State-Licensed Disposal Area at West Valley: 2023 Annual Report

Final Report | March 2024

NEW YORK STATE | NYSERDA

NYSERDA's Promise to New Yorkers:

NYSERDA provides resources, expertise, and objective information so New Yorkers can make confident, informed energy decisions.

Our Vision:

New York is a global climate leader building a healthier future with thriving communities; homes and businesses powered by clean energy; and economic opportunities accessible to all New Yorkers.

Our Mission:

Advance clean energy innovation and investments to combat climate change, improving the health, resiliency, and prosperity of New Yorkers and delivering benefits equitably to all.

State-Licensed Disposal Area at West Valley

2023 Final Report

Prepared for:

New York State Energy Research and Development Authority

West Valley, NY

March 2024

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Acronyms and Abbreviations

CRDL	contract required detection limit
DEC	New York State Department of Environmental Conservation
ft.	feet
GMP	Groundwater Monitoring Plan for the State-Licensed Disposal Area (SDA) at West Valley
ICM	interim control measure
in.	inches
LiDAR	Light Detection and Ranging
LMP	Leachate Monitoring Plan for the State-Licensed Disposal Area (SDA)
MDC	minimum detectable concentrations
MDL	method detection limit
NDA	U.S. Nuclear Regulatory Commission-Licensed Disposal Area
NYCRR	New York State Codes, Rules, and Regulations
NYSERDA	New York State Energy Research and Development Authority
pCi/L	picocuries per liter
PQL	practical quantitation limits
RCRA	Resource Conservation and Recovery Act
SDA	State-Licensed Disposal Area
TLD	thermoluminescent dosimeter
µg/L	microgram per liter
UPL	upper predictive limits
UTL	upper tolerance limits
VOC	volatile organic compound
WNYNSC	Western New York Nuclear Service Center
WP-91	Well Point-91
WVDP	West Valley Demonstration Project
WVSMP	West Valley Site Management Program

S.1 Executive Summary

2023 PERFORMANCE

The New York State Energy Research and Development Authority (NYSERDA) maintains and monitors the State-Licensed Disposal Area (SDA) to protect public health, safety, and the environment. The SDA is located at the Western New York Nuclear Service Center (WNYNSC). This report summarizes the results of environmental monitoring, erosion monitoring, facility operations and maintenance, and waste management activities conducted during calendar year 2023 at the SDA.

In 2023, NYSERDA safely and successfully completed several field activities, including:

- Routine leachate and groundwater level monitoring at 98 locations on a monthly and quarterly basis.
- Routine groundwater, surface water, and stormwater sampling at 28 locations for 86 different parameters (semi-annually for groundwater and stormwater, and quarterly for surface water).
- Semi-annual gamma radiation measurements at 51 locations with 204 individual data points.
- Quarterly thermoluminescent dosimeter (TLD) monitoring at 11 locations with 44 individual measurements.
- Annual trench cap and North Slope elevations at 105 individual survey locations.
- Thirty-six separate inspections were completed for the buildings, waste, geomembrane cover, erosion monitoring, and workplace safety at the SDA.

Leachate elevations for Well Point-91 (WP-91) and Trench 14 continue to decrease in 2023, and indicate that the Trench 14 Interim Control Measure (ICM) completed in 2021 is effectively reducing the flow of water into Trench 14. Specifically, the leachate level elevations have returned to 2013 levels. All leachate elevations are well below the ground surface (at least 10 feet [ft.] below the top of the trench) indicating that NYSERDA's SDA water management activities are effective and protective of public health and safety and the environment. In addition, trench cap surveys indicate that they remain stable.

The erosion control measures remain effective at stabilizing the stream channels and slopes surrounding the SDA, and the West Valley Site Management Program (WVSMP) operations and maintenance actions continue to keep the SDA systems functioning properly, and the grounds in good condition. The 2023 erosion monitoring reports indicate that there were no erosion concerns identified that currently threaten the integrity of the SDA.

The 2023 precipitation total at the SDA was 41.15 inches (in.). This is 2.80 in. lower than the five-year average for the SDA. NYSERDA will continue to monitor precipitation at the SDA.

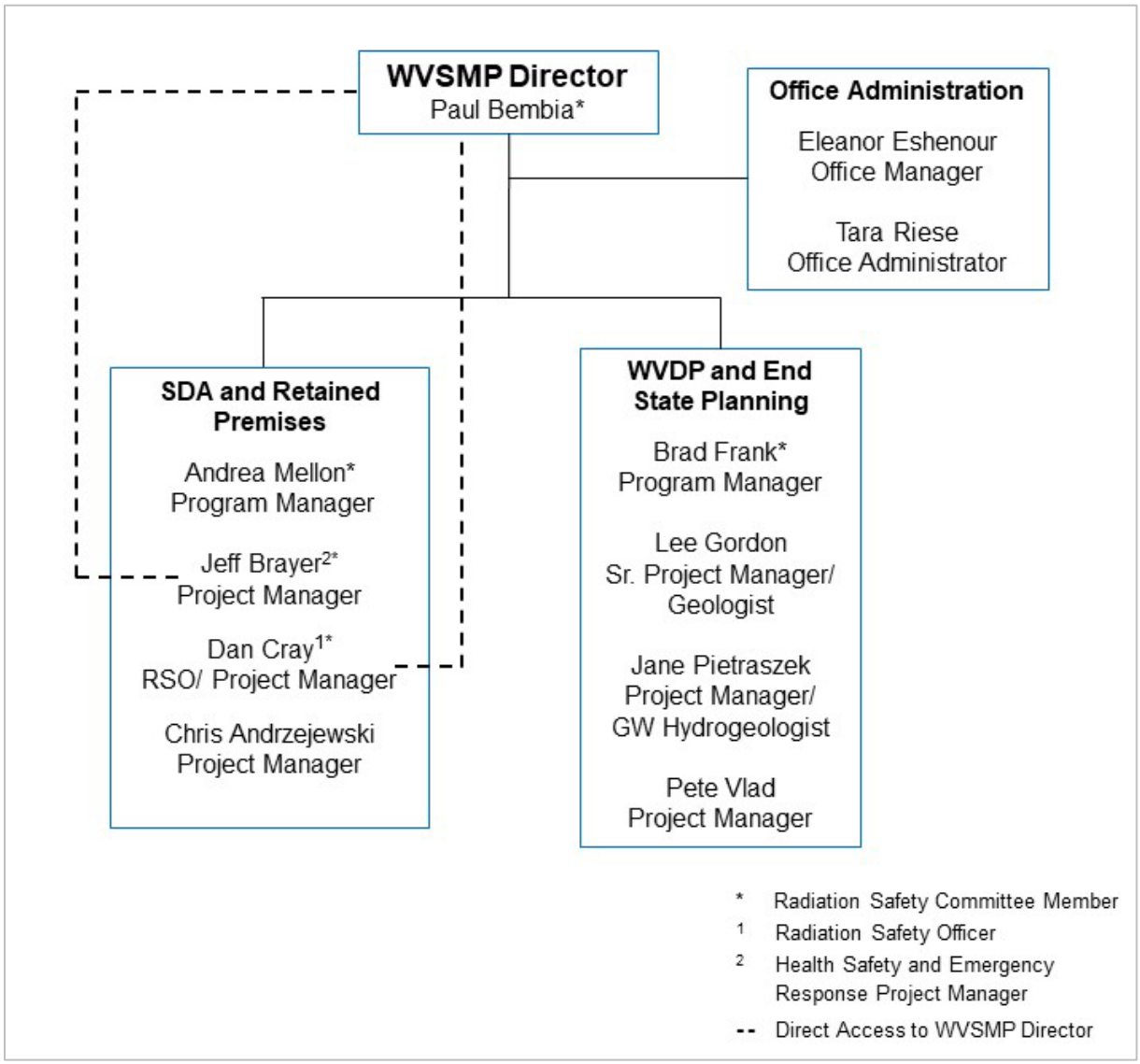
As presented in the 2023 SDA Annual Report, the environmental monitoring data collected, and the inspections completed, the SDA trenches are effectively containing the radioactive and chemical constituents present. This effective waste containment demonstrates that NYSERDA is managing the SDA in a manner that is protective of the health and safety of the public, workers, and the environment.

This report is prepared in accordance with the New York State Department of Environmental Conservation (DEC) radiation control regulations and the SDA radiation control permit. Annual reporting requirements are specified in:

- Title 6 of the Official Compilation of Codes, Rules, and Regulations of the State of New York (NYCRR) Part 380, Rules and Regulations for the Prevention and Control of Environmental Pollution by Radioactive Materials, May 10, 2018.
- DEC Radiation Control Permit #137-6, Permit No. 9-0422-00011/00011, December 29, 2021.

S.2 West Valley Site Management Program

NYSERDA's WVSMP is responsible for the protection of public health, safety, and the environment at the WNYNSC. The WVSMP is comprised of 11 professionals with diverse talents and expertise. The mission of the WVSMP is to be responsible stewards of the WNYNSC, including the SDA, by using objective analysis, and soliciting multiple perspectives to identify, assess, and implement effective, enduring approaches to protect the environment, and the well-being of NYSERDA's workers.



1 State-Licensed Disposal Area Description

The SDA occupies approximately 15 acres of the WNYNSC (Figure 1-1) immediately adjacent to the West Valley Demonstration Project (WVDP). The SDA consists of three filled lagoons and two sets of parallel trenches that contain radioactive waste: 1 through 7 in the northern area and 8 through 14 in the southern area (see Figure 1-2). The SDA is surrounded by an eight-foot-high, chain-link fence, which includes a one-foot barbed-wire outrigger. NYSERDA controls access to the SDA by limiting the issuance of keys to the six, locked SDA gates. In addition, a contracted security service conducts routine patrols of the SDA's perimeter.

Between 1963 and 1975, Nuclear Fuel Services, Inc. (the SDA operator at that time), disposed of approximately 2.4 million cubic feet of radioactive waste in trenches constructed in the native silty-clay soil. These trenches are 450 to 650 ft. in length and are approximately 20 ft. deep. Trench cross-sections are trapezoidal in shape, with a top width of 35 ft. and a bottom-floor width of 20 ft. During construction of the SDA trenches (except for Trenches 6 and 7) the trench floors were sloped along their length to allow water to drain to a low point where a trench sump was located. A vertical pipe, which extends from above the trench cap to each sump, provides a way to routinely monitor trench water elevations. The sump pipe also serves as a conduit through which water can be sampled or removed from the trenches. Each trench is covered with an eight- to 10-feet-thick mounded cap of compacted clay, and a drainage swale is located between adjacent trenches to direct precipitation away from the trenches.

Differing in both physical form and construction from other trenches, Trenches 6 and 7 were built to hold high-activity wastes that required immediate shielding. Trench 6 is a series of individual holes in which waste was placed, while Trench 7 is a narrow, shallow trench where waste containers were placed and encased in concrete. A sump was not installed in either of these two trenches.

Figure 1-1. Map of the WNYNSC

Source: NYSERDA

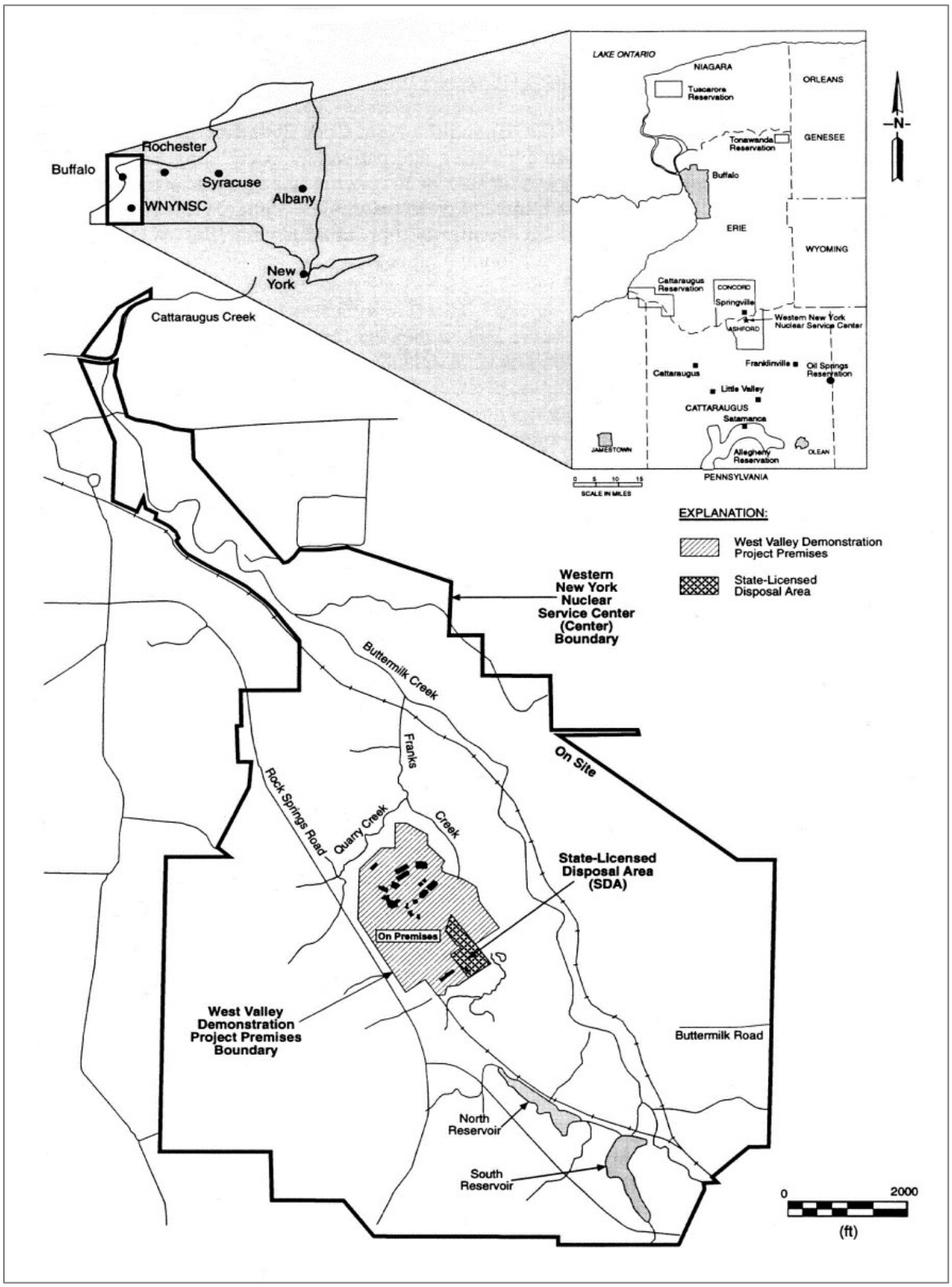


Figure 1-2. Aerial Photograph of the SDA

Source: NYSERDA

1.1 Leachate Management

Between 1990 and 1991, NYSERDA installed three tanks in two buildings at the SDA. In 1991, 8,000 gallons of leachate were pumped from Trench 14 into a 9,200-gallon fiberglass tank. In 2009, the Trench 14 leachate held in the tank was removed, shipped, and treated at a permitted facility, and in 2010, the used fiberglass tank was removed, shipped, and disposed of at a permitted treatment and disposal facility. The remaining two tanks were unused and were approved by the DEC as Protective Filer Certification on April 24, 2012, with the remaining Leachate Treatment Facility receiving clean closure under the Resource Conservation and Recovery Act (RCRA) as a Solid Waste Management Unit (No. 5) with No Further Action.[1]

1.2 Trench Water Infiltration Controls

NYSERDA has completed six projects as ICMs under the RCRA 3008(h) Administrative Order on Consent (Docket No. II RCRA-3008(h) 92-0202). The Administrative Order on Consent authorized the U.S. Environmental Protection Agency and DEC to issue orders requiring corrective action or such other responses as necessary to protect human health or the environment.

The trench water infiltration control projects were completed between 1992 to 2021 and focused on water management before it enters the SDA trenches and becomes contaminated. These infiltration controls include the addition of geomembrane covers over the top of the SDA trenches, and the installation of a soil-bentonite subsurface barrier wall along the western side of Trench 14, and a subsurface sheet-pile wall at the north end of Trench 14, along with a geomembrane cover over the U.S. Nuclear Regulatory Commission-Licensed Disposal Area (NDA) hardstand area.

The infiltration control projects have been very successful in eliminating or reducing the volume of clean water entering each of the trenches, where it becomes contaminated (leachate).

1.3 North Slope Stabilization Controls

In 2022, NYSERDA completed a stabilization project of the SDA North Slope. This project removed the original loose soils from the slope that were deposited during construction of the trenches in the mid-1960s and replaced them with a stone layer. Drainage features were also added to improve water movement from the slope.

1.4 Corrective Measures Study

In addition to radionuclides, the SDA trenches are known to contain materials that are classified as hazardous constituents under RCRA. Because there is a possibility that these materials could be released from the trenches, NYSERDA is required to prepare a corrective measures study under the requirements of the Administrative Order on Consent once a decision is made on the ultimate disposition of the SDA.

1.5 Hazardous Waste Management Permit Applications

NYSERDA currently has an Interim Status RCRA Permit for the WNYNSC and anticipates a Final Status RCRA Permit to be developed and finalized once the Phase 2 Supplemental Environmental Impact Statement end-state decisions for the WNYNSC (including the SDA) are determined.

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[1] Letter, Lynn Winterberger, DEC, to Paul Bembia, NYSERDA, "Determination of No Further Action – Solid Waste Management (SMWU) State-Licensed Disposal Area Unit No. 5 (SDA-5)," dated April 14, 2020.

2 Environmental Monitoring

2.1 Trench Leachate Elevations

2.1.1 Leachate Elevation Monitoring

Because the SDA trenches are constructed in a highly impermeable clay, water that enters the trenches tends to accumulate. As such, routine measurements are conducted to monitor the elevation of leachate in each trench. One SDA trench sump is located in each of Trenches 1 through 5, 8, 9, and 11 through 13. Two sumps, designated 10N and 10S, are located in Trench 10; and one sump designated 14, and one well-point designated WP-91, are located in Trench 14 (see Figure 2-1).

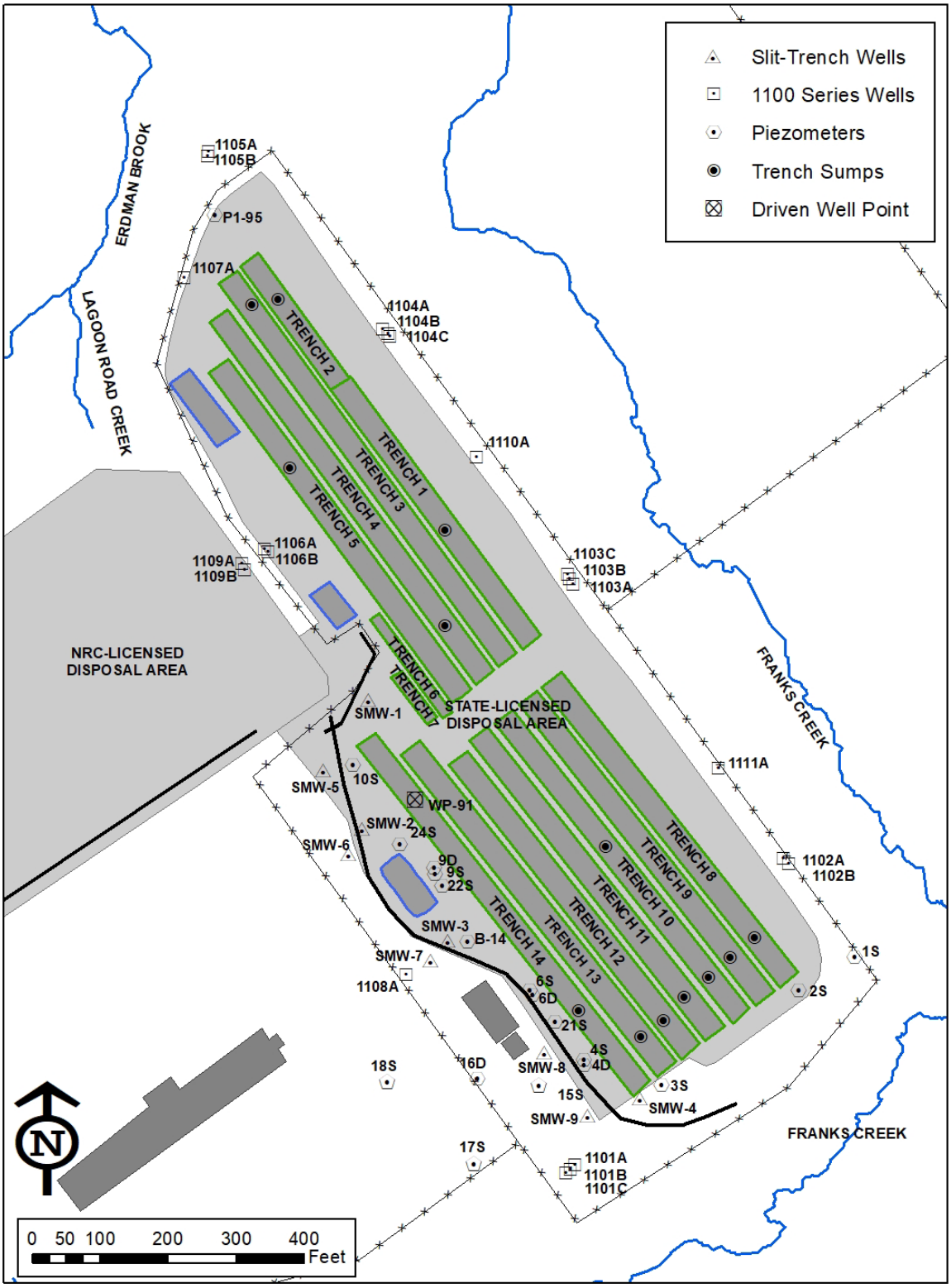
Leachate elevations are measured in accordance with the *Leachate Monitoring Plan for the State-Licensed Disposal Area (SDA)* (LMP[2]). In addition to requiring the leachate elevation measurements, the LMP specifies data assessment, notification, and reporting requirements. Table A-1 presents leachate elevation data for 2023. Graphical presentations of leachate elevations are presented using regression lines (red) and prediction lines (green) in Figures A-1 through A-15. In addition, the slope (rate of increase or decrease) and the R2 value (coefficient of determination) are shown on these figures. The R2 value is a statistical ratio of how the data fit the regression line and how the data points vary around their mean. In general, the closer the value of R2 is to 1.0, the better the model fits the data.

For Trench 3, two regression lines and prediction interval graphs are provided. This is due to changes in the rate of decrease for this trench.

Leachate elevation measurements for 2023 were collected quarterly in March, June, September, and December (see Table A-1). Additional monthly leachate elevation measurements were collected in Trenches 13 and 14 (including WP-91) (see Section 2.1.2).

Figure 2-1. Trench Sump and Groundwater Monitoring Locations

Source: NYSERDA



2.1.2 Leachate Elevation Trend Assessment

The LMP requires an annual assessment of long-term leachate elevation trends. The long-term statistical data assessment for 2023 (Annual Statistical Assessment of SDA Water Elevations – Data Through 2023[3]) indicates that from 2000 through 2023, most trenches show a decreasing long-term leachate elevation trend (see Figure 2-2).

Prior to 2017, Trench 1 was shown to be exhibiting an increasing long-term trend (see Figure A-1). However, the Trench 1 sump was sampled in September 2017 and the leachate level in the sump decreased by approximately 0.48 ft. (approximately six in.) during sampling and did not recover through 2023. Based on the regression analysis plotted in Figure A-1, since September 2017, Trench 1 remained stable until November 2021. In November 2021, the monthly measurement collected indicated that the leachate level had decreased by 1.51 ft., and the fourth quarter 2021 leachate elevation measurement collected in December 2021 and level collected in January 2022 for Trench 1 supported this change. In February 2022, these elevations returned to historical levels, where they remained through 2023.

Elevations collected through 2021 have indicated there is little leachate in Trench 1, which is consistent with the results of investigations by Nuclear Fuel Services, Inc. in 1970 and 1981.[4] Statistical outlier testing of the November and December 2021 and the January 2022 measurements were completed using the Tukey and Rosner tests. The results of these tests indicate that all three of these measurements were statistical outliers or anomalies and would be removed from the data set. Measurements at Trench 1 will continue on a routine quarterly basis.

Trench 3 had been exhibiting a decrease of 2.55 inches per year through the end of 2019. Beginning in 2020 and through the end of 2023, the trench showed a decrease of 6.55 inches per year. The change necessitates a separate regression line for the Trench 3 graph to accurately depict the current leachate elevation trend at this location (see Figures A-3 and A-4). The trend in Trench 3 continues to be evaluated.

Trench 5 sump was measured as “dry” during the fourth quarter of 2023 and was confirmed during the trench sump camera survey conducted in September 2023. The small elevational levels recorded during the previous year’s measurements are likely due to residual moisture droplets at the bottom of the sump and are not associated with an actual leachate elevation level.

An increase in the Trench 14 leachate elevation was observed from 2011 to early 2022. Based on the regression analysis plotted in Figure A-14, between 2013 and 2023, Trench 14 has been increasing at approximately 0.23 inches per year. However, after completion of the Trench 14 ICM activities in October of 2021, leachate elevations in Trench 14 have been decreasing. Through 2022 and 2023, the leachate in the Trench 14 sump decreased by 5.40 in. and has returned to 2013 levels.

Monitoring of location WP-91 began in 2013 to supplement data from Trench 14, as WP-91 is located on the northern end of the trench. The 2023 data show that the leachate elevations are similar to the Trench 14 location (Figure A-15). Based on the regression analysis plotted in Figure A-15, between 2013 and 2023, WP-91 has been increasing at approximately 0.17 inches per year. However, after completion of the Trench 14 ICM activities in October 2021, leachate elevations at WP-91 have been decreasing. Through 2022 and 2023 the leachate in WP-91 decreased by approximately 5.76 in. and has returned to 2013 levels. The current leachate elevations do not present a threat of release, or a concern for the health and safety of the public or the environment.

2.1.3 Trench Sump Pipe Camera Survey Activity

In 2023, NYSERDA conducted a camera survey to evaluate each trench sump pipe and WP-91 to determine if there were any physical changes in the trench sump pipes that may be creating measurement variability. During this survey, the interior conditions of the sump pipes and the visual quality of the leachate were documented, and the depth to bottom of each sump was recorded. NYSERDA is currently reviewing the draft report associated with this activity.

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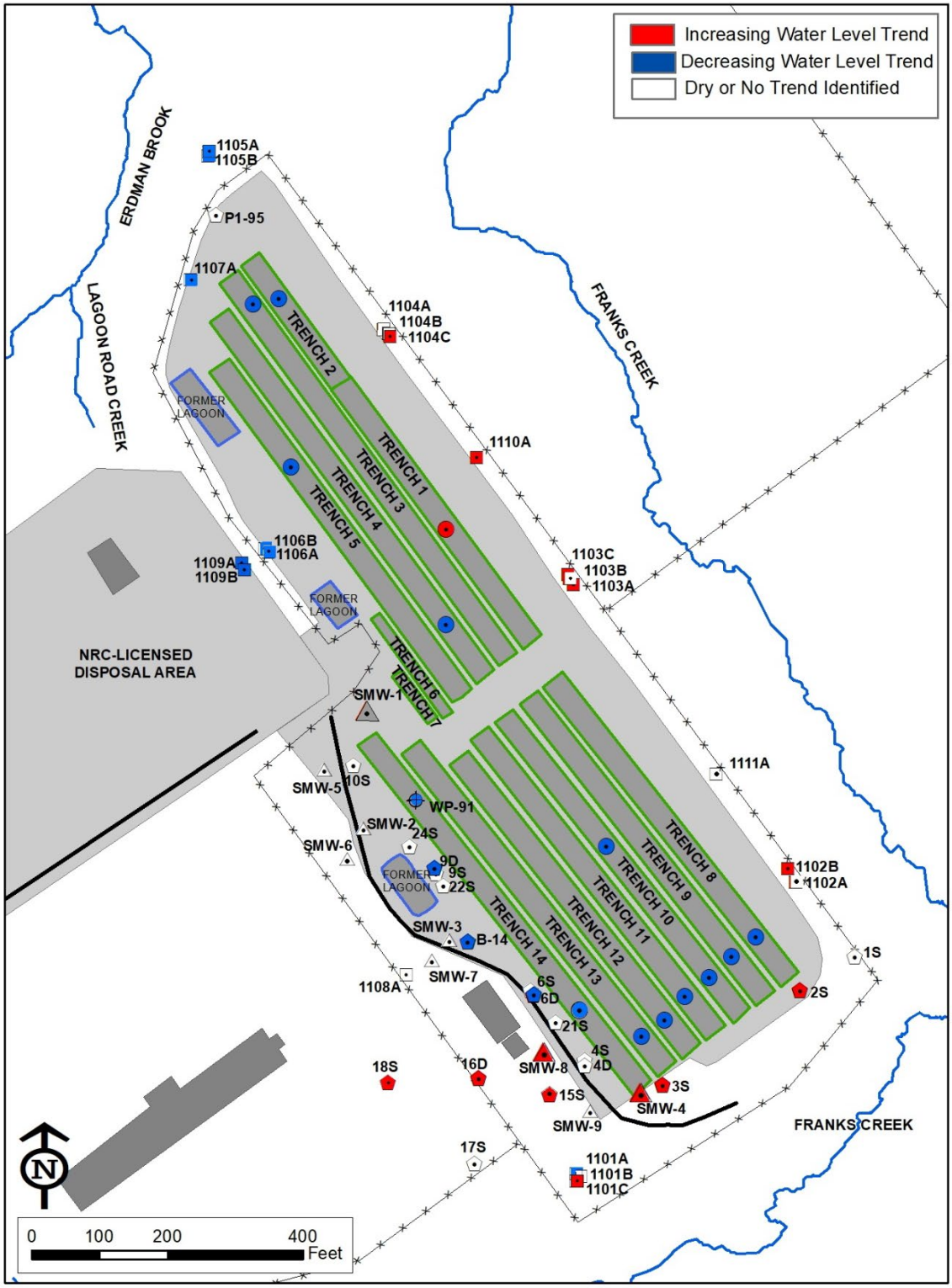
[2] Throughout this report, LMP refers to the Leachate Monitoring Plan: NYSERDA. 2019. "Leachate Monitoring Plan for the State-Licensed Disposal Area (SDA), ENV501.06."

[3] NYSERDA. 2023. "Annual Statistical Assessment of State-Licensed Area Water Elevations – Data Through 2023." Prepared by Stantec.

[4] Letter, J. P. Duckworth to. W. H. Lewis, "Waste Burial Trench 1 Study," dated June 5, 1981.

Figure 2-2. SDA Water Elevation Trends

Source: NYSERDA



2.2 Groundwater Monitoring

The SDA groundwater monitoring network consists of 21 groundwater monitoring wells (the 1100-series wells), 19 piezometers, and nine slit-trench wells. The location of each monitoring location is shown on Figure 2-1. The purpose of the groundwater monitoring program is twofold: (1) to provide data of sufficient quality and quantity to allow detection of the migration of radionuclides or volatile organic compounds (VOCs) from the SDA via groundwater; and (2) to provide information on hydrologic conditions near the disposal trenches. The Groundwater Monitoring Program is conducted in accordance with the *Groundwater Monitoring Plan for the State-Licensed Disposal Area (SDA) at West Valley* (GMP[5]). The 1100-series wells, piezometers, and slit-trench wells are inspected and maintained as described in the GMP.

2.2.1 Groundwater Elevation Monitoring

The GMP requires quarterly groundwater elevation measurements in the 1100-series wells, the piezometers, and the slit-trench wells. Well construction information for each type of well is presented in Tables B-1, B-3, and B-5. In 2023, quarterly measurements were taken in March, June, September, and December; and the results for each well are presented in Tables B-2, B-4, and B-6, respectively. In addition, monthly groundwater elevation measurements were taken at a number of non-routine locations in support of the Trench 14 leachate investigation and mitigation activities.

Groundwater elevation data are used to construct quarterly groundwater elevation contour maps for the Weathered Lavery Till and the Kent Recessional Sequence (see Figures B-1 through B-12). The 2023 groundwater contour maps show the hydraulic gradient in the Weathered Lavery Till, in the vicinity of the disposal trenches, to be inward toward the trenches. The path of the groundwater movement in the Kent Recessional Sequence is northeasterly. These trends are consistent with historical data.

2.2.2 Groundwater Elevation Trend Assessment

An assessment of increasing or decreasing trends in groundwater elevations was conducted for the data collected in 2023 (*Annual Statistical Assessment of SDA Water Elevations – Data Through 2023*[6]). The statistical assessment used groundwater elevation data from January 2000 through December 2023, and the results of the trend assessment show increasing long-term water elevation trends in: Wells 1101C, 1102B, 1103A, 1103C, 1104C, 1107A, and 1110A; Piezometers 2S, 3S, 15S, 16D, and 18S; and Slit-Trench Wells SMW-4 and SMW-8. A long-term decreasing water elevation trend was observed in: Wells 1101A, 1105A, 1105B, 1106A, 1106B, 1109A, and 1109B; and Piezometers 6D, 9D, and B-14.

Piezometers 4S, 6S and 9S; and Slit-Trench Wells SMW-2 and SMW-3 have been dry throughout the statistical assessment period. No upward or downward trends were found in the remaining groundwater wells at the SDA. Based on the 23-year assessment period, Well 1107A demonstrates an increasing elevation trend (see Figure 2-2). However, from the fourth quarter of 2022 through the fourth quarter of 2023, 1107A shows a decreasing trend, which can be attributed to the North Slope stabilization activities.

As Figure 2-2 shows, the majority of the wells located beneath the geomembrane cover immediately downgradient of the slurry wall and subsurface sheet pile wall are dry, exhibit no trend, or exhibit a decreasing trend. Five locations upgradient of the slurry wall show an increasing trend. The distribution of groundwater elevations near the north and west sides of Trench 14, and the decreasing leachate elevation trends in all but one of the trenches, reflect the continued effectiveness of the water infiltration controls system (i.e., subsurface barrier walls and geomembrane cover). Specifically, the groundwater elevations inside of the subsurface sheet-pile wall and the slurry wall at the north end of Trench 14 remain at or below 2008 levels (see Figures B-1 through B-12), including SMW-1, which was measured as "dry" throughout 2023 and represents a decrease of 6 ft. in groundwater elevations in this area, and Well 10S-91, which is trending downward with the seasonal peak now 2 ft. below the 2019 seasonal peak elevation. Groundwater elevations at locations outside of the slurry wall and subsurface sheet-pile wall remain consistent with historical results.

2.2.3 Groundwater Parameter Monitoring

In accordance with the GMP, the 1100-series wells were sampled semiannually (May 2023 and November 2023/January 2024). After the November event was conducted, NYSERDA resampled Wells 1103A, 1104A, 1104B, 1105A, 1108A, and 1110A due to elevated tritium results compared to historical results. This resampling was completed in January 2024. The January 2024 tritium resampling results were consistent with historical results.

Analytical parameters monitored semiannually included gross alpha, gross beta, and tritium, and field water quality parameters (conductivity, pH, temperature, and turbidity). Analytical parameters monitored annually in 2023 included gamma-emitting radionuclides (by gamma spectroscopy); four beta-emitting radionuclides (carbon-14, iodine-129, strontium-90, and technetium-99); and VOCs. Checklists of the parameters sampled at each well are presented in Tables B-7 and B-8. Groundwater analytical results for all parameters are presented in Tables B-9 and B-10.

2.2.3.1 Gross Alpha

For the May and November 2023 events, no Upper Tolerance Limits (UTL)/Upper Prediction Limits (UPL) were exceeded for any of the sampled wells. No new maximum concentrations were reported for any sampled location. A qualitative review of the data did not identify any trends. These results were also below the 6 NYCRR 703.5 – Table 1 Water Quality Standards for Surface Water and Groundwater value for gross alpha (1.5E+01 picocuries per liter [pCi/L]).

Gross alpha results were assessed using the statistical intrawell comparison protocol described in the GMP. Results of gross alpha monitoring are consistent with historical results.

2.2.3.2 Gross Beta

For the May 2023 sampling event, the UTL/UPL was exceeded for Well 1110A. This result also represents a new maximum result (2.75E+01±2.59E+00 pCi/L). Review of the historical data for this well indicates that the previous maximum value for gross beta at this location (2.45E+01±1.49E+00 pCi/L) occurred in 2014. With the exception of Well 1110A, no new maxima or trends were reported for any sampled location. For the November 2023 sampling event, the UTL was exceeded for Well 1101B but was not a new maximum value. A qualitative review of the data did not identify any trends. These results were also below the 6 NYCRR 703.5 – Table 1 Water Quality Standards for Surface Water and Groundwater value for gross beta (1.0E+03 pCi/L).

Gross beta results were assessed using the statistical intrawell comparison protocol described in the GMP. Results of gross beta monitoring are consistent with historical results.

2.2.3.3 Tritium

In May 2023, no UTL/UPL were exceeded for any of the sampled wells. In November 2023, the UTL/UPL were exceeded for Wells 1105A, 1108A and 1110A. When the November 2023 tritium results were compared to historical results it was noted that Wells 1103A (5.01E+02±7.80E+01 pCi/L), 1104A (1.68E+02±5.82E+01 pCi/L), and 1104B (1.43E+02±5.64E+01 pCi/L) were elevated. Because of the number of elevated groundwater tritium values, along with elevated tritium results for surface water samples collected during the same week, NYSERDA resampled these six wells to check for potential analytical issues. The wells were resampled for tritium on January 11, 2024, and all resample results for these locations were consistent with historical tritium levels. All tritium results (initial and resampled event) are well below the 6 NYCRR 703.5 – Table 1 Water Quality Standards for Surface Water and

Groundwater value for tritium (2.0E+04 pCi/L). NYSERDA and the environmental monitoring support services contractor are working with the analytical laboratory to determine if there are any instrumentation or method biases that may have contributed to these anomalous results.

Tritium results were assessed using the statistical intrawell comparison protocol described in the GMP. Results of tritium monitoring are consistent with historical results. The original November 2023 tritium results from the six wells that were resampled in January 2024 were anomalous and will not be included in statistical analyses.

2.2.3.4 Gamma-Emitting Radionuclides

In May 2023, gamma spectroscopy was performed for the 15 routinely reported radionuclides. The results were consistent with historical results. There was insufficient water in Well 1103C for gamma spectroscopy analyses.

2.2.3.5 Beta-Emitting Radionuclides

Beta-emitting radionuclide sampling for carbon-14, iodine-129, strontium-90, and technetium-99 was performed in May 2023, but there was insufficient water in Well 1103C for iodine-129 and technetium-99 analyses.

With the exception of Well 1103A, all May 2023 results for carbon-14 were below their minimum detectable concentrations (MDC), and/or 2-sigma uncertainties, and the contract required detection limit (CRDL) of 5.00E+01 pCi/L, and were consistent with historical results, which did not exceed the reporting criteria set forth in the GMP. The result for Well 1103A (2.04E+03±2.62E+02 pCi/L) was elevated and not consistent with historical values. NYSERDA requested that the laboratory perform a reanalysis of the sample to confirm the initial reported result. The initial result could not be replicated by the reanalysis, and was a non-detect, which is consistent with historical values.

All May 2023 results for iodine-129 were below their MDC and 2-sigma uncertainties. The May 2023 MDC for the sample from Well 1105B exceeded the CRDL of 1E+00 pCi/L; therefore, a “UJ” qualifier was assigned to this result.

The May 2023 strontium-90 results were consistent with historical results and below the MDC or 2-sigma uncertainties and CRDL of 1E+00 pCi/L with the exception of one location. Well 1107A (6.26E+00±2.78E+00 pCi/L) was above the CRDL, MDC, and 2-sigma uncertainty. The MDC for this

result was also above the CRDL; therefore, a "J" qualifier was assigned to the result. Though above the CRDL, MDC, and 2-sigma uncertainty, the strontium-90 result for Well 1107A is consistent with the downward trend in data observed at this location since 2013.

After the fifth positive detection for strontium-90 in Well 1107A was recorded in 2002, control charting was initiated. The current calculated mean and control limits are based upon the initial five positive detections. Based upon the control chart for strontium-90 in Well 1107A, an overall decreasing trend has been observed.

All 2023 results for technetium-99 were below their MDC or 2-sigma uncertainties and the program detection limit of 5E+00 pCi/L, which is consistent with historical results.

2.2.3.6 Volatile Organic Compounds

For the May 2023 event, VOCs were not detected above the method detection limit (MDL) or practical quantitation limits (PQL) with the exception of toluene, methylene chloride and 4-methyl-2-pentanone. Toluene was detected in four samples, ranging from estimated concentrations below the laboratory reporting limit of 1.0 microgram per liter (µg/L) (i.e., "J"-flagged values) to 1.76 µg/L in the sample from Well 1103C. Toluene has historically not been detected at these sampling locations. Methylene chloride was detected in twenty samples as estimated concentrations that were below the reporting limit of 5.0 µg/L; however, these were qualified as non-detect due to trip blank and method blank contamination. Methylene chloride is generally considered a laboratory contaminant and has been detected occasionally at low concentrations in historical data. 4-methyl-2-pentanone was detected at an estimated ("J"-qualified) concentration of 2.0 µg/L in 1103C. This compound has been detected in two field duplicate samples from this well early in the historical data set.

Due to the presence of toluene in samples from the May 2023 event, Wells 1103C and 1110A were sampled for VOCs in November 2023. In November 2023, VOCs were not detected above the MDL or PQL, with the exception of methyl methacrylate, methylene chloride (detected between the MDL and the PQL) and toluene in sample 1103C, and acetone (detected between the MDL and PQL) for sample 1110A. These results were qualified as non-detect due to trip blank contamination. The trip blank detected acetone, methyl methacrylate and toluene at concentrations above the PQL and methylene chloride at a concentration between the MDL and PQL ("J"-qualified). The validated sample results indicate that this is consistent with historical results at these locations.

2.2.3.7 Field Water Quality Parameters

Conductivity, temperature, turbidity, and pH are measured in the field during groundwater sampling. The 2023 water quality measurements were consistent with historical results and are reported in Table B-10. In May and November 2023, there was insufficient groundwater at Wells 1103C and 1104C to collect water quality parameters. No new maximum concentrations were reported for either the May or November events.

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[5] Throughout this report, GMP refers to the Groundwater Monitoring Plan: NYSERDA. 2019. "Groundwater Monitoring Plan for the SDA at West Valley, ENV502.06."

[6] Stantec, pg. 11.

2.3 Surface Water Monitoring

During 2023, quarterly surface water samples for gross alpha, gross beta, and tritium analyses were collected at the four SDA monitoring locations (WNDCELD, WNFRC67, WNNDADR, and WNERB53). A background sampling location south (and upgradient) of the SDA on Buttermilk Creek (WFBCBKG) was collected quarterly and is used for data comparison. An annual sample was also collected at location WFBCANL, approximately 0.75 miles northeast (and downgradient) of the SDA on Buttermilk Creek.

As shown in Figure 2-3, WNNDADR, located in Lagoon Road Creek adjacent to both the SDA and the NDA, (and within the WVDP premises), and WNERB53, located in Erdman Brook downstream of WNNDADR, monitor surface water runoff from the SDA, NDA, and portions of the WVDP premises. WNDCELD, located in Franks Creek on the south side of the SDA, monitors surface water from areas adjacent to the WVDP Drum Cell upstream of the SDA. WNFRC67, located downstream on Franks Creek, monitors surface water on the eastern and southern portions of the SDA.

Figure 2-4 shows WFBCBKG, located upstream of the WNYNSC in Buttermilk Creek, which monitors background surface water conditions, and WFBCANL, also located in Buttermilk Creek, which monitors Buttermilk Creek just downstream of where the Kent Recessional Sequence groundwater is discharged to Buttermilk Creek via groundwater seeps.

Surface water monitoring data are presented in Tables C-1 through C-6. A statistical assessment of radiological constituents (gross alpha, gross beta, and tritium) for the SDA surface water was conducted using the data collected in 2023 (*Statistical Assessment of State-Licensed Radioactive Waste Disposal Area Surface Water Constituents for 2023*). Results are discussed below.

2.3.1 Radiological Parameters

2.3.1.1 Gross Alpha

The 2023 gross alpha results for all four surface water sampling locations (WNDCELD, WNFRC67, WNNDADR, and WNERB53) were statistically indistinguishable from background. All 2023 gross alpha results were below the 6 NYCRR 703.5 (1.5E+01 pCi/L) criteria, which is used as a comparative value for gross alpha.

Figure 2-3. Surface Water Monitoring Locations (WNDCELD, WNFRC67, WNNDADR, and WNERB53)

Source: NYSERDA

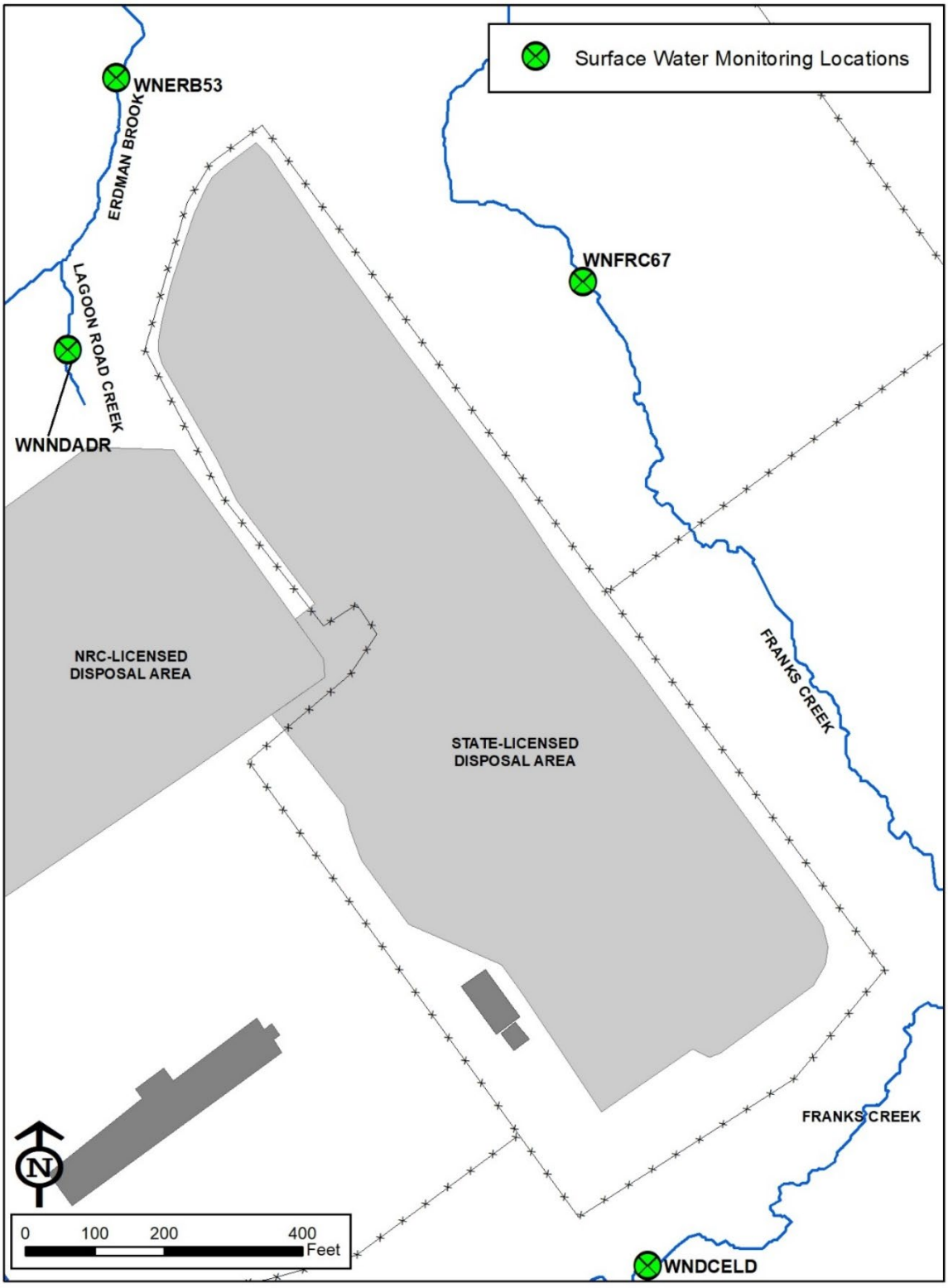
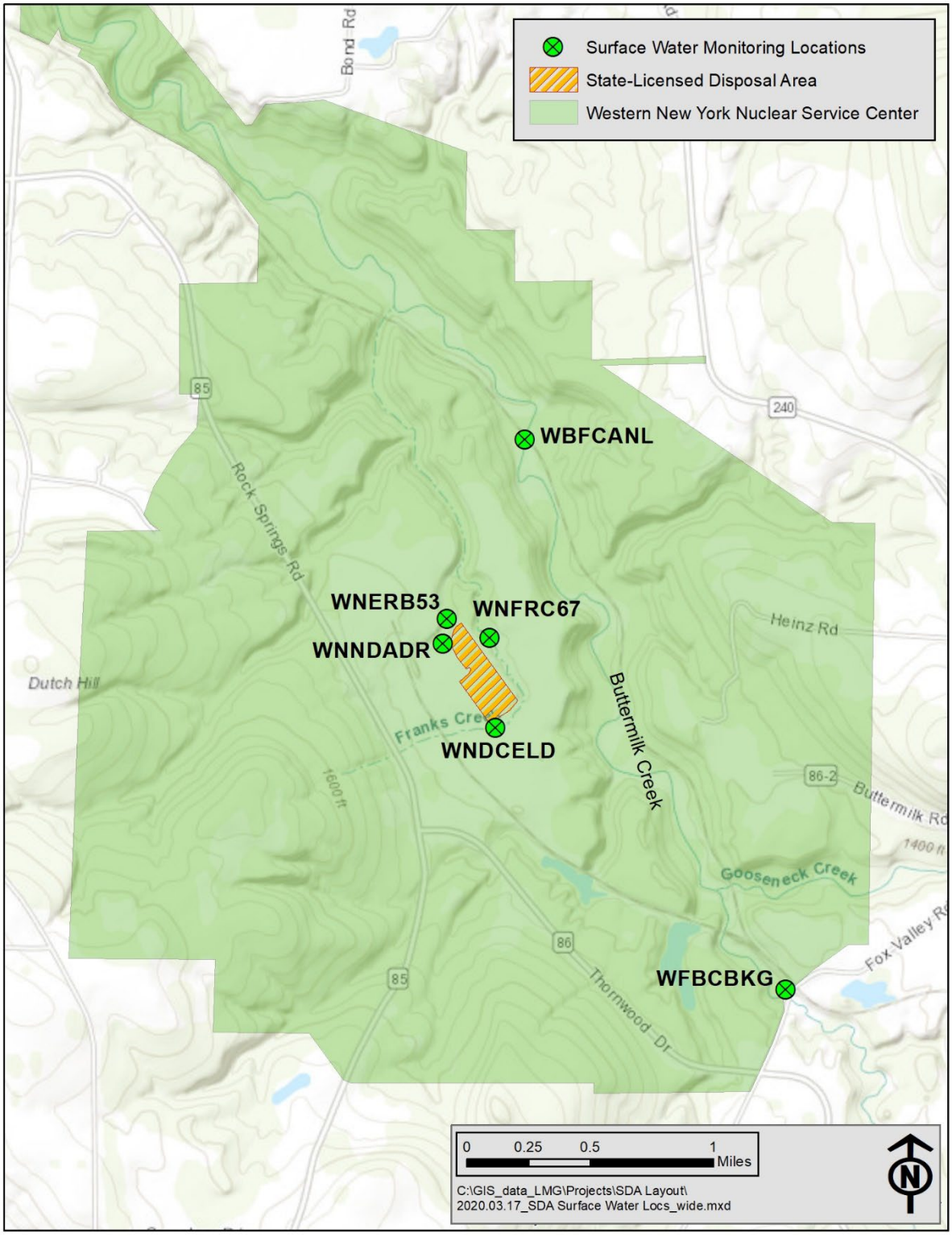


Figure 2-4. Surface Water Monitoring Locations (WFBCBKG and WFBCANL)

Source: NYSERDA



2.3.1.2 Gross Beta

The 2023 gross beta results for WNDCELD, WNFRC67, and WNERB53 were statistically indistinguishable from background. Gross beta results for WNNDADR were statistically higher than background; however, the results continue to decrease since the NDA geomembrane cover and subsurface barrier wall were installed in 2008, and are consistent with historical data.

All gross beta results were below the 6 NYCRR 703.5 (1.0E+3 pCi/L) criteria, which is used as a comparative value for gross beta.

2.3.1.3 Tritium

The initial fourth quarter tritium results were detected above their respective MDC and 2-sigma uncertainties at WFBCBKG, WNDCELD, and WNERB53. These results were laboratory qualified "UJ" because the laboratory method blank results were also elevated at greater than 50% of the contract required detection limit. Tritium results were detected below the MDC and 2-sigma uncertainties for WNFRC67 and WNNDADR locations. NYSERDA resampled locations WFBCBKG, WNDCELD, and WNERB53 on January 8, 2024, and the results were consistent with historical values and below the MDC with no qualifications.

NYSERDA and the environmental monitoring support contractor are working with the analytical laboratory to determine if there are any instrumentation or method biases, that may have contributed to these anomalous results.

All tritium results were below the 6 NYCRR 703.5 (2.0E+04 pCi/L) criteria, which is used as a comparative value for tritium.

2.4 Stormwater Monitoring

As required by the SDA State Pollutant Discharge Elimination System Permit No. NY-026971, semiannual sampling is conducted at one of the four designated SDA stormwater outfalls (as shown in Figure 2-5). During 2023, semiannual stormwater samples were collected from Outfall W01 during a qualifying storm event on June 12, and a nonqualifying event on October 30, 2023.

Composite samples from both events were analyzed for biological oxygen demand, chemical oxygen demand, total nitrate-nitrite and total Kjeldahl nitrogen, total phosphorus, total suspended solids, gross alpha, gross beta, tritium, and gamma emitters. Grab samples from both events were analyzed for biological oxygen demand, chemical oxygen demand, total nitrate-nitrite and total Kjeldahl nitrogen, oil and grease, total phosphorus, total suspended solids, pH, and temperature. Ambient rainfall samples from both events were analyzed for pH.

2.4.1 Radiological Parameters

2.4.1.1 Gross Alpha

The gross alpha result for the June 2023 sampling event (9.68E+00±2.49E+00 pCi/L) was above its reported MDC. The gross alpha result for the October 2023 sampling event was a nondetect as it was below the respective reported MDC.

Both results were below the 6 NYCRR 703.5 (1.5E+01 pCi/L) criteria, which is used as a comparative value for gross alpha.

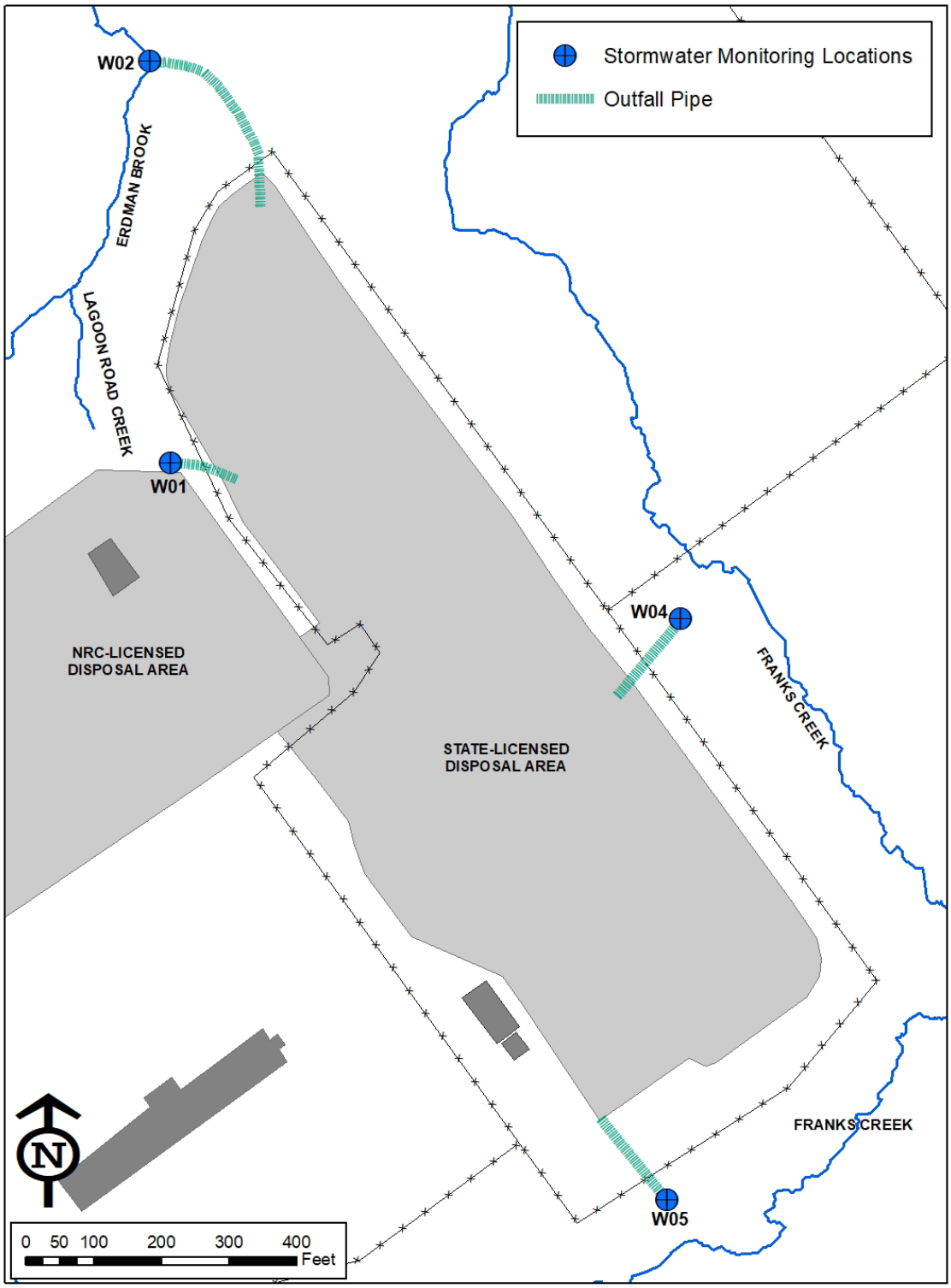
2.4.1.2 Gross Beta

The gross beta result for the June 2023 sampling event (3.40E+00±9.40E-01 pCi/L) was above its reported MDC; however, the sample blank results suggested a potential false positive associated with analytical bias, and the sample was assigned a “U” qualifier. The gross beta result for the October 2023 sampling event was below the reported MDC. The 2023 results are consistent with historical results.

Both gross beta results were below the 6 NYCRR 703.5 (1.0E+03 pCi/L) criteria, which is used as a comparative value for gross beta.

Figure 2-5. Stormwater Monitoring Locations

Source: NYSERDA



2.4.1.3 Tritium

The tritium results for the June and October 2023 sampling events were nondetects as they were below their respective reported MDC.

Both tritium results were below the 6 NYCRR 703.5 (2.0E+04 pCi/L) criteria, which is used as a comparative value for tritium.

2.4.1.4 Gamma Spectroscopy

The results for three gamma emitters (cesium-137, cobalt-60, and potassium-40) are reported for each stormwater sampling event. In addition, gamma spectroscopy results were reviewed for an additional 145 gamma-emitting radionuclides.

All gamma spectroscopy results, except for bismuth-214 were reported below their respective MDCs. The reported result for bismuth-214 in June 2023 (2.41E+01±1.36E+01 pCi/L) and October 2023 (1.58E+01±1.44E+01 pCi/L) were above their respective MDCs (1.26E+01 pCi/L in June and 1.35E+01 pCi/L in October). Both bismuth-214 results are considered estimated due to the uncertainty being greater than 50% and were assigned a "J" data qualifier. The October 2023 result is the fifth non-U qualified result for bismuth-214, and per NYSERDA procedure, a statistical control chart will be developed for bismuth-214 beginning with the first semi-annual sampling event of 2024. However, all but one of these results are estimated "J" qualified data. It should also be noted that bismuth-214 is in the decay chain for uranium-238, which does occur as both a site constituent and a naturally occurring radionuclide.

2.4.2 Chemical and Physical Parameters

Results for all chemical and physical parameters were below the State Pollutant Discharge Elimination System Permit No. NY-026971 permit limits. As required by the State Pollutant Discharge Elimination System Permit No. NY-026971 permit, chemical and physical results were reported to DEC's Division of Water in the Discharge Monitoring Report electronic submission after each semiannual sampling event.

2.5 Gamma Radiation Monitoring

2.5.1 Overland Gamma Radiation Surveys

Gamma radiation surveys are performed semiannually at the SDA to maintain current data on gamma exposure levels and to monitor for changing conditions at the SDA.

As shown on Figure 2-6, radiation levels are measured at 51 fixed-survey locations in and around the SDA including:

- Thirty-two monument markers located on the north and south ends of each trench (designated as T3s, T3n, etc.), and the three filled lagoons (SDA2, SDA3, and SDA4) monitor the contribution of underground radioactive materials to the area radiation levels within the SDA.
- Sixteen SDA perimeter survey points (P-1 through P-16) marked on the chain-link fence surrounding the SDA monitor external radiation from all sources, including the WVDP.
- One survey point (T-1 BLDG) inside the T-1 Building monitors external radiation. This measurement is taken in the middle of the vacant concrete tank pad.
- Two survey points (DC-[G] and DC-dr) at the WVDP Drum Cell, located west of the SDA, provide information on the radiation levels near the Drum Cell. The Drum Cell is currently used to house “clean” intermodals from waste disposal facilities.

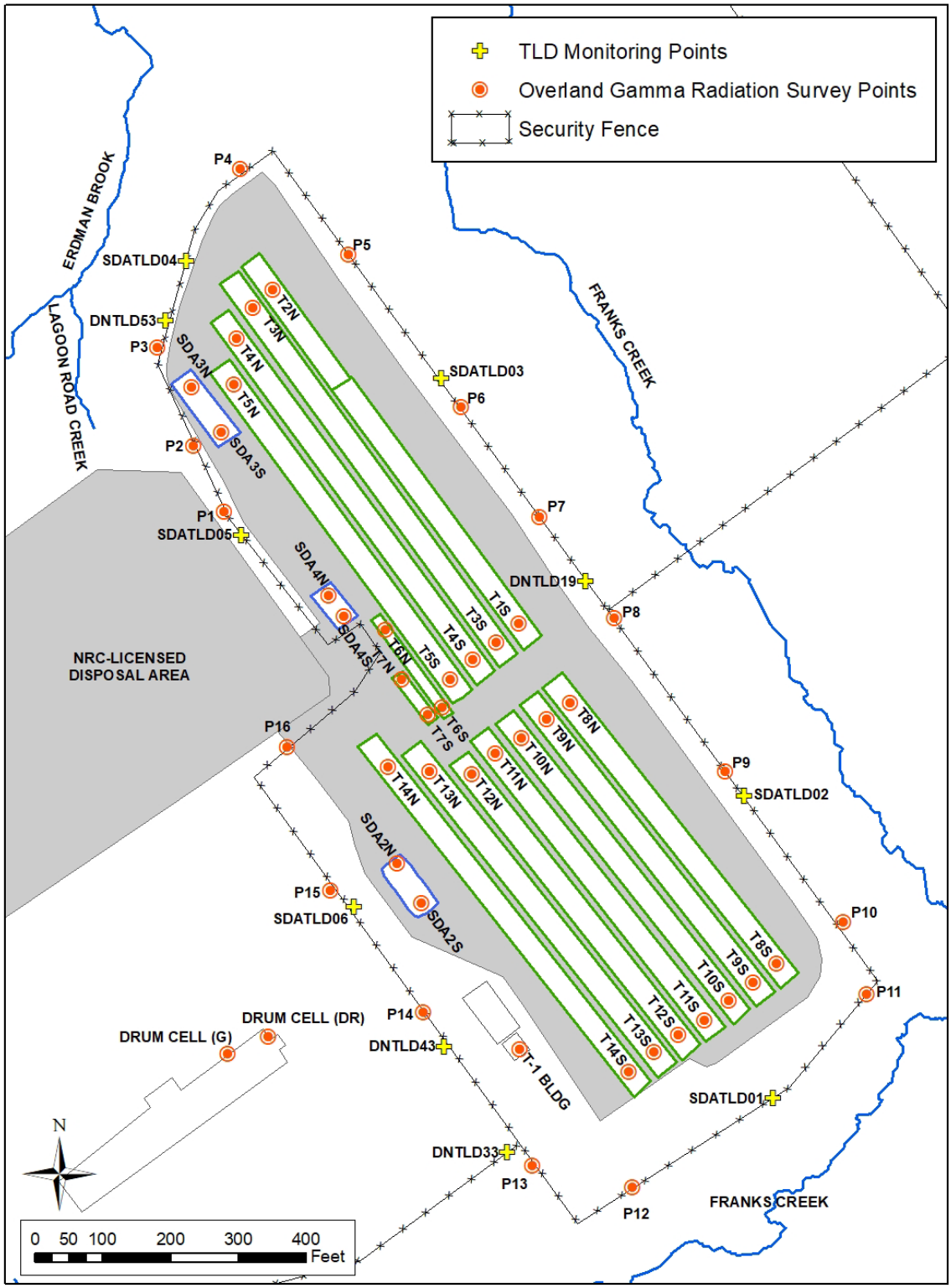
At each fixed survey point, radiation levels are measured at one meter and one centimeter above the ground, floor, or building surface.

Radiation detection instruments are also monitored continuously between fixed-survey locations to identify any anomalous reading(s) exceeding three times those of the nearby fixed-survey monitoring points; no such fluctuations were identified or noted on the survey report form.

Gamma radiation levels observed during both semiannual surveys were consistent with historical data. Survey readings for the 2023 semiannual surveys (May and October) are provided in Table D-1.

Figure 2-6. Gamma Radiation Monitoring Locations

Source: NYSERDA



2.5.2 Thermoluminescent Dosimetry Monitoring

In 2023, 22 environmental TLDs, consisting of two dosimeters at 10 designated locations around the SDA and a background location (approximately 4.5 miles southwest of the SDA outside of the Ashford Office Complex), were processed each calendar quarter to obtain the integrated environmental gamma radiation exposure from each location (see Figure 2-6). Environmental dosimeter monitoring locations are described in Table 2-1.

Table 2-1. Dosimeter Identification and Location

Source: NYSERDA

Location ID	Number of Dosimeters	Monitoring Location Description
NYTLDBK	Two	Background, on the fence along the driveway from Ashford Hollow Road to the Ashford Office Complex
DNTLD19	Two	Eastern perimeter fence north of SDA buffer area access gate between Survey Points 7 and 8
DNTLD33	Two	Outside SDA fence near corner of WVDP perimeter fence and SDA fence. South of SDA Access Gate #15
DNTLD43	Two	Western perimeter fence of SDA adjacent to the main SDA Access Gate #15
DNTLD53	Two	Northwestern corner perimeter fence of SDA
SDATLD01	Two	South fence at approximate centerline of Trench 11
SDATLD02	Two	East fence middle of southern trenches next to Survey Point 9
SDATLD03	Two	East fence middle of northern trenches next to Survey Point 6
SDATLD04	Two	North fence approximate center between Trenches 3 and 4
SDATLD05	Two	West fence middle of northern trenches next to and south of Survey Point 1
SDATLD06	Two	West fence south of Survey Point 15

In addition to the four original field locations (DNTLD19, DNTLD33, DNTLD43, and DNTLD53), six new monitoring locations (SDATLD01 through SDATLD06) were added to the monitoring program beginning in 2020. DNTLD53 and SDATLD04 monitor the northwestern and northeastern corners of the SDA, respectively, and are the closest to the WVDP, which is a potential source of external radiation exposure. Site activities at the WVDP in 2023 included the demolition and removal of the Main Plant Process Building, railcar waste shipments, and off-site disposal of debris. DNTLD53 has consistently provided the highest results of the original monitoring locations and the results collected for new location

SDATLD04 are similar to DNTLD53. Environmental TLD monitoring results for 2023 are included in Table D-2.

Based on the statistically similar results from a two-year statistical comparison of the historically used dosimeter (Harshaw Model 110) with a new dosimeter (Panasonic UD-814), NYSERDA has implemented the use of the Panasonic UD-814 dosimeter, which was provided by a new vendor in 2020. This change increased the number of chips contained in each dosimeter from four chips (contained in one badge) to eight chips (contained in two badges). The chips are averaged into a single result, with the Panasonic UD-814 dosimeter providing a higher level of precision and less variability within the measurements.

Also, on an annual basis, the quarterly environmental TLD results for each SDA location are compared to the background location using the Wilcoxon-Mann-Whitney test. The Wilcoxon-Mann-Whitney test is a nonparametric significance test for comparing a small number of data points (such as those available for the 2023 environmental TLD analysis).

Historically, ambient radiation exposures for three of the original field locations (i.e., monitored prior to 2020) DNTLD19, DNTLD33, and DNTLD53 have ranged from indistinguishable to higher than background since 2014, while DNTLD43 has consistently been indistinguishable from background. The results of the Wilcoxon-Mann-Whitney test show that the ambient radiation exposure at location DNTLD53 was statistically higher than background in 2023, while locations DNTLD19, DNTLD33, and DNTLD43 were not statistically different from background.

In addition, ambient radiation exposures from the six new SDA locations have been consistently higher than background since being added to the monitoring program in 2020; however, in 2023, results of the Wilcoxon-Mann-Whitney test show that ambient radiation exposures from the SDATLD01 and SDATLD02 locations were indistinguishable from background, while ambient radiation exposures at locations SDATLD03, SDATLD04, SDATLD05, and SDATLD06 remained statistically higher than background.

The quarterly environmental TLD results for 2023 were reviewed for completeness and accuracy, and to determine if there were any outliers in the dataset. Dixon’s outlier test was performed for the 2023 results for each location. The fourth quarter 2023 results for DNTLD19 (16.80 milliroentgen per quarter) and SDATLD06 (18.82 milliroentgen per quarter) were flagged as potential outliers identified at a

significance level of 0.05; however, the two potential outliers identified in the 2023 results were not identified as such when combined with historical results and were retained for the statistical analysis.

2.6 Meteorological Monitoring

NYSERDA operates and maintains a suite of meteorological instruments at the SDA, including instruments to measure total precipitation (e.g., rain, snow, and sleet); temperature; relative humidity; barometric pressure; wind speed; and wind direction. The instruments are equipped with a battery-powered backup system to ensure data continuity during power outages. A quarterly summary of the daily 2023 precipitation at the SDA is provided in Tables E-1, E-2, E-3, and E-4. There were no interruptions in meteorological data collection in 2023. As indicated in the Executive Summary, the 2023 precipitation total at the SDA was 41.15 in., 2.80 in. lower than the five-year average precipitation total for the SDA.

3 Erosion Monitoring

In accordance with the requirements of the Part 380 Permit #9-0422-00011/00011, NYSERDA has established a comprehensive erosion monitoring program at the SDA, inclusive of the surrounding slopes and streams. The objective of the program is to monitor active erosion processes that could threaten the integrity of the SDA. The monitoring ensures that erosion features are clearly identified, inspected, quantified, and, if necessary, mitigated before erosion damage can occur at the SDA.

3.1 Visual Inspections of Surrounding Stream Channels

In 2023, NYSERDA conducted monthly visual inspections of the creeks that flow around three sides of the SDA (Erdman Brook, Franks Creek, and Lagoon Road Creek). Stream channel inspections included assessments of installed erosion control structures and the results are documented in NYSERDA's Erosion Monitoring Log (per NYSERDA's *Erosion Monitoring Plan*[7]). No unscheduled inspections were required in 2023.

3.2 Light Detection and Ranging Mapping and Orthophotography

In 2020, NYSERDA conducted updated aerial Light Detection and Ranging (LiDAR) mapping and orthoimagery projects, covering both the WNYNSC and the SDA. The processed data from the 2020 survey was delivered to NYSERDA in April 2021. These surveys fulfill NYSERDA's requirement to complete comprehensive topographic mapping of the SDA and adjacent premises once every five years (per NYSERDA's *Erosion Monitoring Plan*[8]). There were no LiDAR updates completed in 2023. Detailed topographic maps of the SDA and adjacent premises are developed at a resolution of 0.5 meters utilizing the LiDAR survey data. Figure 3-1 is a high-quality topographic map of the SDA and the surrounding area that was derived from a subset of the 2020 LiDAR data. Having collected multiple LiDAR datasets at different times (i.e., 2010, 2015, 2020) allows the data to be examined for changes to the land surface due to erosion, deposition, and/or subsidence. These examinations identify active erosion of streams and gullies in the watershed, as would be expected. Streams and gullies in the vicinity of the SDA, having been largely stabilized by erosion controls, show little evidence of active erosion.

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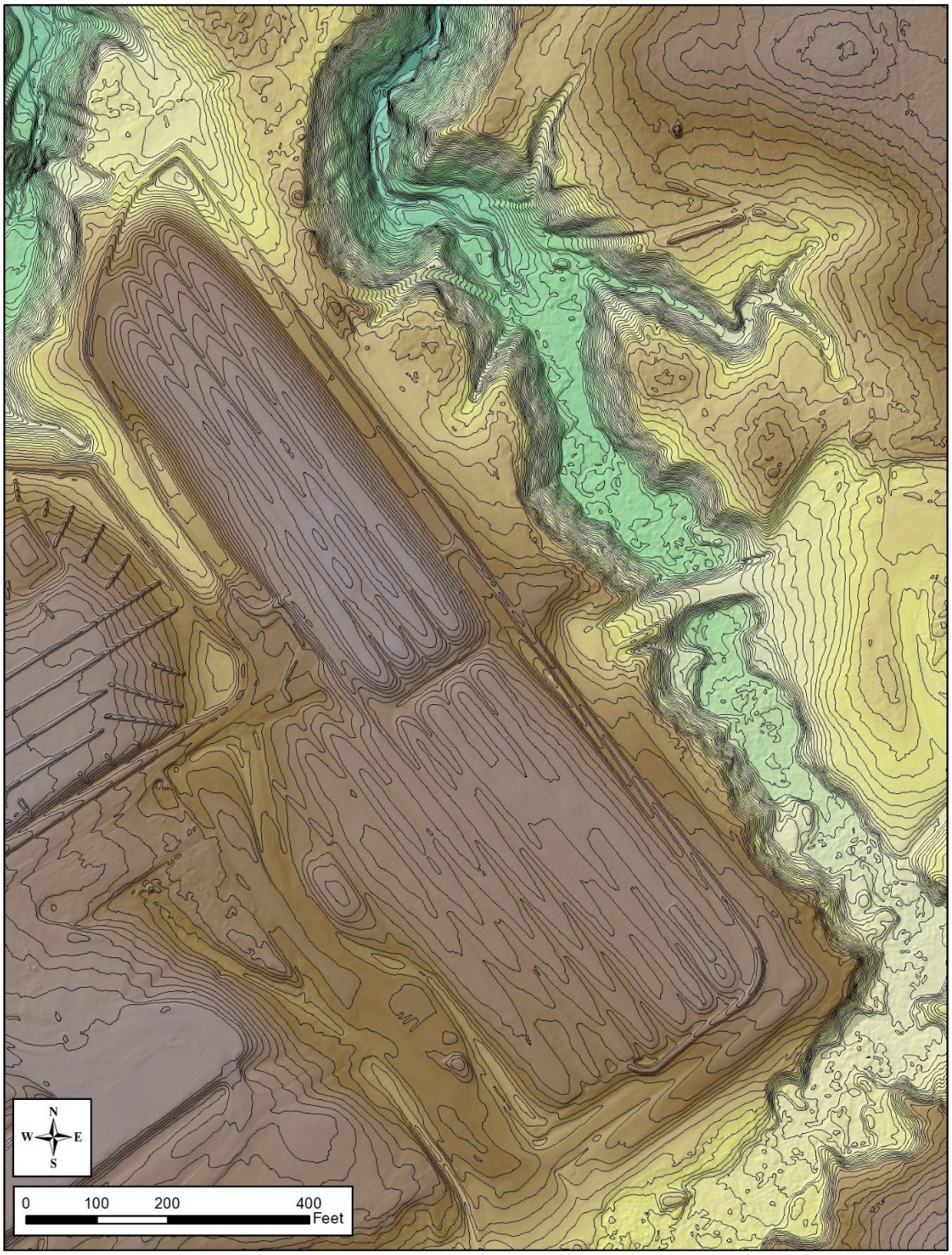
7 NYSERDA. 2019. "Erosion Monitoring Plan, ENV509.02."

8 Ibid.

Figure 3-1. LiDAR Topographic Map of the SDA and Surrounding Areas

Source: NYSERDA



4 Facility Operations and Maintenance

NYSERDA is responsible for the safety, operations, and maintenance of the buildings and grounds at the SDA. Both routine and nonroutine facility inspections and maintenance activities are implemented to ensure that the facility is operating in accordance with NYSERDA's plans and procedures. In 2023, facility operations and maintenance at the SDA included:

- inspections and testing
- maintenance

4.1 Inspections and Testing

NYSERDA actively maintains the facilities at the SDA through routine inspections and testing of various physical and mechanical systems, followed by prompt corrective actions, as needed. All inspections are documented on standard forms and maintained as WVSMP records. Any deficiencies noted during these inspections and tests are tracked in the WVSMP's Open Items database, scheduled for completion, and closed out in a timely manner.

In 2023, NYSERDA completed the following inspections and tests:

- monthly SDA building inspections per NYSERDA's *SDA Building Inspection* procedure [9]
- monthly and annual fire extinguisher inspections
- five walkover inspections of the entire SDA, and surrounding slopes and streams per NYSERDA's *Walkover Inspection of the SDA* procedure [10]
- annual geomembrane cover system inspection per NYSERDA's *Geomembrane Cover System Inspection* procedure [11]
- nonroutine inspections of the SDA after severe weather conditions (e.g., high winds, heavy precipitation, earthquakes, etc.)

All systems and operations at the SDA are performing as designed.

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9 NYSERDA. 2023. "SDA Building Inspection, OPS016.04."

10 NYSERDA. 2019. "Walkover Inspection of the SDA, OPS003.09."

11 NYSERDA. 2023. "Geomembrane Cover System Inspection, OPS007.06 PC1."

Figure 4-1. Trench Cap Ground Surface Elevations Survey Points

Source: NYSERDA

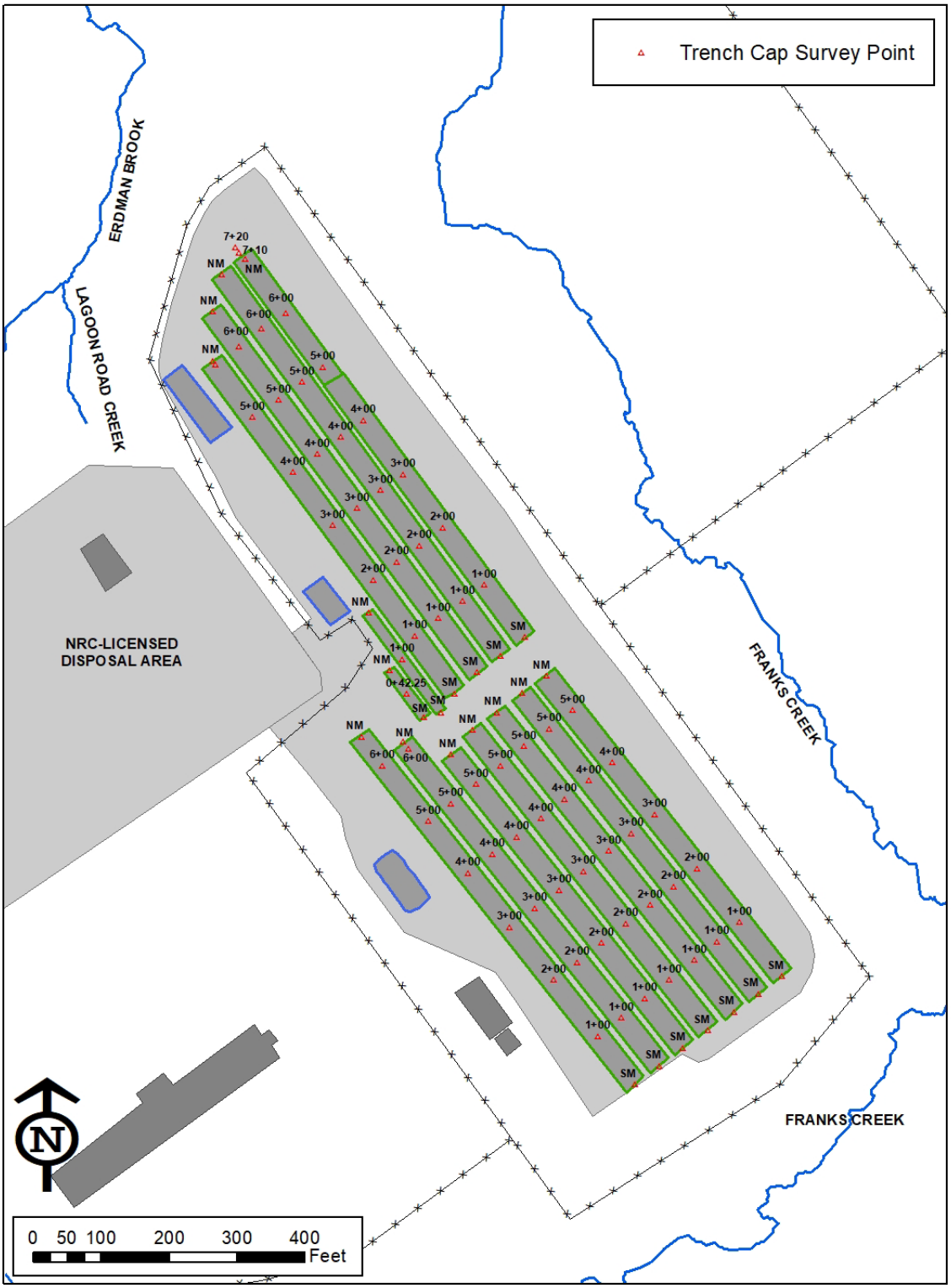


Figure 4-2. North Slope Survey Points

Source: NYSERDA

4.2 Operations and Maintenance

In 2023, NYSERDA completed the following routine and preventative maintenance at the SDA:

- snowplowing and vegetation control at the SDA and Bulk Storage Warehouse

NYSERDA completed the following nonroutine operations and maintenance activities at the SDA in 2023:

- Conducted focused topographic surveys of trench cap subsidence areas.
- Installed and surveyed in the new Control Point 1006 for the North Slope which replaces survey point CP-53, which was removed during the North Slope stabilization project.
- Completed installation of the fourteen new survey points on the North Slope to monitor for potential movement of the North Slope post construction.

4.2.1 Quantitative Measurements

4.2.1.1 State-Licensed Disposal Area Trench Cap Survey

NYSERDA surveys the ground surface elevations along the SDA trench centerlines and monuments to monitor for trench cap settlement. NYSERDA has established fixed-trench cap elevation survey points that provide a consistent survey location each year. These annual results are compared to the previous year's data for indications of trench cap subsidence. A map identifying the location of the trench cap elevation survey points is shown in Figure 4-1 with the current survey data points presented in Table F-1.

Areas of settlement were observed in 2013 on the southernmost 100-foot sections of Trench 13 as well as the northern area of Trench 14. Since 2014, NYSERDA has conducted quarterly focused topographic surveys in each of the areas identified above using a 10-foot grid pattern to monitor the rate of subsidence. A slight decreasing trend of downward movement since 2013 has been identified. The current data collected indicates that this downward movement has stabilized and the changes in elevation are within the measurement error uncertainty. NYSERDA will continue to monitor these areas annually.

In 2017, Trench 8 settlement was mitigated during the installation of the new geomembrane cover by installing lightweight geofoam blocks to raise the areas of settlement before covering with the new geomembrane cover. A settlement gauge was installed at this time to provide future monitoring capabilities of the settled trench cap surface after the installation of the geofoam panels. The settlement gauge elevation measurements have remained very stable and within the measurement error uncertainty.

In addition to the focused topographic surveys, periodic visual inspections of the trench caps are performed to provide a more immediate identification of cap subsidence. NYSERDA will continue to monitor and report to DEC all locations where subsidence has been identified in accordance with NYSERDA's plans and procedures.

4.2.1.2 State-Licensed Disposal Area North Slope Survey

NYSERDA completed the stabilization of the North Slope in the 2022–2023 field seasons and installed fourteen new survey monitoring points along the periphery and central section of the slope as shown in Figure 4-2. The first round of survey data was collected in 2023 and is presented in Table F-2. Subsequent data sets will also be presented in Table F-2 for comparative purposes to assess whether there is movement at each point.

5 Waste Management

NYSERDA has developed and implemented both systems and procedures to manage the SDA in a manner that minimizes the generation of radioactive or hazardous waste.

In 2023, waste management activities at the SDA included:

- waste inspections
- waste storage

5.1 Inspections

In 2023, NYSERDA completed four quarterly waste inspections. No deficiencies were noted during these inspections.

5.2 Waste Removal and Disposal

NYSERDA is not a routine generator of waste. In 2023, 0.21 cubic meters of low-level radioactive waste were generated.

The total volume of waste currently in storage is 1.58 cubic meters. All waste currently in storage is low-level radioactive waste only.

Appendices – Acronyms, Qualifiers, and Notes

Acronyms:

BGS	below ground surface
BOD	biological oxygen demand
°C	degree Celsius
cm	centimeter
COD	chemical oxygen demand
ft.	feet
L	Lacustrine Unit (Kent recessional sequence)
L/O	Lacustrine/Outwash – Kame Sand and Gravel (Kent recessional sequence)
in	inch
ISV	Insufficient sample volume
m	meter
mg/L	milligrams per liter
mR/Qtr	milliroentgen per quarter
NAVD	North American Vertical Datum
N.M.	Not measured
NTU	nephelometric turbidity unit
pCi/L	picocurie per liter
SU	standard units
TSS	total suspended solids
U	Unweathered Till
µrem/hr	microrem per hour
µmhos/cm	micromhos per Centimeter
WP-91	Well Point-91
W	Weathered Till
W/U	Weathered/Unweathered Till
yr	year
---	No sample required

Appendices – continued.

Qualifiers:

B	Blank contamination was present
J	Analyte identified. Associated result is considered estimated or uncertain
JB	Analyte identified. Associated numerical value is considered estimate or uncertain, and Blank contamination was present
Q	qualifier
U	Not detected above minimum detectable concentration and/or 2-sigma uncertainty
UI	Gamma spectroscopy – uncertain identification
UJ	Not detected above minimum detectable concentration and/or 2-sigma uncertainty, which may be considered estimated or uncertain
UJB	Not detected at the estimated method detection limit due to blank contamination

Notes:

[a]	Resampled in January 2024.
[b]	SDA perimeter locations (P-1 through P-16) are identified on Figure 2-6. Measurements were made at one m and one cm from the ground, tank, or building surface.
[c]	DC-(G) and DC-dr are located (at the Drum Cell) on the WVDP premises adjacent to the SDA. The Drum Cell was previously used to store low-level radioactive waste drums; however, the waste was removed and shipped for off-site disposal in 2007. The Drum Cell is currently used to house “clean” intermodals from waste disposal facilities. The DC-(G) and DC-dr measurements were made at locations on the north side and west roll-up door, respectively.
[d]	Location is given as X+Y where X is trench length in 100-foot increments plus Y in feet (e.g., 7+10=710 feet). N-M is located on the centerline mark of the north monument plaque at each trench. S-M is located on the centerline mark of the south monument plaque at each trench.
[e]	Coordinate system: Horizontal datum is North America Datum of 1983, NY West Zone. Vertical datum is North American Vertical Datum of 1988. Elevations were measured on July 11, 2023, by Nussbaumer & Clark, Incorporated.
[f]	Control for the SDA Trench Cap Survey was provided by the Control Points.
[g]	NYSERDA installed 14 new monitoring points on the North Slope of the SDA after completion of the stabilization project in 2022–2023. These survey points were surveyed in the North American Vertical Datum of 1983 and North American Vertical Datum of 1988. Locations are identified with a “NS” prefix to distinguish from previous monitoring points.
[h]	Control for the North Slope Survey was provided by the Control Points.

Appendix A – Trench Leachate Elevation Data

Table A-1. 2023 Trench Leachate Elevation Data

Elevations are referenced as North American Vertical Datum of 1988.

Source: NYSERDA

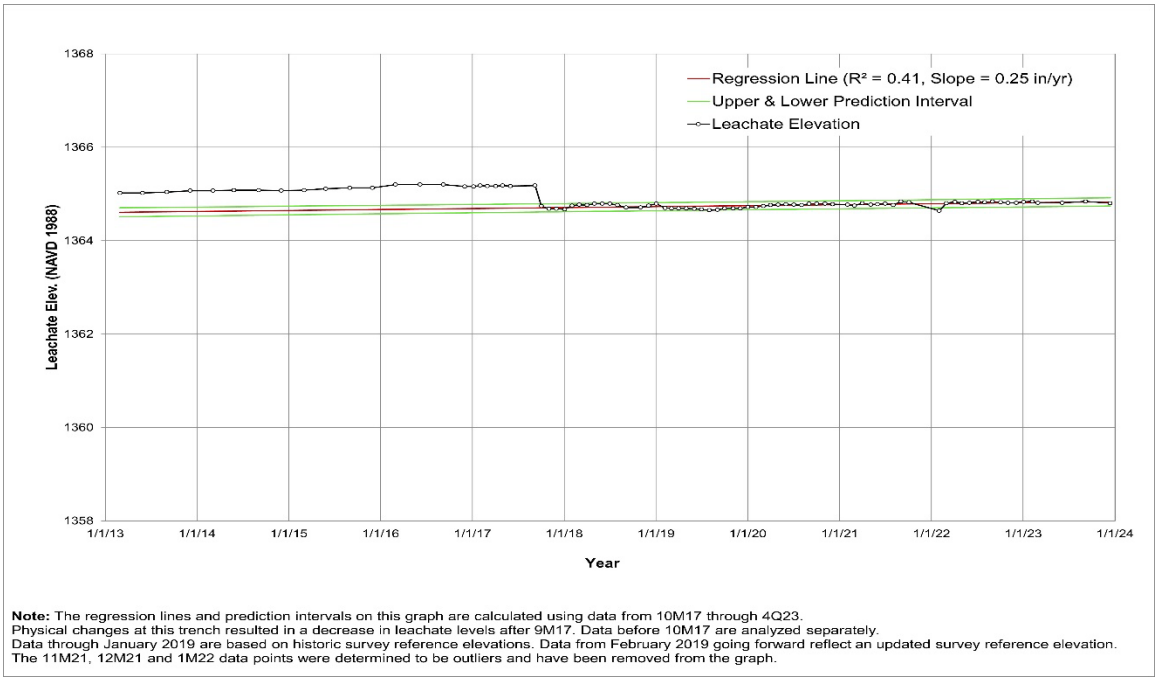
Trench	Jan 3	Feb 6	Mar 1	Apr 3	May 1	Jun 5
Trench 1	1364.83	1364.84	1364.81			1364.81
Trench 2			1360.01			1359.99
Trench 3	1356.93	1356.84	1356.84			1356.72
Trench 4			1361.28			1361.27
Trench 5			1361.62			1361.62
Trench 8			1359.98			1359.98
Trench 9			1358.79			1358.75
Trench 10n			1360.05			1360.04
Trench 10s			1359.19			1359.13
Trench 11			1358.85			1358.82
Trench 12			1359.64			1359.71
Trench 13	1362.07	1362.06	1362.05	1361.91	1361.91	1362.03
Trench 14	1365.40	1365.38	1365.36	1365.31	1365.33	1365.32
WP-91	1365.31	1365.27	1365.29	1365.24	1365.24	1365.19

Table A-1 continued.

Trench	Jul 5	Aug 1	Sep 6	Oct 2	Nov 1	Dec 13
Trench 1			1364.84			1364.80
Trench 2			1359.96			1359.90
Trench 3			1356.59			1356.39
Trench 4			1361.25			1361.21
Trench 5			1361.62			dry
Trench 8			1359.97			1359.89
Trench 9			1358.75			1358.71
Trench 10n			1360.05			1359.84
Trench 10s			1359.13			1359.05
Trench 11			1358.81			1358.73
Trench 12			1359.69			1359.52
Trench 13	1362.03	1362.00	1362.00	1361.99	1361.99	1361.98
Trench 14	1365.35	1365.35	1365.27	1365.24	1365.21	1365.18
WP-91	1365.18	1365.16	1365.20	1365.15	1365.15	1365.13

Figure A-1. 2017 –2023 Leachate Elevations, Trench 1

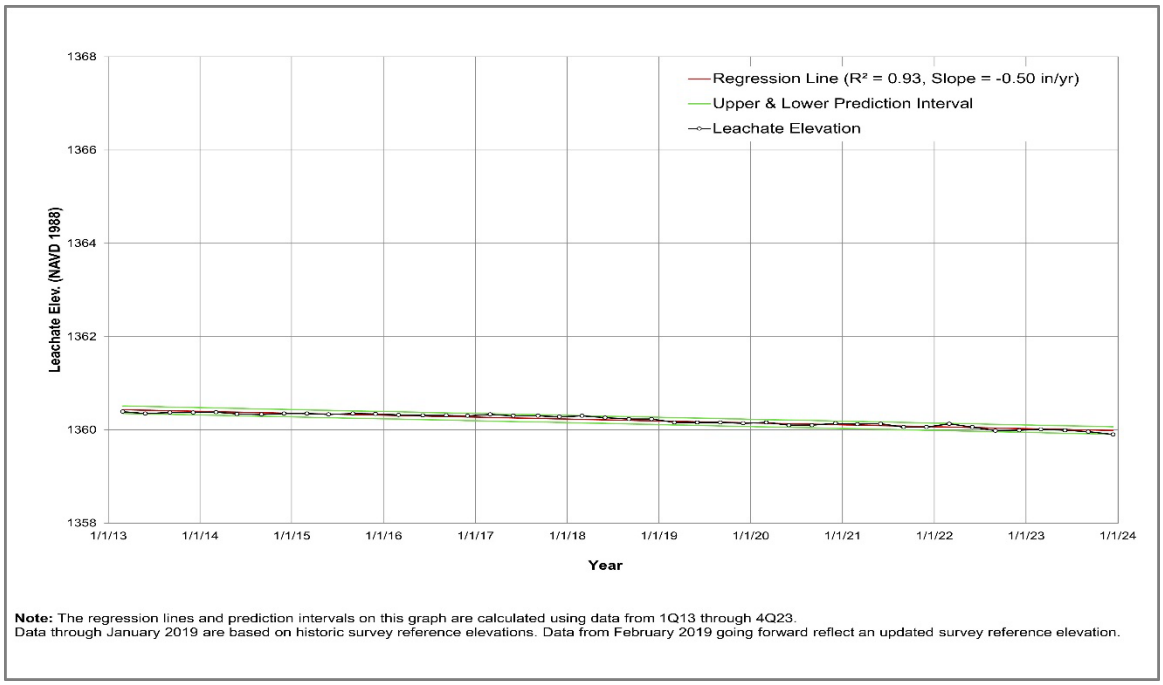
Source: Stantec



Note: The regression lines and prediction intervals on this graph are calculated using data from 10M17 through 4Q23.
Physical changes at this trench resulted in a decrease in leachate levels after 9M17. Data before 10M17 are analyzed separately.
Data through January 2019 are based on historic survey reference elevations. Data from February 2019 going forward reflect an updated survey reference elevation.
The 11M21, 12M21 and 1M22 data points were determined to be outliers and have been removed from the graph.

Figure A-2. 2013 – 2023 Leachate Elevations, Trench 2

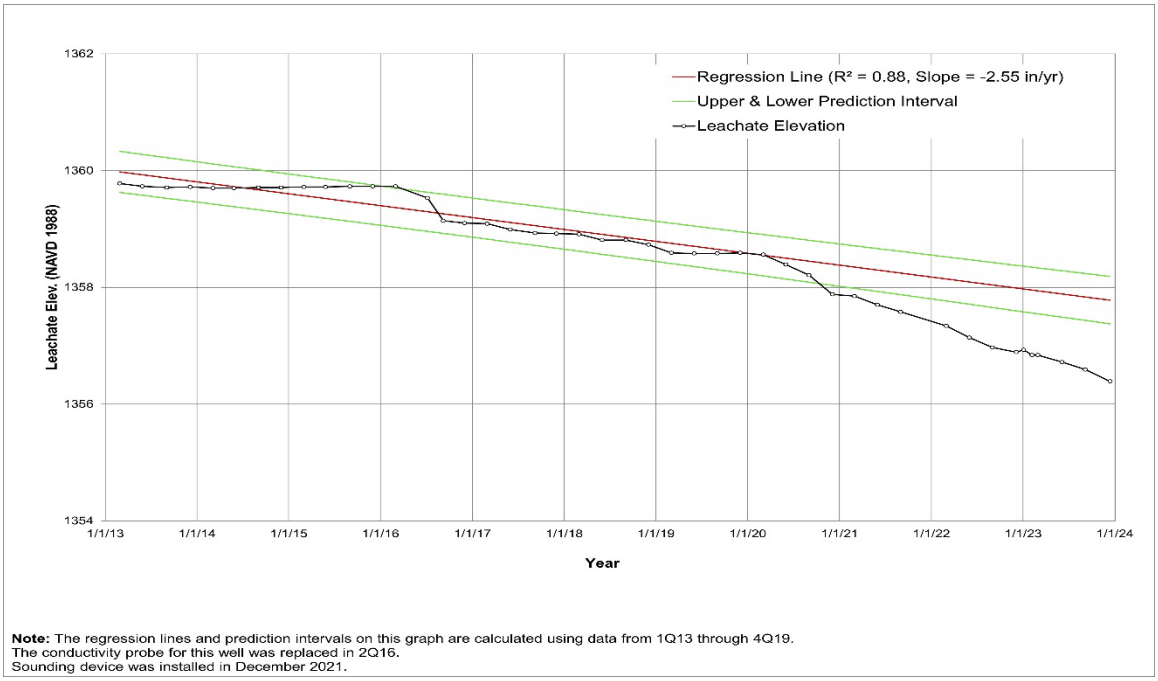
Source: Stantec



Note: The regression lines and prediction intervals on this graph are calculated using data from 1Q13 through 4Q23.
Data through January 2019 are based on historic survey reference elevations. Data from February 2019 going forward reflect an updated survey reference elevation.

Figure A-3. 2013 – 2019 Leachate Elevations, Trench 3

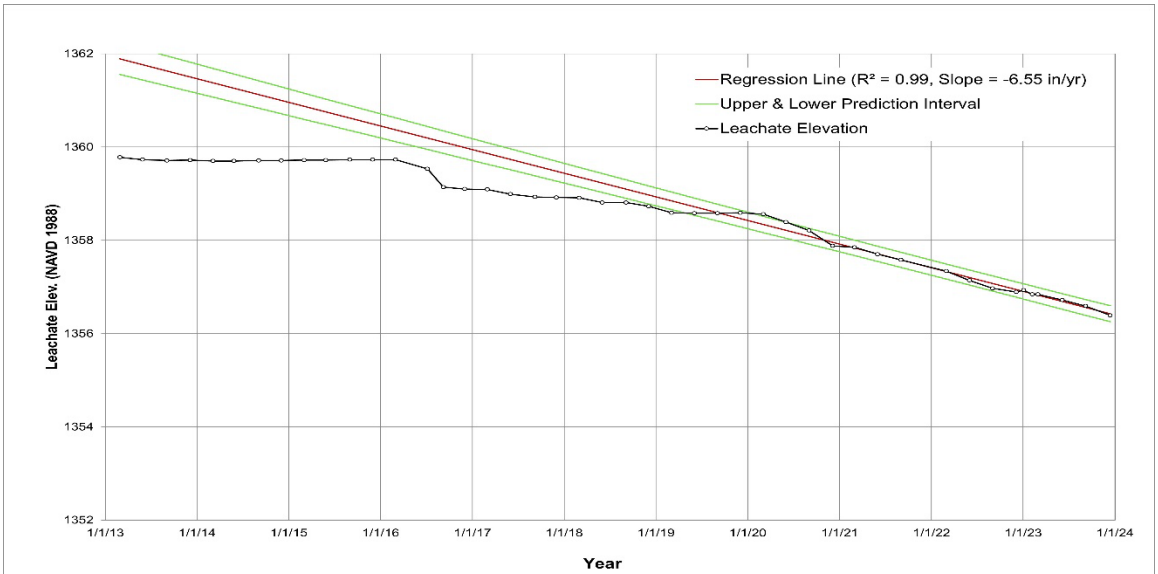
Source: Stantec



Note: The regression lines and prediction intervals on this graph are calculated using data from 1Q13 through 4Q19.
The conductivity probe for this well was replaced in 2Q16.
Sounding device was installed in December 2021.

Figure A-4. 2020 – 2023 Leachate Elevations, Trench 3

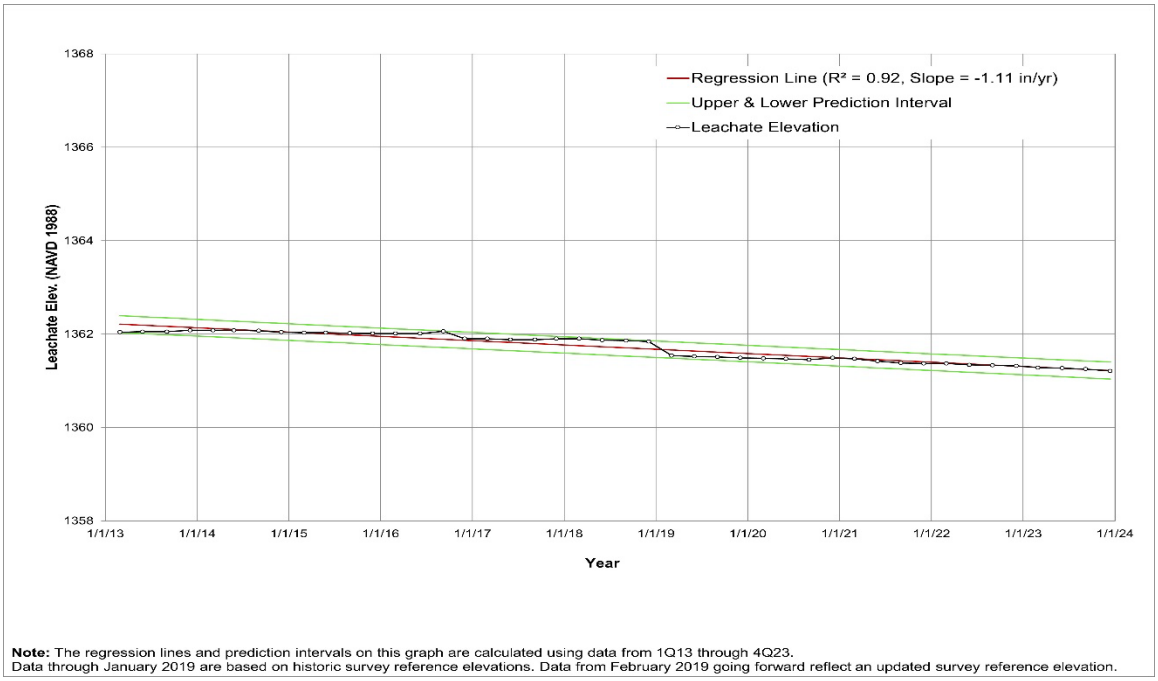
Source: Stantec



Note: The regression lines and prediction intervals on this graph are calculated using data from 1Q20 through 4Q23.
The conductivity probe for this well was replaced in 2Q16.
Data through January 2019 are based on historic survey reference elevations. Data from February 2019 going forward reflect an updated survey reference elevation.
Sounding device was installed in December 2021.

Figure A-5. 2013 – 2023 Leachate Elevations, Trench 4

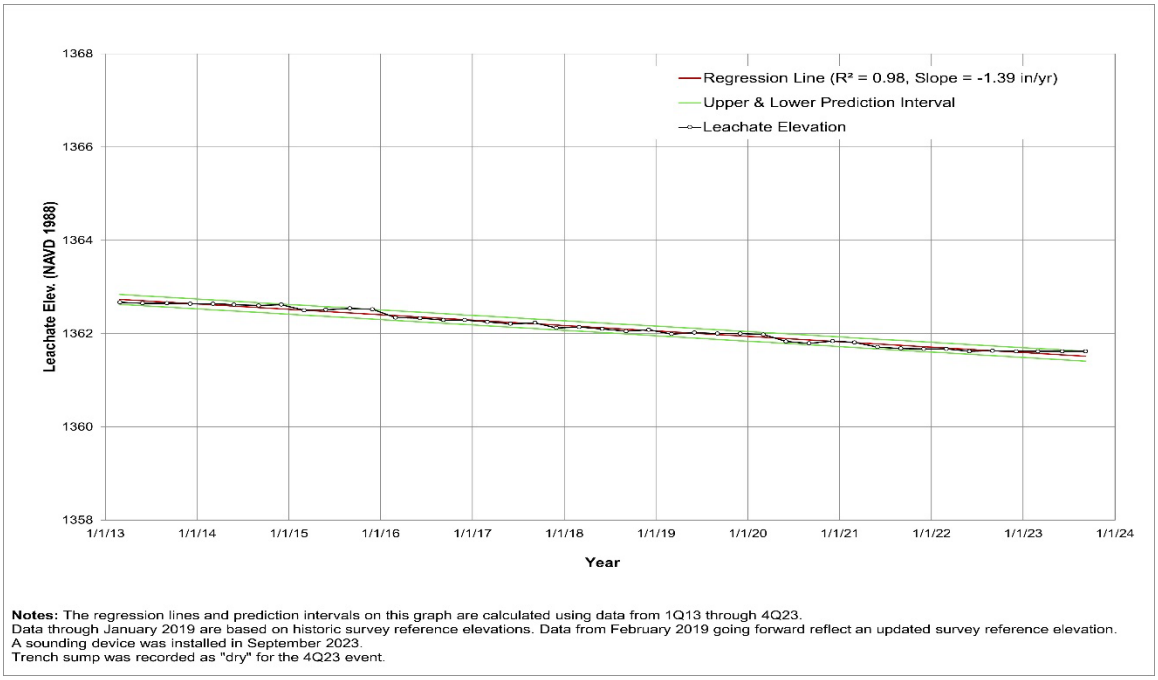
Source: Stantec



Note: The regression lines and prediction intervals on this graph are calculated using data from 1Q13 through 4Q23.
Data through January 2019 are based on historic survey reference elevations. Data from February 2019 going forward reflect an updated survey reference elevation.

Figure A-6. 2013 – 2023 Leachate Elevations, Trench 5

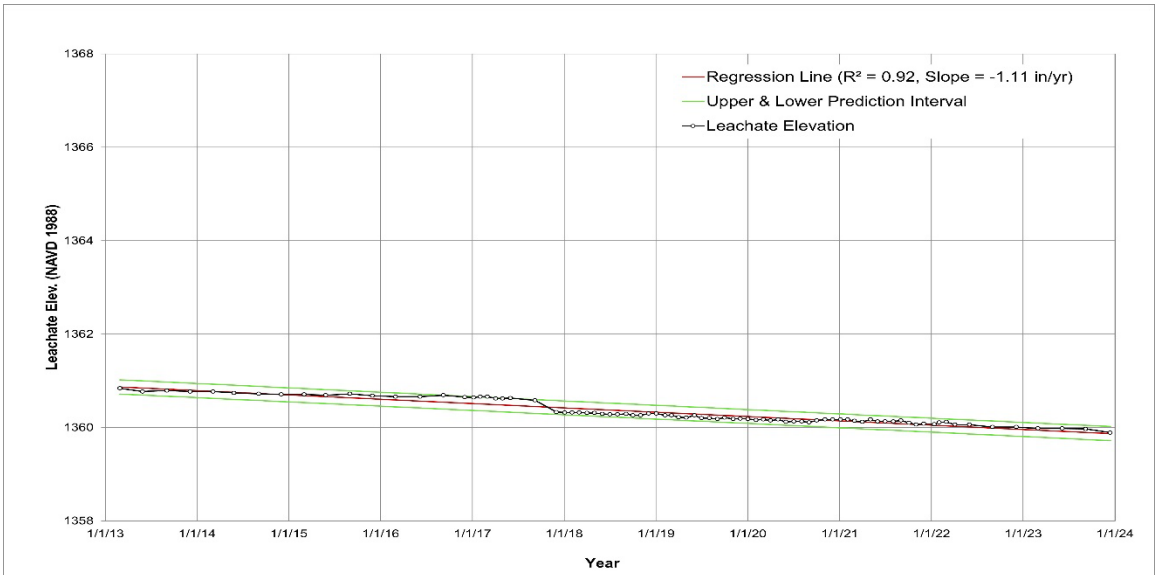
Source: Stantec



Notes: The regression lines and prediction intervals on this graph are calculated using data from 1Q13 through 4Q23.
Data through January 2019 are based on historic survey reference elevations. Data from February 2019 going forward reflect an updated survey reference elevation.
A sounding device was installed in September 2023.
Trench sump was recorded as "dry" for the 4Q23 event.

Figure A-7. 2013 – 2023 Leachate Elevations, Trench 8

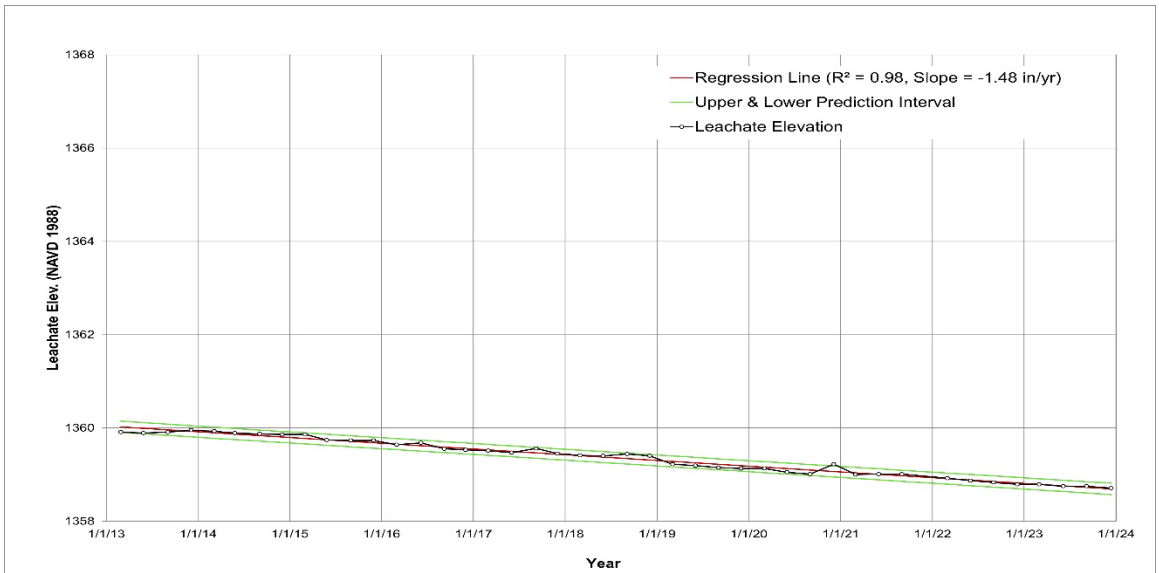
Source: Stantec



Notes: The regression lines and prediction intervals on this graph are calculated using data from 1Q13 through 4Q23.
A sump riser extension was added in September 2017.
Data through January 2019 are based on historic survey reference elevations. Data from February 2019 going forward reflect an updated survey reference elevation.

Figure A-8. 2013 – 2023 Leachate Elevations, Trench 9

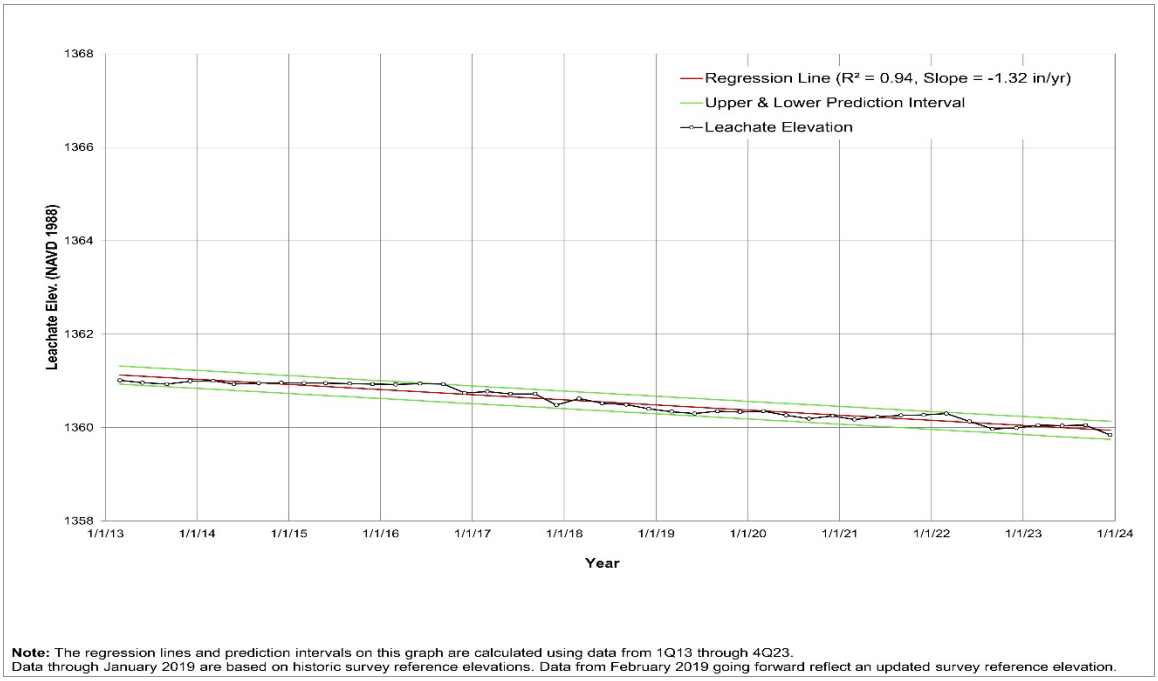
Source: Stantec



Note: The regression lines and prediction intervals on this graph are calculated using data from 1Q13 through 4Q23.
Data through January 2019 are based on historic survey reference elevations. Data from February 2019 going forward reflect an updated survey reference elevation.
Unable to obtain a reading during 12/1/21 field event. Probe stuck inside the sump at 30.70 feet.

Figure A-9. 2013 – 2023 Leachate Elevations, Trench 10N

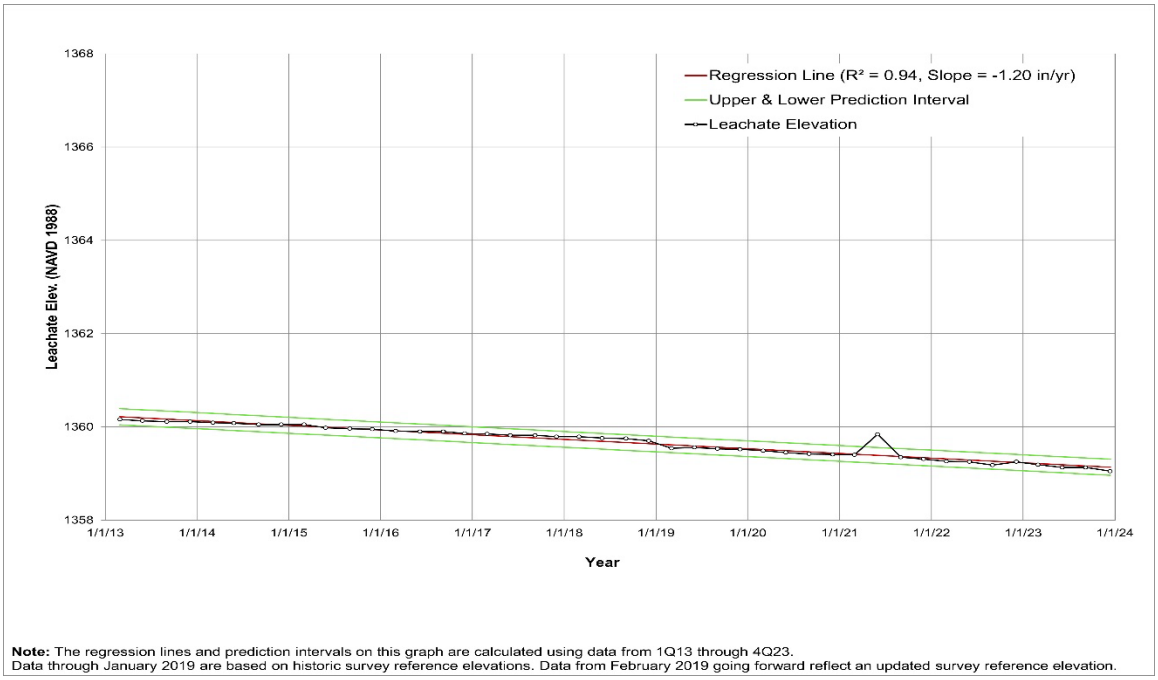
Source: Stantec



Note: The regression lines and prediction intervals on this graph are calculated using data from 1Q13 through 4Q23.
Data through January 2019 are based on historic survey reference elevations. Data from February 2019 going forward reflect an updated survey reference elevation.

Figure A-10. 2013 – 2023 Leachate Elevations, Trench 10S

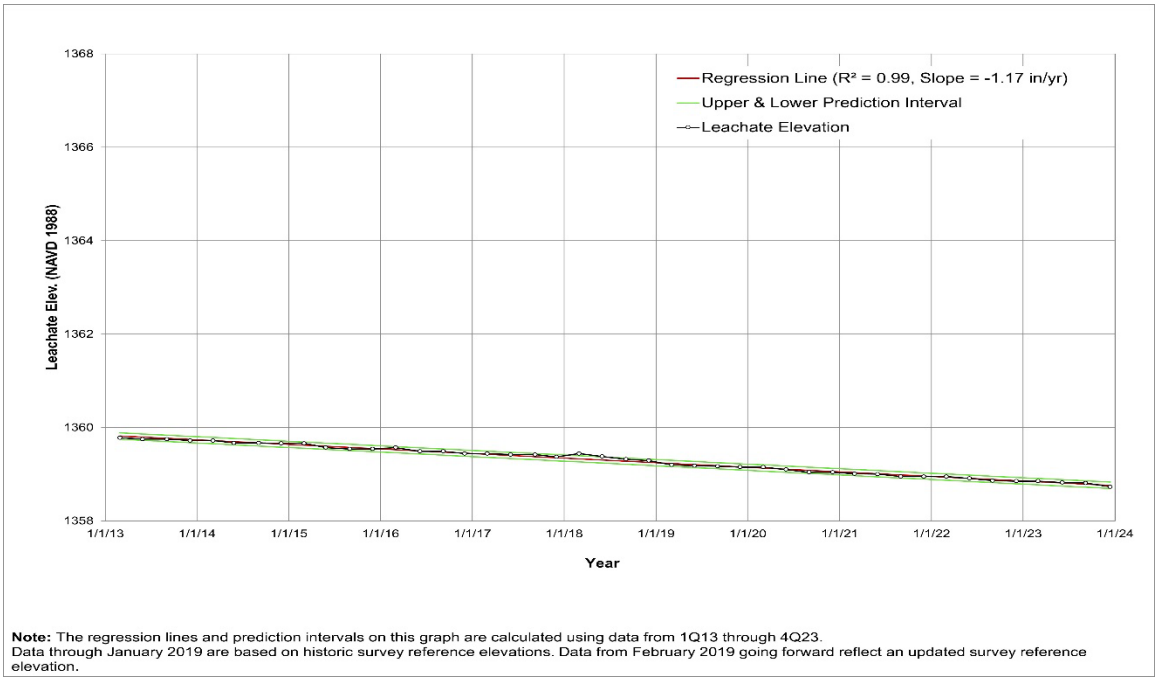
Source: Stantec



Note: The regression lines and prediction intervals on this graph are calculated using data from 1Q13 through 4Q23.
Data through January 2019 are based on historic survey reference elevations. Data from February 2019 going forward reflect an updated survey reference elevation.

Figure A-11. 2013 – 2023 Leachate Elevations, Trench 11

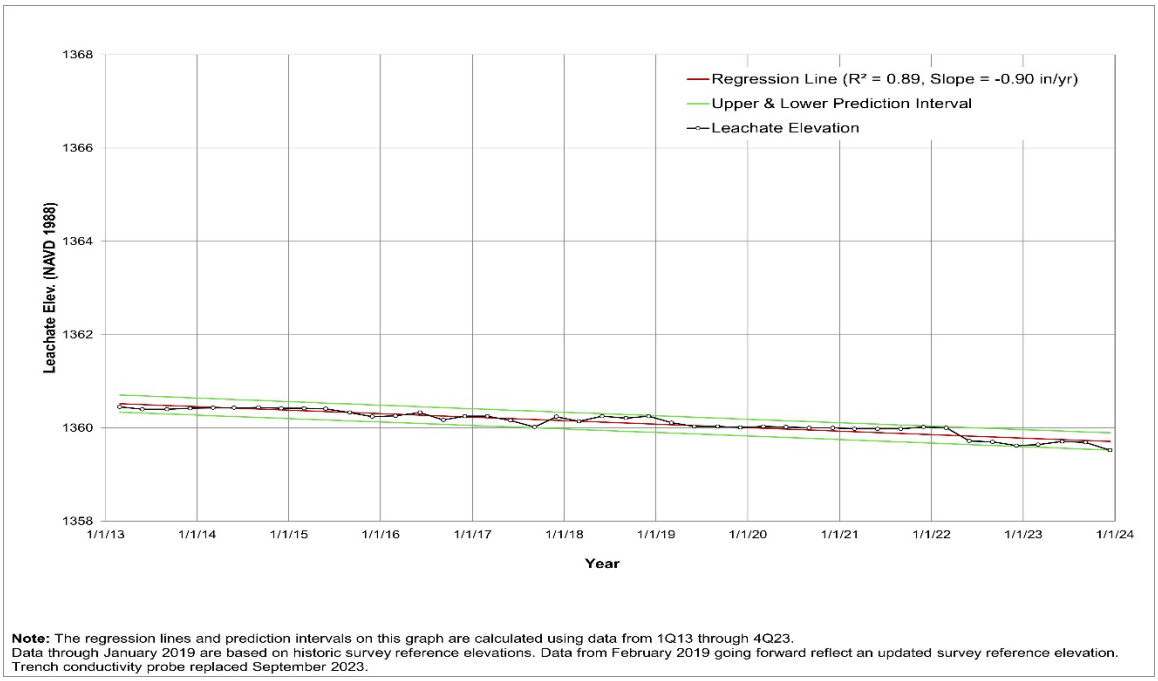
Source: Stantec



Note: The regression lines and prediction intervals on this graph are calculated using data from 1Q13 through 4Q23.
Data through January 2019 are based on historic survey reference elevations. Data from February 2019 going forward reflect an updated survey reference elevation.

Figure A-12. 2013 – 2023 Leachate Elevations, Trench 12

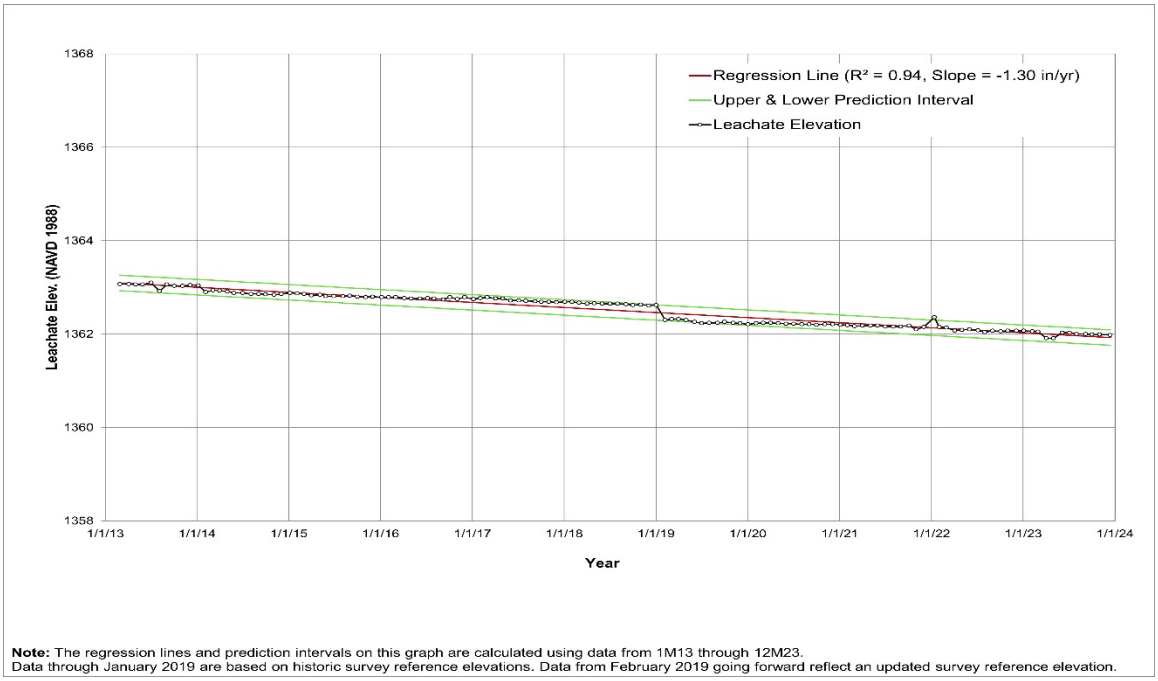
Source: Stantec



Note: The regression lines and prediction intervals on this graph are calculated using data from 1Q13 through 4Q23.
Data through January 2019 are based on historic survey reference elevations. Data from February 2019 going forward reflect an updated survey reference elevation.
Trench conductivity probe replaced September 2023.

Figure A-13. 2013 – 2023 Leachate Elevations, Trench 13

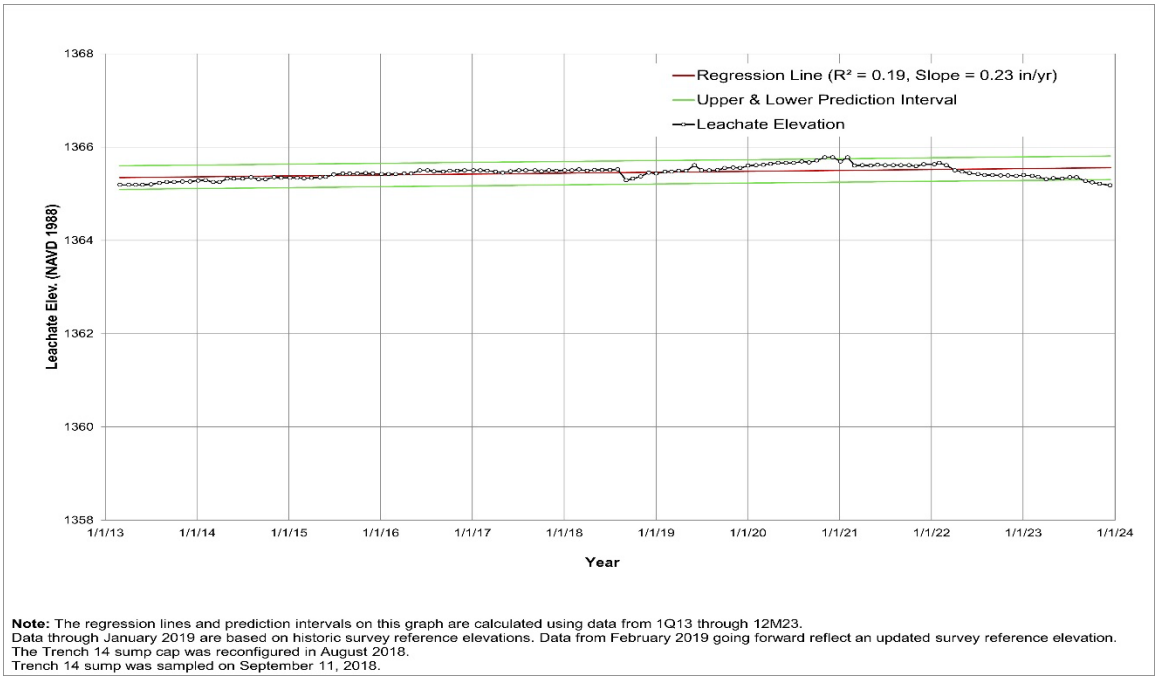
Source: Stantec



Note: The regression lines and prediction intervals on this graph are calculated using data from 1M13 through 12M23.
Data through January 2019 are based on historic survey reference elevations. Data from February 2019 going forward reflect an updated survey reference elevation.

Figure A-14. 2013 – 2023 Leachate Elevations, Trench 14

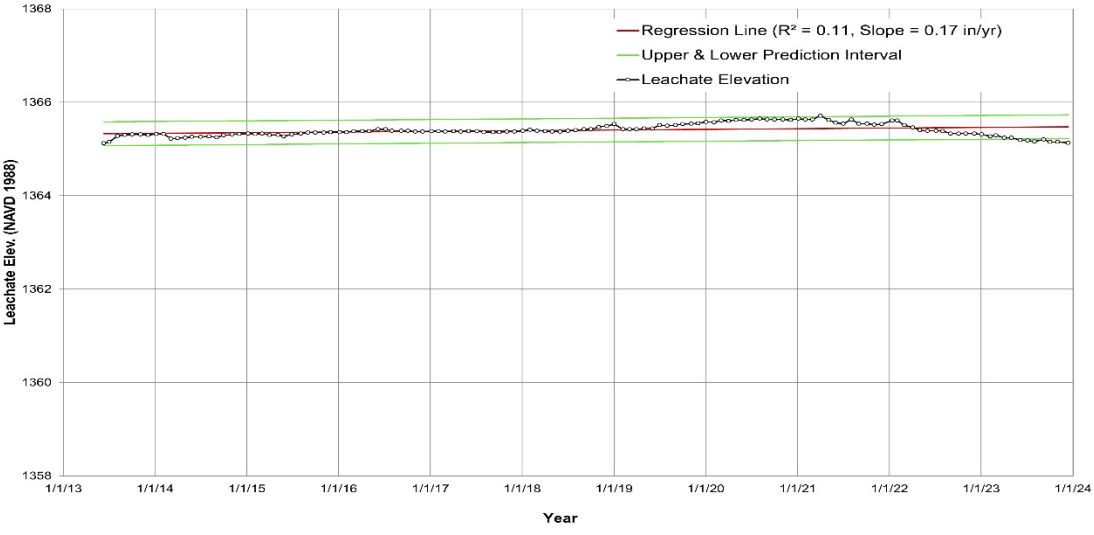
Source: Stantec



Note: The regression lines and prediction intervals on this graph are calculated using data from 1Q13 through 12M23.
Data through January 2019 are based on historic survey reference elevations. Data from February 2019 going forward reflect an updated survey reference elevation.
The Trench 14 sump cap was reconfigured in August 2018.
Trench 14 sump was sampled on September 11, 2018.

Figure A-15. 2013 – 2023 Leachate Elevations, WP-91

Source: Stantec



Note: The regression lines and prediction intervals on this graph are calculated using data from 6M13 through 12M23.
Data through January 2019 are based on historic survey reference elevations. Data from February 2019 going forward reflect an updated survey reference elevation.

Appendix B – Groundwater Monitoring

Table B-1. Groundwater Monitoring Well Summary – SDA 1100 Series Wells

Elevations are referenced to the North American Vertical Datum of 1988 and based on well construction details.

Source: NYSERDA

Well	Well Depth (ft. BGS)	Well Bottom Elevation (ft.)	Screened Interval Elevations (ft.)	Geologic Unit Screened
1101A	16.4	1362.78	1373.20 - 1363.20	W/U
1101B	30.4	1348.83	1359.25 - 1349.25	U
1101C	109.4	1269.54	1284.96 - 1269.96	L
1102A	17.4	1365.12	1375.54 - 1365.54	W/U
1102B	31.4	1351.00	1361.42 - 1351.42	U
1103A	16.4	1363.31	1373.73 - 1363.73	W/U
1103B	36.4	1343.24	1358.66 - 1343.66	U
1103C	121.4	1257.92	1273.34 - 1258.34	L/O
1104A	19.4	1356.53	1371.95 - 1356.95	W/U
1104B	36.4	1339.51	1354.93 - 1339.93	U
1104C	124.4	1251.37	1261.79 - 1251.79	L/O
1105A	21.4	1344.22	1354.64 - 1344.64	U
1105B	36.4	1329.43	1344.85 - 1330.27	U
1106A	16.4	1357.77	1368.19 - 1358.19	W/U
1106B	31.1	1343.03	1353.45 - 1343.45	U
1107A	19.4	1357.58	1373.00 - 1358.00	W/U
1108A	16.4	1364.34	1374.76- 1364.76	W/U
1109A	16.4	1358.27	1368.69 - 1358.69	W/U
1109B	31.4	1342.43	1357.85 - 1342.85	U
1110A	20.4	1356.46	1366.88 - 1356.88	W/U
1111A	21.4	1358.63	1369.05 - 1359.05	U

Table B-2. 2023 Groundwater Elevations - SDA 1100-Series Wells

Elevations are referenced to the North American Vertical Datum of 1988.

Source: NYSERDA

Well	Jan 3	Feb 6	Mar 1	Apr 3	May 1	Jun 5
1101A	1376.52	1369.98	1373.81	1377.19	1377.08	1370.72
1101B	1361.33	1363.12	1363.38	1363.38	1363.37	1355.97
1101C	1281.69	1281.64	1281.74	1281.77	1282.26	1281.65
1102A			1379.00			1373.31
1102B			R			1365.51
1103A			1379.36			1377.04
1103B			1365.34			1363.95
1103C			1259.56			1259.43
1104A			1372.12			1368.49
1104B			1359.94			1351.90
1104C			1253.63			1253.76
1105A			1353.96			1349.07
1105B			1339.11			1333.82
1106A	1371.04	1371.44	1371.31	1371.62	1370.95	1364.79
1106B	1357.37	1357.10	1356.89	1356.57	1356.54	1354.07
1107A			1366.21			1366.20
1108A	1374.24	1375.90	1376.33	1377.07	1376.73	1371.18
1109A	1362.52	1361.31	1361.39	1361.20	1361.49	1359.85
1109B	1362.19	1361.66	1361.63	1361.48	1361.84	1359.74
1110A			1359.75			1358.77
1111A			1376.34			1375.33

Table B-2 continued.

Well	Jul 5	Aug 1	Sep 6 and Sep 7	Oct 2	Nov 1	Dec 12
1101A	1376.32	1375.12	1375.62	1374.84	1373.26	1376.12
1101B	1358.31	1360.38	1362.22	1362.68	1362.78	1357.33
1101C	1281.58	1281.49	1281.68	1281.43	1281.59	1281.51
1102A			1374.53			1374.41
1102B			1364.56			1364.99
1103A			1377.27			1379.11
1103B			1364.76			1364.91
1103C			1259.54			1259.45
1104A			1369.63			1367.85
1104B			1359.19			1352.79
1104C			1253.92			1253.45
1105A			1353.50			1350.49
1105B			1335.86			1335.32
1106A	1367.22	1370.46	1370.00	1369.94	1371.10	1368.77
1106B	1355.96	1356.86	1357.94	1358.16	1358.14	1356.61
1107A			1367.34			1365.88
1108A	1372.24	1372.35	1372.25	1371.71	1371.67	1375.91
1109A	1361.33	1361.77	1362.17	1362.21	1362.25	1361.19
1109B	1361.54	1362.25	1362.80	1362.82	1363.03	1361.36
1110A			1359.41			1359.89
1111A			1372.70			1366.11

Table B-3. Groundwater Monitoring Well Summary – SDA Piezometers

Elevations are referenced to the North American Vertical Datum of 1988 and based on well construction details.

Source: NYSERDA

Piezometer	Well Depth (ft. BGS)	Well Bottom Elevation (ft.)	Screened Interval Elevations (ft.)	Geologic Unit Screened
1S-91	14	1368.88	1376.38- 1368.88	W/U
2S-91	16	1368.87	1378.87- 1368.87	W/U
3S-91	13.5	1365.10	1372.60- 1365.10	W/U
4S-91	11	1369.48	1374.48- 1369.48	W/U
4D-91	29	1351.48	1366.48- 1351.48	U
6S-91	11	1370.52	1375.52- 1370.52	W/U
6D-91	25	1356.52	1366.52- 1356.52	U
9S-91	9	1372.03	1377.03- 1372.03	W/U
9D-91	25	1356.03	1366.03- 1356.03	U
10S-91	12.4	1367.07	1374.57- 1367.07	W/U
15S-91	13	1365.91	1373.41- 1365.91	W/U
16D-91	25	1354.31	1364.31- 1354.31	U
17S-91	11	1372.55	1377.55- 1372.55	W/U
18S-91	14	1366.52	1374.02- 1366.52	U
21S-91	16	1365.52	1370.52- 1365.52	U
22S-91	21	1361.74	1366.74- 1361.74	U
24S-91	18	1362.32	1372.32- 1362.32	W/U
B-14	24	1355.89	1365.89- 1355.89	U
P1-95	7.7	1360.21	1365.21- 1360.21	W

Table B-4. 2023 Groundwater Elevations - SDA Piezometers

Elevations are referenced to the North American Vertical Datum of 1988.

Source: NYSERDA

Well/ Piezometer	Jan 3	Feb 6	Mar 1	Apr 3	May 1	Jun 5
1S			1380.58			1379.66
2S			1379.77			1379.61
3S	1373.02	1373.36	1373.88	1374.57	1374.73	1374.19
4S	dry	dry	dry	dry	dry	dry
4D	1357.16	1356.27	1355.94	1355.47	1355.62	1355.25
6S	dry	dry	dry	dry	dry	dry
6D	1361.78	1361.11	1360.66	1360.23	1360.25	1360.30
9S	dry	dry	dry	dry	dry	dry
9D	1357.05	1357.69	1357.02	1356.48	1356.43	1356.25
10S	1371.78	1371.30	1370.99	1370.83	1371.10	1371.86
15S	1379.52	1379.61	1379.59	1379.79	1379.70	1377.88
16D	1363.34	1363.07	1362.84	1362.62	1362.42	1362.22
17S	1381.80	1382.01	1382.05	1382.23	1382.13	1380.15
18S	1377.33	1377.67	1377.75	1377.91	1377.90	1377.08
21S	dry	dry	dry	dry	dry	dry
22S	dry	dry	dry	dry	dry	dry
24S	dry	dry	dry	dry	dry	dry
B-14	1358.50	1357.89	1357.59	1357.11	1356.97	1356.89
P1			1365.01			1363.04

Table B-4 continued.

Well/ Piezometer	Jul 5	Aug 1	Sep 6 and Sep 7	Oct 2	Nov 1	Dec 12 and Dec 13
1S			N.M.			1380.11
2S			1382.72			1377.79
3S	1373.70	1373.55	1372.89	1372.05	1370.78	1370.24
4S	dry	dry	dry	dry	dry	dry
4D	1355.50	1355.89	1356.62	1356.80	1357.17	1356.72
6S	dry	dry	dry	dry	dry	dry
6D	1360.72	1361.40	1361.97	1362.37	1362.55	1361.59
9S	dry	dry	dry	dry	dry	dry
9D	1356.21	1356.22	1356.23	1356.24	1357.24	1356.76
10S	1372.99	1374.09	1374.47	1374.15	1373.27	1372.14
15S	1379.02	1378.99	1378.05	1377.34	1379.27	1379.35
16D	1362.11	1362.11	1362.51	1362.77	1363.00	1363.18
17S	1378.12	1377.75	1377.65	1377.40	1378.33	1381.19
18S	1375.90	1375.83	1375.40	1374.71	1374.26	1376.20
21S	dry	dry	dry	dry	dry	dry
22S	dry	dry	dry	dry	dry	dry
24S	dry	dry	dry	dry	dry	dry
B-14	1357.11	1357.44	1358.13	1358.34	1358.59	1358.40
P1			1363.01			1364.16

Table B-5. Groundwater Monitoring Well Summary – SDA Slit-Trench Wells

Elevations are referenced to the North American Vertical Datum of 1988 and based on well construction details.

Source: NYSERDA

Slit Trench Well	Well Depth (ft. BGS)	Well Bottom Elevation (ft.)	Screened Interval Elevations (ft.)	Geologic Unit Screened
SMW-1	7	1372.91	1375.33 - 1373.08	W
SMW-2	6	1373.91	1376.33 - 1374.08	W
SMW-3	6	1373.80	1376.22 - 1373.97	W
SMW-4	11	1366.77	1369.19 – 1366.94	W/U
SMW-5	7.2	1369.93	1372.35 – 1370.10	W
SMW-6	7	1372.59	1375.01 – 1372.76	W
SMW-7	6.5	1371.59	1374.01 – 1371.76	W
SMW-8	7	1371.78	1375.03 – 1372.78	W
SMW-9	6	1369.93	1372.35 - 1370.10	W

Table B-6. 2023 Groundwater Elevations - SDA Slit-Trench Wells

Elevations are referenced to the North American Vertical Datum of 1988.

Source: NYSERDA

Well	Jan 3	Feb 6	Mar 1	Apr 3	May 1	Jun 5
SMW-1	dry	dry	dry	dry	dry	dry
SMW-2	dry	dry	dry	dry	dry	dry
SMW-3	dry	dry	dry	dry	dry	dry
SMW-4	1371.64	1372.42	1373.20	1374.00	1374.99	1374.31
SMW-5	1375.95	1376.02	1376.66	1376.77	1377.30	1376.33
SMW-6	1379.24	1379.07	1379.69	1379.50	1379.87	1378.08
SMW-7	dry	1374.44	1374.79	1375.50	1375.66	1375.31
SMW-8	1373.50	1373.46	1373.74	1373.78	1375.33	1375.64
SMW-9	1376.65	1376.67	1376.82	1376.97	1376.49	1375.39

Well	Jul 5	Aug 1	Sep 6	Oct 2	Nov 1	Dec 12 and Dec 13
SMW-1	dry	dry	dry	dry	dry	dry
SMW-2	dry	dry	dry	dry	dry	dry
SMW-3	dry	dry	dry	dry	dry	dry
SMW-4	1373.83	1373.26	1372.28	1370.74	1369.08	1369.29
SMW-5	1376.34	1376.23	1376.12	1375.73	1376.08	1375.76
SMW-6	1377.81	1377.80	1377.10	1376.20	1379.11	1378.88
SMW-7	1374.90	1374.65	1374.51	1374.22	dry	dry
SMW-8	1375.34	1376.15	1376.57	1375.86	1374.97	1373.51
SMW-9	1374.80	1374.66	1374.35	1373.37	1374.38	1375.60

Figure B-1. First Quarter 2023 Weathered Lavery Till Groundwater Contour Map

Source: Stantec

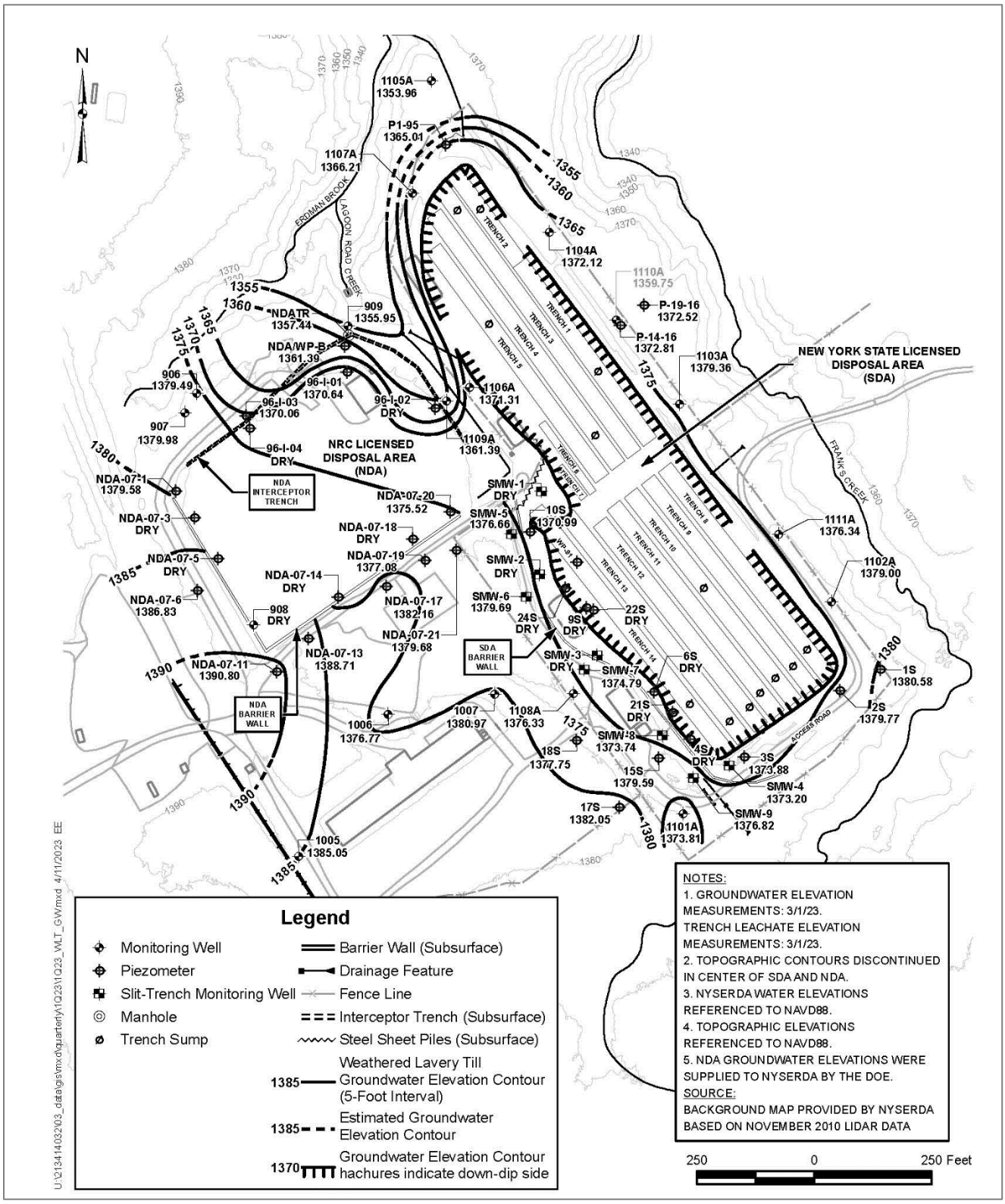


Figure B-2. First Quarter 2023 Kent Recessional Groundwater Contour Map

Source: Stantec

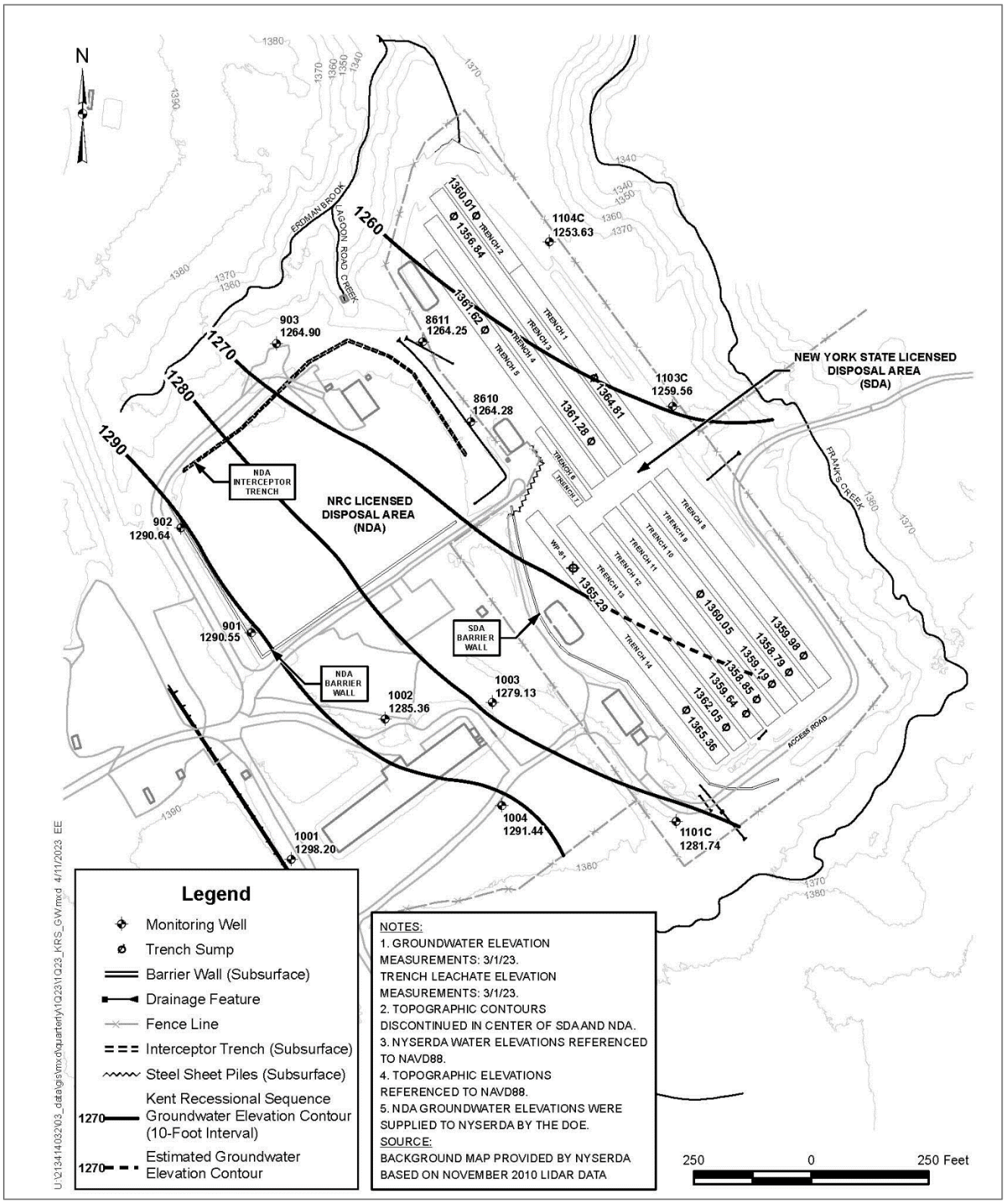


Figure B-3. First Quarter 2023 North End Trench 14 Enhanced Groundwater Contour Map

Source: Stantec

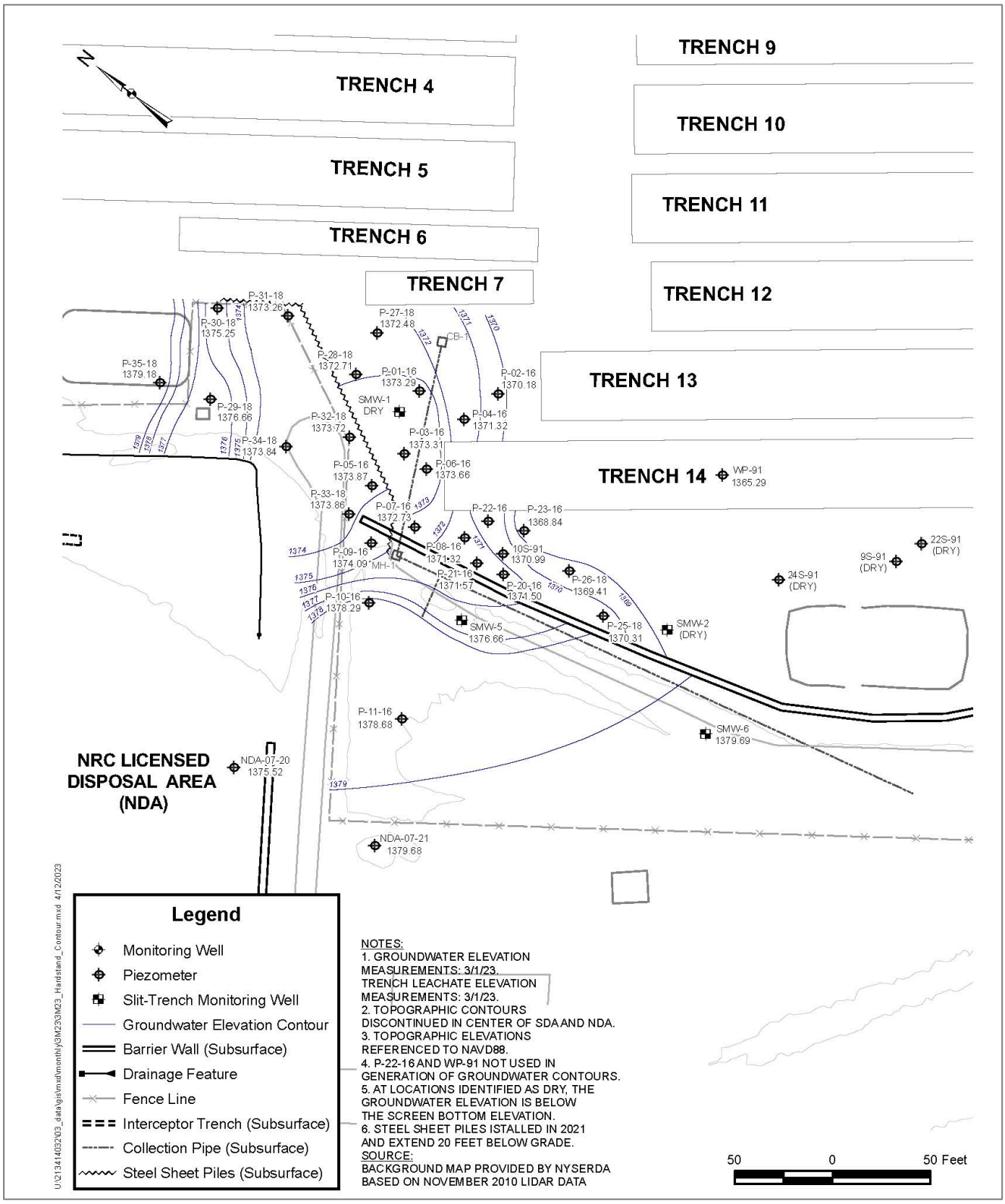


Figure B-4. Second Quarter 2023 Weathered Lavery Till Groundwater Contour Map

Source: Stantec

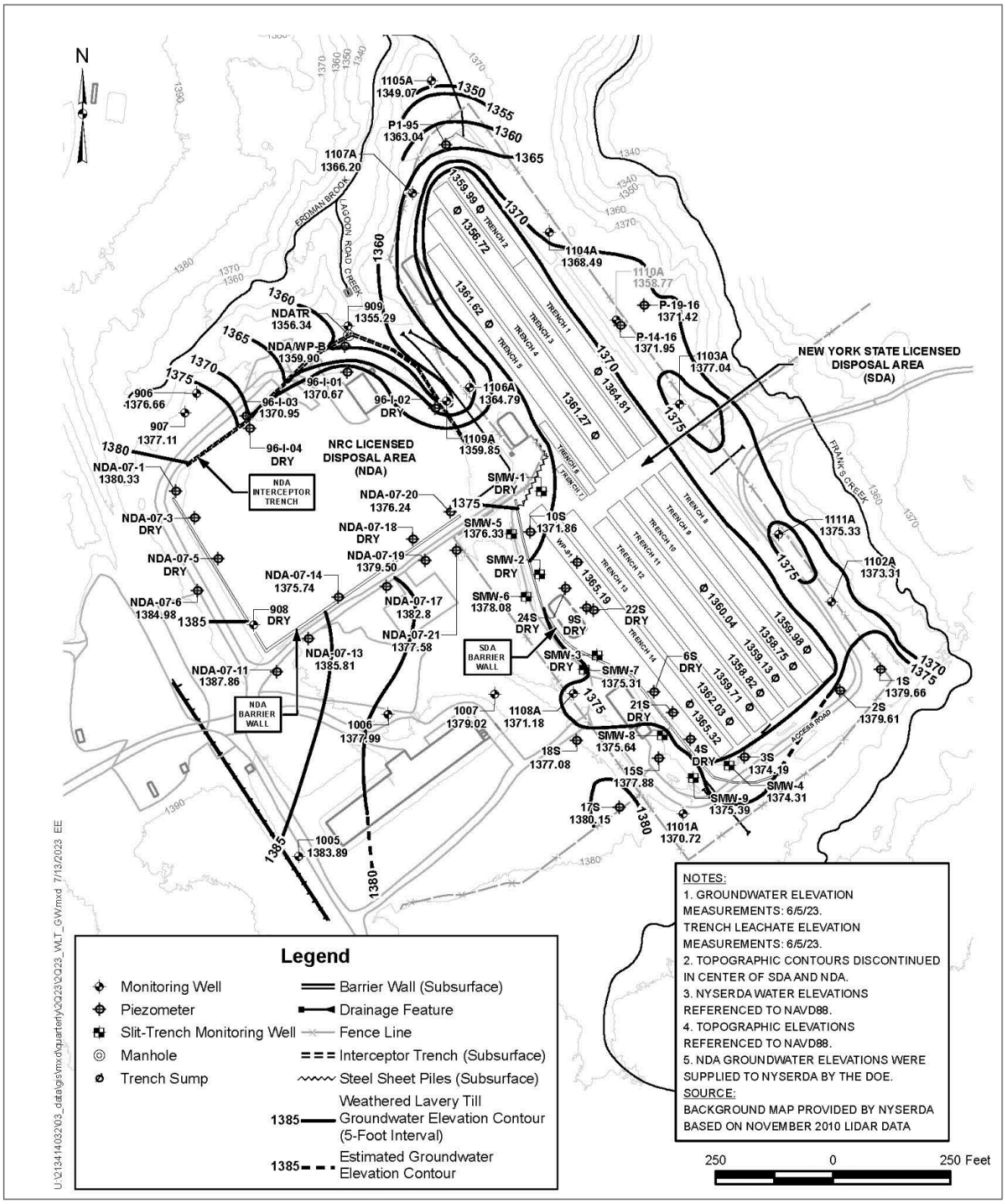


Figure B-5. Second Quarter 2023 Kent Recessional Groundwater Contour Map

Source: Stantec

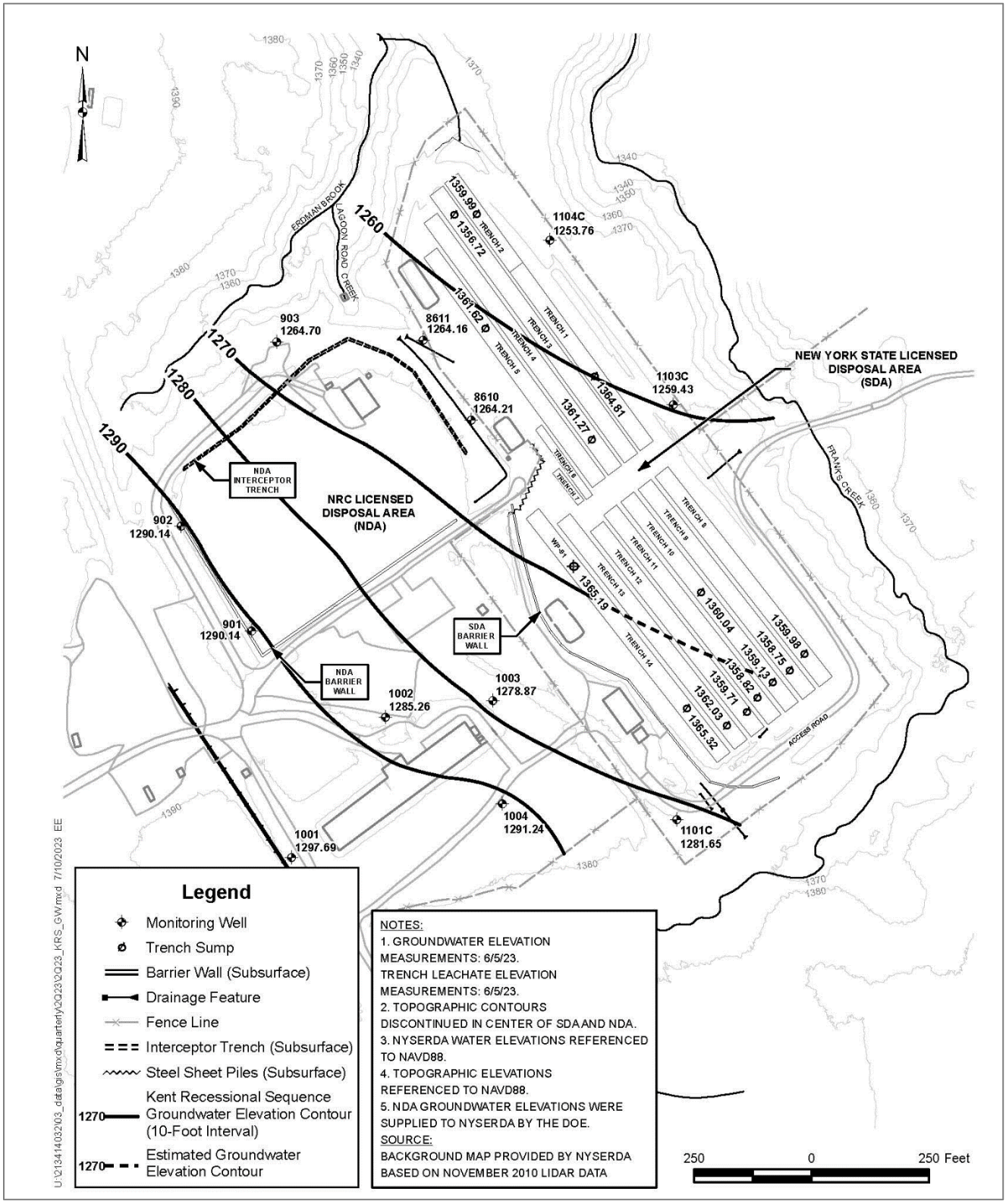


Figure B-6. Second Quarter 2023 North End Trench 14 Enhanced Groundwater Contour Map

Source: Stantec

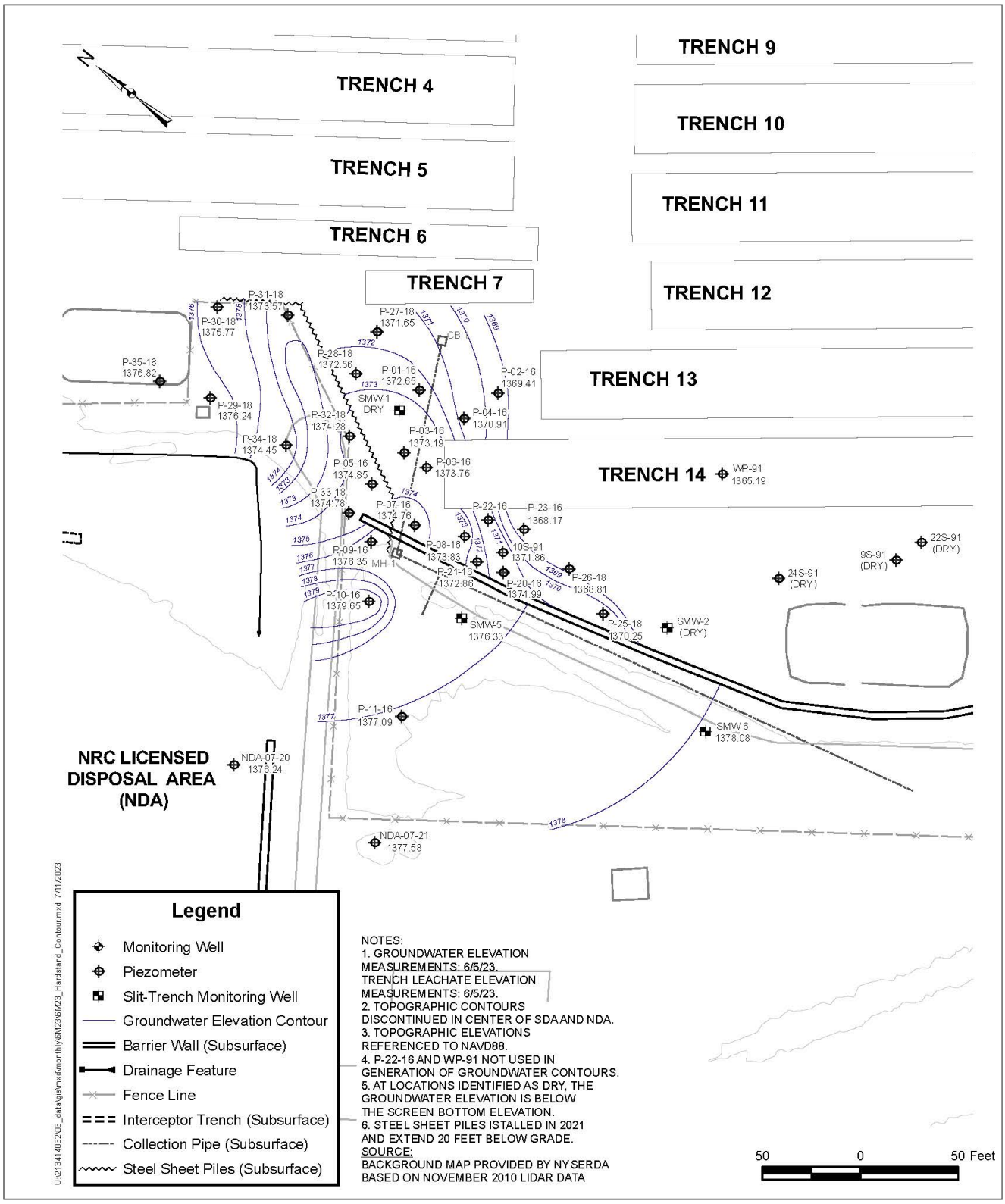


Figure B-7. Third Quarter 2023 Weathered Lavery Till Groundwater Contour Map

Source: Stantec

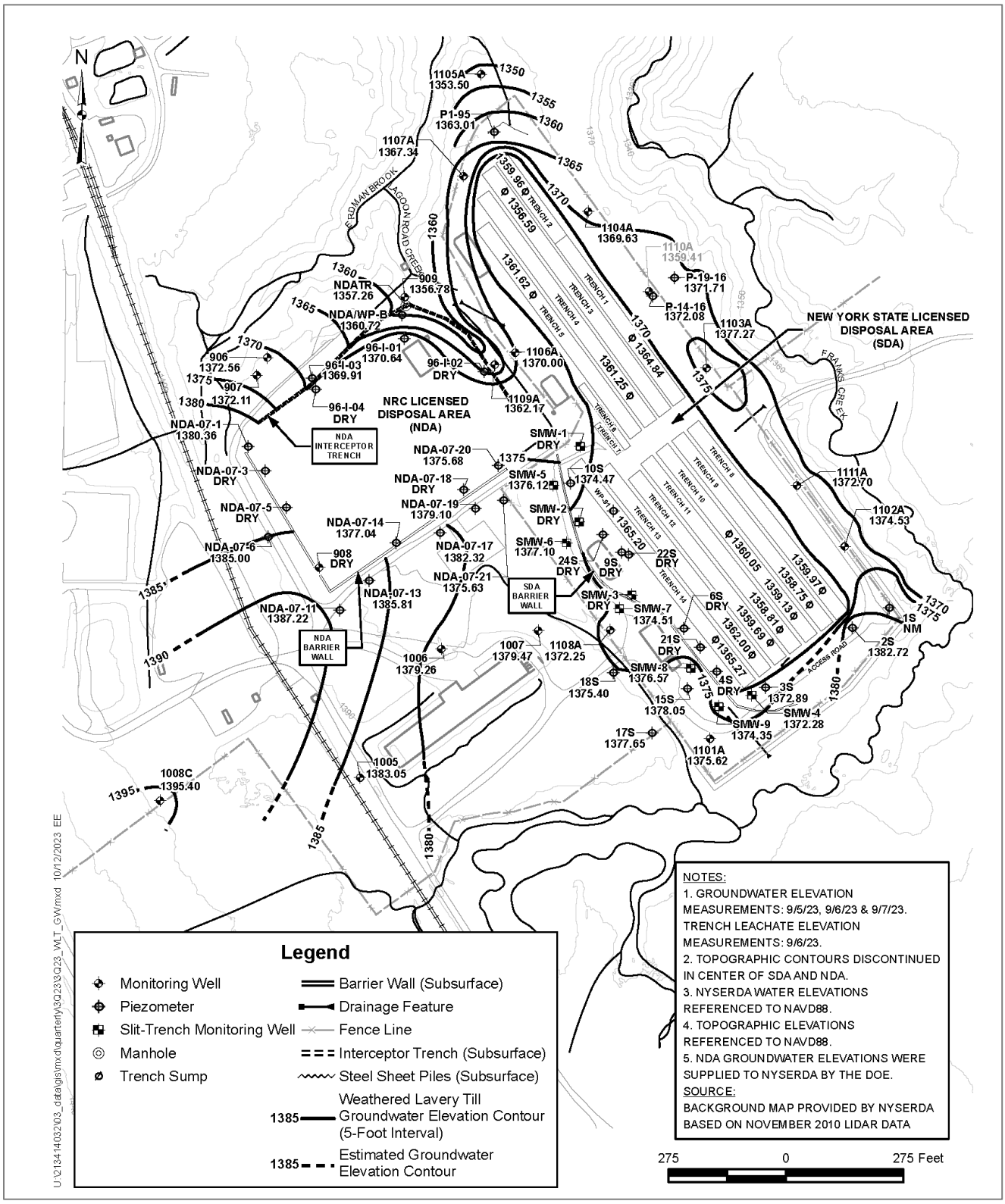


Figure B-8. Third Quarter 2023 Kent Recessional Groundwater Contour Map

Source: Stantec

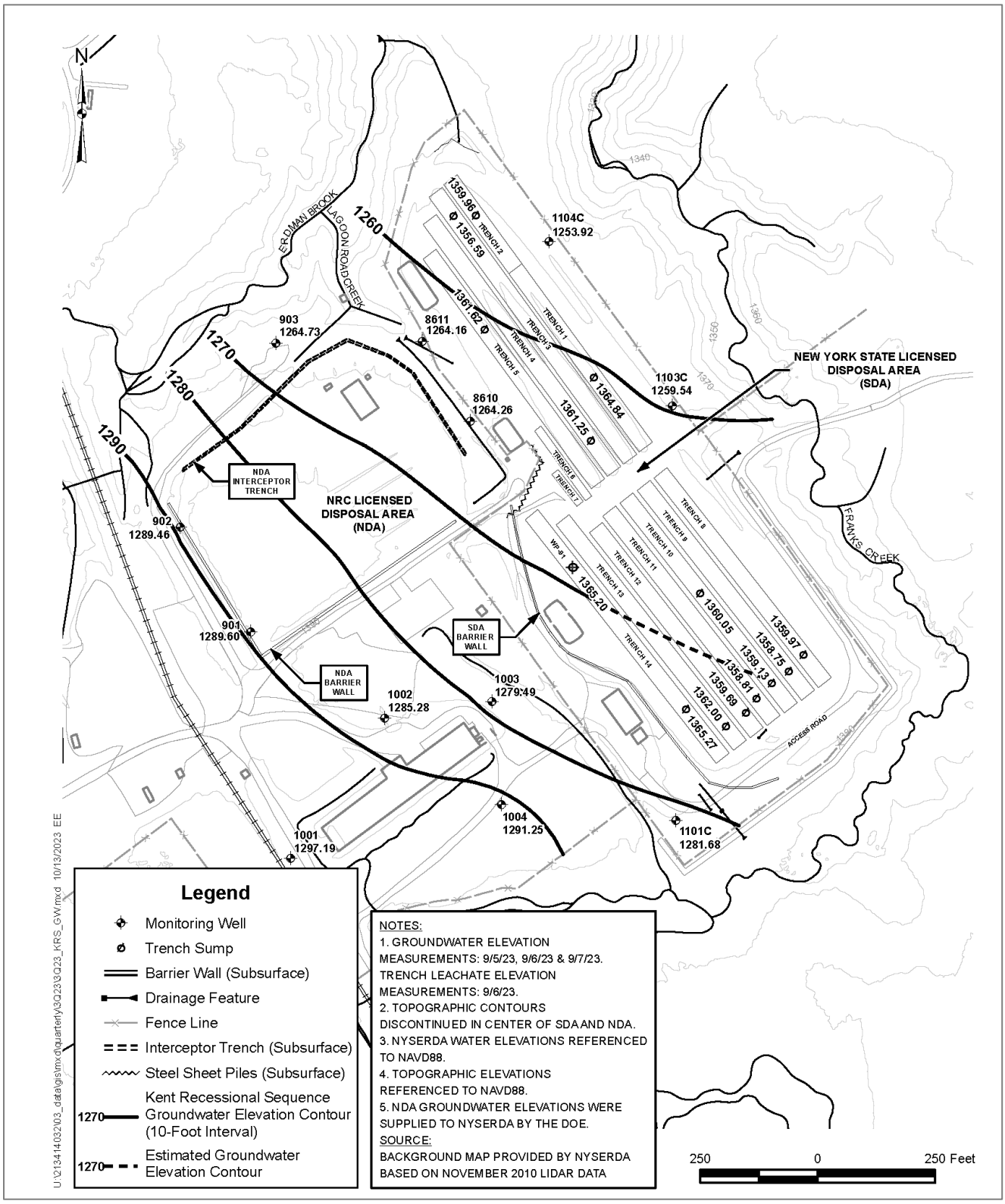


Figure B-9. Third Quarter 2023 North End Trench 14 Enhanced Groundwater Contour Map

Source: Stantec

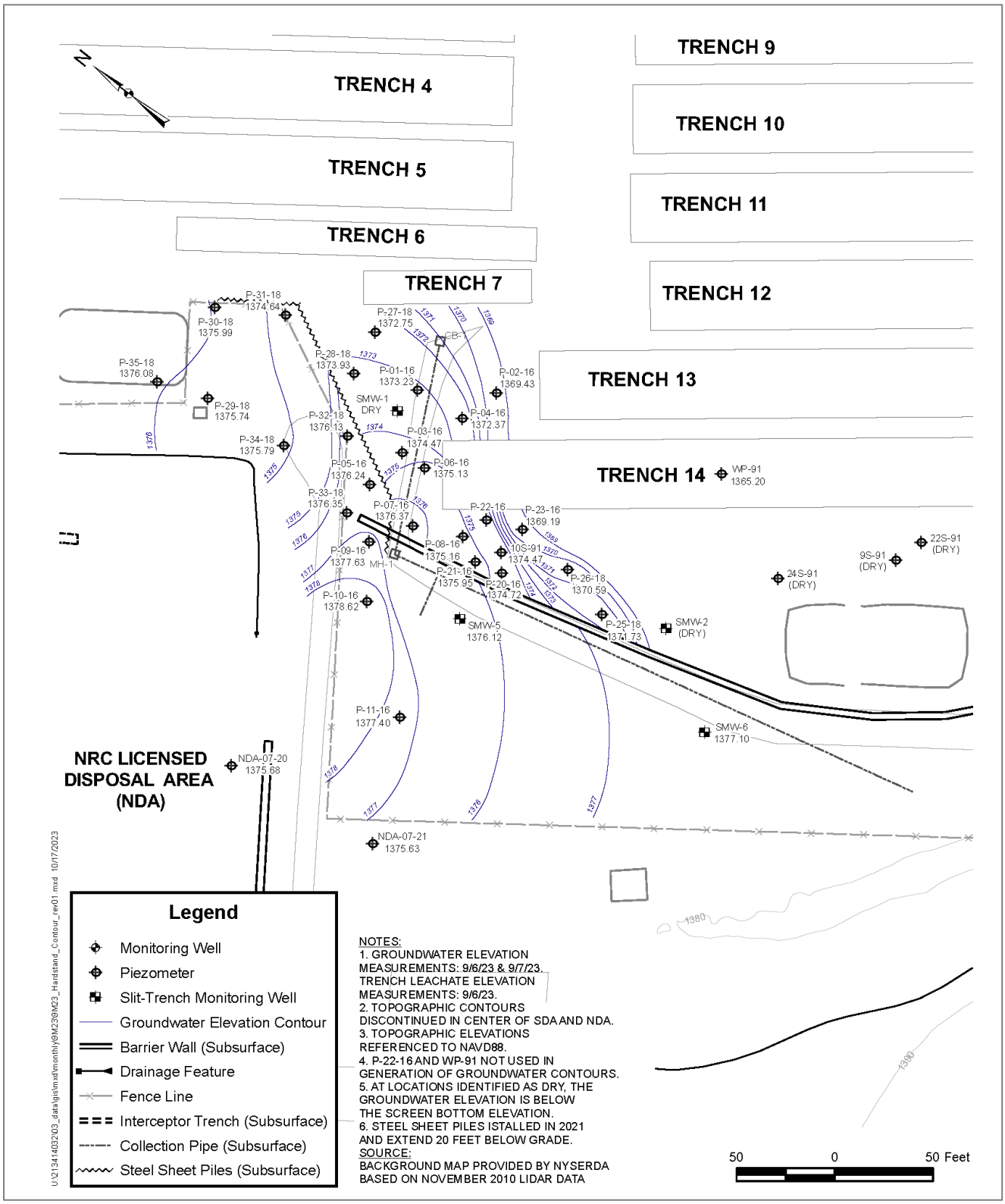


Figure B-10. Fourth Quarter 2023 Weathered Lavery Till Groundwater Contour Map

Source: Stantec

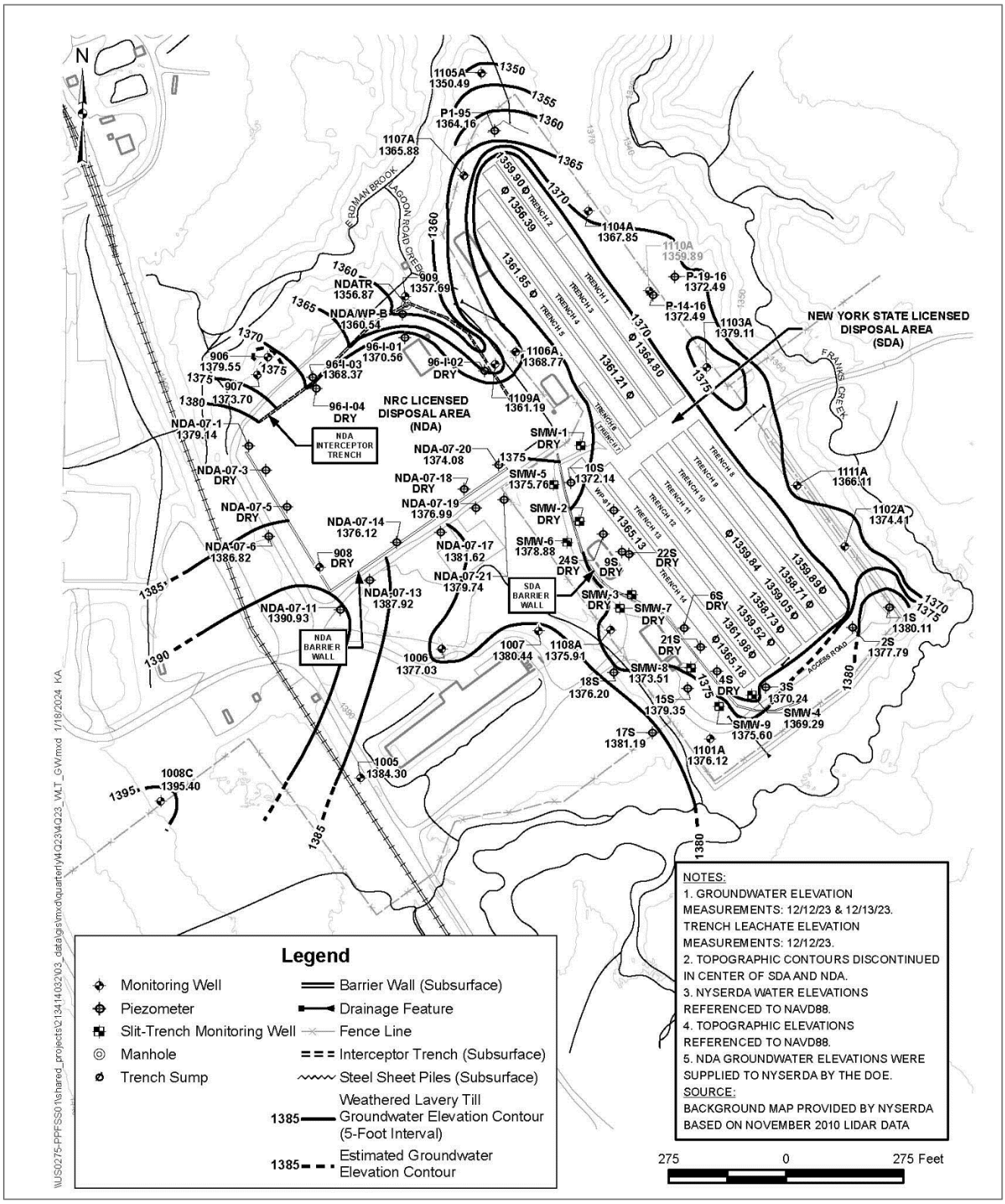


Figure B-11. Fourth Quarter 2023 Kent Recessional Groundwater Contour Map

Source: Stantec

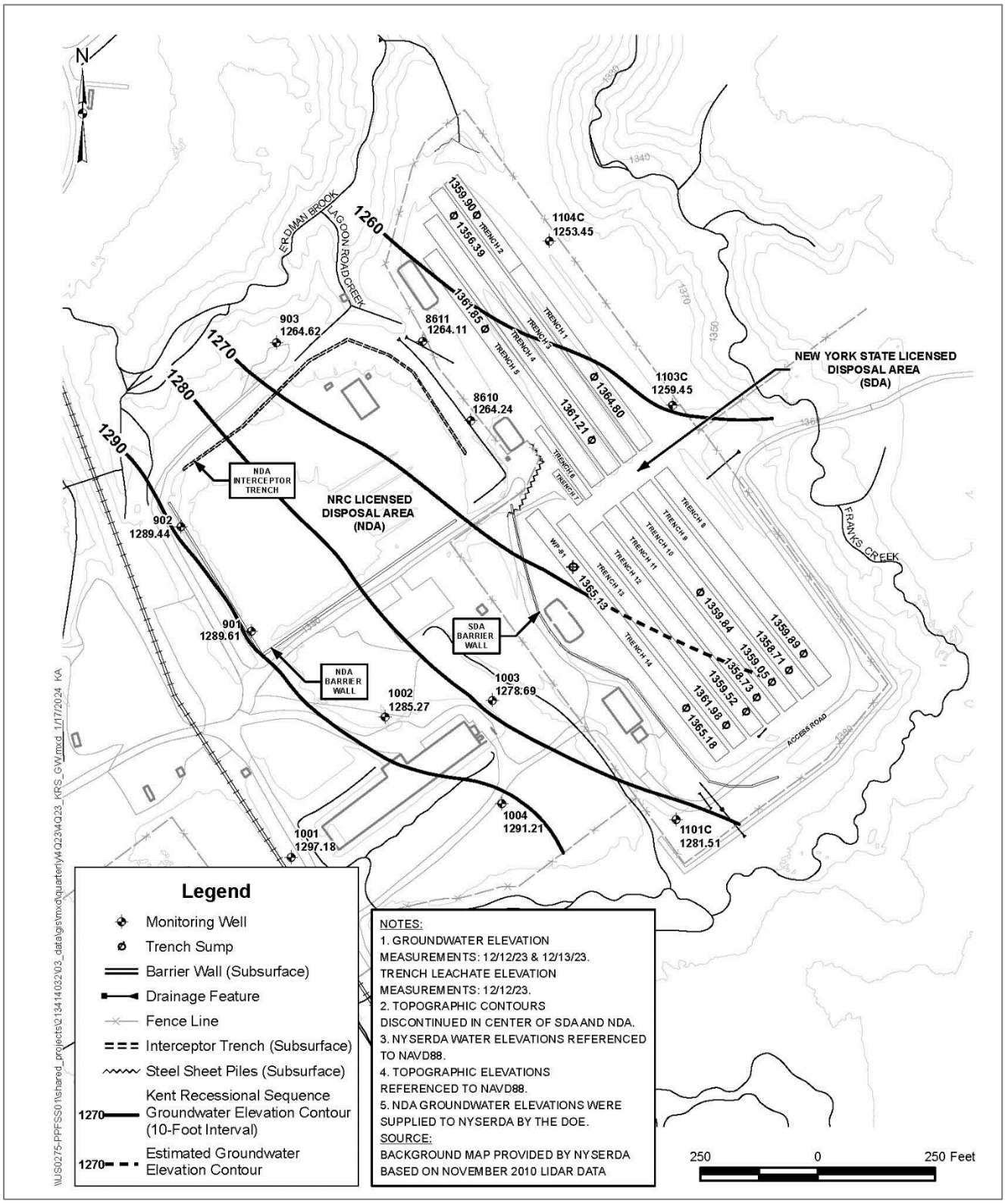


Figure B-12. Fourth Quarter 2023 North End Trench 14 Enhanced Groundwater Contour Map

Source: Stantec

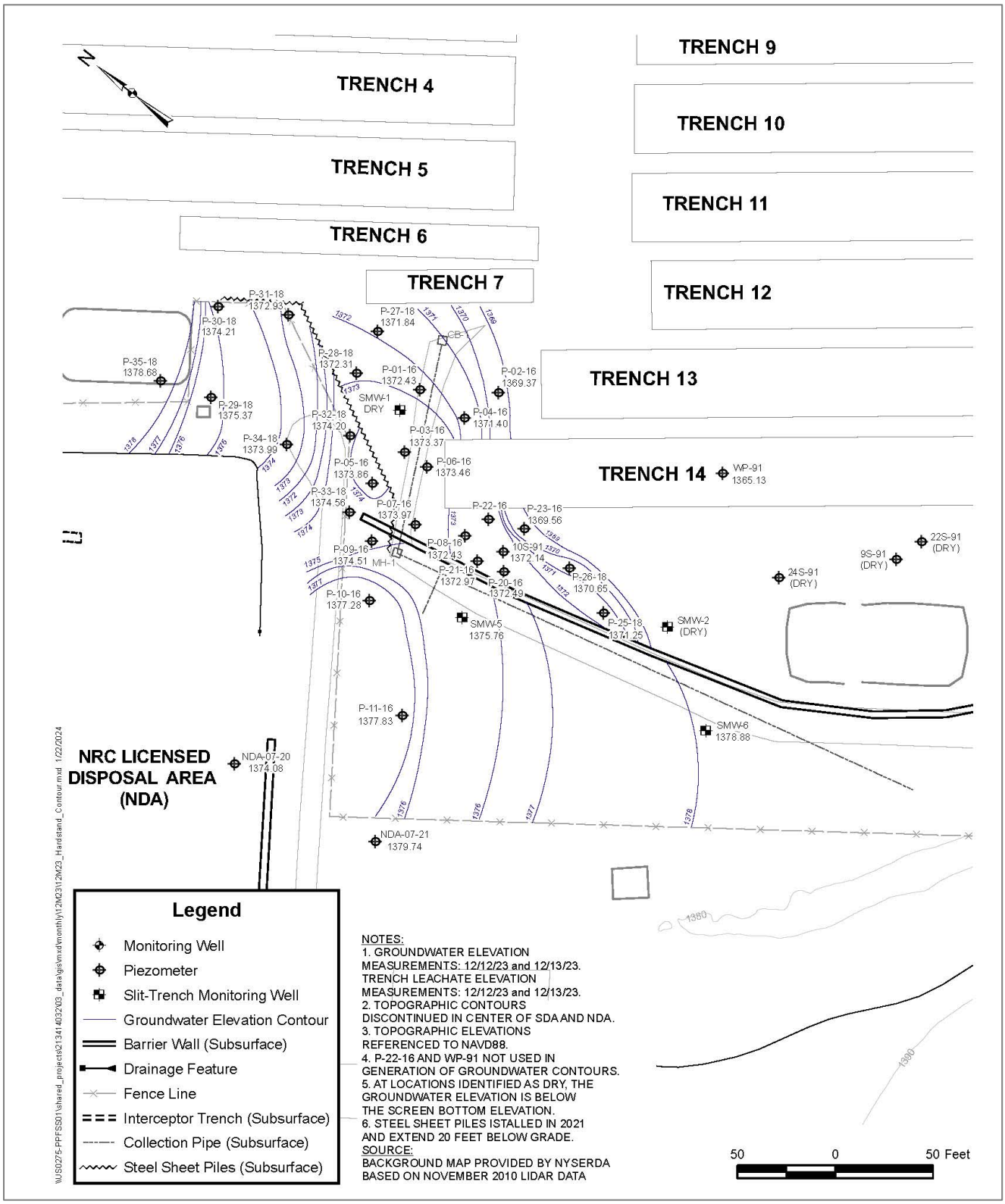


Table B-7. Semiannual Groundwater Sampling Performed in 2023

Source: NYSERDA

Well	Gross Alpha (May)	Gross Alpha (Nov)	Gross Beta (May)	Gross Beta (Nov)	Tritium (May)	Tritium (Nov)	Field Water Quality Parameters (May)	Field Water Quality Parameters (Nov)
1101A	✓	✓	✓	✓	✓	✓	✓	✓
1101B	✓	✓	✓	✓	✓	✓	✓	✓
1101C	✓	✓	✓	✓	✓	✓	✓	✓
1102A	✓	✓	✓	✓	✓	✓	✓	✓
1102B	✓	✓	✓	✓	✓	✓	✓	✓
1103A	✓	✓	✓	✓	✓	✓[a]	✓	✓[a]
1103B	✓	✓	✓	✓	✓	✓	✓	✓
1103C	✓	✓	✓	✓	✓	✓	ISV	ISV
1104A	✓	✓	✓	✓	✓	✓[a]	✓	✓[a]
1104B	✓	✓	✓	✓	✓	✓[a]	✓	✓[a]
1104C	✓	✓	✓	✓	✓	✓	ISV	ISV
1105A	✓	✓	✓	✓	✓	✓[a]	✓	✓[a]
1105B	✓	✓	✓	✓	✓	✓	✓	✓
1106A	✓	✓	✓	✓	✓	✓	✓	✓
1106B	✓	✓	✓	✓	✓	✓	✓	✓
1107A	✓	✓	✓	✓	✓	✓	✓	✓
1108A	✓	✓	✓	✓	✓	✓[a]	✓	✓[a]
1109A	✓	✓	✓	✓	✓	✓	✓	✓
1109B	✓	✓	✓	✓	✓	✓	✓	✓
1110A	✓	✓	✓	✓	✓	✓[a]	✓	✓[a]
1111A	✓	✓	✓	✓	✓	✓	✓	✓

Table B-8. Annual Groundwater Sampling Performed in 2023

Source: NYSERDA

Well	Gamma Emitters	Beta Emitters				Volatile Organic Compounds
		C-14	I-129	Sr-90	Tc-99	
1101A	✓	✓	✓	✓	✓	✓
1101B	✓	✓	✓	✓	✓	✓
1101C	✓	✓	✓	✓	✓	✓
1102A	✓	✓	✓	✓	✓	✓
1102B	✓	✓	✓	✓	✓	✓
1103A	✓	✓	✓	✓	✓	✓
1103B	✓	✓	✓	✓	✓	✓
1103C	ISV	✓	ISV	✓	ISV	✓
1104A	✓	✓	✓	✓	✓	✓
1104B	✓	✓	✓	✓	✓	✓
1104C	✓	✓	✓	✓	✓	✓
1105A	✓	✓	✓	✓	✓	✓
1105B	✓	✓	✓	✓	✓	✓
1106A	✓	✓	✓	✓	✓	✓
1106B	✓	✓	✓	✓	✓	✓
1107A	✓	✓	✓	✓	✓	✓
1108A	✓	✓	✓	✓	✓	✓
1109A	✓	✓	✓	✓	✓	✓
1109B	✓	✓	✓	✓	✓	✓
1110A	✓	✓	✓	✓	✓	✓
1111A	✓	✓	✓	✓	✓	✓

Table B-9. 2023 Groundwater Radiological Data - SDA 1100-Series Wells

Duplicate samples on the same date indicate a field duplicate was collected and analyzed.

As a comparison for the data in Table B-9, the 6 NYCRR Part 703.5, Table 1, *Water Quality Standards Surface Waters and Groundwater* concentrations are provided as a reference. This table lists the concentrations that are applicable for waters that are designated as Health (Water Source) locations. NYSERDA does not have a location that meets this definition.

Source: NYSERDA

Sample Location	Sample Date	Gross Alpha (pCi/L)	Q	Gross Beta (pCi/L)	Q	Tritium (pCi/L)	Q
703.5 Water Quality Standards		1.50E+01 pCi/L		1.00E+03 pCi/L		2.00E+04 pCi/L	
1101A	05/08/23	4.40E+00±1.37E+00	J	2.87E+00±9.77E-01		1.78E+01±5.11E+01	U
1101A	11/08/23	1.29E+00±1.08E+00	U	5.42E+00±8.87E-01		-2.68E+01±5.11E+01	U
1101B	05/08/23	1.95E+00±9.20E-01	J	2.21E+00±1.08E+00		3.88E+01±5.26E+01	U
1101B	11/08/23	1.56E+00±1.30E+00	U	9.39E+00±1.11E+00		-3.52E+01±5.03E+01	U
1101C	05/08/23	7.58E-01±7.86E-01	UJ	1.24E+00±9.65E-01	U	7.89E+01±5.57E+01	U
1101C	11/08/23	4.75E-01±6.82E-01	U	3.55E+00±9.29E-01		-3.31E+01±5.02E+01	U
1102A	05/08/23	4.59E+00±1.20E+00	J	3.60E+00±1.02E+00		6.23E+01±5.53E+01	U
1102A	11/08/23	3.02E+00±8.09E-01		1.97E+00±8.83E-01		2.13E+01±5.43E+01	U
1102B	05/08/23	2.01E-01±8.77E-01	UJ	1.01E+00±9.89E-01	U	7.23E+01±5.52E+01	U
1102B	11/08/23	6.98E-01±5.04E-01	U	1.37E+00±6.55E-01		-3.52E+01±4.98E+01	U
1103A	05/08/23	5.88E+00±1.56E+00	J	2.67E+00±1.09E+00		4.77E+01±5.35E+01	U
1103A	11/08/23	4.73E+00±1.35E+00		3.92E+00±9.33E-01		5.01E+02±7.80E+01	
1103A (Resample)	01/11/24	---		---		3.98E+01±4.59E+01	U
1103B	05/08/23	1.48E+00±1.11E+00	UJ	-2.74E+00±1.23E+00	UJ	6.44E+01±5.55E+01	U
1103B	11/08/23	1.51E+00±6.55E-01		1.86E+00±6.38E-01		8.03E+00±4.54E+01	U
1103C	05/01/23	1.83E+00±1.14E+00	J	1.84E+00±9.64E-01	J	5.28E+01±5.31E+01	U
1103C	11/02/23	1.67E-01±5.46E-01	U	2.84E+00±7.14E-01		7.74E+01±5.04E+01	U
1104A	05/04/23	2.66E+00±1.05E+00		1.94E+00±7.25E-01		2.59E+01±5.08E+01	U
1104A	11/08/23	2.62E+00±6.96E-01		7.89E+00±8.23E-01		1.68E+02±5.82E+01	
1104A (Resample)	01/11/24	---		---		4.15E+01±4.59E+01	U
1104B	05/04/23	1.60E+00±9.31E-01	J	1.31E+00±9.62E-01	U	1.59E+01±5.03E+01	U
1104B	11/08/23	2.51E+00±7.33E-01		1.92E+00±8.82E-01		1.43E+02±5.64E+01	UJ
1104B (Resample)	01/11/24	---		---		3.92E+01±4.56E+01	U
1104C	05/01/23	5.86E+00±4.38E+00	UJ	7.69E+00±2.92E+00	J	-8.13E+00±4.81E+01	U
1104C	11/02/23	1.86E+00±2.74E+00	UJ	9.75E-01±2.10E+00	U	4.61E+00±4.62E+01	U
1105A	05/04/23	7.85E-01±9.41E-01	U	2.34E+00±8.93E-01		4.20E+01±5.25E+01	U

Table B-9 continued.

Sample Location	Sample Date	Gross Alpha (pCi/L)	Q	Gross Beta (pCi/L)	Q	Tritium (pCi/L)	Q
703.5 Water Quality Standards		1.50E+01 pCi/L		1.00E+03 pCi/L		2.00E+04 pCi/L	
1105A	11/07/23	7.51E-01±6.93E-01	U	9.91E-01±6.91E-01	U	2.95E+02±6.58E+01	
1105A (Resample)	01/11/24	---		---		-1.68E+01±3.98E+01	U
1105A (Resample)	01/11/24	---		---		4.22E+01±4.63E+01	U
1105B	05/04/23	2.44E+00±1.40E+00	J	1.37E+00±9.63E-01	U	-9.31E+00±4.85E+01	U
1105B	05/04/23	2.17E+00±1.13E+00	J	2.36E+00±1.12E+00		6.65E+01±5.41E+01	U
1105B	11/07/23	1.98E+00±7.08E-01		2.24E+00±6.99E-01		-6.27E+01±3.88E+01	UJ
1106A	05/08/23	1.59E+00±9.63E-01	J	2.26E+00±9.93E-01		7.08E+01±5.57E+01	U
1106A	11/07/23	2.19E+00±6.88E-01		2.76E+00±7.23E-01		8.64E+01±5.83E+01	U
1106B	05/08/23	3.43E+00±1.14E+00	J	2.30E+00±1.08E+00		4.20E+01±5.29E+01	U
1106B	11/07/23	1.41E+00±6.25E-01		2.15E+00±8.91E-01		-7.66E+01±4.56E+01	UJ
1107A	05/04/23	2.33E+00±1.14E+00		5.81E+00±8.06E-01		2.04E+03±1.39E+02	
1107A	11/07/23	5.30E+00±1.95E+00		2.11E+01±2.10E+00		1.88E+03±1.27E+02	
1108A	05/04/23	5.40E+00±1.42E+00		3.98E+00±1.10E+00		1.07E+01±4.96E+01	U
1108A	11/02/23	2.68E+00±9.56E-01		2.84E+00±7.83E-01		2.23E+02±6.20E+01	
1108A (Resample)	01/11/24	---		---		3.72E+01±4.54E+01	U
1109A	05/08/23	8.04E-01±1.18E+00	UJ	2.46E+00±1.01E+00		3.59E+02±7.45E+01	
1109A	11/07/23	2.54E+00±8.78E-01		2.22E+00±7.35E-01	J	2.46E+02±6.11E+01	
1109B	05/09/23	7.64E-01±9.70E-01	UJ	1.55E+00±9.93E-01	U	6.16E+01±5.44E+01	U
1109B	11/07/23	9.85E-02±3.46E-01	U	1.87E+00±6.42E-01		1.89E+02±6.49E+01	
1110A	05/04/23	1.45E+01±2.67E+00		2.75E+01±2.59E+00		-6.23E+00±4.82E+01	U
1110A	11/02/23	1.11E+01±2.37E+00		9.56E+00±1.52E+00		2.63E+02±6.40E+01	
1110A	11/02/23	1.16E+01±2.49E+00		9.26E+00±1.52E+00		-9.91E+00±5.28E+01	U
1110A (Resample)	01/11/24	---		---		2.36E+01±4.48E+01	U
1111A	05/08/23	7.57E+00±1.93E+00	J	5.26E+00±1.16E+00		7.73E+01±5.58E+01	U
1111A	11/08/23	4.37E+00±9.48E-01		4.38E+00±7.93E-01		4.41E+01±5.59E+01	U

Table B-9 continued.

Sample Location	Sample Date	Beryllium-7 (pCi/L)	Q	Bismuth-214 (pCi/L)	Q	Carbon-14 (pCi/L)	Q
703.5 Water Quality Standards							
1101A	05/08/23	-3.34E+01±3.67E+01	U	1.11E+01±1.41E+01	U	-3.42E+00±1.80E+01	U
1101B	05/08/23	1.92E+01±3.85E+01	U	1.07E+01±1.56E+01	U	4.78E+00±1.82E+01	U
1101C	05/08/23	-3.05E+01±4.45E+01	U	1.89E+01±1.95E+01	U	-7.81E+00±1.78E+01	U
1102A	05/08/23	-8.79E+00±3.87E+01	U	6.27E+00±2.23E+01	U	9.64E+00±1.87E+01	U
1102B	05/08/23	-1.09E+01±3.46E+01	U	-8.49E+00±1.07E+01	U	1.59E+00±1.82E+01	U
1103A	05/08/23	2.55E+01±3.62E+01	U	4.17E+00±2.42E+01	U	-2.36E+00±2.61E+01	U
1103B	05/08/23	1.85E+01±4.85E+01	U	-1.08E+01±1.40E+01	U	-9.47E+00±1.77E+01	U
1103C	05/01/23	ISV		ISV		-7.20E+00±1.30E+01	U
1104A	05/04/23	3.82E+01±3.67E+01	U	1.35E+01±1.38E+01	U	-3.45E+00±2.47E+01	U
1104B	05/04/23	4.82E+01±4.93E+01	U	6.27E+00±1.80E+01	U	-1.08E+00±2.48E+01	U
1104C	05/01/23	4.74E+01±4.35E+01	U	-1.42E+00±1.19E+01	U	6.57E+00±1.80E+01	U
1105A	05/04/23	5.55E+01±4.41E+01	U	8.58E+00±1.45E+01	U	3.78E+00±2.50E+01	U
1105B	05/04/23	-1.70E+01±4.71E+01	U	7.82E+00±1.39E+01	U	-5.84E+00±2.46E+01	U
1105B	05/04/23	7.93E+00±3.51E+01	U	8.28E+00±1.19E+01	U	1.32E+01±2.52E+01	U
1106A	05/08/23	-7.98E+00±4.23E+01	U	1.08E+01±1.43E+01	U	-3.47E+00±1.76E+01	U
1106B	05/08/23	-1.55E+01±3.46E+01	U	6.59E+00±1.05E+01	U	-2.52E+00±1.72E+01	U
1107A	05/04/23	2.65E+00±1.25E+02	U	2.77E+01±4.15E+01	U	-5.83E+00±2.45E+01	U
1108A	05/04/23	1.17E+01±3.48E+01	U	7.95E+00±1.69E+01	U	1.36E+01±2.53E+01	U
1109A	05/08/23	8.44E+00±4.12E+01	U	-2.83E+00±1.12E+01	U	1.05E+00±1.83E+01	U
1109B	05/09/23	1.45E+01±4.51E+01	U	-1.98E+00±1.22E+01	U	2.15E+00±1.80E+01	U
1110A	05/04/23	9.48E+00±2.99E+01	U	2.76E+00±1.04E+01	U	-4.32E+00±2.46E+01	U
1111A	05/08/23	-2.87E+01±3.42E+01	U	-5.43E-02±9.98E+00	U	-5.32E+00±1.80E+01	U

Table B-9 continued.

Sample Location	Sample Date	Cesium-134 (pCi/L)	Q	Cesium-137 (pCi/L)	Q	Cobalt-57 (pCi/L)	Q
703.5 Water Quality Standards							
1101A	05/08/23	9.85E-01±4.59E+00	U	-4.34E+00±4.74E+00	U	2.06E+00±3.14E+00	U
1101B	05/08/23	2.88E+00±4.96E+00	U	-2.60E+00±5.26E+00	U	3.44E+00±4.21E+00	U
1101C	05/08/23	-4.83E+00±9.36E+00	U	4.96E-01±1.21E+01	U	7.68E-03±3.13E+00	U
1102A	05/08/23	4.57E+00±5.43E+00	U	5.25E+00±5.01E+00	U	-3.69E-01±4.03E+00	U
1102B	05/08/23	-2.81E+00±4.60E+00	U	-1.06E+00±3.69E+00	U	1.47E+00±2.92E+00	U
1103A	05/08/23	-1.55E+00±5.36E+00	U	3.74E+00±9.59E+00	U	1.40E+00±3.85E+00	U
1103B	05/08/23	1.44E+00±6.77E+00	U	4.35E+00±4.64E+00	U	-5.31E+00±3.87E+00	UJ
1103C	05/01/23	ISV		ISV		ISV	
1104A	05/04/23	-7.68E-01±4.45E+00	U	-2.93E-01±4.11E+00	U	1.91E-01±2.69E+00	U
1104B	05/04/23	5.76E-01±5.17E+00	U	-1.30E+00±5.22E+00	U	1.17E+00±3.84E+00	U
1104C	05/01/23	8.33E-02±5.61E+00	U	-5.53E-01±4.25E+00	U	1.40E+00±2.82E+00	U
1105A	05/04/23	5.59E+00±4.56E+00	U	2.81E+00±5.11E+00	U	-1.99E+00±3.56E+00	U
1105B	05/04/23	5.88E+00±8.07E+00	U	3.04E+00±4.05E+00	U	5.07E+00±4.54E+00	U
1105B	05/04/23	-2.47E+00±4.58E+00	U	4.87E-01±3.75E+00	U	-5.01E-01±3.04E+00	U
1106A	05/08/23	-5.14E+00±6.96E+00	U	2.10E+00±4.65E+00	U	2.57E+00±3.96E+00	U
1106B	05/08/23	-6.93E-01±4.52E+00	U	-8.13E-01±4.26E+00	U	-1.47E+00±2.80E+00	U
1107A	05/04/23	7.47E+00±1.47E+01	U	-1.11E-01±1.23E+01	UJ	-1.02E+01±1.03E+01	U
1108A	05/04/23	1.58E+00±3.81E+00	U	2.02E+00±4.43E+00	U	6.40E-01±2.84E+00	U
1109A	05/08/23	-2.58E+00±4.72E+00	UJ	-6.18E+00±5.77E+00	U	5.58E-01±2.96E+00	U
1109B	05/09/23	3.75E+00±6.63E+00	U	3.05E+00±4.50E+00	U	-1.44E+00±3.88E+00	U
1110A	05/04/23	4.67E-01±3.86E+00	U	-3.29E+00±3.13E+00	UJ	-3.15E-01±2.65E+00	U
1111A	05/08/23	1.95E+00±4.83E+00	U	-2.74E+00±3.52E+00	U	-2.51E-01±2.63E+00	U

Table B-9 continued.

Sample Location	Sample Date	Cobalt-60 (pCi/L)	Q	Iodine-129 (pCi/L)	Q	Lead-212 (pCi/L)	Q
703.5 Water Quality Standards							
1101A	05/08/23	5.29E-01±2.05E+00	U	-1.14E-01±4.94E-01	U	5.62E+00±1.22E+01	U
1101B	05/08/23	4.60E+00±5.68E+00	U	-1.55E-01±4.30E-01	U	1.53E+01±1.62E+01	U
1101C	05/08/23	-2.44E-01±6.23E+00	U	-4.02E-01±4.01E-01	UJ	9.64E+00±1.85E+01	U
1102A	05/08/23	3.11E+00±4.56E+00	U	-2.53E-01±5.38E-01	U	1.89E-01±1.90E+01	U
1102B	05/08/23	-9.05E-01±3.21E+00	U	-2.26E-02±1.70E-01	U	-1.18E+00±8.63E+00	U
1103A	05/08/23	-1.17E+00±6.01E+00	U	1.17E-01±3.65E-01	U	4.62E+00±1.62E+01	U
1103B	05/08/23	1.43E+00±5.69E+00	U	2.22E-01±2.91E-01	U	0.00E+00±2.12E+01	UI
1103C	05/01/23	ISV		ISV		ISV	
1104A	05/04/23	8.62E-01±4.68E+00	U	0.00E+00±5.28E-01	UI	5.47E+00±7.69E+00	U
1104B	05/04/23	-1.85E+00±5.82E+00	U	2.90E-01±4.46E-01	U	1.19E+00±1.41E+01	U
1104C	05/01/23	-4.79E-01±3.59E+00	U	-5.08E-01±5.68E-01	U	2.19E+00±1.56E+01	U
1105A	05/04/23	1.82E+00±5.81E+00	U	-2.40E-01±5.01E-01	U	1.12E+00±1.23E+01	U
1105B	05/04/23	-2.64E-01±4.98E+00	U	-1.68E-01±5.88E-01	UJ	-5.83E+00±9.19E+00	U
1105B	05/04/23	-9.46E-01±3.97E+00	U	-6.25E-03±5.28E-01	U	6.99E+00±1.11E+01	U
1106A	05/08/23	6.25E-01±4.55E+00	U	2.99E-02±3.06E-01	U	7.20E+00±1.87E+01	U
1106B	05/08/23	2.46E+00±3.05E+00	U	3.70E-01±4.13E-01	U	-3.06E+00±7.87E+00	U
1107A	05/04/23	6.93E+00±1.71E+01	U	6.18E-02±1.92E-01	U	1.33E+01±3.45E+01	U
1108A	05/04/23	-1.56E+00±2.69E+00	U	1.17E-01±4.18E-01	U	6.63E+00±1.19E+01	U
1109A	05/08/23	1.27E+00±3.39E+00	U	4.15E-01±4.67E-01	U	3.08E+00±1.16E+01	U
1109B	05/09/23	5.08E-01±2.19E+00	U	1.81E-01±3.83E-01	U	0.00E+00±1.98E+01	U
1110A	05/04/23	1.37E-01±3.19E+00	U	-1.14E-01±4.40E-01	U	-8.59E+00±9.35E+00	U
1111A	05/08/23	0.00E+00±4.88E+00	U	-2.37E-01±5.04E-01	U	4.06E+00±8.64E+00	U

Table B-9 continued.

Sample Location	Sample Date	Lead-214 (pCi/L)	Q	Potassium-40 (pCi/L)	Q	Radium-224 (pCi/L)	Q
703.5 Water Quality Standards							
1101A	05/08/23	-6.61E+00±9.79E+00	U	-5.11E+01±5.59E+01	U	-1.22E+01±7.61E+01	U
1101B	05/08/23	8.48E+00±1.67E+01	U	2.51E+01±5.84E+01	U	3.74E+01±8.80E+01	U
1101C	05/08/23	-1.15E+01±1.31E+01	U	-4.22E+01±1.04E+02	U	3.80E+01±8.55E+01	U
1102A	05/08/23	1.24E+00±1.70E+01	U	7.02E+01±8.74E+01	U	2.01E+00±2.02E+02	U
1102B	05/08/23	1.15E+01±1.43E+01	U	7.50E+00±9.70E+01	U	-1.57E+02±7.76E+01	UJ
1103A	05/08/23	-1.38E+01±1.20E+01	UJ	-4.36E+01±8.25E+01	U	4.88E+01±9.93E+01	U
1103B	05/08/23	-1.29E+01±1.40E+01	U	-7.17E+01±9.35E+01	U	0.00E+00±2.26E+02	UI
1103C	05/01/23	ISV		ISV		ISV	
1104A	05/04/23	-7.78E-01±9.50E+00	U	7.36E-01±5.18E+01	U	1.67E+01±6.01E+01	U
1104B	05/04/23	-6.14E+00±1.30E+01	U	3.07E+01±7.61E+01	U	9.87E+01±8.69E+01	U
1104C	05/01/23	-1.12E+00±1.11E+01	U	-5.17E+01±7.44E+01	U	3.63E+01±8.53E+01	U
1105A	05/04/23	3.47E+00±1.22E+01	U	-6.11E+01±6.75E+01	U	-7.12E+00±9.09E+01	U
1105B	05/04/23	-3.62E+00±1.17E+01	U	-5.50E+01±5.90E+01	U	7.64E+01±8.31E+01	U
1105B	05/04/23	1.47E+00±1.34E+01	U	-9.29E+00±5.28E+01	U	-1.50E+01±7.23E+01	U
1106A	05/08/23	4.44E+00±1.36E+01	U	2.86E+01±6.58E+01	U	7.78E+00±1.05E+02	U
1106B	05/08/23	9.16E+00±1.16E+01	U	1.43E+01±6.98E+01	U	-3.02E+01±8.26E+01	U
1107A	05/04/23	0.00E+00±4.30E+01	UI	9.90E+00±1.58E+02	U	8.56E+01±2.40E+02	U
1108A	05/04/23	-5.30E+00±8.67E+00	U	-4.13E+01±5.12E+01	U	1.70E+01±7.76E+01	U
1109A	05/08/23	2.46E+00±1.03E+01	U	1.29E+01±6.81E+01	U	-8.22E+01±9.02E+01	U
1109B	05/09/23	-9.18E-01±1.13E+01	U	-6.17E+00±6.93E+01	U	3.12E+01±7.92E+01	U
1110A	05/04/23	-4.16E+00±8.51E+00	U	6.29E+01±6.45E+01	U	8.68E+01±8.07E+01	U
1111A	05/08/23	1.63E+01±1.50E+01	U	4.56E+00±5.78E+01	U	7.08E+01±1.04E+02	U

Table B-9 continued.

Sample Location	Sample Date	Radium-226 (pCi/L)	Q	Strontium-90 (pCi/L)	Q	Technetium-99 (pCi/L)	Q
703.5 Water Quality Standards		3.00E+00 pCi/L		8.00E+00 pCi/L			
1101A	05/08/23	1.55E+01±1.36E+02	U	1.11E-01±5.26E-01	U	-3.13E-01±4.12E+00	UJ
1101B	05/08/23	2.74E+01±1.63E+02	U	6.55E-01±4.53E-01	U	-8.00E-01±4.25E+00	UJ
1101C	05/08/23	-4.46E+01±1.24E+02	U	2.33E-01±5.02E-01	U	1.90E+00±5.45E+00	UJ
1102A	05/08/23	1.63E+01±1.51E+02	U	6.49E-01±4.92E-01	U	1.05E+00±4.07E+00	UJ
1102B	05/08/23	-2.21E+01±8.98E+01	U	-4.29E-02±3.92E-01	U	3.15E-01±5.03E+00	UJ
1103A	05/08/23	-8.81E+01±1.35E+02	U	-5.36E-02±3.44E-01	U	7.11E-01±5.37E+00	UJ
1103B	05/08/23	2.27E+01±1.82E+02	U	-3.14E-02±2.99E-01	U	-1.84E+00±4.37E+00	UJ
1103C	05/01/23	ISV		3.63E-01±2.85E-01	U	ISV	
1104A	05/04/23	6.09E+01±1.53E+02	U	2.20E-01±3.83E-01	U	2.78E-01±2.61E+00	U
1104B	05/04/23	1.24E+02±2.31E+02	U	2.85E-02±2.95E-01	U	-2.62E-02±2.63E+00	U
1104C	05/01/23	-8.66E+01±1.05E+02	U	-2.24E-03±1.97E-01	U	-1.66E+00±3.66E+00	UJ
1105A	05/04/23	4.68E+01±1.57E+02	U	-1.58E-01±3.34E-01	U	-2.19E+00±2.49E+00	U
1105B	05/04/23	-3.38E+01±1.01E+02	U	3.41E-01±3.39E-01	U	-3.00E+00±2.50E+00	UJ
1105B	05/04/23	4.50E+01±1.38E+02	U	5.20E-02±2.50E-01	U	-1.45E+00±2.57E+00	U
1106A	05/08/23	-1.14E+02±1.16E+02	U	-7.20E-02±3.82E-01	U	-2.60E-01±4.59E+00	UJ
1106B	05/08/23	2.85E-01±1.04E+02	U	3.29E-01±2.83E-01	U	-1.23E+00±5.12E+00	UJ
1107A	05/04/23	7.54E+01±4.93E+02	U	6.26E+00±2.78E+00	J	-8.31E-01±2.86E+00	U
1108A	05/04/23	-8.18E+01±8.59E+01	U	2.51E-01±3.08E-01	U	-3.25E+00±2.66E+00	UJ
1109A	05/08/23	5.74E+01±1.52E+02	U	1.83E-02±2.50E-01	U	-2.19E+00±4.95E+00	UJ
1109B	05/09/23	8.52E+01±1.79E+02	U	3.51E-01±4.43E-01	U	4.76E-01±4.27E+00	UJ
1110A	05/04/23	0.00E+00±1.17E+02	UI	2.09E-01±3.34E-01	U	-7.02E-01±2.93E+00	U
1111A	05/08/23	7.64E+01±1.50E+02	U	5.16E-01±4.05E-01	U	8.25E-01±4.02E+00	UJ

Table B-9 continued.

Sample Location	Sample Date	Thallium 208 (pCi/L)	Q	Thorium-234 (pCi/L)	Q	Uranium-235 (pCi/L)	Q
703.5 Water Quality Standards							
1101A	05/08/23	1.49E+00±5.46E+00	U	1.74E+02±4.25E+02	U	-2.22E+00±2.83E+01	U
1101B	05/08/23	2.62E+00±5.67E+00	U	4.05E+02±6.06E+02	U	0.00E+00±5.12E+01	UI
1101C	05/08/23	4.45E+00±8.85E+00	U	5.16E+01±1.37E+02	U	-8.96E+00±2.77E+01	U
1102A	05/08/23	3.41E+00±1.10E+01	U	1.93E+02±4.51E+02	U	-4.13E+01±3.83E+01	UJ
1102B	05/08/23	-1.19E-01±5.29E+00	U	-2.82E+01±1.10E+02	U	4.08E-01±2.67E+01	U
1103A	05/08/23	7.85E+00±8.95E+00	U	1.62E+01±3.28E+02	U	6.36E+01±5.38E+01	U
1103B	05/08/23	-1.95E+00±6.52E+00	U	2.48E+02±4.68E+02	U	3.30E+01±4.66E+01	U
1103C	05/01/23	ISV		ISV		ISV	
1104A	05/04/23	3.45E+00±5.47E+00	U	4.71E+01±2.33E+02	U	1.17E+01±2.95E+01	U
1104B	05/04/23	-2.62E+00±6.36E+00	U	0.00E+00±5.48E+02	UI	-3.50E+00±3.82E+01	U
1104C	05/01/23	2.41E-01±6.14E+00	U	-8.70E+01±2.23E+02	U	-8.28E+00±3.08E+01	U
1105A	05/04/23	1.62E+00±1.17E+01	U	2.48E+01±4.06E+02	U	1.66E+01±3.29E+01	U
1105B	05/04/23	3.79E+00±6.18E+00	U	-1.50E+02±1.90E+02	UJ	2.00E+01±4.28E+01	U
1105B	05/04/23	4.55E+00±5.45E+00	U	1.66E+02±2.42E+02	U	-9.29E-01±2.94E+01	U
1106A	05/08/23	3.33E+00±6.62E+00	U	-1.97E+02±3.97E+02	U	2.53E+01±3.10E+01	U
1106B	05/08/23	2.37E-01±8.03E+00	U	2.56E+02±2.90E+02	U	-1.29E+01±2.61E+01	U
1107A	05/04/23	-1.23E+01±1.61E+01	U	-4.60E+02±7.33E+02	U	2.69E+01±7.74E+01	U
1108A	05/04/23	1.68E+00±5.46E+00	U	2.09E+02±2.79E+02	U	-1.42E+01±2.41E+01	U
1109A	05/08/23	-3.04E+00±6.21E+00	U	0.00E+00±3.04E+02	UI	-1.52E+01±2.71E+01	U
1109B	05/09/23	-4.37E-02±5.92E+00	U	-4.62E+02±3.73E+02	UJ	-3.52E-01±3.28E+01	U
1110A	05/04/23	9.91E-01±8.14E+00	U	-1.18E+02±1.80E+02	U	-6.48E+00±2.56E+01	U
1111A	05/08/23	-3.25E+00±5.05E+00	U	6.14E+01±2.11E+02	U	4.40E+00±2.50E+01	U

Table B-10. 2023 Groundwater Field Parameter Data - SDA 1100-Series Wells

Source: NYSERDA

Sample Location	Sample Date	Conductivity (μmhos/cm)	pH (SU)	Temperature (°C)	Turbidity (NTU)
1101A	05/08/23	168	7.83	13.10	5.18
1101A	11/08/23	815	7.47	11.80	4.55
1101B	05/08/23	115	8.08	12.90	1.96
1101B	11/08/23	566	7.88	9.43	6.06
1101C	05/08/23	73	8.29	11.79	81.9
1101C	11/08/23	347	8.00	9.09	33.0
1102A	05/08/23	161	7.82	11.60	3.44
1102A	11/08/23	763	7.37	10.69	20.1
1102B	05/08/23	113	7.87	12.52	2.21
1102B	11/08/23	555	7.77	9.82	5.63
1103A	05/08/23	240	7.53	14.20	5.56
1103A	11/08/23	1250	7.15	12.69	>100
1103B	05/08/23	105	7.83	12.51	2.13
1103B	11/08/23	640	7.75	10.16	4.41
1103C	05/01/23	ISV	ISV	ISV	ISV
1103C	11/02/23	ISV	ISV	ISV	ISV
1104A	05/04/23	143	7.95	9.96	3.05
1104A	11/08/23	680	7.20	11.63	16.8
1104B	05/04/23	119	8.32	11.48	0.79
1104B	11/08/23	579	7.47	10.11	4.53
1104C	05/01/23	ISV	ISV	ISV	ISV
1104C	11/02/23	ISV	ISV	ISV	ISV
1105A	05/04/23	138	7.69	10.00	89.0
1105A	11/07/23	680	8.65	10.24	25.6
1105B	05/04/23	126	8.05	10.00	>100
1105B	11/07/23	630	8.64	9.37	77.1
1106A	05/08/23	143	7.57	14.60	1.44
1106A	11/07/23	704	8.23	13.61	4.56
1106B	05/08/23	138	7.70	14.95	16.8

Table B-10 continued.

Sample Location	Sample Date	Conductivity (μmhos/cm)	pH (SU)	Temperature (°C)	Turbidity (NTU)
1106B	11/07/23	697	8.33	12.48	4.28
1107A	05/04/23	414	6.32	10.04	0.68
1107A	11/07/23	2030	7.60	11.98	5.48
1108A	05/04/23	167	8.19	9.07	44.7
1108A	11/02/23	835	8.85	11.55	86.7
1109A	05/08/23	138	6.75	14.56	1.18
1109A	11/07/23	694	7.65	14.01	0.94
1109B	05/09/23	95	7.03	13.10	21.6
1109B	11/07/23	473	8.33	12.09	47.8
1110A	05/04/23	356	7.93	11.25	>100
1110A	11/02/23	1611	8.37	10.23	56.6
1111A	05/08/23	202	7.60	10.67	8.22
1111A	11/08/23	964	7.33	10.72	5.54

Appendix C – Surface and Stormwater Data

Table C-1. 2023 SDA Surface Water Data - Lagoon Road Creek (WNNDADR)

Duplicate samples on the same date indicate a field duplicate was collected and analyzed.

As a comparison for the data in Table C-1, the 6 NYCRR Part 703.5 concentrations are provided as a reference. This table lists the concentrations that are applicable for waters that are designated as Health (Water Source) locations. NYSERDA does not have a location that meets this definition.

Source: NYSERDA

Sample Date	Gross Alpha (pCi/L)	Q	Gross Beta (pCi/L)	Q	Tritium (pCi/L)	Q
703.5 Water Quality Standards	1.50E+01 pCi/L		1.00E+03 pCi/L		2.00E+04 pCi/L	
02/13/23	1.03E+00±1.18E+00	U	8.13E+00±1.10E+00		6.37E+01±9.52E+01	U
02/13/23	1.15E+00±1.20E+00	U	9.26E+00±1.19E+00		4.03E+01±9.39E+01	U
05/11/23	4.16E-01±6.36E-01	U	1.41E+01±1.38E+00		6.53E+01±1.06E+02	U
08/02/23	1.32E+00±1.10E+00	U	1.31E+01±2.06E+00		-6.21E+01±7.32E+01	U
11/09/23	4.88E-01±3.75E-01	U	3.39E+00±5.32E-01		1.30E+02±9.24E+01	U

Table C-2. 2023 SDA Surface Water Data - Erdman Brook (WNERB53)

As a comparison for the data in Table C-2, the 6 NYCRR Part 703.5 concentrations are provided as a reference. This table lists the concentrations that are applicable for waters that are designated as Health (Water Source) locations. NYSERDA does not have a location that meets this definition.

Source: NYSERDA

Sample Date	Gross Alpha (pCi/L)	Q	Gross Beta (pCi/L)	Q	Tritium (pCi/L)	Q
703.5 Water Quality Standards	1.50E+01 pCi/L		1.00E+03 pCi/L		2.00E+04 pCi/L	
02/13/23	3.77E-01±9.89E-01	U	3.24E+00±9.83E-01		2.33E+01±9.41E+01	U
05/11/23	7.58E-01±1.59E+00	UJ	3.53E+00±1.18E+00		1.96E+01±9.96E+01	U
08/02/23	8.86E-01±9.78E-01	U	3.08E+00±1.34E+00		-4.69E+01±7.55E+01	U
11/09/23	2.33E-01±8.04E-01	U	3.32E+00±5.83E-01		2.04E+02±9.53E+01	UJ
01/08/24	---		---		1.19E+01±6.13E+01	U

Table C-3. 2023 SDA Surface Water Data - Franks Creek (WNFRC67)

Duplicate samples on the same date indicate a field duplicate was collected and analyzed.

As a comparison for the data in Table C-3, the 6 NYCRR Part 703.5 concentrations are provided as a reference. This table lists the concentrations that are applicable for waters that are designated as Health (Water Source) locations. NYSERDA does not have a location that meets this definition.

Source: NYSERDA

Sample Date	Gross Alpha (pCi/L)	Q	Gross Beta (pCi/L)	Q	Tritium (pCi/L)	Q
703.5 Water Quality Standards	1.50E+01 pCi/L		1.00E+03 pCi/L		2.00E+04 pCi/L	
02/13/23	7.40E-01±1.00E+00	U	1.54E+00±1.22E+00	U	-1.06E+01±9.25E+01	U
05/11/23	6.34E-01±4.95E-01	U	8.76E-01±8.18E-01	U	-6.19E+01±8.89E+01	U
08/02/23	1.17E+00±1.05E+00	U	3.20E+00±1.27E+00		9.28E+01±9.57E+01	U
08/02/23	7.50E-01±9.47E-01	U	2.85E+00±1.25E+00		-7.74E+01±7.03E+01	UJ
11/09/23	4.12E-01±4.00E-01	U	4.96E+00±8.31E-01		1.11E+02±9.16E+01	U

Table C-4. 2023 SDA Surface Water Data - Franks Creek (WNDCELD)

As a comparison for the data in Table C-4, the 6 NYCRR Part 703.5 concentrations are provided as a reference. This table lists the concentrations that are applicable for waters that are designated as Health (Water Source) locations. NYSERDA does not have a location that meets this definition.

Source: NYSERDA

Sample Date	Gross Alpha (pCi/L)	Q	Gross Beta (pCi/L)	Q	Tritium (pCi/L)	Q
703.5 Water Quality Standards	1.50E+01 pCi/L		1.00E+03 pCi/L		2.00E+04 pCi/L	
02/13/23	8.52E-01±1.10E+00	U	5.44E-01±8.40E-01	U	4.88E+01±9.51E+01	U
05/11/23	-1.20E+00±5.53E-01	UJ	3.54E-01±6.18E-01	U	-3.04E+01±9.38E+01	U
08/02/23	1.64E+00±1.15E+00	J	3.24E+00±1.29E+00		-3.95E+01±7.67E+01	U
11/09/23	-3.08E-01±5.06E-01	U	9.91E-01±7.15E-01	U	1.82E+02±9.41E+01	UJ
01/08/24	---		---		3.94E+01±6.64E+01	U

Table C-5. 2023 SDA Surface Water Data - Buttermilk Creek: Upgradient of the SDA (WFBCBKG)

Duplicate samples on the same date indicate a field duplicate was collected and analyzed.

As a comparison for the data in Table C-5, the 6 NYCRR Part 703.5 concentrations are provided as a reference. This table lists the concentrations that are applicable for waters that are designated as Health (Water Source) locations. NYSERDA does not have a location that meets this definition.

Source: NYSERDA

Sample Date	Gross Alpha (pCi/L)	Q	Gross Beta (pCi/L)	Q	Tritium (pCi/L)	Q
703.5 Water Quality Standards	1.50E+01 pCi/L		1.00E+03 pCi/L		2.00E+04 pCi/L	
02/13/23	1.21E+00±1.17E+00	U	2.26E+00±8.88E-01		2.27E+01±9.29E+01	U
05/11/23	-1.08E-01±6.73E-01	U	2.10E+00±8.78E-01		-1.53E+01±9.56E+01	U
08/02/23	1.11E+00±7.97E-01	J	3.93E+00±1.30E+00		2.95E+01±8.77E+01	U
11/09/23	2.22E-01±5.66E-01	U	3.24E+00±7.13E-01		1.97E+02±9.53E+01	UJ
01/08/24	---		---		5.55E+01±7.01E+01	U
01/08/24	---		---		3.12E+01±6.57E+01	U

Table C-6. 2023 SDA Surface Water Data - Buttermilk Creek: Downgradient of the SDA (WFBCANL)

As a comparison for the data in Table C-6, the 6 NYCRR Part 703.5 concentrations are provided as a reference. This table lists the concentrations that are applicable for waters that are designated as Health (Water Source) locations. NYSERDA does not have a location that meets this definition.

Source: NYSERDA

Sample Date	Gross Alpha (pCi/L)	Q	Gross Beta (pCi/L)	Q	Tritium (pCi/L)	Q
703.5 Water Quality Standards	1.50E+01 pCi/L		1.00E+03 pCi/L		2.00E+04 pCi/L	
05/11/23	2.87E-02±6.34E-01	U	1.97E+00±8.74E-01		2.91E+00±9.74E+01	U

Table C-7. 2023 SDA Stormwater Radiological Data - Outfall Location W01

Duplicate samples on the same date indicate a field duplicate was collected and analyzed.

As a comparison for the data in Table C-7, the 6 NYCRR Part 703.5 concentrations are provided as a reference. This table lists the concentrations that are applicable for waters that are designated as Health (Water Source) locations. NYSERDA does not have a location that meets this definition.

Source: NYSERDA

Sample Date	Gross Alpha (pCi/L)	Q	Gross Beta (pCi/L)	Q	Tritium (pCi/L)	Q
703.5 Water Quality Standards	1.50E+01 pCi/L		1.00E+03 pCi/L		2.00E+04 pCi/L	
06/12/23	9.68E+00±2.49E+00		3.40E+00±9.40E-01	U	8.30E+01±9.96E+01	U
10/30/23	1.03E+00±9.59E-01	U	1.53E+00±1.21E+00	U	-3.58E+01±9.23E+01	U
10/30/23	1.63E+00±1.04E+00	J	8.55E-01±1.03E+00	U	-2.74E+01±9.40E+01	U

Sample Date	Cesium-137 (pCi/L)	Q	Cobalt-60 (pCi/L)	Q	Potassium-40 (pCi/L)	Q
703.5 Water Quality Standards						
06/12/23	1.38E+00±3.65E+00	U	-1.20E+00±3.18E+00	U	-7.21E+00±5.90E+01	U
10/30/23	1.83E+00±4.58E+00	U	-4.13E-01±3.95E+00	U	-2.47E+01±6.14E+01	U

Table C-8. 2023 SDA Stormwater Chemical Physical Data - Outfall Location W01

Duplicate samples on the same date indicate a field duplicate was collected and analyzed. Data is shown as reported on the Discharge Monitoring Reports. Blank entries indicate a result was not obtained, typically because it was not required.

Source: NYSERDA

Sample Date	Sample Type	BOD (mg/L)	Q	COD (mg/L)	Q	Nitrogen, Total (mg/L)	Q	Oil & Grease (mg/L)	Q
06/12/23	Grab	14	J	38	JB	1.9	J	3.7	JB
06/12/23	Composite	6.4		21	B	1.4			
06/12/23	Grab	14	J	38	B	2.5	J	<1.4	UJB
10/30/23	Grab	<1.0	UJ	<9.0	U	0.11	J	<1.4	U
10/30/23	Composite	<1.0	UJ	<9.0	U	0.085			
10/30/23	Composite	<1.0	UJ	<9.0	U	0.14	J		

Sample Date	Sample Type	Total Phosphorus (mg/L)	Q	TSS (mg/L)	Q	pH (SU)	Q	Temp (°C)	Q
06/12/23	Grab	0.10		20	J	4.14		17.04	
06/12/23	Composite	0.094		2.9					
06/12/23	Ambient Rain					5.32		16.78	
06/12/23	Grab	0.15		29		4.90		17.11	
10/30/23	Grab	0.029	J	<0.57	U	6.09		8.31	
10/30/23	Composite	0.054		<0.57	U				
10/30/23	Ambient Rain					5.86		8.40	
10/30/23	Composite	<0.020	U	<0.58	U				

Appendix D – Overland Gamma Radiation Survey & Thermoluminescent Dosimeter Data

Table D-1. 2023 Overland Gamma Radiation Survey Results

Source: NYSERDA

	May (μrem/hr)		October (μrem/hr)	
Location[b]	1m	1cm	1m	1cm
P-1	6	4	4	4
P-2	4	6	5	5
P-3	3	5	5	5
P-4	6	4	5	5
P-5	3	3	4	3
P-6	3	4	4	4
P-7	3	3	5	5
P-8	3	4	4	4
P-9	4	5	5	4
P-10	6	3	3	3
P-11	4	4	4	4
P-12	3	4	3	3
P-13	3	3	4	4
P-14	3	4	3	3
P-15	3	3	3	4
P-16	3	3	5	5
SDA2n	4	5	3	3
SDA2s	5	7	3	5
SDA3n	4	3	4	5
SDA3s	4	4	4	4
SDA4n	4	4	4	4
SDA4s	6	6	4	4
T1s	4	6	4	4
T2n	4	5	4	4
T3n	3	5	4	4
T3s	4	6	3	3

Table D-1 continued.

Location[b]	May (μrem/hr) 1m	May (μrem/hr) 1cm	October (μrem/hr) 1m	October (μrem/hr) 1cm
T4n	5	4	4	5
T4s	4	5	5	5
T5n	4	4	6	4
T5s	5	7	3	3
T6n	4	3	4	5
T6s	5	6	7	3
T7n	5	7	4	6
T7s	7	6	3	3
T8n	3	5	5	5
T8s	4	5	5	5
T9n	5	5	5	5
T9s	5	3	3	3
T10n	5	5	6	7
T10s	4	4	6	6
T11n	3	6	5	6
T11s	6	5	3	5
T12n	5	5	6	6
T12s	4	4	3	3
T13n	5	5	4	4
T13s	4	5	4	6
T14n	5	6	4	4
T14s	4	5	7	6
Tank T-1	4	5	5	5
DC-(G)[c]	3	3	4	3
DC-dr[c]	3	5	4	4

Table D-2. 2023 Thermoluminescent Dosimeter Data

Source: NYSERDA

Location	1st Qtr (mR/Qtr)	Q	2nd Qtr (mR/Qtr)	Q	3rd Qtr (mR/Qtr)	Q	4th Qtr (mR/Qtr)	Q
NYTLDBK (Background Location)	14.71±0.93		15.59±1.19		16.41±1.16		17.26±0.84	
DNTLD19 (SDA E. Fence)	15.52±1.52		15.65±2.02		15.70±1.36		16.80±0.78	
DNTLD33 (SDA SW Corner)	16.41±0.99		16.19±1.25		17.19±1.36		18.66±1.12	
DNTLD43 (SDA West Gate)	13.77±0.99		13.68±1.03		14.29±1.52		15.58±0.88	
DNTLD53 (SDA N. Fence)	19.30±1.27		17.32±1.37		17.45±1.28		18.85±1.66	
SDATLD01 (SDA S. Fence)	16.95±0.97		16.56±1.11		17.62±1.24		18.28±1.06	
SDATLD02 (SDA SE Fence)	16.31±1.03		16.90±1.27		17.00±1.18		18.54±1.02	
SDATLD03 (SDA NE Fence)	17.59±1.07		17.48±1.70		18.20±1.20		19.26±1.44	
SDATLD04 (SDA N. Fence)	18.39±1.15		17.46±1.11		17.79±1.46		18.79±1.50	
SDATLD05 (SDA NW Fence)	17.17±1.27		17.45±1.11		17.80±1.38		18.19±0.94	
SDATLD06 (SDA W. Fence)	17.45±1.31		17.54±1.31		17.70±1.22		18.82±1.92	

Appendix E – Precipitation

Table E-1. First Quarter 2023 SDA Precipitation Data (Liquid Rainfall Equivalent)

Source: NYSERDA

January 2023	Precipitation (inches)	February 2023	Precipitation (inches)	March 2023	Precipitation (inches)
1/1/2023	0.02	2/1/2023	0.01	3/1/2023	0.00
1/2/2023	0.00	2/2/2023	0.03	3/2/2023	0.00
1/3/2023	0.75	2/3/2023	0.06	3/3/2023	0.47
1/4/2023	0.50	2/4/2023	0.00	3/4/2023	0.22
1/5/2023	0.00	2/5/2023	0.01	3/5/2023	0.05
1/6/2023	0.13	2/6/2023	0.00	3/6/2023	0.18
1/7/2023	0.11	2/7/2023	0.00	3/7/2023	0.02
1/8/2023	0.00	2/8/2023	0.00	3/8/2023	0.00
1/9/2023	0.00	2/9/2023	0.61	3/9/2023	0.00
1/10/2023	0.00	2/10/2023	0.18	3/10/2023	0.28
1/11/2023	0.00	2/11/2023	0.00	3/11/2023	0.01
1/12/2023	0.55	2/12/2023	0.00	3/12/2023	0.00
1/13/2023	0.09	2/13/2023	0.01	3/13/2023	0.03
1/14/2023	0.00	2/14/2023	0.00	3/14/2023	0.01
1/15/2023	0.00	2/15/2023	0.01	3/15/2023	0.00
1/16/2023	0.00	2/16/2023	0.00	3/16/2023	0.02
1/17/2023	0.21	2/17/2023	0.12	3/17/2023	0.78
1/18/2023	0.31	2/18/2023	0.00	3/18/2023	0.06
1/19/2023	0.58	2/19/2023	0.00	3/19/2023	0.11
1/20/2023	0.50	2/20/2023	0.00	3/20/2023	0.00
1/21/2023	0.00	2/21/2023	0.03	3/21/2023	0.00
1/22/2023	0.12	2/22/2023	0.43	3/22/2023	0.00
1/23/2023	0.06	2/23/2023	0.15	3/23/2023	0.46
1/24/2023	0.00	2/24/2023	0.03	3/24/2023	0.00
1/25/2023	0.33	2/25/2023	0.00	3/25/2023	0.68
1/26/2023	0.18	2/26/2023	0.01	3/26/2023	0.03
1/27/2023	0.07	2/27/2023	0.39	3/27/2023	0.36
1/28/2023	0.01	2/28/2023	0.12	3/28/2023	0.00
1/29/2023	0.10			3/29/2023	0.07
1/30/2023	0.07			3/30/2023	0.00
1/31/2023	0.00			3/31/2023	0.20
Total	**4.69**	**Total**	**2.20**	**Total**	**4.04**

Table E-2. Second Quarter 2023 SDA Precipitation Data (Liquid Rainfall Equivalent)

Source: NYSERDA

April 2023	Precipitation (inches)	May 2023	Precipitation (inches)	June 2023	Precipitation (inches)
4/1/2023	0.98	5/1/2023	0.22	6/1/2023	0.00
4/2/2023	0.00	5/2/2023	0.37	6/2/2023	0.00
4/3/2023	0.63	5/3/2023	0.13	6/3/2023	0.00
4/4/2023	0.37	5/4/2023	0.03	6/4/2023	0.00
4/5/2023	0.44	5/5/2023	0.00	6/5/2023	0.00
4/6/2023	0.06	5/6/2023	0.00	6/6/2023	0.00
4/7/2023	0.00	5/7/2023	0.13	6/7/2023	0.00
4/8/2023	0.00	5/8/2023	0.00	6/8/2023	0.00
4/9/2023	0.00	5/9/2023	0.00	6/9/2023	0.00
4/10/2023	0.00	5/10/2023	0.00	6/10/2023	0.00
4/11/2023	0.00	5/11/2023	0.00	6/11/2023	0.03
4/12/2023	0.01	5/12/2023	0.00	6/12/2023	0.16
4/13/2023	0.00	5/13/2023	0.00	6/13/2023	0.03
4/14/2023	0.00	5/14/2023	0.00	6/14/2023	0.57
4/15/2023	0.07	5/15/2023	0.00	6/15/2023	0.00
4/16/2023	0.78	5/16/2023	0.00	6/16/2023	0.03
4/17/2023	0.07	5/17/2023	0.00	6/17/2023	0.00
4/18/2023	0.16	5/18/2023	0.00	6/18/2023	0.00
4/19/2023	0.00	5/19/2023	0.00	6/19/2023	0.00
4/20/2023	0.00	5/20/2023	0.64	6/20/2023	0.00
4/21/2023	0.05	5/21/2023	0.00	6/21/2023	0.00
4/22/2023	0.26	5/22/2023	0.00	6/22/2023	0.00
4/23/2023	0.00	5/23/2023	0.00	6/23/2023	0.04
4/24/2023	0.05	5/24/2023	0.00	6/24/2023	0.15
4/25/2023	0.00	5/25/2023	0.00	6/25/2023	0.00
4/26/2023	0.07	5/26/2023	0.00	6/26/2023	0.89
4/27/2023	0.00	5/27/2023	0.00	6/27/2023	0.60
4/28/2023	0.06	5/28/2023	0.00	6/28/2023	0.02
4/29/2023	0.01	5/29/2023	0.00	6/29/2023	0.00
4/30/2023	0.45	5/30/2023	0.00	6/30/2023	0.00
		5/31/2023	0.00		
Total	**4.52**	**Total**	**1.52**	**Total**	**2.52**

Table E-3. Third Quarter 2023 SDA Precipitation Data (Liquid Rainfall Equivalent)

Source: NYSERDA

July 2023	Precipitation (inches)	August 2023	Precipitation (inches)	September 2023	Precipitation (inches)
7/1/2023	0.00	8/1/2023	0.01	9/1/2023	0.00
7/2/2023	1.06	8/2/2023	0.00	9/2/2023	0.00
7/3/2023	0.33	8/3/2023	0.00	9/3/2023	0.00
7/4/2023	0.00	8/4/2023	0.00	9/4/2023	0.00
7/5/2023	0.00	8/5/2023	0.00	9/5/2023	0.00
7/6/2023	0.00	8/6/2023	0.30	9/6/2023	0.00
7/7/2023	0.58	8/7/2023	0.37	9/7/2023	1.24
7/8/2023	0.00	8/8/2023	0.15	9/8/2023	0.02
7/9/2023	0.00	8/9/2023	0.00	9/9/2023	0.04
7/10/2023	0.00	8/10/2023	0.12	9/10/2023	0.00
7/11/2023	0.00	8/11/2023	0.01	9/11/2023	0.00
7/12/2023	0.41	8/12/2023	0.00	9/12/2023	0.04
7/13/2023	0.07	8/13/2023	0.02	9/13/2023	0.02
7/14/2023	0.00	8/14/2023	0.01	9/14/2023	0.00
7/15/2023	0.29	8/15/2023	0.48	9/15/2023	0.00
7/16/2023	0.11	8/16/2023	0.09	9/16/2023	0.00
7/17/2023	0.00	8/17/2023	0.00	9/17/2023	0.00
7/18/2023	0.10	8/18/2023	0.22	9/18/2023	0.01
7/19/2023	0.00	8/19/2023	0.00	9/19/2023	0.00
7/20/2023	0.59	8/20/2023	0.00	9/20/2023	0.00
7/21/2023	0.14	8/21/2023	0.00	9/21/2023	0.00
7/22/2023	0.00	8/22/2023	0.00	9/22/2023	0.00
7/23/2023	0.01	8/23/2023	0.17	9/23/2023	0.00
7/24/2023	0.40	8/24/2023	0.12	9/24/2023	0.03
7/25/2023	0.00	8/25/2023	0.96	9/25/2023	0.14
7/26/2023	0.13	8/26/2023	0.00	9/26/2023	0.00
7/27/2023	0.44	8/27/2023	0.00	9/27/2023	0.00
7/28/2023	0.00	8/28/2023	0.00	9/28/2023	0.00
7/29/2023	0.70	8/29/2023	0.01	9/29/2023	0.01
7/30/2023	0.00	8/30/2023	0.07	9/30/2023	0.00
7/31/2023	0.00	8/31/2023	0.00		
Total	**5.36**	**Total**	**3.11**	**Total**	**1.55**

Table E-4. Fourth Quarter 2023 SDA Precipitation Data (Liquid Rainfall Equivalent)

Source: NYSERDA

October 2023	Precipitation (inches)	November 2023	Precipitation (inches)	December 2023	Precipitation (inches)
10/1/2023	0.00	11/1/2023	0.05	12/1/2023	0.35
10/2/2023	0.00	11/2/2023	0.00	12/2/2023	0.15
10/3/2023	0.00	11/3/2023	0.00	12/3/2023	0.53
10/4/2023	0.00	11/4/2023	0.00	12/4/2023	0.35
10/5/2023	0.00	11/5/2023	0.02	12/5/2023	0.13
10/6/2023	0.43	11/6/2023	0.06	12/6/2023	0.04
10/7/2023	0.18	11/7/2023	0.03	12/7/2023	0.11
10/8/2023	0.80	11/8/2023	0.10	12/8/2023	0.00
10/9/2023	0.02	11/9/2023	0.17	12/9/2023	0.05
10/10/2023	0.00	11/10/2023	0.00	12/10/2023	0.30
10/11/2023	0.20	11/11/2023	0.00	12/11/2023	0.04
10/12/2023	0.00	11/12/2023	0.00	12/12/2023	0.00
10/13/2023	0.00	11/13/2023	0.00	12/13/2023	0.00
10/14/2023	0.34	11/14/2023	0.00	12/14/2023	0.00
10/15/2023	0.08	11/15/2023	0.00	12/15/2023	0.00
10/16/2023	0.04	11/16/2023	0.00	12/16/2023	0.00
10/17/2023	0.05	11/17/2023	0.79	12/17/2023	0.07
10/18/2023	0.00	11/18/2023	0.00	12/18/2023	0.43
10/19/2023	0.00	11/19/2023	0.00	12/19/2023	0.10
10/20/2023	0.29	11/20/2023	0.00	12/20/2023	0.00
10/21/2023	0.44	11/21/2023	0.33	12/21/2023	0.00
10/22/2023	0.00	11/22/2023	0.22	12/22/2023	0.00
10/23/2023	0.00	11/23/2023	0.00	12/23/2023	0.03
10/24/2023	0.00	11/24/2023	0.00	12/24/2023	0.05
10/25/2023	0.08	11/25/2023	0.00	12/25/2023	0.00
10/26/2023	0.15	11/26/2023	0.03	12/26/2023	0.05
10/27/2023	0.24	11/27/2023	0.49	12/27/2023	0.72
10/28/2023	0.27	11/28/2023	0.53	12/28/2023	0.30
10/29/2023	0.48	11/29/2023	0.03	12/29/2023	0.00
10/30/2023	0.65	11/30/2023	0.00	12/30/2023	0.11
10/31/2023	0.05			12/31/2023	0.09
Total	**4.79**	**Total**	**2.85**	**Total**	**4.00**

Appendix F – Ground Surface Elevation Data

Table F-1. 2023 SDA Trench Cap Ground Surface Elevation Data

Source: NYSERDA

Trench	Location[d]	Elevation[e]	Trench	Location[d]	Elevation[e]	Trench	Location[d]	Elevation[e]
1&2	S-M	1392.77	6	S-M	1385.86	11	S-M	1385.36
1&2	1+0	1391.88	6	1+0	1388.48	11	1+0	1384.45
1&2	2+0	1390.92	6	N-M	1390.67	11	2+0	1385.60
1&2	3+0	1390.56				11	3+0	1386.53
1&2	4+0	1390.02	7	S-M	1385.91	11	4+0	1386.94
1&2	5+0	1388.93	7	0+42.25	1385.00	11	5+0	1387.18
1&2	6+0	1386.14	7	N-M	1384.77	11	N-M	1388.67
1&2	N-M	1383.76						
1&2	7+10	1379.63	8	S-M	1390.25	12	S-M	1385.34
1&2	7+20	1377.52	8	1+0	1388.60	12	1+0	1383.72
			8	2+0	1387.87	12	2+0	1384.94
3	S-M	1392.89	8	3+0	1387.51	12	3+0	1386.03
3	1+0	1392.43	8	4+0	1387.42	12	4+0	1386.73
3	2+0	1392.33	8	5+0	1387.54	12	5+0	1386.63
3	3+0	1391.05	8	N-M	1389.05	12	N-M	1389.49
3	4+0	1390.64						
3	5+0	1389.15	9	S-M	1388.47	13	S-M	1385.21
3	6+0	1386.42	9	1+0	1386.34	13	1+0	1382.18
3	N-M	1384.22	9	2+0	1387.10	13	2+0	1384.57
			9	3+0	1387.51	13	3+0	1385.50
4	S-M	1393.32	9	4+0	1388.10	13	4+0	1386.18
4	1+0	1391.24	9	5+0	1388.49	13	5+0	1386.45
4	2+0	1392.16	9	N-M	1389.81	13	6+0	1385.22
4	3+0	1391.57				13	N-M	1387.94
4	4+0	1391.41	10	S-M	1386.60			
4	5+0	1389.47	10	1+0	1385.29	14	S-M	1385.30
4	6+0	1387.27	10	2+0	1386.48	14	1+0	1383.09
4	N-M	1387.17	10	3+0	1387.00	14	2+0	1383.77
			10	4+0	1387.63	14	3+0	1384.88
5	S-M	1393.84	10	5+0	1387.76	14	4+0	1385.33
5	1+0	1391.68	10	N-M	1389.46	14	5+0	1384.81
5	2+0	1390.94				14	6+0	1384.33
5	3+0	1390.19				14	N-M	1384.56
5	4+0	1389.51						
5	5+0	1389.64						
5	6+0	1386.73						
5	N-M	1388.37						

Table F-1 continued.

Location[f]	2023		
	Northing	Easting	Elevation
1001	892593.00	1130396.72	1366.95
1002	892044.04	1130797.43	1376.85
1003	891333.32	1131254.81	1384.46
1004	891032.88	1130825.12	1379.24
1005	891619.21	1130390.13	1380.72

Table F-2. 2023 SDA North Slope Monitoring Point Data

Source: NYSERDA

Location[g]	2023 Elevation[e]
NS-1	1376.85
NS-2	1377.88
NS-3	1377.89
NS-4	1376.43
NS-5	1374.74
NS-6	1357.92
NS-7	1346.57
NS-8	1346.17
NS-9	1347.23
NS-10	1360.08
NS-11	1367.20
NS-12	1366.97
NS-13	1367.10
NS-14	1362.51

Location[h]	2023		
	Northing	Easting	Elevation
1001	892593.00	1130396.72	1366.95
1006	892205.99	1130175.15	1373.58

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New York State Energy Research and Development Authority

17 Columbia Circle
Albany, NY 12203-6399

toll free: 866-NYSERDA
local: 518-862-1090
fax: 518-862-1091

info@nyserda.ny.gov
nyserda.ny.gov

State of New York
Kathy Hochul, Governor

New York State Energy Research and Development Authority
Richard L. Kauffman, Chair | Doreen M. Harris, President and CEO