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August 29, 2022

Brian Helminger, Director
Heart of the Valley Metropolitan Sewerage District
801 Thilmany Road
Kaukauna, WI 54130

Beau Bernhoft, Administrator
Village of Little Chute
108 West Main Street
Little Chute, WI 54140

Re: Outagamie County Landfill Leachate Management Plan
Actions and Schedule for Ammonia Load Reductions

Dear Brian Helminger and Beau Bernhoft:

This letter has been prepared by Foth Infrastructure & Environment, LLC (Foth) on behalf of the Outagamie County Recycling & Solid Waste Department (OCRSWD) to communicate the proposed plan and schedule to address reductions in ammonia in the leachate discharge to the village of Little Chute (Little Chute) sewerage system and Heart of the Valley (HOV) wastewater treatment facility. This plan has been prepared based on our productive technical roundtable meeting that was held between the parties on June 23, 2022. At the meeting, OCRSWD agreed to submit a plan and schedule of actions that would be taken to manage ammonia load slugging, reduce ammonia loading, and address leachate sampling and metering of the leachate discharges from OCRSWD to Little Chute/HOV.

Understanding and Approach

OCRSWD is currently discharging leachate from its East Landfill (ELF) and Northeast Landfill (NELF) to Little Chute/HOV under existing discharge agreements established in 1989 and 1995. OCRSWD has received a letter from Little Chute and HOV notifying OCRSWD of their intent to terminate the 1989 and 1995 discharge agreements effective February 1, 2023. However, at the roundtable meeting Little Chute, HOV, and OCRSWD expressed their desire to continue working together toward a mutually beneficial resolution of the issues that have been raised regarding leachate management. The parties agreed that OCRSWD would develop an action plan and schedule for implementation of such plan for review by Little Chute and HOV. Little Chute and HOV further agreed to rescind their notice of termination or extend the proposed termination date and continue to accept leachate from OCRSWD after review and approval of the action plan and schedule.

OCRSWD is committed to working with Little Chute and HOV to come to a resolution regarding leachate management starting with the following items:

1. Action Plan to Reduce Slugging – OCRSWD will take action to reduce ammonia slugging through various steps including installation of a metering tank for the NELF leachate. The design basis, layout, and installation schedule are provided in this plan.

2. Ammonia Load Limits and Schedule – OCRSWD will commit to a schedule to take phased actions and meet stepped ammonia limits. The proposed ammonia limits and schedule are defined below including the potential reductions of the HOV wastewater treatment plant (WWTP) ammonia treatment capacity used by OCRSWD. OCRSWD agrees to incrementally reduce the ammonia load every year resulting in a rate of 139 pounds per day (lbs/day). In addition, OCRSWD would like to work with HOV to validate that the reductions are adding value to WWTP operations.

3. Flow Monitoring and Sampling System – OCRSWD will design the metering tank with flow and sampling features to accommodate HOV concerns with monitoring and representative sample data. The monitoring system will be designed with manual and/or automated controls to deliver leachate from the NELF below an agreed to ammonia limit to reduce slugging using a variable flow rate based on an ammonia concentration.

4. Meeting Schedule – OCRSWD will commit to a series of meetings over the next three months with HOV and Little Chute to come to resolution on this action plan and develop an updated discharge agreement.

Action Plan to Reduce Slugging Delivery

OCRSWD would like to continue to work with HOV/Little Chute to reduce the ammonia slugging that HOV has stated can be disruptive to HOV treatment processes. This action plan includes various short- and long-term steps that OCRSWD is taking and will take in the future to address ammonia slugging.

- **NELF Metering Tank Installation** – OCRSWD will install a ~40,000-gallon leachate metering tank with controlled discharge to the Little Chute sanitary sewer. The metering tank will accept the NELF leachate discharge from Phase 1, 2, and 3 sumps. The tank will provide for a single, controlled discharge for NELF leachate to the Little Chute sanitary sewer. The metering from this centralized tank will provide the basis for all future billings and load charges from Little Chute. The installation will include an open channel flow meter and automatic sampler to provide a single discharge monitoring location. The tank will be designed to control the leachate discharge to HOV/Little Chute. Design of the metering tank is currently ongoing and a conceptual layout is shown on Figure 1.
  - Schedule – The metering tank project budgeting and design will be completed in 2022, bidding and installation in 2023, and anticipated operation will commence by January 1, 2024.
  - Design Features/Benefits – The tank design will include discharge control, flow metering and monitoring equipment as well as, a truck load-out structure. The intent is to operate the tank to discharge at a consistent rate as agreed upon with HOV/Little Chute.
  - Capital Investment – $874,000

- **Accelerated NELF Final Cover Construction Schedule** – OCRSWD will accelerate the final cover construction schedule for the next phase of NELF final cover system construction from 2025/2026 to 2024. The next phase of the final cover construction will be approximately 10-acres of composite cap on the side slopes of phase 2 and phase 3 and will lead to a reduction in the volume of leachate generated from rainfall. The accelerated final cover area is presented on Figure 2.
  - Schedule – The accelerated final cover construction project budgeting and design will be completed in 2023, bidding and construction will be completed by December 31, 2024.
  - Design Features/Benefits – The ~10-acre final cover design provides a composite cap that will reduce the volume of leachate being generated from these areas. OCRSWD is willing to invest in installing this cover system ahead of schedule even though it may reduce the disposal capacity available for use in the NELF. An estimated 5 to 10% reduction in leachate generation is expected as a result of this action. OCRSWD will look for any opportunities to reduce leachate generation through cover placement. Following this cover sequence, the NELF will be 50% capped.
  - Capital Investment – ~$2 million

- **Leachate Recirculation Implementation** – OCRSWD will be using leachate recirculation as one method to achieve organic stability in the NELF to meet its state permit goals. Implementing leachate recirculation will also be used to control slugging delivery of leachate from the three sumps to the metering tank and ultimately to HOV/Little Chute. OCRSWD would like the opportunity to use the investment made in the leachate recirculation system to help manage/reduce leachate volume discharged.
  - Schedule – Leachate recirculation is ongoing and will continue as appropriate.
  - Design Features/Benefits – The use of leachate recirculation can help to reduce slugging delivery and ultimately reduce leachate volumes through evaporation and moisture absorption by the waste. The use of leachate recirculation as a tool must be managed carefully as landfill gas generation will likely increase and could cause potential odors or other nuisance conditions. OCRSWD will gather data regarding the schedule and quantity of leachate recirculated to examine how it may be affecting leachate volumes and organic strength (ammonia) over time. Adjustments will be made as necessary to help manage the ammonia loading schedule.
  - Capital Investment – >$500,000

- **NELF Sump Pump Operation Management** – In the interim, OCRSWD will continue to manage pump operation of the three NELF sumps to reduce slugging delivery of leachate by controlling pumping at all three sumps to reduce large volumes being discharge at once.
  - Schedule – Ongoing operations.
  - Design Features/Benefits – To reduce ammonia slugging, OCRSWD has been managing pump operation to prevent all sump pumps from delivering large volumes at once. This effort will continue to be coordinated and balanced with the need to maintain compliance with Wisconsin Department of Natural Resources requirements to maintain less than 1-foot of head on the liner. After the metering tank is installed, the sump pumps will continue to be managed as part of the larger SCADA control system.

Ammonia Load Limits and Schedule

OCRSWD would like to continue to work with HOV/Little Chute on reducing the overall ammonia load being delivered to the HOV plant through stepped limits in a phased approach. HOV has indicated that the OCRSWD leachate ammonia load is currently using approximately 25% of the HOV ammonia treatment capacity. OCRSWD proposes to take the following actions to reduce this percentage in a stepped process.

- **NELF Ammonia Limits** – OCRSWD proposes meeting the following ammonia load limits and schedule to achieve the targeted ammonia loading rate of 139 lbs/day as requested by HOV/Little Chute. This schedule is meant to provide an annual reduction of the NELF ammonia load so that, based on HOV's statement that OCRSWD is currently using 25% of HOV's capacity, OCRSWD is estimated to be less than 20% of HOV plant capacity by 2024, less than 15% by 2027, and less than 10% by 2029. This limit schedule will require installation of the metering tank and transfer of some of the leachate to another WWTP throughout the year via tanker truck. Therefore, the limits are started based on the tank construction and operating schedule above.

Year	Annual Ammonia Limit (lbs/day)	Est. % of HOV Ammonia Treatment Capacity (%)
2023	--	
2024	255	19%
2025	225	17%
2026	200	15%
2027	185	14%
2028	150	11%
2029	139	10%
2030	139	-
2031	139	-

- **Ammonia Loading Annual Report** – OCRSWD will be conducting detailed sampling and analysis that will allow OCRSWD and HOV/Little Chute teams to monitor the effectiveness of this ammonia load reduction strategy. To communicate the results of the NELF ammonia load reduction efforts, OCRSWD will provide an annual summary report of the efforts and ongoing results, evaluation, and summary of the actual loading versus the plan. The report will include recommendations for any adjustments that may be necessary from either OCRSWD or the HOV WWTP perspective.

Flow Monitoring and Sampling

OCRSWD will be employing an updated flow monitoring and proportional sampling program with new equipment in conjunction with the NELF metering tank. In addition, the existing ELF north lift station is being rehabilitated to accommodate new metering equipment. These actions are being taken to provide added monitoring and control of the leachate discharges sent to Little Chute/HOV to reduce slugging and better manage the overall ammonia load delivered. OCRSWD

will implement the following programs and equipment for flow monitoring and sampling of leachate discharges.

- **NELF Metering Tank Flow Monitoring and Sampling** – OCRSWD will be installing a monitoring system as part of the NELF metering tank construction that will maintain discharge of NELF leachate below an agreed to ammonia limit using a variable flow rate based on an ammonia concentration. The loadout facility will be used on an as needed basis to load excess leachate into tanker trucks for delivery to an alternative treatment facility.
  - Schedule – The plan and schedule correspond with the metering tank project.
  - Design Features/Benefits –
    - A dedicated flow proportional sampler will be installed as part of the tank design for collection of samples on a weekly basis for laboratory analysis.
    - Lab test results for ammonia from the NELF will be used to calculate a weekly discharge rate in gallons per minute (gpm) based on the ammonia concentrations that aligns with the limits established in the table above (lbs/day ammonia).
    - The weekly discharge flow rate (gpm) will be manually set or programmed to a PLC control panel so that the discharge pump or valve can adjust to match the setting. A pre-fabricated open channel flow meter manhole will be installed in the gravity discharge pipeline to the Little Chute sanitary sewer.
    - The local control panel will display the leachate discharge rate (gpm) setting, the weekly ammonia concentration (parts per million) inputs, the real-time measured flow rate (gpm), and the calculated ammonia loading (lb/day) from the NELF. In addition, the panel will control and display the tank level sensor and load-out pumping systems. This information can be made available to the facility SCADA system for real time data display, monitoring, and long-term records. The flow metering and monitoring system will be used to collect data for billing purposes.

- **East Landfill Lift Station Rehabilitation Updates** – OCRSWD is currently undertaking a rehabilitation project for the ELF lift station. This project work is underway and is meant to improve the operation of the pumping systems and the collection of flow data. The ELF north lift station is being replaced to address issues with storm water intrusion and aging equipment. A new pump and magnetic flow meter will be installed in accordance with manufacturers recommendations. A replacement magnetic flow meter has also been installed in the ELF south lift station this year.
  - Schedule – The lift station rehabilitation construction is currently under contract and completion is expected in the fall of 2022.
  - Design Features/Benefits – The lift station rehab has been undertaken to add new flow metering equipment and prevent intrusion of storm water into the sump. This intrusion is likely the reason for higher total suspended solids readings detected in some of the recent monthly samples. The lift station rehabilitation work will provide for new flow metering and continued sampling at this location.
  - Capital Investment – ~$250,000

- **East Landfill Ammonia Load** – OCRSWD has determined that directing the ELF leachate to the NELF metering tank is not feasible or justifiable given the low levels of ammonia being discharged from the ELF and the significant cost of this project. The actual rate of

ammonia loading from the ELF averages < 20 lbs/day, which is significantly less than the NELF average of > 300 lbs/day and this rate is an order of magnitude less than the ammonia limits listed above. In addition, the ELF leachate volume (~80,000 to 180,000 gallons/month) is not as significant compared to the NELF volumes (~400,000 to 800,000 gallons/month). The estimated capital cost to install forcemain piping to divert ELF leachate to the NELF metering tank is >$750,000. Given the significant costs and low ammonia loadings, OCRSWD proposes to account for the ELF loading in the daily discharge rate but cannot justify incurring the cost to construct a new forcemain system to have the ELF leachate pumped to the new NELF metering tank. However, OCRSWD is investing in the rehabilitation of the ELF North Lift Station and maintaining the current discharges to HOV/Little Chute as described. These rehabilitation projects will continue to provide long-term flow metering and sampling systems.

Meeting Schedule

OCRSWD is committed to working with Little Chute and HOV to come to a resolution regarding leachate management, and we understand that the detailed agreement associated with this plan and schedule require a series of discussions. OCRSWD suggests the following meeting schedule to continue discussions with the goal that an updated discharge agreement can be prepared and executed before the end of the year.

- September 2022 – Little Chute/HOV plan review
- Late September 2022 – Meeting for discussion on plan details
- October 2022 – Draft new agreement

This letter was prepared by the undersigned below. Brian Van Straten, Director at OCRSWD, will be reaching out directly to Brian Helminger and Beau Bernhoft to schedule the series of meetings.

Sincerely,

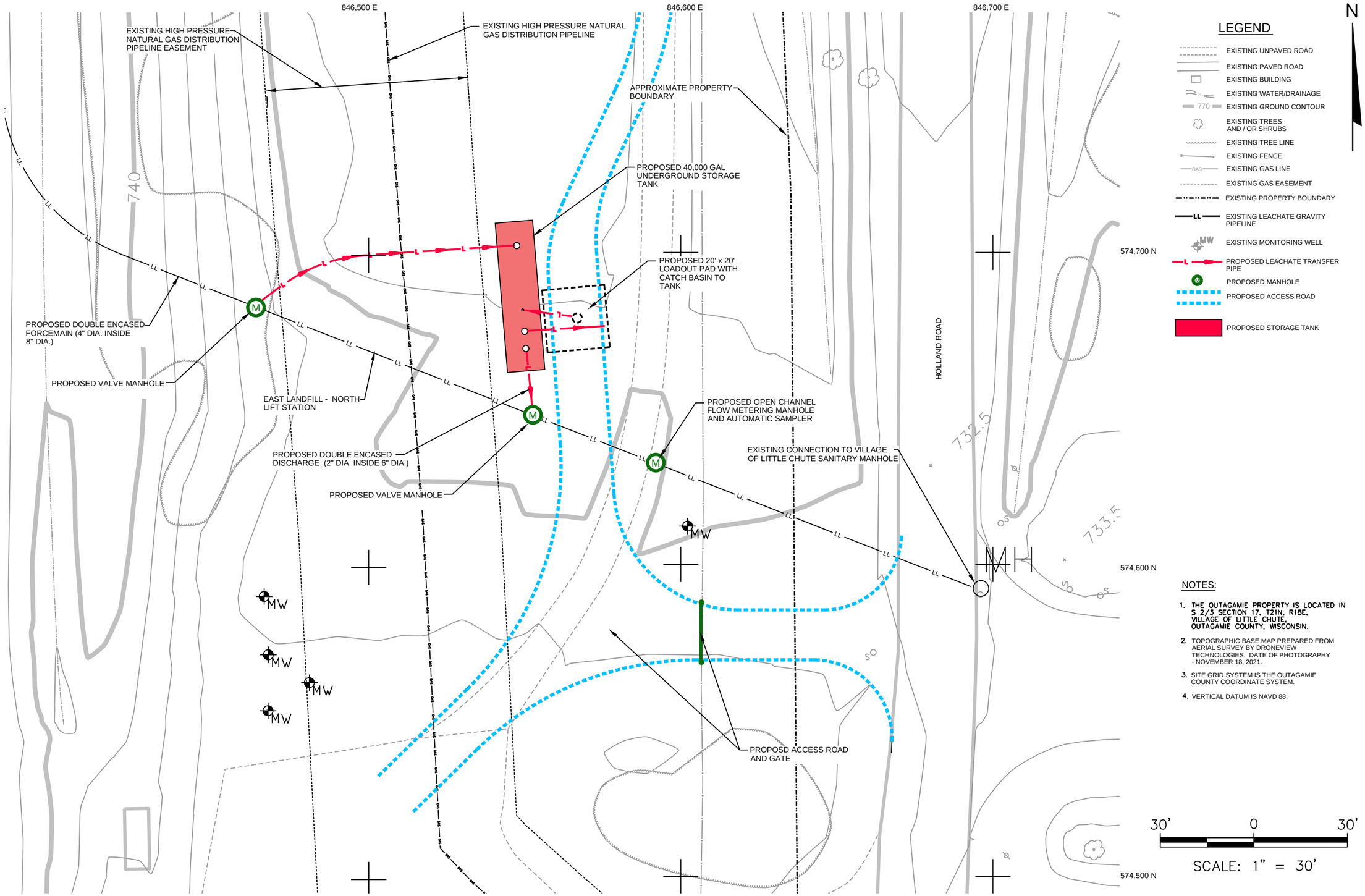
Foth Infrastructure & Environment, LLC

Christopher A. Anderson, P.E.
Senior Client Manager
Licensed in WI

Joshua C. Gabehart, P.E.
Lead Environmental Engineer
Licensed in IL, AR, IA, GA

Attachments

cc: Brian Van Straten, Outagamie County Recycling & Solid Waste Department
Greg Parins, Outagamie County Recycling & Solid Waste Department
Vanessa Wishart, Stafford Rosenbaum, LLP
Marty Sturzl, SCS Engineers



NOTES:

1. THE OUTAGAMIE PROPERTY IS LOCATED IN S 2/3 SECTION 17, T21N, R18E, VILLAGE OF LITTLE CHUTE, OUTAGAMIE COUNTY, WISCONSIN.
2. TOPOGRAPHIC BASE MAP PREPARED FROM AERIAL SURVEY BY DRONEVIEW TECHNOLOGIES. DATE OF PHOTOGRAPHY - NOVEMBER 18, 2021.
3. SITE GRID SYSTEM IS THE OUTAGAMIE COUNTY COORDINATE SYSTEM.
4. VERTICAL DATUM IS NAVD 88.

PRELIMINARY LEACHATE TANK AND LOADOUT LAYOUT

SITE

OUTAGAMIE COUNTY LANDFILL
OUTAGAMIE COUNTY, WISCONSIN

CLIENT

OUTAGAMIE COUNTY RECYCLING & SOLID WASTE

Outagamie County
DEPARTMENT OF RECYCLING & SOLID WASTE

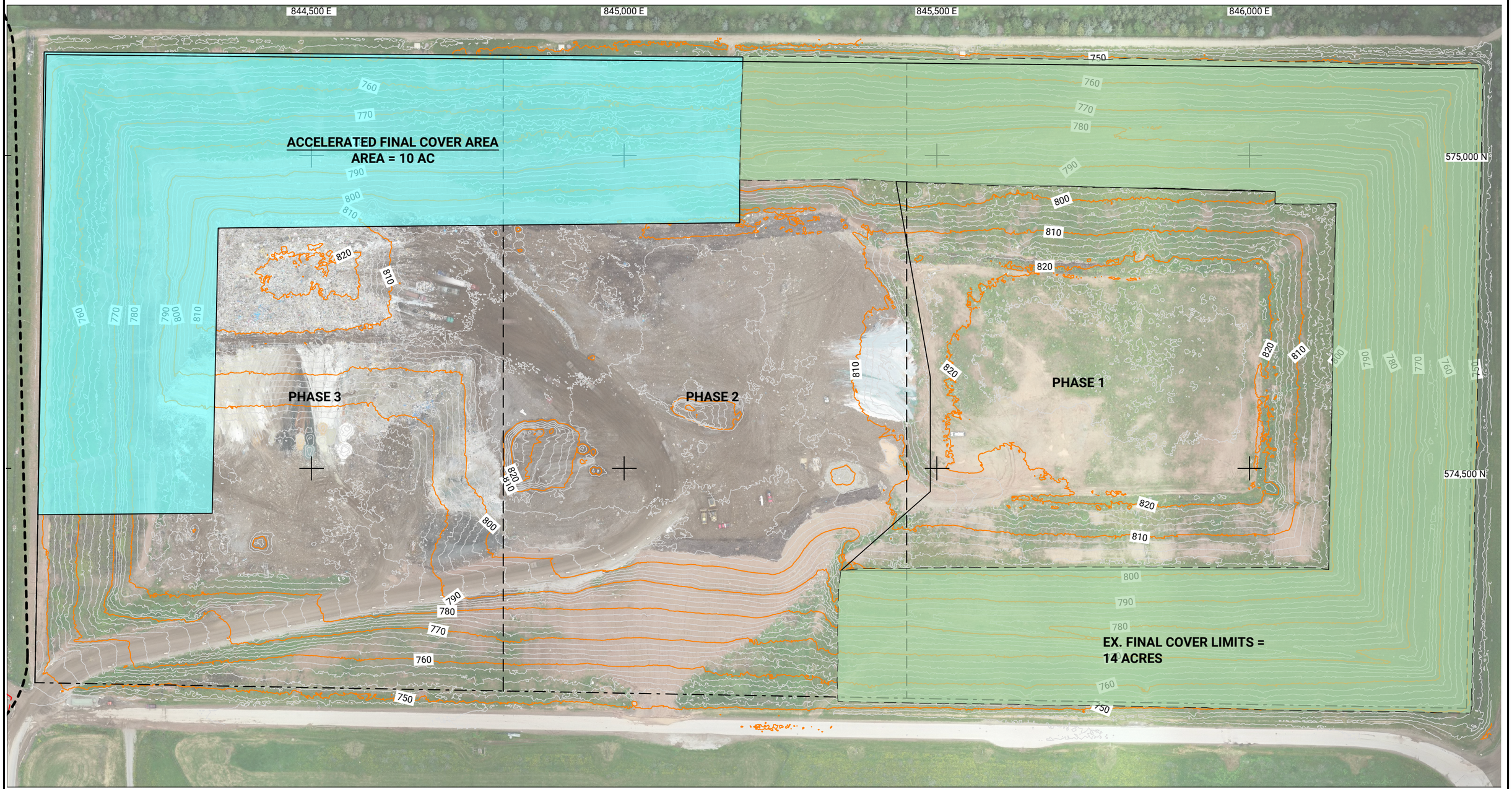
FIGURE 1 OF 1

ENGINEER

SCS ENGINEERS
2830 DAIRY DRIVE MADISON, WI 53718-6751
PHONE: (608) 224-2830

DRAWN BY:	MRS	
CHECKED BY:	MRS	
APPROVED BY:	--	
PROJECT NO.	25222132.00	
DRAWN:	07/25/22	
REVISED:	--	

I:\25222132.03\Drawings\Figure 2 Tank and Loadout Layout.dwg, 8/22/2022 12:52:37 PM



LEGEND

- 790 — EXISTING GROUND CONTOURS (MAJOR)
- EXISTING GROUND CONTOURS (MINOR)
- NELF PHASE LIMITS
- NELF WASTE LIMITS
- NELF EXISTING COVER LIMITS

NOTES:

1. CONTOURS REPRESENT GROUND SURFACE BASED ON AERIAL DRONE SURVEY PERFORMED BY FOTH ON JULY 8, 2022.

N

NAD 83

Foth

0 75' 150'

SCALE

OUTAGAMIE COUNTY NELF

FIGURE 2

NORTHEAST LANDFILL
EXISTING AND ACCELERATED FINAL COVER AREAS

Date Completed: 08/26/22		Revision Date:
Drawn By: DJM4	Checked By: CAA1	Project No: 22O002.00

Friday, August 26, 2022 10:28:51 AM
DWG Filename: figure 1 nelf area.dwg Layout: layout 1
DWG Folder Location: P:\Documents\Clients\Outagamie Co Recyc SW Wh\2022\00220002.00\CADFigures\7-8-22 aerial survey\