Penn E&R
Environmental & Remediation, Inc.

January 27, 2025
4000-PA009580-005

VIA ELECTRONIC MAIL

Mr. Michael B. "Mick" Leat
Land Quality Bureau
Iowa Department of Natural Resources
Henry A. Wallace Building
502 East 9th Street
Des Moines, IA 50319-0034

Subject: Leachate Control System Performance Evaluation Report – 2024
WDC Acquisition LLC Landfill
Creston, Iowa

Dear Mr. Leat:

Penn Environmental & Remediation, Inc. (Penn E&R) is pleased to submit this Leachate Control System (LCS) Performance Evaluation Report for calendar year 2024 for the landfill currently operated at the WDC Acquisition LLC (WDC) facility in Creston, Iowa. This performance evaluation is being submitted in fulfillment of the requirements specified in Section X.2.d of the Sanitary Disposal Project Permit No. 88-SDP-4-86P (Permit) issued September 15, 2021.

BACKGROUND

WDC currently operates a manufacturing facility located in Creston, Iowa, as shown in **Figure 1**. The plant produces aluminum and magnesium metal sand-mold casts of parts. The parts are then machined to specification. Industrial wastes such as reclaimed foundry sand, baghouse waste/dust, and treated magnesium dross are generated and were previously disposed in the adjacent landfill, as shown in **Figure 2**.

As part of the operation of the landfill, an LCS consisting of collection trenches, a pump station, piping, and filtration system operates to control the groundwater level within the landfill. Piezometers within the boundaries of the landfill monitor the groundwater elevation. The actual treatment portion of the LCS consists of filtration, storage, sampling, and discharge, as shown in **Figure 3**. The LCS operates based on the level of leachate accumulated in the pump station draining the collection trenches. Leachate is transferred through a filter to the holding tank where it is periodically sampled and discharged. In 2024, the system generally operated by discharging on a continuous basis.

ANALYTICAL RESULTS AND MAINTENANCE

Monthly performance results are recorded for operation of the LCS, including generated volumes and analytical data. A summary of the volumes collected through the LCS is presented in **Table 1**. For evaluation year 2024 (November 2023 through October 2024), approximately 2,204,814 gallons of leachate were collected, treated, and discharged to the City of Creston Publicly Owned Treatment Works (POTW). For 2024, the LCS was typically operated daily, with daily monitoring and monthly sampling (weekly

sampling for lead). The results from the monthly analytical sampling are presented in **Table 2**, along with the POTW discharge limits. No exceedances were identified in the 2024 evaluation year.

It should be noted that WDC's leachate discharge is evaluated for compliance by the POTW using the mass loading for the volume of leachate discharged *the day* the monthly sample was taken. In this report, the concentrations of constituents in the monthly sample are used with the average and maximum daily leachate discharge volumes for *the month* to determine the mass loadings shown in **Table 2**.

The treatment system's Mag-style meter was installed in 2023 and has been working without issue. During any times when the flow meter is not functioning correctly, the flows are calculated using the total effluent discharge readings, which include leachate flows, and multiplying the recent percentage of leachate flows compared to total effluent flows.

In July 2023 constrictions in leachate piping from the pump lift station to the collection tank inside the building resulted in low to no leachate flow. The piping was subsequently hydro jet cleaned to remove residual buildup and normal operations resumed in August 2023. Iowa Administrative Code (IAC) 567.115.26(11)a(8) requires the LCS be cleaned at least once every three years.

COMPLIANCE WITH MAXIMUM LEACHATE HEAD

In Section X.2.d. of the Permit, two regulatory references are cited. First, IAC 567.115.26(11)a(1) is cited which requires that *"The leachate collection system shall be designed to allow not more than one foot of head above the top of landfill liner. The collection system must include a method for measuring the leachate in the landfill at the lowest areas(s) of the collection system."* Second, IAC 567.115.26(12)b(2) is cited which requires that *"Existing fill areas must address the design standards of subrule 115.26(11), except paragraph "a", subparagraphs (1) to (4). The leachate collection system must be designed to achieve the lowest possible leachate head above the landfill liner and must include a method of measuring the leachate head."*

The locations of the piezometers used to monitor leachate elevations within the boundaries of the landfill are shown in **Figure 2**. **Table 3** summarizes the leachate elevation data for these piezometers. As recommended in the 2002 LCS Performance Evaluation Report, top of casing elevations of the subject piezometers was resurveyed in April 2003 by Mid-State Surveying & Consulting, Inc. of Creston, Iowa. This was done to confirm the elevations used in the past (Howard R. Green Company March 1999 Existing Topography) and to verify that past piezometer extensions have been accounted for. WDC previously adjusted top of casing elevations to account for casing reductions during previous net removal of waste material from the landfill and more recent surveys. This has ceased since the landfill is now closed. The most current top of casing elevations, which are assumed final, are noted in **Table 3**. Information obtained from the January 5, 1993, Hydrogeologic Investigation Report was used to more accurately reconstruct the base of landfill elevations at the piezometer locations. The results of this analysis indicate that the base of the landfill (based on the information available at the piezometer locations) lies at an elevation of approximately 1,255.50 feet above mean sea level, with a high at LPZ-21 of 1,258.34 feet and a low at LPZ-24 of 1,253.08 feet.

By using the current piezometer elevations to compute the elevation of the leachate within the landfill during 2024, it was found that leachate levels varied from a maximum of 5.98 feet above the landfill base (LPZ-26, August 2024) to a low of 4.38 feet above the landfill base (LPZ-23, April 2024).

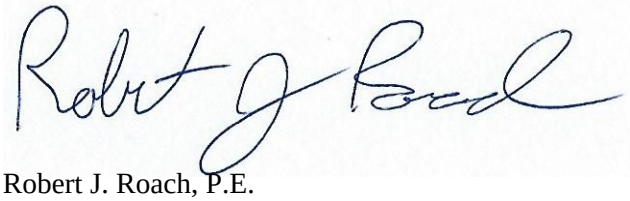
The evaluation of leachate elevations within the landfill demonstrates that more than 1 foot of head exists above the projected landfill base. However, as noted in IAC 567.115.26(12)b(2), the 1-foot requirement is intended for new landfills and is specifically exempted for existing fill areas. The leachate collection system

in place at the landfill is intended to achieve the lowest possible leachate head above the landfill base by collecting leachate via the perimeter collection trenches. Continued tracking of leachate levels within the landfill, utilizing current top of piezometer elevations, will determine whether leachate levels are maintained at the lowest levels possible. Overall, the leachate levels within the landfill are comparable to past levels. Refer to the Second Semiannual Landfill Inspection Report for 2024 for additional information regarding the performance of the LCS.

CONCLUSIONS

In accordance with Section X.2.d. of the Permit, effective control of leachate is defined as compliance with IAC 567.115.26(11)a(1) and IAC 567.115.26(12)b(2), and the maintenance of surface and groundwater quality standards at compliance monitoring points. As stated above, leachate levels within the landfill indicate that more than 1 foot of head exists above the projected landfill base. Continued evaluation of leachate levels within the landfill will determine whether leachate levels are maintained at the lowest possible levels; leachate elevations are comparable to past levels. The Annual Water Quality Report for 2024 Sampling Data details exceedances of groundwater quality standards for several parameters at several monitoring wells, consistent with data from previous annual reports.

Respectfully submitted,
PENN ENVIRONMENTAL & REMEDIATION, INC.



Robert J. Roach, P.E.
Senior Project Engineer

RJR:cdb

Enclosures

cc: M. Thelen/WDC
P. Murrow/USEPA
C. Denton/B&T
R. Doumont/Penn E&R

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TABLES

Table 1
Monthly Performance Results
WDC Acquisition LLC Landfill
Creston, Iowa
Calendar Years 2023 - 2024

Sample Date	Average Daily Discharge in Gallons[(1)]	Max Daily Discharge in Gallons	Monthly Discharge in Gallons	Cumulative Discharge in Gallons
November 2023	4,193	8,042	125,804	125,804
December 2023	4,139	8,327	128,298	254,102
January 2024	5,113	12,992	158,506	412,608
February 2024	5,526	11,405	160,245	572,853
March 2024	3,777	9,605	117,080	689,933
April 2024	5,347	15,739	160,415	850,348
May 2024	8,738	16,504	270,873	1,121,221
June 2024	8,400	19,171	252,010	1,373,231
July 2024	8,124	14,551	251,845	1,625,076
August 2024	6,820	13,437	211,418	1,836,494
September 2024	6,427	9,272	192,820	2,029,314
October 2024	5,661	11,705	175,500	2,204,814

[(1)] Average calculated based on discharge days for the month, not calendar days.

Table 2
Discharge Limits and Analytical Sampling Results
WDC Acquisition LLC Landfill
Creston, Iowa
Calendar Years 2023 and 2024

Sample Date	Max. BOD (lbs/day) [1]	Max. Hexavalent Chromium (lbs/day) [1]	Max. Fluoride (lbs/day) [1]	*Ave.Fluoride (lbs/day) [2]*	Max. Ammonia Nitrogen (lbs/day) [1]	Max. O&G (mg/l)	Max. Phenols (lbs/day) [1]	Max. TSS (lbs/day) [1]	Max. Chromium (lbs/day) [1]	Max. Lead (lbs/day) [1]	*Ave. Lead (lbs/day) [2]*	Max. Zinc (lbs/day) [1]	*Ave. Zinc (lbs/day) [2]*
November 2023	0.5738	0.0007	3.79	1.98	0.62	2.6500	0.0007	4.43	0.0010	0.00007	0.00004	0.0080	0.0042
December 2023	0.4169	0.0007	4.02	2.00	0.66	2.5500	0.0007	3.15	0.0006	0.00002	0.00001	0.0044	0.0022
January 2024	0.6505	0.0011	5.95	2.34	0.94	2.5500	0.0011	5.53	0.0012	0.00428	0.00169	0.0043	0.0017
February 2024	0.5710	0.0010	5.58	2.70	0.54	2.6500	0.0010	2.92	0.0006	0.00002	0.00001	0.0040	0.0020
March 2024	0.4809	0.0008	4.26	1.67	0.68	2.6000	0.0008	3.90	0.0007	0.00002	0.00001	0.0029	0.0012
April 2024	0.7881	0.0013	6.74	2.29	1.09	2.5500	0.0013	5.65	0.0008	0.00003	0.00001	0.0043	0.0015
May 2024	0.8264	0.0014	7.27	3.85	0.68	2.4000	0.0014	3.58	0.0003	0.00003	0.00002	0.0091	0.0048
June 2024	1.6798	0.0016	8.19	3.59	1.20	2.6000	0.0016	6.56	0.0009	0.00004	0.00002	0.0091	0.0040
July 2024	0.7286	0.0012	6.68	3.73	0.71	2.5500	0.0012	3.95	0.0003	0.00003	0.00002	0.0307	0.0172
August 2024	1.8053	0.0011	6.30	3.20	0.86	2.5500	0.0011	4.00	0.0003	0.00003	0.00001	0.0055	0.0028
September 2024	0.4642	0.0008	4.23	2.93	0.56	2.5000	0.0008	5.03	0.0007	0.00002	0.00001	0.0008	0.0005
October 2024	0.5861	0.0010	5.49	2.65	0.79	3.0500	0.0010	4.10	0.0008	0.00002	0.00001	0.0010	0.0005
Average Permitted Release (lbs/day)	**25**	**0.05**	**40**	**40**	**1.5**	**50 (mg/L)**	**0.3**	**25**	**0.25**	**0.025**	**0.025**	**0.25**	**0.25**
Maximum Permitted Release (lbs/day)	**40**	**0.15**	**60**	**60**	**3**	**75 (mg/L)**	**0.3**	**40**	**0.75**	**0.075**	**0.075**	**0.75**	**0.75**

Notes:
[1] Table uses maximum discharge flow/day for the month in calculation of mass flow discharges unless otherwise noted.
[2] Based on average discharge flow/day for the month (per discharge day not calendar day), unless otherwise noted.
[3] Red shaded cells indicate exceedances based on POTW limits.
[4] Blue shaded cells are calculated/reported using concentrations at one-half the reporting limit (ref: IDNR letter to Wellman dated May 9, 2013).

Table 3
Leachate Elevations
WDC Acquisition LLC Landfill
Creston, Iowa
Calendar Years 2022 and 2023

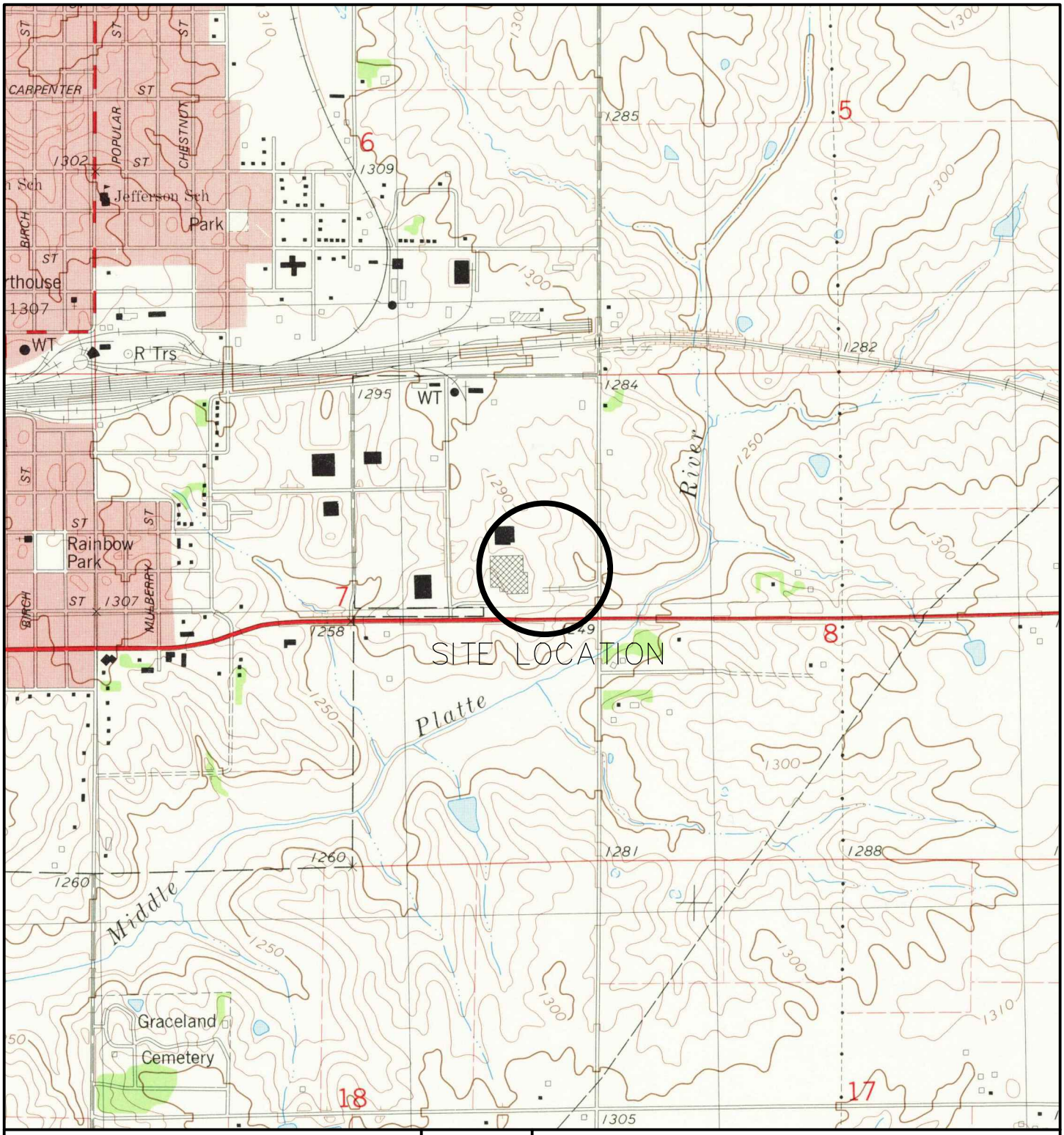
				November		December		January		February		March		April		May		June		July		August		September		October	
Well I.D.	TOC Elev.11/2018 (ft MSL)[1,2]	TOC Elev.01/2019 (ft MSL)	TOC Elev.09/2019 (ft MSL)	Depth to GW (ft)	GW Elev (ft MSL)	Depth to GW (ft)	GW Elev (ft MSL)	Depth to GW (ft)	GW Elev (ft MSL)	Depth to GW (ft)	GW Elev (ft MSL)	Depth to GW (ft)	GW Elev (ft MSL)	Depth to GW (ft)	GW Elev (ft MSL)	Depth to GW (ft)	GW Elev (ft MSL)	Depth to GW (ft)	GW Elev (ft MSL)	Depth to GW (ft)	GW Elev (ft MSL)	Depth to GW (ft)	GW Elev (ft MSL)	Depth to GW (ft)	GW Elev (ft MSL)	Depth to GW (ft)	GW Elev (ft MSL)
LPZ-21[3]	NA[4]	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
LPZ-23	1281.24	1281.24	1277.24[5]	17.31	1259.93	17.35	1259.89	17.42	1259.82	17.51	1259.73	176	1101.24	17.65	1259.59	17.31	1259.93	17.13	1260.11	16.96	1260.28	16.68	1260.56	17.12	1260.12	17.53	1259.71
LPZ-24[3]	1273.87	1273.87	1273.87[5]	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
LPZ-25[3]	1277.81	1277.81	1277.81	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
LPZ-26	1281.33	1281.33	1277.83[5]	17.72	1260.11	17.77	1260.06	17.89	1259.94	17.98	1259.85	18.19	1259.64	18.31	1259.52	18.21	1259.62	18.05	1259.78	17.61	1260.22	17.36	1260.47	17.5	1260.33	18.01	1259.82

Notes:
[1] TOC = Top of inner casing.
[2] ft MSL = Feet above mean sea level.
[3] Damaged, not functional.
[4] NA = Not available.
[5] TOC elev. revised September 2019 due to resurvey.

Well I.D.	Orig. TOC 1993 HIR Report (ft MSL)	Well Depth to LF Base 1993 HIR Report (ft)	Elev LF Base 1993 HIR Report (ft MSL)
LPZ-21	1273.36	15.02	1258.34
LPZ-23	1272.96	17.75	1255.21
LPZ-24	1270.18	17.1	1253.08
LPZ-25	1274.49	18.6	1255.89
LPZ-26	1273.69	19.2	1254.49

		November		December		January		February		March		April		May		June		July		August		September		October	
Well I.D.	Elev LF Base 1993 HIR Report (ft MSL)	GW Elev (ft MSL)	Depth above LF Base (ft)	GW Elev (ft MSL)	Depth above LF Base (ft)	GW Elev (ft MSL)	Depth above LF Base (ft)	GW Elev (ft MSL)	Depth above LF Base (ft)	GW Elev (ft MSL)	Depth above LF Base (ft)	GW Elev (ft MSL)	Depth above LF Base (ft)	GW Elev (ft MSL)	Depth above LF Base (ft)	GW Elev (ft MSL)	Depth above LF Base (ft)	GW Elev (ft MSL)	Depth above LF Base (ft)	GW Elev (ft MSL)	Depth above LF Base (ft)	GW Elev (ft MSL)	Depth above LF Base (ft)	GW Elev (ft MSL)	Depth above LF Base (ft)	GW Elev (ft MSL)	Depth above LF Base (ft)
LPZ-21	1258.34	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
LPZ-23	1255.21	1259.93	4.72	1259.89	4.68	1259.82	4.61	1259.73	4.52	1101.24	-153.97	1259.59	4.38	1259.93	4.72	1260.11	4.90	1260.28	5.07	1260.56	5.35	1260.12	4.91	1259.71	4.50		
LPZ-24	1253.08	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
LPZ-25	1255.89	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
LPZ-26	1254.49	1260.11	5.62	1260.06	5.57	1259.94	5.45	1259.85	5.36	1259.64	5.15	1259.52	5.03	1259.62	5.13	1259.78	5.29	1260.22	5.73	1260.47	5.98	1260.33	5.84	1259.82	5.33		

FIGURES



SCALE – FEET

0 2000

REFERENCE
USGS 7.5–MIN TOPOGRAPHIC QUADRANGLE CRESTON EAST, IOWA, DATED 1980 SCALE 1:24000.

NORTH

FIGURE 1
SITE LOCATION MAP

WDC ACQUISITION LLC FACILITY
CRESTON, IOWA

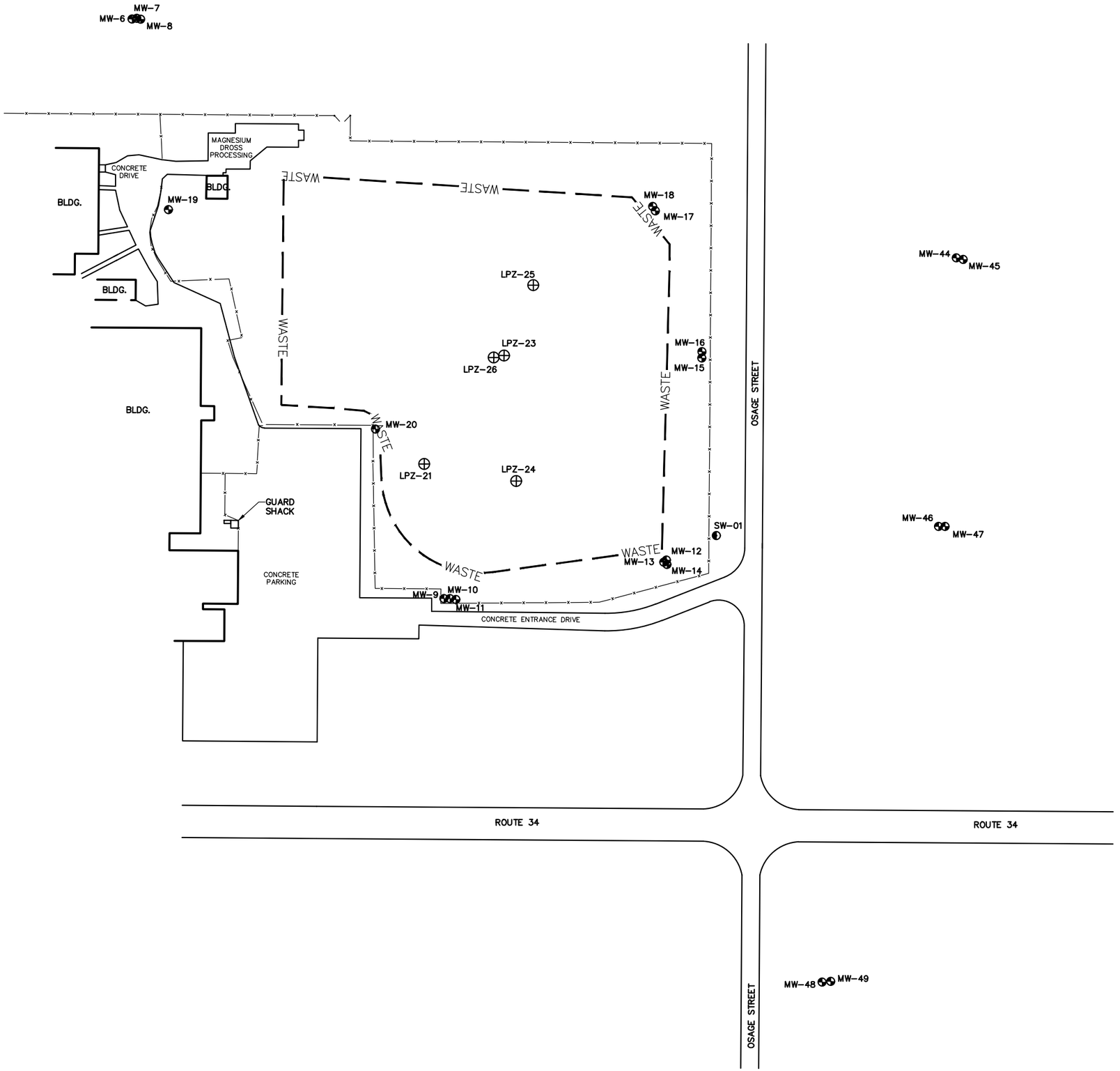
PREPARED FOR
WDC ACQUISITION LLC
CRESTON, IOWA

APPROVED	RJR 01/26/2023
CHECKED	RFD 01/26/2023
DRAWN	CAC 11/24/2021
PROJECT NO.	4000–PA008641

DRAWING NUMBER
PA008641001

Penn E&R
Environmental & Remediation, Inc.

S:\PROJECT FILES\4000–PA008981 WDC OPS 2022\2022 LCSPE\REFERENCE\FIGURE 1 – PA008641001.DWG,1/25/2023 12:02 PM



LEGEND

SW-01	SURFACE WATER MONITORING POINT (APPROXIMATE LOCATION)
MW-16	MONITORING WELL
LPZ-21	LEACHATE PIEZOMETER
WASTE	APPROXIMATE LANDFILL BOUNDARY
x x	CHAIN LINK FENCE

REFERENCE:
1. TAKEN FROM GREEN ENVIRONMENTAL SERVICES, INC. "HYDROGEOLOGIC INVESTIGATION REPORT" JANUARY 25, 1993.
2. TOPOGRAPHIC AND ELEVATION SURVEY BY GARDEN & ASSOCIATES, LTD., JUNE 13, 2018.

NORTH

SCALE – FEET

0 150 300 450

REVISION	DATE	DESCRIPTION

FIGURE 2
SITE PLAN

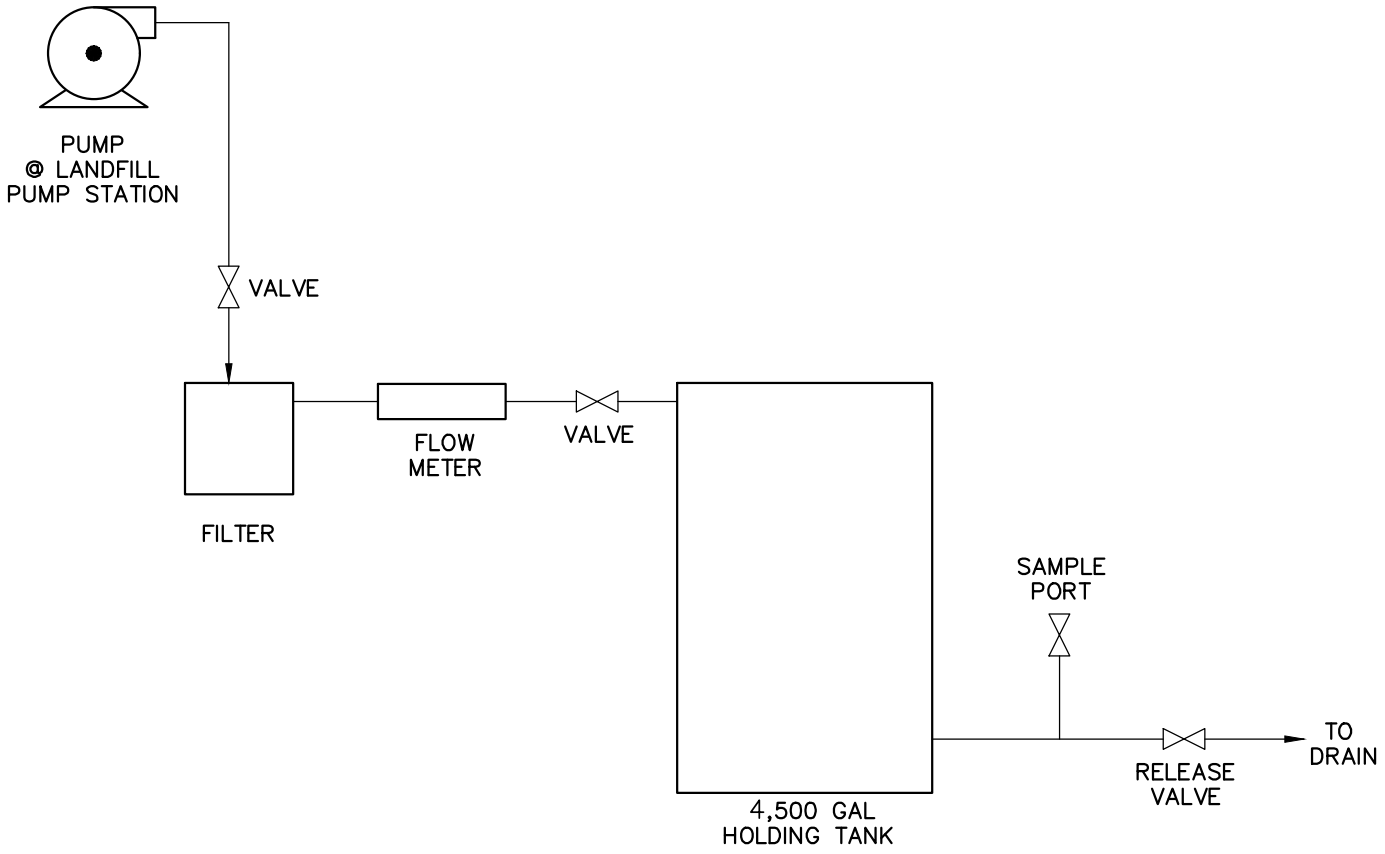
WDC ACQUISITION LLC FACILITY
CRESTON, IOWA

PREPARED FOR
WDC ACQUISITION LLC
CRESTON, IOWA

APPROVED	RJR 01/26/2023
CHECKED	RFD 01/26/2023
DRAWN	CAC 11/24/2021
PROJECT NO.	4000-PA008641
DRAWING NUMBER	PA008641201

Penn E&R
Environmental & Remediation, Inc.

S:\PROJECT FILES\4000-PA008981 WDC OPS 2022\2022 LCSPE\REFERENCE\FIGURE 2 - PA008641201.DWG, 1/25/2023 11:22:53 AM



DRAWING NOT TO SCALE

FIGURE 3
LEACHATE CONTROL SYSTEM
TREATMENT FACILITY
WDC ACQUISITION LLC
CRESTON, IOWA

PREPARED FOR
WDC ACQUISITION LLC
CRESTON, IOWA

APPROVED	RJR 01/26/2023
CHECKED	RFD 01/26/2023
DRAWN	CAC 11/24/2021

DRAWING NUMBER
PA008641003

Penn E&R
Environmental & Remediation, Inc.

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