INL/RPT-26-89787

2025 Annual Industrial Wastewater Reuse Report for the Idaho National Laboratory Site's Materials and Fuels Complex Industrial Waste Pond

February 2026

Idaho National Laboratory

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Idaho National Laboratory
Idaho Falls, Idaho 83415

http://www.inl.gov

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ABSTRACT

This report describes conditions and information for permit year November 1, 2024, through October 31, 2025, as required by state of Idaho Department of Environmental Quality (DEQ) Reuse Permit, I-160-02, Modification 6. Modification 6 was issued July 24th, 2025, due to a change in the authorized representative (Bruns 2025).

This report contains the following information:

- Facility and system description
- Permit-required effluent monitoring data and loading rates
- Groundwater monitoring data
- Status of special compliance conditions
- Issues/noncompliances
- Discussion of the facility's environmental impacts.

In summary, for the 2025 report year, the concentrations of all permit-required groundwater constituents were below the applicable groundwater quality standard levels including both total and dissolved (filtered) iron and manganese concentrations. An estimated 7.729 million gallons of industrial wastewater were discharged to the Industrial Waste Pond, which is well below the permit limit of 17 million gallons per year.

There were zero five-day written notifications/reports of noncompliance during the report year.

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FIGURES

TABLES

ACRONYMS

BEA	Battelle Energy Alliance, LLC
bgs	below ground surface
CA	Compliance Activity
CCN	correspondence control number
CFR	Code of Federal Regulations
DEQ	Idaho Department of Environmental Quality
FM	prefix for flow measurement identifier
GEL	General Engineering Laboratories
GW	prefix for groundwater monitoring description or identifier
ICS	Initial Calibration Standard
IDAPA	Numbering designation for all administrative rules in Idaho promulgated according to the Idaho Administrative Procedures Act
INL	Idaho National Laboratory
IRA	Inflation Reduction Act
IWCS	Industrial Wastewater Collection System
IWP	Industrial Waste Pond
MFC	Materials and Fuels Complex
MG	million gallons
MU	prefix for management unit location identifier
NA	not applicable
PCS	Primary Constituent Standard
PL	Primary Line
PO	plan of operation
QAPP	quality assurance project plan
SBL	Southwestern Branch Line
SCS	Secondary Constituent Standard
s.u.	standard units
TDS	total dissolved solids
USGS	United States Geological Survey, or prefix for groundwater reporting (well) common designation
WW	prefix for wastewater monitoring location identifier

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1. INTRODUCTION

The Materials and Fuels Complex (MFC) Industrial Waste Pond (IWP) is an industrial wastewater reuse facility operated by Battelle Energy Alliance, LLC (BEA). Operations during the 2025 reporting year were conducted under Reuse Permit I-160-02, Modification 6, as issued by the Idaho Department of Environmental Quality (DEQ) (Ayers 2023). A minor modification was issued July 24, 2025, to update the authorized representative from Kent L. Miller to Stacy M. Nottestad (Bruns 2025).

The current permit became effective January 26, 2017. The first minor modification, issued March 7, 2017, resolved a technical concern with the sampling requirements (Neher 2017). The second minor modification, issued May 8, 2019, updated the responsible official from Mr. Robert D. Boston to Mr. William E. Miller (Neher 2019). The third minor modification and reissuance, issued September 15, 2020, removed the Industrial Waste Ditch management unit after the West Campus Utility Corridor project connected the two pipelines, conveying discharges directly to the IWP and eliminating discharges to Ditch C (Neher 2020). The fourth minor modification, issued March 23, 2022, updated the responsible official from Mr. William E. Miller to Mr. Lance L. Lacroix (Ayers 2022). The fifth minor modification, issued October 24, 2023, updated the responsible official from Mr. Lance L. Lacroix to Mr. Michael J. McAnulty (Ayers 2023).

This annual report summarizes the facility system and operation, monitoring data, special compliance conditions, issues/noncompliances, and environmental impacts for the 2025 reporting year (November 1, 2024, through October 31, 2025).

2. FACILITY, SYSTEM DESCRIPTION, AND OPERATION

This facility is located on approximately 60 acres in the southeastern portion of Idaho National Laboratory (INL), approximately 30 miles west of Idaho Falls, Idaho, in Bingham County. MFC consists of buildings and structures for research and development of nuclear technologies, nuclear environmental management, and space radioactive power sources. The IWP, located outside the northwest corner of the MFC security fence, was first excavated in 1959 and has a design capacity of approximately 285 million gallons (MG) at a maximum water depth of 13 feet. The industrial wastewater system that feeds the IWP, referred to as the Industrial Wastewater Collection System (IWCS), consists of a combination of pipelines/branches, lift stations, flow meter, composite sampler, and associated components. Wastewater discharged to the IWCS consists of primarily non-contact cooling water, cooling tower drains, and air wash flows. Small volumes of MFC-768 cooling water system blowdown, intermittent reverse osmosis blowdown, and floor drain and laboratory sink discharges are also sent to the IWCS. On occasion, with approval, industrial wastewater from MFC facility process holdup tanks discharge to the pipeline.

The IWCS has two distinct sections: the IWCS Primary Line (PL) and the IWCS Southwestern Branch Line (SBL). The IWCS PL begins near MFC-774, travels north through lift station MFC-778A, then turns west through the monitoring station where it eventually discharges to the pond. The PL collects wastewater from all sources that pass through the flow meter and composite sampler, while the SBL only collects wastewater from sources inside building MFC-768. MFC-768 discharges to an underground pipe running northwest then turns towards the north through the MFC-803 lift station. This lift station pumps wastewater to the north where it discharges into the PL upstream of the flow meter and composite

sampler. MFC-768 also produces wastewater flow from the cooling water tower that discharges into the storm drain on the west side of the facility. The storm drain discharges into the IWP. Flows from preventative maintenance activities are estimated based off unit flow rates and the timeframe it discharges.

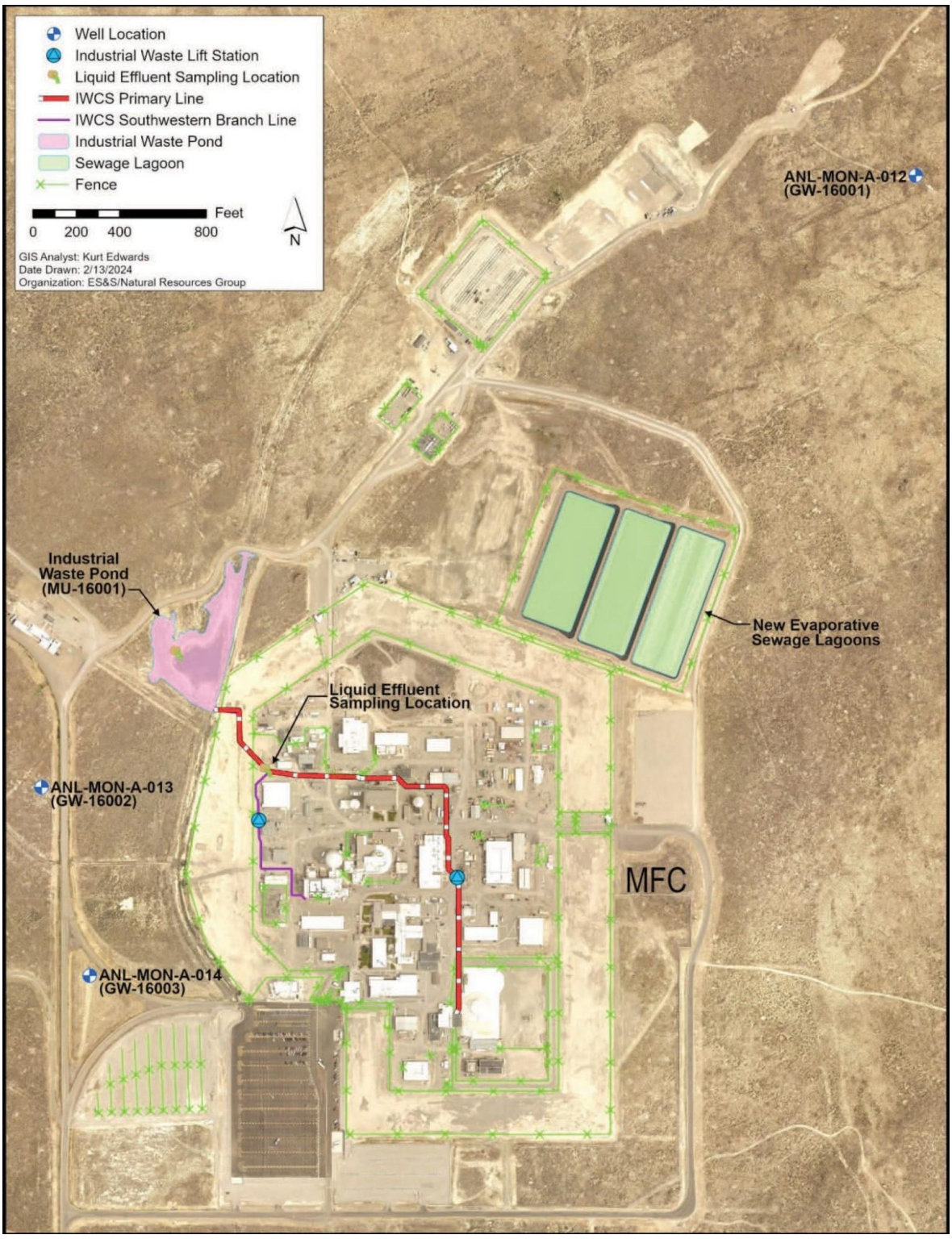

Figure 1. MFC Industrial Wastewater Collection System.

2.1 Significant Equipment Maintenance

On March 11, 2024, a meeting was held with DEQ to further discuss the industrial wastewater asbestos cement piping replacement project (Carlin 2024). BEA discussed the plans to replace approximately 1,225 feet of asbestos cement industrial wastewater piping, as well as the older lift station (MFC-778A) pumps. Pump controllers and dual monitoring (local and remote) are planned to be added to both lift stations. This project is considered maintenance due to a "like-kind" replacement with minor changes to location, and no planned changes in capacity. As a result, DEQ indicated that plans and specifications are not required to be reviewed by the State. However, DEQ requested a discussion of the project be included in the facility's annual report(s) as required by Section 6.1.2 of Reuse Permit I-160-02 (Bruns 2025). DEQ requested as-built drawings identifying the manholes at the completion of the project for DEQ records. The design was finalized and construction began in June 2025. As of the end of October all 1,225 feet of the asbestos cement industrial wastewater piping has been removed, however; the MFC-778A lift station pumps remain under construction. Once the lift station construction is complete MFC will send as-built drawings per DEQ's request.

There continues to be no existing or planned cross-connections or interconnections between the wastewater and any water supplies (potable or nonpotable) that require backflow prevention assemblies, devices, or methods.

3. EFFLUENT MONITORING

3.1 Sampling Program and Analytical Methods

The effluent discharges at MFC are monitored by trained and qualified BEA personnel. Effluent samples were collected monthly from the PL (sampling location WW-16001) prior to discharge to the IWP (see **Error! Reference source not found.**). All samples were collected according to established programmatic sampling procedures including project specific sampling and analysis plans and procedures that govern sampling activities and quality control protocols.

The effluent sampling was randomly scheduled within the constraints of the sampling staff and laboratory availability. Samples were typically collected early in the month (first or second week) and on a Tuesday or Wednesday of the selected week to ensure the contract laboratory could receive the samples during normal working hours to meet temperature and hold time requirements. Sampling early in the month also allowed extra time in the month to collect additional samples in the event there were issues with the original samples, sampling equipment, flow meter, etc.

All samples were analyzed using methods identified in 40 Code of Federal Regulations (CFR) 136, "Guidelines Establishing Test Procedures for the Analysis of Pollutants," 40 CFR 141, "National Primary Drinking Water Regulations," or 40 CFR 143, "Other Safe Drinking Water Act Regulations." Field parameters were measured with a meter calibrated within 24 hours of sample collection. All other permit-required samples were submitted under full chain-of-custody to GEL Laboratories located in Charleston, South Carolina.

3.2 Effluent Monitoring Results

The effluent samples were collected monthly from the PL at sample point WW-16001 prior to discharge to the IWP. All effluent samples were collected as 24-hour flow proportional composite samples using a Hach AS950 automated sampler. Total and filtered metals were analyzed to monitor system performance and provide better comparison to groundwater monitoring results. Chloride and sodium are monitored for operational purposes and are not required by the permit. Field parameters including pH and electrical conductivity were measured at the time of sample collection using calibrated

instruments. Conductivity is not required by the permit. All samples were collected as required by the permit and the analytical results are presented in Table 1.

The effluent data packages were submitted for data validation by an independent contractor to evaluate the useability of the analytical results. Validation qualifier flags are assigned to the data results merely to serve as caveats to data users. Several effluent sample results were qualified during data validation. The J-qualified results are definitive data that are considered estimates that may be inaccurate or imprecise, typically due to a laboratory quality control parameter outside of an acceptable range. These validation reports may be available upon request for further review. These qualified values are presented in Table 1.

There are no effluent loading or concentration limits specified in the permit; therefore, for reference only, the Secondary Constituent Standard (SCS) for total dissolved solids (TDS) under the Idaho Ground Quality Rule (IDAPA 58.01.11) is 500 mg/L, and the Primary Constituent Standard (PCS) for nitrate + nitrite as nitrogen is 10 mg/L. During the 2025 reporting year, the highest observed TDS concentration was 388 mg/L, and the highest nitrate + nitrite as nitrogen concentration was 4.09 mg/L, both below the applicable IDAPA constituent standards. Effluent monitoring results for 2025 remained consistent with historical trends, as illustrated in Figure 2.

Table 1. Analytical results for 24-hour composite samples collected from WW-16001.

Sample Month	Nov	Dec	Jan	Feb	Mar	April	May	June[a]	July	Aug	Sept	Oct
Sample Date	11/12/24	12/3/24	1/14/25	2/4/25	3/4/25	4/8/25	5/13/25	6/3/25	7/8/25	8/5/25	9/9/25	10/7/25
pH (s.u.)	8.22	8.12	7.88	7.88	7.27	7.75	7.98	8.26	7.62	7.28	8.33	8.28
Electrical conductivity (µS/cm)	495	443	750	503	402	509	470	558	417	445	483	421
Chloride (mg/L)	28.6	25.5	100	41.2	25.5	44.3	23.6	23.2 [23.8]	21.2	22.8	15.2	21.6
Nitrate+nitrite as nitrogen (mg/L)	3.58	3.11	3.7J[b]	3.13	2.8	4.09J	3.28	3.43 [3.69]	3.24	3.4	3.58	3.18
Total dissolved solids (mg/L)	300	259	388	294	217	312	280	343 [328]	254	275	252	243
Iron (mg/L)	0.0365	0.03U[c]	0.03U	0.0806	0.108	0.0432	0.0358	0.038J[e] [0.195J][e]	0.124	0.0777	0.154	0.0581
Iron, filtered (mg/L)	0.03U	0.03U	0.03U	0.03U	0.03U	0.0373	0.03U	0.03UJ[d] [0.03UJ]	0.03U	0.03U	0.03U	0.03U
Manganese (mg/L)	0.002U	0.002U	0.002U	0.00227	0.00246	0.00399	0.002U	0.00815 [0.00877]	0.00348	0.00242	0.00559	0.002U
Manganese, filtered (mg/L)	0.002U	0.002U	0.002U	0.002U	0.002U	0.0038	0.002U	0.00823 [0.00787]	0.002U	0.002UJ	0.002U	0.002U
Sodium (mg/L)	27.5	21.4	75.2	35.8	21.5J	37.7	25.0	26.3 [26.5]	23.4	20.1	28.8	20.4
Sodium, filtered (mg/L)	28.8	20.9	78.6	34.8	21.7J	38.0	24.3	27.3 [26.1]	23.1	21.0	29.6	23.4

a. Results for field duplicate sample collected in June are shown in parentheses.
b. J flag indicates the associated value is an estimate and may be inaccurate or imprecise.
c. U qualification indicates the analyte was analyzed for, but not detected above the MDL, MDA, or LOD.
d. UJ indicates that the sample was analyzed for but was not detected. The associated value is an estimate and may be inaccurate or imprecise.
e. This J flag indicates the associated value is an estimate and may be inaccurate or imprecise.due to high relative percent difference between primary sample and duplicate.

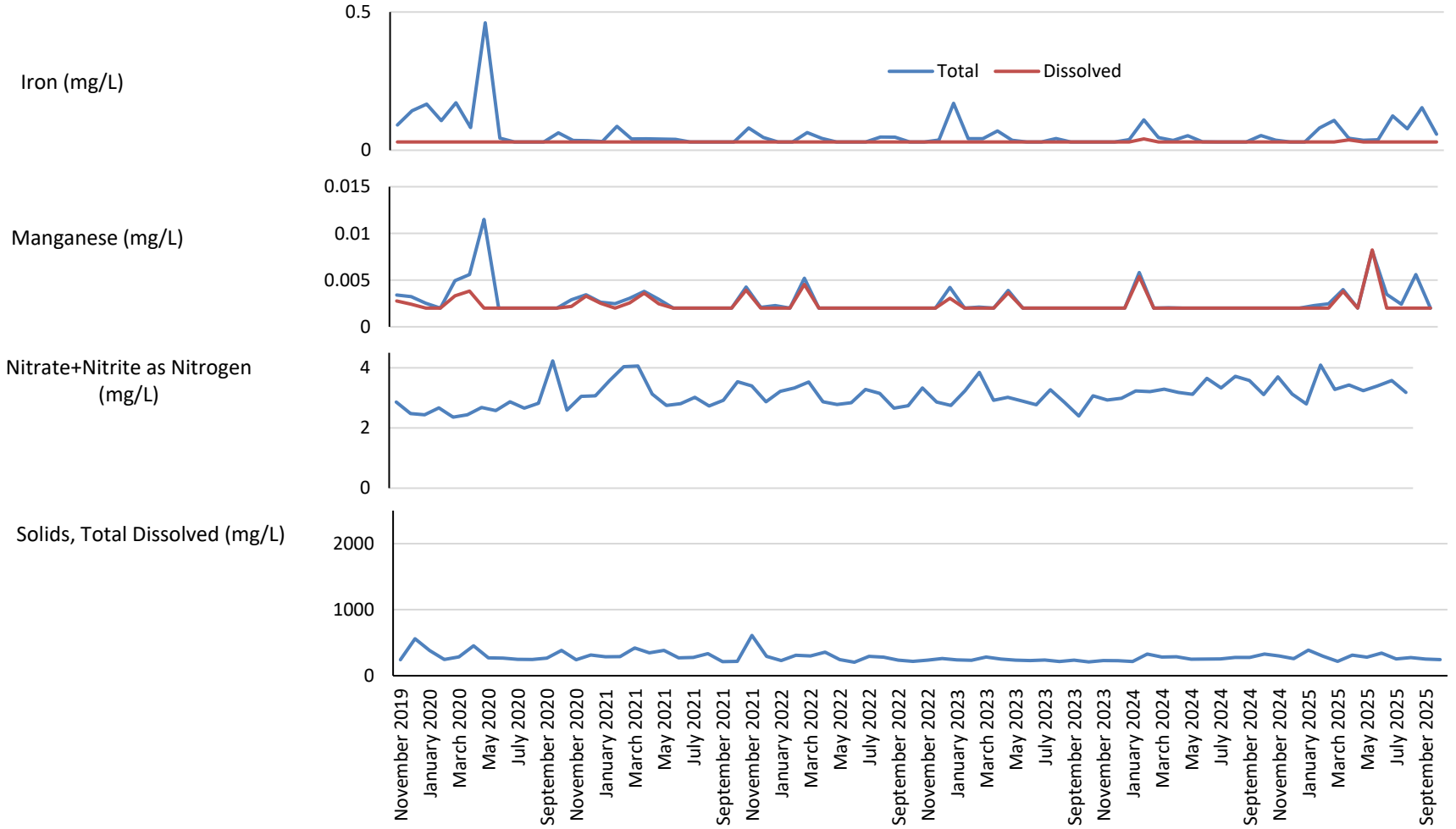

Figure 2. Iron, manganese, nitrate+nitrite as nitrogen, and TDS effluent concentrations from WW-16001 for the period of 2020 to 2025.

3.3 Flow Volumes and Hydraulic Loading Rates

The Reuse Permit, Section 5.1.2, requires weekly meter reading, monthly data compilation, and annual volumes (MG/year) reported. Table 2 summarizes the monthly and annual flow and volume data from the flow meter, FM-16001.

Table 2. Volume of wastewater discharged from the IWCS to the IWP.

Month	Average (gpm[a])	Total (MG[b,c])
Nov-24	9.4	0.407
Dec-24	9.1	0.406
Jan-25	9.0	0.400
Feb-25	10.4	0.421
Mar-25	17.7	0.789
Apr-25	14.4	0.622
May-25	31.9	1.425
Jun-25	10.0	0.431
Jul-25	17.8	0.794
Aug-25	21.4	0.954
Sep-25	12.3	0.530
Oct-25	12.3	0.550
TOTAL		**7.729**

a. gpm—gallons per minute
b. MG—million gallons
c. The sum of monthly totals listed herein may not equal actual annual total listed due to rounding.

There were several instances of flows being estimated throughout the 2025 reporting year. The first being during the MFC Deep Well #2 construction and disinfection process, where flushing activities discharged to the stormwater ditch adjacent to the IWCS sampling flume. Since this ditch ultimately drains into the industrial wastewater pond, a conservative approach was taken to estimate flows not captured by the flow meter. Based on valve positions—800 gallons per minute (gpm) for full open and 400 gpm for partially open—five discharge events between May and August were estimated to total 1,296,000 gallons. This volume was added to the reported flow totals. This was an unusual occurrence for the facility, and it is not expected to recur now that the deep well maintenance is complete. Table 3 summarizes the time and gallons estimated of the five discharge events.

Table 3. Volume of wastewater discharged from the IWCS to the IWP.

Date	Time Ran	Gallons Estimated	Notes
5-6-25	6 hours	288,000	Valve fully open
5-20-25	12 hours	576,000	Valve fully open
5-23-25	6 hours	144,000	Valve partially open
7-29-25	6 hours	144,000	Valve partially open
8-12-25	6 hours	144,000	Valve partially open. Recirculated most of the time. So used 6 instead of 12 hours
Total:		1,296,000	

The second instance of estimated flow occurred on October 2, 2025, during a planned power outage when the flow meter was temporarily switched to generator power. Due to a malfunction, the data acquisition system sent false operational signals to operators, indicating the meter was functioning when it was not. As a result, flow monitoring was lost for approximately two hours. Based on typical flow rates during similar operations, an estimated 1,560 gallons was calculated for this period and included in the total October flow volume.

The third instance of estimated flow occurred as part of the semi-annual preventative maintenance flushing of the cooling water tower located at MFC-768. These flushes, conducted in May and September of the 2025 reporting year, involved discharging water to the storm drain on the west side of the facility. Each event lasted approximately eight hours, with an estimated flow rate of 150–200 gallons per minute. To ensure a conservative estimate, the higher rate of 200 gpm was used, resulting in a total estimated discharge of 192,000 gallons. This volume was included in the annual total reported to the IWCS.

The total effluent flow volume was an estimated to be 7.729 MG for the reporting period, which is well below the 17 MG limit.

As requested in the MFC Industrial Wastewater Asbestos Cement Piping Replacement Project Meeting Minutes (Carlin, 2024), an estimate of 3.9 MG of stormwater was calculated to have flowed to the IWP for the 2025 reporting year. The stormwater volume was calculated based on the catchment areas of MFC and runoff coefficients from TEV-3763 along with the precipitation rates from November 2024 through October 2025. Detailed calculations and assumptions can be found in ECAR-8940, “MFC Storm Drain Volume to Industrial Waste Pond Calculations.”

4. GROUNDWATER MONITORING

4.1 Sampling Program

The Reuse Permit requires sampling at three INL groundwater wells collected twice annually, in April/May and September/October. Project specific sampling and analysis plans and procedures that govern sampling activities and quality control protocols directed trained and qualified BEA personnel during groundwater sampling activities.

4.2 Sampling and Analytical Methods

The field parameters including temperature, pH, and electrical conductivity were measured at the time of sample collection by BEA personnel using instruments that were calibrated to set standards. All other permit-required groundwater samples were submitted under full chain-of-custody for analysis to GEL in Charleston, South Carolina. Groundwater wells were purged for at least three casing volumes prior to sampling. Static water table elevations and depths to the water were measured prior to well purging.

Analytical methods specified in 40 CFR 141, "National Primary Drinking Water Regulations," 40 CFR 143, "Other Safe Drinking Water Act Regulations," and 40 CFR 136, "Guidelines Establishing Test Procedures for the Analysis of Pollutants," were used for analysis of all permit required parameters.

4.3 Monitoring Wells

The Reuse Permit requires groundwater samples to be collected to evaluate potential impacts to groundwater from the wastewater discharges to the MFC IWP. Groundwater sampling is required at the following three monitoring wells (see Table 3 and Figure 1):

- ANL-MON-A-012 (GW-16001, upgradient well)
- ANL-MON-A-013 (GW-16002, downgradient well)
- ANL-MON-A-014 (GW-16003, downgradient well).

4.4 Groundwater Monitoring Results

As required in Section 5.2.2 of the permit, groundwater samples were collected in April 2025 and September 2025. All parameters identified in permit Section 5.2.2 were collectedTable 4. Both the total and filtered (dissolved) sample results for iron and manganese analyses are reported as directed by DEQ (Lewis 2017). Chloride, sulfate, sodium, potassium, calcium, magnesium, and alkalinity, as specified in Section 5.2.2, are only required during April/May of the first and last year of the permit; however, they were also sampled in 2025 including both total alkalinity and bicarbonate alkalinity. All groundwater results are included in Table 4.

The groundwater data packages were submitted for data validation by an independent contractor to evaluate the useability of the analytical results. Validation qualifier flags are assigned to data results merely to serve as caveats to data users. There are no exceptions, anomalies or deviations from the specified methods. Several groundwater sample results were qualified during data validation. The J-qualified results are definitive data that are considered estimates that may be inaccurate or imprecise, typically due to a laboratory quality control parameter outside of an acceptable range. These validation reports may be available upon request for further review. These qualified values are presented below in Table 4.

During the 2025 report year, the concentrations of all permit-required analytes were below their respective groundwater quality standards prescribed in IDAPA 58.01.11. A more detailed discussion of specific analytes is discussed in Section 6.

Table 4. Summary of groundwater data collected for the MFC Reuse Permit.

WELL NAME	ANL-MON-A-012 (GW-16001)		ANL-MON-A-013 (GW-16002)		ANL-MON-A-014 (GW-16003)		PCS/SCS[a]
Sample date	4/16/25	9/22/25	4/21/25	9/23/25	4/21/25	9/23/25	
Water table depth (feet bgs)	660.96	663.55	649.43	651.84	648.59	651.02	NA[b]
Water table elevation (feet above mean sea level)[c]	4,471.74	4,469.15	4,470.94	4,468.53	4,469.49	4,467.06	NA
Temperature (°F)	57.6	57.4	54.5	56.1	56.3	57.2	NA
pH (s.u.)	7.28	7.46	7.24	7.51	7.18	7.59	6.5 to 8.5 (SCS)
Electrical conductivity, field[d] (µmhos/cm)	371	372	389	379	385	374	NA
Electrical conductivity, lab[e] (µmhos/cm)	379 [378]	376	398	380	388	376	NA
Nitrate+nitrite as nitrogen (mg/L)	2.94 [2.94][f]	3.07	2.87	2.80	2.87	3.46	10 (PCS)
Chloride (mg/L)	14.9 [15.0]	14.8	16.8	15.9	16.1	15.0	250 (SCS)
Sulfate (mg/L)	18.1 [18.2]	18.4	19.0	18.7	19.2	18.1	250 (SCS)
Total dissolved solids (mg/L)	231 [230]	228	247	253	229	215	500 (SCS)
Iron, total (mg/L)	0.0535 [0.0384]	0.03U	0.126	0.049	0.03U	0.03U	0.3 (SCS)
Iron, filtered (mg/L)	0.03U[g] [0.03U]	0.03U	0.03U	0.03U	0.03U	0.03U	0.3 (SCS)
Manganese, total (mg/L)	0.002U [0.002U]	0.002U	0.00265	0.002U	0.002U	0.002U	0.05 (SCS)
Manganese, filtered (mg/L)	0.002U [0.002U]	0.002U	0.002U	0.002U	0.002U	0.002U	0.05 (SCS)
Sodium, total (mg/L)	17.5 [17.6]	17.0	19.0	17.4	18.0	17.7	NA
Sodium, filtered (mg/L)	17.3 [17.1]	17.2	18.2	18.4	18.1	17.3	NA
Potassium, total (mg/L)	3.55 [3.50]	3.45	3.38	3.41J[h]	3.41	3.53J	NA

Potassium, filtered (mg/L)	3.47 [3.43]	3.53	3.37	3.59J	3.44	3.41J	NA
Calcium, total (mg/L)	37.7 [37.6]	38.5	36.0	38.2	38.8	39.6	NA
Calcium, filtered (mg/L)	36.7 [36.8]	39.2	37.5	39.9	38.9	38.1	NA
Magnesium, total (mg/L)	12.7J [12.8J]	12.9	12.7	12.8	13.1	13.2	NA
Magnesium, filtered (mg/L)	12.6J [12.4J]	12.9	12.8	13.5	13.1	12.8	NA
Alkalinity, total, as $CaCO_3$ (mg/L)	136 [136]	137	139	138	137	136	NA
Alkalinity, bicarbonate, as $CaCO_3$ (mg/L)	136 [136]	137	139	138	137	136	NA

a. Primary Constituent Standard (PCS) or Secondary Constituent Standard (SCS) from IDAPA 58.01.11 (Ground Water Quality Rule).
b. NA - Not applicable.
c. Elevations are given in the National Geodetic Vertical Datum of 1929.
d. Field measurements of electrical conductivity performed by BEA personnel during sample collection.
e. Laboratory results of electrical conductivity provided by GEL. Laboratory measurement of conductivity is required by the reuse permit.
f. Results for duplicate samples collected in April are shown in parentheses.
g. U qualification indicates the analyte was not detected above the instrument detection limit, or the analyte was detected at or above the applicable detection limit but the value is not more than five times the highest positive amount in any laboratory blank and is U qualified as a result of data validation.
h. J flag indicates the associated value is an estimate and may be inaccurate or imprecise

4.5 Water Table Information

As stated in Section 5.2 of the permit, water table elevations and water table depths are required to be measured semiannually at the following three monitoring wells: ANL-MON-A-012, ANL-MON-A-013, and ANL-MON-A-014. This information is presented in tabular format in Table 4 and historical trends are presented in Figure 3. The elevations are referenced to the National Geodetic Vertical Datum of 1929. Figures 4 and 5 show the inferred general groundwater flow direction in the vicinity of the MFC while the general groundwater flow direction at the INL Site is to the southwest.

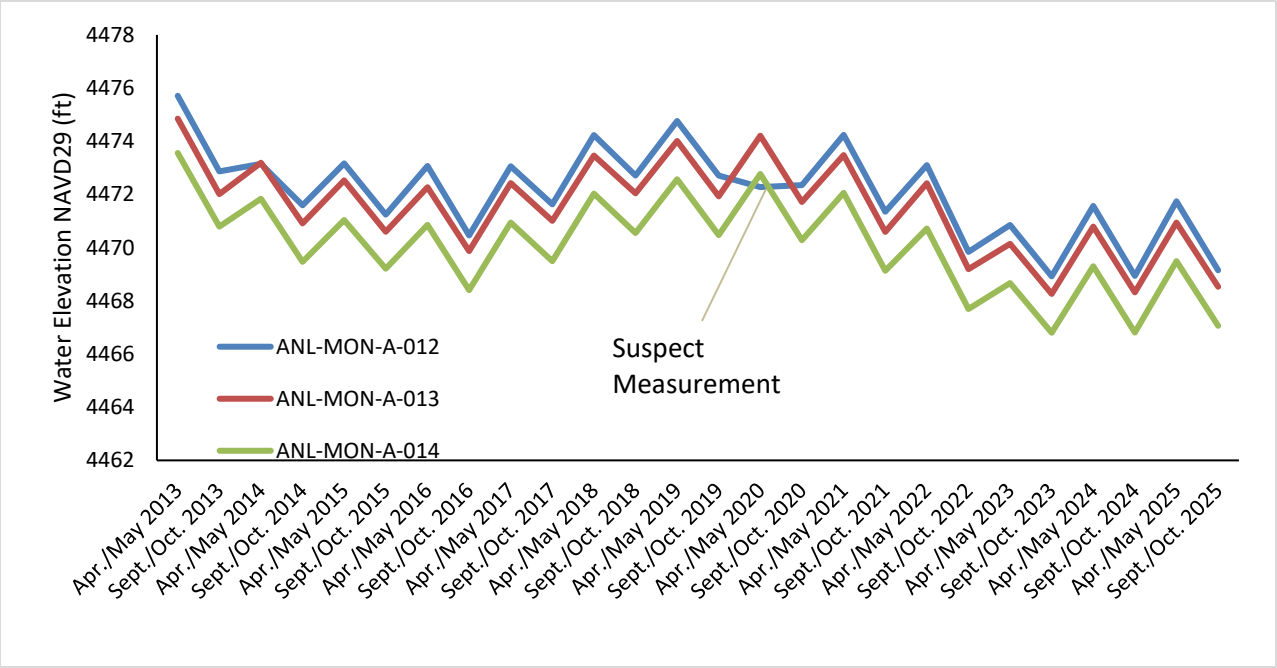

Figure 3. Groundwater elevations for the three Reuse Permit compliance wells.

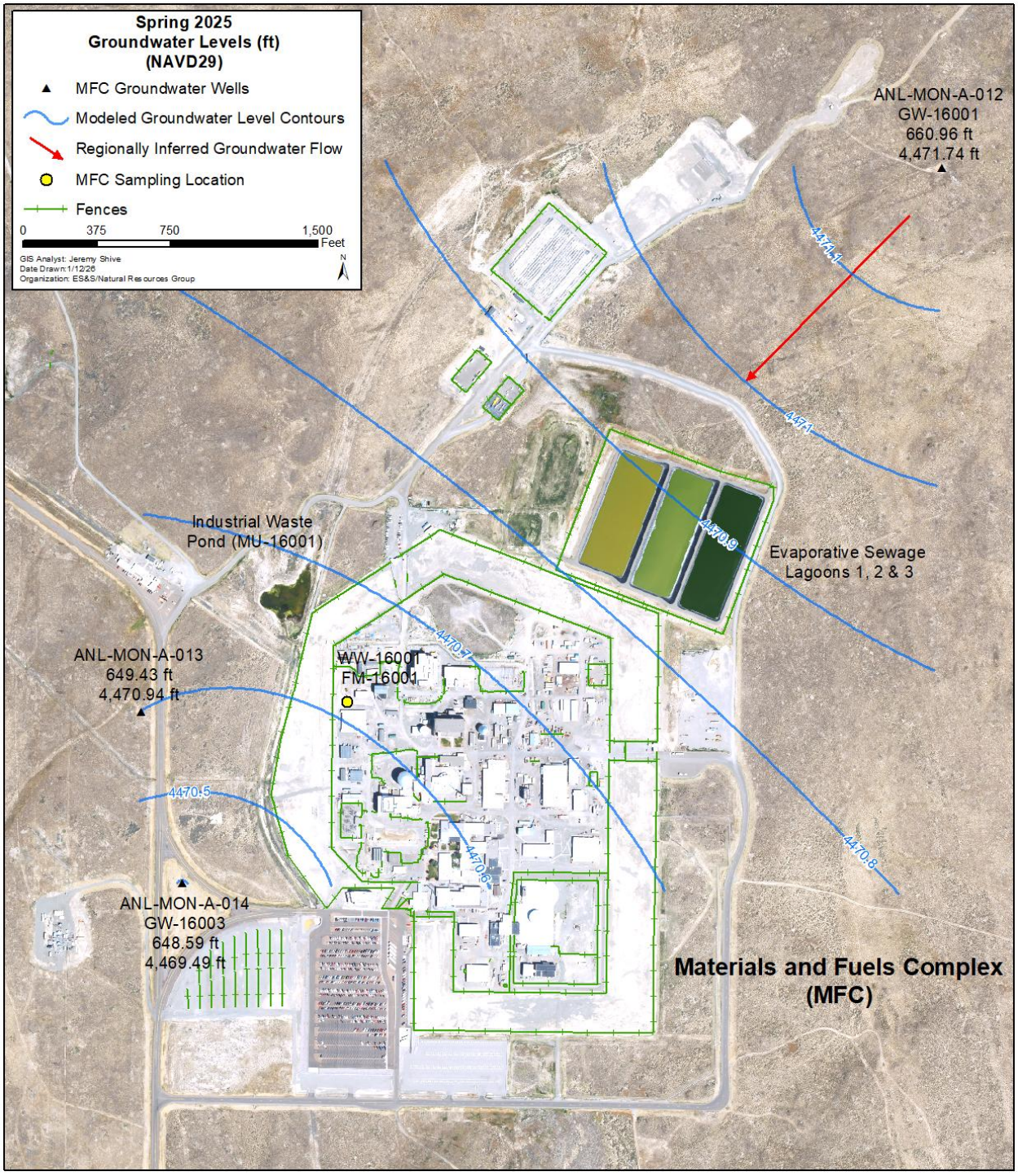

Figure 4. Groundwater map and contours based on the Spring 2025 water level measurements.

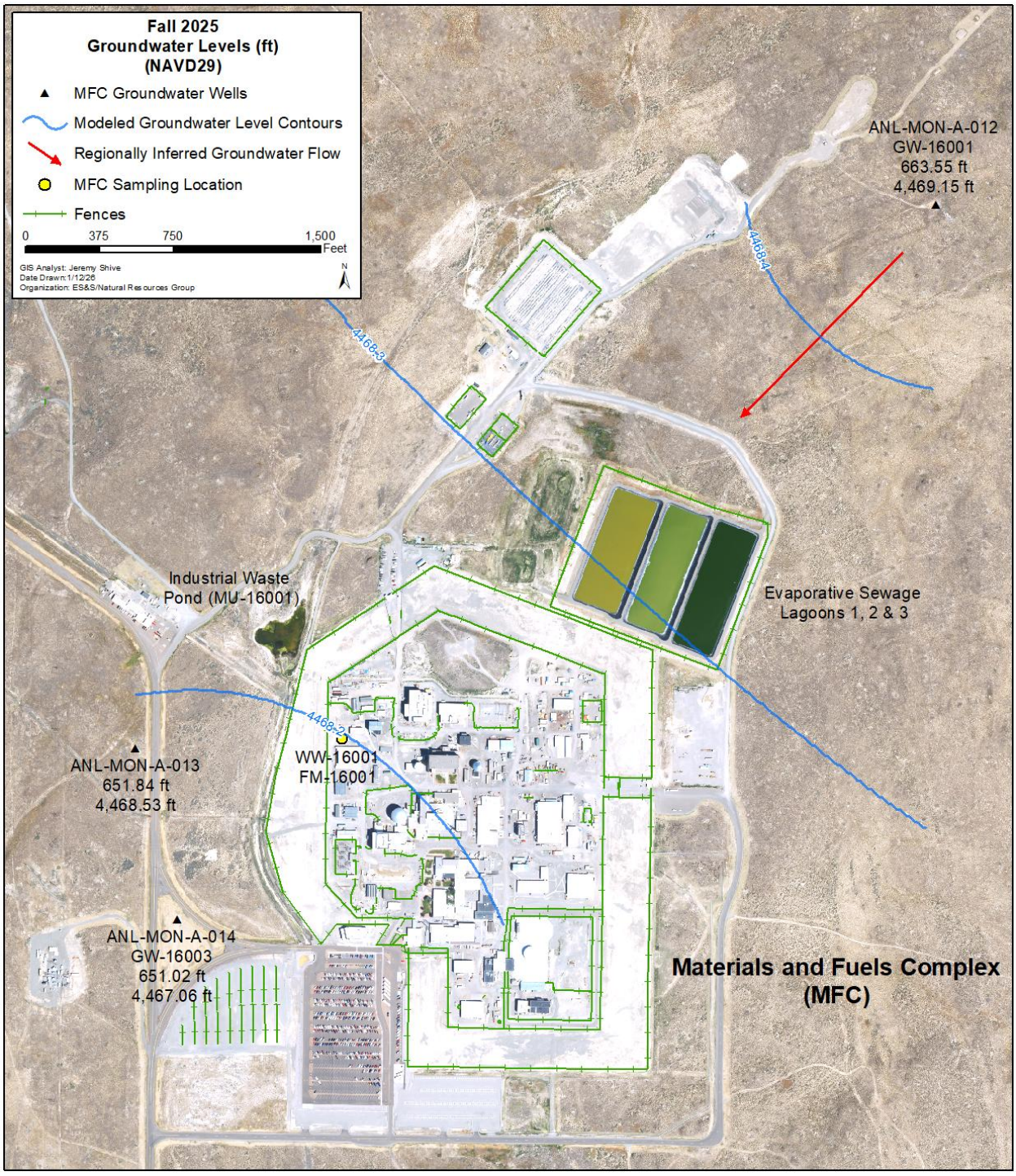

Figure 5. Groundwater map and contours based on the Fall 2025 water level measurements.

5. PERMIT YEAR SUMMARIES

This section provides information and status associated with permit-required compliance activities. Issues and noncompliances are addressed in Section 5.2.

5.1 Status of Permit-Required Compliance Activities

The Reuse Permit, Section 3, identifies the following three compliance activities pertinent to the 2025 report year:

- **Compliance Activity CA-160-01:** Submit for review and approval a Plan of Operation (PO) that reflects current operations and incorporates current permit requirements.

  The PO completion date specified in the Reuse Permit, Section 3, is within twelve (12) months of permit issuance—the PO was submitted to DEQ on January 24, 2018 (Miller 2018). The PO was updated internally in February 2021 to reflect changes in Reuse Permit Modification 3 and is available to DEQ upon request.

- **Compliance Activity CA-160-02**: Prepare and implement a Quality Assurance Project Plan (QAPP) that incorporates all monitoring and reporting required by permit.

  A letter was submitted June 22, 2017 (Miller 2017), transmitting the prepared QAPP and implementation statement. The QAPP was updated internally on May 17, 2018, to reflect comments from the 2017 annual report. The QAPP was updated again internally in February 2021 to reflect the reduction in sampling requirements due to Reuse Permit Modification 3 and is available to DEQ upon request.

- **Compliance Activity CA-160-03**: Submit for review and approval a Waste Solids Management Plan prior to any dredging or removal of solids, mud, or sludge from the IWP.

  The completion date is “as needed” and is currently not applicable as there are not any plans to remove solids from the pond.

5.2 Issues/Noncompliances

For the 2025 report year, the facility was in substantial compliance with the Reuse Permit requirements. There were no instances of noncompliance during the report year.

5.3 Department of Environmental Quality Annual Inspection

The most recent inspection of facilities and equipment by DEQ associated with Reuse Permit I-160-02 occurred April 10, 2024. During the inspection, equipment and facilities were toured, including both lift stations, the flow meter (FM-16001), the sample compositor (WW-16001), the IWP, and groundwater monitoring wells ANL-MON-A-013 and -014. The two recommendations from the previous inspection (John 2022) were administrative in nature and have been resolved. The inspection concluded with no findings or non-compliances and the DEQ inspection report was received April 18, 2024 (Ayers 2024).

6. ENVIRONMENTAL IMPACTS

The operation of the IWP returns a significant portion of the recycled water to the aquifer and provides needed water for several native animal species in an otherwise semi-arid environment. The Reuse Permit specifies a maximum hydraulic loading rate of 17 MG/year. The total estimated volume discharged to the MFC IWP during the reporting period (November 1, 2024, through October 31, 2025) was 7.729 MG.

No effluent limits are specified in the permit for monitored constituents. The concentrations of the permit-required analytes in the groundwater samples were all below the respective groundwater quality standards in IDAPA 58.01.11, as required by the permit.

6.1 Trend Analysis

A Mann-Kendall test was performed on several of the groundwater monitoring constituents using data from the last five years, 2021 to 2025. The State of Idaho Department of Environmental Quality Remediation Program Mann-Kendal Statistical Test Version 2 was used to perform the analysis.

The Mann-Kendall test of the nitrate+nitrite as nitrogen concentrations in groundwater from the last five years (2021 to 2025), Table 5, show an increasing trend in all three wells, ANL-MON-A-012, ANL-MON-013, and ANL-MON-A-014. However, as illustrated in Figure 6, the general increase is slight and since both the downgradient and upgradient wells show similar trends, the lack of a significant difference from up to down gradient indicates the reuse system is not impacting groundwater and the system complies with both the permit and the Ground Water Quality Rule.

Table 5. Mann-Kendall trend results for nitrate+nitrite as nitrogen in the groundwater monitoring wells.

Well Name	# Samples	Trend ≥ 80% Confidence	Trend ≥ 90% Confidence	Stability Check (if no trend at 80% confidence)
ANL-MON-A-012	10	Increasing	Increasing	NA[a]
ANL-MON-A-013	10	Increasing	Increasing	NA
ANL-MON-A-014	10	Increasing	Increasing	NA

a. Not applicable

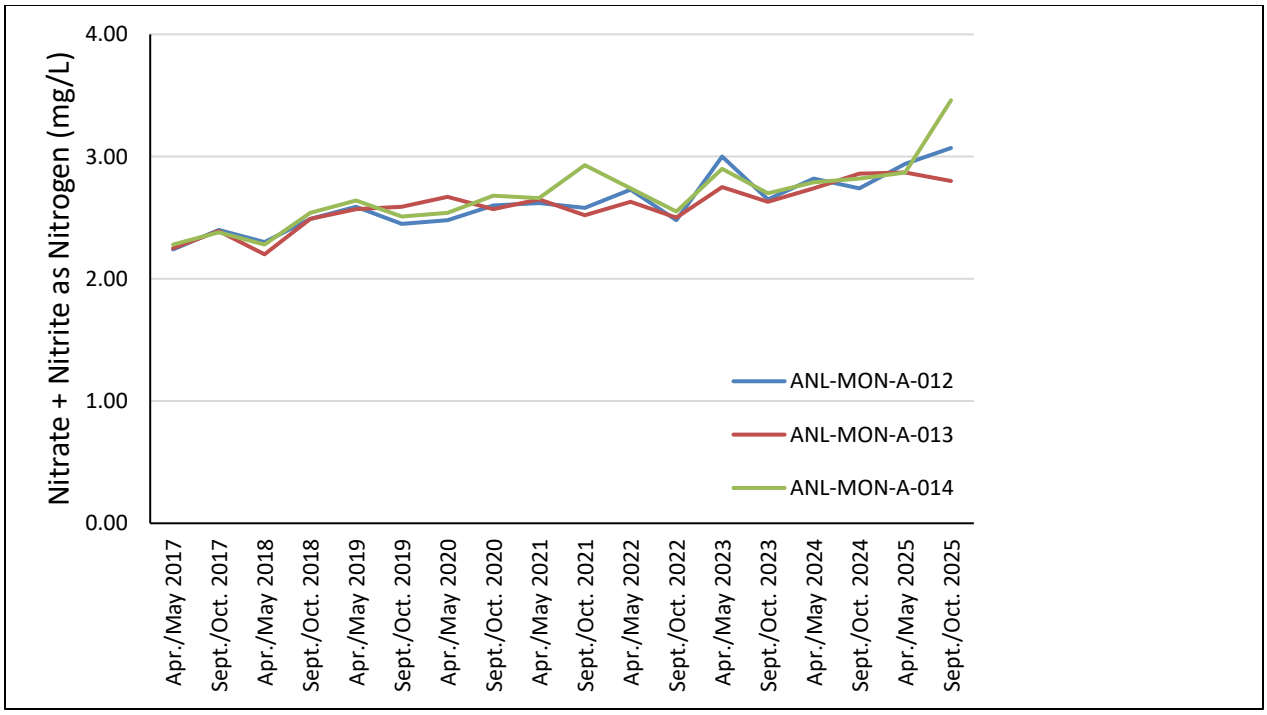

Figure 6. Groundwater concentrations for nitrate+nitrite as nitrogen for 2017 to 2025.

The Mann-Kendall tests performed on the groundwater iron and manganese concentrations, Tables 6 and 7, show increasing or no trend in all wells given the years examined (2021 to 2025).

Table 6. Mann-Kendall trend results for total iron in the groundwater monitoring wells.

Well Name	# Samples	Trend ≥ 80% Confidence	Trend ≥ 90% Confidence	Stability Check (if no trend at 80% confidence)
ANL-MON-A-012	10	No Trend	No Trend	Stable
ANL-MON-A-013	10	Increasing	Increasing	N/A
ANL-MON-A-014	10	No Trend	No Trend	Stable
a. Not applicable				

Table 7. Mann-Kendall trend results for total manganese in the groundwater monitoring wells.

Well Name	# Samples	Trend ≥ 80% Confidence	Trend ≥ 90% Confidence	Stability Check (if no trend at 80% confidence)
ANL-MON-A-012	10	Increasing	Increasing	NA[a]
ANL-MON-A-013	10	Increasing	No Trend	NA
ANL-MON-A-014	10	Increasing	Increasing	NA
a. Not applicable				

7. REFERENCES

40 CFR 136, "Guidelines Establishing Test Procedures for the Analysis of Pollutants," *Code of Federal Regulations*, Office of the Federal Register, June 2024.

40 CFR 141, "National Primary Drinking Water Regulations," *Code of Federal Regulations*, Office of the Federal Register, October 2024.

40 CFR 143, "Other Safe Drinking Water Act Regulations," *Code of Federal Regulations*, Office of the Federal Register, July 2021.

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