Geosyntec consultants

215 South Main Street, Suite 500
Salt Lake City, UT 84111
PH 801.853.8308
www.geosyntec.com

September 20, 2021

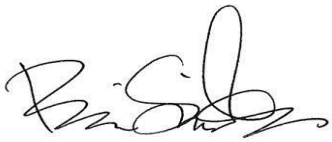
Mr. Hao Zhu
Utah Department of Environmental Quality
Division of Waste Management and Radiation Control
195 North 1950 West
Salt Lake City, UT 84116

Subject: Site Management Plan
Former Bacchus Plant 3
West Valley City, Utah

Dear Mr. Zhu:

On behalf of Hercules LLC, a wholly owned subsidiary of Ashland LLC, Geosyntec Consultants Incorporated is submitting the attached Site Management Plan (SMP) for the above referenced site. If you have any questions regarding the SMP, please contact us at 801-618-0483. Alternatively, Mr. Edward Meeks of Hercules, LLC can be reached at 302-995-3433.

Sincerely,



Brent Robinson, PE
Senior Principal

Brian Smith
Project Manager

Cc:

Mr. Edward Meeks (Hercules, LLC)

Attachment:

Site Management Plan

Geosyntec consultants

engineers | scientists | innovators

SITE MANAGEMENT PLAN

Former Hercules Bacchus Plant 3
West Valley City, Utah

Prepared for

Hercules Incorporated
500 Hercules Road
Wilmington, Delaware 19808-1599

Prepared by

Geosyntec Consultants, Inc.
215 South State Street, Suite 500
Salt Lake City, Utah 84111

Project SLC1011

September 2021

TABLE OF CONTENTS

LIST OF FIGURES

LIST OF TABLES

ACRONYMS AND ABBREVIATIONS

AMSL	Above Mean Sea Level
1,1-DCE	1,1 Dichloroethene
1,2-DCA	1,2 Dichloroethane
DWMRC	Division of Waste Management and Radiation Control
EC	Environmental Covenant
HHRA	Human Health Risk Assessment
MCL	Maximum Contaminant Level
SMP	Site Management Plan
RSL	Regional Screening Level
SVOC	Semi-Volatile Organic Compound
1,1,1-TCA	1,1,1 Trichloroethane
1,1,2-TCA	1,1,2 Trichloroethane
TCE	Trichloroethene
USEPA	United States Environmental Protection Agency
VOC	Volatile Organic Compound

1. INTRODUCTION

On behalf of Hercules, LLC. (Hercules), a wholly owned subsidiary of Ashland, LLC (Ashland), Geosyntec Consultants, Inc has prepared the following Site Management Plan (SMP) to address the historic release of 1,1,1 trichloroethane (1,1,1-TCA) at two spill sites within the former Bacchus Plant 3 (Plant 3) site located in West Valley City, Utah. This SMP has been prepared in accordance with the requirements of the Utah Division of Waste Management and Radiation Control (DWMRC) risk-based cleanup and closure program (R315-101) and the findings of the human health risk assessments (HHRAs) performed for the site (ERM 2009 and ERM 2018). This SMP has been prepared to establish the risk-based controls and procedures that will be used to prevent exposure to volatile organic compounds (VOCs) identified in shallow soil and groundwater at the site, and to manage site conditions in a manner that protects human health and the environment.

1.1 Site Location and Description

Plant 3 is located at 5400 South 7000 West in West Valley City, Utah, along the foothills of the Oquirrh Mountains in the western portion of the Salt Lake Valley, approximately 11 miles southwest of downtown Salt Lake City. Site elevations range between 4,975 feet and 5,025 feet above mean sea level (AMSL), approximately 800 feet above the surrounding valley floor. A map showing the location of Plant 3 is provided as Figure 1. A general site layout map is provided as Figure 2.

Plant 3 was historically owned and operated by Hercules to manufacture composite materials used in the aerospace industry and was originally developed as part of the larger Bacchus Works facility, which is located to the north (the current ATK Launch Systems facility). Northrop Grumman Corporation is the parent company of ATK Launch Systems LLC (ATK). Aerial photographs of the site suggest that development of Plant 3 dates back to at least the 1960s. Plant 3 is currently owned and operated by Hexcel Corporation (Hexcel), which purchased the facility from Hercules in 1996. Hexcel is a manufacturer of carbon fiber materials.

As part of the sales agreement, Hercules retained ownership of the Bacchus Pond property, located on the north side of the Plant 3 site (see Figure 2). Bacchus Pond was historically used to contain non-contact cooling water and storm water discharges from Plant 3. Discharges to Bacchus Pond ceased shortly after the sale of the property was finalized in 1997. It is now dry. The Bacchus Pond property is currently managed under a separate SMP, implemented in 2007, to address residual VOCs, semi-volatile organic compounds (SVOCs), and metals in sediment from the former Bacchus Pond (now surface soil since the pond no longer contains water).

The ATK facility is located immediately north and downgradient from Plant 3 and the Bacchus Pond area. The ATK site is the source of perchlorate and VOC groundwater plumes that extend from the ATK property to the north. The groundwater plumes within the ATK site are being managed by ATK under oversight by the DWMRC.

Plant 3 is zoned for commercial industrial use (M-Manufacturing) by West Valley City. Land use in the immediate surrounding area is also zoned for commercial and industrial use and is dominated by the approximately 2,800-acre ATK facility to the north of the site. Due to the large area encompassed by the ATK facility, and the dispersed nature of its operations, there is a significant amount of vacant land in the surrounding area despite the industrial setting. Two large gravel pits (Kilgore Companies and Staker Parsons pits) are located immediately to the south of Plant 3. Residential development is present to the east and north, with the closest residential homes located approximately 0.4 miles east of the site. The nearest downgradient homes are located approximately 1 mile north of the site. Surrounding land use is depicted on Figure 3.

Plant 3 is located within the "Overpressure Zone A" of the West Valley City Land Use and Management Act ordinance (Title 7-14-500 of the West Valley City Municipal Code, revised March 16, 2017). This ordinance limits the types of development that can occur near the ATK facility to protect against potential damage or injury to human life from an accidental explosion. Residential homes are not permitted within Overpressure Zone A, and only commercial or industrial development may occur.

1.2 Background

Site investigation activities have identified VOC groundwater impacts associated with the release of 1,1,1-TCA at two historic spill locations within Plant 3 (ERM 2009, ERM 2013, ERM 2015, and ERM 2017). The reported spills occurred in 1987 and 1988. The spill locations are depicted on Figure 2. Approximately 150 gallons of 1,1,1-TCA were reportedly released during the 1987 spill, and approximately 100 to 200 gallons were released during the 1988 spill. Based on site records, cleanup activities for both spills were conducted by Hercules immediately after the releases (ERM 2009), although detailed information on the cleanup actions is limited. Both spills were associated with releases from former aboveground storage tanks that contained 1,1,1-TCA. Both tanks have since been removed.

Investigation activities to date have included the installation of five deep monitoring wells (wells HIMW-1 through HIMW-5), which range in depth from approximately 230 feet to 350 feet below ground surface (bgs) to characterize soil and groundwater conditions associated with the historic 1,1,1-TCA releases. Groundwater beneath Plant 3 is present at depths ranging from approximately 180 to 250 feet bgs. Wells HIMW-1 and HIMW-3 were installed in the 1987 spill area; well HIMW-2 was installed in the 1988 spill area; and wells HIMW-4 and HIMW-5 were installed downgradient from the spill areas along the northern boundary of Plant 3.

Three wells were also installed on the Bacchus Pond property (BP-1, BP-2, and BP-3) in 1996 as part of the initial baseline investigation of that property. All three of these wells are now dry. In addition, data from monitoring wells on the ATK property have also been utilized to characterize downgradient groundwater conditions in the vicinity of Plant 3. Plant 3 monitoring well locations and downgradient ATK wells are shown on Figure 2.

Prior investigation findings (ERM 2009, ERM 2013, and ERM 2015) have shown limited detections for VOCs in soil, but VOC concentrations in groundwater above the proposed site

management comparison criteria (i.e., USEPA Maximum Contaminant Levels [MCLs] or USEPA Regional Screening Levels [RSLs]) for select constituents). Groundwater sample data shows that the highest groundwater concentrations are generally present in the 1988 spill location, with generally lower concentrations in the 1987 spill area and other downgradient well locations. Historic groundwater sample data are summarized in Table 1 and graphically depicted on Figure 4 (Figure 4 presents most current available data from 2020 only).

Monitoring data from the site shows that the following VOCs have been observed at levels above the proposed site management comparison criteria in one or more locations: 1,1,2 trichloroethane (1,1,2-TCA), 1,1 dichloroethene (1,1-DCE), 1,2 dichloroethane (1,2-DCA), methylene chloride, naphthalene and trichloroethene (TCE). With the exception of the reported concentrations of 1,2-DCA and TCE in well HIMW-2 (1988 spill location), reported detections are generally observed to exceed either the MCLs or USEPA RSLs, but not both.

Historic monitoring in the downgradient ATK wells in the vicinity of the site (wells GW-24, GW-25, GW-47, GW-58, GW-59, GW-60, GW-61, GW-75, and GW-83) have generally shown non-detect or trace levels of VOCs below the proposed site management comparison criteria (USEPA MCL or USEPA RSLs), although some exceedances have been noted (primarily in wells GW-58, GW-60, and GW-61). ATK previously conducted a groundwater risk assessment (Tetra Mentis 2011) that evaluated the risks associated with the observed VOCs detected in wells within this portion of their property. While Plant 3 has been identified as a potential source of some of these detections, it is noted that the wells that have historically shown exceedances are generally cross-gradient from the historic 1,1,1-TCA spill areas. Based on the available data, potential sources within the ATK property also cannot be ruled out as the source for the observed detections. The most current ATK data is presented on Figure 4 (2019 data from wells GW-58, GW-59, GW-60, GW-61, and GW-83 only).

Groundwater beneath the Plant 3 site occurs within the Principal Basin Fill aquifer, which underlies the Salt Lake Valley (Utah Geological Survey 2008). This aquifer is recharged by precipitation, which falls within the adjacent Oquirrh Mountains and surrounding bench areas. The aquifer is generally unconfined along the alluvial margins of the Oquirrh Mountains and confined in the lower and central portions of the basin. The aquifer is used as a drinking water source in the Salt Lake Valley but is not used within Plant 3 or the adjacent ATK property. Current groundwater monitoring data shows that groundwater with Plant 3 related impacts is contained within Plant 3 or the extreme southeast corner of the ATK property and that no other off-site properties or downgradient drinking water sources are impacted from the 1,1,1-TCA spill sites (ERM 2018).

2. SITE RISK ASSESSMENT

Risk assessments were conducted to quantitatively evaluate potential human health risk posed by the VOC constituents that have been detected in shallow soil and groundwater beneath the Plant 3 site. The soil and groundwater risk assessments were conducted in accordance with the DWMRC risk-based cleanup and closure program (R315-101), and were completed in 2009 and 2018, respectively (ERM 2009 and ERM 2018). The risk assessments evaluated actual land use conditions, which are industrial and commercial in nature, but also evaluated potential hypothetical residential development in accordance with the risk-based cleanup program requirements to account for potential future land use changes. It is recognized that potential future land use changes are highly unlikely given the current site development and zoning. The general findings from the risk assessments are presented below.

2.1 Soil

- The results of the soil risk assessment showed that risks in both areas associated with shallow soil did not exceed DWMRC risk-based thresholds ($1x10^{-6}$ for carcinogens and 1.0 for noncarcinogens) under actual land-use conditions.
- Assessment of a potential hypothetical residential exposure scenario showed a noncarcinogenic risk above the hazard index (HI) of 1.0 in the 1987 spill area, based on a potential soil vapor intrusion pathway from the shallow soil. All risks were below acceptable risk levels (i.e., less than $1x10^{-6}$ for carcinogens and 1.0 for noncarcinogens) for a hypothetical residential exposure scenario in the 1988 spill area.

2.2 Groundwater

- The results of the groundwater risk assessment showed that under actual site conditions there are no complete exposure pathways for groundwater and therefore no associated human health risks.
- A hypothetical land use scenario was evaluated that assumed potential on-site and off-site residential development where groundwater impacts exist (i.e., development of Plant 3 and/or downgradient areas on the ATK property). This evaluation was performed in accordance with risk-based cleanup and closure program to evaluate potential future land use planning conditions and considerations. This scenario conservatively evaluated direct groundwater use for domestic or commercial purposes by potential receptors (drinking, washing, bathing, etc.). Under this hypothetical scenario, risk calculations show that elevated carcinogenic and non-carcinogenic risks may result (i.e., carcinogenic risk greater than $1x10^{-6}$ and hazard index greater than 1.0). However, the risk assessment noted that groundwater with site related constituents is currently not being used by on-site or off-site receptors, and future groundwater use is extremely improbable given current and likely future land use, zoning, and limitations on available groundwater resources.

The results of the soil and groundwater risk assessments show that there are no elevated risks above the DWMRC thresholds under actual land use conditions, but elevated risks may arise when certain hypothetical land-use conditions (residential) are considered. Based on findings of the risk assessments, the implementation of an SMP was recommended to ensure that appropriate site controls and monitoring are implemented to mitigate the identified risks that could arise from potential land use changes (i.e., potential residential and/or commercial development and use of groundwater). The DWMRC approved the risk assessment findings and requested that an SMP be prepared (DWMRC correspondence to Hercules dated March 22, 2018).

3. SITE MANAGEMENT

3.1 Environmental Covenant

An Environmental Covenant (EC) will be developed in cooperation with the DWMRC and recorded on the property with the Office of the County Recorder of Salt Lake County, Utah.

The EC will be used as the primary institutional control to restrict groundwater use and prevent potential residential development of the Plant 3 property. The area that will be covered by the EC is shown on Figure 5. It is noted that the EC only covers the Plant 3 property and does not extend to off-site properties. The EC will be recorded with the Salt Lake County Recorder's Office in conjunction with the implementation of this SMP. The EC will remain in effect until such time as it is demonstrated that there are no longer conditions that present a potential risk, and until the Director of the DMWRC (Director) approves the removal or modification of these controls.

The Plant 3 EC will supplement the current EC recorded on the Bacchus Pond property, which already precludes residential development and the use of groundwater within the boundaries of that property. Additionally, it is understood that potential land use changes or future development within the ATK property would also likely be subject to groundwater use limitations based on the known impacts to groundwater that exist within that property.

3.2 Activity and use Limitations

The EC to be recorded against the Plant 3 property will include the following site management and activity and use limitations on the Plant 3 property.

3.2.1 Site Management Plan

Hercules and the Plant 3 property owner shall comply with this SMP for the portions applicable to their obligations.

3.2.2 Land Use Limitations

The Plant 3 property is restricted to commercial or industrial use only. Residential or other non-commercial/non-industrial uses of the Plant 3 property shall be reviewed and approved by the Director prior to implementation.

3.2.3 Groundwater Limitations

Groundwater from the impacted aquifer shall not be used for drinking, irrigation, bathing or any other purposes without approval. Uses of groundwater from the impacted aquifer shall be reviewed and approved by the Director prior to implementation.

3.3 Maintenance, Access, and Inspections

Under the EC, Hercules and the Director and their respective authorized agents, employees, and contractors shall have rights of reasonable access to the Plant 3 property for inspections and monitoring of the compliance with the EC, and for complying with the terms and conditions of the

EC and this SMP. Nothing in this SMP shall be construed as expanding or limiting any access and inspection authorities of Hercules or Director under the law.

3.3.1 Notice

Any party or person desiring to access the property under authority of the EC shall provide notice to the Plant 3 property owner of the affected portion of the property not less than 48 hours in advance of accessing the property, except in the event of an emergency condition which reasonably requires immediate access. In the event of any such emergency condition, the party exercising this access right will provide notice to the then current Plant 3 property owner of the affected portion of the property requiring access as soon thereafter as is reasonably possible.

3.3.2 Disruption

To the extent that Hercules, the Director or their authorized representatives, conduct any activities on or within any portion of the Plant 3 property, they will use reasonable efforts to comply with the then current Plant 3 property owner's business operation and security needs and requirements, and will conduct such activities so as to cause the least amount of disruption to the use of the affected portion of the Plant 3 property as may be reasonably possible. Any person who conducts any activities related to the implementation of the EC or SMP shall repair or replace any improvements or landscaping damaged on the affected portion of the property due to these activities. The Director will determine what needs, requirements, and activities are reasonable. Should the Director's activities cause damage to the affected portion of the Plant 3 property improvements or landscaping that are not repaired or replaced, the injured party may present a claim against the State of Utah in accordance with Utah law.

3.4 Monitoring Requirements

Hercules shall comply with DWMRC requirements for groundwater monitoring and reporting as documented in the approved SMP, and any subsequent modifications and or addenda to the SMP approved by the Director.

Groundwater monitoring will be conducted to monitor and evaluate groundwater conditions over time. Monitoring will be conducted in accordance with the procedures outlined in the existing Groundwater Monitoring Plan (GMP) (ERM 2016a, ERM 2016b or any subsequent revisions) for the Plant 3 site, and will include the collection of groundwater samples from all current monitoring locations (i.e., HIMW-1, HIMW-2, HIMW-3, and HIMW-5), including collection of quality assurance and quality control samples. Monitoring is not proposed at wells BP-1, BP-2, and BP-3, which are currently dry and have been dry for at least 10 years. The DWMRC will be notified a minimum of 14-days prior to all monitoring events.

Initial monitoring will be conducted on an annual basis, with sampling conducted in October of each year. After five years, the frequency of the monitoring will be evaluated. The evaluation will include a statistical evaluation of the groundwater concentration trends using a Mann Kendall trend analysis in accordance with the decision framework outlined in Figure 6 and in the following paragraph.

If groundwater concentration trends are demonstrated to be stable or decreasing, at the 95% one-sided confidence level, the frequency of the monitoring would be reduced to bi-annual (every other year) and monitoring would continue for an additional 6-year period (3 sampling events). After this additional 6-year period, if concentrations still show stable or decreasing trends, further reduction in the frequency of the monitoring would be evaluated in cooperation with the DWMRC.

The USEPA MCLs for drinking water or the USEPA RSLs for tap water ingestion will be used as site management comparison criteria for the site, unless another suitable comparison criteria is approved by the DWMRC (USEPA MCLs will be used as the primary site management comparison criteria. For constituents that do not have established MCLs, the USEPA RSL for tap water ingestion will be used). It is envisioned that the restriction on groundwater use would remain in place until it is demonstrated that groundwater concentrations at all monitoring locations are below the approved site management comparison criteria and DWMRC approval is obtained[1]

3.5 Monitoring Wells

If any monitoring well is damaged or removed due to the construction of improvements on the property, such well will be repaired or replaced to allow for continued monitoring. Replacement wells will be placed in locations approved by the Director. Installation, development, sampling, plugging and abandonment of monitoring wells shall comply with a work plan submitted to and approved by the Director.

The Plant 3 owner shall not move nor modify any groundwater monitoring wells on the Property without first notifying the Director and Hercules in writing. The Plant 3 owner shall not authorize or engage in any construction or development activity that would permanently hinder, prevent access to, or jeopardize the operation and use of any groundwater monitoring wells.

3.6 Site Management Contacts

Inquiries concerning the SMP should be directed to the following:

Hercules., LLC
Ed Meeks, Remediation Project Manager
500 Hercules Road, Building 8145/1-025
Wilmington, DE 19808-15
Email: edmeeks@ashland.com
Phone: 1-302-995-9499

[1] Monitoring will be allowed to cease when the 95% upper confidence limit of the Theil-Sen trend line around the data is equal or is lower than the approved site management criteria in accordance with the Statistical Corrective Action Test statistical techniques outlined in Chapter 21.3 of the USEPA Unified Statistical Guidance (USEPA 2009).

Hexcel Corporation
Jared Carling
PO Box 18748
Salt Lake City, UT 84118-0748
Email: Jared.Carling@hexcel.com
Phone: 1-801-209-2427 (o), 1-385-441-2350 (c)

Utah Department of Environmental Quality
Division of Waste Management and Radiation Control
Director
P.O. Box 144880
Salt Lake City, Utah 84114-4880
Phone: 1-801 536-0200

4. REPORTING

Groundwater monitoring reports will be prepared and submitted to the DWMRC after each sampling event. The reports will summarize the completed sampling activities and results. Reports will also include a review of available groundwater data from the ATK wells in the vicinity of Plant 3 (e.g., wells GW-58, GW-59, GW-60, GW-61, and GW-83).

All data generated from the groundwater monitoring events will be arranged in a clear and logical format. Tables will be prepared to present laboratory analytical summaries and other field measurements, as appropriate. Laboratory analytical summaries will include sample location, sample number, sample date, sample results, qualifiers, and units of measurement. Analytical groundwater summary tables will also include the site management comparison criteria for comparison purposes (i.e., USEPA MCLs and RSLs). Data will be presented graphically as appropriate to show well locations, groundwater gradient and flow direction, site surface features, and other relevant information. Copies of the laboratory reports, data validation reports, and other pertinent supporting documentation (e.g., well purging logs, etc.) will be provided as appendices to the report. Groundwater reports will be provided to the DWMRC approximately 8 weeks after receiving the analytical reports from the laboratory.

5. REFERENCES

ERM. 2009. Environmental Site Characterization Report, Former Hercules Bacchus Plant 3, TCA Spill Areas, West Valley, Utah. Prepared for Hercules Incorporated.

ERM. 2013. Preliminary Groundwater Investigation Report, Former Bacchus Plant 3, West Valley Utah. Prepared for Hercules Incorporated.

ERM. 2015. Groundwater Investigation Report, Former Bacchus Plant 3, West Valley, Utah. Prepared for Hercules Incorporated.

ERM. 2016a. Groundwater Monitoring Plan, Former Bacchus Plant 3, West Valley, Utah. Prepared for Hercules Incorporated.

ERM. 2016b. Addendum to Groundwater Monitoring Plan, Former Bacchus Plant 3, West Valley, Utah. Prepared for Hercules Incorporated.

ERM. 2017. Quarterly Groundwater Monitoring Report, Former Bacchus Plant 3, West Valley, Utah. Prepared for Hercules Incorporated.

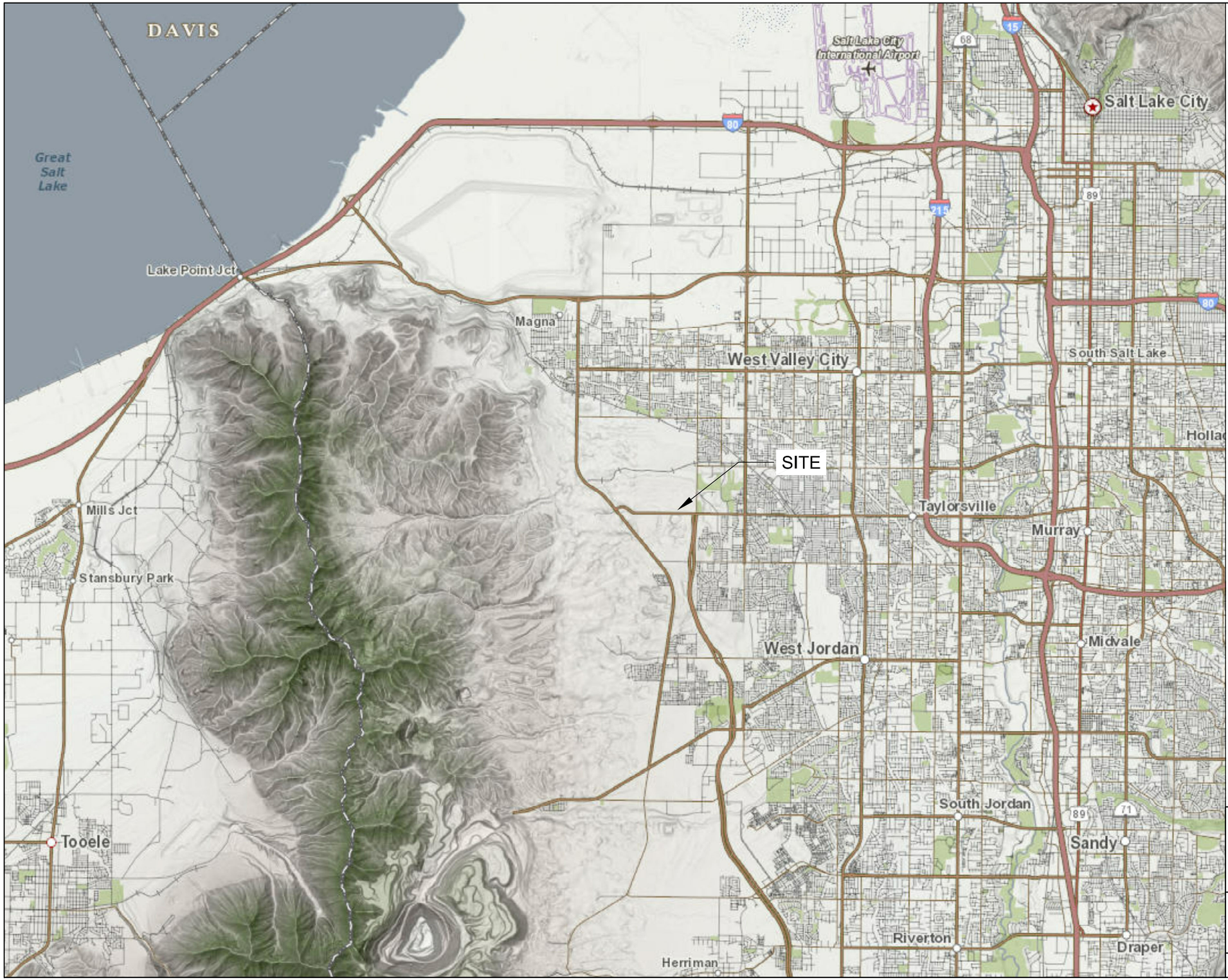
ERM. 2018. Groundwater Human Health Risk Assessment. Former Bacchus Plant 3. West Valley, Utah. Prepared for Hercules Incorporated.

Utah Geological Survey. 2008. Groundwater Quality Classification for the Principal Basin-Fill Aquifer, Salt Lake Valley, Salt Lake County, Utah. Utah Geological Survey.

Tetra Mentis. 2011a. Human Health Risk Assessment for Groundwater at the ATK Launch System, Bacchus Facility, West Valley, Utah. Prepared for ATK Launch Systems.

US EPA Statistical Analysis of Groundwater Monitoring Data at RCRA Facilities Unified Guidance, March 2009. EPA 530/R-09-007.

FIGURES



N

0 2

SCALE IN MILES

SITE LOCATION MAP
FORMER BACCHUS PLANT 3
WEST VALLEY, UTAH

Geosyntec consultants

PROJECT NO: SLC1011 | SEPTEMBER 2021

FIGURE 1

O:\PROJECTS\AVASHLAND\SLC1011 2020 ENVIRONMENTAL SUPPORT\SMP UPDATE\FIGURES\FIG 1 SITE LOCATION MAP - Last Saved by: BSmith on 5/27/20

6400 WEST STREET

GW-75

GW-83

GW-61

GW-60

GW-58

BP-3

BP-1

BP-2

HMW-2

HIMW-5

HIMW-4
(abandoned)

HIMW-3

HIMW-1

GW-59

GW-47

GW-24

GW-25

GW-44

GW-17

GW-26

ATK LAUNCH SYSTEMS PROPERTY

FORMER PLANT
3/HEXCEL

BACCHUS
POND

KILGORE
GRAVEL PIT

APPROXIMATE LOCATION
OF 1988 TCA RELEASE

APPROXIMATE LOCATION
OF 1987 TCA RELEASE

5400 SOUTH STREET

STAKER PARSONS
GRAVEL PIT

FORMER PLANT
3/HEXCEL

N

LEGEND

- HERCULES WELL
- ATK LAUNCH SYSTEMS WELL

NOTES:

ALL WELL LOCATIONS APPROXIMATE

0 600

SCALE IN FEET

SITE LAYOUT MAP
FORMER BACCHUS PLANT 3
WEST VALLEY, UTAH

Geosyntec consultants

FIGURE 2

PROJECT NO: SLC1011 | SEPTEMBER 2021

O:\PROJECTS\AVASHLAND\SLC1011 2020 ENVIRONMENTAL SUPPORT\SMP UPDATE\FIGURES\FIG 2 SITE LAYOUT MAP - Last Saved by: BSmith on 9/17/21

N

LEGEND

COMMERCIAL/INDUSTRIAL LANDUSE ZONING

RESIDENTIAL/AGRICULTURAL LAND USE ZONING

ZONING BASED ON WEST VALLEY AND SALT LAKE COUNTY ZONNING MAPS
http://slco.org/development-services/zoning-land-use/
http://www.wvc-ut.gov/356/Maps

LANDUSE/ZONING BOUNDARIES APPROXIMATE

0 1,700
SCALE IN FEET

SURROUNDING LAND USE MAP
FORMER BACCHUS PLANT 3
WEST VALLEY, UTAH

Geosyntec consultants

FIGURE 3

PROJECT NO: SLC1011 | SEPTEMBER 2021

O:\PROJECTS\AVASHLAND\SLC1011 2020 ENVIRONMENTAL SUPPORT\SMP UPDATE\FIGURES\FIG 3 SURROUNDING LAND USE MAP - Last Saved by: BSmith on 9/17/21

O:\PROJECTS\AASHLAND\SLC1011 2020 ENVIRONMENTAL SUPPORT\SMP UPDATE\FIGURES\FIG 4 GW ANALYTICAL SUMMARY FOR SMP - Last Saved by: BSmith on 9/17/21

N

LEGEND

- HERCULES WELL
- ATK LAUNCH SYSTEMS WELL

PARAMETER	USEPA MCL	USEPA RSL
1,1,1 TRICHLOROETHANE (1,1,1 TCA)	200	–
1,1,2 TRICHLOROETHANE (1,1,2 TCA)	5	–
1,1 DICHLOROETHANE (1,1 DCA)	NS	2.8
1,1 DICHLOROETHENE (1,1 DCE)	7	–
1,2 DICHLOROETHANE (1,2 DCA)	5	–
CHLOROFORM	80	–
FREON 113	NS	10,000
METHYLENE CHLORIDE	5	–
TRICHLOROETHENE (TCE)	5	–

NOTES:

1. ALL WELL LOCATIONS APPROXIMATE
2. PRESENTED DATA IS FROM OCTOBER 2020 GROUNDWATER MONITORING EVENT. HISTORICAL DATA IS SUMMARIZED ON TABLE 1
3. CONCENTRATIONS HIGHLIGHTED IN YELLOW EXCEED USEPA MCL OR RSL FOR TAP WATER
4. FIGURE SHOWS ONLY DETECTED VOCS FOR EACH LOCATION
5. ATK LAUNCH SYSTEM WELLS SHOW MOST RECENT AVAILABLE DATA (AUGUST 2019) FOR EACH LOCATION AT THE TIME THE MONITORING REPORT WAS PREPARED
6. ALL UNITS IN MICROGRAMS PER LITER (ug/L)
7. *RESULT FROM DILUTION PERFORMED ON THE SAMPLE FROM HIMW-2. DILUTION WAS PERFORMED BY THE LABORATORY OUTSIDE OF METHOD HOLDING TIME; HENCE, RESULTS FROM BOTH THE INITIAL AND DILUTED SAMPLE ARE REPORTED. RESULTS FROM THE DILUTION ARE QUALIFIED WITH "H" DUE TO THE ANALYSIS BEING FORMED OUTSIDE THE METHOD HOLDING TIME.

QUALIFIERS

J = RESULT IS BELOW THE REPORTING LIMIT BUT ABOVE THE METHOD DETECTION LIMIT AND THE CONCENTRATION IS AN APPROXIMATE VALUE

H = SAMPLE WAS ANALYZED OUTSIDE OF THE SPECIFIED METHOD HOLDING TIME

F1 = MATRIX SPIKE OR MATRIX SPIKE DUPLICATE RECOVERY FOR THIS ANALYTE EXCEEDS CONTROL LIMIT

E = RESULT EXCEEDS CALIBRATION RANGE

0 600

SCALE IN FEET

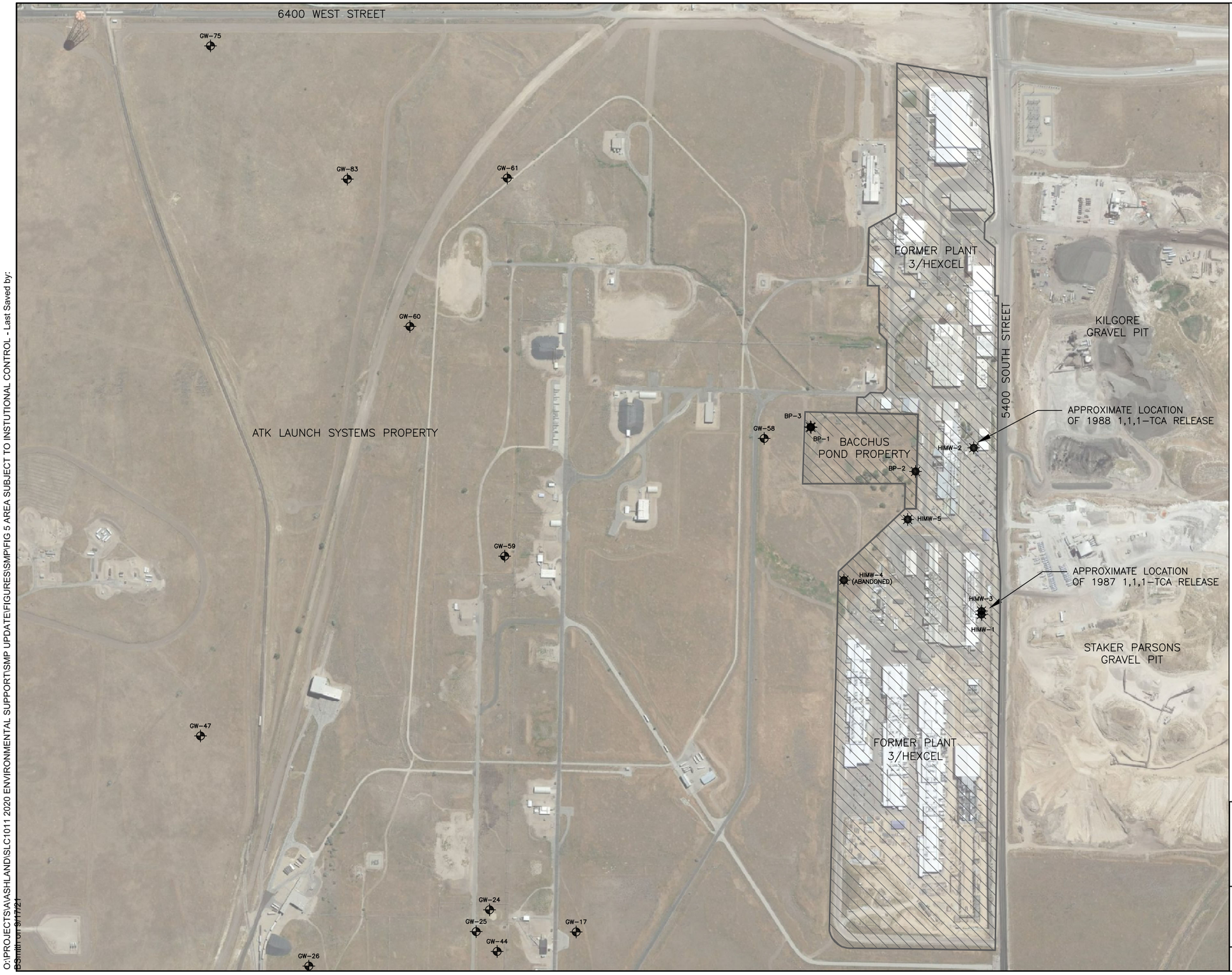
GROUNDWATER ANALYTICAL SUMMARY MAP (OCTOBER 2020) FORMER BACCHUS PLANT 3 WEST VALLEY, UTAH

Geosyntec consultants

FIGURE 4

PROJECT NO: SLC1011 | SEPTEMBER 2021

O:\PROJECTS\AASHLAND\SLC1011 2020 ENVIRONMENTAL SUPPORT\SMP UPDATE\FIGURES\SMP\FIG 5 AREA SUBJECT TO INSTUTIONAL CONTROL - Last Saved by: BSmith on 9/7/21



N

LEGEND

- HERCULES WELL
- ATK LAUNCH SYSTEMS WELL
- APPROXIMATE PROPERTY BOUNDARY
- AREA SUBJECT TO GROUNDWATER AND RESIDENTIAL LANDUSE RESTRICTION (INCLUDES BACCHUS POND PROPERTY, WHICH IS MANAGED UNDER SEPARATE SITE MANAGEMENT PLAN AND ENVIRONMENTAL CONVENANT THAT ALSO RESTRICTS GROUNDWATER USE AND RESDENTIAL USE FOR THAT PROPERTY)

0 600

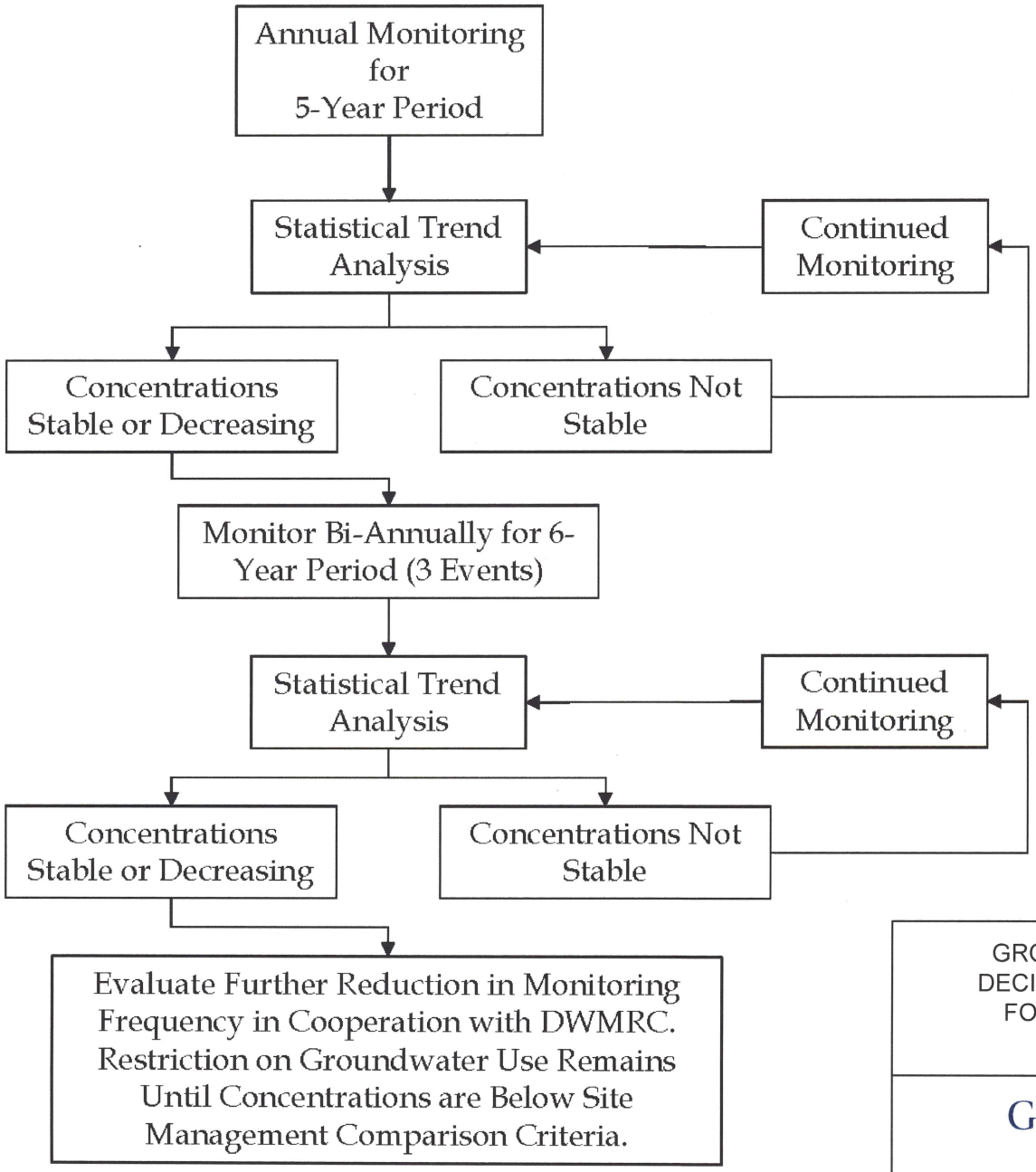
SCALE IN FEET

AREAS SUBJECT TO INSTITUTIONAL CONTROLS FORMER BACCHUS PLANT 3 WEST VALLEY, UTAH

Geosyntec consultants

PROJECT NO: SLC1011 | SEPTEMBER 2021

FIGURE 5



GROUNDWATER MONITORING
DECISION MAKING FRAMEWORK
FORMER BACCHUS PLANT 3
WEST VALLEY, UTAH

Geosyntec consultants

FIGURE 6

PROJECT NO: SLC1011 | SEPTEMBER 2021

TABLES

Table 1
Hercules LLC
Former Bacchus Plant 3
Groundwater Analytical Summary

Well	Date	Screen Interval (ft)	Depth of Pump Intake (ft)	1,1,1 Trichloroethane (1,1,1 TCA)	1,1,2 Trichloroethane	1,2,4 Trimethylbenzene	1,2,3 Trichlorobenzene	1,1 Dichloroethane (1,1 DCA)	1,1 Dichloroethene (1,1 DCE)	1,2 Dichloroethane (1,2 DCA)	2-Butanone (MEK)	Acetone	Benzene	Dichlorobromomethane	Carbon Tetrachloride	Chloroform	cis 1,2 Dichloroethene (cis-1,2 DCE)	trans 1,2 Dichloroethene (trans-1,2 DCE)	Ethylbenzene	Methylene Chloride	Naphthalene	Toluene	Tetrachloroethene (PCE)	Trichloroethene (TCE)
HIMW-1	3/20/2008	330-350	340	< 0.50	< 0.50	< 0.50	NA	< 0.50	< 0.50	< 0.50	< 2.0	**4.6**	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	**0.04 J**	< 0.50	< 0.50	**0.1 J**	< 0.50	**0.08 J**
	1/25/2013			< 0.30	< 0.30	< 0.30	< 0.30	< 0.30	< 0.30	< 0.30	< 1.5	< 1.9	< 0.30	< 0.30	< 0.30	< 0.30	< 0.30	< 0.30	< 0.30	< 0.30	< 0.30	< 0.30	< 0.30	< 0.30
	5/27/2015			< 0.16	< 0.27	< 0.15	< 0.21	< 0.22	**0.32 J**	< 0.13	< 2.0	**2.2 J**	< 0.16	< 0.17	< 0.19	< 0.16	< 0.15	< 0.15	< 0.16	< 0.32	< 0.22	< 0.17	< 0.20	< 0.16
	4/25/2016			< 0.07	< 0.15	< 0.08	< 0.09	< 0.07	< 0.08	< 0.10	< 0.52	< 0.34	< 0.06	< 0.09	< 0.13	< 0.10	< 0.09	< 0.08	< 0.09	< 0.27	< 0.16	< 0.07	< 0.18	< 0.25
	7/13/2016			< 0.17	< 0.13	< 0.17	< 0.17	< 0.07	< 0.10	< 0.22	< 0.47	< 0.55	< 0.10	< 0.14	< 0.18	< 0.10	< 0.10	< 0.10	< 0.12	< 0.27	< 0.21	< 0.14	< 0.18	< 0.25
	10/18/2016			< 0.17	< 0.13	**0.22 J**	< 0.17	< 0.07	< 0.10	< 0.22	< 0.47	< 0.55	< 0.10	< 0.14	< 0.18	< 0.10	< 0.10	< 0.10	< 0.12	< 0.27	< 0.21	< 0.14	< 0.18	< 0.25
	1/24/2017			< 0.17	< 0.13	< 0.17	< 0.17	< 0.07	< 0.10	< 0.22	< 0.47	< 0.55	< 0.10	< 0.14	< 0.18	< 0.10	< 0.10	< 0.10	< 0.12	< 0.27	< 0.21	< 0.14	< 0.18	< 0.25
	10/24/2017			< 0.17	< 0.13	< 0.17	< 0.17	< 0.07	< 0.10	< 0.22	< 0.47	< 0.55	< 0.10	< 0.14	< 0.18	< 0.10	< 0.10	< 0.10	< 0.12	< 0.27	< 0.21	< 0.14	< 0.18	< 0.25
	10/1/2018			< 0.17	< 0.25	< 0.25	< 0.58	< 0.093	< 0.12	< 0.22	< 0.72	< 0.91	< 0.10	< 0.14	< 0.18	< 0.24	< 0.10	< 0.10	< 0.13	< 0.27	< 0.57	< 0.19	< 0.19	< 0.25
	10/3/2019			< 0.25	< 0.25	< 0.25	< 0.48	< 0.25	< 0.27	< 0.23	< 0.72	< 0.94	< 0.26	< 0.17	< 0.19	< 0.24	< 0.23	< 0.26	< 0.34	< 0.27	< 0.57	< 0.24	< 0.31	< 0.31
	10/22/2020			< 0.60	< 0.45	< 0.48	< 1.1	< 0.31	< 0.55	< 0.57	< 2.6	< 3.4	< 0.60	< 0.64	< 0.88	< 0.60	< 0.71	< 0.67	< 0.51	< 0.89	< 0.84	< 0.46	< 0.47	< 0.69
HIMW-2	3/19/2008	209-229	219	**7.4**	**5.1**	< 0.50	NA	**1.3**	**23**	**4.3**	< 2.0	**2.4**	**0.2 J**	**0.5 J**	**1.5**	**3.2**	**0.08 J**	**0.2 J**	< 0.50	**1.1**	< 0.50	**0.04 J**	< 0.50	**190**
	1/25/2013			**3.9**	**4.3**	< 0.30	< 0.30	**0.69 J**	**20**	**3.8**	< 1.5	< 1.9	< 0.30	< 0.30	**1.8**	**2.3**	< 0.30	< 0.30	< 0.30	**0.86 J**	< 0.30	< 0.30	< 0.30	**250**
	5/27/2015			**2.2 J**	**4.0 J**	< 1.5	< 2.1	< 2.2	**14**	**5.2 J**	< 20	< 19	< 1.6	< 1.7	**1.9**	**2.0 J**	< 1.5	< 1.5	< 1.6	**5.2 J B**	< 2.2	< 1.7	< 2.0	**240**
	4/25/2016			**1.7**	**3.1**	< 0.08	< 0.09	**0.34 J**	**6.2**	**6.4**	< 0.52	< 0.34	< 0.06	< 0.09	**1.2**	**1.5**	< 0.09	< 0.08	< 0.09	**1.4**	< 0.16	< 0.07	< 0.18	**150**
	7/13/2016			**1.1**	**3.2**	< 0.17	< 0.17	**0.33 J**	**6.8**	**6.2**	< 0.47	**2.9**	< 0.10	< 0.14	**0.71 J**	**1.4**	< 0.10	< 0.10	< 0.12	**1.5**	< 0.21	< 0.14	< 0.18	**110**
	10/18/2016			**1.3**	**3.0**	< 0.17	< 0.17	**0.32 J**	**9.6**	**7.3**	< 0.47	**0.84 J**	< 0.10	< 0.14	**1.1**	**1.4**	< 0.10	< 0.10	< 0.12	**1.5**	< 0.21	< 0.14	< 0.18	**140**
	1/24/2017			< 0.17	**2.3**	< 0.17	< 0.17	< 0.07	**6.4**	**7.0**	< 0.47	< 0.55	< 0.10	< 0.14	**0.69 J**	**1.1**	< 0.10	< 0.10	< 0.12	**1.3**	< 0.21	< 0.14	< 0.18	**120**
	10/24/2017			< 0.17	**2.6**	< 0.17	< 0.17	< 0.07	**6.4**	**7.5**	**1.3 J**	**2.1**	< 0.10	< 0.14	**0.72 J**	**1.1**	< 0.10	< 0.10	< 0.12	**1.5**	< 0.21	< 0.14	< 0.18	**120**
	10/1/2018			< 0.17	**1.9**	< 0.25	< 0.58	< 0.093	**5.3**	< 0.22	< 0.72	< 0.91	< 0.10	< 0.14	**0.60 J**	**0.81 J**	< 0.10	< 0.10	< 0.13	**1.1**	< 0.57	< 0.19	< 0.19	**97**
	10/3/2019			**0.41 J**	**1.5**	< 0.25	< 0.48	< 0.25	**3.7**	**7.8**	< 0.72	**4.6**	< 0.26	< 0.17	**0.50 J**	**0.66 J**	< 0.23	< 0.26	< 0.34	**1.1**	< 0.57	< 0.24	< 0.31	**83**
	10/22/2020			< 0.60	**0.72 J**	< 0.48	< 1.1	< 0.31	**2.8**	**5.1**	< 2.6	< 3.4	< 0.60	< 0.64	< 0.88	< 0.60	< 0.71	< 0.67	< 0.51	**1.1**	< 0.84	< 0.46	< 0.47	**75 E**
	10/22/2020			< 3.0 H	< 2.3 H	< 2.4 H	< 5.3 H	< 1.5 H	**3.3 J H**	**6.9 H**	< 13 H	< 17 H	< 3.0 H	< 3.2 H	< 4.4 H	< 3.0 H	< 3.5 H	< 3.4 H	< 2.5 H	**4.4 J H**	< 4.2 H	< 2.3 H	< 2.3 H	**79 H**
HIMW-3	5/27/2015	258.6-278.6	268.6	**40**	< 1.1	< 0.60	< 0.84	< 0.88	**94**	< 0.52	< 8.0	< 7.6	< 0.64	< 0.68	< 0.76	< 0.64	< 0.60	< 0.60	< 0.64	< 1.3	< 0.88	< 0.68	< 0.80	< 0.64
	4/25/2016			**23**	< 0.15	< 0.08	< 0.09	< 0.07	**57**	< 0.10	< 0.52	< 0.34	< 0.06	< 0.09	< 0.13	**0.10 J**	< 0.09	< 0.08	< 0.09	< 0.27	**0.34 J B**	< 0.07	< 0.18	< 0.25
	7/13/2016			**23**	< 0.13	< 0.17	< 0.17	< 0.07	**59**	< 0.22	< 0.47	< 0.55	< 0.10	< 0.14	< 0.18	**0.12 J**	< 0.10	< 0.10	< 0.12	< 0.27	**0.32 J**	< 0.14	< 0.18	< 0.25
	10/18/2016			**24**	< 0.13	< 0.17	< 0.17	< 0.07	**55**	< 0.22	< 0.47	**1.1 J**	< 0.10	< 0.14	< 0.18	**0.14 J**	< 0.10	< 0.10	< 0.12	< 0.27	< 0.21	< 0.14	< 0.18	< 0.25
	1/24/2017			**17**	< 0.13	< 0.17	**0.32 J B**	< 0.07	**54**	< 0.22	< 0.47	< 0.55	< 0.10	< 0.14	< 0.18	< 0.10	< 0.10	< 0.10	< 0.12	< 0.27	< 0.21	< 0.14	< 0.18	< 0.25
	10/24/2017			**12**	< 0.13	< 0.17	< 0.17	< 0.07	**48**	< 0.22	< 0.47	**0.78 J**	< 0.10	< 0.14	< 0.18	< 0.10	< 0.10	< 0.10	< 0.12	< 0.27	< 0.21	< 0.14	< 0.18	< 0.25

Table 1
Hercules LLC
Former Bacchus Plant 3
Groundwater Analytical Summary

Well	Date	Screen Interval (ft)	Depth of Pump Intake (ft)	1,1,1 Trichloroethane (1,1,1 TCA)	1,1,2 Trichloroethane	1,2,4 Trimethylbenzene	1,2,3 Trichlorobenzene	1,1 Dichloroethane (1,1 DCA)	1,1 Dichloroethene (1,1 DCE)	1,2 Dichloroethane (1,2 DCA)	2-Butanone (MEK)	Acetone	Benzene	Dichlorobromomethane	Carbon Tetrachloride	Chloroform	cis 1,2 Dichloroethene (cis-1,2 DCE)	trans 1,2 Dichloroethene (trans-1,2 DCE)	Ethylbenzene	Methylene Chloride	Naphthalene	Toluene	Tetrachloroethene (PCE)	Trichloroethene (TCE)
	10/1/2018			**10**	< 0.25	< 0.25	< 0.58	< 0.093	**46**	< 0.22	< 0.72	**1.8 J**	< 0.10	< 0.14	< 0.18	< 0.24	< 0.10	< 0.10	< 0.13	< 0.27	< 0.57	< 0.19	< 0.19	< 0.25
	10/3/2019			**8.5**	< 0.25	< 0.25	< 0.48	< 0.25	**45**	< 0.23	< 0.72	**2.8**	< 0.26	< 0.17	< 0.19	< 0.24	< 0.23	< 0.26	< 0.34	< 0.27	< 0.57	< 0.24	< 0.31	< 0.31
	10/22/2020			**6.5**	< 0.45	< 0.48	< 1.1	< 0.31	**47**	< 0.31	< 2.6	< 3.4	< 0.60	< 0.64	< 0.88	< 0.60	< 0.71	< 0.67	< 0.51	< 0.89	< 0.84	< 0.46	< 0.47	< 0.69
HIMW-4 (Abandoned)	5/27/2015	271.8-291.8	281.8	**1.5**	< 0.27	< 0.15	< 0.21	**0.45 J**	**9.7**	**0.32 J**	< 2.0	< 1.9	< 0.16	**0.34 J**	< 0.19	**1.8**	< 0.15	< 0.15	< 0.16	< 0.32	**0.98 J**	< 0.17	**0.40 J**	**2.9**
	4/26/2016			**0.76 J ***	< 0.15	< 0.08	< 0.09	**0.22 J**	**5.2**	**0.22 J**	< 0.52	< 0.34	< 0.06	**0.26 J**	< 0.13	**1.3**	< 0.09	< 0.08	< 0.09	< 0.27	**0.45 J B**	< 0.07	< 0.18	**1.6**
	7/14/2016			**0.79 J**	< 0.13	< 0.17	< 0.17	**0.23 J**	**5.5**	**0.24 J**	< 0.47	**9.3 J**	< 0.10	**0.27 J**	< 0.18	**1.4**	< 0.10	< 0.10	< 0.12	< 0.27	**0.32 J**	< 0.14	< 0.18	**2.0**
	10/19/2016			**0.53 J**	< 0.13	**0.28 J**	< 0.17	**0.20 J**	**3.7**	< 0.22	< 0.47	**3.1**	< 0.10	**0.25 J**	< 0.18	**1.2**	< 0.10	< 0.10	< 0.12	< 0.27	**0.84 J**	< 0.14	< 0.18	**1.4**
	1/25/2017			**0.53 J**	< 0.13	< 0.17	< 0.17	< 0.07	**4.2**	< 0.22	< 0.47	< 0.55	< 0.10	**0.24 J**	< 0.18	**1.2**	< 0.10	< 0.10	< 0.12	< 0.27	< 0.21	< 0.14	< 0.18	**1.6**
HIMW-5	5/27/2015	244.9-264.9	254.9	**4.9**	< 0.27	< 0.15	< 0.21	**0.30 J**	**23**	< 0.13	< 2.0	< 1.9	< 0.16	**0.36 J**	< 0.19	**2.0**	< 0.15	< 0.15	< 0.16	< 0.32	**0.30 J**	< 0.17	< 0.20	**0.46 J**
	4/26/2016			**4.2**	< 0.15	< 0.08	< 0.09	**0.25 J**	**16**	< 0.10	< 0.52	< 0.34	< 0.06	**0.34 J**	< 0.13	**2.0**	< 0.09	< 0.08	< 0.09	< 0.27	< 0.16	< 0.07	< 0.18	**0.35 J**
	7/13/2016			**4.4**	< 0.13	< 0.17	< 0.17	**0.24 J**	**22**	< 0.22	< 0.47	**1.8 J**	< 0.10	**0.41 J**	< 0.18	**2.3**	< 0.10	< 0.10	< 0.12	< 0.27	< 0.21	< 0.14	< 0.18	**0.43 J**
	10/18/2016			**4.0**	< 0.13	**0.28 J**	< 0.17	**0.31 J**	**22**	< 0.22	< 0.47	**1.8 J**	< 0.10	**0.52 J**	< 0.18	**2.2**	< 0.10	< 0.10	< 0.12	< 0.27	< 0.21	< 0.14	< 0.18	**0.37 J**
	1/25/2017			**3.2**	< 0.13	< 0.17	< 0.17	< 0.07	**19**	< 0.22	< 0.47	< 0.55	< 0.10	**0.38 J**	< 0.18	**2.0**	< 0.10	< 0.10	< 0.12	< 0.27	< 0.21	< 0.14	< 0.18	< 0.25
	10/24/2017			**3.3**	< 0.13	< 0.17	< 0.17	< 0.07	**24**	< 0.22	< 0.47	< 0.55	< 0.10	**0.49 J**	< 0.18	**2.5**	< 0.10	< 0.10	< 0.12	< 0.27	< 0.21	< 0.14	< 0.18	< 0.25
	10/1/2018			**2.7**	< 0.25	< 0.25	< 0.58	< 0.093	**22**	< 0.22	< 0.72	**1.5 J**	< 0.10	**0.38 J**	< 0.18	**2.1**	< 0.10	< 0.10	< 0.13	< 0.27	< 0.57	< 0.19	< 0.19	< 0.25
	10/3/2019			**2.3**	< 0.25	< 0.25	< 0.48	< 0.25	**20**	< 0.23	< 0.72	**3.2**	< 0.26	**0.40 J**	< 0.19	**2.3**	< 0.23	< 0.26	< 0.34	< 0.27	< 0.57	< 0.24	< 0.31	< 0.31
	10/21/2020			**1.5**	< 0.45	< 0.48	< 1.1	< 0.31	**19 F1**	< 0.57	< 2.6	< 3.4	< 0.60	< 0.64	< 0.88	**1.8**	<0.71 * F1	<0.67 F1	< 0.51	< 0.89	< 0.84	< 0.46	< 0.47	<0.69 F1
USEPA MCL[a]				200	5	NS	NS	NS	7	5	NS	NS	5	80	5	80	70	100	700	5	NS	1,000	5	5
USEPA RSL for Tap Water Ingestion[b]				-	-	56	7	2.8	-	-	5,600	14,000	-	-	-	-	-	-	-	-	0.12	-	-	-

Notes:
All concentrations reported in ug/L
J = Estimated concentration detected below laboratory reporting limit
B = Compound was found in the blank and sample
E = Result exceeds calibration range
H = Sample was prepped or analyzed outside of the specified holding time
F1 = MS and/or MSD recovery exceeds control limit
* = LCS or LCSD is outside acceptance limits
NS = No Standard
NA = Not Analyzed.
[a]USEPA Maximum Contaminant Level (MCL) for drinking water
[b]USEPA Regional Screening Levels (RSL) for tap water ingestions (updated May 2021).
Concentrations highlighted in yellow exceed USEPA MCL or USEPA RSL for tap water ingestion. USEPA RSL for tap water is only applied when MCL has not been established.
Table shows detected compounds only