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April 8, 2025

Mr. Brian Rath  
Land Quality Bureau  
Iowa Department of Natural Resources  
6200 Park Ave  
Des Moines, IA 50321

**Subject: Ottumwa Midland Landfill Well Documentation Report  
Monitoring Well Construction Documentation – MW-125  
Permit #90-SDP-8-92P**

Dear Mr. Rath:

On behalf of Interstate Power and Light Company (IPL), Alliant Energy is providing the enclosed documentation supporting installation of the new monitoring well MW-125, south of the Temporary Contact Water Basin at the Ottumwa Midland Landfill.

Please call me at (515) 558-9704 or email me at [jennycoughlin@alliantenergy.com](mailto:jennycoughlin@alliantenergy.com) with any questions regarding the enclosed report.

Sincerely,

A handwritten signature in black ink, appearing to read "Jenny Coughlin", is written over a light gray rectangular background.

Jenny Coughlin  
Sr. Environmental Specialist  
Alliant Energy Corporate Services, Inc.

Enclosures

Cc: Meghan Blodgett, Thomas Karwoski – SCS Engineers

April 7, 2025  
File No. 25224073.01

Ms. Jenny Coughlin  
Alliant Energy  
500 East Court Ave, Suite 300  
Des Moines, IA 50309

Subject: Ottumwa-Midland Landfill (OML) Well Documentation Report  
Monitoring Well Construction Documentation – MW-125  
15300 130th Street, Ottumwa, Iowa  
Existing Landfill Permit #90-SDP-08-92P

Dear Ms. Coughlin:

SCS Engineers (SCS) completed the installation of one groundwater monitoring well at the Ottumwa-Midland Landfill (OML) in Ottumwa, Iowa (**Figure 1**). The new well (MW-125) was installed on November 16, 2024, by Cascade Drilling L.P. (Cascade). The monitoring well location is shown on **Figure 2**.

The well was installed to the south of Temporary Contact Water Basin 1/2 (TCB 1/2). The Iowa Department of Natural Resources (IDNR) is requiring a monitoring well downgradient of TCB 1/2. IPL provided the approximate proposed location for the new well to IDNR via email on July 22, 2024, and IDNR concurred with the location via email on the same day.

## **BORING LOG**

Monitoring well MW-125 was drilled on November 16, 2024, by Cascade of Little Falls, Minnesota. Prior to drilling, OML site staff assisted with moving concrete barriers to allow access to the drilling location. Douds Stone of Chillicothe, Iowa, delivered a truckload of gravel to create a flat drilling pad at the edge of the landfill access road. Cascade used their equipment to grade the stone out for drill rig access and setup.

All drilling and well construction was performed under the supervision of SCS. The boring log for MW-125 is included in **Attachment A**. Soils in the borings were identified as clay and silt overlying shale bedrock. The top of bedrock was at 31 feet, which is consistent with observations in previous borings at the site.

## **MONITORING WELL CONSTRUCTION/DEVELOPMENT**

Monitoring well MW-125 was installed on November 16, 2024, by Cascade. The well construction form is included in **Attachment B**. A photograph of the well is included in **Attachment C**. The well location was surveyed by French-Reneker of Fairfield, Iowa, on January 28, 2025.

SCS performed well development and hydraulic conductivity testing at well MW-125 on December 31, 2024. Hydraulic conductivity test results are included in **Attachment D**.



Ms. Jenny Coughlin  
April 7, 2025  
Page 2

The calculated hydraulic conductivity value is summarized below, and is within the typical range for the aquifer materials observed in the boring:

Well	Calculated Hydraulic Conductivity (cm/sec)
MW-125	$5.5 \times 10^{-4}$

Please contact Meghan Blodgett at (608) 216-7362 or if you have any questions about the well documentation.

Sincerely,



Bri Salome  
Associate Hydrogeologist  
SCS Engineers



Meghan Blodgett  
Senior Hydrogeologist/Project Manager  
SCS Engineers

BAS/MDB/jsn\_AJR/BRK

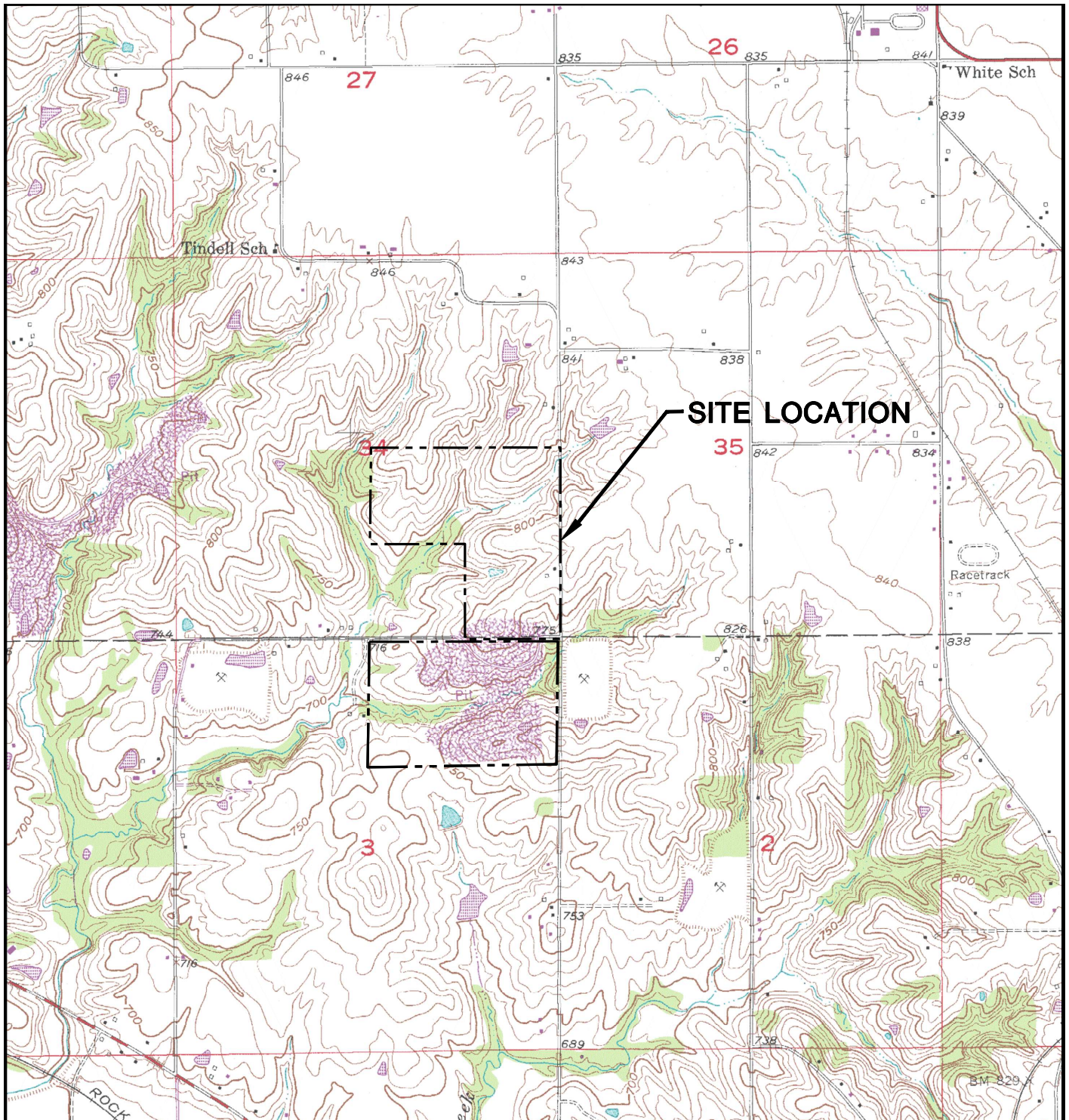
cc: Jeff Maxted, Alliant Energy  
Matt Bizjack, Alliant Energy

Encl. Figure 1 – Site Location Map  
Figure 2 – Site Plan  
Attachment A – Boring Log  
Attachment B – Well Construction Form  
Attachment C – Well Photograph  
Attachment D – Hydraulic Conductivity Test Results

I:\25224073.01\Deliverables\Well Documentation Report MW-125\250407\_Coughlin\_OML\_MW-125 Well Documentation Report.docx

## Figures

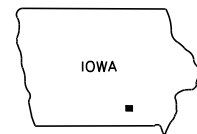
- 1 Site Location Map
- 2 Site Plan



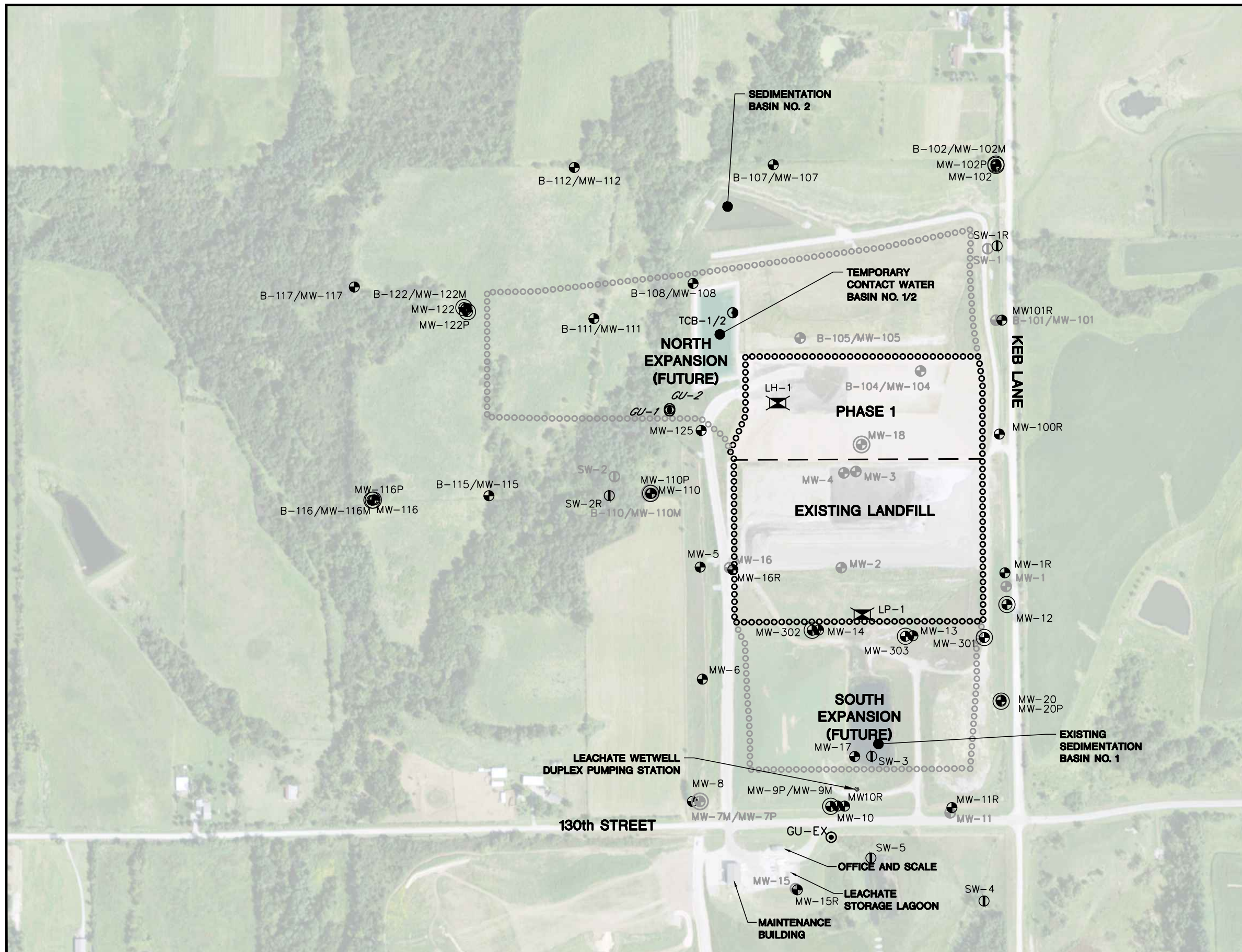
LEGEND

— — — — — APPROXIMATE PROPERTY LINE

OTTUMWA NORTH QUADRANGLE  
 IOWA—WAPELLO CO.  
 7.5 MINUTE SERIES (TOPOGRAPHIC)  
 SW/4 OTTUMWA NORTH 15' QUADRANGLE  
 1976  
 SCALE: 1" = 2,000'

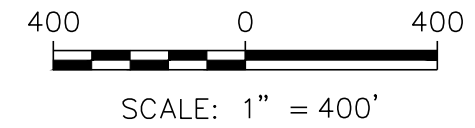


CLIENT	INTERSTATE POWER AND LIGHT CO. 15300 130th STREET OTTUMWA, IA 52501		SITE	OTTUMWA MIDLAND LANDFILL OTTUMWA, IOWA		ENGINEER	SITE LOCATION MAP	
	PROJECT NO.	25216073.00		DRAWN BY:	KP		SCS ENGINEERS 2830 DAIRY DRIVE MADISON, WI 53718-6751 PHONE: (608) 224-2830	FIGURE
	DRAWN:	09/15/11		CHECKED BY:	MB			1
REVISED:	11/17/16	APPROVED BY:	TK 11/21/17					



LEGEND	
	APPROXIMATE PROPERTY LINE
	APPROVED WASTE LIMITS
	EXISTING WASTE LIMITS
	PHASE LIMIT
	EXISTING SOIL BORING
	EXISTING MONITORING WELL
	EXISTING PIEZOMETER
	EXISTING SURFACE WATER MONITORING STAFF GAUGE
	ABANDONED MONITORING WELL
	ABANDONED SURFACE WATER MONITORING STAFF GAUGE
	LEACHATE HEADWELL
	GROUNDWATER UNDERDRAIN
	TEMPORARY CONTACT WATER BASIN

- NOTES:
- 2015 AERIAL PHOTOGRAPH IS FROM THE IOWA GEOGRAPHIC MAP SERVER-IOWA STATE UNIVERSITY GEOGRAPHIC INFORMATION SYSTEMS SUPPORT & RESEARCH FACILITY.
  - PROPERTY LINE SOUTH OF 130<sup>TH</sup> STREET FROM SURVEY MAP PREPARED BY GARDEN & ASSOCIATES, OSKALOOSA, IOWA, DATED DECEMBER 20, 1988.
  - PROPERTY LINE NORTH OF 130<sup>TH</sup> STREET FROM PLAT OF SURVEY MAP PREPARED BY SCS ENGINEERS, MADISON, WISCONSIN, DATED FEBRUARY 20, 2013.
  - EXISTING LIMITS OF WASTE ARE APPROXIMATE.
  - WELLS MW-2, MW-3, AND MW-4 WERE ABANDONED DURING CONSTRUCTION OF EXISTING LANDFILL.
  - WELLS MW-18, MW-101, MW-104, AND MW-105 WERE ABANDONED DURING EXPANSION CONSTRUCTION.



PROJECT NO. 25221073.00	DRAWN BY: AHB/KP	<b>SCS ENGINEERS</b> 2830 DAIRY DRIVE MADISON, WI 53718-6751 PHONE: (608) 224-2830	CLIENT INTERSTATE POWER AND LIGHT CO. 15300 130th STREET OTTUMWA, IA 52501	SITE OTTUMWA MIDLAND LANDFILL OTTUMWA, IOWA	SITE PLAN	FIGURE 2
DRAWN: 11/17/2011	CHECKED BY: PEG					
REVISED: 03/20/2025	APPROVED BY: MDB, 4/7/2025					

Attachment A

Boring Log

Route To: Watershed/Wastewater  Waste Management   
Remediation/Redevelopment  Other

Facility/Project Name Interstate Power and Light Company - Ottumwa Midland Landfill		License/Permit/Monitoring Number 90-SDP-8-92PI		Boring Number MW-125	
Boring Drilled By: Name of crew chief (first, last) and Firm Jeff Johns Cascade		Date Drilling Started 11/15/2024		Date Drilling Completed 11/16/2024	
Unique Well No.		DNR Well ID No.		Common Well Name	
Final Static Water Level 62.9 Feet		Surface Elevation 783.1 Feet		Borehole Diameter 6.0 in	
Local Grid Origin <input type="checkbox"/> (estimated: <input type="checkbox"/> ) or Boring Location <input checked="" type="checkbox"/> State Plane 395,155 N, 1,929,163 E S/C/N NW 1/4 of SE 1/4 of Section 34, T 73 N, R 14 W		Lat 41° 4' 47.4" Long -92° 27' 9.4"		Local Grid Location <input type="checkbox"/> N <input type="checkbox"/> E <input type="checkbox"/> S <input type="checkbox"/> W	
Facility ID		County Wapello		Civil Town/City/ or Village Ottumwa	

Sample Number and Type	Length Att. & Recovered (in)	Blow Counts	Depth In Feet	Soil/Rock Description And Geologic Origin For Each Major Unit	U S C S	Graphic Log	Well Diagram	PID/FID	Soil Properties					RQD/ Comments	
									Standard Penetration	Moisture Content	Liquid Limit	Plasticity Index	P 200		
1	67		1.5	POORLY GRADED GRAVEL (GP), grayish brown (2.5Y 5/2), fine to coarse gravel, trace sand and silt, subangular/angular gravel, organics. (FILL) (ROADWAY).	GP										
			3.0	GRAVELLY CLAY (CL-ML), dark grey (2.5Y 4/1), with yellowish tan and light blueish grey mottling, fine to coarse gravel, some coarse sand, subrounded gravel, subrounded sand, trace cinders, organics (roots), very hard, moderate plasticity. With depth increase coarse material content, decrease fine material.	CL-ML				-	M					
			4.5												
			7.5	CLAYEY SILT (CL-ML), very dark grey (2.5Y 3/1), fine to coarse gravel, angular gravel, very brittle, blocky texture, red/light greenish grey/yellowish tan mottling, organics (roots).	CL-ML										
			10.5	GRAVELLY CLAY (CL-ML), dark grey (2.5Y 4/1), with yellowish tan and light blueish grey mottling, fine to coarse gravel, some coarse sand, subrounded gravel, subrounded sand, trace cinders, organics (roots), very hard, moderate plasticity.	CL-ML										
			12.0												
			13.5	SILTY CLAY (CL-ML), very dark grey (2.5Y 5/1), fine subrounded gravel, tan and light greenish grey mottling.	CL-ML										
15.0	SILTY CLAY (CL-ML), olive grey (5Y 4/2), fine to coarse gravel, trace coarse sand, subrounded gravel, subrounded sand, organics (roots), yellowish tan mottling, trace black mottling.	CL-ML				2.75	M								
16.5															
18.0	SILTY CLAY (CL-ML), very dark grey (2.5Y 3/1), fine to coarse gravel, coarse sand, subrounded gravel, rounded sand, cinder and coal seams, organics (roots), light blueish grey and yellowish tan mottling.	CL-ML													
19.5															

I hereby certify that the information on this form is true and correct to the best of my knowledge.

Signature 	Firm SCS	Tel: Fax:
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Boring Number MW-125

Page 2 of 3


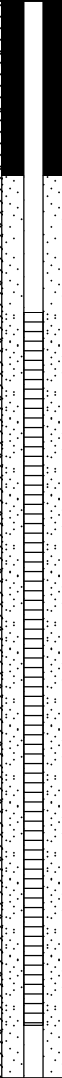


Sample		Blow Counts	Depth In Feet	Soil/Rock Description And Geologic Origin For Each Major Unit	U S C S	Graphic Log	Well Diagram	PID/FID	Soil Properties					RQD/ Comments
Number and Type	Length Att. & Recovered (in)								Standard Penetration	Moisture Content	Liquid Limit	Plasticity Index	P 200	
9	65		21.0	SILTY CLAY (CL-ML), very dark grayish brown (2.5Y 3/2), fine gravel, coarse sand, rounded gravel, rounded sand, organics (roots), trace cinders, yellowish tan mottling.	CL-ML									
			22.5											
			24.0	SILTY CLAY (CL-ML), very dark grey (2.5Y 3/1), fine to coarse gravel, coarse sand, subrounded gravel, rounded sand, cinder and coal seams, organics (roots), light blueish grey and yellowish tan mottling.	CL-ML				1.25	M				
			25.5	CLAYEY SILT (CL-ML), yellowish brown (10YR 5/6), fine to coarse gravel, coarse sand, subrounded gravel, subrounded sand, dark yellowish brown mottling.	CL-ML									
13	51		27.0											
			28.5	SILTY CLAY (CL-ML), very dark grey (2.5Y 3/1), fine to coarse gravel, coarse sand, subrounded gravel, rounded sand, cinder and coal seams, organics (roots), light blueish grey and yellowish tan mottling.	CL-ML									
			30.0	SILT (ML), light grey (5Y 7/1), very hard, yellowish brown mottling, some black mottling from 28.2-29'.	ML									
			31.5	SILT (ML), light grey (5Y 7/1), rock flour with weathered shale, trace fine sand grains. SHALE, very dark grey (2.5Y 3/1).	ML				4.5+	M				
15	50		33.0											
			34.5	Coal seam										
			36.0											
			37.5	Increase brittleness					--	M				
16	50		39.0											
			40.5											
			42.0											
			43.5											
17	24		45.0											
			46.5	Black (5Y 2.5/1) Increase content of powdered shale					--	M				
18	36		48.0											
			49.5											
19	24		51.0	Light Grey (5Y 7/1)										
			52.5											

Redrilled 0-40' to place casing, used 300 gallons of water.

At 50' placed casing and started using water.

Boring Number MW-125

Page 3 of 3

Sample		Blow Counts	Depth In Feet	Soil/Rock Description And Geologic Origin For Each Major Unit	U S C S	Graphic Log	Well Diagram	PID/FID	Soil Properties					RQD/ Comments
Number and Type	Length Att. & Recovered (in)								Standard Penetration	Moisture Content	Liquid Limit	Plasticity Index	P 200	
20	36		54.0	SHALE, very dark grey (2.5Y 3/1). (continued)					-	M				
			55.5											
			57.0	Dark Grey (5Y 3/1)										
21	56		57.0	Coal seam					-	M				
			58.5											
			60.0											
22	60		61.5						--	M/W				Water at 62'
			63.0											
			64.5											
23	60		66.0						--	W				Drilling from 40-66', 300 gallons of water used.
			67.5											
			69.0											
			70.5											
			72.0											
24	63		73.5						--	W				
			75.0											
				End of boring @ 76', set well at 75'										

Attachment B  
Well Construction Form

# MONITORING WELL / PIEZOMETER CONSTRUCTION DOCUMENTATION FORM

Disposal Site Name: Interstate Power and Light Company - Ottumwa Midland Land Permit No.: 90-SDP-8-92P  
Well/Piezometer No.: MW-125 Date Started: 11/15/2024 Date Completed: 11/16/2024  
Applicable Requirements<sup>1</sup>:  567 IAC 113  567 IAC 115  Site Permit  
 567 IAC 114  567 IAC 139  Other: \_\_\_\_\_

## A. SURVEYED LOCATION<sup>2</sup> AND ELEVATION OF POINT

Elevations (MSL): Ground Surface: 783.08 Top of Protective Casing: 785.78  
Top of Well Casing: 785.40  
Site Coordinates: Northing: 395155.247 Easting: 1929162.895  
World Coordinates: Latitude: 41°04'47.4016" Longitude: -92°27'09.3704"  
Elevation and Coordinate Systems: IA State Plane - S Zone

## B. SOIL BORING INFORMATION

Certified Well Contractor Cascade Environmental  
Address 209 Lemuir St City, State, Zip Code Little Falls, MN 56345  
Name of driller Paul Dickinson Cert No. 09621  
Drilling method Rotosonic Drilling fluid water Bore hole diameter 6  
Soil sampling method bagged rotosonic samples Depth of boring 76

## C. MONITORING WELL INSTALLATION

Casing material: 40 Sch PVC Placement method: Gravity  
Length of casing: 62.2' Quantity: 50 lb bag x 13  
Casing diameter: 2" Backfill (if different from seal): --  
Casing joint type: threaded Material: --  
Casing/screen joint type: threaded Placement method: --  
Screen material: 40 Sch PVC Quantity: --  
Screen opening size: 10 Slot Surface seal design: Concrete  
Screen length: 15' Material of protective casing: Steel  
Material of grout between  
Depth of Well: 76' protective casing and well casing: Red Flint 40 Sand  
Filter Pack: Protective cap: \_\_\_\_\_  
Material: Filter Pack Sand Material: Steel  
Grain Size: Red Flint 40 Vented?:  Y  N Locking?:  Y  N  
Quantity: 50 lb bag x 6 Well cap: \_\_\_\_\_  
Seal (minimum 3 ft. length above filter pack): Material: Plastic  
Material: 3/8 Bentonite Chips Vented?:  Y  N

## D. GROUNDWATER MEASUREMENT ( $\pm 0.01$ foot below top of inner well casing)

Water level 62.94 Stabilization time --  
Well development method periodically surged pump, pumped 10 well volumes  
Average depth of frost line 3.5'

<sup>1</sup> Refer to the site's permit to determine applicable requirements. Note that some sites may only be regulated by their permit versus current landfill chapters. If the permit and rule are silent regarding applicable requirements, then 567 IAC Chapter 39 shall apply, which requires use of the Well Log (Well Record) Form, not this form. If the applicable requirements have been modified and approved by the DNR, then note under Other.

<sup>2</sup> The location does not need to be surveyed by a licensed surveyor. A handheld GPS reading accurate to +/- 30 feet is acceptable when an aerial photograph showing the location (pin) is included with this form. The site coordinates should be the same coordinate system currently used for survey control and mapping of the site.

**DRILLER'S CERTIFICATION**

**I certify under penalty of law I believe the information reported above is true, accurate, and complete.**

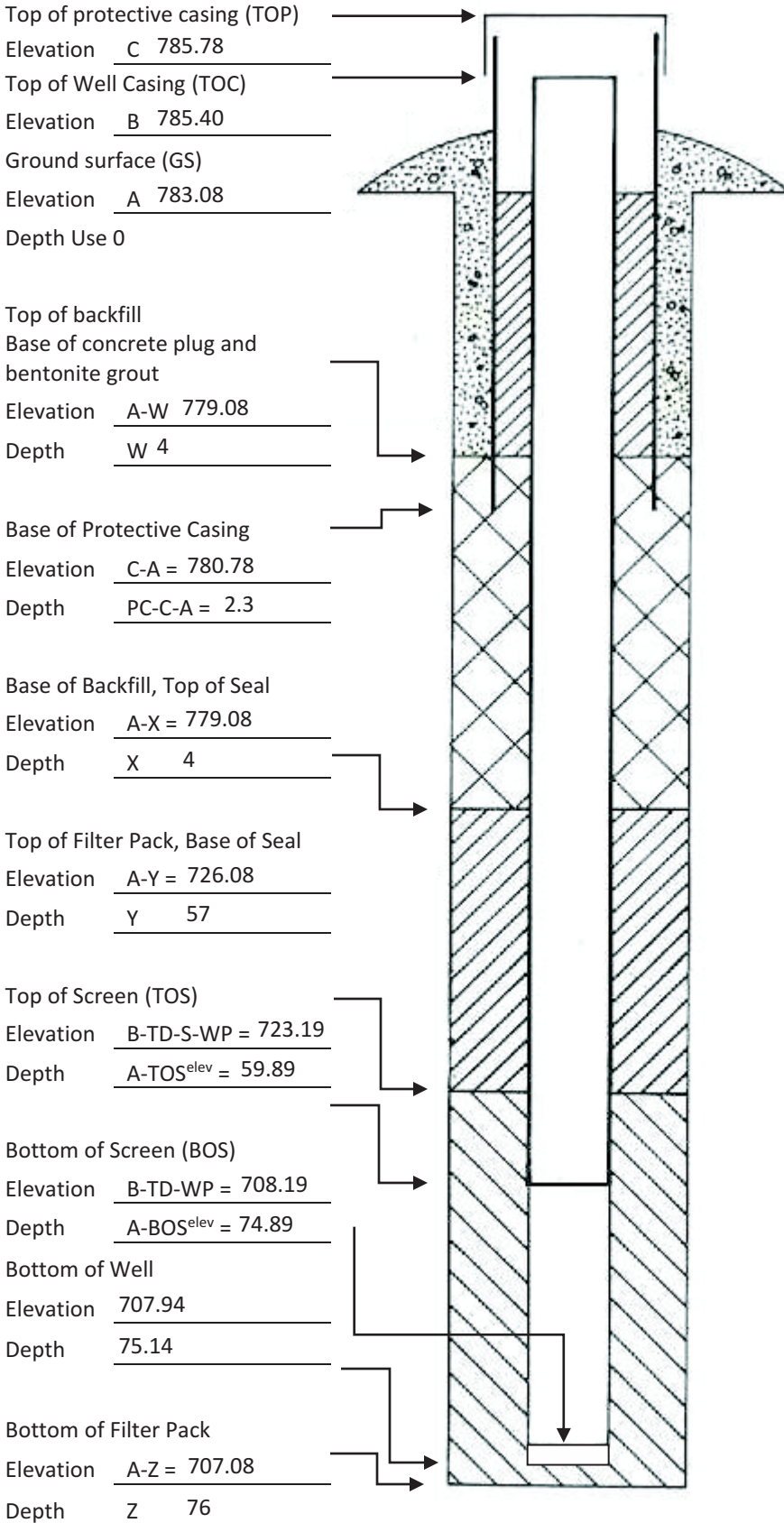
**Signature** Paul Dickinson      **Certification #** 9361      **Date** 11-16-2024

Note: Attach well log, boring log, and map showing new monitoring well/piezometer location in relation to existing wells or piezometers. Complete one form for each well plugged and submit within 30 days to the local county agent, DNR project officer, and Erik Day with the DNR's Water Supply Section at [erik.day@dnr.iowa.gov](mailto:erik.day@dnr.iowa.gov). DNR prefers that the forms be completed and submitted electronically.

# Well and Boring Logs

Elevations: ±0.01 ft. MSL

Depths: ±0.1 ft from Ground Surface



## Required Data:

- Elevations for A, B, and C shall be surveyed.
- Depths for W, X, Y, and Z shall be field measured following completion of each item.
- Lengths of the Protective Casing (PC), Screen (S), and Well Point (WP) shall be field measured prior to installation of each item.
- The total Depth (TD) from the Top of Well Casing to the Bottom of Well Point shall be field measured following installation.

PC: 5                      S: 15  
WP: 0.25                      TD: 77.46

Attachment C  
Well Photograph

Ottumwa Midland Landfill (OML)  
15300 130<sup>th</sup> St, Ottumwa, Iowa  
SCS Engineers Project #25224073.01



**Photo 1:** Moving concrete barrier to access drilling location for MW-125. Photo facing Southwest.



**Photo 2:** Building pad to drill MW-125 on. Photo facing West.



Ottumwa Midland Landfill (OML)  
15300 130<sup>th</sup> St, Ottumwa, Iowa  
SCS Engineers Project #25224073.01



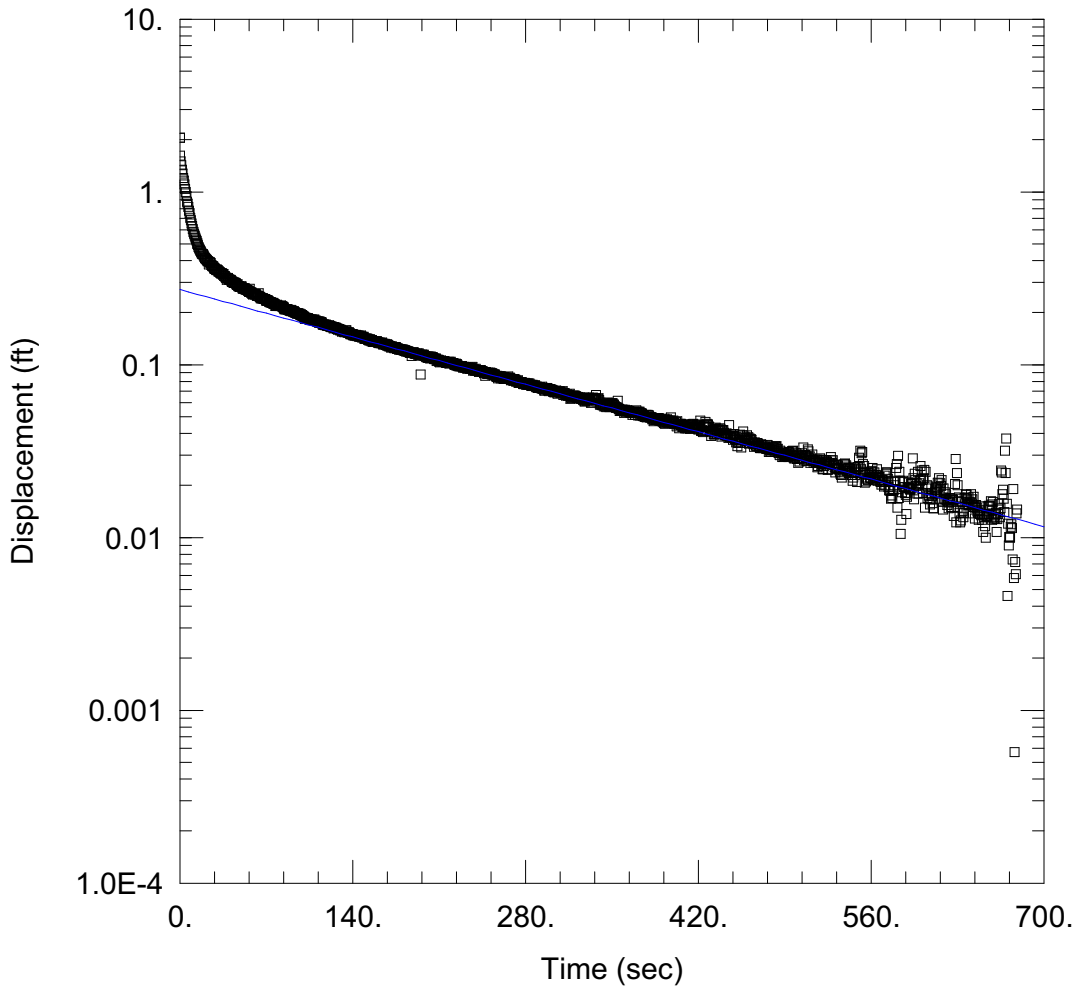
**Photo 3:** Drilling MW-125. Photo facing Northwest.



**Photo 4:** Completed MW-125. Photo facing North. Concrete barriers were replaced by site staff following completion of well installation.

## Attachment D

### Hydraulic Conductivity Test Results



WELL TEST ANALYSIS

Data Set: \...\241231\_MW-125 Slug Test\_BAS.aqt

Date: 03/20/25

Time: 17:20:05

PROJECT INFORMATION

Company: SCS Engineers

Client: IPL

Project: 25224073.01

Location: Ottumwa, Iowa

Test Well: MW-125

Test Date: 12/31/2024

AQUIFER DATA

Saturated Thickness: 50. ft

Anisotropy Ratio (Kz/Kr): 0.01

WELL DATA (MW-125)

Initial Displacement: 2.06 ft

Static Water Column Height: 14.41 ft

Total Well Penetration Depth: 14.41 ft

Screen Length: 14.41 ft

Casing Radius: 0.09 ft

Well Radius: 0.25 ft

Gravel Pack Porosity: 0.3

SOLUTION

Aquifer Model: Unconfined

Solution Method: Bower-Rice

K = 0.0005517 cm/sec

y0 = 0.2719 ft