



IOWA DEPARTMENT OF NATURAL RESOURCES  
**Monitoring Well/Piezometer  
 Abandonment Form**

Disposal Site Name: Boone County Sanitary Landfill Permit No.: 08-SDP-01-75P

Well/Piezometer No.: MW96-23

Applicable Requirements<sup>1</sup>:  567 IAC 113  567 IAC 139  
 567 IAC 114  Site Permit  
 567 IAC 115  Other: \_\_\_\_\_

**1. Location of Well<sup>2</sup>**

Site Coordinates: Northing: 7981.91 Easting: 9155.06

World Coordinates: Latitude: \_\_\_\_\_ Longitude: \_\_\_\_\_

**2. Well Description:**

Well depth: 67.59 ft

Depth to water: 50.42 ft.

Well material: PVC (PVC, stainless, iron, etc.)

Well diameter: 2.0 in.

Year or decade constructed: 1996

Abandonment date: ~~4/6/2026~~ 5/11/2026 TBW

Abandonment method: IAC 113.10(2)"d" - by over-drilling to original depth/diameter & tremie grouting from the bottom-up.

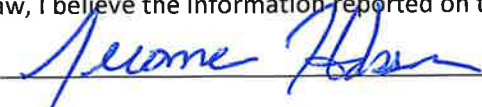
If plugged by owner, complete the following:

I certify, under penalty of law, I believe the information reported on this form is true, accurate, and complete.

Signature of Owner \_\_\_\_\_

If plugged by certified well contractor, complete the following:

I certify, under penalty of law, I believe the information reported on this form is true, accurate, and complete.

Signature of Contractor:  Cert No: 9062

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).

<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 requirement, then 567 UAC Chapter 39 shall apply, which requires use of the Abandoned Water Well Plugging Record, 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 and include with this form an aerial photograph showing the location. The site coordinates should be the same coordinate system currently used for survey control and mapping of the site.

MONITORING WELL/PIEZOMETER CONSTRUCTION  
DOCUMENTATION FORM

Disposal site name Boone County Sanitary Landfill Permit # 08 SDP 1 75 P  
 Well or Piezometer # MW 96-23 Date Started 12-27-96 Date Started 12-27-96

Surveyed Locations and Elevations

Location (+/0.5 ft):  
 Specify corner of site Southeast  
 Distance and direction along boundary N 7981.91

Distance and direction from boundary to well E 9155.06

Elevations (+/0.01 ft. MSL):  
 Ground surface 983.95  
 Top of protective casing 986.66 1007.33  
 Benchmark elevation 986.39  
 Benchmark description \_\_\_\_\_

Well Installation, continued:

Filter pack:  
 Material Silica Sand  
 Grain size 0  
 Volume 400 lbs

Seal (minimum 3 ft. length above)  
 filter pack:  
 Material Bentonite Chips  
 Placement method Through Hollow Stem Augers  
 Volume 350 lbs

Backfill (if different from seal):  
 Material Bentonite Chips  
 Placement method Through Hollow Stem Auger  
 Volume See above

Soil Boring Information

Name and address of construction company  
Western Company  
Hwy 275  
Valley, Nebraska 68064  
 Name of driller \_\_\_\_\_  
 Drilling method Hollow stem Auger  
 Drilling fluid N/A  
 Bore hole diameter 8"  
 Soil sampling method CME Continuous Sampler  
 Depth of boring 44'

Surface seal design:

Material of protective casing: Steel  
 Material of grout between protective casing and well casing: Concrete and/or Bentonite  
 Protective cap:  
 Material Steel  
 Vented?  Yes  No  
 Locking?  Yes  No  
 Well cap:  
 Material PVC  
 Vented?  Yes  No

Monitoring Well Installation

Casing material PVC  
 Length of casing 36.65' 57.59  
 Outside casing diameter 2.375"  
 Inside casing diameter 2.00"  
 Casing joint type Threaded  
 Casing/screen joint type Threaded  
 Screen material PVC  
 Screen opening size 0.010"  
 Screen length 10'  
 Depth of well 46.65 67.59 from Top PVC

D. Groundwater Measurement

Water level (+/0.01 ft. below top of inner well casing) 47'  
 Stabilization time 24+ Hours  
 Well development method Hand Bailing

Upgradient Well  Downgradient Well   
 (See piezometric map from Hydrogeologic study)  
 Average depth of frostline 48"

Attachments: Driller's log Pipe schedules and grouting schedules. 8 1/2 inch x 11 inch map showing location of all monitoring wells and piezometers.

WELL OR PIEZOMETER MW 96-23

SPACE TO ATTACH ENTIRE SOIL BORING LOG  
(SHOW SCREENED INTERVAL AND FILTER PACK)

ELEVATION: +0.01 FT. MSL  
DEPTHS: +0.1 FT. FROM  
GROUND SURFACE

TOP OF PROTECTIVE CASING  
ELEVATION 986.66

TOP OF WELL CASING  
ELEVATION ~~986.39~~ 1007.33

GROUND SURFACE  
ELEVATION 983.95

TOP OF BACKFILL  
BASE OF CONCRETE PLUG  
AND BENTONITE GROUT  
ELEVATION 981.95  
DEPTH 4.44'

BASE OF PROTECTIVE  
CASING  
ELEVATION 981.66  
DEPTH 4.73'

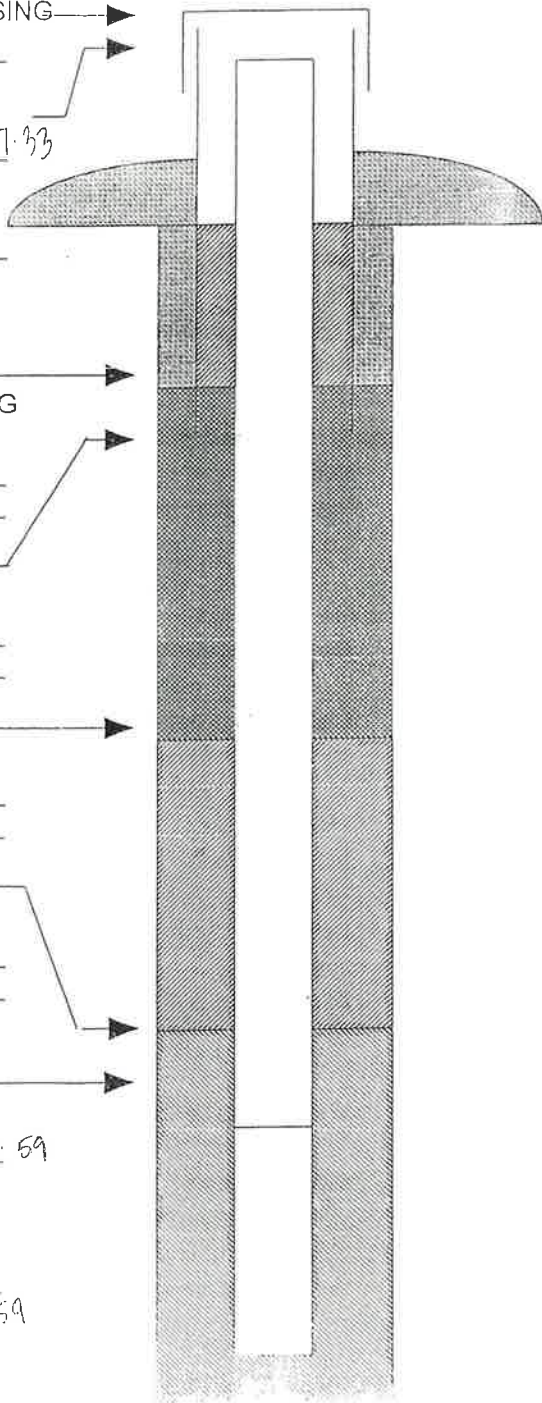
BASE OF BACKFILL  
TOP OF SEAL  
ELEVATION N/A  
DEPTH N/A

TOP OF FILTER PACK  
BASE OF SEAL  
ELEVATION 954.45  
DEPTH 31.94'

TOP OF SCREEN  
ELEVATION 949.74  
DEPTH ~~36.05'~~ 57.59

BOTTOM OF SCREEN  
ELEVATION 939.74  
DEPTH ~~46.65'~~ 67.59

BASE OF FILTER PACK  
ELEVATION 939.74  
DEPTH ~~46.65'~~ 67.59





FOX ENGINEERING, ASSOCIATES  
1531 Airport Road  
Ames, Iowa 50010

Telephone: (515) 233-0000  
Fax: (515) 233-0103

# LOG OF TEST BORING

Page 1 of 2

Drillers LAYNE WESTERN Boring No. 96-23 FOX Inspector RMF  
FOX Project No. 2638-96C.310

Date Drilled 12/27/96 Project BOONE CO. LANDFILL  
Surface Elevation 983.95 (New 1004.4%) Location \_\_\_\_\_  
Depth Drilled 44' CS=CONTINUOUS SAMPLER  
Drilling Method 8" Ø HOLLOW STEMS ST=SHELBY TUBE  
Depth to Water \_\_\_\_\_ ft @ completion (▽), \_\_\_\_\_ ft @ \_\_\_\_\_ hrs.(▽), \_\_\_\_\_ ft @ \_\_\_\_\_ hrs.  
G = Grab

Depth ft	Sample		Elev	COLOR	MC %	CONSISTENCY	Soil Description
	No.	Type					
23-1		A		DARK GRAY	FROZEN	FROZEN	SANDY SILTY CLAY W/ SOME GRAVEL
23-2		CS			MOIST	MED	
23-3		CS	969.95	DARK GRAY			SANDY SILTY CLAY W/ TRACE GRAVEL
23-4		CS		DARK GRAY	VERY MOIST		
23-5		ST			MOIST		
23-6		CS					VERY SANDY SILTY CLAY W/ TRACE GRAVEL
23-7		ST	956.95	DARK GRAY	MOIST		
23-8		CS		DARK GRAY	VERY MOIST	MED DENSE	VERY SANDY CLAYEY SILT TO CLAYEY SILTY SAND
23-9		CS	953.95		MOIST	MED	

↑ Fill Added (20ft)

TR GREEN MIXED IN DARK GRAY

Depth ft	Sample		Elev	COLOR	MC %	CONSISTENCY	Soil Description
	No.	Type					
35	23-9	CS	948.95	DARK GRAY	MOIST	MED	VERY SANDY CLAYEY SILT
37			944.95	DARK GRAY	37' WET	37' SOFT	VERY SANDY SILTY CLAY W/TRACE GRAVEL & EMBEDDED SAND & GRAVEL SEAMS
40	23-10	CS	939.95	DARK GRAY	WET	LOOSE	SAND AND GRAVEL
45					AUGER REFUSAL @ 44'		~ 64 Ft
50							
55							
60							
65							
70							
75							



IOWA DEPARTMENT OF NATURAL RESOURCES  
**Monitoring Well/Piezometer  
 Abandonment Form**

Disposal Site Name: Boone County Sanitary Landfill Permit No.: 08-SDP-01-75P

Well/Piezometer No.: MW21-43

Applicable Requirements<sup>1</sup>:  567 IAC 113  567 IAC 139  
 567 IAC 114  Site Permit  
 567 IAC 115  Other: \_\_\_\_\_

**1. Location of Well<sup>2</sup>**

Site Coordinates: Northing: 7868.52 Easting: 9436.76

World Coordinates: Latitude: \_\_\_\_\_ Longitude: \_\_\_\_\_

**2. Well Description:**

Well depth: 30.25 ft

Depth to water: 20.24 ft.

Well material: PVC (PVC, stainless, iron, etc.)

Well diameter: 2.0 in.

Year or decade constructed: 2021

Abandonment date: 4/6/2026 ✓

Abandonment method: IAC 113.10(2)" d" - by over-drilling to original depth/diameter & tremie grouting from the bottom-up.

If plugged by owner, complete the following:

I certify, under penalty of law, I believe the information reported on this form is true, accurate, and complete.

Signature of Owner \_\_\_\_\_

If plugged by certified well contractor, complete the following:

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# MONITORING WELL / PIEZOMETER CONSTRUCTION DOCUMENTATION FORM

Disposal Site Name Boone County Sanitary Landfill Permit No. 08-SDP-01-75P  
Well or Piezometer No. MW 21-43 Dates Started 12/29/21 Date Completed 12/29/21

## A. SURVEYED LOCATION AND ELEVATION OF POINT (+0.5 ft.)

Specify corner of site N - 7868.52 E - 9436.76 Distance and direction along boundary Site Specific Coordinate Base  
Distance and direction from boundary to surface monitoring well \_\_\_\_\_  
Elevation (+0.01 ft. MSL) \_\_\_\_\_  
Ground Surface 975.65 ft Top of protective casing 978.55 ft  
Top of well casing 978.29 ft Benchmark elevation 1058.62  
Benchmark description Site Control Point No. 2

## B. SOIL BORING INFORMATION

Construction Company Name Terracon, Consultants, Inc  
Address 600 SW 7th Street City, State, Zip Code Des Moines, IA 50309  
Name of driller Paul Falk  
Drilling method HSA Drilling fluid N/A Bore Hole diameter 8.25 inch  
Soil sampling method Split Spoon Depth of boring 29.0 ft

## C. MONITORING WELL INSTALLATION

Casing material <u>PVC</u>	Placement method <u>Tremle Pipe</u>
Length of casing <u>20.25 ft</u>	Volume <u>3.4 cu ft</u>
Outside casing diameter <u>2.375 inch</u>	Backfill (if different from seal): _____
Inside casing diameter <u>2.067 inch</u>	Material _____
Casing joint type <u>Threaded</u>	Placement method _____
Casing/screen joint type <u>Threaded</u>	Volume _____
Screen material <u>PVC</u>	Surface seal design: _____
Screen opening size <u>0.006 inch</u>	Material of protective casing: <u>Steel</u>
Screen length <u>10 ft</u>	Material of grout between protective casing and well casing: <u>Bentonite Chips</u>
Depth of Well <u>30.25 ft</u>	Protective cap: _____
Filter Pack: _____	Material <u>Steel</u>
Material <u>Silica Sand</u>	Vented?: <input checked="" type="checkbox"/> Y <input type="checkbox"/> N Locking?: <input checked="" type="checkbox"/> Y <input type="checkbox"/> N
Grain Size <u>.25 mm</u>	Well cap: _____
Volume <u>4.76 cu ft</u>	Material <u>PVC</u>
Seal (minimum 3 ft. length above filter pack): _____	Vented?: <input checked="" type="checkbox"/> Y <input type="checkbox"/> N
Material <u>Bentonite Grout</u>	

## D. GROUNDWATER MEASUREMENT (+0.01 foot below top of inner well casing)

Water level 20.30 Stabilization time 13 Days  
Well development method Pump and Surge to be completed at a later date.  
Average depth of frost line 48 inch

## DRILLER'S CERTIFICATION

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

Signature  Certification # 1207 Date 1.17.22

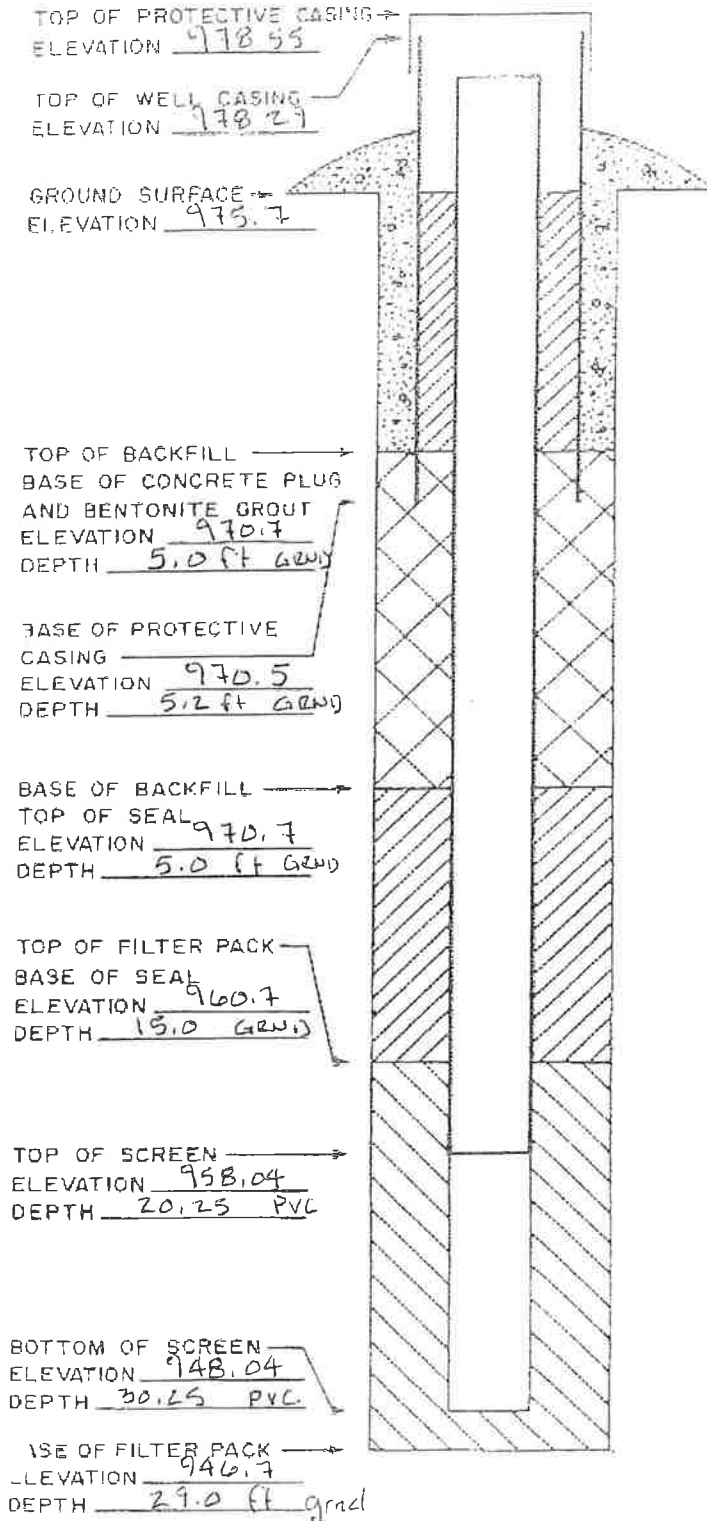
Attachments: Driller's log. Pipe schedules and grouting schedules. 8 1/2 inch x 11 inch map showing locations of all monitoring wells and piezometers.

Please mail completed form to: Iowa Department of Natural Resources, Land Quality Bureau, 502 E. 9<sup>th</sup> St, Des Moines, IA 50319.  
Questions? Call or Email: Nina Booker Environmental Engineer Sr., 515-725-8309, [nina.booker@dnr.iowa.gov](mailto:nina.booker@dnr.iowa.gov)

ELEVATIONS ± 0.01 FT. MSL  
DEPTHS ± 0.1 FT FROM  
GROUND SURFACE

SPACE TO ATTACH ENTIRE SOIL BORING LOG  
(SHOW SCREENED INTERVAL AND FILTER PACK INTERVAL)

MW-21-43





HLW Engineering Group  
 204 West Broad Street, P.O. Box 314  
 Story City, Iowa 50248

Telephone: (515) 733-4144  
 Fax: (515) 733-4146

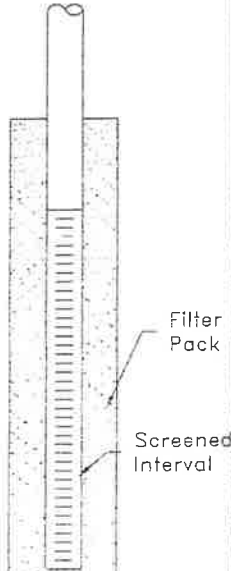
HLW Engineering Group

LOG OF TEST BORING

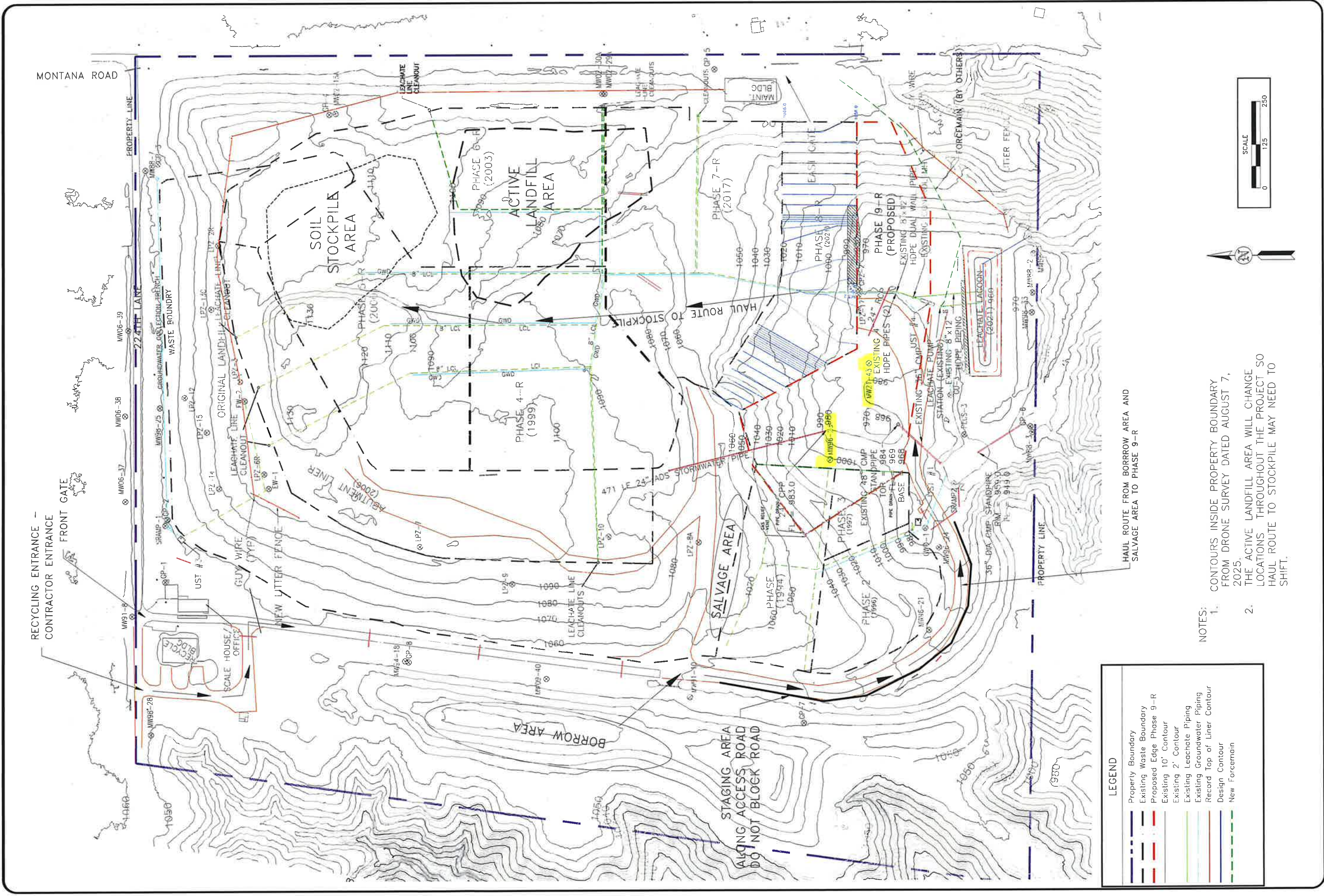
Drillers Terracon - Paul Falk Boring No. MW 21-43 HLW Observer JGH  
 HLW Project No. 6007-20A.200

Date Drilled 12/29/21 Project BOONE COUNTY SANITARY LANDFILL  
 Surface Elevation 975.65 FT 08-SDP-01-75P  
 Depth Drilled 29.0 FT PHASE 8R EXPANSION MONITORING WELL  
 Drilling Method 8" HSA  
 Depth to Water \_\_\_\_\_ ft @ completion (▽), \_\_\_\_\_ ft @ \_\_\_\_\_ hrs.(▼), \_\_\_\_\_ ft @ \_\_\_\_\_ hrs.

DEPTH FT	WELL DETAIL	SAMPLE		COLOR	MC %	CONSISTENCY	ELEV	SOIL DESCRIPTION
		NO.	TYPE					
0								
		1	SS	Gray	Moist	Soft	3	Silty Clay with Fine Sand - Oxidized
		2	SS	Dark Gray		Medium		Silty Clay - Oxidized
5		3	SS				7	Fine Sand in Nose
		4	SS	Gray	Wet	Firm		Fine Silty Sand
		5	SS	Dark Gray	Moist	Medium	9	Silty Sandy Clay Some Sand Stringers
10		6	SS	Gray	Wet	Dense	11	Fine Sand
				Gray	Damp	Firm	12	Clay - Black Spots
		7	SS					
15		8	SS					
		9	SS		Wet	Dense	18.5	Fine Sand
		10	SS				19	Medium Sand
20		11	SS					
		12	SS					
25		13	SS					
		14	SS		Moist	Medium	27	Silt



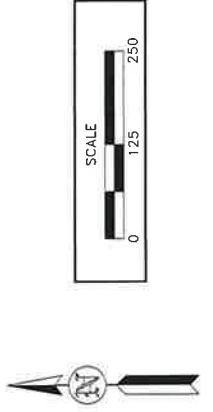
END OF BORING @ 29.0 FT



**LEGEND**

Property Boundary	--- (Blue dashed line)
Existing Waste Boundary	--- (Black dashed line)
Proposed Edge Phase 9-R	--- (Red dashed line)
Existing 10' Contour	--- (Black solid line)
Existing 2' Contour	--- (Green solid line)
Existing Leachate Piping	--- (Blue solid line)
Existing Groundwater Piping	--- (Red solid line)
Record Top of Liner Contour	--- (Black solid line)
Design Contour	--- (Blue solid line)
New Foremain	--- (Green dashed line)

- NOTES:**
1. CONTOURS INSIDE PROPERTY BOUNDARY FROM DRONE SURVEY DATED AUGUST 7, 2025.
  2. THE ACTIVE LANDFILL AREA WILL CHANGE LOCATIONS THROUGHOUT THE PROJECT SO HAUL ROUTE TO STOCKPILE MAY NEED TO SHIFT.



HLW Engineering Group  
 204 West Broad Street, P.O. Box 314  
 Story City, Iowa 50248  
 Phone: (515) 733-4144  
 FAX: (515) 733-4146

**OVERALL SITE PLAN**

BOONE COUNTY SANITARY LANDFILL  
 BOONE, IA

**FIGURE: 2**

REVISION	NO.	DATE
DRAWN	JGH	PROJECT NO. 6007-25B
		DATE 03/30/26