S.C. Department of Health and Environmental Control

Proposed Plan for Site Remediation

Bluewater Thermal Solutions

100 Hunts Bridge Road
Fountain Inn, South Carolina

July 2023

ANNOUNCEMENT OF PROPOSED PLAN

The South Carolina Department of Health and Environmental Control (DHEC or the Department) has completed an evaluation of cleanup alternatives to address source area contamination at the former Bluewater Thermal Solutions facility (the Site). This Proposed Plan identifies DHEC's preferred Alternative for cleanup of contamination and provides the reasoning for this preference. In addition, this Proposed Plan includes summaries of the other cleanup alternatives evaluated during the process. These alternatives were identified based on information gathered during environmental investigations conducted at the Site since 2012. The Department entered into a Voluntary Cleanup contract with Gibraltar Industries, Inc., and Bodycote Thermal on May 27, 2015.

The Department is presenting this Proposed Plan to inform the public of our activities conducted at the Site, gain public input, and fulfill the requirements of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) and the National Oil and Hazardous Substances Pollution Contingency Plan (National Contingency Plan or NCP). This Proposed Plan summarizes information that can be found in greater detail in the Revised Feasibility Study (March 2022) and other documents contained in the Administrative Record. The Department encourages the public to review these documents to gain an understanding of the Site and the activities that have been completed.

The Department will select a final cleanup remedy after reviewing and considering comments submitted during the public comment period. The Department may modify the Preferred Alternative or select another response action presented in this Proposed Plan based on new information or public comments. Therefore, the public is encouraged to review and comment on all the alternatives presented in this Proposed Plan.

DHEC's Preferred Cleanup Summary
Alternative 3: In Situ Chemical Oxidation

DHEC's preferred remedial option includes:

- In Situ Chemical Oxidation (ISCO) using sodium persulfate;
- Groundwater monitoring;
- Monitored Natural Attenuation with Institutional Controls

MARK YOUR CALENDAR

❑ PRESENTATION OF PROPOSED PLAN:

DHEC has recorded a presentation and it is available on the website below. If requested, DHEC will hold a public meeting to further explain the Proposed Plan and all the alternatvies presented in the Remedial Alternatives Evaluation and answer questions.

http://scdhec.gov/BluewaterThermal

❑ PUBLIC COMMENT PERIOD:

DHEC will accept written comments on the Proposed Plan during the public comment period.

July 25, 2023 through September 25, 2023

Please submit your written comments to:
Cynde Devlin, Project Manager
SC DHEC Bureau of Land & Waste Management
2600 Bull Street
Columbia, SC 29201
devlincl@dhec.sc.gov

❑ FOR MORE INFORMATION:

Call: Cynde Devlin, Project Manager, 803-898-0816

See: DHEC's website at:
http://www.dhec.sc.gov/BluewaterThermal

View: The Administrative Record at the following locations:

Laurens County Library
311 N. Main St, Fountain Inn, SC 29644
Hours: Monday & Tuesday 9 am - 8 pm
Wednesday - Friday 9 am – 5:30 pm
Friday 9 am – 5:30 pm
Saturday & Sunday Closed

DHEC Freedom of Information Office
2600 Bull Street, Columbia, SC
(803) 898-3817
Monday - Friday: 8:30 am - 5:00 pm

DHEC's Webpage:
http://www.dhec.sc.gov/BluewaterThermal

SITE HISTORY

The Bluewater Thermal Solution Site is located in the city of Fountain Inn in Laurens County. The property is located off Interstate 385 and south of State Road S-30-731, approximately 2 miles southeast of Fountain Inn in a commercial and agricultural area. The site is bound to the west and southwest by Interstate 385, the north by a commercial bakery, to the south and southeast by a dense wooded area and to the east by farmland.

The site historically consisted of agricultural land prior to development in 1968. The site consists of a 74,500 sq foot one-story structure used for heat treating processes. Carolina Commercial Heat Treating, Inc. (CCHT) opened the facility in 1968 for thermal processing of steel, stainless steel, cast iron, and other industrial materials. In 1996 Gibraltar Steel Corporation of New York (GSCNY) acquired CCHT through a stock purchase agreement. CCHT continued operations as a division of Gibraltar Steel Corporation. In June 2006, Bluewater Thermal Processing, LLC purchased substantially all of the assets and certain liabilities of CCHT from GSCNY including the site. The name was changed to Bluewater Thermal Processing, LLC. The property was acquired by Bodycote from Bluewater Thermal Processing, LLC in 2012. Bodycote currently owns the property and utilizes it for industrial heat treating and thermal processing.

AREAS OF CONCERN

Since construction in 1968 heat treating processes were conducted at the site. On-site groundwater sampling has delineated one area of groundwater impact from historic operations where the primary impacts are chlorinated volatile organics (VOCs). Historically, the highest concentrations of tetrachloroethene (PCE) and trichloroethene (TCE) were detected at MW-1S-16 (4100 ug/l PCE). The Environmental Protection Agency maximum contaminant level (MCL) for PCE and TCE is 5 ug/l. Select VOC compounds (1,1-dichloroethane, 1,1-dichloroethene, toluene, chloromethane, chloroform and cis 1,2-dichloroethane) were also detected slightly above their respective MCLs in select groundwater sample (MW-1S-16, MW-5-16 and MW-6-16). Overall, the source area focuses around well MW-1S-16. The November 2013 Phase II site investigation identified the same area (BH-4 4600 ug/l PCE and BH-5 2700 ug/l PCE) with the highest concentrations of PCE. In addition, groundwater samples from three locations (BH-6, BH-7 and BH-8) located inside Building 6 exceeded the MCLs for PCE and TCE. In January 2019, a pilot test was conducted using injections of oxidant in the area south/southeast of Buildings 5 and 6 and west of Buildings 2 and 3. PCE was reduced at monitoring well MW-1S-16 from 4100 ug/l to 180 ug/l and TCE was reduced from 110 ug/l to 1.7 ug/l. PCE and TCE concentrations increased in wells TW-10 and TW-11 following the pilot study.

SUMMARY OF SITE RISKS

Contamination from operations at the Bluewater site has been released to soil and migrated into groundwater. The latest analytical data indicates volatile organic compounds (VOCs) in soil and groundwater above regulatory standards.

The primary risk to the public and the environment is from direct ingestion or exposure to contaminated soil and/or groundwater on-site. Data collected to date indicates that contamination is contained on-site therefore there is no direct receptor beyond the property boundary. Preferred alternatives identified in this Proposed Plan and the Feasibility Study are necessary to protect public health and the environment from actual or threatened releases of hazardous substances to the environment and to prevent further migration of contaminated groundwater.

CLEANUP GOALS

Remedial action objectives (RAOs) are developed in order to set goals for protecting human health and the environment. The goals should be as specific as possible, but should not unduly limit the range of remedial alternatives that can be developed. Accordingly, the following RAOs were developed for the Site:

1. Restore groundwater to MCLs (maximum contaminant level).

2. Prevent exposure of human and ecological receptors to impacted soil and groundwater above applicable standards.

The remediation goals for contaminated groundwater at the site are the Environmental Protection Agency (EPA) Maximum Contaminant Levels (MCLs) for drinking water or the Tap Water Screening Levels in EPA's Regional Screening Level tables if a MCL does not exist.

SCOPE AND ROLE OF THE ACTION

The proposed actions in this Proposed Plan will be the final cleanup action for the Site. The remedial action objectives (RAOs) for these proposed actions include injecting a chemical oxidant solution into the impacted area to reduce groundwater contaminants of concern to below MCLs and to further mitigate and control the migration of contaminants through groundwater.

SUMMARY OF REMEDIAL ALTERNATIVES

Based on information collected during previous investigations, *a Revised Focused Feasibility Study* (Gibraltar 2022 rev 2) was conducted to identify, develop, and evaluate options and remedial alternatives to address contamination at the Site. This evaluation considered the nature and extent of contamination and associated potential human health risks developed during the remedial investigations and associated studies to determine and evaluate potential remedial alternatives and their overall protection of human health and the environment. Each remedial alternative evaluated by the Department is described briefly below. Note: A final Remedial Design will be developed prior to implementation of any alternative.

SUMMARY OF REMEDIAL ALTERNATIVES

Alternative	Description
1: No Action	• No action for soil • No action for groundwater • Cost: $0
2: Institutional Controls (ICs) and Monitored Natural Attenuation (MNA)	• Implement restrictions on land and groundwater use • Monitor natural degradation of constituents of concern (COCs) in groundwater • Cost: Approximately $250,000
3: In Situ Chemical Oxidation	• Injection of sodium persulfate solution into the subsurface • Implement restrictions on land and groundwater use • Cost: $600,00
4: In Situ Enhanced Biodegradation	• Installation of ten injection wells • Injection of dilute organic carbon substrate solution • Cost: $650,000
5: Groundwater Extraction, Treatment and Discharge	• Installation of 3 groundwater extraction wells • Construction of an air stripper and granular activated carbon unit (GAC) • Treated groundwater discharged to publicly owned treatment works (POTW) • Cost: $900,000

DESCRIPTION OF ALTERNATIVES

Alternative 1 - No Action

The No Action alternative is required by the National Contingency Plan to be carried through the screening process, it serves as a baseline for comparison of the other remedial action alternatives.

The no action alternative does not include any on-site or legal controls or actions for soil or groundwater at the site. This alternative would not be protective of the environment and would take an unreasonable time to achieve remedial action objectives. There is no cost associated with implementing this alternative.

Alternative 2 –Institutional Control (ICs) and Monitored Natural Attenuation (MNA)

Monitored Natural Attenuation (MNA) is a passive approach that monitors the natural degradation or reduction in contaminant concentrations in groundwater. Groundwater chemistry and contaminants of concern are monitored to continually evaluate and confirm that natural degradation is occurring. A groundwater sampling and analysis plan would be developed to monitor remedy performance.

Institutional Controls (ICs) would include restrictions on land use, development, and groundwater use.

The total present value cost of this alternative over a 10 year period is $250,000.

Alternative 3 – In Situ Chemical Oxidation

Chemical oxidation uses chemicals called “oxidants” to help change harmful contaminants into less toxic ones. It is commonly described as “in situ” because it is conducted in place, without having to excavate soil or pump out groundwater for aboveground cleanup. In this case a chemical oxidant solution will be injected into the aquifer to react with contaminants of concern. Injections will follow a grid pattern over the areal extent and across the vertical zone in the source area. Sodium persulfate will be pressure injected into the subsurface using direct push technology (DPT). Groundwater monitoring will be conducted to assess remediation performance.

ICs and MNA may be implemented as a follow up to achieve long term goals.

Present worth for this alternative over a 10 year period is estimated to be $600,000.

Alternative 4 – In Situ Enhanced Biodegradation (ISEB)

Enhanced in situ bioremediation is an engineered technology that introduces physical, chemical, and biological changes to the aquifer to create the conditions necessary for microorganisms to transform contaminants of concern (COCs) to innocuous by-products. Injections of dilute organic carbon substrate solution will be performed once a year for approximately three years to enhance reductive dechlorination. In situ enhanced biodegradation (ISEB) will include up to ten injection wells targeting areas of elevated groundwater contamination. A pilot test will be completed to determine full scale implementation.

MNA and ICs will be used to address residual groundwater contamination following treatment.

The present worth cost estimate for this alternative is $650,000.

Alternative 5- Groundwater Extraction, Treatment and Discharge

Groundwater is extracted and conveyed to an above-ground treatment system that removes contaminants. Pump and treat systems are also used to contain contaminant plumes. Pumping draws contaminated water toward the wells, keeping the contaminant plume from spreading.
In this case three extraction wells will be installed along the path of the groundwater contaminant plume. Extracted groundwater will be pumped from the extraction wells to a treatment building. An air stripper will treat extracted groundwater to be discharged to a publicly owned treatment works (PTOW). Secondary treatment using granular activated carbon (GAC) maybe be required prior to discharge to the POTW.

MNA and ICs will be used to address residual groundwater contamination following treatment.

The present worth cost for this alternative is estimated to be $900,000 over 10 years.

EVALUATION OF ALTERNATIVES

The National Contingency Plan requires the Department use specific criteria to evaluate and compare the different remediation alternatives individually and against each other in order to select a remedy. This section of the Proposed Plan profiles the relative performance of each alternative against the criteria, noting how it compares to the other options under consideration. The criteria are:

1. Overall protection of human health and the environment;
2. Compliance with Applicable or Relevant and Appropriate Requirements (ARARs);
3. Long-term effectiveness and permanence;
4. Reduction of toxicity, mobility, or volume through treatment
5. Short-term effectiveness;
6. Implementability;
7. Cost; and
8. Community acceptance

The main objectives for the preferred remedial action are to be protective of human health and the environment and to comply with State and Federal regulations. These two objectives are considered *threshold criteria*. Threshold criteria are requirements each alternative must meet in order to be eligible for selection.

The following measures are considered *balancing criteria*: long-term effectiveness and permanence; reduction of toxicity, mobility, or volume through treatment; short-term effectiveness; implementability; and cost. These criteria are used to weigh the technical feasibility, strengths and weaknesses, and cost advantages and disadvantages of each alternative.

Community acceptance of the cleanup alternative and the other considered alternatives is a *modifying criterion* that will be carefully considered by the Department prior to final remedy selection.

COMPARATIVE ANALYSIS OF ALTERNATIVES

A comparative analysis of each alternative was performed. The alternatives were evaluated in relation to one another for each of the evaluation criteria. The purpose of the analysis is to identify the relative advantages and disadvantages of each alternative. The alternatives are ranked from 1 to 6 (1 being the lowest) and the comparative analysis is illustrated in attached table.

Note: Although Alternative 1 (No Action) does not meet the threshold criteria, it is retained for discussion because it provides a baseline for comparing the other alternatives to the criteria outlined above.

Overall Protection of Human Health and the Environment

When evaluating alternatives in terms of overall protection of human health and the environment, consideration is given to the way site-related risks are eliminated, reduced, or controlled through treatment, engineering controls, or institutional controls.

Alternatives 1 (No Action) does not achieve the remedial action objectives and provides the least protection of human health and the environment because no measures would be implemented to eliminate potential pathways for exposure.

Alternative 2 (ICs and MNA) would rely on groundwater monitoring to evaluate the effectiveness of natural attenuation of groundwater contamination.

Alternative 3 (In Situ Chemical Oxidation), Alternative 4 (In Situ Enhanced Biodegradation) and Alternative 5 (Groundwater Extraction, Treatment and Discharge) are expected to be protective of human health and the environment by reducing concentrations of constituents of concern in groundwater within varying time frames.

Compliance with ARARs (Applicable or Relevant and Appropriate Requirements)

This evaluation criterion evaluates whether an alternative meets federal and state environmental statutes and regulations that pertain to the site. Each alternative is evaluated with respect to its ability to comply with such requirements.

Alternatives 1 does not meet regulatory limits for groundwater in acceptable time frames since no active remediation would be conducted.
Alternatives 2 through 5 would meet regulatory limits within various time frames. Alternatives 3 and 4 rank higher for attaining remedial goals in the best overall time frame because the source area is directly addressed.

Long-Term Effectiveness and Permanence
The magnitude of residual risk remaining from untreated impacted media or treatment residuals and the adequacy and reliability of containment systems and institutional controls are evaluated under this criterion.

Alternative 1 and Alternative 2 are the least effective long term because these remedies do not involve any active remediation therefore extending the length of time groundwater contamination remains.

Alternatives 3 and 4 address contamination through oxidation or biodegradation treating the contaminant mass in a more acceptable time frame. Alternatives 5 addresses groundwater contamination through hydraulic control but does not address the source of contamination.

Reduction of Toxicity, Mobility, or Volume through Treatment (TMV)
The degree to which an alternative employs treatment to reduce the harmful effects of contaminants, their ability to move in the environment, and the amount of contamination present is evaluated by this criterion.

Alternative 1 does not employ treatment of groundwater therefore would not result in reduction of toxicity, mobility, or volume of contamination. Alternative 2 relies on natural attenuation of contamination which could greatly extend the remediation time frame. Alternatives 3 and 4 provide a reduction of contaminant mass using in situ technologies. Alternative 5 contains groundwater contamination using hydraulic control but does not treat the source extending the remedial time frame.

Short-Term Effectiveness
The short-term effectiveness evaluation takes into consideration any risk the alternative poses to on-site workers, the surrounding community, or the environment during implementation, as well as the length of time needed to implement the alternative.

Alternative1 does not include any remedial activities so no short-term risks exist to on-site workers or the community. Alternative 2 does not involve active remediation. The only potential risk is through routine monitoring. Alternatives 3 through 5 do include active remediation and would involve a temporary disturbance at the site during amendment injections and well installation, however, proper use of personal protective equipment and adherence to a site-specific health and safety plan by on-site workers would minimize or eliminate impacts.

Implementability
The analysis of implementability considers the technical and administrative feasibility of remedy implementation, as well as the availability of required materials and services.

There are no technical or administrative limitations to implementing Alternative 1 and Alternative 2 because these alternatives do not involve any active remediation and require minimal materials or services. Alternatives 3 through 5 require injection of amendments, treatment of contaminated groundwater, and monitoring all of which have been successfully used to remediate similar sites in similar geologic settings. These services are commonly implemented and there are ample experienced contractors to perform these services.

Cost
The cost criterion includes estimated initial capital costs and annual O&M costs, as well as a present worth cost evaluation. Present worth cost is the total cost of an alternative over time in terms of today's dollar value. Cost estimates are expected to be accurate within a range of -30% to +50%.

Alternative 1	$0
Alternative 2	$250,000
Alternative 3	$600,000
Alternative 4	$650,000
Alternative 5	$900,000

Community Acceptance
Community acceptance of the preferred remedy will be evaluated after the public comment period. Public comments will be summarized and responses provided in the Responsiveness Summary Section of the Record of Decision document that will present the Department's final alternative selection. The Department may choose to modify the preferred alternative or select another remedy based on public comments or new information.

SUMMARY OF THE DEPARTMENT'S PREFERRED ALTERNATIVE

The Department has identified a preferred alternative to address the contamination in at the Site. The preferred remedial alternative is Alternative 3 which combines the use of ISCO by injection of a chemical oxidant solution into impacted areas of the aquifer and a performance evaluation of groundwater. A sodium persulfate solution would be injected into the aquifer in a grid pattern over the areal extent and across the vertical zone. The oxidant will be pressure injected into the subsurface using direct push technology to thoroughly permeate the contaminated zone. Groundwater monitoring would be conducted to assess remediation performance and refine the injection program if necessary. Institutional controls and monitored natural attenuation may be implemented as a follow up to ISCO.

A pilot study using ISCO was performed in January 2019 at the Bluewater Thermal site. An area of approximately 13,500 square feet between MW-5-16 and BH-3 in the north and between TW-10 and TW-11 in the south portion of the site was treated using sodium persulfate. Fourteen direct push

injections to a depth of 20 and 28 feet below ground surface were completed. Groundwater monitoring conducted following post ISCO injections resulted in a significant reduction in PCE and TCE in the treatment area.

The total estimated net present worth of this alternative combination is approximately $600,000.

It is the Department's judgment that the Preferred Alternative identified in this Proposed Plan is necessary to protect public health and the environment.

COMPARISON OF REMEDIAL ALTERNATIVES TO EVALTATION CRITERIA

Remedial Options	Overall Protection of Human Health And the Environment		Compliance with ARARs		Short Term Effectiveness		Long Term Effectiveness		Reduction of Toxicity, Mobility & Volume through Treatment		Implementability		Cost		Total
No Action	Provides no protection	1	Will not meet in acceptable time frame	1	Provides no remedial effects	1	Provides no remedial effects	1	Provides no remedial effects	1	No issues to implemented	6	$0	6	17
Institutional Controls (ICs) and Monitored Natural Attenuation (MNA)	ICs restrict use of land and groundwater.	2	Will not meet analyte specific remedial goals within 50 years.	2	Not effective in the short term	2	Long term residuals expected to persist. Would take greater than 50 years to be effective.	2	Reduction in volume, toxicity and mobility of contaminants likely to take greater than 50 yrs.	2	Easy to implement.	5	$250,000	4	19
ISCO and Performance Monitoring	Treats impacted source area and groundwater.	6	COCs expected to meet standards in reasonable time frame	6	Expected to have an immediate impact on groundwater contamination	6	May have long term benefits and additional injections could be employed	6	Will reduce toxicity and volume with injections of oxidant	4	No excessive coordination required.	3	$600,000	3	34
ISEB and Performance Monitoring	Reduces concentrations of COCs. Natural attenuation expected to remediate remaining impacts to groundwater	6	COCs expected to be reduced within a reasonable time frame	6	Expected to reduce contamination in source area and plume.	6	May have long term benefits and additional injections could be employed	6	Injection expected to reduce toxicity, mobility, and volume of contamination	4	Technically and administratively feasible.	3	$650,000	3	34
Extraction, Treatment, and Discharge and Performance Monitoring	Reduces concentrations of COCs in treatment area. ICs would restrict use of land and groundwater.	3	Will not meet remedial goals in a reasonable time frame	4	Expected to contain contaminant plume using hydraulic control.	5	Extraction system would have to remain active for extended time to control contamination	4	Contaminants are reduced over an extended time frame. Natural attenuation expected to assist in reducing toxicity and mobility of contamination.	3	Technically and administratively feasible.	2	$900,000	1	22

USE THIS SPACE TO WRITE YOUR COMMENTS

Your input on the Proposed Plan for the Bluewater Thermal Site is important. Comments provided by the public are valuable in helping DHEC select a final cleanup remedy.

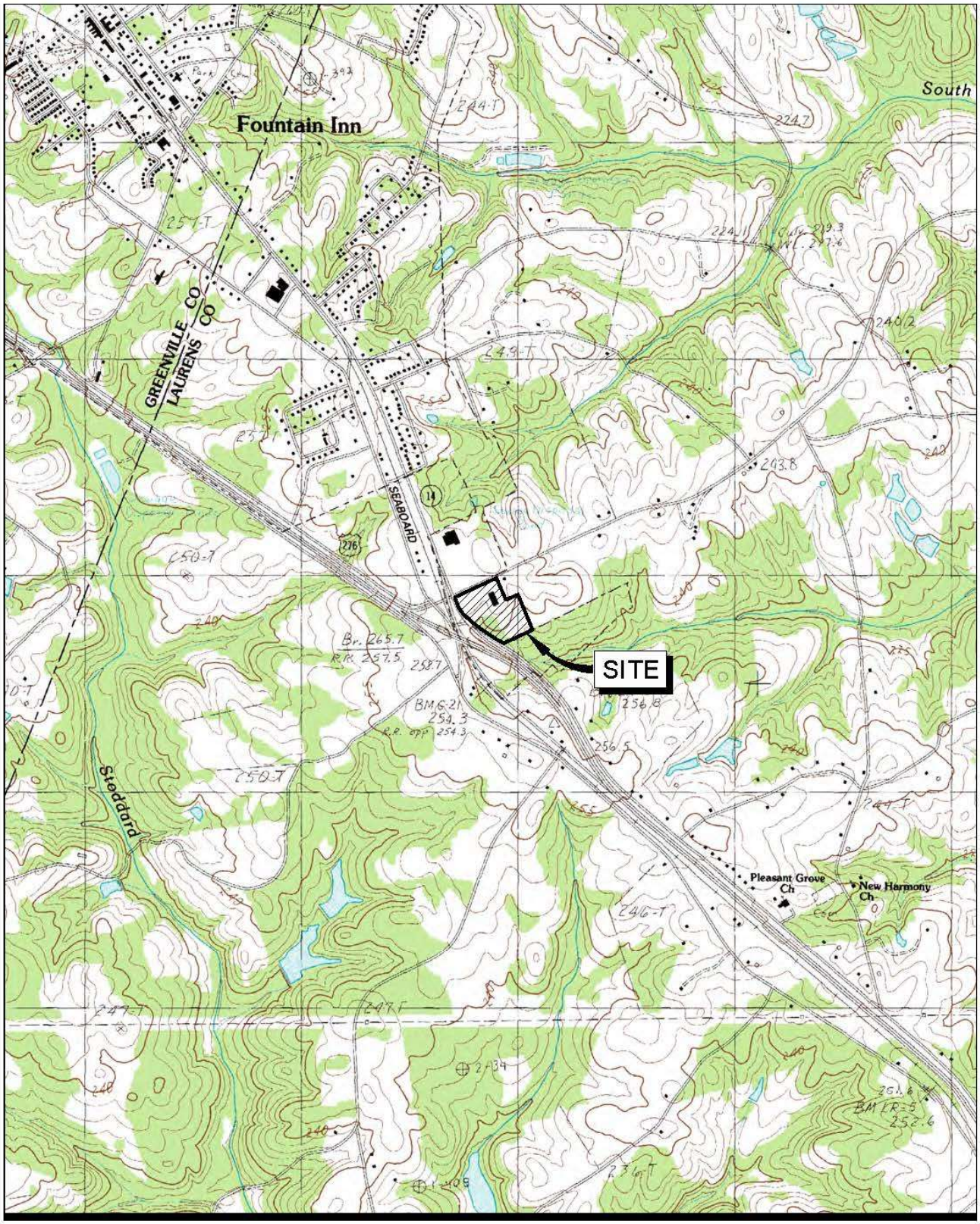
You may use the space below to write your comments, then fold and mail. Comments must be postmarked by September 25, 2023. If you have any questions, please contact Cynde Devlin at 803-898-0816. You may also submit your questions and/or comments electronically to: devlincl@dhec.sc.gov

Name _____ Telephone _____

Address _____ Email _____

City _____

State _____ Zip _____



BLUEWATER THERMAL SOLUTIONS
100 HUNTS BRIDGE ROAD,
FOUNTAIN INN, SOUTH CAROLINA

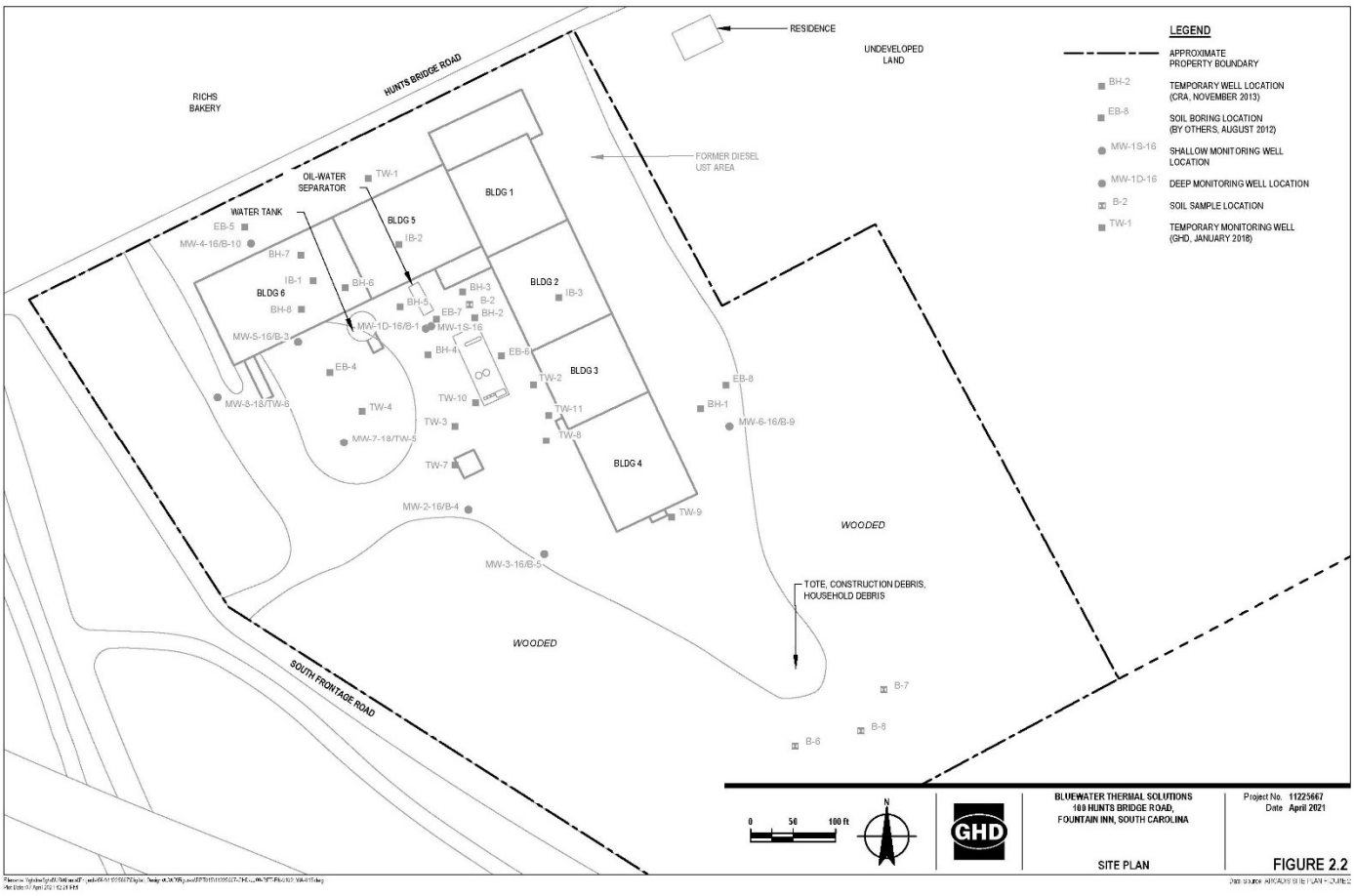
Project No. **11225667**
Date **April 2021**

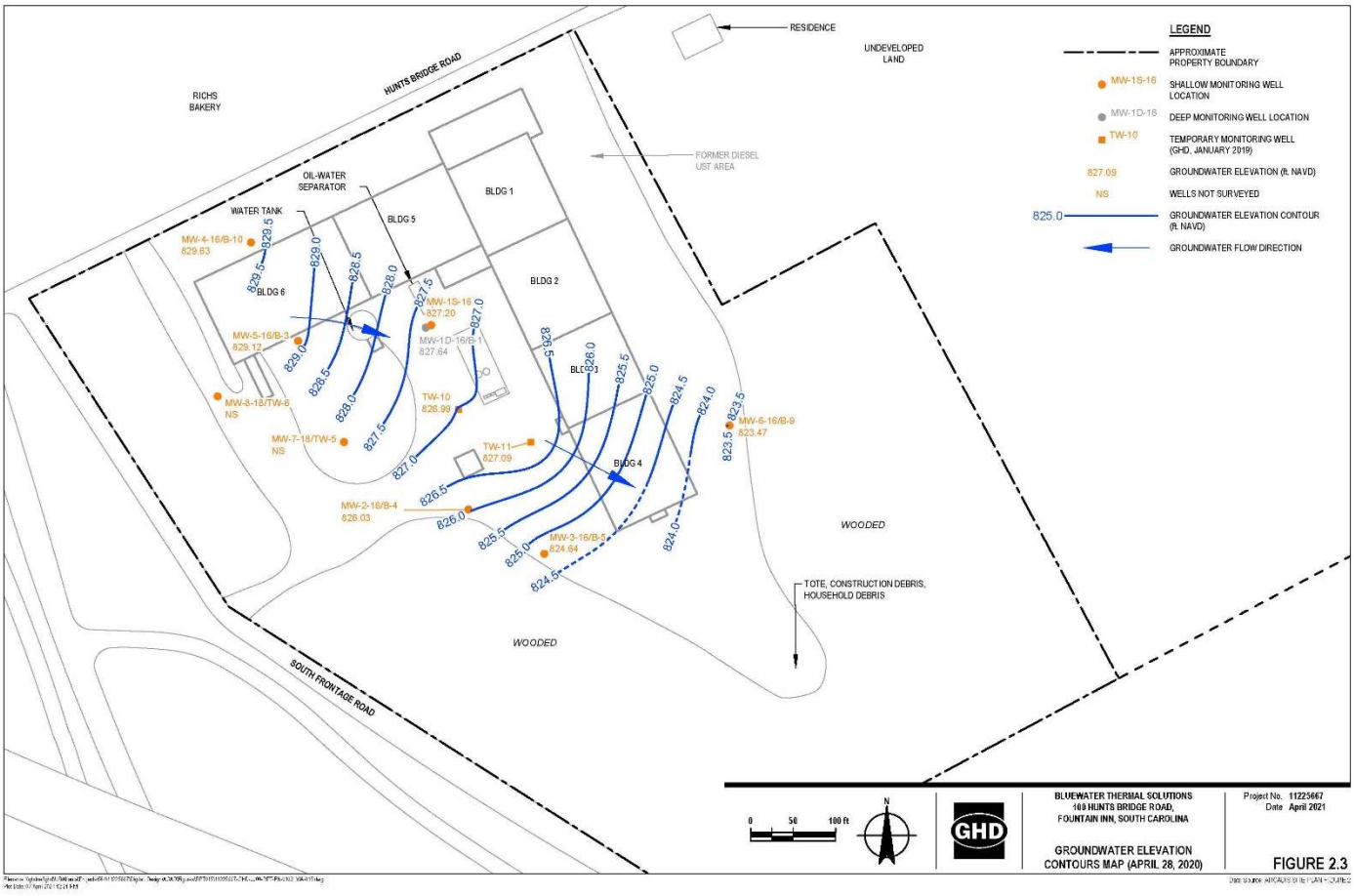
SITE LOCATION MAP

FIGURE 2.1

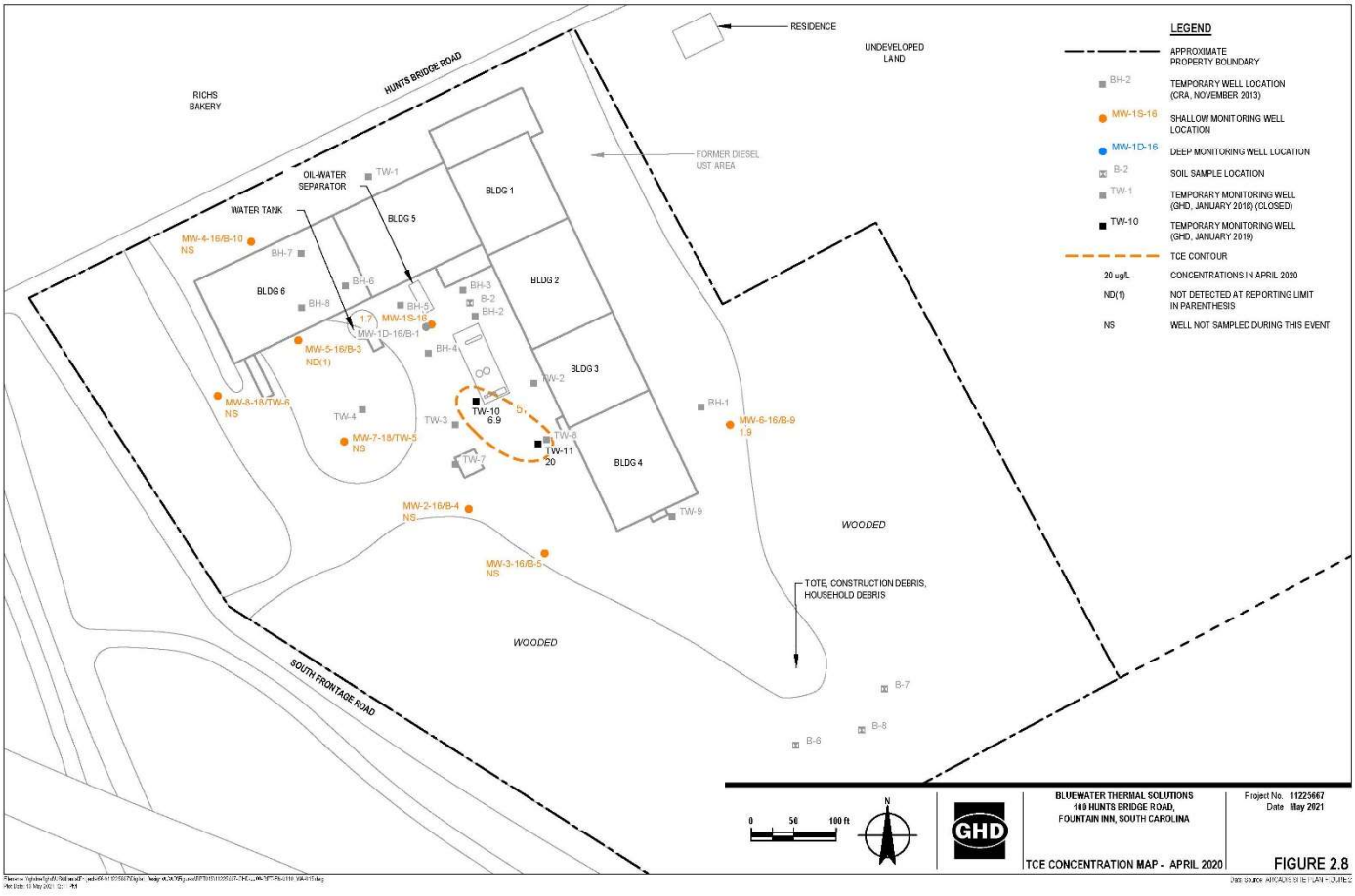
Filename: \\ghdnet\ghd\US\Atlanta\Projects\564\11225667\Digital_Design\ACAD\Figures\RPT015\11225667-GHD-0000-RPT-EN-0101_MA-015.dwg
Plot Date: 07 April 2021 12:21 PM

Data Source: USGS QUADRANGLE MAP; FOUNTAIN INN, SOUTH CAROLINA.


RESIDENCE
UNDEVELOPED LAND
HUNTS BRIDGE ROAD
RICHS BAKERY
FORMER DIESEL UST AREA
OIL-WATER SEPARATOR
WATER TANK
BLDG 1
BLDG 2
BLDG 3
BLDG 4
BLDG 5
BLDG 6
TW-1
EB-5
MW-4-16/B-10
BH-7
IB-1
BH-6
BH-8
MW-5-16/B-3
IB-2
BH-5
BH-3
B-2
BH-2
EB-7
MW-1D-16/B-1
MW-1S-16
BH-4
EB-6
IB-3
EB-4
MW-8-18/TW-8
TW-4
TW-10
TW-2
TW-11
TW-3
MW-7-18/TW-5
TW-8
TW-7
MW-2-16/B-4
TW-9
MW-3-16/B-5
EB-8
BH-1
MW-6-16/B-9
WOODED
WOODED
TOTE, CONSTRUCTION DEBRIS, HOUSEHOLD DEBRIS
B-7
B-8
B-6
SOUTH FRONTAGE ROAD
LEGEND
APPROXIMATE PROPERTY BOUNDARY
BH-2 TEMPORARY WELL LOCATION (CRA, NOVEMBER 2013)
EB-8 SOIL BORING LOCATION (BY OTHERS, AUGUST 2012)
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)
0 50 100 ft
N
GHD
BLUEWATER THERMAL SOLUTIONS
100 HUNTS BRIDGE ROAD,
FOUNTAIN INN, SOUTH CAROLINA
Project No. 11225667
Date April 2021
SITE PLAN
FIGURE 2.2


RESIDENCE
UNDEVELOPED LAND
HUNTS BRIDGE ROAD
RICHS BAKERY
FORMER DIESEL UST AREA
OIL-WATER SEPARATOR
WATER TANK
BLDG 1
BLDG 2
BLDG 3
BLDG 4
BLDG 5
BLDG 6
MW-4-16/B-10
829.63
MW-1S-16
827.20
MW-1D-16/B-1
827.64
MW-5-16/B-3
829.12
MW-8-18/TW-6
NS
MW-7-18/TW-5
NS
TW-10
826.99
TW-11
827.09
MW-2-16/B-4
826.03
MW-3-16/B-5
824.64
MW-6-16/B-9
823.47
TOTE, CONSTRUCTION DEBRIS, HOUSEHOLD DEBRIS
WOODED
WOODED
SOUTH FRONTAGE ROAD
LEGEND
APPROXIMATE PROPERTY BOUNDARY
MW-1S-16 SHALLOW MONITORING WELL LOCATION
MW-1D-16 DEEP MONITORING WELL LOCATION
TW-10 TEMPORARY MONITORING WELL (GHD, JANUARY 2019)
827.09 GROUNDWATER ELEVATION (ft. NAVD)
NS WELLS NOT SURVEYED
825.0 GROUNDWATER ELEVATION CONTOUR (ft. NAVD)
GROUNDWATER FLOW DIRECTION
0 50 100 ft
N
GHD
BLUEWATER THERMAL SOLUTIONS
103 HUNTS BRIDGE ROAD,
FOUNTAIN INN, SOUTH CAROLINA
GROUNDWATER ELEVATION CONTOURS MAP (APRIL 28, 2020)
Project No. 11225667
Date April 2021
FIGURE 2.3

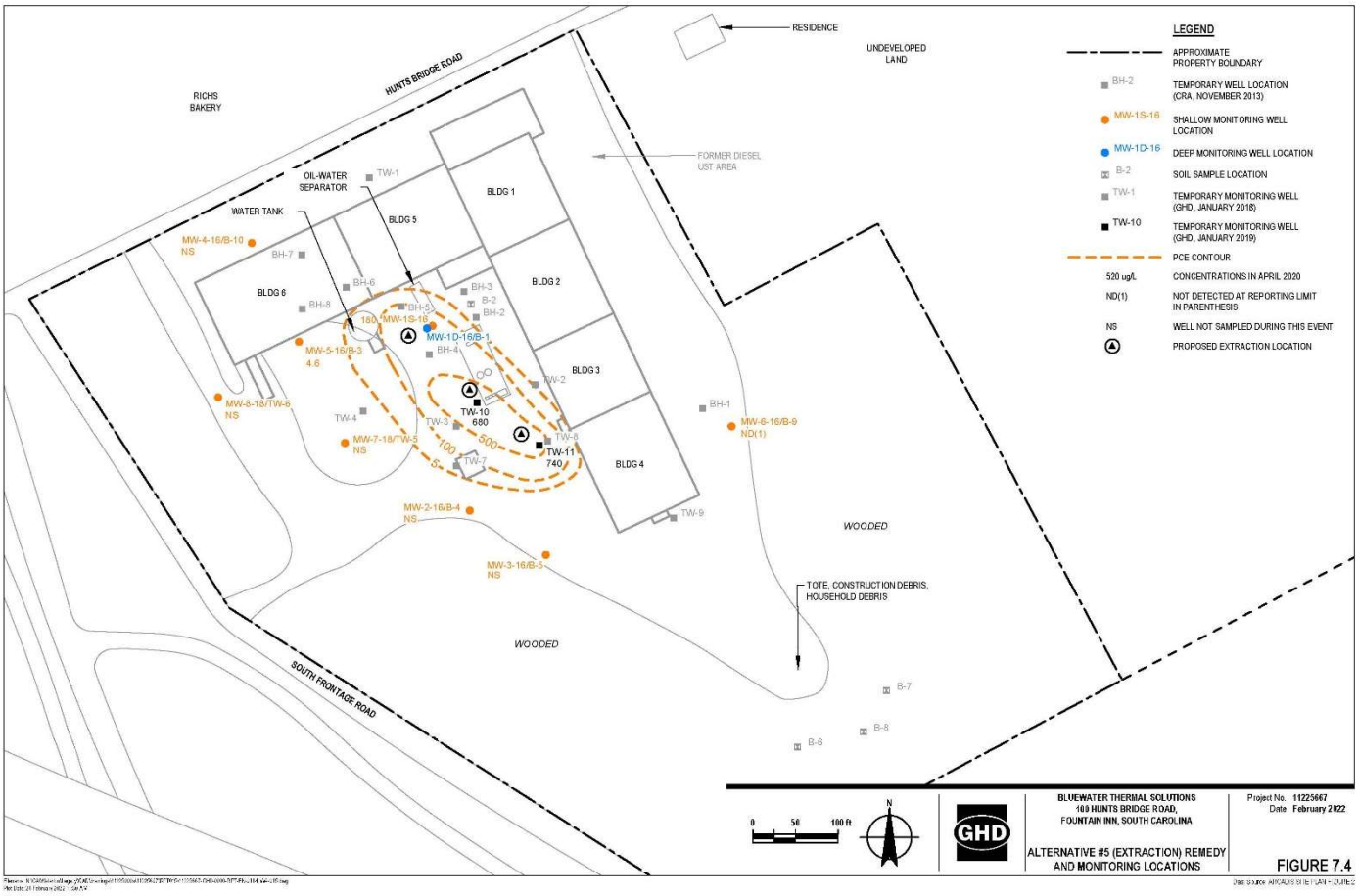

RESIDENCE
UNDEVELOPED LAND
HUNTS BRIDGE ROAD
RICHS BAKERY
FORMER DIESEL UST AREA
OIL-WATER SEPARATOR
WATER TANK
BLDG 1
BLDG 2
BLDG 3
BLDG 4
BLDG 5
BLDG 6
MW-4-16/B-10 NS
MW-1S-16
MW-1D-16/B-1
MW-5-16/B-3 4.6
MW-8-18/TW-6 NS
MW-7-18/TW-5 NS
TW-10 680
TW-11 740
MW-6-16/B-9 ND(1)
MW-2-16/B-4 NS
MW-3-16/B-5 NS
TOTE, CONSTRUCTION DEBRIS, HOUSEHOLD DEBRIS
WOODED
WOODED
SOUTH FRONTAGE ROAD
LEGEND
APPROXIMATE PROPERTY BOUNDARY
TEMPORARY WELL LOCATION (CRA, NOVEMBER 2013)
SHALLOW MONITORING WELL LOCATION
DEEP MONITORING WELL LOCATION
SOIL SAMPLE LOCATION
TEMPORARY MONITORING WELL (GHD, JANUARY 2018) (CLOSED)
TEMPORARY MONITORING WELL (GHD, JANUARY 2019)
PCE CONTOUR
520 ug/L CONCENTRATIONS IN APRIL 2020
ND(1) NOT DETECTED AT REPORTING LIMIT IN PARENTHESIS
NS WELL NOT SAMPLED DURING THIS EVENT
0 50 100 ft
N
GHD
BLUEWATER THERMAL SOLUTIONS
169 HUNTS BRIDGE ROAD,
FOUNTAIN INN, SOUTH CAROLINA
Project No. 11225667
Date May 2021
PCE CONCENTRATION MAP - APRIL 2020
FIGURE 2.7


RESIDENCE
UNDEVELOPED LAND
HUNTS BRIDGE ROAD
RICHS BAKERY
FORMER DIESEL UST AREA
OIL-WATER SEPARATOR
WATER TANK
BLDG 1
BLDG 2
BLDG 3
BLDG 4
BLDG 5
BLDG 6
TW-1
BH-7
BH-6
BH-8
BH-5
BH-3
B-2
BH-2
BH-4
MW-4-16/B-10 NS
MW-1S-16 17
MW-1D-16/B-1
MW-5-16/B-3 ND(1)
MW-8-18/TW-6 NS
TW-4
TW-3
MW-7-18/TW-5 NS
TW-10 6.9
TW-11 20
TW-2
TW-8
TW-7
BH-1
MW-6-16/B-9 1.9
MW-2-16/B-4 NS
TW-9
MW-3-16/B-5 NS
WOODED
WOODED
TOTE, CONSTRUCTION DEBRIS, HOUSEHOLD DEBRIS
B-7
B-8
B-6
SOUTH FRONTAGE ROAD
LEGEND
APPROXIMATE PROPERTY BOUNDARY
BH-2 TEMPORARY WELL LOCATION (CRA, NOVEMBER 2013)
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) (CLOSED)
TW-10 TEMPORARY MONITORING WELL (GHD, JANUARY 2019)
TCE CONTOUR
20 ug/L CONCENTRATIONS IN APRIL 2020
ND(1) NOT DETECTED AT REPORTING LIMIT IN PARENTHESIS
NS WELL NOT SAMPLED DURING THIS EVENT
0 50 100 ft
N
GHD
BLUEWATER THERMAL SOLUTIONS
169 HUNTS BRIDGE ROAD,
FOUNTAIN INN, SOUTH CAROLINA
Project No. 11225667
Date May 2021
TCE CONCENTRATION MAP - APRIL 2020
FIGURE 2.8


RESIDENCE
UNDEVELOPED LAND
HUNTS BRIDGE ROAD
RICHS BAKERY
FORMER DIESEL UST AREA
OIL-WATER SEPARATOR
WATER TANK
BLDG 1
BLDG 2
BLDG 3
BLDG 4
BLDG 5
BLDG 6
MW-4-16/B-10 NS
MW-1S-16
MW-1D-16/B-1
MW-5-16/B-3 4.6
MW-8-18/TW-6 NS
MW-7-18/TW-5 NS
MW-2-16/B-4 NS
MW-3-16/B-5 NS
MW-6-16/B-9 ND(1)
TW-10 680
TW-11 740
100
500
5
WOODED
WOODED
TOTE, CONSTRUCTION DEBRIS, HOUSEHOLD DEBRIS
SOUTH FRONTAGE ROAD
LEGEND
APPROXIMATE PROPERTY BOUNDARY
TEMPORARY WELL LOCATION (CRA, NOVEMBER 2013)
SHALLOW MONITORING WELL LOCATION
DEEP MONITORING WELL LOCATION
SOIL SAMPLE LOCATION
TEMPORARY MONITORING WELL (GHD, JANUARY 2018)
TEMPORARY MONITORING WELL (GHD, JANUARY 2019)
PCE CONTOUR
520 ug/L CONCENTRATIONS IN APRIL 2020
ND(1) NOT DETECTED AT REPORTING LIMIT IN PARENTHESIS
NS WELL NOT SAMPLED DURING THIS EVENT
PROPOSED MNA LOCATION
0 50 100 ft
N
GHD
BLUEWATER THERMAL SOLUTIONS
100 HUNTS BRIDGE ROAD,
FOUNTAIN INN, SOUTH CAROLINA
ALTERNATIVE #2 (MNA) REMEDY AND MONITORING LOCATIONS
Project No. 11225667
Date February 2022
FIGURE 7.1


RESIDENCE
UNDEVELOPED LAND
HUNTS BRIDGE ROAD
RICHS BAKERY
FORMER DIESEL UST AREA
OIL-WATER SEPARATOR
WATER TANK
BLDG 1
BLDG 2
BLDG 3
BLDG 4
BLDG 5
BLDG 6
MW-4-16/B-10 NS
MW-1S-16 180
MW-1D-16/B-1
MW-5-16/B-3 4.6
MW-8-18/TW-6 NS
MW-7-18/TW-5 NS
MW-2-16/B-4 NS
MW-3-16/B-5 NS
MW-6-16/B-9 ND(1)
TW-10 880
TW-11 740
100
500
5
WOODED
WOODED
TOTE, CONSTRUCTION DEBRIS, HOUSEHOLD DEBRIS
SOUTH FRONTAGE ROAD
LEGEND
APPROXIMATE PROPERTY BOUNDARY
TEMPORARY WELL LOCATION (CRA, NOVEMBER 2013)
SHALLOW MONITORING WELL LOCATION
DEEP MONITORING WELL LOCATION
SOIL SAMPLE LOCATION
TEMPORARY MONITORING WELL (GHD, JANUARY 2018)
TEMPORARY MONITORING WELL (GHD, JANUARY 2019)
PCE CONTOUR
520 ug/L CONCENTRATIONS IN APRIL 2020
ND(1) NOT DETECTED AT REPORTING LIMIT IN PARENTHESIS
NS WELL NOT SAMPLED DURING THIS EVENT
PROPOSED ISCO INJECTION LOCATION
0 50 100 ft
N
GHD
BLUEWATER THERMAL SOLUTIONS
105 HUNTS BRIDGE ROAD,
FOUNTAIN INN, SOUTH CAROLINA
ALTERNATIVE #3 (ISCO) REMEDY AND MONITORING LOCATIONS
Project No. 11225667
Date February 2022
FIGURE 7.2


RESIDENCE
UNDEVELOPED LAND
HUNTS BRIDGE ROAD
RICHS BAKERY
FORMER DIESEL UST AREA
OIL-WATER SEPARATOR
WATER TANK
BLDG 1
BLDG 2
BLDG 3
BLDG 4
BLDG 5
BLDG 6
MW-4-16/B-10 NS
MW-1S-16
MW-1D-16/B-1
180
MW-5-16/B-3 4.6
MW-8-18/TW-6 NS
MW-7-18/TW-5 NS
TW-10 880
TW-11 740
100
500
5
MW-6-16/B-9 ND(1)
MW-2-16/B-4 NS
MW-3-16/B-5 NS
TOTE, CONSTRUCTION DEBRIS, HOUSEHOLD DEBRIS
WOODED
WOODED
SOUTH FRONTAGE ROAD
LEGEND
APPROXIMATE PROPERTY BOUNDARY
TEMPORARY WELL LOCATION (CRA, NOVEMBER 2013)
SHALLOW MONITORING WELL LOCATION
DEEP MONITORING WELL LOCATION
SOIL SAMPLE LOCATION
TEMPORARY MONITORING WELL (GHD, JANUARY 2018)
TEMPORARY MONITORING WELL (GHD, JANUARY 2019)
PCE CONTOUR
520 ug/L
CONCENTRATIONS IN APRIL 2020
ND(1)
NOT DETECTED AT REPORTING LIMIT IN PARENTHESIS
NS
WELL NOT SAMPLED DURING THIS EVENT
PROPOSED ISEB INJECTION LOCATION
0
50
100 ft
N
GHD
BLUEWATER THERMAL SOLUTIONS
105 HUNTS BRIDGE ROAD,
FOUNTAIN INN, SOUTH CAROLINA
Project No. 11225667
Date February 2022
ALTERNATIVE #4 (ISEB) REMEDY AND MONITORING LOCATIONS
FIGURE 7.3


RESIDENCE
UNDEVELOPED LAND
HUNTS BRIDGE ROAD
RICHS BAKERY
FORMER DIESEL UST AREA
OIL-WATER SEPARATOR
WATER TANK
BLDG 1
BLDG 2
BLDG 3
BLDG 4
BLDG 5
BLDG 6
TW-1
BH-7
BH-6
BH-8
BH-5
BH-3
B-2
BH-2
BH-4
TW-2
TW-3
TW-4
TW-5
TW-6
TW-7
TW-8
TW-9
BH-1
MW-4-16/B-10
NS
MW-1S-16
MW-1D-16/B-1
MW-5-16/B-3
4.6
MW-8-18/TW-6
NS
MW-7-18/TW-5
NS
TW-10
680
TW-11
740
MW-6-16/B-9
ND(1)
MW-2-16/B-4
NS
MW-3-16/B-5
NS
WOODED
WOODED
TOTE, CONSTRUCTION DEBRIS, HOUSEHOLD DEBRIS
SOUTH FRONTAGE ROAD
B-7
B-8
B-6
180
500
100
5
LEGEND
APPROXIMATE PROPERTY BOUNDARY
TEMPORARY WELL LOCATION (CRA, NOVEMBER 2013)
SHALLOW MONITORING WELL LOCATION
DEEP MONITORING WELL LOCATION
SOIL SAMPLE LOCATION
TEMPORARY MONITORING WELL (GHD, JANUARY 2018)
TEMPORARY MONITORING WELL (GHD, JANUARY 2019)
PCE CONTOUR
520 ug/L
CONCENTRATIONS IN APRIL 2020
ND(1)
NOT DETECTED AT REPORTING LIMIT IN PARENTHESIS
NS
WELL NOT SAMPLED DURING THIS EVENT
PROPOSED EXTRACTION LOCATION
0
50
100 ft
N
GHD
BLUEWATER THERMAL SOLUTIONS
105 HUNTS BRIDGE ROAD,
FOUNTAIN INN, SOUTH CAROLINA
ALTERNATIVE #5 (EXTRACTION) REMEDY AND MONITORING LOCATIONS
Project No. 11225667
Date February 2022
FIGURE 7.4