



GeoInsight
ENVIRONMENTAL STRATEGY & ENGINEERING

**AQUIFER PROTECTION DISTRICT - HYDROGEOLOGIC STUDY REPORT
BENCHMARK SENIOR LIVING
PROPOSED ASSISTED LIVING FACILITY DEVELOPMENT
MAP 10, LOT 1
LAFAYETTE ROAD
RYE, NEW HAMPSHIRE**

Prepared for:

Benchmark Senior Living
BSL Rye Development LLC
201 Jones Road - Third Floor West
Waltham, Massachusetts 02451

Prepared By:

GeoInsight, Inc.
186 Granite Street, 3rd Floor, Suite A
Manchester, New Hampshire 03101
Tel: 603-314-0820
Fax: 603-314-0821

info@geoinc.com
www.geoinsightinc.com

July 15, 2021

GeoInsight Project 9212-006

Kimberly Reed
Town of Rye Planning & Zoning Administrator
10 Central Road
Rye, New Hampshire 03870

RE: Aquifer Protection District – Hydrogeologic Study Report
Benchmark Senior Living
Proposed Assisted Living Facility Development
Map 10, Lot 1, Lafayette Road
Rye, New Hampshire

Dear Ms Reed:

At the request of Benchmark Senior Living/BSL Rye Development LLC (Benchmark), GeoInsight, Inc. (GeoInsight) completed a Hydrogeologic Study of a vacant parcel of land adjacent to Lafayette Road (Route 1) in Rye, New Hampshire (the Property). The Property is identified by the Town of Rye as Map 10, Lot 1 and is a 9.56-acre parcel that was formerly known as 355 Lafayette Road (former Hector's Motel). The location of the Property is shown on Figure 1 and on the Rye Assessors map included in Attachment A. The Hydrogeologic Study was completed pursuant to Town of Rye General Code, §190-3.6 E(2) and F(1). Based upon the mapped limits of stratified-drift aquifers (June 2003 Town map in Attachment A), and according to Rye General Code, §190-3.6, the Property is located within the Town's Aquifer and Wellhead Protection Overlay District.

As you may be aware, a lot line revision is proposed which would separate the Property into two new parcels. Redevelopment efforts include the construction of a proposed 30-unit condominium (condo) development on the southern portion of the parcel by Tuck Realty Corporation (a Hydrogeologic Study was submitted for this development under a separate cover) and construction of a senior/assisted living facility by Benchmark on the northern portion of Map 10, Lot 1, with future connection of the senior facility to Benchmark's Evolve Memory Care (Evolve) facility, located on the abutting parcel farther to the north. Current preliminary layouts of the Tuck condo development and proposed Benchmark assisted living facility are presented on Figures 1 through 3.

This Hydrogeologic Study Report addresses the Benchmark assisted living facility development as it relates to the Town's Aquifer Protection District rules and requirements. A previous Hydrogeologic Study was prepared in February 2010 for Benchmark's Evolve facility (then called Sanctuary Care) located to the north of the Property. The New Hampshire Department of Environmental Services issued a Groundwater Discharge Permit (GDP) for the Evolve facility to monitor groundwater quality on that site in the area of and downgradient of the leach field serving that facility.

Soil boring and monitoring well data from the entire current parcel, and existing data from wells at the Evolve facility were considered in development of this Hydrogeologic Study.

PROPOSED DEVELOPMENT DETAILS

The proposed Benchmark facility is comprised of 78 beds for residents, and the building has a kitchen and laundry facilities, as well as a salon and nurse's office, with 42 staff/employees. The assisted living facility will connect to the Evolve Memory Care facility and the north part of Map 10, Lot 1 will be combined with the Evolve lot (Map 10, Lot 3) to create a new parcel.

The 78-bed assisted living facility will be served by an on-site subsurface disposal system ("leach field"), with design flow of 10,590 gallons per day (GPD; 125 GPD per bed and 20 GPD per employee). GeoInsight understands stormwater will be detained and treated with bioretention ponds located around the property. The parking areas will be curbed with porous pavement. The building will have a mix of flat roof with roof drains and sloped roof with stone drip edges. The stormwater management system/features as designed will infiltrate 100 percent of stormwater collected on-site through the sand and gravel soil on the property.

FIELD DATA COLLECTION ACTIVITIES AND RESULTS

As a part of the Hydrogeologic Study, on May 13 and 14, 2021, GeoInsight oversaw the drilling of six soil borings completed as groundwater monitoring wells at the Property (GEO-1 through GEO-6). Borings/wells GEO-2, GEO-3, GEO-4, were advanced on the Tuck condo development portion of the Property. Boring/well GEO-5 was located near the proposed future lot line separating the Tuck and Benchmark developments, and GEO-1 and GEO-6 are located on the proposed Benchmark (northern) part of the Property. These six borings/wells, along with pre-existing wells MW-3 and MW-6 associated with the Evolve facility to the north, were used in this Hydrogeologic Study. Boring/well completion logs for GEO-1 through GEO-6 are presented in Attachment B and the locations are illustrated on Figures 1 through 3. GeoInsight also completed a Geotechnical Engineering Assessment for a previous proposed layout of the Benchmark building, which involved advancement of 8 soil borings. The 8 geotechnical soil boring locations are shown on Figures 1 through 3 and boring logs are presented in Attachment B.

On May 23 and 28, 2021, GeoInsight collected depth to groundwater measurements and water quality indicator parameter readings (pH, temperature, dissolved oxygen, specific conductance, and oxidation-reduction potential) in the eight wells (Tables 1 and 2, respectively). On May 28, 2021, wells GEO-1 through GEO-6 and MW-3 and MW-6 were surveyed relative to a local benchmark (see Figure 1) to establish wellhead elevations for use in determining groundwater flow calculations (Table 1).

Wells GEO-1 through GEO-6, and MW-3 and MW-6 were sampled on May 23, 2021, and samples were analyzed by a laboratory for ammonia-nitrogen, nitrate-nitrogen, and chloride. A copy of the laboratory analytical report is presented in Attachment C and the nitrogen and chloride data are presented in Table 2.

Nitrate and chloride concentrations reported in groundwater samples collected from wells GEO-1 through GEO-6 ranged from not detected above the laboratory reporting limit of 0.1 milligrams per liter (mg/L) to 2.9 mg/L (nitrate) and 3.9 mg/L to 240 mg/L (chloride). In wells MW-3 and MW-6 located at the Evolve facility and upgradient of the Property, reported nitrate and chloride concentrations were 0.9 mg/L and 1.3 mg/L (nitrate) and 420 mg/L and 430 mg/L (chloride).

On May 28, 2021, *in-situ* monitoring well/aquifer hydraulic conductivity testing (“slug tests”) were performed at wells GEO-1 through GEO-6. Because the monitoring wells had screens intersecting the water table (not fully submerged), slug-out (falling head) tests were conducted. Hydraulic conductivity values from the slug tests ranged from 23 to 27 feet per day (ft/day). Note, that the aquifer responses recorded in wells GEO-3, GEO-4, and GEO-5 (and for the second test at GEO-2) were too rapid to provide useful data for calculating hydraulic conductivities. Slug test data and charts for wells GEO-1, GEO-2, and GEO-6 are presented in Attachment D.

Previous hydraulic conductivity testing by others in a February 2010 hydrogeologic study report for the Evolve facility to the north reported hydraulic conductivity values from 22 to 250 feet per day. The higher end range in values in that report appear to have been calculated using rapid slug test response data, which tends to yield higher and unrepresentative calculated hydraulic conductivity values. The 22 ft/day value from the Evolve project correlates with the range of results from the GEO-1, GEO-2, and GEO-5 tests.

HYDROGEOLOGIC SETTING

The topography of the Property is approximately 110 feet to 116 feet above mean sea level (MSL). The Property is generally level with Lafayette Road. The area surrounding the Property is mixed residential and commercial and the Coakley Landfill, which is closed landfill and a USEPA Superfund Site, borders the Property to the west/southwest (see Assessors Map in Attachment A).

Based upon information obtained during the completion of the soil borings at the Property, native soil is primarily a glacial outwash deposit. The site stratigraphy was generally observed to consist of an upper coarse-grained layer (light brown to brown, fine to coarse sand, with some to trace amounts of gravel, and some to trace amounts of silt) and a lower fine-grained layer (fine sand and silt, with little to trace amounts of clay).

Based upon a review of the Bedrock Geologic Map of New Hampshire, bedrock underlying the Property consists of quartz-feldspar granitic gneiss and pegmatite intruded into the Rye formation and forming a migmatite. Outcrops were not observed on the Property and the borings completed did not encounter refusal to explorations depths up to 33 feet below ground surface (bgs; well GEO-6). Refusal on presumed bedrock (subsequently cored for confirmation) at the Evolve facility in borings completed for the 2010 hydrogeologic study for that project, was encountered at depths of 11 feet bgs (northeast part of the Evolve property) and 35 feet bgs (southwest part of Evolve property).

Depth to groundwater in the eight wells gauged on May 23 and 28, 2021 ranged from approximately 13.5 feet bgs (well GEO-2) to 24.5 feet bgs (well GEO-5), which equates to relative elevations of 96.5 feet MSL (well GEO-2) and 93.5 feet MSL (well GEO-5). Groundwater elevation

contours were mapped on the development site plan for the Property (Figures 2 and 3). Groundwater was at an elevation of approximately 104 feet at the northeast part of the Property and slopes to an elevation of 93.5 feet at the southwest part of the Property. With respect to the proposed assisted living facility on the northern portion of the Property, groundwater flow is generally directed southwesterly (Figures 2 and 3) with a high groundwater elevation of 104 feet at the northeastern Property line to 94 feet at the southwestern western property boundary.

SAMPLING OF UNNAMED MONITORING WELL

An unnamed monitoring well is located on the Property and its location is shown on Figure 1. This monitoring well was sampled by Jones & Beach Engineers on January 15, 2020 and samples were sent to Eastern Analytical of Concord, New Hampshire for various analyses. The laboratory analytical report from the January 2020 unnamed monitoring well testing is presented in Attachment C. The groundwater sample was analyzed for volatile organic compounds (VOCs), select semi-volatile organic compounds, pesticides, herbicides, metals, nitrate/nitrite/ammonia, per- and poly-fluorinated substances (PFAS), and other inorganic parameters. Detected concentrations of constituents included:

Compound	Detected Concentration	AGQS
bis-2-ethyl hexyl adipate	2.5 micrograms per liter (µg/L)	400 µg/L
bis-2-ethyl hexyl phthalate	9.2 µg/L	6 µg/L
ammonia-N	0.18 µg/L	No AGQS
arsenic	9.4 µg/L	10 µg/L
barium	29 µg/L	2,000 µg/L
chromium	17 µg/L	100 µg/L
lead	7.8 µg/L	15 µg/L
manganese	260 µg/L	300 µg/L
perfluorooctanoic acid (PFOA)	0.0035 µg/L	0.012 µg/L
Perfluorooctane sulfonic acid (PFOS)	0.00394 µg/L	0.015 µg/L

Except for bis-2-ethylhexyl phthalate (BEHP), other detected compounds were at concentrations below applicable New Hampshire Ambient Groundwater Quality Standards (AGQSs). The detection of BEHP at a concentration of 9.2 µg/L, was above the New Hampshire AGQS of 6 µg/L, however, BEHP is a common laboratory contaminant/artifact. GeoInsight attempted to sample the unnamed on-site monitoring well for environmental due diligence purposes on February 3, February 22, and March 2, 2021 to re-analyze for BEHP in groundwater; however, the well was dry on all three dates and a sample could not be obtained.

In lieu of being able to obtain groundwater samples from the unnamed monitoring well located at the Property, GeoInsight collected groundwater samples for BEHP/phthalate analysis from monitoring wells MW-3 and MW-6 located at the Evolve facility along the shared property line with the Subject Property on March 2, 2021. Also, after installation of well GEO-1, on May 23, 2021, GeoInsight sampled the well for phthalate analysis. BEHP and other phthalates were not detected at concentrations above laboratory reporting limits in the March 2, 2021 groundwater samples from wells MW-3 and MW-6 or the May 23, 2021 groundwater sample from well GEO-1. The analytical reports for the March 2021 and May 2021 sampling are included in Attachment C.

EVOLVE GROUNDWATER DISCHARGE PERMIT SUMMARY

The neighboring Evolve memory care facility to the north has a NHDES-issued GDP (NHDES #201004021) for its on-site community wastewater disposal system (septic/sanitary leach field). The GDP approved up to 10,000 GPD of wastewater discharge, however, Evolve GDP monitoring records indicate an average daily flow of approximately 2,700 GPD. The Evolve facility has a nitrate pre-treatment system (the April 2010 GDP Application on file with the NHDES indicates a BioClere system). GeoInsight reviewed groundwater testing records from the Evolve facility to evaluate constituent concentrations downgradient of the Evolve leach field; the most recent GDP data summary table and a monitoring well site plan for the Evolve facility are presented in Attachment D. Wastewater constituents of concern, including those with established NH AGQs (specifically, nitrate and arsenic) were not detected above NH AGQs in the available GDP testing records indicating the leach field and nitrate pretreatment system are operating effectively. Groundwater flow at the Evolve facility was reported by others to the south and southwest (see site plan in Attachment E).

COAKLEY LANDFILL SUMMARY

As previously mentioned, the Property (Map 10, Lot 1) abuts the Coakley Landfill Superfund site. While groundwater quality beneath the Property does not appear to be affected by conditions at the landfill, the Property is currently recorded in the Groundwater Management Zone (GMZ) for the Coakley site. A copy of the NHDES-issued GMP and Notice of GMP recorded at the registry of deeds for the Coakley Landfill are presented in Attachment F. Given the nature of the groundwater conditions at the Superfund site and its proximity to the Property, GeoInsight reviewed available investigation and groundwater monitoring reports for the landfill as a part of this Hydrogeologic Study. The following information was obtained from the Draft 2019 Annual Report (dated July 31, 2020) for the Coakley Landfill on file with the NHDES:

“Overburden groundwater flowing westward from the landfill discharges into a large wetland complex that serves as a hydraulic boundary for groundwater and the headwaters for Berrys Brook, which then flows in a northerly direction, and Little River, which flows to the south.”

Groundwater flow in bedrock is also interpreted to move in a westerly direction from the landfill toward a bedrock trough located beneath the wetland complex. This bedrock trough is oriented north/northeast to south/southwest parallel to regional geologic structure. As groundwater encounters this bedrock trough, it is likely that groundwater in bedrock is migrating in the direction (trend) of regional geologic structure, which is coincident with the Berrys Brook valley to the north and the Little River valley to the south and ultimately discharging to Little River and Berrys Brook.

Consistent with historical results, CL [USEPA Cleanup Level] and/or AGQS [Ambient Groundwater Quality Standard] exceedances were identified for 1,4-dioxane, TBA [tertiary butyl alcohol], arsenic, and manganese in one or more wells [at and near the landfill]. In general, the parameters and locations that exceeded the regulatory thresholds are similar to historical monitoring events. Tert-butyl alcohol exceedances were limited to two wells in 2019, consistent with historical data.”

Groundwater monitoring at the landfill also includes sampling of per- and poly-fluorinated alkyl substances (PFAS) in overburden and bedrock groundwater as PFAS are a constituent of concern at the landfill site. Groundwater elevation contour plans and constituent distribution maps from the aforementioned 2019 Annual Report are presented in Attachment F and the location of the Property is identified on these plans.

The groundwater contour plans for the overburden and bedrock aquifer for the landfill generally depict a western component to groundwater flow. This finding would generally position the Property hydraulically upgradient from the landfill, which is consistent with a mapped westerly groundwater flow direction for the Property based upon wells installed for this Hydrogeologic Study.

Based upon the mapped extent of constituent/plume iso-contours in groundwater for the landfill (Attachment F), arsenic, manganese, and 1,4-dioxane plumes were inferred to be present in overburden groundwater at the Property, and 1,4-dioxane and PFAS were inferred to be present in bedrock groundwater beneath the Property. It should be noted; however, that the iso-contours were inferred by others in the vicinity of the Property based upon data from distant monitoring wells (see well locations on CES Inc.'s Figure 3 and 4 in Attachment F) and are not based on groundwater testing data obtained from the Property (also, Property-specific overburden groundwater flow direction is westerly). Groundwater sampling data from the aforementioned pre-existing unnamed overburden monitoring well on the Property (Figures 2 and 3; currently dry, and unavailable for this study) collected in January 2020 by others had detected concentration of arsenic, manganese, and PFAS, which were below applicable AGQs (1,4-dioxane was not tested in the January 2020 sampling event).

Arsenic and manganese are commonly present in groundwater as geologic background consistent with the January 2020 concentrations reported for the unnamed well at the Property (9.4 mg/L for arsenic and 260 mg/L for manganese). The detected concentrations of two PFAS's, perfluorooctanoic acid (PFOA) of 3.5 parts per trillion or ppt, and perfluorooctane sulfonic acid (PFOS) of 3.94 ppt in the unnamed monitoring well at the Property may possibly be false positives or anthropogenic background, and unrelated to the landfill, but are less than the current AGQs of 12 ppt for PFOA and 15 ppt for PFOS. This 2020 groundwater testing data furthers the conclusion that the landfill is not adversely affecting overburden groundwater below the Property.

GROUNDWATER MOUNDING ANALYSIS

Depth to groundwater below the Property ranges from 13.5 to 24.5 feet bgs, so mounding of groundwater beneath proposed wastewater leach field is not anticipated to reduce the unsaturated soil profile such that percolation of groundwater will be hindered. Also, with the proposed porous pavement to manage and reinfiltrate stormwater and bioretention ponds are various locations around the Property planned, mounding due to storm water re-infiltration is not anticipated to be significant either. However, following standard practice and to verify that there will be no significant mounding beneath the leach field, GeoInsight calculated estimated/predicted groundwater mound heights using the proposed design flows and hydraulic conductivity data obtained in conjunction with this study.

The maximum groundwater mound height beneath the wastewater disposal fields was calculated using the method described by Hantush (1967)¹. Variables in the mounding calculation included:

- Initial saturated thickness: 10 feet. This was based upon soil borings with total depths of approximately 30 feet and a depth to water of approximately 20 feet. Since the borings did not reach refusal on bedrock, the actual saturated thickness is greater than 10 feet, but lower saturated thicknesses result in higher predicted mounds, so this is a conservative assumption.
- Hydraulic conductivity: 23 feet/day. This is the lowest value calculated from the slug tests performed as part of this study. Use of the lower hydraulic conductivity value results in a conservative condition (it will predict higher mound heights).
- Porosity: 0.2 (dimensionless). This is an assumption based upon literature values for the sandy materials described in the boring logs.
- Disposal field dimensions: 40 feet by 100 feet.
- Discharge volume: 10,590 GPD. This is the design volume for each disposal field. The design volume is conservative and typical flows will be lower.
- Time of loading: 90, 180 and 365 days. These are all extremely conservative conditions. Typically, 30 days is considered the duration required to reach steady-state conditions even at maximum loading.

Results of the mounding calculations gives predicted mound heights of 1.4 feet, 2.6 feet and 3.9 feet for loading durations of 90 days, 180 days and 365 days, respectively, beneath the leach field. With depths to water on site of 13 to 24 feet or greater, these mound heights are not significant.

NITRATE LOADING

Leach fields, particularly those that serve a multi-bed facility, can result in a contribution of nitrate into the aquifer that, depending on site hydrogeology, can result in nitrate levels that exceed the New Hampshire AGQS of 10 mg/L. It is important to evaluate the nitrate loading and how that affects groundwater quality, with particular concern to meeting the AGQS of 10 mg/L at the downgradient Property boundary.

The nitrogen/nitrate concentration at the downgradient Property boundary was simulated using a commonly accepted mass-balance approach. In this method, the nitrate concentration is calculated by the total nitrate mass entering the groundwater on the property, divided by the water recharging the area of the wastewater disposal fields that flows to the downgradient boundary plus any known background concentration of nitrate. The total nitrogen/nitrate

¹ Hantush, M.S. 1967, *Growth and decay of groundwater mounds in response to uniform percolation*: Water Resources Research, v.3, P. 227-234.

concentration is given by the volume and concentration of wastewater flows and inputs from loss from fertilized lawn area. There is one wastewater disposal field with a design flow of 10,590 GPD.

A conservative nitrate concentration assumption for residential wastewater is 40 mg/L (Massachusetts DEP *Guidelines for Title 5 Aggregation of flows and Nitrogen Loading* 310 CMR 15.216 cites 35 mg/L). Assuming a post development-maintained lawn area of 14,585 square feet in the wastewater field recharge area (Figure 3), a fertilizer application of 3 pounds per 1,000 square feet per year of which 25% is not consumed and is leached to the groundwater (MADEP *Guidelines*), the total nitrate load to the Property is approximately 614 million milligrams per year.

The area in which groundwater flows to the disposal fields from the upgradient property boundary to the downgradient boundary was delineated by interpretation of the May 28, 2021 groundwater contour map (Figure 3). This area was measured at 0.65 acres. Even though the stormwater design plans for 100 percent infiltration of stormwater runoff, as conservative assumption in the nitrate analysis, the pavement and building areas were assumed for the mass balance calculation to be impermeable. The pavement and building areas totaling 0.31 acres was deducted from the recharge area. This is conservative as permeable/porous pavement and roof run-off recharge via drip edges are planned for the development, so actual recharge to the disposal field recharge area will be higher than simulated. Annual average precipitation for Rye is 50 inches of which it is assumed 50 percent infiltrates to recharge groundwater. Since the water supply is municipal and coming from an off-site source rather than an on-site well, the wastewater fields yield a total net recharge of 15 million liters per year. This results in a calculated concentration of nitrate of 38 mg/L plus a known background concentration of an average 1.3 mg/L, which results in 39.3 mg/L of nitrate in groundwater at the downgradient Property boundary. Nitrate loading calculation spreadsheets are presented in Attachment G. The predicted concentration of 39.3 mg/L of nitrate exceeds the NH AGQS of 10 mg/L and, therefore, denitrification via pretreatment will be necessary.

A SeptiTech nitrate pretreatment system is planned for the assisted living facility disposal field. According to SeptiTech / Bio-Microbics of Maine Inc., their systems will result in 85 to 90 percent reduction in nitrogen/nitrate. Assuming the low-end estimate of 85 percent reduction of nitrogen in effluent from the treatment system, the nitrogen input to the mass balance calculation was updated substituting 6 mg/L nitrogen in place of the 40 mg/L assumption for untreated residential wastewater effluent. The resulting mass balance calculation (with other inputs remaining the same), yields a concentration of 6 mg/L nitrate from the pre-treated wastewater effluent from the SeptiTech system, plus a known background concentration of an average 1.3 mg/L, for a total predicted nitrate level 7.3 mg/L at the downgradient Property boundary, which is below the NH AGQS of 10 mg/L.

CONCLUSIONS

Based upon the Hydrogeologic Study completed for the Property, recharge of residential septic wastewater into the one community leach field in the proposed Benchmark senior living facility development, assuming pre-treatment with SeptiTech denitrification units, will result in nitrate concentrations that are below the NH AGQS of 10 mg/L at the downgradient (southwestern) Property boundary.

This conclusion indicates that the wastewater systems will not cause degradation of the water quality in the Aquifer Protection District or in groundwater migrating off-site.

It should be further noted, notwithstanding, the preceding conclusion, that the Property is located in the GMZ for the Coakley Landfill, which currently restricts use of groundwater on-site, and groundwater from the Property flows towards and onto the Coakley Landfill property, which is also a part of the landfill's GMZ where groundwater use is restricted and known groundwater impact plumes have been documented. Therefore, use of the overburden or bedrock aquifers in the Aquifer Protection District on and in the area of the Property and landfill for a future municipal well location appears unlikely. Nonetheless, the proposed nitrate pretreatment system for the Benchmark senior living facility leach field is protective of groundwater quality in the Aquifer Protection District.

Please contact us at (603) 314-0820 if you have questions regarding this Hydrogeologic Study.

Sincerely,
GEOINSIGHT, INC.



Darrin L. Santos, P.G.
Associate/Senior Geologist



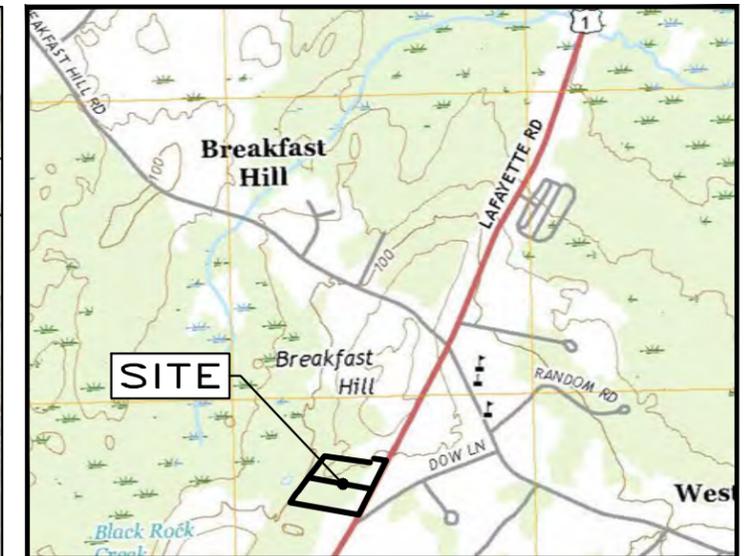
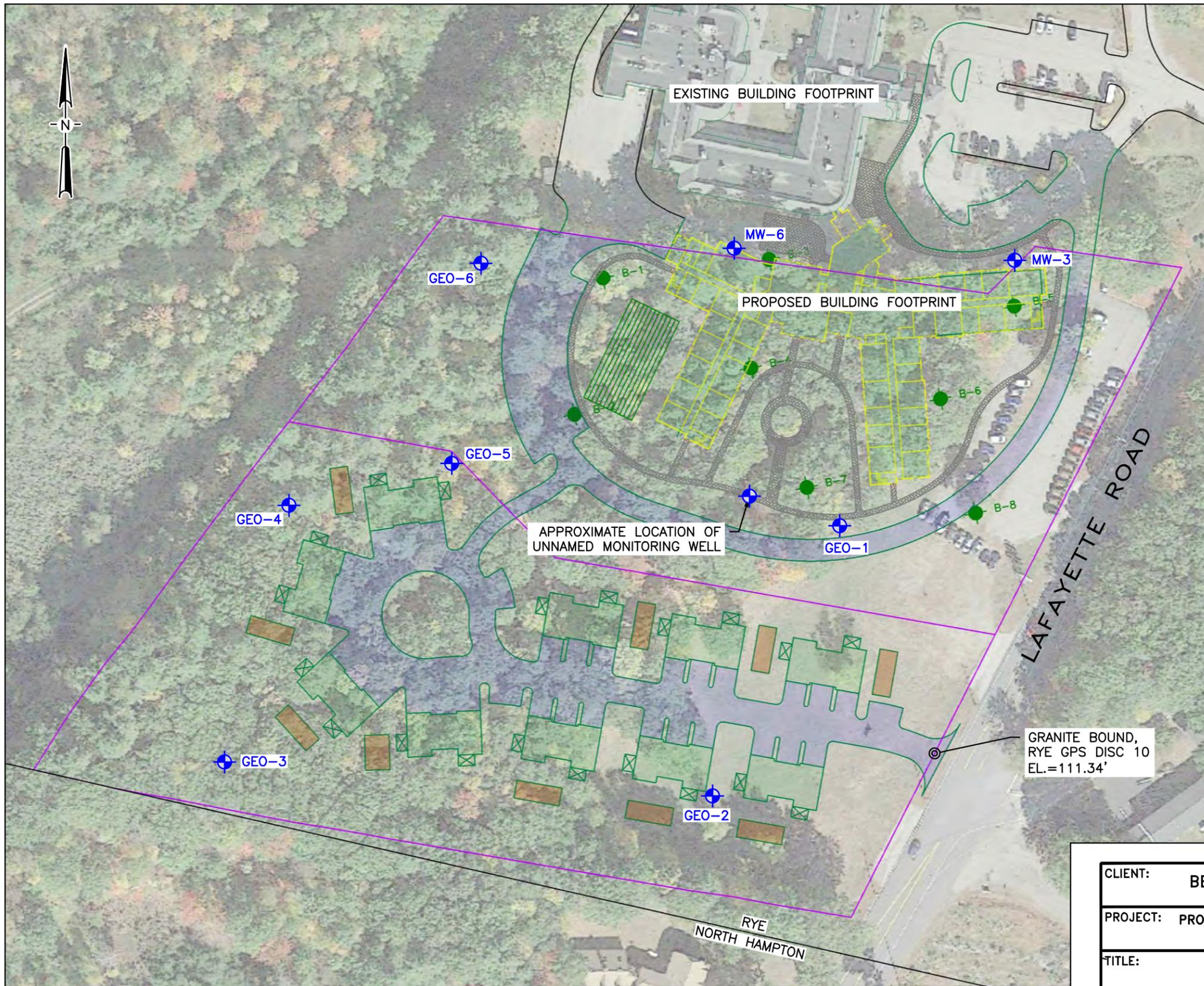
Andrea W. Kenter, P.G.
Senior Associate/Senior Hydrogeologist

Attachments

cc: Benchmark Senior Living

P:\9212 Benchmark Hanover MA - Rye NH\RYE NH\Hydro Study\Rye BM Hydro study (drft1).doc

FIGURES



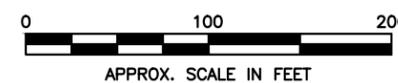
SITE LOCUS
1"=2000'

LEGEND

- APPROXIMATE PROPERTY BOUNDARY
- GEO-1 MONITORING WELL LOCATION
- B-4 APPROXIMATE GEOINSIGHT BORING LOCATION AND DESIGNATION

NOTES

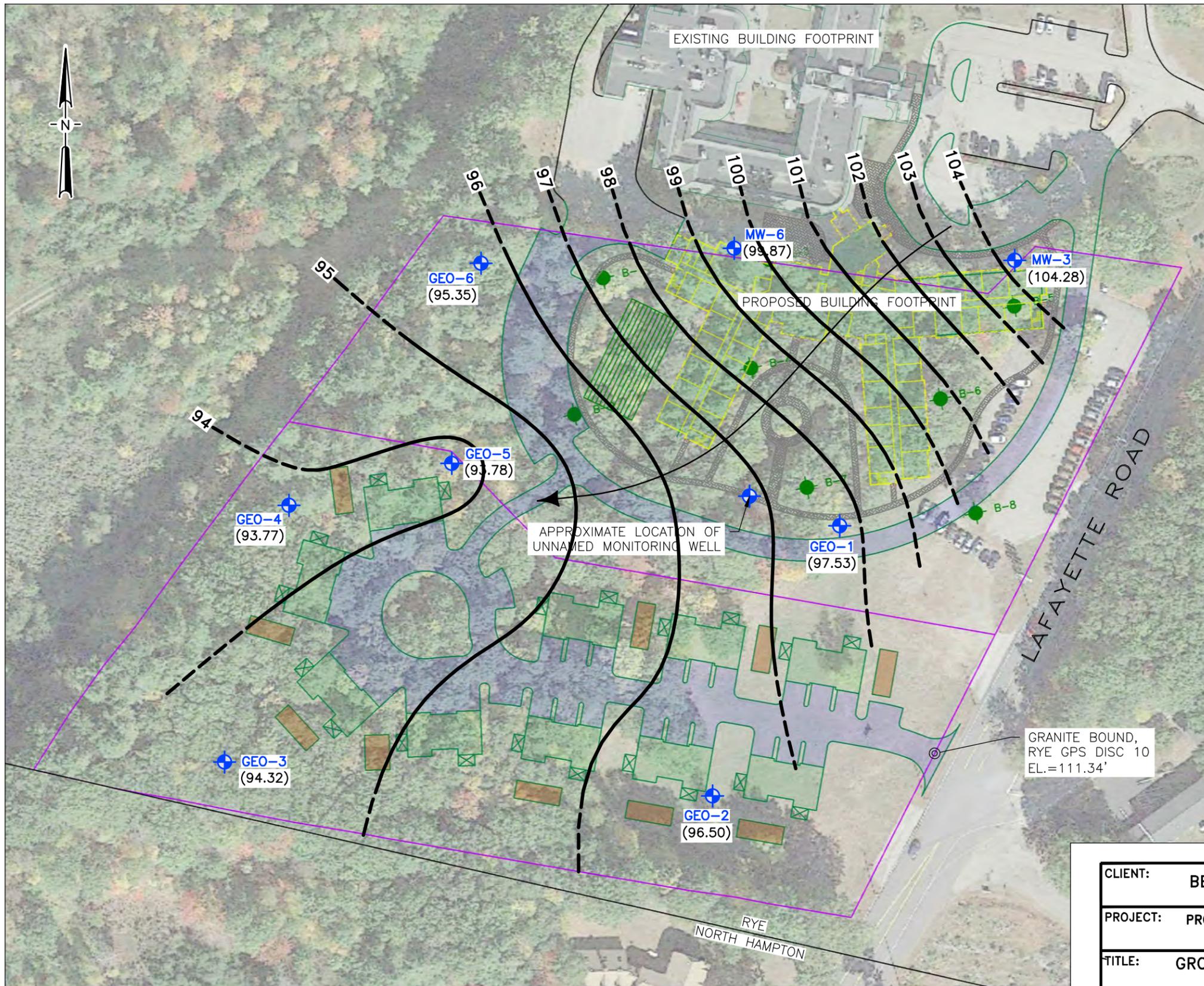
1. THIS PLAN IS BASED UPON AN AERIAL IMAGE OBTAINED FROM GOOGLE EARTH DATED OCTOBER 20, 2020 AND A SITE PLAN PREPARED BY JONES & BEACH ENGINEERS, INC. AND DATED DECEMBER 17, 2019 LAST REVISED SEPTEMBER 28, 2020.



CLIENT: BENCHMARK SENIOR LIVING			
PROJECT: PROPOSED ASSISTED LIVING FACILITY RYE, NEW HAMPSHIRE			
TITLE: SITE PLAN			
DESIGNED: JRB	DRAWN: STM	CHECKED: DLS	APPROVED: DLS
SCALE: AS SHOWN	DATE: 07/14/21	FILE NO.: 9212D004	PROJECT NO.: 9212-005



FIGURE NO.: 1

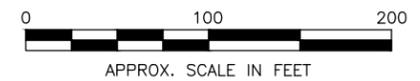


LEGEND

- APPROXIMATE PROPERTY BOUNDARY
- GEO-1 MONITORING WELL LOCATION
- APPROXIMATE GEOINSIGHT BORING LOCATION AND DESIGNATION
- 98 RELATIVE GROUNDWATER ELEVATION CONTOUR (DASHED WHERE INFERRED)
- INFERRED DIRECTION OF GROUNDWATER FLOW
- (97.53) RELATIVE GROUNDWATER ELEVATION

NOTES

1. THIS PLAN IS BASED UPON AN AERIAL IMAGE OBTAINED FROM GOOGLE EARTH DATED OCTOBER 20, 2020 AND A SITE PLAN PREPARED BY JONES & BEACH ENGINEERS, INC. AND DATED DECEMBER 17, 2019 LAST REVISED SEPTEMBER 28, 2020.



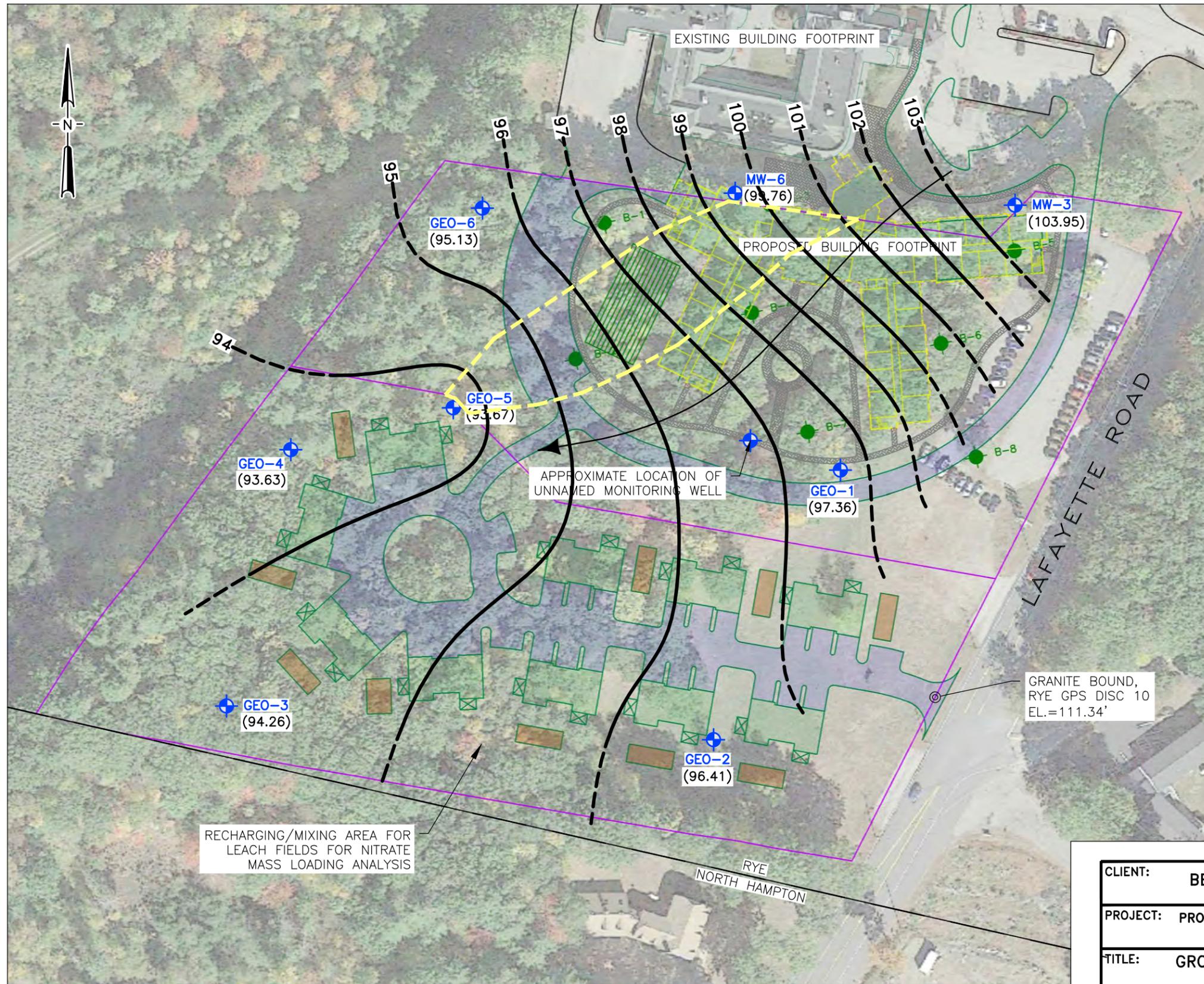
CLIENT: BENCHMARK SENIOR LIVING			
PROJECT: PROPOSED SENIOR LIVING FACILITY RYE, NEW HAMPSHIRE			
TITLE: GROUNDWATER CONTOUR PLAN MAY 23, 2021			
DESIGNED: JRB	DRAWN: STM	CHECKED: DLS	APPROVED: DLS
SCALE: AS SHOWN	DATE: 07/09/21	FILE NO.: 9212D004	PROJECT NO.: 9212-007



GeoInsight

FIGURE NO.: 2

PLOT DATE: 7-14-21
FILE: \\geonho\AutoCAD\9212\9212D004.dwg



LEGEND

- APPROXIMATE PROPERTY BOUNDARY
- GEO-1 MONITORING WELL LOCATION
- B-4 APPROXIMATE GEOINSIGHT BORING LOCATION AND DESIGNATION
- RELATIVE GROUNDWATER ELEVATION CONTOUR (DASHED WHERE INFERRED)
- INFERRED DIRECTION OF GROUNDWATER FLOW
- (97.53) RELATIVE GROUNDWATER ELEVATION
- NITROGEN LOADING RECHARGE AREA

NOTES

1. THIS PLAN IS BASED UPON AN AERIAL IMAGE OBTAINED FROM GOOGLE EARTH DATED OCTOBER 20, 2020 AND A SITE PLAN PREPARED BY JONES & BEACH ENGINEERS, INC. AND DATED DECEMBER 17, 2019 LAST REVISED SEPTEMBER 28, 2020.



CLIENT: BENCHMARK SENIOR LIVING			
PROJECT: PROPOSED ASSISTED LIVING FACILITY RYE, NEW HAMPSHIRE			
TITLE: GROUNDWATER CONTOUR PLAN MAY 28, 2021			
DESIGNED: JRB	DRAWN: STM	CHECKED: DLS	APPROVED: DLS
SCALE: AS SHOWN	DATE: 06/11/21	FILE NO.: 9212D004	PROJECT NO.: 9212-005



GeoInsight

FIGURE NO.: **3**

TABLES

TABLE 1
GROUNDWATER ELEVATION DATA
MAP 10, LOT 1
LAFAYETTE ROAD
RYE, NEW HAMPSHIRE

Well ID	Date	TOC Elevation (feet)	Depth To Water (feet)	Groundwater Elevation (feet)
GEO-1	5/23/2021	116.58	19.05	97.53
	5/28/2021		19.22	97.36
GEO-2	5/23/2021	112.97	16.47	96.50
	5/28/2021		16.56	96.41
GEO-3	5/23/2021	111.37	17.05	94.32
	5/28/2021		17.11	94.26
GEO-4	5/23/2021	113.91	20.14	93.77
	5/28/2021		20.28	93.63
GEO-5	5/23/2021	121.03	27.25	93.78
	5/28/2021		27.36	93.67
GEO-6	5/23/2021	120.26	24.91	95.35
	5/28/2021		25.13	95.13
MW-3	5/23/2021	121.26	16.98	104.28
	5/28/2021		17.31	103.95
MW-6	5/23/2021	123.46	23.59	99.87
	5/28/2021		23.70	99.76

NOTES:

1. TOC = top of casing.
2. TOC elevations were surveyed by GeoInsight, Inc. on May 28, 2021 to an benchmark with an established elevation of 111.34 feet (granite bound with a “Rye GPS” disc note on it) for the survey datum/control.

TABLE 2
GROUNDWATER FIELD AND LABORATORY TESTING DATA
MAP 10, LOT 1
LAFAYETTE ROAD
RYE, NEW HAMPSHIRE

Well ID	Date	FIELD TEST PARAMETERS					LABORATORY ANALYSES		
		Temp (celcius)	pH (standard units)	Specific Conductivity (milli-Siemens per centimeter)	Dissolved Oxygen (mg/L)	Oxidation-Reduction Potential (milli-Volts)	Ammonia- Nitrogen (mg/L)	Nitrate- Nitrogen (mg/L)	Chloride (mg/L)
NH Ambient Groundwater Quality Standard (AQGS)						No Standard	10 mg/L	No Standard	
GEO-1	5/23/2021	13.8	7.8	928	2.2	72	ND(0.5)	ND(0.1)	220.0
	5/28/2021	10.4	6.8	1,166	12.6	227	--	--	--
GEO-2	5/23/2021	10.4	6.6	191	8.3	22	ND(0.5)	2.2	3.9
	5/28/2021	8.5	6.6	255	7.6	206	--	--	--
GEO-3	5/23/2021	10.9	6.8	780	8.5	29	ND(0.5)	1.1	200
	5/28/2021	8.8	6.6	935	7.4	207	--	.	--
GEO-4	5/23/2021	10.5	6.7	382	8.8	30	ND(0.5)	1.4	76
	5/28/2021	8.5	6.6	384	8.3	197	--	--	--
GEO-5	5/23/2021	10.7	6.6	111	8.5	-1	0.9	ND(0.1)	12
	5/28/2021	8.6	6.8	117	7.8	192	--	--	--
GEO-6	5/23/2021	12.1	6.3	890	8.4	-7	ND(0.5)	2.9	240
	5/28/2021	10.4	6.2	1,132	7.6	200	--	--	--
MW-3	5/23/2021	11.5	5.6	1,378	9.4	67	ND(0.5)	1.3	420
	5/28/2021	9.4	5.7	2,008	8.7	200	--	--	--
MW-6	5/23/2021	12.4	6.4	1,437	9.6	73	ND(0.5)	0.9	430
	5/28/2021	10.3	6.4	1,714	8.2	196	--	--	--

Notes:

1. ND(x) denotes analyte not detected above laboratory practical quantitation limit noted in parentheses.
2. mg/L = milligrams per liter.

ATTACHMENT A

ASSESSOR MAP AND AQUIFER PROTECTION DISTRICT MAP

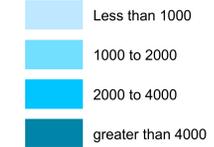
Stratified Drift Aquifers Map Rye, New Hampshire

June 2003

LEGEND

Transmissivity in Feet Squared per Day of

Stratified-Drift Aquifers in the Lower Merrimack and Coastal River Basins



BASE FEATURES

<p>Roads by Legislative Class</p> <ul style="list-style-type: none"> — Class I - Primary System — Class II - Secondary System — Class III - State Recreational — Class IV - within Compacts — Class V - Municipal - - - Class VI - Unmaintained Municipal — Private 	<p>Political Boundaries</p> <ul style="list-style-type: none"> — State Boundary — County Boundary — Town Boundary <p>Railroads</p> <ul style="list-style-type: none"> — Railroads <p>Major Pipelines</p> <ul style="list-style-type: none"> — Major Pipelines 	<p>Surface Water Features</p> <ul style="list-style-type: none"> — Stream, Shoreline — Intermittent Stream — Apparent Wetland Limit — Other Water Feature — Bodies of Water <p>Adjacent Municipalities</p> <ul style="list-style-type: none"> — Adjacent Municipalities
---	---	---

This is a static legend for the Rockingham Region. All features may not be present within the extent of this map.

MAP DATA SOURCES

Stratified-Drift Aquifer data was automated by Complex Systems Research Center, UNH and is archived in the GRANIT Database. The aquifer data was automated from maps generated as part of a larger study of groundwater resources in New Hampshire. The study was conducted under a cooperative agreement between the US Geological Survey and the NH Department of Environmental Services, Water Resources Division. It included an assessment of the aquifers within stratified sand and gravel deposits.

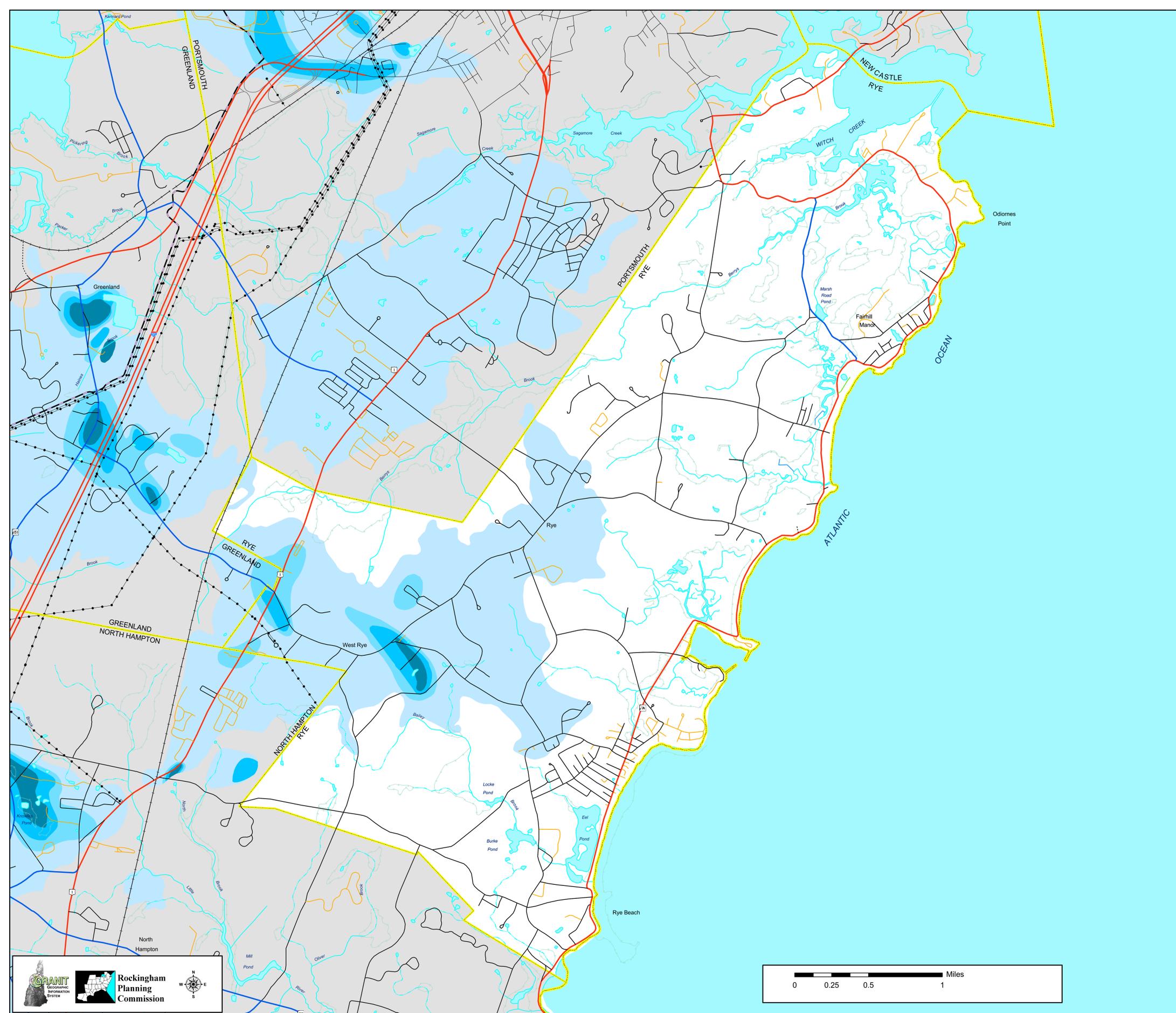
Transmissivity of Stratified Drift Aquifers quantifies the ability of an aquifer to transmit water, measured in feet squared per day. Transmissivity/Aquifer data was automated by Complex Systems Research Center, UNH and is archived in the GRANIT Database. The aquifer data was automated from maps generated as part of a larger study of groundwater resources in New Hampshire. The study was conducted under a cooperative agreement between the US Geological Survey and the NH Department of Environmental Services, Water Resources Division. It included an assessment of the aquifers within stratified sand and gravel deposits.

The specific reports that cover the Rockingham Planning Region are the following:
US Geological Survey Open-File Report 92-95, "Geohydrologic and Ground-Water-Quality Data for Stratified-Drift Aquifers in the Exeter, Lamprey, and Oyster River Basins, Southeastern New Hampshire." This study was prepared in cooperation with the NH Department of Environmental Services, Water Resources Division and was completed in 1992.

US Geological Survey Water-Resources Investigations Report 91-4025, "Geohydrology and Water Quality of Stratified-Drift Aquifers in the Lower Merrimack and Coastal River Basins, Southeastern New Hampshire." This study was prepared in cooperation with the NH Department of Environmental Services, Water Resources Division and was completed in 1992.

Base Features
Base features (transportation, political and hydrographic) were automated from the USGS Digital Line Graph data, 1:24,000, as archived in the GRANIT database at Complex Systems Research Center, Institute for the study of Earth, Oceans and Space, University of New Hampshire, Durham, NH, 1992-1999. The roads within the Rockingham Planning Region have been updated by Rockingham Planning Commission and by NH Department of Transportation through ongoing efforts.

NOTE: Base features for areas surrounding the Rockingham Region may be shown on this map. These features were automated from USGS 1:100,000 scale digital data sources. This information was provided for reference only. RPC makes no claim to its completeness or accuracy.



THIS MAP WAS FUNDED BY A GRANT FROM THE NH OFFICE OF STATE PLANNING



Rye, NH

1 inch = 551 Feet



January 28, 2021



Data shown on this map is provided for planning and informational purposes only. The municipality and CAI Technologies are not responsible for any use for other purposes or misuse or misrepresentation of this map.

ATTACHMENT B

SOIL BORING / WELL COMPLETION LOGS



SOIL BORING LOG

Client: Benchmark Senior Living	Boring Identification: B-1
Project: Proposed Assisted Living Facility Improvements	Sheet: 1 of 1
Location: Lafayette Road (Rt. 1), Rye, NH (Map 10, Lot 1)	Project No.: 9212
Drilling Company: Geosearch, Inc.	Boring Location: Lat 43.0031 Long -70.8119
Foreman: Shawn Preston	Ground Surface Elevation: ~122 ft
GeoInsight Engineer/Geologist: JRB	Date Started: 1/14/21
	Date Completed: 1/14/21

DRILLING METHOD	SAMPLER	GROUNDWATER MEASUREMENTS			
Vehicle: ATV	Type: 2" SS / Auto	Date	Depth (ft)	Reference	Stabilization
Model: CME-850	Hammer (lb): 140	01/14/2021	Not Encountered	Ground Surface	During Drilling
Method: Hollow stem augers	Fall (in): 30				

DEPTH (ft)	SAMPLE INFORMATION				SAMPLE DESCRIPTION	STRATUM DESCRIPTION	FIELD SCREENING (ppm)	NOTE
	#	Pen/Rec (in)	Depth (ft)	Blows/6"				
0	S1	24/8	0-2	2	2 inches of Topsoil.	TOPSOIL		
1				3	S1: Loose, light brown, fine to coarse SAND, trace Silt, damp.	GLACIAL OUTWASH		
				4				
2				5				
3								
4								
5	S2	24/10	5-7	15	S2: Very dense, light brown, fine to coarse SAND, trace Silt, trace Gravel, damp.			
6				31				
7				36				
8				34				
9								
10	S3	24/8	10-12	6	S3: Medium dense, brown, fine to coarse SAND, little Gravel, trace Silt, damp.			
11				12				
12				14				
13				28				
14								
15	S4	24/8	15-17	9	S4: Dense, brown, fine to coarse SAND, some Silt, trace Gravel, damp.			
16				17				
17				30				
18				26				
19								
20	S5	24/6	20-22	49	S5: Dense, brown, fine to coarse SAND, some Gravel, trace Silt, moist.			
21				26				
22				18				
23				21	Note: Pulverized rock present in sampler likely from 20-20.5' based on high blow count.			
					Boring terminated at 22' bgs. Refusal not encountered.			

GRANULAR SOILS		COHESIVE SOILS		NOTES
Blows/ft.	Density	Blows/ft.	Consistency	
0-4	V. LOOSE	<2	V. SOFT	Cave in at 12' bgs when measuring for depth to groundwater.
5-10	LOOSE	2-4	SOFT	
11-30	M. DENSE	4-8	M. STIFF	
31-50	DENSE	8-15	STIFF	
>50	V. DENSE	15-30	V. STIFF	
		>30	HARD	



SOIL BORING LOG

GeoInsight
Environmental Strategy & Engineering

Client: Benchmark Senior Living	Boring Identification: B-2
Project: Proposed Assisted Living Facility Improvements	
Location: Lafayette Road (Rt. 1), Rye, NH (Map 10, Lot 1)	Checked By: BTN
Sheet: 1 of 2	
Project No.: 9212	

Drilling Company: Geosearch, Inc.	Boring Location: Lat 43.0028 Long -70.812
Foreman: Shawn Preston	Ground Surface Elevation: ~118 ft
GeoInsight Engineer/Geologist: JRB	Date Started: 1/14/21
Date Completed: 1/14/21	

DRILLING METHOD	SAMPLER	GROUNDWATER MEASUREMENTS			
Vehicle: ATV	Type: 2" SS / Auto	Date	Depth (ft)	Reference	Stabilization
Model: CME-850	Hammer (lb): 140	01/14/2021	~25	Ground Surface	During Drilling
Method: Hollow stem augers	Fall (in): 30				

DEPTH (ft)	SAMPLE INFORMATION				SAMPLE DESCRIPTION	STRATUM DESCRIPTION	FIELD SCREENING (ppm)	NOTE	
	#	Pen/Rec (in)	Depth (ft)	Blows/6"					
0	S1	24/8	0-2	3	4 inches of Topsoil.	TOPSOIL			
1				4	S1: Loose, brown, fine to coarse SAND, trace Silt, trace Gravel, damp.	GLACIAL OUTWASH			
				5					
2				5					
3									
4					Note: Auger grinding at 4' bgs.				
5	S2	24/12	5-7	8	S2: Very dense, brown, fine to coarse SAND, trace Silt, trace Gravel, damp.				
				27					
6				36					
				38					
7									
8									
9									
10	S3	24/12	10-12	8	S3: Medium dense, brown, fine to coarse SAND, trace Silt, trace Gravel, damp.				
				11					
11				15					
				15					
12									
13									
14									
15	S4	24/12	15-17	6	S4: Dense, brown, fine to coarse SAND, little Gravel, trace Silt, damp.				
				15					
16				18					
				17					
17									
18									
19									
20									

GRANULAR SOILS		COHESIVE SOILS		NOTES
Blows/ft.	Density	Blows/ft.	Consistency	
0-4	V. LOOSE	<2	V. SOFT	Boring location is next to what appears to be a former test pit location. The boring looks to be outside of the disturbed area. Cave in at 13.95' bgs when measuring for depth to groundwater.
5-10	LOOSE	2-4	SOFT	
11-30	M. DENSE	4-8	M. STIFF	
31-50	DENSE	8-15	STIFF	
>50	V. DENSE	15-30	V. STIFF	
		>30	HARD	



SOIL BORING LOG

GeoInsight
Environmental Strategy & Engineering

Client: Benchmark Senior Living	Boring Identification: B-2
Project: Proposed Assisted Living Facility Improvements	Sheet: 2 of 2
Location: Lafayette Road (Rt. 1), Rye, NH (Map 10, Lot 1)	Checked By: BTN
	Project No.: 9212

Drilling Company: Geosearch, Inc.	Boring Location: Lat 43.0028 Long -70.812
Foreman: Shawn Preston	Ground Surface Elevation: ~118 ft
GeoInsight Engineer/Geologist: JRB	Date Started: 1/14/21
	Date Completed: 1/14/21

DRILLING METHOD	SAMPLER	GROUNDWATER MEASUREMENTS			
Vehicle: ATV	Type: 2" SS / Auto	Date	Depth (ft)	Reference	Stabilization
Model: CME-850	Hammer (lb): 140	01/14/2021	~25	Ground Surface	During Drilling
Method: Hollow stem augers	Fall (in): 30				

DEPTH (ft)	SAMPLE INFORMATION				SAMPLE DESCRIPTION	STRATUM DESCRIPTION	FIELD SCREENING (ppm)	NOTE
	#	Pen/Rec (in)	Depth (ft)	Blows/6"				
20	S5	24/8	20-22	8	S5: Medium dense, brown, fine to coarse SAND, little Silt, little Gravel, damp.	GLACIAL OUTWASH		
21				9				
				19				
22				22				
23								
24								
25	S6A	6/6	25-25.5	7	S6A: Very stiff, grayish brown, fine to coarse SAND and SILT, trace Clay, wet.	GLACIAL OUTWASH		
26	S6B	18/18	25.5-27	10	S6B: Very stiff, brownish gray, fine SAND and SILT, trace Clay, wet.			
				18				
27				25				
28								
29								
30	S7	24/24	30-32	5	S7: Very stiff, grayish brown, fine to medium SAND, and SILT, trace Clay, wet.			
31				10				
				13				
32				20				
					Boring terminated at 32' bgs. Refusal not encountered.			
33								
34								
35								
36								
37								
38								
39								
40								

GRANULAR SOILS		COHESIVE SOILS		NOTES
Blows/ft.	Density	Blows/ft.	Consistency	
0-4	V. LOOSE	<2	V. SOFT	Boring location is next to what appears to be a former test pit location. The boring looks to be outside of the disturbed area. Cave in at 13.95' bgs when measuring for depth to groundwater.
5-10	LOOSE	2-4	SOFT	
11-30	M. DENSE	4-8	M. STIFF	
31-50	DENSE	8-15	STIFF	
>50	V. DENSE	15-30	V. STIFF	
		>30	HARD	



SOIL BORING LOG

Client: Benchmark Senior Living	Boring Identification: B-3
Project: Proposed Assisted Living Facility Improvements	Sheet: 1 of 1
Location: Lafayette Road (Rt. 1), Rye, NH (Map 10, Lot 1)	Project No.: 9212
Drilling Company: Geosearch, Inc.	Boring Location: Lat 43.0031 Long -70.8114
Foreman: Shawn Preston	Ground Surface Elevation: ~120 ft
GeoInsight Engineer/Geologist: JRB	Date Started: 1/14/21
	Date Completed: 1/14/21

DRILLING METHOD	SAMPLER	GROUNDWATER MEASUREMENTS			
Vehicle: ATV	Type: 2" SS / Auto	Date	Depth (ft)	Reference	Stabilization
Model: CME-850	Hammer (lb): 140	01/14/2021	Not Encountered	Ground Surface	During Drilling
Method: Hollow stem augers	Fall (in): 30				

DEPTH (ft)	SAMPLE INFORMATION				SAMPLE DESCRIPTION	STRATUM DESCRIPTION	FIELD SCREENING (ppm)	NOTE
	#	Pen/Rec (in)	Depth (ft)	Blows/6"				
0	S1	24/8	0-2	3	3 inches of Topsoil.	TOPSOIL		
1				4	S1: Loose, light brown, fine to coarse SAND, trace Silt, damp.	GLACIAL OUTWASH		
				5				
2				5				
3								
4								
5	S2	24/8	5-7	6	S2: Dense, grayish brown, fine to coarse SAND, little Gravel, trace Silt, damp.			
6				11				
				24				
7				31				
8								
9								
10	S3	24/10	10-12	10	S3: Dense, brown, fine to coarse SAND, some Gravel, trace Silt, damp.			
11				18				
				20				
12				12				
13								
14								
15	S4	24/24	15-17	5	S4: Very stiff, grayish brown, fine SAND and SILT, trace Clay, damp.	GLACIAL OUTWASH		
16				7				
				11				
17				14				
18								
19								
20	S5	24/24	20-22	9	S5: Very stiff, brownish gray fine SAND and SILT, trace Clay, moist.			
21				12				
				15				
22				15				
23					Boring terminated at 22' bgs. Refusal not encountered.			

GRANULAR SOILS		COHESIVE SOILS		NOTES
Blows/ft.	Density	Blows/ft.	Consistency	
0-4	V. LOOSE	<2	V. SOFT	Cave in at 16.90' bgs when measuring depth to water.
5-10	LOOSE	2-4	SOFT	
11-30	M. DENSE	4-8	M. STIFF	
31-50	DENSE	8-15	STIFF	
>50	V. DENSE	15-30	V. STIFF	
		>30	HARD	



SOIL BORING LOG

Client: Benchmark Senior Living	Boring Identification: B-4
Project: Proposed Assisted Living Facility Improvements	
Location: Lafayette Road (Rt. 1), Rye, NH (Map 10, Lot 1)	Checked By: BTN
Sheet: 1 of 2	
Project No.: 9212	

Drilling Company: Geosearch, Inc.	Boring Location: Lat 43.0029 Long -70.8114
Foreman: Shawn Preston	Ground Surface Elevation: ~118 ft
GeoInsight Engineer/Geologist: JRB	Date Started: 1/14/21
Date Completed: 1/14/21	

DRILLING METHOD	SAMPLER	GROUNDWATER MEASUREMENTS			
Vehicle: ATV	Type: 2" SS / Auto	Date	Depth (ft)	Reference	Stabilization
Model: CME-850	Hammer (lb): 140	01/14/2021	24	Ground Surface	5 minutes
Method: Hollow stem augers	Fall (in): 30				

DEPTH (ft)	SAMPLE INFORMATION				SAMPLE DESCRIPTION	STRATUM DESCRIPTION	FIELD SCREENING (ppm)	NOTE
	#	Pen/Rec (in)	Depth (ft)	Blows/6"				
0	S1	24/6	0-2	4	2 inches of Topsoil.	TOPSOIL		
1				3	S1: Loose, light brown, fine to coarse SAND, little Silt, trace Gravel, damp.	GLACIAL OUTWASH		
				3				
2				3				
3								
4								
5	S2	24/8	5-7	11	S2: Very dense, gray and brown, fine to coarse SAND, little Gravel, trace Silt, damp.			
				35				
6				36				
				29				
7								
8								
9								
10	S3	24/10	10-12	11	S3: Very dense, brown, fine to coarse SAND, some Gravel, trace Silt, damp.			
				24				
11				38				
				33				
12								
13								
14								
15	S4	24/12	15-17	11	S4: Dense, brown, fine to coarse SAND, trace Gravel, trace Silt, damp			
				19				
16				24				
				22				
17								
18								
19								
20					Note: Soil change to fines at 20 feet.			

GRANULAR SOILS		COHESIVE SOILS		NOTES
Blows/ft.	Density	Blows/ft.	Consistency	
0-4	V. LOOSE	<2	V. SOFT	
5-10	LOOSE	2-4	SOFT	
11-30	M. DENSE	4-8	M. STIFF	
31-50	DENSE	8-15	STIFF	
>50	V. DENSE	15-30	V. STIFF	
		>30	HARD	



SOIL BORING LOG

GeoInsight
Environmental Strategy & Engineering

Client: Benchmark Senior Living	Boring Identification: B-4
Project: Proposed Assisted Living Facility Improvements	
Location: Lafayette Road (Rt. 1), Rye, NH (Map 10, Lot 1)	Checked By: BTN
Sheet: 2 of 2	
Project No.: 9212	

Drilling Company: Geosearch, Inc.	Boring Location: Lat 43.0029 Long -70.8114
Foreman: Shawn Preston	Ground Surface Elevation: ~118 ft
GeoInsight Engineer/Geologist: JRB	Date Started: 1/14/21
Date Completed: 1/14/21	

DRILLING METHOD	SAMPLER	GROUNDWATER MEASUREMENTS			
Vehicle: ATV	Type: 2" SS / Auto	Date	Depth (ft)	Reference	Stabilization
Model: CME-850	Hammer (lb): 140	01/14/2021	24	Ground Surface	5 minutes
Method: Hollow stem augers	Fall (in): 30				

DEPTH (ft)	SAMPLE INFORMATION				SAMPLE DESCRIPTION	STRATUM DESCRIPTION	FIELD SCREENING (ppm)	NOTE
	#	Pen/Rec (in)	Depth (ft)	Blows/6"				
20	S5	24/24	20-22	3	S5: Medium stiff, gray, fine SAND and SILT, trace Clay, moist.	GLACIAL OUTWASH		
21				4				
22				4				
23				7				
24								
25	S6A	24/24	25-27	2	S6: Medium stiff, gray, fine SAND and SILT, little Clay, wet			
26				3				
27				3				
28				4				
29								
30	S7A	12/12	30-31	3	S7A: Stiff, gray, fine SILT, little fine SAND, little Clay, wet.			
31				3		S7B: Stiff, brownish gray, fine to medium SAND and SILT, little Clay, wet.		
31	S7B	12/12	31-32	9				
32				15				
33					Boring terminated at 32' bgs. Refusal not encountered.			
34								
35								
36								
37								
38								
39								
40								

GRANULAR SOILS		COHESIVE SOILS		NOTES
Blows/ft.	Density	Blows/ft.	Consistency	
0-4	V. LOOSE	<2	V. SOFT	Boring location is next to what appears to be a former test pit location. The boring looks to be outside of the disturbed area. Cave in at 13.95' bgs when measuring for depth to groundwater.
5-10	LOOSE	2-4	SOFT	
11-30	M. DENSE	4-8	M. STIFF	
31-50	DENSE	8-15	STIFF	
>50	V. DENSE	15-30	V. STIFF	
		>30	HARD	



SOIL BORING LOG

GeoInsight
Environmental Strategy & Engineering

Client: Benchmark Senior Living	Boring Identification: B-5
Project: Proposed Assisted Living Facility Improvements	
Location: Lafayette Road (Rt. 1), Rye, NH (Map 10, Lot 1)	Checked By: BTN
Sheet: 1 of 2	
Project No.: 9212	

Drilling Company: Geosearch, Inc.	Boring Location: Lat 43.0030 Long -70.8105
Foreman: Shawn Preston	Ground Surface Elevation: ~116 ft
GeoInsight Engineer/Geologist: JRB	Date Started: 1/13/21
Date Completed: 1/13/21	

DRILLING METHOD	SAMPLER	GROUNDWATER MEASUREMENTS			
Vehicle: ATV	Type: 2" SS / Auto	Date	Depth (ft)	Reference	Stabilization
Model: CME-850	Hammer (lb): 140	01/13/2021	20	Ground Surface	During Drilling
Method: Hollow stem augers	Fall (in): 30				

DEPTH (ft)	SAMPLE INFORMATION				SAMPLE DESCRIPTION	STRATUM DESCRIPTION	FIELD SCREENING (ppm)	NOTE	
	#	Pen/Rec (in)	Depth (ft)	Blows/6"					
0	S1	24/12	0-2	7	1 inch of Topsoil.	TOPSOIL			
1				12	S1: Medium dense, brown, fine to coarse SAND and GRAVEL, trace Silt, damp.	GLACIAL OUTWASH			
				8					
2				6					
3									
4									
5	S2	24/12	5-7	7	S2: Medium dense, brown, fine to coarse SAND, some Gravel, trace Silt, damp.		GLACIAL OUTWASH		
				4					
6				18					
7				20					
8									
9									
10	S3	12/8	10-11	57	S3: Very dense, brown, fine to coarse SAND, trace Gravel, trace Silt, damp.	GLACIAL OUTWASH			
				14					
11									
12									
13									
14									
15	S4	24/24	15-17	6	S4: Medium dense, grayish brown, SILT, little Clay, trace fine SAND, moist.		GLACIAL OUTWASH		
				6					
16				8					
17				12					
18									
19									
20									

GRANULAR SOILS		COHESIVE SOILS		NOTES
Blows/ft.	Density	Blows/ft.	Consistency	
0-4	V. LOOSE	<2	V. SOFT	
5-10	LOOSE	2-4	SOFT	
11-30	M. DENSE	4-8	M. STIFF	
31-50	DENSE	8-15	STIFF	
>50	V. DENSE	15-30	V. STIFF	
		>30	HARD	



SOIL BORING LOG

GeoInsight
Environmental Strategy & Engineering

Client: Benchmark Senior Living	Boring Identification: B-5
Project: Proposed Assisted Living Facility Improvements	
Location: Lafayette Road (Rt. 1), Rye, NH (Map 10, Lot 1)	Checked By: BTN
Sheet: 2 of 2	
Project No.: 9212	

Drilling Company: Geosearch, Inc.	Boring Location: Lat 43.0030 Long -70.8105
Foreman: Shawn Preston	Ground Surface Elevation: ~116 ft
GeoInsight Engineer/Geologist: JRB	Date Started: 1/13/21
Date Completed: 1/13/21	

DRILLING METHOD	SAMPLER	GROUNDWATER MEASUREMENTS			
Vehicle: ATV	Type: 2" SS / Auto	Date	Depth (ft)	Reference	Stabilization
Model: CME-850	Hammer (lb): 140	01/13/2021	20	Ground Surface	During Drilling
Method: Hollow stem augers	Fall (in): 30				

DEPTH (ft)	SAMPLE INFORMATION				SAMPLE DESCRIPTION	STRATUM DESCRIPTION	FIELD SCREENING (ppm)	NOTE
	#	Pen/Rec (in)	Depth (ft)	Blows/6"				
20	S5	24/24	20-22	1	S5: Medium stiff, grayish brown, CLAY, trace SILT, wet.	GLACIAL OUTWASH		
21				3				
22				3				
23				4				
24								
25	S6A	24/24	25-27	2	S6: Alternating 6" layers of very stiff, grayish brown, CLAY, trace Silt, wet and grayish brown, fine to medium SAND, little Silt, wet.			
26				6				
27				10				
28				11				
29								
30	S7A	12/12	30-31	9	S7A: Dense, brown, fine to coarse SAND, trace Silt, wet. Small 2" layer of Gray SILT, trace Clay, wet.			
31				17				
31	S7B	12/12	31-32	21	S7B: Dense, grayish brown, fine to medium SAND, trace Silt, wet.			
32				31				
33					Boring terminated at 32' bgs. Refusal not encountered.			
34								
35								
36								
37								
38								
39								
40								

GRANULAR SOILS		COHESIVE SOILS		NOTES
Blows/ft.	Density	Blows/ft.	Consistency	
0-4	V. LOOSE	<2	V. SOFT	Boring location is next to what appears to be a former test pit location. The boring looks to be outside of the disturbed area. Cave in at 13.95' bgs when measuring for depth to groundwater.
5-10	LOOSE	2-4	SOFT	
11-30	M. DENSE	4-8	M. STIFF	
31-50	DENSE	8-15	STIFF	
>50	V. DENSE	15-30	V. STIFF	
		>30	HARD	



SOIL BORING LOG

Client: Benchmark Senior Living	Boring Identification: B-6
Project: Proposed Assisted Living Facility Improvements	Sheet: 1 of 1
Location: Lafayette Road (Rt. 1), Rye, NH (Map 10, Lot 1)	Project No.: 9212
Drilling Company: Geosearch, Inc.	Boring Location: Lat 43.0028 Long -70.8108
Foreman: Shawn Preston	Ground Surface Elevation: ~116 ft
GeoInsight Engineer/Geologist: JRB	Date Started: 1/13/21
	Date Completed: 1/13/21

DRILLING METHOD	SAMPLER	GROUNDWATER MEASUREMENTS			
-----------------	---------	--------------------------	--	--	--

Vehicle: ATV	Type: 2" SS / Auto	Date	Depth (ft)	Reference	Stabilization
Model: CME-850	Hammer (lb): 140	01/13/2021	20	Ground Surface	During Drilling
Method: Hollow stem augers	Fall (in): 30				

DEPTH (ft)	SAMPLE INFORMATION				SAMPLE DESCRIPTION	STRATUM DESCRIPTION	FIELD SCREENING (ppm)	NOTE
	#	Pen/Rec (in)	Depth (ft)	Blows/6"				
0	S1	24/12	0-2	1	3 inches of Topsoil.	TOPSOIL		
1				2	S1: Medium dense, brown, fine to medium SAND, little Silt, trace Gravel, damp.	GLACIAL OUTWASH		
				4				
2				4				
3								
4								
5	S2	24/10	5-7	3	S2: Dense, brown, fine to coarse SAND, little Gravel, trace Silt, damp.			
6				13				
7				21				
8				26				
9								
10	S3	24/12	10-12	7	S3: Dense, brown, fine to coarse SAND, little Gravel, trace Silt, damp			
11				16				
12				18				
13				18				
14								
15	S4	24/24	15-17	6	S4: Medium dense, grayish brown SILT, little fine Sand, trace Clay, damp.	GLACIAL OUTWASH		
16				9				
17				9				
18				18				
19								
20	S5	24/24	20-22	6	S5: Stiff, grayish brown, fine SAND and SILT, trace Clay, wet.			
21				7				
22				5				
23				8				
					Boring terminated at 22' bgs. Refusal not encountered.			

GRANULAR SOILS		COHESIVE SOILS		NOTES
Blows/ft.	Density	Blows/ft.	Consistency	
0-4	V. LOOSE	<2	V. SOFT	
5-10	LOOSE	2-4	SOFT	
11-30	M. DENSE	4-8	M. STIFF	
31-50	DENSE	8-15	STIFF	
>50	V. DENSE	15-30	V. STIFF	
		>30	HARD	



SOIL BORING LOG

GeoInsight
Environmental Strategy & Engineering

Client: Benchmark Senior Living	Boring Identification: B-7
Project: Proposed Assisted Living Facility Improvements	
Location: Lafayette Road (Rt. 1), Rye, NH (Map 10, Lot 1)	Checked By: BTN
Sheet: 1 of 2	
Project No.: 9212	

Drilling Company: Geosearch, Inc.	Boring Location: Lat 43.0026 Long -70.8112
Foreman: Shawn Preston	Ground Surface Elevation: ~116 ft
GeoInsight Engineer/Geologist: JRB	Date Started: 1/13/21
Date Completed: 1/13/21	

DRILLING METHOD	SAMPLER	GROUNDWATER MEASUREMENTS			
Vehicle: ATV	Type: 2" SS / Auto	Date	Depth (ft)	Reference	Stabilization
Model: CME-850	Hammer (lb): 140	01/13/2021	20	Ground Surface	During Drilling
Method: Hollow stem augers	Fall (in): 30				

DEPTH (ft)	SAMPLE INFORMATION				SAMPLE DESCRIPTION	STRATUM DESCRIPTION	FIELD SCREENING (ppm)	NOTE
	#	Pen/Rec (in)	Depth (ft)	Blows/6"				
0	S1	24/8	0-2	2	1 inch of Topsoil.	GLACIAL OUTWASH		
1				2	S1: Loose, brown, fine to coarse SAND, trace Silt, damp.			
				3				
				4				
2								
3								
4								
5	S2	24/8	5-7	6	S2: Dense, brown, fine to coarse SAND, little Gravel, trace Silt, damp.			
				18				
6				24				
				30				
7								
8								
9								
10	S3	24/12	10-12	13	S3: Very dense, brown, fine to coarse SAND, some Gravel, trace Silt, damp.			
				23				
11				32				
				28				
12								
13								
14								
15	S4	24/6	15-17	7	S4: Dense, brown, fine to coarse SAND, trace Gravel, trace Silt, damp.			
				10				
16				21				
				28				
17								
18								
19								
20					Note: Soil change to fines at 20 feet.			

GRANULAR SOILS		COHESIVE SOILS		NOTES
Blows/ft.	Density	Blows/ft.	Consistency	
0-4	V. LOOSE	<2	V. SOFT	
5-10	LOOSE	2-4	SOFT	
11-30	M. DENSE	4-8	M. STIFF	
31-50	DENSE	8-15	STIFF	
>50	V. DENSE	15-30	V. STIFF	
		>30	HARD	



SOIL BORING LOG

GeoInsight
Environmental Strategy & Engineering

Client: Benchmark Senior Living	Boring Identification: B-7
Project: Proposed Assisted Living Facility Improvements	
Location: Lafayette Road (Rt. 1), Rye, NH (Map 10, Lot 1)	Checked By: BTN
Sheet: 2 of 2	
Project No.: 9212	

Drilling Company: Geosearch, Inc.	Boring Location: Lat 43.0026 Long -70.8112
Foreman: Shawn Preston	Ground Surface Elevation: ~116 ft
GeoInsight Engineer/Geologist: JRB	Date Started: 1/13/21
Date Completed: 1/13/21	

DRILLING METHOD	SAMPLER	GROUNDWATER MEASUREMENTS			
Vehicle: ATV	Type: 2" SS / Auto	Date	Depth (ft)	Reference	Stabilization
Model: CME-850	Hammer (lb): 140	01/13/2021	20	Ground Surface	During Drilling
Method: Hollow stem augers	Fall (in): 30				

DEPTH (ft)	SAMPLE INFORMATION				SAMPLE DESCRIPTION	STRATUM DESCRIPTION	FIELD SCREENING (ppm)	NOTE
	#	Pen/Rec (in)	Depth (ft)	Blows/6"				
20	S5	24/24	20-22	4	S5: Very stiff, grayish brown, fine to medium SAND and SILT, trace Clay, wet.	GLACIAL OUTWASH		
21				6				
				10				
22				14				
23								
24								
25	S6A	24/24	25-27	3	S6: Stiff, gray, fine to coarse SAND and SILT, little Clay, wet.			
				4				
26				11				
				19				
27								
28								
29								
30	S7	24/24	30-32	2	S7: Stiff, gray, fine to medium SAND and SILT, trace Clay, wet.			
				4				
31				10				
				9				
32					Boring terminated at 32' bgs. Refusal not encountered.			
33								
34								
35								
36								
37								
38								
39								
40								

GRANULAR SOILS		COHESIVE SOILS		NOTES
Blows/ft.	Density	Blows/ft.	Consistency	
0-4	V. LOOSE	<2	V. SOFT	
5-10	LOOSE	2-4	SOFT	
11-30	M. DENSE	4-8	M. STIFF	
31-50	DENSE	8-15	STIFF	
>50	V. DENSE	15-30	V. STIFF	
		>30	HARD	



SOIL BORING LOG

Client: Benchmark Senior Living	Boring Identification: B-8
Project: Proposed Assisted Living Facility Improvements	Sheet: 1 of 1
Location: Lafayette Road (Rt. 1), Rye, NH (Map 10, Lot 1)	Project No.: 9212
Drilling Company: Geosearch, Inc.	Boring Location: Lat 43.0025 Long -70.8106
Foreman: Shawn Preston	Ground Surface Elevation: ~113 ft
GeoInsight Engineer/Geologist: JRB	Date Started: 1/13/21
	Date Completed: 1/13/21

DRILLING METHOD	SAMPLER	GROUNDWATER MEASUREMENTS			
-----------------	---------	--------------------------	--	--	--

Vehicle: ATV	Type: 2" SS / Auto	Date:	Depth (ft):	Reference:	Stabilization:
Model: CME-850	Hammer (lb): 140	01/13/2021	15	Ground Surface	During Drilling
Method: Hollow stem augers	Fall (in): 30				

DEPTH (ft)	SAMPLE INFORMATION				SAMPLE DESCRIPTION	STRATUM DESCRIPTION	FIELD SCREENING (ppm)	NOTE
	#	Pen/Rec (in)	Depth (ft)	Blows/6"				
0	S1	24/12	0-2	5	6 inches of Topsoil.	TOPSOIL		
1				4	S1: Loose, brown, fine to coarse SAND, some Silt, trace Gravel, damp.	GLACIAL OUTWASH		
				4				
2				5				
3								
4								
5	S2	24/12	5-7	16	S2: Medium dense, brown, fine to coarse SAND, some Gravel, trace Silt, damp.			
6				16				
				13				
7				13	Note: Gravel coming up between 7-10' while augering down.			
8								
9								
10	S3	24/12	10-12	10	S3: Dense, brown, fine to coarse SAND, little Gravel, trace Silt, damp.			
11				19				
				21				
12				25				
13								
14								
15	S4	24/3	15-17	7	S4: Medium dense, brown, fine to SAND and SILT, wet.			
16				6				
				6				
17				9				
18								
19								
20	S5	24/12	20-22	11	S5: Dense, brown, fine to coarse SAND, little Gravel, trace Silt, wet.			
21				12				
				22				
22				22				
23					Boring terminated at 22' bgs. Refusal not encountered.			

GRANULAR SOILS		COHESIVE SOILS		NOTES
Blows/ft.	Density	Blows/ft.	Consistency	
0-4	V. LOOSE	<2	V. SOFT	
5-10	LOOSE	2-4	SOFT	
11-30	M. DENSE	4-8	M. STIFF	
31-50	DENSE	8-15	STIFF	
>50	V. DENSE	15-30	V. STIFF	
		>30	HARD	



GeoInsight
Environmental Strategy & Engineering

SOIL BORING / WELL COMPLETION LOG

Client: Benchmark Senior Living / Tuck Realty Corp.	Boring Identification: B-9	Well ID: GEO-1
Project: Map 10, Lot 1 (former Hector's Motel)		Sheet: 1 of 2
Location: Lafayette Road (Rt. 1), Rye, NH	Chkd. By: DLS	Project Number: 9212
Drilling Company: GeoSearch, Inc.	Boring Location: 43.00243721 N 70.81120395 W	
Foreman: Mike D.	Top of PVC Riser Elevation: 116.58'	Datum: 111.34'
GeoInsight Engineer/Geologist: Joshua Brown	Top of Protector Elevation: NS	Ground Elevation: NA
	Date Started: 5/13/2021	Date Completed: 5/13/2021

DRILLING METHOD		SAMPLER		GROUNDWATER MEASUREMENTS								
Vehicle: ATV		Type: 2" SS / Auto		Date	Depth (ft)	Reference	Stabilization					
Model: CME-850		Hammer (lb): 140		05/13/2021	19.03	Top of Riser	1 hour					
Method: Hollow stem auger		Fall (in): 30		05/23/2021	19.05		10 days					
DEPTH (ft)	SAMPLE INFORMATION				WELL COMPLETION DETAIL	SAMPLE DESCRIPTION	STRATUM DESCRIPTION	FIELD SCREENING (ppm)	NOTE			
	#	Pen/Rec (in)	Depth (ft)	Blows/6"								
0				--		0-2" Organic topsoil						
1				--								
2				--								
3				--		Grinding at 3'						
4				--								
5	S-1	24/12	5-7	7		S-1: Dense, Brown, fine to coarse SAND, some Gravel, trace organics, damp	SAND	<1	1			
6				17								
7				16		Cuttings: Gravelly from 6-7'						
8				--								
9				--								
10	S-2	24/12	10-12	8		S-2: Medium dense, brownish gray, fine to coarse SAND, little Silt, trace Gravel, damp	SAND & SILT	<1	1			
11				11								
12				13								
13				--								
14				--								
15	S-3	24/18	15-17	9		S-3: Dense, brown, fine to coarse SAND, some Silt, trace Gravel, moist	SAND & SILT	<1	1			
16				17								
17				11								
18				--		Cuttings: Gravelly between 18-19'						
19				--								
20				--								
GRANULAR SOILS		COHESIVE SOILS		WELL CONSTRUCTION NOTES		WELL MATERIALS		INTERVAL (feet bgs)		LEGEND		
Blows/ft.		Density		Blows/ft. Consistency								
0-4		V. LOOSE		<2 V. SOFT		32' well constructed with 3' standpipe and 29' bgs.		Concrete		0-0.5		
5-10		LOOSE		2-4 SOFT				Backfill		0.5-12		
11-30		M. DENSE		5-8 M. STIFF				Grout		NA		
31-50		DENSE		9-15 STIFF				Bentonite: Chips		12-13		
>50		V. DENSE		16-30 V. STIFF				Sandpack: # 2 Sand		13-29		
				>30 HARD				Riser		17		
								Screen		15		

NOTES

- Soil samples screened in the field with a MiniRae 3000 photoionization detector with a 10.6 eV lamp.
- bgs = below ground surface.



GeoInsight
Environmental Strategy & Engineering

SOIL BORING / WELL COMPLETION LOG

Client: Benchmark Senior Living / Tuck Realty Corp.	Boring Identification: B-9	Well ID: GEO-1
Project: Map 10, Lot 1 (former Hector's Motel)		Sheet: 2 of 2
Location: Lafayette Road (Rt. 1), Rye, NH	Chkd. By: DLS	Project Number: 9212
Drilling Company: GeoSearch, Inc.	Boring Location: 43.00243721 N 70.81120395 W	
Foreman: Mike D.	Top of PVC Riser Elevation: 116.58'	Datum: 111.34'
GeoInsight Engineer/Geologist: Joshua Brown	Top of Protector Elevation: NS	Ground Elevation: NA
	Date Started: 5/13/2021	Date Completed: 5/13/2021

DRILLING METHOD	SAMPLER	GROUNDWATER MEASUREMENTS			
Vehicle: ATV	Type: 2" SS / Auto	Date	Depth (ft)	Reference	Stabilization
Model: CME-850	Hammer (lb): 140	05/13/2021	19.03	Top of Riser	1 hour
Method: Hollow stem auger	Fall (in): 30	05/23/2021	19.05		10 days

DEPTH (ft)	SAMPLE INFORMATION				WELL COMPLETION DETAIL	SAMPLE DESCRIPTION	STRATUM DESCRIPTION	FIELD SCREENING (ppm)	NOTE
	#	Pen/Rec (in)	Depth (ft)	Blows/6"					
20	S-4	24/24	20-22	5		S-4: Medium dense, gray, fine SAND and SILT, trace Clay, wet	SAND & SILT	<1	1
21				6					
21				7					
22				6					
22				--					
23				--					
23				--					
24				--					
24				--					
24				--					
25	S-5	24/24	25-27	WOH		S-5: Medium stiff, gray, fine SILT, trace fine Sand, trace Clay, wet Augered to 29' bgs.	SAND & SILT	<1	1
26				2					
26				3					
27				9					
27				--					
28				--					
28				--					
28				--					
29				--					
29				--					
30									
31									
32									
33									
34									
35									
36									
37									
38									
39									
40									

*Boring terminated at 29' bgs.
Set monitoring well at 29' bgs*

GRANULAR SOILS		COHESIVE SOILS		WELL CONSTRUCTION NOTES	WELL MATERIALS	INTERVAL (feet bgs)	LEGEND
Blows/ft.	Density	Blows/ft.	Consistency				
0-4	V. LOOSE	<2	V. SOFT	32' well constructed with 3' standpipe and 29' bgs.	Concrete	0-0.5	
5-10	LOOSE	2-4	SOFT		Backfill	0.5-12	
11-30	M. DENSE	5-8	M. STIFF		Grout	NA	
31-50	DENSE	9-15	STIFF		Bentonite: Chips	12-13	
>50	V. DENSE	16-30	V. STIFF		Sandpack: # 2 Sand	13-29	
		>30	HARD		Riser	17	
				Screen	15		

NOTES

- Soil samples screened in the field with a MiniRae 3000 photoionization detector with a 10.6 eV lamp.
- bgs = below ground surface.



GeoInsight
Environmental Strategy & Engineering

SOIL BORING / WELL COMPLETION LOG

Client: Benchmark Senior Living / Tuck Realty Corp.	Boring Identification: B-10	Well ID: GEO-2
Project: Map 10, Lot 1 (former Hector's Motel)	Sheet: 1 of 1	Project Number: 9212
Location: Lafayette Road (Rt. 1), Rye, NH	Chkd. By: DLS	
Drilling Company: GeoSearch, Inc.	Boring Location: 43.00176000 N 70.81164608 W	
Foreman: Mike D.	Top of PVC Riser Elevation: 112.97'	Datum: 111.34'
GeoInsight Engineer/Geologist: Joshua Brown	Top of Protector Elevation: NS	Ground Elevation: NA
	Date Started: 5/13/2021	Date Completed: 5/13/2021

DRILLING METHOD	SAMPLER	GROUNDWATER MEASUREMENTS			
Vehicle:	Type:	Date	Depth (ft)	Reference	Stabilization
ATV	2" SS / Auto	05/13/2021	16.32	Top of Riser	1 hour
Model: CME-850	Hammer (lb): 140	05/23/2021	16.47		10 days
Method: Hollow stem auger	Fall (in): 30				

DEPTH (ft)	SAMPLE INFORMATION				WELL COMPLETION DETAIL	SAMPLE DESCRIPTION	STRATUM DESCRIPTION	FIELD SCREENING (ppm)	NOTE	
	#	Pen/Rec (in)	Depth (ft)	Blows/6"						
0				--		0-2" - Organic topsoil				
1				--						
2				--						
3				--						
4				--						
5	S-1	24/12	5-7	9		S-1: Dense, grayish brown, fine to coarse SAND, some Gravel, trace Silt, damp	SAND & GRAVEL	<1	1	
6				12						
7				19		Cuttings: Gravelly from ~5-6' and grinding at ~8'				
8				13						
9				--						
10	S-2	24/12	10-12	13		S-2: Dense, grayish brown, fine to coarse SAND, some Gravel, trace Silt, damp	SAND & SILT	<1	1	
11				14						
12				18						
13				13						
14				--						
15	S-3	24/18	15-17	12		S-3: Medium dense, brown, fine to coarse SAND and GRAVEL, some Silt, wet	SAND & SILT	<1	1	
16				13						
17				15						
18				9						
19				--						
20	S-4A	12/12	20-21	5		S-4A: Medium dense, brown, fine to coarse SAND, trace Silt, wet	SAND & SILT	<1	1	
21	S-4B	12/12	21-22	10		S-4B: Medium dense, grayish brown, fine SAND and SILT, wet		<1	1	
22				10		Boring terminated at 22' bgs. Set monitoring well at 22' bgs.				
23										
24										
25										

GRANULAR SOILS		COHESIVE SOILS		WELL CONSTRUCTION NOTES	WELL MATERIALS	INTERVAL (feet bgs)	LEGEND
Blows/ft.	Density	Blows/ft.	Consistency				
0-4	V. LOOSE	<2	V. SOFT	25' well constructed with 3' standpipe and 22' bgs.	Concrete	0-0.5	
5-10	LOOSE	2-4	SOFT		Backfill	0.5-5	
11-30	M. DENSE	5-8	M. STIFF		Grout	NA	
31-50	DENSE	9-15	STIFF		Bentonite: Chips	5-6	
>50	V. DENSE	16-30	V. STIFF		Sandpack: # 2 Sand	6-22	
		>30	HARD		Riser	10	
				Screen	15		

NOTES

- Soil samples screened in the field with a MiniRae 3000 photoionization detector with a 10.6 eV lamp.
- bgs = below ground surface.



GeoInsight
Environmental Strategy & Engineering

SOIL BORING / WELL COMPLETION LOG

Client: Benchmark Senior Living / Tuck Realty Corp.	Boring Identification: B-11	Well ID: GEO-3
Project: Map 10, Lot 1 (former Hector's Motel)		Sheet: 1 of 1
Location: Lafayette Road (Rt. 1), Rye, NH	Chkd. By: DLS	Project Number: 9212
Drilling Company: GeoSearch, Inc.	Boring Location: 43.00185871 N 70.81331703 W	
Foreman: Mike D.	Top of PVC Riser Elevation: 111.37'	Datum: 111.34'
GeoInsight Engineer/Geologist: Joshua Brown	Top of Protector Elevation: NS	Ground Elevation: NA
	Date Started: 5/13/2021	Date Completed: 5/13/2021

DRILLING METHOD	SAMPLER	GROUNDWATER MEASUREMENTS			
Vehicle: ATV	Type: 2" SS / Auto	Date	Depth (ft)	Reference	Stabilization
Model: CME-850	Hammer (lb): 140	05/13/2021	16.96	Top of Riser	1 hour
Method: Hollow stem auger	Fall (in): 30	05/23/2021	17.05		10 days

DEPTH (ft)	SAMPLE INFORMATION				WELL COMPLETION DETAIL	SAMPLE DESCRIPTION	STRATUM DESCRIPTION	FIELD SCREENING (ppm)	NOTE	
	#	Pen/Rec (in)	Depth (ft)	Blows/6"						
0				--		0-3" - Organic topsoil				
1				--						
2				--						
3				--						
4				--						
5	S-1	24/12	5-7	12		S-1: Medium dense, brown, fine to coarse SAND, some Gravel, trace Silt, damp	SAND & GRAVEL	<1	1	
6				17		Cuttings: Gravelly and grinding at ~5'				
7				11						
8				9						
9				--						
10				--						
11	S-2	24/11	10-12	5		S-2: Medium dense, brown, fine to coarse SAND, some Gravel, trace Silt, damp			<1	1
12				12		Cuttings: Gravelly from 10-15.				
13				11						
14				--						
15				--						
16	S-3	24/8	15-17	6		S-3: Medium dense, brown, fine to coarse SAND and GRAVEL, trace Silt, wet		<1	1	
17				12						
18				10						
19				7						
20				--						
21	S-4	24/18	20-22	16		S-4: Dense, brown, fine to coarse SAND, some Gravel, some Silt, wet		<1	1	
22				20						
23				16						
24				--						
25				--						

*Boring terminated at 22' bgs.
Set monitoring well at 22' bgs.*

GRANULAR SOILS		COHESIVE SOILS		WELL CONSTRUCTION NOTES	WELL MATERIALS	INTERVAL (feet bgs)	LEGEND
Blows/ft.	Density	Blows/ft.	Consistency				
0-4	V. LOOSE	<2	V. SOFT	25' well constructed with 3' standpipe and 22' bgs.	Concrete	0-0.5	
5-10	LOOSE	2-4	SOFT		Backfill	0.5-5	
11-30	M. DENSE	5-8	M. STIFF		Grout	NA	
31-50	DENSE	9-15	STIFF		Bentonite: Chips	5-6	
>50	V. DENSE	16-30	V. STIFF		Sandpack: # 2 Sand	6-22	
		>30	HARD		Riser	10	
				Screen	15		

NOTES

- Soil samples screened in the field with a MiniRae 3000 photoionization detector with a 10.6 eV lamp.
- bgs = below ground surface.



GeoInsight
Environmental Strategy & Engineering

SOIL BORING / WELL COMPLETION LOG

Client: Benchmark Senior Living / Tuck Realty Corp.	Boring Identification: B-12	Well ID: GEO-4
Project: Map 10, Lot 1 (former Hector's Motel)		Sheet: 1 of 2
Location: Lafayette Road (Rt. 1), Rye, NH	Chkd. By: DLS	Project Number: 9212
Drilling Company: GeoSearch, Inc.	Boring Location: 43.00250177 N 70.81308876 W	
Foreman: Mike D.	Top of PVC Riser Elevation: 113.91'	Datum: 111.34'
GeoInsight Engineer/Geologist: Joshua Brown	Top of Protector Elevation: NS	Ground Elevation: NA
	Date Started: 5/14/2021	Date Completed: 5/14/2021

DRILLING METHOD		SAMPLER		GROUNDWATER MEASUREMENTS							
Vehicle: ATV		Type: 2" SS / Auto		Date	Depth (ft)	Reference	Stabilization				
Model: CME-850		Hammer (lb): 140		05/14/2021	20.05	Top of Riser	1 hour				
Method: Hollow stem auger		Fall (in): 30		05/23/2021	20.14		9 days				
DEPTH (ft)	SAMPLE INFORMATION				WELL COMPLETION DETAIL	SAMPLE DESCRIPTION	STRATUM DESCRIPTION	FIELD SCREENING (ppm)	NOTE		
	#	Pen/Rec (in)	Depth (ft)	Blows/6"							
0				--		0-3" - Organic topsoil					
1				--							
2				--							
3				--		Grinding from ~3-5' - Gravelly.					
4				--							
5	S-1	24/13	5-7	7		S-1: Medium dense, grayish brown, fine to coarse SAND, some Gravel, trace Silt, damp		<1	1		
6				10							
7				9							
8				9		Cuttings: Gravelly from ~5-7'					
9				--							
10	S-2	24/16	10-12	9		S-2: Medium Dense, grayish brown, fine to coarse SAND, trace Silt, trace Gravel, damp	SAND & GRAVEL	<1	1		
11				8							
12				8							
13				--		Cuttings: Gravellyl at ~12' bgs.					
14				--							
15	S-3	24/2	15-17	8		S-3: Medium dense, brown, fine to coarse SAND, trace Silt, damp		<1	1		
16				9							
17				7							
18				11							
19				--							
20				--							
GRANULAR SOILS		COHESIVE SOILS		WELL CONSTRUCTION NOTES		WELL MATERIALS		INTERVAL (feet bgs)		LEGEND	
Blows/ft.		Density		Blows/ft.		Consistency					
0-4		V. LOOSE		<2		V. SOFT		Concrete		0-0.5	
5-10		LOOSE		2-4		SOFT		Backfill		0.5-10	
11-30		M. DENSE		5-8		M. STIFF		Grout		NA	
31-50		DENSE		9-15		STIFF		Bentonite: Chips		10-11	
>50		V. DENSE		16-30		V. STIFF		Sandpack: # 2 Sand		11-27	
				>30		HARD		Riser		15	
								Screen		15	

NOTES

- Soil samples screened in the field with a MiniRae 3000 photoionization detector with a 10.6 eV lamp.
- bgs = below ground surface.



SOIL BORING / WELL COMPLETION LOG

GeoInsight
Environmental Strategy & Engineering

Client: Benchmark Senior Living / Tuck Realty Corp.	Boring Identification: B-12	Well ID: GEO-4
Project: Map 10, Lot 1 (former Hector's Motel)		Sheet: 2 of 2
Location: Lafayette Road (Rt. 1), Rye, NH	Chkd. By: DLS	Project Number: 9212
Drilling Company: GeoSearch, Inc.	Boring Location: 43.00250177 N 70.81308876 W	
Foreman: Mike D.	Top of PVC Riser Elevation: 113.91'	Datum: 111.34'
GeoInsight Engineer/Geologist: Joshua Brown	Top of Protector Elevation: NS	Ground Elevation: NA
	Date Started: 5/14/2021	Date Completed: 5/14/2021

DRILLING METHOD	SAMPLER	GROUNDWATER MEASUREMENTS			
Vehicle:	Type:	Date	Depth (ft)	Reference	Stabilization
ATV	2" SS / Auto	05/14/2021	20.05	Top of Riser	1 hour
Model: CME-850	Hammer (lb): 140	05/23/2021	20.14		9 days
Method: Hollow stem auger	Fall (in): 30				

DEPTH (ft)	SAMPLE INFORMATION				WELL COMPLETION DETAIL	SAMPLE DESCRIPTION	STRATUM DESCRIPTION	FIELD SCREENING (ppm)	NOTE
	#	Pen/Rec (in)	Depth (ft)	Blows/6"					
20	S-4	24/15	20-22	5		S-4: Medium dense, grayish brown, fine to coarse SAND, some Gravel, trace Silt, wet	SAND & GRAVEL	<1	1
21				7					
22				11					
23				13					
24				--					
25				--					
26				--					
27				--					
28				--					
29				--					
25	S-5	24/6	25-27	10		S-5: Medium dense, gray, SILT and fine to coarse SAND, wet	SAND & SILT	<1	1
26				10					
27				10					
28				11					
27	<i>Boring terminated at 27' bgs. Set monitoring well at 27' bgs</i>								
28				--					
29				--					
30				--					
31				--					
32				--					
33				--					
34				--					
35				--					
35	S-3	24/	15-17						
36									
37									
38									
39									
40									

GRANULAR SOILS		COHESIVE SOILS		WELL CONSTRUCTION NOTES	WELL MATERIALS	INTERVAL (feet bgs)	LEGEND
Blows/ft.	Density	Blows/ft.	Consistency				
0-4	V. LOOSE	<2	V. SOFT	30' well constructed with 3' standpipe and 27' bgs.	Concrete	0-0.5	
5-10	LOOSE	2-4	SOFT		Backfill	0.5-10	
11-30	M. DENSE	5-8	M. STIFF		Grout	NA	
31-50	DENSE	9-15	STIFF		Bentonite: Chips	10-11	
>50	V. DENSE	16-30	V. STIFF		Sandpack: # 2 Sand	11-27	
		>30	HARD		Riser	15	
				Screen	15		

NOTES

- Soil samples screened in the field with a MiniRae 3000 photoionization detector with a 10.6 eV lamp.
- bgs = below ground surface.



SOIL BORING / WELL COMPLETION LOG

GeoInsight
Environmental Strategy & Engineering

Client: Benchmark Senior Living / Tuck Realty Corp.	Boring Identification: B-13	Well ID: GEO-5
Project: Map 10, Lot 1 (former Hector's Motel)		Sheet: 1 of 2
Location: Lafayette Road (Rt. 1), Rye, NH	Chkd. By: DLS	Project Number: 9212
Drilling Company: GeoSearch, Inc.	Boring Location: 43.00260300 N 70.81252969 W	
Foreman: Mike D.	Top of PVC Riser Elevation: 121.03'	Datum: 111.34'
GeoInsight Engineer/Geologist: Joshua Brown	Top of Protector Elevation: NS	Ground Elevation: NA
	Date Started: 5/14/2021	Date Completed: 5/14/2021

DRILLING METHOD	SAMPLER	GROUNDWATER MEASUREMENTS			
Vehicle:	Type:	Date	Depth (ft)	Reference	Stabilization
ATV	2" SS / Auto	05/14/2021	27.11	Top of Riser	1 hour
Model: CME-850	Hammer (lb): 140	05/23/2021	27.25		9 days
Method: Hollow stem auger	Fall (in): 30				

DEPTH (ft)	SAMPLE INFORMATION				WELL COMPLETION DETAIL	SAMPLE DESCRIPTION	STRATUM DESCRIPTION	FIELD SCREENING (ppm)	NOTE		
	#	Pen/Rec (in)	Depth (ft)	Blows/6"							
0				--		0-3" - Organic topsoil					
1				--							
2				--							
3				--		Cuttings: Grinding at ~2 - Gravelly material					
4				--							
5	S-1	24/12	5-7	9		S-1: Dense, brown, fine to coarse SAND, trace Silt, trace Gravel, damp - small amount of pulverized rock and roots in sampler.		<1	1		
6				12							
7				13							
8				--							
9				--							
10	S-2	24/13	10-12	5		S-2: Medium dense, grayish brown, fine to coarse SAND, trace Silt, trace Gravel, damp	SAND	<1	1		
11				9							
12				7							
13				6							
14				--							
15	S-3	24/12	15-17	5		S-3: Medium dense, grayish brown, fine to coarse SAND, trace Silt, damp		<1	1		
16				9							
17				12							
18				--							
19				--							
20				--							

GRANULAR SOILS		COHESIVE SOILS		WELL CONSTRUCTION NOTES	WELL MATERIALS	INTERVAL (feet bgs)	LEGEND
Blows/ft.	Density	Blows/ft.	Consistency				
0-4	V. LOOSE	<2	V. SOFT	35' well constructed with 3' standpipe and 32' bgs.	Concrete	0-0.5	
5-10	LOOSE	2-4	SOFT		Backfill	0.5-15	
11-30	M. DENSE	5-8	M. STIFF		Grout	NA	
31-50	DENSE	9-15	STIFF		Bentonite: Chips	15-16	
>50	V. DENSE	16-30	V. STIFF		Sandpack: # 2 Sand	16-32	
		>30	HARD		Riser	17	
				Screen	15		

NOTES

- Soil samples screened in the field with a MiniRae 3000 photoionization detector with a 10.6 eV lamp.
- bgs = below ground surface.



GeoInsight
Environmental Strategy & Engineering

SOIL BORING / WELL COMPLETION LOG

Client: Benchmark Senior Living / Tuck Realty Corp.	Boring Identification: B-13	Well ID: GEO-5
Project: Map 10, Lot 1 (former Hector's Motel)		Sheet: 2 of 2
Location: Lafayette Road (Rt. 1), Rye, NH	Chkd. By: DLS	Project Number: 9212
Drilling Company: GeoSearch, Inc.	Boring Location: 43.00260300 N 70.81252969 W	
Foreman: Mike D.	Top of PVC Riser Elevation: 121.03'	Datum: 111.34'
GeoInsight Engineer/Geologist: Joshua Brown	Top of Protector Elevation: NS	Ground Elevation: NA
	Date Started: 5/14/2021	Date Completed: 5/14/2021

DRILLING METHOD		SAMPLER		GROUNDWATER MEASUREMENTS						
Vehicle: ATV		Type: 2" SS / Auto		Date	Depth (ft)	Reference	Stabilization			
Model: CME-850		Hammer (lb): 140		05/14/2021	27.11	Top of Riser	1 hour			
Method: Hollow stem auger		Fall (in): 30		05/23/2021	27.25		9 days			
DEPTH (ft)	SAMPLE INFORMATION				WELL COMPLETION DETAIL	SAMPLE DESCRIPTION	STRATUM DESCRIPTION	FIELD SCREENING (ppm)	NOTE	
	#	Pen/Rec (in)	Depth (ft)	Blows/6"						
20	S-4	24/3	20-22	15	[Visual well completion detail: 20-32' depth]	S-4: Dense, brown, fine to coarse SAND, trace Silt, trace Gravel, moist	SAND & GRAVEL	<1	1	
21				17						
22				17						
23				20						
24				--						
25				--						
26				--						
27				--						
28				--						
29				--						
30	S-5	24/10	25-27	11		S-5: Medium dense, brownish gray, fine to coarse SAND, some Gravel, trace Silt, wet		<1	1	
31				9						
32				10						
33				6						
34				--						
35				--						
36				--						
37				--						
38				--						
39				--						
40				--						
	S-6	24/	30-32	16		S-6: Medium dense, brownish gray, fine to coarse SAND, some Gravel, trace Silt, wet		<1	1	
				14						
				14						
				20						
Boring terminated at 32' bgs. Set monitoring well at 32' bgs.										
33										
34										
35										
36										
37										
38										
39										
40										
GRANULAR SOILS		COHESIVE SOILS		WELL CONSTRUCTION NOTES	WELL MATERIALS	INTERVAL (feet bgs)	LEGEND			
Blows/ft.	Density	Blows/ft.	Consistency							
0-4	V. LOOSE	<2	V. SOFT	35' well constructed with 3' standpipe and 32' bgs.	Concrete	0-0.5				
5-10	LOOSE	2-4	SOFT		Backfill	0.5-15				
11-30	M. DENSE	5-8	M. STIFF		Grout	NA				
31-50	DENSE	9-15	STIFF		Bentonite: Chips	15-16				
>50	V. DENSE	16-30	V. STIFF		Sandpack: # 2 Sand	16-32				
		>30	HARD		Riser	17				
				Screen	15					

NOTES

- Soil samples screened in the field with a MiniRae 3000 photoionization detector with a 10.6 eV lamp.
- bgs = Below ground surface; NS = Not surveyed; WOH = Weight of hammer



GeoInsight
Environmental Strategy & Engineering

SOIL BORING / WELL COMPLETION LOG

Client: Benchmark Senior Living / Tuck Realty Corp.	Boring Identification: B-14	Well ID: GEO-6
Project: Map 10, Lot 1 (former Hector's Motel)		Sheet: 1 of 2
Location: Lafayette Road (Rt. 1), Rye, NH	Chkd. By: DLS	Project Number: 9212
Drilling Company: GeoSearch, Inc.	Boring Location: 43.00310488 N 70.81242190 W	
Foreman: Mike D.	Top of PVC Riser Elevation: 120.26	Datum: 111.34'
GeoInsight Engineer/Geologist: Joshua Brown	Top of Protector Elevation: NS	Ground Elevation: NA
	Date Started: 5/14/2021	Date Completed: 5/14/2021

DRILLING METHOD	SAMPLER	GROUNDWATER MEASUREMENTS			
Vehicle: ATV	Type: 2" SS / Auto	Date	Depth (ft)	Reference	Stabilization
Model: CME-850	Hammer (lb): 140	05/14/2021	24.64	Top of Riser	1 hour
Method: Hollow stem auger	Fall (in): 30	05/23/2021	24.91		9 days

DEPTH (ft)	SAMPLE INFORMATION				WELL COMPLETION DETAIL	SAMPLE DESCRIPTION	STRATUM DESCRIPTION	FIELD SCREENING (ppm)	NOTE
	#	Pen/Rec (in)	Depth (ft)	Blows/6"					
0				--		Switched to sampling every 10' due to time constraints.			
1				--					
2				--					
3				--					
4				--		Cuttings: Material in cuttings from 0-10' consistent with other borings - Brown fine to coarse SAND, some gravel, damp.			
5				--					
6				--					
7				--					
8				--					
9				--					
10	S-1	24/12	10-12	17		S-1: Medium dense, brown, fine to coarse SAND, some Gravel, trace Silt, damp	SAND & GRAVEL	<1	1
11				13					
12				13					
13				12					
14				--					
15				--					
16				--					
17				--					
18				--					
19				--					
20				--					

GRANULAR SOILS		COHESIVE SOILS		WELL CONSTRUCTION NOTES	WELL MATERIALS	INTERVAL (feet bgs)	LEGEND
Blows/ft.	Density	Blows/ft.	Consistency				
0-4	V. LOOSE	<2	V. SOFT	36' well constructed with 3' standpipe and 33' bgs.	Concrete	0-0.5	
5-10	LOOSE	2-4	SOFT		Backfill	0.5-15	
11-30	M. DENSE	5-8	M. STIFF		Grout	NA	
31-50	DENSE	9-15	STIFF		Bentonite: Chips	15-16	
>50	V. DENSE	16-30	V. STIFF		Sandpack: # 2 Sand	16-32	
		>30	HARD		Riser	22	
				Screen	13		

NOTES

- Soil samples screened in the field with a MiniRae 3000 photoionization detector with a 10.6 eV lamp.
- bgs = below ground surface.



GeoInsight®

Environmental Strategy & Engineering

SOIL BORING / WELL COMPLETION LOG

Client: Benchmark Senior Living / Tuck Realty Corp.	Boring Identification: B-14	Well ID: GEO-6
Project: Map 10, Lot 1 (former Hector's Motel)		Sheet: 2 of 2
Location: Lafayette Road (Rt. 1), Rye, NH	Chkd. By: DLS	Project Number: 9212
Drilling Company: GeoSearch, Inc.	Boring Location: 43.00310488 N 70.81242190 W	
Foreman: Mike D.	Top of PVC Riser Elevation: 120.26	Datum: 111.34'
GeoInsight Engineer/Geologist: Joshua Brown	Top of Protector Elevation: NS	Ground Elevation: NA
	Date Started: 5/14/2021	Date Completed: 5/14/2021

DRILLING METHOD	SAMPLER	GROUNDWATER MEASUREMENTS			
Vehicle: ATV	Type: 2" SS / Auto	Date	Depth (ft)	Reference	Stabilization
Model: CME-850	Hammer (lb): 140	05/14/2021	24.64	Top of Riser	1 hour
Method: Hollow stem auger	Fall (in): 30	05/23/2021	24.91		9 days

DEPTH (ft)	SAMPLE INFORMATION				WELL COMPLETION DETAIL	SAMPLE DESCRIPTION	STRATUM DESCRIPTION	FIELD SCREENING (ppm)	NOTE	
	#	Pen/Rec (in)	Depth (ft)	Blows/6"						
20	S-2A	12/9	20-21	18		S-2A: Dense, brown, fine to medium SAND, trace Silt, damp	SAND & GRAVEL	<1	1	
21	S-2B	12/9	21-22	15		S-2B: Dense, brown, fine SAND and SILT, damp				
22				13						
				--						
23				--						
24				--			Cutting: Water at ~25'			
				--						
25	S-3	24/24	25-27	5			S-3: Stiff, gray, fine SAND and SILT, some Clay, wet	SAND & SILT	<1	1
26				5						
				5						
27				8						
				--						
28				--						
				--						
29				--						
				--						
30				--					<1	1
31				--						
32				--						
				--						
33				--		Boring terminated at 33' bgs. Set monitoring well at 33' bgs				
34				--						
35				--						
36				--						
37				--						
38				--						
39				--						
40				--						

GRANULAR SOILS		COHESIVE SOILS		WELL CONSTRUCTION NOTES	WELL MATERIALS	INTERVAL (feet bgs)	LEGEND
Blows/ft.	Density	Blows/ft.	Consistency				
0-4	V. LOOSE	<2	V. SOFT	36' well constructed with 3' standpipe and 33' bgs.	Concrete	0-0.5	
5-10	LOOSE	2-4	SOFT		Backfill	0.5-18	
11-30	M. DENSE	5-8	M. STIFF		Grout	NA	
31-50	DENSE	9-15	STIFF		Bentonite: Chips	18-19	
>50	V. DENSE	16-30	V. STIFF		Sandpack: # 2 Sand	19-33	
		>30	HARD		Riser	23	
					Screen	13	

NOTES

- Soil samples screened in the field with a MiniRae 3000 photoionization detector with a 10.6 eV lamp.
- bgs = Below ground surface; NS = Not surveyed; WOH = Weight of hammer

ATTACHMENT C
LABORATORY ANALYTICAL REPORTS

Laboratory Report



Absolute Resource *associates*

124 Heritage Avenue Portsmouth NH 03801

Darrin Santos
GeoInsight, Inc.
186 Granite Street
3rd Floor, Suite A
Manchester, NH 03103

PO Number: None
Job ID: 57096
Date Received: 5/24/21

Project: Benchmark Rye 9212-006

Attached please find results for the analysis of the samples received on the date referenced above.

Unless otherwise noted in the attached report, the analyses performed met the requirements of Absolute Resource Associates' Quality Assurance Plan. The Standard Operating Procedures are based upon USEPA SW-846, USEPA Methods for Chemical Analysis of Water and Wastewater, Standard Methods for the Examination of Water and Wastewater and other recognized methodologies. The results contained in this report pertain only to the samples as indicated on the chain of custody.

Absolute Resource Associates maintains certification with the agencies listed below. The reported results apply to the sample(s) in the condition as received at the time the laboratory took custody. This report shall not be reproduced except in full, without written approval of the laboratory. The liability of ARA is limited to the cost of the requested analyses, unless otherwise agreed upon in writing.

We appreciate the opportunity to provide laboratory services. If you have any questions regarding the enclosed report, please contact the laboratory and we will be glad to assist you.

Sincerely,
Absolute Resource Associates

A handwritten signature in black ink that reads "Alexander Alterisio". The signature is written in a cursive, flowing style.

Alex Alterisio
Authorized Signature

Date of Approval: 6/2/2021
Total number of pages: 4

Absolute Resource Associates Certifications

New Hampshire 1732
Maine NH902

Massachusetts M-NH902

Project ID: Benchmark Rye 9212-006

Job ID: 57096

Sample#: 57096-001

Sample ID: GEO-1

Matrix: Water

Sampled: 5/23/21 13:10

Parameter	Reporting		Units	Instr Dil'n	Prep		Analysis			Reference
	Result	Limit			Analyst	Date	Batch	Date	Time	
dimethylphthalate	< 5	5	ug/L	1	CL	5/27/21	13914	5/27/21	22:04	SW3510C8270E
diethyl phthalate	< 5	5	ug/L	1	CL	5/27/21	13914	5/27/21	22:04	SW3510C8270E
di-n-butylphthalate	< 5	5	ug/L	1	CL	5/27/21	13914	5/27/21	22:04	SW3510C8270E
butyl benzyl phthalate	< 5	5	ug/L	1	CL	5/27/21	13914	5/27/21	22:04	SW3510C8270E
bis(2-ethylhexyl)phthalate	< 5	5	ug/L	1	CL	5/27/21	13914	5/27/21	22:04	SW3510C8270E
di-n-octyl phthalate	< 5	5	ug/L	1	CL	5/27/21	13914	5/27/21	22:04	SW3510C8270E
Surrogate Recovery		Limits								
nitrobenzene-D5 SUR	72	35-114	%	1	CL	5/27/21	13914	5/27/21	22:04	SW3510C8270E
2-fluorobiphenyl SUR	63	43-116	%	1	CL	5/27/21	13914	5/27/21	22:04	SW3510C8270E
p-terphenyl-D14 SUR	57	33-141	%	1	CL	5/27/21	13914	5/27/21	22:04	SW3510C8270E

Sample Receipt Condition Report

57096

Absolute Resource Associates
Job Number:

Samples Received from: -UPS -FedEx -USPS -Lab Courier -Client Drop-off -_____

Custody Seals - present & intact: -Yes -No -N/A CoC signed: -Yes -No

Receipt Temp: 10 °C Samples on ice? -Yes -No -N/A Sampled < 24 hrs ago? -Yes -No

PFAS-only real ice? -Yes -No -N/A Any signs of freezing? -Yes -No

Comments:

Preservation / Analysis	Bottle Size/Type & Quantity						Check pH for ALL applicable* samples and document:
HCl	40mL(G)	250mL(P)	500mL(P)	1L(G)			
HNO ₃	125mL(P)	250mL(P)	500mL(P)				
H ₂ SO ₄	40mL(G)	60mL(P)	125mL(P)	250mL(P)	500mL(P)		
NaOH	125mL(P)	250mL(P)					
(NH ₄) ₂ SO ₄	60mL(P)	125mL(P)	250mL(P)				
ZnAc-NaOH	125mL(P)	250mL(P)					
Trizma	125mL(P)	250mL(P)					*pH ✓ by analyst: VOC, PFAS, TOC, O&G
NH ₄ Ac	125mL(P)	250mL(P)					Residual Cl not present:
Na ₂ S ₂ O ₃	40mL(G)	120mL(P)					ABN625 _____ Pest608 _____
MeOH	20mL(G)	40mL(G)					Bacteria ResCl ✓ by analyst
None (solid)	2oz(G)	4oz(G)	8oz(G)	Syringe			PC Dry applicable? Y N
None (water)	40ml (G)	60mL(P)	125mL(P)	250mL(P)	500mL(P)	1L(G)	1L(P)
Mold	Cassette	Bulk	Plate	Tape Lift			
Asbestos	Cassette	Bulk					
Lead	Cassette	Bulk	Wipe				

Login Review	Yes	No	N/A	Comments
Proper lab sample containers/enough volume/correct preservative?	X			
Analyses marked on COC match bottles received?	X			
VOC & TOC Water-no headspace?			X	
VOC Solid-MeOH covers solid, no leaks, Prep Expiration OK?			X	
PFAS: Lab specific bottles? QC received, if required?			X	
Bacteria bottles provided by ARA?			X	
Samples within holding time?	X			
Immediate tests communicated in writing: NO ₃ , NO ₂ , PO ₄ , pH, BOD, Coliform/E. coli (P/A or MPN), Enterococci, Color Surfactants, Turbidity, Odor, CrVI, Ferrous Iron, Dissolved Oxygen, Unpres 624			X	
Date, time & ID on samples match CoC?	X			
Rushes communicated to analyst in writing?			X	
Subcontract note on login board?				
Pesticides EPA 608 pH5-9?				
Compliance samples have no discrepancies/require no flags?				(Or must be rejected)
Log-in Supervisor notified immediately of following items:			X	Discrepancies, compliance samples (NHDES, MADEP, DoD etc.) or uncommon requests.

 Inspected and Received By: Sam

 Date/Time: 5/24/21 8:36

Peer Review Checklist			
<input type="checkbox"/> Client ID/Project Manager	<input type="checkbox"/> On Ice, Temperature OK?	<input type="checkbox"/> Sample IDs	<input type="checkbox"/> Analyses in Correctly
<input type="checkbox"/> Project Name	<input type="checkbox"/> PO# (if provided)	<input type="checkbox"/> Matrix	-references
<input type="checkbox"/> TAT/rushes communicated	<input type="checkbox"/> Sub samples sent? Shipping Charge?	<input type="checkbox"/> Date/Time collected	-wastewater methods
<input type="checkbox"/> Received Date/Time	<input type="checkbox"/> Issues noted above communicated?	<input type="checkbox"/> Short HTs communicated	<input type="checkbox"/> Notes from CoC in LIMS
Reviewed By: _____		Date: _____	

Notes: (continue on back as needed)

	Initials	Date	What was sent?
Uploaded / PDF _____	_____	_____	Report / Data / EDD / Invoice
Uploaded / PDF _____	_____	_____	Report / Data / EDD / Invoice
Uploaded / PDF _____	_____	_____	Report / Data / EDD / Invoice

Laboratory Report



Absolute Resource *associates*

124 Heritage Avenue Portsmouth NH 03801

Darrin Santos
GeolInsight, Inc.
186 Granite Street
3rd Floor, Suite A
Manchester, NH 03103

PO Number: None
Job ID: 57095
Date Received: 5/24/21

Project: Benchmark Rye 9212-006

Attached please find results for the analysis of the samples received on the date referenced above.

Unless otherwise noted in the attached report, the analyses performed met the requirements of Absolute Resource Associates' Quality Assurance Plan. The Standard Operating Procedures are based upon USEPA SW-846, USEPA Methods for Chemical Analysis of Water and Wastewater, Standard Methods for the Examination of Water and Wastewater and other recognized methodologies. The results contained in this report pertain only to the samples as indicated on the chain of custody.

Absolute Resource Associates maintains certification with the agencies listed below. The reported results apply to the sample(s) in the condition as received at the time the laboratory took custody. This report shall not be reproduced except in full, without written approval of the laboratory. The liability of ARA is limited to the cost of the requested analyses, unless otherwise agreed upon in writing.

We appreciate the opportunity to provide laboratory services. If you have any questions regarding the enclosed report, please contact the laboratory and we will be glad to assist you.

Sincerely,
Absolute Resource Associates

A handwritten signature in black ink, appearing to read 'A. DeWees', written in a cursive style.

Aaron DeWees
Chief Operating Officer

Date of Approval: 6/1/2021
Total number of pages: 5

Absolute Resource Associates Certifications

New Hampshire 1732
Maine NH902

Massachusetts M-NH902

Project ID: Benchmark Rye 9212-006

Job ID: 57095

Sample#: 57095-001

Sample ID: GEO-1

Matrix: Water

Sampled: 5/23/21 13:10

Parameter	Reporting		Instr Dil'n		Analyst	Prep Date	Analysis			Reference
	Result	Limit	Units	Factor			Batch	Date	Time	
Ammonia as N	< 0.5	0.5	mg/L	1	SFM	2101459	5/25/21	9:40	SM4500NH3-D	
Chloride	220	2.5	mg/L	5	DBV	2101487	5/26/21	14:31	E300.0A	
Nitrate-N	< 0.1	0.1	mg/L	1	DBV	2101441	5/24/21	12:37	E300.0A	

Sample#: 57095-002

Sample ID: GEO-2

Matrix: Water

Sampled: 5/23/21 13:20

Parameter	Reporting		Instr Dil'n		Analyst	Prep Date	Analysis			Reference
	Result	Limit	Units	Factor			Batch	Date	Time	
Ammonia as N	< 0.5	0.5	mg/L	1	SFM	2101459	5/25/21	9:40	SM4500NH3-D	
Chloride	3.9	0.5	mg/L	1	DBV	2101487	5/26/21	15:20	E300.0A	
Nitrate-N	2.2	0.1	mg/L	1	DBV	2101441	5/24/21	13:27	E300.0A	

Sample#: 57095-003

Sample ID: GEO-3

Matrix: Water

Sampled: 5/23/21 13:30

Parameter	Reporting		Instr Dil'n		Analyst	Prep Date	Analysis			Reference
	Result	Limit	Units	Factor			Batch	Date	Time	
Ammonia as N	< 0.5	0.5	mg/L	1	SFM	2101459	5/25/21	9:40	SM4500NH3-D	
Chloride	200	2.5	mg/L	5	DBV	2101487	5/26/21	14:47	E300.0A	
Nitrate-N	1.1	0.1	mg/L	1	DBV	2101441	5/24/21	13:43	E300.0A	

Sample#: 57095-004

Sample ID: GEO-4

Matrix: Water

Sampled: 5/23/21 13:40

Parameter	Reporting		Instr Dil'n		Analyst	Prep Date	Analysis			Reference
	Result	Limit	Units	Factor			Batch	Date	Time	
Ammonia as N	< 0.5	0.5	mg/L	1	SFM	2101459	5/25/21	9:40	SM4500NH3-D	
Chloride	76	0.5	mg/L	1	DBV	2101487	5/26/21	15:37	E300.0A	
Nitrate-N	1.4	0.1	mg/L	1	DBV	2101441	5/24/21	14:00	E300.0A	

Sample#: 57095-005

Sample ID: GEO-5

Matrix: Water

Sampled: 5/23/21 13:50

Parameter	Reporting		Instr Dil'n		Analyst	Prep Date	Analysis			Reference
	Result	Limit	Units	Factor			Batch	Date	Time	
Ammonia as N	0.9	0.5	mg/L	1	SFM	2101486	5/27/21	7:25	SM4500NH3-D	
Chloride	12	0.5	mg/L	1	DBV	2101441	5/24/21	14:16	E300.0A	
Nitrate-N	< 0.1	0.1	mg/L	1	DBV	2101441	5/24/21	14:16	E300.0A	

Project ID: Benchmark Rye 9212-006

Job ID: 57095

Sample#: 57095-006

Sample ID: GEO-6

Matrix: Water

Sampled: 5/23/21 14:00

Parameter	Reporting		Instr Dil'n		Analyst	Prep Date	Analysis			Reference
	Result	Limit	Units	Factor			Batch	Date	Time	
Ammonia as N	< 0.5	0.5	mg/L	1	SFM	2101459	5/25/21	9:40	SM4500NH3-D	
Chloride	240	2.5	mg/L	5	DBV	2101487	5/26/21	15:04	E300.0A	
Nitrate-N	2.9	0.1	mg/L	1	DBV	2101441	5/24/21	14:33	E300.0A	

Sample#: 57095-007

Sample ID: MW-3

Matrix: Water

Sampled: 5/23/21 14:10

Parameter	Reporting		Instr Dil'n		Analyst	Prep Date	Analysis			Reference
	Result	Limit	Units	Factor			Batch	Date	Time	
Ammonia as N	< 0.5	0.5	mg/L	1	SFM	2101459	5/25/21	9:40	SM4500NH3-D	
Chloride	420	5.0	mg/L	10	DBV	2101487	5/26/21	13:58	E300.0A	
Nitrate-N	1.3	0.1	mg/L	1	DBV	2101441	5/24/21	14:49	E300.0A	

Sample#: 57095-008

Sample ID: MW-6

Matrix: Water

Sampled: 5/23/21 14:20

Parameter	Reporting		Instr Dil'n		Analyst	Prep Date	Analysis			Reference
	Result	Limit	Units	Factor			Batch	Date	Time	
Ammonia as N	< 0.5	0.5	mg/L	1	SFM	2101486	5/27/21	7:25	SM4500NH3-D	
Chloride	430	5.0	mg/L	10	DBV	2101487	5/26/21	14:14	E300.0A	
Nitrate-N	0.9	0.1	mg/L	1	DBV	2101441	5/24/21	15:05	E300.0A	

Absolute Resource
associates



124 Heritage Avenue #16
Portsmouth, NH 03801
603-436-2001

absoluteresourceassociates.com

**CHAIN-OF-CUSTODY RECORD
AND ANALYSIS REQUEST**

57095

ANALYSIS REQUEST

Company Name: Geo Insight Inc.
Company Address: 186 Granite St Manchester, NH
Report To: Darcin Santos
Phone #: (603) 314-0820
Invoice to: Same
Email: DLSANTOS@GeoInc.com
PO #:

Project Name: Benchmark Eye
Project #: 9212-006
Project Location: NH MA ME VT
Accreditation Required? N/Y:
Protocol: RCRA SDWA NPDES
MCP NHDES DOD
Reporting QAPP GW-1 S-1
Limits: EPA DW Other
Quote #
 NH Reimbursement Pricing

Lab Sample ID (Lab Use Only)	Field ID	# CONTAINERS	Matrix			Preservation Method				Sampling		
			WATER	SOLID	OTHER	HCl	HNO ₃	H ₂ SO ₄	NaOH	MeOH	DATE	TIME
57095-01	GEO-1	2	X							5/23/21	13:10	JRS
02	GEO-2	2	X								13:20	
03	GEO-3	2	X								13:30	
04	GEO-4	2	X								13:40	
05	GEO-5	2	X								13:50	
06	GEO-6	2	X								14:00	
07	MW-3	2	X								14:10	
08	MW-6	2	X								14:20	

<input type="checkbox"/> VOC 8260	<input type="checkbox"/> VOC 8260 NHDES	<input type="checkbox"/> VOC 8260 MADEP	<input type="checkbox"/> VOC 624.1	<input type="checkbox"/> VOC BTEX MIBE, only	<input type="checkbox"/> VOC 8021VT	<input type="checkbox"/> VPH MADEP	<input type="checkbox"/> G60 8015	<input type="checkbox"/> 1,4-Dioxane	<input type="checkbox"/> VOC 524.2	<input type="checkbox"/> NH List	<input type="checkbox"/> Gases-List	<input type="checkbox"/> TPH 8100	<input type="checkbox"/> DRO 8015	<input type="checkbox"/> EPH MADEP	<input type="checkbox"/> TPH Fingerprint	<input type="checkbox"/> 8270PAH	<input type="checkbox"/> 8270ABN	<input type="checkbox"/> 625.1	<input type="checkbox"/> EDB	<input type="checkbox"/> 8082 PCB	<input type="checkbox"/> 8081 Pesticides	<input type="checkbox"/> 608.3 Pest/PCB	<input type="checkbox"/> PFAS 537.1	<input type="checkbox"/> PFAS 533	<input type="checkbox"/> PFAS isotope dilution	<input type="checkbox"/> O&G 1664	<input type="checkbox"/> Mineral O&G 1664	<input type="checkbox"/> pH	<input type="checkbox"/> BOD	<input type="checkbox"/> Conductivity	<input type="checkbox"/> Turbidity	<input type="checkbox"/> Apparent Color	<input type="checkbox"/> TSS	<input type="checkbox"/> TDS	<input type="checkbox"/> TS	<input type="checkbox"/> TVS	<input type="checkbox"/> Alkalinity	<input type="checkbox"/> Acidity	<input type="checkbox"/> RCRA Metals	<input type="checkbox"/> Priority Pollutant Metals	<input type="checkbox"/> TAL Metals	<input type="checkbox"/> Hardness	<input type="checkbox"/> Total Metals-list:	<input type="checkbox"/> Dissolved Metals-list:	<input type="checkbox"/> Ammonia	<input type="checkbox"/> COD	<input type="checkbox"/> TKN	<input type="checkbox"/> TN	<input type="checkbox"/> TOC	<input type="checkbox"/> Ferrous Iron	<input type="checkbox"/> T-Phosphorus	<input type="checkbox"/> Bacteria P/A	<input type="checkbox"/> Bacteria MPN	<input type="checkbox"/> Enterococci	<input type="checkbox"/> Cyanide	<input type="checkbox"/> Sulfide	<input type="checkbox"/> Nitrate + Nitrite	<input type="checkbox"/> Ortho P	<input type="checkbox"/> Phenols	<input type="checkbox"/> Nitrate	<input type="checkbox"/> Nitrite	<input checked="" type="checkbox"/> Chloride	<input type="checkbox"/> Sulfate	<input type="checkbox"/> Bromide	<input type="checkbox"/> Fluoride	<input type="checkbox"/> Corrosivity	<input type="checkbox"/> Ignitibility/FP	<input type="checkbox"/> TCLP Metals	<input type="checkbox"/> TCLP VOC	<input type="checkbox"/> TCLP SVOC	<input type="checkbox"/> TCLP Pesticide	Subcontract: <input type="checkbox"/> Grain Size	<input type="checkbox"/> Herbicides	<input type="checkbox"/> Asbestos	<u>Nitrate-Nitrogen & Ammonia-Nitrogen</u>	Grab (G) or Composite (C)
-----------------------------------	---	---	------------------------------------	--	-------------------------------------	------------------------------------	-----------------------------------	--------------------------------------	------------------------------------	----------------------------------	-------------------------------------	-----------------------------------	-----------------------------------	------------------------------------	--	----------------------------------	----------------------------------	--------------------------------	------------------------------	-----------------------------------	--	---	-------------------------------------	-----------------------------------	--	-----------------------------------	---	-----------------------------	------------------------------	---------------------------------------	------------------------------------	---	------------------------------	------------------------------	-----------------------------	------------------------------	-------------------------------------	----------------------------------	--------------------------------------	--	-------------------------------------	-----------------------------------	---	---	----------------------------------	------------------------------	------------------------------	-----------------------------	------------------------------	---------------------------------------	---------------------------------------	---------------------------------------	---------------------------------------	--------------------------------------	----------------------------------	----------------------------------	--	----------------------------------	----------------------------------	----------------------------------	----------------------------------	--	----------------------------------	----------------------------------	-----------------------------------	--------------------------------------	--	--------------------------------------	-----------------------------------	------------------------------------	---	--	-------------------------------------	-----------------------------------	--	---------------------------

TAT REQUESTED
Priority (24 hr)*
Expedited (48 hr)*
Standard
(10 Business Days)
*Date Needed

See absoluteresourceassociates.com for sample acceptance policy and current accreditation lists.
SPECIAL INSTRUCTIONS Short Hold Samples.

CUSTODY RECORD
QSD-01 Revision 03/09/2020

REPORTING INSTRUCTIONS PDF (e-mail address) DLSANTOS@GeoInc.com
 HARD COPY REQUIRED EDD

Relinquished by Sampler: <u>JRS</u>	Date <u>5/24/21</u>	Time	Received by:	Date	Time
Relinquished by:	Date	Time	Received by:	Date	Time
Relinquished by:	Date	Time	Received by Laboratory: <u>[Signature]</u>	Date <u>5/24/21</u>	Time <u>7:51</u>

RECEIVED ON ICE YES NO
TEMPERATURE 0 °C

Sample Receipt Condition Report

57095

Absolute Resource Associates
Job Number:

Samples Received from: -UPS -FedEx -USPS -Lab Courier -Client Drop-off -
 Custody Seals - present & intact: -Yes -No -N/A CoC signed: -Yes -No
 Receipt Temp: 0 °C Samples on ice? -Yes -No -N/A Sampled < 24 hrs ago? -Yes -No
 PFAS-only real ice? -Yes -No -N/A Any signs of freezing? -Yes -No

Comments:

Preservation / Analysis	Bottle Size/Type & Quantity						Check pH for ALL applicable* samples and document:
HCl	40mL(G)	250mL(P)	500mL(P)	1L(G)			
HNO ₃	125mL(P)	250mL(P)	500mL(P)				
H ₂ SO ₄	40mL(G)	60mL(P)	125mL(P)	250mL(P)	8	500mL(P)	pH 2.50m
NaOH	125mL(P)	250mL(P)					
(NH ₄) ₂ SO ₄	60mL(P)	125mL(P)	250mL(P)				
ZnAc-NaOH	125mL(P)	250mL(P)					
Trizma	125mL(P)	250mL(P)					
NH ₄ Ac	125mL(P)	250mL(P)					
Na ₂ S ₂ O ₃	40mL(G)	120mL(P)					
MeOH	20mL(G)	40mL(G)					
None (solid)	2oz(G)	4oz(G)	8oz(G)	Syringe			
None (water)	40ml (G)	60mL(P)	8 125mL(P)	250mL(P)		500mL(P)	
Mold	Cassette	Bulk	Plate	Tape Lift			
Asbestos	Cassette	Bulk					
Lead	Cassette	Bulk	Wipe				

*pH ✓ by analyst: VOC, PFAS, TOC, O&G
 Residual Cl not present:
 ABN625 _____ Pest608 _____
 Bacteria ResCl ✓ by analyst

PC Dry applicable? Y N
 1L(G) 1L(P)

Login Review	Yes	No	N/A	Comments
Proper lab sample containers/enough volume/correct preservative?	X			
Analyses marked on COC match bottles received?	X			
VOC & TOC Water-no headspace?			X	
VOC Solid-MeOH covers solid, no leaks, Prep Expiration OK?			X	
PFAS: Lab specific bottles? QC received, if required?			X	
Bacteria bottles provided by ARA?			X	
Samples within holding time?	X			
Immediate tests communicated in writing: NO ₃ , NO ₂ , PO ₄ , pH, BOD, Coliform/E. coli (P/A or MPN), Enterococci, Color Surfactants, Turbidity, Odor, CrVI, Ferrous Iron, Dissolved Oxygen, Unpres 624	X			DBU
Date, time & ID on samples match CoC?	X			
Rushes communicated to analyst in writing?			X	
Subcontract note on login board?				
Pesticides EPA 608 pH5-9?				
Compliance samples have no discrepancies/require no flags?				(Or must be rejected)
Log-in Supervisor notified immediately of following items:				Discrepancies, compliance samples (NHDES, MADEP, DoD etc.) or uncommon requests.

 Inspected and Received By: [Signature]

 Date/Time: 5/24/21 8:35

Peer Review Checklist			
<input type="checkbox"/> Client ID/Project Manager	<input type="checkbox"/> On Ice, Temperature OK?	<input type="checkbox"/> Sample IDs	<input type="checkbox"/> Analyses in Correctly
<input type="checkbox"/> Project Name	<input type="checkbox"/> PO# (if provided)	<input type="checkbox"/> Matrix	-references
<input type="checkbox"/> TAT/rushes communicated	<input type="checkbox"/> Sub samples sent? Shipping Charge?	<input type="checkbox"/> Date/Time collected	-wastewater methods
<input type="checkbox"/> Received Date/Time	<input type="checkbox"/> Issues noted above communicated?	<input type="checkbox"/> Short HTs communicated	<input type="checkbox"/> Notes from CoC in LIMS
Reviewed By: _____		Date: _____	

Notes: (continue on back as needed)

Initials	Date	What was sent?
Uploaded / PDF _____	_____	Report / Data / EDD / Invoice
Uploaded / PDF _____	_____	Report / Data / EDD / Invoice
Uploaded / PDF _____	_____	Report / Data / EDD / Invoice

Laboratory Report



Absolute Resource *associates*

124 Heritage Avenue Portsmouth NH 03801

Darrin Santos
GeolInsight, Inc.
186 Granite Street
3rd Floor, Suite A
Manchester, NH 03103

PO Number: None
Job ID: 56057
Date Received: 3/2/21

Project: Benchmark Rye 9212

Attached please find results for the analysis of the samples received on the date referenced above.

Unless otherwise noted in the attached report, the analyses performed met the requirements of Absolute Resource Associates' Quality Assurance Plan. The Standard Operating Procedures are based upon USEPA SW-846, USEPA Methods for Chemical Analysis of Water and Wastewater, Standard Methods for the Examination of Water and Wastewater and other recognized methodologies. The results contained in this report pertain only to the samples as indicated on the chain of custody.

Absolute Resource Associates maintains certification with the agencies listed below. The reported results apply to the sample(s) in the condition as received at the time the laboratory took custody. This report shall not be reproduced except in full, without written approval of the laboratory. The liability of ARA is limited to the cost of the requested analyses, unless otherwise agreed upon in writing.

We appreciate the opportunity to provide laboratory services. If you have any questions regarding the enclosed report, please contact the laboratory and we will be glad to assist you.

Sincerely,
Absolute Resource Associates

A handwritten signature in black ink, appearing to read 'A. DeWees', written in a cursive style.

Aaron DeWees
Chief Operating Officer

Date of Approval: 3/5/2021
Total number of pages: 4

Absolute Resource Associates Certifications

New Hampshire 1732
Maine NH902

Massachusetts M-NH902

Project ID: Benchmark Rye 9212

Job ID: 56057

Sample#: 56057-001

Sample ID: MW-6

Matrix: Water

Sampled: 3/2/21 12:00

Parameter	Result	Reporting		Instr Dil'n		Prep		Analysis		
		Limit	Units	Factor	Analyst	Date	Batch	Date	Time	Reference
dimethylphthalate	< 5	5	ug/L	1	CL	3/4/21	13664	3/4/21	18:26	SW3510C8270E
diethyl phthalate	< 5	5	ug/L	1	CL	3/4/21	13664	3/4/21	18:26	SW3510C8270E
di-n-butylphthalate	< 5	5	ug/L	1	CL	3/4/21	13664	3/4/21	18:26	SW3510C8270E
butyl benzyl phthalate	< 5	5	ug/L	1	CL	3/4/21	13664	3/4/21	18:26	SW3510C8270E
bis(2-ethylhexyl)phthalate	< 5	5	ug/L	1	CL	3/4/21	13664	3/4/21	18:26	SW3510C8270E
di-n-octyl phthalate	< 5	5	ug/L	1	CL	3/4/21	13664	3/4/21	18:26	SW3510C8270E
Surrogate Recovery		Limits								
nitrobenzene-D5 SUR	76	35-114	%	1	CL	3/4/21	13664	3/4/21	18:26	SW3510C8270E
p-terphenyl-D14 SUR	49	43-116	%	1	CL	3/4/21	13664	3/4/21	18:26	SW3510C8270E
2-fluorobiphenyl SUR	66	33-141	%	1	CL	3/4/21	13664	3/4/21	18:26	SW3510C8270E

Sample#: 56057-002

Sample ID: MW-3

Matrix: Water

Sampled: 3/2/21 12:00

Parameter	Result	Reporting		Instr Dil'n		Prep		Analysis		
		Limit	Units	Factor	Analyst	Date	Batch	Date	Time	Reference
dimethylphthalate	< 5	5	ug/L	1	CL	3/4/21	13664	3/4/21	18:57	SW3510C8270E
diethyl phthalate	< 5	5	ug/L	1	CL	3/4/21	13664	3/4/21	18:57	SW3510C8270E
di-n-butylphthalate	< 5	5	ug/L	1	CL	3/4/21	13664	3/4/21	18:57	SW3510C8270E
butyl benzyl phthalate	< 5	5	ug/L	1	CL	3/4/21	13664	3/4/21	18:57	SW3510C8270E
bis(2-ethylhexyl)phthalate	< 5	5	ug/L	1	CL	3/4/21	13664	3/4/21	18:57	SW3510C8270E
di-n-octyl phthalate	< 5	5	ug/L	1	CL	3/4/21	13664	3/4/21	18:57	SW3510C8270E
Surrogate Recovery		Limits								
nitrobenzene-D5 SUR	72	35-114	%	1	CL	3/4/21	13664	3/4/21	18:57	SW3510C8270E
p-terphenyl-D14 SUR	56	43-116	%	1	CL	3/4/21	13664	3/4/21	18:57	SW3510C8270E
2-fluorobiphenyl SUR	66	33-141	%	1	CL	3/4/21	13664	3/4/21	18:57	SW3510C8270E

Sample Receipt Condition Report

56057

Absolute Resource Associates

Job Number:

Samples Received from: -UPS -FedEx -USPS -Lab Courier -Client Drop-off -_____

Custody Seals - present & intact: -Yes -No N/A CoC signed: -Yes -No

Receipt Temp: 11 °C Samples on ice? -Yes No -N/A Sampled < 24 hrs ago? Yes -No

PFAS-only real ice? -Yes -No N/A Any signs of freezing? -Yes No

Comments: custom to be notified

Preservation / Analysis	Bottle Size/Type & Quantity						Check pH for ALL applicable* samples and document:
HCl	40mL(G)	250mL(P)	500mL(P)	1L(G)			
HNO ₃	125mL(P)	250mL(P)	500mL(P)				
H ₂ SO ₄	40mL(G)	60mL(P)	125mL(P)	250mL(P)	500mL(P)		
NaOH	125mL(P)	250mL(P)					
(NH ₄) ₂ SO ₄	60mL(P)	125mL(P)	250mL(P)				
ZnAc-NaOH	125mL(P)	250mL(P)					
Trizma	125mL(P)	250mL(P)					*pH ✓ by analyst: VOC, PFAS, TOC, O&G
NH ₄ Ac	125mL(P)	250mL(P)					Residual Cl not present:
Na ₂ S ₂ O ₃	40mL(G)	120mL(P)					ABN625 Pest608
MeOH	20mL(G)	40mL(G)					Bacteria ResCl ✓ by analyst
None (solid)	2oz(G)	4oz(G)	8oz(G)	Syringe			PC Dry applicable? Y N
None (water)	40ml (G)	60mL(P)	125mL(P)	250mL(P)	500mL(P)	1L(G)	3 1L (P)
Mold	Cassette	Bulk	Plate	Tape Lift			
Asbestos	Cassette	Bulk					
Lead	Cassette	Bulk	Wipe				

Login Review	Yes	No	N/A	Comments
Proper lab sample containers/enough volume/correct preservative?	✓			
Analyses marked on COC match bottles received?	✓			
VOC & TOC Water-no headspace?				
VOC Solid-MeOH covers solid, no leaks, Prep Expiration OK?			✓	
PFAS: Lab specific bottles? QC received, if required?			✓	
Bacteria bottles provided by ARA?			✓	
Samples within holding time?	✓			
Immediate tests communicated in writing: NO ₃ , NO ₂ , PO ₄ , pH, BOD, Coliform/E. coli (P/A or MPN), Enterococci, Color Surfactants, Turbidity, Odor, CrVI, Ferrous Iron, Dissolved Oxygen, Unpres 624			✓	
Date, time & ID on samples match CoC?	✓			
Rushes communicated to analyst in writing?	✓			Allison & Chuck
Subcontract note on login board?			✓	
Pesticides EPA 608 pH5-9?			✓	
Compliance samples have no discrepancies/require no flags?			✓	(Or must be rejected)
Log-in Supervisor notified immediately of following items:				Discrepancies, compliance samples (NHIDES, MADEP, DoD etc.) or uncommon requests.

Inspected and Received By: gl Date/Time: 3/21/21 1525

Peer Review Checklist			
<input checked="" type="checkbox"/> Client ID/Project Manager	<input checked="" type="checkbox"/> On Ice, Temperature OK?	<input checked="" type="checkbox"/> Sample IDs	<input checked="" type="checkbox"/> Analyses in Correctly
<input checked="" type="checkbox"/> Project Name	<input type="checkbox"/> PO# (if provided)	<input checked="" type="checkbox"/> Matrix	-references
<input checked="" type="checkbox"/> TAT/rushes communicated	<input type="checkbox"/> Sub samples sent? Shipping Charge?	<input checked="" type="checkbox"/> Date/Time collected	-wastewater methods
<input checked="" type="checkbox"/> Received Date/Time	<input type="checkbox"/> Issues noted above communicated?	<input checked="" type="checkbox"/> Short HT's communicated	<input type="checkbox"/> Notes from CoC in LIMS
Reviewed By: <u>SPM</u>		Date: <u>3/14/21</u>	

Notes: (continue on back as needed)

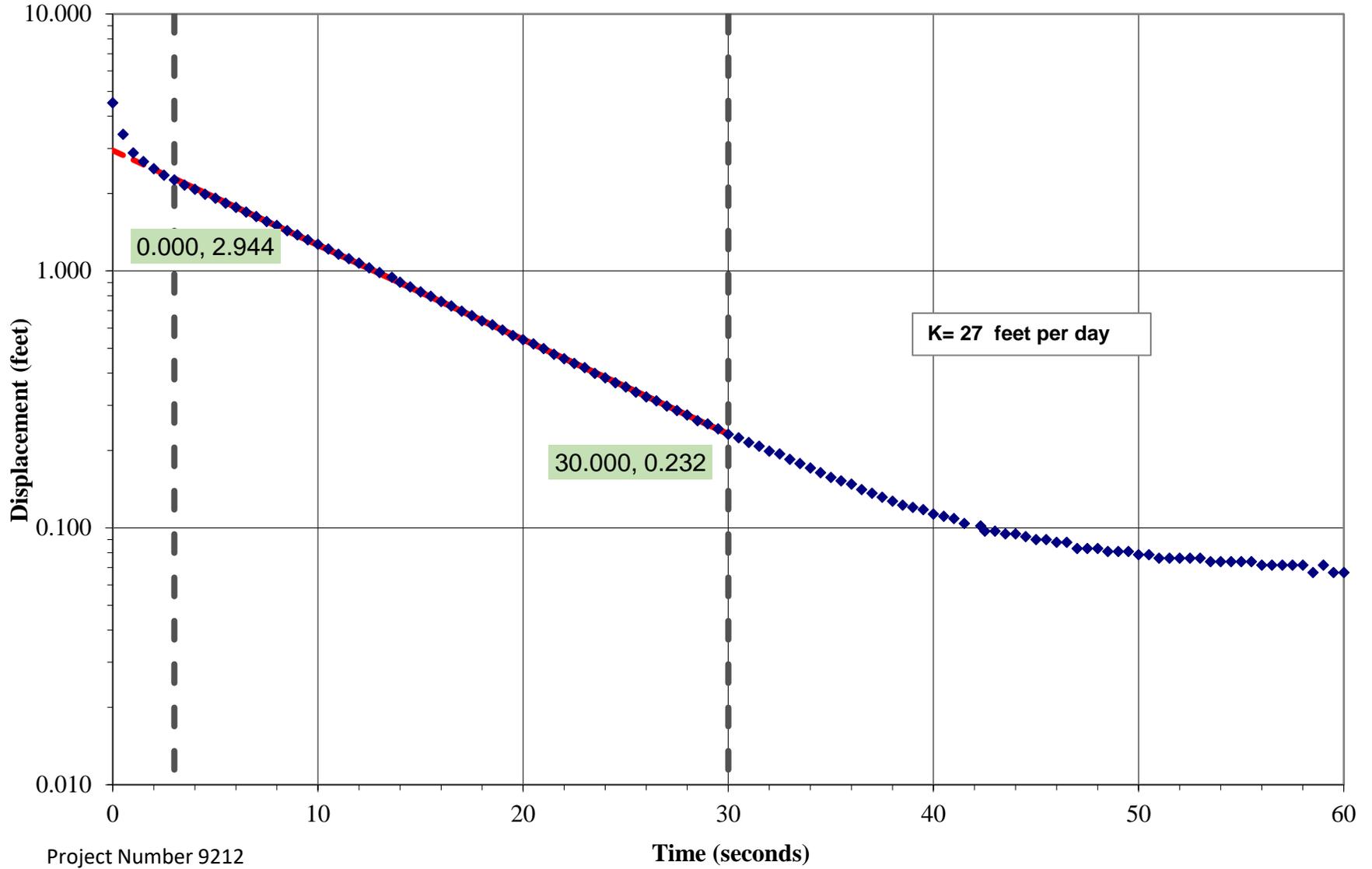
Initials	Date	What was sent?
Uploaded / PDF		Report / Data / EDD / Invoice
Uploaded / PDF		Report / Data / EDD / Invoice
Uploaded / PDF		Report / Data / EDD / Invoice

ATTACHMENT D

SLUG TEST DATA AND HYDRAULIC CONDUCTIVITY CALCULATIONS

GEO-1 SLUG TEST ANALYSIS (Trial 1)

Benchmark Senior Living Lafayette Road, Rye NH



Bouwer and Rice Slug Test for Partially-Penetrating Wells

Note $L_w < H$

Project Name: Benchmark Senior Living
 Project Address: Lafayette Road, Rye NH
 Project Number: 9212
 Test Well: GEO-1
 Trial: 1

Instructions: enter values in shaded cells.

Well and Aquifer Parameters

Well casing diameter ($2r_c$)	0.16667	feet	
Boring diameter ($2r_w$)	0.54167	feet	
Height of water column in well (L_w)	13.07	feet	
Length of saturated well screen (L_e)	13.07	feet	Note: L_e will equal L_w for wells screened across the water table (shallow wells).
Aquifer Thickness (H)	20	feet	Assumption
Gravel pack porosity (n)	0.3	dimensionless	Note: 30% porosity (0.3) is typical for gravel packs.
Anisotropy ratio (K_r/K_z)	10	dimensionless	Note: a value of 1 is equal to no anisotropy ($K_r = K_z$). Most sites will have an anisotropy ratio greater than 1 ($K_r > K_z$).

Notes:

- For a 2-inch diameter well, the well casing diameter ($2r_c$) is 0.16667 feet and the boring diameter ($2r_w$) is typically 0.54167 feet (6.5-inch diameter augers).
- For a 4-inch diameter well, the well casing diameter ($2r_c$) is 0.33333 feet and the boring diameter ($2r_w$) is typically 0.6875 feet (8.25-inch diameter augers).
- For a 6-inch diameter well, the well casing diameter ($2r_c$) is 0.5 feet and the boring diameter ($2r_w$) is typically 0.83333 feet (10-inch diameter augers).

Well casing radius (r_c)	0.083335	feet	
Equivalent casing radius (r_{ce})	0.163911	feet	Note: corrected for porosity of gravel pack (shallow wells only).
Boring radius (r_w)	0.270835	feet	
Corrected boring radius (r_w^*)	0.085646	feet	Note: corrected for anisotropy.
L_e/r_w (for Bouwer and Rice graph)	152.61	dimensionless	

Parameters from recovery graph

Displacement at $t=0$ (y_0)	2.944	feet
Arbitrary time on straight line slope (t)	30.000	seconds
Displacement at that arbitrary time (y_t)	0.232	feet

Dimensionless Parameters (calculated from Bouwer and Rice Graph by linear interpolation)

A	5.39	dimensionless
B	0.96	dimensionless

$\ln R_e/r_w$ 3.55014

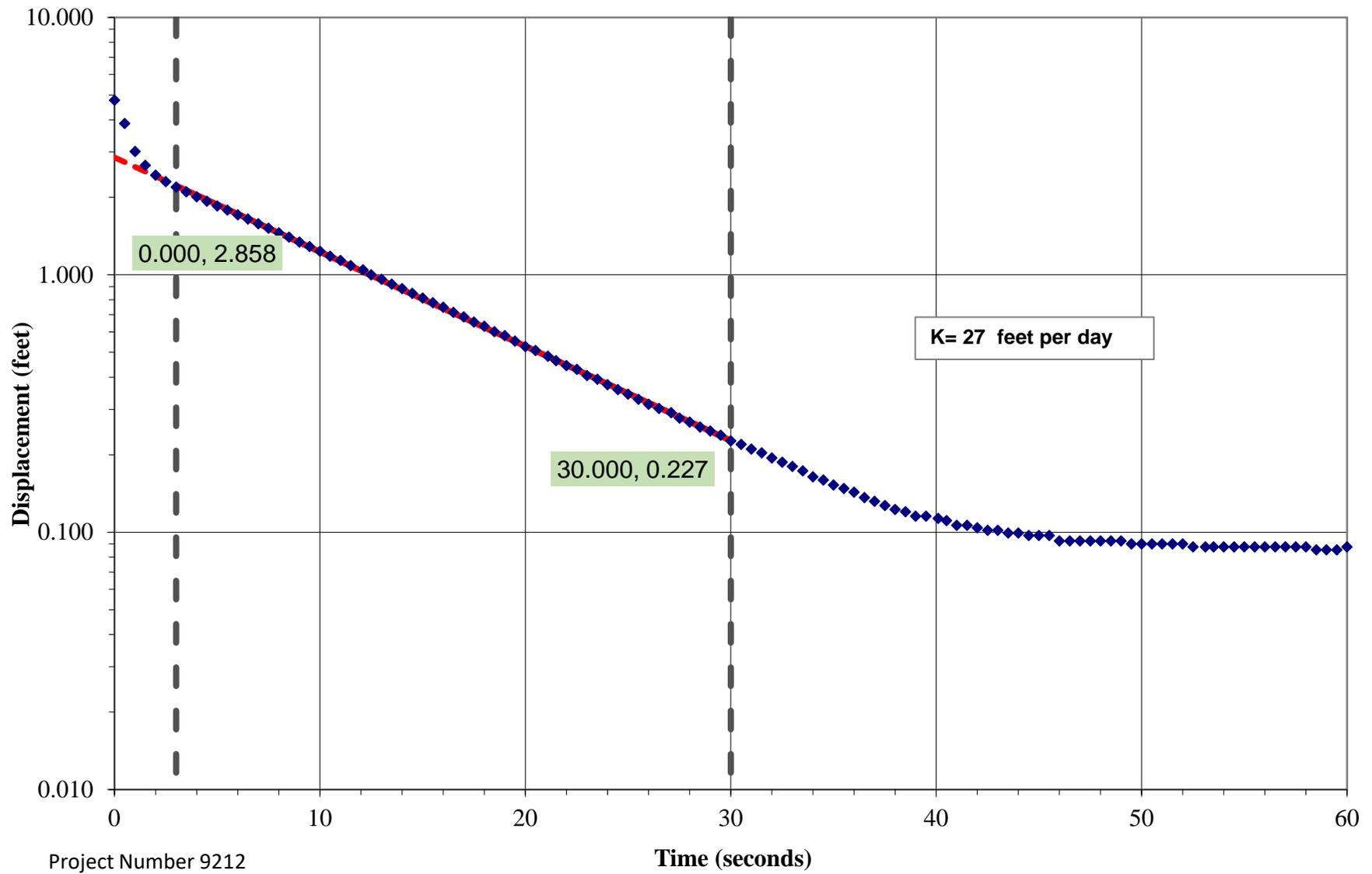
Hydraulic Conductivity (K) 3.09E-04 ft/sec **9.42E-03** cm/sec **2.67E+01** ft/day

References:

- Bouwer, H. and Rice, R.C., 1976, A Slug Test for Determining Hydraulic Conductivity of Unconfined Aquifers With Completely or Partially Penetrating Wells. *Water Resources Research*, Vol. 12 No. 3, pp. 423-428.
- Bouwer, H. 1989, The Bouwer and Rice Slug Test - An Update. *Ground Water*, Vol. 27, No. 3, pp. 304-309.
- Zlotnik, V. 1994, Interpretation of Slug and Packer Tests in Anisotropic Aquifers. *Ground Water*, Vol. 32, No. 5, pp. 761-766.

GEO-1 SLUG TEST ANALYSIS (Trial 2)

Benchmark Senior Living Lafayette Road, Rye NH



Bouwer and Rice Slug Test for Partially-Penetrating Wells

Note $L_w < H$

Project Name: Benchmark Senior Living
 Project Address: Lafayette Road, Rye NH
 Project Number: 9212
 Test Well: GEO-1
 Trial: 2

Instructions: enter values in shaded cells.

Well and Aquifer Parameters

Well casing diameter ($2r_c$)	0.16667	feet	
Boring diameter ($2r_w$)	0.54167	feet	
Height of water column in well (L_w)	13.07	feet	
Length of saturated well screen (L_e)	13.07	feet	Note: L_e will equal L_w for wells screened across the water table (shallow wells).
Aquifer Thickness (H)	20	feet	Assumption
Gravel pack porosity (n)	0.3	dimensionless	Note: 30% porosity (0.3) is typical for gravel packs.
Anisotropy ratio (K_r/K_z)	10	dimensionless	Note: a value of 1 is equal to no anisotropy ($K_r = K_z$). Most sites will have an anisotropy ratio greater than 1 ($K_r > K_z$).

Notes:

- For a 2-inch diameter well, the well casing diameter ($2r_c$) is 0.16667 feet and the boring diameter ($2r_w$) is typically 0.54167 feet (6.5-inch diameter augers).
- For a 4-inch diameter well, the well casing diameter ($2r_c$) is 0.33333 feet and the boring diameter ($2r_w$) is typically 0.6875 feet (8.25-inch diameter augers).
- For a 6-inch diameter well, the well casing diameter ($2r_c$) is 0.5 feet and the boring diameter ($2r_w$) is typically 0.83333 feet (10-inch diameter augers).

Well casing radius (r_c)	0.083335	feet	
Equivalent casing radius (r_{ce})	0.163911	feet	Note: corrected for porosity of gravel pack (shallow wells only).
Boring radius (r_w)	0.270835	feet	
Corrected boring radius (r_w^*)	0.085646	feet	Note: corrected for anisotropy.
L_e/r_w (for Bouwer and Rice graph)	152.61	dimensionless	

Parameters from recovery graph

Displacement at $t=0$ (y_0)	2.858	feet
Arbitrary time on straight line slope (t)	30.000	seconds
Displacement at that arbitrary time (y_t)	0.227	feet

Dimensionless Parameters (calculated from Bouwer and Rice Graph by linear interpolation)

A	5.39	dimensionless
B	0.96	dimensionless

$\ln R_e/r_w$ 3.55014

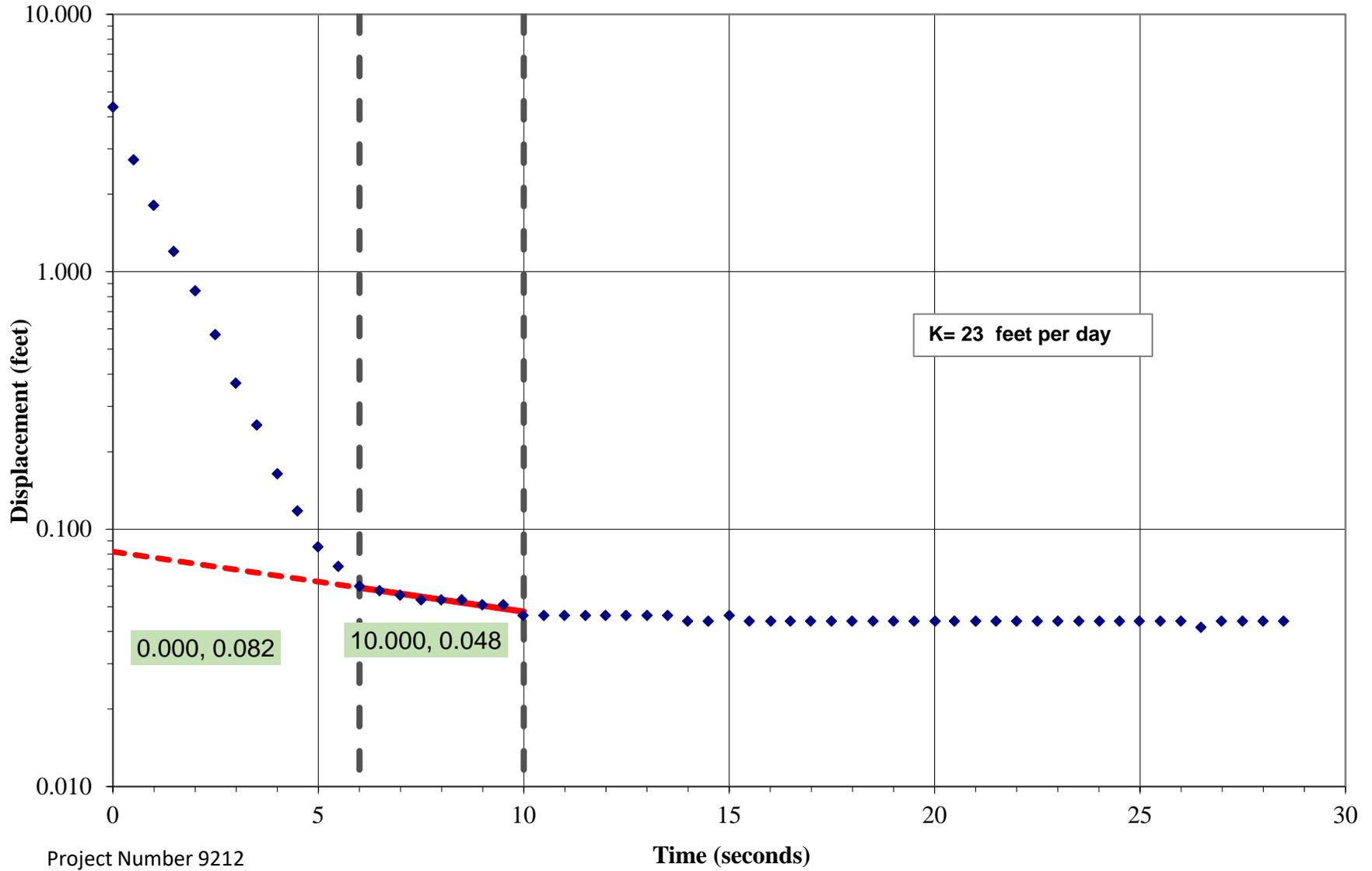
Hydraulic Conductivity (K) 3.08E-04 ft/sec **9.39E-03** cm/sec **2.66E+01** ft/day

References:

- Bouwer, H. and Rice, R.C., 1976, A Slug Test for Determining Hydraulic Conductivity of Unconfined Aquifers With Completely or Partially Penetrating Wells. *Water Resources Research*, Vol. 12 No. 3, pp. 423-428.
- Bouwer, H. 1989, The Bouwer and Rice Slug Test - An Update. *Ground Water*, Vol. 27, No. 3, pp. 304-309.
- Zlotnik, V. 1994, Interpretation of Slug and Packer Tests in Anisotropic Aquifers. *Ground Water*, Vol. 32, No. 5, pp. 761-766.

GEO-2 SLUG TEST ANALYSIS (Trial 1)

Benchmark Senior Living Lafayette Road, Rye NH



Bouwer and Rice Slug Test for Partially-Penetrating Wells

Note $L_w < H$

Project Name: Benchmark Senior Living
 Project Address: Lafayette Road, Rye NH
 Project Number: 9212
 Test Well: GEO-2
 Trial: 1

Instructions: enter values in shaded cells.

Well and Aquifer Parameters

Well casing diameter ($2r_c$)	0.16667	feet	
Boring diameter ($2r_w$)	0.54167	feet	
Height of water column in well (L_w)	8.39	feet	
Length of saturated well screen (L_e)	8.39	feet	Note: L_e will equal L_w for wells screened across the water table (shallow wells).
Aquifer Thickness (H)	20	feet	Assumption
Gravel pack porosity (n)	0.3	dimensionless	Note: 30% porosity (0.3) is typical for gravel packs.
Anisotropy ratio (K_r/K_z)	10	dimensionless	Note: a value of 1 is equal to no anisotropy ($K_r = K_z$). Most sites will have an anisotropy ratio greater than 1 ($K_r > K_z$).

Notes:

- For a 2-inch diameter well, the well casing diameter ($2r_c$) is 0.16667 feet and the boring diameter ($2r_w$) is typically 0.54167 feet (6.5-inch diameter augers).
- For a 4-inch diameter well, the well casing diameter ($2r_c$) is 0.33333 feet and the boring diameter ($2r_w$) is typically 0.6875 feet (8.25-inch diameter augers).
- For a 6-inch diameter well, the well casing diameter ($2r_c$) is 0.5 feet and the boring diameter ($2r_w$) is typically 0.83333 feet (10-inch diameter augers).

Well casing radius (r_c)	0.083335	feet	
Equivalent casing radius (r_{ce})	0.163911	feet	Note: corrected for porosity of gravel pack (shallow wells only).
Boring radius (r_w)	0.270835	feet	
Corrected boring radius (r_w^*)	0.085646	feet	Note: corrected for anisotropy.
L_e/r_w (for Bouwer and Rice graph)	97.96	dimensionless	

Parameters from recovery graph

Displacement at $t=0$ (y_0)	0.082	feet
Arbitrary time on straight line slope (t)	10.000	seconds
Displacement at that arbitrary time (y_t)	0.048	feet

Dimensionless Parameters (calculated from Bouwer and Rice Graph by linear interpolation)

A	4.31	dimensionless
B	0.73	dimensionless

$\ln R_e/r_w$ 3.11975

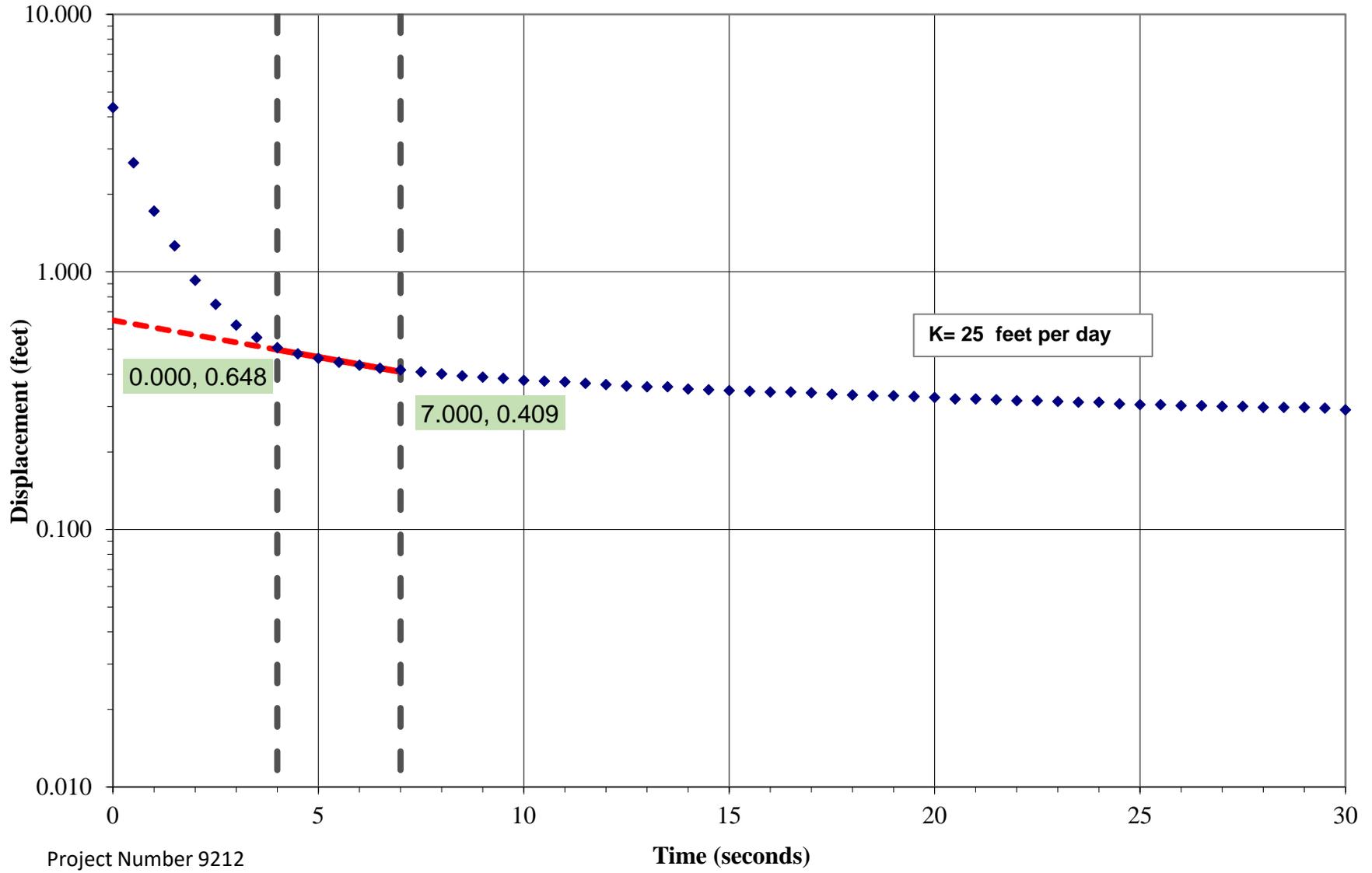
Hydraulic Conductivity (K) 2.68E-04 ft/sec **8.17E-03** cm/sec **2.32E+01** ft/day

References:

- Bouwer, H. and Rice, R.C., 1976, A Slug Test for Determining Hydraulic Conductivity of Unconfined Aquifers With Completely or Partially Penetrating Wells. Water Resources Research, Vol. 12 No. 3, pp. 423-428.
 Bouwer, H. 1989, The Bouwer and Rice Slug Test - An Update. Ground Water, Vol. 27, No. 3, pp. 304-309.
 Zlotnik, V. 1994, Interpretation of Slug and Packer Tests in Anisotropic Aquifers. Ground Water, Vol. 32, No. 5, pp. 761-766.

GEO-6 SLUG TEST ANALYSIS (Trial 1)

Benchmark Senior Living Lafayette Road, Rye NH



Bouwer and Rice Slug Test for Partially-Penetrating Wells

Note $L_w < H$

Project Name: Benchmark Senior Living
 Project Address: Lafayette Road, Rye NH
 Project Number: 9212
 Test Well: GEO-6
 Trial: 1

Instructions: enter values in shaded cells.

Well and Aquifer Parameters

Well casing diameter ($2r_c$)	0.16667	feet	
Boring diameter ($2r_w$)	0.54167	feet	
Height of water column in well (L_w)	10.19	feet	
Length of saturated well screen (L_e)	10.19	feet	Note: L_e will equal L_w for wells screened across the water table (shallow wells).
Aquifer Thickness (H)	20	feet	Assumption
Gravel pack porosity (n)	0.3	dimensionless	Note: 30% porosity (0.3) is typical for gravel packs.
Anisotropy ratio (K_r/K_z)	10	dimensionless	Note: a value of 1 is equal to no anisotropy ($K_r = K_z$). Most sites will have an anisotropy ratio greater than 1 ($K_r > K_z$).

Notes:

- For a 2-inch diameter well, the well casing diameter ($2r_c$) is 0.16667 feet and the boring diameter ($2r_w$) is typically 0.54167 feet (6.5-inch diameter augers).
- For a 4-inch diameter well, the well casing diameter ($2r_c$) is 0.33333 feet and the boring diameter ($2r_w$) is typically 0.6875 feet (8.25-inch diameter augers).
- For a 6-inch diameter well, the well casing diameter ($2r_c$) is 0.5 feet and the boring diameter ($2r_w$) is typically 0.83333 feet (10-inch diameter augers).

Well casing radius (r_c)	0.083335	feet	
Equivalent casing radius (r_{ce})	0.163911	feet	Note: corrected for porosity of gravel pack (shallow wells only).
Boring radius (r_w)	0.270835	feet	
Corrected boring radius (r_w^*)	0.085646	feet	Note: corrected for anisotropy.
L_e/r_w (for Bouwer and Rice graph)	118.98	dimensionless	

Parameters from recovery graph

Displacement at $t=0$ (y_0)	0.648	feet
Arbitrary time on straight line slope (t)	7.000	seconds
Displacement at that arbitrary time (y_t)	0.409	feet

Dimensionless Parameters (calculated from Bouwer and Rice Graph by linear interpolation)

A	4.74	dimensionless
B	0.82	dimensionless

$\ln R_e/r_w$ 3.30422

Hydraulic Conductivity (K) 2.86E-04 ft/sec **8.72E-03** cm/sec **2.47E+01** ft/day

References:

- Bouwer, H. and Rice, R.C., 1976, A Slug Test for Determining Hydraulic Conductivity of Unconfined Aquifers With Completely or Partially Penetrating Wells. Water Resources Research, Vol. 12 No. 3, pp. 423-428.
- Bouwer, H. 1989, The Bouwer and Rice Slug Test - An Update. Ground Water, Vol. 27, No. 3, pp. 304-309.
- Zlotnik, V. 1994, Interpretation of Slug and Packer Tests in Anisotropic Aquifers. Ground Water, Vol. 32, No. 5, pp. 761-766.

ATTACHMENT E

EVOLVE FACILITY GROUNDWATER DISCHARGE PERMIT DOCUMENTS



The State of New Hampshire
DEPARTMENT OF ENVIRONMENTAL SERVICES



Robert R. Scott, Commissioner

(E-Mail Only)

November 13, 2020

KAREN ZERMANI
BSL RYE INVESTORS LLC
295 LAFAYETTE ROAD
RYE, NH 03870

KZERMANI@BENCHMARKQUALITY.COM

GROUNDWATER DISCHARGE PERMIT

**SUBJECT: RYE – Evolve @ Rye, 295 Lafayette Road, Revised Groundwater Discharge Permit
Site# 201004021 / RSN# 24077 / Activity# 286014**

Dear Ms. Zermani:

Please find enclosed the Revised Groundwater Discharge Permit (GDP) Number GWP-200304015-S-003, approved by the Water Division of the Department of Environmental Services (NHDES), for the discharge of treated wastewater at the subject facility.

The issuance of this revised permit reflects a change in ownership. The terms and conditions of the permit remain unchanged.

Should you have any questions, please contact me at the Water Division at (603) 271-2858 or by e-mail at mitchell.locker@des.nh.gov

Sincerely,

Mitchell D. Locker, P.G.
Drinking Water & Groundwater Bureau

MDL/ml/ S:\WD-DWGB\...\uic1\2021mdl\permits\201004021-R-003a revpmt Evolve
e-copy: Stephen Roy, WSEB Stephen.Roy@des.nh.gov
Linda Bresnahan, Evolve Senior Living admin.evolve.rye@evolvesl.com / ed@evolveatrye.com
Paul Dahn, Manager /Evolve Senior Living pauldahn@portdevelopmentllc.com



The

NEW HAMPSHIRE DEPARTMENT OF ENVIRONMENTAL SERVICES

WATER DIVISION

hereby issues this

GROUNDWATER DISCHARGE PERMIT

NO. GWP-201004021-R-003

to the permittee

BSL RYE INVESTORS LLC

for the discharge of up to 10,000 gallons per day of treated wastewater

in RYE, N.H.

to the groundwater via infiltration as depicted on the drawings titled

"Groundwater Contour Plan" dated July 7, 2010

"Sanctuary Care at Rye - Subsurface Disposal System Plans" and

Exhibit A-4 / "Approximate Nitrate Concentration Plume & Proposed Monitoring Well Plan"

dated April 19,2010, Revised May 2010,

prepared by Appledore Engineering, Inc.

TO: BSL RYE INVESTORS LLC
295 LAFAYETTE ROAD (Route 1)
RYE, NH 03870
ATTN:

Date of Issuance: August 19, 2020
Revision Date: November 13, 2020
Date of Expiration: August 18, 2025

(continued)

Pursuant to authority in N.H. RSA 485-A:13, I(a), the New Hampshire Department of Environmental Services (NHDES), hereby grants this permit to discharge up to 10,000 gallons per day of tertiary treated wastewater to the groundwater via subsurface disposal fields at the above described site, subject to the following conditions:

STANDARD DISCHARGE PERMIT CONDITIONS

1. The permittee shall not violate Ambient Groundwater Quality Standards adopted by the NHDES (N.H. Admin. Rules, Env-Wq 402) in the groundwater, at the boundary of the Groundwater Discharge Zone, as shown on the referenced site plan.
2. The permittee shall not cause groundwater degradation, which results in a violation of the surface water quality standards (N.H. Admin. Rules, Env-Wq 1700), in any surface water body at the boundary of the Groundwater Discharge Zone, designated on the referenced site plan.
3. The permittee shall allow an authorized member of the NHDES staff, or its agent, to enter the property covered by this permit for the purpose of collecting information, examining records, collecting samples, or undertaking other action associated with the permit.
4. The permittee shall apply for renewal of this permit no sooner than 90 days prior to its expiration date. The permittee shall continue to comply with all conditions in this permit until the permit is renewed or the facility is closed in accordance with all applicable requirements, regardless of whether a renewal application is filed.
5. This permit is transferable only upon written request to, and approval of, the NHDES. Compliance with the existing permit shall be established prior to ownership transfer. Transfer requests shall include the name and address of the person to whom the permit transfer is requested, signature of the current permittee, and a summary of all monitoring results to date.
6. The NHDES reserves the right, under N.H. Admin. Rules, Env-Wq 402, to require additional hydrogeologic studies, sampling and/or remedial measures if the NHDES receives information indicating a need for such work.
7. The permittee shall comply with any conditions associated with this discharge that are stipulated by the municipality in which it is located.
8. The treatment works shall be operated and maintained by qualified operator(s), licensed by the NHDES under the N.H. Administrative Rules, Env-Wq 304. The advanced wastewater treatment system requires a Grade 2 operator and a backup operator of Grade I or higher.
9. The permittee shall submit as-built plans within 90 days of any additional construction activity related to the wastewater collection, treatment or disposal system or any additional monitoring well installation.
10. Issuance of this permit is based on the Groundwater Discharge Permit application dated August 3, 2020, submitted supporting information and the information in the NHDES file #201004021.

11. This permit is issued based on the discharge of tertiary treated wastewater. The wastewater effluent shall meet the following treatment criteria prior to discharge:

<u>Parameter</u>	<u>Effluent Limits</u>	<u>Compliance Well Limit</u>
FLOW	≤10,000gpd *1	-----
CBOD ₅	≤30 mg/l *2	-----
TSS	≤30 mg/l *2	-----
Nitrate	≤12 mg/l *3	<10 mg/l *4
Ammonia-N	<5 mg/l	-----
pH	6.5 - 8.5 *4	-----

- *1 *max daily*
- *2 *monthly average based on monthly sampling.*
- *3 *Based on the nutrient migration evaluation.*
- *4 *Based on ambient groundwater quality standards (AGQS).*

12. The permittee shall conduct treatment system sampling to verify proper operation and effluent quality and submit completed monthly operations reports (MORs) to the Department's Wastewater Engineering Bureau, Operations Section. The treatment system sampling schedule shall be as follows:

<u>Monitoring Locations</u>	<u>Sampling Frequency</u>	<u>Parameters</u>
(1) Influent	Daily Weekly Monthly	Continuous Flow pH (2)CBOD ₅ , (3)Ammonia & Total Suspended Solids (TSS)
(4) Effluent	2x/month Monthly	Alkalinity, (3)Ammonia, Nitrate & pH (2)CBOD ₅ & TSS

- (1) *Influent samples shall be taken prior to entering advanced treatment units.*
- (2) *BOD₅ may be substituted for CBOD₅*
- (3) *TKN may be substituted for ammonia*
- (4) *Effluent samples shall be taken from the final treated effluent prior to discharge.*

13. The permittee shall maintain a groundwater quality monitoring program and submit monitoring results to the NHDES' Groundwater Discharge Permits Coordinator no later than 45 days after sampling. Samples shall be taken from on-site monitoring wells, listed on the following table in accordance with the schedule outlined therein.

<u>Monitoring Locations</u>	<u>Sampling Frequency</u>	<u>Parameters</u>
MW- 2A, 3, 4, 5 & 6	May & November, of each year	Arsenic, Chloride, <i>E.coli</i> , Nitrate, Nitrite, pH, TKN, Specific Conductivity @ 25°C & Static Water Elevation
Piezometer MW-1, 2A, 3 & 5	Monthly May 2022	Groundwater Elevation (1) Per- & Polyfluoroalkyl Substances (PFAS) using EPA method 537 or equal

<u>Monitoring Locations</u>	<u>Sampling Frequency</u>	<u>Parameters</u>
MW-1, 2A, 3 & 5	November 2023	VOCs using EPA Method 8260B including low level ⁽²⁾ 1,4-Dioxane & SDWA Metals

- (1) PFAS sampling shall be reported with detection level at or below 5 parts per trillion (ng/l)
(2) 1,4-Dioxane analysis shall have a detection/ reporting level of 0.25ug/l or lower

Samples shall be obtained using sampling procedures and protocol described in "Practical Guide for Ground-Water Sampling," USEPA current edition, and "RCRA Ground-Water Monitoring Enforcement Guidance," USEPA current edition. Samples shall be analyzed by a laboratory certified by the U.S. Environmental Protection Agency or the New Hampshire Department of Environmental Services. All overburden groundwater samples collected for Safe Drinking Water Act (SDWA) Metals shall be analyzed for dissolved metals and must be field-filtered (with a 0.45-micron filter) and acidified at the time of sample collection. As referred to herein, the term "SDWA Metals" refers to: arsenic, barium, cadmium, chromium, lead, mercury, selenium, and silver.

14. All groundwater data shall be submitted electronically to the Environmental Monitoring Database (EMD).
15. An annual summary of water quality data shall be submitted to the NHDES' Groundwater Discharge Permits Coordinator on or before January 31st of each year using a format acceptable for upload to the NHDES' OneStop Data Site.
16. If a regulated contaminant is detected by monitoring at a concentration that violates groundwater quality standards, the permittee shall notify the NHDES' Groundwater Discharge Permits Coordinator within 10 days and prepare a response plan (in accordance with N.H. Admin. Rules, Env-Wq 402) within 60 days of notifying the NHDES to ensure that groundwater quality criteria are not violated at the boundary of the Groundwater Discharge Zone. The permittee shall implement the response plan within 30 days of NHDES approval.



Mitchell D. Locker, P.G.
Water Division – Drinking Water & Groundwater Bureau

Under RSA 21-0:14 and 21-0:7-IV, any person aggrieved by any terms or conditions of this permit may appeal to the Water Council in accordance with RSA 541-A and N.H. Admin. Rules, Env-WC 200. Such appeal must be made to the Council within 30 days and must be addressed to the Chairman, Water Council, 29 Hazen Drive, PO Box 95, Concord, NH 03302-0095.

JONES & BEACH ENGINEERS INC.

85 Portsmouth Avenue, PO Box 219, Stratham, NH 03885
603.772.4746 - JonesandBeach.com

March 24, 2020

NHDES Water Division Drinking Water & Groundwater Bureau
Attn. Mitchell Locker
29 Hazen Drive
PO Box 95
Concord, NH 03302-0095

**RE: Groundwater Monitoring (Activity #249549)
DES Site #201004021-R-002, RSN #24077
Evolve Senior Living
295 Lafayette Road (Route 1), Rye, NH
JBE Project No. 13128.1**

Dear Mr. Locker:

On behalf of our client, Evolve Senior Living, we are submitting the sampling results for May and November, 2019. Please note that MW 4 was destroyed by a plow, the new upgradient well 2A and MW1 has been dry and unable to sample or gather groundwater elevations.

Please find the following items included with this letter sent by email:

1. Laboratory Testing Summary Table dated March 2020.
2. Laboratory Report performed by Eastern Analytical, Inc. on June 2019
3. Laboratory Report performed by Eastern Analytical, Inc. on November 2019

Thank you very much for your time. If you have any questions or need additional information, please email me at calbert@jonesandbeach.com or contact our office.

Very truly yours,
JONES & BEACH ENGINEERS, INC.



Christopher Albert
Senior Project Manager

cc: Linda Bresnahan, Evolve Senior Living (via e-mail)
Peter Rowell, Town of Rye (via e-mail)

LABORATORY TESTING SUMMARY

J/B	EVOLVE SENIOR LIVING PROPERTY 295 LAFAYETTE ROAD RYE, NH JBE PROJECT NO. 13128.1 March 2020	JONES & BEACH ENGINEERS, INC. 85 PORTSMOUTH AVENUE PO BOX 219 STRATHAM, NH 03855 (603)772-4746
-----	--	---

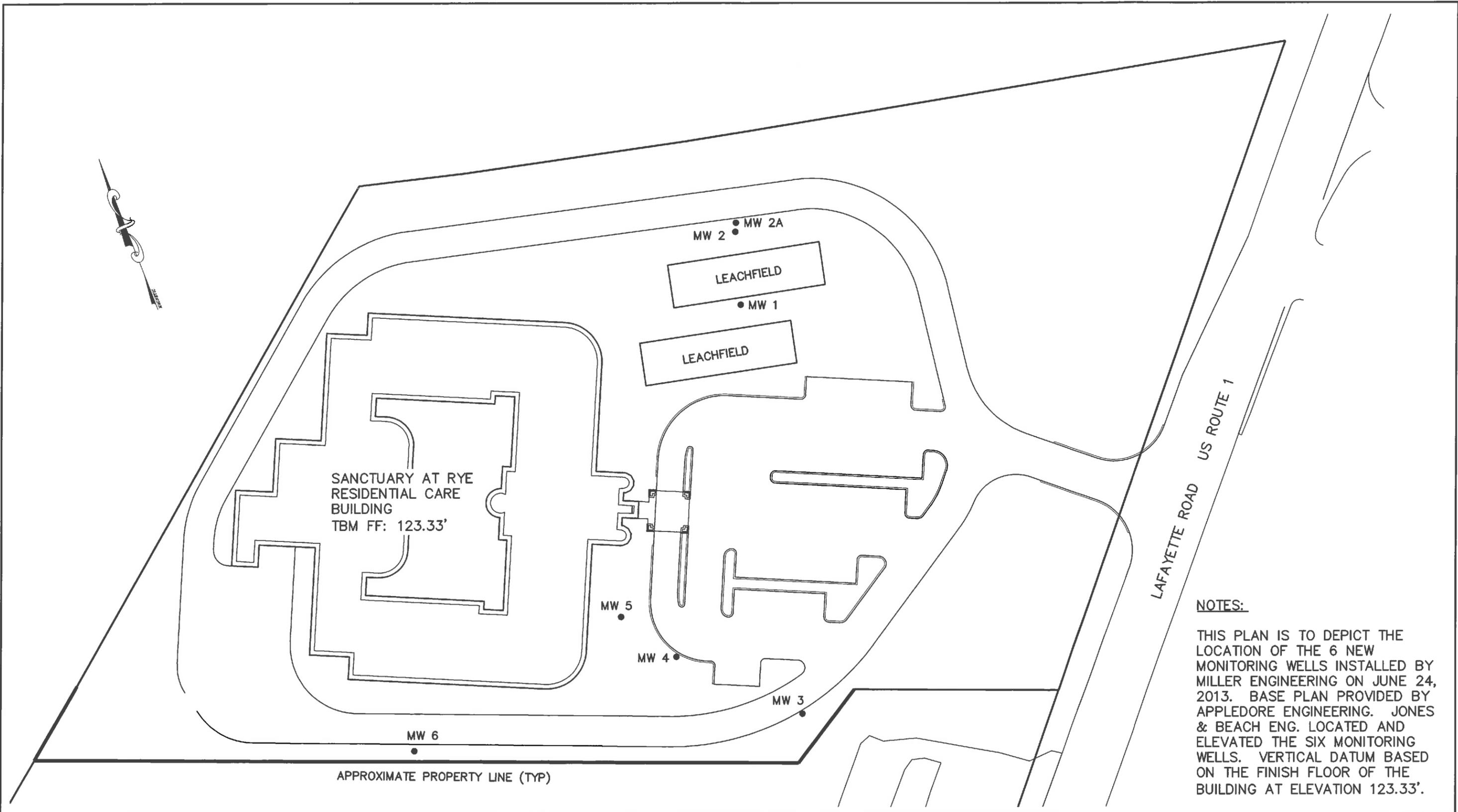
Date of Testing	10/22/13	10/22/13	10/22/13	10/22/13	11/25/13	11/25/13	11/25/13	11/25/13	5/22/14	5/22/14	5/22/14	5/22/14	11/12/14	11/12/14	11/12/14	11/12/14	5/7/15	5/7/15	5/7/15	5/7/15	5/7/15	11/29/2015	11/29/2015	11/29/2015	11/29/2015	11/29/2015	5/25/2016	5/25/2016	5/25/2016	5/25/2016	5/25/2016
Monitoring Station ID	MW-3 A/K/A MW-103	MW-4 A/K/A MW-104	MW-5 A/K/A MW-105	MW-6 A/K/A MW-106	MW-3 A/K/A MW-103	MW-4 A/K/A MW-104	MW-5 A/K/A MW-105	MW-6 A/K/A MW-106	MW-3 A/K/A MW-103	MW-4 A/K/A MW-104	MW-5 A/K/A MW-105	MW-6 A/K/A MW-106	MW-3 A/K/A MW-103	MW-4 A/K/A MW-104	MW-5 A/K/A MW-105	MW-6 A/K/A MW-106	MW-2A	MW-3 A/K/A MW-103	MW-4 A/K/A MW-104	MW-5 A/K/A MW-105	MW-6 A/K/A MW-106	MW-2A	MW-3	MW-4	MW-5	MW-6	MW-2A	MW-3	MW-4	MW-5	MW-6
Project Elevations, ft. Ground Surface (Approx.)	120.20	122.70	122.90	122.40	120.20	122.70	122.90	122.40	120.20	122.70	122.90	122.40	120.20	122.70	122.90	122.40	124.50	120.20	122.70	122.90	122.40	124.5	120.2	122.7	122.9	122.4	124.5	120.2	122.7	122.9	122.4
Project Elevations, ft. Measuring Point (top of riser)	121.28	123.45	123.36	123.49	121.28	123.45	123.36	123.49	121.28	123.45	123.36	123.49	121.28	123.45	123.36	123.49	125.87	121.28	123.45	123.36	123.49	125.87	121.28	123.45	123.36	123.49	125.87	121.28	123.45	123.36	123.49
Groundwater Depth Below Measuring Point, ft.	20.08	24.00	24.16	25.44	21.56	25.00	25.26	26.66	18.99	20.74	21.45	23.50	19.56	24.31	23.93	25.85	21.62	15.55	19.20	20.00	23.00	23.45	20	23.85	24.2	25.3	23.14	18.45	21.8	21.95	23.83
Groundwater Elevation, ft.	101.20	99.45	99.20	98.05	99.72	98.45	98.08	96.83	104.29	102.71	102.00	99.99	101.69	98.14	99.43	97.64	104.25	105.73	104.25	103.36	100.49	102.42	101.28	99.8	99.16	98.19	102.73	102.83	101.65	101.41	99.86

Miscellaneous, mg/L	NH Ground-water Quality Standards (AGQS) mg/L (ppm)	Groundwater Sampling Location																																							
		Background Samples						November 2013						May 2014						November 2014						May 2015						November 2015						May 2016			
Chloride	250	24	50	44	53	100	17	120	96	940	520	36	340	800	18	140	130	270	840	230	88	330	200	1300	88	230	200	140	730	330	130	150									
Nitrate-N	10	0.9	1.0	<0.5	2.9	0.9	1.5	<0.5	2.7	0.9	1.8	3.5	2.4	1.7	0.2	1.1	2.2	1.2	<0.5	0.8	7.9	2.1	1.5	1	0.9	5.4	1.5	1.6	<0.5	1.4	4.1	1.8									
TKN	NONE	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5										
Ortho Phosphate-P	NONE	<0.01	<0.01	<0.01	<0.01	0.01	0.30	0.03	0.48	<0.01	<0.01	0.02	<0.01	<0.01	0.02	<0.01	0.01	<0.01	<0.01	0.02	<0.01	0.02	<0.01	0.01	<0.01	0.01	<0.01	0.01	0.1	0.2	0.07	0.1									
pH	6.5-8.5	5.8	5.7	6.6	6.1	5.9	5.8	6.6	6.2	5.3	5.6	6.7	6.7	5.5	6.7	6.0	6.6	7.05	6.5	6.75	6.85	6.75	6.85	7.85	8.0	8.1	7.85	8.9	8.8	7	7										
E.coli	0	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1										
Specific Conductivity - us/cm	NONE	112	155	495	198	365	425	488	607	455	241	274	959	220	298	442	965	3200	960	1750	712	700	3250	400	950	840	580	2.5	713	1175	414										
Temperature - C°	NONE	6.8	6.2	6.2	5.4	13.2	14.0	12.7	14.7	10.4	12.6	13.6	10.6	11.8	12.6	14.1	11.8	16	9.5	10.6	13.4	13	13.6	10.0	8.9	10.0	10.8	11.7	10.2	11.2	12.4	11.3									

Date of Testing	11/29/16	11/29/16	11/29/16	11/29/16	11/29/16	7/27/2017	7/27/2017	7/27/2017	7/27/2017	7/27/2017	12/5/2017	12/5/2017	12/5/2017	12/5/2017	5/30/2018	5/30/2018	5/30/2018	5/30/2018	5/30/2018	11/14/2018	11/14/2018	11/14/2018	11/14/2018	11/14/2018	6/20/2019	6/20/2019	6/20/2019	6/20/2019	11/21/2019	11/21/2019	11/21/2019	
Monitoring Station ID	MW-2A	MW-3	MW-4	MW-5	MW-6	MW-2A	MW-3	MW-4	MW-5	MW-6	MW-2A	MW-3	MW-4	MW-5	MW-6	MW-2A	MW-3	MW-4	MW-5	MW-6	MW-2A	MW-3	MW-4	MW-5	MW-6	MW-2A	MW-3	MW-5	MW-6	MW-3	MW-5	MW-6
Project Elevations, ft. Ground Surface (Approx.)	124.5	120.2	122.7	122.9	122.4	124.5	120.2	122.70	122.90	122.40	124.5	120.2	122.70	122.90	122.40	124.5	120.2	122.70	122.90	122.40	124.5	120.2	122.7	122.9	122.4	124.5	120.2	122.90	122.4	120.2	122.90	122.4
Project Elevations, ft. Measuring Point (top of riser)	125.87	121.28	123.45	123.45	123.49	125.87	121.28	123.45	123.45	123.49	125.87	121.28	123.45	123.45	123.49	125.87	121.28	123.45	123.45	123.49	125.87	121.28	123.45	123.36	123.49	125.87	121.28	123.45	123.49	121.28	123.45	123.49
Groundwater Depth Below Measuring Point, ft.	23.48	20.35	24.60	24.80	25.17	22.60	16.88	20.32	21.09	23.51	23.45	20.40	24.18	24.33	25.40	22.50	16.20	20.17	20.92	23.50	23	15.42	19.17	21	22.66	DRY	16	20	23	19.7	23.7	25
Groundwater Elevation, ft.	102.39	100.93	98.85	98.56	98.32	103.27	104.40	103.13	103.13	99.98	102.42	100.88	99.27	99.12	98.09	103.37	105.06	103.28	102.53	99.99	102.87	105.86	104.28	102.36	100.83	DRY	105.28	103.45	100.48	101.58	98.75	98.49

Miscellaneous, mg/L	NH Ground-water Quality Standards (AGQS) mg/L (ppm)	Groundwater Sampling Location																																							
		November 2016						July 2017						December 2017						May 2018						November 2018						June 2019						November 2019			
Chloride	250	32	660	140	85	140	300	1200	260	190	170	250	1300	130	97	99	220	530	440	33	250	120	190	67	28	78	200	410	85	400	900	91	88								
Nitrate-N	10	0.6	1.4	1.0	5.1	1.0	1.8	2.2	1.0	6.7	2.7	1.9	3.7	0.9	5.0	1.2	1.8	0.78	1.1	2.5	1.4	0.82	2.9	0.8	1.7	1.2	0.5	0.99	3.0	3.0	2.2	3.6	1.4								
TKN	NONE	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5								
Ortho Phosphate-P	NONE	<0.01	0.01	0.03	0.09	0.01	0.04	<0.01	0.02	0.02	0.01	<0.01	0.01	0.02	0.01	0.03	<0.01	0.019	<0.01	0.011	<0.01	0.014	0.014	0.034	0.012	0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01								
pH	6.5-8.5	8.1	7.57	8.19	7.62	8.14	5.8	5.1	5.5	6.3	5.9	6.3	5.3	6.0	6.5	6.4	6.5	4.73	5.0	5.93	5.4	6.5	6.48	6.7	6.86	6.8	6.17	5.54	6.46	6.31	5.38	6.57	6.58								
E.coli	0	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1								
Specific Conductivity - us/cm	NONE	790	2560	602	1280	660	960	2070	923	665	658	850	4100	570	580	470	760	1831	1568	362	826	470	700	390	320	410	790	1600	540	1600	2600	600	450								
Temperature - C°	NONE	10.8	6.2	10.9	9.8	10.1	13.1	12.9	13.2	13.7	12.7	11.1	11.3	12.6	12.2	11.6	13.6	13.5	16.5	14	12.5	11.28	7.53	11.45	8.59	8.98					11.2	12	11.5								

Drinking Water Metals, mg/L	NH Ground-water Quality Standards (AGQS) mg/L (ppm)	Groundwater Sampling Location																																							
		November 2016						July 2017						December 2017						May 2018						November 2018						June 2019						November 2019			
Arsenic	0.010	<0.001	0.001	<0.001	0.003	0.008	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	0.0098								
Barium	2.000																																								
Boron	0.620	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05								
Cadmium	0.005	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001								
Chromium	0.100	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001								
Lead	0.015	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001								
Mercury	0.002	<0.0001	<0.0001	<0.0001																																					



NOTES:

THIS PLAN IS TO DEPICT THE LOCATION OF THE 6 NEW MONITORING WELLS INSTALLED BY MILLER ENGINEERING ON JUNE 24, 2013. BASE PLAN PROVIDED BY APPLIEDORE ENGINEERING. JONES & BEACH ENG. LOCATED AND ELEVATED THE SIX MONITORING WELLS. VERTICAL DATUM BASED ON THE FINISH FLOOR OF THE BUILDING AT ELEVATION 123.33'.

Design: CSA Draft: CSA Date: JAN. 2014
 Checked: JSR Scale: 1" = 60' Project No.: 13128
 Drawing Name: 13128-PLAN.dwg

THIS PLAN SHALL NOT BE MODIFIED WITHOUT WRITTEN PERMISSION FROM JONES & BEACH ENGINEERS, INC. (JBE). ANY ALTERATIONS, AUTHORIZED OR OTHERWISE, SHALL BE AT THE USER'S SOLE RISK AND WITHOUT LIABILITY TO JBE.

Rev.	Date	Revision	By
1	5/7/15	ADDITION OF WELL NO. 2A	CSA
1	1/3/14	NOV. 2013 SAMPLING	CSA

J/B Jones & Beach Engineers, Inc.
 Civil Engineering Services

85 Portsmouth Ave. 603-772-4746
 PO Box 219 FAX: 603-772-0227
 Stratham, NH 03885 E-Mail: JBE@jonesandbeach.com

Designed and Produced in NH

Drawing Name: **MONITORING WELL PLAN**

OWNER: EVOLVE AT RYE LLC
 295 LAFAYETTE ROAD, RYE, NEW HAMPSHIRE

CONTACT: NICK GRIFFIN LINDA BRESNAHAN
 DIRECTOR OF MAINTANENANCE OWNER REPRESENTATIVE

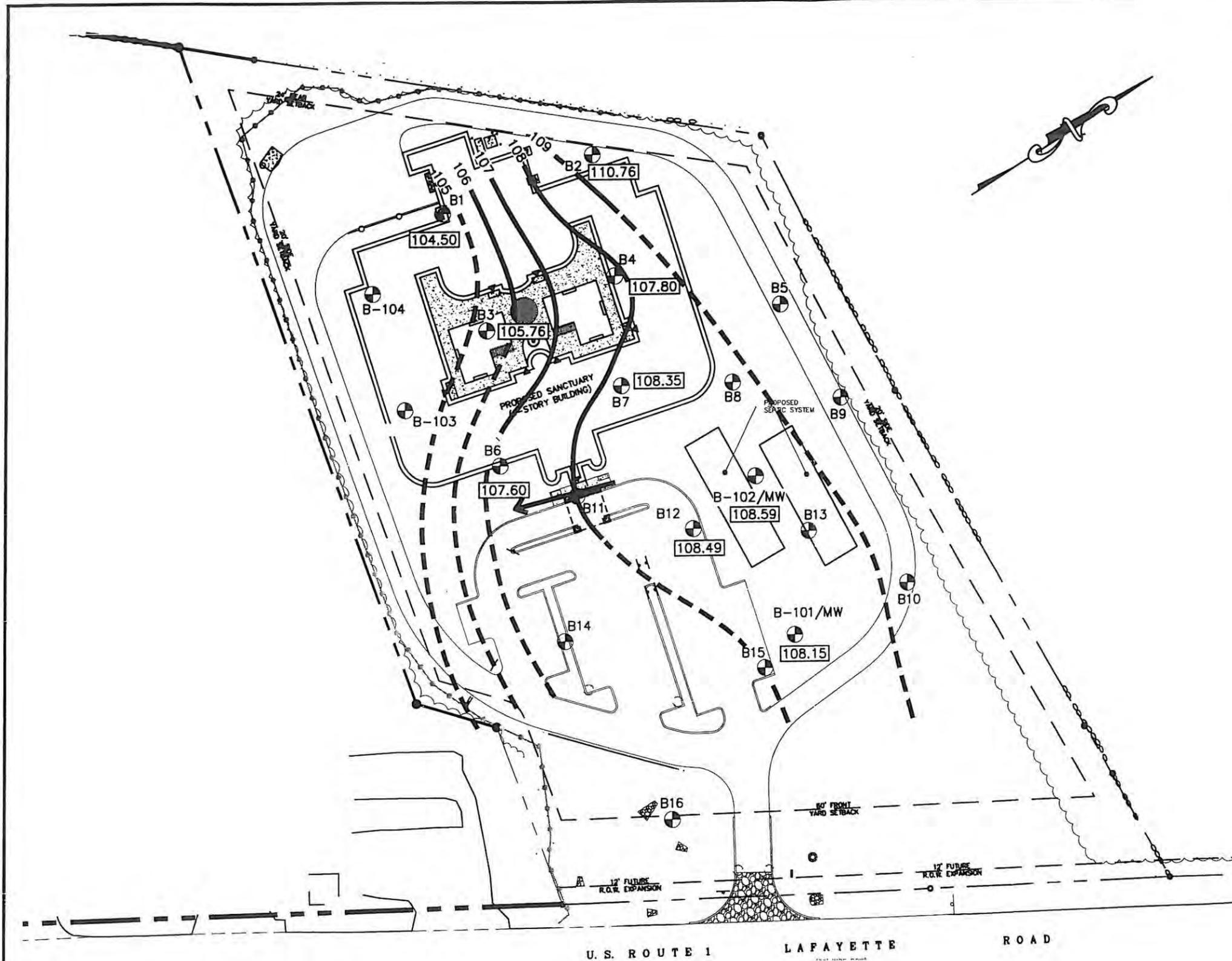
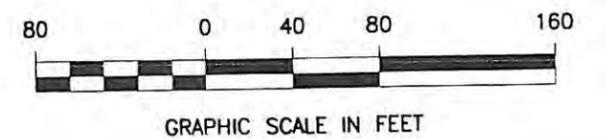
DRAWING No.
C1
 SHEET 1 OF 1
 JBE PROJECT
 No. 13128

NOTES:

1. THIS FIGURE WAS PREPARED FROM A PLAN PROVIDED BY APPLDRE ENGINEERING, INC. OF PORTSMOUTH, NEW HAMPSHIRE.
2. TEST BORINGS SHOWN AS B-101 THROUGH B-104 WERE ADVANCED ON 1-13-10 UNDER THE DIRECTION OF TERRACON WITH EQUIPMENT OWNED AND OPERATED BY GREAT WORKS TEST BORING, INC. OF ROLLINSFORD, NEW HAMPSHIRE.
3. THE APPROXIMATE LOCATIONS OF THE SUBSURFACE EXPLORATIONS WERE LOCATED BY TAPING FROM EXISTING SITE FEATURES. THE LOCATIONS SHOULD BE CONSIDERED ACCURATE TO THE DEGREE IMPLIED BY THE METHOD USED.
4. USE OF THIS PLAN IS LIMITED TO THE ILLUSTRATION OF THE APPROXIMATE LOCATION OF THE SUBSURFACE EXPLORATIONS AND OTHER PERTINENT SITE FEATURES. OTHER USE OF THIS PLAN WITHOUT PERMISSION FROM TERRACON IS PROHIBITED.

LEGEND

- B-1  MONITORING WELL LOCATION
-  108.15 GROUNDWATER ELEVATION (FT.)
-  GROUNDWATER FLOW DIRECTION
-  GROUNDWATER CONTOUR (DASHED WHERE INFERRED)



Project Mngr:	SDK	Project No.	J1107100
Drawn By:	MCR	Scale:	1" = 80'
Checked By:	SDK	File No.	J1107100.dwg
Approved By:	SDK	Date:	April 2010

Terracon

77 Sundial Ave. Manchester, NH 03103
 PH. (603)647-9700 FAX (603) 647-4432

GROUNDWATER CONTOUR PLAN (4-7-10)

**SANCTUARY CARE AT RYE
 RYE, NEW HAMPSHIRE**

Exhibit
A-2

ATTACHMENT F
COAKLEY LANDFILL INFORMATION

2014 FEB 27 PM 12: 11

006700

ROCKINGHAM COUNTY
REGISTRY OF DEEDS

**NOTICE OF GROUNDWATER MANAGEMENT PERMIT
GWP-198712001-N-002
TO BE RECORDED AGAINST:**

Coakley Landfill Inc. Bk1340 P254 and Bk1347 P172

NOTICE IS HEREBY GIVEN THAT: The New Hampshire Department of Environmental Services (Department) has issued Groundwater Management Permit #GWP-198712001-N-002 ("Permit") to the Coakley Landfill Group. Pursuant to Env-Or 607.09(a) this notice is recorded for each property located within the groundwater management zone identified in the Permit at the Registry of Deeds in Rockingham County.

The Permit establishes a Groundwater Management Zone ("GMZ"), an area within which groundwater use must be controlled and monitored due to the presence of groundwater contaminants that exceed the State's Ambient Groundwater Quality Standards ("AGQS"). The Permit may include conditions to and restrictions upon the use of the properties within the GMZ, including restrictions on the use of groundwater.

The Permit was originally issued on June 19, 2008 and renewed January 7, 2014 expires on January 6, 2019, unless renewed for subsequent five-year period(s). This Notice will remain in effect until such time as the AGQS are restored within the GMZ and the Department issues a Release of Recordation to the Permittee. The Permit is available for review at the New Hampshire Department of Environmental Services, 29 Hazen Drive, Concord, NH 03301 or can be viewed by searching under our OneStop Data Retrieval Site at http://www2.des.nh.gov/OneStop/ORCB_Query.aspx?Project+CCST.

The following properties are located within the GMZ:

Tax Map / Lot No.	Property Address	Owner	Deed Ref. (Book / Page)
6/37	365 Lafayette Road, Rye	SNS LLC	5238/2463
10/11	355 Lafayette Road, Rye	Malcolm E. Smith III	5079/0262
17/72	67 North Road, North Hampton	Joan M Nordstrom	2416/583
17/73	65 North Road, North Hampton	Joseph F and Yolanda Fitzgerald	3007/2807
17/82	160 Lafayette Road, North Hampton	Luck Enterprises, Inc.	2473/1659
17/86	180 Lafayette Road, North Hampton	Christopher C and Louis J Fucci	3319/952
17/87	186 Lafayette Road, North Hampton	Lori A Lessard Trustee	2760/2099
21/8	188 Lafayette Road, North Hampton	Joseph J and Helen M McKittrick	2641/2656
21/10	8A Lafayette Terrace, North Hampton	John J Sr and Dorleena Wylie	4030/2567
21/11	12A Lafayette Terrace, North Hampton	Seth McAlister	5044/102
21/12	16A Lafayette Terrace, North Hampton	William and Christine Adinolfo	2963/1721
21/14	20 Lafayette Terrace, North Hampton	Joseph Hanley	4682/1265
21/14-1	40-42 Lafayette Terrace, North Hampton	James A C Jones	4451/1104
21/15	44 Lafayette Terrace, North Hampton	Joseph B and Bridget S Conner	4183/1638
21/16	46 Lafayette Terrace, North Hampton	Rodney K Booker Trustee	5196/2724
21/17	1 Lafayette Terrace, North Hampton	Judith I and Bernard P Tracey	2450/687

21/18	3 Lafayette Terrace, North Hampton	Erin and Joshua Miller	5029/1768
21/19	5 Lafayette Terrace, North Hampton	Richard P and Kimberly M Bartlett	3824/2799
21/20	9 Lafayette Terrace, North Hampton	Alexis J Perron III	3088/1774
21/21	11 Lafayette Terrace, North Hampton	Kenneth and Tracey Margeson	3121/1606
21/22	15 Lafayette Terrace, North Hampton	Edward and Anita Gabree	3013/2221
21/23	Part of 11 Lafayette Terrace	Kenneth and Tracey Margeson	3121/1606
21/24	43 Lafayette Terrace, North Hampton	William Warman	4374/1365
21/25	45 Lafayette Terrace, North Hampton	ZCCMMXIIVOOOOOIIIIII5INH LTD Partnership	2530/1863
21/26	198 Lafayette Road, North Hampton	Gozinta LLC	4275/904
21/27	206 Lafayette Road, North Hampton	206 Lafayette Road LLC	4785/379
21/27-1	200 Lafayette Road, North Hampton	Derek R Burt Trustee	5147/325
21/28	216 Lafayette Road, North Hampton	Stella A Ciborowski Trust	2414/729
21/28-1	216 Lafayette Road, North Hampton	Leo J Crotty Jr	2475/1278
21/29	212 Lafayette Road, North Hampton	S&L Realty Trust	3666/1199
21/31	224 Lafayette Road, North Hampton	SNS LLC	5238/2463
21/32	Coakley Landfill, North Hampton	Coakley Landfill LLC	3117/2934
21/33	Coakley Landfill, North Hampton	Coakley Landfill LLC	3117/2934
21/34	Lafayette Road Rear, North Hampton	James A C Jones	4451/1102

21/35	Lafayette Terrace Rear, North Hampton	James A C Jones	4451/1102
21/36	Lafayette Terrace Rear, North Hampton	James A C Jones	4451/1102
21/37	Lafayette Terrace Rear, North Hampton	Town of North Hampton	3415/1661
21/39	North Road Rear, North Hampton	Joan, Breen and Denise Grenier- Winther, Susan Sherr, and Caryn Blake	5142/2979
21/41	North Road Rear, North Hampton	Elmer M Sewall	1340/524
21/46	10 Lafayette Terrace / Part of 8A, North Hampton	John J Sr and Dorleena L Wylie	3219/2588
*R1/13	340 Breakfast Hill Road (Portion Only)	Elmer M Sewall Rev Trust 96	3159/928
R1/9B	560 Breakfast Hill Road	Town of Greenland	3454/1131

Shaded rows indicate newly added lots.

*An expanded portion of the Sewall parcel (Tax Map R1 Lot #13) is included within the GMZ, as shown on the updated plot plan entitled "*Groundwater Monitoring Zone Plan*" prepared by Richard D. Bartlett & Associates, LLC., certified on December 11, 2013, and described as follows:

Commencing at a point on the easterly line of land now or formerly of the Boston and Maine Corporation, said point being a distance of 600.93 feet as measured along a curve to the left, having a central angle of 01°54'46" and a radius of 18,000.00 feet, from a steel pin set on the southerly sideline of Breakfast Hill Road marking the northeasterly most corner of said Boston and Maine land identified on tax map R1 as lot 11, thence by a curve to the left, having a central angle of 00°33'15" and a radius of 18,000.00 feet, a distance of 174.06 feet to a point, thence by a curve to the left, having a central angle of 00°24'32" and a radius of 11,425.51 feet, a distance of 81.56 feet to a point; thence S13°08'30"W a distance of 1,419.54 feet to a point; thence, N76°51'30"W a distance of 99.00 feet to a point at land now or formerly of Elmer M. Sewall Revocable Trust 96, thence, along said Sewall land, N35°09'35"E a distance of 88.02 feet to a point; thence, continuing by said Sewall land, N13°08'30"E a distance of 163.21 feet to a point; thence N76°51'30"W a distance of 434.00 feet, through said Sewall land to a point; thence S17°29'30"W a distance of 1,097.80 feet to a point on the Greenland-North Hampton town line, said point being N79°55'00"W a distance of 18.99 feet from a concrete bound, on said town line, engraved "G" and "N-H", thence, along said town line, N79°55'00"W a distance of 345.00 feet to a point; thence N23°21'55"E a distance of 2,504.63 feet to a point; thence N25°28'15"E a distance of 551.47 feet to a point; thence S72°51'15"E a distance of 221.87 feet to a point; thence S15°37'10"W a distance of 441.43 feet to a point; thence S75°34'35"E a distance of 166.70 feet continuing through said Sewall land and said

Boston and Maine land to the point of beginning.

Containing 1,306,532 square feet or 29.99 acres, of which 27.42 acres is the land of the Elmer M. Sewall Revocable Trust 96 and 2.57 acres is the land of the Boston and Maine Corporation.

/s/Robert Sullivan, Permittee
Coakley Landfill Group



February 26, 2014

Approved pursuant to authorization of Coakley
Executive Committee via electronic communication



The

NEW HAMPSHIRE DEPARTMENT OF ENVIRONMENTAL SERVICES

hereby issues

GROUNDWATER MANAGEMENT PERMIT NO. GWP-198712001-N-002

to the permittee

COAKLEY LANDFILL GROUP

to monitor the past discharge of

Contaminants Of Concern

(as identified in Table 12 of the 1994 Record of Decision and subsequent decision documents)

at

COAKLEY LANDFILL
(480 Breakfast Hill Road)

in NORTH HAMPTON, N.H.

via the groundwater, surface water and sediment monitoring system comprised of

32 monitoring wells, 3 surface water, 2 sediment, and 1 leachate sampling locations and 5 residential drinking water supply wells

as depicted on the Site Plan and tables entitled

Environmental Monitoring Network (site plan);
OU-1 Groundwater Monitoring Wells and Water Supply Wells; and
OU-2 Groundwater Monitoring Wells

dated September 2013 (site plan) and July 2013 Revision 2.0 (tables), prepared by
Summit Environmental Consultants

TO: COAKLEY LANDFILL GROUP
1 JUNKINS AVENUE
PORTSMOUTH, NEW HAMPSHIRE 03801

Date of Issuance: January 7, 2014

Date of Expiration: January 6, 2019

(continued)

Pursuant to authority in N.H. RSA 485-C:6-a, the New Hampshire Department of Environmental Services (Department), hereby grants this permit to monitor past discharges to the groundwater at the above described location for five years subject to the following conditions:

STANDARD MANAGEMENT PERMIT CONDITIONS

1. The permittee shall not violate Ambient Groundwater Quality Standards adopted by the Department (N.H. Admin. Rules Env-Or 600) in groundwater outside the boundaries of the Groundwater Management Zone, as shown on the referenced site plan and updated on the plot plan entitled “*Groundwater Monitoring Zone Plan*” prepared by Richard D. Bartlett & Associates, LLC., certified on December 11, 2013.
2. The permittee shall not cause groundwater degradation that results in a violation of surface water quality standards (N.H. Admin. Rules Env-Ws 1700) in any surface water body.
3. The permittee shall allow any authorized staff of the Department, or its agent, to enter the property covered by this permit for the purpose of collecting information, examining records, collecting samples, or undertaking other action associated with this permit.
4. The permittee shall apply for the renewal of this permit at least 90 days prior to its expiration date.
5. This permit is transferable only upon written request to, and approval of, the Department. Compliance with the existing Permit shall be established prior to permit transfer. Transfer requests shall include the name and address of the person to whom the permit transfer is requested, signature of the current and future permittee, and a summary of all monitoring results to date.
6. The Department reserves the right, under N.H. Admin. Rules Env-Or 600, to require additional hydrogeologic studies and/or remedial measures if the Department receives information indicating the need for such work.
7. The permittee shall maintain a water quality monitoring program and submit monitoring results to the Department’s Waste Management Division no later than 45 days after sampling. Samples shall be taken from site monitoring wells, surface water and sediment sampling points as shown and labeled on the referenced site plan in accordance with the schedule outlined herein:

Monitoring Locations	Sampling Frequency	Parameters
FPC-4B, AE-4B	August each year	Bedrock well - field parameters, TAL metals (total, unless highly turbid), NHDES Waste Management Division full list of analytes for volatile organics (full list VOCs).
FPC-5A, MW-4, MW-9, OP-2	August each year	Overburden wells – field parameters, TAL metals (dissolved), 1,4-dioxane.
FPC-6B, FPC-8B, GZ-105, AE-2B, AE-3B, MW-5S, MW-5D, MW-6, MW-8, MW-11	August each year	Bedrock wells – field parameters, TAL metals (total, unless highly turbid), full list VOCs, 1,4-dioxane.
FPC-7A, FPC-9A, FPC-11A, AE-1A, MW-10, OP-5	August each year	Overburden wells – field parameters, TAL metals (dissolved)

- 3 -Monitoring Locations	Sampling Frequency	Parameters
FPC-5B, BP-4	August each year	Bedrock well – field parameters, TAL metals (total, unless highly turbid), 1,4-dioxane.
FPC-6A, FPC-8A, AE-2A, AE-3A	August each year	Overburden wells – field parameters, TAL metals (dissolved), full list VOCs, 1,4-dioxane.
AE-4A	August each year	Overburden well – field parameters, TAL metals (dissolved), full list VOCs.
FPC-7B, FPC-11B, AE-1B	August each year	Bedrock wells – field parameters, TAL metals (total, unless highly turbid).
Residential, Surface Water, Sediment & Leachate		
368BHR (R-3), 339BHR	August & February each year	Bedrock drinking water well – Field parameters, arsenic & manganese (total), VOCs full list (EPA Method 524), 1,4-dioxane.
399BHR (R-5), 346BHR, 415BHR	August each year	Field parameters, arsenic & manganese (total), NHDES full list (EPA Method 524), 1,4-dioxane.
SW-4, SW-5, SW-103	August each year	Field parameters, ammonia, TAL metals (dissolved), full list VOCs.
SED-4, SED-5	August each year	Metals (total).
L-1	August each year	Field parameters, COD, ammonia, TAL metals (dissolved).

Sampling shall be performed in accordance with the documents listed in Env-Or 610.02 (e) and the approved Environmental Monitoring Plan. Samples shall be analyzed by a laboratory certified by the U.S. Environmental Protection Agency or the New Hampshire Department of Environmental Services pursuant to Env-C 300. All overburden groundwater samples collected for metal analyses shall be analyzed for dissolved metals; and thus must be field filtered (with a 0.45-micron filter) and acidified after filtration in the field. Surface water samples and samples collected from bedrock or water supply wells shall be analyzed for total metals, and shall not be filtered. As referred to herein, the term “TAL Metals” refers to aluminum, arsenic, barium, cadmium, calcium, chromium, copper, iron, lead, magnesium, mercury, nickel, potassium, selenium, silver, sodium, thallium, zinc, cobalt, beryllium, manganese, antimony, and vanadium.

Summaries of water quality shall be submitted annually to the Department’s Waste Management Division, in the month of February, using a format acceptable to the Department. The Summary Report shall include the information listed in Env-Or 607.04 (a), as applicable.

The Annual Summary Report shall be prepared and stamped by a professional engineer or professional geologist licensed in the State of New Hampshire.

8. Issuance of this permit is based on the Groundwater Management Permit Application dated October 3, 2013 and the historical documents found in the Department file DES #198712001. The Department may require additional hydrogeologic studies and/or remedial measures if invalid or inaccurate data are submitted.
9. Within 15 days of the date of Department approval of this Groundwater Management Permit, the permittee shall provide notice of the permit by certified mail, return receipt requested, to all owners of **newly added lots** of record (i.e., not noticed under original permit) within the Groundwater Management Zone (see shaded lots in Special Condition #12). The permittee shall submit documentation of this notification to the Department within 45 days of permit issuance.

10. Within 60 days of the date of Department approval of this Groundwater Management Permit, the permit holder shall record notice of the permit in the registry of deeds in the chain of title for each **newly added lot** within the Groundwater Management Zone (see shaded lots in Special Condition #12). The original notice on Lot 13 Map R1 shall be amended to reflect the expanded GMZ within this lot. **Recordation requires that the registry be provided with the name of current property owner and associated book and page numbers for the deed of each lot encumbered by this permit. Portions of State/Town/City roadways and associated right-of-way properties within the Groundwater Management Zone do not require recordation.** A copy of each recorded notice shall be submitted to the Department and to the governing body of each municipality in which the site or any lot within the GMZ is located within 30 days of recordation.

11. Within 30 days of discovery of a violation of an ambient groundwater quality standard at or beyond the Groundwater Management Zone boundary, the permittee shall notify the Department in writing. Within 60 days of discovery, the permittee shall submit recommendations to correct the violation. The Department shall approve the recommendations if the Department determines that they will correct the violation.

SPECIAL CONDITIONS FOR THIS PERMIT

12. Recorded property within the Groundwater Management Zone shall include the lots, or portions thereof, as listed and described in the following table:

Tax Map / Lot No.	Property Address	Owner	Deed Ref. (Book / Page)
6/37	365 Lafayette Road, Rye	SNS LLC	5238/2463
10/11	355 Lafayette Road, Rye	Malcolm E. Smith III	5079/0262
17/72	67 North Road, North Hampton	Joan M Nordstrom	2416/583
17/73	65 North Road, North Hampton	Joseph F and Yolanda Fitzgerald	3007/2807
17/82	160 Lafayette Road, North Hampton	Luck Enterprises, Inc.	2473/1659
17/86	180 Lafayette Road, North Hampton	Christopher C and Louis J Fucci	3319/952
17/87	186 Lafayette Road, North Hampton	Lori A Lessard Trustee	2760/2099
21/8	188 Lafayette Road, North Hampton	Joseph J and Helen M McKittrick	2641/2656
21/10	8A Lafayette Terrace, North Hampton	John J Sr and Dorleena Wylie	4030/2567
21/11	12A Lafayette Terrace, North Hampton	Seth McAlister	5044/102
21/12	16A Lafayette Terrace, North Hampton	William and Christine Adinolfo	2963/1721
21/14	20 Lafayette Terrace, North Hampton	Joseph Hanley	4682/1265
21/14-1	40-42 Lafayette Terrace, North Hampton	James A C Jones	4451/1104
21/15	44 Lafayette Terrace, North Hampton	Joseph B and Bridget S Conner	4183/1638
21/16	46 Lafayette Terrace, North Hampton	Rodney K Booker Trustee	5196/2724

(continued)

GWP-198712001-N-002

Tax Map / Lot No.	Property Address	Owner	Deed Ref. (Book / Page)
21/17	1 Lafayette Terrace, North Hampton	Judith I and Bernard P Tracey	2450/687
21/18	3 Lafayette Terrace, North Hampton	Erin and Joshua Miller	5029/1768
21/19	5 Lafayette Terrace, North Hampton	Richard P and Kimberly M Bartlett	3824/2799
21/20	9 Lafayette Terrace, North Hampton	Alexis J Perron III	3088/1774
21/21	11 Lafayette Terrace, North Hampton	Kenneth and Tracey Margeson	3121/1606
21/22	15 Lafayette Terrace, North Hampton	Edward and Anita Gabree	3013/2221
21/23	Part of 11 Lafayette Terrace	Kenneth and Tracey Margeson	3121/1606
21/24	43 Lafayette Terrace, North Hampton	William Warman	4374/1365
21/25	45 Lafayette Terrace, North Hampton	ZCCMMXIIVOOOOOIIIIII5INH LTD Partnership	2530/1863
21/26	198 Lafayette Road, North Hampton	Gozinta LLC	4275/904
21/27	206 Lafayette Road, North Hampton	206 Lafayette Road LLC	4785/379
21/27-1	200 Lafayette Road, North Hampton	Derek R Burt Trustee	5147/325
21/28	216 Lafayette Road, North Hampton	Stella A Ciborowski Trust	2414/729
21/28-1	216 Lafayette Road, North Hampton	Leo J Crotty Jr	2475/1278
21/29	212 Lafayette Road, North Hampton	S&L Realty Trust	3666/1199
21/31	224 Lafayette Road, North Hampton	SNS LLC	5238/2463
21/32	Coakley Landfill, North Hampton	Coakley Landfill LLC	3117/2934
21/33	Coakley Landfill, North Hampton	Coakley Landfill LLC	3117/2934
21/34	Lafayette Road Rear, North Hampton	James A C Jones	4451/1102
21/35	Lafayette Terrace Rear, North Hampton	James A C Jones	4451/1102
21/36	Lafayette Terrace Rear, North Hampton	James A C Jones	4451/1102
21/37	Lafayette Terrace Rear, North Hampton	Town of North Hampton	3415/1661
21/39	North Road Rear, North Hampton	Joan, Breen and Denise Grenier- Winther, Susan Sherr, and Caryn Blake	5142/2979
21/41	North Road Rear, North Hampton	Elmer M Sewall	1340/524
21/46	10 Lafayette Terrace / Part of 8A, North Hampton	John J Sr and Dorleena L Wylie	3219/2588

(continued)

GWP-198712001-N-002

Tax Map / Lot No.	Property Address	Owner	Deed Ref. (Book / Page)
*R1/13	340 Breakfast Hill Road (Portion Only)	Elmer M Sewall Rev Trust 96	3159/928
R1/9B	560 Breakfast Hill Road	Town of Greenland	3454/1131

Shaded rows indicate newly added lots that require notice per Standard Permit Conditions #9 and #10. The original notice on Lot 13 Map R1 should be amended and recorded to reflect the expanded GMZ within this lot.

*An expanded portion of the Sewall parcel (Tax Map R1 Lot #13) is included within the GMZ, as shown on the updated plot plan entitled “*Groundwater Monitoring Zone Plan*” prepared by Richard D. Bartlett & Associates, LLC., certified on December 11, 2013, and described as follows:

Commencing at a point on the easterly line of land now or formerly of the Boston and Maine Corporation, said point being a distance of 600.93 feet as measured along a curve to the left, having a central angle of 01°54’46” and a radius of 18,000.00 feet, from a steel pin set on the southerly sideline of Breakfast Hill Road marking the northeasterly most corner of said Boston and Maine land identified on tax map R1 as lot 11, thence by a curve to the left, having a central angle of 00°33’15” and a radius of 18,000.00 feet, a distance of 174.06 feet to a point, thence by a curve to the left, having a central angle of 00°24’32” and a radius of 11,425.51 feet, a distance of 81.56 feet to a point; thence S13°08’30”W a distance of 1,419.54 feet to a point; thence, N76°51’30”W a distance of 99.00 feet to a point at land now or formerly of Elmer M. Sewall Revocable Trust 96, thence, along said Sewall land, N35°09’35”E a distance of 88.02 feet to a point; thence, continuing by said Sewall land, N13°08’30”E a distance of 163.21 feet to a point; thence N76°51’30”W a distance of 434.00 feet, through said Sewall land to a point; thence S17°29’30”W a distance of 1,097.80 feet to a point on the Greenland-North Hampton town line, said point being N79°55’00”W a distance of 18.99 feet from a concrete bound, on said town line, engraved “G” and “N-H”, thence, along said town line, N79°55’00”W a distance of 345.00 feet to a point; thence N23°21’55”E a distance of 2,504.63 feet to a point; thence N25°28’15”E a distance of 551.47 feet to a point; thence S72°51’15”E a distance of 221.87 feet to a point; thence S15°37’10”W a distance of 441.43 feet to a point; thence S75°34’35”E a distance of 166.70 feet continuing through said Sewall land and said Boston and Maine land to the point of beginning.

Containing 1,306,532 square feet or 29.99 acres, of which 27.42 acres is the land of the Elmer M. Sewall Revocable Trust 96 and 2.57 acres is the land of the Boston and Maine Corporation.

13. INSTALLATION OF NEW GMZ COMPLIANCE WELLS

Two well couplets (overburden and bedrock) shall be installed near the revised GMZ boundary. Locations to be confirmed with EPA & DES prior to construction. Wells shall be installed and sampled as part of the regular scheduled 2014 sampling program.

14. UNDEVELOPED LOTS WITHIN THE GROUNDWATER MANAGEMENT ZONE:

Consistent with Env-Or 607.06(d), for each undeveloped lot, or portion thereof, which is within the Groundwater Management Zone and lacks access to a public water supply, the permittee shall contact the property owner annually to determine if a water supply well has been installed. The permittee shall include a report on this inquiry in the Annual Summary Report required in Standard Permit Condition #7. The results of these inquiries shall be documented in each Annual Summary Report.

Upon discovery of a new drinking water supply well within the Groundwater Management Zone, the permittee shall provide written notification to the Department and, to ensure compliance with Env-Or 607.06(a), submit a contingency plan to provide potable drinking water in the event the well is or becomes contaminated above the ambient groundwater quality standards. The potable water supply shall meet applicable federal and state water quality criteria. This plan shall be submitted to the Department for approval within 15 days of the date of discovery.

The permittee shall sample the new supply well within 30 days of discovery. The well shall be sampled for all the analytical parameters included in Standard Condition # 7, unless otherwise specified in writing by the Department. The permittee shall forward all analytical results to the Department's Waste Management Division, the Department's Environmental Health Program, and the owner of the drinking water supply well within 7 days of receipt of the results.

If the results for the new well meet the ambient groundwater quality standards, the permittee shall continue to sample the new wells annually as part of the permit. If the results for the new well indicate a violation of the ambient groundwater quality standards, the permittee shall notify the owner immediately and conduct confirmatory sampling within 14 days of receiving the original results.

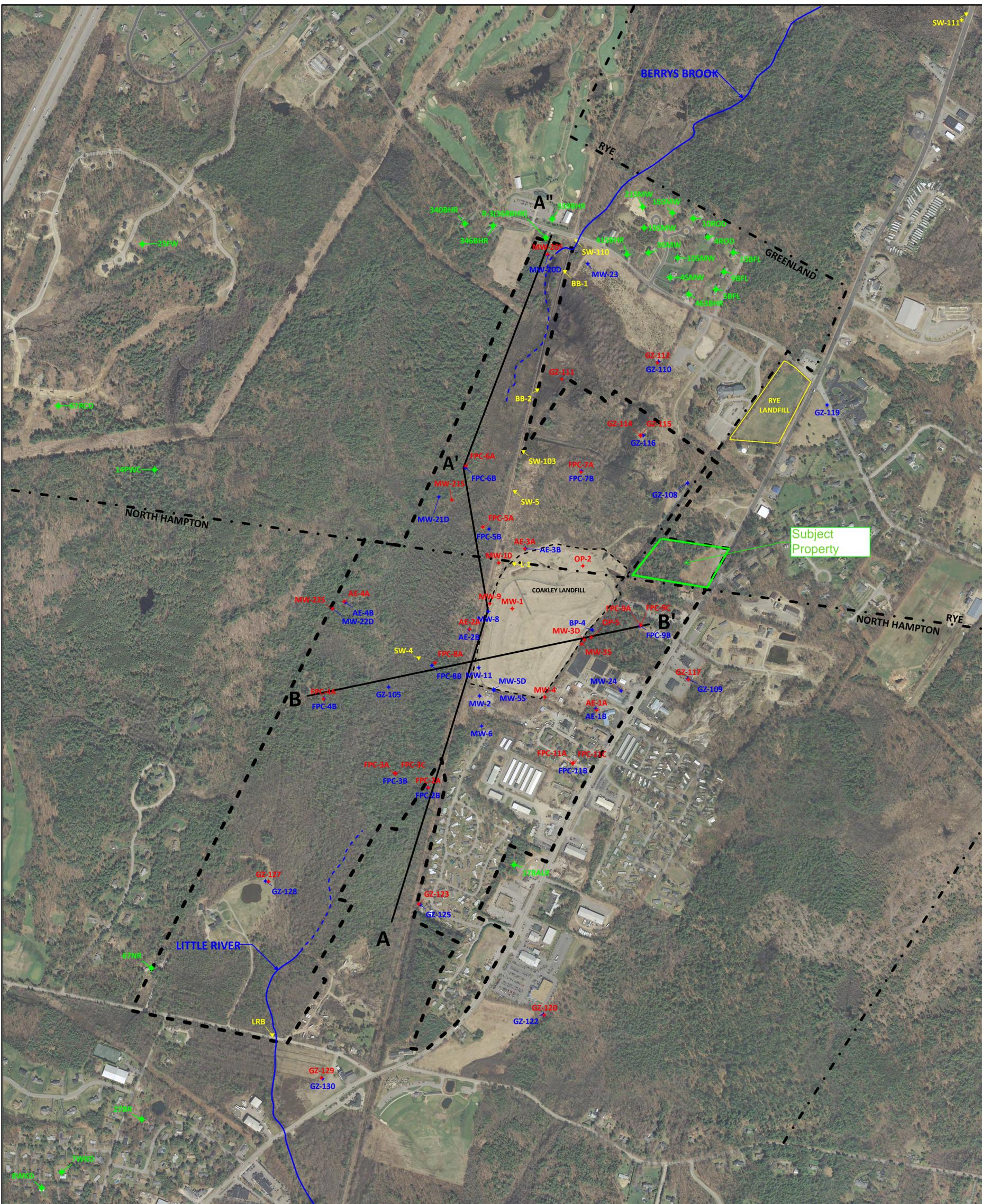
Upon confirmation of a violation of the ambient groundwater quality standards in a new drinking water well, the permittee shall immediately implement the contingency plan to provide a potable drinking water supply that meets applicable federal and state water quality criteria.

15. All monitoring wells at the site shall be properly maintained and secured from unauthorized access or surface water infiltration.
16. The permittee shall update ownership information required by Env-Or 607.03(a)(20) for all properties within the Groundwater Management Zone prior to renewal of the permit or upon a recommendation for site closure.



Carl W. Baxter, P.E., Administrator
Hazardous Waste Remediation Bureau
Waste Management Division

Under RSA 21-0:14 and 21-0:9-V, any person aggrieved by any terms or conditions of this permit may appeal to the Waste Management Council in accordance with RSA 541-A and N.H. Admin. Rules, Env-WMC 200. Such appeal must be made to the Council within 30 days and must be addressed to the Chairman of the Waste Management Council, c/o Appeals Clerk, Department of Environmental Services Legal Unit, 29 Hazen Drive, P.O. Box 95, Concord, NH 03302-0095.



LEGEND

- * 67RCD RESIDENTIAL WATER SUPPLY WELL LOCATION
- * GZ-117 OVERBURDEN GROUNDWATER MONITORING WELL
- * GZ-108 BEDROCK GROUNDWATER MONITORING WELL
- * SW-103 SURFACE WATER SAMPLING LOCATION
- GROUNDWATER MANAGEMENT ZONE BOUNDARY
- TOWN LINE

NOTES

1. THIS SITE PLAN IS BASED ON EXISTING SAMPLING LOCATIONS AS PER THE COAKLEY LANDFILL SUPERFUND SITE REVISED SAMPLING AND ANALYSIS PLAN DATED JULY 18, 2018.
2. GAZT BOUNDARY IS BASED UPON "GAZT BOUNDARY PLAN" DATED MAY 9, 2008 INCORPORATED IN THE 2008 GMP. UPDATES PERMITTED BY HANCOCK ASSOCIATES AND 2013 GIVE EXPANSION AREA ESTABLISHED BY THE 2013 GMP DATED JANUARY 7, 2014.
3. GIS DATA COURTESY OF NEW HAMPSHIRE ONLINE GRANT DATABASE.
4. MAP IS PROJECTED USING THE NEW HAMPSHIRE STATE PLANE PROJECTION, US FEET AND REFERENCES THE NORTH AMERICAN VERTICAL DATUM OF 1983.
5. SURFACE WATER SAMPLE LOCATION SW-111 IS LOCATED APPROXIMATELY 220 FEET NORTH OF MAPPED AREA ADJACENT TO THE SOUTH OF 3660 LANARLETTE ROAD.

COAKLEY LANDFILL SUPERFUND SITE NEW HAMPSHIRE

GRAPHIC SCALE

0 FT 400 FT 800 FT 1200 FT 1600 FT

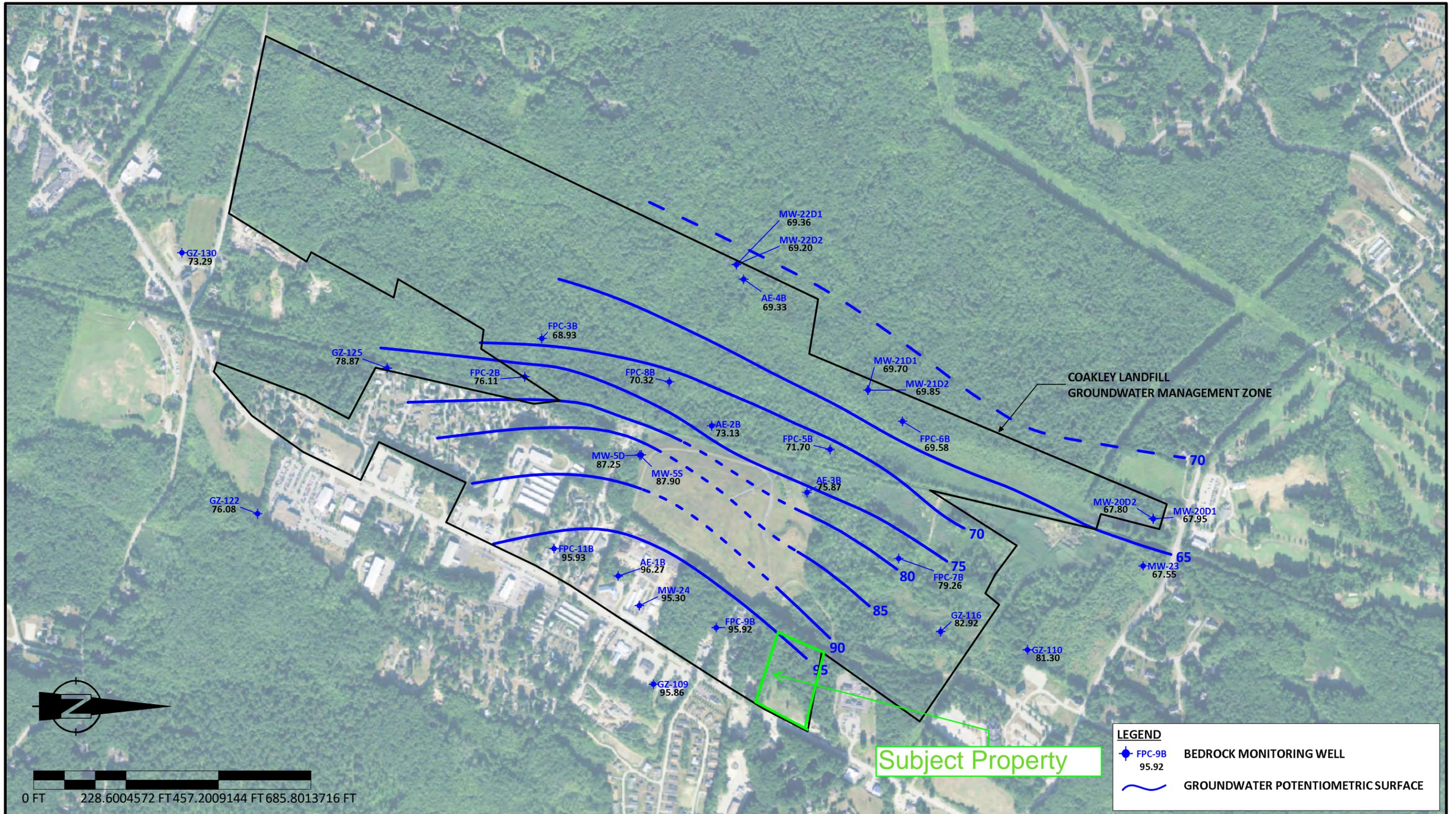
CES INC
Engineers • Environmental Scientists • Surveyors

Bar Harbor 138 Oakley Way Bar Harbor, ME T 207 288-0587 F 207 288-0588	Lewiston 148 Main Street Lewiston, ME T 207 795-6128 F 207 795-6129	Madison 67 Oakley Street Portland, ME T 207 795-6128 F 207 795-6129
Presque Isle 543 Main Street Presque Isle, ME T 207 764-8412 F 207 764-8414	Waterville 44 Main Street Waterville, ME T 207 498-2002 F 207 498-2004	Saco 148 Main Street Saco, ME T 207 283-6156 F 207 283-6157

SWLAK is a division of CES, Inc.
1104 Michigan Blvd
Fort Myers, FL 33916
T 239 481 1211
F 239 481 1071

PROJECT TITLE COAKLEY LANDFILL SUPERFUND SITE NORTH HAMPTON AND GREENLAND, NEW HAMPSHIRE																																
SHEET TITLE GROUNDWATER MONITORING WELL NETWORK OVERBURDEN AND BEDROCK MONITORING WELLS																																
<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <th>REV</th> <th>DESCRIPTION</th> <th>DATE</th> <th>DRAWN BY</th> <th>CHECKED BY</th> </tr> <tr> <td> </td> <td> </td> <td> </td> <td> </td> <td> </td> </tr> <tr> <td> </td> <td> </td> <td> </td> <td> </td> <td> </td> </tr> <tr> <td> </td> <td> </td> <td> </td> <td> </td> <td> </td> </tr> <tr> <td> </td> <td> </td> <td> </td> <td> </td> <td> </td> </tr> </table>	REV	DESCRIPTION	DATE	DRAWN BY	CHECKED BY																					<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 50%;"> SCALE 1:4,800 DATE 2019-11-06 </td> <td style="width: 50%;"> ISSUE STATUS FOR DISCUSSION PURPOSES ONLY </td> </tr> <tr> <td> DESIGNED BY CFB </td> <td> APPROVED BY MAO </td> </tr> <tr> <td> DATE 2019-11-06 </td> <td> PROJECT NUMBER 10424.016 </td> </tr> </table>	SCALE 1:4,800 DATE 2019-11-06	ISSUE STATUS FOR DISCUSSION PURPOSES ONLY	DESIGNED BY CFB	APPROVED BY MAO	DATE 2019-11-06	PROJECT NUMBER 10424.016
REV	DESCRIPTION	DATE	DRAWN BY	CHECKED BY																												
SCALE 1:4,800 DATE 2019-11-06	ISSUE STATUS FOR DISCUSSION PURPOSES ONLY																															
DESIGNED BY CFB	APPROVED BY MAO																															
DATE 2019-11-06	PROJECT NUMBER 10424.016																															

FIGURE 2



PROJECT TITLE: **COAKLEY LANDFILL SUPERFUND SITE
NORTH HAMPTON & GREENLAND, NEW HAMPSHIRE**

SHEET TITLE: **FALL 2019 BEDROCK
GROUNDWATER POTENTIOMETRIC SURFACE CONTOUR MAP**

DWG: **FIGURE 4**

JN: 10424.016

SCALE: AS SHOWN

BY: CFB

DATE: 2020-06-22

APPROVED BY: SLY

CHECKED BY: CFB

REV: _____

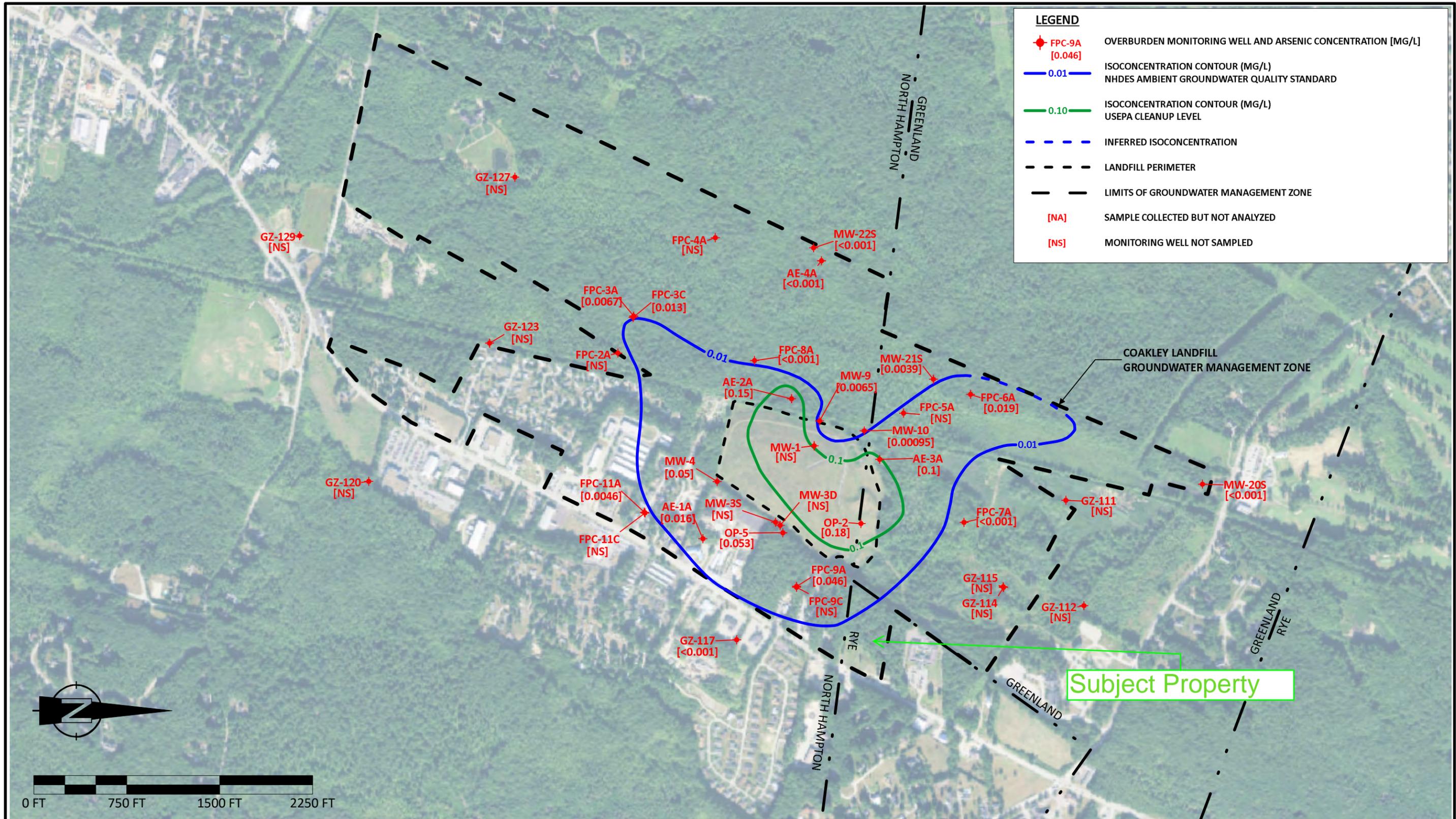
REV DATE: _____

ISSUE: _____

ISSUE DATE: _____

NOTE:
N/M - NOT MEASURED
FROZ - FROZEN
N/A - NOT INSTALLED AT TIME OF GAUGING OR HAD BLOCKAGE





PROJECT TITLE: **COAKLEY LANDFILL SUPERFUND SITE
NORTH HAMPTON & GREENLAND, NEW HAMPSHIRE**

SHEET TITLE: **SPRING 2019 LATERAL DISTRIBUTION OF
DISSOLVED ARSENIC IN OVERBURDEN GROUNDWATER**

DWG: **FIGURE 5**

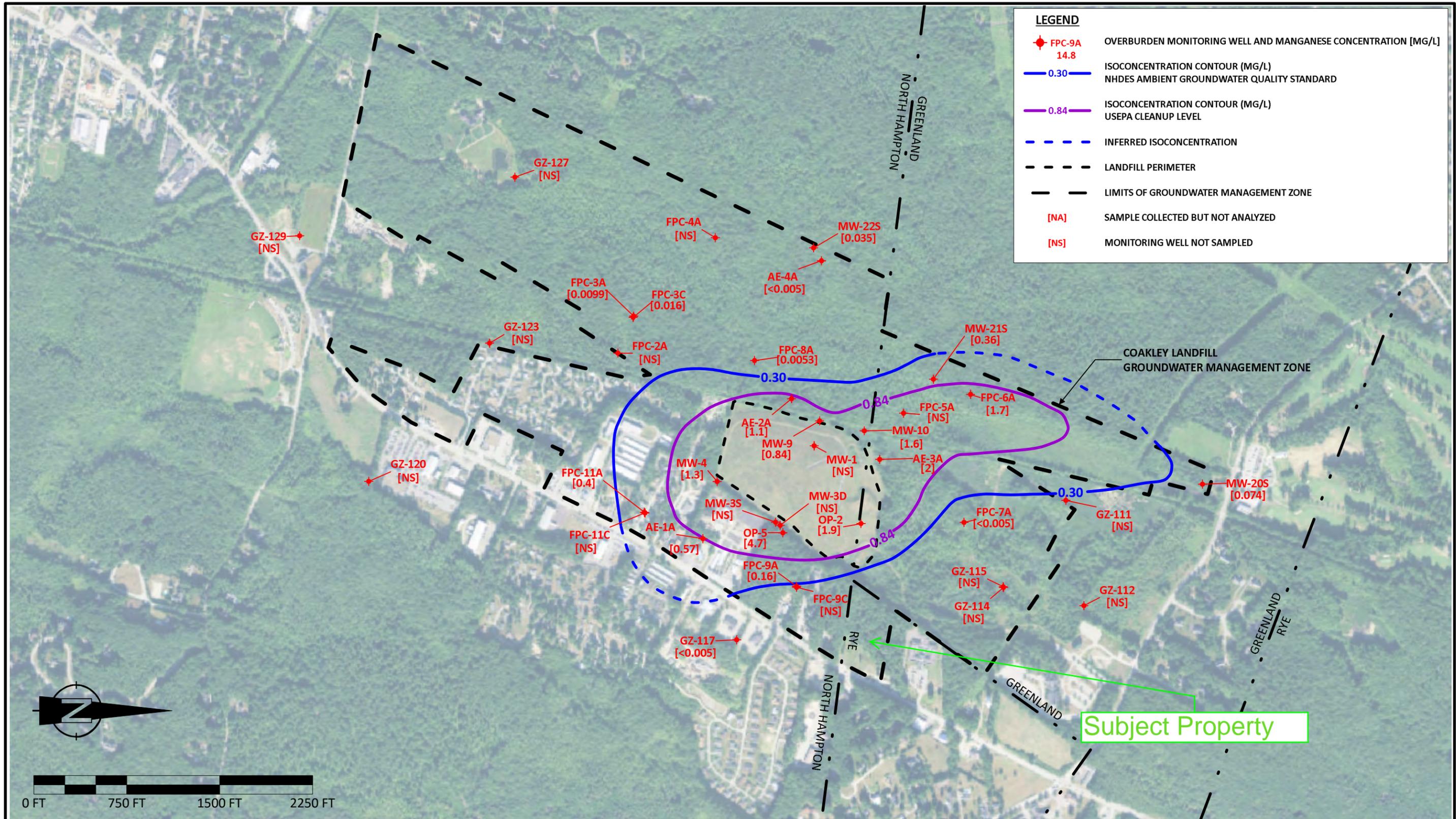
JN: 10424.024
SCALE: AS SHOWN

BY: KWD
DATE: 2020-05-12
APPROVED BY: CFB
CHECKED BY: SLY

REV:
REV DATE:
ISSUE:
ISSUE DATE:

NOTE:



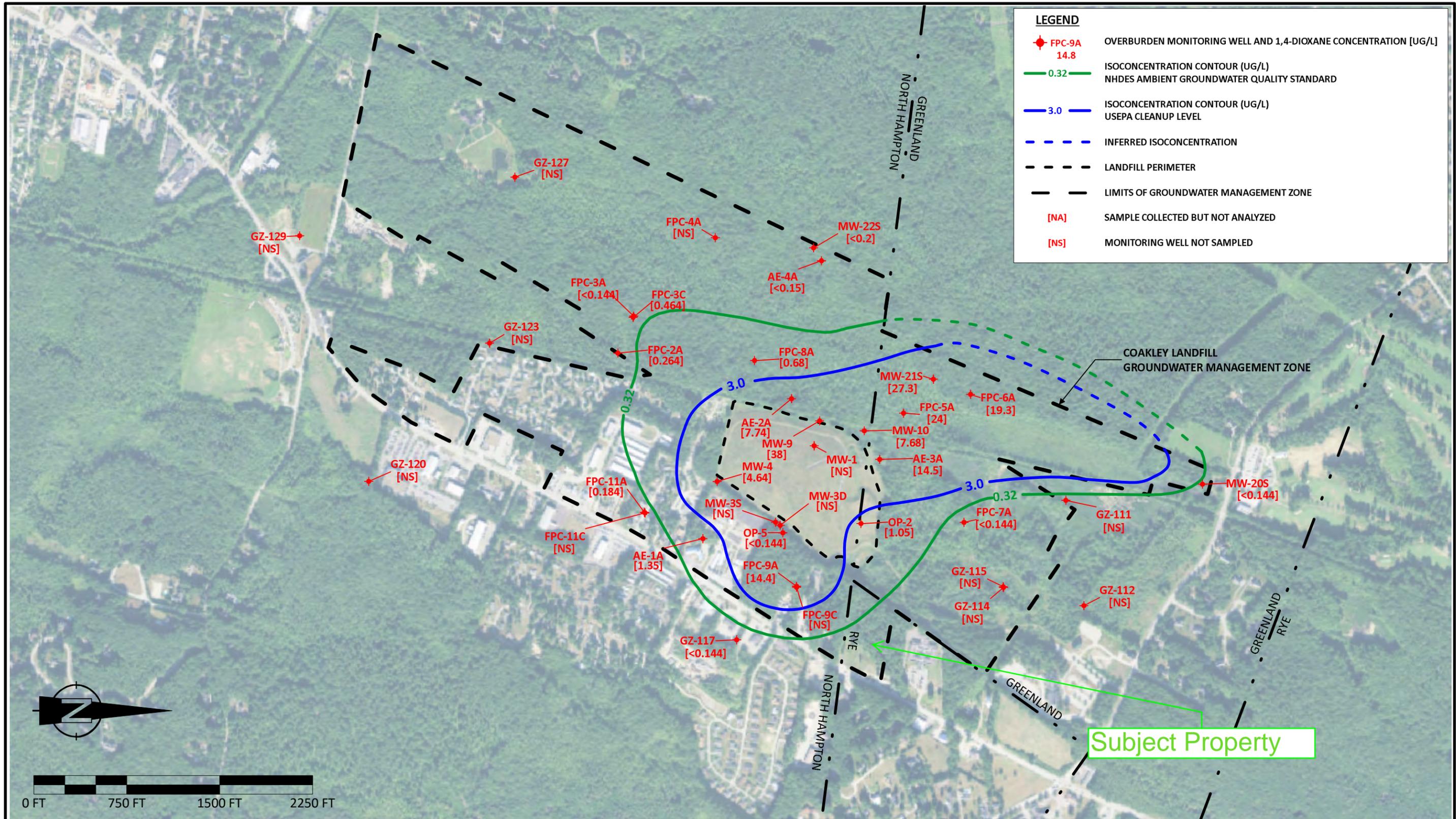


PROJECT TITLE: **COAKLEY LANDFILL SUPERFUND SITE
NORTH HAMPTON & GREENLAND, NEW HAMPSHIRE**

SHEET TITLE: **SPRING 2019 LATERAL DISTRIBUTION OF
DISSOLVED MANGANESE IN OVERBURDEN GROUNDWATER**

DWG: FIGURE 6	BY: KWD	REV:	NOTE:
JN: 10424.024	DATE: 2020-05-12	REV DATE:	
SCALE: AS SHOWN	APPROVED BY: CFB	ISSUE:	
	CHECKED BY: SLY	ISSUE DATE:	





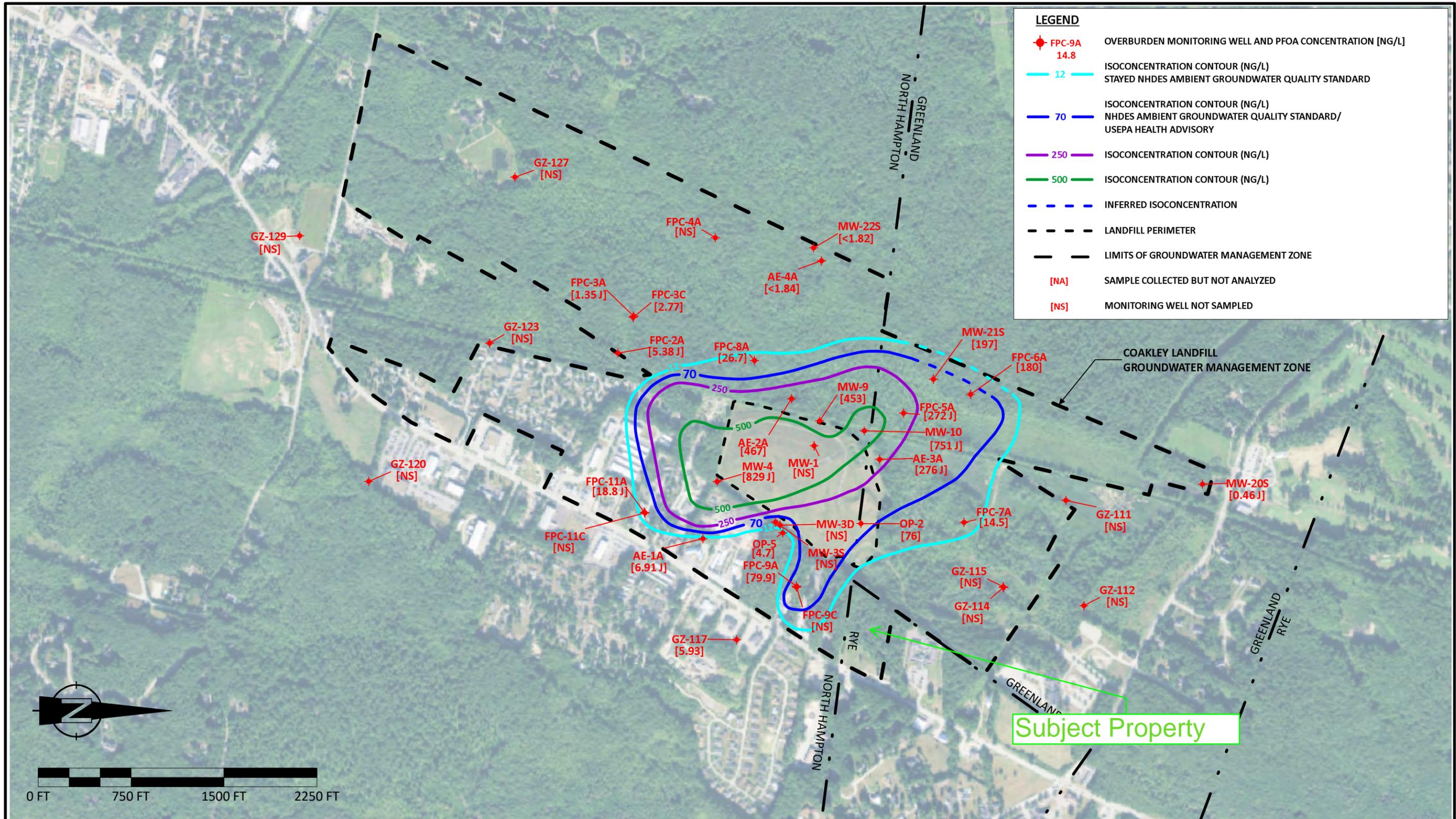
PROJECT TITLE: **COAKLEY LANDFILL SUPERFUND SITE
NORTH HAMPTON & GREENLAND, NEW HAMPSHIRE**

SHEET TITLE: **FALL 2019 LATERAL DISTRIBUTION OF
1,4-DIOXANE IN OVERBURDEN GROUNDWATER**

DWG: FIGURE 7	BY: KWD	REV:
JN: 10424.024	DATE: 2020-05-12	REV DATE:
SCALE: AS SHOWN	APPROVED BY: CFB	ISSUE:
	CHECKED BY: SLY	ISSUE DATE:

NOTE:





PROJECT TITLE: **COAKLEY LANDFILL SUPERFUND SITE
NORTH HAMPTON & GREENLAND, NEW HAMPSHIRE**

SHEET TITLE: **FALL 2019 LATERAL DISTRIBUTION OF
PFOA IN OVERBURDEN GROUNDWATER**

DWG: **FIGURE 8**

JN: 10424.024

SCALE: AS SHOWN

BY: CFB

DATE: 2020-06-25

APPROVED BY: CFB

CHECKED BY: SLY

REV: []

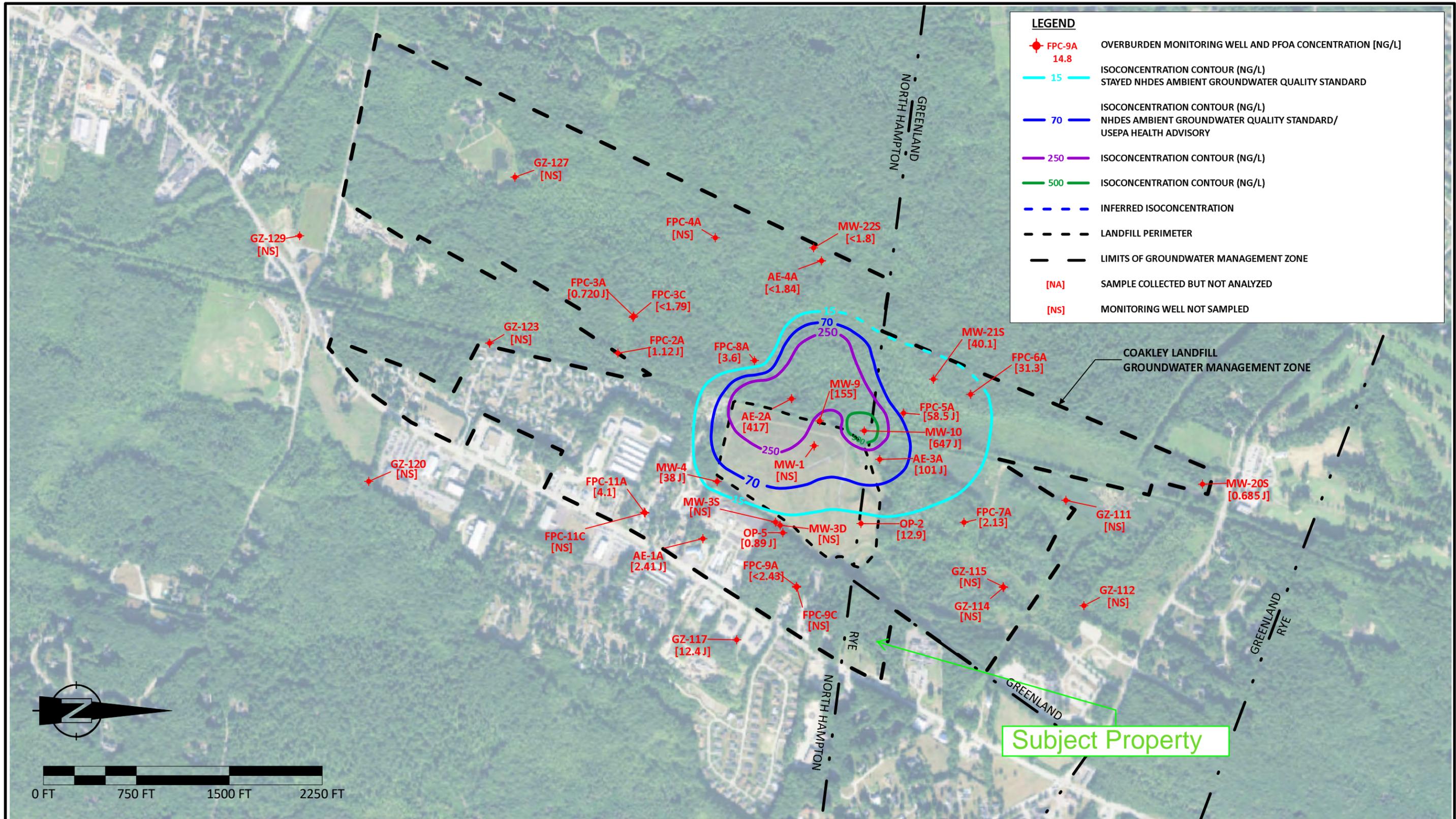
REV DATE: []

ISSUE: []

ISSUE DATE: []

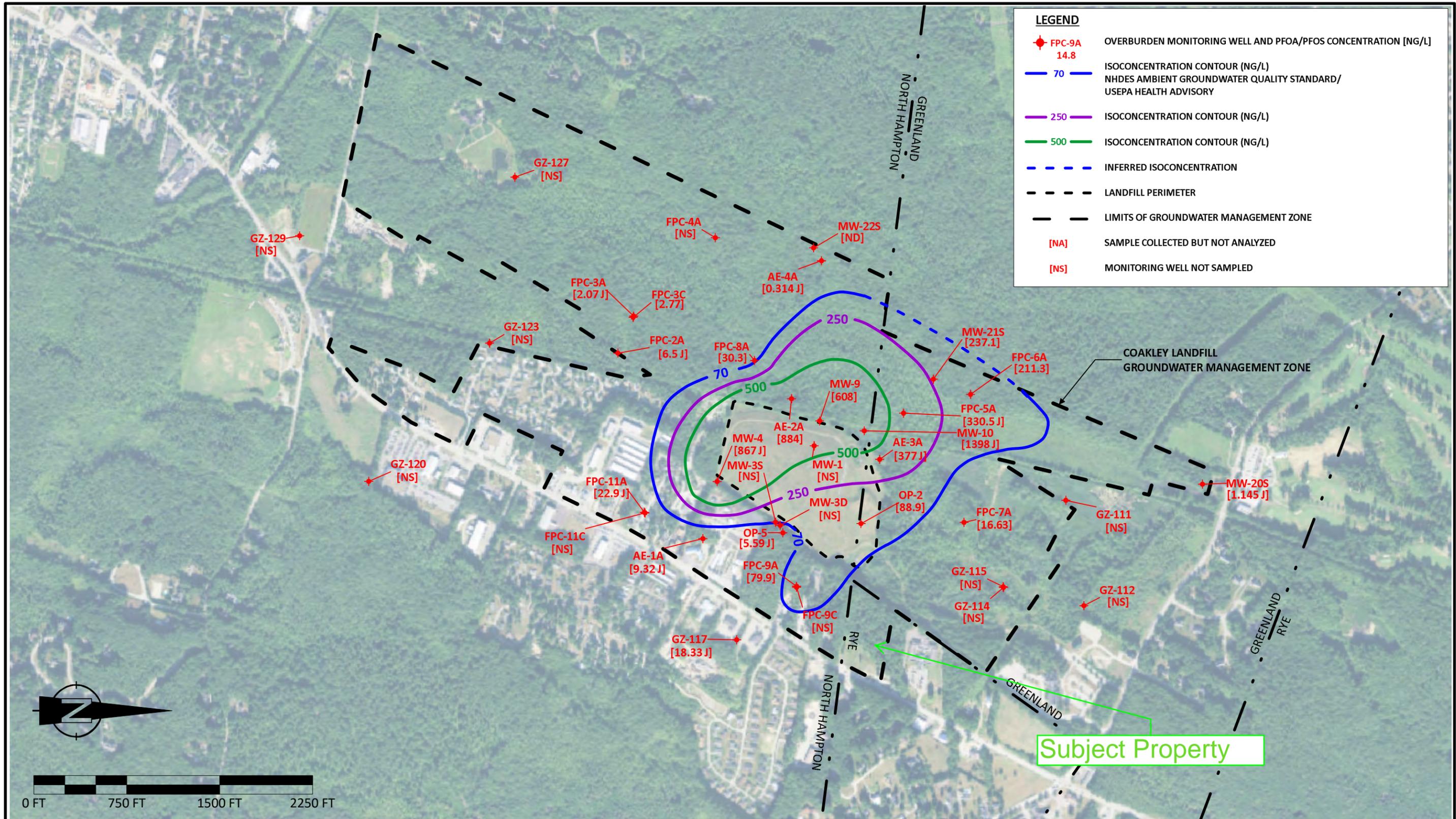
NOTE:
On September 30, 2019, the AGQS for PFAS compounds perfluorooctanoic acid (PFOA) and perfluorooctanesulfonic acid (PFOS) were lowered from their previous AGQS of 70 nanograms per liter (ng/L) each to 12 ng/L and 15 ng/L, respectively. These standards were stayed by a court ruling on December 31, 2019.





PROJECT TITLE: COAKLEY LANDFILL SUPERFUND SITE NORTH HAMPTON & GREENLAND, NEW HAMPSHIRE	DWG: FIGURE 9	BY: KWD	REV:	NOTE: On September 30, 2019, the AGQS for PFAS compounds perfluorooctanoic acid (PFOA) and perfluorooctanesulfonic acid (PFOS) were lowered from their previous AGQS of 70 nanograms per liter (ng/L) each to 12 ng/L and 15 ng/L, respectively. These standards were stayed by a court ruling on December 31, 2019.
SHEET TITLE: FALL 2019 LATERAL DISTRIBUTION OF PFOS IN OVERBURDEN GROUNDWATER	JN: 10424.024	DATE: 2020-06-25	REV DATE:	
	SCALE: AS SHOWN	APPROVED BY: CFB	ISSUE:	
		CHECKED BY: SLY	ISSUE DATE:	



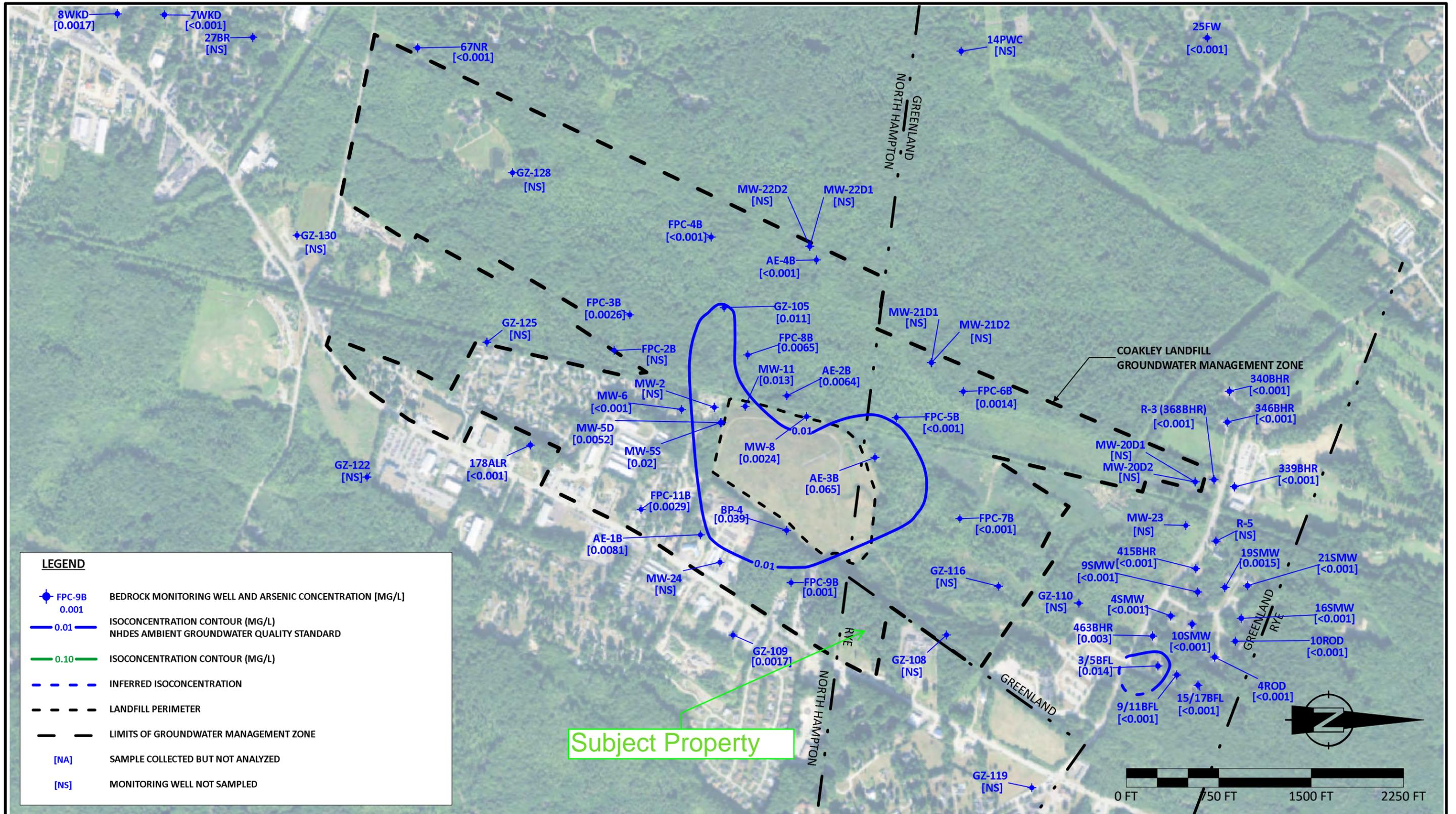


PROJECT TITLE: **COAKLEY LANDFILL SUPERFUND SITE
NORTH HAMPTON & GREENLAND, NEW HAMPSHIRE**

SHEET TITLE: **FALL 2019 LATERAL DISTRIBUTION OF
PFOA + PFOS IN OVERBURDEN GROUNDWATER**

DWG: FIGURE 10	BY: KWD	REV:	NOTE:
JN: 10424.024	DATE: 2020-05-12	REV DATE:	
SCALE: AS SHOWN	APPROVED BY: CFB	ISSUE:	
	CHECKED BY: SLY	ISSUE DATE:	





PROJECT TITLE: **COAKLEY LANDFILL SUPERFUND SITE
NORTH HAMPTON & GREENLAND, NEW HAMPSHIRE**

SHEET TITLE: **SPRING 2019 LATERAL DISTRIBUTION OF
TOTAL ARSENIC IN BEDROCK GROUNDWATER**

DWG: **FIGURE 11**

BY: KWD

DATE: 2020-05-12

APPROVED BY: CFB

SCALE: AS SHOWN

CHECKED BY: SLY

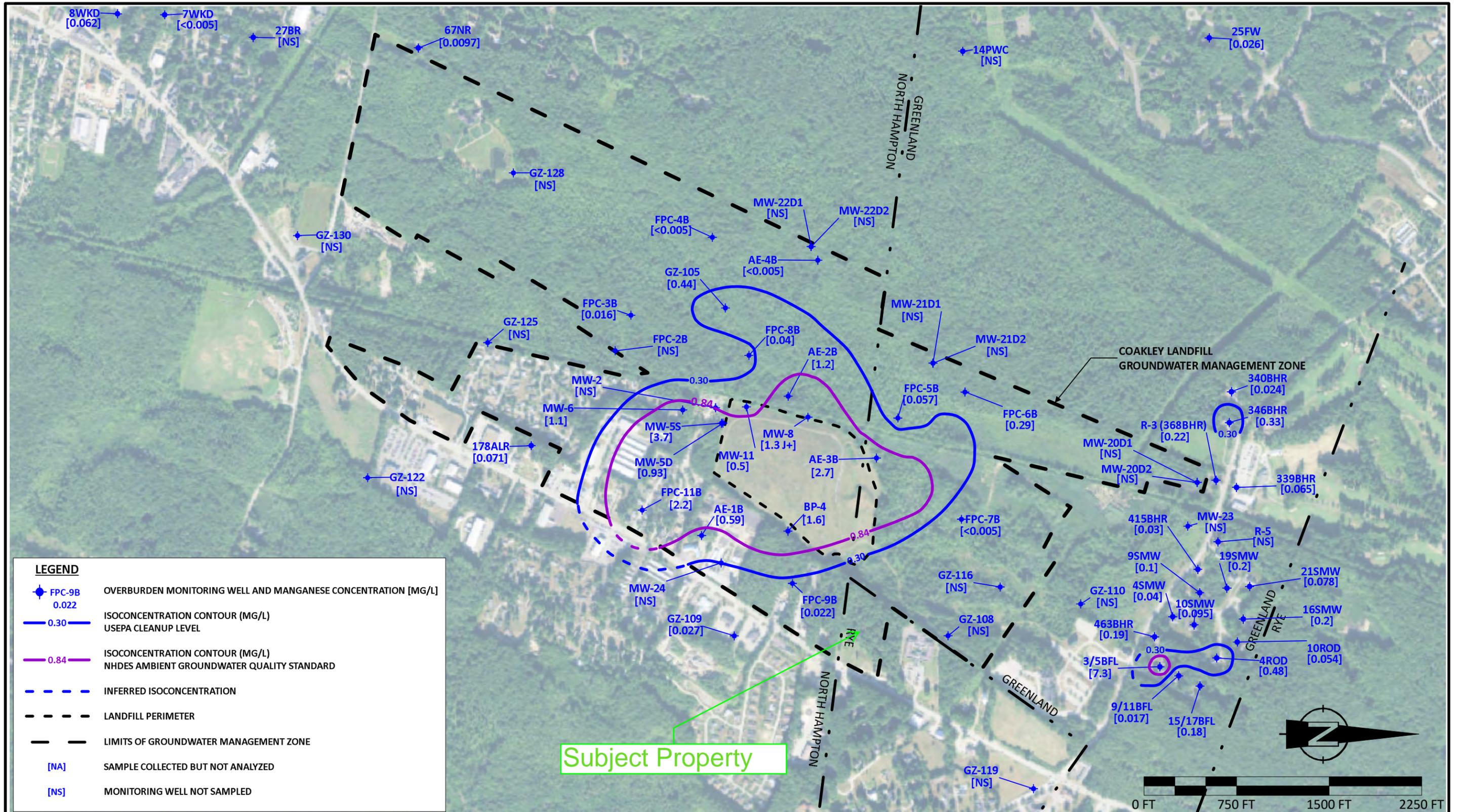
REV: KWD

REV DATE:

ISSUE:

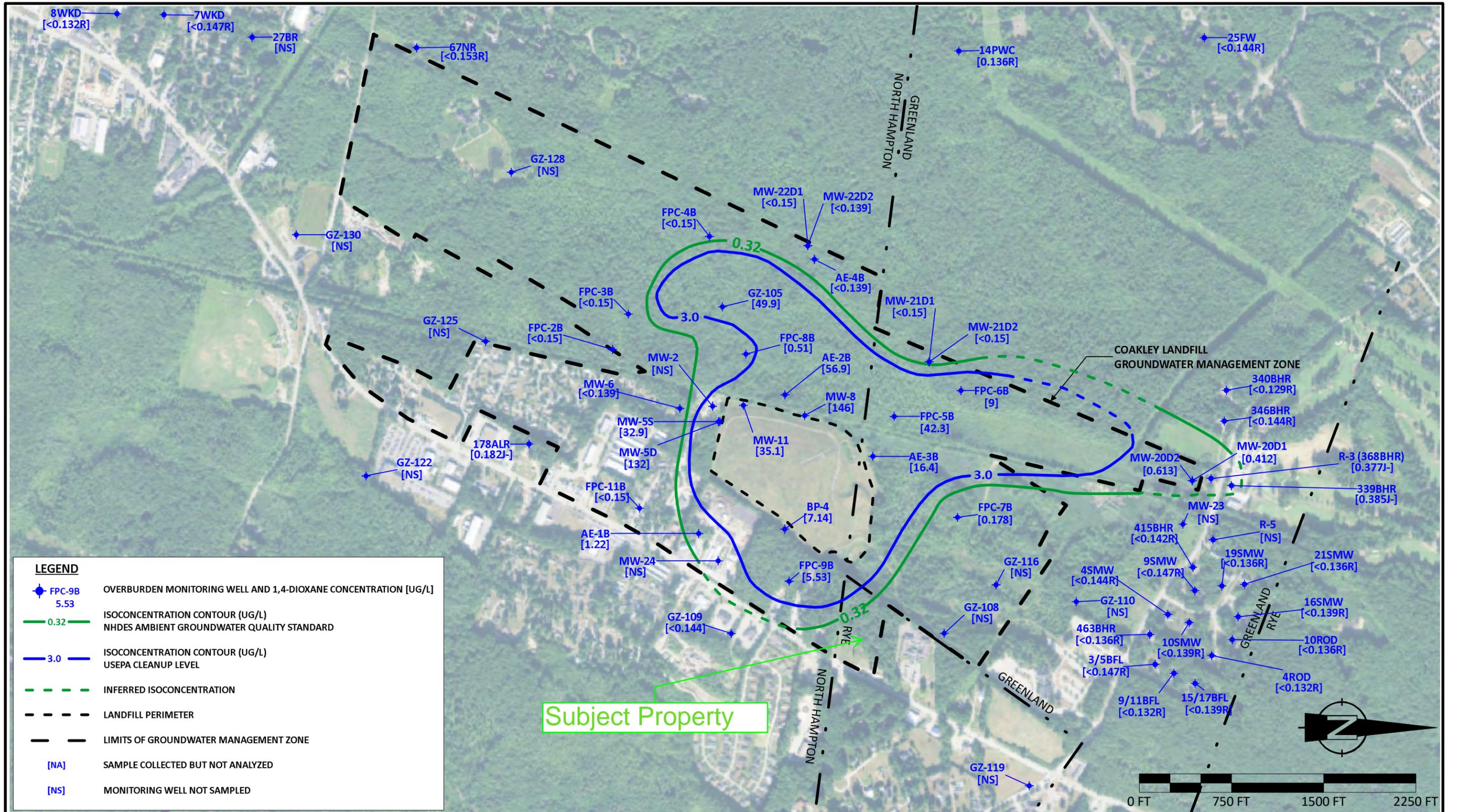
ISSUE DATE:





PROJECT TITLE:	COAKLEY LANDFILL SUPERFUND SITE NORTH HAMPTON & GREENLAND, NEW HAMPSHIRE	DWG:	FIGURE 12	BY:	KWD	REV:		NOTE:	
SHEET TITLE:	SPRING 2019 LATERAL DISTRIBUTION OF TOTAL MANGANESE IN BEDROCK GROUNDWATER	JN:	10424.024	DATE:	2020-05-12	REV DATE:			
		SCALE:	AS SHOWN	APPROVED BY:	CFB	ISSUE:			
				CHECKED BY:	SLY	ISSUE DATE:			





PROJECT TITLE: **COAKLEY LANDFILL SUPERFUND SITE
NORTH HAMPTON & GREENLAND, NEW HAMPSHIRE**

SHEET TITLE: **FALL 2019 LATERAL DISTRIBUTION OF
1,4-DIOXANE IN BEDROCK GROUNDWATER**

DWG: **FIGURE 13**

BY: KWD
DATE: 2020-05-12

APPROVED BY: CFB
CHECKED BY: SLY

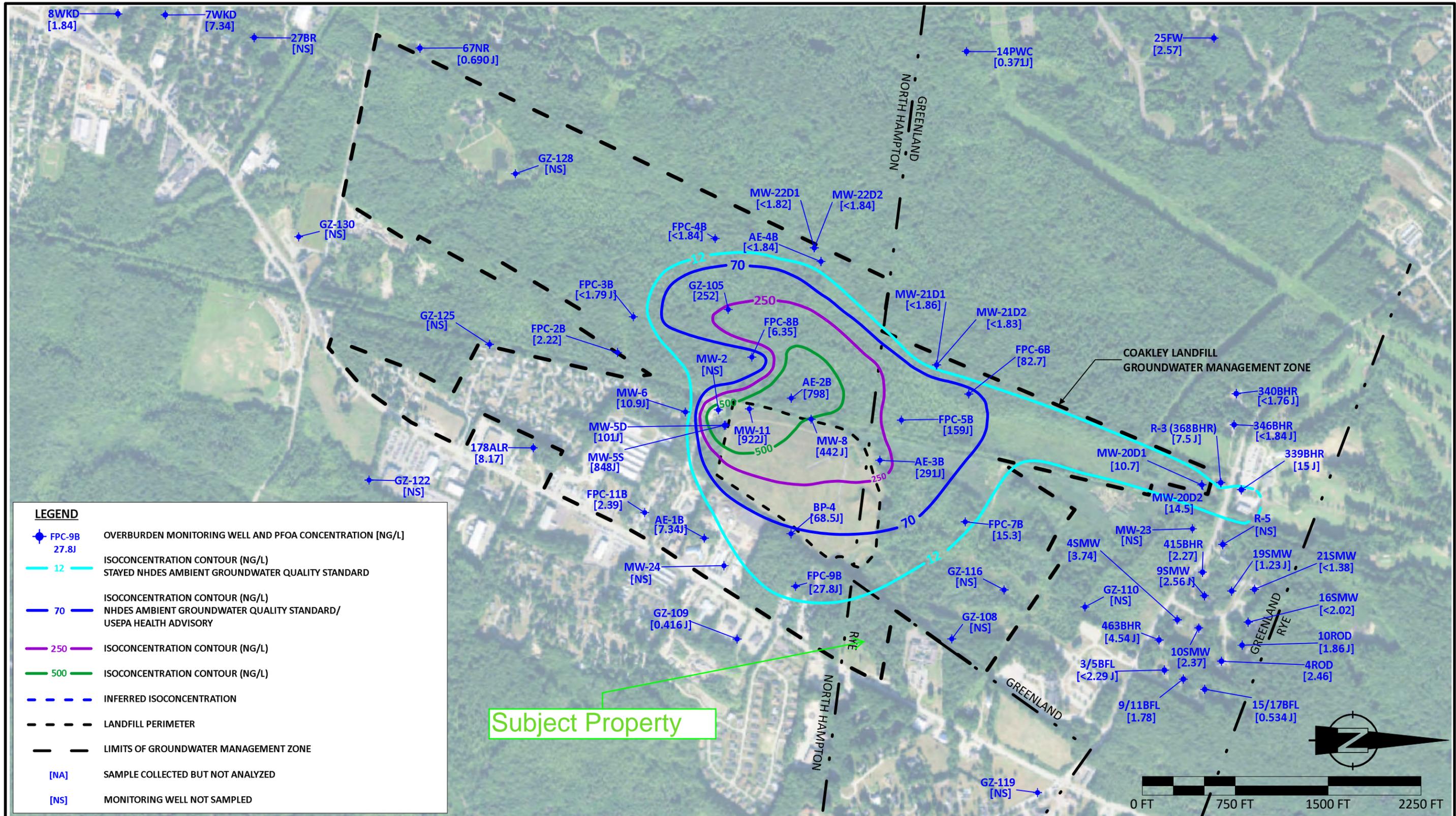
JN: 10424.024
SCALE: AS SHOWN

REV: KWD
REV DATE:

ISSUE: CFB
ISSUE DATE:

NOTE:





PROJECT TITLE: **COAKLEY LANDFILL SUPERFUND SITE
NORTH HAMPTON & GREENLAND, NEW HAMPSHIRE**

SHEET TITLE: **FALL 2019 LATERAL DISTRIBUTION OF
PFOA IN BEDROCK GROUNDWATER**

DWG: **FIGURE 14**

BY: CFB

DATE: 2020-06-24

JN: 10424.024

SCALE: AS SHOWN

APPROVED BY: CFB

CHECKED BY: SLY

REV: [REDACTED]

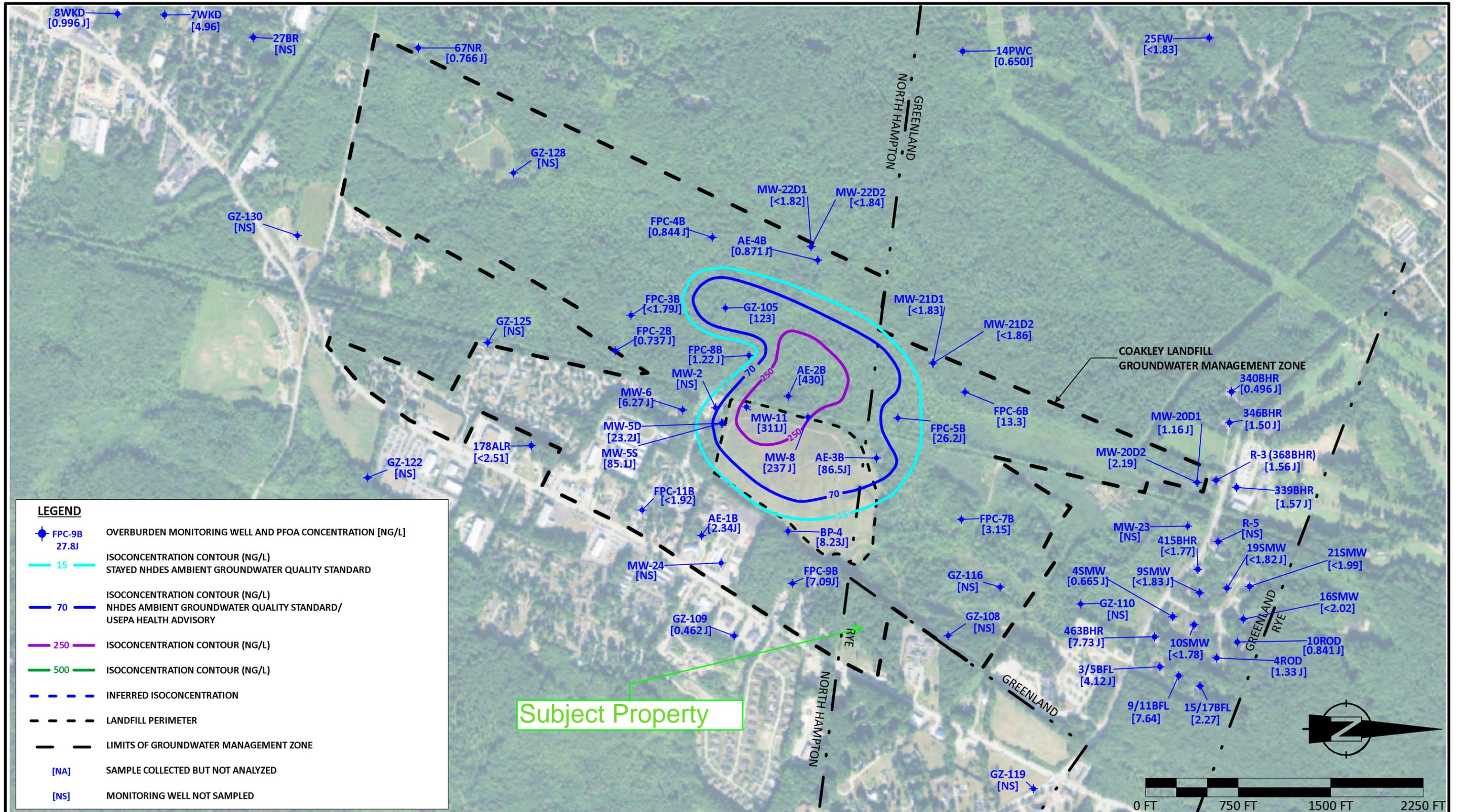
REV DATE: [REDACTED]

ISSUE: [REDACTED]

ISSUE DATE: [REDACTED]

NOTE: On September 30, 2019, the AGQS for PFAS compounds perfluorooctanoic acid (PFOA) and perfluorooctanesulfonic acid (PFOS) were lowered from their previous AGQS of 70 nanograms per liter (ng/L) each to 12 ng/L and 15 ng/L, respectively. These standards were stayed by a court ruling on December 31, 2019.





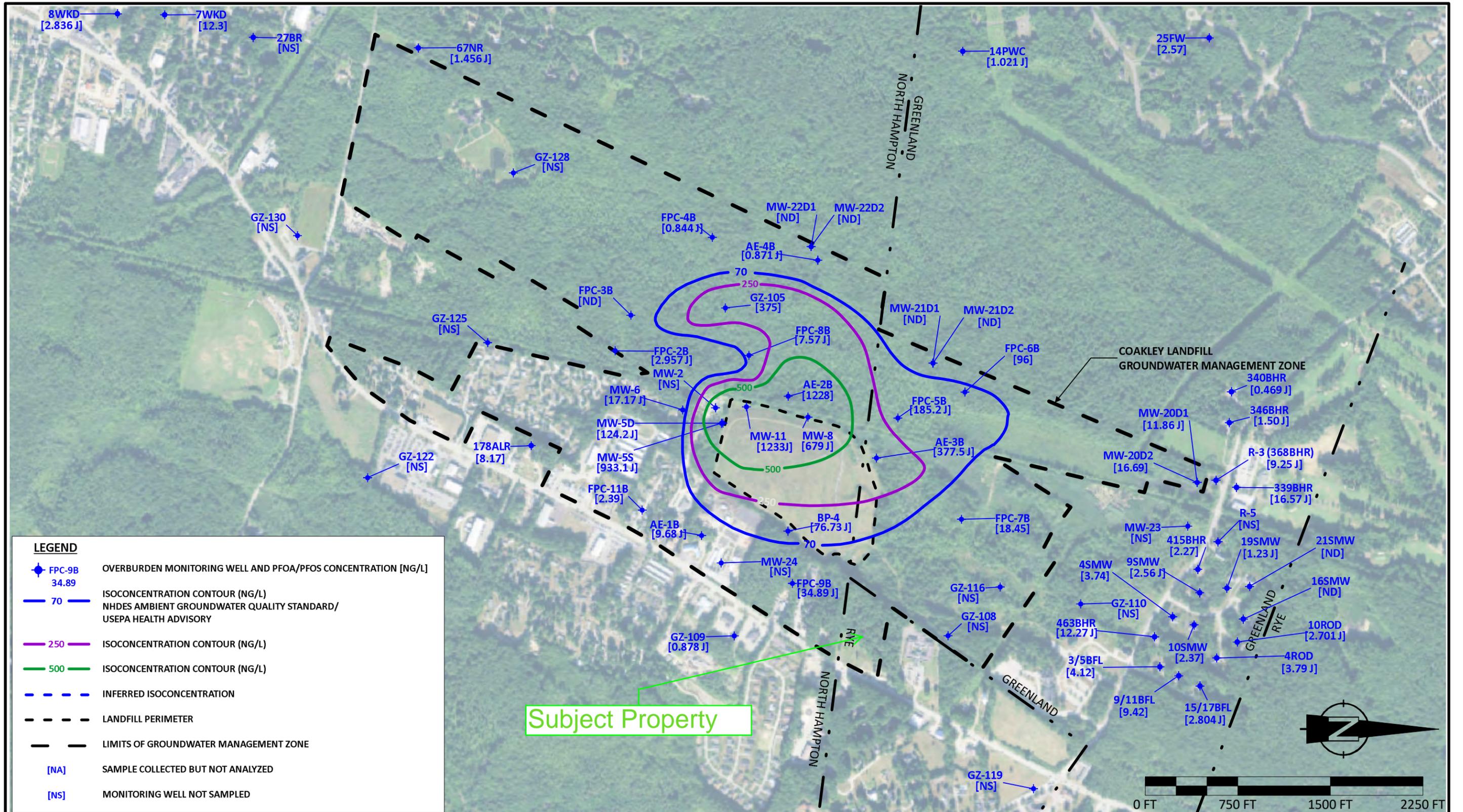
LEGEND	
	FPC-9B 27.8 OVERBURDEN MONITORING WELL AND PFOA CONCENTRATION [NG/L]
	15 ISOCONCENTRATION CONTOUR (NG/L) STAYED NHDES AMBIENT GROUNDWATER QUALITY STANDARD
	70 ISOCONCENTRATION CONTOUR (NG/L) NHDES AMBIENT GROUNDWATER QUALITY STANDARD/ USEPA HEALTH ADVISORY
	250 ISOCONCENTRATION CONTOUR (NG/L)
	500 ISOCONCENTRATION CONTOUR (NG/L)
	INFERRED ISOCONCENTRATION
	LANDFILL PERIMETER
	LIMITS OF GROUNDWATER MANAGEMENT ZONE
[NA]	SAMPLE COLLECTED BUT NOT ANALYZED
[NS]	MONITORING WELL NOT SAMPLED

PROJECT TITLE: **COAKLEY LANDFILL SUPERFUND SITE
NORTH HAMPTON & GREENLAND, NEW HAMPSHIRE**

SHEET TITLE: **FALL 2019 LATERAL DISTRIBUTION OF
PFOS IN BEDROCK GROUNDWATER**

DWG: FIGURE 15	BY: KWD	REV:
JN: 10424.024	DATE: 2020-06-25	REV DATE:
SCALE: AS SHOWN	APPROVED BY: CFB	ISSUE:
	CHECKED BY: SLY	ISSUE DATE:

NOTE:
On September 30, 2019, the AGQS for PFAS compounds perfluorooctanoic acid (PFOA) and perfluorooctanesulfonic acid (PFOS) were lowered from their previous AGQS of 70 nanograms per liter (ng/L) each to 12 ng/L and 15 ng/L, respectively. These standards were stayed by a court ruling on December 31, 2019.



LEGEND	
	FPC-9B OVERBURDEN MONITORING WELL AND PFOA/PFOS CONCENTRATION [NG/L]
	70 ISOCONCENTRATION CONTOUR (NG/L) NHDES AMBIENT GROUNDWATER QUALITY STANDARD/ USEPA HEALTH ADVISORY
	250 ISOCONCENTRATION CONTOUR (NG/L)
	500 ISOCONCENTRATION CONTOUR (NG/L)
	INFERRED ISOCONCENTRATION
	LANDFILL PERIMETER
	LIMITS OF GROUNDWATER MANAGEMENT ZONE
[NA]	SAMPLE COLLECTED BUT NOT ANALYZED
[NS]	MONITORING WELL NOT SAMPLED

Subject Property

PROJECT TITLE: <p style="text-align: center;">COAKLEY LANDFILL SUPERFUND SITE NORTH HAMPTON & GREENLAND, NEW HAMPSHIRE</p>	DWG: <p style="text-align: center;">FIGURE 16</p>	BY: KWD	REV: 	NOTE:
SHEET TITLE: <p style="text-align: center;">FALL 2019 LATERAL DISTRIBUTION OF PFOA + PFOS IN BEDROCK GROUNDWATER</p>	JN: 10424.024	DATE: 2020-05-12	REV DATE: 	
	SCALE: AS SHOWN	APPROVED BY: CFB	ISSUE: 	
		CHECKED BY: SLY	ISSUE DATE: 	



ATTACHMENT G

NITRATE LOADING/MASS BALANCE SPREADSHEET

NITROGEN LOADING CALCULATION

I Nitrogen Load

A. Septic
wastewater volume (gallons/day) 10,590 x 40 mg/L (given) = septic nitrogen (mg/yr) 584,440,920

B. Fertilizer
lawn area (sq ft) 14,585 x 3 lbs/ 1000 sq ft / yr (given -- 25% leached) = fertilizer nitrogen (lbs/yr) 11 or fertilizer nitrogen (mg/yr) 4,961,717
ESTIMATE

Total Nitrogen = 589,402,637 mg/yr

area 28145.83
pavement 4931.146 ft
building 8629.721
lawn 14584.96

II Recharge Volume

A. Precipitation

recharge area (ac) 0.65 - imperv. area (ac) 0.31 = recharge area (sq ft) 14,585

average precip (in/yr) 50 x % infiltrate 50 = recharge rate (ft/day) 0.0057

recharge area (sq ft) 14,585 x recharge rate (ft/day) 0.0057 = precipitation recharge (gal/day) 622

B. Septic (not included if water supply is from a well on the site)
septic recharge (gal/day) 10,590

Total Recharge = 4,092,380 gal/yr or 15,489,658 L/yr

III Concentration

Nitrogen Load (mg/yr) / Recharge Volume (L/yr) = 38.05 mg/L

NITROGEN LOADING CALCULATION

I Nitrogen Load

A. Septic
wastewater volume (gallons/day) 10,590 x 6 mg/L (given) = 87,666,138 mg/yr
septic nitrogen (mg/yr)

B. Fertilizer
lawn area (sq ft) 14,585 x 3 lbs/ 1000 sq ft / yr (given -- 25% leached) = 11 lbs/yr or 4,961,717 mg/yr
ESTIMATE

Total Nitrogen = 92,627,855 mg/yr

area 28145.83
pavement 4931.146 ft
building 8629.721
lawn 14584.96

II Recharge Volume

A. Precipitation

recharge area (ac) 0.65 - imperv. area (ac) 0.31 = recharge area (sq ft) 14,585

average precip (in/yr) 50 x % infiltrate 50 = recharge rate (ft/day) 0.0057

recharge area (sq ft) 14,585 x recharge rate (ft/day) 0.0057 = precipitation recharge (gal/day) 622

B. Septic (not included if water supply is from a well on the site)
septic recharge (gal/day) 10,590

Total Recharge = 4,092,380 gal/yr or 15,489,658 L/yr

III Concentration

Nitrogen Load (mg/yr) / Recharge Volume (L/yr) = 5.98 mg/L