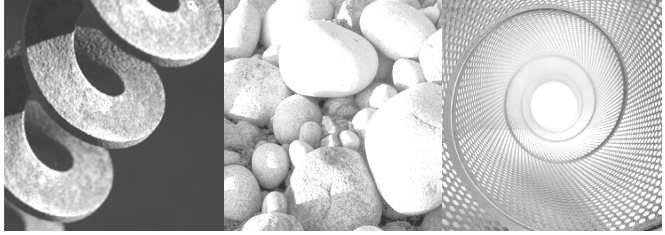

GEI Consultants

Consulting
Engineers and
Scientists

Annual Groundwater Monitoring and Operations, Maintenance & Monitoring Report 2020/2021

Halesite Former MGP Site

Town of Huntington, Suffolk County,
Long Island, New York
Site ID No. 1-52-173

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Abbreviations, Acronyms, and Measurements

AKRF	Allee King Rosen & Fleming
AWQS	Ambient Water Quality Standards
BTEX	Benzene, Toluene, Ethylbenzene, and total Xylenes
°C	Degrees Celsius
DER	Division of Environmental Remediation
DNAPL	Dense Non-Aqueous Phase Liquid
DO	Dissolved Oxygen
DTW	Depth-to-Groundwater
D&B	Dvirka and Bartilucci
ft bgs	feet below ground surface
GEI	GEI Consultants, Inc., P. C.
GM	Groundwater Monitoring
LNAPL	Light Non-Aqueous Phase Liquid
mg/L	milligrams per liter
MGP	Manufactured Gas Plant
mS/cm	microSiemens per centimeter
MSL	Mean Sea Level
mV	millivolts
NAPL	Non-Aqueous Phase Liquid
NYSDEC	New York State Department of Environmental Protection
OM&M	Operations Maintenance & Monitoring
ORP	oxidation reduction potential
PAH	Polycyclic Aromatic Hydrocarbon
pH	potential Hydrogen
PSEG-LI	Public Service Electric and Gas Company – Long Island
Q1	First Quarter
Q2	Second Quarter
Q3	Third Quarter
Q4	Fourth Quarter
RAP	Remedial Action Plan
RIR	Remedial Investigation Report
TOGS	Technical and Operational Guidance Series
TSDF	Treatment, Storage, and Disposal Facility
µg/L	micrograms per liter
USDOT	United States Department of Transportation
VHB	Vanasse Hangen Brustlin, Inc.
WLE	Water Level Elevation

Executive Summary

This annual report presents the groundwater monitoring (GM) and operations, maintenance and monitoring (OM&M) results obtained during the annual monitoring period (Fourth Quarter [Q4] 2020 through Third Quarter [Q3] 2021) for the Halesite Former Manufactured Gas Plant (MGP) Site (the Site) located on North New York Avenue in Halesite, within the Town of Huntington, Suffolk County, New York. GM and OM&M activities include groundwater monitoring, non-aqueous phase liquid (NAPL) monitoring and recovery, as well as maintenance and monitoring of the groundwater treatment system.

A letter requesting reductions to the long-term groundwater monitoring program was approved by the New York State Department of Environmental Conservation (NYSDEC) in September 2014. The reductions included reducing the groundwater sampling frequency to semi-annual or annual (depending on recent analytical results), limiting the analytical requirements for groundwater sampling to benzene, toluene, ethylbenzene, and total xylenes (BTEX) and polycyclic aromatic hydrocarbons (PAHs), reducing the frequency of NAPL monitoring to quarterly or annually (depending on the historical presence of NAPL in a particular well), reducing NAPL recovery to quarterly, and reducing the reporting frequency to annually. The letter also established criteria for further reductions to the groundwater sampling program based on analytical results and provided criteria for shutdown and removal of the groundwater treatment system at the Site. Implementation of the reduced program began in Q4 2014. This report represents the seventh report following approval of the reductions to the program. Significant reductions to the annual sampling list beginning with the Q3 2017 annual sampling event were realized as a result of the concentrations noted during previous sampling rounds and in accordance with the approved criteria.

Site Background

The former MGP Site is believed to have initiated operations around 1892 and continued to operate through approximately 1918. The MGP structures were later dismantled and removed from the Site. The results of the investigations and discussion of the Site history are presented in the Final Remedial Investigation Report (RIR), dated April 2004.

Based on results presented in the RIR, and the subsequent implementation of a routine groundwater monitoring and sampling program, the former MGP Site and areas adjacent to the Site have been found to contain MGP-related impacts to soil and groundwater.

Subsequently, a Remedial Action Plan (RAP) was submitted to and approved by NYSDEC in March 2006. Implementation of the RAP was conducted from summer 2008 through spring 2009 and included soil excavation, the installation of NAPL recovery wells, and the

installation, startup, and operation of an oxygen injection system to treat impacted groundwater.

NAPL Gauging and Recovery

Since recovery started in December 2009, approximately 130 gallons of dense non-aqueous phase liquid (DNAPL) have been recovered from onsite recovery wells and three monitoring wells through Q3 2021, primarily by purging with a peristaltic pump (see Table 2.2). Offsite NAPL recovery in monitoring well HHMW-22S1 has totaled approximately 8 gallons through First Quarter (Q1) 2014; however, since Q1 2015, the minimal thicknesses of DNAPL have prevented further recovery. DNAPL thicknesses in RW-9D, where the majority of DNAPL has been recovered, and the remaining onsite wells have been relatively consistent during the last year.

Groundwater Treatment and Quality

Since treatment system startup in May 2009, a total of 512,576 pounds of oxygen (approximately 9,200 pounds per quarter during the past year) have been injected into groundwater to promote microbial reduction of groundwater impacts (see Appendix A). Total BTEX and total PAH concentrations in groundwater have remained low (below 50 micrograms per liter [µg/L]) in the majority of the monitoring wells at, and in the vicinity of the Site since baseline sampling (April 2009). The groundwater impacts primarily consist of PAHs. Decreases in BTEX and PAH concentrations have been observed in most of the monitoring wells with historically elevated concentrations located in the immediate vicinity and downgradient of the oxygen injection system.

Overall, the historical monitoring period concentration trends continue to indicate that the oxygen injection system is effectively remediating groundwater in the areas in the vicinity of and immediately downgradient of the system. Downgradient of the oxygen injection system, no impacts above 100 µg/L have been present in the past five sampling events. Currently, downgradient concentrations above the ambient water quality standards are limited to one well (HHMW-19S1).

Future Plans

The GM and OM&M program will continue in accordance with the NYSDEC-approved Operations, Maintenance, and Monitoring Plan (GEI Consultants, Inc., P.C. [GEI], 2009) and the long-term monitoring plan discussed above. Any proposed modifications to the program will be presented to the NYSDEC for review and approval.

1. Introduction

This annual report presents the groundwater monitoring (GM) and operations, maintenance and monitoring (OM&M) results conducted during the annual monitoring period (Fourth Quarter [Q4] 2019 through Third Quarter [Q3] 2020) for the Halesite Former Manufactured Gas Plant (MGP) Site (the Site) located on North New York Avenue in Halesite, within the Town of Huntington, Suffolk County, New York. The sampling and data collection were conducted in general accordance with the New York State Department of Environmental Conservation (NYSDEC)-approved Operations, Maintenance, and Monitoring Plan (GEI Consultants, Inc. [GEI], 2009). This report has been prepared in accordance with the requirements of Section 6 of Division of Environmental Remediation, Technical Guidance for Site Investigation and Remediation (DER-10), and Order-on-Consent, Index No. D1-0001-98-11 signed by KeySpan Corporation (currently known as National Grid) and the NYSDEC.

GM and OM&M activities included groundwater monitoring, non-aqueous phase liquid (NAPL) monitoring and recovery, and OM&M of the oxygen injection system. GM and OM&M results are presented in the following sections of the report:

- Section 2 – NAPL Monitoring and Recovery
- Section 3 – Groundwater Monitoring
- Section 4 – Conclusions

1.1 Background

The former MGP is believed to have initiated operations around 1892 and continued to operate through approximately 1918. The MGP structures were later dismantled and removed from the Site. The results of the investigations and discussion of the Site history are presented in the Remedial Investigation Report (RIR).

The Site is approximately one acre in size and is located along North New York Avenue approximately 200 feet east of Huntington Harbor (**Figure 1**). An active Public Service Electric and Gas – Long Island (PSEG-LI) electric substation is located on the western-third, or Lowland Area, of the Site. The remaining eastern two-thirds of the property, or Upland Area, is undeveloped land that is characterized by a steep slope that was formerly heavily vegetated but was cleared and stabilized with new plantings during Site remediation. The surrounding area is primarily residential with a mixture of commercial properties along New York Avenue. The topography of the Site is relatively flat, but generally sloping towards the harbor around the existing electric substation in the Lowland Area. The undeveloped Upland Area of the Site rises sharply eastward from approximately 20 to 60 feet above mean sea level (MSL) and continues to slope upward to a high point near the northeast corner of the

property. The elevation of the Site ranges from approximately 15 feet above MSL near the western boundary in the Lowland Area to approximately 85 feet above MSL at the eastern boundary in the Upland Area.

A final Remedial Action Plan (RAP) titled "Remedial Action Plan, Halesite Former MGP Site, Halesite, New York" prepared by GEI was submitted by National Grid (KeySpan) in March 2006 to the NYSDEC and approved. A summary of Site investigations and remedial activities is presented in **Table 1a** below.

Table 1a – Summary of Site Investigations and Remedial Activity

Date	Remedial Activity	Activity Detail	Conducted By
1997	Phase I Site Investigation	Piezometer and monitoring well installation, soil and groundwater sampling	Fluor Daniel GTI
2001 – 2004	Remedial Investigations	Included soil, soil vapor and groundwater sampling, monitoring well installations	D&B VHB
August 2005	Substation Clean Utility Corridor Installation Project	Removal of approximately 180 tons of soil and other material from the substation area	GEI
October 2008	Shallow Soil Excavation	Removal of approximately 400 tons of impacted soil including the top two feet of soil in the Upland Area	AKRF/Creamer
November 2008 – February 2009	Onsite Impacted Soil Excavation	Removal of approximately 5,800 tons of impacted soil from four onsite source areas	AKRF/Creamer
February 2009	DNAPL Delineation Program	Soil borings	GEI
February – March 2009	Offsite Impacted Soil Excavation	Removal of approximately 1,150 tons of offsite impacted soil from the parking lot of the adjacent office building	AKRF/Creamer
May 2009	Oxygen Injection System (Including additional monitoring well installations)	Installed in the Lowland Area, to treat groundwater from residual soil contamination	AKRF/GEI
2009 – Current	DNAPL Recovery	See Section 2	GEI

Notes:
DNAPL: Dense Non-Aqueous Phase Liquid
D&B: Dvirka and Bartilucci
VHB: Vanasse Hangen Brustlin, Inc.
AKRF: Allee King Rosen & Fleming

1.2 Site Geology

The subsurface sediments at the Site and surrounding area are comprised of a relatively thick sequence of sand, gravel, silt, and clay. Four distinct stratigraphic units underlie the Site and adjacent area.

From the ground surface and downward, these units consist of topsoil/fill material, a shallow sand unit, a fine-grained unit, and a glacial sand unit. The fine-grained unit is generally continuous onsite and is encountered at depths ranging from approximately 8 to 70 feet below ground surface (ft bgs) in the Lowland Area to the Upland Area of the Site, respectively, with thicknesses of up to 8 feet in the Upland Area. This unit is not present in the extreme western portion of the Lowland Area and immediately downgradient of the Site. Additional information regarding Site geology is available in the RIR, dated April 2004.

2. NAPL Monitoring and Recovery

2.1 Program Scope and Purpose

As part of the remediation activities, 13 passive NAPL recovery wells (RW-1 through RW-11, RW-5D, and RW-9D) were installed along the perimeter of the Lowland Area. These recovery wells, along with monitoring wells MW-03, HHMW-05S2R, HHMW-09S2, HHMW-15S, and HHMW-22S1 are monitored for the presence of NAPL. Monitoring wells MW-03, HHMW-05S2, HHMW-09S2, HHMW-15S, HHMW-22S1, and recovery wells RW-5D and RW-9D are monitored quarterly. The remaining recovery wells are monitored annually. Recovery from wells with sufficient thicknesses of NAPL is conducted quarterly. The locations of these wells are depicted on **Figure 2**.

2.1.1 Historical Findings

Historically, NAPL has been observed in nine monitoring and recovery wells located onsite and one monitoring well located offsite (HHMW-22S1). Excluding HHMW-12, which was located in the Upland Area (see **Table 2a**), measurable levels of NAPL have historically been limited to the areas immediately adjacent to, and within, the substation. Since the completion of the remedial excavation in the area, NAPL has not been detected in the Upland Area. Remedial excavation was not conducted within the substation, and as a result, NAPL has continued to be detected within, and in the vicinity of, the substation. A summary of the historical NAPL findings is provided in the table below.

Table 2a – Historical NAPL Summary

Well	Location	Maximum NAPL Thickness (feet)	Period Measured (Start)	Current Well Status	Current Monitoring Frequency*	Comments
HHMW-12	Upland	0.4**	Q2 2005	Abandoned	NA	Abandoned – Replaced by HHMW-16***
HHMW-10	Lowland – substation	2.3	Q2 2005	Abandoned	NA	--
HHRW-01	Lowland – substation	--	NA	Destroyed	NA	Replaced by HHMW-10
HHMW-05S2R	Lowland	0.2	Q3 2012	Active	Quarterly	--
HHMW-09S2	Lowland	3.68	Q4 2008	Active	Quarterly	--
HHMW-15S	Lowland – substation	2.6	Q4 2011	Active	Quarterly	Replacement for HHRW-01
HHMW-22S1	Lowland – office bldg.	3.8	Q3 2009	Active	Quarterly	--
RW-5D	Lowland	1.25	Q4 2009	Active	Quarterly	--

Well	Location	Maximum NAPL Thickness (feet)	Period Measured (Start)	Current Well Status	Current Monitoring Frequency*	Comments
RW-9D	Lowland	3.0	Q1 2017	Active	Quarterly	--
MW-03	Lowland	0.02	Q3 2014	Active	Quarterly	--

Notes:
*: The monitoring frequency for the wells monitored monthly with measurable thicknesses of NAPL was reduced to quarterly beginning in Q4 2014
**: Light non-aqueous phase liquid (LNAPL), all other measurements are dense non-aqueous phase liquid (DNAPL)
***: No evidence of NAPL has been observed at the HHMW-16 cluster
NA: Not Applicable

2.2 NAPL Monitoring and Recovery Data

2.2.1 Onsite NAPL Monitoring & Recovery

As discussed above, NAPL has been observed in existing recovery wells RW-5D and RW-9D, as well as in existing monitoring wells MW-03, HHMW-05S2R, HHMW-09S2, and HHMW-15S located onsite. **Table 2-1** provides NAPL thickness measurements in the 13 passive recovery wells, as well as in monitoring wells MW-03, HHMW-05S2R, HHMW-09S2, and HHMW-15S. NAPL monitoring is conducted quarterly in onsite recovery wells RW-5D and RW-9D and in monitoring wells MW-03, HHMW-05S2R, HHMW-09S2, and HHMW-15S, which are located within the PSEG-LI substation. DNAPL recovery is conducted on a quarterly schedule at these wells when sufficient thicknesses of DNAPL are present. NAPL monitoring at the remaining recovery wells is conducted annually.

2.2.2 Onsite DNAPL Recovery Data

A summary of the recent DNAPL thicknesses and total amounts recovered from onsite monitoring and recovery wells are shown in **Table 2b** below. **Table 2-2** provides DNAPL recovery data for these wells beginning in Q4 2009 through Q3 2020. DNAPL thicknesses and recovery totals in been decreasing during the past year as shown below.

Table 2b – Summary of Recent DNAPL Thickness and Recovery Totals in Onsite Wells

Well ID	Screen Interval	Average DNAPL Thickness (feet)						Estimated Total Volume Removed
	(feet)	2016	2017	2018	2019	2020	2021*	(gallons)
RW-5D	15-25	0.14	0.13	0.23	0.37	0.29	0.16	11.50
RW-9D	14-24	1.68	2.63	2.05	1.4	0.95	1.4	112.20
HHMW-05S2R	18-28	0.05	0.07	0.04	0.03	0.03	0.01	0.45
HHMW-09S2	17.5-27.5	trace	trace	NO	NO	NO	NO	0.88
HHMW-15S	7.5-12.5	0.2	0.03	0.03	NO	0.01	0.01	4.65

Notes:
*: Values are for the first three quarters (Q1, Q2 & Q3) of 2021
NO: Not Observed
In existing wells, light non-aqueous phase liquid (LNAPL) has only been observed in recovery well RW-9D, at trace levels in Q4 2009 and 2010, and Q3 2011.
Trace amounts of DNAPL counted as 0.01 feet when calculating averages.

2.2.3 Offsite DNAPL Gauging and Recovery

As noted in Section 2.2.1, DNAPL gauging at offsite monitoring well HHMW-22S1 is currently conducted on a quarterly basis. Recovery is conducted on an as-needed basis. To date, no LNAPL has been observed in this well. DNAPL thicknesses in monitoring well HHMW-22S1 had been decreasing since 2012 and have either not been observed or have been only identified at trace levels since Q4 2015. The limited thicknesses have prevented any recovery since First Quarter (Q1) 2014. Approximately 8 gallons of DNAPL have been recovered in this well to date.

2.3 Waste Management

The recovered DNAPL and associated purge water were stored in properly labeled United States Department of Transportation (USDOT)-approved 55-gallon drums in a designated area onsite for subsequent offsite disposal.

2.4 Future Plans

- Onsite NAPL gauging and recovery will continue according to the current schedule.
- The offsite DNAPL gauging will continue on a quarterly schedule. DNAPL recovery will be conducted if the thickness measured is adequate to allow removal (via peristaltic pump).

- Any recovered DNAPL/aqueous solution will be removed and disposed of by a licensed liquid hazardous waste transporter to an approved treatment, storage, and disposal facility (TSDF).

3. Groundwater Monitoring

3.1 Oxygen Injection System

3.1.1 Program Purpose and Scope

An oxygen injection system was installed around the perimeter of the Lowland Area to treat impacted groundwater emanating from the residual soil contamination at the Site. This impacted soil could not be excavated due to accessibility issues associated with the steep slopes in the Upland Area and the active electrical substation in the Lowland Area. The purpose of the oxygen injection system is to infuse oxygen into groundwater to promote microbial reduction in groundwater impacts. The oxygen injection system became operational on May 4, 2009 and its location is depicted on **Figure 2**.

3.1.2 Current Monitoring Activities

Table 3-1 provides the complete monitoring well list, including sampling frequency. The current oxygen injection system monitoring activities are summarized in **Table 3a** below.

Table 3a – Description and Location of Analytical and Monitoring Results

Current Activity	Description	Frequency	Location of Results
Oxygen System Monitoring	Routine inspection, operational parameter monitoring, and system optimization	Monthly	Appendix A (field logs not included)
Performance Monitoring of Oxygen Injection System*	Monitoring of groundwater chemistry parameters	Semi-annually	Table 3-2
	Groundwater sampling	Semi-annually	Tables 3-4, 3-5, 3-6

Note:

*: In order to ensure that system runtime is maximized between onsite monitoring events; a telemetry system provides remote access to system parameters and settings. This system also transmits email alerts of alarms, signaling that the system is down.

3.1.3 Oxygen Injection System OM&M Data

System Operational Data – The oxygen injection system operated for 335 out of 365 days during the annual monitoring period. The system injected between approximately 7,848 pounds (Fourth Quarter [Q4] 2020) to 10,523 pounds (Q1 2021) of oxygen into the groundwater during each quarter and 512,576 pounds since system startup in May 2009. Most of the system downtime occurred during Q4 2020. The majority of the Q2 downtime resulted from electrical issue that was subsequently repaired. Calculated injected oxygen mass is provided in **Appendix A**.

Groundwater Parameters – Groundwater parameters including dissolved oxygen (DO), oxidation reduction potential (ORP), pH, conductivity, and temperature are monitored to evaluate the system performance. The oxygen injection system has been generally effective at increasing DO concentrations and ORP in groundwater. ORP values in groundwater were lower than the baseline values in downgradient wells during the current annual monitoring period; however, this is largely due to the elimination of numerous wells with historically high ORP values and low concentrations of Benzene, Toluene, Ethylbenzene, and total Xylenes (BTEX) and Polycyclic Aromatic Hydrocarbon (PAHs). **Table 3b** summarizes these parameters, as well as pH, conductivity, and temperature.

Table 3b – Summary of Groundwater Parameters

		Baseline Values	Operational Values	Q1 2021	Q3 2021
		average	average	average	average
DO (mg/L)	Upgradient	3.21	7.21	7.35	6.87
	Injection Area	4.78	17.11	13.00	5.37
	Downgradient	5.17	4.12	0.00	0.00
ORP (mV)	Upgradient	204	288	197	146
	Injection Area	170	208	135	4
	Downgradient	125	100	-85	-121
pH	Upgradient	5.30	5.08	5.47	5.44
	Injection Area	5.75	5.51	6.30	6.38
	Downgradient	5.93	5.85	6.57	6.86
conductivity (mS/cm)	Upgradient	0.233	0.430	0.247	0.310
	Injection Area	0.589	0.501	0.499	0.200
	Downgradient	0.574	0.539	0.667	0.880
Temperature (°C)	Upgradient	12.61	13.46	12.19	18.62
	Injection Area	10.40	13.48	10.66	18.87
	Downgradient	11.73	14.35	9.43	22.39

Notes:
mg/L: milligrams per liter
mV: millivolts
mS/cm: microSiemens per centimeter
°C: degrees Celsius
Baseline values are taken from the April 2009 sampling round, prior to system start-up
green highlight indicates increase from baseline value

A complete summary of groundwater parameter data is included in **Table 3-2**.

3.2 Groundwater Monitoring

3.2.1 Program Purpose and Scope

Groundwater monitoring is conducted semi-annually to monitor the groundwater quality and the effectiveness of the oxygen injection system. The well locations and geographic boundaries of the Site are depicted on **Figure 2**. A letter requesting reductions to the long-

term groundwater monitoring program was approved by NYSDEC in September 2014. The approved reductions included a reduction in sampling frequency for individual wells to semi-annual or annual based on the detected concentrations, reductions to the analytical sampling requirements, limiting the analysis to BTEX and PAHs only, and a reduction in reporting frequency from quarterly to annually. Implementation of the reduced program began in Q4 2014. Criteria for further reductions based on analytical results were also established and based on these criteria, the annual sampling rounds were reduced significantly beginning in Q3 2017. During the 2016 annual sampling round, 29 wells were included on the sampling lists, two of which were not sampled due to the presence of DNAPL in the wells. The 2021 annual sampling list was reduced based on the established criteria to 11 wells, four of which were not sampled due to the presence of DNAPL.

A reduction from semi-annual to annual depth-to-groundwater measurements and groundwater elevation calculations was approved by NYSDEC on March 22, 2021 and implemented during the current reporting period.

The Site has been divided into three areas; upgradient, the oxygen injection area, and downgradient. A fourth offsite area is located sidegradient of the Site and is designated as such (see **Figure 2**). **Table 3c** lists monitoring wells currently sampled and their respective associated area. In general, the wells are divided into two zones, shallow and intermediate. The boundary between the two zones is defined by the fine-grained unit, which is present throughout the majority of the Site and downgradient area. The monitoring wells are sampled across the tidal cycle.

Monitoring well HHMW-11S was abandoned prior to the start of the Town of Huntington Bulkhead replacement project in 2015 and monitoring well HHMW-20S2 was destroyed during the project subsequent to the Q1 2016 sampling event. These wells were re-installed (as HHMW-11SR and HHMW-20S2R, respectively) during Q3 2016.

Table 3c – Groundwater Monitoring Wells

Upgradient	Oxygen Injection Area	Downgradient	Sidegradient
HHMW-13 HHMW-14 **HHMW-16S1** **HHMW-18S1**	**HHMW-05S2-R*** **HHMW-09S1** **HHMW-15S*** **MW-03***	HHMW-07S1 **HHMW-19S1**	**HHMW-22S1***

Notes:
Bold: wells sampled semi-annually
No Bold: wells sampled annually.
*: Not sampled if DNAPL is present within the well.

3.2.2 Site Activity

The following groundwater monitoring activities were conducted during the annual monitoring period:

- Depth-to-groundwater (DTW) measurements were collected on August 10, 2021 from 32 onsite and offsite monitoring wells (**Table 3-3**).
- Groundwater samples were collected for laboratory analysis from six onsite and offsite monitoring wells during the Q1 2021 semi-annual sampling event.
- Groundwater samples were collected for laboratory analysis from seven onsite and offsite monitoring wells during the Q3 2021 annual sampling event.

3.2.3 Groundwater Elevation Data

Measured groundwater levels and calculated the elevations are provided in **Table 3-3**. Groundwater contour maps representing the groundwater flow during the Q3 2021 monitoring period are provided on **Figures 3** through **6**. The ranges in DTW and water level elevation (WLE) data in shallow wells during the Q3 2021 measurement round is summarized in the following table:

Table 3d – Summary of Groundwater Measurement Data (2021)

	High Tide		Low Tide	
	Minimum	**Maximum**	**Minimum**	**Maximum**
DTW	0.25	64.54	0.40	64.65
WLE	6.31	11.58	3.73	11.47

Notes:
1: Measured in feet below top of well casing
2: Calculated as feet above mean sea level (MSL)

The groundwater flow direction at the Site is generally westward towards Huntington Harbor for both high and low tides. The average groundwater elevation during the Q3 2021 monitoring event was 0.39 feet higher than the corresponding Q3 2020 average elevation.

3.2.4 Groundwater Analytical Data

Groundwater analytical data is presented on the following tables:

- **Table 3-4: Groundwater Analytical Results** – presents the groundwater analytical detections in Q1 and Q3 2021.
- **Table 3-5: Summary of Historical Total BTEX Results** – presents a summary of historical BTEX results for the monitoring wells associated with the Site.
- **Table 3-6: Summary of Historical Total PAH Results** – presents a summary of historical PAH results for the monitoring wells associated with the Site.

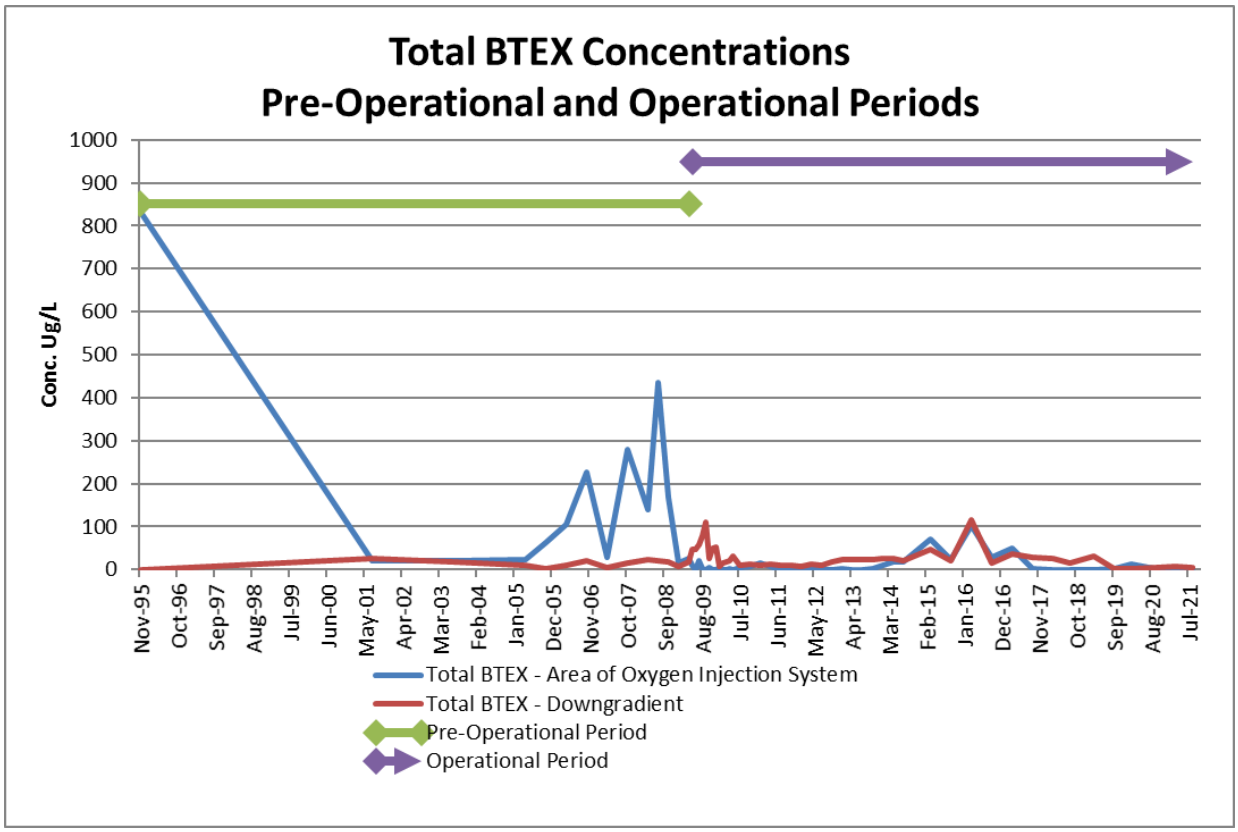
3.2.4.1 BTEX and PAH Distribution and Trends

BTEX and PAH concentrations in groundwater are compared to New York State Technical and Operational Guidance Series (TOGS), 1.1.1 – Ambient Water Quality Standards and Guidance Values (AWQS) for Class GA groundwater. Concentration trends for total BTEX and total PAHs are examined for three areas (upgradient, oxygen injection area, and downgradient) in reference to their location to the oxygen injection system. In addition, trends are examined for monitoring wells with exceedances of the standards and guidance values, as well as other wells, as appropriate.

BTEX

Exceedances of the AWQS for BTEX during the annual monitoring period were limited to three monitoring wells. MW-03 during the semi-annual event, and HHMW-16S1 and HHMW-19S1 during the semi-annual sampling and annual sampling events. HHMW-16S1, MW-03 and HHMW-19S1 are located in the Upland, Lowland and downgradient of the Site, respectively (**Figure 2**).

The average shallow zone total BTEX concentrations at and downgradient of the Site, are presented in the graph below. In general, average shallow total BTEX concentrations have remained low. Excluding the initial sampling event conducted in 1995, the highest average concentrations in onsite wells in the area of the oxygen injection system were detected prior to activation of the oxygen injection system. This increase was likely the result of new monitoring wells in targeted areas that were installed during that period. The slight increase in average concentrations during 2016 is likely attributable to the elimination or reduction of sampling of wells with historically low concentrations.



Note: Graph does not include monitoring well HHMW-15S since it was not sampled in recent sampling events (prior to Q2 2014) due to the presence of DNAPL.

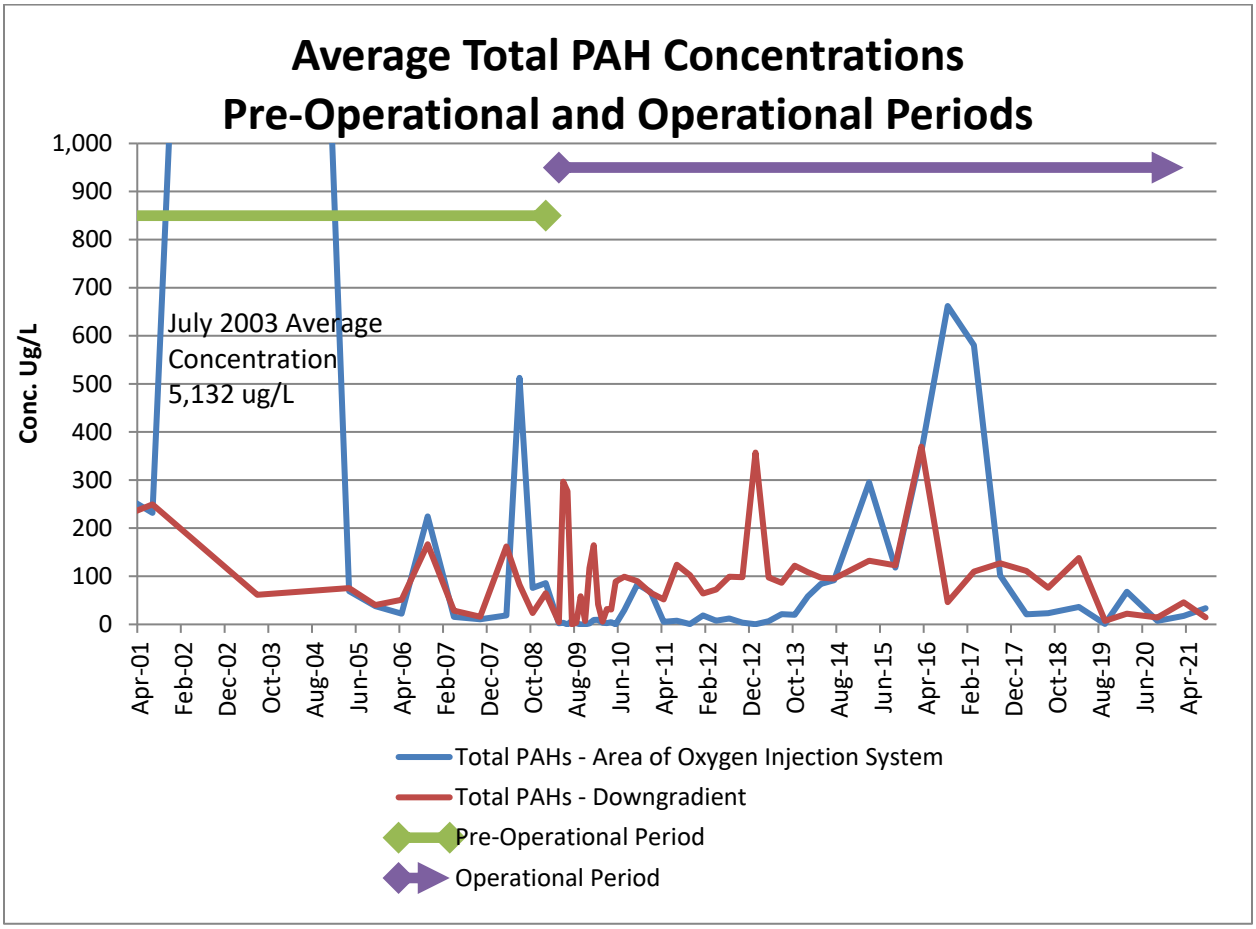
During the Q1 and Q3 2021 sampling events, exceedances of the AWQS for BTEX included total xylenes in monitoring well MW-03 in the semiannual event with a concentration of 8.9 micrograms per liter (µg/L) and HHMW-16S1 in the semi-annual sampling (Q1) event and annual (Q3) with concentrations of 12 µg/L and 5.6 µg/L, respectively. Other BTEX exceedances were limited to monitoring well HHMW-19S1 and included ethylbenzene in the Q1 sampling event with a concentration of 7.1 µg/L and benzene in the Q3 sampling event with a concentration of 1.4 µg/L. The AWQS for total xylenes and ethylbenzene is 5 µg/L and the AWQS for benzene is 1.4 µg/L.

Total BTEX concentrations in downgradient wells since the start-up of the oxygen injection system (May 2009) have generally remained relatively low (below 100 µg/L) excluding HHMW-19S1. Total BTEX concentrations in HHMW-19S1 have been decreasing since Q1 2016 and have been below 100 µg/L since the Q1 2017 sampling event and below 10 µg/L since Q1 2019.

PAHs

PAH exceedances of AWQS during the annual monitoring period were limited to the shallow zone (above the fine-grained unit, where present). These exceedances were identified in five

wells extending from the upgradient area to the area downgradient of the Site. Average shallow zone total PAH concentrations in the vicinity of the oxygen injection system and downgradient of the Site are presented below. Similar to total BTEX concentrations, the highest average concentrations in onsite wells in the area of the oxygen injection system were generally detected prior to activation of the oxygen injection system. Monitoring wells HHMW-05S2R, HHMW-09S2 and HHMW-15S located in the vicinity of the oxygen injection system, along with HHMW-22S1, located in the parking lot of the adjacent office building, have not been sampled in recent events due to the presence of DNAPL in the wells. Similarly, MW-03 was sampled in Q1, but not in Q3 due to the presence of DNAPL. The increases in average concentrations during the 2016-2017 period is mostly attributable to the sampling of several wells that have historically had the presence of DNAPL (MW-03 and HHMW-05S2R). Concentrations have decreased in subsequent sampling events in which these wells were generally not sampled due to the reemergence of DNAPL within the wells. Decreases in several other wells have also been evident during this time.



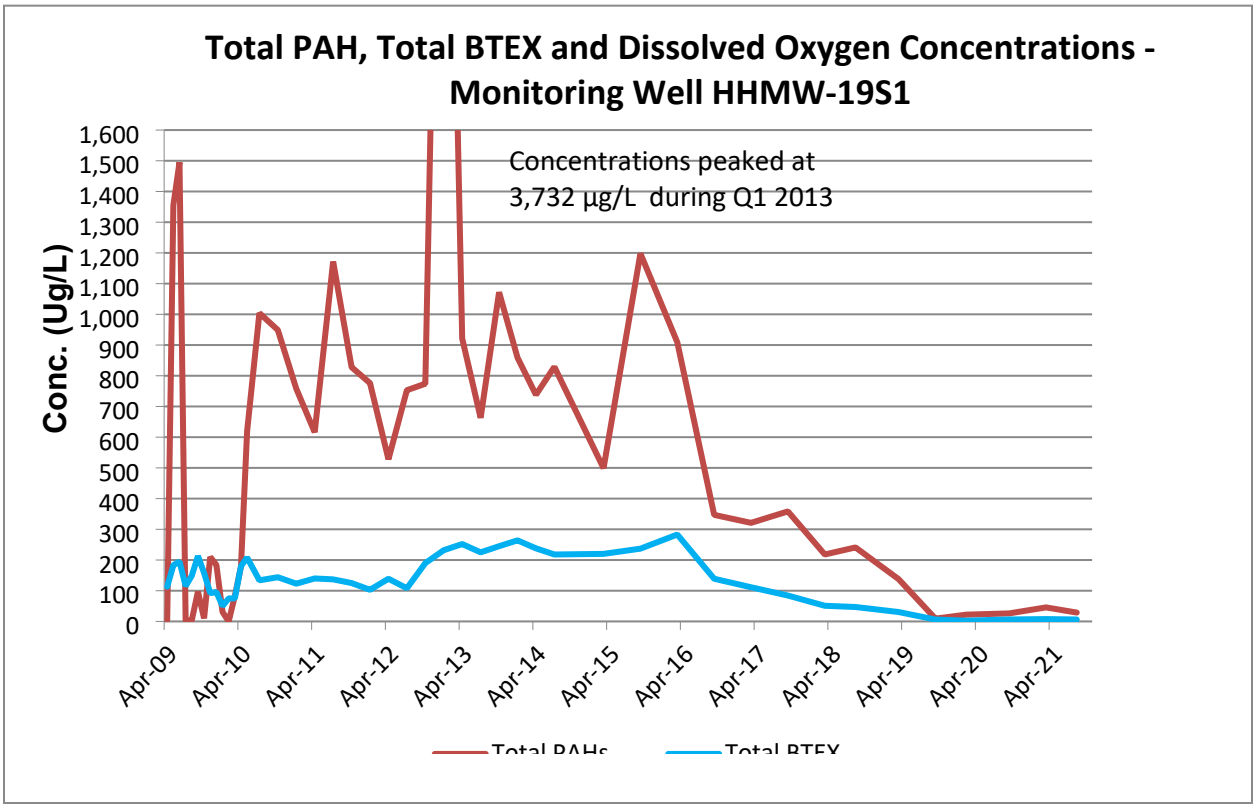
Note:
Does not include monitoring wells MW-03, HHMW-05S2 and HHMW-15 due to the presence of DNAPL in these wells at the time of sampling.

During the Q1 and Q3 2021 sampling events, PAH concentrations exceeding the AWQS were identified in upgradient monitoring wells HHMW-13, HHMW-14 and HHMW-16S1, as well as HHMW-09S1, located in the area of the oxygen injection system and downgradient well HHMW-19S1.

Exceedances of the AWQS in upgradient monitoring wells were identified in both sampling events. Exceedances included benzo(a)anthracene in HHMW-13 (Q3) and HHMW-14 Q1 and Q3), as well as benzo(a)pyrene in HHMW-16S1 (Q1) and HHMW-14 (Q1 and Q3). The remaining PAH exceedances were all identified in HHMW-14 and included benzo(b)fluoranthene, benzo(k)fluoranthene, chrysene, and indeno(1,2,3-cd)pyrene in both sampling events. The maximum value for each PAH exceedance was identified in HHMW-14 during the Q1 sampling event. The AWQS for benzo(a)pyrene is non-detect and the AWQS for the remaining compounds in the upgradient wells listed above is 0.002 µg/L.

Exceedances in the area of the oxygen injections system were limited to HHMW-09S1 and included benzo(a)anthracene in HHMW-13 (max of 0.69 µg/L), benzo(a)pyrene in HHMW-16S1 (max of 7.4 µg/L), benzo(b)fluoranthene (max of 2.9 µg/L), benzo(k)fluoranthene (max of 1.1 µg/L), chrysene (max of 1.1 µg/L), and indeno(1,2,3-cd)pyrene (6.6 µg/L in Q3). Downgradient exceedances were limited to naphthalene (25 µg/L in Q1) and acenaphthene (21 µg/L in Q3) in HHMW-19S1. The AWQS for acenaphthene and naphthalene are 20 µg/L and 10 µg/L, respectively. As stated above, MW-03 has not been sampling frequently due to the presence of DNAPL. Overall, PAH concentrations have remained low in the majority of the wells in the area of the oxygen injection system. As a result, several of the monitoring wells in the area have been eliminated from the sampling program in accordance with the approved reduction criteria.

In the downgradient area, elevated concentrations have generally been limited to HHMW-19S1. Similar to total BTEX, the total PAH concentrations in HHMW-19S1 have decreased from previous levels and have remained below 100 µg/L in recent sampling events as indicated in the graph below.



3.2.5 Future Plans

- Continue monitoring groundwater impacts.
- Wells in which DNAPL has historically been observed will be gauged prior to sampling. If DNAPL is observed during gauging, the well will not be sampled.

4. Conclusions and Recommendations

4.1 Conclusions

The oxygen injection system at the Halesite former MGP Site is operating as designed. Decreases in total BTEX and total PAH concentrations have been observed in monitoring wells downgradient of the treatment system. No elevated concentrations (above 100 µg/L) were detected in any monitoring well during the current annual monitoring period. Concentrations above the AWQS in downgradient wells were limited in one well (HHMW-19S). Overall, the concentrations in HHMW-19S continue to decrease.

4.2 Recommendations

It is recommended that GM and OM&M activities continue on the current schedule in accordance with the approved reduction criteria detailed in the July 2014 letter titled, "Long Term Groundwater Monitoring Program Reductions and Remediation System Shutdown Criteria."

References

AKRF (2010). "Draft Final Engineering Report, Halesite Former Manufactured Gas Plant Site," March 31.

GEI (2006). "Remedial Action Plan, Halesite Former MGP Site," March.

GEI (2007). "Hydrologic Study, Bay Shore/Brightwaters Former MGP Site, Bay Shore, New York, Site # 1-52-172," December 31.

GEI (2009). "Operations, Maintenance, and Monitoring Plan, Halesite Former MGP Site." May 6.

GEI (2009). "DNAPL Delineation Report, Halesite Former Manufactured Gas Plant Site," June 30.

GEI (2009). "Groundwater Monitoring Report, Second Quarter 2009, Halesite Former Manufactured Gas Plant Site, Halesite, New York," August 31.

GEI (2010). "Oxygen Injection System Start-up Summary Report, Halesite Former Manufactured Gas Plant Site, Halesite, New York," March 30.

New York State Department of Health (2006). Final Guidance for Evaluating Soil Vapor Intrusion in the State of New York, October.

Vanasse Hangen Brustlin, Inc. (2004). "Halesite Former Manufactured Gas Plant Site, Final Remedial Investigation Report," April 16.

Tables

Table 2-1. NAPL Gauging Summary
Halesite Former MGP Site
Annual Groundwater Monitoring and Operations, Maintenance & Monitoring Report

Well ID	2009											
	5/11/2009	5/14/2009	5/18/2009	5/21/2009	5/26/2009	6/11/2009	7/7/2009	8/7/2009	9/8/2009	10/29/2009	11/17/2009	12/2/2009
DNAPL Thickness (in feet)												
RW-1	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO
RW-2	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO
RW-3	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO
RW-4	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO
RW-5	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO
RW-5D	NO	~0.25	~ 0.38	~ 0.2	~0.1	Trace	Trace	0.5	1.0	0.83	1.08	1.25
RW-6	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO
RW-7	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO
RW-8	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO
RW-9	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO
RW-9D	NO	NO	NO	NO	NO	NO	NO	Trace	0.4	0.5	0.875	1.08
RW-10	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO
RW-11	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO
HHMW-09S2	NM	NM	NM	NM	NM	7.48*	NM	NM	0.5	0.42	0.67	0.67
HHMW-15S	NM	NM	NM	NM	NM	NM	NM	NM	NM	0.67**	NM	NM
HHMW-05S2R	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
MW-03	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM

Table 2-1. NAPL Gauging Summary
Halesite Former MGP Site
Annual Groundwater Monitoring and Operations, Maintenance & Monitoring Report

Well ID	2010											
	1/29/2010	3/2/2010	3/26/2010	4/30/2010	5/28/2010	6/18/2010	7/28/2010	8/31/2010	10/4/2010	10/29/2010	11/30/2010	12/30/2010
DNAPL Thickness (in feet)												
RW-1	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO
RW-2	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO
RW-3	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO
RW-4	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO
RW-5	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO
RW-5D	NM(1)	NM(1)	NM(1)	Trace	Trace	NM(1)	NM(1)	0.08	0.08	0.08	0.08	Trace
RW-6	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO
RW-7	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO
RW-8	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO
RW-9	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO
RW-9D	NM(1)	NM(1)	NM(1)	0.11	0.3	NM(1)	NM(1)	0.42	0.58	0.75	0.75	0.83
RW-10	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO
RW-11	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO
HHMW-09S2	NM(1)	NM(1)	NM(1)	0.11	Trace	NM(1)	NM(1)	NO	NO	0.08	0.08	Trace
HHMW-15S	0.33**	NM	NM	0.12**	NM	NM	0.97**	NM	NM	0.71**	NM	NM
HHMW-05S2R	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
MW-03	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM

Table 2-1. NAPL Gauging Summary
Halesite Former MGP Site
Annual Groundwater Monitoring and Operations, Maintenance & Monitoring Report

Well ID	2011											
	1/24/2011	2/18/2011	3/29/2011	4/29/2011	5/20/2011	6/22/2011	7/19/2011	8/29/2011	9/30/2011	10/20/2011	11/15/2011	12/23/2011
DNAPL Thickness (in feet)												
RW-1	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO
RW-2	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO
RW-3	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO
RW-4	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO
RW-5	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO
RW-5D	0.17	0.04	0.08	0.08	0.08	0.08	0.04	0.08	0.08	0.08	0.04	0.16
RW-6	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO
RW-7	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO
RW-8	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO
RW-9	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO
RW-9D	0.75	0.75	0.83	0.75	0.83	0.75	0.58	0.58	0.83	0.67	0.83	0.75
RW-10	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO
RW-11	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO
HHMW-09S2	0.17	Trace	Trace	0.04	Trace	0.08	Trace	Trace	0.08	0.04	Trace	0.16
HHMW-15S	0.8**	NM	NM	0.9**	NM	NM	1.5**	NM	NM	2.6**	NM	NM
HHMW-05S2R	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
MW-03	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM

Table 2-1. NAPL Gauging Summary
Halesite Former MGP Site
Annual Groundwater Monitoring and Operations, Maintenance & Monitoring Report

Well ID	2012											
	1/26/2012	2/27/2012	3/26/2012	5/2/2012	5/31/2012	6/27/2012	7/31/2012	8/29/2012	9/25/2012	11/9/2012	11/30/2012	12/12/2012
DNAPL Thickness (in feet)												
RW-1	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO
RW-2	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO
RW-3	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO
RW-4	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO
RW-5	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO
RW-5D	0.16	0.08	0.3	0.4	0.4	0.3	0.08	Trace	0.2	0.2	0.2	0.2
RW-6	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO
RW-7	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO
RW-8	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO
RW-9	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO
RW-9D	0.75	0.75	0.8	1.4	0.7	0.7	0.75	0.8	1.1	1.3	0.7	0.8
RW-10	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO
RW-11	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO
HHMW-09S2	Trace	Trace	Trace	Trace	Trace	Trace	Trace	0.1	Trace	Trace	Trace	Trace
HHMW-15S	0.8	NM	NM	2.1	NM	NM	NM	NM	4.0	NM	NM	3.5
HHMW-05S2R	NM	NM	NM	NM	NM	NM	NM	NM	0.2	Trace	Trace	0.1
MW-03	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM

Table 2-1. NAPL Gauging Summary
Halesite Former MGP Site
Annual Groundwater Monitoring and Operations, Maintenance & Monitoring Report

Well ID	2013										
	1/17/2013	2/18/2013	3/29/2013	4/26/2013	5/31/2013	7/25/2013	8/28/2013	9/30/2013	10/30/2013	11/26/2013	12/27/2013
DNAPL Thickness (in feet)											
RW-1	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO
RW-2	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO
RW-3	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO
RW-4	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO
RW-5	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO
RW-5D	0.3	0.2	0.3	0.1	0.3	0.08	0.06	Trace	0.04	0.25	0.375
RW-6	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO
RW-7	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO
RW-8	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO
RW-9	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO
RW-9D	0.9	0.7	0.9	0.9	0.7	1.0	0.83	0.6	0.58	0.58	0.58
RW-10	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO
RW-11	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO
HHMW-09S2	Trace	Trace	0.1	Trace	0.1	NO	Trace	0.02	Trace	Trace	NO
HHMW-15S	NM	NM	3.0	NM	NM	NM	NM	0.8	NM	NM	Trace
HHMW-05S2R	Trace	0.1	0.1	Trace	Trace	0.1	NO	0.02	Trace	Trace	Trace
MW-03	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM

Table 2-1. NAPL Gauging Summary
Halesite Former MGP Site
Annual Groundwater Monitoring and Operations, Maintenance & Monitoring Report

Well ID	2014									
	1/31/2014	2/28/2014	3/31/2014	4/28/2014	6/3/2014	6/25/2014	8/1/2014	8/29/2014	9/30/2014	12/29/2014
DNAPL Thickness (in feet)										
RW-1	NO	NO	NO	NO	NO	NO	NO	NO	NM	NM
RW-2	NO	NO	NO	NO	NO	NO	NO	NO	NM	NM
RW-3	NO	NO	NO	NO	NO	NO	NO	NO	NM	NM
RW-4	NO	NO	NO	NO	NO	NO	NO	NO	NM	NM
RW-5	NO	NO	NO	NO	NO	NO	NO	NO	NM	NM
RW-5D	0.04	0.125	0.17	0.04	0.125	NO	Trace	0.08	0.21	0.16
RW-6	NO	NO	NO	NO	NO	NO	NO	NO	NM	NM
RW-7	NO	NO	NO	NO	NO	NO	NO	NO	NM	NM
RW-8	NO	NO	NO	NO	NO	NO	NO	NO	NM	NM
RW-9	NO	NO	NO	NO	NO	NO	NO	NO	NM	NM
RW-9D	0.58	0.58	0.83	0.5	0.75	0.3	0.9	1.67	0.54	1.25
RW-10	NO	NO	NO	NO	NO	NO	NO	NO	NM	NM
RW-11	NO	NO	NO	NO	NO	NO	NO	NO	NM	NM
HHMW-09S2	Trace	Trace	Trace	Trace	0.02	NO	NO	Trace	Trace	0.02
HHMW-15S	NM	NM	NO***	NM	NM	Trace	NM	NM	0.17	Trace
HHMW-05S2R	0.04	NM	0.04	0.04	0.02	Trace	Trace	0.06	0.04	0.16
MW-03	Trace	Trace	Trace	Trace	Trace	Trace	Trace	Trace	0.02	NO

Table 2-1. NAPL Gauging Summary
Halesite Former MGP Site
Annual Groundwater Monitoring and Operations, Maintenance & Monitoring Report

Well ID	2015				2016				2017			
	3/31/2015	6/30/2015	9/25/2015	12/29/2015	4/12/2016	7/14/2016	10/4/2016	12/28/2016	3/30/2017	6/28/2017	9/25/2017	12/20/2017
DNAPL Thickness (in feet)												
RW-1	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NO	NM
RW-2	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NO	NM
RW-3	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NO	NM
RW-4	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NO	NM
RW-5	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NO	NM
RW-5D	0.06	0.04	0.21	0.08	0.04	0.04	0.42	0.04	0.06	0.08	0.06	0.33
RW-6	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NO	NM
RW-7	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NO	NM
RW-8	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NO	NM
RW-9	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NO	NM
RW-9D	1.25	1.16	1.0	1.2	1.7	1.1	1.5	2.4	3.0	2.5	2.4	2.6
RW-10	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NO	NM
RW-11	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NO	NM
HHMW-09S2	0.04	Trace	0.04	Trace	Trace	Trace	NO	NO	Trace	Trace	Trace	NO
HHMW-15S	Trace	0.08	1.25	0.33	0.04	0.04	0.06	0.67	0.04	0.06	Trace	Trace
HHMW-05S2R	0.04	0.02	0.08	0.125	0.125	Trace	0.02	0.06	0.06	0.06	0.13	Trace
MW-03	NO	NO	Trace	NO	NO	NO	Trace	Trace	Trace	Trace	Trace	NO

Table 2-1. NAPL Gauging Summary
Halesite Former MGP Site
Annual Groundwater Monitoring and Operations, Maintenance & Monitoring Report

Well ID	2018				2019				2020				2021		
	4/6/2018	6/13/2018	9/24/2018	12/7/2018	3/28/2019	6/28/2019	9/27/2019	12/27/2019	2/26/2020	4/22/2020	9/18/2020	12/29/2020	3/23/2021	6/16/2021	8/10/2021
DNAPL Thickness (in feet)															
RW-1	NM	NM	NO	NO	NO	NO	NO	NM	NO	NO	NO	NO	NO	NO	NO
RW-2	NM	NM	NO	NO	NO	NO	NO	NM	NO	NO	NO	NO	NO	NO	NO
RW-3	NM	NM	NO	NO	NO	NO	NO	NM	NO	NO	NO	NO	NO	NO	NO
RW-4	NM	NM	NO	NO	NO	NO	NO	NM	NO	NO	NO	NO	NO	NO	NO
RW-5	NM	NM	NO	NO	NO	NO	NO	NM	NO	NO	NO	NO	NO	NO	NO
RW-5D	0.04	0.25	0.41	0.21	0.025	0.42	0.55	0.25	0.45	0.25	0.16	0.21	NO	0.25	0.33
RW-6	NM	NM	NO	NO	NO	NO	NO	NM	NO	NO	NO	NO	NO	NO	NO
RW-7	NM	NM	NO	NO	NO	NO	NO	NM	NO	NO	NO	NO	NO	NO	NO
RW-8	NM	NM	NO	NO	NO	NO	NO	NM	NO	NO	NO	NO	NO	NO	NO
RW-9	NM	NM	NO	NO	NO	NO	NO	NM	NO	NO	NO	NO	NO	NO	NO
RW-9D	3.17	1.42	2.2	1.42	2.17	1.25	1.41	0.75	0.6	0.83	1.25	1.16	1.54	1.25	1.4
RW-10	NM	NM	NO	NO	NO	NO	NO	NM	NO	NO	NO	NO	NO	NO	NO
RW-11	NM	NM	NO	NO	NO	NO	NO	NM	NO	NO	NO	NO	NO	NO	NO
HHMW-09S2	NO	NO	Trace	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	Trace
HHMW-15S	Trace	0.04	Trace	Trace	Trace	NO	NO	NO	NO	NO	NO	Trace	Trace	Trace	Trace
HHMW-05S2R	0.04	0.04	0.04	0.04	Trace	0.04	0.04	NO	0.02	0.04	0.04	Trace	Trace	NO	Trace
MW-03	NO	NO	Trace	NO	NO	NO	NO	NO	NO	Trace	NO	NO	NO	NO	Trace

No measurable levels of LNAPL have been observed to date.

Notes:

NAPL = Non-aqueous phase liquid
DNAPL = Dense non-aqueous phase liquid
MGP = Manufactured Gas Plant
NO = None observed
NM = Not measured
NM (1) = Not measured - see Table 2-2
* = Measurement suspect
** = Measurement taken during quarterly sampling round
*** = Measurement taken in April 2014

Table 2-2. Onsite NAPL Gauging and Recovery Log
Halesite Former MGP Site
Annual Groundwater Monitoring and Operations, Maintenance & Monitoring Report

Well ID	2009	2010													
	12/14/2009[1]	1/5/2010[2]	1/12/2010[3]	1/19/2010[3]	1/26/2010[3]	2/5/2010[3]	2/12/2010[4]	3/8/2010[3]	4/1/2010[3]	4/30/2010[3]	6/4/2010[3]	7/20/2010[3]	8/31/2010[3]	10/4/2010[3]	10/29/2010[3]
Initial Thickness (in feet)															
RW-5D	1.25	1.25	0.5	0.33	0.25	0.17	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08
RW-9D	1.08	1.08	0.42	0.33	0.25	0.17	0.17	0.17	0.17	0.33	0.33	0.33	0.42	0.58	0.67
HHMW-09S2	NM	0.66	0.25	0.17	0.17	0.17	0.08	0.17	0.25	0.08	0.08	0.08	0.00**	0.00**	0.08**
HHMW-15S	0.67****	NM	NM	NM	0.33****	NM	NM	NM	NM	0.12****	NM	0.97****	NM	NM	0.71****
HHMW-05S2R	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
Amount Removed (in gallons)															
RW-5D	1.5	NA	1.1*	0.40	0.30	0.20	0.10	NA	0.10	0.10	0.10	0.10	0.10	0.10	0.10
RW-9D	1.5	NA	1*	0.40	0.30	0.20	0.20	NA	0.20	0.40	0.40	0.40	0.50	0.70	0.80
HHMW-09S2	NA	NA	0.1*	0.05	0.05	0.05	0.02	NA	0.08	0.02	0.02	0.02	0.00	0.00	0.00
HHMW-15S	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
HHMW-05S2R	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

Table 2-2. Onsite NAPL Gauging and Recovery Log
Halesite Former MGP Site
Annual Groundwater Monitoring and Operations, Maintenance & Monitoring Report

Well ID	2010		2011												2012
	11/30/2010[3]	12/30/2010[3]	1/24/2011[3]	2/18/2011[3]	3/29/2011[3]	4/29/2011[3]	5/20/2011[3]	6/22/2011[3]	7/19/2011[3]	8/29/2011[3]	9/30/2011[3]	10/20/2011[3]	11/15/2011[3]	12/23/2011[3]	1/26/2012[3]
Initial Thickness (in feet)															
RW-5D	0.08	trace	0.17	0.04	0.08	0.08	0.08	0.08	0.04	0.08	0.08	0.08	0.04	0.16	0.16
RW-9D	0.75	0.83	0.75	0.75	0.83	0.75	0.83	0.75	0.59	0.58	0.83	0.67	0.83	0.75	0.75
HHMW-09S2	0.08	trace	trace	trace	trace	0.04	trace	0.08	trace**	trace**	0.08**	0.04**	trace**	.16**	.16**
HHMW-15S	NM	NM	0.8****	NM	NM	0.9****	NM	NM	1.5****	NM	NM	2.6	NM	NM	0.8
HHMW-05S2R	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
Amount Removed (in gallons)															
RW-5D	0.10	0.00	0.20	0.05	0.10	0.10	0.10	0.10	0.05	0.10	0.07	0.10	0.04	0.14	0.14
RW-9D	0.90	1.00	0.90	0.90	1.00	0.90	1.00	0.90	0.71	0.70	1.00	0.80	1.00	0.90	0.90
HHMW-09S2	0.02	0.00	0.00	0.00	0.00	0.01	0.00	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00
HHMW-15S	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	2.00	NA	NA	NA
HHMW-05S2R	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

Table 2-2. Onsite NAPL Gauging and Recovery Log
Halesite Former MGP Site
Annual Groundwater Monitoring and Operations, Maintenance & Monitoring Report

Well ID	2012											2013			
	2/27/2012[3]	3/26/2012[3]	5/2/2012[3]	5/31/2012[3]	6/27/2012[3]	7/31/2012[3]	8/29/2012[3]	9/25/2012[3]	11/12/2012[3]	11/30/2012[3]	12/12/2012[3]	1/17/2013[3]	2/18/2013[3]	3/29/2013[3]	4/26/2013[3]
Initial Thickness (in feet)															
RW-5D	0.08	0.3	0.4	0.4	0.3	0.08	trace	0.2	0.2	0.2	0.2	0.30	0.20	0.30	0.10
RW-9D	0.75	0.8	1.4	0.7	0.7	0.75	0.8	1.1	1.3	0.7	0.8	0.90	0.70	0.90	0.90
HHMW-09S2	trace**	trace	trace	trace	trace	trace	0.1	trace	trace	trace	trace	trace	trace	0.1	trace
HHMW-15S	NM	NM	2.1	NM	NM	NM	NM	4.0	NM	NM	3.5	NM	NM	3.0	NM
HHMW-05S2R	NM	NM	NM	NM	NM	NM	NM	0.2	NM	NM	0.1	trace	0.1	0.1	trace
Amount Removed (in gallons)															
RW-5D	0.07	0.27	0.36	0.36	0.27	0.07	0.00	0.18	0.18	0.18	0.18	0.27	0.18	0.27	0.09
RW-9D	0.90	0.96	1.68	0.84	0.84	0.68	0.72	0.99	1.17	0.63	0.72	0.81	0.63	0.81	0.81
HHMW-09S2	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
HHMW-15S	NA	NA	NA	NA	NA	NA	NA	1.25	NA	NA	0.60	NA	NA	0.60	NA
HHMW-05S2R	NA	NA	NA	NA	NA	NA	NA	0.25	NA	NA	0.10	0.00	0.00	0.10	0.00

Table 2-2. Onsite NAPL Gauging and Recovery Log
Halesite Former MGP Site
Annual Groundwater Monitoring and Operations, Maintenance & Monitoring Report

Well ID	2013							2014									
	5/31/2013[3]	7/25/2013	6/28/2013	9/30/2013	10/30/2013	11/26/2013	12/18/2013	1/31/2014	2/28/2014	3/31/2014	4/28/2014	6/3/2014	6/25/2014	8/1/2014	8/29/2014	9/30/2014	12/29/2014
Initial Thickness (in feet)																	
RW-5D	0.30	0.08	0.06	trace	0.04	0.25	0.38	0.04	0.13	0.17	0.04	0.13	0.00	trace	0.08	0.21	0.16
RW-9D	0.70	1.00	0.83	0.58	0.58	0.58	0.58	0.58	0.58	0.83	0.58	0.75	0.30	0.90	1.67	0.54	1.25
HHMW-09S2	0.1	NO	trace	0.02	trace	0.02	NO	trace	trace	trace	trace	0.02	0.00	0.00	trace	trace	0.02
HHMW-15S	NM	NM	NM	0.8	NM	NM	trace	NM	NM	0.00	NM	NM	trace	NM	NM	0.17	trace
HHMW-05S2R	trace	0.1	NO	0.02	trace	trace	trace	0.04	NM	0.04	0.04	0.02	trace	trace	0.06	0.04	0.16
Amount Removed (in gallons)																	
RW-5D	0.27	0.00	0.00	0.00	0.00	0.00	0.20	0.00	0.00	0.20	0.00	0.00	0.00	0.00	0.00	0.25	0.20
RW-9D	0.63	3.00	1.00	0.75	0.50	0.50	0.40	0.50	0.40	0.75	0.50	0.75	0.25	0.75	2.50	0.75	2.00
HHMW-09S2	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
HHMW-15S	NA	NA	NA	0.10	NA	NA	0.00	NA	NA	0.00	NA	NA	0.00	0.00	0.00	0.00	0.00
HHMW-05S2R	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Table 2-2. Onsite NAPL Gauging and Recovery Log
Halesite Former MGP Site
Annual Groundwater Monitoring and Operations, Maintenance & Monitoring Report

Well ID	2015				2016				2017				2018				2019
	3/31/2015	6/30/2015	9/25/2015	12/29/2015	4/12/2016	7/14/2016	10/4/2016	12/28/2016	3/30/2017	6/28/2017	9/25/2017	12/20/2017	4/6/2018	6/13/2018	9/24/2018	12/7/2018	3/28/2019
Initial Thickness (in feet)																	
RW-5D	0.06	0.04	0.21	0.08	0.04	0.04	0.42	0.04	0.06	0.08	0.06	0.33	0.04	0.25	0.41	0.21	0.25
RW-9D	1.25	1.16	1.00	1.20	1.70	1.10	1.50	2.40	3.00	2.50	2.40	2.60	3.17	1.42	2.20	1.42	2.17
HHMW-09S2	0.04	trace	0.04	trace	trace	trace	NO	NO	Trace	Trace	Trace	NO	NO	NO	Trace	NO	NO
HHMW-15S	0.16	0.08	1.25	0.33	0.04	0.04	0.06	0.67	0.04	0.06	Trace	Trace	Trace	0.04	Trace	Trace	Trace
HHMW-05S2R	0.04	0.02	0.08	0.125	0.125	trace	0.02	0.06	0.06	0.06	0.13	Trace	0.04	0.04	0.04	0.04	Trace
Amount Removed (in gallons)																	
RW-5D	0.00	0.00	0.10	0.00	0.00	0.00	0.50	0.00	0.00	0.00	0.00	0.25	0.00	0.00	0.30	0.00	0.00
RW-9D	2.00	2.25	1.75	1.75	2.00	1.50	2.25	3.50	4.50	3.50	3.50	3.75	4.50	2.25	3.50	2.00	3.00
HHMW-09S2	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
HHMW-15S	0.00	0.00	0.10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
HHMW-05S2R	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Table 2-2. Onsite NAPL Gauging and Recovery Log
Halesite Former MGP Site
Annual Groundwater Monitoring and Operations, Maintenance & Monitoring Report

Well ID	2019			2020				2021			
	6/28/2019	9/27/2019	12/27/2019	2/26/2020	7/7/2020	9/18/2020	12/29/2020	3/23/2021	6/16/2021	8/10/2021	
Initial Thickness (in feet)											
RW-5D	0.42	0.55	0.25	0.45	0.25	0.16	0.21	NO	0.16	0.16	
RW-9D	1.25	1.41	0.75	0.60	1.00	1.25	1.16	1.54	1.25	1.40	
HHMW-09S2	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	
HHMW-15S	NO	NO	NO	NO	NO	NO	Trace	Trace	Trace	Trace	
HHMW-05S2R	0.04	0.04	0.02	0.02	0.04	0.04	Trace	Trace	Trace	Trace	
Amount Removed (in gallons)											**Total (gallons)**
RW-5D	0.00	0.66	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	11.50
RW-9D	2.00	2.00	1.25	0.00	1.25	1.25	1.50	2.00	1.75	2.00	112.20
HHMW-09S2	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.88***
HHMW-15S	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	4.65
HHMW-05S2R	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.45
											129.7

Notes:
NAPL = Non-Aqueous Phase Liquid
MGP = Manufactured Gas Plant
(1) = DNAPL purged with bailer
(2) = Oil-sorbent socks installed
(3) = Oil-sorbent socks removed and replaced (thickness measured after sock was removed)
(4) = Oil-sorbent socks removed in order to measure DNAPL recharge.
* = Volume estimated based on well diameter and thickness measurements.
** = Oil-sorbent sock not replaced
*** = Includes 0.4 gallons recovered between December 2008 and February 2009
**** = Measured during quarterly sampling round
NA = Not applicable
NM = Not measured
NO = None observed

Table 3-1. Groundwater Monitoring Well Sampling Schedule
Halesite Former MGP Site
Annual Groundwater Monitoring and Operations, Maintenance & Monitoring Report

Monitoring Well ID	Screen Interval (Feet bgs)	Sample Frequency
Upgradient Groundwater Monitoring Wells		
HHMW-13	39-49	A
HHMW-14	64-74	S
HHMW-16S1	15-20	S
HHMW-16S2	25-35	NS
HHMW-17S1	12-17	NS
HHMW-17S2	22-32	NS
HHMW-18S1	7-12	S
HHMW-18S2	17-27	NS
Area of Oxygen Injection System Groundwater Monitoring Wells		
MW-03*	2-12	S
MW-04	1-21	NS
HHMW-04I	30-40	NS
HHMW-05S1-R	6-11	NS
HHMW-05S2-R*	18-28	S
HHMW-09S1	6-11	S
HHMW-09S2	17.5-27.5	NS
HHMW-09I	43-53	NS
HHMW-09D	85-95	NS
HHMW-15S*	5-10	S
Sidegradient Groundwater Monitoring Wells		
HHMW-22S1*	3-8	S
HHMW-22S2	13-23	NS
Downgradient Groundwater Monitoring Wells		
HHMW-07S1	3-8	A
HHMW-07S2	16-26	NS
HHMW-07I	45-55	NS
HHMW-07D	115-125	NS
HHMW-08S	2-12	NS
HHMW-08I	35-45	NS
HHMW-11SR	3-13	NS
HHMW-11I**	31-41	NS
HHMW-19S1	2-7	S
HHMW-19S2	15-25	NS
HHMW-20S1	2-7	NS
HHMW-20S2	15-25	NS
HHMW-21S1	2-7	NS
HHMW-21S2	15-25	NS

Notes:

MGP = Manufactured Gas Plant

* = Not Sampled due to presence of DNAPL

** = Well abandoned

NS = Not Sampled

A = Annual

S = Semi-annual

DNAPL = Dense Non-Aqueous Phase Liquid

Table 3-2. Summary of Groundwater Parameter Data
Halesite Former MGP Site
Annual Groundwater Monitoring and Operations, Maintenance & Monitoring Report

		2009									2010						
	Monitoring Well	**Apr-09**	**May-09**	**Jun-09**	**Jul-09**	**Aug-09**	**Sep-09**	**Oct-09**	**Nov-09**	**Dec-09**	**Jan-10**	**Feb-10**	**Mar-10**	**Apr-10**	**May-10**	**Jul-10**	**Oct/Nov-10**
	pH (standard units)																
Upgradient	HHMW-13	5.53	--	--	5.21	--	--	--	5.09	--	--	5.43	--	4.74	--	5.02	5.17
	HHMW-14	5.40	--	--	5.60	--	--	--	5.17	--	--	5.47	--	4.97	--	4.68	5.21
	HHMW-16S1	5.08	4.73	4.20	6.20	4.47	4.28	4.34	6.21	6.53	3.91	4.47	4.48	5.05	4.30	4.53	4.60
	HHMW-16S2	5.12	5.43	3.94	6.10	5.23	5.25	5.25	5.05	5.51	5.29	4.26	5.09	4.86	4.82	5.01	5.15
	HHMW-17S1	5.31	4.95	5.87	4.40	5.06	4.71	4.78	5.93	6.96	5.14	4.97	4.63	4.94	4.58	4.96	4.21
	HHMW-17S2	5.32	5.13	6.37	5.38	5.10	5.08	5.16	4.95	5.36	5.45	5.50	5.40	4.98	4.82	5.31	4.87
	HHMW-18S1	5.34	5.65	6.42	4.65	5.34	5.12	5.09	4.91	6.92	5.18	5.35	5.42	5.74	4.86	4.94	4.20
	HHMW-18S2	5.30	5.63	6.36	5.44	5.05	5.16	5.11	6.31	5.31	5.15	5.31	5.31	5.10	4.78	5.19	4.28
Oxygen Injection Area	HHMW-04I	5.35	--	--	--	--	--	5.13	--	--	--	5.01	--	5.12	--	5.15	3.41
	HHMW-05S1-R	6.65	6.67	6.13	5.62	6.05	6.18	5.89	6.96	7.11	6.15	6.33	5.43	5.98	5.58	6.06	4.77
	HHMW-05S2-R	5.31	5.68	5.60	4.78	4.98	5.22	5.12	4.93	5.31	5.19	5.43	5.40	5.12	4.98	5.07	4.12
	HHMW-09D	6.02	--	--	--	--	--	--	--	--	5.93	--	--	5.86	--	5.83	--
	HHMW-09I	5.55	--	--	--	--	--	--	--	--	5.44	--	--	5.39	--	5.12	6.18
	HHMW-09S1	5.30	--	--	6.38	--	--	--	6.85	--	5.80	--	--	4.35	--	4.68	5.21
	HHMW-09S2	5.61	--	--	5.39	--	--	--	5.17	--	5.59	--	--	4.85	--	4.92	5.01
	HHMW-15S	--	5.62	--	5.61	--	--	--	--	--	--	--	--	5.34	--	--	--
	MW-03	6.67	--	--	7.03	--	--	6.33	--	--	6.67	--	--	6.59	--	6.38	7.33
	MW-04	5.29	--	--	5.21	--	--	4.98	--	--	5.48	--	--	5.10	--	4.95	3.14
S*	HHMW-22S2	5.40	--	--	5.71	--	--	5.15	--	--	5.18	--	--	--	4.82	5.18	3.57
Downgradient	HHMW-06I	5.69	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	HHMW-06S1	6.76	--	--	--	--	--	6.28	--	--	6.45	--	--	6.34	--	6.24	6.91
	HHMW-06S2	5.45	--	--	--	--	--	5.37	--	--	5.83	--	--	--	4.88	5.00	5.55
	HHMW-07I	5.57	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	HHMW-07S1	6.16	--	--	7.05	--	--	6.16	--	--	6.09	--	--	6.44	--	6.33	6.41
	HHMW-07S2	5.34	--	--	4.68	--	--	5.26	--	--	5.28	--	--	5.24	--	5.00	5.27
	HHMW-08S	5.67	--	--	--	--	--	5.45	--	--	5.63	--	--	5.31	--	5.25	5.82
	HHMW-19S1	6.63	6.48	6.67	7.26	6.27	6.03	5.45	5.59	5.96	5.71	5.79	5.99	5.72	5.55	5.68	9.60
	HHMW-19S2	5.41	5.75	6.02	5.57	5.25	5.39	5.26	6.92	7.11	5.32	5.46	4.90	5.25	4.63	4.94	3.93
	HHMW-20S1	6.85	6.76	6.99	--	--	--	--	--	--	5.06	6.74	6.12	6.70	8.04	6.31	8.94
	HHMW-20S2/20S2R	5.41	5.34	5.00	--	--	--	--	--	--	6.54	4.90	5.13	5.00	4.76	4.93	3.91
	HHMW-21S1	6.82	6.25	6.26	--	--	--	--	--	--	6.20	6.29	5.85	--	5.65	5.84	5.41
	HHMW-21S2	5.58	5.56	5.23	--	--	--	--	--	--	5.34	5.57	--	--	4.95	5.14	3.91
	HHMW-11I	5.70	--	--	--	--	--	--	--	--	5.56	--	--	5.45	--	5.16	4.43
	HHMW-11S/11SR	--	--	--	--	--	--	--	--	--	6.42	--	--	6.00	--	6.08	7.83

Table 3-2. Summary of Groundwater Parameter Data
Halesite Former MGP Site
Annual Groundwater Monitoring and Operations, Maintenance & Monitoring Report

		2009									2010						
	Monitoring Well	**Apr-09**	**May-09**	**Jun-09**	**Jul-09**	**Aug-09**	**Sep-09**	**Oct-09**	**Nov-09**	**Dec-09**	**Jan-10**	**Feb-10**	**Mar-10**	**Apr-10**	**May-10**	**Jul-10**	**Oct/Nov-10**
	Conductivity (mS/cm)																
Upgradient	HHMW-13	0.240	--	--	0.280	--	--	--	0.245	--	--	0.233	--	0.276	--	0.213	0.167
	HHMW-14	0.243	--	--	0.280	--	--	--	0.256	--	--	0.240	--	0.201	--	0.228	0.168
	HHMW-16S1	0.148	0.160	0.233	0.241	0.478	0.634	0.713	0.900	1.040	1.250	0.910	0.571	1.400	1.320	1.160	0.664
	HHMW-16S2	0.202	0.277	0.260	0.267	0.297	0.320	0.270	2.780	0.271	0.234	0.239	0.228	0.209	0.245	0.226	0.196
	HHMW-17S1	0.258	0.473	0.762	0.860	0.357	1.540	1.030	1.450	1.340	1.280	1.410	1.380	0.795	0.630	0.373	0.317
	HHMW-17S2	0.289	0.310	0.308	0.323	0.652	0.387	0.281	0.292	0.286	0.363	0.295	0.462	0.223	0.215	0.158	0.233
	HHMW-18S1	0.232	0.234	0.231	0.247	0.175	0.245	0.198	0.290	0.243	0.249	0.244	0.469	0.343	0.272	0.271	0.190
	HHMW-18S2	0.251	0.251	0.249	0.263	0.265	0.279	0.233	0.273	0.243	0.206	0.214	0.205	0.280	0.216	0.215	0.206
Oxygen Injection Area	HHMW-04I	0.285	--	--	--	--	--	0.254	--	--	--	0.283	--	0.316	--	0.208	0.181
	HHMW-05S1-R	0.559	0.545	0.780	0.854	0.725	1.110	0.926	0.866	0.720	0.669	0.640	0.656	0.419	0.537	0.804	0.360
	HHMW-05S2-R	0.276	0.348	0.780	0.342	0.328	0.289	0.245	0.261	0.284	0.225	0.235	0.284	0.642	0.316	0.199	0.183
	HHMW-09D	0.145	--	--	--	--	--	--	--	--	0.120	--	--	0.165	--	0.112	--
	HHMW-09I	0.214	--	--	--	--	--	--	--	--	0.255	--	--	0.241	--	0.199	0.176
	HHMW-09S1	2.840	--	--	2.660	--	--	--	0.980	--	0.711	--	--	3.200	--	2.660	0.704
	HHMW-09S2	0.365	--	--	0.284	--	--	--	0.309	--	0.252	--	--	0.219	--	0.189	0.194
	HHMW-15S	--	1.080	--	0.565	--	--	--	--	--	--	--	--	0.413	--	--	--
	MW-03	0.441	--	--	1.490	--	--	1.270	--	--	0.805	--	--	0.611	--	0.751	0.973
	MW-04	0.178	--	--	0.347	--	--	0.348	--	--	0.999	--	--	0.560	--	0.569	0.340
S*	HHMW-22S2	0.259	--	--	0.291	--	--	0.241	--	--	0.214	--	--	--	0.224	0.222	0.178
Downgradient	HHMW-06I	0.163	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	HHMW-06S1	1.490	--	--	--	--	--	0.739	--	--	0.845	--	--	2.080	--	1.840	0.316
	HHMW-06S2	0.311	--	--	--	--	--	0.290	--	--	0.253	--	--	--	0.286	0.265	0.264
	HHMW-07I	0.179	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	HHMW-07S1	0.511	--	--	0.862	--	--	1.280	--	--	0.774	--	--	0.537	--	0.529	0.478
	HHMW-07S2	0.268	--	--	0.317	--	--	0.239	--	--	0.294	--	--	0.281	--	0.211	0.182
	HHMW-08S	0.539	--	--	--	--	--	0.417	--	--	0.461	--	--	0.323	--	0.287	0.270
	HHMW-11I	0.279	--	--	--	--	--	--	--	--	0.339	--	--	0.304	--	0.236	0.196
	HHMW-11S/11SR	--	--	--	--	--	--	--	--	--	1.280	--	--	0.900	--	0.960	0.369
	HHMW-19S1	0.273	0.290	0.255	0.246	0.234	0.254	0.364	0.278	0.299	0.367	0.531	0.344	0.319	0.272	0.369	0.352
	HHMW-19S2	0.414	0.473	0.671	0.510	0.367	0.348	0.255	0.309	0.328	0.340	0.329	0.360	0.320	0.230	0.223	0.214
	HHMW-20S1	2.670	2.360	2.340	--	--	--	--	--	--	0.242	2.420	1.680	0.910	0.797	1.160	0.369
	HHMW-20S2/20S2R	0.357	0.335	0.328	--	--	--	--	--	--	2.660	0.257	0.254	0.426	0.371	0.236	0.201
	HHMW-21S1	0.341	0.412	0.440	--	--	--	--	--	--	0.445	0.441	0.340	--	0.573	0.464	0.373
	HHMW-21S2	0.236	0.254	0.263	--	--	--	--	--	--	0.200	0.209	--	--	0.323	0.200	0.179

Table 3-2. Summary of Groundwater Parameter Data
Halesite Former MGP Site
Annual Groundwater Monitoring and Operations, Maintenance & Monitoring Report

		2009									2010						
	Monitoring Well	**Apr-09**	**May-09**	**Jun-09**	**Jul-09**	**Aug-09**	**Sep-09**	**Oct-09**	**Nov-09**	**Dec-09**	**Jan-10**	**Feb-10**	**Mar-10**	**Apr-10**	**May-10**	**Jul-10**	**Oct/Nov-10**
	Dissolved Oxygen (mg/L)																
Upgradient	HHMW-13	6.95	--	--	0.00	--	--	--	0.00	--	--	0.00	--	5.39	--	0.89	0.00
	HHMW-14	9.10	--	--	14.81	--	--	--	6.87	--	--	6.82	--	7.80	--	6.76	7.28
	HHMW-16S1	5.79	11.94	0.00	0.00	8.88	1.55	13.32	16.80	13.10	9.00	23.00	9.23	8.18	0.00	11.83	16.29
	HHMW-16S2	0.00	5.11	0.00	2.25	8.40	8.00	8.32	7.67	7.68	7.11	7.90	8.20	7.70	8.20	6.90	7.63
	HHMW-17S1	0.00	7.40	10.60	18.38	15.88	30.00	17.18	15.00	9.00	25.00	27.00	22.00	21.00	9.00	19.00	15.20
	HHMW-17S2	0.00	10.87	4.59	7.79	8.40	7.61	8.00	5.36	7.85	7.92	8.20	9.50	7.40	8.10	7.84	4.20
	HHMW-18S1	0.00	0.00	0.00	0.00	2.37	0.00	0.00	0.00	0.00	3.56	3.53	6.09	9.80	0.00	7.73	2.10
	HHMW-18S2	3.80	0.00	0.00	1.17	3.50	1.84	1.69	2.10	3.72	2.86	2.30	5.30	2.49	1.90	0.00	1.50
Oxygen Injection Area	HHMW-04I	8.43	--	--	--	--	--	20.00	--	--	--	27.00	--	13.90	--	8.88	7.40
	HHMW-05S1-R	0.00	0.00	0.00	0.22	10.10	7.23	14.91	14.70	19.90	22.00	25.00	14.81	23.00	9.52	23.00	18.80
	HHMW-05S2-R	1.28	0.00	26.00	26.00	44.00	26.00	14.32	19.02	16.85	19.01	27.00	28.00	33.00	26.00	24.00	13.00
	HHMW-09D	8.67	--	--	--	--	--	--	--	--	7.29	--	--	9.04	--	7.38	--
	HHMW-09I	8.78	--	--	--	--	--	--	--	--	8.86	--	--	8.78	--	8.02	6.90
	HHMW-09S1	10.49	--	--	0.00	--	--	--	12.40	--	10.01	--	--	3.42	--	3.79	8.40
	HHMW-09S2	0.00	--	--	28.00	--	--	--	20.00	--	32.00	--	--	26.00	--	32.00	33.00
	HHMW-15S	--	0.00	--	0.00	--	--	--	--	--	--	--	--	7.70	--	--	--
	MW-03	0.00	--	--	4.21	--	--	20.00	--	--	15.41	--	--	19.80	--	18.00	7.00
	MW-04	5.39	--	--	25.00	--	--	20.00	--	--	37.00	--	--	20.00	--	28.00	36.00
S*	HHMW-22S2	8.40	--	--	10.52	--	--	9.67	--	--	8.11	--	--	--	8.80	9.29	8.40
Downgradient	HHMW-06I	7.37	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	HHMW-06S1	0.00	--	--	--	--	--	0.00	--	--	6.03	--	--	0.51	--	0.56	0.00
	HHMW-06S2	6.72	--	--	--	--	--	4.78	--	--	5.12	--	--	--	6.60	5.75	4.10
	HHMW-07I	8.27	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	HHMW-07S1	3.14	--	--	0.00	--	--	0.00	--	--	0.00	--	--	0.00	--	0.00	0.00
	HHMW-07S2	0.11	--	--	0.00	--	--	1.10	--	--	2.95	--	--	1.20	--	2.65	1.65
	HHMW-08S	0.00	--	--	--	--	--	20.00	--	--	31.00	--	--	27.00	--	24.00	27.00
	HHMW-11I	5.19	--	--	--	--	--	--	--	--	6.27	--	--	4.10	--	4.19	3.40
	HHMW-11S/11SR	--	--	--	--	--	--	--	--	--	0.00	--	--	0.00	--	0.00	0.00
	HHMW-19S1	11.27	5.99	1.59	10.10	6.90	5.77	3.79	0.77	6.15	0.69	3.05	2.75	0.00	0.00	0.00	0.00
	HHMW-19S2	0.97	0.00	0.00	0.00	1.50	0.70	1.09	0.50	0.30	3.95	2.76	0.80	1.28	0.00	1.47	0.00
	HHMW-20S1	7.21	0.00	0.00	--	--	--	--	--	--	2.43	1.58	0.25	0.00	0.00	0.38	0.00
	HHMW-20S2/20S2R	2.28	0.00	0.00	--	--	--	--	--	--	2.20	3.20	4.20	4.00	3.90	4.10	3.20
	HHMW-21S1	12.05	4.45	0.70	--	--	--	--	--	--	5.30	4.67	7.48	--	0.54	4.61	3.10
	HHMW-21S2	7.84	3.81	0.34	--	--	--	--	--	--	7.34	7.80	--	--	8.70	8.40	7.70

Table 3-2. Summary of Groundwater Parameter Data
Halesite Former MGP Site
Annual Groundwater Monitoring and Operations, Maintenance & Monitoring Report

		2009									2010						
	Monitoring Well	**Apr-09**	**May-09**	**Jun-09**	**Jul-09**	**Aug-09**	**Sep-09**	**Oct-09**	**Nov-09**	**Dec-09**	**Jan-10**	**Feb-10**	**Mar-10**	**Apr-10**	**May-10**	**Jul-10**	**Oct/Nov-10**
	Temperature (degrees Celsius)																
Upgradient	HHMW-13	16.41	--	--	16.82	--	--	--	12.67	--	--	11.01	--	12.40	--	13.00	12.24
	HHMW-14	14.90	--	--	16.88	--	--	--	12.22	--	--	10.83	--	12.30	--	12.84	12.14
	HHMW-16S1	11.74	13.50	13.04	14.71	13.63	12.56	12.74	13.40	12.00	12.00	11.71	10.75	10.94	10.85	13.29	12.44
	HHMW-16S2	11.51	12.62	12.95	13.19	13.50	12.81	12.04	12.31	11.89	11.67	10.00	11.70	11.80	12.40	12.82	12.17
	HHMW-17S1	11.69	12.54	13.91	16.31	14.98	16.30	13.52	15.60	13.60	10.55	11.45	11.10	11.25	11.54	12.92	13.50
	HHMW-17S2	11.05	16.03	13.97	16.16	16.20	15.74	13.04	14.50	12.73	9.41	11.70	11.80	11.90	12.50	13.37	12.80
	HHMW-18S1	11.28	12.66	13.12	14.07	14.54	15.58	13.80	12.52	12.60	11.94	9.26	6.68	11.10	11.16	18.20	14.20
	HHMW-18S2	12.27	13.77	13.68	15.08	14.50	14.84	12.01	13.10	11.07	12.18	9.80	10.90	11.94	12.20	17.57	13.10
Oxygen Injection Area	HHMW-04I	11.11	--	--	--	--	--	14.12	--	--	--	10.70		11.70	--	15.91	11.70
	HHMW-05S1-R	9.82	10.82	13.21	15.35	19.20	20.06	15.64	16.30	15.50	11.48	8.70	6.30	10.70	11.01	19.89	16.10
	HHMW-05S2-R	10.53	11.48	11.17	12.64	14.10	15.33	14.06	14.45	13.97	12.77	11.80	10.90	10.99	11.10	14.77	14.60
	HHMW-09D	11.22	--	--	--	--	--	--	--	--	11.10	--	--	11.58	--	14.05	--
	HHMW-09I	11.31	--	--	--	--	--	--	--	--	11.29	--	--	11.71	--	14.15	12.60
	HHMW-09S1	10.71	--	--	18.02	--	--	--	14.40	--	9.75	--	--	10.33	--	16.22	14.20
	HHMW-09S2	11.37	--	--	16.85	--	--	--	12.94	--	9.01	--	--	11.60	--	14.79	13.10
	HHMW-15S	--	10.02	--	17.40	--	--	--	--	--		--	--	13.00	--	--	--
	MW-03	7.97	--	--	16.09	--	--	15.38	--	--	8.12	--	--	10.80	--	19.41	16.10
	MW-04	9.56	--	--	18.81	--	--	16.31	--	--	10.22	--	--	10.43	--	16.38	13.10
S*	HHMW-22S2	11.62	--	--	13.24	--	--	12.93	--	--	10.45	--	--	--	12.40	14.55	12.60
Downgradient	HHMW-06I	11.24	--	--	--	--	--	--	--	--		--	--	--	--	--	--
	HHMW-06S1	11.11	--	--	--	--	--	16.45	--	--	8.73	--	--	13.60	--	23.36	16.70
	HHMW-06S2	11.10	--	--	--	--	--	13.70	--	--	10.95	--	--	--	13.80	16.67	13.90
	HHMW-07I	11.24	--	--	--	--	--	--	--	--		--	--	--	--	--	--
	HHMW-07S1	10.43	--	--	18.92	--	--	14.91	--	--	8.69	--	--	13.70	--	23.10	15.85
	HHMW-07S2	11.11	--	--	13.06	--	--	13.26	--	--	12.28	--	--	11.87	--	15.26	13.34
	HHMW-08S	11.09	--	--	--	--	--	15.34	--	--	10.40	--	--	12.80	--	19.88	15.40
	HHMW-11I	10.98	--	--	--	--	--	--	--	--	12.20	--	--	12.40	--	14.74	14.50
	HHMW-11S/11SR	--	--	--	--	--	--	--	--	--	9.36	--	--	12.02	--	22.04	18.30
	HHMW-19S1	15.54	13.69	15.80	19.20	26.60	21.99	15.40	15.26	12.99	10.19	8.20	9.00	13.20	14.10	20.15	16.40
	HHMW-19S2	12.11	12.06	13.07	13.15	20.10	14.80	12.99	13.90	13.70	12.41	11.85	11.18	12.10	11.26	13.61	13.10
	HHMW-20S1	11.20	13.63	16.27	--	--	--	--	--	--	10.82	7.31	7.72	12.99	13.73	21.58	18.20
	HHMW-20S2/20S2R	11.05	11.36	13.55	--	--	--	--	--	--	7.92	11.30	11.00	12.20	12.40	15.19	15.00
	HHMW-21S1	14.41	14.79	17.28	--	--	--	--	--	--	8.29	7.30	9.43	--	14.79	22.90	17.60
	HHMW-21S2	11.57	12.17	12.94	--	--	--	--	--	--	11.06	10.90	--	--	13.50	14.52	14.00

Table 3-2. Summary of Groundwater Parameter Data
Halesite Former MGP Site
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		2009									2010						
	Monitoring Well	**Apr-09**	**May-09**	**Jun-09**	**Jul-09**	**Aug-09**	**Sep-09**	**Oct-09**	**Nov-09**	**Dec-09**	**Jan-10**	**Feb-10**	**Mar-10**	**Apr-10**	**May-10**	**Jul-10**	**Oct/Nov-10**
	Oxidation Reduction Potential (mV)																
Upgradient	HHMW-13	179	--	--	250	--	--	--	253	--	--	384	--	250	--	224	247
	HHMW-14	234	--	--	295	--	--	--	251	--	--	371	--	253	--	317	286
	HHMW-16S1	195	267	301	227	184	245	263	186	254	295	233	298	260	321	229	241
	HHMW-16S2	281	340	330	300	258	258	259	264	185	410	286	277	246	242	312	275
	HHMW-17S1	259	368	343	322	155	316	290	88	129	385	287	295	291	322	281	249
	HHMW-17S2	28	339	323	301	259	263	243	256	239	383	281	284	239	233	282	277
	HHMW-18S1	213	223	256	278	116	232	234	202	47	201	200	157	236	245	238	214
	HHMW-18S2	246	309	279	299	260	248	243	53	318	371	304	294	203	266	282	214
Oxygen Injection Area	HHMW-04I	242	--	--	--	--	--	296	--	--	--	315	--	288	--	201	242
	HHMW-05S1-R	23	9	257	254	115	125	227	11	32	152	169	168	123	193	181	172
	HHMW-05S2-R	215	242	342	335	262	248	282	240	326	423	226	285	259	178	293	185
	HHMW-09D	209	--	--	--	--	--	--	--	--	331	--	--	189	--	206	--
	HHMW-09I	247	--	--	--	--	--	--	--	--	194	--	--	233	--	173	244
	HHMW-09S1	185	--	--	185	--	--	--	63	--	331	--	--	317	--	106	167
	HHMW-09S2	223	--	--	316	--	--	--	332	--	447	--	--	258	--	291	258
	HHMW-15S	--	137	--	176	--	--	--	--	--	--	--	--	186	--	--	--
	MW-03	-85	--	--	5	--	--	168	--	--	255	--	--	50	--	-49	-7
	MW-04	272	--	--	337	--	--	315	--	--	272	--	--	223	--	237	271
S*	HHMW-22S2	260	--	--	316	--	--	280	--	--	382	--	--	--	258	301	257
Downgradient	HHMW-06I	217	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	HHMW-06S1	7	--	--	--	--	--	-90	--	--	41	--	--	-36	--	-127	-106
	HHMW-06S2	169	--	--	--	--	--	136	--	--	255	--	--	--	205	172	135
	HHMW-07I	209	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	HHMW-07S1	5	--	--	-23	--	--	-60	--	--	-22	--	--	1	--	-96	-75
	HHMW-07S2	230	--	--	261	--	--	208	--	--	157	--	--	190	--	184	259
	HHMW-08S	205	--	--	--	--	--	247	--	--	230	--	--	188	--	214	240
	HHMW-11I	196	--	--	--	--	--	--	--	--	179	--	--	249	--	233	204
	HHMW-11S/11SR	--	--	--	--	--	--	--	--	--	-59	--	--	-38	--	-107	-31
	HHMW-19S1	-65	-3	-3	-49	-80	-34	-36	-32	-8	44	-4	-52	-96	-100	-85	-169
	HHMW-19S2	223	180	166	142	217	223	120	10	6	233	224	231	243	247	171	212
	HHMW-20S1	-88	-72	-85	--	--	--	--	--	--	345	-86	-87	-122	-99	-143	-149
	HHMW-20S2/20S2R	122	379	322	--	--	--	--	--	--	-105	313	280	282	285	244	248
	HHMW-21S1	87	251	224	--	--	--	--	--	--	127	106	231	--	205	138	172
	HHMW-21S2	235	327	254	--	--	--	--	--	--	394	280	--	--	218	237	253

Table 3-2. Summary of Groundwater Parameter Data
Halesite Former MGP Site
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		2011				2012				2013				2014		
	Monitoring Well	**Jan-11**	**Apr-11**	**Jul-11**	**Nov-11**	**Jan-12**	**Apr-12**	**Aug-12**	**Nov-12**	**Jan-13**	**Apr-13**	**Jul-13**	**Oct-13**	**Jan-14**	**Apr-14**	**Sep-14**
	pH (standard units)															
Upgradient	HHMW-13	5.45	5.10	4.90	5.00	4.92	4.50	4.65	4.81	4.07	4.41	5.69	5.24	5.20	5.15	4.93
	HHMW-14	4.82	5.20	4.95	4.50	4.25	4.00	7.10	7.05	6.34	6.08	6.48	5.19	5.23	5.41	5.30
	HHMW-16S1	4.40	4.48	4.31	3.70	4.24	4.39	4.87	5.07	4.62	5.24	5.07	4.44	5.30	4.40	5.57
	HHMW-16S2	5.49	4.80	5.27	5.30	5.21	5.40	6.30	6.85	6.31	6.68	6.36	5.67	5.07	4.98	5.05
	HHMW-17S1	4.71	4.84	5.05	4.10	4.44	5.86	5.98	5.54	5.21	5.30	5.25	5.40	5.81	6.21	5.99
	HHMW-17S2	5.47	5.38	5.53	4.75	4.59	5.00	5.25	5.95	5.54	5.28	5.24	5.12	5.90	6.15	6.12
	HHMW-18S1	4.70	5.70	5.19	4.76	4.87	5.03	5.19	5.26	4.81	5.14	5.11	4.86	4.60	5.33	4.70
	HHMW-18S2	5.07	5.27	5.11	4.98	4.61	4.61	5.33	5.40	5.32	5.21	5.09	5.02	4.89	4.73	5.35
Oxygen Injection Area	HHMW-04I	5.14	5.25	5.30	4.62	4.73	4.91	5.31	5.43	5.32	5.33	5.31	5.01	4.84	5.14	5.30
	HHMW-05S1-R	5.52	6.10	6.20	6.00	4.89	5.24	6.26	6.26	6.00	6.30	6.29	6.02	5.82	5.78	5.92
	HHMW-05S2-R	5.39	5.20	5.68	4.65	4.62	4.56	5.15	5.31	5.02	5.27	5.16	5.11	4.92	5.36	5.38
	HHMW-09D	6.01	--	--	--	5.33	--	--	--	5.56	--	--	--	5.56	--	--
	HHMW-09I	5.59	5.51	5.70	5.68	4.89	--	--	--	5.52	--	--	--	5.02	--	--
	HHMW-09S1	5.72	6.29	4.88	5.02	5.31	5.06	5.26	5.23	5.78	5.82	5.75	4.91	5.37	6.63	5.40
	HHMW-09S2	4.74	--	--	4.79	4.79	5.24	5.36	5.43	4.91	5.40	5.14	5.26	4.98	4.92	4.99
	HHMW-15S	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	MW-03	6.86	6.87	--	6.24	6.14	6.95	6.74	6.66	6.51	6.74	6.61	6.36	6.00	6.42	6.16
	MW-04	5.42	5.54	5.10	4.39	4.79	5.63	5.32	5.43	5.04	5.37	5.77	5.21	5.16	5.64	4.96
S*	HHMW-22S2	--	3.45	5.17	5.02	4.41	5.34	5.03	5.27	5.17	5.27	5.24	5.11	4.88	5.41	4.91
Downgradient	HHMW-06I	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	HHMW-06S1	6.93	6.68	6.61	6.00	6.57	--	--	--	--	--	--	--	--	--	--
	HHMW-06S2	5.15	5.21	5.70	5.17	4.75	--	--	--	--	--	--	--	--	--	--
	HHMW-07I	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	HHMW-07S1	7.03	6.39	6.82	7.98	5.97	6.50	6.60	6.73	6.68	6.69	6.46	6.48	6.30	6.68	6.11
	HHMW-07S2	5.13	5.36	6.89	4.87	4.73	5.40	5.43	5.55	4.93	5.50	5.70	5.35	5.03	4.81	5.41
	HHMW-08S	6.09	5.74	6.57	4.18	3.89	5.87	5.39	5.92	5.63	5.77	6.05	5.52	5.37	5.85	5.73
	HHMW-19S1	6.49	4.16	6.73	7.50	4.75	6.78	6.50	6.37	6.14	6.36	6.21	6.00	5.90	6.27	5.94
	HHMW-19S2	4.77	5.34	5.49	4.87	4.73	5.45	5.50	5.43	5.26	4.51	5.28	5.16	4.99	4.74	5.35
	HHMW-20S1	6.48	6.46	7.20	6.23	6.32	7.09	6.85	6.85	6.50	6.83	6.73	6.60	6.42	6.96	6.32
	HHMW-20S2/20S2R	5.60	5.31	6.68	5.11	3.79	4.75	5.22	5.30	5.10	5.39	5.66	5.11	4.97	5.94	5.33
	HHMW-21S1	6.07	5.81	5.96	4.38	4.77	6.04	5.86	5.95	5.72	5.89	5.77	5.58	5.65	6.05	5.46
	HHMW-21S2	5.03	4.99	5.50	5.31	4.77	5.46	5.56	5.69	5.47	5.59	5.41	5.36	5.16	5.15	5.54
	HHMW-11I	6.17	5.65	6.03	5.15	3.97	5.69	5.63	5.77	5.37	5.63	5.92	5.46	5.27	5.87	5.65
	HHMW-11S/11SR	7.42	6.35	6.94	7.02	5.58	6.70	6.36	6.44	6.17	6.47	6.37	6.15	6.14	6.59	6.00

Table 3-2. Summary of Groundwater Parameter Data
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		2011				2012				2013				2014		
	Monitoring Well	**Jan-11**	**Apr-11**	**Jul-11**	**Nov-11**	**Jan-12**	**Apr-12**	**Aug-12**	**Nov-12**	**Jan-13**	**Apr-13**	**Jul-13**	**Oct-13**	**Jan-14**	**Apr-14**	**Sep-14**
	Conductivity (mS/cm)															
Upgradient	HHMW-13	0.219	0.160	0.120	0.187	0.194	0.830	0.770	0.765	0.873	0.895	0.271	0.411	0.390	0.395	0.230
	HHMW-14	0.239	0.152	0.112	0.113	0.285	0.535	0.590	0.638	0.682	0.619	0.301	0.417	0.390	0.415	0.595
	HHMW-16S1	0.925	0.653	0.779	0.689	0.798	0.700	0.850	0.881	0.885	0.840	0.595	0.997	0.381	0.700	0.930
	HHMW-16S2	0.241	0.190	0.201	0.198	0.206	0.490	0.500	0.529	0.615	0.667	0.319	0.343	0.610	0.701	0.900
	HHMW-17S1	0.378	0.548	0.749	0.427	0.507	0.245	0.268	0.393	0.334	0.415	0.268	0.480	0.810	0.369	0.341
	HHMW-17S2	0.250	0.307	0.515	0.305	0.317	0.550	0.306	0.359	0.396	0.268	0.281	0.361	0.480	0.310	0.409
	HHMW-18S1	0.377	0.284	0.305	0.289	0.328	0.265	0.251	0.258	0.234	0.398	0.311	0.510	0.370	0.365	0.300
	HHMW-18S2	0.205	0.272	0.239	0.271	0.268	0.208	0.229	0.231	0.249	0.240	0.244	0.369	0.243	0.217	0.246
Oxygen Injection Area	HHMW-04I	0.204	0.327	0.265	0.300	0.232	0.298	0.244	0.270	0.300	0.284	0.308	0.452	0.311	0.142	0.330
	HHMW-05S1-R	0.359	0.380	0.444	0.388	0.297	0.307	0.582	0.387	0.331	0.316	0.365	0.470	1.23	0.448	3.230
	HHMW-05S2-R	0.201	0.788	0.275	0.291	0.252	0.214	0.280	0.255	0.289	0.276	0.301	0.347	0.269	0.262	0.283
	HHMW-09D	0.121	--	--	--	0.157	--	--	--	0.120	--	--	--	0.164	--	--
	HHMW-09I	0.173	0.237	0.219	0.188	0.190	--	--	--	0.226	--	--	--	0.213	--	--
	HHMW-09S1	0.241	0.373	1.190	0.838	0.632	0.903	0.474	0.521	0.249	0.526	0.300	0.705	0.269	0.200	0.405
	HHMW-09S2	0.188	--	--	0.315	0.243	0.227	0.344	0.292	0.206	0.258	0.305	0.333	0.298	0.266	0.253
	HHMW-15S	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	MW-03	0.633	0.775	--	0.699	0.894	0.632	0.600	0.614	1.090	0.631	0.732	1.100	0.967	1.420	1.270
	MW-04	0.253	0.388	0.250	0.290	0.294	0.202	0.370	0.313	0.238	0.277	0.306	0.418	0.278	0.256	0.316
S*	HHMW-22S2	--	0.180	0.255	0.217	0.200	0.209	0.260	0.242	0.285	0.278	0.277	0.394	0.270	0.269	0.293
Downgradient	HHMW-06I	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	HHMW-06S1	0.412	1.600	1.740	1.540	2.010	--	--	--	--	--	--	--	--	--	--
	HHMW-06S2	0.210	0.228	0.387	0.291	0.255	--	--	--	--	--	--	--	--	--	--
	HHMW-07I	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	HHMW-07S1	0.442	1.150	0.544	0.591	0.638	0.495	0.529	0.591	0.611	1.02	0.538	0.927	1.40	1.98	0.87
	HHMW-07S2	0.131	0.283	0.568	0.258	0.204	0.187	0.225	0.228	0.199	0.255	0.268	0.350	0.257	0.241	0.257
	HHMW-08S	0.207	0.475	0.681	0.314	0.295	0.274	0.295	0.307	0.330	0.309	0.346	0.512	0.308	0.525	0.401
	HHMW-11I	0.212	0.307	0.783	0.280	0.251	0.260	0.237	0.270	0.292	0.276	0.287	0.331	0.287	0.276	0.288
	HHMW-11S/11SR	0.920	0.895	0.788	0.392	0.532	0.430	0.323	0.545	0.586	0.537	0.647	0.703	0.675	1.790	1.000
	HHMW-19S1	0.431	0.644	0.400	0.392	0.453	0.420	0.369	0.481	0.490	0.683	0.567	0.778	1.28	2.53	1.48
	HHMW-19S2	0.251	0.271	0.266	0.273	0.292	0.235	0.215	0.262	0.287	0.251	0.273	0.329	0.273	0.245	0.275
	HHMW-20S1	0.410	0.616	0.769	0.790	1.140	0.770	0.562	0.304	0.382	0.412	0.699	0.857	0.698	0.730	0.874
	HHMW-20S2/20S2R	0.238	0.325	0.979	0.300	0.243	0.287	0.265	0.274	0.305	0.295	0.328	0.361	0.303	0.306	0.297
	HHMW-21S1	0.370	0.369	0.647	0.340	0.297	0.272	0.454	0.354	0.363	0.356	0.368	0.500	0.442	0.644	0.413
	HHMW-21S2	0.210	0.206	0.254	0.226	0.251	0.197	0.214	0.228	0.251	0.218	0.244	0.301	0.258	0.130	0.259

Table 3-2. Summary of Groundwater Parameter Data
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		2011				2012				2013				2014		
	Monitoring Well	**Jan-11**	**Apr-11**	**Jul-11**	**Nov-11**	**Jan-12**	**Apr-12**	**Aug-12**	**Nov-12**	**Jan-13**	**Apr-13**	**Jul-13**	**Oct-13**	**Jan-14**	**Apr-14**	**Sep-14**
	Dissolved Oxygen (mg/L)															
Upgradient	HHMW-13	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.03	7.02	5.46	0.30	5.10	5.89
	HHMW-14	6.44	7.01	0.00	0.00	0.00	0.00	0.00	0.00	0.21	0.00	3.07	8.78	8.92	8.35	10.90
	HHMW-16S1	15.45	15.30	13.20	4.80	4.90	5.94	0.00	0.00	0.00	0.00	3.92	19.99	9.38	3.99	4.32
	HHMW-16S2	6.94	7.52	7.30	8.00	6.21	0.00	0.00	0.00	0.00	0.00	7.70	11.22	6.17	4.10	9.38
	HHMW-17S1	21.00	17.00	20.11	11.90	11.93	19.99	16.96	23.07	29.00	12.44	29.48	24.31	7.67	6.98	6.47
	HHMW-17S2	8.95	6.73	5.63	7.79	9.97	5.43	5.49	9.11	13.01	5.74	7.31	14.02	14.00	17.24	18.24
	HHMW-18S1	3.70	9.34	4.33	1.63	3.98	7.11	2.89	4.97	4.91	10.11	5.03	2.81	8.10	11.59	7.80
	HHMW-18S2	4.02	3.50	4.25	4.93	4.80	6.03	4.59	3.76	4.82	3.23	4.26	3.57	3.95	5.80	6.98
Oxygen Injection Area	HHMW-04I	9.16	9.35	21.10	10.03	8.50	10.68	19.43	12.73	18.77	8.28	6.61	10.56	10.96	7.58	10.03
	HHMW-05S1-R	26.00	19.99	34.00	9.94	28.00	32.00	19.99	7.81	26.00	24.70	19.57	22.60	21.65	17.90	20.00
	HHMW-05S2-R	15.20	28.33	26.26	12.78	21.60	23.00	19.99	9.92	16.61	12.21	19.42	19.00	16.10	19.87	19.24
	HHMW-09D	4.33	--	--	--	9.66	--	--	--	9.19	--	--	--	8.42	--	--
	HHMW-09I	4.89	9.41	7.83	0.00	5.99	--	--	--	7.17	--	--	--	9.71	--	--
	HHMW-09S1	12.89	11.30	3.40	5.20	15.50	11.07	8.98	9.91	5.31	5.25	8.95	9.96	7.48	7.64	8.23
	HHMW-09S2	29.00	--	--	33.91	29.00	28.00	30.00	29.03	38.00	22.89	28.97	34.00	38.26	23.50	30.00
	HHMW-15S	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
	MW-03	16.01	6.52	--	15.08	15.19	21.00	10.85	14.56	25.00	19.08	8.87	16.10	25.59	16.37	18.35
	MW-04	27.00	20.00	20.00	19.99	23.07	21.00	19.72	24.34	36.00	37.60	25.07	33.86	33.34	25.10	30.00
S*	HHMW-22S2	--	12.37	12.12	7.40	7.02	9.84	8.92	5.28	9.12	7.41	6.33	9.51	8.60	7.97	7.90
Downgradient	HHMW-06I	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	HHMW-06S1	0.00	2.85	1.82	0.00	3.28	--	--	--	--	--	--	--	--	--	--
	HHMW-06S2	5.03	6.16	6.24	7.16	4.32	--	--	--	--	--	--	--	--	--	--
	HHMW-07I	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	HHMW-07S1	0.00	0.00	0.00	0.00	2.51	2.81	0.00	0.35	0.71	0.98	0.65	3.50	0.68	0.83	0.40
	HHMW-07S2	0.00	8.10	0.00	3.41	0.00	1.90	4.89	1.82	2.21	4.28	7.12	2.10	2.06	0.75	5.66
	HHMW-08S	25.00	22.65	22.00	16.30	23.00	22.00	21.00	18.58	31.98	27.00	16.39	24.03	31.41	15.60	16.47
	HHMW-11I	3.00	4.19	0.00	5.62	3.31	3.58	3.48	3.41	5.24	4.85	6.60	8.34	4.35	2.80	6.57
	HHMW-11S/11SR	0.00	0.00	0.00	0.00	2.38	0.00	0.00	0.09	0.44	0.90	0.43	0.68	0.90	0.88	0.55
	HHMW-19S1	0.00	0.00	0.00	0.00	0.00	0.00	0.18	0.25	0.70	1.10	0.99	1.81	0.60	1.90	0.69
	HHMW-19S2	0.00	2.31	2.97	3.07	3.32	0.39	1.20	2.81	2.11	1.45	5.25	7.02	1.81	2.49	3.88
	HHMW-20S1	0.00	0.00	0.00	0.00	2.53	0.37	0.00	0.00	1.08	1.40	0.66	0.39	1.16	1.37	0.84
	HHMW-20S2/20S2R	2.34	11.00	4.60	5.41	3.35	3.79	4.08	3.46	4.69	5.10	8.30	8.64	4.29	3.09	8.15
	HHMW-21S1	7.56	5.37	4.56	2.72	5.48	4.92	3.84	3.85	6.70	4.96	3.39	4.30	4.84	5.87	4.55
	HHMW-21S2	6.75	5.50	8.83	8.10	9.97	7.72	8.20	6.01	7.02	6.09	6.58	11.73	7.90	5.98	7.22

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	Monitoring Well	**Jan-11**	**Apr-11**	**Jul-11**	**Nov-11**	**Jan-12**	**Apr-12**	**Aug-12**	**Nov-12**	**Jan-13**	**Apr-13**	**Jul-13**	**Oct-13**	**Jan-14**	**Apr-14**	**Sep-14**
	Temperature (degrees Celsius)															
Upgradient	HHMW-13	11.66	12.00	19.20	15.10	7.07	10.40	21.22	15.66	10.15	12.01	26.13	13.75	12.20	11.65	11.00
	HHMW-14	11.75	11.68	17.50	12.23	7.81	10.30	20.60	15.14	9.41	12.15	21.94	11.62	11.50	11.47	11.63
	HHMW-16S1	12.02	11.82	19.54	13.14	8.60	15.20	19.25	13.93	9.84	12.83	21.84	12.61	8.70	10.02	14.00
	HHMW-16S2	10.97	12.10	16.47	13.87	5.90	10.24	21.30	13.59	10.07	11.49	28.45	12.13	8.21	10.17	14.12
	HHMW-17S1	12.05	11.66	22.14	13.75	7.90	18.41	26.06	10.01	9.82	15.88	22.08	16.31	11.35	11.47	10.73
	HHMW-17S2	10.96	11.95	23.76	14.77	6.41	8.80	22.14	11.53	9.25	20.85	21.85	12.81	12.54	8.73	9.24
	HHMW-18S1	8.17	10.42	17.42	13.10	9.53	19.58	17.66	13.49	9.27	13.88	17.29	13.29	10.33	12.00	14.50
	HHMW-18S2	8.97	11.69	15.72	12.26	10.70	18.81	15.33	12.14	9.90	13.05	17.50	12.30	10.92	17.09	14.25
Oxygen Injection Area	HHMW-04I	10.27	11.08	22.49	12.25	11.79	12.95	15.60	9.47	10.59	11.42	18.74	13.20	9.16	15.86	15.32
	HHMW-05S1-R	10.42	9.33	18.05	15.90	9.85	12.51	20.87	14.07	9.29	10.23	19.25	16.22	11.06	9.00	17.75
	HHMW-05S2-R	12.43	10.33	13.69	13.94	12.32	13.14	16.50	13.49	10.57	12.25	14.64	14.01	13.10	10.76	13.44
	HHMW-09D	7.27	--	--	--	10.67	--	--	--	10.31	--	--	--	11.03	--	--
	HHMW-09I	8.45	11.51	18.28	11.75	8.77	--	--	--	10.95	--	--	--	11.16	--	--
	HHMW-09S1	9.29	12.00	24.10	13.61	12.62	11.61	22.72	15.62	9.25	13.12	19.71	14.32	9.19	10.63	20.02
	HHMW-09S2	8.60	--	--	13.14	10.15	11.22	15.96	16.33	10.60	18.93	15.69	12.71	10.79	11.22	15.26
	HHMW-15S	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	MW-03	7.22	8.90	--	15.55	8.79	10.83	20.15	16.58	7.02	9.86	21.83	16.98	9.99	8.99	17.42
	MW-04	11.57	9.83	16.81	14.01	11.87	17.18	15.33	12.11	10.44	10.74	18.39	14.57	10.95	12.69	15.92
S*	HHMW-22S2	--	12.68	16.82	10.10	6.41	12.14	17.97	11.14	9.60	11.79	15.07	12.23	10.86	11.42	12.99
Downgradient	HHMW-06I	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	HHMW-06S1	6.45	11.68	23.44	16.75	8.21	--	--	--	--	--	--	--	--	--	--
	HHMW-06S2	10.82	12.54	14.16	12.57	11.20	--	--	--	--	--	--	--	--	--	--
	HHMW-07I	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	HHMW-07S1	4.62	10.90	21.84	15.95	7.90	15.14	22.15	15.47	8.93	12.87	21.90	17.23	7.86	10.44	19.44
	HHMW-07S2	10.41	11.50	17.40	12.63	11.85	13.61	14.10	13.41	10.85	11.78	14.64	14.57	12.03	14.76	14.27
	HHMW-08S	10.10	11.02	20.50	15.90	11.23	15.94	21.42	16.29	9.84	11.42	18.56	16.63	10.86	12.10	18.36
	HHMW-11I	10.40	11.20	15.90	12.80	11.09	13.66	17.13	14.80	9.85	11.54	17.13	14.16	11.10	13.70	14.48
	HHMW-11S/11SR	6.00	10.32	21.36	16.27	10.01	13.20	22.75	18.28	8.74	10.79	21.16	18.34	10.04	11.17	19.55
	HHMW-19S1	8.09	10.70	18.64	15.97	9.82	14.55	23.95	16.42	9.38	11.50	20.85	17.06	8.40	11.00	20.02
	HHMW-19S2	12.28	11.45	13.49	12.67	11.84	14.66	20.47	13.25	11.40	13.25	15.13	13.53	11.77	15.11	14.23
	HHMW-20S1	6.41	10.97	20.37	16.19	9.56	15.17	23.38	17.09	8.83	12.75	21.20	18.51	9.12	11.27	20.07
	HHMW-20S2/20S2R	9.99	11.00	16.40	12.67	11.74	16.11	17.91	13.16	10.87	12.24	15.40	14.73	11.94	11.87	16.18
	HHMW-21S1	5.54	11.42	23.83	16.39	8.90	15.64	22.84	16.84	9.29	12.04	22.60	18.29	8.97	11.37	21.20
	HHMW-21S2	8.61	11.32	17.49	12.26	10.62	16.10	16.45	14.22	11.34	11.30	17.43	14.17	11.41	15.49	16.79

Table 3-2. Summary of Groundwater Parameter Data
Halesite Former MGP Site
Annual Groundwater Monitoring and Operations, Maintenance & Monitoring Report

		2011				2012				2013				2014		
	Monitoring Well	**Jan-11**	**Apr-11**	**Jul-11**	**Nov-11**	**Jan-12**	**Apr-12**	**Aug-12**	**Nov-12**	**Jan-13**	**Apr-13**	**Jul-13**	**Oct-13**	**Jan-14**	**Apr-14**	**Sep-14**
	Oxidation Reduction Potential (mV)															
Upgradient	HHMW-13	250	210	312	261	389	320	800	744	661	732	261	182	193	175	402
	HHMW-14	299	209	330	425	589	550	790	674	584	601	289	220	399	91	96
	HHMW-16S1	270	214	400	700	850	900	NM	283	237	288	281	271	214	89	97
	HHMW-16S2	273	274	260	220	236	380	500	432	357	299	210	220	--	101	112
	HHMW-17S1	310	335	291	231	154	195	340	251	244	301	188	191	125	108	110
	HHMW-17S2	278	275	188	268	327	290	280	405	344	233	306	221	231	383	301
	HHMW-18S1	300	248	236	196	196	260	247	276	309	304	286	260	208	287	287
	HHMW-18S2	294	299	278	355	290	316	267	325	287	330	242	252	209	207	251
Oxygen Injection Area	HHMW-04I	291	294	301	308	215	270	249	308	269	280	171	266	173	95	277
	HHMW-05S1-R	240	232	114	150	139	480	202	169	231	183	186	322	216	186	243
	HHMW-05S2-R	269	294	248	290	352	344	272	288	293	404	222	221	258	297	255
	HHMW-09D	237	--	--	--	255	--	--	--	213	--	--	--	171	--	--
	HHMW-09I	270	321	189	210	189	--	--	--	220	--	--	--	198	--	--
	HHMW-09S1	133	215	283	192	--	235	168	281	101	122	175	161	147	119	133
	HHMW-09S2	312	--	--	310	234	243	294	285	292	248	228	238	198	297	318
	HHMW-15S	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	MW-03	12	93	--	150	266	157	90	91	79	70	58	57	-8	12	-17
	MW-04	292	253	182	216	298	261	285	299	306	379	310	256	281	239	303
S*	HHMW-22S2	--	50	286	187	164	279	258	313	285	333	234	220	247	294	306
Downgradient	HHMW-06I	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	HHMW-06S1	78	47	-75	-106	-8	--	--	--	--	--	--	--	--	--	--
	HHMW-06S2	200	280	141	159	159	--	--	--	--	--	--	--	--	--	--
	HHMW-07I	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	HHMW-07S1	-35	5	-98	-100	-53	-77	-135	-132	-155	-149	-147	-158	-40	-130	-63
	HHMW-07S2	287	225	-67	198	203	144	208	251	258	212	256	169	94	236	183
	HHMW-08S	216	247	250	118	219	254	234	245	234	196	279	216	144	273	240
	HHMW-11I	198	265	293	219	242	261	178	282	215	364	293	222	121	232	218
	HHMW-11S/11SR	-90	-50	-108	-22	5	-70	-45	-38	-41	-60	-106	-40	-41	-54	-27
	HHMW-19S1	-81	6	-122	-150	-110	155	-149	-109	-78	-112	-130	-103	-85	-92	-53
	HHMW-19S2	277	245	230	219	126	235	151	278	267	266	293	222	93	220	239
	HHMW-20S1	-28	-16	-120	-127	-66	-84	-136	-59	-5	-8	-125	-95	-36	21	12
	HHMW-20S2/20S2R	203	275	281	221	273	288	197	302	277	280	320	232	145	310	265
	HHMW-21S1	133	253	216	115	164	185	190	221	235	356	245	145	157	169	175
	HHMW-21S2	260	283	187	215	296	255	205	297	256	236	202	216	195	206	255

Table 3-2. Summary of Groundwater Parameter Data
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		2015		2016		2017		2018		2019		2020		2021	
	Monitoring Well	**Mar-15**	**Sep-15**	**Mar-16**	**Sep/Oct-16**	**Mar-17**	**Sep-17**	**Mar-18**	**Aug-18**	**Mar-19**	**Sep-19**	**Feb-20**	**Sep-20**	**Mar-21**	**Aug-21**
	pH (standard units)														
Upgradient	HHMW-13	5.37	4.78	2.04	5.33	--	4.88	--	--	--	5.19	--	5.18	--	5.81
	HHMW-14	5.43	5.15	2.43	5.37	--	4.90	--	5.41	--	5.41	--	5.36	5.60	5.50
	HHMW-16S1	4.79	4.34	1.16	1.16	--	4.11	4.56	4.75	4.76	4.14	4.97	4.97	--	5.09
	HHMW-16S2	--	4.71	--	4.04	5.34	4.74	--	5.20	--	5.08	--	--	--	--
	HHMW-17S1	--	4.86	--	5.76	--	--	--	--	--	--	--	--	--	--
	HHMW-17S2	--	4.50	--	3.53	--	--	--	--	--	--	--	--	--	--
	HHMW-18S1	4.87	4.67	4.48	5.16	5.50	4.88	--	5.16	--	5.27	--	5.10	5.34	5.37
	HHMW-18S2	--	4.88	--	5.33	--		--	--	--	--	--	--	--	--
Oxygen Injection Area	HHMW-04I	--	4.79	--	5.31	--	--	--	--	--	--	--	--	--	--
	HHMW-05S1-R	5.32	5.62	4.81	5.56	--	--	--	--	--	--	--	--	--	--
	HHMW-05S2-R	--	5.04	--	5.34	--	--	--	--	--	--	--	--	--	--
	HHMW-09D	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	HHMW-09I	--	5.01	--	5.71	--	--	--	--	--	--	--	--	--	--
	HHMW-09S1	5.42	5.21	3.29	5.95	6.10	5.41	6.39	5.06	6.35	6.04	6.33	5.62	5.87	6.38
	HHMW-09S2	--	4.98	--	5.53	--	--	--	--	--	--	--	--	--	--
	HHMW-15S	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	MW-03	6.12	5.49	5.92	6.17	6.56	--	--	--	--	--	6.72	--	6.72	--
	MW-04	--	4.95	--	5.53	--	--	--	--	--	--	--	--	--	--
S*	HHMW-22S2	--	4.99	--	5.35	--	--	--	--	--	--	--	--	--	--
Downgradient	HHMW-06I	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	HHMW-06S1	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	HHMW-06S2	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	HHMW-07I	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	HHMW-07S1	6.24	5.73	5.03	6.62	6.77	6.35	--	5.54	--	7.50	--	6.95	--	7.13
	HHMW-07S2	--	5.06	--	5.50	--	--	--	--	--	--	--	--	--	--
	HHMW-08S	--	5.18	--	5.93	--	--	--	--	--	--	--	--	--	--
	HHMW-19S1	5.99	6.09	5.47	6.28	6.45	6.07	5.96	5.87	6.64	6.94	7.00	6.46	6.57	6.59
	HHMW-19S2	5.10	4.84	--	5.45	--	--	--	--	--	--	--	--	--	--
	HHMW-20S1	6.55	6.49	6.62	6.64	--	--	6.55	6.00	--	7.53	--	--	--	--
	HHMW-20S2/20S2R	--	4.76	--	5.48	--	--	--	--	--	--	--	--	--	--
	HHMW-21S1	--	5.51	--	5.87	--	--	--	--	--	--	--	--	--	--
	HHMW-21S2	--	4.84	--	5.61	--	--	--	--	--	--	--	--	--	--
	HHMW-11I	--	5.11	--	--	--	--	--	--	--	--	--	--	--	--
	HHMW-11S/11SR	6.27	6.24	--	6.76	8.89	6.75	--	5.95	--	7.09	--		--	--

Table 3-2. Summary of Groundwater Parameter Data
Halesite Former MGP Site
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		2015		2016		2017		2018		2019		2020		2021	
	Monitoring Well	**Mar-15**	**Sep-15**	**Mar-16**	**Sep/Oct-16**	**Mar-17**	**Sep-17**	**Mar-18**	**Aug-18**	**Mar-19**	**Sep-19**	**Feb-20**	**Sep-20**	**Mar-21**	**Aug-21**
	Conductivity (mS/cm)														
Upgradient	HHMW-13	0.312	0.26	0.219	0.273	--	0.390	--	--	--	0.270	--	0.184	--	0.250
	HHMW-14	0.310	0.19	0.222	0.273	--	0.39	--	0.205	--	0.267	--	0.190	0.215	0.249
	HHMW-16S1	1.130	0.62	0.424	0.424	--	0.85	0.754	0.337	0.489	0.612	0.599	0.308	--	0.486
	HHMW-16S2	--	0.25	--	0.261	0.335	0.40	--	0.193	--	0.283	--	--	--	--
	HHMW-17S1	--	0.34	--	0.304	--	--	--	--	--	--	--	--	--	--
	HHMW-17S2	--	0.26	--	0.294	--	--	--	--	--	--	--	--	--	--
	HHMW-18S1	0.437	0.34	0.269	0.447	0.344	0.406	--	0.220	--	0.408	--	0.226	0.278	0.255
	HHMW-18S2	--	0.24	--	0.268	--	--	--	--	--	--	--	--	--	--
Oxygen Injection Area	HHMW-04I	--	0.311	--	0.316	--	--	--	--	--	--	--	--	--	--
	HHMW-05S1-R	0.219	0.234	0.234	0.204	--	--	--	--	--	--	--	--	--	--
	HHMW-05S2-R	--	0.238	--	0.333	--	--	--	--	--	--	--	--	--	--
	HHMW-09D	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	HHMW-09I	--	0.217	--	0.220	--	--	--	--	--	--	--	--	--	--
	HHMW-09S1	0.299	0.309	0.15	0.254	0.289	0.357	0.361	0.212	0.200	0.221	0.183	0.153	0.130	0.200
	HHMW-09S2	--	0.299	--	0.379	--	--	--	--	--	--	--	--	--	--
	HHMW-15S	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	MW-03	1.660	1.360	2.690	1.650	1.630	--	--	--	--	--	1.740	--	0.868	--
	MW-04	--	0.265	--	0.301	--	--	--	--	--	--	--	--	--	--
S*	HHMW-22S2	--	0.25	--	0.303	--	--	--	--	--	--	--	--	--	--
Downgradient	HHMW-06I	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	HHMW-06S1	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	HHMW-06S2	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	HHMW-07I	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	HHMW-07S1	1.62	0.45	0.707	1.15	0.92	2.12	--	1.82	--	0.261	--	0.634	--	1.070
	HHMW-07S2	--	0.22	--	0.276	--	--	--	--	--	--	--	--	--	--
	HHMW-08S	--	0.37	--	0.414	--	--	--	--	--	--	--	--	--	--
	HHMW-11I	--	0.25	--	--	--	--	--	--	--	--	--	--	--	--
	HHMW-11S/11SR	0.747	0.81	--	0.877	0.530	0.590	--	0.220	--	0.310	--	--	--	--
	HHMW-19S1	1.82	1.06	1.08	0.710	2.33	1.17	2.33	0.753	0.718	0.467	0.258	0.420	0.667	0.689
	HHMW-19S2	0.302	0.26	--	0.288	--	--	--	--	--	--	--	--	--	--
	HHMW-20S1	1.390	0.70	0.385	0.536	--	--	0.940	0.193	--	0.172	--	--	--	--
	HHMW-20S2/20S2R	--	0.27	--	0.347	--	--	--	--	--	--	--	--	--	--
	HHMW-21S1	--	0.37	--	0.480	--	--	--	--	--	--	--	--	--	--
	HHMW-21S2	--	0.24	--	0.267	--	--	--	--	--	--	--	--	--	--

Table 3-2. Summary of Groundwater Parameter Data
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		2015		2016		2017		2018		2019		2020		2021	
	Monitoring Well	**Mar-15**	**Sep-15**	**Mar-16**	**Sep/Oct-16**	**Mar-17**	**Sep-17**	**Mar-18**	**Aug-18**	**Mar-19**	**Sep-19**	**Feb-20**	**Sep-20**	**Mar-21**	**Aug-21**
	Dissolved Oxygen (mg/L)														
Upgradient	HHMW-13	2.68	7.49	0.00	2.04	--	2.17	--	--	--	0.00	--	1.18	--	5.86
	HHMW-14	7.90	8.05	5.39	6.68	--	6.95	--	6.87	--	6.84	--	9.25	6.29	7.89
	HHMW-16S1	11.53	9.67	16.02	7.67	11.12	14.06	17.80	10.43	15.45	13.67	6.07	18.21	--	9.26
	HHMW-16S2	--	7.22	--	8.14	--	8.48	--	5.59	--	6.69	--	--	--	--
	HHMW-17S1	--	15.33	--	13.11	--	--	--	--	--	--	--	--	--	--
	HHMW-17S2	--	5.62	--	5.90	--	--	--	--	--	--	--	--	--	--
	HHMW-18S1	14.79	5.00	10.84	4.56	22.67	3.07	--	0.60	--	7.66	--	2.95	8.41	4.48
	HHMW-18S2	--	3.55	--	5.25	--	--	--	--	--	--	--	--	--	--
Oxygen Injection Area	HHMW-04I	--	17.80	--	5.96	--	--	--	--	--	--	--	--	--	--
	HHMW-05S1-R	17.39	31.00	14.89	9.66	--	--	--	--	--	--	--	--	--	--
	HHMW-05S2-R	--	18.98	--	9.38	--	--	--	--	--	--	--	--	--	--
	HHMW-09D	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	HHMW-09I	--	10.47	--	6.17	--	--	--	--	--	--	--	--	--	--
	HHMW-09S1	16.12	6.97	8.66	6.47	2.98	5.94	9.66	1.96	2.13	5.04	2.30	3.87	7.06	5.37
	HHMW-09S2	--	48.00	--	27.92	--	--	--	--	--	--	--	--	--	--
	HHMW-15S	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	MW-03	16.47	20.28	31.62	24.84	50.00	--	--	--	--	--	16.10	--	18.94	--
	MW-04	--	35.55	--	20.52	--	--	--	--	--	--	--	--	--	--
S*	HHMW-22S2	--	8.42	--	7.00	--	--	--	--	--	--	--	--	--	--
Downgradient	HHMW-06I	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	HHMW-06S1	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	HHMW-06S2	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	HHMW-07I	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	HHMW-07S1	1.58	1.91	4.88	0.35	5.62	0.43	--	0.00	--	0.00	--	0.00	--	0.00
	HHMW-07S2	--	2.76	--	2.62	--	--	--	--	--	--	--	--	--	--
	HHMW-08S	--	24.30	--	14.65	--	--	--	--	--	--	--	--	--	--
	HHMW-11I	--	2.90	--	--	--	--	--	--	--	--	--	--	--	--
	HHMW-11S/11SR	0.34	1.34	--	1.5	2.95	1.54	--	0.00	--	0.00	--	--	--	--
	HHMW-19S1	3.53	1.05	6.37	3.04	7.70	1.50	0.74	0.00	0.37	0.00	0.92	0.00	0.00	0.00
	HHMW-19S2	2.25	2.40	--	5.02	--	--	--	--	--	--	--	--	--	--
	HHMW-20S1	1.62	1.36	0.00	0.63	--	--	2.55	0.00	--	0.00	--	--	--	--
	HHMW-20S2/20S2R	--	4.80	--	7.30	--	--	--	--	--	--	--	--	--	--
	HHMW-21S1	--	3.11	--	4.78	--	--	--	--	--	--	--	--	--	--
	HHMW-21S2	--	8.10	--	7.05	--	--	--	--	--	--	--	--	--	--

Table 3-2. Summary of Groundwater Parameter Data
Halesite Former MGP Site
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		2015		2016		2017		2018		2019		2020		2021	
	Monitoring Well	**Mar-15**	**Sep-15**	**Mar-16**	**Sep/Oct-16**	**Mar-17**	**Sep-17**	**Mar-18**	**Aug-18**	**Mar-19**	**Sep-19**	**Feb-20**	**Sep-20**	**Mar-21**	**Aug-21**
	Temperature (degrees Celsius)														
Upgradient	HHMW-13	10.76	23.34	14.34	14.79	--	12.80	--	--	--	12.50	--	11.77	--	21.05
	HHMW-14	10.95	20.82	14.32	14.32	--	13.66	--	14.48		13.27	--	11.48	12.11	17.83
	HHMW-16S1	9.51	20.33	14.27	11.16	--	12.98	11.37	18.08	11.22	12.38	10.89	12.39	--	19.52
	HHMW-16S2	--	16.34	--	14.32	10.82	13.74	--	17.98	--	12.31	--	--	--	--
	HHMW-17S1	--	16.46	--	13.66	--	--	--	--	--	--	--	--	--	--
	HHMW-17S2	--	17.78	--	15.25	--	--	--	--	--	--	--	--	--	--
	HHMW-18S1	7.91	20.99	15.21	14.52	6.15	13.77	--	19.66	--	18.17	--	16.47	12.27	16.07
	HHMW-18S2	--	19.10	--	14.07	--	--	--	--	--	--	--	--	--	--
Oxygen Injection Area	HHMW-04I	--	15.37	--	17.60	--	--	--	--	--	--	--	--	--	--
	HHMW-05S1-R	6.07	20.28	14.17	20.29	--	--	--	--	--	--	--	--	--	--
	HHMW-05S2-R	--	16.93	--	16.07	--	--	--	--	--	--	--	--	--	--
	HHMW-09D	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	HHMW-09I	--	14.41	--	12.80	--	--	--	--	--	--	--	--	--	--
	HHMW-09S1	3.20	26.65	13.63	20.72	12.29	18.66	8.93	21.87	9.52	16.88	8.52	18.96	10.76	18.87
	HHMW-09S2	--	15.16	--	13.57	--	--	--	--	--	--	--	--	--	--
	HHMW-15S	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	MW-03	6.48	18.60	11.75	17.19	7.05	--	--	--	--	--	8.86	--	10.55	--
	MW-04	--	16.05	--	17.89	--	--	--	--	--	--	--	--	--	--
S*	HHMW-22S2	--	13.58	--	12.82	--	--	--	--	--	--	--	--	--	--
Downgradient	HHMW-06I	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	HHMW-06S1	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	HHMW-06S2	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	HHMW-07I	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	HHMW-07S1	3.77	21.04	9.52	22.02	5.80	19.14	--	21.76	--	21.27	--	16.80	--	22.81
	HHMW-07S2	--	14.86	--	14.49	--	--	--	--	--	--	--	--	--	--
	HHMW-08S	--	20.23	--	19.22	--	--	--	--	--	--	--	--	--	--
	HHMW-11I	--	18.11	--	--	--	--	--	--	--	--	--	--	--	--
	HHMW-11S/11SR	6.31	22.08	--	18.61	8.78	19.84	--	21.95	--	20.29	--	--	--	--
	HHMW-19S1	5.27	22.24	10.75	22.57	5.97	18.89	12.69	22.08	8.95	21.53	6.19	20.52	9.43	21.96
	HHMW-19S2	10.09	16.28	--	15.34	--	--	--	--	--	--	--	--	--	--
	HHMW-20S1	5.53	23.96	11.38	21.18	--	--	9.07	22.59	--	21.39	--	--	--	--
	HHMW-20S2/20S2R	--	15.55	--	14.56	--	--	--	--	--	--	--	--	--	--
	HHMW-21S1	--	26.26	--	24.13	--	--	--	--	--	--	--	--	--	--
	HHMW-21S2	--	18.11	--	17.03	--	--	--	--	--	--	--	--	--	--

Table 3-2. Summary of Groundwater Parameter Data
Halesite Former MGP Site
Annual Groundwater Monitoring and Operations, Maintenance & Monitoring Report

		2015		2016		2017		2018		2019		2020		2021	
	Monitoring Well	**Mar-15**	**Sep-15**	**Mar-16**	**Sep/Oct-16**	**Mar-17**	**Sep-17**	**Mar-18**	**Aug-18**	**Mar-19**	**Sep-19**	**Feb-20**	**Sep-20**	**Mar-21**	**Aug-21**
	Oxidation Reduction Potential (mV)														
Upgradient	HHMW-13	217	260	350	211	--	205	--	--	--	221	--	243	--	103
	HHMW-14	211	263	349	224	--	219	--	328	--	206	--	297	185	135
	HHMW-16S1	270	307	419	419	--	297	232	397	241	311	267	201	--	129
	HHMW-16S2	--	288	--	329	277	236	--	365	--	269	--	--	--	--
	HHMW-17S1	--	301	--	244	--	--	--	--	--	--	--	--	--	--
	HHMW-17S2	--	309	--	353	--	--	--	--	--	--	--	--	--	--
	HHMW-18S1	216	274	362	295	295	223	--	345	--	248	--	264	208	218
	HHMW-18S2	--	288	--	260	--	--	--	--	--	--	--	--	--	--
Oxygen Injection Area	HHMW-04I	--	299	--	268	--	--	--	--	--	--	--	--	--	--
	HHMW-05S1-R	181	248	330	233	--	--	--	--	--	--	--	--	--	--
	HHMW-05S2-R	--	243	--	163	--	--	--	--	--	--	--	--	--	--
	HHMW-09D	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	HHMW-09I	--	280	--	123	--	--	--	--	--	--	--	--	--	--
	HHMW-09S1	106	41	157	5	113	10	35	114.00	58	39.00	63	-13.00	177.00	4.00
	HHMW-09S2	--	322	--	203	--	--	--	--	--	--	--	--	--	--
	HHMW-15S	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	MW-03	99	9	36	22	33	--	--	--	--	--	-18.00	--	93.00	--
	MW-04	--	294	--	260	--	--	--	--	--	--	--	--	--	--
S*	HHMW-22S2	--	205	--	269	--	--	--	--	--	--	--	--	--	--
Downgradient	HHMW-06I	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	HHMW-06S1	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	HHMW-06S2	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	HHMW-07I	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	HHMW-07S1	-2	2	22	-125	104	-140	--	57	--	-150	--	-177	--	-133
	HHMW-07S2	--	213	--	108	--	--	--	--	--	--	--	--	--	--
	HHMW-08S	--	278	--	214	--	--	--	--	--	--	--	--	--	--
	HHMW-11I	--	273	--	--	--	--	--	--	--	--	--	--	--	--
	HHMW-11S/11SR	-3	-28	--	-125	60	-98	--	126	--	-122	--	--	--	--
	HHMW-19S1	54	-62	20	-127	1	-98	-145	20	-82	-130	-43	-175	-85	-108
	HHMW-19S2	110	267	--	98	--	--	--	--	--	--	--	--	--	--
	HHMW-20S1	-25	47	98	-1	--	--	-59	72.00	--	-118.00	--	--	--	--
	HHMW-20S2/20S2R	--	290	--	188	--	--	--	--	--	--	--	--	--	--
	HHMW-21S1	--	203	--	198	--	--	--	--	--	--	--	--	--	--
	HHMW-21S2	--	294	--	229	--	--	--	--	--	--	--	--	--	--

Notes:

MGP = Manufactured Gas Plant
mS/cm = millisiemens per centimeter
mg/L = milligrams per liter
mv = millivolts
* = Sidegradient
-- = not measured

Table 3-3. Water Level Measurements and Calculated Water Elevations
Halesite Former MGP Site
Annual Groundwater Monitoring and Operations, Maintenance & Monitoring Report

Well and Piezometer I.D.	Top of Casing Elevation (ft)	Tide	8/10/2021			Notes
			Time	Depth to Water (ft)	Groundwater Elevation (ft)	
Upland Groundwater Monitoring Wells						
HHMW-13	55.75	High	13:03	44.24	11.51	
		Low	0648	44.29	11.46	
HHMW-14	76.12	High	13:01	64.54	11.58	
		Low	0645	64.65	11.47	
HHMW-16S1	38.01	High	13:06	27.21	10.80	
		Low	0650	27.54	10.47	
HHMW-16S2	37.69	High	13:05	27.40	10.29	
		Low	13:09	27.71	9.98	
HHMW-17S1	30.63	High	13:09	20.14	10.49	
		Low	0653	20.44	10.19	
HHMW-17S2	31.09	High	13:10	20.58	10.51	
		Low	0655	20.86	10.23	
Lowland Groundwater Monitoring Wells						
MW-03	14.66	High	13:21	4.57	10.09	
		Low	7:20	4.74	9.92	
MW-04	18.46	High	13:19	8.24	10.22	
		Low	7:15	8.64	9.82	
HHMW-04I	19.58	High	13:18	8.44	11.14	
		Low	7:17	8.81	10.77	
HHMW-05S1R	17.40	High	13:26	7.21	10.19	
		Low	7:26	7.25	10.15	
HHMW-05S2R	17.44	High	13:24	6.63	10.81	
		Low	7:25	7.03	10.41	
HHMW-09S1	19.26	High	13:12	8.88	10.38	
		Low	7:07	8.91	10.35	
HHMW-09S2	19.33	High	13:13	8.92	10.41	
		Low	7:05	9.21	10.12	
HHMW-09I	19.23	High	13:14	8.82	10.41	
		Low	7:08	9.17	10.06	
HHMW-09D	18.83	High	13:15	8.41	10.42	
		Low	7:10	8.82	10.01	
HHMW-18S1	20.66	High	13:33	9.67	10.99	
		Low	6:58	9.94	10.72	
HHMW-18S2	21.01	High	13:32	10.06	10.95	
		Low	7:00	10.34	10.67	
HHMW-22S1	16.00	High	13:30	5.43	10.57	
		Low	7:28	5.33	10.67	
HHMW-22S2	16.40	High	13:28	5.83	10.57	
		Low	7:30	6.17	10.23	
Downgradient Groundwater Monitoring Wells						
HHMW-07S1	11.59	High	13:40	2.92	8.67	
		Low	7:39	3.09	8.50	
HHMW-07S2	11.40	High	13:38	1.56	9.84	
		Low	7:38	2.72	8.68	
HHMW-07I	10.86	High	13:37	0.48	10.38	
		Low	7:40	0.97	9.89	
HHMW-07D	11.13	High	13:36	0.55	10.58	
		Low	7:41	0.96	10.17	
HHMW-08S	8.67	High	13:58	2.22	6.45	
		Low	8:03	4.94	3.73	
HHMW-08I	8.59	High	13:52	0.59	8.00	
		Low	8:00	2.77	5.82	
HHMW-11SR	NM	High	13:54	1.26	NC	Abandoned - Re-installed on 9/27/16. Not re-surveyed.
		Low	8:16	3.19	NC	
HHMW-19S1	11.87	High	13:44	3.07	8.80	
		Low	8:17	3.14	8.73	
HHMW-19S2	11.52	High	13:46	1.90	9.62	
		Low	8:15	2.80	8.72	
HHMW-20S1	10.27	High	13:52	3.96	6.31	
		Low	7:51	4.38	5.89	
HHMW-20S2R	NM	High	13:52	1.39	NC	Abandoned - Re-installed on 9/27/16. Not re-surveyed.
		Low	7:53	3.47	NC	
HHMW-21S1	9.77	High	13:49	2.92	6.85	
		Low	7:47	3.40	6.37	
HHMW-21S2	10.09	High	13:50	0.25	9.84	
		Low	7:45	0.40	9.69	

Notes:
MGP = Manufactured Gas Plant
ft = feet
NC = Not Calculated
NM = Not Measured

Table 3-4. Groundwater Analytical Results
Halesite Former MGP
Annual Groundwater Monitoring and Operations, Maintenance Monitoring Report

			Location Name	HHMW-07S1	HHMW-09S1	HHMW-09S1	HHMW-13	HHMW-14	HHMW-14	HHMW-16S1	HHMW-16S1	HHMW-18S1	HHMW-18S1	HHMW-19S1	HHMW-19S1
			Sample Name	HHMW-07S1	HHMW-09S1	HHMW-09S1	HHMW-13	HHMW-14	HHMW-14	HHMW-16S1	HHMW-16S1	HHMW-18S1	HHMW-18S1	HHMW-19S1	HHMW-19S1
			Start Depth	3	6	6	39	64	64	25	25	9	9	3	3
			End Depth	8	11	11	49	74	74	30	30	14	14	8	8
			Depth Unit	ft	ft	ft	ft	ft	ft	ft	ft	ft	ft	ft	ft
			Sample Date	8/11/2021	3/24/2021	8/11/2021	8/11/2021	3/24/2021	8/11/2021	3/24/2021	8/11/2021	3/24/2021	8/11/2021	3/24/2021	8/11/2021
			Parent Sample												
Analyte	**Units**	**CAS No.**	**NYS AWQS**												
BTEX	µg/L														
Benzene		71-43-2	1	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	**0.57 J**	**1.4**
Toluene		108-88-3	5	1 U	1 U	1 U	1 U	1 U	1 U	**1.1**	**0.42 J**	1 U	1 U	1 U	1 U
Ethylbenzene		100-41-4	5	1 U	1 U	1 U	1 U	1 U	1 U	**0.99 J**	**0.32 J**	1 U	1 U	**7.1**	**5 J**
Total Xylene		1330-20-7	5	2 U	2 U	2 U	2 U	2 U	2 U	**12**	**5.6**	2 U	2 U	2 U	2 U
Total BTEX (ND=0)		TBTEX_ND0	NE	ND	ND	ND	ND	ND	ND	**14.09**	**6.34**	ND	ND	**7.67**	**6.4**
PAH17	µg/L														
Acenaphthene		83-32-9	20*	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	**1.1 J**	**1.5 J**	**17**	**21**
Acenaphthylene		208-96-8	NE	10 U	**1.7 J**	**3.3 J**	**2.9 J**	**4.3 J**	**1.9 J**	**4.2 J**	**0.92 J**	**16**	**12**	10 U	10 U
Anthracene		120-12-7	50*	10 U	10 U	10 U	**1.3 J**	**1.3 J**	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Benzo(a)anthracene		56-55-3	0.002*	1 U	**0.69 J**	**0.67 J**	**1.2**	**8.8**	**3.8**	1 U	1 U	1 U	1 U	1 U	1 U
Benzo(b)fluoranthene		205-99-2	0.002*	2 U	**1.9 J**	**2.9**	2 U	**11**	**4.5**	2 U	2 U	2 U	2 U	2 U	2 U
Benzo(k)fluoranthene		207-08-9	0.002*	1 U	**0.86 J**	**1.1**	1 U	**4.1**	**2.1**	1 U	1 U	1 U	1 U	1 U	1 U
Benzo(g,h,i)perylene		191-24-2	NE	10 U	**4 J**	**9.3 J**	10 U	**9.5 J**	**3.5 J**	**0.71 J**	**1.2 J**	10 U	10 U	10 U	10 U
Benzo(a)pyrene		50-32-8	ND	1 U	**3.7**	**7.4**	1 U	**16**	**6.5**	**0.55 J**	1 U	1 U	1 U	1 U	1 U
Chrysene		218-01-9	0.002*	2 U	**0.96 J**	**1.1 J**	2 U	**8 J**	**3.7**	10 U	2 U	10 U	2 U	10 U	2 U
Dibenz(a,h)anthracene		53-70-3	NE	1 U	1 UJ	**0.94 J**	1 U	1 UJ	1 U	1 UJ	1 U	1 UJ	1 U	1 UJ	1 U
Fluoranthene		206-44-0	50*	10 UJ	10 U	10 U	**3.7 J**	**6 J**	**2.8 J**	10 U	10 U	10 U	10 UJ	10 U	10 UJ
Fluorene		86-73-7	50*	10 U	10 U	10 U	**1.6 J**	10 U	10 U	10 U	10 U	**4 J**	**2.7 J**	**3.2 J**	**2.8 J**
Indeno(1,2,3-cd)pyrene		193-39-5	0.002*	2 U	2 U	**6.6**	2 U	**8.2**	**2.9**	2 U	2 U	2 U	2 U	2 U	2 U
2-Methylnaphthalene		91-57-6	NE	10 U	10 U	10 U	**1.8 J**	10 U	10 U	10 U	10 U	**2.3 J**	10 U	**0.53 J**	10 U
Naphthalene		91-20-3	10*	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	**0.61 J**	2 U	**25 J**	**5.1**
Phenanthrene		85-01-8	50*	10 U	10 U	10 U	**4 J**	10 U	10 U	10 U	10 U	**2.3 J**	10 U	10 U	10 U
Pyrene		129-00-0	50*	10 U	10 U	10 U	**4.3 J**	**11**	**4.1 J**	10 U	10 U	10 U	10 U	10 U	10 U
Total PAH (17) (ND=0)		TPAH17_ND0	NE	ND	**13.81**	**33.31**	**20.8**	**88.2**	**35.8**	**5.46**	**2.12**	**26.31**	**16.2**	**45.73**	**28.9**

Table 3-4. Groundwater Analytical Results
Halesite Former MGP
Annual Groundwater Monitoring and Operations, Maintenance Monitoring Report

			Location Name	HHMW-19S1	MW-03	MW-03
			Sample Name	DUP-01	MW-03	DUP-01
			Start Depth	3	2	2
			End Depth	8	12	12
			Depth Unit	ft	ft	ft
			Sample Date	8/11/2021	3/24/2021	3/24/2021
			Parent Sample	HHMW-19S1		MW-03
Analyte	**Units**	**CAS No.**	**NYS AWQS**			
BTEX	µg/L					
Benzene		71-43-2	1	**1.6**	1 U	1 U
Toluene		108-88-3	5	1 U	**0.69 J**	**0.77 J**
Ethylbenzene		100-41-4	5	**9.1 J**	**1.3**	**1.5**
Total Xylene		1330-20-7	5	**0.69 J**	**8.9**	**10**
Total BTEX (ND=0)		TBTEX_ND0	NE	**11.39**	**10.89**	**12.27**
PAH17	µg/L					
Acenaphthene		83-32-9	20*	**17**	**17**	**15**
Acenaphthylene		208-96-8	NE	10 U	**1.8 J**	**1.9 J**
Anthracene		120-12-7	50*	10 U	10 U	10 U
Benzo(a)anthracene		56-55-3	0.002*	1 U	1 U	1 U
Benzo(b)fluoranthene		205-99-2	0.002*	2 U	2 U	2 U
Benzo(k)fluoranthene		207-08-9	0.002*	1 U	1 U	1 U
Benzo(g,h,i)perylene		191-24-2	NE	10 U	10 U	10 U
Benzo(a)pyrene		50-32-8	ND	1 U	1 U	1 U
Chrysene		218-01-9	0.002*	2 U	10 U	10 U
Dibenz(a,h)anthracene		53-70-3	NE	1 U	1 UJ	1 UJ
Fluoranthene		206-44-0	50*	10 U	10 U	10 U
Fluorene		86-73-7	50*	**2.8 J**	**1.8 J**	**2.1 J**
Indeno(1,2,3-cd)pyrene		193-39-5	0.002*	2 U	2 U	2 U
2-Methylnaphthalene		91-57-6	NE	10 U	10 U	10 U
Naphthalene		91-20-3	10*	**4.4**	**0.76 J**	**1.4 J**
Phenanthrene		85-01-8	50*	10 U	10 U	10 U
Pyrene		129-00-0	50*	10 U	10 U	10 U
Total PAH (17) (ND=0)		TPAH17_ND0	NE	**24.2**	**21.36**	**20.4**

Table 3-4. Groundwater Analytical Results
Halesite Former MGP
Annual Groundwater Monitoring and Operations, Maintenance Monitoring Report

Notes:

Analytes in blue are not detected in any sample
µg/L= micrograms per liter or parts per billion (ppb)

BTEX = Benzene, Toluene, Ethylbenzene, and Xylenes
PAH = Polycyclic Aromatic Hydrocarbon

Total BTEX and Total PAHs are calculated using detects only.
Total PAH16 is calculated using the EPA16 list of analytes: Acenaphthene, Acenaphthylene, Anthracene, Benz[a]anthracene, Benzo[a]pyrene, Benzo[b]fluoranthene, Benzo[g,h,i]perylene, Benzo[k]fluoranthene, Chrysene, Dibenz[a,h]anthracene, Fluoranthene, Fluorene, Indeno[1,2,3-cd]pyrene, Naphthalene, Phenanthrene, and Pyrene

Total PAH17 is calculated using the EPA16 list of analytes plus 2-Methylnaphthalene

NYS AWQS = New York State Ambient Water Quality Standards and Guidance Values for GA groundwater
* indicates the value is a guidance value and not a standard

CAS No. = Chemical Abstracts Service Number
MGP = Manufactured Gas Plant
ND = Not Detected
NE = Not Established

Bolding indicates a detected result concentration
Gray shading and bolding indicates that the detected result value exceeds the NYS AWQS

Data Qualifiers:
J = The result is an estimated value.
U = The result was not detected above the reporting limit.

Table 3-5. Summary of Historical Total BTEX Results
Halesite Former MGP Site
Annual Groundwater Monitoring and Operations, Maintenance & Monitoring Report

Well No.	Screen Interval (feet)	BTEX Concentrations (µg/L)													
		Sampling Date													
		1995	2001	2003	2005		2006		2007		2008			2009	
		Nov	Jul	Jul	Apr	Oct	Apr	Oct	Apr	Oct	Apr	Jul	Oct	Jan	Apr/May
		Pre-operational Period													
Upland Groundwater Monitoring Wells															
HHMW-12	45.0 - 55.0	*	*	6	35	0	12	35	10	16	31	15	0	NS(1)	NS(1)
HHMW-13	39.0 - 49.0	*	*	2	0	0	0	0	0	0	3	0	0	0	0
HHMW-14	64.0 - 74.0	*	*	2	0	0	0	0	0	0	0	0	0	0	0
HHMW-16S1	25.0 - 30.0	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	0
HHMW-16S2	35.0 - 45.0	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	0
HHMW-17S1	20.0 - 25.0	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	0
HHMW-17S2	30.0 - 40.0	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	0
HHMW-18S1	9.0 - 14.0	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	0
HHMW-18S2	19.0 - 29.0	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	0
Oxygen Injection System Area GW Monitoring Wells															
MW-01	5.0 - 25.0	6	0	0	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)
MW-02	6.0 - 26.0	29	0	0	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)
MW-03	2.0 - 12.0	4119	127	44	144	318	136	720	167	179	611	145	104	356	110
MW-04	1.0 - 21.0	--	0	--	0	0	0	0	0	0	0	0	0	3	0
P-01	12.1 - 15.4	0	20	--	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)
P-02	12.3 - 16.4	0	1	4	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)
HHMW-01I	35.0 - 45.0	**	0	0	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)
HHMW-04I	30.0 - 40.0	**	0	0	NS	NS	NS	NS	NS	NS	NS	NS	NS	0	0
HHMW-05S1-R	6.0 - 11.0	**	178	114	0	0	501	637	0	980	80	1980	735	129	120
HHMW-05S2-R	18.0 - 28.0	**	0	0	NS	NS	NS	NS	NS	NS	NS	NS	NS	0	0
HHMW-05I	30.0 - 40.0	**	0	0	NS	NS	NS	NS	NS	NS	NS	NS	NS	0	NS(1)
HHMW-05D	80.0 - 90.0	**	0	0	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS(1)
HHMW-09S1	6.0 - 11.0	**	5	0	0	0	0	0	0	233	0	49	1	0	0
HHMW-09S2	17.5 - 27.5	**	0	0	NS	NS	NS	NS	NS	NS	NS	NS	NS	6	0
HHMW-09I	43.0 - 53.0	**	0	0	NS	NS	NS	NS	NS	NS	NS	NS	NS	0	0
HHMW-09D	85.0 - 95.0	**	1	0	0	0	0	0	0	0	0	0	0	0	0
HHMW-10	15.0 - 20.0	**	0	143	0	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)
HHRW-01	13.0 - 23.0	***	***	***	***	***	0	0	0	NS	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)
HHMW-15S	7.5 - 12.5	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	237

Table 3-5. Summary of Historical Total BTEX Results
Halesite Former MGP Site
Annual Groundwater Monitoring and Operations, Maintenance & Monitoring Report

Well No.	Screen Interval (feet)	BTEX Concentrations (µg/L)													
		Sampling Date													
		1995	2001	2003	2005		2006		2007		2008			2009	
		Nov	Jul	Jul	Apr	Oct	Apr	Oct	Apr	Oct	Apr	Jul	Oct	Jan	Apr/May
		Pre-operational Period													
Downgradient Groundwater Monitoring Wells															
HHMW-06S1	2.5 - 7.5	**	0	0	0	0	0	0	0	0	0	0	0	0	0
HHMW-06S2	12.0 - 22.0	**	0	0	0	0	0	0	NS	0	0	0	0	0	0
HHMW-06I	35.0 - 45.0	**	0	0	NS	NS	NS	NS	NS	NS	NS	NS	NS	0	0
HHMW-07S1	3.0 - 8.0	**	220	138	52	0	43	119	NS	98	148	113	108	66	62
HHMW-07S2	16.0 - 26.0	**	0	1	0	0	0	0	0	0	0	0	0	0	2
HHMW-07I	45.0 - 55.0	**	0	0	NS	NS	NS	NS	NS	NS	NS	NS	NS	0	0
HHMW-07D	115.0 - 125.0	**	0	0	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
HHMW-08S	2.0 -12.0	**	1	0	0	0	0	0	0	0	0	0	0	0	0
HHMW-08I	35.0 - 45.0	**	0	0	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
HHMW-11S/11SR	3.0 - 13.0	*	*	65	23	21	32	31	21	13	22	0	17	10	20
HHMW-11I	31.0 - 41.0	*	*	0	0	0	0	0	0	0	0	26	0	0	0
HHMW-19S1	3.0 - 8.0	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	113
HHMW-19S2	15.0 - 25.0	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	46
HHMW-20S1	4.0 - 9.0	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	21
HHMW-20S2/20S2R	15.0 - 25.0	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	11
HHMW-21S1	3.0 - 8.0	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	0
HHMW-21S2	15.0 - 25.0	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	0
Sidegradient Groundwater Monitoring Wells															
HHMW-22S1	4.0 - 9.0	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	NS[2]
HHMW-22S2	15.0 - 25.0	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	0

Table 3-5. Summary of Historical Total BTEX Results
Halesite Former MGP Site
Annual Groundwater Monitoring and Operations, Maintenance & Monitoring Report

Well No.	Screen Interval (feet)	BTEX Concentrations (µg/L)														
		Sampling Date														
		2009								2010						
		May	June	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	April	May	July	Oct/Nov
		Operational Period														
Upland Groundwater Monitoring Wells																
HHMW-12	45.0 - 55.0	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)
HHMW-13	39.0 - 49.0	NS	NS	0	NS	NS	NS	0	NS	NS	0	NS	0	NS	0	0
HHMW-14	64.0 - 74.0	NS	NS	0	NS	NS	NS	0	NS	NS	0	NS	0	NS	0	0
HHMW-16S1	25.0 - 30.0	23	0	0	22	15	30	29	31	38	14	1	0	0	7	32
HHMW-16S2	35.0 - 45.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
HHMW-17S1	20.0 - 25.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
HHMW-17S2	30.0 - 40.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
HHMW-18S1	9.0 - 14.0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0
HHMW-18S2	19.0 - 29.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Oxygen Injection System Area GW Monitoring Wells																
MW-01	5.0 - 25.0	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)
MW-02	6.0 - 26.0	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)
MW-03	2.0 - 12.0	NS	NS	20	NS	NS	21	NS	NS	17	NS	NS	8	NS	31	58
MW-04	1.0 - 21.0	NS	NS	0	NS	NS	0	NS	NS	0	NS	NS	0	NS	0	0
P-01	12.1 - 15.4	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)
P-02	12.3 - 16.4	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)
HHMW-01I	35.0 - 45.0	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)
HHMW-04I	30.0 - 40.0	NS	NS	NS	NS	NS	NS	NS	NS	NS	0	NS	0	NS	0	0
HHMW-05S1-R	6.0 - 11.0	17	0	0	0	0	0	0	0	0	0	0	0	0	0	0
HHMW-05S2-R	18.0 - 28.0	0	0	0	3	0	0	0	0	0	0	0	0	1	0	0
HHMW-05I	30.0 - 40.0	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)
HHMW-05D	80.0 - 90.0	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)
HHMW-09S1	6.0 - 11.0	NS	NS	0	NS	NS	NS	0	NS	1	NS	NS	0	NS	6	0
HHMW-09S2	17.5 - 27.5	NS	NS	106	NS	NS	NS	1	NS	11	NS	NS	0	NS	0	0
HHMW-09I	43.0 - 53.0	NS	NS	NS	NS	NS	NS	NS	NS	0	NS	NS	0	NS	0	0
HHMW-09D	85.0 - 95.0	NS	NS	NS	NS	NS	NS	NS	NS	0	NS	NS	0	NS	0	NS
HHMW-10	15.0 - 20.0	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)
HHRW-01	13.0 - 23.0	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)
HHMW-15S	7.5 - 12.5	NS	NS	68	NS	NS	NS	NS	NS	NS	NS	NS	0	NS	NS	NS

Table 3-5. Summary of Historical Total BTEX Results
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Well No.	Screen Interval (feet)	BTEX Concentrations (µg/L)														
		Sampling Date														
		2009								2010						
		May	June	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	April	May	July	Oct/Nov
		Operational Period														
Downgradient Groundwater Monitoring Wells																
HHMW-06S1	2.5 - 7.5	NS	NS	NS	NS	NS	0	NS	NS	0	NS	NS	0	NS	0	0
HHMW-06S2	12.0 - 22.0	NS	NS	NS	NS	NS	0	NS	NS	0	NS	NS	NS	0	0	0
HHMW-06I	35.0 - 45.0	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
HHMW-07S1	3.0 - 8.0	NS	NS	103	NS	NS	14	NS	NS	31	NS	NS	0	NS	2	3
HHMW-07S2	16.0 - 26.0	NS	NS	0	NS	NS	0	NS	NS	0	NS	NS	0	NS	0	0
HHMW-07I	45.0 - 55.0	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
HHMW-07D	115.0 - 125.0	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
HHMW-08S	2.0 -12.0	NS	NS	NS	NS	NS	0	NS	NS	0	NS	NS	0	NS	0	0
HHMW-08I	35.0 - 45.0	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
HHMW-11S/11SR	3.0 - 13.0	NS	NS	NS	NS	NS	NS	NS	NS	2	NS	NS	3	NS	0	1
HHMW-11I	31.0 - 41.0	NS	NS	NS	NS	NS	NS	NS	NS	0	0	NS	0	NS	0	0
HHMW-19S1	3.0 - 8.0	183	195	115	149	213	158	92	96	50	75	75	180	208	134	144
HHMW-19S2	15.0 - 25.0	21	24	16	10	7	5	7	10	0	3	4	0	0	0	0
HHMW-20S1	4.0 - 9.0	26	17	NS	NS	NS	NS	NS	NS	0	13	10	12	2	1	2
HHMW-20S2/20S2R	15.0 - 25.0	2	0	NS	NS	NS	NS	NS	NS	14	1	2	0	0	0	0
HHMW-21S1	3.0 - 8.0	0	0	NS	NS	NS	NS	NS	NS	0	NS	0	NS	0	0	0
HHMW-21S2	15.0 - 25.0	NS[(2)]	NS[(2)]	NS[(2)]	NS[(2)]	NS[(2)]	NS[(2)]	NS[(2)]	NS[(2)]	0	0	NS	NS	0	0	0
Sidegradient Groundwater Monitoring Wells																
HHMW-22S1	4.0 - 9.0	NS[(2)]	NS[(2)]	NS[(2)]	NS[(2)]	NS[(2)]	NS[(2)]	NS[(2)]	NS[(2)]	NS[(2)]	NS[(2)]	NS[(2)]	NS[(2)]	NS[(2)]	NS[(2)]	NS[(2)]
HHMW-22S2	15.0 - 25.0	NS	NS	0	NS	NS	0	NS	NS	0	NS	NS	NS	0	0	0

Table 3-5. Summary of Historical Total BTEX Results
Halesite Former MGP Site
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Well No.	Screen Interval (feet)	BTEX Concentrations (µg/L)																
		Sampling Date																
		2011				2012				2013				2014			2015	
		Jan/Feb	Apr	July	Oct/Nov	Jan	Apr	July	Oct/Nov	Jan	Apr	July	Oct/Nov	Jan	Apr	Sept	Mar	Aug/Sept
		Operational Period																
Upland Groundwater Monitoring Wells																		
HHMW-12	45.0 - 55.0	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)
HHMW-13	39.0 - 49.0	0	0	0	0	3	2	2	1	2	0	0	0	0	0	0	10	2
HHMW-14	64.0 - 74.0	0	0	0	1	5	2	0	0	3	0	0	0	0	0	0	83	2
HHMW-16S1	25.0 - 30.0	16	7	3	2	20	40	17	15	2	0	0	0	5	26	13	35	3
HHMW-16S2	35.0 - 45.0	0	2	0	2	0	1	3	0	0	0	0	0	0	0	0	NS	3
HHMW-17S1	20.0 - 25.0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	NS	0
HHMW-17S2	30.0 - 40.0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	NS	0
HHMW-18S1	9.0 - 14.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
HHMW-18S2	19.0 - 29.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	NS	0
Oxygen Injection System Area GW Monitoring Wells																		
MW-01	5.0 - 25.0	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)
MW-02	6.0 - 26.0	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)
MW-03	2.0 - 12.0	113	43	NS	8	10	19	3	0	2	0	0	15	74	111	112	201	158
MW-04	1.0 - 21.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	NS	0
P-01	12.1 - 15.4	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)
P-02	12.3 - 16.4	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)
HHMW-01I	35.0 - 45.0	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)
HHMW-04I	30.0 - 40.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	NS	0
HHMW-05S1-R	6.0 - 11.0	0	0	0.5	0	0	0	0	0	0	0	0	0	0	0	0	NS	0
HHMW-05S2-R	18.0 - 28.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
HHMW-05I	30.0 - 40.0	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)
HHMW-05D	80.0 - 90.0	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)
HHMW-09S1	6.0 - 11.0	6	6	0	0	3	14	0	0	3	0	0	1	4	15	4	12	NS
HHMW-09S2	17.5 - 27.5	0	NS	NS	0	0	0	0	0	0	0	0	0	0	0	0	NS	0
HHMW-09I	43.0 - 53.0	0	0	0	0	0	NS	NS	NS	0	NS	NS	NS	0	NS	NS	NS	0
HHMW-09D	85.0 - 95.0	NS	NS	NS	NS	0	NS	NS	NS	0	NS	NS	NS	0	NS	NS	NS	NS
HHMW-10	15.0 - 20.0	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)
HHRW-01	13.0 - 23.0	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)
HHMW-15S	7.5 - 12.5	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	7100	NS	NS	NS

Table 3-5. Summary of Historical Total BTEX Results
Halesite Former MGP Site
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Well No.	Screen Interval (feet)	BTEX Concentrations (µg/L)																
		Sampling Date																
		2011				2012				2013				2014			2015	
		Jan/Feb	Apr	July	Oct/Nov	Jan	Apr	July	Oct/Nov	Jan	Apr	July	Oct/Nov	Jan	Apr	Sept	Mar	Aug/Sept
		Operational Period																
Downgradient Groundwater Monitoring Wells																		
HHMW-06S1	2.5 - 7.5	0	0	0	0	0	NS	NS	NS	NS	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)
HHMW-06S2	12.0 - 22.0	0	0	0	0	0	NS	NS	NS	NS	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)
HHMW-06I	35.0 - 45.0	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)
HHMW-07S1	3.0 - 8.0	0	3	4	0	0	5	6	9	19	13	15	7	25	30	11	17	0
HHMW-07S2	16.0 - 26.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	NS	0
HHMW-07I	45.0 - 55.0	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)
HHMW-07D	115.0 - 125.0	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)
HHMW-08S	2.0 -12.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	NS	0
HHMW-08I	35.0 - 45.0	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)
HHMW-11S/11SR	3.0 - 13.0	2	2	0	NS	0	0	0	0	0	0	0	0	0	0	0	0	0
HHMW-11I	31.0 - 41.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	NS	0
HHMW-19S1	3.0 - 8.0	123	140	137	125	103	139	108	190	232	252	225	245	264	238	218	220	237
HHMW-19S2	15.0 - 25.0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	2	0
HHMW-20S1	4.0 - 9.0	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0
HHMW-20S2/20S2R	15.0 - 25.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	NS	0
HHMW-21S1	3.0 - 8.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	NS	0
HHMW-21S2	15.0 - 25.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	NS	0
Sidegradient Groundwater Monitoring Wells																		
HHMW-22S1	4.0 - 9.0	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)
HHMW-22S2	15.0 - 25.0	NS	0	0	0	0	0	0	0	0	0	0	0	0	0	0	NS	0

Table 3-5. Summary of Historical Total BTEX Results
Halesite Former MGP Site
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Well No.	Screen Interval (feet)	BTEX Concentrations (µg/L)											
		2016		2017		2018		2019		2020		2021	
		Mar	Aug/Sept /Oct	Mar	Sept	Mar	Aug	Mar	Sept	Feb	Sept	Mar	Sept
		Operational Period											
Upland Groundwater Monitoring Wells													
HHMW-12	45.0 - 55.0	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)
HHMW-13	39.0 - 49.0	2	2	NS(1)	0	NS(1)	0	NS(1)	0	NS(1)	0	NS(1)	0
HHMW-14	64.0 - 74.0	1	3	NS(1)	0.27	NS(1)	0	NS(1)	0	NS(1)	0	0	0
HHMW-16S1	25.0 - 30.0	4	4	NS(1)	0	10	0	4.7	0	7.31	4.3	14.09	6.34
HHMW-16S2	35.0 - 45.0	NS(1)	1	0	0	NS(1)	0	NS(1)	0	NS(1)	NS(1)	NS(1)	NS(1)
HHMW-17S1	20.0 - 25.0	NS(1)	0	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)
HHMW-17S2	30.0 - 40.0	NS(1)	0	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)
HHMW-18S1	9.0 - 14.0	0	0	0	0	NS(1)	0	NS(1)	0	NS(1)	0	0	0
HHMW-18S2	19.0 - 29.0	NS(1)	0	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)
Oxygen Injection System Area GW Monitoring Wells													
MW-01	5.0 - 25.0	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)
MW-02	6.0 - 26.0	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)
MW-03	2.0 - 12.0	301	225	97.5	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	25.76	NS(1)	10.89	NS(1)
MW-04	1.0 - 21.0	NS(1)	0	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)
P-01	12.1 - 15.4	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)
P-02	12.3 - 16.4	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)
HHMW-01I	35.0 - 45.0	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)
HHMW-04I	30.0 - 40.0	NS(1)	0	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)
HHMW-05S1-R	6.0 - 11.0	NS(1)	0	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)
HHMW-05S2-R	18.0 - 28.0	0	0	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)
HHMW-05I	30.0 - 40.0	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)
HHMW-05D	80.0 - 90.0	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)
HHMW-09S1	6.0 - 11.0	6	0	0	0.58	0	0	0.44	1.3	0.94	0.75	0	0
HHMW-09S2	17.5 - 27.5	NS(1)	0	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)
HHMW-09I	43.0 - 53.0	NS(1)	0	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)
HHMW-09D	85.0 - 95.0	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)
HHMW-10	15.0 - 20.0	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)
HHRW-01	13.0 - 23.0	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)
HHMW-15S	7.5 - 12.5	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)

Table 3-5. Summary of Historical Total BTEX Results
Halesite Former MGP Site
Annual Groundwater Monitoring and Operations, Maintenance & Monitoring Report

Well No.	Screen Interval (feet)	BTEX Concentrations (µg/L)											
		2016		2017		2018		2019		2020		2021	
		Mar	Aug/Sept /Oct	Mar	Sept	Mar	Aug	Mar	Sept	Feb	Sept	Mar	Sept
		Operational Period											
Downgradient Groundwater Monitoring Wells													
HHMW-06S1	2.5 - 7.5	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)
HHMW-06S2	12.0 - 22.0	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)
HHMW-06I	35.0 - 45.0	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)
HHMW-07S1	3.0 - 8.0	76	2	0	0.94	NS(1)	8.5	NS(1)	0	NS(1)	5.05	NS(1)	0
HHMW-07S2	16.0 - 26.0	NS(1)	0	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)
HHMW-07I	45.0 - 55.0	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)
HHMW-07D	115.0 - 125.0	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)
HHMW-08S	2.0 -12.0	NS(1)	0	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)
HHMW-08I	35.0 - 45.0	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)
HHMW-11S/11SR	3.0 - 13.0	NS(1)	0	0	0.21	NS(1)	0	NS(1)	0	NS(1)	NS(1)	NS(1)	NS(1)
HHMW-11I	31.0 - 41.0	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)
HHMW-19S1	3.0 - 8.0	283	139	111.3	84.31	51.02	46.78	30.67	6.2	2.4	6.46	7.67	6.4
HHMW-19S2	15.0 - 25.0	NS(1)	0	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)
HHMW-20S1	4.0 - 9.0	0	0	NS(1)	NS(1)	0	0	NS(1)	0	NS(1)	NS(1)	NS(1)	NS(1)
HHMW-20S2/20S2R	15.0 - 25.0	NS(1)	0	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)
HHMW-21S1	3.0 - 8.0	NS(1)	0	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)
HHMW-21S2	15.0 - 25.0	NS(1)	0	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)
Sidegradient Groundwater Monitoring Wells													
HHMW-22S1	4.0 - 9.0	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)
HHMW-22S2	15.0 - 25.0	NS(1)	0	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)

Table 3-5. Summary of Historical Total BTEX Results
Halesite Former MGP Site
Annual Groundwater Monitoring and Operations, Maintenance & Monitoring Report

Well No.	Screen Interval (feet)	Pre-operational Period			Operational Period		
		Min	Max	Mean	Min	Max	Mean
		Operational Period					
Upland Groundwater Monitoring Wells							
HHMW-12	45.0 - 55.0	0	35	16	NS(1)	NS(1)	NS(1)
HHMW-13	39.0 - 49.0	0	3	0	0	10	1
HHMW-14	64.0 - 74.0	0	2	0	0	83	3
HHMW-16S1	25.0 - 30.0	0	0	0	0	40	12
HHMW-16S2	35.0 - 45.0	0	0	0	0	3	0
HHMW-17S1	20.0 - 25.0	0	0	0	0	1	0
HHMW-17S2	30.0 - 40.0	0	0	0	0	1	0
HHMW-18S1	9.0 - 14.0	0	0	0	0	2	0
HHMW-18S2	19.0 - 29.0	0	0	0	0	0	0
Oxygen Injection System Area GW Monitoring Wells							
MW-01	5.0 - 25.0	0	6	2	NS(1)	NS(1)	NS(1)
MW-02	6.0 - 26.0	0	29	10	NS(1)	NS(1)	NS(1)
MW-03	2.0 - 12.0	44	4,119	607	0	301	62
MW-04	1.0 - 21.0	0	3	0	0	0	0
P-01	12.1 - 15.4	0	20	10	NS(1)	NS(1)	NS(1)
P-02	12.3 - 16.4	0	4	2	NS(1)	NS(1)	NS(1)
HHMW-01I	35.0 - 45.0	0	0	0	NS(1)	NS(1)	NS(1)
HHMW-04I	30.0 - 40.0	0	0	0	0	0	0
HHMW-05S1-R	6.0 - 11.0	0	1,980	393	0	17	1
HHMW-05S2-R	18.0 - 28.0	0	0	0	0	3	0
HHMW-05I	30.0 - 40.0	0	0	0	NS(1)	NS(1)	NS(1)
HHMW-05D	80.0 - 90.0	0	0	0	NS(1)	NS(1)	NS(1)
HHMW-09S1	6.0 - 11.0	0	233	22	0	15	3
HHMW-09S2	17.5 - 27.5	0	6	2	0	106	6
HHMW-09I	43.0 - 53.0	0	0	0	0	0	0
HHMW-09D	85.0 - 95.0	0	1	0	NS	NS	NS
HHMW-10	15.0 - 20.0	0	143	48	NS(1)	NS(1)	NS(1)
HHRW-01	13.0 - 23.0	0	0	0	NS(1)	NS(1)	NS(1)
HHMW-15S	7.5 - 12.5	237	237	237	0	7100	2,389

Table 3-5. Summary of Historical Total BTEX Results
Halesite Former MGP Site
Annual Groundwater Monitoring and Operations, Maintenance & Monitoring Report

Well No.	Screen Interval (feet)	Pre-operational Period			Operational Period		
		Min	Max	Mean	Min	Max	Mean
		Operational Period					
Downgradient Groundwater Monitoring Wells							
HHMW-06S1	2.5 - 7.5	0	0	0	NS(1)	NS(1)	NS(1)
HHMW-06S2	12.0 - 22.0	0	0	0	NS(1)	NS(1)	NS(1)
HHMW-06I	35.0 - 45.0	0	0	0	NS(1)	NS(1)	NS(1)
HHMW-07S1	3.0 - 8.0	0	220	96	0	103	13
HHMW-07S2	16.0 - 26.0	0	2	0	0	0	0
HHMW-07I	45.0 - 55.0	0	0	0	NS(1)	NS(1)	NS(1)
HHMW-07D	115.0 - 125.0	0	0	0	NS(1)	NS(1)	NS(1)
HHMW-08S	2.0 -12.0	0	1	0	0	0	0
HHMW-08I	35.0 - 45.0	0	0	0	NS(1)	NS(1)	NS(1)
HHMW-11S/11SR	3.0 - 13.0	10	65	25	0	3	0
HHMW-11I	31.0 - 41.0	0	26	2	0	0	0
HHMW-19S1	3.0 - 8.0	113	113	113	2.4	283	137
HHMW-19S2	15.0 - 25.0	46	46	46	0	24	3
HHMW-20S1	4.0 - 9.0	21	21	21	0	26	3
HHMW-20S2/20S2R	15.0 - 25.0	11	11	11	0	14	1
HHMW-21S1	3.0 - 8.0	0	0	0	0	0	0
HHMW-21S2	15.0 - 25.0	NS(2)	NS(2)	NS(2)	0	0	0
Sidegradient Groundwater Monitoring Wells							
HHMW-22S1	4.0 - 9.0	NS(2)	NS(2)	NS(2)	NS(2)	NS(2)	NS(2)
HHMW-22S2	15.0 - 25.0	0	0	0	0	0	0

General Notes:

µg/L = Micrograms per liter

PAH = Polycyclic Aromatic Hydrocarbons

MGP = Manufactured Gas Plant

Monitoring wells HHMW-16S1, HHMW-16S2, HHMW-17S1, and HHMW-17S2 sampled on March 2, 2010 were included in the February monthly results.

(1): Monitoring well abandoned

(2): Monitoring well not sampled due to the presence of DNAPL

* = Well constructed in 2003

** = Well constructed in 2001

*** = Well constructed in October 2005

**** = Well constructed in 2009

NS = Not sampled

DNAPL = Dense Non-Aqueous Phase Liquid

Table 3-6. Summary of Historical Total PAH Results
Halesite Former MGP Site
Annual Groundwater Monitoring and Operations, Maintenance & Monitoring Report

Well No.	Screen Interval (feet)	Total PAH Concentrations (µg/L)													
		Sampling Date													
		1995	2001	2003	2005		2006		2007		2008			2009	
		Nov	Jul	Jul	Apr	Oct	Apr	Oct	Apr	Oct	Apr	Jul	Oct	Jan	Apr/May
		Pre-operational Period													
Upgradient Groundwater Monitoring Wells															
HHMW-12	45.0 - 55.0	*	*	1	65	0	0	181	122	0	206	0	0	NS(1)	NS(1)
HHMW-13	39.0 - 49.0	*	*	26	76	0	0	220	0	3	196	0	0	74	26
HHMW-14	64.0 - 74.0	*	*	36	0	0	190	455	0	18	826	43	0	8	3
HHMW-16S1	25.0 - 30.0	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	98
HHMW-16S2	35.0 - 45.0	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	0
HHMW-17S1	20.0 - 25.0	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	0
HHMW-17S2	30.0 - 40.0	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	0
HHMW-18S1	9.0 - 14.0	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	48
HHMW-18S2	19.0 - 29.0	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	0
O2 Injection System Area GW Monitoring Wells															
MW-01	5.0 - 25.0	0	13	7	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)
MW-02	6.0 - 26.0	74	0	7	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)
MW-03	2.0 - 12.0	2,904	1,721	34	374	188	133	115	66	12	91	4	0	404	0
MW-04	1.0 - 21.0	--	173	--	0	0	0	0	12	0	0	0	0	0	0
P-01	12.1 - 15.4	0	0	--	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)
P-02	12.3 - 16.4	33	1	17	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)
HHMW-01I	35.0 - 45.0	**	13	0	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)
HHMW-04I	30.0 - 40.0	**	0	0	NS	NS	NS	NS	NS	NS	NS	NS	NS	0	0
HHMW-05S1-R	6.0 - 11.0	**	510	0	0	0	0	1,155	0	9	0	2,429	344	426	2
HHMW-05S2-R	18.0 - 28.0	**	135	0	NS	NS	NS	NS	NS	NS	NS	NS	NS	0	0
HHMW-05I	30.0 - 40.0	**	0	0	NS	NS	NS	NS	NS	NS	NS	NS	NS	0	NS(1)
HHMW-05D	80.0 - 90.0	**	29	0	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS(1)
HHMW-09S1	6.0 - 11.0	**	552	0	28	0	0	77	0	31	2	130	34	25	6
HHMW-09S2	17.5 - 27.5	**	0	0	NS	NS	NS	NS	NS	NS	NS	NS	NS	2	9
HHMW-09I	43.0 - 53.0	**	0	0	NS	NS	NS	NS	NS	NS	NS	NS	NS	0	0
HHMW-09D	85.0 - 95.0	**	0	31	0	0	0	0	0	0	0	0	0	0	NS
HHMW-10	15.0 - 20.0	**	790	76,890	12	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)
HHRW-01	13.0 - 23.0	***	***	***	***	***	0	0	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)
HHMW-15S	7.5 - 12.5	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	3,668

Table 3-6. Summary of Historical Total PAH Results
Halesite Former MGP Site
Annual Groundwater Monitoring and Operations, Maintenance & Monitoring Report

Well No.	Screen Interval (feet)	Total PAH Concentrations (µg/L)													
		Sampling Date													
		1995	2001	2003	2005		2006		2007		2008			2009	
		Nov	Jul	Jul	Apr	Oct	Apr	Oct	Apr	Oct	Apr	Jul	Oct	Jan	Apr/May
		Pre-operational Period													
Downgradient Groundwater Monitoring Wells															
HHMW-06S1	2.5 - 7.5	**	1	0	0	0	0	0	0	0	0	0	0	0	0
HHMW-06S2	12.0 - 22.0	**	374	0	77	11	0	0	NS	0	0	39	0	31	0
HHMW-06I	35.0 - 45.0	**	0	0	NS	NS	NS	NS	NS	NS	NS	NS	NS	0	0
HHMW-07S1	3.0 - 8.0	**	1,688	505	360	0	140	981	0	3	1,046	479	32	364	9
HHMW-07S2	16.0 - 26.0	**	0	0	11	111	13	47	0	0	7	16	0	26	0
HHMW-07I	45.0 - 55.0	**	1	0	NS	NS	NS	NS	NS	NS	NS	NS	NS	0	0
HHMW-07D	115.0 - 125.0	**	0	0	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
HHMW-08S	2.0 -12.0	**	181	14	0	28	116	58	72	58	0	0	34	78	0
HHMW-08I	35.0 - 45.0	**	0	10	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
HHMW-11S/11SR	3.0 - 13.0	*	*	63	79	130	88	80	98	49	79	0	97	82	0
HHMW-11I	31.0 - 41.0	*	*	82	0	0	0	0	0	0	0	0	0	0	0
HHMW-19S1	3.0 - 8.0	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	5
HHMW-19S2	15.0 - 25.0	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	0
HHMW-20S1	4.0 - 9.0	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	49
HHMW-20S2/20S2R	15.0 - 25.0	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	2
HHMW-21S1	3.0 - 8.0	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	0
HHMW-21S2	15.0 - 25.0	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	0
Sidegradient Groundwater Monitoring Wells															
HHMW-22S1	4.0 - 9.0	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	NS[(2)]
HHMW-22S2	15.0 - 25.0	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	0

Table 3-6. Summary of Historical Total PAH Results
Halesite Former MGP Site
Annual Groundwater Monitoring and Operations, Maintenance & Monitoring Report

Well No.	Screen Interval (feet)	Total PAH Concentrations (µg/L)														
		Sampling Date														
		2009								2010						
		May	June	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	July	Oct/Nov
		Operational Period														
Upgradient Groundwater Monitoring Wells																
HHMW-12	45.0 - 55.0	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)
HHMW-13	39.0 - 49.0	NS	NS	29	NS	NS	NS	3	NS	NS	4	NS	0	NS	328	31
HHMW-14	64.0 - 74.0	NS	NS	5	NS	NS	NS	0	NS	NS	0	NS	0	NS	27	0
HHMW-16S1	25.0 - 30.0	34	323	600	33	109	40	96	143	58	27	29	5	0	42	179
HHMW-16S2	35.0 - 45.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
HHMW-17S1	20.0 - 25.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
HHMW-17S2	30.0 - 40.0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0
HHMW-18S1	9.0 - 14.0	653	924	614	0	250	310	711	651	71	0	0	0	0	257	0
HHMW-18S2	19.0 - 29.0	0	0	15	0	0	0	0	0	0	0	0	0	0	33	0
O2 Injection System Area GW Monitoring Wells																
MW-01	5.0 - 25.0	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)
MW-02	6.0 - 26.0	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)
MW-03	2.0 - 12.0	NS	NS	0	NS	NS	0	NS	NS	0	NS	NS	0	NS	89	666
MW-04	1.0 - 21.0	NS	NS	0	NS	NS	0	NS	NS	0	NS	NS	0	NS	0	0
P-01	12.1 - 15.4	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)
P-02	12.3 - 16.4	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)
HHMW-01I	35.0 - 45.0	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)
HHMW-04I	30.0 - 40.0	NS	NS	NS	NS	NS	NS	NS	NS	NS	0	NS	0	NS	0	0
HHMW-05S1-R	6.0 - 11.0	5	0	0	0	0	0	0	4	7	0	5	10	0	0	0
HHMW-05S2-R	18.0 - 28.0	1	0	0	4	0	0	0	14	54	9	0	0	0	0	0
HHMW-05I	30.0 - 40.0	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)
HHMW-05D	80.0 - 90.0	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)
HHMW-09S1	6.0 - 11.0	NS	NS	31	NS	NS	NS	0	NS	15	NS	NS	1	NS	174	0
HHMW-09S2	17.5 - 27.5	NS	NS	13	NS	NS	NS	7	NS	0	NS	NS	0	NS	2	0
HHMW-09I	43.0 - 53.0	NS	NS	NS	NS	NS	NS	NS	NS	0	NS	NS	30	NS	0	0
HHMW-09D	85.0 - 95.0	NS	NS	NS	NS	NS	NS	NS	NS	0	NS	NS	0	NS	0	NS
HHMW-10	15.0 - 20.0	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)
HHRW-01	13.0 - 23.0	NS(1)	NS(1)	NS(1)	NS(1)	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
HHMW-15S	7.5 - 12.5	NS	NS	26	NS	NS	NS	NS	NS	NS	NS	NS	11	NS	NS	NS

Table 3-6. Summary of Historical Total PAH Results
Halesite Former MGP Site
Annual Groundwater Monitoring and Operations, Maintenance & Monitoring Report

Well No.	Screen Interval (feet)	Total PAH Concentrations (µg/L)														
		Sampling Date														
		2009								2010						
		May	June	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	July	Oct/Nov
		Operational Period														
Downgradient Groundwater Monitoring Wells																
HHMW-06S1	2.5 - 7.5	NS	NS	NS	NS	NS	0	NS	NS	0	NS	NS	0	NS	0	0
HHMW-06S2	12.0 - 22.0	NS	NS	NS	NS	NS	16	NS	NS	0	NS	NS	NS	5	0	6
HHMW-06I	35.0 - 45.0	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
HHMW-07S1	3.0 - 8.0	NS	NS	0	NS	NS	14	NS	NS	285	NS	NS	67	NS	96	15
HHMW-07S2	16.0 - 26.0	NS	NS	0	NS	NS	6	NS	NS	59	NS	NS	0	NS	2	31
HHMW-07I	45.0 - 55.0	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
HHMW-07D	115.0 - 125.0	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
HHMW-08S	2.0 -12.0	NS	NS	NS	NS	NS	0	NS	NS	0	NS	NS	0	NS	0	0
HHMW-08I	35.0 - 45.0	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
HHMW-11S/11SR	3.0 - 13.0	NS	NS	NS	NS	NS	NS	NS	NS	58	NS	NS	36	NS	73	52
HHMW-11I	31.0 - 41.0	NS	NS	NS	NS	NS	NS	NS	NS	0	NS	NS	0	NS	0	0
HHMW-19S1	3.0 - 8.0	1355	1495	0	4	97	10	210	184	31	0	82	178	619	1004	949
HHMW-19S2	15.0 - 25.0	310	27	0	3	20	1	24	145	0	0	25	0	0	0	49
HHMW-20S1	4.0 - 9.0	112	136	NS	NS	NS	NS	NS	NS	0	27	48	28	0	111	65
HHMW-20S2/20S2R	15.0 - 25.0	2	1	NS	NS	NS	NS	NS	NS	107	0	4	0	0	0	0
HHMW-21S1	3.0 - 8.0	0	0	NS	NS	NS	NS	NS	NS	0	NS	0	NS	0	0	0
HHMW-21S2	15.0 - 25.0	0	0	NS	NS	NS	NS	NS	NS	0	0	NS	NS	0	0	0
Sidegradient Groundwater Monitoring Wells																
HHMW-22S1	4.0 - 9.0	NS[2]	NS[2]	NS[2]	NS[2]	NS[2]	NS[2]	NS[2]	NS[2]	NS[2]	NS[2]	NS[2]	NS[2]	NS[2]	NS[2]	NS
HHMW-22S2	15.0 - 25.0	NS	NS	0	NS	NS	0	NS	NS	0	NS	NS	NS	0	0	0

Table 3-6. Summary of Historical Total PAH Results
Halesite Former MGP Site
Annual Groundwater Monitoring and Operations, Maintenance & Monitoring Report

Well No.	Screen Interval (feet)	Total PAH Concentrations (µg/L)																
		Sampling Date																
		2011				2012				2013				2014			2015	
		Jan/Feb	Apr	July	Oct/Nov	Jan	Apr	July	Oct/Nov	Jan	Apr	July	Oct/Nov	Jan	Apr	Sept	Mar	Aug/Sept
		Operational Period																
Upgradient Groundwater Monitoring Wells																		
HHMW-12	45.0 - 55.0	NS[1]	NS[1]	NS[1]	NS[1]	NS[1]	NS[1]	NS[1]	NS[1]	NS[1]	NS[1]	NS[1]	NS[1]	NS[1]	NS[1]	NS[1]	NS[1]	NS[1]
HHMW-13	39.0 - 49.0	19	25	36	27	15	1	2	75	106	15	39	136	44	29	51	119	41
HHMW-14	64.0 - 74.0	0	7	7	0	7	15	32	0	92	13	284	601	81	17	1	56	1
HHMW-16S1	25.0 - 30.0	108	53	14	4	1	12	12	112	60	0	58	9	8	197	99	187	0
HHMW-16S2	35.0 - 45.0	0	0	0	0	0	0	0	0	0	0	NS	0	0	0	0	NS	0
HHMW-17S1	20.0 - 25.0	0	0	0	0	0	5	6	0	0	0	0	0	0	0	0	NS	0
HHMW-17S2	30.0 - 40.0	0	0	3	0	0	0	2	0	0	0	0	0	0	0	0	NS	1
HHMW-18S1	9.0 - 14.0	475	0	463	642	552	427	672	554	0	32	235	670	613	37	121	123	486
HHMW-18S2	19.0 - 29.0	0	0	18	0	0	0	0	0	0	0	5	0	0	0	9	NS	32
O2 Injection System Area GW Monitoring Wells																		
MW-01	5.0 - 25.0	NS[1]	NS[1]	NS[1]	NS[1]	NS[1]	NS[1]	NS[1]	NS[1]	NS[1]	NS[1]	NS[1]	NS[1]	NS[1]	NS[1]	NS[1]	NS[1]	NS[1]
MW-02	6.0 - 26.0	NS[1]	NS[1]	NS[1]	NS[1]	NS[1]	NS[1]	NS[1]	NS[1]	NS[1]	NS[1]	NS[1]	NS[1]	NS[1]	NS[1]	NS[1]	NS[1]	NS[1]
MW-03	2.0 - 12.0	536	0	NS	0	4	5	10	2	1	39	1	33	311	312	377	669	824
MW-04	1.0 - 21.0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	NS	0
P-01	12.1 - 15.4	NS[1]	NS[1]	NS[1]	NS[1]	NS[1]	NS[1]	NS[1]	NS[1]	NS[1]	NS[1]	NS[1]	NS[1]	NS[1]	NS[1]	NS[1]	NS[1]	NS[1]
P-02	12.3 - 16.4	NS[1]	NS[1]	NS[1]	NS[1]	NS[1]	NS[1]	NS[1]	NS[1]	NS[1]	NS[1]	NS[1]	NS[1]	NS[1]	NS[1]	NS[1]	NS[1]	NS[1]
HHMW-01I	35.0 - 45.0	NS[1]	NS[1]	NS[1]	NS[1]	NS[1]	NS[1]	NS[1]	NS[1]	NS[1]	NS[1]	NS[1]	NS[1]	NS[1]	NS[1]	NS[1]	NS[1]	NS[1]
HHMW-04I	30.0 - 40.0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	NS	0
HHMW-05S1-R	6.0 - 11.0	1	34	3	1	0	0	0	2	1	5	8	0	0	0	0	S	0
HHMW-05S2-R	18.0 - 28.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	95	2
HHMW-05I	30.0 - 40.0	NS[1]	NS[1]	NS[1]	NS[1]	NS[1]	NS[1]	NS[1]	NS[1]	NS[1]	NS[1]	NS[1]	NS[1]	NS[1]	NS[1]	NS[1]	NS[1]	NS[1]
HHMW-05D	80.0 - 90.0	NS[1]	NS[1]	NS[1]	NS[1]	NS[1]	NS[1]	NS[1]	NS[1]	NS[1]	NS[1]	NS[1]	NS[1]	NS[1]	NS[1]	NS[1]	NS[1]	NS[1]
HHMW-09S1	6.0 - 11.0	2	2	37	4	159	45	75	20	0	2	138	106	208	276	257	121	NS
HHMW-09S2	17.5 - 27.5	0	NS	NS	0	1	1	0	0	0	0	0	0	1	0	0	NS	0
HHMW-09I	43.0 - 53.0	0	0	2	0	2	NS	NS	NS	0	NS	NS	NS	1	NS	NS	NS	0
HHMW-09D	85.0 - 95.0	NS	NS	NS	NS	0	NS	NS	NS	0	NS	NS	NS	0	NS	NS	NS	NS
HHMW-10	15.0 - 20.0	NS[1]	NS[1]	NS[1]	NS[1]	NS[1]	NS[1]	NS[1]	NS[1]	NS[1]	NS[1]	NS[1]	NS[1]	NS[1]	NS[1]	NS[1]	NS[1]	NS[1]
HHRW-01	13.0 - 23.0	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
HHMW-15S	7.5 - 12.5	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	36978	NS	NS	NS

Table 3-6. Summary of Historical Total PAH Results
Halesite Former MGP Site
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Well No.	Screen Interval (feet)	Total PAH Concentrations (µg/L)																
		Sampling Date																
		2011				2012				2013				2014			2015	
		Jan/Feb	Apr	July	Oct/Nov	Jan	Apr	July	Oct/Nov	Jan	Apr	July	Oct/Nov	Jan	Apr	Sept	Mar	Aug/Sept
		Operational Period																
Downgradient Groundwater Monitoring Wells																		
HHMW-06S1	2.5 - 7.5	0	0	0	1	0	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
HHMW-06S2	12.0 - 22.0	0	3	45	23	0	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
HHMW-06I	35.0 - 45.0	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
HHMW-07S1	3.0 - 8.0	1	0	74	42	15	31	29	27	63	46	82	31	123	100	55	56	23
HHMW-07S2	16.0 - 26.0	18	0	9	54	0	70	77	64	0	38	49	43	50	61	14	NS	7
HHMW-07I	45.0 - 55.0	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
HHMW-07D	115.0 - 125.0	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
HHMW-08S	2.0 -12.0	0	0	0	2	0	0	0	0	0	0	0	0	21	0	0	NS	0
HHMW-08I	35.0 - 45.0	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
HHMW-11S/11SR	3.0 - 13.0	4	55	64	35	43	30	31	35	34	33	28	30	36	35	58	51	76
HHMW-11I	31.0 - 41.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	NS	0
HHMW-19S1	3.0 - 8.0	758	616	1,172	828	776	528	753	774	3732	921	663	1072	859	738	829	499	1198
HHMW-19S2	15.0 - 25.0	37	0	94	90	0	57	72	92	62	3	58	98	82	119	53	50	14
HHMW-20S1	4.0 - 9.0	36	0	154	154	0	79	124	87	37	28	69	68	19	13	36	5	31
HHMW-20S2/20S2R	15.0 - 25.0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	NS	0
HHMW-21S1	3.0 - 8.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	NS	0
HHMW-21S2	15.0 - 25.0	0	0	0	NS	0	0	0	0	0	0	0	0	0	0	0	NS	0
Sidegradient Groundwater Monitoring Wells																		
HHMW-22S1	4.0 - 9.0	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
HHMW-22S2	15.0 - 25.0	NS	1	0	0	0	0	0	0	0	0	0	0	0	0	0	NS	0

Table 3-6. Summary of Historical Total PAH Results
Halesite Former MGP Site
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Well No.	Screen Interval (feet)	Total PAH Concentrations (µg/L)											
		Sampling Date											
		2016		2017		2018		2019		2020		2021	
		Mar	Aug/Sept/Oct	Mar	Sept	Mar	Aug	Mar	Sept	Feb	Sept	Mar	Sept
		Operational Period											
Upgradient Groundwater Monitoring Wells													
HHMW-12	45.0 - 55.0	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)
HHMW-13	39.0 - 49.0	22	9	NS(1)	18.87	NS(1)	15.75	NS(1)	46.3	NS(1)	17.66	NS(1)	20.8
HHMW-14	64.0 - 74.0	0	0	NS(1)	0	NS(1)	20.15	NS(1)	0	NS(1)	243.5	88.2	35.8
HHMW-16S1	25.0 - 30.0	47	0	NS(1)	0	0	0	11.3	5.6	27.4	0	5.46	2.12
HHMW-16S2	35.0 - 45.0	NS(1)	112	5.3	0	NS(1)	0	NS(1)	0	NS(1)	NS(1)	NS(1)	NS(1)
HHMW-17S1	20.0 - 25.0	NS(1)	0	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)
HHMW-17S2	30.0 - 40.0	NS(1)	27	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)
HHMW-18S1	9.0 - 14.0	93	75	0	24.5	NS(1)	33	NS(1)	5.2	NS(1)	53.2	26.31	16.2
HHMW-18S2	19.0 - 29.0	NS(1)	0	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)
O2 Injection System Area GW Monitoring Wells													
MW-01	5.0 - 25.0	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)
MW-02	6.0 - 26.0	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)
MW-03	2.0 - 12.0	763	4421	1004.9	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	86.8	NS(1)	21.36	NS(1)
MW-04	1.0 - 21.0	NS(1)	10	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)
P-01	12.1 - 15.4	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)
P-02	12.3 - 16.4	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)
HHMW-01I	35.0 - 45.0	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)
HHMW-04I	30.0 - 40.0	NS(1)	0	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)
HHMW-05S1-R	6.0 - 11.0	NS(1)	0	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)
HHMW-05S2-R	18.0 - 28.0	262	767	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)
HHMW-05I	30.0 - 40.0	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)
HHMW-05D	80.0 - 90.0	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)
HHMW-09S1	6.0 - 11.0	54	76	156.1	101.8	20.64	23.1	36.04	0.89	48.4	6.98	13.81	33.31
HHMW-09S2	17.5 - 27.5	NS(1)	4	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)
HHMW-09I	43.0 - 53.0	NS(1)	0	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)
HHMW-09D	85.0 - 95.0	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)
HHMW-10	15.0 - 20.0	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)
HHRW-01	13.0 - 23.0	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)
HHMW-15S	7.5 - 12.5	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)

Table 3-6. Summary of Historical Total PAH Results
Halesite Former MGP Site
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Well No.	Screen Interval (feet)	Total PAH Concentrations (µg/L)											
		Sampling Date											
		2016		2017		2018		2019		2020		2021	
		Mar	Aug/Sept/Oct	Mar	Sept	Mar	Aug	Mar	Sept	Feb	Sept	Mar	Sept
		Operational Period											
Downgradient Groundwater Monitoring Wells													
HHMW-06S1	2.5 - 7.5	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)
HHMW-06S2	12.0 - 22.0	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)
HHMW-06I	35.0 - 45.0	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)
HHMW-07S1	3.0 - 8.0	196	11	0	4.99	NS(1)	45.7	NS(1)	0	NS(1)	2	NS(1)	0
HHMW-07S2	16.0 - 26.0	NS(1)	16	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)
HHMW-07I	45.0 - 55.0	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)
HHMW-07D	115.0 - 125.0	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)
HHMW-08S	2.0 -12.0	NS(1)	0	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)
HHMW-08I	35.0 - 45.0	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)
HHMW-11S/11SR	3.0 - 13.0	NS(1)	32.3	8	17.43	NS(1)	8.5	NS(1)	9.1	NS(1)	NS(1)	NS(1)	NS(1)
HHMW-11I	31.0 - 41.0	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)
HHMW-19S1	3.0 - 8.0	909	347	321	358.3	218.1	241.16	137.91	9.1	22.1	26.2	45.73	28.9
HHMW-19S2	15.0 - 25.0	NS(1)	49	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)
HHMW-20S1	4.0 - 9.0	4	7	NS(1)	NS(1)	4.04	8.2	NS(1)	9.9	NS(1)	NS(1)	NS(1)	NS(1)
HHMW-20S2/20S2R	15.0 - 25.0	NS(1)	0	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)
HHMW-21S1	3.0 - 8.0	NS(1)	0	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)
HHMW-21S2	15.0 - 25.0	NS(1)	0	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)
Sidegradient Groundwater Monitoring Wells													
HHMW-22S1	4.0 - 9.0	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)
HHMW-22S2	15.0 - 25.0	NS(1)	0	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)	NS(1)

Table 3-6. Summary of Historical Total PAH Results
Halesite Former MGP Site
Annual Groundwater Monitoring and Operations, Maintenance & Monitoring Report

Well No.	Screen Interval (feet)	Pre-operational Period			Operational Period		
		Min	Max	Mean	Min	Max	Mean
Upgradient Groundwater Monitoring Wells							
HHMW-12	45.0 - 55.0	0	206	64	NS(1)	NS(1)	NS(1)
HHMW-13	39.0 - 49.0	0	220	56	0	328	45
HHMW-14	64.0 - 74.0	0	826	140	0	601	53
HHMW-16S1	25.0 - 30.0	98	98	98	0	600	64
HHMW-16S2	35.0 - 45.0	0	0	0	0	112	3
HHMW-17S1	20.0 - 25.0	0	0	0	0	6	0
HHMW-17S2	30.0 - 40.0	0	0	0	0	27	1
HHMW-18S1	9.0 - 14.0	48	48	48	0	924	265
HHMW-18S2	19.0 - 29.0	0	0	0	0	33	4
O2 Injection System Area GW Monitoring Wells							
MW-01	5.0 - 25.0	0	13	7	NS(1)	NS(1)	NS(1)
MW-02	6.0 - 26.0	0	74	27	NS(1)	NS(1)	NS(1)
MW-03	2.0 - 12.0	0	2,904	465	0	4421	377
MW-04	1.0 - 21.0	0	173	17	0	10	1
P-01	12.1 - 15.4	0	0	0	NS(1)	NS(1)	NS(1)
P-02	12.3 - 16.4	1	33	17	NS(1)	NS(1)	NS(1)
HHMW-01I	35.0 - 45.0	0	13	7	NS(1)	NS(1)	NS(1)
HHMW-04I	30.0 - 40.0	0	0	0	0	1	0
HHMW-05S1-R	6.0 - 11.0	0	2,429	375	0	34	3
HHMW-05S2-R	18.0 - 28.0	0	135	34	0	767	36
HHMW-05I	30.0 - 40.0	NS(1)	0	0	NS(1)	NS(1)	NS(1)
HHMW-05D	80.0 - 90.0	NS(1)	29	15	NS(1)	NS(1)	NS(1)
HHMW-09S1	6.0 - 11.0	257	552	63	0	276	66
HHMW-09S2	17.5 - 27.5	0	9	3	0	13	1
HHMW-09I	43.0 - 53.0	NS	0	0	0	30	3
HHMW-09D	85.0 - 95.0	NS	31	3	0	0	0
HHMW-10	15.0 - 20.0	12	76,890	25,897	NS(1)	NS(1)	NS(1)
HHRW-01	13.0 - 23.0	0	0	0	NS(1)	NS(1)	NS(1)
HHMW-15S	7.5 - 12.5	3,668	3,668	3,668	11	36978	12338

Table 3-6. Summary of Historical Total PAH Results
Halesite Former MGP Site
Annual Groundwater Monitoring and Operations, Maintenance & Monitoring Report

Well No.	Screen Interval (feet)	Pre-operational Period			Operational Period		
		Min	Max	Mean	Min	Max	Mean
Downgradient Groundwater Monitoring Wells							
HHMW-06S1	2.5 - 7.5	0	1	0	0	1	0
HHMW-06S2	12.0 - 22.0	0	374	45	0	45	10
HHMW-06I	35.0 - 45.0	0	0	0	NS(1)	NS(1)	NS(1)
HHMW-07S1	3.0 - 8.0	0	1,688	427	0	285	50
HHMW-07S2	16.0 - 26.0	0	111	18	0	77	29
HHMW-07I	45.0 - 55.0	0	1	0	NS(1)	NS(1)	NS(1)
HHMW-07D	115.0 - 125.0	0	0	0	NS(1)	NS(1)	NS(1)
HHMW-08S	2.0 -12.0	0	181	53	0	21	1
HHMW-08I	35.0 - 45.0	0	10	5	NS(1)	NS(1)	NS(1)
HHMW-11S/11SR	3.0 - 13.0	0	130	77	4	76	37
HHMW-11I	31.0 - 41.0	0	82	7	0	0	0
HHMW-19S1	3.0 - 8.0	5	5	5	0	3732	582
HHMW-19S2	15.0 - 25.0	0	0	0	0	310	50
HHMW-20S1	4.0 - 9.0	49	49	49	0	154	48
HHMW-20S2/20S2R	15.0 - 25.0	2	2	2	0	107	4
HHMW-21S1	3.0 - 8.0	0	0	0	0	0	0
HHMW-21S2	15.0 - 25.0	NS(2)	NS(2)	NS(2)	0	0	0
Sidegradient Groundwater Monitoring Wells							
HHMW-22S1	4.0 - 9.0	NS(2)	NS(2)	NS(2)	NS(2)	NS(2)	NS(2)
HHMW-22S2	15.0 - 25.0	0	0	0	0	1	0

General Notes:

µg/L = Micrograms per liter

PAH = Polycyclic Aromatic Hydrocarbons

MGP = Manufactured Gas Plant

Monitoring wells HHMW-16S1, HHMW-16S2, HHMW-17S1, and HHMW-17S2 sampled on March 2, 2010 were included in the February monthly results.

(1): Monitoring well abandoned

(2): Monitoring well not sampled due to the presence of DNAPL

* = Well constructed in 2003

** = Well constructed in 2001

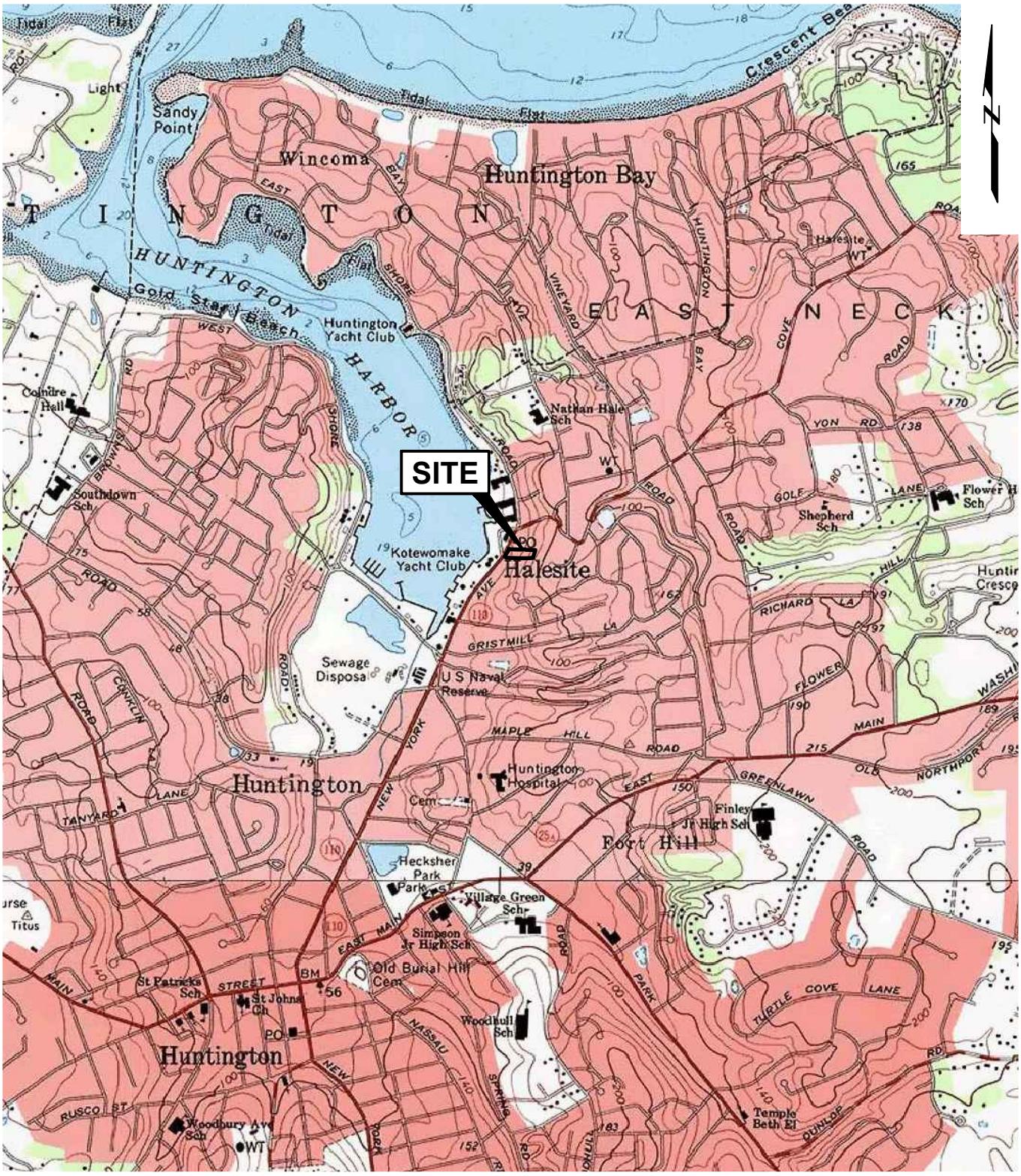
*** = Well constructed in October 2005

**** = Well constructed in 2009

NS = Not sampled

DNAPL = Dense Non-Aqueous Phase Liquid

Figures



SOURCE:

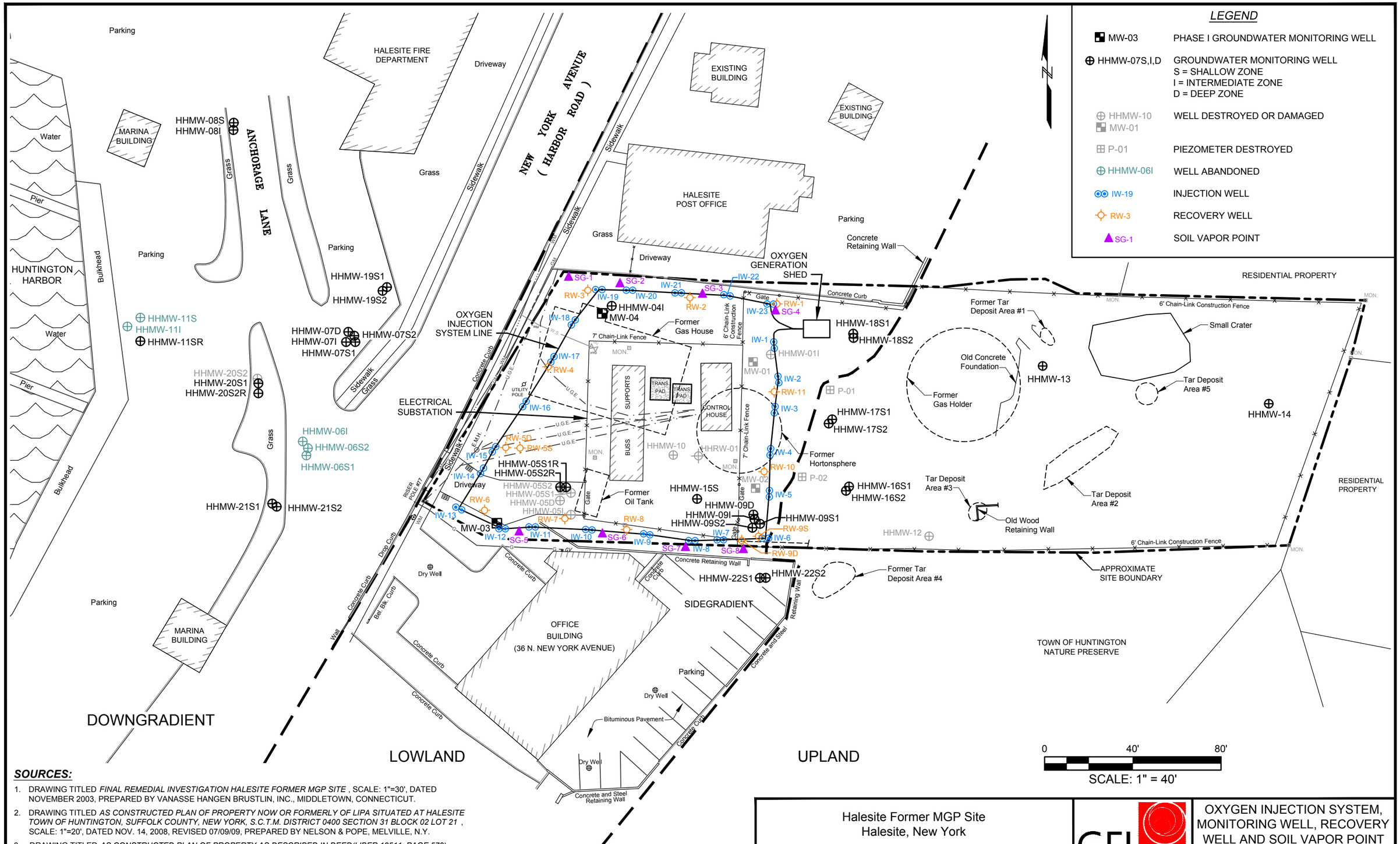
Map created with TOPO! ® ©2001 National Geographic (www.nationalgeographic.com/topo)

0 2000' 4000'

SCALE: 1" = 2000'

Halesite Former MGP Site Halesite, New York	GEI	SITE LOCATION MAP
nationalgrid	Project 1905774	November 2021 Fig. 1

\\gtb1v-fs01\ I:\Project\National Grid\Halesite\GW Contours\2017\1702897_GWC_2017_1.dwg - 12/5/2017



SOURCES:

1. DRAWING TITLED *FINAL REMEDIAL INVESTIGATION HALESITE FORMER MGP SITE* , SCALE: 1"=30', DATED NOVEMBER 2003, PREPARED BY VANASSE HANGEN BRUSTLIN, INC., MIDDLETOWN, CONNECTICUT.
2. DRAWING TITLED *AS CONSTRUCTED PLAN OF PROPERTY NOW OR FORMERLY OF LIPA SITUATED AT HALESITE TOWN OF HUNTINGTON, SUFFOLK COUNTY, NEW YORK, S.C.T.M. DISTRICT 0400 SECTION 31 BLOCK 02 LOT 21* , SCALE: 1"=20', DATED NOV. 14, 2008, REVISED 07/09/09, PREPARED BY NELSON & POPE, MELVILLE, N.Y.
3. DRAWING TITLED *AS CONSTRUCTED PLAN OF PROPERTY AS DESCRIBED IN DEED(LIBER 12511; PAGE 573) (ALSO KNOWN AS P/O LOT 18 "MAP OF KETEWOMOKE") SITUATED AT HALESITE TOWN OF HUNTINGTON, SUFFOLK COUNTY, NEW YORK, S.C.T.M. DISTRICT 0400 SECTION 31 BLOCK 02 LOT 21,* SCALE: 1"=30', DATED JULY 14, 2008, UPDATED 05/06/09, PREPARED BY NELSON & POPE, MELVILLE, N.Y.

Halesite Former MGP Site
Halesite, New York

nationalgrid

GEI

OXYGEN INJECTION SYSTEM, MONITORING WELL, RECOVERY WELL AND SOIL VAPOR POINT LOCATION MAP

Project 1905774 | November 2021 | Fig. 2

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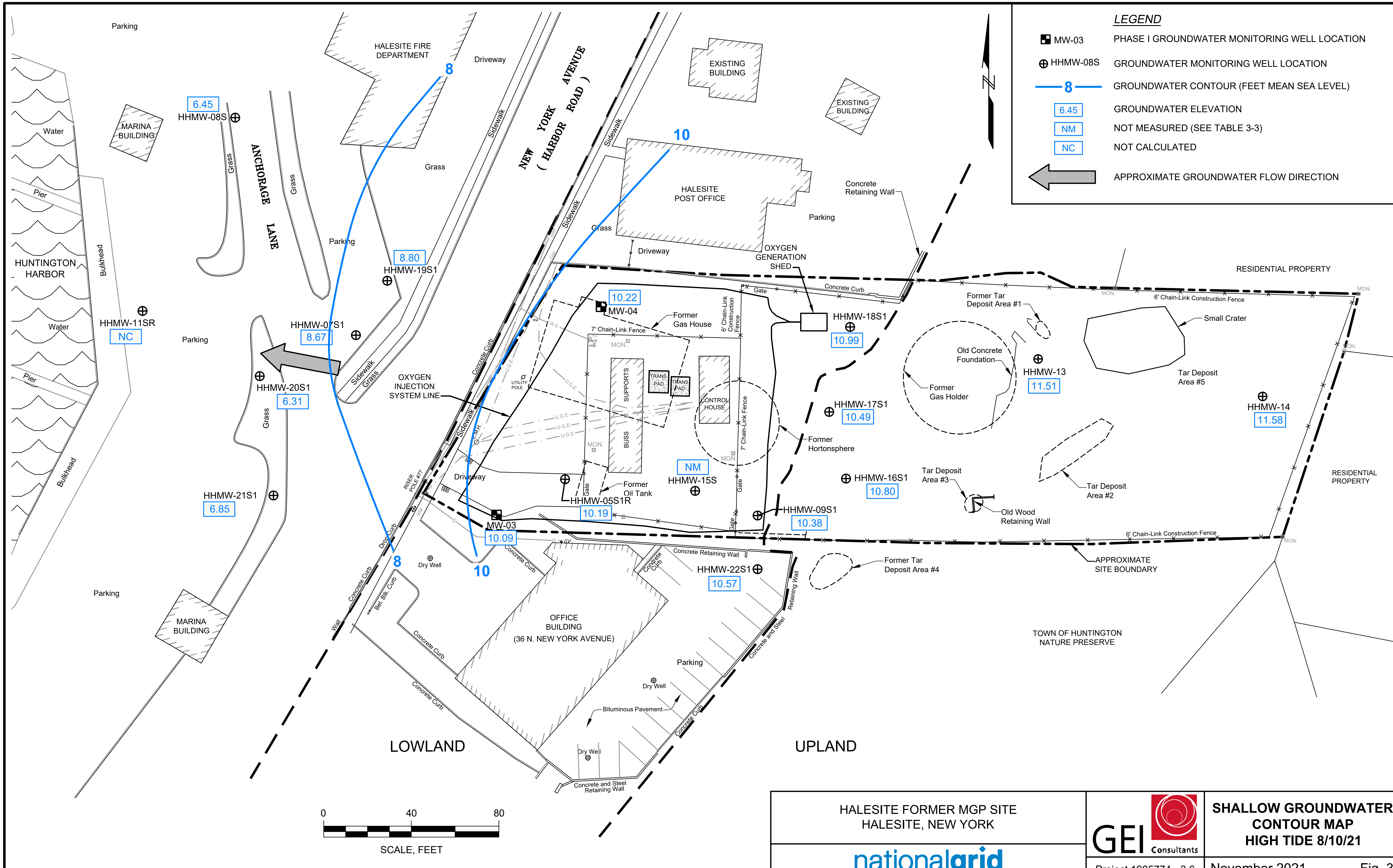


HALESITE FORMER MGP SITE
HALESITE, NEW YORK

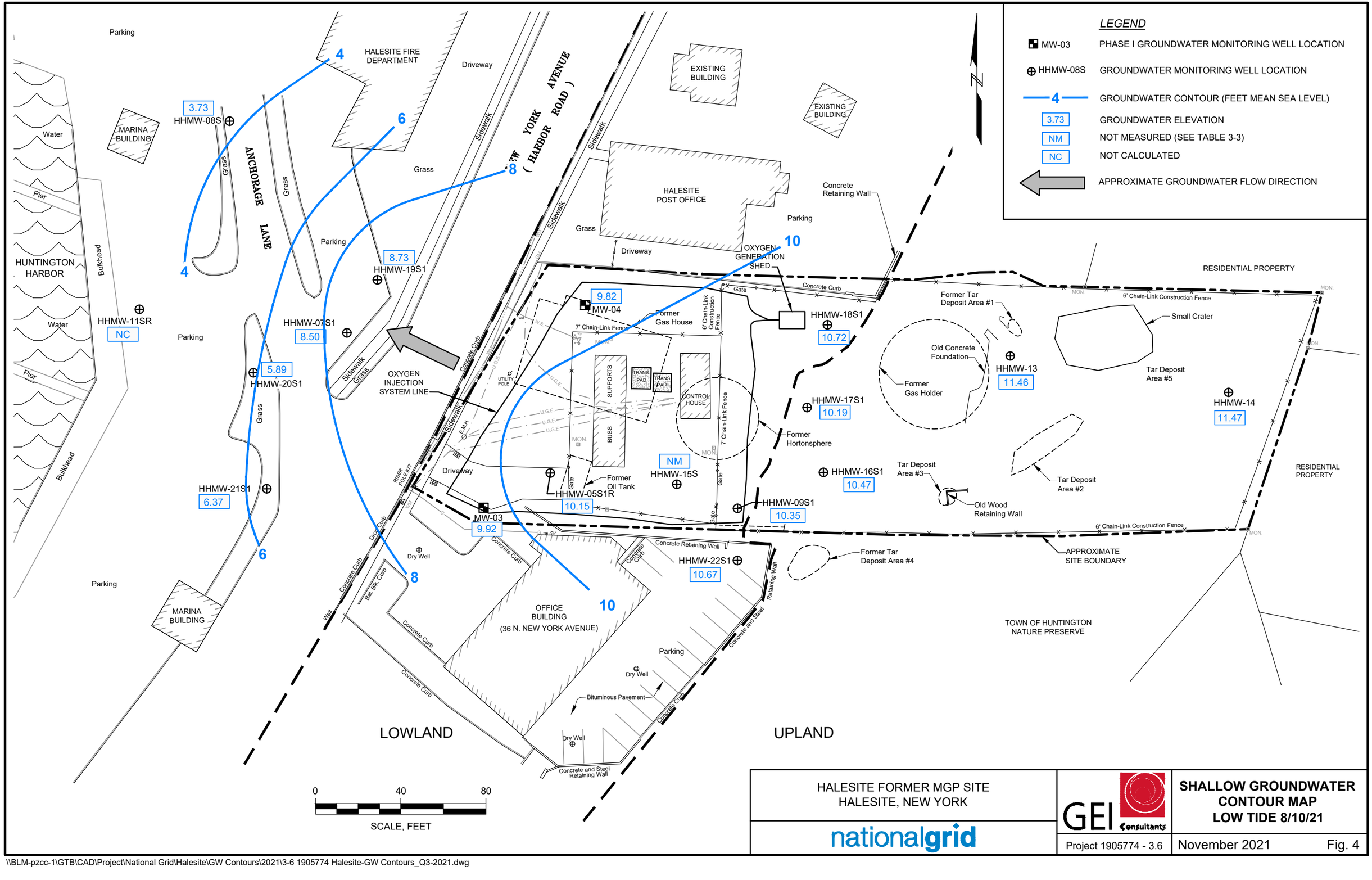
nationalgrid

GEI Consultants

SHALLOW GROUNDWATER CONTOUR MAP HIGH TIDE 8/10/21

Project 1905774 - 3.6 | November 2021 | Fig. 3

\\BLM-pzcc-1\GTB\CAD\Project\National Grid\Halesite\GW Contours\2021\3-6 1905774 Halesite-GW Contours_Q3-2021.dwg



HALESITE FORMER MGP SITE
HALESITE, NEW YORK

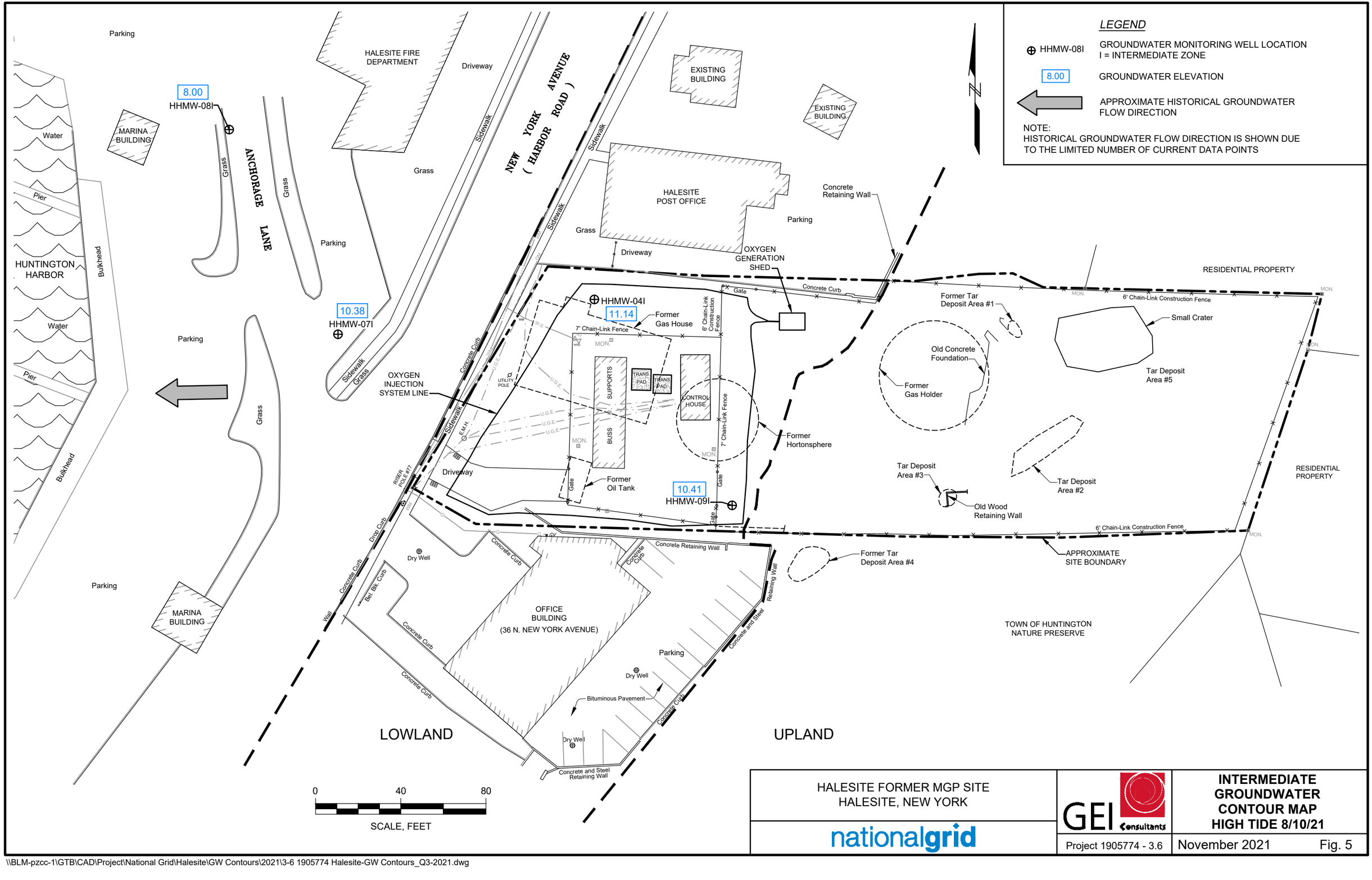
nationalgrid

GEI Consultants

SHALLOW GROUNDWATER CONTOUR MAP LOW TIDE 8/10/21

Project 1905774 - 3.6 | November 2021 | Fig. 4

\\BLM-pzcc-1\GTB\CAD\Project\National Grid\Halesite\GW Contours\2021\3-6 1905774 Halesite-GW Contours_Q3-2021.dwg



HALESITE FORMER MGP SITE HALESITE, NEW YORK nationalgrid	GEI Consultants Project 1905774 - 3.6	**INTERMEDIATE GROUNDWATER CONTOUR MAP HIGH TIDE 8/10/21** November 2021 Fig. 5

\\BLM-pzcc-1\GTB\CAD\Project\National Grid\Halesite\GW Contours\2021\3-6 1905774 Halesite-GW Contours_Q3-2021.dwg

LEGEND

- ⊕ HHMW-08I — GROUNDWATER MONITORING WELL LOCATION I = INTERMEDIATE ZONE
- 5.82 — GROUNDWATER ELEVATION
- NM — NOT MEASURED (SEE TABLE 3-3)
- APPROXIMATE HISTORICAL GROUNDWATER FLOW DIRECTION

NOTE:
HISTORICAL GROUNDWATER FLOW DIRECTION IS SHOWN DUE TO THE LIMITED NUMBER OF CURRENT DATA POINTS

HUNTINGTON HARBOR
Water
Bulkhead
Pier
Water
Pier
Bulkhead
Parking
MARINA BUILDING
Parking
MARINA BUILDING
5.82
HHMW-08I
Grass
ANCHORAGE LANE
Grass
Parking
HALESITE FIRE DEPARTMENT
Driveway
Grass
9.89
HHMW-07I
Sidewalk
Grass
Parking
Grass
NEW YORK AVENUE (HARBOR ROAD)
Sidewalk
Sidewalk
EXISTING BUILDING
EXISTING BUILDING
HALESITE POST OFFICE
Parking
Concrete Retaining Wall
Grass
Driveway
OXYGEN GENERATION SHED
Gate
Concrete Curb
RESIDENTIAL PROPERTY
Former Tar Deposit Area #1
MON.
6' Chain-Link Construction Fence
Small Crater
Tar Deposit Area #5
HHMW-04I
10.77
Former Gas House
7' Chain-Link Fence
6' Chain-Link Construction Fence
Concrete Curb
OXYGEN INJECTION SYSTEM LINE
UTILITY POLE
SUPPORTS
TRANS. PAD
TRANS. PAD
CONTROL HOUSE
7' Chain-Link Fence
Old Concrete Foundation
Former Gas Holder
Former Hortonsphere
BUSS
MON.
Sidewalk
Driveway
RISER POLE #77
Gate
Former Oil Tank
10.06
HHMW-09I
Gate
Tar Deposit Area #3
Old Wood Retaining Wall
Tar Deposit Area #2
RESIDENTIAL PROPERTY
6' Chain-Link Construction Fence
Former Tar Deposit Area #4
APPROXIMATE SITE BOUNDARY
Drop Curb
Concrete Curb
Dry Well
Concrete Curb
Concrete Curb
Concrete Retaining Wall
Retaining Wall
Bel. Blk. Curb
Concrete Curb
OFFICE BUILDING (36 N. NEW YORK AVENUE)
Concrete Curb
Parking
Concrete and Steel
Dry Well
Bituminous Pavement
Concrete Curb
Dry Well
Concrete and Steel Retaining Wall
TOWN OF HUNTINGTON NATURE PRESERVE
LOWLAND
UPLAND

0 40 80
SCALE, FEET

HALESITE FORMER MGP SITE
HALESITE, NEW YORK

nationalgrid

GEI Consultants

INTERMEDIATE GROUNDWATER CONTOUR MAP LOW TIDE 8/10/21

Project 1905774 - 3.6 | November 2021 | Fig. 6

\\BLM-pzcc-1\GTB\CAD\Project\National Grid\Halesite\GW Contours\2021\3-6 1905774 Halesite-GW Contours_Q3-2021.dwg

Appendix A

Oxygen Injection System OM&M Data

Appendix A. Operational Data
Halesite Oxygen Injection System
Halesite Former MGP Site
Operations, Maintenance, and Monitoring Program - Q1 2021

	Operational Days		Oxygen Injected Per Month
Month 1	Jan-21	31	3534
Month 2	Feb-21	28	3340
Month 3	Mar-21	31	3648

Total Operational Days Jan. - Mar. 2021 90
Total Oxygen injected during this period (lbs) 10,523
Weight of Oxygen Injected through Q4 2020 (lbs) 483,544
Running total of Injected Oxygen (lbs) 494,067

Notes:
SCFH (M) = Measured flow rate
SCFH (C*) = Flow rate converted for oxygen (Flow meters are calibrated for air)
CF/D (V) = Volume of oxygen injected per day
PSI (M) = Measured pressure
PSIa (P) = Pressure converted to atmospheric pressure.
n = PV/RT = Mass of Oxygen (lbs)
Temperature = Degrees Rankine
R = Individual Gas Constant = 48.24 ft/T
1 lb-mole of oxygen=32 lbm

System Operating Specs
Total of 6 injection banks
Oxygen is injected for 13 minutes during each injection cycle
Each Injection bank operates for 4 injection cycles per day
Each injection point injects oxygen for 52 min per day (13 min per cycle * 4 Cycles)

Example
Bank 1 starts at 7AM

Bank 1 finishes injection at 713AM
System is recharging 713AM to 800AM
System is recharging 813AM to 900AM
Bank 3 starts injection at 900AM
Bank 3 finishes injection at 913AM
System is recharging from 913AM to 1000AM
Bank 4 starts injection at 1000AM
Bank 4 Finishes injection at 1013AM
System is recharging from 1013AM to 1100PM
Bank 5 starts injection at 1100AM

Bank 5 finishes injection at 1113AM
System is recharging from 1113AM to 1200PM
Bank 6 starts injection at 1200PM
System is recharging from 1213PM to 100PM
(Keep repeating cycle for course of day)

			1/26/2021						2/23/2021						3/15/2021					
		O2%	90.2						91.6						86.3					
		R	48.24						48.24						48.24					
		Temp R (T)	648						646						645					
		System Hours																		
		Depth	SCFH (M)	SCFH (C*)	CF/D (V)	PSI (M)	PSIa (P)	n=PV/RT lbs O2	SCFH (M)	SCFH (C*)	CF/D (V)	PSI (M)	PSIa (P)	n=PV/RT lbs O2	SCFH (M)	SCFH (C*)	CF/D (V)	PSI (M)	PSIa (P)	n=PV/RT lbs O2
Injection Bank 1	Point 1D	32	30	33.770	29.268	7.5	22.2	2.700	29	33.010	28.609	8.0	22.7	2.749	32	36.022	31.219	7.5	22.2	2.768
	Point 1	24	33	34.993	30.327	5.0	19.7	2.482	30	32.213	27.918	5.5	20.2	2.387	32	33.933	29.408	5.0	19.7	2.314
	Point 2D	27	34	39.125	33.909	8.5	23.2	3.269	30	34.522	29.919	8.5	23.2	2.938	33	37.975	32.911	8.5	23.2	3.050
	Point 2	20	30	31.812	27.570	5.0	19.7	2.257	27	28.631	24.813	5.0	19.7	2.069	31	32.872	28.489	5.0	19.7	2.242
	Point 3D	30	29	33.372	28.922	8.5	23.2	2.788	25	28.769	24.933	8.5	23.2	2.448	32	36.824	31.914	8.5	23.2	2.957
	Point 3	23	29	30.752	26.651	5.0	19.7	2.182	25	26.510	22.975	5.0	19.7	1.916	31	32.872	28.489	5.0	19.7	2.242
	Point 4D	30	32	36.022	31.219	7.5	22.2	2.880	25	28.457	24.663	8.0	22.7	2.370	31	34.896	30.243	7.5	22.2	2.682
	Point 4	23	33	34.993	30.327	5.0	19.7	2.482	27	28.631	24.813	5.0	19.7	2.069	30	31.812	27.570	5.0	19.7	2.169
Total Oxygen Injected per Day (lbs)			**21.040**						**18.946**						**20.423**					
		Depth	SCFH (M)	SCFH (C*)	CF/D (V)	PSI (M)	PSIa (P)	n=PV/RT lbs O2	SCFH (M)	SCFH (C*)	CF/D (V)	PSI (M)	PSIa (P)	n=PV/RT lbs O2	SCFH (M)	SCFH (C*)	CF/D (V)	PSI (M)	PSIa (P)	n=PV/RT lbs O2
Injection Bank 2	Point 5	23	32	33.499	29.033	4.5	19.2	2.316	29	30.359	26.311	4.5	19.2	2.138	35	36.640	31.755	4.5	19.2	2.435
	Point 5D	30	30	34.148	29.595	8.0	22.7	2.791	29	33.010	28.609	8.0	22.7	2.749	34	38.702	33.541	8.0	22.7	3.041
	Point 6D	29	28	31.162	27.007	7.0	21.7	2.435	27	30.049	26.042	7.0	21.7	2.392	31	34.501	29.901	7.0	21.7	2.591
	Point 6	22	28	28.928	25.071	4.0	18.7	1.948	27	28.265	24.496	4.5	19.2	1.991	30	30.994	26.862	4.0	18.7	2.006
	Point 7D	28	25	28.457	24.663	8.0	22.7	2.326	29	32.645	28.292	7.5	22.2	2.658	31	35.287	30.582	8.0	22.7	2.773
	Point 7	22	32	33.060	28.652	4.0	18.7	2.226	30	31.406	27.218	4.5	19.2	2.212	32	33.499	29.033	4.5	19.2	2.226
	Point 8D	30	32	36.425	31.568	8.0	22.7	2.978	30	34.148	29.595	8.0	22.7	2.844	31	35.287	30.582	8.0	22.7	2.773
	Point 8	22	28	29.691	25.732	5.0	19.7	2.106	27	28.631	24.813	5.0	19.7	2.069	29	30.752	26.651	5.0	19.7	2.097
Total Oxygen Injected per Day (lbs)			**19.127**						**19.053**						**19.942**					
		Depth	SCFH (M)	SCFH (C*)	CF/D (V)	PSI (M)	PSIa (P)	n=PV/RT lbs O2	SCFH (M)	SCFH (C*)	CF/D (V)	PSI (M)	PSIa (P)	n=PV/RT lbs O2	SCFH (M)	SCFH (C*)	CF/D (V)	PSI (M)	PSIa (P)	n=PV/RT lbs O2
Injection Bank 3	Point 9D	30	33	38.785	33.613	9.5	24.2	3.380	30	35.259	30.558	9.5	24.2	3.130	30	35.259	30.558	9.5	24.2	2.954
	Point 9	21	25	26.171	22.682	4.5	19.2	1.810	30	31.406	27.218	4.5	19.2	2.212	33	34.546	29.940	4.5	19.2	2.296
	Point 10	22	25	26.171	22.682	4.5	19.2	1.810	30	31.406	27.218	4.5	19.2	2.212	32	33.499	29.033	4.5	19.2	2.226
	Point 10D	30	26	29.919	25.930	8.5	23.2	2.500	30	34.148	29.595	8.0	22.7	2.844	31	35.673	30.917	8.5	23.2	2.865
	Point 11D	25	26	29.268	25.365	7.5	22.2	2.340	30	34.522	29.919	8.5	23.2	2.938	32	36.022	31.219	7.5	22.2	2.768
	Point 11	17	25	25.828	22.385	4.0	18.7	1.739	30	30.994	26.862	4.0	18.7	2.126	31	31.596	27.383	3.5	18.2	1.991
	Point 12D	24	26	29.595	25.649	8.0	22.7	2.419	30	34.148	29.595	8.0	22.7	2.844	31	35.287	30.582	8.0	22.7	2.773
	Point 12	16	24	25.450	22.056	5.0	19.7	1.805	30	31.406	27.218	4.5	19.2	2.212	32	33.499	29.033	4.5	19.2	2.226
Total Oxygen Injected per Day (lbs)			**17.803**						**20.517**						**20.098**					
		Depth	SCFH (M)	SCFH (C*)	CF/D (V)	PSI (M)	PSIa (P)	n=PV/RT lbs O2	SCFH (M)	SCFH (C*)	CF/D (V)	PSI (M)	PSIa (P)	n=PV/RT lbs O2	SCFH (M)	SCFH (C*)	CF/D (V)	PSI (M)	PSIa (P)	n=PV/RT lbs O2
Injection Bank 4	Point 13D	23	33	37.563	32.555	8.0	22.7	3.071	35	39.840	34.528	8.0	22.7	3.318	30	34.148	29.595	8.0	22.7	2.683
	Point 13	16	18	18.843	16.331	4.5	19.2	1.303	29	30.359	26.311	4.5	19.2	2.138	38	39.781	34.476	4.5	19.2	2.644
	Point 14	15	38	40.295	34.923	5.0	19.7	2.859	41	44.025	38.155	5.5	20.2	3.262	52	55.141	47.789	5.0	19.7	3.760
	Point 14D	20	23	25.891	22.438	7.5	22.2	2.070	30	33.770	29.268	7.5	22.2	2.750	35	39.399	34.145	7.5	22.2	3.028
	Point 15D	19	20	22.001	19.067	6.5	21.2	1.680	30	33.001	28.601	6.5	21.2	2.566	38	41.801	36.228	6.5	21.2	3.067
	Point 15	14	47	43.052	37.312	0.0	14.7	2.279	40	36.640	31.755	0.0	14.7	1.976	50	45.800	39.693	0.0	14.7	2.330
	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total Oxygen Injected per Day (lbs)			**13.261**						**16.010**						**17.513**					
		Depth	SCFH (M)	SCFH (C*)	CF/D (V)	PSI (M)	PSIa (P)	n=PV/RT lbs O2	SCFH (M)	SCFH (C*)	CF/D (V)	PSI (M)	PSIa (P)	n=PV/RT lbs O2	SCFH (M)	SCFH (C*)	CF/D (V)	PSI (M)	PSIa (P)	n=PV/RT lbs O2
Injection Bank 5	Point 16D	14	33	38.785	33.613	9.5	24.2	3.380	31	36.434	31.576	9.5	24.2	3.234	31	36.434	31.576	9.5	24.2	3.052
	Point 16	8	46	46.236	40.071	3.0	17.7	2.947	50	53.020	45.951	5.0	19.7	3.832	46	46.236	40.071	3.0	17.7	2.833
	Point 17	13	50	51.657	44.769	4.0	18.7	3.479	50	51.657	44.769	4.0	18.7	3.544	42	43.392	37.606	4.0	18.7	2.809
	Point 17D	18	32	35.614	30.865	7.0	21.7	2.783	32	36.022	31.219	7.5	22.2	2.934	33	36.727	31.830	7.0	21.7	2.759
	Point 18D	25	32	35.614	30.865	7.0	21.7	2.783	32	35.614	30.865	7.0	21.7	2.835	30	33.770	29.268	7.5	22.2	2.595
	Point 18	19	48	49.591	42.978	4.0	18.7	3.339	47	48.557	42.083	4.0	18.7	3.331	45	46.491	40.292	4.0	18.7	3.009
	Point 19	19	48	50.249	43.549	4.5	19.2	3.474	50	52.343	45.364	4.5	19.2	3.687	47	49.202	42.642	4.5	19.2	3.270
	Point 19D	25	32	35.201	30.508	6.5	21.2	2.687	32	35.614	30.865	7.0	21.7	2.835	33	36.727	31.830	7.0	21.7	2.759
Total Oxygen Injected per Day (lbs)			**24.873**						**26.230**						**23.085**					
		Depth	SCFH (M)*	SCFH (C*)	CF/D (V)	PSI (M)*	PSIa (P)	n=PV/RT lbs O2	SCFH (M)*	SCFH (C*)	CF/D (V)	PSI (M)*	PSIa (P)	n=PV/RT lbs O2	SCFH (M)*	SCFH (C*)	CF/D (V)	PSI (M)*	PSIa (P)	n=PV/RT lbs O2
Injection Bank 6	Point 20D	25	28	31.162	27.007	7.0	21.7	2.435	31	34.501	29.901	7.0	21.7	2.746	29	32.275	27.972	7.0	21.7	2.424
	Point 20	19	44	45.458	39.397	4.0	18.7	3.061	42	43.392	37.606	4.0	18.7	2.977	42	43.392	37.606	4.0	18.7	2.809
	Point 21	20	32	33.933	29.408	5.0	19.7	2.407	30	31.812	27.570	5.0	19.7	2.299	29	30.752	26.651	5.0	19.7	2.097
	Point 21D	29	28	31.519	27.316	7.5	22.2	2.520	31	34.896	30.243	7.5	22.2	2.842	28	31.519	27.316	7.5	22.2	2.422
	Point 22	22	28	29.691	25.732	5.0	19.7	2.106	31	32.453	28.126	4.5	19.2	2.286	27	28.265	24.496	4.5	19.2	1.878
	Point 22D	28	36	40.978	35.514	8.0	22.7	3.350	30	34.148	29.595	8.0	22.7	2.844	30	34.148	29.595	8.0	22.7	2.683
	Point 23	18	26	27.918	24.196	5.5	20.2	2.031	32	34.361	29.779	5.5	20.2	2.546	32	33.933	29.408	5.0	19.7	2.314
	Point 23D	29	26	30.240	26.208	9.0	23.7	2.581	30	34.893	30.240	9.0	23.7	3.034	32	37.219	32.256	9.0	23.7	3.053
Total Oxygen Injected per Day (lbs)			**17.910**						**18.539**						**16.628**					
System Total Per Day (lbs)			**114.01**						**119.30**						**117.69**					

Appendix A. Operational Data
Halesite Oxygen Injection System
Halesite Former MGP Site
Operations, Maintenance, and Monitoring Program - Q2 2021

	Operational Days		Oxygen Injected Per Month
Month 1	Apr-21	30	3388
Month 2	May-21	31	3138
Month 3	Jun-21	30	3093

Total Operational Days Apr. - June 2021 91
Total Oxygen injected during this period (lbs) 9,620
Weight of Oxygen Injected through Q1 2021 (lbs) 494,067
Running total of Injected Oxygen (lbs) 503,687

Notes:
SCFH (M) = Measured flow rate
SCFH (C*) = Flow rate converted for oxygen (Flow meters are calibrated for air)
CF/D (V) = Volume of oxygen injected per day
PSI (M) = Measured pressure
PSIa (P) = Pressure converted to atmospheric pressure.
n = PV/RT = Mass of Oxygen (lbs)
Temperature = Degrees Rankine
R = Individual Gas Constant = 48.24 ft/T
1 lb-mole of oxygen=32 lbm

System Operating Specs
Total of 6 injection banks
Oxygen is injected for 13 minutes during each injection cycle
Each Injection bank operates for 4 injection cycles per day
Each injection point injects oxygen for 52 min per day (13 min per cycle * 4 Cycles)

Example
Bank 1 starts at 7AM

Bank 1 finishes injection at 713AM
System is recharging 713AM to 800AM
System is recharging 813AM to 900AM
Bank 3 starts injection at 900AM
Bank 3 finishes injection at 913AM
System is recharging from 913AM to 1000AM
Bank 4 starts injection at 1000AM
Bank 4 Finishes injection at 1013AM
System is recharging from 1013AM to 1100PM
Bank 5 starts injection at 1100AM

Bank 5 finishes injection at 1113AM
System is recharging from 1113AM to 1200PM
Bank 6 starts injection at 1200PM
System is recharging from 1213PM to 100PM
(Keep repeating cycle for course of day)

			4/30/2021						5/28/2021						6/18/2021					
	O2%		93.6						82.8						86.3					
	R		48.24						48.24						48.24					
	Temp R (T)		645						648						621					
	System Hours																			
		Depth	SCFH (M)	SCFH (C*)	CF/D (V)	PSI (M)	PSIa (P)	n=PV/RT lbs O2	SCFH (M)	SCFH (C*)	CF/D (V)	PSI (M)	PSIa (P)	n=PV/RT lbs O2	SCFH (M)	SCFH (C*)	CF/D (V)	PSI (M)	PSIa (P)	n=PV/RT lbs O2
Injection Bank 1	Point 1D	32	31	31.897	27.644	8.0	22.7	2.718	34	34.984	30.319	8.0	22.7	2.625	33	33.955	29.427	8.0	22.7	2.771
	Point 1	24	30	28.756	24.922	5.0	19.7	2.127	32	31.060	26.918	5.5	20.2	2.074	32	30.673	26.583	5.0	19.7	2.172
	Point 2D	27	29	30.166	26.144	8.5	23.2	2.627	33	33.955	29.427	8.0	22.7	2.548	32	33.286	28.848	8.5	23.2	2.776
	Point 2	20	30	29.118	25.236	5.5	20.2	2.208	30	28.756	24.922	5.0	19.7	1.873	32	30.673	26.583	5.0	19.7	2.172
	Point 3D	30	30	31.206	27.045	8.5	23.2	2.718	31	32.592	28.246	9.0	23.7	2.553	30	31.206	27.045	8.5	23.2	2.603
	Point 3	23	30	29.118	25.236	5.5	20.2	2.208	32	30.673	26.583	5.0	19.7	1.997	32	30.673	26.583	5.0	19.7	2.172
	Point 4D	30	30	30.526	26.456	7.5	22.2	2.544	33	33.955	29.427	8.0	22.7	2.548	32	32.561	28.220	7.5	22.2	2.599
	Point 4	23	31	29.714	25.752	5.0	19.7	2.198	30	28.756	24.922	5.0	19.7	1.873	32	30.673	26.583	5.0	19.7	2.172
	Total Oxygen Injected per Day (lbs)		**19.349**						**18.091**						**19.439**					
		Depth	SCFH (M)	SCFH (C*)	CF/D (V)	PSI (M)	PSIa (P)	n=PV/RT lbs O2	SCFH (M)	SCFH (C*)	CF/D (V)	PSI (M)	PSIa (P)	n=PV/RT lbs O2	SCFH (M)	SCFH (C*)	CF/D (V)	PSI (M)	PSIa (P)	n=PV/RT lbs O2
Injection Bank 2	Point 5	23	30	28.389	24.603	4.5	19.2	2.046	32	30.281	26.244	4.5	19.2	1.922	32	30.281	26.244	4.5	19.2	2.090
	Point 5D	30	30	30.868	26.752	8.0	22.7	2.631	35	36.012	31.211	8.0	22.7	2.702	32	32.926	28.536	8.0	22.7	2.687
	Point 6D	29	30	30.180	26.156	7.0	21.7	2.459	34	34.204	29.644	7.0	21.7	2.454	31	31.186	27.028	7.0	21.7	2.433
	Point 6	22	30	28.016	24.281	4.0	18.7	1.967	30	28.016	24.281	4.0	18.7	1.732	32	29.884	25.900	4.0	18.7	2.009
	Point 7D	28	30	30.526	26.456	7.5	22.2	2.544	30	30.526	26.456	7.5	22.2	2.240	31	31.897	27.644	8.0	22.7	2.603
	Point 7	22	29	27.442	23.783	4.5	19.2	1.978	31	29.335	25.424	4.5	19.2	1.862	31	28.950	25.090	4.0	18.7	1.946
	Point 8D	30	29	29.839	25.860	8.0	22.7	2.543	32	33.286	28.848	8.5	23.2	2.553	30	30.868	26.752	8.0	22.7	2.519
	Point 8	22	30	28.756	24.922	5.0	19.7	2.127	30	28.756	24.922	5.0	19.7	1.873	31	29.714	25.752	5.0	19.7	2.105
	Total Oxygen Injected per Day (lbs)		**18.294**						**17.337**						**18.393**					
		Depth	SCFH (M)	SCFH (C*)	CF/D (V)	PSI (M)	PSIa (P)	n=PV/RT lbs O2	SCFH (M)	SCFH (C*)	CF/D (V)	PSI (M)	PSIa (P)	n=PV/RT lbs O2	31	SCFH (C*)	CF/D (V)	PSI (M)	PSIa (P)	n=PV/RT lbs O2
Injection Bank 3	Point 9D	30	31	33.272	28.836	10.0	24.7	3.085	33	35.058	30.384	9.5	24.2	2.805	31	32.934	28.543	9.5	24.2	2.865
	Point 9	21	31	29.335	25.424	4.5	19.2	2.115	30	28.389	24.603	4.5	19.2	1.802	31	29.335	25.424	4.5	19.2	2.025
	Point 10	22	31	29.335	25.424	4.5	19.2	2.115	30	28.389	24.603	4.5	19.2	1.802	30	28.389	24.603	4.5	19.2	1.960
	Point 10D	30	30	30.526	26.456	7.5	22.2	2.544	32	33.286	28.848	8.5	23.2	2.553	32	33.286	28.848	8.5	23.2	2.776
	Point 11D	25	30	30.868	26.752	8.0	22.7	2.631	31	31.897	27.644	8.0	22.7	2.394	32	32.926	28.536	8.0	22.7	2.687
	Point 11	17	31	28.950	25.090	4.0	18.7	2.032	31	28.950	25.090	4.0	18.7	1.790	31	28.950	25.090	4.0	18.7	1.946
	Point 12D	24	31	31.897	27.644	8.0	22.7	2.718	31	32.246	27.947	8.5	23.2	2.473	32	32.926	28.536	8.0	22.7	2.687
	Point 12	16	31	29.335	25.424	4.5	19.2	2.115	30	28.389	24.603	4.5	19.2	1.802	30	28.389	24.603	4.5	19.2	1.960
	Total Oxygen Injected per Day (lbs)		**19.354**						**17.419**						**18.907**					
		Depth	SCFH (M)	SCFH (C*)	CF/D (V)	PSI (M)	PSIa (P)	n=PV/RT lbs O2	SCFH (M)	SCFH (C*)	CF/D (V)	PSI (M)	PSIa (P)	n=PV/RT lbs O2	SCFH (M)	SCFH (C*)	CF/D (V)	PSI (M)	PSIa (P)	n=PV/RT lbs O2
Injection Bank 4	Point 13D	23	30	31.206	27.045	8.5	23.2	2.718	30	31.206	27.045	8.5	23.2	2.393	31	31.897	27.644	8.0	22.7	2.603
	Point 13	16	27	25.550	22.143	4.5	19.2	1.842	27	25.880	22.430	5.0	19.7	1.685	26	24.603	21.323	4.5	19.2	1.698
	Point 14	15	41	39.795	34.489	5.5	20.2	3.018	50	48.531	42.060	5.5	20.2	3.241	41	39.300	34.060	5.0	19.7	2.783
	Point 14D	20	25	25.438	22.047	7.5	22.2	2.120	28	28.491	24.692	7.5	22.2	2.091	27	27.473	23.810	7.5	22.2	2.193
	Point 15D	19	25	25.150	21.797	7.0	21.7	2.049	33	33.198	28.772	7.0	21.7	2.381	25	24.859	21.544	6.5	21.2	1.895
	Point 15	14	40	33.120	28.704	0.0	14.7	1.828	40	39.302	34.062	6.0	20.7	2.689	40	38.825	33.648	5.5	20.2	2.820
	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Total Oxygen Injected per Day (lbs)		**13.574**						**14.481**						**13.992**					
		Depth	SCFH (M)	SCFH (C*)	CF/D (V)	PSI (M)	PSIa (P)	n=PV/RT lbs O2	SCFH (M)	SCFH (C*)	CF/D (V)	PSI (M)	PSIa (P)	n=PV/RT lbs O2	SCFH (M)	SCFH (C*)	CF/D (V)	PSI (M)	PSIa (P)	n=PV/RT lbs O2
Injection Bank 5	Point 16D	14	31	32.934	28.543	9.5	24.2	2.992	24	25.497	22.097	9.5	24.2	2.040	26	27.622	23.939	9.5	24.2	2.403
	Point 16	8	51	46.987	40.722	3.5	18.2	3.210	46	42.380	36.730	3.5	18.2	2.550	38	35.010	30.342	3.5	18.2	2.291
	Point 17	13	55	52.046	45.106	4.5	19.2	3.752	45	42.583	36.905	4.5	19.2	2.703	44	41.637	36.085	4.5	19.2	2.874
	Point 17D	18	37	37.649	32.629	7.5	22.2	3.138	30	30.526	26.456	7.5	22.2	2.240	24	24.421	21.165	7.5	22.2	1.949
	Point 18D	25	35	35.614	30.865	7.5	22.2	2.968	28	28.491	24.692	7.5	22.2	2.091	26	26.456	22.928	7.5	22.2	2.112
	Point 18	19	50	47.314	41.006	4.5	19.2	3.410	41	38.798	33.625	4.5	19.2	2.462	43	40.690	35.265	4.5	19.2	2.809
	Point 19	19	50	47.314	41.006	4.5	19.2	3.410	44	42.175	36.552	5.0	19.7	2.747	42	39.744	34.445	4.5	19.2	2.743
	Point 19D	25	31	31.186	27.028	7.0	21.7	2.541	30	30.180	26.156	7.0	21.7	2.165	24	23.864	20.682	6.5	21.2	1.819
	Total Oxygen Injected per Day (lbs)		**25.422**						**18.997**						**19.000**					
		Depth	SCFH (M)*	SCFH (C*)	CF/D (V)	PSI (M)*	PSIa (P)	n=PV/RT lbs O2	SCFH (M)*	SCFH (C*)	CF/D (V)	PSI (M)*	PSIa (P)	n=PV/RT lbs O2	SCFH (M)*	SCFH (C*)	CF/D (V)	PSI (M)*	PSIa (P)	n=PV/RT lbs O2
Injection Bank 6	Point 20D	25	29	29.174	25.284	7.0	21.7	2.377	30	30.180	26.156	7.0	21.7	2.165	24	24.144	20.925	7.0	21.7	1.884
	Point 20	19	46	42.959	37.231	4.0	18.7	3.016	49	45.760	39.659	4.0	18.7	2.829	40	37.355	32.375	4.0	18.7	2.511
	Point 21	20	30	28.756	24.922	5.0	19.7	2.127	29	27.797	24.091	5.0	19.7	1.810	25	23.963	20.768	5.0	19.7	1.697
	Point 21D	29	30	30.526	26.456	7.5	22.2	2.544	28	28.491	24.692	7.5	22.2	2.091	23	23.403	20.283	7.5	22.2	1.868
	Point 22	22	30	28.389	24.603	4.5	19.2	2.046	30	28.756	24.922	5.0	19.7	1.873	22	21.088	18.276	5.0	19.7	1.494
	Point 22D	28	30	30.868	26.752	8.0	22.7	2.631	30	30.868	26.752	8.0	22.7	2.316	29	29.839	25.860	8.0	22.7	2.435
	Point 23	18	30	29.118	25.236	5.5	20.2	2.208	28	27.177	23.554	5.5	20.2	1.815	22	21.088	18.276	5.0	19.7	1.494
	Point 23D	29	30	31.540	27.335	9.0	23.7	2.806	29	30.489	26.424	9.0	23.7	2.389	23	24.181	20.957	9.0	23.7	2.060
	Total Oxygen Injected per Day (lbs)		**16.949**						**14.898**						**13.383**					
	System Total Per Day (lbs)		**112.94**						**101.22**						**103.11**					

Appendix A. Operational Data
Halesite Oxygen Injection System
Halesite Former MGP Site
Operations, Maintenance, and Monitoring Program - Q3 2021

	Operational Days		Oxygen Injected Per Month
Month 1	Jul-21	31	2345
Month 2	Aug-21	31	2483
Month 3	Sept-21	30	4061

Total Operational Days Jul. - Sept. 2021 92
Total Oxygen injected during this period (lbs) 8,889
Weight of Oxygen Injected through Q2 2021 (lbs) 503,687
Running total of Injected Oxygen (lbs) 512,576

Notes:
SCFH (M) = Measured flow rate
SCFH (C*) = Flow rate converted for oxygen (Flow meters are calibrated for air)
CF/D (V) = Volume of oxygen injected per day
PSI (M) = Measured pressure
PSIa (P) = Pressure converted to atmospheric pressure.
n = PV/RT = Mass of Oxygen (lbs)
Temperature = Degrees Rankine
R = Individual Gas Constant = 48.24 ft/T
1 lb-mole of oxygen=32 lbm

System Operating Specs
Total of 6 injection banks
Oxygen is injected for 13 minutes during each injection cycle
Each Injection bank operates for 4 injection cycles per day
Each injection point injects oxygen for 52 min per day (13 min per cycle * 4 Cycles)

Example
Bank 1 starts at 7AM

Bank 1 finishes injection at 713AM
System is recharging 713AM to 800AM
System is recharging 813AM to 900AM
Bank 3 starts injection at 900AM
Bank 3 finishes injection at 913AM
System is recharging from 913AM to 1000AM
Bank 4 starts injection at 1000AM
Bank 4 Finishes injection at 1013AM
System is recharging from 1013AM to 1100PM
Bank 5 starts injection at 1100AM

Bank 5 finishes injection at 1113AM
System is recharging from 1113AM to 1200PM
Bank 6 starts injection at 1200PM
System is recharging from 1213PM to 100PM
(Keep repeating cycle for course of day)

			7/28/2021						8/31/2021						10/1/2021					
		O2%	88.2						86.2						84.3					
		R	48.24						48.24						48.24					
		Temp R (T)	654						643						639					
		System Hours																		
		Depth	SCFH (M)	SCFH (C*)	CF/D (V)	PSI (M)	PSIa (P)	n=PV/RT lbs O2	SCFH (M)	SCFH (C*)	CF/D (V)	PSI (M)	PSIa (P)	n=PV/RT lbs O2	SCFH (M)	SCFH (C*)	CF/D (V)	PSI (M)	PSIa (P)	n=PV/RT lbs O2
Injection Bank 1	Point 1D	32	15	16.068	13.925	8.0	22.7	1.273	27	28.278	24.507	7.0	21.7	2.128	40	42.847	37.134	8.0	22.7	3.320
	Point 1	24	23	23.241	20.142	5.5	20.2	1.638	25	25.262	21.894	5.5	20.2	1.770	31	31.325	27.148	5.5	20.2	2.160
	Point 2D	27	25	27.073	23.463	8.5	23.2	2.191	28	30.321	26.279	8.5	23.2	2.440	30	32.135	27.851	8.0	22.7	2.490
	Point 2	20	13	12.973	11.243	5.0	19.7	0.892	23	22.951	19.891	5.0	19.7	1.568	41	40.913	35.458	5.0	19.7	2.751
	Point 3D	30	12	12.995	11.262	8.5	23.2	1.052	23	24.907	21.586	8.5	23.2	2.004	45	48.731	42.234	8.5	23.2	3.859
	Point 3	23	11	10.977	9.513	5.0	19.7	0.754	24	23.949	20.756	5.0	19.7	1.636	46	45.903	39.782	5.0	19.7	3.086
	Point 4D	30	12	12.854	11.140	8.0	22.7	1.018	23	24.637	21.352	8.0	22.7	1.940	50	53.559	46.418	8.0	22.7	4.149
	Point 4	23	14	13.970	12.108	5.0	19.7	0.960	20	19.958	17.297	5.0	19.7	1.364	50	49.894	43.242	5.0	19.7	3.355
	Total Oxygen Injected per Day (lbs)		**9.778**						**14.849**						**25.169**					
		Depth	SCFH (M)	SCFH (C*)	CF/D (V)	PSI (M)	PSIa (P)	n=PV/RT lbs O2	SCFH (M)	SCFH (C*)	CF/D (V)	PSI (M)	PSIa (P)	n=PV/RT lbs O2	SCFH (M)	SCFH (C*)	CF/D (V)	PSI (M)	PSIa (P)	n=PV/RT lbs O2
Injection Bank 2	Point 5	23	28	27.584	23.906	4.5	19.2	1.848	23	22.658	19.637	4.5	19.2	1.509	31	30.539	26.468	4.5	19.2	2.001
	Point 5D	30	21	22.495	19.495	8.0	22.7	1.782	19	20.352	17.639	8.0	22.7	1.602	40	42.847	37.134	8.0	22.7	3.320
	Point 6D	29	21	21.994	19.061	7.0	21.7	1.665	20	20.946	18.154	7.0	21.7	1.576	39	41.776	36.206	8.0	22.7	3.237
	Point 6	22	17	16.528	14.324	4.0	18.7	1.078	16	15.556	13.482	4.0	18.7	1.009	42	41.376	35.859	4.5	19.2	2.711
	Point 7D	28	16	17.139	14.854	8.0	22.7	1.357	16	17.139	14.854	8.0	22.7	1.349	45	48.203	41.776	8.0	22.7	3.735
	Point 7	22	26	25.614	22.199	4.5	19.2	1.716	24	23.643	20.491	4.5	19.2	1.574	30	29.554	25.614	4.5	19.2	1.937
	Point 8D	30	29	31.064	26.922	8.0	22.7	2.460	23	24.907	21.586	8.5	23.2	2.004	31	33.930	29.406	9.0	23.7	2.745
	Point 8	22	19	18.718	16.222	4.5	19.2	1.254	15	14.968	12.973	5.0	19.7	1.023	40	40.419	35.030	5.5	20.2	2.787
	Total Oxygen Injected per Day (lbs)		**13.160**						**11.647**						**22.471**					
		Depth	SCFH (M)	SCFH (C*)	CF/D (V)	PSI (M)	PSIa (P)	n=PV/RT lbs O2	SCFH (M)	SCFH (C*)	CF/D (V)	PSI (M)	PSIa (P)	n=PV/RT lbs O2	31	SCFH (C*)	CF/D (V)	PSI (M)	PSIa (P)	n=PV/RT lbs O2
Injection Bank 3	Point 9D	30	22	24.332	21.088	9.5	24.2	2.054	20	22.120	19.171	9.5	24.2	1.857	37	40.922	35.466	9.5	24.2	3.380
	Point 9	21	19	18.718	16.222	4.5	19.2	1.254	18	17.733	15.368	4.5	19.2	1.181	40	40.419	35.030	5.5	20.2	2.787
	Point 10	22	17	16.747	14.514	4.5	19.2	1.122	18	17.733	15.368	4.5	19.2	1.181	40	40.419	35.030	5.5	20.2	2.787
	Point 10D	30	16	17.327	15.016	8.5	23.2	1.402	20	21.658	18.770	8.5	23.2	1.743	39	41.776	36.206	8.0	22.7	3.237
	Point 11D	25	16	17.139	14.854	8.0	22.7	1.357	15	16.068	13.925	8.0	22.7	1.265	38	40.705	35.277	8.0	22.7	3.154
	Point 11	17	15	14.387	12.469	3.5	18.2	0.914	16	15.556	13.482	4.0	18.7	1.009	40	38.889	33.704	4.0	18.7	2.482
	Point 12D	24	17	18.210	15.782	8.0	22.7	1.442	21	22.741	19.709	8.5	23.2	1.830	40	43.316	37.541	8.5	23.2	3.430
	Point 12	16	17	16.747	14.514	4.5	19.2	1.122	19	18.718	16.222	4.5	19.2	1.246	40	40.419	35.030	5.5	20.2	2.787
	Total Oxygen Injected per Day (lbs)		**10.668**						**11.311**						**24.042**					
		Depth	SCFH (M)	SCFH (C*)	CF/D (V)	PSI (M)	PSIa (P)	n=PV/RT lbs O2	SCFH (M)	SCFH (C*)	CF/D (V)	PSI (M)	PSIa (P)	n=PV/RT lbs O2	SCFH (M)	SCFH (C*)	CF/D (V)	PSI (M)	PSIa (P)	n=PV/RT lbs O2
Injection Bank 4	Point 13D	23	30	32.135	27.851	8.0	22.7	2.545	21	22.495	19.495	8.0	22.7	1.771	32	34.278	29.707	8.0	22.7	2.656
	Point 13	16	56	55.882	48.431	5.0	19.7	3.841	15	14.777	12.807	4.5	19.2	0.984	42	41.376	35.859	4.5	19.2	2.711
	Point 14	15	40	38.889	33.704	4.0	18.7	2.537	19	18.718	16.222	4.5	19.2	1.246	50	50.524	43.787	5.5	20.2	3.483
	Point 14D	20	20	21.186	18.361	7.5	22.2	1.641	19	20.127	17.443	7.5	22.2	1.550	40	42.847	37.134	8.0	22.7	3.320
	Point 15D	19	17	17.598	15.252	6.5	21.2	1.302	19	19.899	17.246	7.0	21.7	1.498	50	53.559	46.418	8.0	22.7	4.149
	Point 15	14	32	31.932	27.675	5.0	19.7	2.195	14	14.147	12.260	5.5	20.2	0.991	56	56.586	49.042	5.5	20.2	3.901
	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Total Oxygen Injected per Day (lbs)		**14.061**						**8.040**						**20.220**					
		Depth	SCFH (M)	SCFH (C*)	CF/D (V)	PSI (M)	PSIa (P)	n=PV/RT lbs O2	SCFH (M)	SCFH (C*)	CF/D (V)	PSI (M)	PSIa (P)	n=PV/RT lbs O2	SCFH (M)	SCFH (C*)	CF/D (V)	PSI (M)	PSIa (P)	n=PV/RT lbs O2
Injection Bank 5	Point 16D	14	22	24.582	21.305	10.0	24.7	2.118	25	27.650	23.963	9.5	24.2	2.321	39	43.134	37.383	9.5	24.2	3.563
	Point 16	8	30	28.774	24.938	3.5	18.2	1.827	40	37.835	32.790	3.0	17.7	2.323	55	52.753	45.719	3.5	18.2	3.277
	Point 17	13	40	39.406	34.152	4.5	19.2	2.640	40	39.406	34.152	4.5	19.2	2.624	41	40.391	35.005	4.5	19.2	2.647
	Point 17D	18	18	19.068	16.525	7.5	22.2	1.477	20	21.186	18.361	7.5	22.2	1.631	41	43.432	37.641	7.5	22.2	3.291
	Point 18D	25	21	22.246	19.280	7.5	22.2	1.723	26	27.542	23.870	7.5	22.2	2.121	41	43.432	37.641	7.5	22.2	3.291
	Point 18	19	36	35.465	30.736	4.5	19.2	2.376	37	35.973	31.176	4.0	18.7	2.333	51	50.242	43.543	4.5	19.2	3.292
	Point 19	19	37	36.450	31.590	4.5	19.2	2.442	36	35.465	30.736	4.5	19.2	2.362	55	54.183	46.958	4.5	19.2	3.551
	Point 19D	25	22	23.041	19.969	7.0	21.7	1.744	25	26.183	22.692	7.0	21.7	1.971	42	43.987	38.122	7.0	21.7	3.258
	Total Oxygen Injected per Day (lbs)		**16.347**						**17.684**						**26.168**					
		Depth	SCFH (M)*	SCFH (C*)	CF/D (V)	PSI (M)*	PSIa (P)	n=PV/RT lbs O2	SCFH (M)*	SCFH (C*)	CF/D (V)	PSI (M)*	PSIa (P)	n=PV/RT lbs O2	SCFH (M)*	SCFH (C*)	CF/D (V)	PSI (M)*	PSIa (P)	n=PV/RT lbs O2
Injection Bank 6	Point 20D	25	20	21.186	18.361	7.5	22.2	1.641	31	32.467	28.138	7.0	21.7	2.443	32	33.898	29.378	7.5	22.2	2.568
	Point 20	19	33	32.084	27.806	4.0	18.7	2.093	45	43.750	37.917	4.0	18.7	2.837	50	48.612	42.130	4.0	18.7	3.103
	Point 21	20	22	21.954	19.026	5.0	19.7	1.509	32	31.932	27.675	5.0	19.7	2.182	31	30.935	26.810	5.0	19.7	2.080
	Point 21D	29	19	20.352	17.639	8.0	22.7	1.612	30	31.779	27.542	7.5	22.2	2.447	36	38.135	33.051	7.5	22.2	2.889
	Point 22	22	18	17.962	15.567	5.0	19.7	1.235	32	31.525	27.321	4.5	19.2	2.099	31	30.539	26.468	4.5	19.2	2.001
	Point 22D	28	25	26.779	23.209	8.0	22.7	2.121	28	29.993	25.994	8.0	22.7	2.361	30	32.135	27.851	8.0	22.7	2.490
	Point 23	18	20	20.209	17.515	5.5	20.2	1.424	31	31.325	27.148	5.5	20.2	2.195	31	31.325	27.148	5.5	20.2	2.160
	Point 23D	29	14	15.323	13.280	9.0	23.7	1.267	30	32.836	28.457	9.0	23.7	2.699	30	32.836	28.457	9.0	23.7	2.656
	Total Oxygen Injected per Day (lbs)		**11.635**						**16.564**						**17.291**					
	System Total Per Day (lbs)		**75.65**						**80.10**						**135.36**					

Appendix A. Operational Data
Halesite Oxygen Injection System
Halesite Former MGP Site
Operations, Maintenance, and Monitoring Program - Q4 2020

	Operational Days		Oxygen Injected Per Month
Month 1	Oct-20	29	3354
Month 2-3	Nov. - Dec,	33	4493

Total Operational Days Oct - Dec. 2020	62	
Total Oxygen injected during this period (lbs)		7,848
Weight of Oxygen Injected through Q3 2020 (lbs)		475,696
Running total of Injected Oxygen (lbs)		483,544

Notes:
SCFH (M) = Measured flow rate
SCFH (C*) = Flow rate converted for oxygen (Flow meters are calibrated for air)
CF/D (V) = Volume of oxygen injected per day
PSI (M) = Measured pressure
PSIa (P) = Pressure converted to atmospheric pressure.
n = PV/RT = Mass of Oxygen (lbs)
Temperature = Degrees Rankine
R = Individual Gas Constant = 48.24 ft/T
1 lb-mole of oxygen=32 lbm

System Operating Specs
Total of 6 injection banks
Oxygen is injected for 13 minutes during each injection cycle
Each Injection bank operates for 4 injection cycles per day
Each injection point injects oxygen for 52 min per day (13 min per cycle * 4 Cycles)

Example
Bank 1 starts at 7AM

Bank 1 finishes injection at 713AM
System is recharging 713AM to 800AM
System is recharging 813AM to 900AM
Bank 3 starts injection at 900AM
Bank 3 finishes injection at 913AM
System is recharging from 913AM to 1000AM
Bank 4 starts injection at 1000AM
Bank 4 Finishes injection at 1013AM
System is recharging from 1013AM to 1100PM
Bank 5 starts injection at 1100AM

Bank 5 finishes injection at 1113AM
System is recharging from 1113AM to 1200PM
Bank 6 starts injection at 1200PM
System is recharging from 1213PM to 100PM
(Keep repeating cycle for course of day)

			10/27/2020						1/1/2021					
		O2%	81.0						90.6					
		R	48.24						48.24					
		Temp R (T)	646						646					
		System Hours												
		Depth	SCFH (M)	SCFH (C*)	CF/D (V)	PSI (M)	PSIa (P)	n=PV/RT lbs O2	SCFH (M)	SCFH (C*)	CF/D (V)	PSI (M)	PSIa (P)	n=PV/RT lbs O2
Injection Bank 1	Point 1D	32	40	44.535	38.597	7.5	22.2	3.207	37	41.195	35.703	7.5	22.2	3.318
	Point 1	24	32	33.562	29.087	5.0	19.7	2.145	38	39.855	34.541	5.0	19.7	2.849
	Point 2D	27	31	34.902	30.248	8.0	22.7	2.570	40	45.527	39.457	8.5	23.2	3.832
	Point 2	20	41	42.453	36.792	4.5	19.2	2.644	41	43.002	37.268	5.0	19.7	3.074
	Point 3D	30	40	45.034	39.030	8.0	22.7	3.316	40	45.034	39.030	8.0	22.7	3.709
	Point 3	23	40	41.417	35.895	4.5	19.2	2.580	39	40.904	35.450	5.0	19.7	2.924
	Point 4D	30	40	44.535	38.597	7.5	22.2	3.207	40	44.535	38.597	7.5	22.2	3.587
	Point 4	23	41	42.453	36.792	4.5	19.2	2.644	40	41.953	36.359	5.0	19.7	2.999
Total Oxygen Injected per Day (lbs)			**22.313**						**26.292**					
		Depth	SCFH (M)	SCFH (C*)	CF/D (V)	PSI (M)	PSIa (P)	n=PV/RT lbs O2	SCFH (M)	SCFH (C*)	CF/D (V)	PSI (M)	PSIa (P)	n=PV/RT lbs O2
Injection Bank 2	Point 5	23	30	31.063	26.921	4.5	19.2	1.935	35	36.240	31.408	4.5	19.2	2.525
	Point 5D	30	31	34.902	30.248	8.0	22.7	2.570	37	41.657	36.102	8.0	22.7	3.431
	Point 6D	29	33	36.326	31.482	7.0	21.7	2.557	33	36.326	31.482	7.0	21.7	2.860
	Point 6	22	34	34.743	30.111	4.0	18.7	2.108	34	34.743	30.111	4.0	18.7	2.357
	Point 7D	28	40	44.535	38.597	7.5	22.2	3.207	35	39.405	34.151	8.0	22.7	3.245
	Point 7	22	30	30.656	26.568	4.0	18.7	1.860	32	32.699	28.340	4.0	18.7	2.219
	Point 8D	30	29	32.650	28.296	8.0	22.7	2.404	32	36.027	31.224	8.0	22.7	2.967
	Point 8	22	34	35.205	30.511	4.5	19.2	2.193	37	38.806	33.632	5.0	19.7	2.774
Total Oxygen Injected per Day (lbs)			**18.833**						**22.378**					
		Depth	SCFH (M)	SCFH (C*)	CF/D (V)	PSI (M)	PSIa (P)	n=PV/RT lbs O2	SCFH (M)	SCFH (C*)	CF/D (V)	PSI (M)	PSIa (P)	n=PV/RT lbs O2
Injection Bank 3	Point 9D	30	33	38.361	33.246	9.5	24.2	3.011	30	34.874	30.224	9.5	24.2	3.062
	Point 9	21	40	41.417	35.895	4.5	19.2	2.580	34	35.205	30.511	4.5	19.2	2.452
	Point 10	22	39	40.382	34.997	4.5	19.2	2.515	34	34.743	30.111	4.0	18.7	2.357
	Point 10D	30	37	42.113	36.498	8.5	23.2	3.169	34	38.698	33.539	8.5	23.2	3.257
	Point 11D	25	39	43.908	38.054	8.0	22.7	3.233	34	37.855	32.808	7.5	22.2	3.049
	Point 11	17	36	36.787	31.882	4.0	18.7	2.231	35	35.765	30.996	4.0	18.7	2.427
	Point 12D	24	40	45.034	39.030	8.0	22.7	3.316	33	37.153	32.199	8.0	22.7	3.060
	Point 12	16	37	38.311	33.203	4.5	19.2	2.386	32	33.134	28.716	4.5	19.2	2.308
Total Oxygen Injected per Day (lbs)			**22.442**						**21.973**					
		Depth	SCFH (M)	SCFH (C*)	CF/D (V)	PSI (M)	PSIa (P)	n=PV/RT lbs O2	SCFH (M)	SCFH (C*)	CF/D (V)	PSI (M)	PSIa (P)	n=PV/RT lbs O2
Injection Bank 4	Point 13D	23	31	34.902	30.248	8.0	22.7	2.570	28	31.524	27.321	8.0	22.7	2.596
	Point 13	16	30	31.063	26.921	4.5	19.2	1.935	34	35.205	30.511	4.5	19.2	2.452
	Point 14	15	46	48.246	41.813	5.0	19.7	3.083	50	52.441	45.449	5.0	19.7	3.748
	Point 14D	20	30	33.402	28.948	7.5	22.2	2.405	34	37.855	32.808	7.5	22.2	3.049
	Point 15D	19	29	31.553	27.346	6.5	21.2	2.170	52	56.577	49.034	6.5	21.2	4.352
	Point 15	14	45	47.792	41.420	5.5	20.2	3.132	34	36.110	31.295	5.5	20.2	2.647
	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total Oxygen Injected per Day (lbs)			**15.295**						**18.845**					
		Depth	SCFH (M)	SCFH (C*)	CF/D (V)	PSI (M)	PSIa (P)	n=PV/RT lbs O2	SCFH (M)	SCFH (C*)	CF/D (V)	PSI (M)	PSIa (P)	n=PV/RT lbs O2
Injection Bank 5	Point 16D	14	40	46.498	40.299	9.5	24.2	3.650	37	43.011	37.276	9.5	24.2	3.777
	Point 16	8	50	50.405	43.684	3.5	18.2	2.976	52	51.696	44.803	3.0	17.7	3.320
	Point 17	13	50	51.093	44.280	4.0	18.7	3.099	47	48.665	42.176	4.5	19.2	3.390
	Point 17D	18	37	41.195	35.703	7.5	22.2	2.967	32	35.225	30.528	7.0	21.7	2.773
	Point 18D	25	35	38.527	33.390	7.0	21.7	2.712	32	35.628	30.878	7.5	22.2	2.870
	Point 18	19	51	52.115	45.166	4.0	18.7	3.161	46	47.005	40.738	4.0	18.7	3.189
	Point 19	19	0	0.000	0.000	4.5	19.2	0.000	49	50.736	43.971	4.5	19.2	3.534
	Point 19D	25	40	44.031	38.160	7.0	21.7	3.099	31	33.729	29.232	6.5	21.2	2.594
Total Oxygen Injected per Day (lbs)			**21.665**						**25.448**					
		Depth	SCFH (M)*	SCFH (C*)	CF/D (V)	PSI (M)*	PSIa (P)	n=PV/RT lbs O2	SCFH (M)*	SCFH (C*)	CF/D (V)	PSI (M)*	PSIa (P)	n=PV/RT lbs O2
Injection Bank 6	Point 20D	25	30	33.023	28.620	7.0	21.7	2.325	36	39.628	34.344	7.0	21.7	3.120
	Point 20	19	41	41.896	36.310	4.0	18.7	2.541	50	51.093	44.280	4.0	18.7	3.467
	Point 21	20	30	31.465	27.269	5.0	19.7	2.011	38	39.855	34.541	5.0	19.7	2.849
	Point 21D	29	30	33.402	28.948	7.5	22.2	2.405	36	40.082	34.738	7.5	22.2	3.229
	Point 22	22	30	31.063	26.921	4.5	19.2	1.935	36	37.275	32.305	4.5	19.2	2.597
	Point 22D	28	22	24.495	21.229	7.5	22.2	1.764	36	40.531	35.127	8.0	22.7	3.338
	Point 23	18	32	33.562	29.087	5.0	19.7	2.145	35	36.709	31.814	5.0	19.7	2.624
	Point 23D	29	27	30.731	26.634	8.5	23.2	2.313	36	41.414	35.892	9.0	23.7	3.561
Total Oxygen Injected per Day (lbs)			**15.125**						**21.223**					
System Total Per Day (lbs)			**115.67**						**136.16**					