



# J.H. Campbell Generating Facility

## *Dry Ash Landfill and Cell 6 Lateral Expansion - Closure Plan*

Pursuant to:  
40 CFR 257.102

Submitted to:  
**Consumers Energy Company**  
1945 W. Parnall Road  
Jackson, Michigan USA 49201

Submitted by:  
**Golder Associates Inc.**  
15851 South US 27, Suite 50  
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+1 517 482-2262

21451121

December 2021



## CERTIFICATION

### Professional Engineer Certification Statement [40 CFR 257.102(b)(4)]

I hereby certify that, having reviewed the attached documentation and being familiar with the provisions of Title 40 of the Code of Federal Regulations Section 257.102 (40 CFR Part 257.102), this Closure Plan is accurate and has been prepared in accordance with good engineering practices, including the consideration of applicable industry standards, and with the requirements of 40 CFR Part 257.102.

Golder Associates Inc.

  
Signature

12/22/2021  
Date of Report Certification

Jeffrey R. Piaskowski, PE  
Name

6201061033  
Professional Engineer Certification Number



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Landfill Closure Grading Plan

## 1.0 INTRODUCTION

On April 17, 2015, the United States Environmental Protection Agency (USEPA) issued the Coal Combustion Residual (CCR) Resource Conservation and Recovery Act (RCRA) Rule (40 CFR 257 Subpart D) (“CCR RCRA Rule”) to regulate the beneficial use and disposal of CCR materials generated at coal-fired electrical power generating complexes. In accordance with the CCR RCRA Rule, any CCR surface impoundment or CCR landfill that was actively receiving CCR on the effective date of the CCR RCRA Rule (October 19, 2015) was deemed to be an “Existing CCR Unit” on that date and subject to self-implementing compliance standards and schedules. Consumers Energy Company (CEC) currently operates the Dry Ash Landfill CCR unit (Dry Ash Landfill) at the J.H. Campbell Generating Facility (JH Campbell). JH Campbell is located in West Olive, Michigan as presented on Sheet 1 of Appendix A – Landfill Closure Grading Plan.

The JH Campbell Dry Ash Landfill was permitted as a Type III landfill by the Michigan Department of Natural Resources (MDNR) in 1993 (MDNR 1993) and licensed under State of Michigan Part 115, Solid Waste Management of the Natural Resources and Environmental Protection Act, 1994 PA 451, as amended (Part 115). In March 2018, CEC submitted a permit upgrade request (Golder 2018) to the Michigan Department of Environment, Great Lakes, and Energy, Materials Management Division (EGLE) for the JH Campbell Dry Ash Landfill. The permit update request was submitted to comply with EGLE’s Part 115 rules and the RCRA CCR Rule for lateral expansions of CCR units. The permit upgrade request was approved by EGLE in June 2018 (EGLE 2018).

On July 13, 2021 CEC submitted the JH Campbell Generating Facility – Dry Ash Landfill Expansion Construction Permit Application (CPA) (Golder 2021) to EGLE. The CPA included lateral expansion of landfill cells 6-9 and a 42.9 acre vertical expansion to regain 532,000 cubic yards of airspace that was lost in the modification of the landfill floor grades in 2018. The CPA was submitted to comply with Part 115 and the RCRA CCR Rule for lateral expansions of CCR units. The construction permit was approved by EGLE in a letter dated November 30, 2021 (EGLE 2021). The JH Campbell Dry Ash Landfill Cell 6 Expansion was constructed in 2021. Before CCR can be placed in the JH Campbell Dry Ash Landfill Cell 6 Expansion, an initial written closure plan must be prepared in accordance with 40 CFR 257.102(b)(2)(ii).

This written closure plan serves as the initial closure plan for the JH Campbell Dry Ash Landfill Cell 6 Expansion and amended closure plan for the JH Campbell Dry Ash Landfill and Cell 5 Expansion. The closure plan was generated pursuant to 40 CFR 257.102(a) and describes the steps necessary to close the JH Campbell Dry Ash Landfill consistent with recognized and generally accepted good engineering practices. This closure plan is being prepared with the assumption that the Dry Ash Landfill will not receive waste beyond May 1, 2040, when it is anticipated that JH Campbell will be closed and decommissioned.

## 2.0 SUMMARY OF PREVIOUS CLOSURE PHASES

Construction of the Dry Ash Landfill began in 1997 and, to date, five cells (Cells 1 through 5) have been constructed. CCR is currently being placed in Cells 4 and 5. CCR will be placed in Cell 6 subsequent to placing the required RCRA certifications in the operating record and subsequent to EGLE review and acceptance of the Cell 6 Liner Construction Quality Assurance Report. Portions of Cells 1, 2, 3, and 4 have been closed between 2006 and 2019, as summarized in Table 2.0.1 – Summary of Previous Closure Phases.

**Table 2.0.1 - Summary of Previous Closure Phases**

Phase	Year Completed	Areas Closed
Closure Phase I	2006	Northern area of Cells 1 and 2
Closure Phase II	2007	Southeast area of Cell 2 and northeast area of Cell 3
Closure Phase III	2009	East and southeast area of Cell 3
Closure Phase IV	2012	Southeast area of Cell 2 and central northeast area of Cell 3
Closure Phase V	2014	Southern area of Cell 2
Closure Phase VI	2019	Portions of Cells 3 and 4

### 3.0 NARRATIVE DESCRIPTION [40 CFR 257.102(b)(1)(i,iii-v)]

The Dry Ash Landfill will be closed with CCR in place and capped with a final cover system. Design grades will be reached with construction of a 2.5-foot-thick final cover system designed with a minimum two percent slope to meet performance standard requirements per 40 CFR 257.102(d)(3)(ii). Details of the closure construction are provided in the following sections.

#### 3.1 Dry Ash Landfill CCR Quantity [40 CFR 257.102(b)(1)(iv)]

The Dry Ash Landfill has 10,032,000 cubic yards (cy) of permitted landfill air space which, if fully utilized, may equal the maximum inventory of CCR onsite over the life of the CCR unit.

#### 3.2 Dry Ash Landfill Final Cover Area [40 CFR 257.102(b)(1)(v)]

For closure planning purposes as described in Section 4.2, the largest area of the Dry Ash Landfill requiring a final cover is 20.5 acres.

#### 3.3 Closure Construction Sequence [40 CFR 257.102(b)(1)(i,iii)] and [40 CFR 257.102(d)(1)]

The remaining active areas of the Dry Ash Landfill will continue to be closed in phases. Once an area has reached planned final grade, it will be closed with CCR in place and capped with a final cover system. Design and construction of the final cover system are discussed in the following sections.

##### 3.3.1 Final Cover System Design and Performance [40 CFR 257.102(b)(1)(iii)] and [40 CFR 257.102(d)(3)]

The final cover system will be 2.5 feet thick and consist of a 40-mil linear low-density polyethylene (LLDPE) textured geomembrane (infiltration layer). The infiltration layer will be overlain with a two-foot-thick layer of sand (erosion layer). The erosion layer will be overlain with a six-inch-thick vegetative layer. The vegetative layer will consist of topsoil, seed, fertilizer, and mulch in accordance with Michigan Department of Transportation (MDOT) Standard Specification 816 – Turf Establishment. Typical details of the final cover system are provided on Sheets 7 and 8 in Appendix A.

Together, the final cover system is designed to:

- Provide a final cover permeability less than  $1.0 \times 10^{-5}$  centimeter per second (cm/sec)
- Control contaminated run-off
- Minimize the need for maintenance
- Control, minimize, or eliminate post-closure infiltration of liquids
- Minimize releases of CCR and leachate into ground and surface waters or the atmosphere
- Prevent the sloughing or movement of the liner

The system is designed with a minimum two percent slope on the top deck and 4H:1V side slopes with diversion berms to:

- Prevent/limit the future impoundment of water, sediment, and slurry
- Minimize erosion
- Prevent/control the release of waste
- Limit the effects of settlement/subsidence

### **3.3.2 Final Cover Construction [40 CFR 257.102(b)(1)(i)]**

The Dry Ash Landfill will be filled to permitted grade with CCR as presented on Sheet 3 – Top of Ash Plan in Appendix A. Once CCR has been placed to design grades, the final cover system described in Section 3.3.1 will be constructed and tested to document it meets the requirements of the designed final cover.

## **4.0 SCHEDULE [40 CFR 257.102(b)(1)(vi)]**

### **4.1 Introduction**

This closure plan was prepared assuming the Dry Ash Landfill will continue to receive CCR through March 2040, when it is anticipated that the generating facility will be closed and decommissioned. In order to close the Dry Ash Landfill during a typical summer construction season and within the six-month timeframe required by 40 CFR 257.102(f)(1)(i), it is assumed for the purpose of this closure plan, that the Dry Ash Landfill will receive its final receipt of waste on April 1, 2040 and initiate closure of remaining unclosed areas by May 1, 2040.

Additionally, it is assumed that active areas of the Dry Ash Landfill will continue to be closed sequentially as they reach permitted grades and that a maximum area of 20.5 acres will remain to be covered at final closure. In accordance with 40 CFR 257.102(f)(1)(i) and Part 115 R 299.4317, the closure activities are expected to be completed within six months of the notification for intent to initiate closure.

### **4.2 Closure Construction Schedule**

The closure construction schedule is developed assuming that the last active portion of the Dry Ash Landfill will not be no larger than 20.5 acres. Table 4.2.1 – Closure Schedule Production Estimate indicates that 20.5 acres could be effectively closed within six months, as required by 40 CFR 257.102(f)(1)(i).

**Table 4.2.1 - Closure Schedule Production Estimate for 20.5 Acres**

Closure Component	Quantity	Units	Construction Rate	Rate Units	Required Time in Days
40-mil LLDPE geomembrane	892,980	square feet	60,000	square feet per day	15
24-inch-thick erosion layer plus piping	66,147	cubic yards	3,000	cubic yards per day	22
6-inch-thick vegetative layer	892,980	square feet	100,000	square feet per day	9
Seed, fertilizer, mulch	892,980	square feet	300,000	square feet per day	3
<b>Workdays Required =</b>					<b>49</b>

It is anticipated that closure construction will begin on or before May 1, 2040 to comply with the closure schedule. Conservatively assuming a start to finish construction schedule, the final cover construction will take approximately eleven weeks. Using these assumptions results in completion of the final cover construction on July 20, 2040. Table 4.2.2 – Conceptual Final Cover Construction Schedule Milestones contains a list of milestone dates that were developed as part of the closure construction schedule to demonstrate that closure will be completed within the self-implementing closure schedule per 40 CFR 257.102(f)(1)(i).

**Table 4.2.2 - Conceptual Final Cover Construction Schedule Milestones**

Closure Component	Start Date	End Date
Notification of closure	NA	May 1, 2040
40-mil LLDPE geomembrane (infiltration layer)	May 2, 2040	May 23, 2040
24-inch-thick sand layer (erosion layer)	May 24, 2040	June 27, 2040
6-inch-thick topsoil (vegetative layer)	June 28, 2040	July 12, 2040
Seed, fertilizer, mulch (vegetative layer)	July 13, 2040	July 17, 2040
Closure activities complete	NA	July 20, 2040

### 4.3 Closure Deadline Extension [40 CFR 257.102(f)(2)]

As previously indicated in Section 4.1, closure of existing CCR landfills must be completed within six months of initiating closure in accordance with 40 CFR 257.102(f)(1)(i). However, a deadline extension can be obtained as outlined in 40 CFR 257.102(f)(2) if completion of closure is not feasible within six months (e.g., shortened construction season, significant weather delays, time required for dewatering CCR, delays due to state or local permitting or approval, etc.). An extension must include a narrative description that demonstrates closure is not

feasible in the required timeframe in accordance with 40 CFR 257.102(f)(2)(i,iii). The closure deadline for the Dry Ash Landfill may be extended up to two years in one-year increments per 40 CFR 257.102(f)(2)(ii)(A).

## 5.0 REFERENCES

- Golder Associates Inc. March 2018. J.H. Campbell Dry Ash Landfill, Construction Permit Upgrade Request, Cells 5 through 9.
- Golder Associates Inc. June 2021. J.H. Campbell Generating Facility – Dry Ash Landfill Expansion Construction Permit Application.
- Michigan Department of Environmental Quality. June 2018. Construction Permit number 0299 - upgrade approval letter.
- Michigan Department of Environment, Great Lakes, and Energy. November 30, 2021. Construction Permit Application Approval Letter and Permit.
- State of Michigan. 1994. Part 115, Solid Waste Management of the Natural Resources and Environmental Protection Act, PA 451, as amended.
- United States Environmental Protection Agency (USEPA). July 2018. Code of Federal Record Title 40 Part 257 Subpart D, as amended.

**APPENDIX A**

# Landfill Closure Grading Plan

# CONSUMERS ENERGY COMPANY J.H. CAMPBELL GENERATING FACILITY DRY ASH LANDFILL CLOSURE PLAN

SECTIONS 10,11,14 & 15, T6N, R16W  
PORT SHELDON TOWNSHIP  
OTTAWA COUNTY, MICHIGAN

PREPARED FOR:



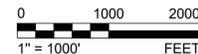
CONSUMERS ENERGY COMPANY  
J.H. CAMPBELL GENERATING PLANT  
17000 CROSWELL STREET  
WEST OLIVE, MI 49460

PREPARED BY:



GOLDER ASSOCIATES INC.  
15851 SOUTH US 27  
SUITE 50  
LANSING, MI 48906

INDEX OF DRAWINGS	
Sheet Number	Drawing Title
1	TITLE SHEET
2	LEGEND, REFERENCES AND GENERAL NOTES
3	TOP OF ASH PLAN
4	TOP OF FINAL COVER PLAN
5	TYPICAL LANDFILL CROSS SECTIONS - SHEET 1 OF 2
6	TYPICAL LANDFILL CROSS SECTIONS - SHEET 2 OF 2
7	FINAL COVER DETAILS - SHEET 1 OF 2
8	FINAL COVER DETAILS - SHEET 2 OF 2



**REFERENCE(S)**

1. AERIAL PHOTO FOR AREA INSIDE THE DRY ASH LANDFILL WAS PROVIDED BY A DRONE SURVEY PERFORMED BY MACATAWA UNMANNED SYSTEMS, LLC IN APRIL 2020.
2. AERIAL PHOTO FOR AREAS OUTSIDE THE DRY ASH LANDFILL WAS PROVIDED BY AN AERIAL SURVEY PERFORMED BY ROWE PROFESSIONAL SERVICES IN OCTOBER 2012. AREAS AROUND POND A, BOTTOM ASH PONDS 1-2 AND 3S WERE PROVIDED BY A DRONE SURVEY PERFORMED BY RYAN INCORPORATED CENTRAL IN OCTOBER 2018.

										SIGNATURE		  <b>J.H. CAMPBELL PLANT WEST OLIVE, MI</b>		<b>TITLE SHEET</b>								
										NAME				SCALE: NONE		DRAWING NO.		SHEET		REV.		
										MICHIGAN P.E. No.				JOB: PT-02661		<b>1</b>						
REFERENCE DRAWINGS		REV	DATE	DESCRIPTION	DR	BY	CHK	APP	CO	REV	DATE	DESCRIPTION	DR	BY	CK	APP	CO					
											10-04-21	2021 UPDATE										

A

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C

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REFERENCE(S) & NOTES

- SITE LOCATION: SECTIONS 10, 11, 14 & 15, T6N, R16W, OTTAWA COUNTY, MICHIGAN.
- EXISTING GROUND TOPOGRAPHY FOR INSIDE THE LANDFILL WAS PROVIDED BY AERIAL MAPPING PERFORMED BY MACATAWA US IN APRIL 2020 FOR THE ACTIVE AREAS AND FUTURE CELL AREAS AND BY ENGINEERING & ENVIRONMENTAL SOLUTIONS, LLC IN NOVEMBER 2011 FOR THE INACTIVE AREAS. CONTOURS WITHIN THE CLOSURE AREAS FOR PHASE I THROUGH PHASE VI REPRESENT FINAL COVER GRADES AT TIME OF CLOSURE.
- EXISTING GROUND TOPOGRAPHY FOR AREAS OUTSIDE OF THE LANDFILL PROVIDED BY AERIAL SURVEYS PERFORMED BY ROWE PROFESSIONAL SERVICES IN JUNE 2007 AND APRIL 2012 (DRAWINGS 20929BASE-PLANT.dwg AND NEDERVELD SURVEY-2007.dwg PROVIDED BY CEC ON 3/13/2015).
- EXISTING CELL AND LEACHATE POND INFORMATION DERIVED FROM THE FOLLOWING:
  - J.H. CAMPBELL ASH STORAGE FACILITY EXPANSION AMENDMENT FOR CONSTRUCTION PERMIT APPLICATION PREPARED BY STS CONSULTANTS LTD. IN NOVEMBER 1993.
  - J.H. CAMPBELL ASH STORAGE FACILITY EXPANSION CELL 1 AND LEACHATE POND CONSTRUCTION DRAWINGS PREPARED BY STS CONSULTANTS LTD. IN JULY 1994 AND INCORPORATES ALL DESIGN CHANGES THROUGH OCTOBER 31, 1995.
  - J.H. CAMPBELL CELL 2 CONSTRUCTION DRAWINGS PREPARED BY CONSUMERS ENERGY AND ISSUED FOR RECORD ON DECEMBER 7, 1998.
  - J.H. CAMPBELL CELL 3 CONSTRUCTION DRAWINGS PREPARED BY STS CONSULTANTS LTD. AND ISSUED FOR CONSTRUCTION ON MARCH 11, 2002.
  - J.H. CAMPBELL EAST LEACHATE POND CONSTRUCTION DRAWINGS PREPARED BY ENGINEERING AND ENVIRONMENTAL SOLUTIONS, LLC. IN MAY 2007.
  - J.H. CAMPBELL CELL 4 LINER CERTIFICATION DRAWINGS PREPARED BY ENGINEERING AND ENVIRONMENTAL SOLUTIONS, LLC. IN DECEMBER 2008.
  - J.H. CAMPBELL CELL 5 LINER CERTIFICATION DRAWINGS PREPARED BY GOLDER IN SEPTEMBER 2018.
- EXISTING FINAL COVER INFORMATION DERIVED FROM THE FOLLOWING:
  - J.H. CAMPBELL ASH STORAGE FACILITY 2006 FINAL COVER CONSTRUCTION (PHASE I AS-CONSTRUCTED) DRAWINGS PREPARED BY ENGINEERING AND ENVIRONMENTAL SOLUTIONS, LLC. IN JANUARY 2007.
  - J.H. CAMPBELL ASH STORAGE FACILITY PHASE II FINAL COVER CERTIFICATION DRAWINGS PREPARED BY ENGINEERING AND ENVIRONMENTAL SOLUTIONS, LLC. IN DECEMBER 2007.
  - J.H. CAMPBELL PHASE III CLOSURE DRAWINGS PREPARED BY NTH CONSULTANTS, LTD. IN OCTOBER 2009.
  - J.H. CAMPBELL ASH STORAGE FACILITY PHASE IV FINAL COVER CERTIFICATION DRAWINGS PREPARED BY ENGINEERING AND ENVIRONMENTAL SOLUTIONS, LLC. IN OCTOBER 2012.
  - J.H. CAMPBELL ASH STORAGE FACILITY PHASE V FINAL COVER CERTIFICATION DRAWINGS PREPARED BY ENGINEERING AND ENVIRONMENTAL SOLUTIONS, LLC. IN SEPTEMBER 2014.
  - J.H. CAMPBELL ASH STORAGE FACILITY PHASE VI 2019 LANDFILL CLOSURE RECORD DRAWINGS PREPARED BY GOLDER IN SEPTEMBER 2019.
- GROUNDWATER INFORMATION DERIVED FROM "JHC WATER LEVEL MAX 2017 - 2020 BOTH DATUMS" DATED JULY 17, 2020 AND DRAWING "GROUNDWATER CONTOUR MAP 2017-2020 MAXIMUM STATIC WATER ELEVATION" DATED JULY 2020 PROVIDED BY CONSUMERS ENERGY AND PREPARED BY TRC ENVIRONMENTAL. THESE CONTOURS ARE SHOWN ON THESE DRAWINGS AND ARE THE HISTORICALLY HIGH GROUNDWATER LEVELS.
- VERTICAL DATUM:  
CONSUMERS ENERGY J.H. CAMPBELL LOCAL PLANT DATUM, NGVD29.  
NGVD29 = NAVD88 + 0.495'
- HORIZONTAL DATUM:  
CONSUMERS ENERGY J.H. CAMPBELL LOCAL PLANT DATUM.  
LOCAL PLANT DATUM ASSUMES SOUTH BENCHMARK COORDINATES:  
NORTHING = 0  
EASTING = 0
- SOLID WASTE BOUNDARY SHOWN IS PROVIDED FROM THE ORIGINAL CONSTRUCTION PERMIT APPLICATION, DATED DECEMBER 15, 1993, PERMIT NO. 0299, ATTACHMENT A. ALSO FROM THE CURRENT OPERATING LICENSE, DATED JANUARY 23, 2019, NUMBER 9542, ATTACHMENT A.

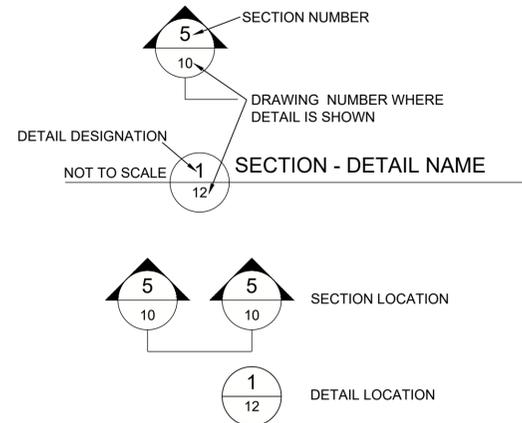
LEGEND

- EXISTING GROUND TOPOGRAPHY
- PERMITTED GRADES
- EXISTING ACTIVE AREA
- EXISTING CLOSED AREA
- EXISTING CELL BOUNDARY
- EXISTING CULVERT
- EXISTING DITCH
- EXISTING DRAIN TILE
- EXISTING IRRIGATION LINE
- EXISTING IRRIGATION HEAD EXISTING
- RAP FORCEMAIN
- EXISTING ROAD
- EXISTING STORM LINE
- EXISTING TREE LINE
- EXISTING BOLLARD
- EXISTING ELECTRICAL TOWER
- EXISTING ELECTRICAL VAULT
- EXISTING HYDRANT
- EXISTING LEACHATE CLEANOUT
- EXISTING LEACHATE MANHOLE
- EXISTING POWER POLE
- EXISTING SANITARY MANHOLE
- EXISTING SIGN
- EXISTING STORMWATER CATCH BASIN
- EXISTING SUMP ACCESS STRUCTURE
- EXISTING MONITORING WELL EXISTING
- WATER WELL
- EXISTING DOMICILE/OUTBUILDING
- PROPOSED ROAD
- PROPERTY LINE

MATERIALS LEGEND

- GEOTEXTILE
- GEONET
- GEOMEMBRANE LINER
- GEOSYNTHETIC CLAY LINER (GCL)
- FLEXIBLE MEMBRANE LINER (FML)
- ASH FILL
- SAND DRAINAGE LAYER
- SAND EROSION LAYER
- VEGETATIVE SUPPORT LAYER

SECTION, DETAIL, AND VIEW DESIGNATIONS



REFERENCE DRAWINGS	REV	DATE	DESCRIPTION	DR	BY	CHK	APP	CO	REV	DATE	DESCRIPTION	DR	BY	CK	APP	CO
										10-04-21	2021 UPDATE					

SIGNATURE

NAME

MICHIGAN P.E. No.

**Consumers Energy**

**J.H. CAMPBELL PLANT**  
**WEST OLIVE, MI**

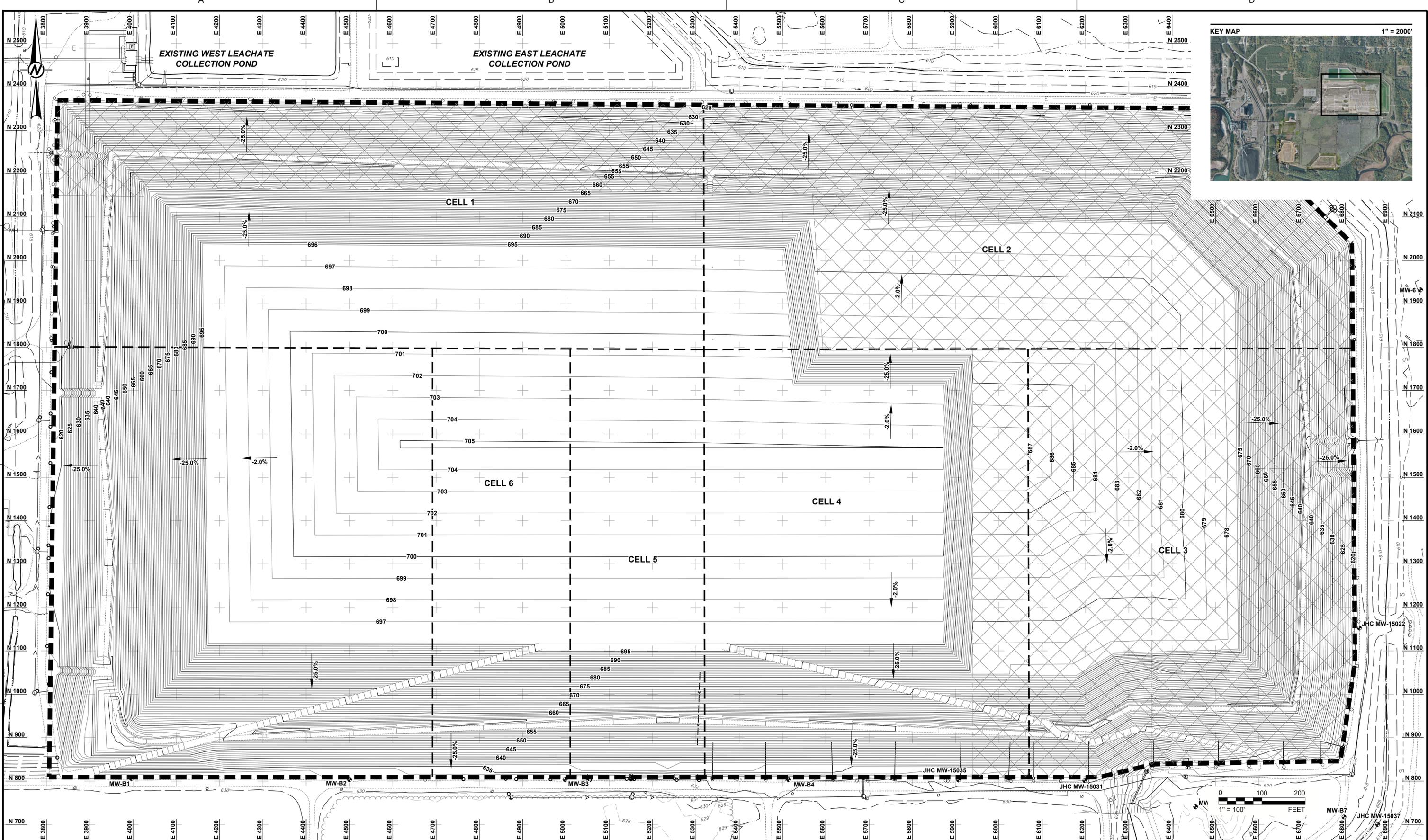
**LEGEND, REFERENCES AND GENERAL NOTES**

SCALE: NONE

DRAWING NO.

SHEET **2** REV.

JOB: PT-02661



REFERENCE DRAWINGS	REV	DATE	DESCRIPTION	DR	BY	CHK	APP	CO	REV	DATE	DESCRIPTION	DR	BY	CK	APP	CO
										10-04-21	2021 UPDATE					

SIGNATURE

NAME

MICHIGAN P.E. No.

**Consumers Energy**

**J.H. CAMPBELL PLANT**  
WEST OLIVE, MI

**TOP OF ASH PLAN**

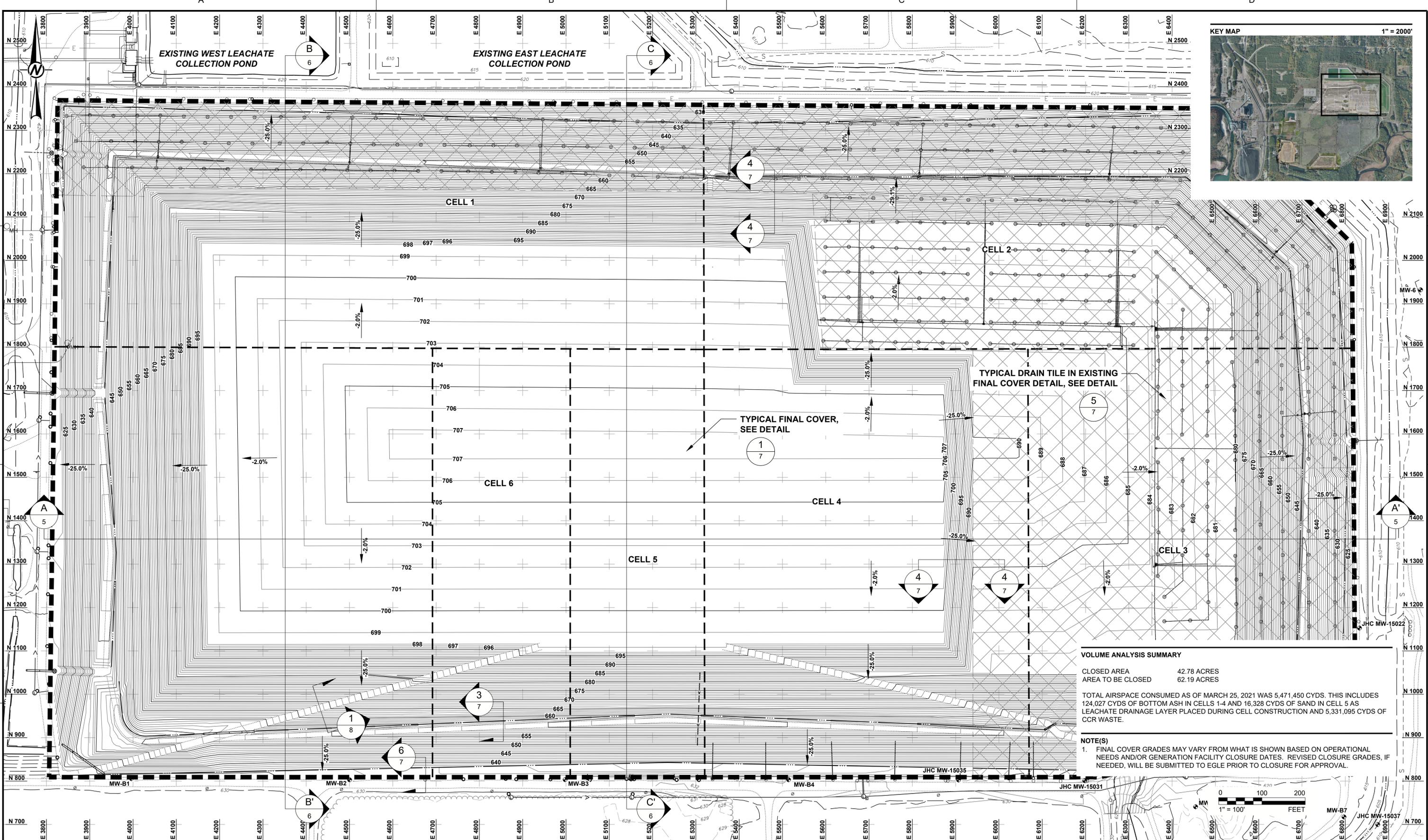
SCALE: 1" = 100'

DRAWING NO.

SHEET **3**

REV.

JOB: PT-02661



**VOLUME ANALYSIS SUMMARY**

CLOSED AREA	42.78 ACRES
AREA TO BE CLOSED	62.19 ACRES

TOTAL AIRSPACE CONSUMED AS OF MARCH 25, 2021 WAS 5,471,450 CYDS. THIS INCLUDES 124,027 CYDS OF BOTTOM ASH IN CELLS 1-4 AND 16,328 CYDS OF SAND IN CELL 5 AS LEACHATE DRAINAGE LAYER PLACED DURING CELL CONSTRUCTION AND 5,331,095 CYDS OF CCR WASTE.

**NOTE(S)**  
 1. FINAL COVER GRADES MAY VARY FROM WHAT IS SHOWN BASED ON OPERATIONAL NEEDS AND/OR GENERATION FACILITY CLOSURE DATES. REVISED CLOSURE GRADES, IF NEEDED, WILL BE SUBMITTED TO EGLE PRIOR TO CLOSURE FOR APPROVAL.

REFERENCE DRAWINGS	REV	DATE	DESCRIPTION	DR	BY	CHK	APP	CO	REV	DATE	DESCRIPTION	DR	BY	CK	APP	CO
										10-04-21	2021 UPDATE					

SIGNATURE

NAME

MICHIGAN P.E. No.

**Consumers Energy**

**J.H. CAMPBELL PLANT**  
WEST OLIVE, MI

**TOP OF FINAL COVER PLAN**

SCALE: 1" = 100'

DRAWING NO.

SHEET **4**

REV.

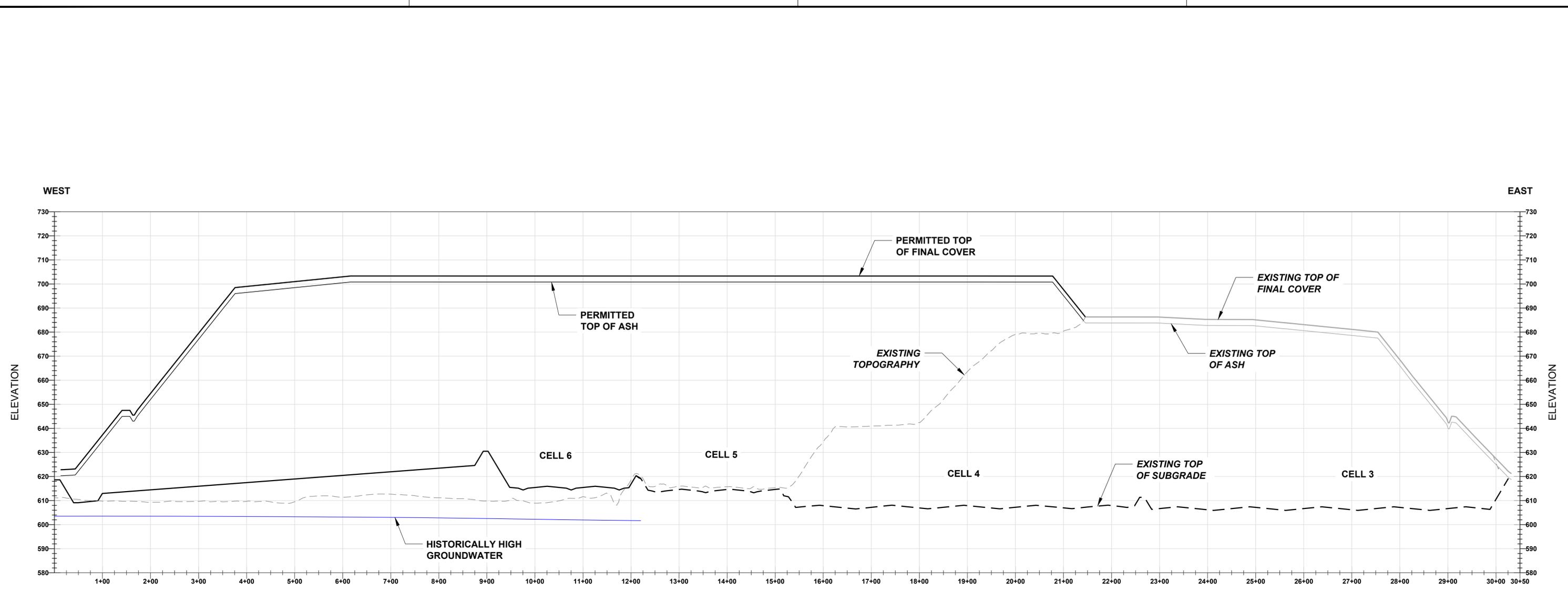
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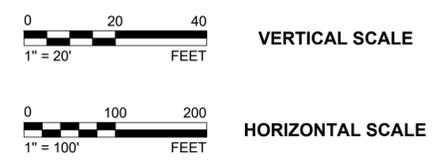
C

D



NOT TO SCALE  $\frac{1}{5}$  CROSS SECTION A-A'

NOTE(S)  
1. SEE SHEET 4 FOR CROSS SECTION LOCATIONS.



REFERENCE DRAWINGS	REV	DATE	DESCRIPTION	DR	BY	CHK	APP	CO	REV	DATE	DESCRIPTION	DR	BY	CK	APP	CO
										10-04-21	2021 UPDATE					

SIGNATURE  
NAME  
MICHIGAN P.E. No.



**TYPICAL LANDFILL CROSS SECTIONS - SHEET 1 OF 2**

SCALE: 1" = 100' (H) / 1" = 20' (V)

DRAWING NO. SHEET 5 REV.

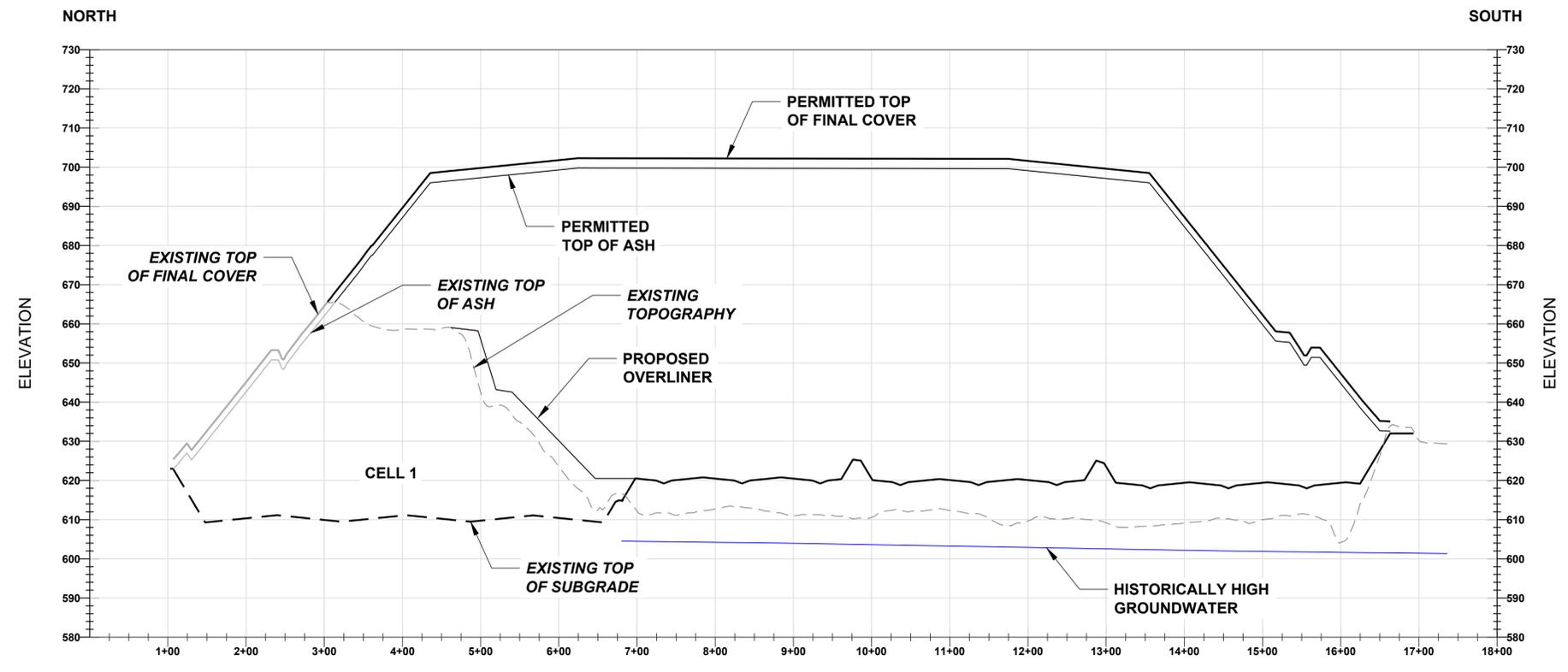
JOB: PT-02661

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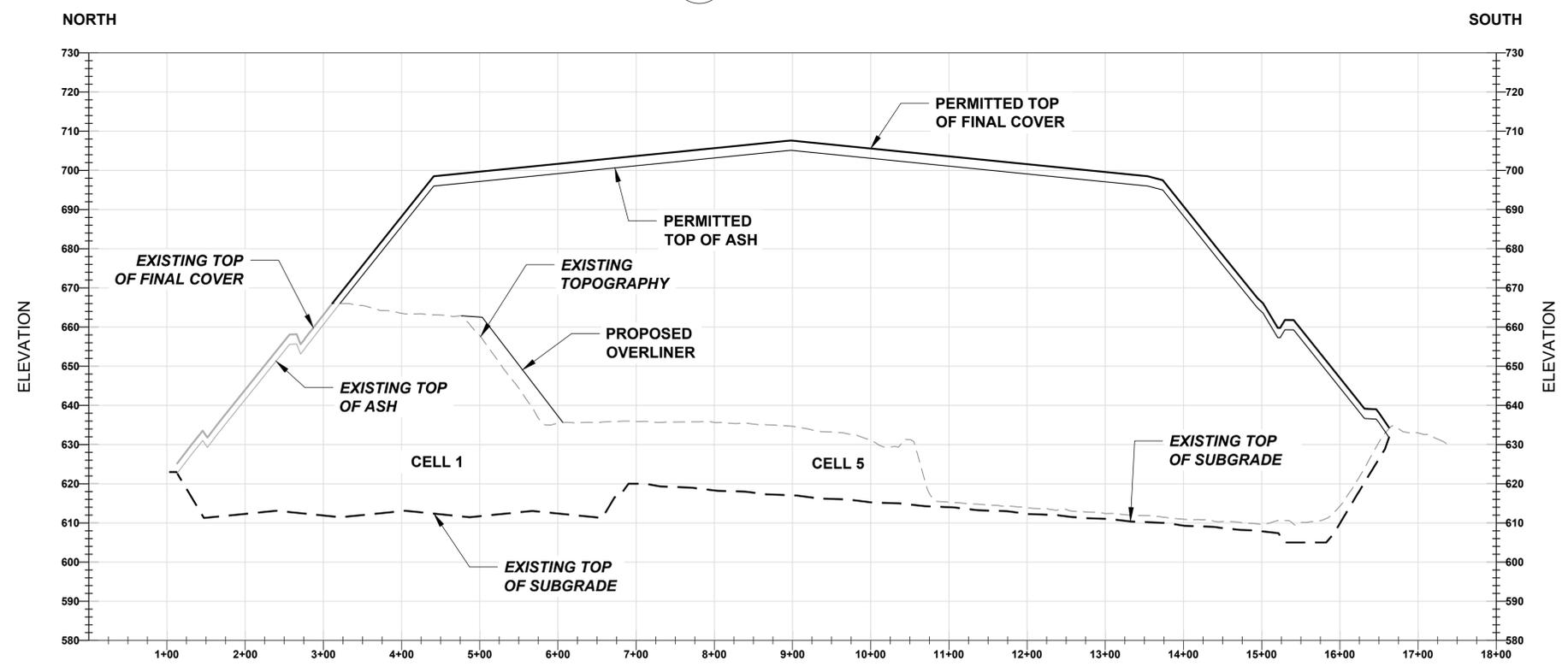
B

C

D



NOT TO SCALE 1  
6 CROSS SECTION B-B'



NOT TO SCALE 2  
6 CROSS SECTION C-C'

NOTE(S)  
1. SEE SHEET 4 FOR CROSS SECTION LOCATIONS.



REFERENCE DRAWINGS	REV	DATE	DESCRIPTION	DR	BY	CHK	APP	CO	REV	DATE	DESCRIPTION	DR	BY	CK	APP	CO
										10-04-21	2021 UPDATE					

SIGNATURE  
NAME  
MICHIGAN P.E. No.

**Consumers Energy**

**J.H. CAMPBELL PLANT  
WEST OLIVE, MI**

**TYPICAL LANDFILL CROSS SECTIONS - SHEET 2 OF 2**

SCALE: 1" = 100' (H) / 1" = 20' (V)

DRAWING NO. SHEET **6** REV.

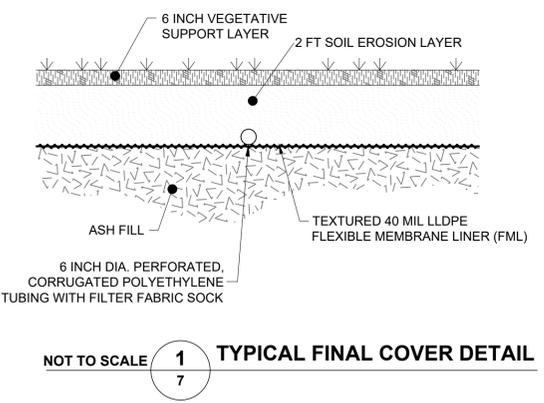
JOB: PT-02661

A

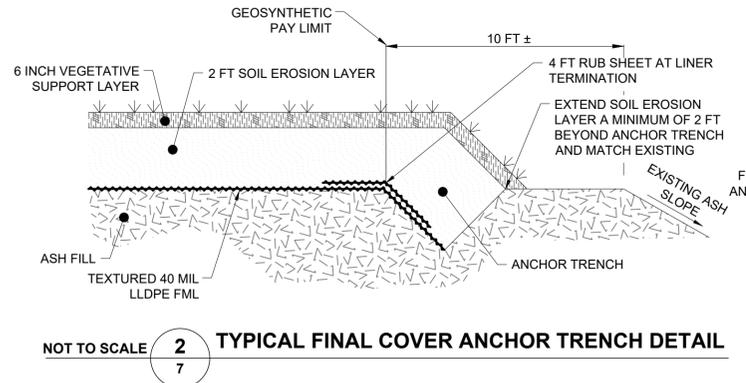
B

C

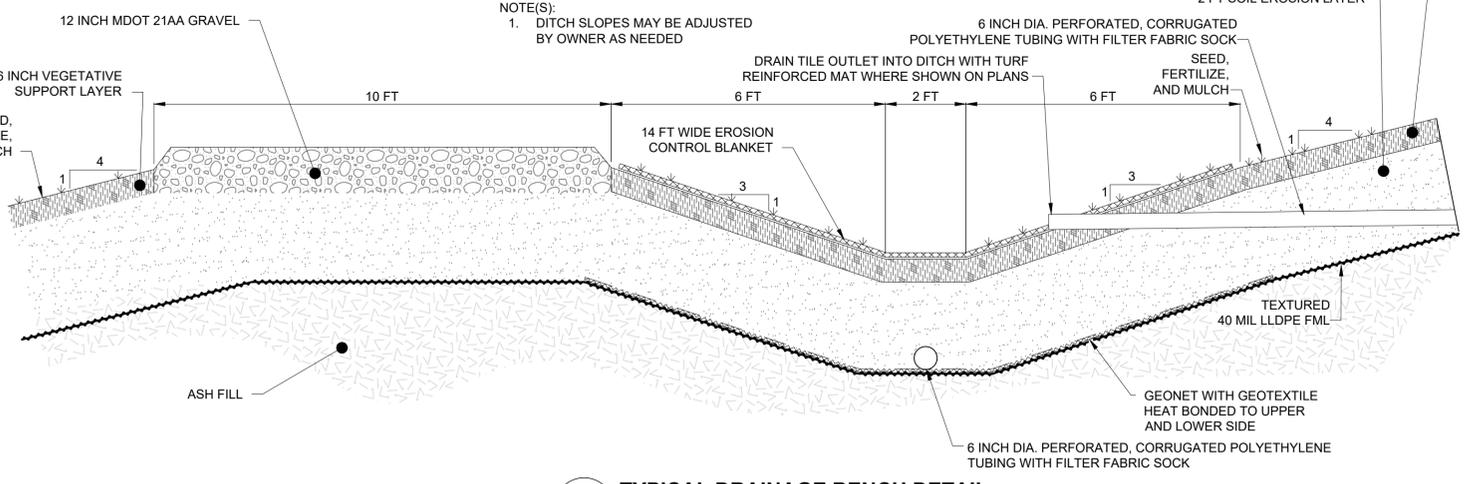
D



NOT TO SCALE **1**  
7  
**TYPICAL FINAL COVER DETAIL**

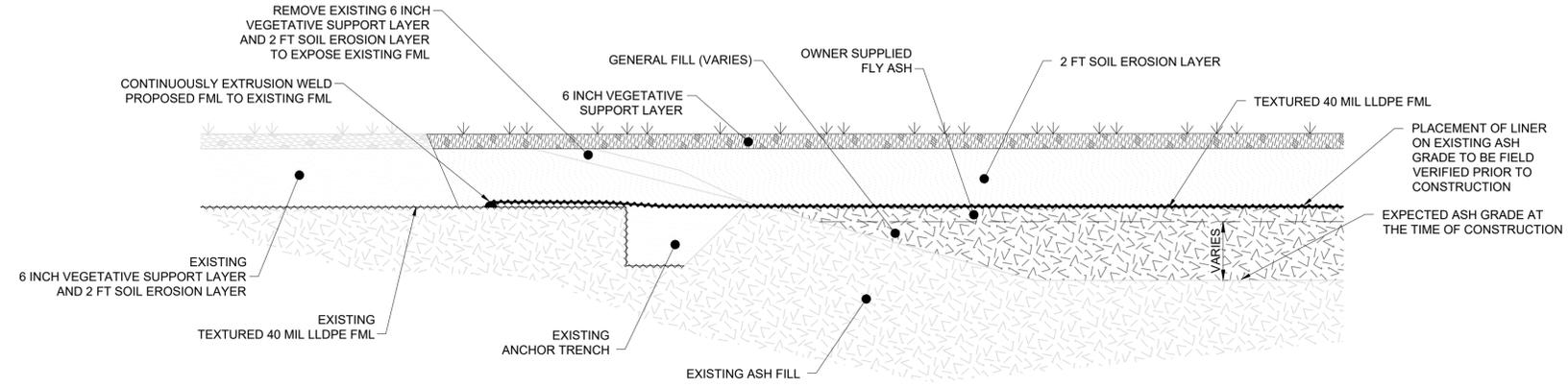


NOT TO SCALE **2**  
7  
**TYPICAL FINAL COVER ANCHOR TRENCH DETAIL**

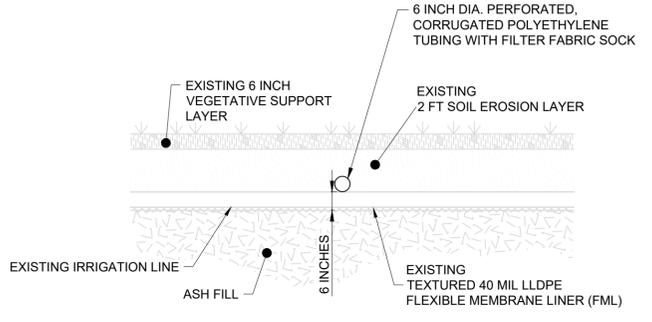


NOTE(S):  
1. DITCH SLOPES MAY BE ADJUSTED BY OWNER AS NEEDED

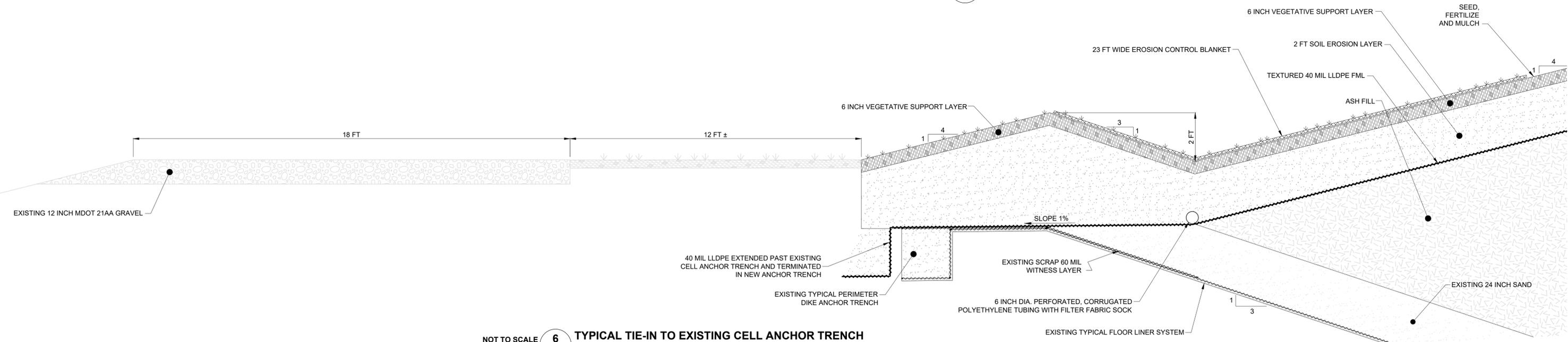
NOT TO SCALE **3**  
7  
**TYPICAL DRAINAGE BENCH DETAIL**



NOT TO SCALE **4**  
7  
**TYPICAL TIE-IN TO EXISTING FINAL COVER SYSTEM**



NOT TO SCALE **5**  
7  
**TYPICAL DRAIN TILE IN EXISTING FINAL COVER DETAIL**



NOT TO SCALE **6**  
7  
**TYPICAL TIE-IN TO EXISTING CELL ANCHOR TRENCH**

REFERENCE DRAWINGS	REV	DATE	DESCRIPTION	DR	BY	CHK	APP	CO	REV	DATE	DESCRIPTION	DR	BY	CK	APP	CO
										10-04-21	2021 UPDATE					

SIGNATURE  
NAME  
MICHIGAN P.E. No.

**Consumers Energy**  
**J.H. CAMPBELL PLANT**  
**WEST OLIVE, MI**

FINAL COVER DETAILS - SHEET 1 OF 2		DRAWING NO.	SHEET	REV.
SCALE: NONE			<b>7</b>	
JOB: PT-02661				

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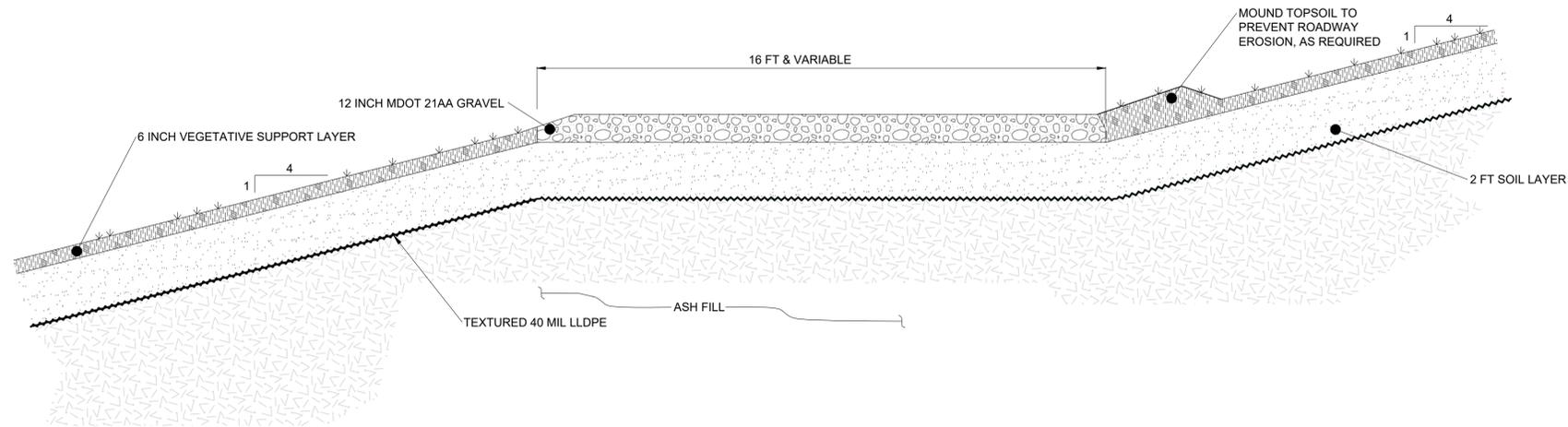
D

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NOT TO SCALE **1** TYPICAL ACCESS ROAD DETAIL  
8

REFERENCE DRAWINGS	REV	DATE	DESCRIPTION	DR	BY	CHK	APP	CO	REV	DATE	DESCRIPTION	DR	BY	CK	APP	CO
										10-04-21	2021 UPDATE					

SIGNATURE
NAME
MICHIGAN P.E. No.

**Consumers Energy**

**J.H. CAMPBELL PLANT**  
**WEST OLIVE, MI**

<b>FINAL COVER DETAILS - SHEET 2 OF 2</b>			
SCALE: NONE	DRAWING NO.	SHEET	REV.
JOB: PT-02661		<b>8</b>	

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