

**2023 Annual Landfill Inspection under
Coal Combustion Residuals Rule
Stanton Energy Center
Orange County, Florida**

May 26, 2023
Updated July 31, 2023



Ardaman & Associates, Inc.

Geotechnical, Environmental, and
Materials Consultants

A Tetra Tech Company

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Orlando Utilities Commission
P.O. Box 3193
Orlando, FL 32802-2723

Attention: Mr. Charles W. Doud, P.E.
Senior Environmental Engineer

Subject: 2023 Annual Landfill Inspection under Coal Combustion Residuals (CCR) Rule,
Stanton Energy Center, Orange County, Florida

Gentlemen/Ladies:

As requested by Orlando Utilities Commission (OUC), Ardaman & Associates, Inc. – a Tetra Tech Company (TT-AAI) has completed the 2023 annual landfill inspection at the Stanton Energy Center on May 2, 2023, with a follow-up inspection on May 31, 2023. 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 corrective actions or long-term attention. In association with the 2023 annual landfill inspection, TT-AAI has reviewed the CCR Rule requirements, historical information in our project files, and the 2022 landfill operation data provided by OUC.

The focus of our annual inspection was on the lined Cells 1 and 2 of the horizontal expansion of the closed 90-acre original landfill, which is also referred to as the original combustion waste storage area (original CWSA). At the time of our inspection, Cells 1 and 2 were the active CCR disposal units at the Stanton Energy Center. Cell 1 has almost been filled to capacity, with closure construction activities expected to begin in late 2023. Cell 2 was activated on April 28, 2022 and currently has approximately 6 acres of the landfill bottom covered with waste materials. Cell 2 is located immediately north of Cell 1 and will eventually be combined with Cell 1. Construction of the proposed Cell 3, which is also part of the horizontal expansion, is uncertain at this time, depending on future waste disposal need at the Stanton Energy Center. Although the closed original CWSA and its closed vertical expansion on top are exempt from the CCR Rule requirements, these landfill units as well as other facilities were also inspected insofar as they may affect the operation and safety of Cells 1 and 2.

The 2023 inspection constituted the eighth annual inspection since waste materials were first placed into Cell 1 on May 28, 2015. The previous (i.e., the seventh) annual inspection was documented in a TT-AAI report titled “2022 Landfill Inspection under Coal Combustion Residuals (CCR) Rule, Orlando Utilities Commission, Stanton Energy Center, Orange County, Florida,” dated May 26, 2022. This report provides some background information on the history and design of Cells 1 and 2, and documents our findings and recommendations from the eighth annual landfill inspection and associated landfill operation data review required by 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 qualified professional engineer must prepare an inspection report 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.*

According to the CCR Rule, a qualified professional engineer 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 Stanton Energy Center is in southeastern Orange County, Florida, in the vicinity of the Econlockhatchee River, about 12 miles southeast of downtown Orlando, and 6 miles northeast of Orlando International Airport. The site is located within Sections 13, 14, 23, and 24 of Township 23 South, Range 31 East, and Sections 7, 8, and 19 of Township 23 South, Range 32 East. The address of the Stanton Energy Center is 5100 South Alafaya Trail, Orlando, Florida 32831. The entire facility encompasses an area of approximately 3,280 acres.

The designated CCR disposal area at the Stanton Energy Center, which is referred to as the Combustion Waste Storage Area (CWSA), is located on the west side of the facility. It occupies an area of approximately 250 acres. Landfilling of waste materials within the entire 250-acre

CWSA has occurred within the closed 90-acre original CWSA, the closed vertical expansion on top of the original CWSA, and the currently active Cells 1 and 2 of the horizontal expansion to the west of the original CWSA. The horizontal expansion consists of the existing Cells 1 and 2 and, if constructed, the future Cell 3.

Cells 1 and 2 each consists of approximately 30 acres of base area and approximately 8 acres of slope area on the west side of the closed original CWSA (i.e., Cells 1 and 2 piggyback on the west slope of the closed original CWSA). Cell 2 is located immediately north of Cell 1 and will eventually piggyback on the north slope of Cell 1 (i.e., Cells 1 and 2 will eventually be combined). The bottom liner system for Cell 2 was connected to the bottom liner system for Cell 1 to form a continuous bottom liner system for the two landfill cells. An aerial photograph dated January-February 2023 that shows the layout of the entire 250-acre CWSA, which includes the 90-acre footprint area of the closed original CWSA, the closed vertical expansion, and Cells 1 and 2 of the horizontal expansion, is presented in Figure 1. Close-up aerial photographs of Cells 1 and 2 are further shown in Figures 2 and 3, respectively.

Coal combustion residuals and other power plant wastes have been landfilled on-site since the start of commercial operation of the first power generating unit (i.e., Unit 1) in 1987. The 90-acre original CWSA and its vertical expansion ceased to receive CCR wastes on August 28, 2015, corresponding to 52 days before the October 19, 2015 deadline for a CCR landfill to be exempt from the CCR rule requirements. Closure of the 90-acre original CWSA and vertical expansion was completed on March 11, 2016, corresponding to 196 days after the landfill units ceased to receive CCR wastes. The Construction Completion Report for the closure of the original CWSA was submitted by TT-AAI on March 12, 2016, and was approved by the Florida Department of Environmental Protection (FDEP) in a letter dated April 18, 2016.

From October 19, 2015 (i.e., the effective date of the CCR Rule) through April 27, 2022, Cell 1 was the only active CCR landfill unit at the Stanton Energy Center. Cell 2 was activated on April 28, 2022. On May 2, 2023 (i.e., the date of our 2023 initial inspection), Cell 1 was almost filled to capacity, and Cell 2 was covered by waste materials in approximately 6 acres of the bottom area. OUC has planned to begin closure construction activities for Cell 1 in 2023.

Relevant Information

In association with the 2023 landfill inspection, TT-AAI has reviewed the following relevant information in our project files or provided by OUC:

- Conditions of Certification for the Stanton Energy Center (PA 81-14M), dated August 30, 2017.
- Design and construction documents for Cells 1 and 2.
- CCR Fugitive Dust Control Plan for the CCR disposal area, prepared by OUC and dated October 2, 2015.
- First Update of Run-on and Run-off Control System Plan for Cell 1, prepared by TT-AAI and dated October 15, 2021.
- Conceptual Closure Plan for Cell 1, prepared by TT-AAI and dated October 14, 2016.
- Landfill Operation and Maintenance Plan for Cell 1, prepared by TT-AAI and dated February 3, 2017.

- Demonstration for Compliance with “Unstable Areas” Requirement in CCR Rule for Cell 1, prepared by TT-AAI and dated January 11, 2019.
- 2022 Annual Landfill Inspection Report for Cell 1, prepared by TT-AAI and dated May 26, 2022.
- Topographic surveys performed by MIKON on September 14, 2021 and September 18, 2022.
- Topographic and waste quantity surveys completed by WSP (formerly Wood) on January 24, 2022 and May 10, 2023.
- On-site rainfall records for 2022 and from January 1 through May 21 of 2023.
- Daily dust logs for 2022.
- Monthly waste quantity records for 2022.
- Weekly landfill inspection reports for 2022.

Cell 1 Design

Because Cell 1 was designed and constructed prior to the effective date (i.e., October 19, 2015) of the CCR Rule, it was not subject to the design criteria for new landfills contained in 40 CFR §257.70. However, it was designed to comply with applicable requirements of Chapter 62-701 of the Florida Administrative Code (F.A.C.), which governs the design, construction, and operation of solid waste management facilities in Florida.

The bottom liner and leachate collection system for the approximately 30-acre base area of Cell 1 was designed to have the following components in descending order:

- A 2-foot thick layer of drainage sand with a minimum saturated hydraulic conductivity of 1.0×10^{-4} cm/sec to provide protection for the liners and drainage for the leachate.
- A geocomposite to provide conveyance for the leachate and to limit the leachate head on the primary geomembrane liner.
- A 60-mil thick textured HDPE geomembrane liner to serve as the primary leakage barrier.
- A geocomposite or geonet to detect and convey leachate that passes through any defects in the primary geomembrane liner and to limit the leachate head on the secondary geomembrane liner.
- A 60-mil thick textured HDPE geomembrane liner to serve as the secondary leakage barrier.
- A 6-inch thick layer of compacted soil subbase with a maximum saturated hydraulic conductivity of 1.0×10^{-5} cm/sec to preclude leakage of leachate through any defects in the secondary geomembrane liner.

The bottom liner and leachate collection system for the approximately 8-acre slope area on the east side of Cell 1 (i.e., the west slope of the original landfill) was designed to have the following components in descending order:

- A 2-foot thick layer of drainage sand with a minimum saturated hydraulic conductivity of 1.0×10^{-4} cm/sec to provide protection for the liners and drainage for the leachate.
- A geocomposite to provide conveyance for the leachate and to limit the leachate head on the slope liner.
- A 60-mil thick textured HDPE geomembrane liner to serve as the leakage barrier.

The bottom liner and leachate collection system for Cell 1 was constructed above a prepared soil subgrade. The objectives of the above designs were to preclude leakage of leachate from Cell 1 into groundwater and to limit the leachate head above the liner system.

Cell 2 Design

Cell 2 was designed and constructed after the effective date (i.e., October 19, 2015) of the CCR Rule, it is subject to the design criteria for new landfills contained in 40 CFR §257.70. Cell 2 was designed with a double-composite liner system that comprises two components, with the top component consisting of a single HDPE geomembrane liner and the bottom component consisting of a composite liner with an HDPE geomembrane liner in direct and uniform contact on top of a 12-inch thick compacted soil liner. In addition, the low point (i.e., the bottom elevation of the compacted soil liner beneath the leachate collection sump) of each of the four subcells in Cell 2 was designed above the seasonal high groundwater elevation. The Cell 2 bottom liner system was connected to the Cell 1 bottom liner system along the north containment dike of Cell 1.

The bottom liner system for Cell 2 was designed to have the following key components in descending order:

- A 2-foot thick layer of drainage sand with a minimum saturated hydraulic conductivity of 1.0×10^{-4} cm/sec to provide protection for the liners and drainage for the leachate.
- A geocomposite to provide conveyance for the leachate and to limit the leachate head on top of the primary liner.
- A 60-mil thick textured HDPE geomembrane liner to serve as the primary leakage barrier.
- A geocomposite or geonet to detect and convey any leachate that passes through any defects in the primary HDPE liner and to limit the leachate head on top of the secondary liner.
- A composite liner with a 60-mil HDPE geomembrane liner underlain by a 12-inch thick compacted soil liner with a maximum saturated hydraulic conductivity of 1.0×10^{-7} cm/sec.
- A prepared liner subgrade that is free of deleterious materials and meets the compaction requirements in the technical specifications.

The liner system on the west slope of the original CWSA was designed to have the following key components in descending order:

- A 2-foot thick layer of drainage sand with a minimum saturated hydraulic conductivity of 1.0×10^{-4} cm/sec to provide protection for the liners and drainage for the leachate.

- A double-sided geocomposite to provide conveyance for the leachate and to limit the leachate head on top of the slope liner.
- A 60-mil thick textured HDPE geomembrane liner to serve as the leakage barrier.
- A minimum 6-inch thick soil bedding layer to provide support for the HDPE geomembrane liner and separation from the underlying waste materials.

The bottom liner and leachate collection system for Cell 2 was constructed above a prepared soil subgrade. The objectives of the above designs were to preclude leakage of leachate from Cell 2 into groundwater and to limit the leachate head above the liner system.

Waste Materials

Fly ash and flue gas desulfurization (FGD) sludge are the predominant coal combustion wastes generated at the Stanton Energy Center. In addition, bottom ash and brine concentrator/crystallizer solids (BCCS) are also generated in significant quantities. The quantities and characteristics of fly ash, FGD sludge, and bottom ash may vary considerably, depending on energy production, and the ash and sulfur contents of the coal used for power generation.

Typically, the fly ash from Units 1 and 2 is sold, and fly ash containing 15 to 25 percent lime purchased from outside fluidized bed facilities is imported for mixing with the FGD sludge generated on-site. The residual lime in the imported fly ash catalyzes a pozzolanic reaction which stabilizes the waste material and causes it to set after deposition in the on-site landfill. This processed waste material, which is referred to as "Promat", comprises the primary coal combustion waste material disposed in the on-site landfill. When needed, fly ash generated on-site and free lime materials are also utilized.

The bottom ash is also sold in accordance with market demand. Any unsold bottom ash and the BCCS are disposed of in the on-site landfill. The on-site landfill also receives miscellaneous power plant wastes as well as construction and demolition debris generated at the Stanton Energy Center, sediments from the lined process water ponds at the facility, and minor quantities of wastes from other OUC facilities.

Topographic Surveys and Waste Quantities

Since activation of Cell 1 on May 28, 2015, OUC has retained surveyors to perform topographic surveys of the waste surface periodically to allow OUC to keep track of landfill geometries, waste volumes, and remaining storage life of the landfill cells. The following surveys were reviewed by TT-AAI as part of the 2023 annual landfill inspection under the CCR Rule:

- MIKON's surveys performed on September 14, 2021 and September 18, 2022.
- WSP's surveys completed on January 24, 2022 and May 10, 2023.

The elevations in MIKON's survey were referenced to the National Geodetic Vertical Datum of 1929 (NGVD29), whereas the elevations in WSP's surveys were referenced to the North American Vertical Datum of 1988 (NAVD88). Results of the topographic surveys by MIKON, and the topographic and waste quantity surveys by WSP are included in Appendices 1 and 2, respectively.

A topographic survey completed by WSP on April 13, 2023, which was approximately one month before the latest waste quantity survey on May 10, 2023, is presented in Figure 4. As shown, the waste materials that were deposited on the slope area of Cell 1 (i.e., on the west slope of the closed original CWSA) had reached typical elevations of approximately +160 to +170 feet (NAVD88) and a maximum elevation of approximately +172 feet (NAVD88). The waste surface inside Cell 1 had reached an elevation of approximately +168 feet (NAVD88). Cell 1 was designed to have a maximum elevation of +175 feet (NAVD88), corresponding to a height of approximately 90 feet above natural grade. Cell 1 was designed to provide a waste storage capacity of approximately 3.1 million cubic yards.

The survey by MIKON on September 14, 2021 showed approximately 2.43 million cubic yards of consumed airspace in Cell 1, with a remaining airspace of 0.67 million cubic yards. Based on the topographic survey performed by MIKON on September 18, 2022, the consumed airspace in Cell 1 increased to approximately 2.73 million cubic yards and the remaining airspace decreased to approximately 0.37 million cubic yards. The average airspace consumption rate in Cell 1 between MIKON's September 14, 2021 and September 18, 2022 surveys was calculated to be approximately 0.30 million cubic yards per year. The latest MIKON's survey further indicated that approximately 60,000 cubic yards of wastes had been deposited in Cell 2 since it was activated on April 28, 2022. The airspace consumptions were computed by MIKON and confirmed by TT-AAI.

A table prepared by WSP that shows the waste volumes in Cell 1 since January 2015 is included in Appendix 2. The data indicated a consumed airspace of approximately 2.82 million cubic yards and a remaining airspace of 0.14 million cubic yards in Cell 1 on May 10, 2023 (i.e., the most recent waste quantity survey for Cell 1), for an estimated total waste storage capacity of approximately 2.96 million cubic yards. The average airspace consumption rate in Cell 1 between WSP's January 24, 2022 and May 10, 2023 surveys was approximately 0.27 million cubic yards per year, which is slightly less than the average airspace consumption rate (0.30 million cubic yards per year) calculated by TT-AAI based on MIKON's surveys performed on September 14, 2021 and September 18, 2022.

In summary, based on MIKON's latest topographic survey, the consumed airspace in Cell 1 as of September 18, 2022 was approximately 2.73 million cubic yards and the remaining airspace was approximately 0.37 million cubic yards. Based on their most recent survey data, WSP determined that, as of May 10, 2023, the consumed airspace in Cell 1 was approximately 2.82 million cubic yards, and the remaining airspace was approximately 0.14 million cubic yards. Ardaman computed the storage capacity of Cell 1 to be 3.1 million cubic yards, whereas WSP considered a storage capacity of approximately 3.0 million cubic yards.

The overall average airspace consumption rate in Cell 1 between May 28, 2015 and September 18, 2022 (i.e., the date of MIKON's latest survey) was estimated to be 0.37 million cubic yards per year. The overall average airspace consumption rate in Cell 1 between May 28, 2015 and May 10, 2023 (i.e., the date of WSP's latest survey) was estimated to be 0.36 million cubic yards per year.

Considering an average waste generation rate on the order of 0.4 million cubic yards per year and the latest airspace consumption rate in Cell 1 to be 0.3 million cubic yards per year, OUC should be able to utilize the remaining airspace and fill Cell 1 to capacity, before closure construction activities begin, if the waste materials were diverted into Cell 1.

According to the waste records provided by OUC, approximately 2.07 million dry tons of ProMat were landfilled in Cell 1 and Cell 2 between May 28, 2015 (i.e., the date when wastes were first

placed inside Cell 1) and the end of 2022. The records did not break down waste distribution between Cells 1 and 2. Assuming that all ProMat was diverted to Cell 2 after it began operation on April 28, 2022, approximately 1.95 million dry tons of the material would have been disposed of in Cell 1 and 119,400 dry tons would have been disposed of in Cell 2. Considering an average dry density of 72 lb/ft³, the total volume of ProMat in Cell 1 was computed to be approximately 2.01 million cubic yards at the end of 2022. According to the most recent topographic survey performed on May 10, 2023, the consumed airspace in Cell 1 was 2.82 million cubic yards. Accordingly, the total volume of miscellaneous wastes that was disposed of in Cell 1 between May 28, 2015 and May 10, 2023 was calculated to be approximately 0.81 million cubic yards, corresponding to an overall average miscellaneous waste deposition rate of approximately 0.1 million cubic yards per year.

It should be noted that the waste generation rate and airspace consumption could vary, depending on energy production, facility maintenance activities, and the ash and sulfur contents of the coal used for power generation.

Fugitive Dust Control

A CCR Fugitive Dust Control Plan for the Stanton Energy Center was completed by OUC on October 2, 2015. The plan stipulates CCR fugitive dust control measures, which include spraying water, sweeping roadways, restricting vehicle travel speed, etc., to minimize waste materials from becoming airborne. It also describes procedures to log citizen complaints and to assess the effectiveness of the plan. Furthermore, the CCR Fugitive Dust Control Plan requires the outside contractor retained by OUC for waste processing and landfill operation to prepare daily logs to document any observed fugitive dust emissions and, if needed, to implement any corrective measures following the observations.

A summary of the daily logs that relate to mitigation measures for fugitive dust emissions for 2022 is included in Appendix 3. The daily logs indicated that, unless there were equipment problems, water was applied to the landfill and roadways whenever fugitive dust release was observed. If needed, sweeper truck was also used on the roadways when dust was observed.

Based on a review of the daily logs and observations on the date of our site visit, it is our professional opinion that no changes to the CCR Fugitive Dust Control Plan and fugitive dust control measures are necessary. Nevertheless, OUC should continue to monitor any fugitive dust emissions caused by generation and disposal of CCR wastes and periodically assess the effectiveness of any fugitive dust control measures.

On-Site Rainfall

In 2022, a total of 66.94 inches of rainfall was recorded by the rain gauge installed near the Makeup Water Pond, which is located on the east side of the Stanton Energy Center. The total rainfall included 12.00 inches of rainfall recorded on September 28, 2022, when Hurricane Ian passed through central Florida. The 2022 rainfall was 15.49 inches above the annual rainfall of 51.45 inches in a normal year, based on the historical rainfall data documented at the nearby Orlando International Airport Climatological Station for the 30-year period between 1991 and 2020. The 2022 annual rainfall recorded at Orlando International Airport was 61.92 inches, which is approximately 5 inches less than the total rainfall recorded by the rain gauge near the Makeup Water Pond.

As indicated previously, our initial visual inspection was performed on May 2, 2023 with a follow-up inspection on May 31, 2023. The rain gauge recorded total monthly rainfalls of 0.93, 0.30,

0.63, and 3.72 inches in January, February, March, and April of 2023, respectively, with a total rainfall of 5.58 inches. The total normal year rainfall for these four months at the nearby Orlando International Airport Climatological Station was documented to be approximately 11.18 inches. Accordingly, the on-site rainfall from January 1 through April 30, 2023 was 5.6 inches below normal. No rain occurred at the site on the dates of our inspections or on the days preceding our site visits, but wet weather occurred during the week before May 2, 2023.

Landfill Leachate

Separate pumps and flow totalizers were installed for the leachate collection and leak detection systems in each of the four subcells (i.e., a total of eight pumps and flow totalizers) for Cell 1. Similar pumping and metering systems were also provided for the leachate collection and leak detection systems in each of the four subcells for Cell 2. When needed, OUC employed auxiliary diesel pumps to remove leachate from Cells 1 and 2, and discharge it through a forcemain to the CWSA Runoff Pond located east of the entire 250-acre CWSA.

Weekly Inspections

An employee of Boral CM Services (the outside contractor retained by OUC for waste processing and landfill operation) inspected Cells 1 and 2 weekly in 2022. The weekly inspections covered the interior and exterior dike slopes, leachate collection and leak detection systems, water levels in Cells 1 and 2, drainage control structures, and wet detention pond. The inspections also included the control panels and flow totalizers for the leak detection pumps and the underdrain pumps for the CWSA Runoff Pond, which receives leachate from Cells 1 and 2.

Summaries of the weekly inspection reports for 2022, as provided to us by OUC, are included in Appendix 4. The following prominent items were noted from our review of the weekly inspection reports:

- Except for a washout near the northwest corner and some erosion of the north and west interior slopes of the containment dike for Cell 2 caused by Hurricane Ian that were noted in the October 4, 2022 inspection report, no significant erosion or washouts of the interior and exterior slopes of the containment dikes around Cells 1 and 2 were observed. The washout was repaired before the next weekly inspection.
- Erosion of the east end piggyback slope of Cell 2 with exposure of the liner following Hurricane Ian was noted in the October 10, 2022 inspection report. The liner and overlying geocomposite were repaired and the protective soil cover was restored before May 31, 2023, with sodding of the repaired areas completed in June 2023.
- Except for the transformer for the Cell 2 leachate collection and leak detection system tripping, as noted in the January 3, 2022 inspection report, all pumps in Cells 1 and 2 were reported as operating in "Auto" mode through the week of April 25, 2022. In the March 3, 2007 inspection report, it was noted that, although all leachate collection pumps appeared to be operating, diesel auxiliary pumps had to be used because of high water levels in Cell 1.
- After April 25 2022, numerous alarms (high temperature, low temperature, low level, etc.) for the leachate collection and leak detection system were noted. Also, the pumps for Sump 1 in Cell 1 and Sump 1 in Cell 2 were frequently turned off or out of service. The observations were caused by a lightning event or components failure, which required the pumps for these sumps be placed out-of-service until replacement parts could be procured and installed.

- A bad level sensor for Sump 4 in Cell 1 was reported in the May 6, 2022 inspection report, and a bad level indicator for Sump 1 in Cell 1 was reported in the October 17 and 31, 2022 weekly inspection reports.
- As noted in the October 10, 2022 inspection report, the concrete pad supporting the riser pipes, cleanouts, and pump control panel for Sump 2 of Cell 2 were damaged by Hurricane Ian. The pad was repaired, and service was restored in May 2023.
- Trailer-mounted auxiliary diesel pumps were used when the system pumps were not operational. Leachate was discharged by the auxiliary pumps to the forcemain either through the pump station discharge pipeline or the forcemain cleanout.
- Numerous alarms and UPS faults were reported for the CWSA Runoff Pond groundwater removal and leak detection pump stations. Leak detection system pump P2 was noted as out-of-service because of a bad motor in the May 23 and June 13, 2022 inspection reports. We understand that replacement parts have been ordered by OUC.
- Except for required vegetation removal noted in the April 18, 2022 and September 5, 12, 19, and 26, 2022 weekly inspection reports, the inlet and outlet structures of the wet detention pond were in a good condition with minimal encroachment by vegetation.

Annual Inspection

The eighth annual inspection of the CCR landfill at the Stanton Energy Center was conducted by Messrs. Francis K. Cheung, P.E., and Jeyisanker Mathiyaparanam, P.E., of TT-AAI on May 2, 2023, with a follow-up site visit on May 31, 2023. The inspection included observing the conditions of Cells 1 and 2 as well as the conditions of the closed original CWSA, the closed vertical expansion, and other facilities that support landfill operation.

Our May 2, 2023 landfill inspection was conducted on foot between 11:15 am and 1:15 pm. At the time of our site visit, the weather was mostly sunny with air temperatures of approximately 79°F near the beginning of our inspection and 83°F when we left the site. TT-AAI noted an issue regarding waste elevations that needed to be corrected during our landfill inspection on May 2, 2023, and performed a follow-up site visit on May 31, 2023 to confirm that the issue had been properly rectified. No rain occurred at the site on the dates of our inspections or on the days preceding our site visits, but wet weather occurred during the week before May 2, 2023.

We began the landfill inspection on May 2, 2023 by observing Cells 1 and 2 from the top of the closed vertical expansion, at an elevation of approximately +175 feet (NAVD88). Our observations indicated that the waste materials on the slope area of Cell 1 (i.e., the west slope of the closed original CWSA) were close to the top of the closed vertical expansion. The waste surface above the base area of Cell 1 was observed to be highest in the central region, with the waste surface at approximately 5 to 10 feet below the top of the vertical expansion. There were no waste materials on the slope area of Cell 2 (i.e., on the west slope of the closed original CWSA), and approximately 6 acres of the Cell 2 base area was covered with waste materials, with an average thickness of less than 10 feet. During our landfill inspection on May 2, 2023, localized damages to the soil cover on the slope area of Cell 2 from Hurricane Ian were still evident and were about to be repaired by the landfill contractor and an outside contractor retained by OUC. Repair to the slope cover had been completed when we made the follow-up site visit on May 31, 2023, but the grass cover remained to be placed. We understand that the repaired areas were sodded in June 2023.

After observing the general conditions of Cells 1 and 2 from the top of the closed vertical expansion, we walked down the landfill slope at the southeastern corner of Cell 1 and observed the waste limit along the southern boundary of the slope area of Cell 1. From there, we traveled clockwise on the containment dike crest along the south and west sides of Cell 1, along the west side of Cell 2, and then along the north side of Cell 2 to observe the conditions of Cells 1 and 2, the containment and perimeter dikes, the stormwater drainage ditch between the containment and perimeter dikes, and the leachate pumping stations on the containment dike crest. After inspection of Cells 1 and 2, we proceeded to inspect the CWSA Runoff Pond, the wet detention pond, and other supporting facilities.

Along the southern boundary of the slope area of Cell 1 that adjoins the closed original CWSA, all waste materials were inside the lined area. However, waste materials were observed above the liner anchor trench on the inside slope of the containment dike along the south and west sides of Cell 1 during our landfill inspection on May 2, 2023, but the issue was confirmed to have been properly rectified before our follow-up site visit on May 31, 2023. During our follow-up site visit, the landfill slope near the toe along the south and west sides of Cell 1 was observed to be slightly steeper than the rest of the slope. Although the slightly steeper slopes near the toe should not affect landfill stability, the landfill slope should be surveyed and reviewed prior to closure.

During our site visit on May 2, 2023, two Caterpillar® articulated dump trucks were transporting waste materials into Cell 2, and one Caterpillar® D6N dozer was working near the northwestern corner on top of Cell 1. The dump trucks traveled on the West Haul Road, which is a limerock road that runs along the west side of the closed original CWSA and the east side of the horizontal expansion, to enter and exit Cell 2. The West Haul Road can also be used to transport waste materials into Cell 1. While at the site, we observed dust trails behind the dump trucks traveling on the West Haul Road, but the limerock dust did not extend beyond the road or above the dump trucks and was well inside the designated waste disposal boundary.

At the time of our landfill inspection on May 2, 2023, there was some shallow standing water near the southwestern region of Cell 2. It appeared that OUC had installed an emergency overflow pipe between Cells 1 and 2 near the northwestern corner of Cell 1. Even though the power lights were lit up, blinking alarm/warning lights were observed on all the leachate control panels for Cells 1 and 2. We understand that system maintenance is on-going and replacement parts for the failed components have been ordered by OUC. During our landfill inspection on May 2, 2023, three trailer-mounted auxiliary diesel pumps were observed on the crest road of the west containment dike, with one pump on the west side of Cell 1 and two pumps on the west side of Cell 2. The pump by Cell 1 was not operating, but the two pumps by Cell 2 were pumping the standing water inside Cell 2 into the forcemain for discharge to the CWSA Runoff Pond. On May 2, 2023, we observed the removed leachate from Cell 2 entering the southern compartment of the CWSA Runoff Pond, but there was no leachate flow to the northern compartment.

The outside slope of the containment dike, and the inside and outside slopes of the perimeter dike, were generally in a good condition except for some localized spots with sparse grass cover. Based on our visual observations, flow should occur freely through the stormwater drainage ditch and box culverts that were constructed between the containment and perimeter dikes along the west side of Cells 1 and 2 and the south side of Cell 1. The two inlets on the south side of Cell 1, which are connected to pipes draining into the wet detention pond near its northwestern corner, were also in a good condition.

Both the East and West Haul Roads were in good conditions, with minimal rutting and depression. The roads were approximately 50 feet wide, which should be sufficient for two-way traffic by articulated dump trucks. No debris or waste materials were observed in the drainage ditches on

both sides of the haul roads.

During our site inspection on May 2, 2023, TT-AAI observed three groundwater monitoring or water level observation wells near Cell 1. These three wells are designated MW-A, MW-9R, and MW-10. Each of these wells was provided with a concrete pad and a metal protective casing. MW-A is located near the southeastern corner of Cell 1. MW-10 is located south of Cell 1 and near the northwestern corner of the wet detention pond. MW-9R is located west of and near the southwestern corner of Cell 1. All three wells appeared to be in good conditions without any visible damages. However, the metal tag and handwritten designation for the well located west of and near the southwestern corner of Cell 1, which we believe to be MW-9R, should be checked and, if necessary, properly labeled. Also, some of the wells were not locked.

Selected photographs taken during our landfill inspection on May 2, 2023 and the follow-up site visit on May 31, 2023 are included in Appendix 5.

Summary and Recommendations

Below are the summary and recommendations from our 2023 landfill inspection under the CCR Rule:

- The entire base and slope areas of Cell 1 were covered with waste materials.
- The waste materials that were deposited on the slope area of Cell 1 (i.e., on the west slope of the closed original CWSA) had reached typical elevations of approximately +160 to +170 feet (NAVD88) and a maximum elevation of approximately +172 feet (NAVD88).
- The waste surface inside Cell 1 had reached an elevation of approximately +168 feet (NAVD88).
- Cell 1 was designed to have a maximum elevation of +175 feet (NAVD88), corresponding to a height of approximately 90 feet above natural grade.
- Closure construction activities for Cell 1 are expected to begin in 2023.
- There were no waste materials on the slope area of Cell 2 (i.e., on the west slope of the closed original CWSA), and approximately 6 acres of the Cell 2 base area was covered with waste materials, with an average thickness of less than 10 feet.
- Our follow-up site visit on May 31, 2023 confirmed that all waste materials were properly contained inside the lined areas of Cells 1 and 2.
- Based on the most recent topographic survey completed on May 10, 2023, the consumed and remaining airspace in Cell 1 were estimated to be 2.82 and 0.14 million cubic yards, respectively.
- The overall average waste generation rate since May 28, 2015 (i.e., the date when wastes were first placed inside Cell 1) was estimated to be on the order of 0.4 million cubic yards per year.
- The latest airspace consumption rate in Cell 1 was estimated to be 0.3 million cubic yards per year.

- Cell 1 should be filled to capacity before closure construction activities begin, if practical.
- Moving forward, the waste quantities that are disposed of in Cells 1 and 2 should be documented separately until after Cell 1 ceases to receive wastes.
- No changes to the CCR Fugitive Dust Control Plan and fugitive dust control measures are necessary, but OUC should continue to monitor fugitive dust emissions and periodically assess the effectiveness of fugitive dust control measures.
- The causes of the blinking alarm/warning lights on all leachate control panels for Cells 1 and 2 should be identified, and any required repairs to the panels and/or equipment should be performed as soon as possible. We understand that system maintenance is on-going and replacement parts for the failed components have been ordered by OUC.
- Auxiliary diesel pumps should be used to remove any accumulated leachate in Cells 1 and 2 and discharge it to the CWSA Runoff Pond whenever the leachate pumping system is out of service.
- The leachate quantities generated in Cells 1 and 2, including leachate quantities removed by the auxiliary pumps, should be measured and documented separately.
- OUC or its landfill contractor should continue to inspect Cells 1 and 2 as well as related facilities on a weekly basis and after heavy storm events or prolonged periods of wet weather.
- Except for the localized damages to the soil cover on the slope area of Cell 2 caused by Hurricane Ian which had been repaired before our follow-up site visit on May 31, 2023, the 2023 annual inspection showed no signs of actual or potential structural weakness, and no conditions that are disrupting or have the potential to disrupt the operation and safety of Cells 1 and 2.
- The 2023 annual inspection through the follow-up site visit on May 31, 2023 did not reveal any outstanding major items or issues that require immediate corrective measures.
- Observations during the 2023 annual inspection indicated that placement and compaction of waste materials inside Cell 1 were performed in a satisfactory manner.
- Concentrated runoff down the landfill slope should be avoided to minimize erosion.
- The landfill slope should be maintained no steeper than 3H:1V from crest to toe.
- The crests and slopes of the containment and perimeter dikes should continue to be monitored at least weekly.
- As part of routine maintenance activities, any bare spots on the dike slopes should be sodded or seeded to minimize erosion, and any erosion gullies should be repaired and then sodded or seeded.
- The weekly inspection report form used by the landfill contractor should be reviewed and modified to incorporate Cell 2, which was activated on April 28, 2022.

- The metal tag and handwritten designation for the well located west of and near the southwestern corner of Cell 1, which we believe to be MW-9R, should be checked and, if necessary, properly labeled.
- All monitoring wells should have locking caps and should be locked.

Recordkeeping and Future Inspection

OUC 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 40 CFR § 257.105(g)(9); (ii) the State Director¹ 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 OUC 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, 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).”

TT-AAI 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 Stanton Energy Center within one year of the date that the report is officially placed in the operating record. Accordingly, we recommend the next annual inspection of Cells 1 and 2 be performed in early 2024.

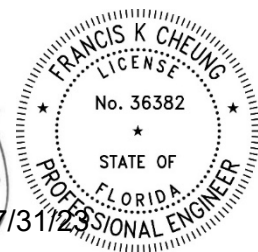
TT-AAI appreciates the opportunity of providing services to OUC. If you have any questions or need additional information, please contact us.

Very truly yours,
ARDAMAN & ASSOCIATES, INC. - A Tetra Tech Company
Certificate of Authorization Number 5950


Jeyisanker Mathiyaparanam, P.E.
Senior Project Engineer

Enclosures


Francis K. Cheung, P.E.
Principal Engineer
Florida License No. 36382



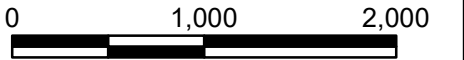
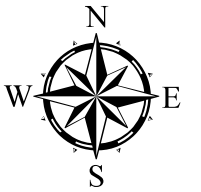
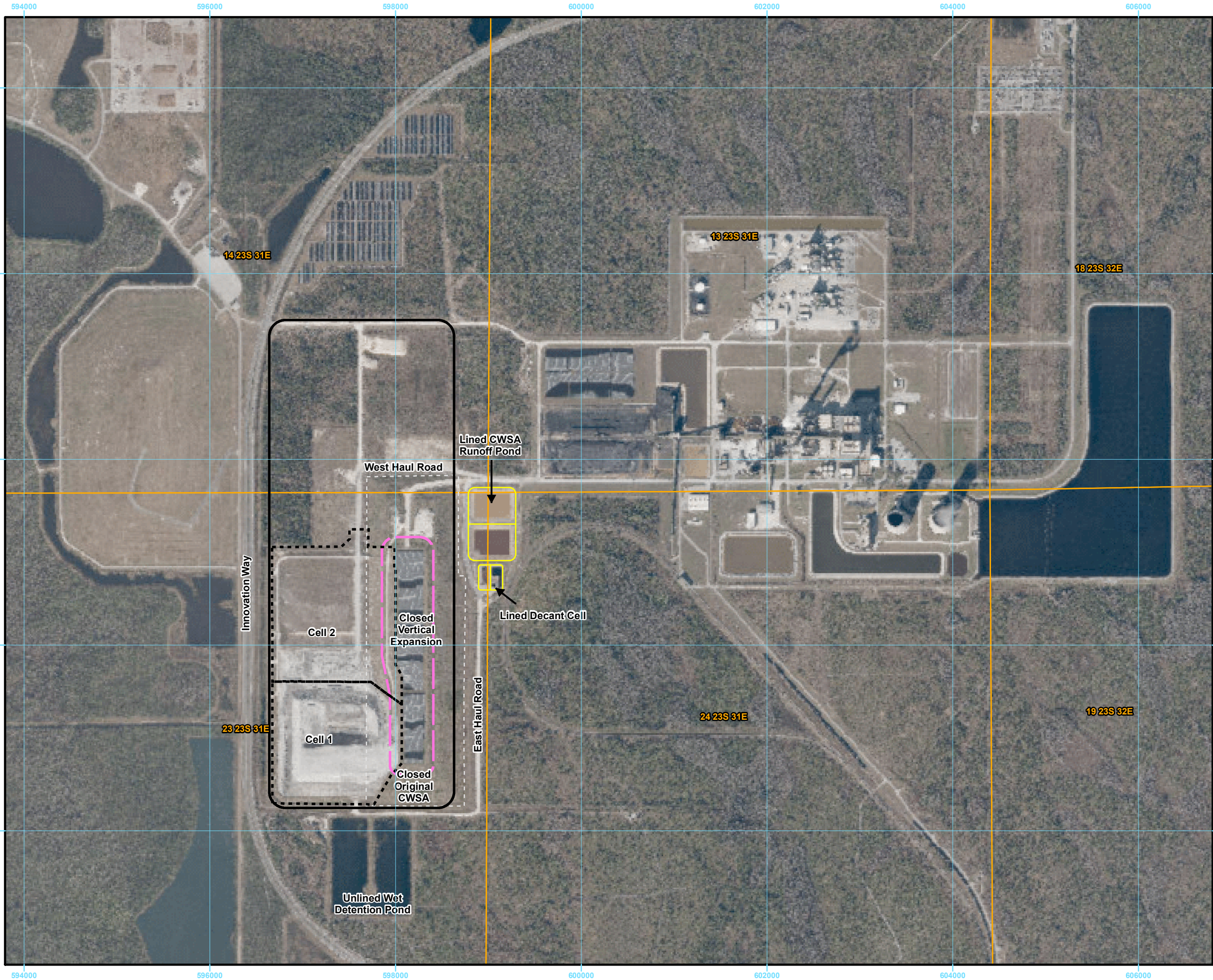
Francis K Cheung Digitally signed by Francis K Cheung
Date: 2023.07.31 16:32:41 -04'00'

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.

¹ 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.”

W:\Projects\2022\22-13-0042\MXD\Site Plan.mxd



Scale: 1" = 1,000'

AERIAL PHOTOGRAPHY FROM
ORANGE COUNTY
PROPERTY APPRAISER

IMAGERY DATE: JANUARY-FEBRUARY 2023

Legend

- Cell Boundary
- 250-Acre Area
- Closed Vertical Expansion
- Original CWSA Limits
- PLSS



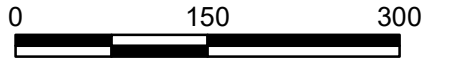
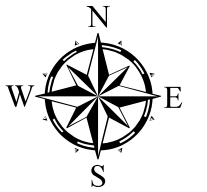
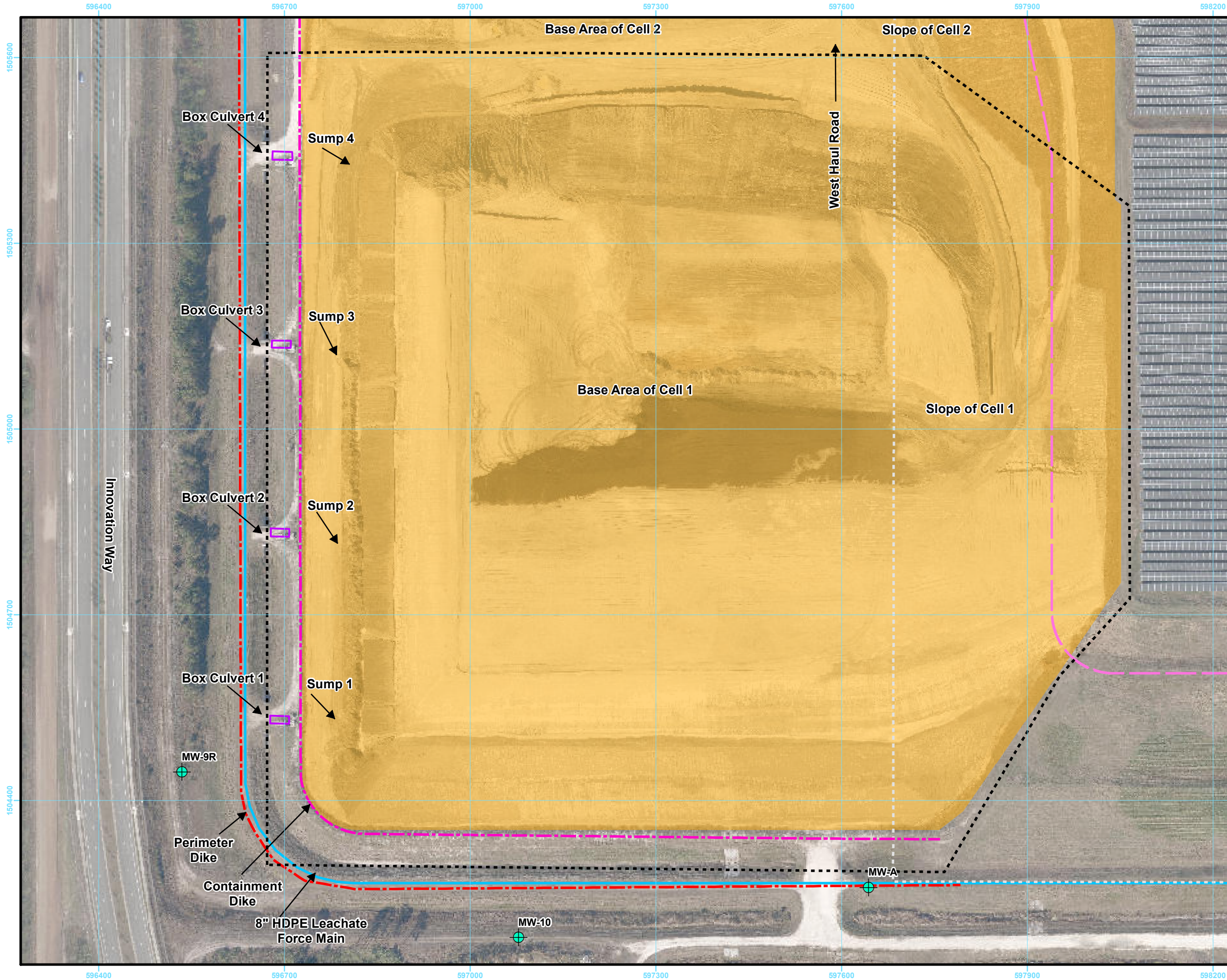
SITE PLAN



**2023 ANNUAL INSPECTION OF
CCR LANDFILL AT
STANTON ENERGY CENTER
ORANGE COUNTY, FLORIDA**

DRAWN BY: ACV	CHECKED BY: JM	DATE: 6/22/23
FILE NO. 22-13-0042	APPROVED BY: FKC	FIGURE: 1

W:\Projects\2022\22-13-0042\MXD\Annotated Aerial Photograph.mxd



Scale: 1" = 150'

AERIAL PHOTOGRAPHY FROM
ORANGE COUNTY
PROPERTY APPRAISER

IMAGERY DATE: JANUARY-FEBRUARY 2023

Legend

- Monitor Well/Piezometer
- Pump Station Control Panel
- Cell 1 Boundary
- Liner Limit
- Closed Vertical Expansion
- Original CWSA Limits
- Containment Dike Centerline
- Perimeter Dike Centerline



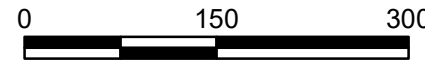
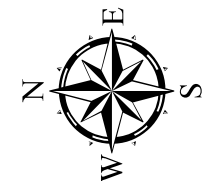
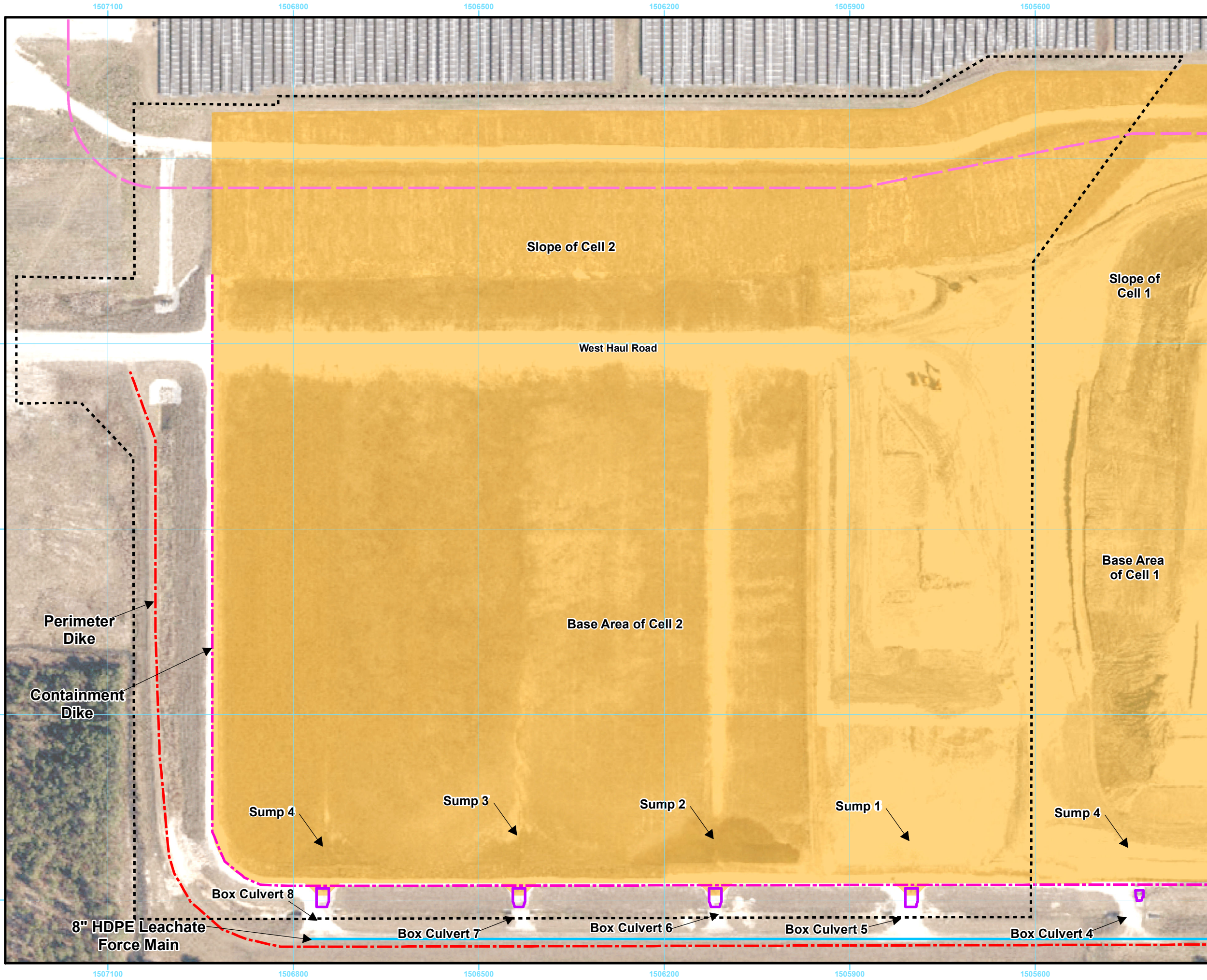
AERIAL PHOTOGRAPH OF CELL 1



2023 ANNUAL INSPECTION OF
CCR LANDFILL AT
STANTON ENERGY CENTER
ORANGE COUNTY, FLORIDA

DRAWN BY: ACV	CHECKED BY: JM	DATE: 6/22/23
FILE NO. 22-13-0042	APPROVED BY: FKC	FIGURE: 2

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Scale: 1" = 150'

AERIAL PHOTOGRAPH FROM
ORANGE COUNTY
PROPERTY APPRAISER
IMAGERY DATE: JANUARY - FEBRUARY 2023

Legend

- Pump Station Control Panel
- Cell 2 Boundary
- Liner Limit
- Closed Vertical Expansion
- Containment Dike Centerline
- Perimeter Dike Centerline



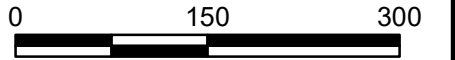
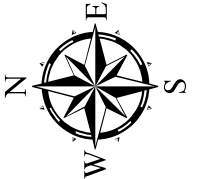
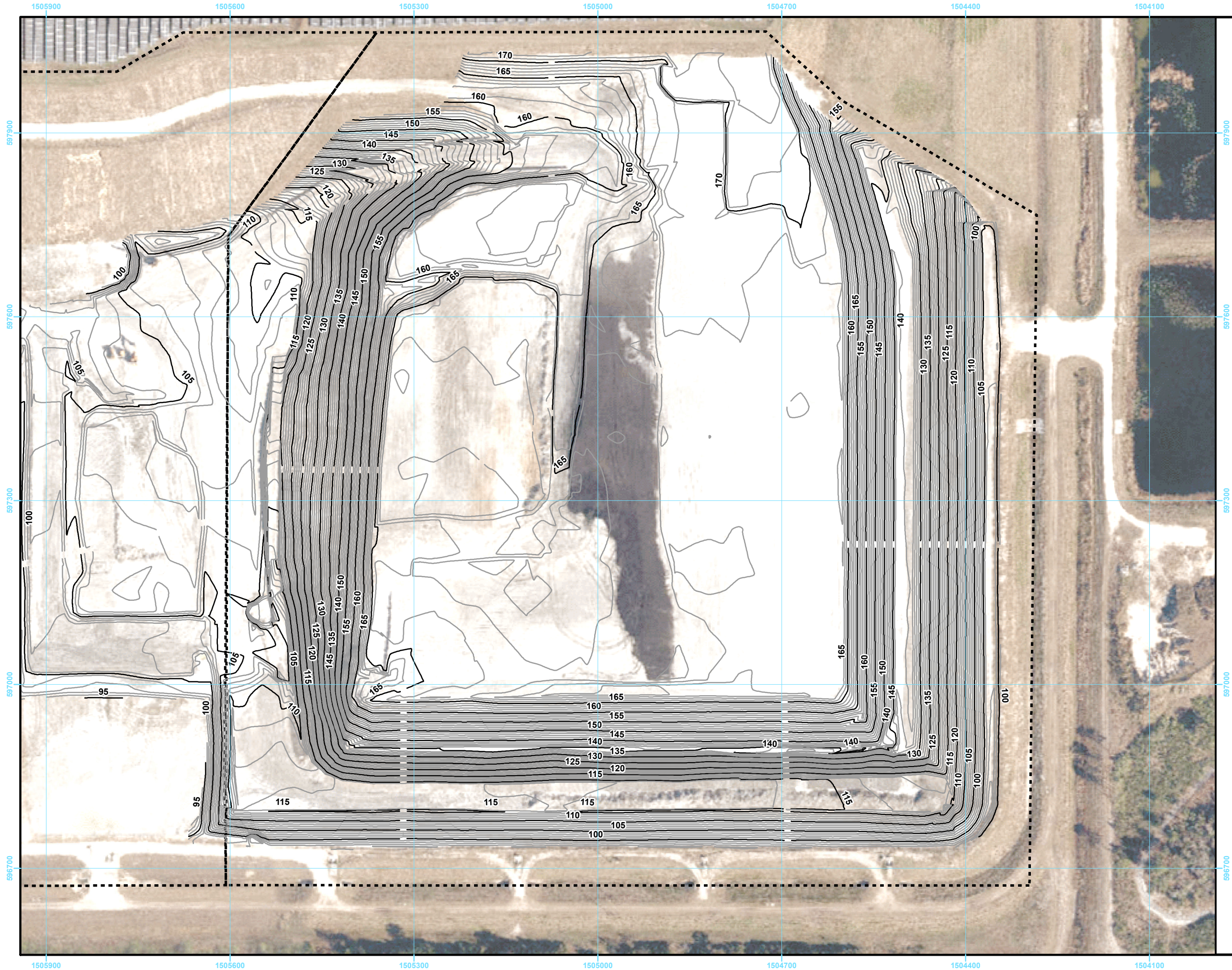
AERIAL PHOTOGRAPH OF CELL 2



2023 ANNUAL INSPECTION OF
CCR LANDFILL AT
STANTON ENERGY CENTER
ORANGE COUNTY, FLORIDA

DRAWN BY: ACV	CHECKED BY: JM	DATE: 6/22/23
FILE NO. 22-13-0042	APPROVED BY: FKC	FIGURE: 3

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Scale: 1" = 150'

SOURCE: TOPOGRAPHIC SURVEY
BY WSP USA ENVIRONMENT &
INFRASTRUCTURE, INC.,
APRIL 13, 2023.

Legend

- 5' Contour
- 1' Contour
- Cell Boundaries



04/13/2023
SURVEY OF TOP OF WASTE



2023 ANNUAL INSPECTION OF
CCR LANDFILL AT
STANTON ENERGY CENTER
ORANGE COUNTY, FLORIDA

DRAWN BY: ACV	CHECKED BY: JM	DATE: 6/29/23
FILE NO. 22-13-0042	APPROVED BY: FKC	FIGURE: 4

Appendix 1

**Topographic Surveys by MIKON as of
September 14, 2021 and September 18, 2022**

October 1, 2021

Mr. Brian Moore
Orlando Utilities Commission
5100 South Alafaya Trail
Orlando, FL 32831-2001

RE: Stanton Energy Center
Ash Landfill

Dear Mr. Moore:

We have completed the volume determinations of the horizontal expansion of the Fly Ash Landfill at the Stanton Energy Center. The volume of the horizontal area is reported as total volume referenced to base. Total volume includes active and capped (if any) areas. The results are as follows:

VOLUMES

Date of Survey: September 14, 2021

Area	Reference Datum	Type of Volume	Fill (cy)	Cut (cy)
Horizontal	Base ¹	Total	2,430,950	1

¹ Base model developed by MIKON Corporation from survey data obtained September 2013 and the surface of adjacent cell to the east surveyed in 2014..

Attached is a site topography drawing both in paper format and on disk. Should you have any questions regarding this report or if we may be of further assistance, please do not hesitate to contact us. We appreciate the opportunity to provide our services to Orlando Utilities.

Respectfully submitted,

MIKON Corporation

Bryan W. Davis

Brian J. Kramer

BWD/BJK:js

Attachments: Landfill Topography Drawing (11 x 17) and AutoCAD File





SCALE 1" = 300'
2' CONTOUR INTERVAL
0 300

DATE OF SURVEY: SEPTEMBER 14, 2021

SHEET NOTES:

1. FIELD WORK AND MAPPING FOR LANDFILL TOPOGRAPHY PROVIDED BY MIKON CORPORATION.

PERMITTED AREA = 315.1 ACRES

ASH LANDFILL

VERTICAL AREA = 93.4 ACRES
HORIZONTAL AREA = 26.4 ACRES
TOTAL AREA = 119.8 ACRES

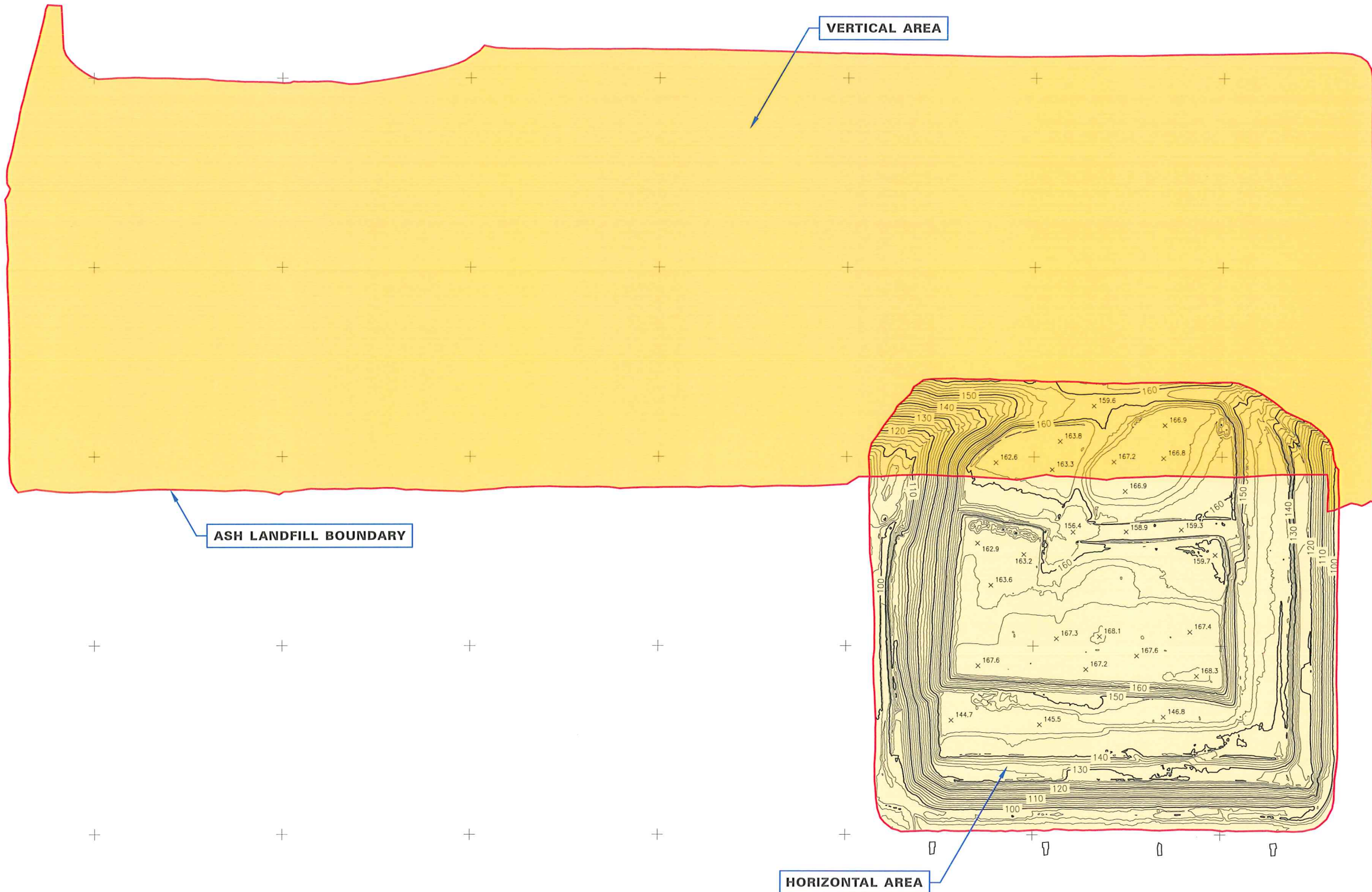
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FILE NAME: STANTON_LE_09_21
DRAWN BY: DHS
CHECKED BY: BLK

ORLANDO UTILITIES COMMISSION

STANTON ENERGY CENTER

ASH
LANDFILL
TOPOGRAPHY

DATE: 09/30/21

SHEET 1 of 1

September 30, 2022

Mr. Brian Moore
Orlando Utilities Commission
Orlando, Florida

RE: Stanton Energy Center
Ash Landfill

<bmoore@ouc.com>

Dear Mr. Moore:

We have completed the volume determinations of the horizontal expansion of the Fly Ash Landfill at the Stanton Energy Center. The volume of the horizontal area is reported as total volume referenced to base. Total volume includes active and capped (if any) areas. The results are as follows:

VOLUMES

Date of Survey: September 18, 2022

Area	Reference Datum	Type of Volume	Fill (cy)	Cut (cy)
Horizontal	Base ¹	Total	2,725,130	27

¹ Base model developed by MIKON Corporation from survey data obtained September 2013 and the surface of adjacent cell to the east surveyed in 2014 and 2021.

Should you have any questions regarding this report or if we may be of further assistance, please do not hesitate to contact us. We appreciate the opportunity to provide our services to Orlando Utilities.

Respectfully submitted,

MIKON Corporation

Bryan W. Davis

Brian J. Kramer

BWD/BJK:js

Attachments: Landfill Topography Drawing and AutoCAD File





SCALE 1" = 300'
2' CONTOUR INTERVAL

DATE OF SURVEY: SEPTEMBER 18, 2022

SHEET NOTES:

1. FIELD WORK AND MAPPING FOR LANDFILL TOPOGRAPHY PROVIDED BY MIKON CORPORATION.

PERMITTED AREA = 315.1 ACRES

ASH LANDFILL

VERTICAL AREA	=	93.4 ACRES
HORIZONTAL AREA	=	32.1 ACRES
TOTAL AREA	=	125.5 ACRES

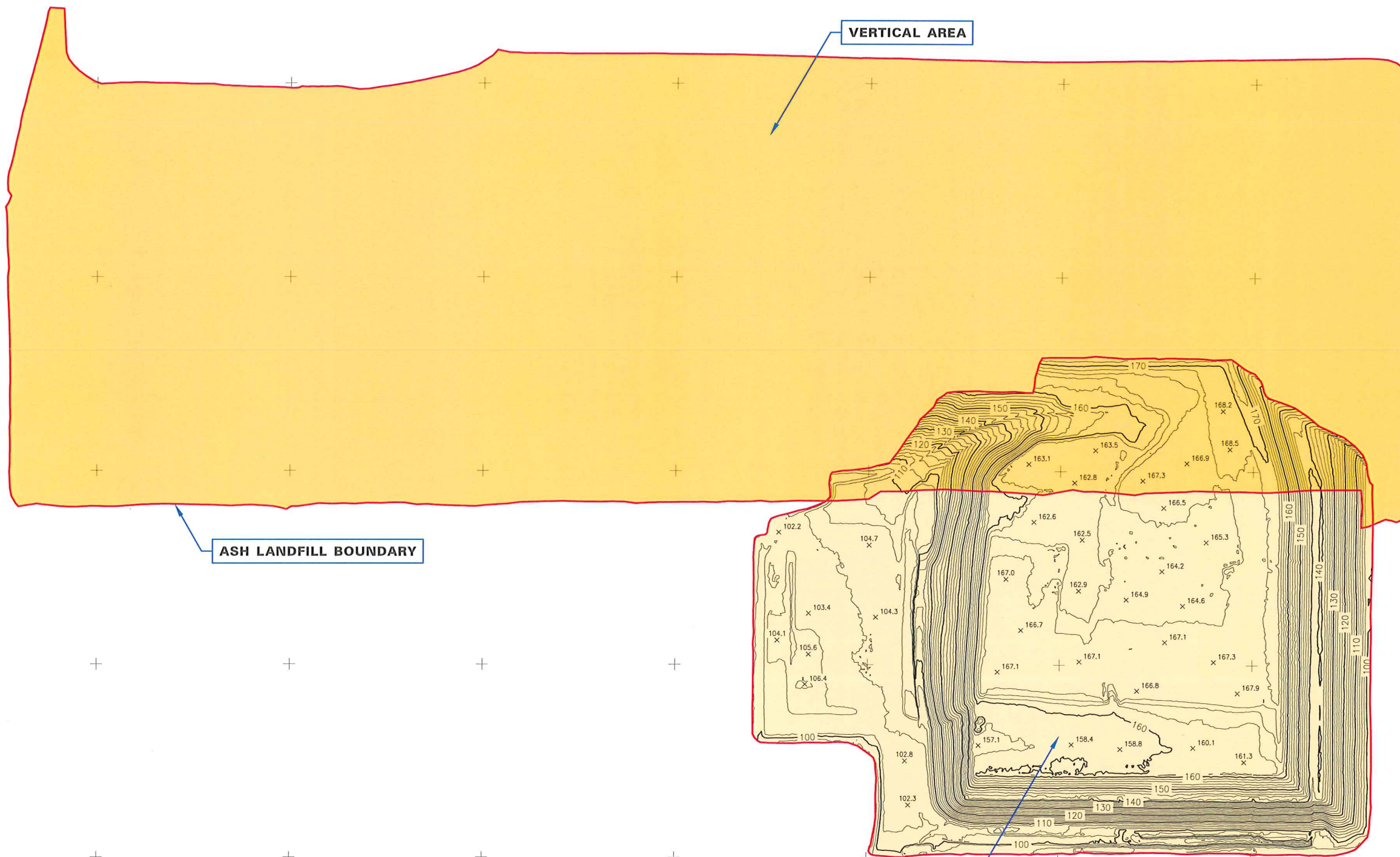
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E 440,500

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E 440,500



ORLANDO UTILITIES COMMISSION

STANTON ENERGY CENTER

ASH
LANDFILL
TOPOGRAPHY

DATE: 09/28/22

SHEET 1 of 1

MIKON CORPORATION
4414 SOUTH 40th STREET, Suite B
ST. JOSEPH, MISSOURI 64503
816-364-2890 fax: 816-364-2126
email: mikon@mikoncorp.com

FILE NAME: STANTON_LF_09_22
DRAWN BY: DHS
CHECKED BY: BJK

Appendix 2

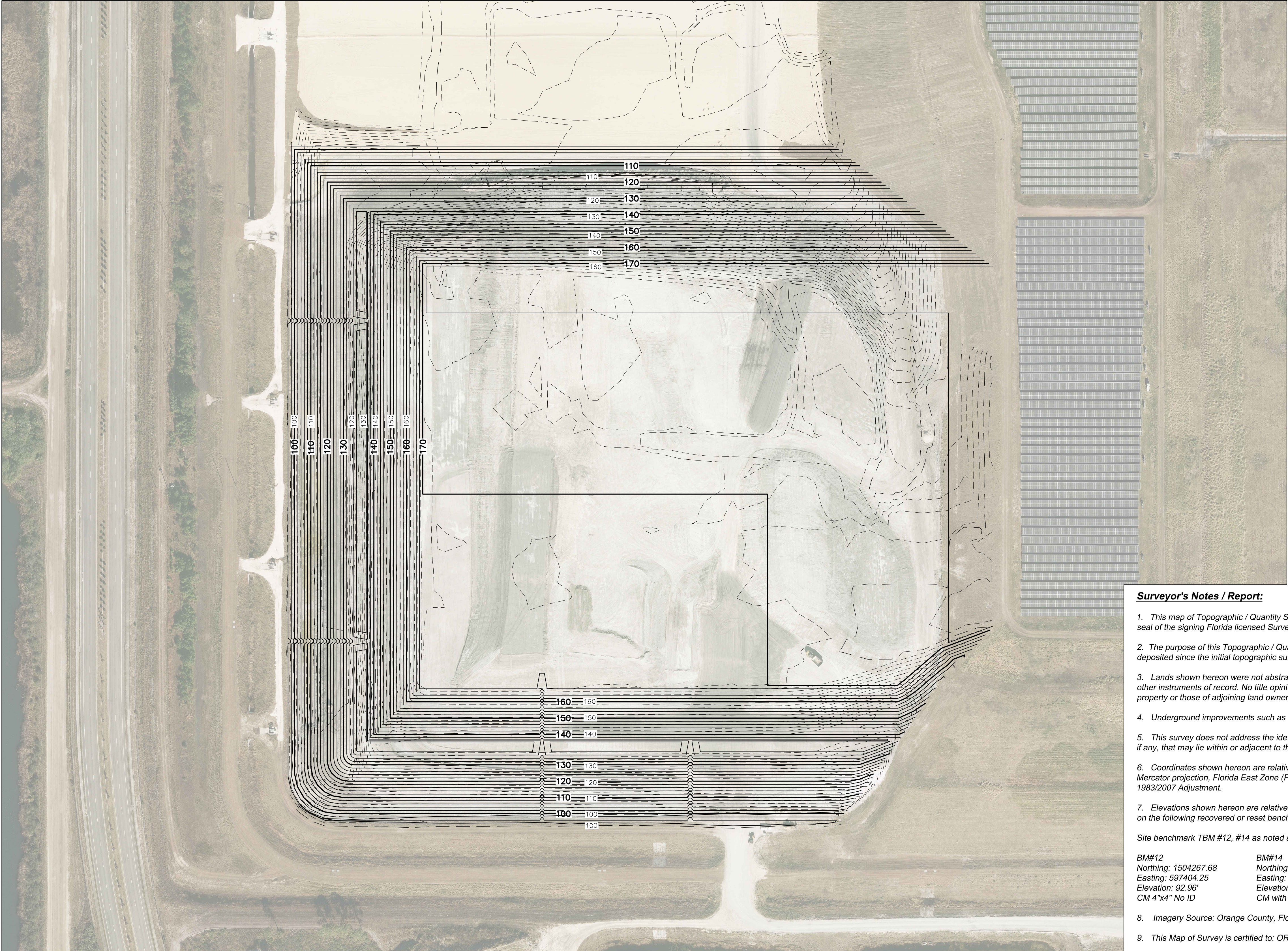
**Topographic and Waste Quantity Surveys
by WSP as of January 24, 2022 and May 10, 2023**

Map of Topographic / Quantity Survey
of
Horizontal Expansion of Combustion Waste Storage Area - Cell 1

Located in
Curtis H. Stanton Energy Center
Orange County, Florida

SURFACE	FILL (CY)	CUT (CY)	NET FILL (CY)
JAN 2015	34,493.11	1,246.77	33,246.34
JAN 2016	90,582.32	59.63	90,522.69
FEB 2016	51,492.27	1,617.08	49,875.19
MAR 2016	50,521.00	415.20	50,105.80
APR 2016	42,996.09	107.39	42,888.70
MAY 2016	30,746.55	1,315.06	29,431.49
JUN 2016	24,725.26	1,318.89	23,406.37
JUL 2016	23,903.85	720.50	23,183.35
AUG 2016	45,680.73	552.65	45,128.08
SEP 2016	35,277.68	2,717.19	32,560.49
OCT 2016	41,091.95	373.75	40,718.20
NOV 2016	26,769.78	584.59	26,185.19
DEC 2016	39,511.03	71.13	39,439.90
JAN 2017	49,129.26	638.02	48,491.24
FEB 2017	20,414.90	543.32	19,871.58
MAR 2017	18,828.76	75.46	18,753.30
APR 2017	74,873.83	10,370.50	64,503.33
MAY 2017	69,893.77	7,856.80	62,036.97
JUN 2017	36,933.97	1,137.68	35,796.29
JUL 2017	30,986.22	1,659.06	29,327.16
AUG 2017	30,516.37	1,725.25	28,791.12
SEP 2017	37,960.57	2,102.78	35,857.79
OCT 2017	22,549.35	2,232.30	20,317.05
NOV 2017	48,815.96	3,263.68	45,552.28
JAN 2018	77,758.64	36,162.39	41,596.25
FEB 2018	38,056.88	4,604.22	33,452.66
APR 2018	68,275.99	58,750.94	10,525.05
MAY 2018	95,418.82	57,003.63	38,415.19
JUL 2018	177,218.68	54,596.31	122,622.37
JAN 2019	214,742.47	11,673.48	203,068.99
FEB 2019	62,388.98	27,949.34	34,439.64
APR 2019	61,464.19	53,646.10	7,818.09
AUG 2019	156,554.09	10,818.11	145,735.98
OCT 2019	87,009.81	3,836.58	83,073.23
APR 2020	171,029.52	2,389.84	168,639.68
MAY 2020	44,781.15	11,250.01	33,531.14
SEP 2020	160,224.99	21,340.37	138,884.62
APR 2021	228,567.12	7,220.07	221,347.05
JAN 2022	272,695.46	6,566.70	266,128.76
MAY 2022	110,016.03	4,916.45	105,099.58
MAY 2023	258,985.35	31,338.73	227,646.62

SURFACE	FILL (CY)	CUT (CY)	NET FILL (CY)
VOLUME REMAINING FROM MAY 2023 TO FINAL DESIGN	203,653.77	61,419.29	142,234.48



Surveyor's Notes / Report:

- This map of Topographic / Quantity Survey is not valid without the signature and the original raised seal of the signing Florida licensed Surveyor and Mapper.
- The purpose of this Topographic / Quantity survey is to depict and develop the quantity of materials deposited since the initial topographic survey performed on in January 2015.
- Lands shown hereon were not abstracted by the Surveyor for rights-of-way, easements, ownership or other instruments of record. No title opinion or abstract of matters affecting title or boundary to the subject property or those of adjoining land owners has been provided to the Surveyor for review.
- Underground improvements such as foundations and utilities were not located.
- This survey does not address the identification or location of jurisdictional wetlands or sovereign lands, if any, that may lie within or adjacent to the lands surveyed.
- Coordinates shown hereon are relative to the Florida State Plane Coordinate System, Transverse Mercator projection, Florida East Zone (FL E 0901), US Survey Foot, North American Datum of 1983/2007 Adjustment.
- Elevations shown hereon are relative to the North American Vertical Datum of 1988 (NAVD88) based on the following recovered or reset benchmarks:

Site benchmark TBM #12, #14 as noted and listed below.

BM#12
Northing: 1504267.68
Easting: 597404.25
Elevation: 92.96'
CM 4"x4" No ID

BM#14
Northing: 1507740.55
Easting: 600838.18
Elevation: 81.04'
CM with 3" Brass Disk HVM4
- Imagery Source: Orange County, Florida , date: January 4, 2021
- This Map of Survey is certified to: ORLANDO UTILITIES COMMISSION

Legend

- CM = Concrete Monument
- = Final Design Major Elevation
- - - = Final Design Minor Elevation
- - - = Current Major Contour Elevation (May 10, 2023)
- - - = Current Minor Contour Elevation (May 10, 2023)
- CY = Cubic Yards
- SF = Square Feet

Prepared by:

Wood Environment & Infrastructure Solutions, Inc.
550 Northlake Boulevard, Suite 1000
Altamonte Springs, FL 32701 USA
Phone: (407) 522-7570
www.woodplc.com
Certificate of Authorization Number LB-0007632

Field survey last day in field 5/10/23

GRAPHIC SCALE
0 50 100 200
(IN FEET)

NORTH

ROBERT M. JONES
4201
STATE OF
FLORIDA
PROFESSIONAL SURVEYOR AND MAPPER
LICENSE No. LS 4201

ouc
The Reliable One®

ORLANDO UTILITIES COMMISSION
5971 Perishing Avenue
Orlando, Florida 32822
Phone: 407-364-4077

Prepared for:

Date	Revision	Date	Revision	Dwg. Date:	June 27, 2023	County:	Orange County, Florida
				Photo Date: <th>Jan 4, 2021</th> <td></td> <td></td>	Jan 4, 2021		
				Field Books: <td></td> <td></td> <td></td>			
				Office No.: <th>6374.18.1079</th> <td></td> <td></td>	6374.18.1079		
				Drawn by: <th>JSP</th> <td></td> <td></td>	JSP		
				Checked by: <th>RMJ</th> <td></td> <td></td>	RMJ		
				Dwg. Name: <th>2023-05 Expansion Cell 1.dwg</th> <td></td> <td></td>	2023-05 Expansion Cell 1.dwg		

Project Title: Map of Topographic / Quantity Survey
Horizontal Expansion of Combustion Waste Storage Area - Cell 1
Curtis H. Stanton Energy Center
Orange County, Florida

Sheet No. N/A of 1

Appendix 3

Summary of Fugitive Dust Daily Logs for 2022

Date	Dust Observed Roadways or Landfill?	Water Applied to Landfill?	Water Applied to Roadways?	Sweeper Truck Operated on Roadways?	If Dust, Why Was Sweeper or Water Truck Not Used?
01/07/2022	YES	YES	YES	YES	
01/08/2022	YES	YES	YES	NO	
01/09/2022	YES	YES	YES	NO	
01/10/2022	YES	YES	YES	YES	
01/11/2022	YES	YES	YES	NO	
01/14/2022	YES	YES	YES	YES	
01/17/2022	YES	YES	YES	NO	
01/18/2022	YES	YES	YES	NO	
01/19/2022	YES	YES	YES	YES	
01/20/2022	YES	YES	YES		
01/21/2022	YES	YES	YES	YES	
01/24/2022	YES	YES	YES		
01/25/2022	YES	YES	YES	NO	
02/07/2022	YES	YES	YES	YES	
02/08/2022	YES	YES	YES	NO	
02/09/2022	YES	YES	YES	NO	
02/10/2022	YES	YES	YES	NO	
02/11/2022	YES	YES	YES	NO	
02/14/2022	YES	YES	YES	YES	
02/21/2022	YES	YES	YES	NO	
02/22/2022	YES	YES	YES	YES	
02/23/2022	YES	YES	YES	NO	
02/24/2022	YES	YES	YES	NO	
02/25/2022	YES	YES	YES	NO	
02/28/2022	YES	YES	YES	NO	
03/01/2022	YES	YES	YES	YES	
03/02/2022	YES	YES	YES	NO	
03/04/2022	YES	YES	YES	NO	
03/07/2022	YES	YES	YES	NO	
03/08/2022	YES	YES	YES	NO	
03/09/2022	YES	YES	YES	NO	
03/10/2022	YES	YES	YES	NO	
03/11/2022	YES	YES	YES	NO	
03/14/2022	YES	YES	YES	NO	
03/21/2022	YES	YES	YES		
03/22/2022	YES	YES	YES	YES	
03/23/2022	YES	YES	YES	NO	
03/24/2022	YES	YES	YES	NO	
03/25/2022	YES	YES	YES	NO	
03/28/2022	YES	YES	YES	NO	
03/29/2022	YES	YES	YES	YES	
03/30/2022	YES	YES	YES	NO	
03/31/2022	YES	YES	YES	YES	

Date	Dust Observed Roadways or Landfill?	Water Applied to Landfill?	Water Applied to Roadways?	Sweeper Truck Operated on Roadways?	If Dust, Why Was Sweeper or Water Truck Not Used?
04/01/2022	YES	YES	YES	NO	
04/04/2022	YES	NO	YES	NO	
04/05/2022	YES	NO	NO	NO	Water truck is down. Hydraulic leak.
04/06/2022	YES	NO	YES	NO	
04/07/2022	YES	YES	YES	NO	
04/08/2022	YES	YES	YES	NO	
04/11/2022	YES	YES	YES	NO	
04/12/2022	YES	NO	YES	YES	
04/13/2022	YES	YES	YES	NO	
04/14/2022	YES	YES	YES	NO	
04/15/2022	YES	YES	YES	NO	
04/18/2022	NO	NO	YES	YES	
04/19/2022	YES	YES	YES	NO	
04/20/2022	YES	YES	YES	NO	
04/21/2022	YES	YES	YES	NO	
04/22/2022	YES	YES	YES	NO	
04/25/2022	YES	YES	YES	YES	
04/26/2022	YES	YES	YES	NO	
04/27/2022	YES	YES	YES	NO	
04/28/2022	YES	YES	YES	NO	
04/29/2022	YES	YES	YES	NO	
05/02/2022	YES	YES	YES	YES	
05/03/2022	YES	YES	YES	NO	
05/04/2022	YES	YES	YES	NO	
05/05/2022	YES	YES	YES	NO	
05/06/2022	YES	YES	YES	NO	
05/09/2022	YES	YES	YES	YES	
05/10/2022	YES	YES	YES	NO	
05/11/2022	YES	NO	NO	NO	Water truck is down. Battery
05/12/2022	YES	YES	YES	NO	
05/13/2022	YES	YES	YES	YES	
05/16/2022	YES	YES	YES	NO	
05/17/2022	YES	YES	YES	NO	
05/18/2022	YES	YES	YES	NO	
05/19/2022	YES	YES	YES	NO	
05/20/2022	YES	YES	YES	NO	
05/23/2022	YES	YES	YES	NO	
05/24/2022				YES	
05/25/2022	YES	YES	YES	NO	
05/26/2022	YES	YES	YES	NO	
05/27/2022	YES	YES	YES	NO	
05/30/2022	YES	YES	YES	NO	
05/31/2022	YES	YES	YES	NO	

Date	Dust Observed Roadways or Landfill?	Water Applied to Landfill?	Water Applied to Roadways?	Sweeper Truck Operated on Roadways?	If Dust, Why Was Sweeper or Water Truck Not Used?
06/01/2022	YES	YES	YES	NO	
06/02/2022	YES	YES	YES	NO	
06/03/2022	YES	YES	YES	NO	
06/06/2022	YES	YES	YES	NO	
06/07/2022	YES	YES	YES	YES	
06/08/2022	YES	YES	YES	NO	
06/09/2022	YES	YES	YES	NO	
06/10/2022	YES	NO	NO	NO	Water truck is down. Hydraulic leak.
06/13/2022	YES	NO	NO	NO	"
06/14/2022	YES	YES	YES	NO	
06/15/2022	YES	YES	YES	NO	
06/16/2022	YES	YES	YES	NO	
06/27/2022	YES	YES	YES	NO	
06/28/2022	YES	YES	YES	YES	
06/29/2022	YES	YES	YES	NO	
06/30/2022	YES	YES	YES	NO	
07/01/2022	YES	YES	YES	NO	
07/04/2022	YES	YES	YES	NO	
07/05/2022	YES	YES	YES	NO	
07/06/2022	YES	YES	YES	NO	
07/07/2022	YES	YES	YES	NO	
07/08/2022	YES	YES	YES	NO	
07/11/2022	YES	YES	YES	NO	
07/12/2022	YES	YES	YES	NO	
07/13/2022	YES	YES	YES	NO	
07/14/2022	YES	YES	YES	NO	
07/15/2022	YES	YES	YES	NO	
07/18/2022	YES	YES	YES	NO	
07/19/2022	YES	YES	YES	YES	
07/20/2022	YES	YES	YES	NO	
07/21/2022	YES	YES	YES	NO	
07/22/2022	YES	YES	YES	NO	
07/25/2022	YES	YES	YES	NO	
07/26/2022	YES	YES	YES	NO	
07/27/2022	YES	YES	YES	NO	
07/28/2022	YES	YES	YES	NO	
07/29/2022	YES	YES	YES	NO	
08/01/2022	YES	YES	YES	NO	
08/02/2022	YES	YES	YES	NO	
08/03/2022	YES	YES	YES	NO	
08/04/2022	YES	YES	YES	NO	
08/05/2022	YES	YES	YES	NO	
08/08/2022	YES	YES	YES	NO	

Date	Dust Observed Roadways or Landfill?	Water Applied to Landfill?	Water Applied to Roadways?	Sweeper Truck Operated on Roadways?	If Dust, Why Was Sweeper or Water Truck Not Used?
08/09/2022	YES	YES	YES	NO	
08/10/2022	YES	YES	YES	NO	
08/11/2022	YES	YES	YES	NO	
08/12/2022	YES	YES	YES	NO	
08/15/2022	YES	YES	YES	NO	
08/16/2022	YES	YES	YES	NO	
08/17/2022	YES	YES	YES	NO	
08/18/2022	YES	YES	YES	NO	
08/19/2022	YES	YES	YES	NO	
08/22/2022	YES	YES	YES	NO	
08/23/2022	YES	YES	YES	NO	
08/24/2022	YES	YES	YES	NO	
08/25/2022	YES	YES	YES	NO	
08/26/2022	YES	YES	YES	NO	
08/29/2022	YES	YES	YES	NO	
08/30/2022	YES	YES	YES	NO	
08/31/2022	YES	YES	YES	NO	
09/01/2022	YES	YES	YES	NO	
09/02/2022	YES	YES	YES	NO	
09/05/2022	YES	YES	YES	NO	
09/06/2022	YES	YES	YES	NO	
09/07/2022	YES	YES	YES	NO	
09/08/2022	YES	YES	YES	NO	
09/09/2022	YES	YES	YES	NO	
09/12/2022	YES	YES	YES	NO	
09/13/2022	YES	YES	YES	NO	
09/14/2022	YES	YES	YES	NO	
09/15/2022	YES	YES	YES	NO	
09/16/2022	YES	YES	YES	NO	
09/19/2022	YES	YES	YES	NO	
09/20/2022	YES	YES	YES	NO	
09/21/2022	YES	YES	YES	NO	
09/22/2022	YES	YES	YES	NO	
09/23/2022	YES	YES	YES	NO	
09/26/2022	YES	YES	YES	NO	
09/27/2022	YES	YES	YES	NO	
09/28/2022	NO	NO	NO	NO	Hurricane
09/29/2022	NO	NO	NO	NO	Hurricane
09/30/2022	NO	NO	NO	NO	Hurricane
10/03/2022	YES	YES	YES	NO	
10/04/2022	YES	YES	YES	NO	
10/05/2022	YES	YES	YES	NO	
10/06/2022	YES	YES	YES	NO	
10/07/2022	YES	YES	YES	NO	

Date	Dust Observed Roadways or Landfill?	Water Applied to Landfill?	Water Applied to Roadways?	Sweeper Truck Operated on Roadways?	If Dust, Why Was Sweeper or Water Truck Not Used?
10/10/2022	YES	YES	YES	NO	
10/11/2022	YES	YES	YES	NO	
10/12/2022	YES	YES	YES	NO	
10/13/2022	YES	YES	YES	NO	
10/24/2022	YES	YES	YES	NO	
10/25/2022	YES	YES	YES	NO	
10/26/2022	YES	YES	YES	NO	
10/27/2022	YES	YES	YES	NO	
10/31/2022	YES	YES	YES	NO	
11/01/2022	YES	YES	YES	NO	
11/02/2022	YES	YES	YES	NO	
11/03/2022	YES	YES	YES	NO	
11/04/2022	YES	YES	YES	NO	
11/07/2022	YES	YES	YES	NO	
11/08/2022	YES	YES	YES	NO	
11/09/2022	NO	NO	NO	NO	Tropical Storm Nicole
11/10/2022	YES	YES	YES	NO	
11/11/2022	YES	YES	YES	NO	
11/14/2022	YES	YES	YES	NO	
11/15/2022	YES	YES	YES	NO	
11/22/2022	YES	YES	YES	NO	
11/23/2022	YES	YES	YES	NO	
11/24/2022	YES	YES	YES	NO	
11/25/2022	YES	YES	YES	NO	
11/28/2022	YES	YES	YES	NO	
11/29/2022	YES	YES	YES	NO	
11/30/2022	YES	YES	YES	NO	
12/01/2022	YES	YES	YES	NO	
12/02/2022	YES	YES	YES	NO	
12/05/2022	YES	YES	YES	NO	
12/06/2022	YES	YES	YES	NO	
12/07/2022	YES	YES	YES	NO	
12/08/2022	YES	YES	YES	NO	
12/09/2022	YES	YES	YES	NO	
12/12/2022	YES	YES	YES	NO	
12/13/2022	YES	YES	YES	NO	
12/14/2022	YES	YES	YES	NO	
12/15/2022	YES	YES	YES	NO	
12/16/2022	YES	YES	YES	NO	
12/19/2022	YES	YES	YES	NO	
12/20/2022	YES	YES	YES	NO	
12/21/2022	YES	YES	YES	NO	
12/22/2022	YES	YES	YES	NO	
12/27/2022	YES	YES	YES	NO	

Date	Dust Observed Roadways or Landfill?	Water Applied to Landfill?	Water Applied to Roadways?	Sweeper Truck Operated on Roadways?	If Dust, Why Was Sweeper or Water Truck Not Used?
12/28/2022	YES	YES	YES	NO	
12/29/2022	YES	YES	YES	NO	
12/30/2022	YES	YES	YES	NO	

Appendix 4

Summary of Weekly Landfill Inspection Reports for 2022

Week of Inspection	Cell 1 Containment Dikes						Cell 2 Containment Dikes						Sumps at West End of CWSA				East End Landfill	Stormwater Wet Detention Pond		
	Exterior Slope Conditions			Interior Slope Conditions			Exterior Slope Conditions		Interior Slope Conditions			Water Level		Pump Operations		Slope Condition	Slope Erosion	Inlet and Outlet Structure Condition	Vegetation	
	North	West	South	North	West	South	North	West	North	West	South	Cell 1	Cell 2	Cell 1	Cell 2					
01/03/2022	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Standing water	All pumps running Auto	Transformer tripped pumps down	Good	No	Good	Minimal	
01/10/2022	Good	Animal damage	Good	Good	Good	Good	Good		Good	Good	Good	Good	Good	All pumps running Auto		Good	Good	Good	Minimal	
01/17/2022	Good	Good	Good	Good	Good	Good	Good	Good	Animal damage	Animal damage	Good	Good	Good	All pumps running Auto		Good	No	Good	Minimal	
01/24/2022	Good	Hog rooting damage	Good	Good	Good	Good	Good		Hog rooting damage	Good	Good	Good	Good	All pumps running Auto		Good	Animal damage Hog rooting	Good	Minimal	
01/31/2022	Good	Animal damage	Good	Good	Good	Good	Good		Good	Good	Good	Good	Good	All pumps running Auto		Good	Some animal damage	Good	Good	
02/07/2022	Good	Animal damage	Good	Good	Good	Good	Good		Good	Good	Good	Good	Good	All pumps running Auto		Good	Some animal damage	Good	Good	
02/14/2022	Good		Good	Good	Good	Good	Good		Good	Good	Good			All pumps running Auto		Good	Animal damage West side	Good	Good	
02/21/2022	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	All pumps running Auto		Good	Animal damage	Good	Good	
02/28/2022	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	OK	OK	All pumps running Auto		Good	Minimal animal damage	Good	Good	
03/07/2022	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	High		All pumps running Auto: Had to turn on diesel pumps		Good	Minimal erosion	Good	Good	
03/14/2022	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	All pumps running Auto		Good	Minimal	Good	Minimal	
03/21/2022	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	OK	OK	All pumps running Auto		Good	Minimal	Good	OK	
03/28/2022	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	All pumps running Auto		Good	Minimal	Good	Minimal	
04/04/2022	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	All pumps running Auto		Good	Minimal	Good	Minimal	
04/11/2022	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	All pumps running Auto		Good	Minimal	Good	Minimal	
04/18/2022	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	All pumps running Auto		Good	Good	Needs cleaning around	Around structure	
04/25/2022	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	All pumps running Auto		Good	Good	Good	Good	
05/06/2022		Good	Good		Good	Good	Good	Good	Good	Good	Good	Good	Good	Sump 1 neither pump is working; Sump 4 bad level sensor		Good	None	Good	Good	
05/09/2022		Good	Good		Good	Good	Good	Good	Good	Good	Good	Good	Good	Sump 1 - failed to start; Sumps 2 & 3 Auto; Sump 4 Low Level alarm	Sump 2 Panel High Temp	Good	Good	Good	Good	
05/16/2022		Minor erosion	Good		Good	Good	Good		Good	Good	Good	Good	Good			Good	None	Good	Minimal	
05/23/2022		Minor erosion	Good		Good	Good	Good		Good	Good	Good	None	None	Sumps 1 & 2 levels reading negative; Sump 1 Leak detection pump O/S; Diesel pumps operational	Sump 1 panel temp high; Diesel pumps operational		Good	Good	Good	
05/30/2022		Minor erosion	Good		Good	Good	Good		Good	Good	Good	Good	Good	"	"	Good	Good	Good	Good	
06/06/2022		Good	Good		Good	Good	Good	Good	Good	Good	Good	Good		Sump 1- Leak detection pump off; Sumps 2 and 3 low level alarm; Sumps 1-4 Auto	Sump 1 Panel High Temp Sumps 2-4 Auto	Good	Good	Good	Good	
06/13/2022		Minor erosion	Good		Good	Good	Good		Good	Good	Good	None	None	Sumps 1 & 2 levels reading negative; Sump 1 Leak detection pump O/S; Diesel pumps operational	Sump 1 panel temp high; Diesel pumps operational	Good	Good	Good	Good	
06/27/2022		Good	Good		Good	Good	Good	Good	Good	Good	Good	Good	Good	Sumps 1 and 3 Leachate pump on leak detection off; Sumps 1-4 Auto		Good	Minimal	Good	Minimal	

Week of Inspection	Cell 1 Containment Dikes						Cell 2 Containment Dikes					Sumps at West End of CWSA				East End Landfill	Stormwater Wet Detention Pond		
	Exterior Slope Conditions			Interior Slope Conditions			Exterior Slope Conditions		Interior Slope Conditions			Water Level		Pump Operations		Slope Condition	Slope Erosion	Inlet and Outlet Structure Condition	Vegetation
	North	West	South	North	West	South	North	West	North	West	South	Cell 1	Cell 2	Cell 1	Cell 2				
07/11/2022		Good	Good		Good	Good	Good	Good	Good	Good	Good	Good	Good	Sump 1 leak detection pump off; Sump 3 High pressure alarm; Sumps 2 & 4 Auto	Sump 1 Inside breaker off; Sump 2 High level alarm; Sumps 3 & 4 Auto	Good	Minimal	Good	Minimal
07/18/2022		Good	Good		Good	Good	Good	Good	Good	Good	Good	Good	Good	Sump 1 Low level alarm; Sumps 1-4 Auto	Power off (transformer fuse)	Good	None	Good	Minimal
08/29/2022		Good	Good		Good	Good	Good	Good	Good	Good	Good	Good		Sump 3 Leak detection off; Sumps 1-4 Auto	Sump 1 High Temp alarm; Sumps 1-4 Auto	Good	None	Good	Yes around structure and edge of pond
09/05/2022		Good	Good		Good	Good	Good	Good	Good	Good	Good			"	Sump 1 Off High Temp; Sumps 2-4 Auto UPS Fault	Good	Minimal	Good	Yes around structure
09/12/2022		Good	Good		Good	Good	Good	Good	Good	Good	Good			Sumps 1 & 4 Off; Sumps 2 & 3 Auto	Sump 1 Off; Sumps 2 & 4 Auto	Good	Minimal	Good	Yes around structure
09/19/2022		Good	Good		Good	Good	Good	Good	Good	Good	Good			"	Sump 1 Off High Temp; Sumps 2 & 4 Auto UPS Bypass; Sump 3 Auto	Good	Minimal	Good	Yes around structure
09/26/2022		Good	Good		Good	Good	Good	Good	Good	Good	Good			"	"	Good	Minimal	Good	Yes around structure
10/04/2022		Minor erosion	Good		Erosion	Minimal erosion	NW corner washed out from hurricane	Minor' erosion	Erosion	Erosion	Minimal erosion			Power off to all pumps	Power off to all pumps	Erosion in Cell 2	Minor south and north sides	Good	Good
10/10/2022		Minor erosion	Good		Minor erosion	Good	Good with temporary repair	Minor erosion	Good with temporary repair	Minor erosion	Good			Sump 1 Power off; Sumps 2-4 Auto	Sumps 1 & 2 Power off; Sumps 3 & 4 Auto; Sump 2 pad damaged	Major erosion with exposed liner in Cell 2	Minor south and north sides	Good	Good
10/17/2022		Minimal erosion	Good		Minimal erosion	Good	Good	Minimal erosion	Minimal erosion	Minimal erosion	Good	Good		Sump 1 Off bad level indicator; Sumps 2-4 Auto; Sump 2 High Temp	Sumps 1 & 2 Off diesel auxiliary pump; Sumps 3 & 4 Auto	Major erosion with exposed liner in Cell 2	Minimal	Good	Minor
10/24/2022		Minimal erosion	Good		Minimal erosion	Good	Good	Minimal erosion	Minimal erosion	Minimal erosion	Good			Sump 1 Off; Sumps 2-4 Auto	Sump 1 Off; Sump 2 Pump pad damage; Sumps 3 & 4 Auto	Major erosion with exposed liner in Cell 2	Minor erosion	Good	Minimal
10/31/2022		Minimal erosion	Good		Minimal erosion	Good	Minimal erosion	Minimal erosion	Minimal erosion	Minimal erosion	Good	Good	Good	Sump 1 Off bad level indicator; Sumps 2-4 Auto; Sump 3 High Temp	Sump 1 Off; Sump 2 Pump pad damage	Major erosion with exposed liner in Cell 2	Minor erosion	Good	Good
11/14/2022		Minimal erosion	Good		Minimal erosion	Good	Good	Minimal erosion	Good	Minimal erosion	Good	Good	Good	Sump 1 Off; Sumps 2-4 Auto	Sump 1 Off; Sump 2 Pump pad damage; Sumps 3 & 4 Auto	Major erosion with exposed liner in Cell 2	Minor	Good	Minimal
12/12/2022		Minimal erosion	Good		Minor erosion	Good	Good	Minimal erosion	Good	Minor erosion	Good	Good	Good	Sump 1 Off; Sumps 2-4 Auto	"	Major erosion with exposed liner in Cell 2	Minor erosion southeast side	Good	Good
12/19/2022		Minimal erosion	Good		Good	Good	Good	Minimal erosion	Good	Good	Good	Good	Good	Sump 1 Off; Sumps 2-4 Auto	Sump 1 Off; Sump 2 O/S; Sumps 3 & 4 Auto	Major erosion with exposed liner in Cell 2	Minor erosion southeast side	Good	Good
12/22/2022		Minimal erosion	Good		Minimal erosion	Good	Good	Minimal erosion	Good	Minimal erosion	Good	Good	Good	Sump 1 Off; Sumps 2-4 Auto	Sump 1 Off; Sump 2 O/S; Sumps 3 & 4 Auto	Major erosion with exposed liner in Cell 2	Minor erosion southeast side	Good	Good

Notes:
Condition of Cell 1 north interior and exterior containment dikes is no longer considered after Cell 2 was activated on April 28, 2022.
Condition of Cell 2 west interior and exterior containment dikes is given the same rating as Cell 1 unless otherwise noted on the inspection form.
O/S - Out of Service

Week of Inspection	CWSA Runoff Pond Pump Stations							
	Groundwater Pump Alarms		Groundwater Pump Operations		Leak Detection Pump Alarms		Leak Detection Pump Operations	
	P1	P4	P1	P4	P2	P3	P2	P3
01/03/2022	No	No	Auto	Auto	Yes	No	Auto	Auto
01/10/2022	Yes High Temp	No	Auto	Auto	No	Yes Low Temp	Auto	Auto
01/17/2022	No	Yes Low Temp	Auto	Auto	No	Yes Low Temp	Auto	Auto
01/24/2022	Yes Low Temp	Yes Low Temp	Auto	Auto	No	Yes Low Temp	Auto	Auto
01/31/2022	Yes	No	Auto	Auto	No	Yes Low Temp	Auto	Auto
02/07/2022	Yes UPS Fault Low Temp	Yes UPS Fault Low Temp	Auto	Auto	No	Yes UPS Fault High Temp	Auto	Auto
02/14/2022	No	No	Auto	Auto	No	Yes UPS Fault High Temp	Auto	Auto
02/21/2022	No	No	Auto	Auto	No	Yes	Auto	Auto
02/28/2022	No	No	Auto	Auto	No	Yes	Auto	Auto
03/07/2022	No	No	Auto	Auto	No	Yes Panel Low Temp	Auto	Auto
03/14/2022	Yes Panel Low Temp	No	Auto	Auto	No	Yes Panel Low Temp	Auto	Auto
03/21/2022	Yes Panel Low Temp	No	Auto	Auto	No	Yes Panel Low Temp	Auto	Auto
03/28/2022	Yes Panel Low Temp	Yes Panel Low Temp	Auto	Auto	Yes UPS Fault	Yes Panel Low Temp	Auto	Auto
04/04/2022	No	No	Auto	Auto	Yes UPS Fault	No	Auto	Auto
04/11/2022	No	No	Auto	Auto	Yes Panel Low Temp	No	Auto	Auto
04/18/2022	No	Yes Low Level	Auto	Auto	No	No	Auto	Auto
04/25/2022	Yes Panel Low Temp	No UPS Fault	Auto	Auto	Yes High Level	Yes Panel High Temp	Auto	Auto
05/06/2022	Yes Level sensor bad	Yes High Level	Auto	Auto	Yes High Temp & Pond Level Low motor current	Yes	Off	Auto

Week of Inspection	CWSA Runoff Pond Pump Stations							
	Groundwater Pump Alarms		Groundwater Pump Operations		Leak Detection Pump Alarms		Leak Detection Pump Operations	
	P1	P4	P1	P4	P2	P3	P2	P3
05/09/2022	No Panel Low Temp	No	Auto	Auto	Yes well level high and low motor current	Yes Panel High Temp	Off	Auto
05/16/2022	No	Pond level high			Pond level high; low motor current; sump level high			High panel temp issue corrected
05/23/2022							Bad motor O/S	
05/30/2022							"	
06/06/2022	No	No	Auto	Auto	Yes	No	Off	Auto
06/13/2022							Bad motor O/S	
06/27/2022	No	Yes High Level	Auto	Auto	Yes High Level	No	Auto	Auto
07/11/2022	No	No	Auto	Auto	Yes Low Level	No	Auto	Auto
07/18/2022	No alarms in	No alarms in	Auto	Auto	Yes	No alarm in	Auto	Auto
08/29/2022	No	No UPS Fault	Auto	Auto	No UPS Fault	Yes UPS Fault	Auto	Auto
09/05/2022	No	No	Auto	Auto	No	No	Auto	Auto
09/12/2022	No	No	Auto	Auto	No	No	Auto	Auto
09/19/2022	No	No	Auto	Auto	No	No	Auto	Auto
09/26/2022	No	No	Auto	Auto	No	No	Auto	Auto
10/04/2022	No	No	Auto	Auto	No	No	Auto	Auto
10/10/2022	No	No	Auto	Auto	No	No	Auto	Auto
10/17/2022	Yes Panel Low Temp	No	Auto	Auto	No	No	Auto	Auto
10/24/2022	No	Yes High Level	Auto	Auto	No	No	Auto	Auto
10/31/2022	Yes Panel Low Temp	Yes High Level	Auto	Auto	No	No	Auto	Auto
11/14/2022	Yes UPS Fault	Yes High Level UPS Fault	Auto	Auto	Yes UPS Fault	Yes UPS Fault	Auto	Auto

Week of Inspection	CWSA Runoff Pond Pump Stations							
	Groundwater Pump Alarms		Groundwater Pump Operations		Leak Detection Pump Alarms		Leak Detection Pump Operations	
	P1	P4	P1	P4	P2	P3	P2	P3
12/12/2022	Yes Panel Low Temp	Yes UPS Fault	Auto	Auto	No	Yes UPS Fault	Auto	Auto
12/19/2022	Yes Panel Low Temp UPS Fault	Yes Panel Low Temp	Auto	Auto	Yes Panel High Temp	Yes UPS Fault	Auto	Auto
12/22/2022	Yes Panel Low Temp	Yes Panel High Temp	Auto	Auto	Yes Panel High Temp	Yes UPS Fault	Auto	Auto

Notes:

UPS- Uninterruptible power supply

Appendix 5

Selected Photographs from 2023 Annual Inspection



Cell 2, Looking Northwest from Reverse Bench of
Closed Vertical Expansion of Original CWSA



Waste Placement in Cell 2 and Northern Slope of Waste Mound in Cell 1,
Looking West



Closed Vertical Expansion and Waste Mound in Cell 1, Looking South Along
Reverse Bench of Closed Vertical Expansion of Original CWSA



Photovoltaic Solar Panels on Top of Closed Vertical Expansion of
Original CWSA, Looking Southeast



Top of Waste in Cell 1, Looking West from Reverse Bench
of Closed Vertical Expansion of Original CWSA



Top of Waste in Cell 1, Looking North-Northwest from Reverse Bench
of Closed Vertical Expansion of Original CWSA



Wet Detention Pond, Looking Southwest from Top of Cell 1
at Juncture with Closed Original CWSA



Southern Slope of Waste Mound, in Cell 1 Where It Abuts
Closed Original CWSA, Looking Northeast



Southern Slope of Waste Mound in Cell 1, Looking South



Discharge Structures for Wet Detention Pond, Looking South-Southwest



Fabriform with Discharge Pipes from Wet Detention Pond into Perimeter Stormwater Ditch, Looking North-Northwest from Perimeter Dike/Road



Culvert Under Access Ramp Crossing Ditch, Looking Northwest Toward Southern Slope of Waste Mound in Cell 1



Perimeter Dike/Road and Ditch South of Cell 1, Looking West from Access Road Crossing Ditch



Fabriform with Inlets to Wet Detention Pond in Perimeter Ditch Around Southwestern Part of Cell 1, Looking Northwest



Monitoring Well MW-A on Southern Side of Cell 1



Box Culvert in Perimeter Ditch at Southwestern Corner of Cell 1, Looking North

Annual Inspection of CCR Landfill
OUC Stanton Energy Center



Western Slope of Waste Mound in Cell 1, Looking North



Northern Slope and Northwestern Corner of Waste Mound in Cell 1,
Looking Southeast



Diesel Auxiliary Pumps with Intakes Deployed in Cell 2



Intakes for Auxiliary Pumps in Preceding Photograph Deployed in Cell 2



Connection of Discharge Pipeline from Auxiliary Pump
to Leachate Force Main via Pump Station



Connection of Discharge Pipeline from Auxiliary Pump Directly
to Leachate Force Main



Containment Dike and Perimeter Ditch on North Side of Cell 2, Looking East



Concrete Flume and HDPE Culverts Draining into Perimeter Ditch on
North Side of Cell 2, Looking East-Northeast

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OUC Stanton Energy Center



Leachate Pump Station for Cell 2, Looking East



Perimeter Ditch West of Cell 2, Looking North from Box Culvert Crossing



Perimeter Dike/Road West of Cell 2, Looking North



Northern Slope of Waste Mound in Cell 1, Looking South



Articulated Dump Truck on West Haul Road in Cell 2, looking East-Southeast



Access Ramp from West Haul Road Through Cell 2 to Top of Cell 1,
Looking Southwest



Articulated Dump Truck Depositing Waste in Cell 2, Looking West



Spreading Waste with Dozer on Top of Cell 1

Annual Inspection of CCR Landfill
OUC Stanton Energy Center



CWSA Runoff Pond, Looking East



CWSA Runoff Pond North Compartment, Looking Northeast



Divider Dike Between CWSA Runoff Pond North and South Compartments,
Looking East-Southeast



Divider Dike Between CWSA Runoff Pond North and South Compartments,
Looking East-Southeast



Control Panel for CWSA Runoff Pond Pump 1



Meters, Gauges, Valves, and Cleanout Sump for CWSA Runoff Pond Pump



Re-graded Waste on South Side of Cell 1, Looking East



Re-graded Waste on South Side of Cell 1, Looking West



Re-graded Waste on West Side of Cell 1, Looking South



Re-graded Waste on West Side of Cell 1, Looking North