

## Attachment C

### Revised Design Capacity and Material Balance Calculations

Job No. 25222268

Job: Landfill Site No. 3 - FR Add. No. 1

By: RPR Date: 6/17/24

Client: Dane County

Subject: Landfill Capacity Calculation

Chk'd MRH Date: 6/17/24

**Purpose:**

To determine the design capacity for the proposed Dane County Landfill Site No. 3, including the combined volume of waste, daily cover, and intermediate cover.

**Methodology:**

The proposed liner base grades and top of waste grades from the Feasibility Report Addendum No. 1 were created as surfaces using AutoCAD Civil 3D. The two surfaces were compared using AutoCAD Civil 3D to determine the volume between the surfaces. The volume of the leachate collection layer (1-ft thick) was subtracted from this volume to calculate the design capacity of the Proposed Landfill.

**Calculation:**

AutoCAD Civil 3D Volume Output: 12,305,899 cy

Leachate Collection Layer Volume:  $3,337,208 \text{ sf} \times 1 \text{ ft (thick)} / 27 \text{ cf/cy} = 123,600 \text{ cy}$ .

Design Capacity:  $12,305,899 \text{ cy} - 123,600 \text{ cy} = 12,182,299 \text{ cy}$

**Results:**

The Proposed Landfill design capacity is approximately 12,182,299 cubic yards.

See calculation sheets 2 and 3 for AutoCAD Civil 3D surface and output information.

Surface Report

Project Name:

I:\25222268.00\Drawings\Civil\Volumes\Volumes - June 2024 Addendum No Grades.dwg

Report Date: 6/17/2024 11:47:05 AM

Client: Client Company

Project Description:

Dane County Landfill #3 Volume Calcs

Prepared by: KP

Linear Units: USSurveyFoot	Area Units: squareFoot	Volume Units: cubicYard
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Surface: Vol - Airspace

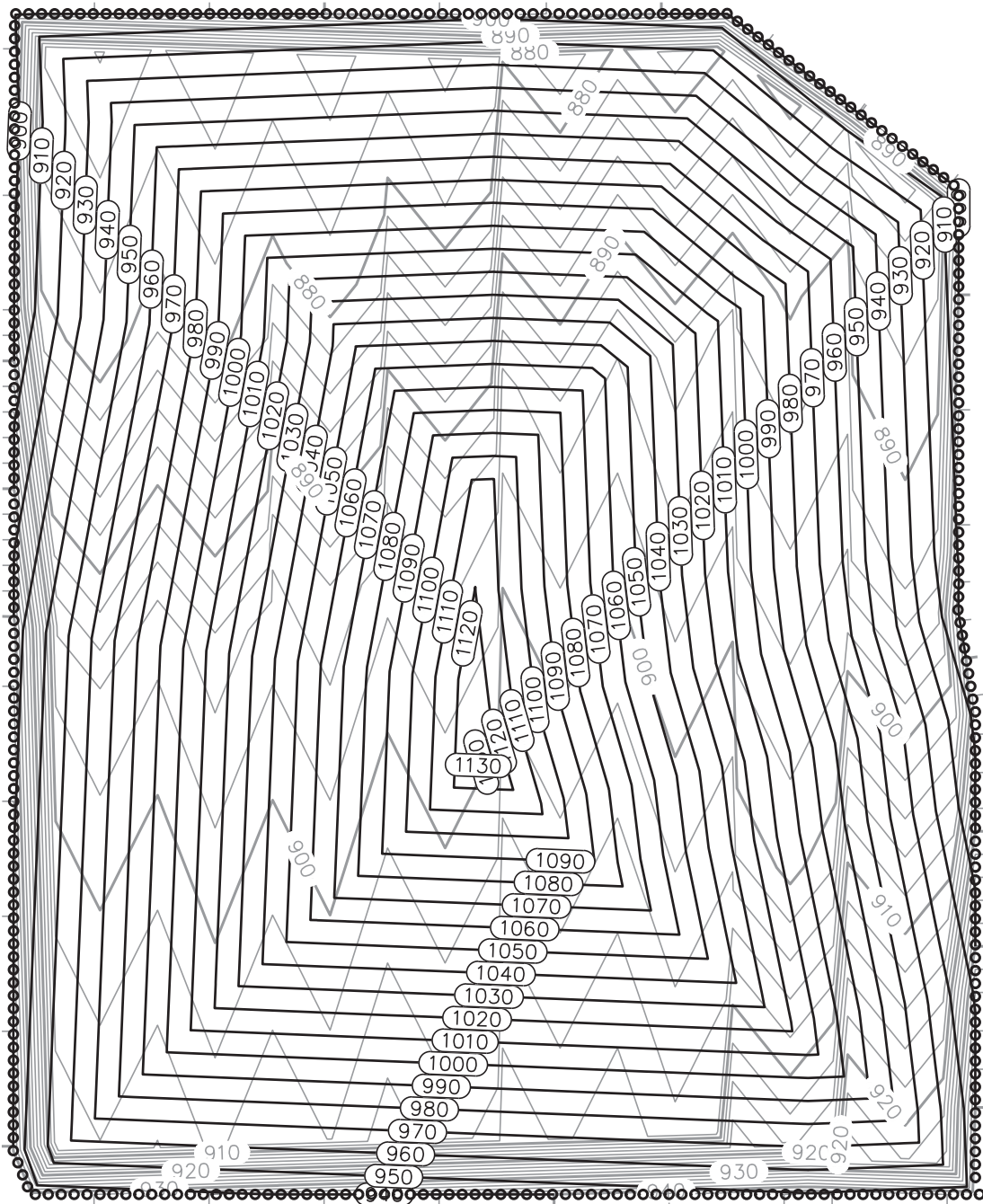
Description: airspace volume from Base grades to Waste grades (HWT) version

Area 2D: 3337214.873	Area 3D: 3534314.870
Elevation Max: 231.044	Elevation Min: 0.000
Number of Points: 7624	Number of Triangles: 14909

Volume Surface: Vol - Airspace

Description: airspace volume from Base grades to Waste grades (HWT) version

Volume Cut: 0.000	Volume Fill: 12305898.949	Volume Total: 12305898.949
Compare Surface: Proposed Waste Grades (June24)		
Base Surface: Proposed Base Grades (June24)		



#### AIRSPACE VOLUME

BASE SURFACE: PR-BASE GRADES ( AUG 2024)  
 COMPARISON SURFACE: PR-WASTE GRADES ( AUG 2024)

CUT VOLUME: 0.00 CU. YD.  
 FILL VOLUME: 12,305,898.95 CU. YD.  
 NET VOLUME: 12,305,898.95 CU. YD.<FILL>

76.6 ACRES DRAINAGE LAYER = 123,600 CY. YD.

NET AIRSPACE: 12,182,298.95 CU. YD. <FILL>

Job No. 25222268

Job: Landfill Site No. 3 - FR Add. No. 1

By BLP Date 6/7/24

Client: Dane County

Subject: Material Balance Calculation

Chk'd MRH Date 6/7/24

**Purpose:**

To determine the volume of cut and fill required to achieve subbase and perimeter grades for the proposed landfill.

**Methodology:**

The existing ground surface and the proposed liner subbase/perimeter grades from the Feasibility Report Addendum No. 1 were created as surfaces using AutoCAD Civil 3D. The two surfaces were compared using AutoCAD Civil 3D to determine the volume between the surfaces. Corrections for shrink/swell were not included in this calculation.

**Calculation:**

AutoCAD Civil 3D Volume Output:	941,567	cy (Cut)
	561,583	cy (Fill)
	379,984	cy (Net Cut)

**Results:**

The net cut for development of the Proposed Landfill is approximately 379,984 cubic yards.

See calculation sheets 2 and 3 for AutoCAD Civil 3D surface and output information.

**Surface Report**

**Client:** Client Company

**Project Name:**

**Project Description:**

**Dane County Landfill #3 Volume Calcs**

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**Report Date:** 6/17/2024 11:47:05 AM

**Prepared by:** KP

<b>Linear Units:</b> USSurveyFoot	<b>Area Units:</b> squareFoot	<b>Volume Units:</b> cubicYard
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**Surface: Vol - Earthwork**

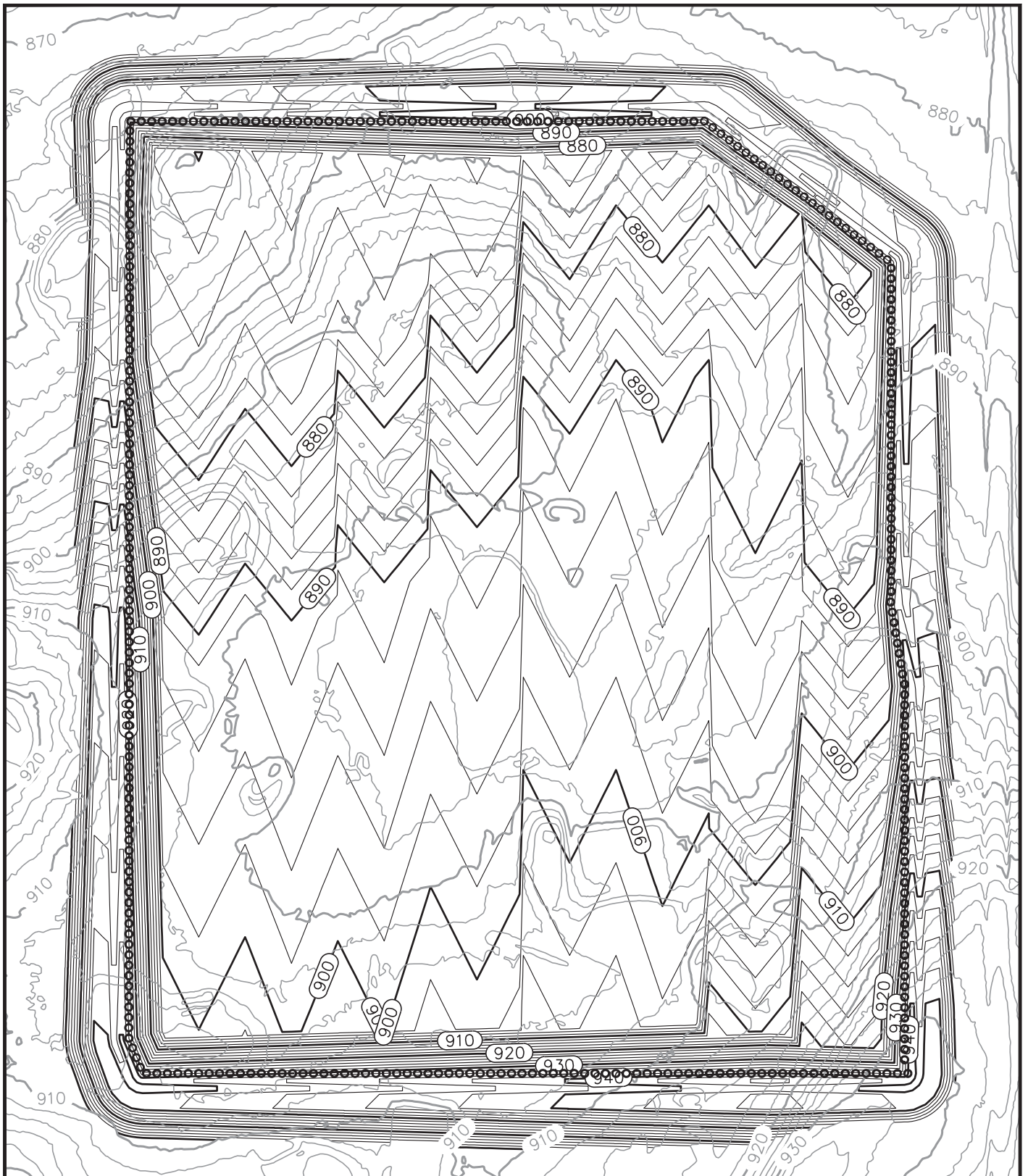
Description: earthwork volume from Existing (2017) grades to June 2024 perimeter and subbase grades.

Area 2D: 4312986.082	Area 3D: 4379420.978
Elevation Max: 32.582	Elevation Min: -30.376
Number of Points: 182697	Number of Triangles: 362191

**Volume Surface: Vol - Earthwork**

Description: earthwork volume from Existing (2017) grades to June 2024 perimeter and subbase grades.

Volume Cut: 941567.279	Volume Fill: 561582.706	Volume Total: -379984.573
Compare Surface: Perimeter and Subbase		
Base Surface: Existing (2017) (clipped)		



#### EARTHWORK VOLUME

BASE SURFACE: EXISTING (2017)

COMPARISON SURFACE: PR-SUBBASE AND PERIMETER ( AUG 2024 GRADES)

CUT VOLUME: 941,567.28 CU. YD.

FILL VOLUME: 561,582.71 CU. YD.

NET VOLUME: 379,984.57 CU. YD.<CUT>