

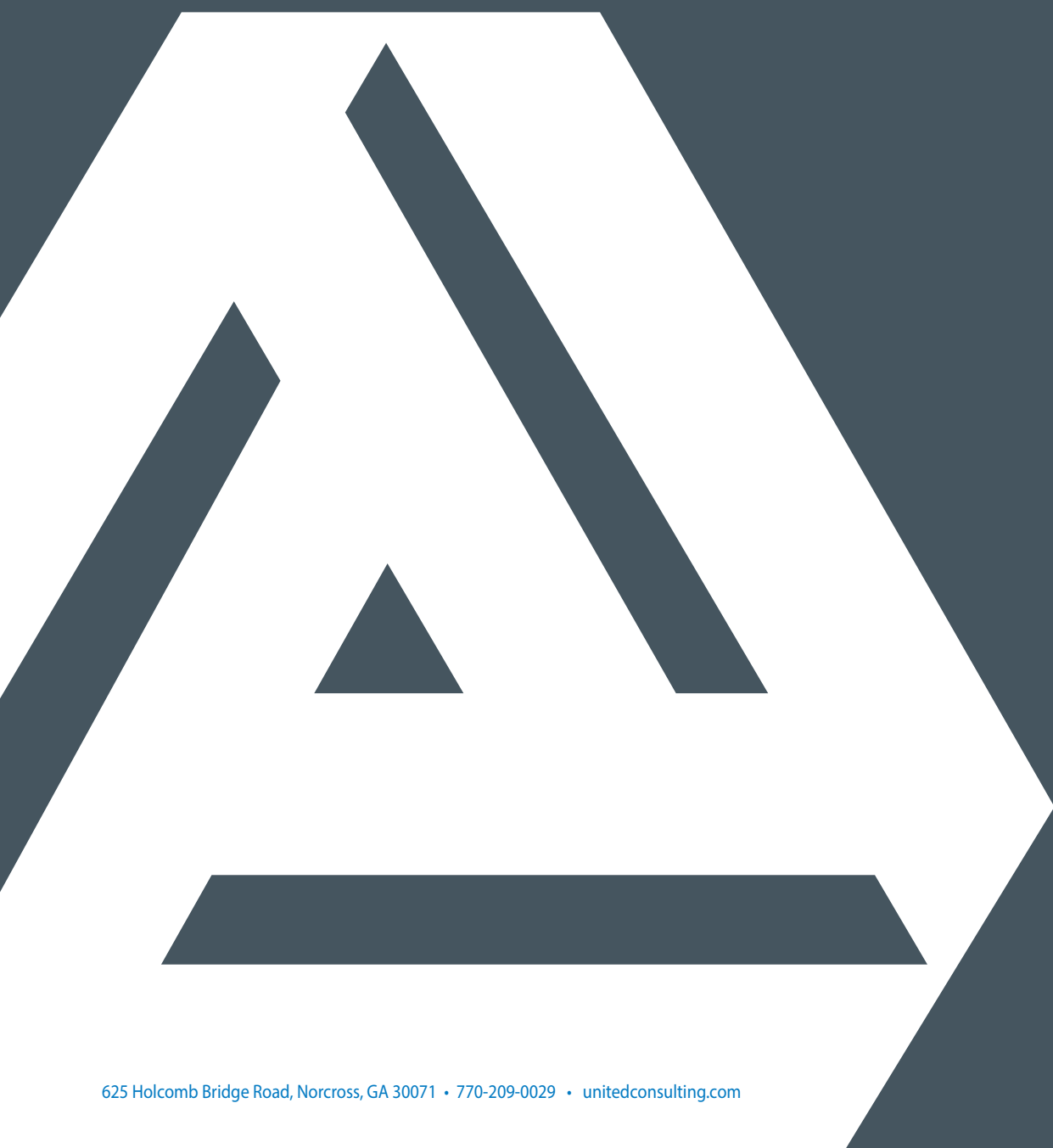


UNITED
CONSULTING

REPORT

**For Environmental
Protection Division**

Monitoring and Maintenance Plan
Williams Mesena Landfill Site
HSI #10021
1634 Mesena Road, Thomson,
McDuffie County, Georgia



December 17, 2021
Revised April 28, 2022

Mr. David Brownlee
Unit Coordinator
Response and Remediation Program
Environmental Protection Division
Floyd Towers East, Suite 1054
2 Martin Luther King, Jr. Drive SE
Atlanta, Georgia 30334

RE: Monitoring and Maintenance Plan
Williams Mesena Landfill Site, HSI #10021
1634 Mesena Road, Thomson, McDuffie County, Georgia
Project No. FULHA-20-GA-04844-01

Dear Mr. Brownlee:

United Consulting is submitting this Monitoring and Maintenance Plan (MMP) for the above-referenced Site pursuant to the Hazardous Site Response Act, **O.C.G.A. § 12-8-90 et seq.** This MMP is submitted in connection with the HSRA Compliance Status Report for the property prepared by American Environmental & Construction Services, Inc. dated April 29, 2021, on behalf of The Estate of Boone Knox. This revised MMP reflects edits to the December 17, 2021, MMP addressing comments provided by EPD on March 22, 2022. It is our understanding that EPD has approved a form of Environmental Covenant that will be required for this property, including performance of activities under a MMP specified or approved by EPD. This MMP would go into effect for the property upon final execution and recording of the Environmental Covenant.

Please contact Leonard Diprima with United Consulting at 678-358-9750, if you have any questions or if we can be of further assistance.

Sincerely,

UNITED CONSULTING



Leonard J. Diprima, Jr., P.G.
Executive Vice President

LJD/rg

SharePoint:04844-01

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1.0 INTRODUCTION

Ongoing maintenance is to be conducted to ensure the effectiveness of the Type 5 Risk Reduction Standard (RRS) remedy at the Williams-Mesena Road Landfill Site (Site). Monitoring and maintenance (MM) activities at the Site will include mowing of the vegetative cover, re-seeding/fertilizer application (as needed), inspection and repair of the soil cap/vegetative cover, maintenance of the monitoring well network, groundwater monitoring and reporting, maintenance of the perimeter security fence, and inspection of stormwater conveyance ditches, the retention pond and other drainage pathways to ensure no obstructions are preventing proper drainage.

1.1 Intent of Document

General components of the Type 5 RRS remedy addressed in this MMP include the following:

- Inspection and maintenance of the final cap soil and vegetative cover across the Site;
- Inspection and maintenance of the permanent markers;
- Completion of routine groundwater monitoring activities;
- Completion of routine reporting; and
- Inspection and maintenance of the perimeter security fencing.

1.2 Site Location

The 122-acre Site is located at 1634 Mesena Road in Thomson, McDuffie County, Georgia. Topographic and site features maps are provided as Figure 1 and Figure 2, respectively. The geographic coordinates at the approximate center of the Site are 33.4609 degrees North latitude and -82.5444 degrees West longitude, [United States Geologic Survey (USGS) Topographic Quadrangle, Thomson West, Georgia]. The Site is bordered by residential properties to the east, forest and pasture to the north, a private farm to the west, and Mesena Road to the south.

1.3 Site Background

The Site reportedly operated as a solid waste landfill for various types of industrial and construction waste from at least 1974 to 1991, at which time the operating permit was revoked, and Site operations subsequently ceased. Site investigations conducted in the early 1990's resulted in the Site being placed on the Georgia Hazardous Site Inventory (HSI) in 1994. Since the landfilling operations ceased in 1991, the Site has remained vacant. A perimeter security fence has been installed around the Site to limit access.

2.0 SITE MONITORING, INSPECTION, AND MAINTENANCE

2.1 General

This section addresses inspection, monitoring, and maintenance procedures for the Site's Type 5 institutional and engineering controls. MM as addressed in this plan includes considerations for groundwater monitoring, inspections, mowing, and other types of maintenance.

2.2 Inspection, Monitoring and Maintenance Scheduling

Maintenance activities can be divided into two types: 1) scheduled, and 2) corrective. Scheduled maintenance tasks are those that are typically accomplished on a regular basis. Any issues identified requiring corrective action identified during scheduled maintenance will be addressed in a timely manner. Corrective tasks may consist of items such as cap slope erosion repair, and repair of erosion and sedimentation controls.

Maintenance of vegetation (such as grass mowing), Site fence inspection and maintenance, inspection of stormwater conveyance ditches, the retention pond and other drainage pathways to ensure no obstructions are preventing proper drainage, are recommended to be performed on a quarterly basis.

Comprehensive inspections are recommended to be performed on a semi-annual basis for the first two years, and then annually thereafter. The following items will be included in periodic inspection and maintenance:

- Maintaining the integrity of the final landfill cover/cap, including making necessary repairs to the cover components;
- Preventing surface water run-on and runoff from eroding or otherwise damaging the cap;
- Inspection and maintenance of the earthen berm constructed along the eastern edge of the landfill property near the retention pond which prevents rainwater from flowing into the back yards of the adjacent residential area;
- Ensuring the security and integrity of the perimeter monitoring wells;
- Ensuring the institutional controls (ICs) are being implemented;
- Confirming that the Type 5 permanent markers are in place, visible, and have not been damaged; and
- Confirming that security fencing and locks restricting access remain in place.

Groundwater monitoring also will be performed on an annual basis in October of each year, as discussed below.

At year five following the completion of the landfill cap construction (calendar year 2025), a re-evaluation of the landfill methane gas risk at the Site will be conducted. The results of the methane evaluation will be presented in the 2025 annual report with associated recommendations regarding methane.

2.3 Annual Reporting

An annual inspection report noting observations during inspections, repairs made, and groundwater monitoring data and conclusions will be prepared and submitted to the EPD as part of the MM records for the Site. The Annual Report will be submitted by December 31st of each calendar year.

All inspection reports to be included in the Annual Report will include the date, time, and location of inspected items, weather conditions, and the name of the individual performing the inspection. The inspection logs may be supplemented, as necessary, with written reports and photographs documenting issues identified and corrective actions implemented.

Preventive, non-emergency maintenance will be completed in a timely manner to mitigate further damage and minimize the need for additional corrective actions. Additional reporting requirements are discussed in Section 3.0.

2.4 Specific Inspection and Maintenance Objectives

2.4.1 Soil Cap/Cover

As previously stated, field inspections should be conducted documenting soil cap/vegetative cover conditions on a semi-annual basis for the first two years. These inspections may be performed annually after two years of a well-established cover system with the concurrence of the EPD.

2.4.1.1 Cap Grading

Cap grading promotes controlled drainage by eliminating depressions or settlement. Some settlement of the underlying landfilled materials is anticipated, but excessive or localized settlement could cause water to pond or concentrate runoff. Standing water could kill vegetation, causing cap instability, or could lead to erosion of the cover soil. Specific observations to be documented during inspections, include:

- Presence and location of erosion gullies;
- Presence and location of settling (subsidence), uplift areas, depressions, or cracks; and
- Presence and location of standing water.

2.4.1.2 Cover Vegetation

Final cover vegetation prevents erosion of the final cover soils. Inadequate vegetation can allow erosion to occur. Vegetation loss can be caused by mowing too low, inadequate moisture, soil compaction, infertile soils, poor seed quality, standing water, or other causes. Specific observations to be documented include, but are not limited to:

- Areas of sparse, dead, or missing vegetation;
- Stressed vegetation;
- Small rill erosion; and
- Animal burrows/mounds.

Locations where deficiencies are observed will be recorded by a field sketch and placed in the field inspection logs with reference (distance) to easily identified Site features or GPS location.

Routine maintenance of grassed areas may include annual reseeding, as necessary, for those areas of sparse or stressed vegetation. Grass should be mowed on a quarterly basis down to 4 or 5 inches to promote growth of shallow rooted grass and to kill seedlet trees, shrubs, weeds, or other pioneer species. Bare, sparsely covered and drought-damaged areas will be reseeded.

Routine maintenance activities related to the items identified above may include:

- Filling ruts and gullies and re-grading fill and topsoil to match surrounding conditions;
- Filling and grading areas of subsidence with fill material and topsoil to match existing surface grading;
- Removal of accumulated vegetation and debris from any storm water conveyance ditches; and
- Repair or replacement of perimeter security fencing.

Localized subsidence or surface depressions (visual or evidenced by the presence of ponded water following a rain event) will be evaluated and repaired as needed.

2.4.1.3 Erosion Prevention

Erosion could cause breaches in the soil cap/vegetative cover system. Erosion can be caused by either water or wind. Erosion can be minimized by maintaining vegetative cover on soils and by providing protection in areas where storm water or wind flows tend to concentrate. Erosion prevention measures include, but are not limited to:

- Inspect for erosion gullies, surface erosion, and vegetation stressed by surface-water flow, and repair such problems as soon as possible to prevent progressive erosive degradation of cover integrity;
- Inspect for areas of unexpected concentrations of surface water flow and manage flow in such areas to prevent excessive scour or erosion of the cover system;
- Inspect along toes of slopes for any evidence of impending erosion, and repair any problems; and
- Inspect edges of the cap where wind concentrates for evidence of wind erosion, and repair erosion problems.

2.4.1.4 Animal Intrusions

Animal intrusions can cause holes in the cap, which can cause damage to the cap system. Animal intrusions are typically the result of burrowing animals. Intrusions can be prevented by installing barriers, rocks, or cobbles. Animal intrusion prevention guidelines include:

- Check for evidence of animal traffic on cover (e.g., tracks, trails, droppings). If such evidence exists and the animals are of a type that could damage the integrity of the cover, consider engineering controls to attempt to prevent animal access to the cover areas.
- Check for animal holes in the capped area which could be a conduit for liquid migration. Fill holes as needed and consider the need for features that may prevent animal intrusion.
- When evaluating the cause of seeps consider the possibility that the seeps could be caused by animal intrusion.

2.4.1.5 Settlement

Excessive settlement or subsidence can cause damage to the cover, which can result in a variety of problems. Problems caused by excessive settlement include: (a) standing water on the cover, which can lead to increased infiltration, buildup of water, and instability; and (b) cracking of the cover, which can lead to increased erosion or infiltration into the cap and resulting instability. Settlement controls include:

- Performing periodic surveys to evaluate settlement of the cap; and
- If settlement is affecting the performance of the storm water runoff, consider reestablishing grades to promote positive drainage.

2.4.2 Groundwater Monitoring Program

Groundwater monitoring at the Site is to be conducted annually in October of each calendar year. At each monitoring event, the groundwater levels in the monitoring wells will be measured, recorded, and evaluated for consistency with other nearby wells, and relative to previous measurement events. In addition, the following stabilization parameters will be recorded on field forms during groundwater purging activities: temperature, dissolved oxygen (DO), oxidation-reduction potential (ORP) and pH. Sampling procedures will follow the most current Region 4 EPA Laboratory Services and Applied Science Division (LSASD) Procedures for Groundwater Sampling.

Sampling and analysis are to be performed annually on the sixteen existing monitoring wells surrounding the Site. The monitoring wells that comprise the monitoring program are noted on Figure 4. Based on the last three years of annual sampling results (2018 through 2020) relative to detected constituents near, at or above previously approved Type 1 and/or Type 3 RRS, groundwater samples are to be analyzed for Resource Conservation & Recovery Act (RCRA) 8 total and dissolved metals, and Target Compound List (TCL) Volatile Organic Compounds (VOCs). No Semi-Volatile Organic Compounds (SVOCs) have been detected above a standard Practical Quantitation Limit (PQL) for TCL SVOCs in the last 3 years of groundwater monitoring. The sampling activities will employ the “multiple purge volume” method rather than “low flow/low volume” methodology if turbidity is an issue; purging should continue until turbidity is 10 Nephelometric Turbidity Units (NTUs), if possible, or less or at least five (5) well volumes have been removed from the monitoring well(s).

The results of the annual groundwater sampling event will be included as part of the Annual Report for the Site to be submitted by December 31st of each calendar year. The groundwater portion of the Annual Report will be stamped by a Georgia Licensed Professional Geologist, including the prerequisite “Groundwater Scientist Statement.” The groundwater monitoring component of the Annual Report will include complete laboratory analytical reports, field purging/sampling forms, a tabular summary of laboratory analytical results, a tabular summary of groundwater elevation and depth to groundwater, and a current potentiometric surface map.

Should at any time an exposure pathway evaluation of the data and trend analyses indicate that monitoring of select and/or all monitoring wells in the network is no longer needed, the parties implementing the MMP may propose to the EPD that these wells be dropped from the monitoring network and/or that the groundwater monitoring portion of the MMP be allowed to cease. Upon EPD's approval of any reduction or cessation of groundwater monitoring, any wells approved for closure by EPD will be properly abandoned. In addition, updated groundwater risk reduction standards and a revised groundwater certification may in the future be presented to EPD for the Site, EPD's approval of which could result in the cessation of groundwater monitoring activities.

3.0 ANNUAL REPORTING REQUIREMENTS

As discussed in Section 2.3, an Annual Report for the Site will be submitted to EPD by December 31st of each calendar year. The Annual Report will provide the following documentation:

- Semi-annual monitoring and maintenance logs;
- Incident/Maintenance forms (as necessary); and
- Groundwater monitoring data.

As discussed in Section 2.2, in calendar year 2025 a re-evaluation of the landfill methane gas risk at the Site will be conducted. The results of the methane evaluation will be presented in the 2025 annual report with associated recommendations regarding methane.

4.0 LIMITATIONS

This report was prepared in accordance with generally accepted environmental practice and procedures. The data analysis and recommendations stated herein are professional opinions; no warranty is expressed or implied.

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FIGURES



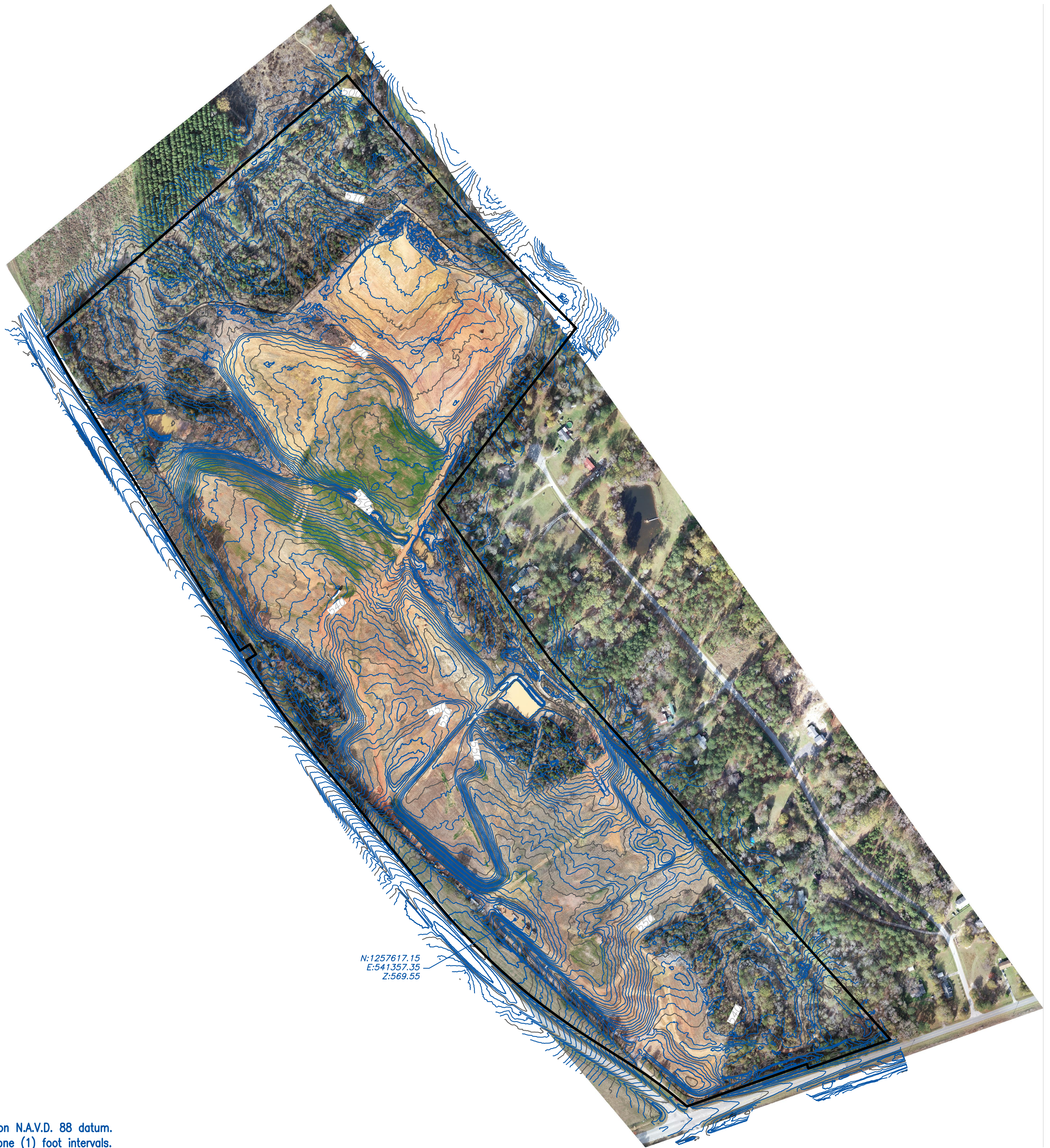
LEGEND

These standard symbols may be found in the drawing.

- Iron Pin Found
- Ⓢ Sanitary Sewer Manhole
- × Spot Elevation

AERIAL LIDAR TOPOGRAPHY


TAN
 4' 35'
 Magnetic North
 4' 35'
 Declination
 Grid North
 GA East Zone
 Reading Held



SURVEY NOTES

1. Elevations are based on N.A.V.D. 88 datum.
2. Contour lines are at one (1) foot intervals.
3. Equipment used; LiDARUSA Reigl VUX, DJI Matrice 600, Leica CS20 data collector and Leica Viva GS16 receiver.
4. Software used: Microstation PowerDraft CONNECT Edition, TerraSolid Software Suite, Inertial Explorer, ScanLook Point Cloud Creation, Leica Captivate and Carlson Survey 2017.
5. Property lines shown on survey are approximate and only shown for reference.



 American Environmental & Construction Services, Inc.	DATE:	January 27, 2021	Williams Mesena Landfill Mesena Road Thomson, Georgia
	PROJECT #:	202012-1	
	SCALE:	1:400	
	DRAWN BY:	BL	Final Landfill Topography Map January 2021
	CAD:	BL	
	CHECKED BY:	RD	
	PROJECT MGR:	RD	
REVISED:	-----	Figure 1	
PRINTED:	1/27/2021 9:55 AM		



Forest & Pasture

Farm / Agriculture

Residential


Farm / Agriculture

W. Bypass Rd.


Mesena Road

Hoover Wood
Products

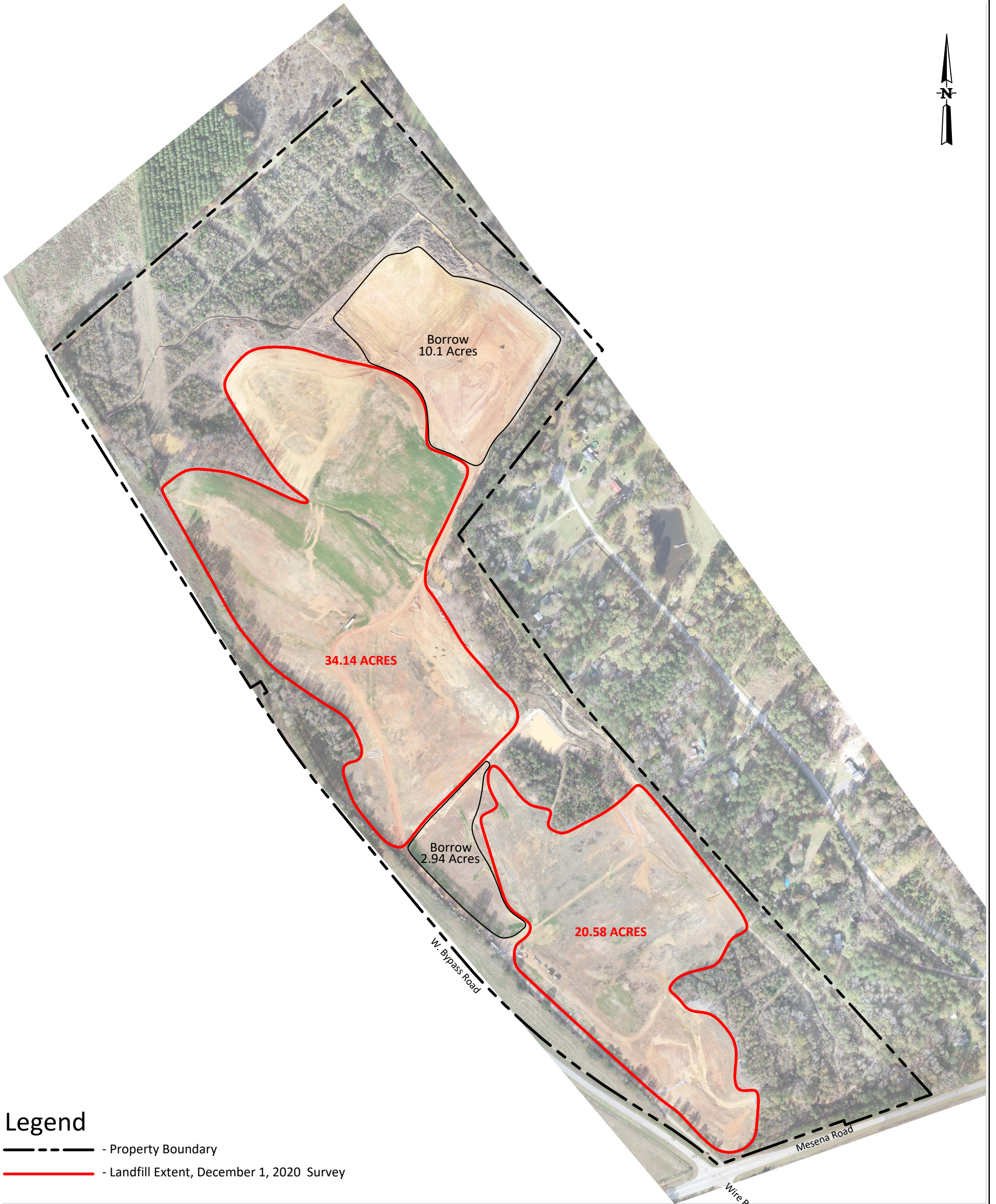
Legend

 Property Boundary

0 250 500 1,000 Feet

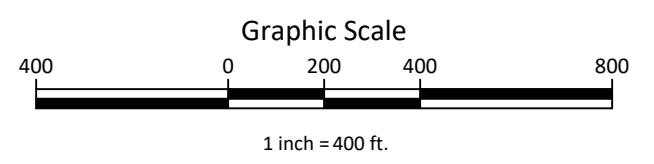
 **American Environmental & Construction Services, Inc.**
Alpharetta, GA


Date: 02/08/21	Figure
Project No. 16-23	2
Drawn By: VAD	
Checked By: SB	



Legend

- Property Boundary
- Landfill Extent, December 1, 2020 Survey



	DATE: January 27, 2021	Williams Mesena Landfill Mesena Road Thomson, Georgia	Final Landfill Extent Combined Landfill Extent December 2020	Figure 3
	PROJECT #: 202012-1			
	SCALE: 1:400			
	DRAWN BY: TL	Final Landfill Extent Combined Landfill Extent December 2020		
	CAD: TL			
	CHECKED BY: RD			
	PROJECT MGR: RD			
REVISED: -----	Final Landfill Extent Combined Landfill Extent December 2020			
PRINTED: 1/27/2021 9:50 AM	Final Landfill Extent Combined Landfill Extent December 2020		Figure 3	

C:\Users\pnutb\Google Drive\Clients\AECS\Williams Mesena\1626-1801 Williams Mesena\Landfill Cap Extents R1.dwg

Monitoring Well Locations
Mesena Road Landfill, Thomson, GA



Legend
⊕ Groundwater Monitoring Wells
▭ Property Boundary

0 250 500 1,000 Feet

American Environmental & Construction Services, Inc.
Alpharetta, GA

Date: 02/08/2021
Project No. 16-23
Drawn By: VAD
Checked By: SMP

Figure
4

Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community