DES Waste Management Division 29 Hazen Drive; PO Box 95 Concord, NH 03302-0095

Groundwater Management Permit Renewal Application Former C.R. Bard Facility Route 12 Fitzwilliam, NH 03447

> NHDES Site #: 198905021 Project Type: LUST Project Number: 1095

Prepared For: BD 1 Becton Drive Franklin Lakes, NH 07417 Phone Number (860) 605-8803 RP Contact Name: Suzanne Smith RP Contact Email: Suzanne_m_smith@bd.com

Prepared By: WSP USA Environment and Infrastructure, Inc. 100 Apollo Drive, Suite 302 Chelmsford, MA 01824 Phone Number: (617) 733-2238 Contact Name: John Rice Contact Email: john.rice@wsp.com

August 14, 2023



Application for *Renewal* of Groundwater Management Permit

Waste Management Division Site Remediation Programs



RSA 485-C:4, VIII and Env-Or 607

A GROUNDWATER MANAGEMENT PERMIT is issued under RSA 485-C:4, VIII and Env-Or 607 to a responsible party to remedy contamination associated with the past discharge of regulated contaminants, and to manage the use of the contaminated groundwater. (Examples include sites contaminated from leaking underground storage tanks, unlined landfills regulated pursuant to RSA 14-M, hazardous waste disposal, etc.)

SUBMIT:

- ONE SIGNED AND COMPLETED APPLICATION (Application shall be dated, signed and sealed by the professional of record licensed under RSA 310-A.)
- SUPPORTING INFORMATION
- \$2,000 APPLICATION FEE (In the form of a check payable to the "Treasurer State of New Hampshire." State and local government, including counties and political subdivisions, are exempt unless eligible for funding under the Petroleum Reimbursement Fund Program.)
- TO: NHDES/Waste Management Division
 Site Remediation Programs
 Groundwater Management Permit Coordinator
 P.O. Box 95, 29 Hazen Drive
 Concord, NH 03302-0095

CERTIFICATION OF NOTICE TO LOCAL TOWN/CITY CLERK

In order to meet the requirements of Env-Or 607.02 (b)(3), the applicant certifies that on July 27, 2023_ a copy of this completed permit application was given to the Town/City Clerk of (the town in which the facility requesting a permit is located).

Date:	August 15, 2023	Applicant Signature:
	, (agast 10) 2020	, pprease e.g. ata e.

Applicant Name (print or type): Suzanne M. Smith

CERTIFICATION OF NOTICE TO OWNERS OF LOTS PROPOSED FOR INCLUSION IN THE GMZ (As Applicable)

In order to meet the requirements of Env-Or 607.02 (b)(2), the applicant certifies that notification has been provided (via certified mail – return receipt requested) to all owners of lots proposed for inclusion in the Groundwater Management Zone (GMZ).

Date:	August 15, 2023	Applicant Signature:	Ny Nome
Applica	ant Name (print or type):	Suzanne M. Smith	

I. SITE INFORMATION

Site Name: Former C.R. Bard Facility	DES Site #: 198905021	
Address: 179 Route 12		
City: Fitzwilliam	State: NH Zip: 03447	
Tax Map: 15	Lot Number: 29	
Deed Reference: County: Cheshire	Book and Page: <u>1895/179</u>	

II. SITE OWNER INFORMATION

Site Owner Name: Turnkey Lur		Turnkey Lumber		Phone:	603-585-9593	
Mailing Address: 179 Route 12 Nort			h			
City: I	- Fitzwilliam		State:	NH	Zip:	03447
Email:	mike@tur	rnkeylumber.com	Fax:			

III. PERMIT APPLICANT INFORMATION (complete only if different than site owner)

Permit A	Permit Applicant Name:		BD		Phone:	201-847-68	800	
Mailing	Address:	1 Bector	Drive		-			
City:	Franklin Lakes		State:	NJ	Zip:	07417		
Email:	Suzanne_r	n_smith@	စစd.com	Fax:				

IV. CONTACT PERSON INFORMATION (complete only if different than site owner)

Contact	Person Name:	Suzanne Smith		Phone:	860-605	-8803	
Mailing	Address: <u>1 Be</u>	ecton Drive					
City:	Franklin Lakes		State:	NJ	Zip:	07417	
Email:	Suzanne_m_sr	nith@bd.com	Fax:				

V. SUPPORTING INFORMATION (required)

- a) Tabular summary of all monitoring results for the 5 years immediately preceding the renewal application from existing monitoring points with an assessment of trends in the data.
- b) Narrative summary of the status of remedial measures performed (e.g., landfills: active, inactive w/no closure plan submitted, closed (as per approved closure plan); petroleum release and hazardous waste release sites: active remediation on-going, remedial action plan (RAP) completed w/on-going monitoring or monitoring–only RAP) and an update on the performance of measures conducted.
- c) Recommendations for any revisions to the existing Groundwater Management Permit, including an outline of proposed modifications to the monitoring program. Any proposed modifications to the monitoring program must be specific in terms of individual monitoring locations, sampling frequency and analytical parameters, and should be supported by reference to the monitoring summary.
- d) Updated site plan(s) scaled to fit onto an 8-1/2 inches by 11 inches or 11 inches by 17 inches sheet, using a tax map as a base, that identifies and locates the following:
 - 1. Proposed groundwater management zone boundary.
 - 2. Any properties, including tax map and lot numbers, within and abutting the lots on which the proposed groundwater management zone is located.
 - 3. All proposed sampling locations.

- 4. Current groundwater contours referenced to a table of current water level measurements obtained from piezometers and monitoring wells used to develop the contours.
- 5. Water supply wells, including type of use, within 500 feet of the GMZ per Env-Or 607.03 (a) (7) f..
- e) A list of properties located within the groundwater management zone including owner's name, mailing address, telephone number, property address, and deed reference including county book and page and tax map and lot number.

VI. CERTIFICATION

To the best of my knowledge, the data and information that I have submitted to renew the Groundwater Management Permit from the New Hampshire Department of Environmental Services, are true and correct.

The undersigned certifies that application has been made for all required local, state, or federal permits. If an officer of the owner, I affirm that I have been duly authorized by the corporation, LLC, LLP, or other corporate entity to bind the corporation, LLC, LLP, or other corporate entity, and to make the above declarations. I also affirm that the corporation, LLC, LLP, or other corporate entity has made all filings and paid all fees required by the New Hampshire Secretary of State.

Date: August 15, 2023 S	ignature:	Sy Smith
		Permit Applicant
Name (print or type): Suzanne N	l. Smith	
PROFESSIONAL CERTIFICATION August 15, 2023 Si Date:	ignature:	Professional Engineer or Geologist
Name (print or type): John F. Ric	е	

The New Hampshire licensed professional of record who prepared this permit application is required to apply their professional seal in the space provided below.



No liability is incurred by the State by reason of any approval for Groundwater Management Permits. Approval by the New Hampshire Department of Environmental Services is based on the information supplied by the applicant. No guarantee is intended or implied by reason of any advice given by NHDES or its staff.

VII.

Supporting Information A

Monitoring Results and Trends Assessment

Assessment of trends in the data

Site investigations began in December 1997. The GMP was issued on September 17, 2003. The GMP was renewed on September 18, 2008 on September 18, 2013, and November 14, 2018. The following subsections focus on findings from the groundwater sampling and analysis conducted from April 2019 through April 2023.

Water Table Conditions

The fluctuation of groundwater elevations measured at each well is relatively consistent (Table A1). In general, the water table elevations decreased from 2019 to 2021, then had an increasing trend in 2022, and then decreased again in 2023. The water elevations in the groundwater management zone have consistently indicated a northerly flow (Figure D2).

Light non-aqueous phase liquid (LNAPL) was not detected in wells TDS-1, TDS-3, or T1-B during this reporting period (Table A1). In well TDS-2, LNAPL has not been measured since 2021; however, evidence of petroleum has been observed on the absorbent sock when installed in the well. LNAPL was measured in well FT-1 in 2020, 2022 and in 2023. The maximum thickness of LNAPL in well FT-1 is 0.03 feet (2020) and the data shows a slightly downward trend for this five-year reporting period.

Groundwater Findings

The groundwater results for all the wells sampled for the previous five years are shown in Table A2. Only monitoring well T1-B has naphthalene detected at a concentration that exceeds the New Hampshire Ambient Groundwater Quality (AGQS) Standard of 100 μ g/L. The naphthalene concentrations in the remaining wells (TDS-2, TDS-3, and FT-1) have been non-detect or below the AGQS during this five-year reporting period.

Statistical analysis (ordinary least squares (OLS) linear regression and Mann-Kendal (MK) trend test with Theil-Sen's slope estimate methods) was performed for the naphthalene concentrations in well T1-B for the data for the last 5 years (2019 through 2023).

The T1-B naphthalene concentrations had no significant (95% confidence) linear trend (Figure A3). The MK trend analysis had a 65 percent confidence level of a downward trend (but not necessarily linear). Both the OLS and MK statistical methods predict attainment of the 100 μ g/I AGQS standard in 2031 and 2030 respectively.

Table A1 Well Gauging Data Former C.R. Bard Facility, Fitzwilliam, NH NHDES # 198905021

Well ID	Gauging Date	PVC Elevation (feet NGVD)	DTB (feet)	DTW (feet)	DTNAPL (feet)	NAPL Thickness (feet)	Groundwater Elevation (feet NGVD)	
TDS-1	4/18/2019	1284.83	6.85	2.61	ND	ND	1282.22	
TDS-1	4/9/2020	1284.83	10.28	2.83	ND	ND	1282.00	
TDS-1	4/12/2021	1284.83	10.30	3.40	ND	ND	1281.43	
TDS-1	4/20/2022	1284.83	10.25	2.58	ND	ND	1282.25	
TDS-1	4/21/2023	1284.83	10.20	3.17	ND	ND	1281.66	
TDS-2	4/18/2019	1285.29	6.85	2.41	2.40	0.01	1282.89	
TDS-2	4/9/2020	1285.29	7.45	2.29	2.27	0.02	1283.02	
TDS-2	4/12/2021	1285.29	7.75	3.01	2.99	0.02	1282.30	
TDS-2	4/20/2022	1285.29	7.98	2.05	ND	ND	1283.24	
TDS-2	4/21/2023	1285.29	7.90	2.82	ND	ND	1282.47	
TDS-3	4/18/2019	1284.27	7.95	3.49	ND	ND	1280.78	
TDS-3	4/9/2020	1284.27	7.99	3.11	ND	ND	1281.16	
TDS-3	4/12/2021	1284.27	8.00	3.59	ND	ND	1280.68	
TDS-3	4/20/2022	1284.27	7.97	2.72	ND	ND	1281.55	
TDS-3	4/21/2023	1284.27	7.91	3.42	ND	ND	1280.85	
FT-1	4/18/2019	1286.91	10.70	2.55	ND	ND	1284.36	
FT-1	4/9/2020	1286.91	10.75	3.03	3.00	0.03	1283.88	
FT-1	4/12/2021	1286.91	10.78	3.81	ND	ND	1283.10	
FT-1	4/20/2022	1286.91	10.70	2.76	2.74	0.02	1284.15	
FT-1	4/21/2023	1286.91	10.67	3.46	3.45	0.01	1283.45	
T1-B	4/18/2019	1287.71	10.88	1.65	ND	ND	1286.06	
T1-B	4/9/2020	1287.71	10.89	2.15	ND	ND	1285.56	
T1-B	4/12/2021	1287.71	10.89	3.04	ND	ND	1284.67	
T1-B	4/20/2022	1287.71	10.90	1.87	ND	ND	1285.84	
T1-B	4/21/2023	1287.71	10.91	2.73	ND	ND	1284.98	

Notes:

Elevations were measured relative to the National Geodetic Vertical Datum.

PVC = top of PVC casing of monitoring well.

DTB = depth to bottom of well.

DTW = depth to water.

DTNAPL = depth to non-aqueous phase liquid.

ND = not detected.

NAPL = non-aqeuous phase liquid.

Prepared by John Rice 6/27/2023

Checked by Gabrielle Davis 6/27/2023

Table A2 Groundwater Analytical Results (2019 - 2023) Former C.R. Bard Facility, Fitzwilliam, New Hampshire NHDES # 198905021

	Well ID	TDS-2	TDS-2	TDS-2	TDS-2	TDS-2	TDS-3	TDS-3	TDS-3	TDS-3	TDS-3	FT-1	FT-1	FT-1	FT-1	FT-1	T1-B	T1-B	T1-B	T1-B	T1-B
	Date Sampled	4/18/2019	4/9/2020	4/12/2021	4/20/2022	4/21/2023	4/18/2019	4/9/2020	4/12/2021	4/20/2022	4/21/2023	4/18/2019	4/9/2020	4/12/2021	4/20/2022	4/21/2023	4/18/2019	4/9/2020	4/15/2021	4/20/2022	4/21/2023
Analyte (ug/L) ⁽¹⁾	AGQS (ug/L)																				
Volatile Organic Compoun (Method 8260B)	ds (VOC)																				
1,2,4 trimethylbenzene	330	38	8.5	62	29	28	<1	<1	<1	<1	<1	1	1.8	1.7	1.5	2.2	200	270	220	220	230
1,3,5 trimethylbenzene	330	7.6	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	69	<1	<1	<1	<1
n-butylbenzene	260	1.5	<1	<1	<1	2.7 J	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	14	<1	<1	11	13
n-propylbenzene	260	2.7	<1	7.1	3.6	5.4	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	34	32	27	27	30
p-isopropyltoluene	260	1.5	<1	2.5	1.1	1.1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	11	10	9.3	9	10
sec-butylbenzene	260	1.2	<1	2.5	1.5	3.1	2.3	2.1	1.9	1.4	1.3	<1	<1	<1	<1	1.3	10	9.4	8.5	8.3	9.9
tert-butylbenzene	260	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	1.8	<1	1.6	1.7	1.9
Iso-propylbenzene	800	1.8	1	4.3	2.5	3.3	<1	1.1	<1	<1	<1	<1	<1	<1	<1	1	17	17	13	13	14
Benzene	5	1.4	<1	1.6	1.3	1.5	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Toluene	1,000	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Ethylbenzene	700	9.9	1.7	6.9	6	5.6	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	36	31	25	22	23
Xylenes (mixed isomers)	10,000	12.3	<1	4.6	1.3	1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	39	34.9	26.8	23.3	24.8
Methyl-tertiary-butyl ether	13	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Naphthalene	100	67	9.4	45	9.9	14	<5	<2	<2	<2	<2	<5	2.6	2.3	<2	2.3	230	240	180	210	190

Notes:

Prepard by John Rice 6/27/2023

Checked by Gabrielle Davis 6/27/2023

Concentrations in micrograms per liter (ug/L) AGQS = Ambient Groundwater Quality Standards Yellow highlight = exceed AGQS

Table includes only analytes that have been detected in the past sampling

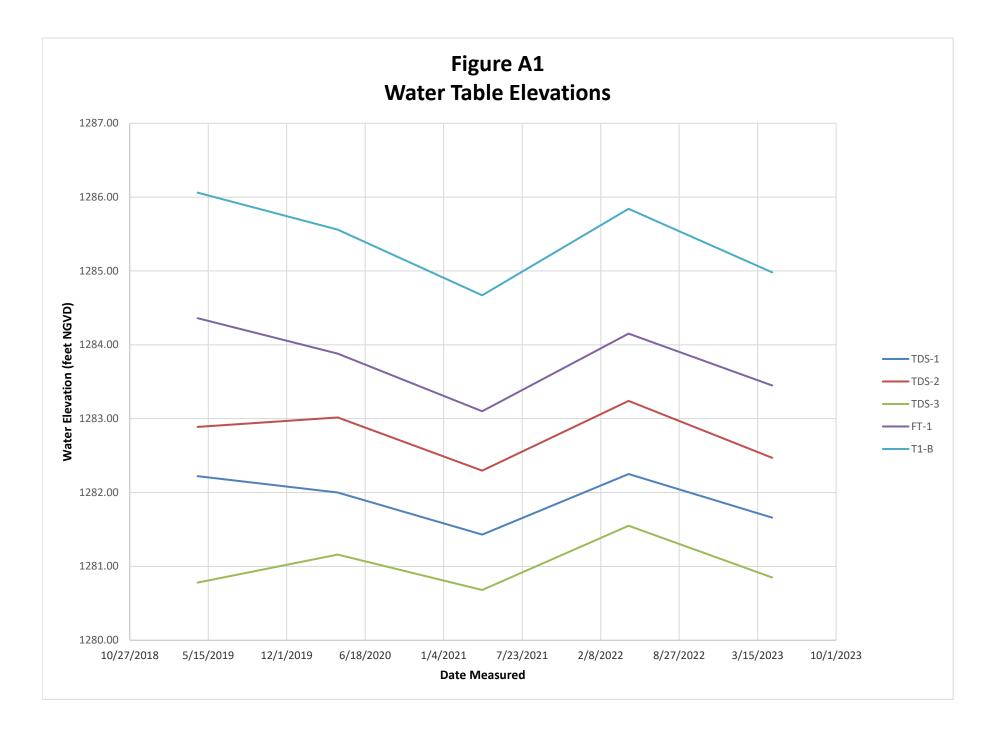
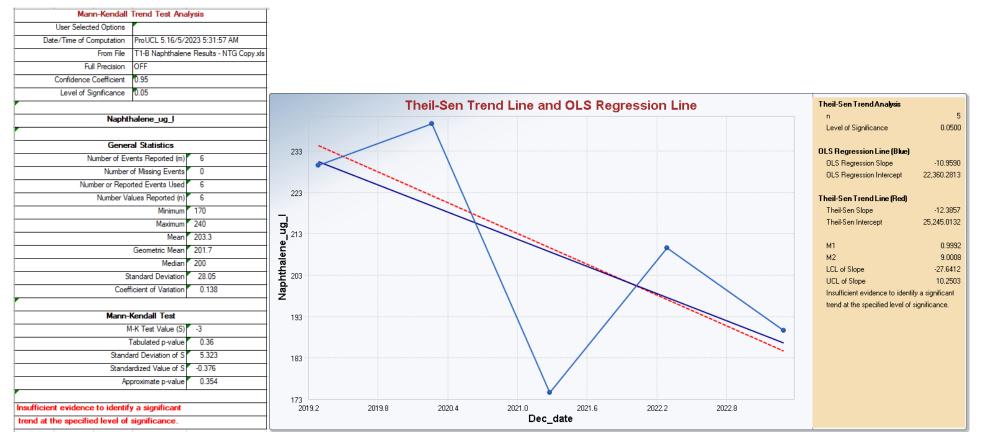


Figure A2 Well T1-B Naphthalene Trend Analysis



Summary

Data Set	OLS Slope	OLS Confidence	Theil-Sen Slope	MK confidence	Date to Attain 100 ug/L (year)
2019 -	-10.959	74.6%			2031.23
2023			-12.3857	64.6%	2030.16

OLS = ordinary least squares linear regression

MK = Mann-Kendall Trend Test Analysis

Supporting Information B

Remedial Measures Status

Narrative Summary of the Status of Remedial Measures Performed

A historical release of No. 2 fuel oil occurred from a 6,000-gallon underground storage tank (UST) formerly located at the Site. The 6,000-gallon UST and associated 265 cubic yards of petroleum-contaminated soils were removed from the Site in 1987 and 1988. In 1997, during subsequent investigations at the Site, petroleum-contaminated soils were observed around the fill pipe to the 10,000-gallon fiberglass UST that replaced the 6,000-gallon UST. Approximately 5 cubic yards of soil were removed and overfill protection was installed in 1997.

During the September 1998 sampling round a 0.2-foot thick layer of light nonaqueous phase liquid (LNAPL) was discovered in monitoring well FT-1 that was not present when the well was sampled in December of 1997. The Initial Response Action conducted in November 1998 included an evaluation of the integrity of the 10,000-gallon UST and tank piping. Although the tank passed the tightness test and there were no signs of leakage from the piping, the tank was replaced rather than upgraded, based on its age and appearance. As described in the May 25, 1999 Tank Closure Report, a small hole was observed in the bottom of the north end of the tank during the tank removal. Remediation included removal of a total of 420 tons of petroleum-contaminated soils and 20,000 gallons of groundwater, as well as passive LNAPL collection using a wick bailer. Subsequent groundwater monitoring conducted in 2002 indicates that the Initial Response Action resulted in a reduction of LNAPL thickness and dissolved concentrations.

Enhanced Fluid Recovery (EFR) was conducted In October and November 2004, at selected monitoring wells at the Site to recover NAPL and groundwater from the source area of the plume. During both events, EFR was applied at the monitoring wells FT-1, T1-B, and TDS-2. The vacuum was applied via a mobile vacuum truck, which collected the recovered fluid for off-site transport and disposal. During the October event, approximately 400 gallons of NAPL and groundwater were recovered. Approximately 454 gallons of NAPL and groundwater were recovered during November event.

On February 23, 2022, the property owner (Turnkey Lumber) removed the inactive 10,000-gallon heating oil UST and associated piping located in the southeast corner of the groundwater management zone. According to the tank closure report, the tank and associated piping appeared in good condition and there was no evidence of failure or breaches of integrity. Soil headspace readings ranged up to 0.4 parts per million per volume. Soil samples from the excavation had no constituents at concentrations exceeding the NHDES soil remediation Standards. One groundwater sample was collected from the UST grave which had benzofluoranthene and indenopyrene detected above the NHDES Ambient Groundwater Quality Standard; however, neither is expected to be associated with a release of fuel oil.

The goal for naphthalene in groundwater may be achieved through continued natural attenuation mechanisms. The lack of LNAPL in well TDS-2 since 2021, the decreasing trend of LNAPL in well FT-1 since 2020, and the lack of LNAPL in T1-B where naphthalene exceeds the AGWQS indicate that additional LNAPL recovery actions will likely not be necessary to achieve regulatory closure.

Supporting Information C

Groundwater Management Permit Recommendations

Recommendation for Revisions to the Existing Groundwater Management Permit Monitoring Program

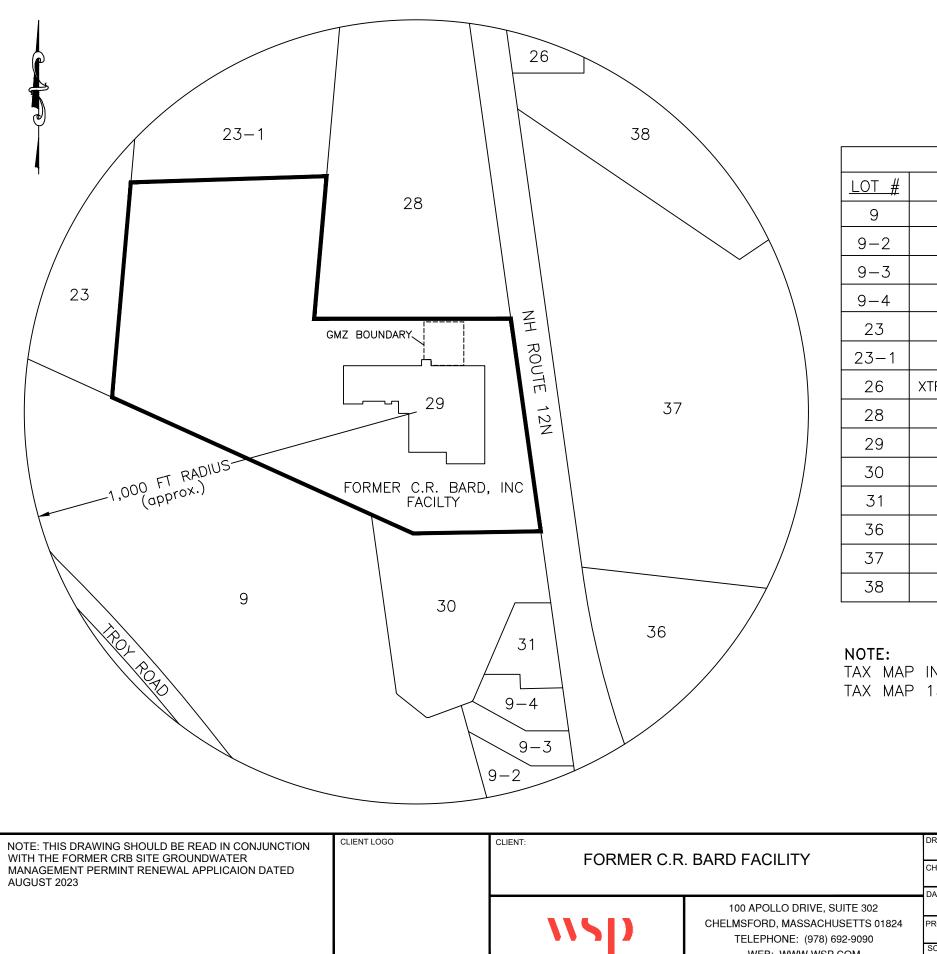
The current Groundwater Management Permit monitoring program requires the sampling of monitoring wells TDS-2, TDS-3, FT-1, and T1-B each April. The groundwater samples are analyzed for the NHDES' Petroleum Remediation Short List of Analytes for VOCs. In addition, all of the monitoring wells have the water level and free product (if present) measured annually.

As indicated in supporting documentation section V, in the past five years, only the naphthalene concentration in T1-B exceeded the NHDES standard. A significant measurable layer (greater than 0.01 feet) of free product has been intermittently detected in wells FT-1 and TDS-2; however, LNAPL has not been detected in TDS-2 since 2021 and the LNAPL in FT-1 has decreased to 0.01 feet.

The annual groundwater sampling and gauging over the past five years have indicated that the groundwater contamination at the site is relatively stable and that the natural attenuation process continues. Based on what has been observed for the last five years, BD recommends that the Groundwater Management Permit monitoring program continue with annual monitoring as part of the permit renewal process.

Supporting Information D

Site Plans



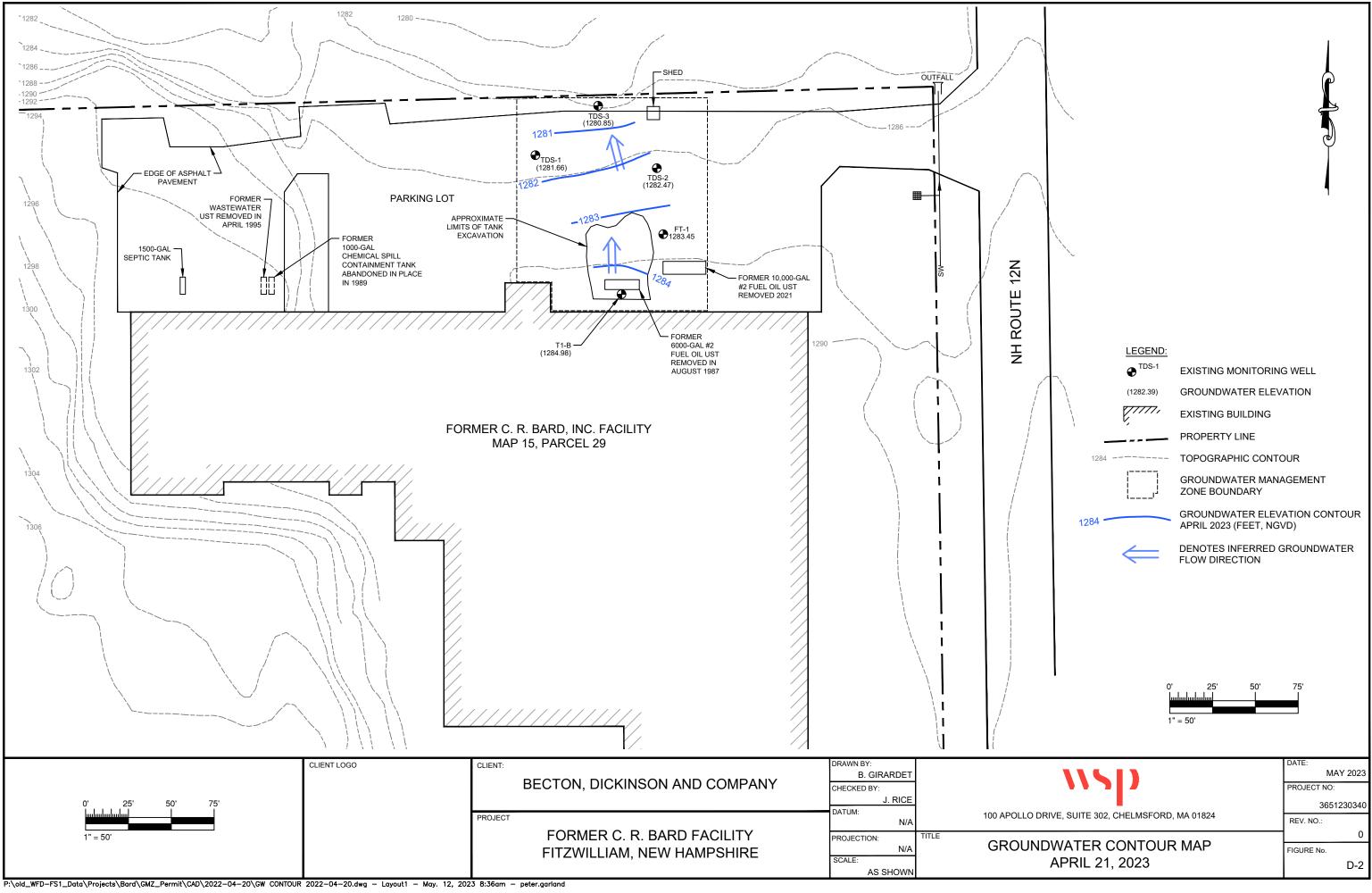
P:\old_WFD-FS1_Data\Projects\Bard\GMZ_Permit\CAD\GROUND MANAGEMENT ZONE MAP C-2023-05-12.dwg - Layout1 - May. 12, 2023 9:53am - peter.garland

	PROPERTIES W
<u>lot #</u>	OWNER
9	TIGHE
9-2	JEWELL AND CHAR
9-3	DURHAM
9-4	TURNER
23	JOBBAGY
23-1	RAITTO
26	XTREAM AUTO BODY & COLLISIO
28	NGL-NE REAL ESTATE
29	TURNKEY LUMBE
30	TOWN OF FITZWILL
31	153 RT. 12N, LL
36	ABBOTT REALTY, L
37	SEILER AND BROV
38	PASTOR
	9 9–2 9–3 9–4 23 23–1 26 28 29 30 31 36 37

TAX MAP INFORMATION WAS OBTAINED TAX MAP 15.

DRAWING SHOULD BE READ IN CONJUNCTION DRMER CRB SITE GROUNDWATER IT PERMINT RENEWAL APPLICAION DATED 3	CLIENT LOGO	CLIENT: FORMER C.R	DRAWN BY: P. GARLAND CHECKED BY: J. RICE	PROJECT	FORMER C FITZWILLIAN	
		wsp	100 APOLLO DRIVE, SUITE 302 CHELMSFORD, MASSACHUSETTS 01824 TELEPHONE: (978) 692-9090 WEB: WWW.WSP.COM	DATUM: N/A PROJECTION: N/A SCALE: NOT TO SCALE	TITLE	GROUNDWA ZONE - SURRO

WITHIN 1,000 F	EET							
	LAND USE							
	RESIDENTIAL							
RRON	RESIDENTIAL							
	RESIDENTIAL							
	RESIDENTIAL							
	VACANT/UNDEVEL	OPED						
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ION CENTER, LLC	COMMERCIAL/INDUS	STRIAL						
TE, LLC	COMMERCIAL							
BER	COMMERCIAL/INDUSTRIAL							
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LLC	RESIDENTIAL							
LLC	COMMERCIAL/INDUS	STRIAL						
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RMER C.R. BARD WILLIAM, NEW HA	DATE: 12 MAY 2023 PROJECT NO: 3651230340							
OUNDWATER MAN	REV. NO.: A FIGURE No.							
		D1						



Supporting Information E

Property Information

Property Within the Groundwater Management Zone

The entire groundwater management zone consists of a small portion of only one property.

Owners Name:	Turnkey Lumber Corporation Attn: Michael Rossi		
Mailing Address:	Route 12		
	Fitzwilliam, NH 03447		
Telephone Number:	978-490-1907		
Property Address:	Route 12		
	Fitzwilliam, NH 03447		
Deed Reference			
County Book	1895		
Page	179		
Тах Мар	15		
Lot Number	29		

Vendor:	TREA01	Treasurer State	e of New Hampshire			NO. 602692 Date July 31, 2023
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