2025 Annual Landfill Inspection under Coal Combustion Residuals Rule
Seminole Generating Station
Putnam County, Florida

March 14, 2025

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March 14, 2025
File Number 24-13-0059

Seminole Electric Cooperative, Inc.
16313 North Dale Mabry Highway
Tampa, FL 33618

Attention: Mr. Justin Gostnell

Subject: 2025 Annual Landfill Inspection under Coal Combustion Residuals Rule, Seminole Generating Station, Putnam County, Florida

Gentlemen/Ladies:

As requested by Mr. Justin Gostnell and authorized by Seminole Electric Cooperative, Inc. (Seminole) Purchase Order 2407064, Ardaman & Associates, Inc., (Ardaman) has completed an inspection of the landfill and associated facilities at the Seminole Generating Station on January 29, 2025. The objectives of our inspection were to satisfy the requirements in 40 CFR §257.84 of the Coal Combustion Residuals (CCR) Rule promulgated by the United States Environmental Protection Agency (EPA) on April 17, 2015, and to identify any items that need immediate action or long-term attention. These requirements are also incorporated by reference in the solid waste operation permit, In association with the landfill inspection, Ardaman has reviewed the CCR Rule requirements, historical information in our project files, and relevant landfill operation data provided by Seminole.

The focus of our inspection was on the lined Increment 1 Buildout (Increment 1), which is the active CCR disposal area and is subject to provisions of the CCR Rule. Although the closed original landfill and the closed lined vertical expansion landfill are not currently subject to the CCR Rule requirements, these landfill units as well as other facilities were also observed insofar as they may affect the operation and safety of Increment 1. The subject inspection is the tenth annual inspection since waste materials were first placed into Increment 1 in April 2013. This report provides some background information on the history and design of Increment 1 and documents our findings and recommendations from the ninth annual inspection under the CCR Rule.

Inspection Requirements under CCR Rule

As stated in 40 CFR §257.84(b)(1), the goal of the annual inspections is "*to ensure that the design, construction, operation, and maintenance of the CCR unit is consistent with recognized and generally accepted good engineering standards*." The CCR Rule further stated that the annual inspections must be performed by a qualified professional engineer and must, at a minimum, include the following efforts:

(i) A review of available information regarding the status and condition of the CCR unit, including, but not limited to, files available in the operating record (e.g., the results of inspections by a qualified person, and results of previous annual inspections); and

(ii) A visual inspection of the CCR unit to identify signs of distress or malfunction of the CCR unit.

Per 40 CFR §257.84(b)(2), the inspection report is required to address the following items:

(i) Any changes in geometry of the structure since the previous annual inspection;

(ii) The approximate volume of CCR contained in the unit at the time of the inspection;

(iii) Any appearances of an actual or potential structural weakness of the CCR unit, in addition to any existing conditions that are disrupting or have the potential to disrupt the operation and safety of the CCR unit; and

(iv) Any other change(s) which may have affected the stability or operation of the CCR unit since the previous annual inspection.

Annual inspections of a CCR unit must be performed by a qualified professional engineer, who is defined as "*an individual who is licensed by a state as a Professional Engineer to practice one or more disciplines of engineering and who is qualified by education, technical knowledge and experience to make the specific technical certifications required under this subpart. Professional engineers making these certifications must be currently licensed in the state where the CCR unit(s) is located*."

Waste Disposal Area

The designated waste disposal area at the Seminole Generating Station is located to the north of the power generating facility. Landfilling of waste materials has occurred within the closed original landfill, the closed vertical expansion landfill, and is currently occurring in the active Increment 1 landfill. Based on the imagery acquired by Pickett and Associates (Pickett) on December 10, 2024 and Google Earth on March 15, 2023, an aerial photograph that shows the layout of the entire waste disposal area is presented in Figure 1.

Increment 1 is located within an approximately 27-acre parcel that lies to the southeast of the closed original landfill and abuts 6 acres of the eastern portion of its southern slope. Lining of Increment 1 occurred in stages referred to as Stages I, IIA, IIB, and III, as shown in Figure 1. The Stage I area, which consists of approximately 17 acres of lined area at the base of Increment 1 and on the south slope of the closed original landfill, began to receive waste materials in April 2013. Lining of the Stage IIA area, which covers approximately 1.5 acres of the south slope of the closed original landfill, was completed in April 2014. Lining of the Stage IIB area, which consists of approximately 5 acres of the base of Increment 1 and the south slope of the closed original landfill, was completed in June 2015. Lining of the Stage III area, which consists of approximately 4 acres of the south slope of the closed original landfill, was completed in October 2017.

Since October 19, 2015 (the effective date of the CCR Rule), Increment 1 has been the only active waste disposal area at the Seminole Generating Station.

Sources of Relevant Information

In association with the landfill inspection, Ardaman has reviewed relevant information from the following sources:

- The nine previous annual CCR landfill inspection reports prepared by Ardaman for 2016 through 2024.
- Conditions of Certification PA78-10A3 for the Seminole Generating Station dated July 27, 2018.
- FDEP Solid Waste Operation Permit 0326595-003-CO-01.
- Design and construction documents for Increment 1.
- "First Update of Run-on and Run-off Control System Plan for Landfill Increment 1 Buildout Landfill," prepared by Ardaman, dated August 31, 2021.
- "Landfill Operation Plan, Seminole Generating Station, Putnam County, Florida," prepared by Seminole, updated August 2022.
- "CCR Fugitive Dust Control Plan for the Seminole Generating Station," prepared by Seminole, with an effective date of July 18, 2022.
- Previous studies on historical waste generation rates and landfill airspace consumption.
- Waste quantity and leachate flow meter records provided by Seminole.
- On-site rain gauge records for 2024 and January 2025 provided by Seminole.
- Topographic survey and aerial photograph based on imagery obtained by Pickett on December 10, 2024.
- Weekly landfill inspection reports for 2024 provided by Seminole.
- Annual CCR Fugitive Dust Control Report, prepared by Seminole dated December 6, 2024.

Waste Composition and Quantities

Waste materials that have been disposed of in Increment 1 consist of fly ash, purge water treatment (PWT) sludge, and miscellaneous wastes. Fly ash is a byproduct from burning pulverized coal for power generation and is essentially a dry material. The PWT sludge originates from the underflow of the TH-101 clarifier, after the suspended solids in the blowdown stream from the flue gas desulfurization (FGD) system have been removed. The suspended solids are formed when ferrous chloride and hydrated lime are added to the purge water for treatment to achieve compliance with the surface water discharge limitations for the facility. The miscellaneous wastes consist of equalization basin sludge (EB sludge), fly ash from sources other than the silos,

unsold bottom ash, coal particles, limestone, sandblasting grit, plant sludges, percolation pond sludge, sludge from the effluent processing facility (EPF) area run-off collection ditch and sump, etc. EB sludge originates from periodic cleanouts of the two equalization basins that are located to the southeast of the coal pile and northwest of the central wastewater treatment facility. The equalization basins receive run-off from the coal pile and drainage from the plant sumps along with other low-volume waste streams.

Based on historical information provided by Seminole, Ardaman analyzed waste generation by waste type, landfilled waste, and diverted waste for the period between January 1, 2007 and December 31, 2024. For the period 2013 through 2024, the average fly ash generation rate was approximately 213,000 dry tons per year. In addition to fly ash, the waste stream included on average, approximately 4,500 tons of PWT sludge and 8,400 tons of miscellaneous waste. The average total waste generation was approximately 226,000 dry tons per year. The waste materials had an average moisture content of 25 percent, and average in-place dry and wet densities of 1.2 and 1.5 tons per cubic yard, respectively. The Seminole Combined Cycle Facility (SCCF) started operating in 2023, and coal-fired Unit 1 ceased operation in December 2023. In 2024, fly ash generation was approximately 94,500 dry tons, and total waste generation was approximately 105,000 dry tons.

In 2017, Seminole started diverting fly ash from the landfill for beneficial use off-site. In April 2019, Seminole started sending PWT sludge off-site for disposal instead of mixing it with fly ash and landfilling the mixture on site. In 2024, 72,900 dry tons of fly ash and 2,700 dry tons of PWT sludge were diverted offsite from the landfill and 27,900 dry tons of fly ash and miscellaneous waste and 1,500 dry tons of PWT sludge that could not be diverted were landfilled.

Design and Construction of Increment 1

Because Increment 1 was designed and constructed prior to enactment of the CCR Rule, it is not subject to the design criteria for new landfills in 40 CFR §257.70. A double liner system that is consistent with the requirements of Chapter 62-701, Florida Administrative Code (F.A.C.), for solid waste management facilities was installed on the base areas of Stages I and IIB (i.e., the entire base area of Increment 1), and on the slope area of Stage I. A single geomembrane liner system, also consistent with the requirements of Chapter 62-701, F.A.C., was placed on the slope areas of Stages IIA, IIB, and III.

The double liner system is composed of the following components in descending order:

- A 2-foot thick drainage sand layer with a minimum saturated hydraulic conductivity of $1x10^{-3}$ cm/sec.

- A double-sided upper geocomposite with a minimum transmissivity of $1x10^{-3}$ m^2/sec (when measured under a normal stress of 5,000 lb/ft^2 and a flow gradient of 0.01).

- A 60-mil textured primary HDPE liner.

- A double-sided lower geocomposite with a minimum transmissivity of $1x10^{-3}$ m^2/sec (when measured under a normal stress of 5,000 lb/ft^2 and a flow gradient of 0.01).

- A 60-mil textured secondary high density polyethylene (HDPE) liner.

- A reinforced, needle-punched geosynthetic clay liner (GCL) with a maximum saturated hydraulic conductivity of $1x10^{-7}$ cm/sec.

- A prepared soil subgrade.

The single geomembrane liner system is composed of the following components in descending order:

- A 2-foot thick drainage sand layer with a minimum saturated hydraulic conductivity of $1x10^{-3}$ cm/sec.

- A double-sided HDPE geocomposite with a minimum transmissivity of $1x10^{-3}$ m^2/sec (when measured under a normal stress of 5,000 lb/ft^2 and a gradient of 0.01).

- A 60-mil textured HDPE liner.

- A bedding soil layer.

The drainage sand layer and upper geocomposite at the bottom of Increment 1 collect leachate and convey it through a network of 8-inch diameter, slotted, DR 17 HDPE leachate collection pipes to the leachate collection sump located at the northeast corner, where the collected leachate is drained by gravity via an 8-inch diameter, solid wall, DR 17, HDPE pipe to a 6-foot diameter, DR 32.5, HDPE leachate collection manhole located on the west bank of Stormwater Pond B (Pond B), which is located east of Increment 1. Similarly, the lower geocomposite collects and conveys any leakage through the primary HDPE liner to the leachate collection sump where the collected leachate is also drained by gravity to the HDPE leachate collection manhole. The quantities of leachate from the leachate collection and leak detection systems are measured by separate flow meters. Cleanouts were provided for all leachate pipelines.

From the leachate collection manhole, the collected leachate from the leachate collection and leak detection systems drains by gravity via an 8-inch diameter, solid wall, DR 17, HDPE leachate conveyance pipe into Pond 8, which is located to the northeast of the closed original landfill. An 8-inch diameter gate valve was installed in the leachate conveyance pipe near the crest of Pond 8 to occlude leachate flow from Increment 1 into Pond 8, if needed.

Increment 1 Landfill Operations

Increment 1 is governed by the Conditions of Certification PA78-10A3 dated July 27, 2018, the landfill operation plan for Increment 1 updated by Seminole in August 2022, and Solid Waste CCR Operation Permit No. 0326595-003-CO-01 issued March 28, 2024.

Prior to landfilling, fly ash from silos was conditioned with PWT sludge in a pug mill inside the old dewatering building of the EPF[1]. The conditioned fly ash was deposited outside the building by a radial stacker. Some of the conditioned fly ash was used to produce “pozzocrete” by adding 2.5 to 3 percent pebble lime from an adjacent silo. Fly ash has also been used to stabilize dewatered PWT sludge and EB sludge.

[1] In 2024, most of the fly ash was conditioned with service water rather than PWT sludge.

Conditioned fly ash and pozzocrete were loaded into 40-cubic yard articulated off-road dump trucks for transportation to Increment 1 where the wastes were staged near the working face. When a sufficient volume of wastes has accumulated, the wastes were spread in layers with a loose thickness of approximately 16 to 18 inches. The wastes were then compacted using a vibratory soil compactor.

Pozzocrete berms with exterior side slopes of 3H:1V and interior side slopes of 7H:1V to 6H:1V were constructed on the outside of each waste lift for dust control. The outside slopes of the pozzocrete berms were constructed to allow placement of 2 feet of soil cover on top of the pozzocrete. Fly ash and other wastes were landfilled in areas inside the pozzocrete berms and, in some cases, other wastes were covered with fly ash to provide a competent surface for the landfill equipment.

The outside slopes of the pozzocrete berms are typically covered with 2 feet of soil and seeded as they were constructed. Unless at least 18 inches of soil cover has been provided on top of the wastes, stormwater run-off from the waste disposal areas is considered leachate and must be captured inside a lined disposal area or lined pond. A perimeter toe swale was constructed inside the lined area on the east side of Increment 1 to collect leachate run-off from the exterior slope of the outer pozzocrete berm that has not yet been covered with soil. Run-off that was collected in this swale flows into the sump of the Stage I area where it infiltrated into the leachate collection sump. Once the entire exterior slope has been covered with soil, run-off that collects in this swale may be directed to Pond B. However, stormwater run-off from the exposed waste areas above the dike must be directed to the interior of Increment 1.

Any stormwater run-off that did not infiltrate into the waste materials or the leachate collection and removal system flowed to a low area in Stage IIB of Increment 1 that has not yet been covered with waste. This low area had an area of approximately 1 acre. To remove any standing water, Seminole deployed two Godwin Dri-Prime CD225M pumps with their suction pipelines currently positioned so that their intakes are near the low point of the Stage IIB area. Each pump has a capacity of approximately 2,400 gpm. The combined flow through the pumps is conveyed through an 18-inch diameter HDPE pipeline into Pond 9 or Pond 2.

Seminole monitored and recorded the quantity of leachate from the leachate collection and leak detection systems of Increment 1 using flow meters located near the leachate collection manhole for Increment 1. Leachate from Increment 1 and the vertical expansion as well as contact run-off from uncovered waste materials was collected in lined ponds and used as makeup or pump seal water for the wet FGD system from which it was either evaporated or treated in the PWT system and discharged.

Fly ash destined for beneficial use is diverted to Silo V-142 or Silo V-143 for loading into trucks. Dewatered PWT sludge is temporarily stockpiled on site as needed, prior to shipment off-site for disposal.

Review of Available Information

Rainfall Data

Seminole maintains an on-site manual climatological station that records rainfall and wind direction and an automated Columbia Weather System weather station on the Urea Building that transmits cumulative rainfall to the distributed control system (DCS).

In 2024, the manual station recorded 57.18 inches of annual rainfall and the automated weather station recorded 53.5 inches of annual rainfall, both of which were above the Federal Point 1991-2020 normal annual rainfall of 51.40 inches. The manual station total of 57.18 inches is close to the 24-year average for the Seminole Generating Station of 57.54 inches. The maximum daily rainfall recorded in 2024 was 4.52 inches on October 9.

The manual weather station recorded a total of 6.64 inches of rainfall in December 2024. The 1991-2020 normal December rainfall at the nearby Federal Point climatological station, which is no longer in operation, is 2.22 inches, and the 24-year average December rainfall at the Seminole Generating Station manual gauge is 3.01 inches. Therefore, the rainfall for the month prior to our inspection was above normal.

The manual rain gauge recorded 3.55 inches between January 1 and January 29, 2025 (i.e., from the beginning of the year to the date of our inspection), which is above normal for the entire month of January. No rainfall was recorded after January 22, 2025, on which 0.60 inches of rainfall was recorded.

Weekly Landfill Inspection Reports

An employee at the Seminole Generating Station inspected Increment 1, including the leachate sump, leachate flow meters, access roads, stormwater structures and ditches, and Stormwater Pond B, weekly in 2024 using a Microsoft Excel workbook with checklists of inspection items. The following items needing attention were noted in the weekly inspection checklists for 2024:

- The screen display for the leachate collection meter became unreadable on July 18, 2024. The meter was repaired on August 9, 2024, and the totalizer was reset.

- Soft spots in the perimeter access roads were reported during the October 1, 8, and 15, 2024 weekly inspections in areas that were far away from Increment 1. The problems had been resolved by the October 22, 2024 weekly inspection.

Topographic Survey and Waste Records

The most recent topographic survey of Increment 1 was performed by Pickett from aerial data acquired on December 10, 2024. The topography from this survey is depicted in Figure 2. An aerial photograph from the flight imagery is shown in Figure 3. The boundaries of the Stages I, IIA, IIB, and III areas, were identified in Figures 2 and 3, and the areas on which a soil cover had been placed were also visually identified in Figure 3.

The top of the outer pozzocrete berm on the east and southeast sides of the Stage I area had reached an elevation of +139 to +150 feet (NAVD88)[2], and the waste surface in most of the Stage I area had reached an elevation of +140 to +149 feet (NAVD88). Waste had been placed in Stage IIB to elevations of +100 to +105 feet (NAVD88). Part of the low point of the Stage IIB area at an elevation of approximately +100 feet (NAVD88) had not yet been covered with waste, although sediment and fly ash had accumulated over the top of the drainage sand layer of the leachate collection system. According to Seminole, they periodically remove accumulated sediment and

[2] Some previous inspection reports and topographic surveys have reported elevations relative to the National Geodetic Vertical Datum (NGVD). Elevations relative to NGVD are 0.958 feet higher than elevations relative to the North American Vertical Datum of 1988 (NAVD88) at the Seminole Generating Station site.

fly ash to expose the sand drainage layer of the leachate collection system. Landfilling in the eastern part of Stage III had reached a maximum elevation of approximately +149 feet (NAVD88).

Based on waste records provided by Seminole, a total of approximately 1,577,200 dry tons of waste were disposed of within Increment 1 between April 5, 2013 (i.e., the start of landfilling in Increment 1) and December 31, 2024 (i.e., 29 days before the date of the 2025 inspection). Based on the same waste records, approximately 1,572,800 dry tons of waste had been placed in Increment 1 by December 10, 2024 (i.e., the date of the latest topographic survey). Figure 4 presents the differences between the December 10, 2024 landfill elevations and the top of drainage sand elevations in the bottom liner system for Increment 1. Analysis of the topographic data indicated that approximately 1,288,700 cubic yards of waste had been placed in Increment 1 by December 10, 2024, corresponding to an overall average dry density of 1.22 tons per cubic yard.

Based on records provided by Seminole, approximately 29,400 dry tons of waste were landfilled in Increment 1 in 2024. In addition, approximately 72,900 tons of dry fly ash were transported off-site for beneficial use in concrete manufacturing, and 10,900 wet tons (2,700 dry tons) of PWT sludge were transported off-site for disposal. Approximately 6,100 wet tons (1,500 dry tons) Of PWT sludge were landfilled in 2024. In 2024, airspace was consumed at an average rate of approximately 20,200 cubic yards per year, compared to the annual average airspace consumption rate of approximately 57,100 cubic yards per year in 2023.

Leachate Flow Meter Records

Separate flow meters for the leachate collection and leak detection systems were installed during construction of the Stage I area and have been monitored by Seminole personnel. Typically, totalizer and flow readings were collected and recorded four times per day, and daily average flows were calculated. In 2024, the leachate collection flow meters recorded an average annual flow rate of approximately 20 gpm, corresponding to approximately 14 inches per year over 27 acres of the Increment 1 leachate collection system footprint, and a peak daily average flow of 358 gpm, corresponding to approximately 0.71 inches per day. The peak daily average flow occurred on October 10, 2024, one day after the maximum recorded daily rainfall during Hurricane Milton.

The leachate collection records also note the days when the meters were out of service or malfunctioning. There were no readings between July 17, 2024 at 7:20 PM and August 9, 2024 at 7:00 PM, so that the leachate quantities were not measured. A total of 8.86 inches of rainfall was recorded during this period.

Auxiliary Pump Records

Seminole Generating Station personnel are responsible for recording the run times for the two auxiliary pumps currently stationed in the Stage IIB area. Based on records provided by Seminole, the auxiliary pumps did not have to be used for removal of surface leachate run-off in 2024. This indicated that run-off that accumulated in the low area of Stage IIB infiltrated into the leachate collection system and discharged to Pond 8. During Hurricane Milton on October 9, 2024, because of rising water in Stage IIB threatening to reach the intake elevations of the auxiliary pumps, Seminole severed the intake pipelines and moved the pumps to a higher elevation. According to Seminole, they intend to move the pumps to a location near the access ramp to Stage IIB and to reconnect the pipelines, but this had not been done as of the inspection date.

Run-On and Run-Off Control System

Per the first update of the run-on and run-off control system plan, most rainwater that potentially drains over upslope land onto any part of Increment 1 will be controlled and diverted by reverse benches with drains and Fabriform-lined flumes and ditches.

Per the run-off control system plan, any rainwater, leachate, or other liquid that drains over land from any part of Increment 1 will be contained without resulting in run-off leaving the lined waste disposal area and discharging into a stormwater management system or nearby natural drainageways under the 25-year, 24-hour design storm event.

Fugitive Dust Control

On December 5, 2024, Seminole Electric Corporate Environmental and SGS Environmental personnel performed a site inspection to review the effectiveness of CCR dust control measures. This annual evaluation was conducted in accordance with 40 CFR §257.80(c) and Section 3.2 of the CCR Fugitive Dust Control Plan. The review, which was documented in a report dated December 6, 2024, concluded that no changes to the existing plan were necessary.

The methods used to control CCR fugitive dust at SGS are documented within the Plan. During the annual review, no significant concerns or deficiencies were identified for the methods in the Plan and their effectiveness in controlling CCR fugitive dust at SGS. Any incident involving dusting of CCR was recorded in an incident report as required by the Plan. Upon notification of any dusting of CCR, SGS staff took immediate actions to remove that equipment from service and address any malfunctions.

During the site visit, no CCR management areas were noted to have visible dusting. The roads used to transport CCR to the Effluent Processing Facility and the Increment 1 landfill were clean and well maintained. CCR within the landfill was compacted and cover material was properly placed to prevent dusting.

No citizen complaints regarding CCR fugitive dusts were received in during the review period.

Increment 1 Inspection

The tenth annual visual inspection of Increment 1 under the CCR Rule was conducted by Mr. Patrick A. Kennedy, P.E., of Ardaman on January 29, 2025. The weather at the time of the inspection was sunny, with a temperature of 58 to 66 °F.

An annotated December 10, 2024 aerial photograph with the items observed during our inspection is shown in Figure 5. Selected representative photographs taken during the site inspection on January 29, 2025 are included in Appendix 1.

For the inspection, Mr. Kennedy was driven by Mr. Wyatt Wilkinson of the Seminole Generating Station, who is a Materials Handling Equipment Operator whose duties include the Increment 1 landfill. The inspection proceeded by traversing Increment 1 and surrounding roads in a Kubota electric golf cart and stopping periodically to walk and observe the condition of Increment 1 as well as the conditions of other waste disposal areas and facilities that may affect the stability and safety of Increment 1.

The inspection started at the southwest corner of Increment 1 and proceeded to the access ramp to Stage IIB near the northwestern corner of the Stage IIB area. The inspection proceeded through Stage IIB to the top of Stage I and around the eastern and southern pozzocrete dikes at the top of Stage I. We then reversed our path to the access ramp and then proceeded along the perimeter road around the east side of Pond B to the leachate collection sump and manhole and along the perimeter road to observe the Fabrifom flumes and monitor wells. We then rode along the perimeter access road to the leachate pipe discharge into Pond 8 and then around the closed original landfill to the concrete pad adjacent the new gypsum dewatering building.

Articulated dump trucks hauling waste enter and leave Increment 1 via the access ramp near the northwestern corner of the Stage IIB area. We observed that vegetation that had grown up in the perimeter ditch on both ends of the culvert under the access ramp and in the concrete flumes on the landfill side slope upstream of the culvert needed to be trimmed. The ash placement against the inside of the Stage IIB containment dike north of the access ramp appeared to have reached the elevation of the liner anchor trench in the containment dike and, therefore waste should not be placed higher. The lower bench on the southern and eastern sides of Increment 1 can normally be reached by an internal access road to the south past the low point of the Stage IIB area The access road through Stage IIB was not able to be driven because of wet, soft areas. Standing in Stage IIB, we observed that the slope of the waste from Stage I to Stage IIB was steep with numerous erosion channels.

An internal access road runs east from the access ramp to the top of waste in Stage I. The alignment of the access road to the top of Stage I had been modified from straight through Stage IIB to turning to the left and climbing diagonally on the slope of Stage III. On the south side of the access road, Seminole had graded two flat plateaus that would delay run-off and allow it to infiltrate. We proceeded on the access road to the top of Stage I. Piles of PWT sludge that was not able to be diverted (reddish piles in Figures 2 and 5) and fly ash were observed on the top of Stage I. According to Seminole, the PWT sludge will be mixed with fly ash at a ratio of four to five parts fly ash to one part PWT sludge prior to landfilling and compaction.

The pozzocrete dike on the east side of the Stage I area had reached an elevation of approximately +140 to +150 feet (NAVD88). The dike is intended to be raised to an elevation of approximately +155 feet (NAVD88), where the next bench will be constructed. All but the upper 15 to 20 feet of the pozzocrete dike above the highest bench had been covered with soil and grassed. The benches below the dike at elevations of approximately +135 feet and +115 feet (NAVD88) and the adjacent side slopes were covered with soil and grass. The waste surface at the top of Stage I was gently sloped in a westerly direction toward the Stage IIB area, but the slope steepened significantly approaching Stage IIB.

The eastern part of the Stage III area had been covered with waste to a maximum elevation of approximately +149 feet (NAVD88) from the top of the access road to the junction of the pozzocrete dike and Stage III. The waste surface in Stage III was sloped to convey run-off toward the Stage IIB area. A Fabriform-lined flume was constructed along the western boundary of the Stage III area to intercept and divert run-off from the upslope area.

The outside containment dike for Increment 1, the adjacent perimeter stormwater swale, and perimeter access road were observed for stability, grass cover, and signs of erosion. The western and southern containment dikes and perimeter swales for Increment 1 were in good condition with no visible erosion or stability issues. Monitor well MW-18, which is located near the southwestern corner of Increment 1, was intact and protected by bollards, and the leachate collection system

cleanouts at the top of the containment dike were in good condition and surrounded by protective bollards.

Stormwater Pond B and the perimeter road around the east side of the pond were in good condition. The CS-1 and CS-2 outlet structures were clear and unobstructed. The water level in Pond B was well below the overflow or bleed down elevations.

The leachate collection manhole for Increment 1 and the leachate flow meter appeared to be functioning properly. At the time of our inspection, the leachate collection control panel displayed a totalizer reading of 68384 x 100 gallons and a flow rate of 7.5 gpm. The leak detection meter indicated no flow. The valve box was open and a valve extension with a handwheel was in place. According to Seminole, the valve in the leachate collection system had been manually cycled on and off to flush the leachate discharge pipeline.

The Fabriform-lined flume on the eastern slope of the closed original landfill just north of Increment 1 discharges into the north end of Pond B. This flume had been extended to the top of the vertical expansion as part of closure construction for the vertical expansion. Vegetation was growing in the flume.

The four leachate collection system cleanouts and four monitor wells (MW-19 though MW-22) on the east side of Increment 1 were in good condition and protected by bollards painted yellow or white for visibility. All of the monitor wells had labels or metal tags showing the well number, measuring point elevation, and depth. The swale within the lined containment that drains toward the sump was unobstructed and had good grass cover. No standing water was observed in the swale or the sump. The two Fabriform-lined flumes and stilling basins draining into Pond B on the east side of Increment 1 were in good condition, with minor amounts of sediment and no water collected at the low points of the road crossings.

Leachate was flowing from the discharge pipeline from Increment 1 into Pond 8.

Following the inspection on January 29, 2025, Mr. Kennedy interviewed Mr. Butch Williams, the Material Handling Supervisor, who has overall responsibility for the CCR landfill, about landfill operation. Based on the interview, the existing landfill operating equipment was adequate and performed satisfactorily, and there were no significant landfill operation issues in 2024.

Findings and Recommendations

Based on our visual inspections, Ardaman has the following key findings and recommendations:

- No signs of an actual or potential structural weakness of the CCR unit and no conditions that were disrupting or had the potential to disrupt the operation and safety of the CCR unit were observed.

- Based on our observation of completed surfaces at the time of the inspection, placing, grading and compaction of wastes appeared to be ongoing in a satisfactory manner.

- Vegetation should be managed to maintain the flow capacity of ditches, culverts, and Fabriform flumes.

- The outside slopes of the containment dike for Increment 1 were stable with no visible signs of erosion.

- There were no signs of erosion around the inlet near the southeastern corner of Increment 1 which was re-constructed in 2018.

- Any bare areas and areas of sparse grass coverage should be overseeded when conditions permit.

- The inside slopes of the Stages IIA, IIB, and III areas that have not been covered with wastes also appeared to be stable with no significant erosion. Overseeding should be performed for any parts of the interior side slopes of the Stages IIA, IIB, and III areas with sparse grass coverage.

- The remaining 15 to 20 feet of the uppermost pozzocrete dike on the southern and eastern sides of Increment 1 should be covered with at least 18 inches of soil and seeded as soon as conditions permit. Until this is accomplished, contact run-off from the uncovered slope should be directed to the interior of Increment 1.

- Waste should not be placed against the inside of the containment dike in Stage IIB higher than liner anchor trench, which was placed 2 feet below the containment dike crest.

- The top of waste surface in Stage I should continue to be graded toward the Stage IIB area.

- Even though they have not been used to remove leachate since 2018, the intake pipelines should be reconnected to the auxiliary pumps and they should continue to be on hand to remove any standing water from the low area of Increment 1. Seminole should continue to provide enough emergency storage in Increment 1 to accommodate run-off from areas of exposed waste and should monitor any accumulation of standing water.

- Seminole should continue to monitor vegetation growth in the drainage sand/protective cover and remove vegetation that has the potential to damage the liner or clog the leachate collection system. This includes vegetation in the sump and perimeter toe swale area on the east side of the Stage I area.

- Seminole should continue with the weekly landfill inspections, as required by the CCR Rule.

Recordkeeping and Future Inspection

Seminole should be cognizant of the following recordkeeping requirements: (i) the annual CCR landfill inspection report must be placed in the written operating record at the facility as stipulated in by 40 CFR § 257.105(g)(9); (ii) the State Director[3] must be notified of the availability of the report as stipulated in 40 CFR § 257.106(g)(7); and (iii) the report must be posted on the Seminole website as stipulated in 40 CFR § 257.107(g)(7).

As stipulated in 40 CFR §257.84(b)(4), the schedule for the next annual CCR landfill inspection is as follows:

> "… *In all cases, the deadline for completing subsequent inspection reports is based on the date of completing the previous inspection report. For purposes of this section,*

[3] In the CCR Rule, the State Director refers to "*the chief administrative officer of the lead state agency responsible for implementing the state program regulating disposal in CCR landfills, CCR surface impoundments, and all lateral expansions of a CCR unit*."

the owner or operator has completed an inspection when the inspection report has been placed in the facility's operating record as required by § 257.105(g)(9)."

Ardaman interprets this to mean that the next annual CCR landfill inspection should be completed and the inspection report should be placed in the operating record at the Seminole Generating Station within one year of the date that this report is officially placed in the operating record. Accordingly, we recommend the next annual inspection of Increment 1 be performed no later than January 2026.

Ardaman appreciates the opportunity of providing our service to Seminole. If you have any questions or need additional information, please contact us.

Very truly yours,
ARDAMAN & ASSOCIATES, INC.
Certificate of Authorization No. 5950

Patrick A. Kennedy, P.E.
Senior Project Manager

Francis K. Cheung, P.E.
Principal Engineer 03/14/2025
Florida License No. 36382

FRANCIS K CHEUNG LICENSE No. 36382 STATE OF FLORIDA PROFESSIONAL ENGINEER

Francis K Cheung Digitally signed by Francis K Cheung Date: 2025.03.14 12:53:55 -04'00'

Enclosure

This item has been digitally signed and sealed by Francis K. Cheung on the date adjacent to the seal.

Printed copies of this document are not considered signed and sealed and the signature must be verified on any electronic copies.

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Scale: 1" = 400'

SOURCE: AERIAL IMAGERY FLOWN DECEMBER 10, 2024 BY, PICKETT & ASSOCIATES, INC, AND MARCH 15, 2023 BY GOOGLE EARTH

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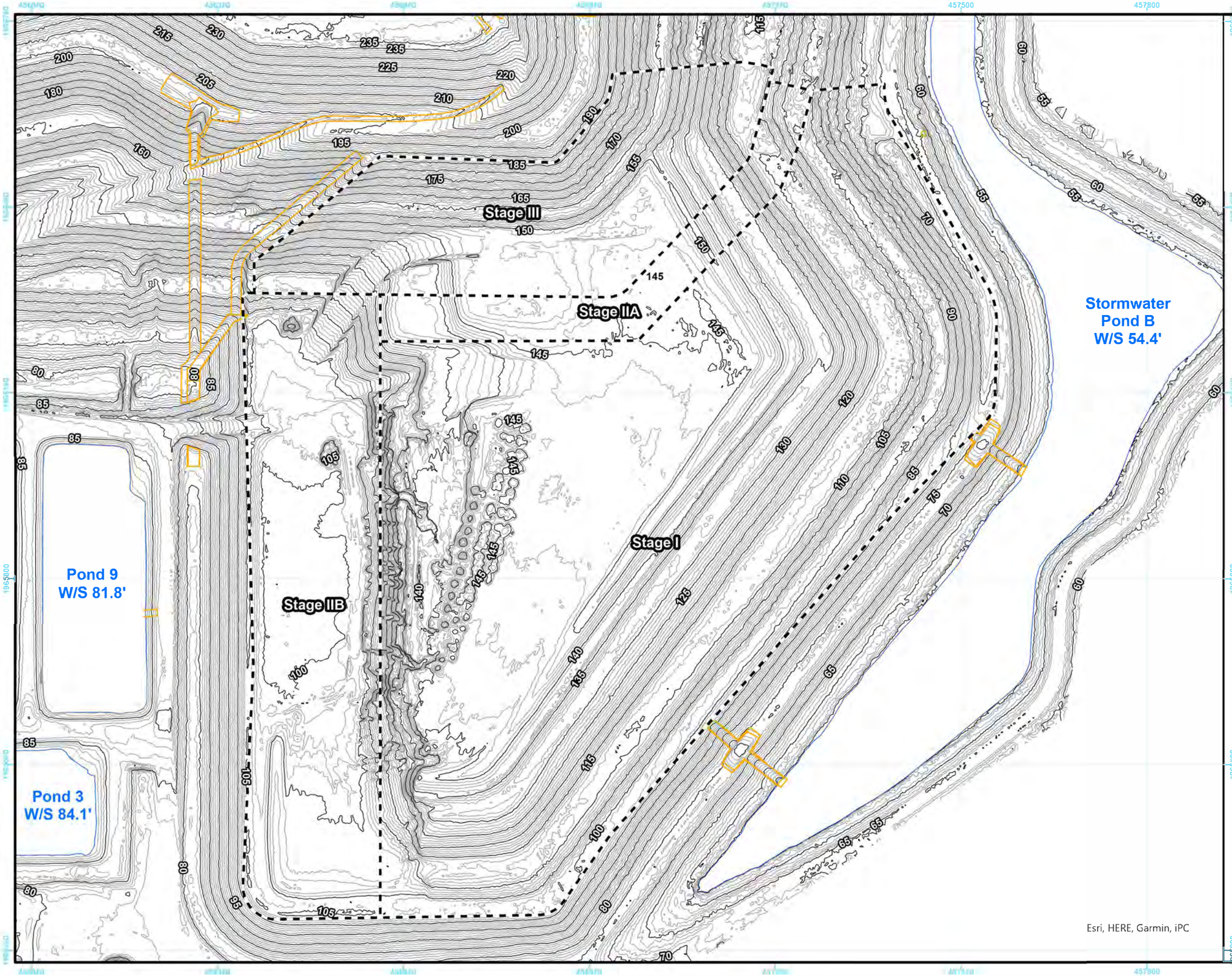
Seminole Electric COOPERATIVE, INC.
IN PARTNERSHIP WITH THOSE WE SERVE

LANDFILL LAYOUT

Ardaman & Associates, Inc.
Geotechnical, Environmental and Materials Consultants

2025 ANNUAL CCR LANDFILL INSPECTION SEMINOLE GENERATING STATION PUTNAM COUNTY, FLORIDA

DRAWN BY: **ACV**	CHECKED BY: **PAK**	DATE: **01/10/2025**
FILE NO. **24-13-0059**	APPROVED BY: **FKC**	FIGURE: **1**



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Scale: 1" = 150'

SOURCE: TOPOGRAPHIC SURVEY COMPILED BY PICKETT & ASSOCIATES, INC. FROM AERIAL DATA ACQUIRED ON DECEMBER 10, 2024.

Legend

- Increment 1 Liner Stage Limits
- Fabriform

Elevation (Feet, NAVD88)

- 5' Contours
- 1' Contours
- Water

Seminole Electric COOPERATIVE, INC.
IN PARTNERSHIP WITH THOSE WE SERVE

12/10/2024 TOPOGRAPHY

Ardaman & Associates, Inc.
Geotechnical, Environmental and Materials Consultants

2025 ANNUAL CCR LANDFILL INSPECTION SEMINOLE GENERATING STATION PUTNAM COUNTY, FLORIDA

DRAWN BY: ACV	CHECKED BY: PAK	DATE: 01/16/2025
FILE NO. 25-13-0059	APPROVED BY: FKC	FIGURE: 2

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Scale: 1" = 150'

SOURCE: AERIAL IMAGERY FLOWN DECEMBER 10, 2024 BY PICKETT & ASSOCIATES, INC.

Legend

- Increment 1 Stage Limits
- Limit of Soil Cover

Seminole Electric COOPERATIVE, INC.
IN PARTNERSHIP WITH THOSE WE SERVE

12/10/2024 AERIAL PHOTO

Ardaman & Associates, Inc.
Geotechnical, Environmental and Materials Consultants

2025 ANNUAL CCR LANDFILL INSPECTION SEMINOLE GENERATING STATION PUTNAM COUNTY, FLORIDA

DRAWN BY: **ACV**	CHECKED BY: **PAK**	DATE: **1/10/2025**
FILE NO. **24-13-0059**	APPROVED BY: **FKC**	FIGURE: **3**

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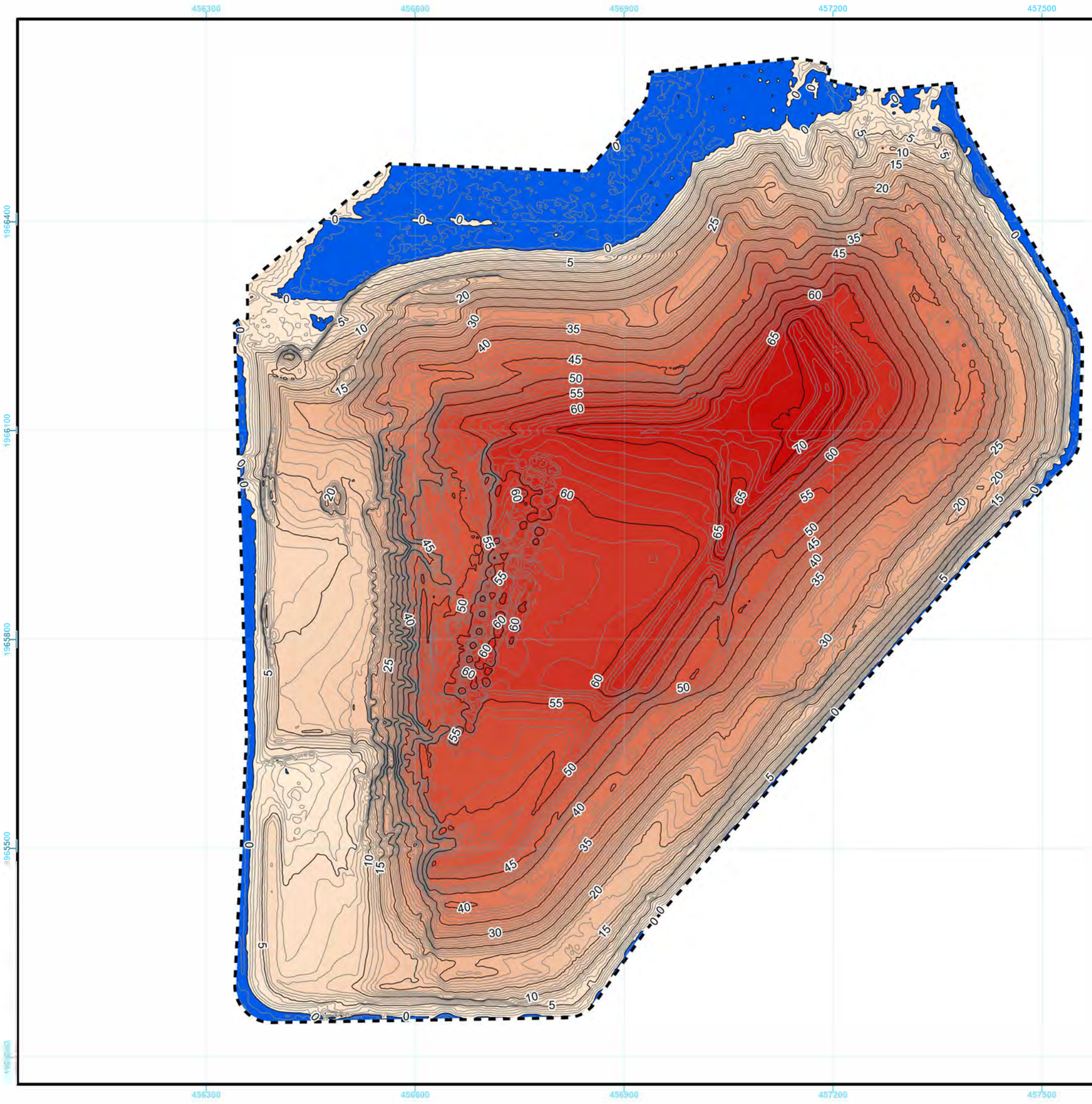

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Scale: 1" = 150'

SOURCE: TOPOGRAPHIC SURVEY COMPILED BY PICKETT & ASSOCIATES, INC. FROM AERIAL DATA ACQUIRED ON DECEMBER 10, 2024.

Legend

Difference Between Surfaces (Feet)

5' Contour

1' Contour

Boundary of Increment 1 Stages I, IIA, IIB, and III

74.0592

0

Less Than Zero

Seminole Electric COOPERATIVE, INC.
IN PARTNERSHIP WITH THOSE WE SERVE

AIRSPACE CONSUMED FROM 04/05/2013 TO 12/10/2024

Ardaman & Associates, Inc.
Geotechnical, Environmental and Materials Consultants

2025 ANNUAL CCR LANDFILL INSPECTION SEMINOLE GENERATING STATION PUTNAM COUNTY, FLORIDA

DRAWN BY: ACV	CHECKED BY: PAK	DATE: 01/16/2025
FILE NO. 24-13-0059	APPROVED BY: FKC	FIGURE: 4

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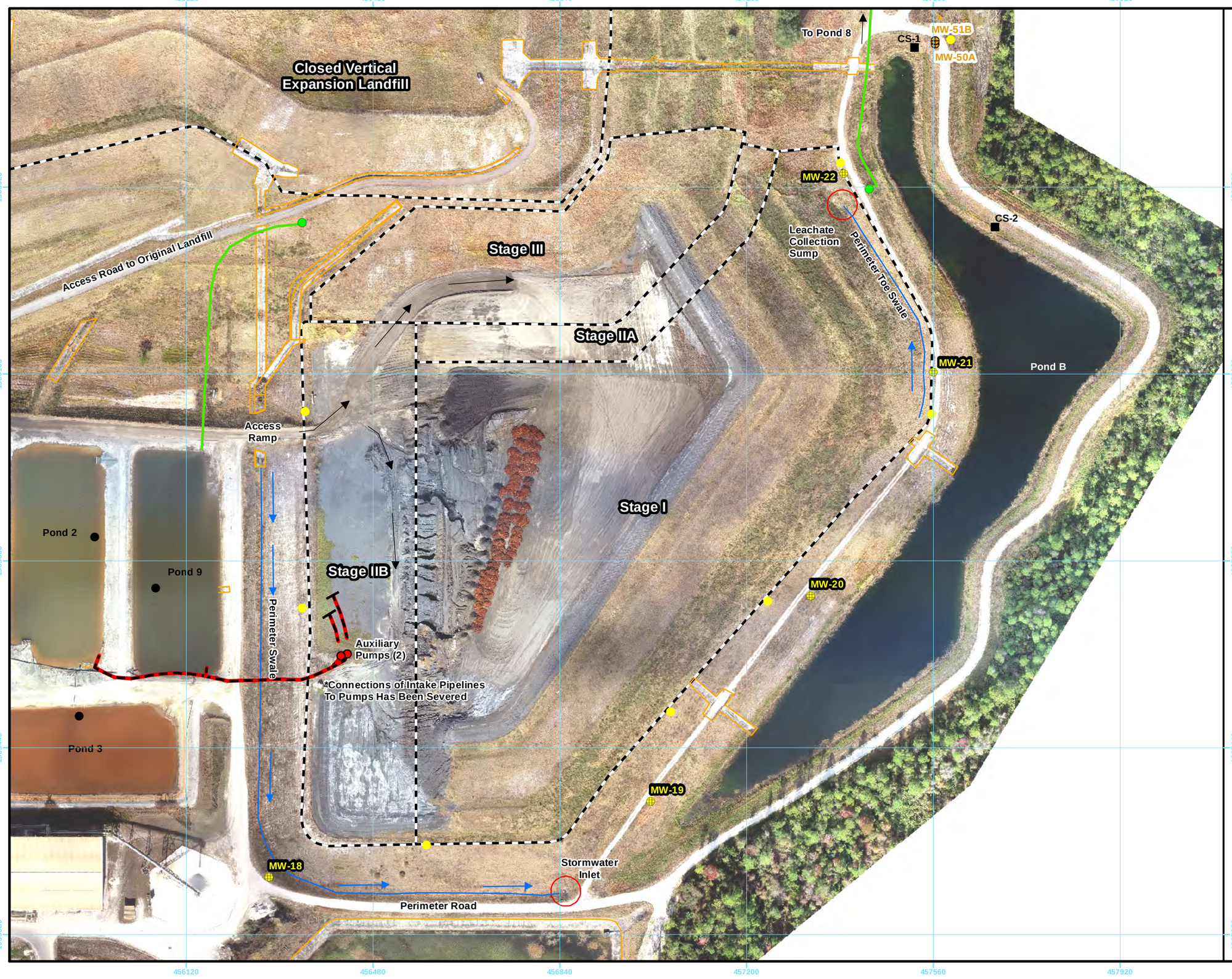

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Scale: 1" = 180'

SOURCE: AERIAL IMAGERY FLOWN DECEMBER 10, 2024 BY PICKETT & ASSOCIATES, INC.

Legend

- Cleanout
- Staff Gauge
- Solid Waste Monitor Well
- Shallow Surficial Aquifer Monitor Well for Groundwater Remediation System
- Fabriform
- Leachate Collection Manhole
- Temporary Pipeline
- Flow Arrows
- Leachate Pipeline
- Traffic Flow

Seminole Electric COOPERATIVE, INC.
IN PARTNERSHIP WITH THOSE WE SERVE

ANNOTATED 12/10/2024 AERIAL PHOTO

Ardaman & Associates, Inc.
Geotechnical, Environmental and Materials Consultants

2025 ANNUAL CCR LANDFILL INSPECTION SEMINOLE GENERATING STATION PUTNAM COUNTY, FLORIDA

DRAWN BY: ACV	CHECKED BY: PAK	DATE: 02/03/2025
FILE NO. 24-13-0059	APPROVED BY: FKC	FIGURE: 5

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Appendix 1

Selected Photographs Taken During Landfill Inspection on January 29, 2025

Annual Inspection of CCR Landfill
Seminole Generating Station

Containment Dike for Stage IIB, Perimeter Swale and, Perimeter Road, Looking South

Pipeline from Auxiliary Pumps for Low Point of Stage IIB to Pond 9, Looking East

Discharge of Pipeline in Previous Photo into Pond 9, Looking West Along Dike Between Ponds 3 and 9

Perimeter Road and Swale Along Toe of Western Containment Dike for Stage IIB, Looking North Toward Closed Original Landfill and Vertical Expansion

Annual Inspection of CCR Landfill
Seminole Generating Station

Access Ramp to Stage IIB, Looking East

North End of Western Containment Dike for Stage IIB and Fabriform-Lined Flumes, Looking North

Fabriform Around Reinforced Concrete Pipe Under Access Ramp to Stage IIB, Looking East

Access Ramp to Stage IIB, Looking Northeast

Annual Inspection of CCR Landfill
Seminole Generating Station

Access Ramp through Stage IIB and Western Extent of Waste, Looking East Toward Stage I

Stage IIB, Looking Southwest from Top of Stage I

Waste Piles on Top of Stage I ,Looking South

Piles of Fly Ash and Dewatered PWT Sludge on Top of Stage I, Looking West

Annual Inspection of CCR Landfill
Seminole Generating Station

Piles of Dewatered PWT Sludge on Top of Stage I, Looking North Toward Stage III

Pozzocrete Dike at Top of Waste on Eastern Side of Stage I, Looking South Along Dike

Top of Waste in Stage I, Looking Southwest

Caterpillar 563C Compactor on Top of Stage I

Annual Inspection of CCR Landfill
Seminole Generating Station

Monitor Well MW-18 and Protective Bollards

Perimeter Swale and Road at Southwestern Corner of Stage IIB Containment Dike, Looking Southeast

Perimeter Road and Swale South of Increment 1, Looking West; Gypsum Dewatering Building and Silos in EPF Area to Rear of Photo

Stormwater Inlet in Southeastern Corner of Increment 1

File Number 24-13-0059

Inspection Date: 01/29/2025

Annual Inspection of CCR Landfill
Seminole Generating Station

Perimeter Road, Eastern Slope of Containment Dike for Stage I, and Stormwater Pond B, Looking North

Eastern Slope of Increment 1 and Fabriform-Lined Flume into Stormwater Pond B, Looking West from Perimeter Road Around Eastern Side of Pond B

Eastern Slope of Increment 1 and Fabriform-Lined Flume into Stormwater Pond B, Looking Northwest from Perimeter Road Around Eastern Side of Pond B

Perimeter Road Around Eastern Side of Pond B, Looking North

Annual Inspection of CCR Landfill
Seminole Generating Station

Outlet Structure CS-1 for Stormwater Pond B, Looking West from Perimeter Road Around Eastern Side of Pond B

Fabriform-Lined Flume from Top of Closed Vertical Expansion to Stormwater Pond B, Looking Uphill from Perimeter Road

Fabriform-Lined Flume into Stormwater Pond B, Looking Southeast

Monitor Well MW-22 and Leachate Collection System Cleanout East of Perimeter Road, Looking South

Leachate Collection (Left)) and Leak Detection (Right) Flow Meter Control Panels for Increment 1

Display of Leachate Collection Flow Meter Control Panel for Increment 1

Leachate Collection and Leak Detection System Manhole for Increment 1

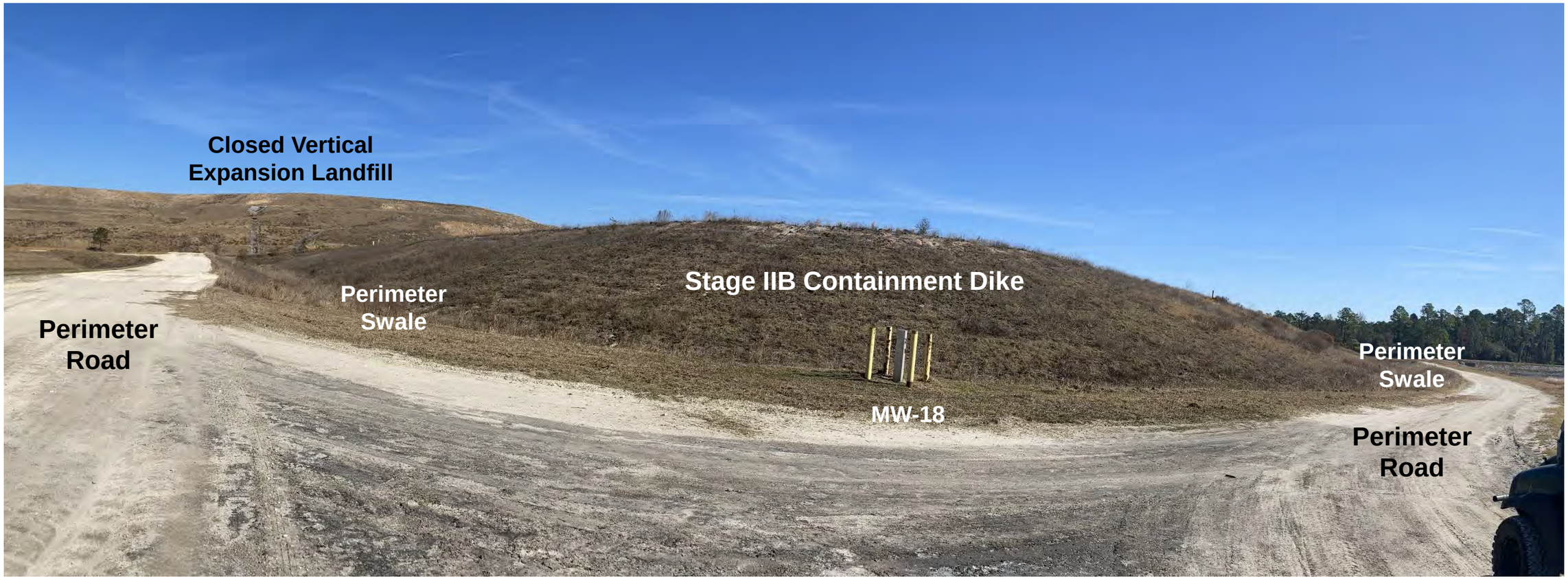
Sump Area of Increment I and Perimeter Swale East of Stage I, Looking South

Monitor Well MW-19, Looking East Toward Culvert Outlet into Stormwater Pond B

Fabriform-Lined Flume on Southern Part of Eastern Slope of Containment Dike for Stage I, Looking South

Fabriform-Lined Flume from Southern Part of Eastern Containment Dike of Stage I into Stormwater Pond B, Looking East

8-Inch Diameter HDPE Discharge Pipe from Increment 1 Leachate Collection and Leak Detection System into Pond 8



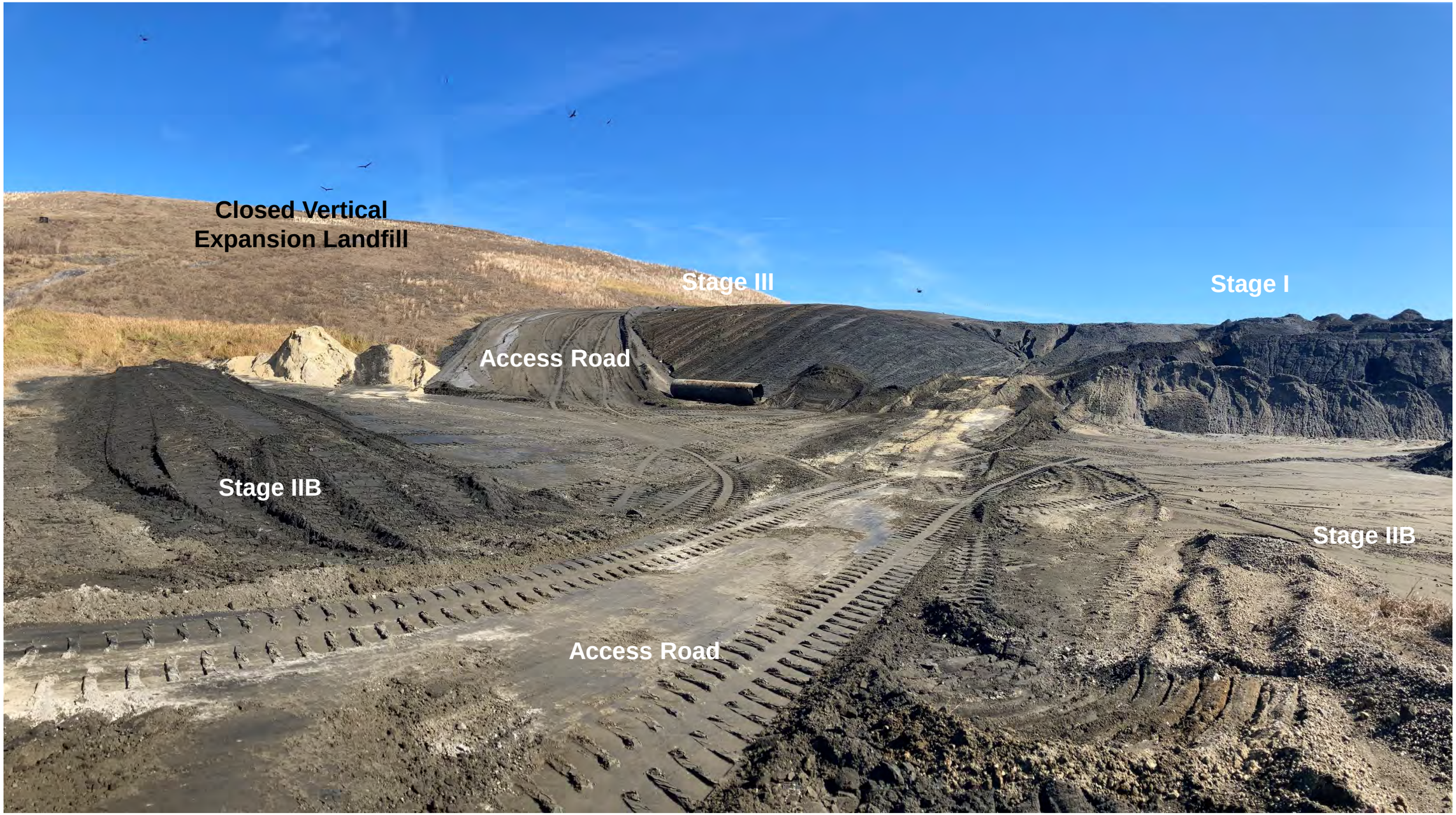
Panorama Along Perimeter Road and Swale, Looking Northeast from Perimeter Road at Southwestern Corner of Stage IIB Containment Dike

Perimeter Road and Swale on West Side of Increment 1, Stage IIB, Looking South

Access Ramp to Stage IIB, Looking Downhill to the West

Annual Inspection of CCR Landfill
Seminole Generating Station

Low Point of Stage IIB, Looking Southeast



Access Road to Top of Stage I and Stage III, Looking Uphill to the East

Access Road to Top of Stage I and Stage III, Looking Downhill to the West

Stage IIB and Access Ramp, Looking Down to the West from Top of Stage I

Top of Increment 1, Stage I, Looking South

Pozzocrete Dikes, Side Slopes, and Benches on Eastern Side of Increment 1, Stage I, Looking East Toward Stormwater Pond B

Annual Inspection of CCR Landfill
Seminole Generating Station

Pozzocrete Dike and Bench on Southeast Side of Stage I, Looking Southwest

Southern Side Slope of Increment 1 Containment Dike, Looking South from Top of Stage I

Stormwater Inlet in Perimeter Swale at Southeastern Corner of Stage I Containment Dike, Looking Northwest

Increment 1, Stage I Eastern Side Slope and Containment Dike, Looking Southwest from Road at Northern End of Stormwater Pond B

Eastern Side of Increment 1, Stage I, Looking South from Near Leachate Collection Sump