

From: Terefe.Mazengia@ghd.com <Terefe.Mazengia@ghd.com>
Sent: Friday, October 26, 2018 10:01 AM
To: Crawford, Bruce <CRAWFOBD@dhec.sc.gov>
Cc: Rahn, Regan D. <RAHNRD@dhec.sc.gov>; cctofiling@croworld.com
Subject: 077150 UIC Permit Application ~COR-077150~

Email Scanned

Good morning Bruce,

Please find attached an underground injection control (UIC) permit application for injection of sodium persulfate activated with sodium hydroxide at the former Bluewater Thermal Solutions Site in Fountain Inn, South Carolina. The Site is under the DHEC voluntary cleanup program; Regan Rahn who is also cc'ed here is the DHEC project manager.

Please let me or Regan know if you have any specific question about the site. I am available for any questions on the permit application.

Thank you

Terefe Mazengia, PG
Senior Geologist

GHD

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October 26, 2018

Reference No. 077150

Mr. Bruce Crawford
South Carolina Department of Health and Environmental Control
Bureau of Land and Waste Management
2600 Bull Street
Columbia, South Carolina 29201

Dear Mr. Crawford:

**Re: Underground Injection Control Permit Application
 Former Bluewater Thermal Solutions LLC
 VCC # 14-6226
 Fountain Inn, South Carolina**

In situ groundwater treatment consisting of groundwater chemical injection is a component of the proposed Remedial Action (RA) for the Former Bluewater Thermal Solutions in Fountain Inn, South Carolina (Site). This letter is to request an underground injection control (UIC) permit to implement the proposed in situ groundwater treatment. Further description of the proposed injection activities are described in the following sections. A Site location map is presented as Figure B-1.

1. Introduction

Bench scale testing was performed at the GHD Innovative Technology Group laboratory to determine the effectiveness, optimal oxidant and dosage for in situ chemical oxidation (ISCO) treatment of the chlorinated volatile organic compounds (CVOC) impacted groundwater. The bench scale study was conducted using representative groundwater samples collected from monitoring well MW-1 and soil samples collected from the immediate vicinity of MW-1 below the water table. A Bench Scale Study Report which summarizes the procedures of the bench scale study, type and dose of oxidant and proposed injection was prepared after the study. The report was submitted to the South Carolina Department of Health and Environmental Control (DHEC) on October 25, 2018.

2. In Situ Chemical Oxidation Injection

The ISCO injection will consist of injection of 25% (w/v) sodium persulfate solution activated by 25% (w/v) sodium hydroxide into thirteen (13) temporary injection points using direct push technology (DPT). Optimal pressure will be applied to inject the solution into each injection location. Each temporary injection point will receive approximately 2680 gallons of 25% sodium persulfate and 800 gallons of sodium hydroxide. Proposed injection locations for the ISCO injection are shown on Figure B-2.

An UIC Permit Application (DHEC 2502) form for the groundwater ISCO injection is enclosed as Appendix A. Additional information regarding the injection is included in Attachments A through K, which are provided as Appendix B.



3. Schedule

The chemical injection described above is tentatively scheduled to begin the week of December 4, 2018 pending SCDHEC approval.

We appreciate the input, which will be provided by your unit during the review of this permit application. Please contact the undersigned or Mr. Richard Scherer with Lippes Mathias Wexler Friedman LLP for any comments or questions on the report.

Sincerely,

GHD

A handwritten signature in blue ink, appearing to read "Terefe Mazengia".

Terefe Mazengia, PG.


TM/tb/1

Encl.

cc: Regan Rahn, SCDHEC
Richard Scherer, Lippes Mathias Wexler Friedman, LLP
Steven Wilsey, GHD

Appendix A

UIC Permit Application - DHEC

Form I UIC	 Underground Injection Control Permit Application Ground-Water Protection Division (Collected under the Authority of Title 48 Chapter 1 of the 1976 South Carolina Code of Laws)	I. EPA ID NUMBER		
			T/A	C
		U		

Read attached instructions before starting.

For Official Use Only

Application Approved month day year	Date Received month day year	Permit Well Number

Comments

II. Facility Name and Address	III. Owner/Operator and Address
Facility Name Former Bluewater Thermal Solutions Site	Owner/Operator Name Gibraltar Industries C/O Lippes Mathias Wexler Friedman LLP
Street Address 100 Hunts Bridge Rd	Street Address 50 Fountain Plaza Suite 1700
City State Zip Code	City State Zip Code
Fountain Inn South Carolina 29644	Buffalo New York 14202

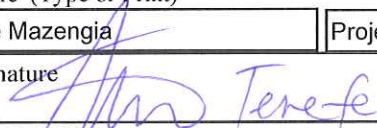
IV. Ownership Status (Select One)	V. SIC Codes
<input type="checkbox"/> A. Federal <input type="checkbox"/> B. State <input checked="" type="checkbox"/> C. Private <input type="checkbox"/> D. Public <input type="checkbox"/> E. Other (Explain)	

VI. Well Status (Select A, B or C)
<input type="checkbox"/> A. Operating Date Started (MM/DD/YYYY) <input type="checkbox"/> B. Modification/Conversion <input checked="" type="checkbox"/> C. Proposed

VII. Type of Permit Requested - Class and Type of Well (see reverse)			
A. Class(es) enter code(s) V.A	B. Type(s) enter code(s) I	C. If class is "other" or type is code 'Y', explain	D. Number of Wells per type 13 Direct Push

VIII. Location of Wells or Approximate Center of field or Project									
C	A. Latitude					B. Longitude			
I	Deg 34	Min 40	Sec 12.5			Deg 82	Min 10	Sec 49.2	

IX. Attachments
Complete the following questions on a separate sheet(s) and number accordingly; see instructions for Classes II, III, and V, complete and submit on a separate sheet(s) attachments A-U as appropriate. Attach maps where required. List attachments by letter which are applicable and include with your application.

X. Certification			
I certify under penalty of law that I have personally examined and am familiar with the information submitted in this document and all attachments and that, based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the information is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of a fine and imprisonment.			
A. Name (Type or Print) Terefe Mazengia	Title Project Geologist	B. Phone No. (678) 280-2140	
C. Signature 	D. Date Signed (MM/DD/YYYY) 10/24/2018		

Appendix B

Additional Injection Information

Appendix B

Attachment A – Activity for Review

Injection of in situ chemical oxidation (ISCO) was chosen as a component of the groundwater remedy for the Site based on a bench scale study performed on soil and groundwater samples from the site. The injection of ISCO containing approximately 2680 gallons of 15 percent (%) sodium persulfate solution containing 3,580 pounds (lb) of sodium persulfate and 800 gallons of 25% sodium hydroxide will be implemented at each of the thirteen injection points. The injection will cover approximate area of 13,500 square feet within the center of the site.

An Underground Injection Control (UIC) permit is requested for installation of 13 temporary injection points for the ISCO injection. Each temporary injection point shall be advanced by DPT to an approximate depth of 30 feet below ground surface (ft bgs). Injection will be conducted at two intervals, 28 feet and 22 feet bgs. The temporary injection points will be abandoned with cement and bentonite grout mix after completion of each injection point.

Attachment B – Well Construction Details

The temporary injection points will be installed as soil borings. In the instance that the prescribed injection volume cannot be introduced continuously into the soil boring within a reasonable time frame, a one-inch outer diameter (1"-OD) polyvinyl chloride (PVC) casing may be inserted into the soil boring to maintain the annular space until the injection resumes. The schematics of injection system is shown on Figure B-3.

Appendix B

Attachment C – Operating Data

The primary intent of the ISCO injection is to reduce the groundwater contaminant mass (PCE and TCE) in the injection area. Highest groundwater concentration of tetrachloroethene (PCE) (4,100 micrograms per liter ($\mu\text{g/L}$)) was detected in a sample from monitoring well MW-1S-16 on January 17, 2018.

Sodium persulfate and sodium hydroxide solution will be injected by applying pressure into temporary injection points laid out in the vicinity of monitoring well MW-1 as shown on Figure B-2. The sodium persulfate and sodium hydroxide doses were determined based on results of the bench scale study performed on site groundwater sample. Completion of two ISCO application events and subsequent groundwater monitoring events is anticipated for completion of the proposed groundwater treatment.

Continuous pumping of the sodium persulfate/sodium hydroxide solution is anticipated during the ISCO injections. An average pressure of 10 pounds per square inch (psi) and maximum pressure of 25 psi will be supplied to the DPT injection configuration. The average pumping rate is not expected to exceed 5 gallons per minute (gal/min), and the maximum daily injection rate will not exceed 4,200 gallons per day (gal/day), assuming an average hydraulic conductivity of 0.051 foot/day.

Pre-injection groundwater analytical results from the recent sampling event are presented in Table B-1. Groundwater monitoring data collected after the first ISCO application event will be reviewed to determine the required concentration of the oxidant and where it should be applied for any subsequent events.

Attachment D – Monitoring Program

Baseline groundwater monitoring will be conducted prior to the full-scale persulfate injection and at 3-month and 6-month intervals following the injection. Groundwater monitoring will involve collection of groundwater samples from monitoring wells MW-1S-16 and MW-5S-16. Additional groundwater samples will be collected from two temporary monitoring wells which are proposed to be installed at the downgradient area prior to or during the injection. All groundwater samples will be collected in accordance with the procedures outlined in the United States Environmental Protection Agency (USEPA), Region 4 Field Branches Quality System and Technical Procedures (FBQSTP), Groundwater Sampling¹ document. Groundwater analyses will include VOCs, sulfates and field parameters.

¹ USEPA, FBQSTP, SESDPROC-301-R1.

Appendix B

Attachment E – Existing or Pending State/Federal Permits

The remedial work proposed herein is being performed pursuant to the May 2015 executed Responsible Party Voluntary Cleanup Contract 14-6226-RP.

Attachment F – Description of Business

The site is located at 100 Hunts Bridge Road, Fountain Inn, South Carolina ("Property"). The Property includes approximately 15.62 acres and is bounded generally by industrial property and Hunts Bridge Road on the north, mixed agricultural and residential property on the east, Frontage Road and 1-385 on the south, and 1A-385 on the west. The Property is identified by the County of Laurens as Tax Map Serial Number 904-08-01-001.

The Site was developed with one single story industrial building totaling 74,500 square-feet that was constructed circa 1968 and 1989. The building is divided into six sections which are designated by Building numbers. During the last reconnaissance of the site, Building 1 was shipping and receiving, Building 2 was heat treating with five active furnaces with oil pits beneath each furnace, Building 3 had two furnaces without oil pits and two vacuum furnaces, Building 4 had brazing processing, Building 5 was storage space, and Building 6 had inactive equipment and parts storage. The remaining areas of the Site include a parking lot, driveway, storage tanks, exterior storage areas, and wooded land. Bodycote occupies the Site and is a business that heat treats and conducts selective hardening to customer serviced parts. Operations include various processes such as carbon nitriding, carburizing, brazing, normalizing, hardening, tempering and annealing to materials such as AISI carbon steels, aluminum alloys, die steels, hardening steels, alloy steels, stainless steels, copper alloys and ductile iron.

Attachment G – Area of Review

For the purpose of this injection, the radius of influence is assumed to be approximately 20 feet based upon stratigraphy/lithology of the site and groundwater data. The actual radius of influence will be determined after completion of this round of injection.

Appendix B

Attachment H – Maps of Wells and Area of Review

Please refer to the following figures for each specific item (1, 2, and 3) located under the Figures Tab following Attachment K.

1. Figure B-1 – Site Location Map
2. Figure B-2 – Proposed Injection Locations
3. Figure B-3 - Schematics of Injection System
4. Figure B-4 – Groundwater Elevation Map - January 16, 2018

Attachment I – Cross Sections/Diagrams

Please refer to the following figures for each specific item (1 and 2) located under the Figures Tab following Attachment K:

1. Figure B-5 – Cross Section Location Map
2. Figure B-6 – Geologic Cross Section A-A'
3. Figure B-7 – Geologic Cross Section B-B'

Attachment J – Name and Depth of Underground Sources of Drinking Water (USDW's)

Regional Aquifer: Piedmont and Blue Ridge crystalline rock aquifer

Surficial Aquifer: Biotitic and hornblendic gneiss and migmatite aquifer – local aquifer, depths range from approximately 18 feet to 50 feet below ground surface.

Appendix B

Attachment K – Hydraulic Controls

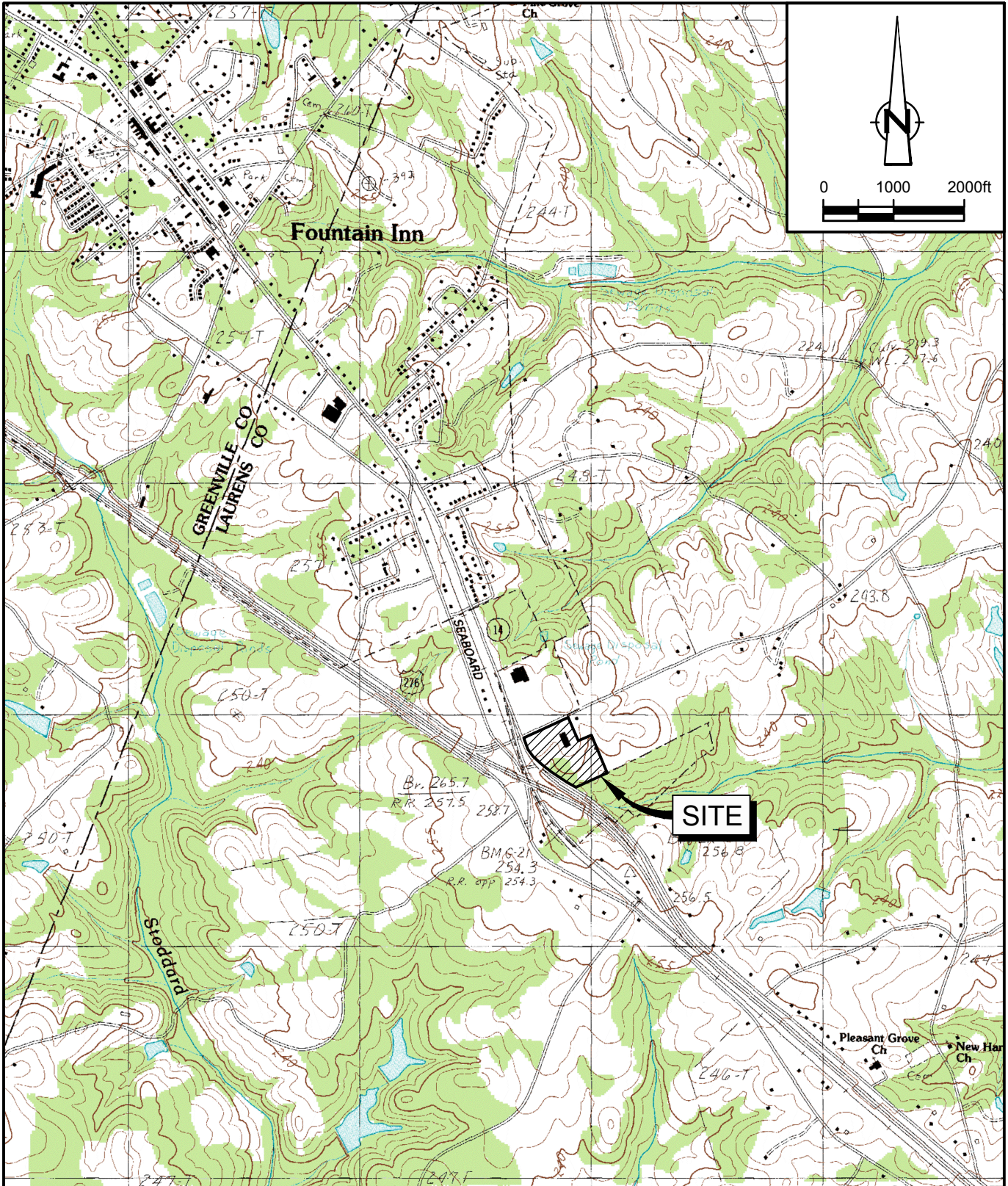
Hydrogeologic setting of the Site was evaluated using all available site-specific information and the regional available data. The two principal hydrostratigraphic units at the Site are:

- 1) Overburden Unit and
- 2) Saprolite Unit consisting of fine to medium-grained micaceous and dense sand with traces of clay and silt;

The overburden unit consists of residual clayey sand to approximately 15 feet where saprolite is encountered. The saprolite unit is mostly weathered granitic gneiss with thick bands of feldspar to approximate depth of 40 feet before transition to weathered bedrock. Groundwater in the overburden and saprolite unit at the Site occurs under water table conditions. The depth to groundwater at the Site ranges from 18 feet at the southern portion of the site to 23.5 feet near the northwestern property boundary. The horizontal hydraulic gradient in the saprolite layer is on the order of 0.01086 feet per foot (ft/ft). The average linear velocity of groundwater flow in the saprolite layer was estimated approximately 15 feet per year (ft/year).

Appendix B

Figures



SOURCE: USGS QUADRANGLE MAP: FOUNTAIN INN, SC.

figure B-1

SITE LOCATION MAP
BLUEWATER THERMAL SOLUTIONS
100 HUNTS BRIDGE ROAD
Fountain Inn, South Carolina



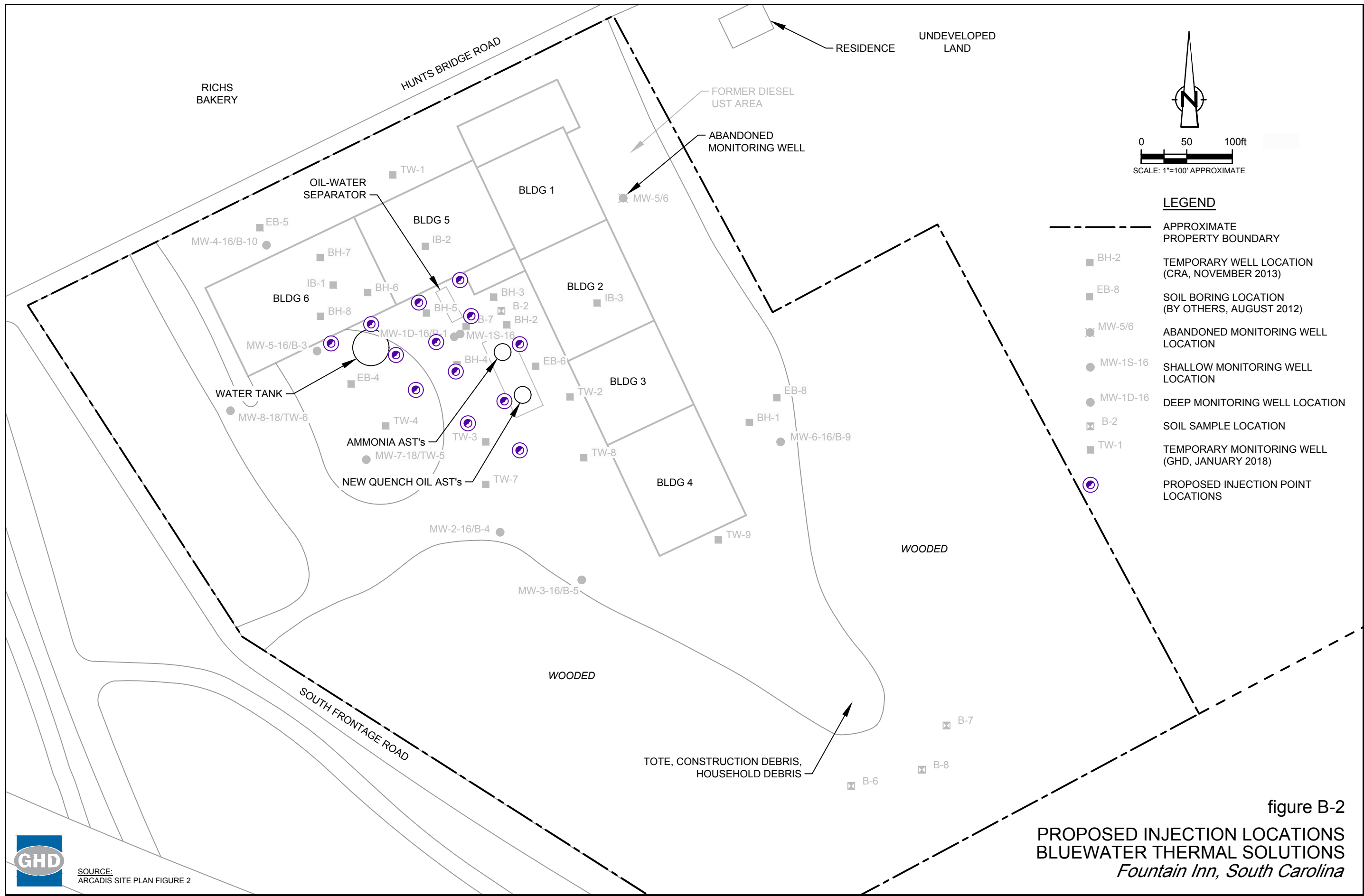


figure B-2
PROPOSED INJECTION LOCATIONS
BLUEWATER THERMAL SOLUTIONS
Fountain Inn, South Carolina



SOURCE:
 ARCADIS SITE PLAN FIGURE 2

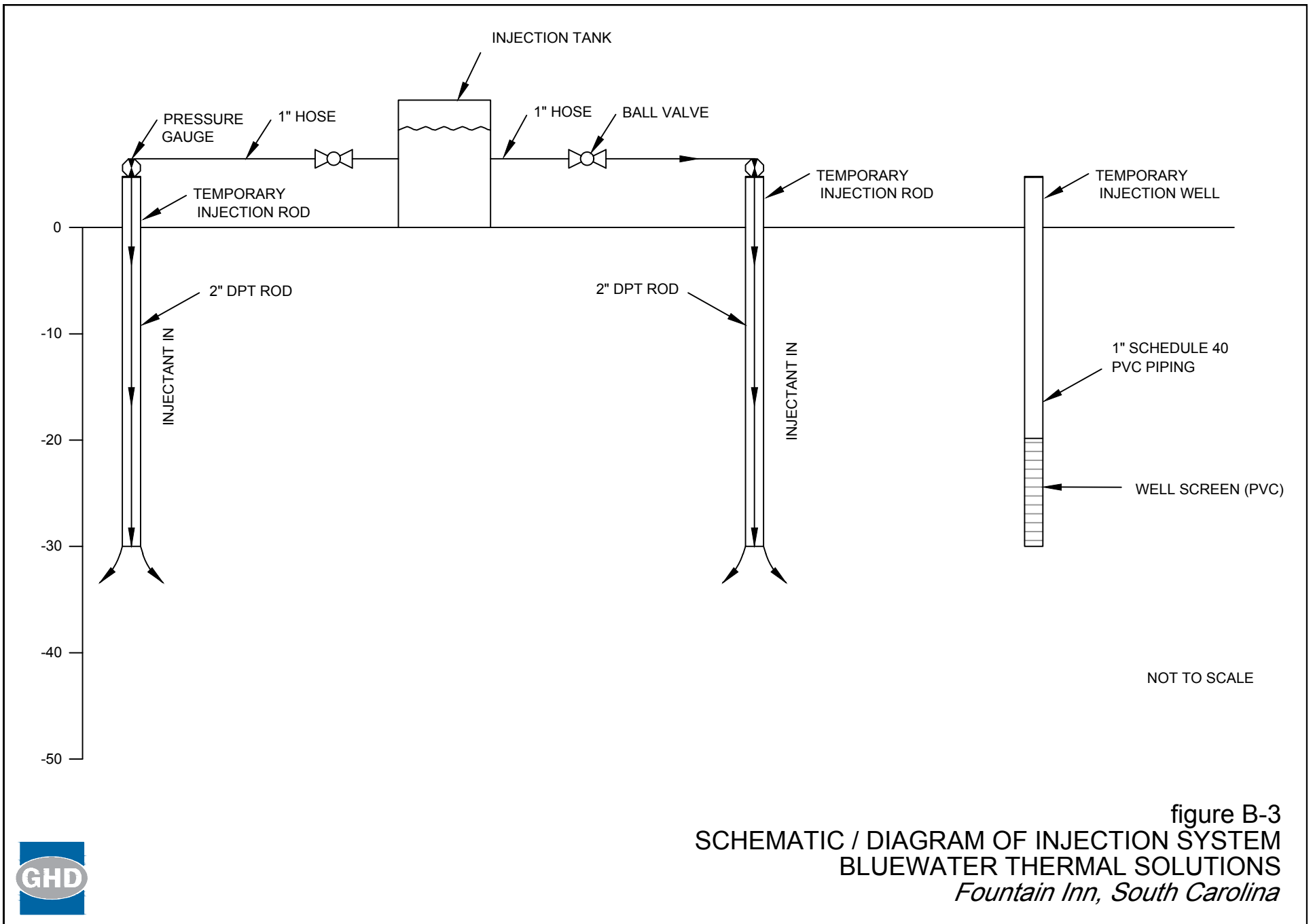
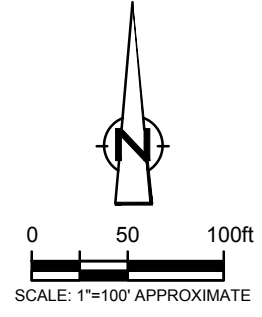
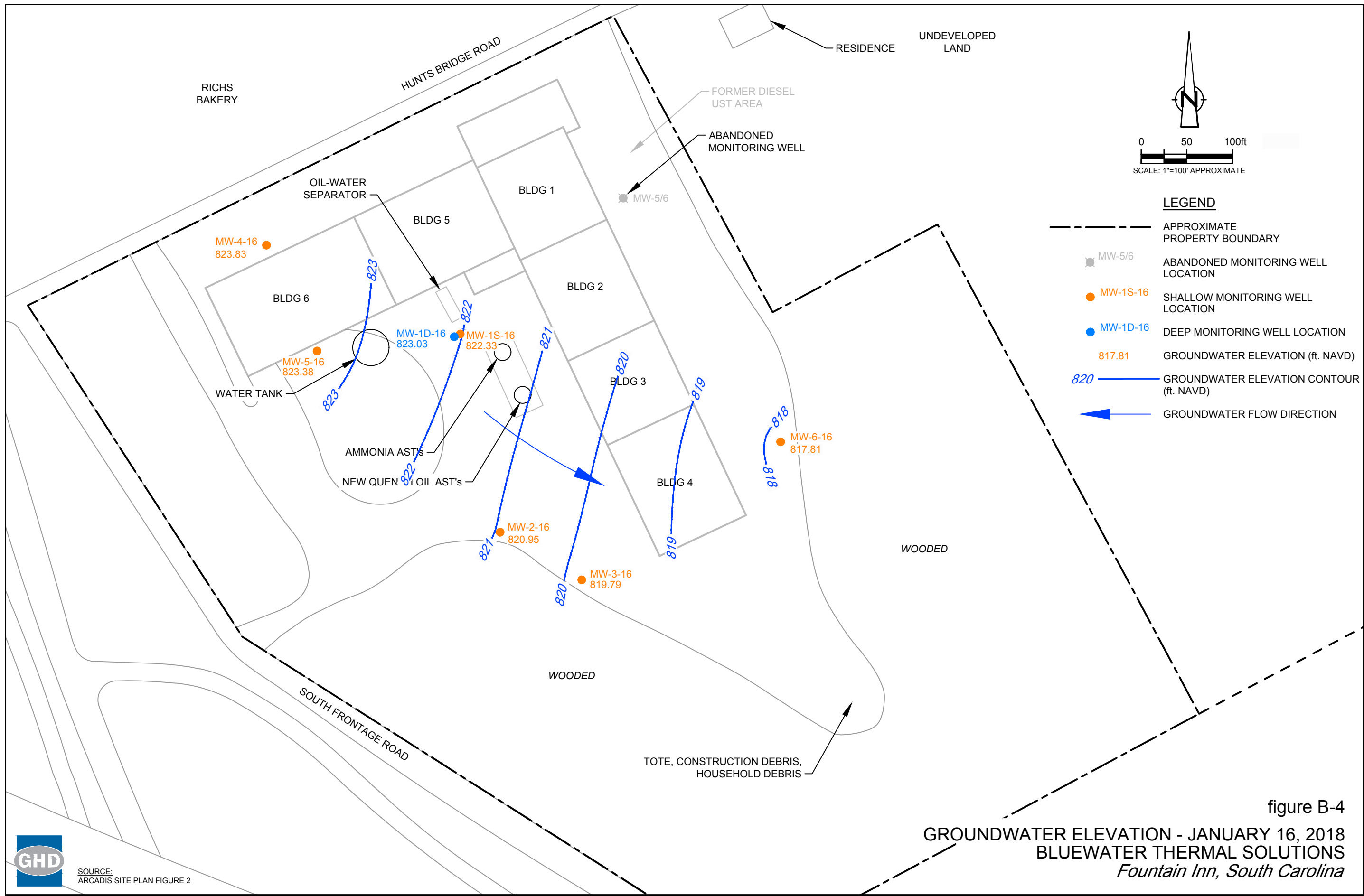


figure B-3
 SCHEMATIC / DIAGRAM OF INJECTION SYSTEM
 BLUEWATER THERMAL SOLUTIONS
Fountain Inn, South Carolina





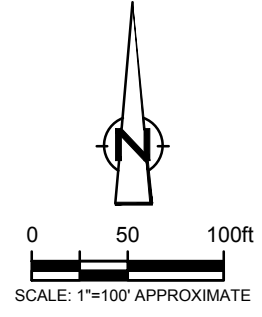
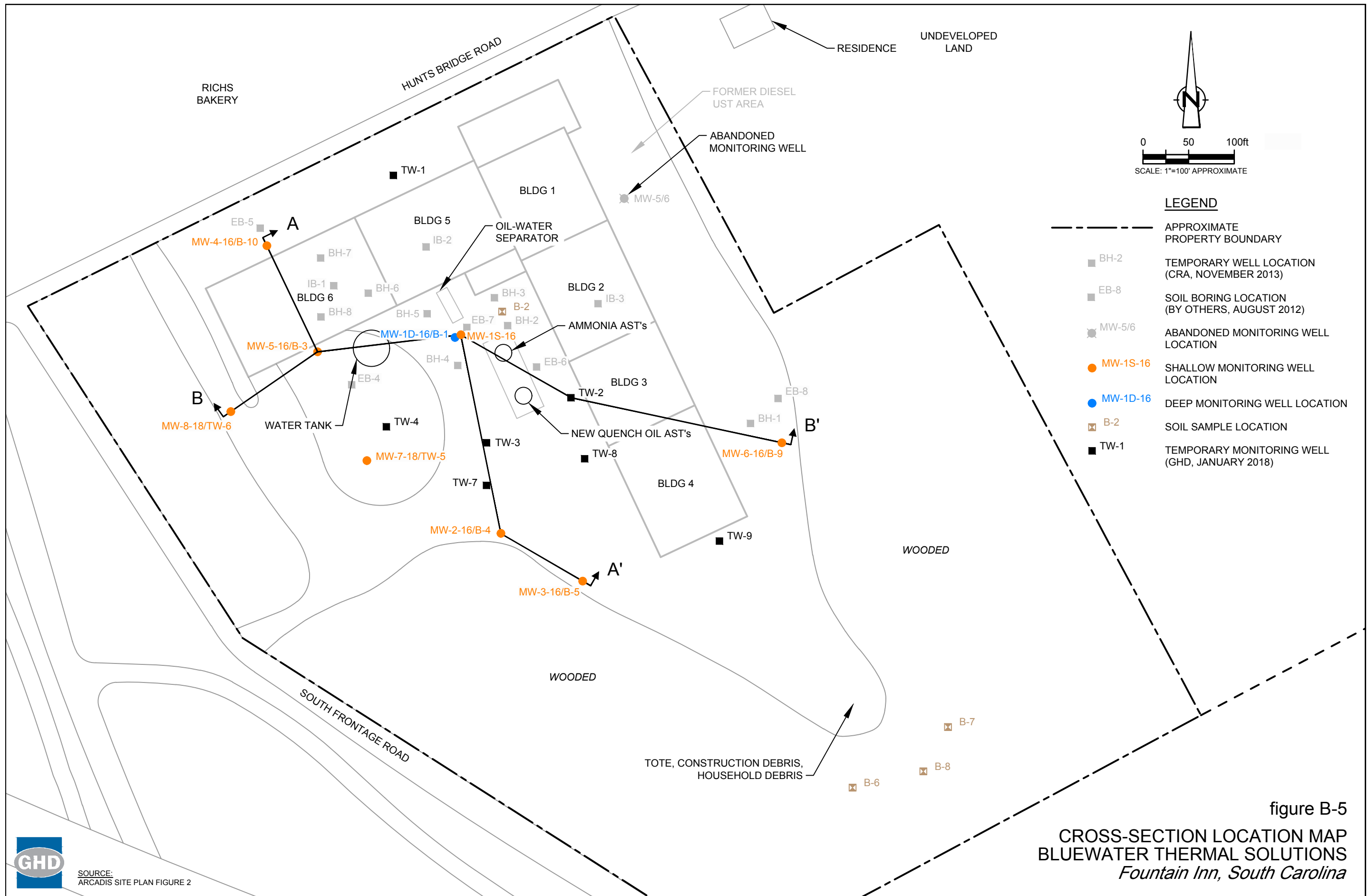
LEGEND

- APPROXIMATE PROPERTY BOUNDARY
- MW-5/6 ABANDONED MONITORING WELL LOCATION
- MW-1S-16 SHALLOW MONITORING WELL LOCATION
- MW-1D-16 DEEP MONITORING WELL LOCATION
- 817.81 GROUNDWATER ELEVATION (ft. NAVD)
- 820 GROUNDWATER ELEVATION CONTOUR (ft. NAVD)
- ← GROUNDWATER FLOW DIRECTION

figure B-4
 GROUNDWATER ELEVATION - JANUARY 16, 2018
 BLUEWATER THERMAL SOLUTIONS
 Fountain Inn, South Carolina



SOURCE:
 ARCADIS SITE PLAN FIGURE 2



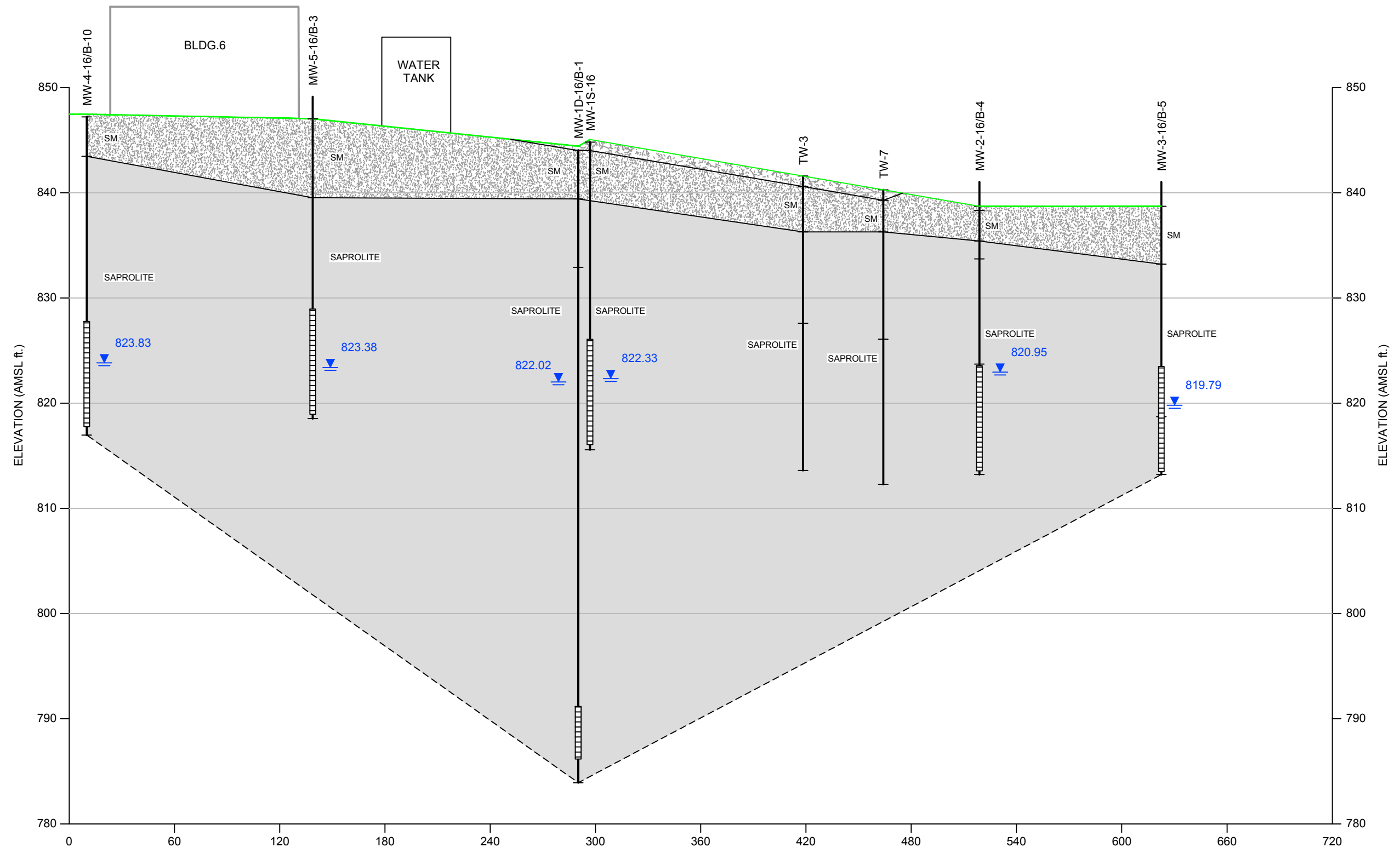
LEGEND

- APPROXIMATE PROPERTY BOUNDARY
- BH-2 TEMPORARY WELL LOCATION (CRA, NOVEMBER 2013)
- EB-8 SOIL BORING LOCATION (BY OTHERS, AUGUST 2012)
- MW-5/6 ABANDONED MONITORING WELL LOCATION
- MW-1S-16 SHALLOW MONITORING WELL LOCATION
- MW-1D-16 DEEP MONITORING WELL LOCATION
- ⊠ B-2 SOIL SAMPLE LOCATION
- TW-1 TEMPORARY MONITORING WELL (GHD, JANUARY 2018)

figure B-5
CROSS-SECTION LOCATION MAP
BLUEWATER THERMAL SOLUTIONS
Fountain Inn, South Carolina



SOURCE:
 ARCADIS SITE PLAN FIGURE 2



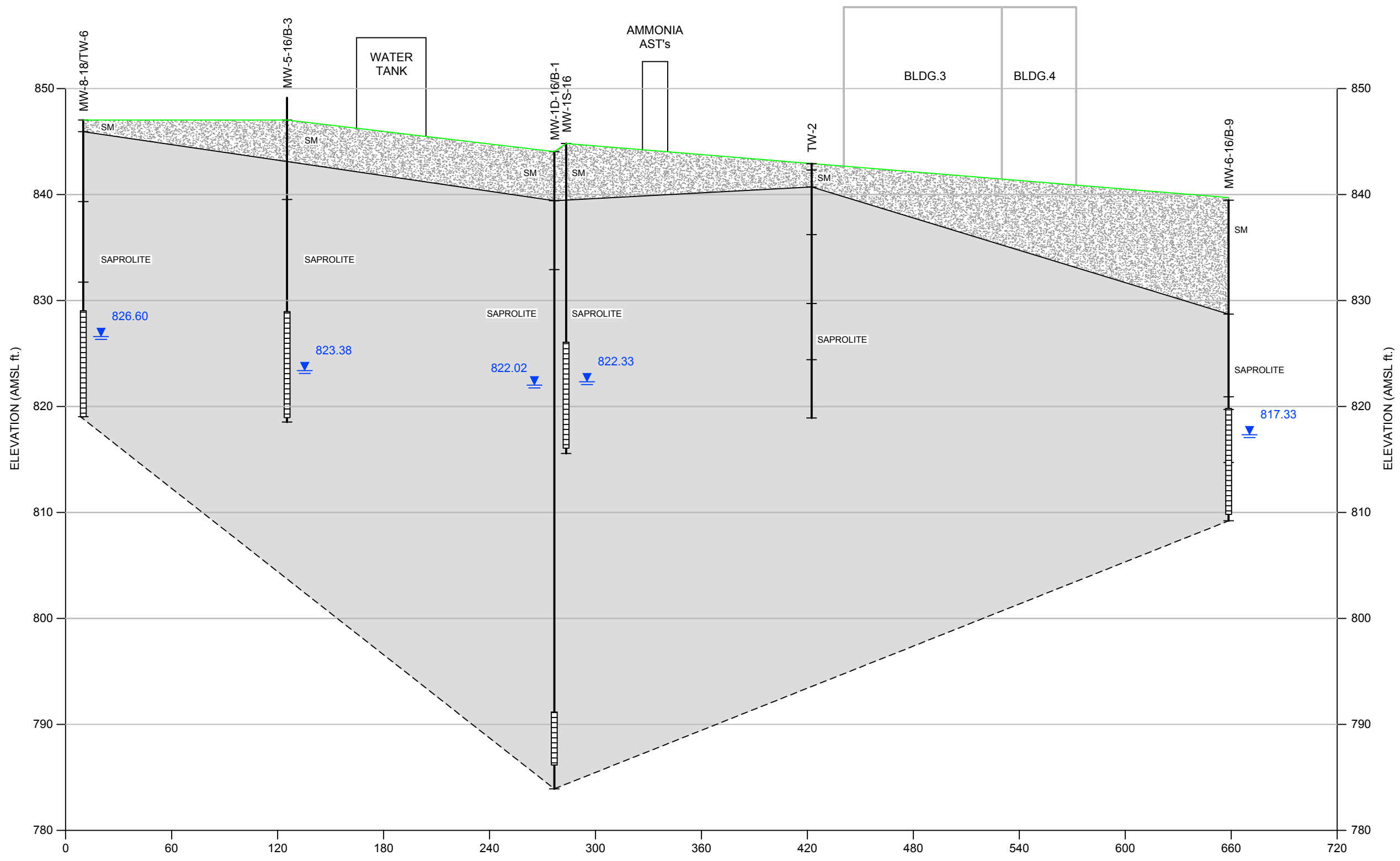
LEGEND

- WELL DESIGNATION
- GROUND SURFACE
- STRATIGRAPHIC BOUNDARY
- ▼ GROUNDWATER ELEVATION
- SCREENED INTERVAL
- BOTTOM OF BORING
- GRAVEL FILL
- SM SILT/SAND FILL
- SAPROLITE

HORIZONTAL DISTANCE 1" = 60'
 VERTICAL DISTANCE 1" = 10'
 VERTICAL EXAGGERATION 1 : 6

figure B-6
GEOLOGICAL CROSS-SECTION A-A'
BLUEWATER THERMAL SOLUTIONS
Fountain Inn, South Carolina





LEGEND

- WELL DESIGNATION
- GROUND SURFACE
- STRATIGRAPHIC BOUNDARY
- ▼ GROUNDWATER ELEVATION
- SCREENED INTERVAL
- BOTTOM OF BORING

- GRAVEL FILL
- SILT/SAND FILL
- SAPROLITE

HORIZONTAL DISTANCE 1" = 60'
 VERTICAL DISTANCE 1" = 10'
 VERTICAL EXAGGERATION 1 : 6



figure B-7
 GEOLOGICAL CROSS-SECTION B-B'
 BLUEWATER THERMAL SOLUTIONS
 Fountain Inn, South Carolina

Appendix B Table

Table B1

Groundwater Analytical Results Summary
Remedial Site Investigation
Bluewater Thermal Solution Site
Fountain Inn, South Carolina

Sample Location: Sample ID: Sample Date:	Parameters	Units	EPA MCL May 2016	EPA Tapwater May 2016	Criteria Used May 2016	MW-1D-2016	MW-1S-2016	MW-1S-2016	MW-2-2016	MW-3-2016	MW-4-2016
						GW-077150-011718-DJB-010 1/17/2018	GW-077150-011718-DJB-008 1/17/2018	GW-077150-011718-DJB-009 1/17/2018 (Duplicate)	GW-077150-011618-DJB-002 1/16/2018	GW-077150-011618-DJB-001 1/16/2018	GW-077150-011618-DJB-004 1/16/2018
	VOCs										
	1,1,1,2-Tetrachloroethane	ug/L	--	0.57	0.57	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
	1,1,1-Trichloroethane	ug/L	200	8000	200	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
	1,1,2-Trichloroethane	ug/L	5	0.28	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
	1,1-Dichloroethane	ug/L	--	2.8	2.8	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
	1,1-Dichloroethene	ug/L	7	280	7	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
	1,2,4-Trichlorobenzene	ug/L	70	1.2	70	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
	1,2-Dibromo-3-chloropropane (DBCP)	ug/L	0.2	0.00033	0.2	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
	1,2-Dibromoethane (Ethylene dibromide)	ug/L	0.05	0.0075	0.05	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
	1,2-Dichlorobenzene	ug/L	600	300	600	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
	1,2-Dichloroethane	ug/L	5	0.17	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
	1,2-Dichloropropane	ug/L	5	0.44	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
	1,3-Dichlorobenzene	ug/L	--	--	--	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
	1,4-Dichlorobenzene	ug/L	75	0.48	75	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
	2-Butanone (Methyl ethyl ketone) (MEK)	ug/L	--	5600	5600	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U
	2-Hexanone	ug/L	--	38	38	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U
	Methyl isobutyl ketone (MIBK)	ug/L	--	6300	6300	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U
	Acetone	ug/L	--	14000	14000	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U
	Benzene	ug/L	5	0.46	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
	Bromodichloromethane	ug/L	80	0.13	80	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
	Bromoform	ug/L	80	3.3	80	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
	Bromomethane (Methyl bromide)	ug/L	--	7.5	7.5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
	Carbon disulfide	ug/L	--	810	810	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
	Carbon tetrachloride	ug/L	5	0.46	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
	Chlorobenzene	ug/L	100	78	100	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
	Chloroethane	ug/L	--	21000	21000	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
	Chloroform (Trichloromethane)	ug/L	80	0.22	80	1.0 U	2.5	2.5	1.0 U	1.0 U	1.0 U
	Chloromethane (Methyl chloride)	ug/L	--	190	190	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
	cis-1,2-Dichloroethene	ug/L	70	36	70	1.0 U	5.6	5.4	1.0 U	1.0 U	1.0 U
	cis-1,3-Dichloropropene	ug/L	--	--	--	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
	Cyclohexane	ug/L	--	13000	13000	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
	Dibromochloromethane	ug/L	80	0.87	80	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
	Dichlorodifluoromethane (CFC-12)	ug/L	--	200	200	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
	Ethylbenzene	ug/L	700	1.5	700	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
	Isopropyl benzene	ug/L	--	450	450	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
	Methyl acetate	ug/L	--	20000	20000	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
	Methyl cyclohexane	ug/L	--	--	--	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
	Methyl tert butyl ether (MTBE)	ug/L	--	14	14	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
	Methylene chloride	ug/L	5	11	5	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U
	Styrene	ug/L	100	1200	100	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
	Tetrachloroethene	ug/L	5	11	5	R	4200	4100	1.0 U	1.0 U	1.0 U
	Toluene	ug/L	1000	1100	1000	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
	trans-1,2-Dichloroethene	ug/L	100	360	100	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
	trans-1,3-Dichloropropene	ug/L	--	--	--	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
	Trichloroethene	ug/L	5	0.49	5	1.0 U	110	110	1.0 U	1.0 U	1.0 U
	Trichlorofluoromethane (CFC-11)	ug/L	--	5200	5200	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
	Trifluorotrchloroethane (CFC-113)	ug/L	--	55000	55000	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
	Vinyl chloride	ug/L	2	0.019	2	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
	Xylenes (total)	ug/L	10000	190	10000	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U

Notes:

U Not detected at the associated reporting limit.

J Estimated concentration.

UJ Not detected; associated reporting limit is estimated.

R Rejected.

Screening value USEPA RSL - Maximum Contaminant Levels (MCL) or Tapwater criteria

Bold, red and highlighted value represent exceedance of the screening value

Table B1

Groundwater Analytical Results Summary
Remedial Site Investigation
Bluewater Thermal Solution Site
Fountain Inn, South Carolina

Sample Location: Sample ID: Sample Date:	Parameters	Units	EPA MCL May 2016	EPA Tapwater May 2016	Criteria Used May 2016	MW-5-2016	MW-6-2016	MW-7-2018	MW-8-2018
						GW-077150-011618-DJB-005 1/16/2018	GW-077150-011618-DJB-003 1/16/2018	GW-077150-011618-DJB-007 1/16/2018	GW-077150-011618-DJB-006 1/16/2018
	VOCs								
	1,1,1,2-Tetrachloroethane	ug/L	--	0.57	0.57	1.0 U	1.0 U	1.0 U	1.0 U
	1,1,1-Trichloroethane	ug/L	200	8000	200	1.0 U	1.0 U	1.0 U	1.0 U
	1,1,2-Trichloroethane	ug/L	5	0.28	5	1.0 U	1.0 U	1.0 U	1.0 U
	1,1-Dichloroethane	ug/L	--	2.8	2.8	1.0 U	6.2	1.0 U	1.0 U
	1,1-Dichloroethene	ug/L	7	280	7	1.0 U	29	1.0 U	1.0 U
	1,2,4-Trichlorobenzene	ug/L	70	1.2	70	1.0 U	1.0 U	1.0 U	1.0 U
	1,2-Dibromo-3-chloropropane (DBCP)	ug/L	0.2	0.00033	0.2	1.0 U	1.0 U	1.0 U	1.0 U
	1,2-Dibromoethane (Ethylene dibromide)	ug/L	0.05	0.0075	0.05	1.0 U	1.0 U	1.0 U	1.0 U
	1,2-Dichlorobenzene	ug/L	600	300	600	1.0 U	1.0 U	1.0 U	1.0 U
	1,2-Dichloroethane	ug/L	5	0.17	5	1.0 U	1.0 U	1.0 U	1.0 U
	1,2-Dichloropropane	ug/L	5	0.44	5	1.0 U	1.0 U	1.0 U	1.0 U
	1,3-Dichlorobenzene	ug/L	--	--	--	1.0 U	1.0 U	1.0 U	1.0 U
	1,4-Dichlorobenzene	ug/L	75	0.48	75	1.0 U	1.0 U	1.0 U	1.0 U
	2-Butanone (Methyl ethyl ketone) (MEK)	ug/L	--	5600	5600	5.0 U	5.0 U	5.0 U	5.0 U
	2-Hexanone	ug/L	--	38	38	5.0 U	5.0 U	5.0 U	5.0 U
	Methyl isobutyl ketone (MIBK)	ug/L	--	6300	6300	5.0 U	5.0 U	5.0 U	5.0 U
	Acetone	ug/L	--	14000	14000	5.0 U	5.0 U	5.0 U	5.0 U
	Benzene	ug/L	5	0.46	5	1.0 U	1.0 U	1.0 U	1.0 U
	Bromodichloromethane	ug/L	80	0.13	80	1.0 U	1.0 U	1.0 U	1.0 U
	Bromoform	ug/L	80	3.3	80	1.0 U	1.0 U	1.0 U	1.0 U
	Bromomethane (Methyl bromide)	ug/L	--	7.5	7.5	1.0 U	1.0 U	1.0 U	1.0 U
	Carbon disulfide	ug/L	--	810	810	1.0 U	1.0 U	1.0 U	1.0 U
	Carbon tetrachloride	ug/L	5	0.46	5	1.0 U	1.0 U	1.0 U	1.0 U
	Chlorobenzene	ug/L	100	78	100	1.0 U	1.0 U	1.0 U	1.0 U
	Chloroethane	ug/L	--	21000	21000	1.0 U	1.0 U	1.0 U	1.0 U
	Chloroform (Trichloromethane)	ug/L	80	0.22	80	1.0 U	1.0 U	1.0 U	1.0 U
	Chloromethane (Methyl chloride)	ug/L	--	190	190	1.0 U	1.0 U	1.0 U	1.0 U
	cis-1,2-Dichloroethene	ug/L	70	36	70	1.0 U	1.0 U	1.0 U	1.0 U
	cis-1,3-Dichloropropene	ug/L	--	--	--	1.0 U	1.0 U	1.0 U	1.0 U
	Cyclohexane	ug/L	--	13000	13000	1.0 U	1.0 U	1.0 U	1.0 U
	Dibromochloromethane	ug/L	80	0.87	80	1.0 U	1.0 U	1.0 U	1.0 U
	Dichlorodifluoromethane (CFC-12)	ug/L	--	200	200	1.0 U	1.0 U	1.0 U	1.0 U
	Ethylbenzene	ug/L	700	1.5	700	1.0 U	1.0 U	1.0 U	1.0 U
	Isopropyl benzene	ug/L	--	450	450	1.0 U	1.0 U	1.0 U	1.0 U
	Methyl acetate	ug/L	--	20000	20000	1.0 U	1.0 U	1.0 U	1.0 U
	Methyl cyclohexane	ug/L	--	--	--	1.0 U	1.0 U	1.0 U	1.0 U
	Methyl tert butyl ether (MTBE)	ug/L	--	14	14	1.0 U	1.0 U	1.0 U	1.0 U
	Methylene chloride	ug/L	5	11	5	2.0 U	2.0 U	2.0 U	2.0 U
	Styrene	ug/L	100	1200	100	1.0 U	1.0 U	1.0 U	1.0 U
	Tetrachloroethene	ug/L	5	11	5	49	1.0 U	1.0 U	1.0 U
	Toluene	ug/L	1000	1100	1000	1.0 U	1.0 U	1.0 U	1.0 U
	trans-1,2-Dichloroethene	ug/L	100	360	100	1.0 U	1.0 U	1.0 U	1.0 U
	trans-1,3-Dichloropropene	ug/L	--	--	--	1.0 U	1.0 U	1.0 U	1.0 U
	Trichloroethene	ug/L	5	0.49	5	1.0 U	1.0 U	1.0 U	1.0 U
	Trichlorofluoromethane (CFC-11)	ug/L	--	5200	5200	1.0 U	1.0 U	1.0 U	1.0 U
	Trifluorotrchloroethane (CFC-113)	ug/L	--	55000	55000	1.0 U	1.0 U	1.0 U	1.0 U
	Vinyl chloride	ug/L	2	0.019	2	1.0 U	1.0 U	1.0 U	1.0 U
	Xylenes (total)	ug/L	10000	190	10000	1.0 U	1.0 U	1.0 U	1.0 U

Notes:

U Not detected at the associated reporting limit.

J Estimated concentration.

UJ Not detected; associated reporting limit is estimated.

R Rejected.

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