Geomembrane Deployment Suitability Assessment No. 9

Bristol Integrated Solid Waste Management Facility

Solid Waste Permit No. 588

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SCS ENGINEERS

02218208.05 | July 15th, 2026

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EXECUTIVE SUMMARY

SCS Engineers (SCS) analyzed elevation data from settlement plates installed within the Solid Waste Permit (SWP) No. 588 Landfill to assess the suitability for deployment of the geomembrane cover system. The settlement analysis considered three criteria established by the Virginia Department of Environmental Quality (VDEQ):

- **Criterion 1:** The rate of settlement is steady or decreasing and the strain rate is no more than 1% per year. Strain rate is defined here as the ratio of the change in vertical elevation of the surface of the waste per unit time at a given location to the vertical thickness of the waste at that location at the time the settlement plate was installed.
- **Criterion 2:** Differential settlement in the landfill surface is no greater than 1:20 (vertical: horizontal) in all locations and no visible alterations in surface grade exist due to differential settlement that preclude flow of surface water to SWM (stormwater management) basins.
- **Criterion 3:** Surface cracks due to settlement having a width less than 1-inch.

The geomembrane deployment is to proceed once an acceptable settlement rate has been reached, with VDEQ concurrence, as outlined in the amendment to the Consent Decree between the Commonwealth of Virginia and the City of Bristol, Virginia, last amended January 16th, 2026.

To date, the analysis of the elevation data and inspection of the site condition shows that none of the three criteria have been fully satisfied. However, the proportion of settlement plates in compliance with Criterion 1 has increased since the start of the suitability assessments. Table 1 summarizes the findings for Criterion 1. Recent elevation analysis and visual inspections of the site indicate that surface cracking and differential settlement is ongoing, and Criteria 2 and 3 are also not satisfied. At this time, substantial ongoing settlement could compromise the integrity of the geomembrane cover system.

Table 1. Summary of Findings

Settlement Plate	Criterion 1
SP-1	Not Satisfied
SP-2A	Not Satisfied
SP-3A	Satisfied
SP-4A	Satisfied
SP-5	Satisfied
SP-6	Satisfied
SP-7A	Satisfied
SP-8	Satisfied
SP-9A	Satisfied
SP-10[1]	Satisfied
SP-11	Satisfied
SP-12	Satisfied

[1] The settlement plate SP-10 is believed to have been disturbed between the readings on 5/30/2025 and 6/27/2025. A correction factor was applied to account for the disturbance, see the discussion in Section 2.2.

1.0 INTRODUCTION

SCS has completed the ninth suitability assessment for deployment of the geomembrane cover system at the City of Bristol, Virginia's (City's) Integrated Solid Waste Management Facility (ISWMF) SWP No. 588 landfill. The assessment is required by the Consent Decree as amended on January 16, 2026. Settlement data were analyzed based on the three criteria outlined in section 6.iv of Appendix A of the amended Consent Decree. The geomembrane cover system deployment will proceed once all three settlement criteria are satisfied and the landfill has reached an acceptable settlement rate with VDEQ's concurrence.

Excessive settlement within the SWP No. 588 landfill will impact the integrity of the geomembrane, which is the most important component of the geomembrane cover system. Problems include the formation of voids underneath the geomembrane as localized depressions form due to differential settlement. The resulting low areas dispersed across the geomembrane surface will disrupt stormwater drainage, and repairs would require cutting the geomembrane to place soil fill. Additionally, the geomembrane surface will fall relative to the top elevation of vertical pipes installed within the waste mass. Landfill gas wells and temperature probes will be affected at a minimum. Excessive settlement can render the wells and probes unreachable, requiring widespread adjustments and repairs.

The long-term success of the geomembrane cover system requires an acceptable rate of settlement to maintain the system's overall integrity. In accordance with the amended Consent Decree, the following three criteria are used to assess the landfill's suitability for the geomembrane deployment:

- **Criterion 1:** The rate of settlement is steady or decreasing and the strain rate is no more than 1% per year. Strain rate is defined here as the ratio of the change in vertical elevation of the surface of the waste per unit time at a given location to the vertical thickness of the waste at that location at the time the settlement plate was installed.
- **Criterion 2:** Differential settlement in the landfill surface is no greater than 1:20 (vertical: horizontal) in all locations and no visible alterations in surface grade exist due to differential settlement that preclude flow of surface water to SWM (stormwater management) basins.
- **Criterion 3:** Surface cracks due to settlement having a width less than 1-inch.

The criteria are evaluated in part using elevation data from settlement plates positioned throughout the landfill. The City has completed monthly elevation surveys of the settlement plates since their installation in November 2022, and the compiled elevation data have been plotted on graphs for each operational settlement plate. Calculations were completed and tabulated to consider if current strain rates satisfy Criterion 1 and if differential settlement rates satisfy Criterion 2. Additionally, topography data from drone flyovers was used to evaluate Criterion 2. The landfill surface was also monitored by personnel for evidence of surface cracking to assess Criterion 3.

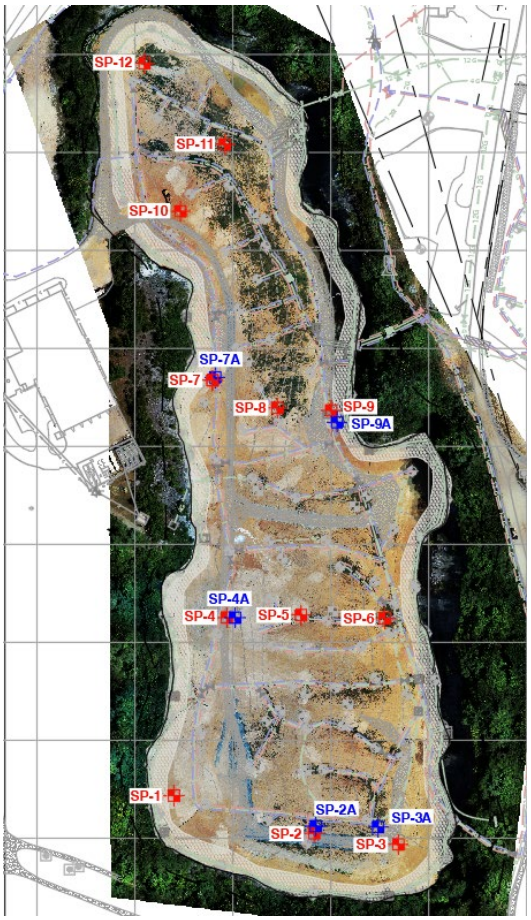
Although the graphical analysis is no longer directly included in the settlement criteria, SCS has continued plotting the settlement plate data to visualize long-term trends. Regression analysis was used to calculate trendlines and project future settlement rates. The settlement projections remain beneficial for planning purposes.

Overall, the analysis of the settlement plate elevation data and surface observations currently indicate ongoing excessive settlement. Criteria 1, 2, and 3 are not currently satisfied.

2.0 METHODS

During November 2022, SCS Field Services installed 12 settlement plates on the Solid Waste Permit No. 588 landfill. Five settlement plates were installed during June 2024 to replace settlement plates that had been damaged or were inaccessible. The settlement plates are located throughout the landfill to represent varying waste thickness and changes in the landfill's base grade (Figure 1). Monthly surveys of the settlement plates are conducted to monitor changes in elevation. Surveying is conducted on foot using satellite-based GPS equipment. The surveyor uses a Trimble R10 as the base and a Trimble R12i as the rover. The base unit is positioned at a control point while the rover is used to locate the settlement plates.

Figure 1. Settlement Plate Locations



Settlement plates are fixed points installed within the landfill surface that are used to measure changes in elevation and identify the magnitude of ongoing settlement. Settlement plates consist of a buried steel base plate and a steel standpipe or rod that extends above ground and provides an elevation reference point. The rod indicates the center of the base plate, and the initial location and elevation is surveyed by a professional surveyor. Subsequent surveys of the settlement plate measure the change in the vertical direction.

2.1 SETTLEMENT PLATE SURVEYS

The locations of the settlement plates were surveyed by the City's surveyor on November 14, 2022. The settlement plates were surveyed again on the following dates: December 13, 2022; January 3, 2023; February 6, 2023; March 8, 2023; April 3, 2023; May 11, 2023; June 5, 2023; July 10, 2023; August 17, 2023; September 11, 2023; October 11, 2023; November 6, 2023; December 12, 2023; January 11, 2024; February 6, 2024; March 13, 2024; April 9, 2024; May 8, 2024; June 4, 2024; July 10, 2024; July 31, 2024; September 10, 2024; October 28, 2024; November 26, 2024; December 23, 2024; January 8, 2025; February 14, 2025; March 18, 2025; April 24, 2025; May 30, 2025; June 27, 2025; July 23, 2025; August 14, 2025; September 9, 2025; October 2, 2025; November 12, 2025; December 3, 2025; January 15, 2026; February 9, 2026; March 11, 2026; April 6, 2026; May 11, 2026, and June 9, 2026.

The surveyed coordinates and elevation changes of the settlement plates are shown in Table 3.

2.2 STATUS OF SETTLEMENT PLATES

Table 2 shows the current condition of each settlement plate. Five of the original settlement plates have been decommissioned due to damage and replaced with new settlement plates in June 2024. Replacement settlement plates (SP-2A, SP-3A, SP-4A, SP-7A, and SP-9A) are listed with suffix "A" in Table 2.

Settlement plates SP-2A, SP-3A, SP-4A, and SP-7A were installed to replace damaged settlement plates. SP-9A was installed due to the existing SP-9's location in a low area which is prone to flooding after rain. The first elevation survey of the replacement settlement plates was conducted July 24, 2024, and the first strain-rate calculations were completed using the next survey's elevation data.

The settlement plate SP-10 is believed to have been disturbed between the readings on May 30, 2025, and June 27, 2025. The disturbance contributed to a measured 0.8-foot drop between the elevation readings. Rather than abandoning the settlement plate, elevation measurements were continued and the subsequent data appears to be reliable. A correction factor has been applied to the calculations and graph for SP-10 to account for the disturbance. The correction factor reduces the measured elevation drop between May 30, 2025, and June 27, 2025, to be consistent with the slope of the best-fit trendline as of the May 30, 2025 reading. The correction factor will continue to be applied in future calculations and graphical presentations for SP-10.

Table 2. Settlement Plate Status

Settlement Plate	Condition
SP-1	Operational
SP-2	Decommissioned
SP-2A	Operational
SP-3	Decommissioned
SP-3A	Operational
SP-4	Decommissioned
SP-4A	Operational
SP-5	Operational
SP-6	Operational
SP-7	Decommissioned

Settlement Plate	Condition
SP-7A	Operational
SP-8	Operational
SP-9	Decommissioned
SP-9A	Operational
SP-10[1]	Operational
SP-11	Operational
SP-12	Operational

3.0 SETTLEMENT DATA - CRITERIA ANALYSIS

In accordance with the amended Consent Decree, the three criteria introduced in Section 1.0 are used to assess the landfill's suitability for the geomembrane deployment:

- **Criterion 1:** The rate of settlement is steady or decreasing and the strain rate is no more than 1% per year. Strain rate is defined here as the ratio of the change in vertical elevation of the surface of the waste per unit time at a given location to the vertical thickness of the waste at that location at the time the settlement plate was installed.
- **Criterion 2:** Differential settlement in the landfill surface is no greater than 1:20 (vertical: horizontal) in all locations and no visible alterations in surface grade exist due to differential settlement that preclude flow of surface water to SWM (stormwater management) basins.
- **Criterion 3:** Surface cracks due to settlement having a width less than 1-inch.

The following sections analyze the settlement plate elevation data for conformance to the three criteria. Criteria 1, 2 and 3 are considered using recent settlement data and site inspections. Table 3 provides the most recent position and elevation data (measured in feet) and calculated strain rates for the settlement plates. Non-operational or inaccessible settlement plates have been excluded from some analyses.

[1] The settlement plate SP-10 is believed to have been disturbed between the readings on 5/30/2025 and 6/27/2025. A correction factor was applied to account for the disturbance, see the discussion in Section 2.2.

Table 3. Elevation and Strain Data at Settlement Plate Location

Settlement Plate	Northing (ft)	Easting (ft)	Elevation on December 3, 2025 (ft)	Elevation Change Between December 3, 2025, and June 9, 2026 (ft)	Strain[1] Between December 3, 2025, and June 9, 2026	Calculated Current Rate of Strain/Year[2]	Elevation Change Since Installation (ft)
SP-1	3397887.8	10412081.3	1828.0	-0.34	-0.51%	-1.0%	-6.4
SP-2A	3397823.6	10412370.8	1790.6	-1.18	-0.78%	-1.5%	-5.2
SP-3A	3397820.3	10412498.1	1778.4	-0.43	-0.42%	-0.8%	-1.8
SP-4A	3398247.0	10412208.1	1800.9	-0.81	-0.48%	-0.9%	-4.3
SP-5	3398255.8	10412339.8	1786.0	-1.17	-0.46%	-0.9%	-14.8
SP-6	3398248.7	10412509.9	1771.9	-0.66	-0.48%	-0.9%	-5.7
SP-7A	3398731.1	10412158.6	1821.2	-0.53	-0.40%	-0.8%	-2.2
SP-8	3398677.9	10412290.9	1798.5	-0.67	-0.27%	-0.5%	-8.8
SP-9A	3398644.1	10412416.0	1787.6	-0.45	-0.44%	-0.9%	-1.2
SP-10[3]	3399079.7	10412095.5	1835.4	-0.42	-0.16%	-0.3%	-4.2
SP-11	3399216.5	10412183.8	1813.9	-0.37	-0.15%	-0.3%	-2.5
SP-12	3399381.7	10412019.6	1809.2	-0.45	-0.40%	-0.8%	-1.5

3.1 CRITERION 1 – STRAIN RATE

Table 3 lists *current* strain rates for each settlement plate calculated using the change in elevation since the previous suitability assessment (comparing survey data from December 3, 2025, to June 9, 2026) divided by the original waste thickness and the elapsed time. Two settlement plates (SP-1, SP-2A) show a current strain rate greater than or equal to 1% per year.

As an alternative to the current strain rate, Table 4 presents the strain rate calculated over the last year by comparing the May 30, 2025, elevation data to June 9, 2026. SP-1, SP-2A, and SP-4A exceeded 1% strain during this period. These values are compared to the current strain rates in Table 3.

Table 4 also includes calculated 1-year settlement projections between June 9, 2026 (the most recent survey date) and June 9, 2027. The calculations used the most recent best-fit trendline for

[1] Strain is defined as the change in elevation divided by the estimated original waste depth.
[2] Current yearly stain rate is calculated by dividing the strain since the previous suitability assessment survey by the number of days between the assessment surveys and multiplying by 365.
[3] The settlement plate SP-10 is believed to have been disturbed between the readings on 5/30/2025 and 6/27/2025. A correction factor was applied to account for the disturbance, see the discussion in Section 2.2.

each settlement plate to project the one-year settlement depth (feet) and strain rate (%). The projections are relative to the June 9, 2026 survey measurements.

Table 4. Comparison of Annual Average Strain Rate and Current Annual Strain Rate

Settlement Plate	Current Annual Strain Rate from Table 3	Average Strain Rate between 5/30/2025 and 6/9/2026	Projected Settlement between 6/9/2026 and 6/9/2027 (ft)	Projected Annual Strain Rate between 6/9/2026 and 6/9/2027
SP-1	-1.0%	1.10%	-1.0	-1.5%
SP-2A	-1.5%	1.59%	-2.8	-1.9%
SP-3A	-0.8%	0.76%	-1.1	-1.1%
SP-4A	-0.9%	1.07%	-2.4	-1.4%
SP-5	-0.9%	0.92%	-2.7	-1.1%
SP-6	-0.9%	0.74%	-1.3	-0.9%
SP-7A	-0.8%	0.76%	-1.2	-0.9%
SP-8	-0.5%	0.50%	-1.5	-0.6%
SP-9A	-0.9%	0.53%	-0.7	-0.7%
SP-10[1]	-0.3%	0.53%	-1.0	-0.4%
SP-11	-0.3%	0.24%	-1.2	-0.5%
SP-12	-0.8%	0.37%	-0.8	-0.7%

The measurements indicate that the current strain rates for two of the twelve operational settlement plates meet or exceed 1% per year. As a result, Criterion 1 is not satisfied. The projected one-year settlement rate for five of the twelve settlement plates also meet or exceed 1%.

3.2 CRITERION 2 – UNIT SETTLEMENT DIFFERENTIAL

As a starting point, the differential settlement was evaluated using the settlement plate survey data collected during the current assessment period. The measured settlement at each operational settlement plate between May 30, 2025, and June 9, 2026, was compared to the settlement at every other operational settlement plate. The difference in settlement between each pair of settlement plates was then evaluated relative to the horizontal distance separating the two locations. Horizontal distances were calculated from the surveyed northing and easting coordinates of the settlement plates. Table 5 shows the elevation change between May 30, 2025, and June 9, 2026, and the northing and easting recorded during the most recent survey (June 9, 2026).

[1] The settlement plate SP-10 is believed to have been disturbed between the readings on 5/30/2025 and 6/27/2025. A correction factor was applied to account for the disturbance, see the discussion in Section 2.2

Table 5. Settlement Plate Location and Elevation Change

Settlement Plate	Northing (ft)	Easting (ft)	Settlement between May 30, 2026, and June 9, 2026 (ft)
SP-1	3397887.8	10412081.3	-0.73
SP-2A	3397823.6	10412370.8	-2.39
SP-3A	3397820.3	10412498.1	-0.77
SP-4A	3398247.0	10412208.1	-1.79
SP-5	3398255.8	10412339.8	-2.35
SP-6	3398248.7	10412509.9	-1.01
SP-7A	3398731.1	10412158.6	-1.01
SP-8	3398677.9	10412290.9	-1.23
SP-9A	3398644.1	10412416.0	-0.54
SP-10[1]	3399079.7	10412095.5	-0.76
SP-11	3399216.5	10412183.8	-0.59
SP-12	3399381.7	10412019.6	-0.42

The maximum calculated differential settlement was 1.27%, occurring between settlement plates SP-2A and SP-3A. This value is below the Criterion 2 limit of 5% (1:20 vertical: horizontal). Table 6 shows the differential settlement calculations for all operational settlement plate pairs.

Table 6. Differential Settlement Calculations for All Operational Settlement Plates

Settlement Plate	SP-1	SP-2A	SP-3A	SP-4A	SP-5	SP-6	SP-7A	SP-8	SP-9A	SP-10	SP-11	SP-12
SP-1	-	0.56%	0.01%	0.28%	0.36%	0.05%	0.03%	0.06%	0.02%	0.00%	0.01%	0.02%
SP-2A		-	1.27%	0.13%	0.01%	0.31%	0.15%	0.14%	0.23%	0.13%	0.13%	0.12%
SP-3A			-	0.20%	0.34%	0.05%	0.02%	0.05%	0.03%	0.00%	0.01%	0.02%
SP-4A				-	0.43%	0.26%	0.16%	0.13%	0.28%	0.12%	0.12%	0.12%
SP-5					-	0.79%	0.26%	0.26%	0.46%	0.18%	0.18%	0.17%
SP-6						-	0.00%	0.05%	0.11%	0.03%	0.04%	0.05%
SP-7A							-	0.16%	0.17%	0.07%	0.09%	0.09%
SP-8								-	0.53%	0.10%	0.12%	0.11%
SP-9A									-	0.04%	0.01%	0.02%
SP-10										-	0.10%	0.11%
SP-11											-	0.08%
SP-12												-

Table 6 alone is insufficient to fully evaluate criterion #2 because the differential settlement limit applies to the entire landfill surface. Differential settlement is visually apparent in localized areas between settlement plates, appearing as surface cracks and scarps as adjacent areas settle at different rates.

The differential settlement map included in Attachment A was prepared to better visualize differential settlement across the landfill surface. The map was prepared using topography data from the SCS drone flyovers dated June 12, 2025, and June 17, 2026. The respective Monthly Compliance Reports describe the methodology and equipment used for each flyover. Autodesk's AutoCAD Civil 3D software was used to complete a volumetric analysis between the two topographic surfaces, generating a new surface consisting of the elevation change between the two original surfaces. The slope between any two points on the new surface is equivalent to the ratio of differential settlement to the amount of horizontal distance.

The analysis area in Attachment A was limited to exclude areas of apparent fill due to construction and ongoing operational work within the landfill. Additionally, the limits of the analysis area was offset from the sidewall due to the drone measurement variability near this area caused by vegetation and interpolation along the sidewall.

3.3 CRITERION 3 – SURFACE CRACKS

Personnel working at the landfill continue to observe settlement cracks on the landfill surface that exceed 1-inch width. The surface cracks appear to follow the abrupt change in the base grade elevations and corresponding waste thickness near the subgrade bench in the quarry sidewall. Settlement cracks and scarps observed during the current assessment period are shown Figures 2 through 5.

Figure 2. Settlement Scarp Observed in Southwest Area Near Sidewall Bench

Figure 3. Settlement Crack Observed in Southwest Area Near Sidewall Bench

Figure 4. Settlement Crack Observed in Southwest Area Near Bench in Sidewall

Figure 5. Settlement Crack Overview

4.0 SUPPLEMENTAL GRAPHICAL ANALYSIS

Secondary compression of municipal solid waste is typically characterized by long-term settlement at a decreasing rate due primarily to decomposition. Settlement data for secondary compression follow a logarithmic trend with respect to time.

The first seven suitability assessments presented the settlement plate data on graphs with linear axes. Linear and logarithmic trendlines were applied to all data for each settlement plate, and the resulting coefficients of determination (R^2) were compared. However, because the analysis duration has increased to nearly four years, applying the trendlines to the entire data set may obscure more recent changes in the data. The analysis procedure was accordingly revised to better identify more recent transitions from linear to logarithmic data. These changes have been implemented since assessment eight.

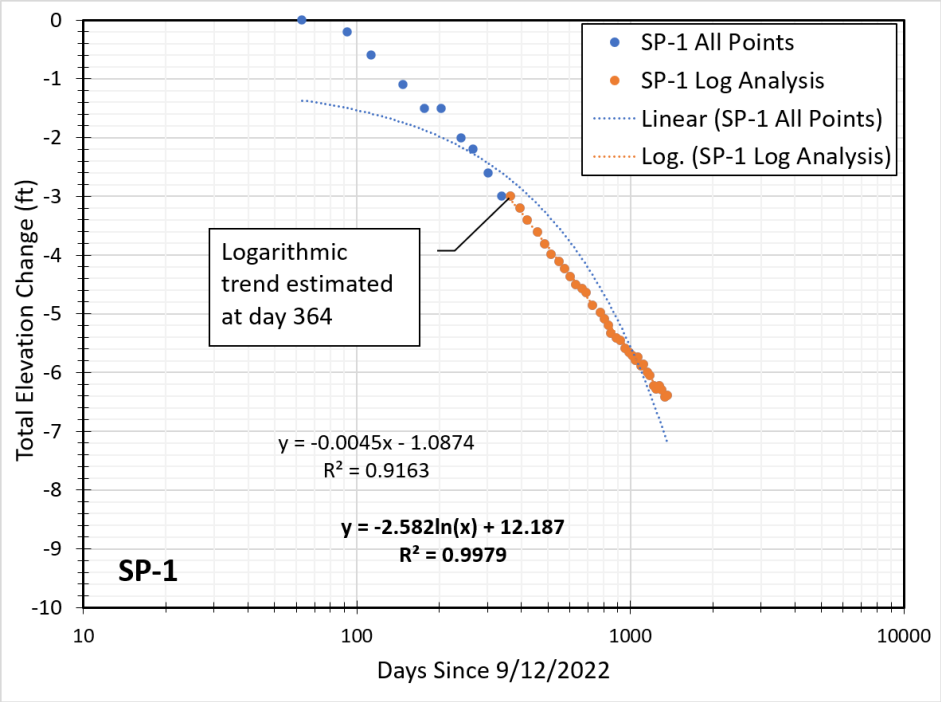
The revised analysis presents the settlement plate data on semi-logarithmic graphs where the x-axis uses a logarithmic scale. Logarithmic data will appear to form a line on a semi-logarithmic graph, while linear data will appear to form a curve. The graph for each settlement plate was visually inspected for the appearance of a logarithmic trend. If a logarithmic trend was visible, an approximate start date was chosen. The data following this date was then used to form a best-fit logarithmic trendline. The R^2 of this new logarithmic trendline was compared to the R^2 for the linear trendline generated using the entirety of the settlement data.

The following semi-logarithmic graphs indicate the approximate start day of the visually estimated logarithmic trend. The data points used to calculate the logarithmic trendline are shown in orange. The linear and logarithmic trendline equations and R^2 values are displayed for each graph.

Regression analysis of the complete elevation data for each operational settlement plate currently shows mostly logarithmic trends for the older and replacement settlement plates. Current measurements indicate a logarithmic rate of settlement for SP-1, SP-2A, SP-3A, SP-4A, SP-5, SP-6, SP-7A, SP-8, SP-9A and SP-10. SP-11 and SP-12 are the only remaining plates which best fit a linear trendline, but the overall rate of settlement at SP-12 is low relative to the other plates. The regression analysis results for the settlement plates are presented herein.

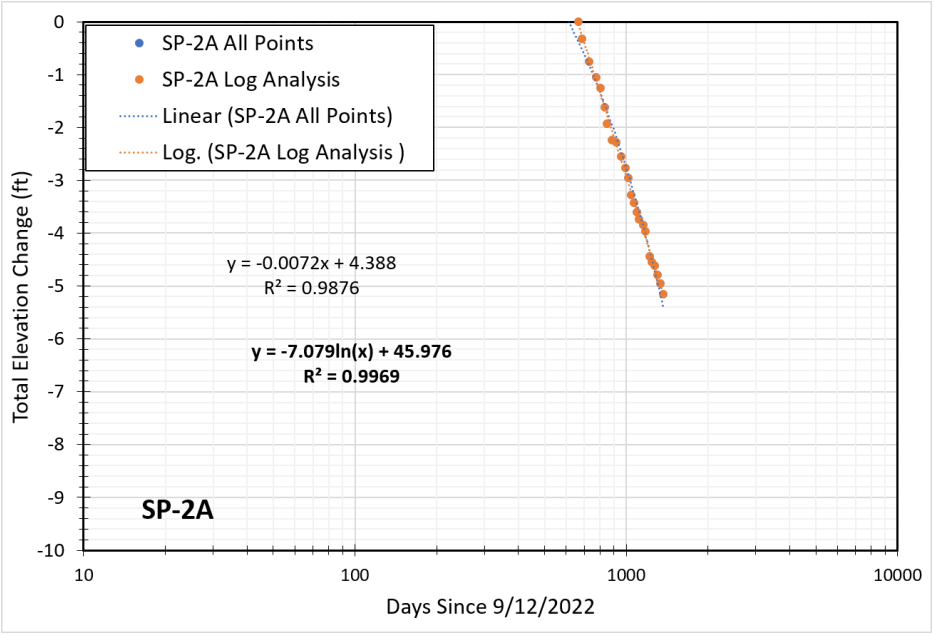
Figure 6 shows the plot of total elevation change versus elapsed time for SP-1. Linear and logarithmic trendlines were fitted to the data, and the coefficients of determination (R^2) were computed. SP-1 shows greater R^2 for the logarithmic trendline, indicating that settlement at SP-1 has transitioned to secondary compression.

Figure 6. Settlement Plate SP-1



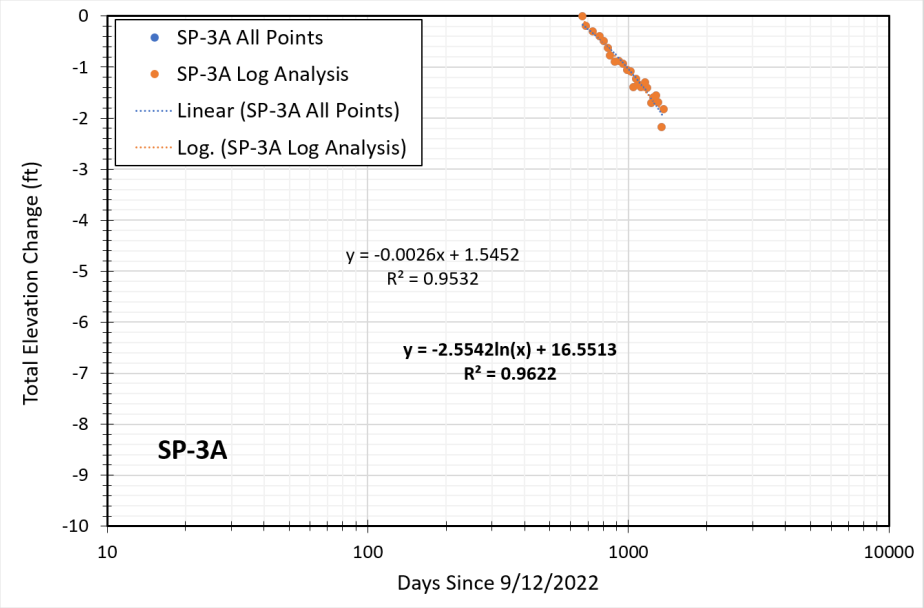
SP-2A replaced SP-2 as of July 2024 and is located near the southern central edge of the landfill. The SP-2A data fits a logarithmic trendline from the day of installation, (R^2=0.9969, see Figure 7).

Figure 7. Settlement Plate SP-2A



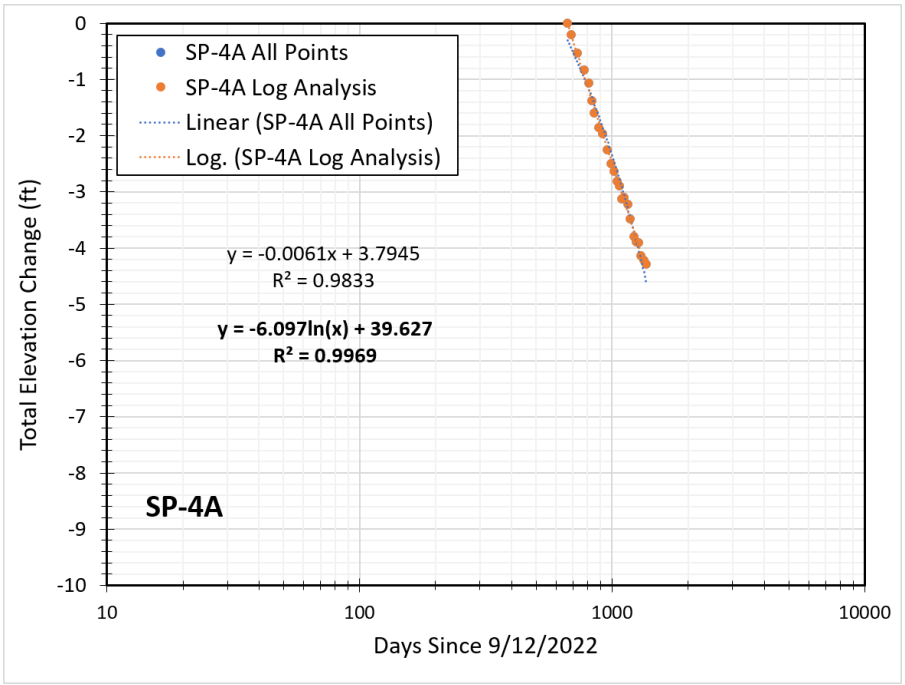
SP-3 was replaced by SP-3A as of July 2024. The elevation data for SP-3A fits data fits a logarithmic trendline from the day of installation, (R2=0.9622, see Figure 8).

Figure 8. Settlement Plate SP-3A



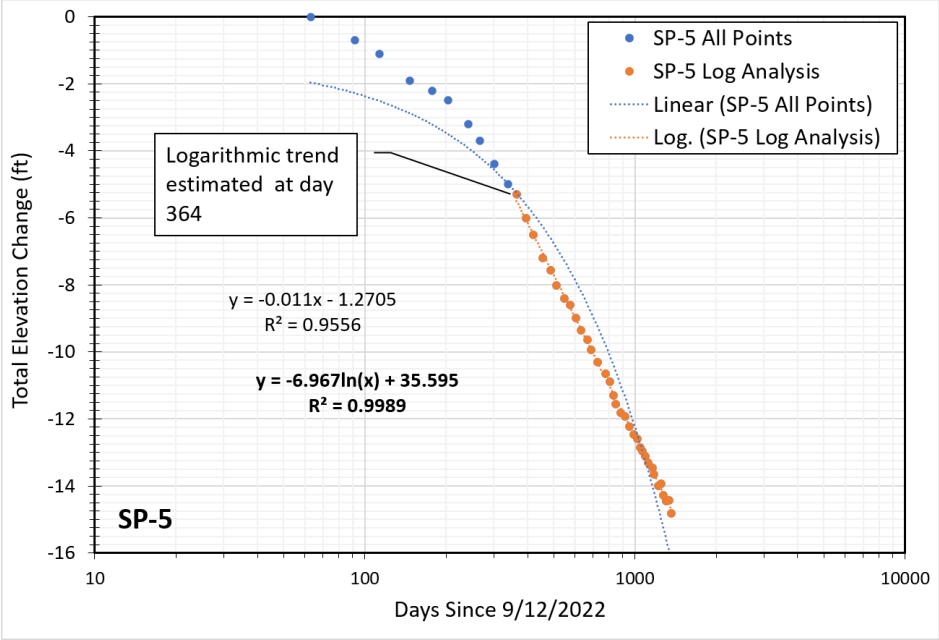
SP-4 was replaced by SP-4A as of the July 31, 2024, survey. The elevation data for SP-4A fits a logarithmic trendline from the day of installation, (R2=0.9969, see Figure 9).

Figure 9. Settlement Plate SP-4A



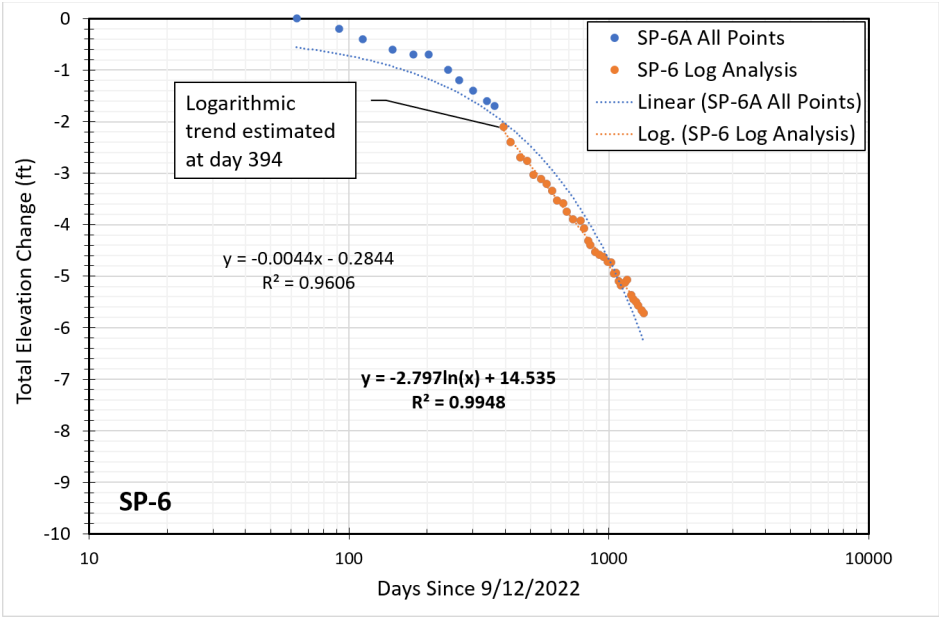
SP-5 shows greater R2 for the logarithmic trendline, indicating that settlement at SP-5 has transitioned to secondary compression (R2=0.9989, see Figure 10).

Figure 10. Settlement Plate SP-5



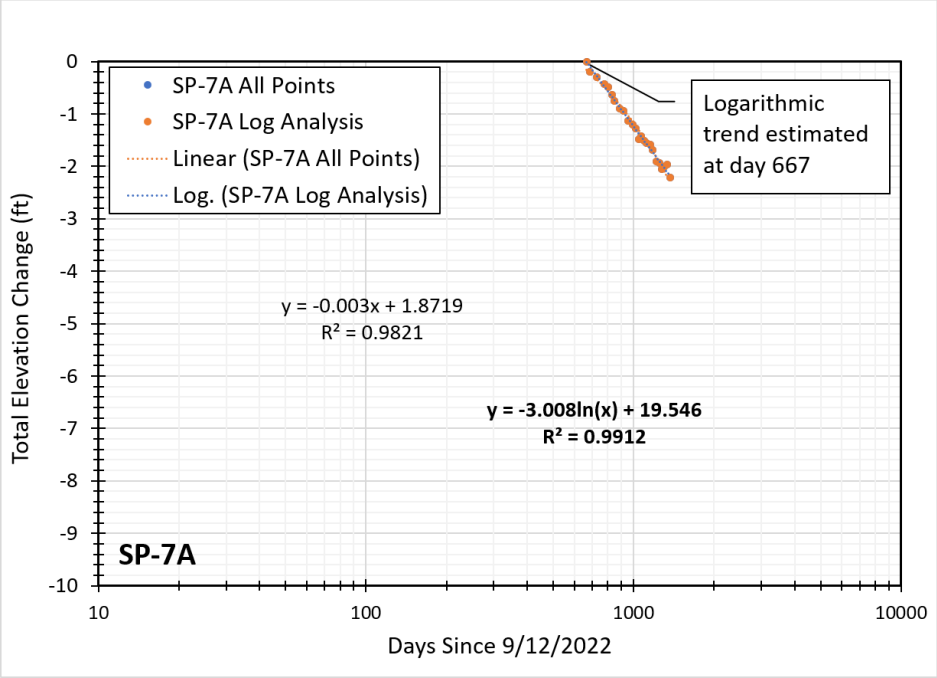
SP-6 shows greater R^2 for the logarithmic trendline, indicating that settlement at SP-6 has transitioned to secondary compression (R2= 0.9948, see Figure 11).

Figure 11. Settlement Plate SP-6



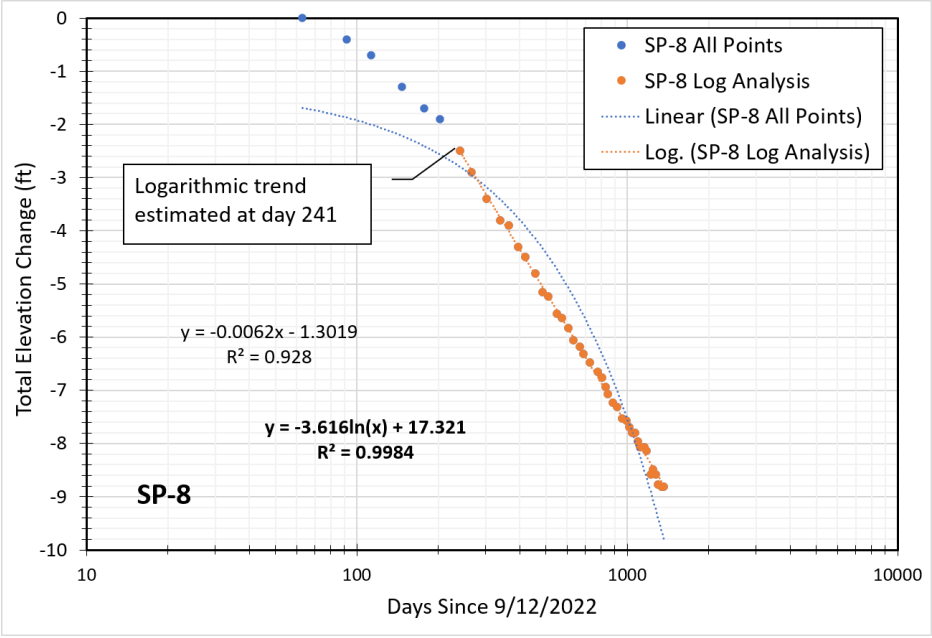
SP-7 was replaced by SP-7A for the July 31, 2024, survey. The elevation data for SP-7A fits a logarithmic trendline from the day of installation (see Figure 12).

Figure 12. Settlement Plate SP-7A



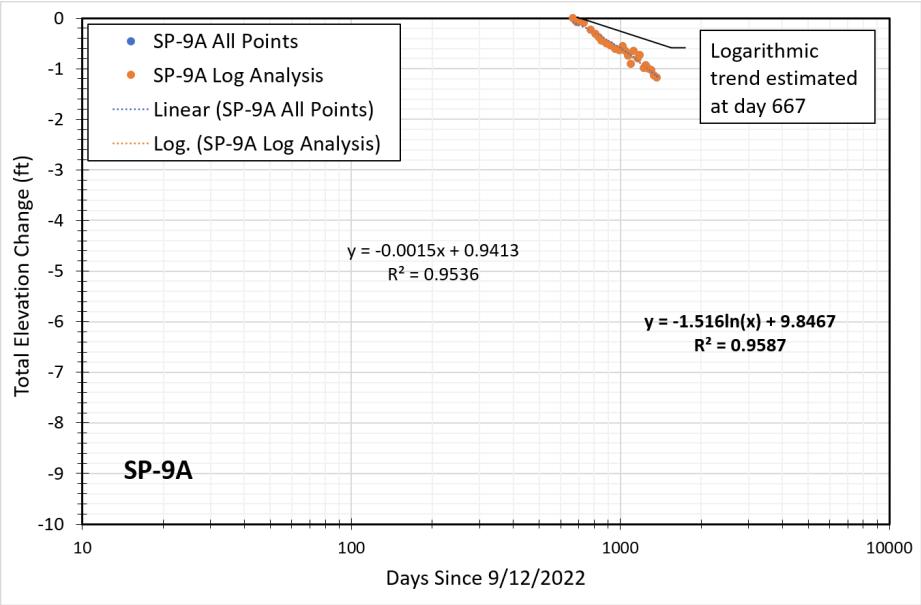
SP-8 is positioned north of the highest temperature area. The settlement data for SP-8 transitioned to a logarithmic trend on day 241 with an R^2 of 0.9984 (Figure 13), indicating secondary compression.

Figure 13. Settlement Plate SP-8



SP-9 was replaced by SP-9A for the July 31, 2024 survey. SP-9A is located 25 feet southeast of SP-9. The elevation data for SP-9A fits a logarithmic trendline from the day of installation (R2=0.9587 Figure 14).

Figure 14. Settlement Plate SP-9A



SP-10, SP-11, and SP-12 are positioned in the north end of the landfill. The northernmost temperature probe (TP-9) indicates lower, more stable temperatures in this area relative to the southern end of the landfill. The elevation data from these settlement plates show lower overall settlement and appear to have lower strain rates (less than 1% per year) relative to the southern plates (Figure 15 through 17). The temperature and elevation data together suggest the northern area may be transitioning to secondary compression, but settlement remains linear with respect to time at SP-11 and SP-12. Elevation variability, potentially due to vertical accuracy limitations of the GPS measurements, appears more noticeable for these settlement plates due to the smaller settlement rates.

Figure 15. Settlement Plate SP-10

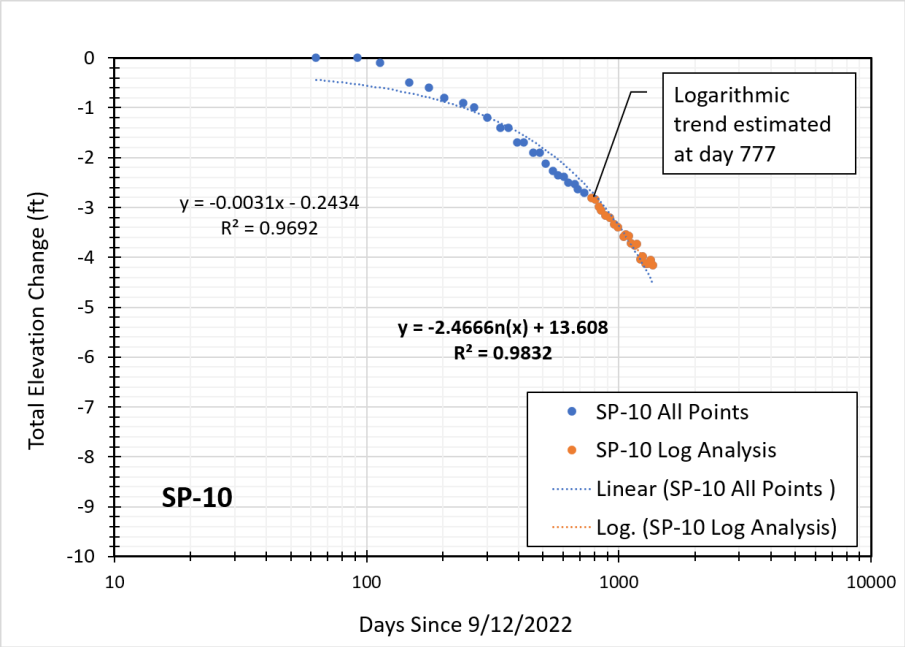


Figure 16. Settlement Plate SP-11

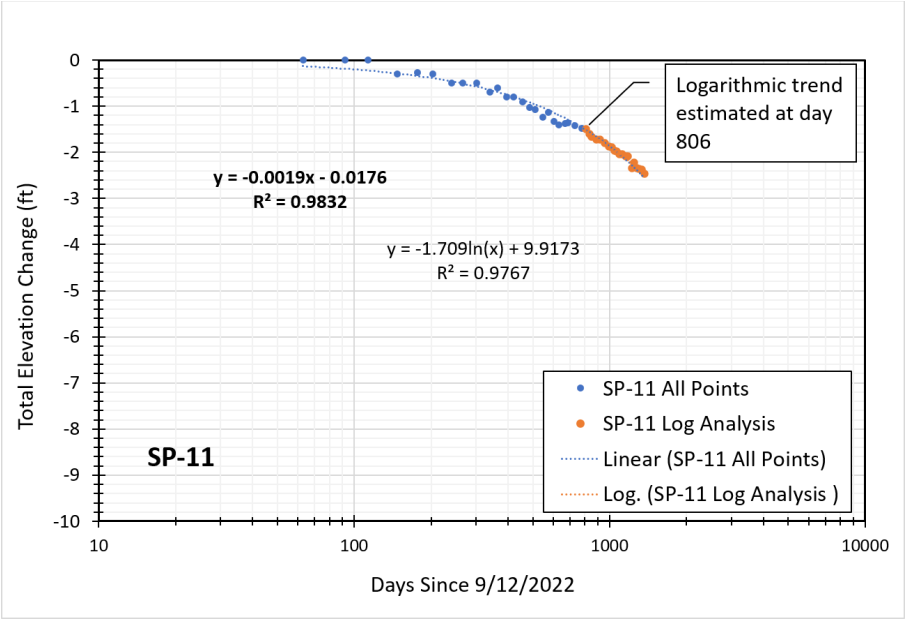
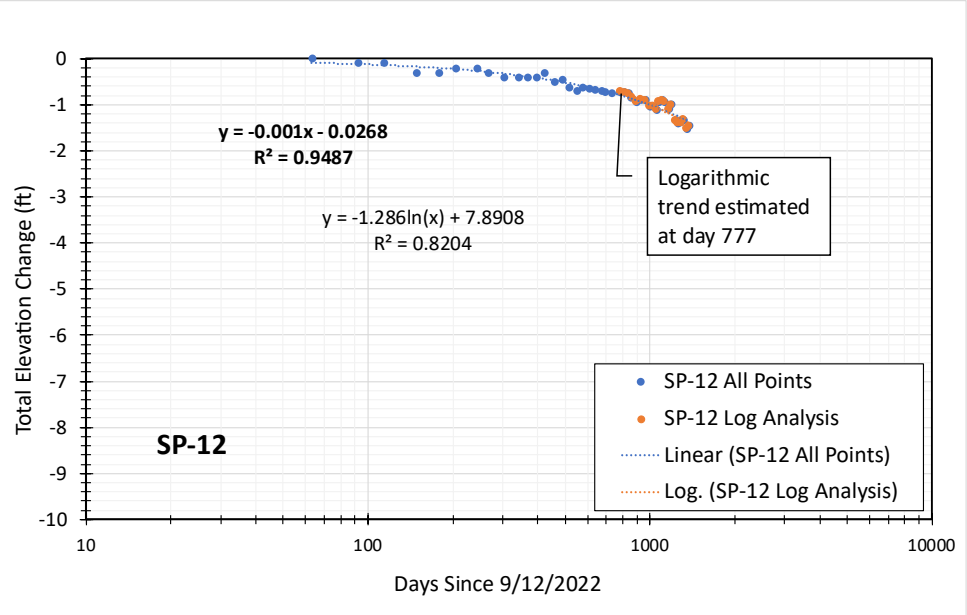


Figure 17. Settlement Plate SP-12



A summary of the settlement trends is presented in Table 7 for the operational plates. The graphs of the elevation data for SP-1A, SP-2A, SP-3A, SP-4A, SP-5, SP-6, SP-7A, SP-8A, SP-9A and SP-10 demonstrate prevalent logarithmic trends. SP-11 and SP-12 are still displaying linear regression. While the overall rate of settlement appears to be low, it still has not transitioned to a logarithmic trend.

Table 7. Settlement Trends

Settlement Plate	Apparent Settlement Trend (Linear or Logarithmic)
SP-1	Logarithmic
SP-2A	Logarithmic
SP-3A	Logarithmic
SP-4A	Logarithmic
SP-5	Logarithmic
SP-6	Logarithmic
SP-7A	Logarithmic
SP-8	Logarithmic
SP-9A	Logarithmic
SP-10	Logarithmic
SP-11	Linear
SP-12	Linear

5.0 CONCLUSION

The analyses of the settlement plate strain rates, differential settlement and presence of surface cracking together indicate that Criteria 1, 2, and 3 have not been satisfied. The latest settlement trendline projections also suggest that Criterion 1 is unlikely to be satisfied within the next year.

However, the landfill has made progress towards an acceptable settlement condition since the start of the suitability assessments. In this current assessment, ten of the twelve operational settlement plates satisfy Criterion 1, and a significant portion of the landfill satisfies Criterion 2.

SCS understands that if one settlement plate fails to meet Criterion 1, then this criterion has not been fully met. The landfill has not reached an acceptable rate of settlement for the geomembrane cover system deployment based on the established criteria. A subsequent assessment will be completed by December 31, 2026 and submitted to VDEQ within 10 business days.

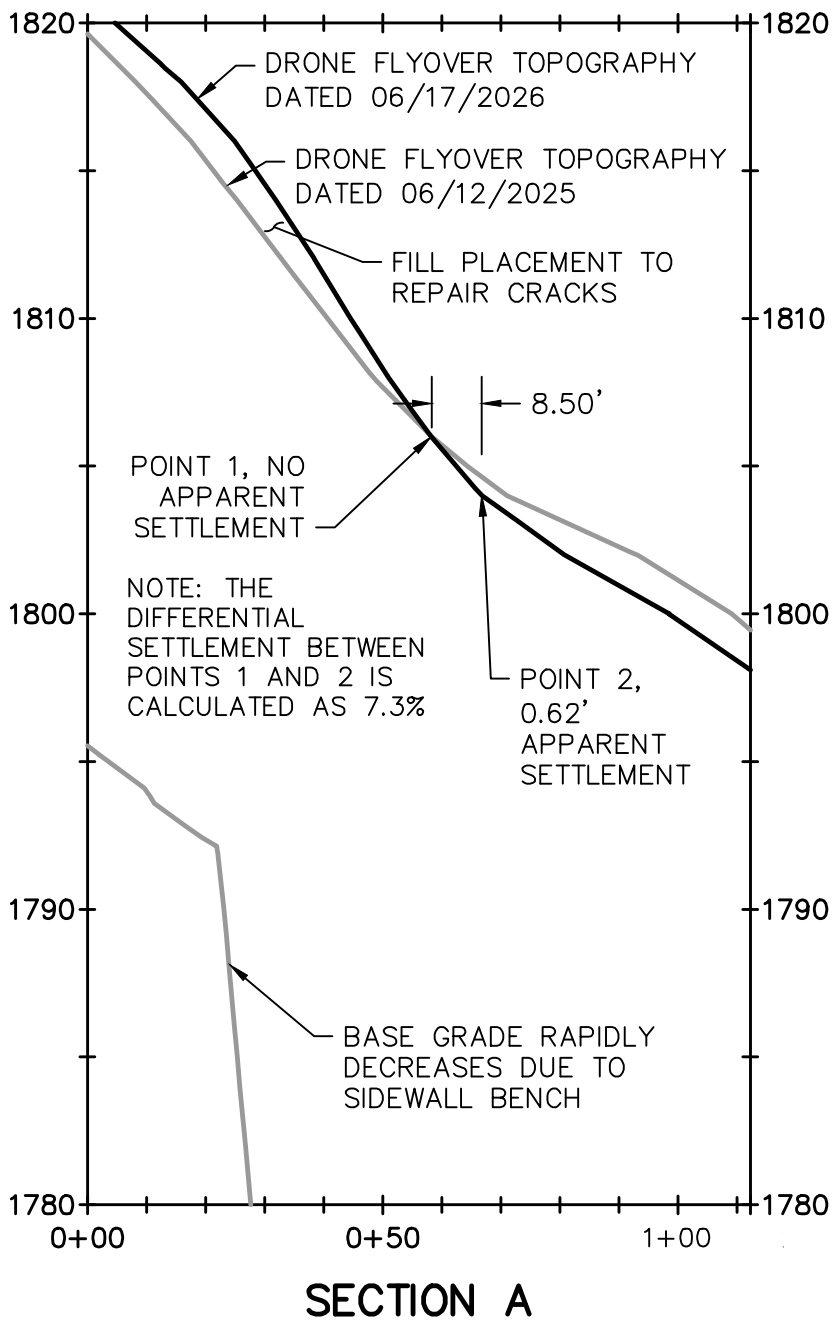
Attachment A

Differential Settlement Map

DIFFERENTIAL SETTLEMENT %			
MINIMUM	MAXIMUM	ACRES	COLOR
0.00%	2.50%	6.94 ac.	
2.50%	5.00%	5.52 ac.	
5.00%	10.00%	3.58 ac.	
10.00%	15.00%	0.61 ac.	
10.00%	20.00%	0.21 ac.	

NOTES:

1. THIS DIFFERENTIAL SETTLEMENT MAP SHOWS THE ESTIMATED DIFFERENTIAL SETTLEMENT ACROSS THE LANDFILL SURFACE AREA. THE DIFFERENTIAL SETTLEMENT IS SHOWN AS THE RATIO OF THE DIFFERENCE IN CALCULATED SETTLEMENT OVER A UNIT HORIZONTAL DISTANCE, DEPICTED AS A PERCENTAGE. SETTLEMENT VALUES WERE CALCULATED OVER AN APPROXIMATE 1–YEAR PERIOD.
2. THE SETTLEMENT IS CALCULATED USING THE ELEVATION DIFFERENCE BETWEEN THE AERIAL TOPOGRAPHY DATA CAPTURED ON JUNE 12, 2025 AND JUNE 17, 2026 BY SCS ENGINEERS.
3. THE BORDER OF THE ANALYSIS AREA WAS ADJUSTED TO REMOVE AREAS OF APPARENT FILL CAUSED BY RECENT CONSTRUCTION WORK, STOCKPILING, AND OTHER OPERATIONAL ACTIVITIES. ADDITIONALLY, LOCATIONS IMMEDIATELY ADJACENT TO THE SIDEWALL WERE EXCLUDED.



SECTION A

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SCS ENGINEERS