Inhalation of Vapor Emissions		Indoor Inhalation of Vapor Emissions	
	Risk	HQ	Risk	HQ	Risk	HQ	Risk	HQ	Risk	HQ	Risk	HQ	Risk	HQ	Risk	HQ
Carbon Tetrachloride							7.41E-07	2.33E-01							1.25E-06	7.88E-02
Tetrachloroethene							2.07E-08	6.77E-05							3.50E-08	2.29E-05

Notes:

NPCP: A physical-chemical parameter, required in the calculation of the value, is not available.

NTOX: The toxicity parameter(s) required in the calculation of the value, is not available.

NCOC: The chemical is not a COC for the pathway because it was selected, but no representative concentration was entered.

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RE-2 RISK/HAZARD QUOTIENT FOR NON-RESIDENTIAL RECEPTORS

CHEMICALS OF CONCERN	SURFICIAL SOIL		SUB-SURFACE SOIL		GROUNDWATER		SOIL-VAPOR	
	Inhalation of Vapors and Particulates, Dermal Contact, and Accidental Ingestion		Indoor Inhalation of Vapor Emissions		Indoor Inhalation of Vapor Emissions		Indoor Inhalation of Vapor Emissions	
	Risk	HQ	Risk	HQ	Risk	HQ	Risk	HQ
Carbon Tetrachloride							2.18E-08	6.23E-03
Tetrachloroethene							6.16E-10	1.83E-06

Notes:

NPCP: A physical-chemical parameter, required in the calculation of the value, is not available.

NTOX: The toxicity parameter(s) required in the calculation of the value, is not available.

NCOC: The chemical is not a COC for the pathway because it was selected, but no representative concentration was entered.

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RE-2 SUMMARY OF CUMULATIVE RISK AND HAZARD INDEX

Routes of Exposure	RECEPTOR							
	RESIDENTIAL				NON-RESIDENTIAL		CONSTRUCTION WORKER	
	CHILD		AGE-ADJUSTED					
	Risk	Hazard Index	Risk	Hazard Index	Risk	Hazard Index	Risk	Hazard Index
Surface Soil: Inhalation of Vapors and Particulates, Dermal Contact, and Accidental Ingestion	NA	NA	NA	NA	NA	NA	NA	NA
Subsurface Soil: Indoor Inhalation of Vapor Emissions	NA	NA	NA	NA	NA	NA	Not Applicable	Not Applicable
Groundwater: Indoor Inhalation of Vapor Emissions	NA	NA	NA	NA	NA	NA	Not Applicable	Not Applicable
Soil-Vapor: Indoor Inhalation of Vapor Emissions from Soil and/or Groundwater	7.62E-07	2.33E-01	1.29E-06	7.88E-02	2.24E-08	6.24E-03	Not Applicable	Not Applicable
Site Risk	**7.62E-07**		**1.29E-06**		**2.24E-08**		**NA**	
Site Hazard Index		**2.33E-01**		**7.88E-02**		**6.24E-03**		**NA**
RATL-1/RATL-2 Required?	NO	NO	NO	NO	NO	NO	NA	NA

Notes:
NA: Not applicable because the chemical is not a COC for the pathway (no representative concentration entered) or its properties (toxicity and/or physical-chemical) are not available.

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RE-2 RISK/HAZARD QUOTIENT BASED ON SOIL-VAPOR DATA

CHEMICALS OF CONCERN	Predicted Indoor Air Concentration Residential	RESIDENTIAL				Predicted Indoor Air Concentration Non-Residential	NON-RESIDENTIAL	
		CHILD		AGE-ADJUSTED				
	[mg/m^3]	Risk	HQ	Risk	HQ	[mg/m^3]	Risk	HQ
Carbon Tetrachloride	1.74E-04	7.41E-07	2.33E-01	1.25E-06	7.88E-02	5.95E-05	2.18E-08	6.23E-03
Tetrachloroethene	1.22E-05	2.07E-08	6.77E-05	3.50E-08	2.29E-05	4.24E-06	6.16E-10	1.83E-06

Notes:

NPCP: A physical-chemical parameter, required in the calculation of the value, is not available.

NTOX: The toxicity parameter(s) required in the calculation of the value, is not available.
NCOC: The chemical is not a COC for the pathway because it was selected, but no representative concentration was entered.

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RATL-2 FOR RESIDENTIAL RECEPTORS

RATLs NOT REQUIRED

CHEMICALS OF CONCERN	CHILD - RATLs NOT REQUIRED				AGE-ADJUSTED - RATLs NOT REQUIRED			
	SURFICIAL SOIL	SUB-SURFACE SOIL	GROUNDWATER	SOIL-VAPOR	SURFICIAL SOIL	SUB-SURFACE SOIL	GROUNDWATER	SOIL-VAPOR
	Inhalation of Vapors and Particulates, Dermal Contact, and Accidental Ingestion	Indoor Inhalation of Vapor Emissions	Indoor Inhalation of Vapor Emissions	Indoor Inhalation of Vapor Emissions	Inhalation of Vapors and Particulates, Dermal Contact, and Accidental Ingestion	Indoor Inhalation of Vapor Emissions	Indoor Inhalation of Vapor Emissions	Indoor Inhalation of Vapor Emissions
	[mg/kg]	[mg/kg]	[mg/L]	[ug/m3]	[mg/kg]	[mg/kg]	[mg/L]	[$\mu g/m^3$]
Carbon Tetrachloride	NA	NA	NA	1.07E+03	NA	NA	NA	2.00E+03
Tetrachloroethene	NA	NA	NA	8.81E+03	NA	NA	NA	5.21E+03

Notes:

NA: Not applicable because the chemical is not a COC for the pathway (no representative concentration entered) or its properties (toxicity and/or physical-chemical) are not available.

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RATL-2 FOR NON-RESIDENTIAL RECEPTORS

RATLs NOT REQUIRED

CHEMICALS OF CONCERN	SURFICIAL SOIL	SUB-SURFACE SOIL	GROUNDWATER	SOIL-VAPOR
	Inhalation of Vapors and Particulates, Dermal Contact, and Accidental Ingestion	Indoor Inhalation of Vapor Emissions	Indoor Inhalation of Vapor Emissions	Indoor Inhalation of Vapor Emissions
	[mg/kg]	[mg/kg]	[mg/L]	[$\mu g/m^3$]
Carbon Tetrachloride	NA	NA	NA	4.01E+04
Tetrachloroethene	NA	NA	NA	2.96E+05

Notes:

NA: Not applicable because the chemical is not a COC for the pathway (no representative concentration enetered) or its properties (toxicity and/or physical-chemical) are not available.

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RE-2 GROUNDWATER PROTECTION

CHEMICALS OF CONCERN	Groundwater Standard,Option 1 [mg/L]	First-Order Decay Rate [day^{-1}]	Saturated Zone Retardation	Unsaturated Zone DAF [--]	Mixing Zone DAF [--]	Saturated Zone DAF at POC [--]	Saturated Zone DAF at POE [--]	Overall DAF at POC [--]	Overall DAF at POE [--]	Allowable Groundwater concentration [mg/L] protective of POE: AT POC	Allowable Groundwater concentration [mg/L] protective of POE: AT SOURCE	Soil concentration directly beneath the source protective of GW at POE [mg/kg]	Predicted Groundwater Concentration at POC [mg/L]	Predicted Groundwater Concentration at POE [mg/L]
Carbon Tetrachloride	5.00E-03	0.00E+00	1.13E+00	1	3.67E+02	1.35E+00	1.35E+00	4.94E+02	4.94E+02	5.00E-03	6.73E-03	1.05E+00	0.00E+00	0.00E+00
Tetrachloroethene	5.00E-03	0.00E+00	1.13E+00	1	3.67E+02	1.35E+00	1.35E+00	4.94E+02	4.94E+02	5.00E-03	6.73E-03	8.87E-01	0.00E+00	0.00E+00

Notes:
NGWSTD: No groundwater standard is available or calculated for the chemical

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