Selection of Remedy
Former Sutherland Generating Station

Former Sutherland Generating Station
3001 E. Main Street Road
Marshalltown, Iowa 50158

Prepared for:

Alliant Energy

SCS ENGINEERS

25222189.00 | September 12, 2025

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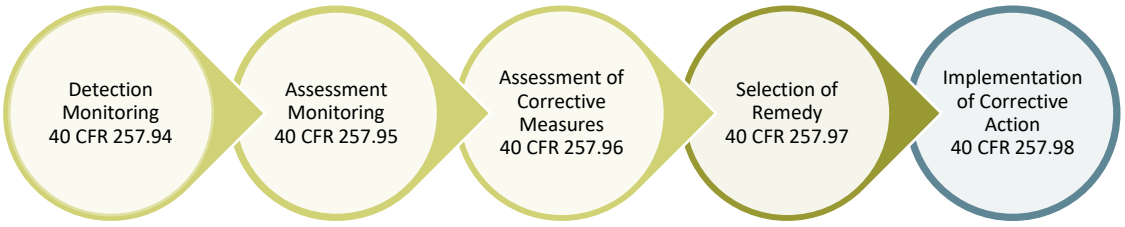
EXECUTIVE SUMMARY

Interstate Power and Light Company (IPL), an Alliant Energy company, previously operated surface impoundments associated with the former Sutherland Generating Station (SGS). Closure and capping of the surface impoundments was completed in June 2020. The multi-unit pond system was used to manage coal combustion residuals (CCR) and wastewater from the power plant, which burned coal and natural gas to generate electricity. SGS was decommissioned in 2020. The closure area for the surface impoundments is monitored with a multi-unit groundwater monitoring system.

IPL samples and tests groundwater around the closed surface impoundments to comply with U.S. Environmental Protection Agency (U.S. EPA) standards for the Disposal of CCR from Electric Utilities, or the "CCR Rule" (Rule). Since the start of assessment monitoring, groundwater samples from two of the compliance wells installed to monitor the closed impoundments contained lithium at a statistically significant level (SSL) higher than the Groundwater Protection Standards (GPS) defined in the Rule. This metal occurs naturally and can be present in CCR.

IPL has prepared this Selection of Remedy Report in accordance with the requirements of the CCR Rule. The information in this report is based on the Assessment of Corrective Measures (ACM) Report issued on June 22, 2022. The ACM was prepared in response to the groundwater sampling results at the SGS facility.

The Selection of Remedy process is one step in a series of steps defined in the Rule and shown below.



The Selection of Remedy Report provides an update to the nature and extent of groundwater impacts discussed in the ACM. Since the ACM was issued, IPL has continued to develop an understanding of the following:

- Types of soil and rock deposits in the area of the SGS facility.
- Depth of groundwater.
- Direction that groundwater is moving.
- Potential sources of lithium in groundwater.
- The area where lithium levels are higher than the U.S. EPA standards.
- The people, plants, and animals that may be affected by levels of lithium in groundwater that are above the GPS.

IPL has been working since the ACM was finalized on June 22, 2022, to further identify the nature and extent of the lithium GPS exceedances downgradient of the closed impoundment. Since the ACM, additional wells were installed to evaluate the concentrations of lithium downgradient of the compliance well network. Three monitoring wells (MW-309, MW-310, and MW-311) were installed in a north-south row approximately 1,000 feet downgradient of the final closure area limits. Additional

delineation wells were installed (MW-306A, MW-312, MW-313, and MW-314) in early 2023. MW-312 was added to the compliance well network in February 2024.

Delineation well MW-312A was installed in December 2023. An aquifer pumping test was conducted at MW-306. Evaluation of the aquifer pumping test indicated a need to conduct a larger-scale aquifer pumping test, which was performed in July 2025. Groundwater monitoring data continue to show lithium is present at SSLs above the GPS in groundwater near the SGS closure area.

The Selection of Remedy Report also presents the following:

- A comparison to the minimum criteria set forth in 40 CFR 257.97(b).
- A discussion of the evaluating criteria in 40 CFR 257.97(c) and the remedy selection scoring methodology used to help select an appropriate corrective measure.
- A summary of the selected remedy.

IPL has identified Gradient Control as the selected remedy. This selected remedy meets the minimum criteria established in the Rule and includes controlling the shallow groundwater gradient by collecting impacted groundwater using pumps and treating the impacted groundwater prior to discharging it according to State and Federal requirements. It also includes groundwater collection and treatment at targeted locations downgradient of the ponds.

In accordance with 40 CFR 257.96(e), IPL held a public meeting with interested and affected parties to discuss the ACM as required by the Rule on July 10, 2025, with interested and affected parties.

Within 90 days of this Selection of Remedy Report, IPL will initiate remedial activities as required in 40 CFR 257.98(a). This report describes the status of remedy design and an anticipated construction schedule. An estimated schedule for the implementation and completion of the selected remedy has been developed, and the design of a groundwater collection system is underway.

For more information on Alliant Energy, view the Alliant Energy Corporate Responsibility Report at https://www.alliantenergy.com/who-we-are/responsibility-report.

PE CERTIFICATION

I, Eric J. Nelson, hereby certify that the selected groundwater remedy, described herein, meets the requirements of 40 CFR 257.97. This Selection of Remedy report was prepared by me or under my direct supervision, and that I am a duly licensed Professional Engineer under the laws of the State of Iowa.

9/12/2025

(signature) (date)

Eric Nelson

(printed or typed name)

License number 23136

My license renewal date is December 31, 2026.

Pages or sheets covered by this seal:

Selection of Remedy – Sutherland Generating Station

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1.0 INTRODUCTION AND PURPOSE

This Selection of Remedy Report was prepared to support compliance with the groundwater monitoring requirements of the "Coal Combustion Residuals (CCR) Final Rule" published by the U.S. Environmental Protection Agency (U.S. EPA) in the *Hazardous and Solid Waste Management System; Disposal of Coal Combustion Residual from Electric Utilities; Final Rule*, dated April 17, 2015 (U.S. EPA, 2015), and subsequent amendments. Specifically, this report was prepared to fulfill the requirements of a final report identified in 40 CFR 257.97(a) and identify the remedy selected to address statistically significant exceedances of the Groundwater Protection Standard (GPS) for lithium observed in groundwater samples from assessment monitoring events for the Sutherland Generation Station (SGS). These GPS exceedances for lithium were initially identified at statistically significant levels (SSLs) in the following:

- Notification of Groundwater Protection Standard Exceedance dated November 17, 2021 (Alliant Energy, 2021A).

This Selection of Remedy report includes a description of the selected remedy and how it meets the requirements of 40 CFR 257.97(b), which are described in **Section 3.1**.

This report also provides a brief summary of the activities completed to further define the nature and extent of the groundwater impacts attributed to the four closed CCR surface impoundments since the Assessment of Corrective Measures (ACM) report was issued on June 22, 2022.

2.0 BACKGROUND

2.1 SITE INFORMATION AND MAP

SGS is located at 3001 E. Main Street Road in Marshalltown, Marshall County, Iowa (**Figure 1**). Four inactive CCR surface impoundments are present at SGS. Closure and capping of the surface impoundments was completed in 2020. A Notification of Completion of Closure pursuant to 40 CFR 257.102(d) was issued by Alliant Energy on June 12, 2020 (Alliant Energy, 2020A).

The groundwater monitoring network at SGS is a multi-unit system that monitors the closure area for the following inactive CCR units:

- SGS North Primary Pond (inactive surface impoundment – closed June 2020)
- SGS South Primary Pond (inactive surface impoundment – closed June 2020)
- SGS Main Pond (inactive surface impoundment – closed June 2020)
- SGS Polishing Pond (inactive surface impoundment – closed June 2020)

The SGS facility had four inactive CCR surface impoundments collectively known as the Main Ash Settling Area. Use of the Main Ash Settling Area began in the late 1950s and was used as settling impoundments for bottom ash until 2012 when the generating station was converted to natural gas. A closure plan for the Main Ash Settling Area was written in February 2018 (Sargent & Lundy [S&L], 2018). An amendment to the Closure Plan was made on July 19, 2019, that outlined activities for closure, including dewatering of ponds in the Main Ash Settling Area, demolition of above- and below-grade conveyance features, stabilizing impoundment bottoms to receive fills, consolidation of the Main Ash Settling area to final cover subgrades, capping of consolidated and graded CCR

material, establishing final grades to preclude ponding of stormwater on the cap, management of cap water runoff, and restoration of disturbed areas (SCS, 2019).

The groundwater monitoring system is designed to detect monitored constituents at the waste boundary of the SGS CCR units as required by 40 CFR 257.91(d). The groundwater monitoring system consists of 2 upgradient background wells (MW-301 and MW-302), 2 upgradient delineation wells (MW-307 and MW-308), 5 downgradient compliance monitoring wells (MW-303, MW-304, MW-305, MW-306, and MW-312) at the waste boundary, and 7 downgradient delineation wells (MW-306A, MW-309, MW-310, MW-311, MW-312A, MW-313, and MW-314). A map showing the CCR units and all background (or upgradient) and downgradient monitoring wells with identification numbers for the CCR groundwater monitoring program is provided on **Figure 2**. A summary of the groundwater monitoring network is included in **Table 1**, and a summary of the site groundwater sample summary is included in **Table 2**.

In accordance with 40 CFR 257.96(a), IPL prepared an ACM in response to the lithium detected in groundwater samples at SSLs above the GPS, which was issued in June 2022.

In accordance with 40 CFR 257.96(e), IPL held a public meeting on July 10, 2025, to discuss the ACM. The meeting was open to interested and affected parties.

2.2 UPDATED NATURE AND EXTENT OF GROUNDWATER IMPACTS

This section provides an update of the nature and extent of groundwater impacts since the ACM was completed. The additional work further defined the nature and extent of groundwater impacts and includes:

- **May 2022** – Installed and developed monitoring wells MW-309, MW-310, and MW-311 with Phase 1 of a two-phased plan for additional well installations. These wells were installed to design the locations of four additional monitoring wells in Phase 2 (SCS, 2022D).

- **August 2022** – Conducted a supplemental quarterly monitoring event following the June 2022 ACM at MW-309, MW-310, and MW-311 (SCS, 2022D).

- **February 2023** – Installed and developed delineation monitoring wells MW-306A and MW-313 and compliance well MW-312 (SCS, 2023E). Updated the groundwater monitoring network certification to include new compliance well MW-312 (SCS, 2023D).

- **March 2023** – Installed and developed delineation monitoring well MW-314 and conducted hydraulic conductivity testing on MW-306A and MW-313 (SCS, 2023E).

- **April 2023** – Conducted hydraulic conductivity testing for new monitoring wells (SCS, 2023E).

- **October 2023** – Collected groundwater samples from MW-307 and MW-308 to use as background water for leach testing (SCS, 2024C).

- **November 2023** – Conducted aquifer pumping tests at MW-306 and collected samples during the pumping test for laboratory analysis (SCS, 2024C).

- **December 2023** –Installed and developed piezometer MW-312A (SCS, 2024C).

- **Summer 2024** – Evaluated aquifer pumping test data (SCS, 2024D).

- **January 2025** – Initiated plans for a larger-scale aquifer pumping test (SCS, 2025B).

- **July 2025** – Installed a pumping test extraction well and two observation wells near compliance wells MW-306 and MW-312. Performed a 72-hour pumping test to inform the design of a full-scale groundwater extraction system. Evaluation of the results is ongoing.

Groundwater elevations, analytical results, field parameters and horizontal and vertical hydraulic gradients are summarized in **Tables 3** through **7**.

2.2.1 Potential Sources

The source of lithium in monitoring wells exceeding GPSs is believed to be the monitored CCR units that include the following:

- SGS North Primary Pond (inactive surface impoundment – closed June 2020)
- SGS South Primary Pond (inactive surface impoundment – closed June 2020)
- SGS Main Pond (inactive surface impoundment – closed June 2020)
- SGS Polishing Pond (inactive surface impoundment – closed June 2020)

As described in the ACM, potential sources of lithium or factors that may be contributing to the groundwater impacts observed include:

- CCR materials discharged to the four former SGS surface impoundments and the former SGS coal yard material consolidated in the closure area including bottom ash, economizer ash, precipitator fly ash, hydrated fly ash, and pyrites.

No additional sources have been identified since the ACM was issued.

2.2.2 Updated Groundwater Assessment

Site Geologic and Hydrologic Information

For the purposes of groundwater monitoring, the surficial alluvium aquifer, composed of glacial drift, sand, and gravel, is considered to be the uppermost aquifer unit, as defined under 40 CFR 257.53, at SGS. Immediately underlying the surficial alluvium aquifer are the Pennsylvanian and Mississippian shale and limestone units. Devonian aged units underlie the Mississippian limestone and are composed of shale, dolomite, and limestone. Silurian dolomite underlies the Devonian shale, dolomite, and limestone (SCS, 2022E).

Unconsolidated deposits at the site consist of clays overlain by loess, which are not productive sources of groundwater (U.S. Department of Agriculture and Soil Conservation Service [USDA], 1981). The uppermost Pennsylvanian bedrock unit is considered to be a regional aquitard.

The Iowa River and associated alluvial aquifers are a major source of surface water and shallow groundwater in the area.

There are no downgradient private wells between the impoundments and the Iowa River where groundwater is discharged. The properties on the north side of County Highway E35 adjacent to the

facility are sidegradient. There was one unused private well identified on the north side of the highway associated with a home that has been removed.

Regional information indicates that groundwater flow within the Mississippian limestone is to the south-southeast. Depth to groundwater as measured in the site monitoring wells varies from 6 to 21 feet below ground surface (bgs) due to topographic variations across the facility and seasonal variations in water levels. Groundwater flow at the site is generally to the east toward the Iowa River. Groundwater elevations and flow directions in the uppermost aquifer are shown on the August 2022 through October 2024 water table maps provided as **Figures 7** through **12**.

Soils at the site are primarily sand, silt, and clay to a depth of approximately 16 to 21 feet bgs. During drilling of monitoring wells MW-301 through MW-306, the unconsolidated materials were identified as consisting primarily of sand, lean clay, and sandy silt. The boring logs for the recently installed monitoring wells MW-307 through MW-311 show alternating deposits of sand, lean clay, and silt to 21 feet bgs (SCS, 2022E).

Expansion of the Groundwater Monitoring Network

In 2022, three additional monitoring wells were installed approximately 1,000 feet downgradient of the closed pond area to define the nature and extent of the lithium impacts at SGS. Groundwater samples from these three new wells (MW-309, MW-310, and MW-311) do not contain lithium at SSLs above the GPS.

In 2023, a second phase of post-ACM monitoring well installations was completed. Monitoring wells MW-306A, MW-312, MW-313, and MW-314 were installed in February and March 2023, and monitoring well MW-312A was installed in December 2023. Groundwater samples from these wells indicate the presence of lithium at SSLs above the GPS in MW-312, MW-313, and MW-314. No GPS exceedances are observed in MW-312A. Lithium is detected above background in MW-306A, MW-307, MW-308, MW-309, MW-310, MW-311, MW-312A, MW-313, and MW-314.

Molybdenum has been detected at statistically significant increases (SSIs) above the background in some wells (MW-303, MW-305, MW-306, and MW-312); however, molybdenum has not been reported in groundwater samples at an SSL above the GPS for molybdenum.

Groundwater Protection Standard Exceedances

The ACM process was triggered by the detection of lithium at an SSL exceeding the GPS in samples from monitoring well MW-306.

The determination that lithium was present at an SSL above the GPS in MW-306 was made based on the statistical evaluation of the assessment monitoring results completed on October 25, 2021, following the July 2021 supplemental monitoring event (SCS, 2021C).

An updated Lower Confidence Limit (LCL) evaluation was completed for lithium. The LCLs were most recently updated in January 2023 (SCS, 2023A) for monitoring data collected from March 2018 through October 2022. LCLs were calculated with Sanitas™ statistical software using historical concentrations measured from the initiation of assessment monitoring. LCL evaluations completed since July 2021 indicate that lithium in MW-306 exceeds the GPS of 40 micrograms per liter (µg/L). Once MW-312 was added to the compliance network with the April 2024 sampling event, lithium in samples from MW-312 also exceeded the GPS at an SSL. The GPS was exceeded in at least one monitoring event for delineation wells MW-306A, MW-313, and MW-314.

The complete results for the assessment monitoring sampling events are summarized in **Appendix A**. Based on the results of assessment monitoring conducted through the October 2024 event, SSLs exceeding the lithium GPS in at least one monitoring event have been identified for the following wells and parameters:

Appendix Monitoring Appendix IV Parameter	Location of GPS Exceedance	Historic Range of Detections at Wells with SSL Above GPS in µg/L	GPS in µg/L
Lithium	MW-305	8.3 - 42	40
Lithium	MW-306	28.6 - 66	40
Lithium	MW-306A	36 - 43	40
Lithium	MW-312	58 - 75	40
Lithium	MW-313	25 - 44	40
Lithium	MW-314	32 - 44	40

µg/L = micrograms per liter GPS = Groundwater Protection Standard SSL = Statistically Significant Level

Molybdenum was detected at the GPS level of 100 µg/L in MW-306 during the October 2023 event. LCL evaluations were made for molybdenum; however, molybdenum has not been determined to be an SSL through October 2024.

Historical and updated CCR groundwater monitoring program sampling analytical and field data results are summarized in **Appendix A**. A groundwater lithium plume developed using the averaged concentration of lithium data between 2020 and 2024 is shown on **Figure 3.**

Data Collection Efforts

An aquifer step pumping test was conducted at MW-306 in November 2023.

Following the step test, it was recommended to install a pumping test extraction well and two observation wells in the vicinity of the lithium-impacted compliance well MW-306 and performing a full-scale pumping test to assist in the design of a pump and treat system. The extraction and observation wells were installed in early July 2025 and a 72-hour pumping test was performed in late July 2025 to support extraction system design. The evaluation and documentation of that test are ongoing.

Figure 4 shows the layout of two cross sections, A-A' and B-B'. The cross sections depict the lithology and water tables observed from west to east across the northern, higher elevation portions of the SGS Closure Area (A-A', **Figure 5**) and across the southern, lower elevation portions of the SGS Closure Area (B-B', **Figure 6**).

2.2.3 Updated Conceptual Site Model

Based on investigation activities collected to date, it is believed that lithium is present in groundwater at SSLs above the GPS immediately downgradient of the CCR units. Lithium mobility is likely tied to ion exchange/surface complexation phases that are easily mobilized into groundwater. Lithium mobilization may occur when the groundwater table is above the base of the CCR material. The source of observed lithium GPS exceedances is hypothesized to be from a singular event during closure activities where CCR compaction mobilized water high in lithium into the groundwater.

The groundwater exposure pathway appears to be incomplete due to the lack of water supply wells present in the impacted groundwater area. Furthermore, lithium impacts do not extend to the Iowa

River. Lithium does not appear to be migrating to a location where it can impact human health or the environment, and therefore no complete exposure pathway was identified for lithium.

3.0 CORRECTIVE MEASURES AND REMEDY SELECTION

Several corrective measure options were presented in detail in the ACM for the SGS report dated June 22, 2022. The ACM identifies the following corrective measure alternatives for the groundwater impacts at SGS:

- Alternative 1 (A1) – No Further Action
- Alternative 2 (A2) – Cover Upgrade
- Alternative 3 (A3) – Gradient Control
- Alternative 4 (A4) – In-Situ Treatment with Physical/Chemical Amendment
- Alternative 5 (A5) – Groundwater Management with Barrier Wall
- Alternative 6 (A6) – Excavate and Re-dispose

The following sections present:

- A comparison to the minimum criteria set forth in 40 CFR 257.97(b).
- A discussion of the evaluating criteria in 40 CFR 257.97(c).
- A summary of the selected remedy.

3.1 APPLICABILITY OF CORRECTIVE MEASURES

Following the ACM, additional investigations were completed to further develop and evaluate corrective action alternatives. At the time the ACM was issued, impacts to groundwater from lithium were documented at the waste boundary. Additional site investigation activities completed at SGS since the ACM was issued confirm that lithium is present at statistically significant concentrations greater than the lithium GPS of 40 µg/L beyond the waste boundaries of the closed CCR surface impoundments at SGS.

In accordance with 40 CFR 257.97(b)(2), a groundwater remedy must attain the GPS and, per 40 CFR 257.98(c)(1), cannot be deemed complete until the GPS has been achieved within the contaminant plume area beyond the groundwater monitoring system established under 40 CFR 257.91. Based on current SCS and IPL understanding of the CCR rule, meeting this standard is required regardless of the present risk to human or ecologic health discussed in the ACM and Section 2.2. SCS has reviewed the potential groundwater corrective measures identified in the June 2022 ACM based on the current CCR rule understanding and considered the updated groundwater assessment and conceptual model, along with the operational needs of the SGS facility. Based on the updated review, some of the potential corrective measures are no longer applicable and have been eliminated from further consideration.

A1 – No Further Action

Alternative 1 is no action and is only included as a baseline condition and a point of comparison for the other alternatives. This alternative did not satisfy all five criteria in 40 CFR 257.97(b)(1) through (5), so it is not an acceptable corrective measure under the CCR Rule and is eliminated from further consideration.

A2 – Cover Upgrade

Alternative 2 includes enhancements to the existing cover that was constructed over the closure area in 2020 in accordance with the criteria set forth in 40 CFR 257.102(d). Further investigation shows lithium at SSLs in groundwater above the GPS extends beyond the waste boundary to downgradient well locations, so final cover enhancements alone cannot meet the requirement of 40 CFR 257.97(b)(4) to remove from the environment as much of the contaminated material that was released from the CCR unit as is feasible. As discussed in the ACM, this alternative could be coupled with another of the alternatives identified to reduce lithium to concentrations below the GPS. However, based on the corrective measures assessment, the selected remedy can meet the requirements in 40 CFR 257.97(b)(1) through (5), so the combination of a cover upgrade with another alternative is unnecessary. Therefore, this alternative has been eliminated from further consideration as a standalone option and will not be discussed further in the current remedy selection.

A3 – Gradient Control

Alternative 3 includes gradient control measures to eliminate confirmed exposure pathways, limit the spread of groundwater impacts, and restore lithium in groundwater to concentrations below the GPS. Under Alternative 3, gradient control measures will be installed to supplement the closure activities completed in 2020.

The ACM described the potential use of gradient control measures such as phytotechnology, modified conductivity zones, and/or groundwater pumping. Based on the activities completed since the June 2022 ACM, Alternative 3 will focus on groundwater extraction and subsequent treatment. Alternative 3 is retained for further evaluation.

A4 – In-Situ Treatment with Physical/Chemical Amendment

Alternative 4 includes adding a physical or chemical amendment within the source area or groundwater plume to reduce the mobilization of lithium to cease completion of confirmed exposure pathways, limit the spread of groundwater impacts, and restore lithium in groundwater to concentrations below the GPS. Under Alternative 4, further leaching of metals and migration within groundwater would be prevented by fixation using a physical/chemical amendment. Depending on the approach selected and the results of further investigation beyond the CCR unit boundary, this alternative may need to be coupled with another alternative to restore lithium in groundwater to concentrations below the GPS. For the purpose of this evaluation, it is assumed that a chemical amendment will be applied to the groundwater plume to reduce lithium concentrations below the GPS and Alternative 4 does not need to be coupled with another alternative.

A5 – Groundwater Management with Barrier Wall

Alternative 5 incorporates the use of a barrier wall to restore lithium in groundwater to concentrations below the GPS. The ACM described the barrier wall as consisting of two different approaches:

- Impermeable barrier: Directs upgradient groundwater away from known groundwater impacts.
- Permeable barrier: Intercepts impacted groundwater within a permeable zone to treat impacted groundwater.

Since the results of further investigation indicate that lithium impacts to groundwater extend beyond the CCR unit boundary, the impermeable barrier alternative may need to be coupled with another alternative to restore lithium in groundwater to concentrations below the GPS. If this combined approach is required in the future, the impermeable barrier can be revisited; however, the impermeable barrier approach has been eliminated from further consideration as a standalone option and will not be discussed further in the current remedy selection process.

Further evaluation of Alternative 5 in the remedy selection process will focus on the permeable barrier approach, which can provide for the treatment of impacted groundwater to address lithium impacts extending beyond the waste boundary. The permeable barrier approach under Alternative 5 is retained for further evaluation.

A6 – Excavate and Re-dispose

Alternative 6 includes the removal of the existing final cover, excavation of CCR within the closure area, and restoring lithium in groundwater to concentrations below the GPS. Under Alternative 6, CCR from the closure area will be excavated and appropriately re-disposed, either on or off site, after the removal of the existing final cover. Further on-site releases from the CCR sources will be prevented by removing the source materials from the site or otherwise minimizing the potential for ongoing on-site leaching of constituents into groundwater.

Further investigation shows lithium GPS exceedances extend beyond the waste boundary to downgradient well locations; therefore, the excavation and re-disposal of CCR in the closure area will not adequately address lithium impacts to groundwater as a standalone remedy since it cannot meet the requirement of 40 CFR 257.97(b)(4). As discussed in the ACM, this alternative could be coupled with another of the alternatives identified to reduce lithium to concentrations below the GPS. However, based on the corrective measures assessment, the selected remedy can meet the requirements in 40 CFR 257.97(b)(1) through (5), so the combination of excavation and re-disposal with another alternative is unnecessary. Therefore, this alternative has been eliminated from further consideration as a standalone option and will not be discussed further in the current remedy selection.

3.2 MINIMUM CRITERIA

The selected remedy must meet the minimum criteria set forth in 40 CFR 257.97(b). These criteria and the ability of the alternatives evaluated to satisfy the criteria are summarized in Table 8.

It is the opinion of SCS and IPL that Alternatives 3, 4, and 5 can meet the requirements in 40 CFR 257.97(b)(1) through (5) based on the information currently available.

3.3 EVALUATION FACTORS

Each alternative remedy was evaluated based on the criteria set forth in 257.97(c). The retained remedies were compared with each other to assess the remedy that best satisfies the collective criteria. The comparison is presented in Table 8 based on the following evaluation criteria:

- Long- and Short-Term Effectiveness [257.97(c)(1)]
  - Magnitude of reduction of existing risks.
  - Magnitude of residual risks in terms of likelihood of further releases due to CCR remaining following implementation of a remedy.

  - The type and degree of long-term management required, including monitoring, operation, and maintenance.
  - Short-term risks to human health and the environment associated with:
    - Excavation
    - Transportation
    - Re-disposal
  - Time until full protection is achieved.
  - Potential for exposure for humans and environmental receptors to remaining wastes, considering the potential threat to human health and the environment associated with excavation, transportation, re-disposal, or containment.
  - Long-term reliability of the engineering and institutional controls.
  - Potential need for replacement of the remedy.

- Source Control to Reduce Future Releases [257.97(c)(2)]
  - The extent to which containment practices will reduce further releases.
  - The extent to which treatment technologies may be used.

- Ease or Difficulty of Implementation [257.97(c)(3)]
  - Degree of difficulty associated with constructing the technology.
  - Expected operation reliability of the technologies.
  - Need to coordinate with and obtain necessary approvals and permits from other agencies.
  - Availability of necessary equipment and specialists.
  - Available capacity and location of needed treatment, storage, and disposal.

- Community Acceptance [257.97(c)(4)]
  - The degree to which community concerns are addressed by a potential remedy.

3.3.1 Long- and Short-Term Effectiveness [257.97(c)(1)]

The long- and short-term effectiveness and protectiveness of the potential remedy(s), along with the degree of certainty that the remedy will prove successful based on consideration of the following per 257.97(c)(1):

Magnitude of Existing and Residual Risks

Each of the retained alternatives serves to reduce the magnitude of existing risks similarly because the existing risk is already minimal based on the discussion in Section 2.2.3, consistent with 257.97 (c)(1)(i) and (ii).

The likelihood for potential future release of CCR to the environment is listed in order of least to most likely, as follows:

- Alternative 5 offers the lowest risk of potential future releases if an effective permeable barrier material/chemistry can be identified, since the alternative has the capacity to provide containment of potential future releases.

- Alternatives 3 and 4 present a slightly increased risk over Alternative 5, as no containment component is a part of these remedies.

Type and Degree of Long-Term Management

Potential remedies were evaluated with respect to "the type and degree of long-term management required, including monitoring, operation, and maintenance," 257.97 (c)(1)(iii).

- All three alternatives require similar types of long-term management, relying heavily on groundwater monitoring to evaluate effectiveness. However, Alternative 4 offers the least intensive long-term management if a suitable amendment can be identified.

- Alternative 5 is similar to Alternative 4 except it requires additional monitoring of barrier wall performance with complex and extensive implementation of repairs, if required.

- Although basic in nature, Alternative 3 requires the most intensive long-term management in the form of groundwater pump operations and maintenance and treatment system monitoring and reporting through National Pollutant Discharge Elimination System (NPDES) permit requirements.

Short-Term Risks

Potential remedies were evaluated with respect to short-term risks. "Short-term risks that might be posed to the community or the environment during the implementation of such a remedy, including potential threats to human health and the environment associated with excavation, transportation, and re-disposal of contaminant," 257.97(c)(1)(iv).

For the three alternatives evaluated, the short-term risks associated with the excavation, transportation, and re-disposal of the contaminants of concern are associated with the need to remove soil that is impacted with groundwater containing lithium and take it off site for disposal. The relative risks across the three alternatives is related to the level of disturbance of soil within the area of lithium-impacted groundwater.

- Alternative 4 involves the lowest short-term risk to the community and environment because there are limited concerns related to excavation, transportation, and re-disposal of contaminated media. There is a limited risk associated with excavation in the form of drilling in comparison to the other alternatives due to the anticipated type and scale of drilling required to perform the in situ chemical amendment applications. Drilling for Alternative 4 is anticipated to include a series of direct-push borings to install chemical injection points withing the groundwater plume. The volume of drilling waste from the direct-push borings is limited to small containers (e.g., 55-gallon steel drums) that are easily transported off site for disposal. Transportation and re-disposal risks exist, but they are limited due to the expected small volume of drilling wastes that may be impacted with CCR constituents.

- Implementing Alternative 3 involves some increased excavation risk over Alternative 4 due to the greater extent of drilling, trenching, and excavation anticipated to be required to complete the groundwater pumping and treatment system construction. Alternative 3 requires drilling additional groundwater extraction wells within the lithium plume that have a larger diameter than the direct-push borings anticipated under Alternative 4. Additionally, trenching/excavating is required under Alternative 3 to connect controls and discharge piping between the new wells and the treatment system and to install discharge piping to an outfall or reuse location for the treated water. Not all of the

excavation required will encounter contaminated soil or groundwater. Short-term risks associated with transportation and re-disposal under Alternative 3 may be somewhat higher than those under Alternative 4 on a simple volume basis due to the number and diameter of the new wells drilled and the excavation activities required.

- The greatest level of short-term risk among the evaluated alternatives is present for Alternative 5 during the construction activities involved in the barrier wall installation. Alternative 5 involves increased excavation, transportation, and re-disposal risk due to the excavation of soil likely impacted with CCR constituents to install the barrier wall system and exporting excavation spoils for off-site disposal. This alternative has the greatest level of short-term risk due to the extent and depth of barrier wall excavations compared to the trenching/excavation required under Alternative 3.

Time Until Full Protection is Achieved

The potential remedies were evaluated with respect to "time until full protection is achieved," 257.97(c)(1)(v).

- Alternative 4 offers the potential shortest time until full protection, as represented in this evaluation, by achieving sustained groundwater concentrations below the GPS; however, this is conditioned on the following:

  – The time required for a viable commercial-scale chemical amendment to become available for injection to treat the contaminants of concern in situ. No viable commercial-scale chemical amendment with a track record of successfully and sustainably remediating lithium in groundwater was identified to date, so the time required to identify an amendment is currently unknown.

  – The level of permanence offered by the amendment chemistry and site conditions. Since the chemical reactions involved under Alternative 4 and Alternative 5 are potentially reversible, this is a significant factor in determining when full protection is achieved.

    Since the chemical reactions involved could occur rapidly upon injection of an amendment, Alternative 4 may require the shortest amount of time to achieve the GPS. The potential time to achieve the GPS is estimated at 2 to 10 years.

- Alternative 3 is expected to provide the next potential shortest timeframe to achieve full protection. The anticipated timeframe to achieve the GPS is similar to that estimated for Alternative 4 (2 to 10 years). Since Alternative 3 involves the removal of contaminant mass from the uppermost aquifer, the permanence of the alternative does not impact this timeframe, as it is irreversible.

- Alternative 5 has the longest anticipated time required to meet the GPS and full protection. Similar to Alternative 4, the time required relies on the identification of a suitable reactive barrier media, which is subject to the same qualifications and permanence issues described above. The implementation of Alternative 5 may be longer than the other alternatives due to the time required to design, procure, and install the barrier wall. In addition, the passive nature of the reactive barrier suggests that the time

required to achieve the GPS is greater than Alternative 3, which is an active remediation method.

Potential for Exposure of Humans and Environmental Receptors

The potential remedies were evaluated with respect to the "potential for exposure of humans and environmental receptors to remaining wastes, considering the potential threat to human health and the environment associated with excavation, transportation, and re-disposal, or containment," 257.97(c)(1)(vi).

The ACM described why the current risk to humans and the environment is low. Human and environmental exposure is increased during construction activities.

- The potential for exposure of humans and the environment to the remaining CCR is not a significant differentiating factor in evaluating the potential remaining alternatives. The CCR in the impoundments has already been consolidated and capped, so the risk profile for the three alternatives is similar.

- Alternative 3 may have a slightly heightened risk over the other alternatives due to the potential for secondary impacts from releases of extracted groundwater, disruption in treatment, and additional groundwater pumping system construction and maintenance.

Long-Term Reliability

The potential remedies were evaluated with respect to "long-term reliability of the engineering and institutional controls," 257.97 (c)((1)(vii).

Although not part of the groundwater corrective actions being evaluated, the final cover installed in 2020 and the deed notation placed on the closure area are common practice for closure-in-place at solid waste disposal facilities and offer long-term reliability as engineering and institutional controls. Beyond these baseline controls, the long-term reliability of the corrective measure alternatives evaluated is listed in order of highest to lowest, as follows:

- Alternative 3 is supported by significant industry experience. Groundwater pump and treat technologies have been used for decades to remediate groundwater impacted by a variety of contaminants, including CCR constituents (Federal Remediation Technologies Roundtable [FRTR], 2020). Alternative 3 offers a notable long-term advantage over Alternatives 4 and 5, particularly in terms of the permanence provided by mass removal versus the reliance on chemical reactions that may be reversed under changing aquifer conditions.
- Alternatives 4 and 5 rely heavily on the availability of an appropriate amendment or reactive barrier product/technology that is available at a proven, commercial scale. A suitable technology meeting these requirements has not been identified, so the long-term reliability of these alternatives is uncertain.

- There is additional uncertainty to the long-term reliability of Alternative 5 due to breaches or short-circuiting that can develop in reactive barriers that require monitoring and maintenance to provide longevity.

Potential Need to Replace Remedy

Potential remedies were evaluated for the "potential need for replacement of the remedy," 257.97(c)(1)(viii).

It is unlikely that the alternatives evaluated will require full replacement, but all will require some form of ongoing maintenance. The following considerations for each alternative support the selection process:

- Alternative 3 is expected to require replacement of components as part of system maintenance, including pumps, conveyances, and treatment system media, if used. These activities are routine, and materials are typically readily available.

- Alternative 4 is likely to require the reapplication of chemical amendments to achieve the GPS. Additionally, since no viable chemical amendment has been identified, there is a risk that emerging products/technologies will still not provide the permanence required to meet the GPS and will require replacement.

- Similarly, Alternative 5 will likely require replenishment or replacement of reactive media and may also require repairs of breaches or short-circuiting in the unlikely event they occur. Since Alternative 5 relies on a chemically reactive barrier to treat groundwater, this alternative also includes some risk that it is not a permanent solution if the reaction can be reversed and lithium is re-released into the environment.

3.3.2 Source Control to Reduce Future Releases [257.97(c)(2)]

The effectiveness of the potential remedies in controlling the source to reduce further releases must be considered based on (i) the extent to which containment practices will reduce further releases; and (ii) the extent to which treatment technologies may be used per 257.97(c)(2) i and ii.

Extent Containment will Reduce Further Releases

Because the final cover was installed in 2020, the alternatives are equal with respect to the protection the final cover offers against further releases.

- Alternative 5 may provide additional containment of future releases if an effective reactive barrier can be installed near the downgradient waste boundary.

- Alternative 3 offers containment of future releases to groundwater in the form of gradient control.

- Alternative 4 provides limited additional containment unless the technology is reapplied following another release.

Extent Treatment Technologies May be Used

Alternative 3 relies on conventional pump and treat remediation. Alternatives 4 and 5 rely on the identification and availability of a suitable amendment or barrier wall technology. The implementation of and contact with the amendments and barrier wall materials will require specialized field implementation methods and health and safety measures.

3.3.3 Implementation [257.97(c)(3)]

Degree of Difficulty Constructing the Technology

Alternative 3 involves typical construction methods, but is expected to involve moderate complexity construction and logistics due to site utilities and unimproved access in the groundwater plume area. These site aspects, coupled with the additional complexities of importing and working with specialty chemicals, specialized application techniques, and specialized construction methods, increase the complexity of construction and logistics for Alternatives 4 and 5.

Expected Operation Reliability of the Technology

The success of Alternative 3 relies on the successful design and operation of a site-specific groundwater extraction and treatment system; however, the overall expected reliability is good based on longstanding industry experience. The success of Alternatives 4 and 5 rely on the successful selection, design, application, and operation of an in situ chemical amendment or reactive barrier system. The immaturity of the technology currently available to remediate the contaminants of concern reduce the expected operational reliability of both alternatives. Additionally, Alternative 5 requires monitoring for potential breaches or short-circuiting of the passive barrier.

Need to Coordinate with and Obtain Approvals and Permits from Other Agencies

The need for coordination and approval of permits from other agencies is the highest with Alternative 3, which will require State and local groundwater well permitting for extraction well installation; a State Water Use Permit for groundwater extraction depending on the design capacity, a State Wastewater Construction permit for the groundwater treatment system, a NPDES permit for the treated groundwater discharge; and may require Federal, State, and/or local permits for system construction related to erosion control, stormwater management, floodplains, and wetlands.

Alternatives 4 and 5 will require similar levels of coordination and approvals. Both are likely to require Federal, State, and/or local permits for system construction related to erosion control, stormwater management, floodplains, and wetlands. Depending on the methods for applying the in situ treatment or constructing the barrier, both alternatives may require permitting related to underground injection control (UIC).

Alternative 5 is likely to require State and local groundwater well permitting for additional monitoring well installation.

Availability of Necessary Equipment and Specialists

The equipment and specialists for Alternative 3 are readily available. However, this alternative will require trained employees to operate and maintain the groundwater collection and treatment system.

Alternatives 4 and 5 both require specialized equipment for installation, and the number of suppliers with the equipment and expertise available to implement the alternatives is limited.

Available Capacity and Location of Needed Treatment, Storage, and Disposal Services

The capacity and location of treatment, storage, and disposal services is unlikely to be a factor for Alternatives 4 and 5. Alternative 3 may require the development of on-site groundwater treatment capacity, but this is not expected to limit the implementation or effectiveness of the alternative.

3.3.4 Community Acceptance [257.97(c)(4)]

No comments were received during the initial public meeting held on July 10, 2025, presenting the ACM.

The likely selected alternative presented at the public meeting did not include off-site disposal. If, in the future, off-site disposal is presented as a likely selected alternative, community acceptance will be revisited once the receiving disposal facility is identified and potential traffic patterns are contemplated. These details may have a significant impact on the participation in the public involvement process and the level of acceptance within the surrounding communities.

3.4 SELECTED REMEDY

The remedy selected includes Alternative 3 – Gradient Control.

Alternative 3 - Gradient Control has been selected based on the evaluation of factors defined in 257.97(c), presented above, and is the selected remedy. This alternative results in low long-term and short-term risks. Alternative 3 does not completely remove the CCR from the facility; however, the CCR and existing groundwater impacts are controlled and it does not present additional exposure risks to the surrounding community. The implementation of Alternative 3 can be achieved more quickly and reliably than the other possible alternatives, and is expected to achieve the GPS more effectively as a result.

3.4.1 Remedy Description

Alternative 3 includes controlling the shallow groundwater gradient by collecting impacted groundwater using pumps and treating the impacted groundwater prior to discharging it according to State and Federal requirements. It also includes groundwater collection and treatment at targeted locations downgradient of the ponds.

The reasonable potential of exposure to human health and the environment will be reduced and may be eliminated as impacted groundwater is collected near the waste boundary to contain and restore lithium concentrations in groundwater to levels below the GPS. A discussion of how this alternative meets the minimum standards in 257.97(b) is provided below.

3.4.2 Satisfying Minimum Criteria

The selected remedy is expected to meet the minimum criteria established in 257.97(b) and described in **Section 3.2**. Each requirement is discussed below. The selected remedy was evaluated along with other potential corrective measures considering the factors in 40 CFR 257.97(c), which are discussed in **Section 3.3** and outlined in **Table 8**.

257.97(b)(1) – Be protective of human health and the environment:

As discussed in the ACM and **Section 2.2** above, the available data indicates that there is no active exposure pathway for lithium. Alternative 3 sustains or improves the current level of protectiveness by capturing CCR-impacted groundwater and providing an inward gradient. Alternative 3 provides active groundwater recovery.

In addition, the selected remedy minimizes the handling of CCR and therefore the exposure of construction workers, the public, and other sensitive receptors (e.g., nearby communities or threatened or endangered species, if present) to CCR. It also reduces secondary impacts from the

remedy implementation such as fine particulates from fugitive dust (e.g., dust generated while traveling local gravel roads), and particulate in equipment exhaust, noise, and traffic.

257.97(b)(2) – Attain the groundwater protection standard as specified pursuant to § 257.95(h):

Capturing impacted groundwater and preventing migration past the impoundment boundary will serve to attain the GPS for lithium.

257.97(b)(3) – Control the source(s) of releases so as to reduce or eliminate, to the maximum extent feasible, further releases of constituents in appendix IV to this part into the environment:

The source of lithium release to groundwater is attributed to CCR in the closed ash ponds at SGS. The ash pond closure and final cover have reduced or eliminated, to the maximum extent feasible, infiltration through the CCR and further releases of CCR constituents into the environment by consolidating CCR.

By actively managing the hydraulic gradient in the vicinity of the closure area, a groundwater pump and treat system effectively intercepts and controls the migration of impacted groundwater. This approach not only captures the contaminant plume before it can migrate further, but it can also maintain an inward gradient to prevent further releases from the consolidated CCR material. As a result, the system serves as a barrier, reducing the risk of environmental exposure and enhancing the protectiveness of the remedy by limiting the transport of lithium and other constituents into surrounding groundwater and ecosystems.

257.97(b)(4) – Remove from the environment as much of the contaminated material that was released from the CCR unit as is feasible, taking into account factors such as avoiding inappropriate disturbance of sensitive ecosystems:

As described above, addressing infiltration in combination with groundwater collection and treatment is expected to eliminate lithium impacts to groundwater by removing CCR-impacted groundwater (the only contaminated material that was released from the CCR unit) from the environment without disturbing sensitive ecosystems.

Through the permitting processes required to install the groundwater extraction system and related treatment and discharge infrastructure, IPL will evaluate the potential presence of threatened and endangered species at SGS. The risk of disturbing threatened and endangered species during groundwater remedy activities is expected to be limited.

257.97(b)(5) – Comply with standards for management of wastes as specified in § 257.98(d):

All wastes associated with the selected remedy are anticipated to be non-hazardous. All CCR or other waste generated during the implementation of the selected remedy can be managed in accordance with all applicable Resource Conservation and Recovery Act (RCRA) requirements. The selected remedy will comply with the standards for management of wastes described in 40 CFR 257.98(d) by monitoring the generation, transportation, treatment, storage, and disposal of wastes subject to RCRA requirements. IPL will work with project management, corporate, and on-site environmental staff, consultants, contractors, and vendors to identify the materials generated during the construction, operation, and maintenance of the selected remedy. The management of wastes subject to RCRA will be documented through appropriate recordkeeping, reporting, labeling,

exportation, and containerization to uphold the RCRA program's principal objectives as described by U.S. EPA (U.S. EPA, 2023):

- Protect human health and the environment from potential adverse effects of improper solid waste management.
- Conserve material and energy resources through waste recycling and recovery.
- Reduce or eliminate the generation of waste as expeditiously as possible.

4.0 SCHEDULE

An estimated schedule for the implementation of the selected groundwater corrective action is provided in **Appendix B**. The schedule provided in **Appendix B** includes 1 year of groundwater collection system operation, maintenance, and monitoring (OM&M). The full duration and final completion of the groundwater corrective action at SGS are not represented on the enclosed Gantt chart schedule to provide clarity on short-term activities. The current estimate for the completion of the groundwater corrective action at SGS is 2 to 10 years. This estimated range will continue to be refined as the groundwater collection system design progresses.

The schedule described above and provided in **Appendix B** is based on the following considerations, as described in 257.97(d) and discussed below.

257.97(d)(1) – Extent and nature of contamination, as determined by the characterization required under §257.95(g):

Investigations of the nature and extent of lithium in groundwater attributed to the former ash ponds at SGS are complete. Given the lack of human and ecological receptors identified to date, ongoing monitoring and the remedy schedule enclosed should be protective of human health and the environment. Groundwater monitoring will continue as the selected remedy is implemented and, unless significant changes in the nature of the impacts are observed, the schedule described above will not be impacted.

257.97(d)(2) – Reasonable probabilities of remedial technologies in achieving compliance with the GPSs established under §257.95(h) and other objectives of the remedy:

Groundwater collection and treatment is a common practice and standard method for site remediation and is expected to achieve the GPS. The combination of the previously completed ash pond closure and capping with groundwater collection and treatment is consistent with prior industry practice and the U.S. EPA's presumptive remedy approach for Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) municipal landfills where high-volume waste poses a low long-term risk and it is not practical, technically feasible, or prudent to treat or re-dispose of the waste off site (U.S. EPA, 1993 and 1994). The selected remedy is also listed in the FRTR Technology Screening Matrix as full-scale, commercially available, and proven to have attained cleanup goals at multiple sites with inorganic contaminants. As such, it is reasonable to expect the selected remedy will achieve the GPS.

257.97(d)(3) – Availability of treatment or disposal capacity for CCR managed during implementation of the remedy:

The availability of treatment or disposal capacity for extracted groundwater has been factored into the selected remedy schedule.

257.97(d)(4) – Potential risks to human health and the environment from exposure to contamination prior to completion of the remedy:

As discussed in the ACM and Section 2.0, there is minimal risk to human health and the environment due to the lithium in groundwater that is attributable to the former ash ponds at SGS because no exposure pathways are currently shown to be completed. The potential risk of new or increased exposure to receptors over the period of time required to implement the selected remedy is low.

257.97(d)(5) – Resource value of the aquifer:

The uppermost aquifer in the area of lithium impacts (downgradient of the former ash ponds) is not currently used as a water supply for human or animal consumption or irrigation. There are no downgradient private wells between the impoundments and the river where groundwater is discharged. The properties on the north side of the road adjacent to the facility are sidegradient.

The value of the uppermost aquifer in this area is unlikely to change significantly over the time required to implement the selected remedy, as the facility will continue to operate as it currently does over the near term.

257.97(d)(6) – Other relevant factors:

The schedule provided in Appendix B captures the remedy-specific components that are currently in development. These aspects are essential to properly size the groundwater collection system for effectiveness prior to installation. These elements include:

- 72-hour pumping test and data evaluation.
- Well layout and design.

5.0 CONCLUSION

The Selection of Remedy Report was prepared to fulfill the requirements of the final report identified in 40 CFR 257.97(a) and identify the remedy selected to address the lithium GPS exceedances at SGS. Based on the site information currently available, Alternative 3 – Gradient Control with groundwater extraction and treatment has been selected as the remedy that meets the requirements of 40 CFR 257.97(b) based on the evaluation factors described in 257.97(c).

A schedule for the implementation and completion of the selected remedies was established under 40 CFR 257.97(d) that describes how IPL will initiate remedial activities within 90 days of this Selection of Remedy Report as required in 40 CFR 257.98(a).

6.0 REFERENCES

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Tables

Table 1. Groundwater Monitoring Well Network
Sutherland Generating Station / SCS Engineers Project #25222189.00

Monitoring Well	Location in Monitoring Network	Role in Monitoring Network
MW-301	Upgradient	Background
MW-302	Upgradient	Background
MW-303	Downgradient	Compliance
MW-304	Downgradient	Compliance
MW-305	Downgradient	Compliance
MW-306	Downgradient	Compliance
MW-306A	Downgradient	Delineation
MW-307	Upgradient	Delineation
MW-308	Upgradient	Delineation
MW-309	Downgradient	Delineation
MW-310	Downgradient	Delineation
MW-311	Downgradient	Delineation
MW-312	Downgradient	Compliance
MW-312A	Downgradient	Delineation
MW-313	Downgradient	Delineation
MW-314	Downgradient	Delineation

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Table 2. Groundwater Samples Summary
Sutherland Generating Station / SCS Engineers Project #25222189.00

Sample Dates	Background Wells		Compliance Wells					Delineation Wells								
	MW-301	MW-302	MW-303	MW-304	MW-305	MW-306	MW-312	MW-306A	MW-307	MW-308	MW-309	MW-310	MW-311	MW-312A	MW-313	MW-314
3/26-27/2018	B	B	B	B	B	B	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI
5/23/2018	B	B	B	B	B	B	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI
6/26/2018	B	B	B	B	B	B	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI
7/26/2018	B	B	B	B	B	B	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI
9/11/2018	B	B	B	B	B	B	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI
11/28/2018	B	B	B	B	B	B	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI
1/9/2019	B	B	B	B	B	B	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI
2/2/2019	B	B	B	B	B	B	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI
4/2/2019	D	D	D	D	D	D	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI
10/16/2019	D	D	D	D	D	D	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI
12/11-12/2019	A	A	A	A	A	A	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI
2/3/2020	A	A	A	A	A	A	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI
4/7/2020	A	A	A	A	A	A	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI
5/11/2020	--	--	--	--	R-A	R-A	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI
10/13/2020	A	A	A	A	A	A	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI
2/24/2021	--	--	--	--	--	R-A	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI
4/6/2021	A	A	A	A	A	A	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI
7/14/2021	--	--	--	--	--	R-A	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI
10/26/2021	A	A	A	A	A	A	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI
12/9/2021	--	--	--	--	--	--	NI	NI	A	A	NI	NI	NI	NI	NI	NI
4/21-22/2022	A	A	A	A	A	A	NI	NI	A	A	NI	NI	NI	NI	NI	NI
5/12/2022	--	--	--	--	--	--	NI	NI	--	--	S	S	S	NI	NI	NI
8/11/2022	--	--	--	--	--	--	NI	NI	--	--	S	S	S	NI	NI	NI
10/10-12/2022	A	A	A	A	A	A	NI	NI	A	A	A	A	A	NI	NI	NI
4/10-13/2023	A	A	A	A	A	A	A	A	A	A	A	A	A	NI	A	A
10/18-20/2023	A	A	A	A	A	A	A	A	A	A	A	A	A	NI	A	A
4/9-11/2024	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
10/14-17/2024	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
Total Samples	22	22	22	22	23	25	4	4	7	7	7	7	7	2	4	4

Abbreviations:
A = Assessment Monitoring Program Sampling Event
B = Background Monitoring Program Sampling Event
R-A = Assessment Monitoring Program Resampling Event
D = Detection Monitoring Program Sampling Event
S = Supplemental Monitoring Event
-- = Not Sampled
NI = Not Installed

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Table 3. Groundwater Elevation Summary
Sutherland Generating Station / SCS Engineers Project #25222189.00

Well Number	MW-301	MW-302	MW-303	MW-304	MW-305	MW-306	MW-306A	MW-307	MW-308	MW-309	MW-310	MW-311	MW-312	MW-312A	MW-313	MW-314
Top of Casing Elevation (feet amsl)	866.61	863.08	859.54	860.79	859.81	861.13	860.32	864.87	863.07	859.95	860.55	857.64	859.97	859.63	861.25	859.57
Screen Length (ft)	10.00	10.00	10.00	10.00	10.00	10.00	5.00	10.00	10.00	15.00	15.00	10.00	10.00	5.00	10.00	10.00
Total Depth (ft from top of casing)	18.80	18.50	18.65	18.80	19.08	18.71	36.30	17.50	16.00	20.00	20.00	15.00	18.40	36.00	19.40	18.40
Top of Well Screen Elevation (ft)	857.81	854.58	850.89	851.99	850.73	852.42	829.02	857.37	857.07	854.95	855.55	852.64	851.57	828.63	851.85	851.17
Measurement Date																
November 29, 2017	853.76	853.81	851.98	851.74	851.68	851.36	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI
March 26-27, 2018	855.23	855.97	854.35	853.79	853.64	853.49	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI
May 23, 2018	855.45	855.32	854.07	853.92	853.99	854.11	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI
June 26, 2018	856.24	856.55	854.97	854.64	854.55	854.57	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI
July 26, 2018	855.96	855.75	854.14	853.86	854.00	853.94	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI
September 11, 2018	857.41	857.06	855.96	855.66	855.94	856.48	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI
November 28, 2018	856.99	856.74	855.01	854.79	854.87	854.91	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI
January 9, 2019	856.85	856.82	855.11	854.93	854.94	854.94	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI
February 12, 2019	856.59	856.43	854.58	854.41	854.56	854.75	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI
April 2, 2019	857.33	857.12	855.60	855.47	855.67	855.96	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI
October 16, 2019	856.15	855.30	854.90	854.78	854.99	852.16	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI
December 11-12, 2019	857.05	856.11	854.47	854.29	854.33	854.39	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI
February 3, 2020	856.24	856.59	854.57	854.35	854.28	854.14	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI
April 7, 2020	856.16	856.23	854.63	854.54	854.64	854.70	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI
May 11, 2020	NM	NM	NM	NM	853.78	853.71	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI
October 13, 2020	854.44	854.38	851.70	851.30	851.32	851.13	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI
February 24, 2021	NM	NM	NM	NM	NM	850.56	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI
April 6, 2021	854.38	854.85	853.21	853.15	853.02	852.79	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI
July 14, 2021	NM	NM	NM	NM	NM	850.67	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI
October 26, 2021	852.42	852.68	850.54	850.13	850.12	850.00	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI
December 9, 2021	NM	NM	NM	NM	NM	NM	NI	851.56	851.87	NI	NI	NI	NI	NI	NI	NI
April 21-22, 2022	853.87	855.04	852.35	851.97	851.91	851.82	NI	852.76	853.08	NI	NI	NI	NI	NI	NI	NI
May 12, 2022	NM	NM	NM	NM	NM	NM	NI	NM	NM	853.95	853.71	853.56	NI	NI	NI	NI
May 24, 2022	854.22	854.38	853.09	852.98	853.00	853.03	NI	853.83	854.02	851.92	851.94	851.91	NI	NI	NI	NI
August 11, 2022	853.41	853.25	851.39	851.03	851.02	850.92	NI	852.17	852.52	849.47	849.49	849.46	NI	NI	NI	NI
October 10, 2022	851.98	851.94	849.96	849.70	849.73	849.62	NI	850.79	851.18	848.44	848.31	848.21	NI	NI	NI	NI
March 1, 2023	NM	NM	NM	NM	NM	NM	854.26	NM	NM	NM	NM	NM	853.63	NI	854.69	854.20
April 10-13, 2023	854.20	854.63	853.34	853.27	853.13	853.01	853.37	853.97	852.53	851.58	851.70	851.72	853.47	NI	853.15	852.77
October 18-20, 2023	851.34	851.44	849.47	849.24	849.27	849.22	849.60	850.32	850.64	848.35	848.13	847.99	849.64	NI	849.41	849.05
April 9-11, 2024	851.89	852.19	850.73	850.53	850.48	850.41	850.79	851.37	851.63	849.58	849.52	849.44	850.82	850.85	850.65	850.35
October 14-17, 2024	852.94	853.15	850.96	850.68	850.57	850.25	850.66	851.63	852.11	848.67	848.71	848.72	850.81	850.78	850.34	849.91
Bottom of Well Elevation (ft)	847.81	844.58	840.89	841.99	840.73	842.42	824.02	847.37	847.07	839.95	840.55	842.64	841.57	823.63	841.85	841.17

Notes:
NM = not measured
NI = not installed

Created by: RM Date: 4/18/2024
Last revision by: RM Date: 10/23/2024
Checked by: NLB Date: 10/24/2024

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Table 4. Groundwater Analytical Results - October 2022 to October 2024
Sutherland Generating Station / SCS Engineers Project #25222189.00

Parameter Name	UPL Method	UPL	GPS	Background Wells									
				MW-301					MW-302				
				10/12/2022	4/11/2023	10/18/2023	4/11/2024	10/17/2024	10/10/2022	4/10/2023	10/18/2023	4/11/2024	10/17/2024
Groundwater Elevation, ft amsl				851.98	854.20	851.34	851.89	852.94	851.94	854.63	851.44	852.19	853.15
Appendix III													
Boron, µg/L	P	278		71 J	77 J	<76	<76	160	<58	<76	<76	<76	<76
Calcium, mg/L	P	95.4		55	69	63	64	41	68	87	71	79	70
Chloride, mg/L	P	90.9		8.9	18	11	13	6.2	5.8	22	6.1	7.3	10
Fluoride, mg/L	NP	0.60		<0.22	<0.38	<0.38	<0.38	<0.38	<0.22	<0.38	<0.38	<0.38	<0.38
Field pH, Std. Units	P	7.67		6.50	6.59	6.12	6.55	6.60	7.17	7.03	7.03	7.07	7.13
Sulfate, mg/L	P	150		22	46	28	28	16	16	110	18	23	18
Total Dissolved Solids, mg/L	P	483		260	290	270	270	220	270	380	270	320	260
Appendix IV	**UTL Method**	**UTL**											
Antimony, µg/L	P	1.48	6	<0.69	<1.0	<1.0	<1.0	<1.0	<0.69	<1.0	<1.0	<1.0	<1.0
Arsenic, µg/L	NP	21	40	<0.75	0.77 J	<0.53	<0.53	<0.53	4.5	3.9	3.8	6.2	6.2
Barium, µg/L	P	275	2,000	45	56	43	58	36	88	110	96	120	110
Beryllium, µg/L	NP	0.48	4	<0.27	<0.33	<0.33	<0.33	<0.33	<0.27	<0.33	<0.33	<0.33	<0.33
Cadmium, µg/L	NP	0.28	5	0.081 J	0.18 J	<0.10	<0.10	<0.10	<0.055	0.11 J	<0.10	<0.10	<0.10
Chromium, µg/L	NP	3.5	100	<1.1	<1.1	<1.1	<1.2	<1.2	<1.1	<1.1	<1.1	<1.2	<1.2
Cobalt, µg/L	P	17.3	8.8	0.25 J	0.47 J	0.24 J	<0.17	0.20 J	1.8	1.5	1.8	4.8	1.4
Fluoride, mg/L	NP	0.600	4	<0.22	<0.38	<0.38	<0.38	<0.38	<0.22	<0.38	<0.38	<0.38	<0.38
Lead, µg/L	NP	2.5	15	<0.24	0.38 J	<0.24	<0.26	<0.26	<0.24	<0.24	<0.24	<0.26	<0.26
Lithium, µg/L	NP	12.6	40	3.3 J	2.8 J	3.1 J	3.7 J	3.3 J	2.8 J	2.8 J	2.8 J	4.3 J	3.0 J
Mercury, µg/L	DQ	DQ	2	--	<0.14	<0.14	<0.11	<0.11	--	<0.14	<0.14	<0.11	<0.11
Molybdenum, µg/L	NP	13.6	100	<1.2	1.9 J	<0.91	<1.3	<1.3	<1.2	0.91 J	<0.91	<1.3	<1.3
Selenium, µg/L	NP	22.0	50	11	6.8	3.8 J	2.2 J	1.6 J	<0.96	12	<1.4	<1.4	<1.4
Thallium, µg/L	NP	0.43	2	<0.26	0.97 J	<0.26	<0.57	<0.57	<0.26	1.3	<0.26	<0.57	<0.57
Radium 226/228 Combined, pCi/L	P	3.36	5	0.739	0.00562	0.957	--	1.15	1.14	0.548	0.788	0.722	0.994
Additional Parameters - Selection of Remedy													
Lithium, dissolved, µg/L	UPL, UTL, or GPS not applicable			--	--	--	--	--	--	--	--	--	--
Iron, dissolved, µg/L				<36	--	--	--	--	270	--	--	--	--
Iron, µg/L				150 F1	340 F1	220	92 J, F1, F2	140	650	370	410	860	690
Magnesium, dissolved, µg/L				16,000	--	--	--	--	23,000	--	--	--	--
Magnesium, µg/L				15,000	--	--	--	--	20,000	--	--	--	--
Manganese, dissolved, µg/L				2200	--	--	--	--	910	--	--	--	--
Manganese, µg/L				2,400	--	--	--	--	970	--	--	--	--
Potassium, µg/L				1,800	--	--	--	--	330 J	--	--	--	--
Sodium, µg/L				12,000	--	--	--	--	4,300	--	--	--	--
Total Alkalinity, mg/L				190	--	--	--	--	380	--	--	--	--
Carbonate Alkalinity, mg/L				<4.6	--	--	--	--	<4.6	--	--	--	--
Bicarbonate Alkalinity, mg/L				190	--	--	--	--	380	--	--	--	--

Blue shaded cell indicates the compliance well result exceeds the UPL and the LOQ.
Yellow shaded cell indicates the compliance well result exceeds the GPS.
Grayscale indicates Additional Parameters sampled for selection of remedy and evaluation of Monitored Natural Attenuation.

Abbreviations:
UPL = Upper Prediction Limit
UTL = Upper Tolerance Limit
µg/L = micrograms per Liter
mg/L = milligrams per Liter
GPS = Groundwater Protection Standard
-- = Not Analyzed
LOD = Limit of Detection
LOQ = Limit of Quantification
P = Parametric UPL with 1-of-2 retesting
NP= Nonparametric UPL with 1-of-2 retesting
DQ= Double Quantitation (not detected in background)

Lab Notes/Qualifiers:
J = Result is less than the reporting limit but greater than limits or equal to the method detection limit and the concentration is an approximate value.
F1 = The matrix spike and/or matrix spike duplicate exceeds control limits.
F2 = The matrix spike/matrix spike duplicate relative percent difference exceeds control limits.

Notes:
1. An individual result above the UPL or GPS does not constitute a statistically significant increase (SSI) above background or statistically significant level above the GPS. See the accompanying letter text for identification of statistically significant results.
2. GPS is the United States Environmental Protection Agency (USEPA) Maximum Contamination Level (MCL), if established; otherwise, the values from 40 CFR 257.95(h)(2).
3. Interwell UPLs and UTLs calculated based on results from background wells MW-301 and MW-302.
4. For compliance wells, only results confirmed above the LOQ are evaluated as potential SSIs above background or statistically significant level above GPS.

I:\25222189.00\Deliverables\2025 Selection of Remedy Report\Tables\[Table 4 - CCR GW Screening Summary_SGS_Oct 2022 to Oct 2024.xlsx]Event Table

Table 4. Groundwater Analytical Results - October 2022 to October 2024
Sutherland Generating Station / SCS Engineers Project #25222189.00

Parameter Name	UPL Method	UPL	GPS	Compliance Wells															
				MW-303					MW-304					MW-305					
				10/10/2022	4/10/2023	10/20/2023	4/11/2024	10/17/2024	10/11/2022	4/11/2023	10/20/2023	4/9/2024	10/17/2024	10/11/2022	4/11/2023	10/20/2023	4/9/2024	10/17/2024
Groundwater Elevation, ft amsl				849.96	853.34	849.47	850.73	850.96	849.70	853.27	849.24	850.53	850.68	849.73	853.13	859.81	850.48	850.57
Appendix III																			
Boron, µg/L	P	278		410	240	360	340	450	470	440	430	440	760	1,100	910	1100	1100	890
Calcium, mg/L	P	95.4		79	79	93	94	100	110	120	90	100	140	110	150	100	110	98
Chloride, mg/L	P	90.9		12	4.6 J	11	3.4 J	20	12	7.0	8.7	8.8	10	27	21	36	31	30
Fluoride, mg/L	NP	0.60		<0.22	0.39 J	<0.38	<0.38	0.63 J	0.26 J	<0.38	0.40 J	<0.38	<0.38	0.36 J	<0.38	0.45 J	<0.38	0.39 J
Field pH, Std. Units	P	7.67		7.44	7.10	7.28	7.05	7.27	6.64	6.72	7.19	7.05	6.71	7.58	6.93	7.48	7.51	7.60
Sulfate, mg/L	P	150		55	150	89	180	110	160	310	150	180	320	200	390	200	200	180
Total Dissolved Solids, mg/L	P	483		350	430	410	460	460	530	620	460	510	720	540	840	530	100	520
Appendix IV	**UTL Method**	**UTL**																	
Antimony, µg/L	P	1.48	6	<0.69	<1.0	<1.0	<1.0	<1.0	<0.69	<1.0	<1.0	<1.0	<1.0	<0.69	<1.0	<1.0	<1.0	<1.0
Arsenic, µg/L	NP	21	40	2.5	0.58 J	2.0	0.64 J	1.8 J	<0.75	<0.53	<0.53	<0.53	<0.53	8.4	5.8	10	8.3	7.2
Barium, µg/L	P	275	2,000	48	46	53	67	61	26	25	22	29	29	41	39	41	41	50
Beryllium, µg/L	NP	0.48	4	<0.27	<0.33	<0.33	<0.33	<0.33	<0.27	<0.33	<0.33	<0.33	<0.33	<0.27	<0.33	<0.33	<0.33	<0.33
Cadmium, µg/L	NP	0.28	5	0.062 J	<0.10	<0.10	<0.10	<0.10	0.068 J	<0.10	<0.10	<0.10	<0.10	<0.055	0.10 J	<0.10	<0.10	<0.10
Chromium, µg/L	NP	3.5	100	<1.1	<1.1	<1.1	<1.2	<1.2	<1.1	<1.1	<1.1	<1.2	<1.2	<1.1	<1.1	<1.1	<1.2	<1.2
Cobalt, µg/L	P	17.3	8.8	1.1	0.21 J	0.69	<0.17	0.59	<0.19	<0.17	<0.17	<0.17	<0.17	0.62	1.1	0.69	0.84	0.65
Fluoride, mg/L	NP	0.600	4	<0.22	0.39 J	<0.38	<0.38	0.63 J	0.26 J	<0.38	0.40 J	<0.38	<0.38	0.36 J	<0.38	0.45 J	<0.38	0.39 J
Lead, µg/L	NP	2.5	15	0.34 J	<0.24	<0.24	<0.26	<0.26	<0.24	<0.24	<0.24	<0.26	<0.26	<0.24	<0.24	<0.24	<0.26	<0.26
Lithium, µg/L	NP	12.6	40	19	16	21	20	21	6.8 J	<2.5	6.3 J	7.8 J	2.8 J	37	22	36	38	42
Mercury, µg/L	DQ	DQ	2	--	<0.14	<0.14	<0.11	<0.11	--	<0.14	<0.14	<0.11	<0.11	--	<0.14	<0.14	<0.11	<0.11
Molybdenum, µg/L	NP	13.6	100	5.3	4.7	16	<1.3	15	2.5	<0.91	3.8	5.8	<1.3	48	27	48	39	36
Selenium, µg/L	NP	22.0	50	<0.96	9.0	<1.4	42	<1.4	<0.96	3.3 J	<1.4	<1.4	<1.4	<0.96	<1.4	<1.4	<1.4	<1.4
Thallium, µg/L	NP	0.43	2	<0.26	<0.26	<0.26	<0.57	<0.57	<0.26	<0.26	<0.26	<0.57	<0.57	<0.26	<0.26	<0.26	<0.57	<0.57
Radium 226/228 Combined, pCi/L	P	3.36	5	0.623	0.0001	0.393	0.686	1.88	0.772	0.462	0.975	0.813	0.132	0.703	0.545	0.853	0.306	0.674
Additional Parameters - Selection of Remedy																			
Lithium, dissolved, µg/L	UPL, UTL, or GPS not applicable			--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Iron, dissolved, µg/L				62 J	--	--	--	--	<36	--	--	--	--	<36	--	--	--	--	--
Iron, µg/L				410	84 J	150	40 J	370	61 J	<36	<36	<36	<36	240	350	310	240	120	
Magnesium, dissolved, µg/L				20,000	--	--	--	--	29,000	--	--	--	--	<150	--	--	--	--	--
Magnesium, µg/L				20,000	--	--	--	--	29,000	--	--	--	--	26,000	--	--	--	--	--
Manganese, dissolved, µg/L				1200	--	--	--	--	14	--	--	--	--	<3.6	--	--	--	--	--
Manganese, µg/L				1,500	--	--	--	--	66	--	--	--	--	620	--	--	--	--	--
Potassium, µg/L				4,700	--	--	--	--	620	--	--	--	--	5,700	--	--	--	--	--
Sodium, µg/L				19,000	--	--	--	--	33,000	--	--	--	--	38,000	--	--	--	--	--
Total Alkalinity, mg/L				280	--	--	--	--	290	--	--	--	--	230	--	--	--	--	--
Carbonate Alkalinity, mg/L				<4.6	--	--	--	--	<4.6	--	--	--	--	<4.6	--	--	--	--	--
Bicarbonate Alkalinity, mg/L				280	--	--	--	--	290	--	--	--	--	230	--	--	--	--	--

Blue shaded cell indicates the compliance well result exceeds the UPL and the LOQ.
Yellow shaded cell indicates the compliance well result exceeds the GPS.
Grayscale indicates Additional Parameters sampled for selection of remedy and evaluation of Monitored Natural Attenuation.

Abbreviations:

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NP= Nonparametric UPL with 1-of-2 retesting
DQ= Double Quantitation (not detected in background)

Lab Notes/Qualifiers:

J = Result is less than the reporting limit but greater than limits or equal to the method detection limit and the concentration is an approximate value.
F1 = The matrix spike and/or matrix spike duplicate exceeds control limits.
F2 = The matrix spike/matrix spike duplicate relative percent difference exceeds control limits.

Notes:

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2. GPS is the United States Environmental Protection Agency (USEPA) Maximum Contamination Level (MCL), if established; otherwise, the values from 40 CFR 257.95(h)(2).
3. Interwell UPLs and UTLs calculated based on results from background wells MW-301 and MW-302.
4. For compliance wells, only results confirmed above the LOQ are evaluated as potential SSIs above background or statistically significant level above GPS.

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Table 4. Groundwater Analytical Results - October 2022 to October 2024
Sutherland Generating Station / SCS Engineers Project #25222189.00

Parameter Name	UPL Method	UPL	GPS	Compliance Wells									Delineation Wells			
				MW-306					MW-312				MW-306A			
				10/12/2022	4/12/2023	10/19/2023	4/9/2024	10/16/2024	4/11/2023	10/19/2023	4/9/2024	10/16/2024	4/12/2023	10/18/2023	4/9/2024	10/15/2024
Groundwater Elevation, ft amsl				849.62	853.01	849.22	850.41	850.25	853.47	849.64	850.82	850.81	853.37	849.60	850.79	850.66
Appendix III																
Boron, µg/L	P	278		3,400	3400	4000	3600	3400	--	1400	1300	1300	--	--	--	--
Calcium, mg/L	P	95.4		140	150	120	140	150	140	120	130	120	170	160	170	150
Chloride, mg/L	P	90.9		16	18	18	18	16	17	17	17	17	21	--	--	--
Fluoride, mg/L	NP	0.60		0.25 J	<0.38	0.39 J	<0.38	0.43 J	--	<0.38	<0.38	<0.38	--	--	--	--
Field pH, Std. Units	P	7.67		7.68	7.69	7.72	7.70	7.62	7.70	7.52	7.45	7.64	7.48	7.35	7.40	7.34
Sulfate, mg/L	P	150		340	400	320	350	330	240	250	230	270	210	--	--	--
Total Dissolved Solids, mg/L	P	483		720	720	600	1200	940	--	560	570	550	--	--	--	--
Appendix IV	**UTL Method**	**UTL**														
Antimony, µg/L	P	1.48	6	<0.69	<1.0	<1.0	<1.0	<1.0	--	<1.0	<1.0	<1.0	--	--	--	--
Arsenic, µg/L	NP	21	40	4.1	3.5	4.5	4.4	4.4	--	1.2 J	1.1 J	1.0 J	--	--	--	--
Barium, µg/L	P	275	2,000	66	63	57	100	71	--	56	48	54	--	--	--	--
Beryllium, µg/L	NP	0.48	4	<0.27	<0.33	<0.33	<0.33	<0.33	--	<0.33	<0.33	<0.33	--	--	--	--
Cadmium, µg/L	NP	0.28	5	<0.055	<0.10	<0.10	<0.10	<0.10	--	<0.10	<0.10	<0.10	--	--	--	--
Chromium, µg/L	NP	3.5	100	<1.1	<1.1	<1.1	<1.2	<1.2	--	<1.1	<1.2	<1.2	--	--	--	--
Cobalt, µg/L	P	17.3	8.8	0.42 J	0.38 J	0.29 J	0.50	0.35 J	--	0.96	0.91	0.83	--	--	--	--
Fluoride, mg/L	NP	0.600	4	0.25 J	<0.38	0.39 J	<0.38	0.43 J	--	<0.38	<0.38	<0.38	--	--	--	--
Lead, µg/L	NP	2.5	15	<0.24	<0.24	<0.24	<0.26	<0.26	--	<0.24	<0.26	<0.26	--	--	--	--
Lithium, µg/L	NP	12.6	40	63	59	62	58	66	58	66	75	58	38	39	43	36
Mercury, µg/L	DQ	DQ	2	--	<0.14	<0.14	<0.11	<0.11	--	<0.14	<0.11	<0.11	--	--	--	--
Molybdenum, µg/L	NP	13.6	100	81	76	100	86	89	--	33	31	31	--	--	--	--
Selenium, µg/L	NP	22.0	50	<0.96	<1.4	<1.4	<1.4	<1.4	--	<1.4	<1.4	<1.4	--	--	--	--
Thallium, µg/L	NP	0.43	2	<0.26	<0.26	<0.26	<0.57	<0.57	--	<0.26	<0.57	<0.57	--	--	--	--
Radium 226/228 Combined, pCi/L	P	3.36	5	0.750	0.474	1.26	0.460	0.863	--	1.02	0.428	0.212	--	--	--	--
Additional Parameters - Selection of Remedy																
Lithium, dissolved, µg/L	UPL, UTL, or GPS not applicable			62	--	--	--	--	--	--	--	--	--	--	--	--
Iron, dissolved, µg/L				<36	--	--	--	--	--	--	--	--	--	--	--	--
Iron, µg/L				85 J	49 J	<36	140	44 J	72 J	90 J	65 J	<36	510	1000	640	570
Magnesium, dissolved, µg/L				25,000	--	--	--	--	--	--	--	--	--	--	--	--
Magnesium, µg/L				25,000	--	--	--	--	22000	23000	23,000	24,000	14000	14000	14,000	14,000
Manganese, dissolved, µg/L				1,900	--	--	--	--	--	--	--	--	--	--	--	--
Manganese, µg/L				1,800	--	--	--	--	1400	1200	1,100	1,200	740	770	680	610
Potassium, µg/L				7,500	--	--	--	--	7500	7700	7,900	7,300	9900	9600	9,100	7,800
Sodium, µg/L				34,000	--	--	--	--	26000	26000	25,000	25,000	29000	27000	25,000	21,000
Total Alkalinity, mg/L				150	--	--	--	--	260	170	240	180	340	280	300	260
Carbonate Alkalinity, mg/L				<4.6	--	--	--	--	<2.5	<2.5	<5.0	<2.5	<2.5	<2.5	<5.0	<2.5
Bicarbonate Alkalinity, mg/L				150	--	--	--	--	260	170	240	180	340	280	300	260

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Grayscale indicates Additional Parameters sampled for selection of remedy and evaluation of Monitored Natural Attenuation.

Abbreviations:

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UTL = Upper Tolerance Limit
µg/L = micrograms per Liter
mg/L = milligrams per Liter
GPS = Groundwater Protection Standard
-- = Not Analyzed
LOD = Limit of Detection
LOQ = Limit of Quantification
P = Parametric UPL with 1-of-2 retesting
NP= Nonparametric UPL with 1-of-2 retesting
DQ= Double Quantitation (not detected in background)

Lab Notes/Qualifiers:

J = Result is less than the reporting limit but greater than limits or equal to the method detection limit and the concentration is an approximate value.
F1 = The matrix spike and/or matrix spike duplicate exceeds control limits.
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Notes:

1. An individual result above the UPL or GPS does not constitute a statistically significant increase (SSI) above background or statistically significant level above the GPS. See the accompanying letter text for identification of statistically significant results.
2. GPS is the United States Environmental Protection Agency (USEPA) Maximum Contamination Level (MCL), if established; otherwise, the values from 40 CFR 257.95(h)(2).
3. Interwell UPLs and UTLs calculated based on results from background wells MW-301 and MW-302.
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I:\25222189.00\Deliverables\2025 Selection of Remedy Report\Tables\[Table 4 - CCR GW Screening Summary_SGS_Oct 2022 to Oct 2024.xlsx]Event Table

Table 4. Groundwater Analytical Results - October 2022 to October 2024
Sutherland Generating Station / SCS Engineers Project #25222189.00

Parameter Name	UPL Method	UPL	GPS	Delineation Wells															
				MW-307					MW-308					MW-309					
				10/10/2022	4/10/2023	10/18/2023	4/10/2024	10/14/2024	10/10/2022	4/13/2023	10/18/2023	4/10/2024	10/14/2024	10/11/2022	4/11/2023	10/20/2023	4/10/2024	10/15/2024
Groundwater Elevation, ft amsl				850.79	853.97	850.64	851.37	851.63	851.18	852.53	850.64	851.63	852.11	848.44	851.58	848.35	849.58	848.67
Appendix III																			
Boron, µg/L	P	278		420	--	--	--	--	400	--	--	--	--	1,400	--	--	--	--	
Calcium, mg/L	P	95.4		170	--	--	--	--	130	--	--	--	--	170	140	95	130	120	
Chloride, mg/L	P	90.9		17	--	--	--	--	14	--	--	--	--	17	19	--	--	--	
Fluoride, mg/L	NP	0.60		<0.22	--	--	--	--	0.26 J	--	--	--	--	0.22 J	--	--	--	--	
Field pH, Std. Units	P	7.67		6.64	6.56	6.58	6.41	6.41	6.91	6.73	6.80	6.70	6.74	7.17	7.25	7.41	7.19	7.11	
Sulfate, mg/L	P	150		270	--	--	--	--	130	--	--	--	--	350	400	--	--	--	
Total Dissolved Solids, mg/L	P	483		760	--	--	--	--	540	--	--	--	--	800	--	--	--	--	
Appendix IV	**UTL Method**	**UTL**																	
Antimony, µg/L	P	1.48	6	<0.69	--	--	--	--	<0.69	--	--	--	--	<0.69	--	--	--	--	
Arsenic, µg/L	NP	21	40	5.9	--	--	--	--	<0.75	--	--	--	--	2.2	--	--	--	--	
Barium, µg/L	P	275	2,000	44	--	--	--	--	64	--	--	--	--	170	--	--	--	--	
Beryllium, µg/L	NP	0.48	4	<0.27	--	--	--	--	<0.27	--	--	--	--	<0.27	--	--	--	--	
Cadmium, µg/L	NP	0.28	5	0.24	--	--	--	--	<0.055	--	--	--	--	0.25	--	--	--	--	
Chromium, µg/L	NP	3.5	100	<1.1	--	--	--	--	<1.1	--	--	--	--	2.5 J	--	--	--	--	
Cobalt, µg/L	P	17.3	8.8	4.6	--	--	--	--	2.5	--	--	--	--	5.8	--	--	--	--	
Fluoride, mg/L	NP	0.600	4	<0.22	--	--	--	--	0.26 J	--	--	--	--	0.22 J	--	--	--	--	
Lead, µg/L	NP	2.5	15	0.80	--	--	--	--	<0.24	--	--	--	--	2.0	--	--	--	--	
Lithium, µg/L	NP	12.6	40	22	24	11	37	22	14	12	16	17	14	24	21	17	26	19	
Mercury, µg/L	DQ	DQ	2	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
Molybdenum, µg/L	NP	13.6	100	5.8	--	--	--	--	<1.2	--	--	--	--	<1.2	--	--	--	--	
Selenium, µg/L	NP	22.0	50	<0.96	--	--	--	--	<0.96	--	--	--	--	<0.96	--	--	--	--	
Thallium, µg/L	NP	0.43	2	<0.26	--	--	--	--	<0.26	--	--	--	--	<0.26	--	--	--	--	
Radium 226/228 Combined, pCi/L	P	3.36	5	0.873	--	--	--	--	0.763	--	--	--	--	2.39	--	--	--	--	
Additional Parameters - Selection of Remedy																			
Lithium, dissolved, µg/L	UPL, UTL, or GPS not applicable			21	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
Iron, dissolved, µg/L				560	--	--	--	--	660	--	--	--	--	83 J	--	--	--	--	
Iron, µg/L				2,300	620	280	430	790	710	4700	580	190	1100	4,800	360	950	220	<36	
Magnesium, dissolved, µg/L				39,000	--	--	--	--	30,000	--	--	--	--	44,000	--	--	--	--	
Magnesium, µg/L				40,000	--	--	--	--	29,000	--	--	--	--	51,000	41000	30,000	39,000	36,000	
Manganese, dissolved, µg/L				5,200	--	--	--	--	1,700	--	--	--	--	35	--	--	--	--	
Manganese, µg/L				5,500	--	--	--	--	1,700	--	--	--	--	990	98	180	57	97	
Potassium, µg/L				5,200	--	--	--	--	4,800	--	--	--	--	4,900	4700	3,500	4,600	4,000	
Sodium, µg/L				29,000	--	--	--	--	21,000	--	--	--	--	42,000	43000	33,000	42,000	34,000	
Total Alkalinity, mg/L				350	--	--	--	--	310	--	--	--	--	240	220	190	200	190	
Carbonate Alkalinity, mg/L				<4.6	--	--	--	--	<4.6	--	--	--	--	<4.6	<2.5	<2.5	<5.0	<2.5	
Bicarbonate Alkalinity, mg/L				350	--	--	--	--	310	--	--	--	--	240	220	190	200	190	

Blue shaded cell indicates the compliance well result exceeds the UPL and the LOQ.
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3. Interwell UPLs and UTLs calculated based on results from background wells MW-301 and MW-302.
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Table 4. Groundwater Analytical Results - October 2022 to October 2024
Sutherland Generating Station / SCS Engineers Project #25222189.00

Parameter Name	UPL Method	UPL	GPS	Delineation Wells									
				MW-310					MW-311				
				10/11/2022	4/11/2023	10/20/2023	4/10/2024	10/15/2024	10/11/2022	4/11/2023	10/20/2023	4/10/2024	10/15/2024
Groundwater Elevation, ft amsl				848.31	851.70	848.13	849.52	848.71	848.21	851.72	847.99	849.44	848.72
Appendix III													
Boron, µg/L	P	278		920	--	--	--	--	1,400	--	--	--	--
Calcium, mg/L	P	95.4		140	170	130	150	130	150	120	130	120	110
Chloride, mg/L	P	90.9		20	43	--	--	--	19	21	--	--	--
Fluoride, mg/L	NP	0.60		<0.22	--	--	--	--	0.33 J	--	--	--	--
Field pH, Std. Units	P	7.67		7.10	6.96	7.30	7.16	7.03	7.05	7.17	7.16	7.19	6.77
Sulfate, mg/L	P	150		290	460	--	--	--	310	260	--	--	--
Total Dissolved Solids, mg/L	P	483		710	--	--	--	--	760	--	--	--	--
Appendix IV	**UTL Method**	**UTL**											
Antimony, µg/L	P	1.48	6	<0.69	--	--	--	--	<0.69	--	--	--	--
Arsenic, µg/L	NP	21	40	1.2 J	--	--	--	--	1.2 J	--	--	--	--
Barium, µg/L	P	275	2,000	55	--	--	--	--	120	--	--	--	--
Beryllium, µg/L	NP	0.48	4	<0.27	--	--	--	--	<0.27	--	--	--	--
Cadmium, µg/L	NP	0.28	5	0.11	--	--	--	--	0.092 J	--	--	--	--
Chromium, µg/L	NP	3.5	100	<1.1	--	--	--	--	<1.1	--	--	--	--
Cobalt, µg/L	P	17.3	8.8	2.7	--	--	--	--	1.1	--	--	--	--
Fluoride, mg/L	NP	0.600	4	<0.22	--	--	--	--	0.33 J	--	--	--	--
Lead, µg/L	NP	2.5	15	2.6	--	--	--	--	0.27 J	--	--	--	--
Lithium, µg/L	NP	12.6	40	18	4.0 J	20	25	21	29	20	33	29	26
Mercury, µg/L	DQ	DQ	2	--	--	--	--	--	--	--	--	--	--
Molybdenum, µg/L	NP	13.6	100	<1.2	--	--	--	--	<1.2	--	--	--	--
Selenium, µg/L	NP	22.0	50	<0.96	--	--	--	--	<0.96	--	--	--	--
Thallium, µg/L	NP	0.43	2	<0.26	--	--	--	--	<0.26	--	--	--	--
Radium 226/228 Combined, pCi/L	P	3.36	5	1.99	--	--	--	--	0.541	--	--	--	--
Additional Parameters - Selection of Remedy													
Lithium, dissolved, µg/L	UPL, UTL, or GPS not applicable			--	--	--	--	--	--	--	--	--	--
Iron, dissolved, µg/L				250	--	--	--	--	<36	--	--	--	--
Iron, µg/L				1,900	<36	97 J	<36	<36	1,400	<36	47 J	<36	<36
Magnesium, dissolved, µg/L				40,000	--	--	--	--	36,000	--	--	--	--
Magnesium, µg/L				43,000	64000	41,000	47,000	43,000	37,000	31000	34,000	30,000	29,000
Manganese, dissolved, µg/L				240	--	--	--	--	100	--	--	--	--
Manganese, µg/L				600	6.6 J	360	320	170	510	45	87	33	67
Potassium, µg/L				4,100	220 J	4,100	4,300	4,200	5,200	3600	5,100	3,900	3,800
Sodium, µg/L				39,000	36000	41,000	45,000	40,000	45,000	39000	43,000	36,000	33,000
Total Alkalinity, mg/L				260	260	200	260	200	250	240	220	200	210
Carbonate Alkalinity, mg/L				<4.6	<2.5	<2.5	<5.0	<2.5	<4.6	<2.5	<2.5	<5.0	<2.5
Bicarbonate Alkalinity, mg/L				260	260	200	260	200	250	240	220	200	210

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Table 4. Groundwater Analytical Results - October 2022 to October 2024
Sutherland Generating Station / SCS Engineers Project #25222189.00

Parameter Name	UPL Method	UPL	GPS	Delineation Wells									
				MW-312A		MW-313				MW-314			
				4/9/2024	10/16/2024	4/12/2023	10/19/2023	4/10/2024	10/15/2024	4/13/2023	10/19/2023	4/10/2024	10/15/2024
Groundwater Elevation, ft amsl				850.85	850.78	853.15	849.41	850.65	850.34	852.77	849.05	850.35	849.91
Appendix III													
Boron, µg/L	P	278		--	--	--	--	--	--	--	--	--	--
Calcium, mg/L	P	95.4		140	140	150	130	140	140	130	140	140	140
Chloride, mg/L	P	90.9		--	--	15	--	--	--	18	--	--	--
Fluoride, mg/L	NP	0.60		--	--	--	--	--	--	--	--	--	--
Field pH, Std. Units	P	7.67		7.28	7.46	7.03	7.21	7.04	6.96	7.26	7.15	7.15	7.00
Sulfate, mg/L	P	150		--	--	290	--	--	--	310	--	--	--
Total Dissolved Solids, mg/L	P	483		--	--	--	--	--	--	--	--	--	--
Appendix IV	**UTL Method**	**UTL**											
Antimony, µg/L	P	1.48	6	--	--	--	--	--	--	--	--	--	--
Arsenic, µg/L	NP	21	40	--	--	--	--	--	--	--	--	--	--
Barium, µg/L	P	275	2,000	--	--	--	--	--	--	--	--	--	--
Beryllium, µg/L	NP	0.48	4	--	--	--	--	--	--	--	--	--	--
Cadmium, µg/L	NP	0.28	5	--	--	--	--	--	--	--	--	--	--
Chromium, µg/L	NP	3.5	100	--	--	--	--	--	--	--	--	--	--
Cobalt, µg/L	P	17.3	8.8	--	--	--	--	--	--	--	--	--	--
Fluoride, mg/L	NP	0.600	4	--	--	--	--	--	--	--	--	--	--
Lead, µg/L	NP	2.5	15	--	--	--	--	--	--	--	--	--	--
Lithium, µg/L	NP	12.6	40	38	34	25	44	44	43	32	35	37	44
Mercury, µg/L	DQ	DQ	2	--	--	--	--	--	--	--	--	--	--
Molybdenum, µg/L	NP	13.6	100	--	--	--	--	--	--	--	--	--	--
Selenium, µg/L	NP	22.0	50	--	--	--	--	--	--	--	--	--	--
Thallium, µg/L	NP	0.43	2	--	--	--	--	--	--	--	--	--	--
Radium 226/228 Combined, pCi/L	P	3.36	5	--	--	--	--	--	--	--	--	--	--
Additional Parameters - Selection of Remedy													
Lithium, dissolved, µg/L	UPL, UTL, or GPS not applicable			--	--	--	--	--	--	--	--	--	--
Iron, dissolved, µg/L				--	--	--	--	--	--	--	--	--	--
Iron, µg/L				1200	1000	200	110	55 J	46 J	790	620	<36	<36
Magnesium, dissolved, µg/L				--	--	--	--	--	--	--	--	--	--
Magnesium, µg/L				24000	25000	37000	31,000	32,000	33,000	37000	40,000	40,000	35,000
Manganese, dissolved, µg/L				--	--	--	--	--	--	--	--	--	--
Manganese, µg/L				760	700	4100	3200	3,100	3,200	640	800	540	640
Potassium, µg/L				7500	6800	4100	5,500	5,400	5,300	4900	5,900	5,000	5,800
Sodium, µg/L				28000	25000	30000	34,000	32,000	27,000	38000	47,000	38,000	38,000
Total Alkalinity, mg/L				250	260	340	180	290	270	250	210	250	250
Carbonate Alkalinity, mg/L				<5.0	<2.5	<2.5	<2.5	<5.0	<2.5	<2.5	<2.5	<5.0	<2.5
Bicarbonate Alkalinity, mg/L				250	260	340	180	290	270	250	210	250	250

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Created by: RM Date: 11/22/2023
Last revision by: RM Date: 8/20/2025
Checked by: NLB Date: 8/20/2025

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1. An individual result above the UPL or GPS does not constitute a statistically significant increase (SSI) above background or statistically significant level above the GPS. See the accompanying letter text for identification of statistically significant results.
2. GPS is the United States Environmental Protection Agency (USEPA) Maximum Contamination Level (MCL), if established; otherwise, the values from 40 CFR 257.95(h)(2).
3. Interwell UPLs and UTLs calculated based on results from background wells MW-301 and MW-302.
4. For compliance wells, only results confirmed above the LOQ are evaluated as potential SSIs above background or statistically significant level above GPS.

I:\25222189.00\Deliverables\2025 Selection of Remedy Report\Tables\[Table 4 - CCR GW Screening Summary_SGS_Oct 2022 to Oct 2024.xlsx]Event Table

Table 5. Groundwater Field Data Summary
Sutherland Generating Station / SCS Engineers Project #25222189.00
April 2019 - October 2024

Well	Sample Date	Groundwater Elevation (feet)	Field Temperature (deg C)	Field pH (Std. Units)	Oxygen, Dissolved (mg/L)	Field Specific Conductance (umhos/cm)	Field Oxidation Potential (mV)	Turbidity (NTU)
MW-301	4/2/2019	857.33	4.9	7.16	1.48	618	58.7	64.7
	10/16/2019	856.15	17.8	6.97	0.16	642	34.7	11.4
	12/11/2019	857.05	12.4	6.69	0.34	550	84.1	51.9
	2/3/2020	856.24	9.5	6.79	3.24	651	61.7	19.1
	4/7/2020	856.16	11.0	6.87	0.13	584	143.1	68.5
	10/13/2020	854.44	17.8	6.66	0.11	906	30.0	19.1
	4/6/2021	854.38	9.9	6.69	0.16	502	180.2	25.1
	10/26/2021	852.42	14.3	6.21	1.44	485	148.3	110.0
	4/22/2022	853.87	8.9	6.23	0.98	282	139.7	40.7
	10/12/2022	851.98	15.6	6.50	0.00	388	172.5	0.0
	4/11/2023	854.20	8.8	6.59	0.38	462	134.1	36.2
	10/18/2023	851.34	17.5	6.12	1.52	499	128.6	18.0
	4/11/2024	851.89	13.2	6.55	2.52	476	116.2	33.5
	10/17/2024	852.94	18.0	6.60	1.99	521	145.4	19.9
MW-302	4/2/2019	857.12	9.5	7.50	0.79	437	10.0	12.9
	10/16/2019	855.30	12.8	7.22	0.24	431	-32.9	4.9
	12/12/2019	856.11	11.0	6.98	0.46	394	-45.9	5.1
	2/3/2020	856.59	9.4	7.31	0.95	464	5.6	2.9
	4/7/2020	856.23	11.3	7.36	0.14	456	-80.4	6.3
	10/13/2020	854.38	13.2	7.43	0.11	464	-103.6	3.7
	4/6/2021	854.85	9.3	6.96	0.49	581	161.9	2.7
	10/26/2021	852.68	13.2	7.30	1.34	624	146.4	23.2
	4/22/2022	855.04	8.2	7.11	3.76	539	123.3	16.3
	10/10/2022	851.94	13.2	7.17	0.00	473	2.6	84.0
	4/10/2023	854.63	8.9	7.03	1.99	571	59.7	5.4
	10/18/2023	851.44	14.4	7.03	0.65	525	10.7	8.7
	4/11/2024	852.19	10.7	7.07	0.25	534	-13.1	19.7
	10/17/2024	853.15	14.9	7.13	0.33	642	67.6	27.6
MW-303	4/2/2019	855.60	10.6	7.29	0.78	1077	61.0	2.4
	10/16/2019	854.90	15.2	6.97	0.24	1037	35.0	3.2
	12/12/2019	854.47	10.4	6.82	1.02	1004	52.8	15.1
	2/3/2020	854.57	8.0	6.84	1.89	1173	60.1	5.3
	4/7/2020	854.63	11.3	7.17	0.13	814	124.3	3.6
	10/13/2020	851.70	14.4	7.12	0.20	888	-74.2	2.4
	4/6/2021	853.21	8.0	7.04	0.15	601	68.5	3.6
	10/26/2021	850.54	13.5	6.84	2.57	577	167.1	110.0
	4/22/2022	852.35	7.0	7.30	3.23	241	83.7	34.7
	10/10/2022	849.96	15.7	7.44	0.01	546	-8.5	0.0
	4/10/2023	853.34	7.7	7.10	-0.08	560	193.1	0.0
	10/20/2023	849.47	15.0	7.28	1.22	741	8.9	5.3
	4/11/2024	850.73	11.6	7.05	3.64	714	91.8	10.1
	10/17/2024	850.96	14.2	7.27	0.58	996	35.5	4.4
MW-304	4/2/2019	855.47	7.6	6.85	1.35	1170	57.1	1.2
	10/16/2019	854.78	14.1	6.72	0.87	1158	39.1	1.6
	12/12/2019	854.29	10.5	6.47	0.37	1083	75.1	0.2
	2/3/2020	854.35	8.1	6.71	1.87	1149	62.5	1.6
	4/7/2020	854.54	10.4	6.68	0.28	1016	95.1	2.1
	10/13/2020	851.30	14.5	6.64	6.20	1033	39.1	1.7
	4/6/2021	853.15	8.4	6.61	5.83	957	182.1	0.8
	10/26/2021	850.13	13.8	7.04	1.58	831	152.1	19.8
	4/21/2022	851.97	7.2	6.77	0.77	874	98.9	4.7
	10/11/2022	849.70	13.0	6.64	0.00	732	218.8	0.0
	4/11/2023	853.27	6.7	6.72	2.62	816	195.7	0.0
	10/20/2023	849.24	12.2	7.19	0.99	775	107.6	5.1
	4/9/2024	850.53	13.1	7.05	1.49	770	65.5	4.4
	10/17/2024	850.68	14.2	6.71	0.46	1361	137.3	3.8

Table 5. Groundwater Field Data Summary
Sutherland Generating Station / SCS Engineers Project #25222189.00
April 2019 - October 2024

Well	Sample Date	Groundwater Elevation (feet)	Field Temperature (deg C)	Field pH (Std. Units)	Oxygen, Dissolved (mg/L)	Field Specific Conductance (umhos/cm)	Field Oxidation Potential (mV)	Turbidity (NTU)
MW-305	4/2/2019	855.67	8.5	6.90	0.96	1168	47.0	6.5
	10/16/2019	854.99	13.8	6.94	0.40	1061	24.7	2.2
	12/12/2019	854.33	11.4	6.52	0.27	1178	50.5	78.4
	2/3/2020	854.28	9.9	6.61	1.09	1200	57.8	4.9
	4/7/2020	854.64	10.2	6.70	0.20	1198	-6.6	8.1
	5/11/2020	853.78	9.1	5.97	0.12	1215	20.2	3.0
	10/13/2020	851.32	14.8	7.33	0.12	1029	-79.3	3.8
	4/6/2021	853.02	10.9	6.68	0.15	1171	69.8	3.4
	10/26/2021	850.12	14.8	7.58	1.15	807	134.7	19.9
	4/21/2022	851.91	10.0	6.99	0.14	938	120.5	11.1
	10/11/2022	849.73	14.7	7.58	0.00	786	17.5	0.0
	4/11/2023	853.13	9.4	6.93	0.13	1044	140.0	0.0
	10/20/2023	849.27	14.2	7.48	0.64	911	29.3	6.2
	4/9/2024	850.48	10.7	7.51	0.27	878	43.1	4.4
	10/17/2024	850.57	15.0	7.60	0.39	1066	117.2	8.7
MW-306	4/2/2019	855.96	10.8	7.81	1.37	907	25.7	0.8
	10/16/2019	852.16	13.1	7.38	0.28	1294	43.4	1.8
	12/12/2019	854.39	11.6	7.50	0.32	1329	30.8	0.8
	2/3/2020	854.14	10.9	7.61	1.46	1446	72.7	0.7
	4/7/2020	854.70	11.1	7.72	0.12	1428	209.2	0.6
	5/11/2020	853.71	10.7	7.08	0.10	1557	123.2	1.4
	10/13/2020	851.13	15.0	7.62	0.09	1445	-97.4	0.0
	2/24/2021	850.56	11.5	7.61	0.09	1479	-38.8	0.0
	4/6/2021	852.79	12.0	7.64	0.11	1464	-29.8	0.0
	7/14/2021	850.67	14.1	8.11	0.13	1178	57.7	0.8
	10/26/2021	850.00	15.7	7.44	1.22	1038	161.0	19.8
	4/21/2022	851.82	11.2	7.71	0.25	1100	110.2	4.6
	10/12/2022	849.62	14.2	7.68	0.00	915	118.8	0.0
	4/12/2023	853.01	11.4	7.69	0.14	988	-8.9	0.0
	10/19/2023	849.22	13.6	7.72	0.60	933	27.1	6.6
	4/9/2024	850.41	17.0	7.70	0.25	1003	-33.4	9.0
	10/16/2024	850.25	14.7	7.62	0.41	1279	114.2	4.0
MW-306A	4/12/2023	853.37	12.6	7.48	0.11	940	-69.0	4.5
	10/18/2023	849.60	14.1	7.35	0.69	1016	-59.2	15.2
	4/9/2024	850.79	12.8	7.40	0.12	972	-104.0	2.9
	10/15/2024	850.66	13.6	7.34	0.21	1107	-58.3	4.8
MW-307	12/9/2021	851.56	14.3	6.53	2.37	1137	52.5	13.0
	4/21/2022	852.76	10.6	6.62	0.12	1104	81.3	26.3
	10/10/2022	850.79	17.3	6.64	0.00	1025	22.9	44.8
	4/10/2023	853.97	10.7	6.56	-0.06	1686	136.4	1.3
	10/18/2023	850.32	14.2	6.58	0.71	991	29.8	10.8
	4/10/2024	851.37	12.3	6.41	0.32	1756	76.0	18.0
	10/14/2024	851.63	14.2	6.41	0.33	1532	107.1	5.3
MW-308	12/9/2021	851.87	13.3	6.96	6.33	739	-37.3	14.0
	4/22/2022	853.08	8.9	7.12	0.15	726	105.7	26.9
	10/10/2022	851.18	15.0	6.91	0.00	780	-23.9	77.9
	4/13/2023	852.53	9.3	6.73	0.11	1160	47.9	40.0
	10/18/2023	850.64	13.8	6.80	0.61	981	28.5	5.0
	4/10/2024	851.63	11.1	6.70	0.14	1139	63.6	18.3
	10/14/2024	852.11	13.7	6.74	0.43	1023	129.1	14.4

Table 5. Groundwater Field Data Summary
Sutherland Generating Station / SCS Engineers Project #25222189.00
April 2019 - October 2024

Well	Sample Date	Groundwater Elevation (feet)	Field Temperature (deg C)	Field pH (Std. Units)	Oxygen, Dissolved (mg/L)	Field Specific Conductance (umhos/cm)	Field Oxidation Potential (mV)	Turbidity (NTU)
MW-309	5/12/2022	853.95	9.5	7.42	7.66	937	191.4	0.1
	8/11/2022	849.47	13.3	7.40	0.25	1065	22.3	36.6
	10/11/2022	848.44	11.7	7.17	0.09	1017	193.6	653.3
	4/11/2023	851.58	9.7	7.25	0.44	1017	96.7	1.7
	10/20/2023	848.35	11.5	7.41	0.92	1128	83.8	36.0
	4/10/2024	849.58	10.3	7.19	0.35	1028	46.6	12.1
	10/15/2024	848.67	12.1	7.11	1.04	1184	115.2	2.7
MW-310	5/12/2022	853.71	9.6	7.44	4.81	1044	190.7	2.9
	8/11/2022	849.49	13.3	7.37	0.14	1001	29.0	36.4
	10/11/2022	848.31	13.7	7.10	1.07	937	178.5	217.9
	4/11/2023	851.70	7.7	6.96	2.83	1189	88.2	0.0
	10/20/2023	848.13	12.3	7.30	1.81	1123	82.1	8.2
	4/10/2024	849.52	10.3	7.16	0.23	1172	32.9	2.1
	10/15/2024	848.71	12.6	7.03	0.91	1356	115.1	4.0
MW-311	5/12/2022	853.56	7.9	7.17	5.15	1017	199.6	0.7
	8/11/2022	849.46	15.0	7.27	0.71	952	39.7	32.0
	10/10/2022	848.21	14.9	7.05	0.16	977	160.3	4.9
	4/11/2023	851.72	6.9	7.17	1.88	847	112.9	0.0
	10/20/2023	847.99	13.9	7.16	1.62	1075	93.7	7.5
	4/10/2024	849.44	8.4	7.19	0.54	898	38.7	32.0
	10/15/2024	848.72	15.1	6.77	1.13	1100	154.1	6.6
MW-312	4/12/2023	853.47	10.5	7.70	0.10	848	19.4	0.0
	10/19/2023	849.64	14.4	7.52	1.30	934	7.5	10.0
	4/9/2024	850.82	11.7	7.45	0.13	870	-49.3	3.8
	10/16/2024	850.81	15.3	7.64	0.22	1108	-0.9	2.8
MW-312A	4/9/2024	850.85	12.8	7.28	0.59	983	-102.3	15.3
	10/16/2024	850.78	13.9	7.46	0.26	1220	-78.1	13.9
MW-313	4/13/2023	853.15	9.7	7.03	0.07	1013	61.1	4.5
	10/19/2023	849.41	12.7	7.21	1.30	1076	39.0	13.2
	4/10/2024	850.65	10.8	7.04	0.06	1015	2.5	6.4
	10/15/2024	850.34	13.8	6.96	1.89	1222	81.4	2.3
MW-314	4/13/2023	852.77	7.4	7.26	0.22	967	55.4	30.0
	10/19/2023	849.05	13.4	7.15	2.14	1195	78.3	26.2
	4/10/2024	850.35	9.0	7.15	0.53	1102	46.9	6.1
	10/15/2024	849.91	14.7	7.00	1.72	1319	123.2	4.4

Last revision by: RM Date: 8/20/2025
Checked by: NLB Date: 8/20/2025

I:\25222189.00\Deliverables\2025 Selection of Remedy Report\Tables\[Table 5 - Field Parameters Summary Table.xlsx]Field Data Summary

Table 6. Horizontal Gradients and Flow Velocity
Sutherland Generating Station
SCS Engineers Project #25222189.00
August 2022 - October 2024

	East				
Sampling Dates	**h1 (ft)**	**h2 (ft)**	**Δl (ft)**	**Δh/Δl (ft/ft)**	**V (ft/d)**
August 11, 2022	851.00	849.49	1273	0.001	0.18
October 10, 2022	849.50	848.31	1113	0.001	0.16
4/10-13/2023	854.00	851.70	2100	0.001	0.17
10/18-20/2023	850.00	847.99	1950	0.001	0.16
4/9-11/2024	851.00	849.44	1,801	0.001	0.2
10/14-17/2024	851.50	849.00	1,745	0.001	0.3

Well	K Value (cm/sec)	K Value (ft/d)
MW-301	6.5E-02	184
MW-302	4.0E-02	113
MW-303	1.7E-02	48
MW-304	1.2E-02	34
MW-305	3.9E-02	111
MW-306	2.6E-02	75
Geometric Mean	2.2E-02	61

Note: Geometric Mean calculation does not include the upgradient wells

Assumed Porosity, n
0.25

Groundwater flow velocity equation: V = [K*(Δh/Δl)] / n

ft = feet
ft/d = feet per day
K = hydraulic conductivity
n = effective porosity
V = groundwater flow velocity

h1, h2 = point interpreted groundwater elevation at locations 1 and 2
Δl = distance between location 1 and 2
Δh/Δl = hydraulic gradient

Notes:

1. Hydraulic conductivity (K) is the geometric mean of the slug test results for water table monitoring wells MW-303 to MW-306. Wells MW-301 and MW-302 were excluded because they are upgradient wells.

2. Effective porosity value is the low end of the range of porosity values for sand in Freeze and Cherry, *Groundwater* , 1979, Table 2.4. The lithology at the screened interval for MW-303 through MW-306 is primarily poorly graded sand, silty sand and some clay.

3. Flow paths for horizontal groundwater velocity calculation shown on Figures 7 through 12.

Last revision by: NLB Date: 8/20/2025
Checked by: RM Date: 8/20/2025

I:\25222189.00\Deliverables\2025 Selection of Remedy Report\Tables\[Table 6 - Horizontal Gradients and Flow Velocity Table_2022-2024.xlsx]Table 6

Table 7. Summary of Vertical Hydraulic Gradients
Sutherland Generating Station / SCS Engineers Project #25222189.00

Well Pair		Vertical Hydraulic Gradient (feet/foot)[1]			
Shallower Well	**Deeper Well**	**April 2023**	**October 2023**	**April 2024**	**October 2024**
MW-306	MW-306A	0.017	0.018	-0.019	-0.021
MW-312	MW-312A	NI[2]	NI[2]	-0.001	0.001

Notes:
(1) A positive vertical gradient indicates an upward groundwater flow. A negative gradient indicates downward flow.
(2) The vertical gradient for MW-312/MW-312A next cannot be calculated for 2023 because MW-312A was not installed until December 2023.
NI = Not Installed

Created By: NLB Date: 8/20/2025
Checked By: RM Date: 8/20/2025

Table 8. Evaluation of Corrective Measure Alternatives
Sutherland Generating Station / SCS Engineers Project #25222189.00

	Alternative #3 Gradient Control	Alternative #4 In-Situ Treatment with Physical/Chemical Amendment	Alternative #5 Groundwater Management with Barrier Wall
CORRECTIVE ACTION ASSESSMENT - 40 CFR 257.97(b)			
257.97(b)(1) Is remedy protective of human health and the environment?	Yes	Yes	Yes
257.97(b)(2) Can the remedy attain the groundwater protection standard?	Yes	Yes	Yes
257.97(b)(3) Can the remedy control the source(s) of releases so as to reduce or eliminate, to the maximum extent feasible, further releases of constituents in appendix IV to this part into the environment?	Yes	Yes	Yes
257.97(b)(4) Can the remedy remove from the environment as much of the contaminated material that was released from the CCR unit as is feasible?	Yes	Yes	Yes
257.97(b)(5) Can the remedy comply with standards for management of wastes as specified in §257.98(d)?	Yes, if gradient control includes sufficient groundwater extraction.	Yes	Yes, if using permeable reactive barriers to treat groundwater in situ to meet GPS.

Table 8. Evaluation of Corrective Measure Alternatives
Sutherland Generating Station / SCS Engineers Project #25222189.00

	Alternative #3 Gradient Control	Alternative #4 In-Situ Treatment with Physical/Chemical Amendment	Alternative #5 Groundwater Management with Barrier Wall
LONG- AND SHORT-TERM EFFECTIVENESS - 40 CFR 257.97(c)(1)			
257.97(c)(1)(i) Magnitude of reduction of existing risks	Existing risk is limited, but reduced by achieving GPS in shorter timeframe than Alternative #1 (No Further Action). Long-term risk is reduced by reducing groundwater concentrations through mass removal with groundwater extraction.	Similar to Alternative #3, but without the benefit of mass removal.	Similar to Alternative #3, but without the benefit of mass removal.
257.97(c)(1)(ii) Magnitude of residual risks in terms of likelihood of further releases due to CCR remaining following implementation of a remedy	Residual risk is limited for all alternatives because the facility is capped. Potential further reduction in release risk due to removal of contaminant mass from the environment.	Similar to Alternative #3, but without the benefit of mass removal.	Similar to Alternative #3, but without the benefit of mass removal. Potential further reduction in release risk provided by barrier walls.
257.97(c)(1)(iii) The type and degree of long-term management required, including monitoring, operation, and maintenance	30-year post-closure groundwater monitoring. Groundwater monitoring network maintenance and as-needed repair/replacement. Final cover maintenance (e.g., mowing and as-needed repair). Periodic final cover inspections. Additional corrective action as required based on post-closure groundwater monitoring. Monitoring for maintenance of the gradient control system and any discharge-related water treatment. Groundwater pump operation and maintenance (O&M), groundwater treatment system O&M, and treatment system discharge monitoring/reporting	30-year post-closure groundwater monitoring. Groundwater monitoring network maintenance and as-needed repair/replacement. Final cover maintenance (e.g., mowing and as-needed repair). Periodic final cover inspections. Additional corrective action as required based on post-closure groundwater monitoring. Monitoring for in situ treatment performance.	Same as Alternative #4 with additional monitoring of wall performance.

Table 8. Evaluation of Corrective Measure Alternatives
Sutherland Generating Station / SCS Engineers Project #25222189.00

	Alternative #3 Gradient Control	Alternative #4 In-Situ Treatment with Physical/Chemical Amendment	Alternative #5 Groundwater Management with Barrier Wall
LONG- AND SHORT-TERM EFFECTIVENESS - 40 CFR 257.97(c)(1) (continued)			
257.97(c)(1)(iv) Short-term risks - Implementation			
Excavation	Some increased construction risk due to drilling, trenching, and excavation for groundwater pumping and treatment system construction.	Limited due to drilling activities.	Some increased construction risk due to excavation or installation of the barrier wall.
Transportation	Some risk from importing groundwater pumping and treatment system materials and transportation of drilling wastes for off-site disposal.	Similar to Alternative #3 with slightly lower risk from importing material for stabilization/treatment and exporting drilling waste on a simple volume basis.	Similar to Alternative #3 with increased risk from importing barrier wall system materials and potential off-site disposal of excavation spoils.
Re-Disposal	Some limited risk for re-disposal of drilling wastes comingled with CCR-impacted groundwater.	Similar to Alternative #3.	Similar to Alternative #3 with increased risk due to permeable reactive barrier excavation volumes.
257.97(c)(1)(v) Time until full protection is achieved	Groundwater protection timeframe to reach GPS potentially 2 to 10 years, achievable within 30-year post-closure monitoring period.	Similar to Alternative #3. Potential for reduction in time to reach GPS due to rapid chemical reaction time. However, the chemical changes driving a reduction in concentration may not be as permanent as mass removal.	Similar to Alternative #3. Potential longer time to reach GPS due to passive nature of reactive barrier versus active mass removal, but also due to the time required to design, procure, and install the barrier wall. Additionally, the chemical changes driving a reduction in concentration may not be as permanent as mass removal.

Table 8. Evaluation of Corrective Measure Alternatives
Sutherland Generating Station / SCS Engineers Project #25222189.00

	Alternative #3 Gradient Control	Alternative #4 In-Situ Treatment with Physical/Chemical Amendment	Alternative #5 Groundwater Management with Barrier Wall
LONG- AND SHORT-TERM EFFECTIVENESS - 40 CFR 257.97(c)(1) (continued)			
257.97(c)(1)(vi) Potential for exposure of humans and environmental receptors to remaining wastes, considering the potential threat to human health and the environment associated with excavation, transportation, re-disposal, or containment	Potential for exposure is low. Remaining waste is already capped. The is some potential for secondary impacts from exposure to impacted groundwater during remediation, releases of extracted groundwater, or disruption in treatment.	Similar to Alternative #3.	Similar to Alternative #3.
257.97(c)(1)(vii) Long-term reliability of the engineering and institutional controls	Deed notation in place for closure with CCR left in place. There is significant industry experience with groundwater pump and treatment approach. Mass removal provides permanence. Remedy relies upon active equipment that will require additional operations and maintenance.	Deed notation in place for closure with CCR left in place. There is limited industry experience with the application of chemical amendments for in situ groundwater remediation of the contaminants of concern. Remedy relies the ability to identify and apply appropriate chemistries, which are not currently available at a proven, commercial scale.	Similar to Alternative #4, with increased potential due to reliance on continued hydraulic conductivity of the selected barrier. Breaches or short circuiting can develop and must be monitored.
257.97(c)(1)(viii) Potential need for replacement of the remedy	Limited potential for remedy replacement, but added expectation for pump, conveyance system, and treatment system replacement.	Similar to Alternative #3, with added expectation for potential reapplication of chemical amendments. Some increased potential for replacement due to the uncertain permanence of chemical reactions.	Similar to Alternative #4, with added expectation for potential replenishment of consumptive barrier product. Some increased potential for replacement due to the uncertain permanence of chemical reactions.
SOURCE CONTROL TO MITIGATE FUTURE RELEASES - 40 CFR 257.97(c)(2)			
257.97(c)(2)(i) The extent to which containment practices will reduce further releases	Cap installed in 2020 will reduce further releases by minimizing infiltration through CCR. Groundwater extraction system may be used to contain future releases to groundwater if they occur.	Similar to Alternative #3 with respect to the final cover.	Similar to Alternative #3 with respect to the final cover. Reactive barriers at or near the waste boundary could provide additional containment for future groundwater releases if they occur.
257.97(c)(2)(ii) The extent to which treatment technologies may be used	This alternative relies on conventional pump and treat remediation.	Alternative relies on the identification and availability of a suitable amendment. Implementation of and contact with chemical agents will require specialized field implementation methods and health and safety measures.	Alternative relies on the identification and availability of a suitable barrier wall technology/chemistry. Implementation of and contact with barrier wall materials will require specialized field implementation methods and health and safety measures.

Table 8. Evaluation of Corrective Measure Alternatives
Sutherland Generating Station / SCS Engineers Project #25222189.00

	Alternative #3 Gradient Control	Alternative #4 In-Situ Treatment with Physical/Chemical Amendment	Alternative #5 Groundwater Management with Barrier Wall
IMPLEMENTATION - 40 CFR 257.97(c)(3)			
257.97(c)(3)(i) Degree of difficulty associated with constructing the technology	Moderate complexity construction. Moderate degree of logistical complexity due to unimproved off-site property access. Moderate to low level of dewatering effort - dewatering required for material excavation/placement and capping. Moderate complexity construction for the installation of extraction wells and conveyance to a site-specific groundwater treatment plant.	Moderate top high complexity construction depending on application method(s); High degree of logistical complexity involving the import of specialty chemicals; application of selected amendment requires specialized equipment; requirements to ensure consistent contact and dosing of amendment.	High complexity construction; Barrier walls require specialty installation equipment and knowledge. Highly specialized and experience contractors required to achieve proper installation. Moderate degree of logistical complexity; Moderate to low level of dewatering effort - dewatering required for material excavation/placement.
257.97(c)(3)(ii) Expected operational reliability of the technologies	High level of operational reliability; however, the success of this remedy relies on the successful operation of a site-specific groundwater treatment plant. Overall expected reliability is good based on industry experience.	Similar to Alternative #3; however, success relies on the successful application of specialty amendment.	Similar to Alternative #3; however, success of this remedy relies on the consistency of the barrier wall. Breaches or short circuiting can develop and must be monitored.
257.97(c)(3)(iii) Need to coordinate with and obtain necessary approvals and permits from other agencies	Need is high in comparison to other alternatives State Closure Permit amendment likely required Approval of facility receiving gradient control discharge for treatment required, or agency approval to construct the necessary treatment facility is required. Well permitting for extraction well installation; NPDES Permit for groundwater treatment and discharge; State and local erosion control/construction stormwater management permits required; Federal/State/Local Floodplain permitting likely required for downgradient work in floodplain.	Need is moderate in comparison to other alternatives; Underground Injection Control Permit may be required if chemical materials placed within groundwater. State and local erosion control/construction stormwater management permits required; Federal/State/Local Floodplain permitting likely required.	Need is moderate in comparison to other alternatives. Underground Injection Control Permit may be required if chemical materials placed within groundwater. Well permitting for barrier wall monitoring; Federal/State/Local Floodplain permitting required; State and local erosion control/construction stormwater management permits required.

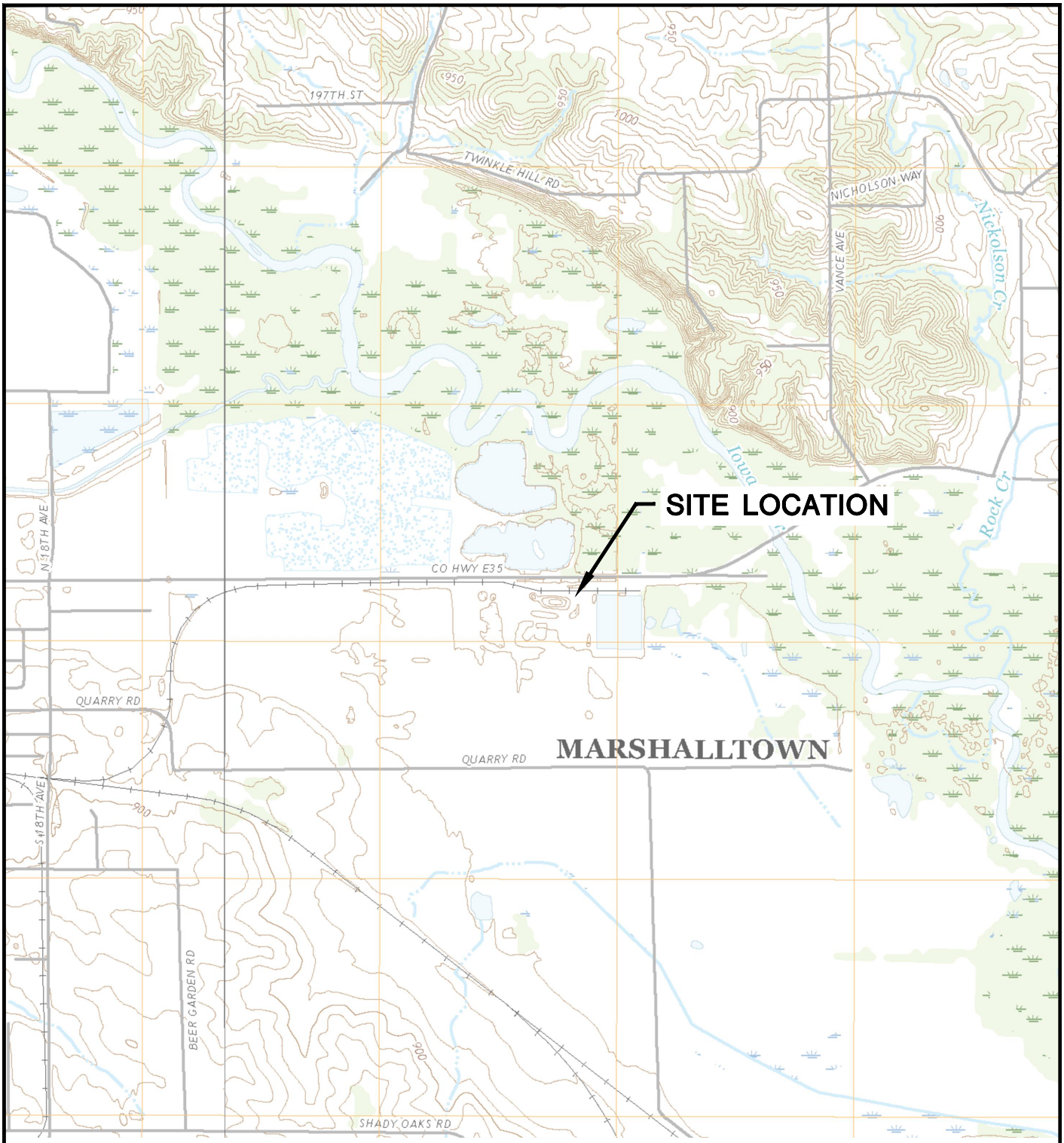
Table 8. Evaluation of Corrective Measure Alternatives
Sutherland Generating Station / SCS Engineers Project #25222189.00

	Alternative #3 Gradient Control	Alternative #4 In-Situ Treatment with Physical/Chemical Amendment	Alternative #5 Groundwater Management with Barrier Wall
IMPLEMENTATION - 40 CFR 257.97(c)(3) (continued)			
257.97(c)(3)(iv) Availability of necessary equipment and specialists	Necessary equipment and specialists are highly available. A site-specific, trained employee will be required to operate the groundwater treatment system.	Availability of the necessary specialized amendments, application equipment, and extensive experience required for application is potentially low or in high demand.	Similar to Alternative #4; Availability of the necessary specialized equipment and extensive experience required for barrier installation is potentially low or in high demand.
257.97(c)(3)(v) Available capacity and location of needed treatment, storage, and disposal services	There is no on-site capacity to treat gradient control system discharge If required, on-site capacity will need to be developed. Off-site capacity to treat gradient control system discharge may exist, but ability/willingness to accept discharge is currently unknown.	Capacity and location of treatment, storage, and disposal services is unlikely to be a factor for this alternative.	Capacity and location of treatment, storage, and disposal services is unlikely to be a factor for this alternative.
COMMUNITY ACCEPTANCE - 40 CFR 257.97(c)(4)			
257.97(c)(4) The degree to which community concerns are addressed by a potential remedy (Anticipated)	No comments were received during the public meeting held in July 2025. Assume all alternatives are acceptable to interested/affected parties.	No comments were received during the public meeting held in July 2025. Assume all alternatives are acceptable to interested/affected parties.	No comments were received during the public meeting held in July 2025. Assume all alternatives are acceptable to interested/affected parties.

Created by: SK Date: 6/7/2022
Last revision by: EJN Date: 7/9/2025
Checked by: RJG Date: 8/26/2025

I:\25222189.00\Deliverables\2025 Selection of Remedy Report\Tables\[Table 8 - Evaluation of Corrective Measure Alternatives_SGS.xlsx]SGS_Evaluation Matrix

Figures



N

LE GRAND QUADRANGLE
IOWA–MARSHALL COUNTY
7.5 MINUTE SERIES (TOPOGRAPHIC)
2018
SCALE: 1" = 2,000'

CLIENT	ALLIANT ENERGY 4902 N. BILTMORE LANE, #1000 MADISON, WI 53718	SITE	ALLIANT ENERGY SUTHERLAND GENERATING STATION MARSHALLTOWN, IOWA

SITE LOCATION MAP

PROJECT NO.	25222076.00	DRAWN BY:	BSS
DRAWN:	11/15/2019	CHECKED BY:	MDB
REVISED:	01/14/2020	APPROVED BY:	TK 03/20/2022

ENGINEER

SCS ENGINEERS
2830 DAIRY DRIVE MADISON, WI 53718-6751
PHONE: (608) 224-2830

FIGURE
1

I:\25222189.00\Drawings\2025 Selection of Remedy Report\01_Site Location Map.dwg, 7/8/2025 12:35:35 PM

LEGEND

- MAJOR EXISTING CONTOUR (10FT INTERVAL)
- MINOR EXISTING CONTOUR (2FT INTERVAL)
- FINAL CLOSURE AREA LIMITS (LIMITS OF ASH DISPOSAL)
- CCR UNITS
- APPROXIMATE PROPERTY LINE
- CCR MONITORING WELL
- CCR BACKGROUND WELL
- DEEP PIEZOMETER WELL

NOTES:

1. MONITORING WELL AND OTHER SAMPLE LOCATIONS ARE APPROXIMATE.
2. AERIAL PHOTOGRAPH IMPORTED FROM BING MAPS USING AUTOCAD GEOLOCATION MAP TOOL.
3. PROPERTY LINES FROM MARSHALL COUNTY, IOWA ARC GIS PARCEL MAP SERVER. LOCATIONS ARE APPROXIMATE.
4. COORDINATE SYSTEM IS NAD83 IOWA STATE PLANE, NORTH ZONE, US SURVEY FEET.
5. CONTOURS WITHIN FINAL COVER LIMITS REPRESENT AS-BUILT TOP OF FINAL COVER GRADES. CONTOURS WITHIN COAL YARD REPRESENT AS-BUILT TOP OF RESTORATION GRADE (FINAL GRADES).
6. WELL INSTALLATION AND SUMMARY SURVEY:
   - 6.1. MONITORING WELLS MW-301, MW-302, MW-303, MW-304, MW-305 AND MW-306 WERE INSTALLED BY DIRECT PUSH ANALYTICAL OF ST CHARLES, IL ON NOVEMBER 20-21, 2017, AND SURVEYED BY CLAPSADDLE-GARBER ASSOCIATES, INC. OF MARSHALLTON, IA ON NOVEMBER 17, 2016.
   - 6.2. MONITORING WELLS MW-307 AND MW-308 WERE INSTALLED BY TERRACON, INC. ON NOVEMBER 30, 2021, AND WERE SURVEYED BY CLAPSADDLE-GARBER ASSOCIATES, INC. OF AMES, IA ON DECEMBER 23, 2021.
   - 6.3. MONITORING WELLS MW-309, MW-310, AND MW-311 WERE INSTALLED BY DIRECT PUSH ANALYTICAL ON MAY 4, 2022, AND WERE SURVEYED BY CLAPSADDLE-GARBER ASSOCIATES, INC. OF MARSHALLTOWN, IA ON MAY 24, 2022.
   - 6.4. MONITORING WELLS MW-306A, MW-312, MW-313 AND MW-314 WERE INSTALLED BY DIRECT PUSH ANALYTICAL ON FEBRUARY 28, 2023, THROUGH MARCH 1, 2023, AND WERE SURVEYED BY CLAPSADDLE-GARBER ASSOCIATES, INC. OF AMES, IA ON MARCH 13, 2023.
   - 6.5. MONITORING WELL MW-312A WAS INSTALLED BY IMPACT 7G, INC. ON DECEMBER 27, 2023, AND WAS SURVEYED BY CLAPSADDLE-GARBER ASSOCIATES, INC. OF MARSHALLTON, IA.

N

300 0 300

SCALE: 1" = 300'

PROJECT NO.	25225076.00	DRAWN BY:	SB
DRAWN:	06/02/2025	CHECKED BY:	NLB 06/03/2025
REVISED:	06/03/2025	APPROVED BY:	TK 9/11/2025

ENGINEER: SCS ENGINEERS, 2830 DAIRY DRIVE MADISON, WI 53718-6751, PHONE: (608) 224-2830

CLIENT: ALLIANT ENERGY, 4902 N. BILTMORE LANE, #1000, MADISON, WI 53718

SITE: ALLIANT ENERGY, SUTHERLAND GENERATING STATION, MARSHALLTOWN, IOWA

SITE PLAN AND MONITORING WELL LOCATIONS

FIGURE 2

I:\25222189.00\Drawings\2025 Selection of Remedy Report\02_Site Plan.dwg, 7/8/2025 4:17:10 PM

EAST MAIN STREET

MW-301
852.94

MW-302
853.15

MW-307
851.63

MW-308
852.11

MW-313
850.34

MW-306
850.25

MW-306A
[850.66]

MW-312A
[850.78]

MW-312
850.81

MW-305
850.57

MW-303
850.96

MW-304
850.68

MW-314
849.91

MW-309
848.67

MW-310
848.71

MW-311
848.72

FORMER COAL STOCKPILE

FORMER POWER PLANT

C-STONE STOCKPILE

853.0 852.5 852.0 851.5 851.0 850.5 850.0 849.5 849.0

LEGEND

- CCR MONITORING WELL
- CCR BACKGROUND MONITORING WELL
- FINAL CLOSURE AREA LIMITS
- **852.94** WATER TABLE ELEVATION AT WELL (OCTOBER 2024)
- **[850.66]** ELEVATION NOT USED FOR WATER TABLE INTERPRETATION (OCTOBER 2024)
- WATER TABLE CONTOUR LINE (0.5-FOOT CONTOUR INTERVAL) (DASHED WHERE INFERRED)
- APPROXIMATE GROUNDWATER FLOW DIRECTION
- ESTIMATED LITHIUM PLUME (40 ug/L)

NOTES:

1. SEE FIGURE 2 FOR BASE MAP NOTES.
2. THE BACKGROUND MONITORING WELLS FOR THE SUTHERLAND GENERATING STATION ARE MW-301 AND MW-302.
3. WATER TABLE CONTOURS ARE ESTIMATED BASED ON DATA OBTAINED ON OCTOBER 14-17, 2024.
4. BACKGROUND AERIAL IMAGE FROM ESRI DATED SEPTEMBER 2020.
5. ESTIMATED LITHIUM PLUME BASED ON AVERAGE CONCENTRATIONS FROM SPRING AND FALL SAMPLING EVENTS APRIL 2020-APRIL 2024.

N

300 0 300

SCALE: 1" = 300'

PROJECT NO.	25222189.00	DRAWN BY:	RAR/BSS
DRAWN:	12/06/2024	CHECKED BY:	RM 8/20/2025
REVISED:	12/13/2024	APPROVED BY:	TK 8/20/2025

ENGINEER: SCS ENGINEERS
2830 DAIRY DRIVE MADISON, WI 53718-6751
PHONE: (608) 224-2830

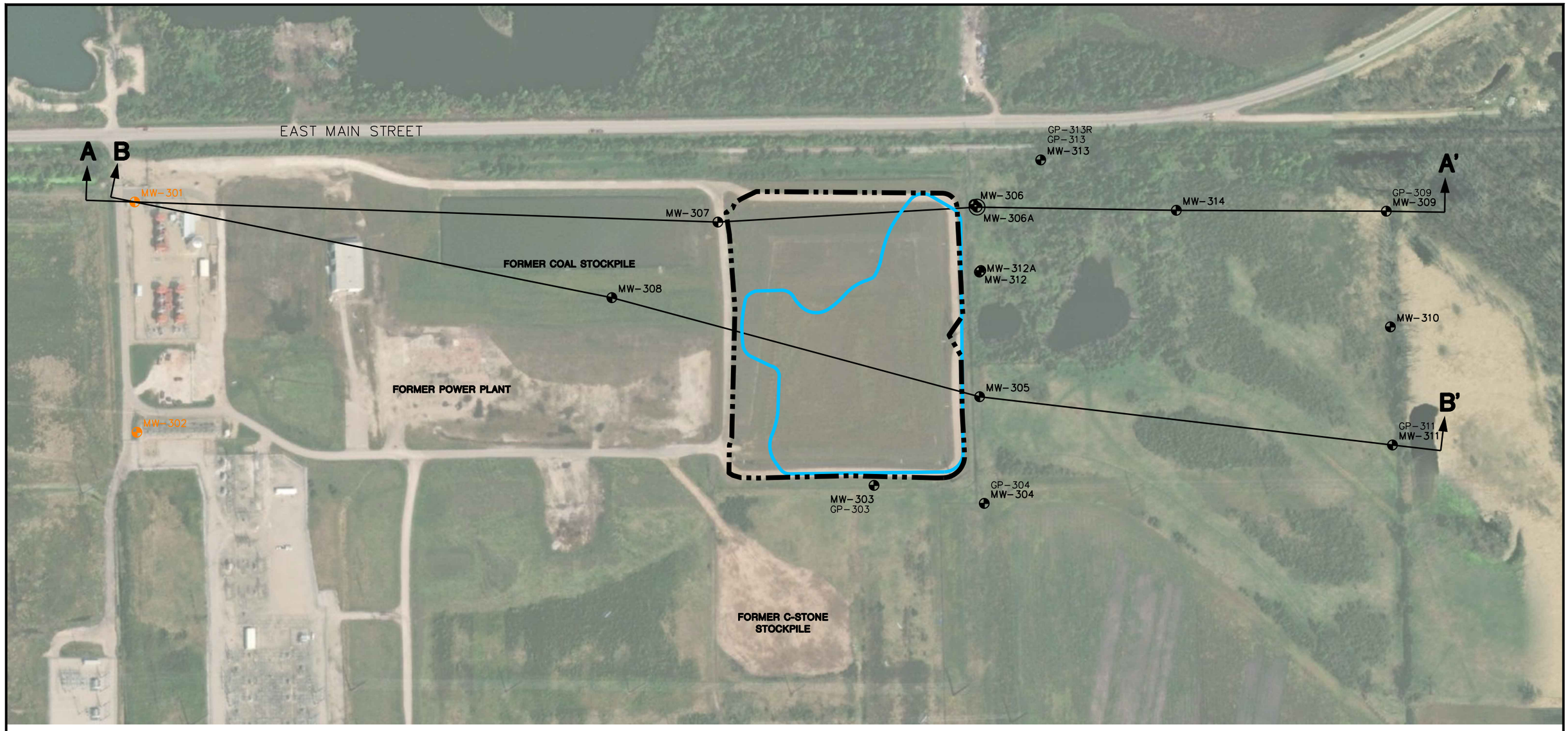
CLIENT: ALLIANT ENERGY
4902 N. BILTMORE LANE
MADISON, WI 53718

SITE: ALLIANT ENERGY
SUTHERLAND GENERATING STATION
MARSHALLTOWN, IOWA

ESTIMATED LITHIUM PLUME

FIGURE 3

I:\25222189.00\Drawings\SGS Conceptual Pump and Treat System Layout\Alliant SGS Oct 2024 WTBL Map Average Lithium Plume.dwg, 12/13/2024 12:05:43 PM



LEGEND

- CCR MONITORING WELL
- CCR BACKGROUND MONITORING WELL
- CCR PIEZOMETER
- FINAL CLOSURE AREA LIMITS (LIMITS OF ASH DISPOSAL)
- CCR UNITS

NOTES:

1. SEE FIGURE 2 FOR BASE MAP NOTES.

N

300 0 300

SCALE: 1" = 300'

PROJECT NO.	25222189.00	DRAWN BY:	BSS/SB
DRAWN:	06/20/2022	CHECKED BY:	NLB 09/05/2025
REVISED:	09/05/2025	APPROVED BY:	TK 9/11/2025

ENGINEER: SCS ENGINEERS
2830 DAIRY DRIVE MADISON, WI 53718-6751
PHONE: (608) 224-2830

CLIENT: ALLIANT ENERGY
4902 N. BILTMORE LANE, #1000
MADISON, WI 53718

SITE: ALLIANT ENERGY
SUTHERLAND GENERATING STATION
MARSHALLTOWN, IOWA

GEOLOGIC CROSS SECTION LOCATION MAP

FIGURE 4

I:\25222189.00\Drawings\2025 Selection of Remedy Report\04_Geologic Cross Section Location Map.dwg, 9/5/2025 1:49:07 PM

A

A'

FORMER COAL YARD AND PERIMETER

CLOSURE AREA

880
878
876
874
872
870
868
866
864
862
860
858
856
854
852
850
848
846
844
842
840
838
836
834
832
830
828
826
824
822
820
818
816
814
812
810
808
806
804
802
800

MW-301

MW-307

MW-306
MW-306A

MW-314

GP-309
MW-309

APPROXIMATE DESIGN IMPOUNDMENT BOTTOM
(FROM HARD HAT SERVICES SETTLING POND RECONFIGURATION)

EXISTING GRADE

CCR AND
GENERAL FILL
MATERIAL

POORLY
GRADED
SAND

CLAY

POORLY
GRADED
SAND

WELL
GRADED
SAND

POORLY
GRADED
SAND

POORLY
GRADED
SAND

SILTY SAND

POORLY
GRADED
SAND

LEAN CLAY

LEAN CLAY

SILTY CLAY

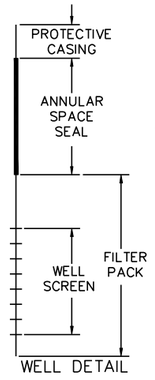
SILT

? ? ? ? ? ? ? ? ? ? ? ?

CLAY

LEGEND

- NON-GEOLOGIC MATERIAL/TOPSOIL
- SAND, POORLY GRADED, LITTLE OR NO FINES (SP)
- SILT (ML)
- LEAN CLAY (CL)
- SILTY CLAY (CL-ML)
- ? CLAY CONTACT WITH SAND
- (FILL)
- SAND, WELL GRADED, LITTLE OR NO FINES (SW)
- FAT CLAY (CH)
- SILTY SAND (SM)
- LITHOLOGY NOT RECORDED DUE TO HYDROVAC OR BLIND DRILLING



WELL DETAIL

NOTES:

1. MW-307 AND MW-309 WERE HYDROVACED. HYDROVACING IS PERFORMED TO DETERMINE IF THE UNDERGROUND UTILITIES ARE PRESENT. HIGH PRESSURE WATER AND A VACUUM ARE USED TO CLEAR THE BOREHOLE AND GEOLOGIC SAMPLES ARE NOT COLLECTED. STARTING AT 7.5' THE NATIVE SOIL OBSERVED IN MW-307 IS POORLY GRADED SAND. NATIVE SOIL IN THE VICINITY OF MW-309 IS CLAY.

0 300

HORIZONTAL SCALE: 1" = 300'
VERTICAL SCALE: 1" = 10'
VERTICAL EXAGGERATION = 30X

PROJECT NO.	25222189.00	DRAWN BY:	SB/BSS
DRAWN:	06/01/2022	CHECKED BY:	NLB 09/05/2025
REVISED:	09/05/2025	APPROVED BY:	TK 9/11/2025

ENGINEER: SCS ENGINEERS
2830 DAIRY DRIVE MADISON, WI 53718-6751
PHONE: (608) 224-2830

CLIENT: ALLIANT ENERGY
4902 N. BILTMORE LANE
MADISON, WI 53718

SITE: ALLIANT ENERGY
SUTHERLAND GENERATING STATION
MARSHALLTOWN, IOWA

GEOLOGIC CROSS SECTION A-A'

FIGURE 5

I:\25222189.00\Drawings\2025 Selection of Remedy Report\05-06_Cross Sections.dwg, 9/5/2025 3:08:00 PM

B

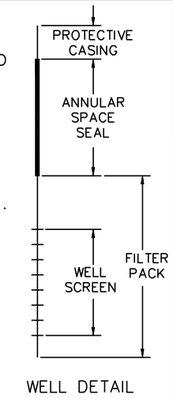
B'

FORMER COAL YARD AND PERIMETER

CLOSURE AREA

NOTES:

1. MW-308 AND MW-311 WERE HYDROVACED. HYDROVACING IS PERFORMED TO DETERMINE IF UNDERGROUND UTILITIES ARE PRESENT. HIGH PRESSURE WATER AND A VACUUM ARE USED TO CLEAR THE BOREHOLE AND GEOLOGIC SAMPLES ARE NOT COLLECTED. STARTING AT 8.5' THE NATIVE SOIL OBSERVED IN MW-308 IS POORLY GRADED SAND. NATIVE SOIL IN THE VICINITY OF MW-311 IS CLAY.
2. CLAY ELEVATIONS FROM GP-303 AND GP-304 WERE USED TO ESTIMATE THE CLAY SURFACE LOCATION WEST OF MW-311 AND GP-311.



WELL DETAIL

MW-301

MW-308

MW-305

GP-311

MW-311

APPROXIMATE DESIGN IMPOUNDMENT BOTTOM
(FROM HARD HAT SERVICES SETTLING POND RECONFIGURATION)

EXISTING GRADE

CCR AND GENERAL FILL MATERIAL

POORLY GRADED SAND

POORLY GRADED SAND

POORLY GRADED SAND

LEAN CLAY

CLAY

874 873 872 871 870 869 868 867 866 865 864 863 862 861 860 859 858 857 856 855 854 853 852 851 850 849 848 847 846 845 844 843 842 841 840 839 838 836 833 830 827 824 821 818 815

LEGEND

- NON-GEOLOGIC MATERIAL/TOPSOIL
- SAND, POORLY GRADED, LITTLE OR NO FINES (SP)
- SILT (ML)
- LEAN CLAY (CL)
- GRAVEL (GP)
- SILTY CLAY (CL-ML)
- (FILL)
- LITHOLOGY NOT RECORDED DUE TO HYDROVAC OR BLIND DRILLING
- ? CLAY CONTACT

0 300

HORIZONTAL SCALE: 1" = 300'
VERTICAL SCALE: 1" = 5'
VERTICAL EXAGGERATION = 60X

PROJECT NO.	25222189.00	DRAWN BY:	SB/BSS	ENGINEER	SCS ENGINEERS 2830 DAIRY DRIVE MADISON, WI 53718-6751 PHONE: (608) 224-2830	CLIENT	ALLIANT ENERGY 4902 N. BILTMORE LANE MADISON, WI 53718	SITE	ALLIANT ENERGY SUTHERLAND GENERATING STATION MARSHALLTOWN, IOWA	GEOLOGIC CROSS SECTION B-B'	FIGURE 6
DRAWN:	06/13/2022	CHECKED BY:	NLB 09/05/2025								
REVISED:	09/05/2025	APPROVED BY:	TK 9/11/2025								

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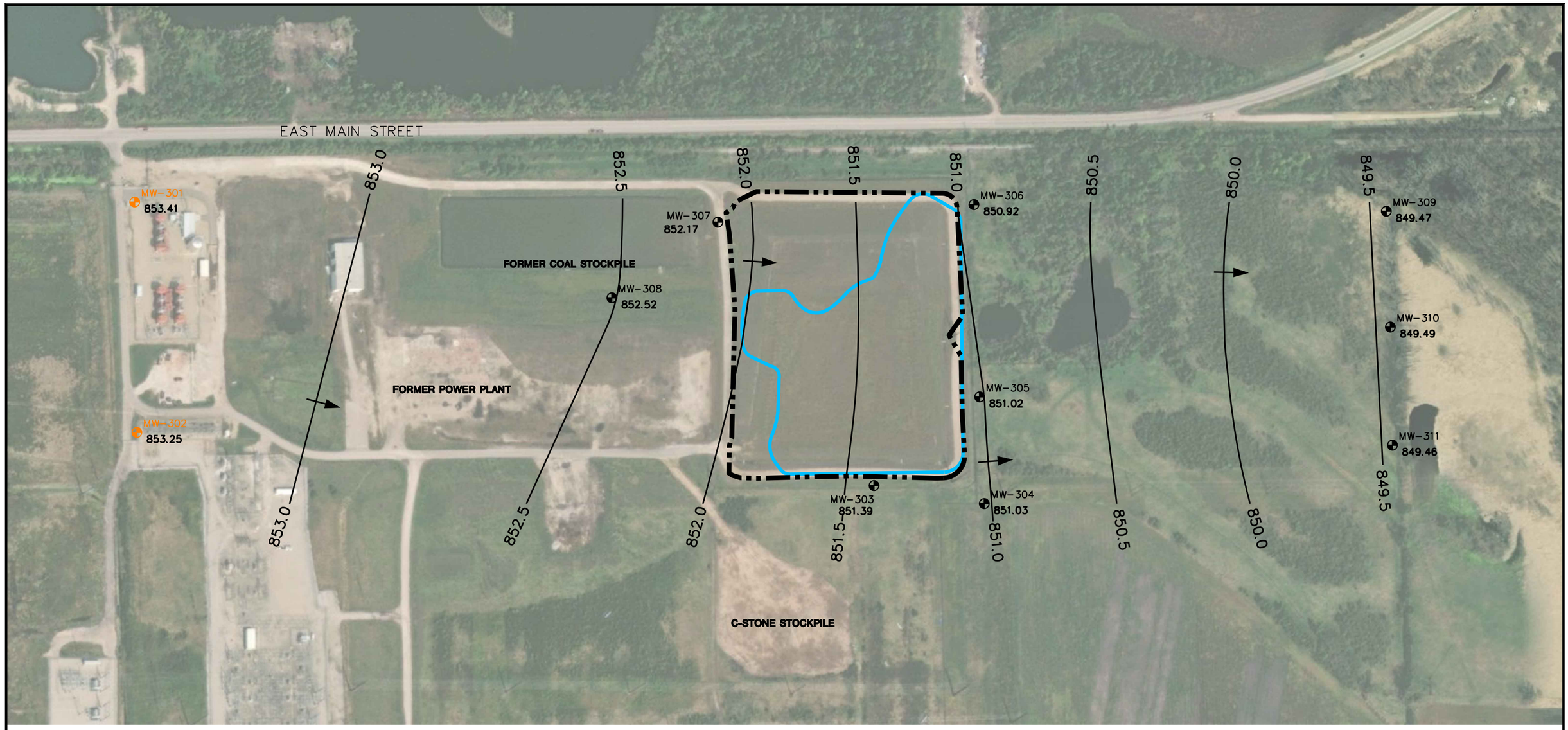


LEGEND

- CCR MONITORING WELL
- CCR BACKGROUND MONITORING WELL
- CCR UNITS
- FINAL CLOSURE AREA LIMITS (LIMITS OF ASH DISPOSAL)
- 854.38 — WATER TABLE ELEVATION (AUGUST 11, 2022)
- WATER TABLE CONTOUR
- APPROXIMATE GROUNDWATER FLOW DIRECTION

NOTES:

1. SEE FIGURE 2 FOR BASE MAP NOTES.
2. THE BACKGROUND MONITORING WELLS FOR THE SUTHERLAND GENERATING STATION ARE MW-301 AND MW-302.
3. WATER TABLE CONTOURS ARE ESTIMATED BASED ON DATA OBTAINED ON 08/11/2022.

N

300 0 300

SCALE: 1" = 300'

PROJECT NO.	25222076.00	DRAWN BY:	BSS
DRAWN:	08/23/2022	CHECKED BY:	NLB
REVISED:	02/14/2023	APPROVED BY:	TK 9/11/2025

ENGINEER: SCS ENGINEERS, 2830 DAIRY DRIVE MADISON, WI 53718-6751, PHONE: (608) 224-2830

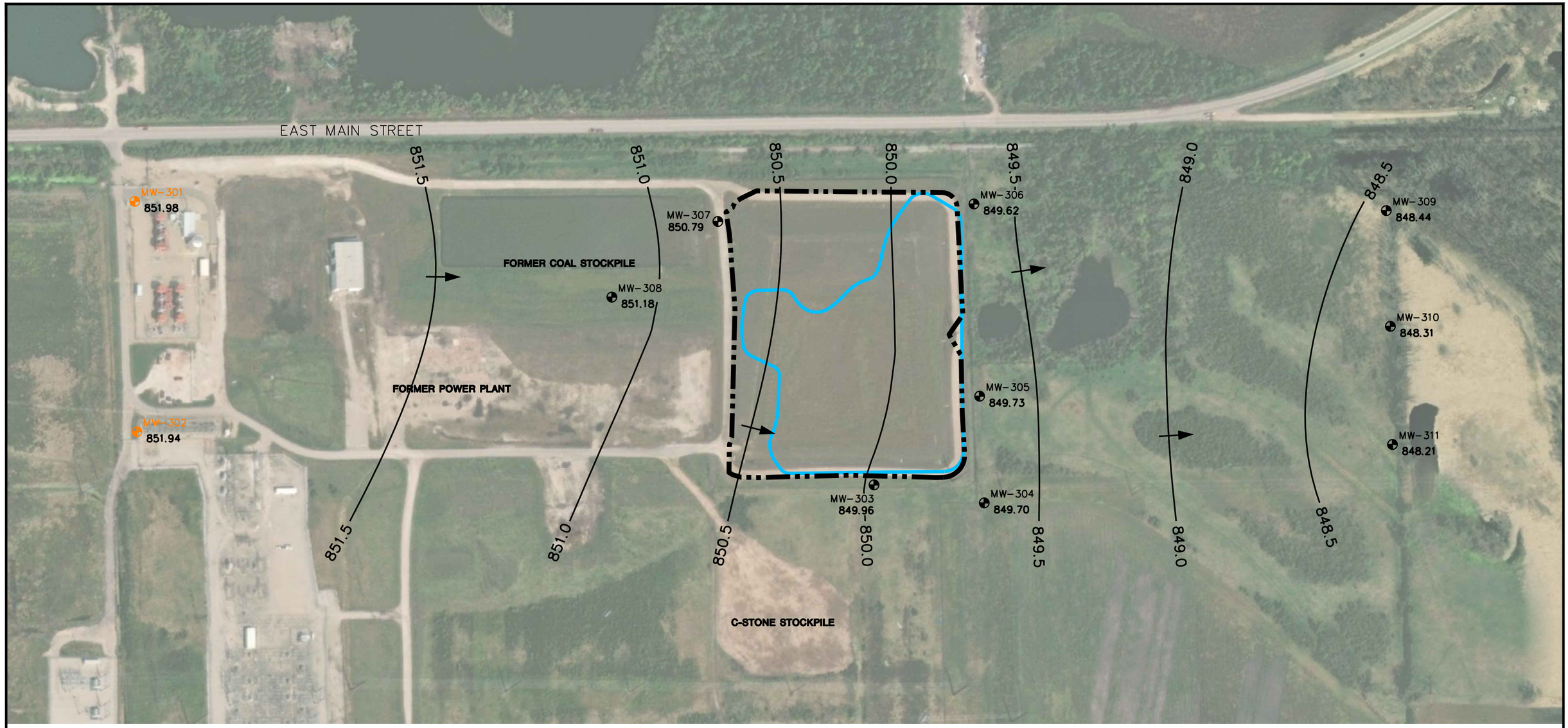
CLIENT: ALLIANT ENERGY, 4902 N. BILTMORE LANE, MADISON, WI 53718

SITE: ALLIANT ENERGY, SUTHERLAND GENERATING STATION, MARSHALLTOWN, IOWA

WATER TABLE MAP
AUGUST 2022

FIGURE 7

I:\25222189.00\Drawings\2025 Selection of Remedy Report\07-08_2022 Wtbl Maps.dwg, 7/8/2025 4:19:29 PM



LEGEND

- CCR MONITORING WELL
- CCR BACKGROUND MONITORING WELL
- CCR UNITS
- FINAL CLOSURE AREA LIMITS (LIMITS OF ASH DISPOSAL)
- 854.38 — WATER TABLE ELEVATION (OCTOBER 10, 2022)
- WATER TABLE CONTOUR
- APPROXIMATE GROUNDWATER FLOW DIRECTION

NOTES:

1. SEE FIGURE 2 FOR BASE MAP NOTES.
2. THE BACKGROUND MONITORING WELLS FOR THE SUTHERLAND GENERATING STATION ARE MW-301 AND MW-302.
3. WATER TABLE CONTOURS ARE ESTIMATED BASED ON DATA OBTAINED ON OCTOBER 10, 2022.

N

300 0 300

SCALE: 1" = 300'

PROJECT NO.	25222076.00	DRAWN BY:	BSS
DRAWN:	08/23/2022	CHECKED BY:	NLB
REVISED:	02/14/2023	APPROVED BY:	TK 9/11/2025

ENGINEER: SCS ENGINEERS
2830 DAIRY DRIVE MADISON, WI 53718-6751
PHONE: (608) 224-2830

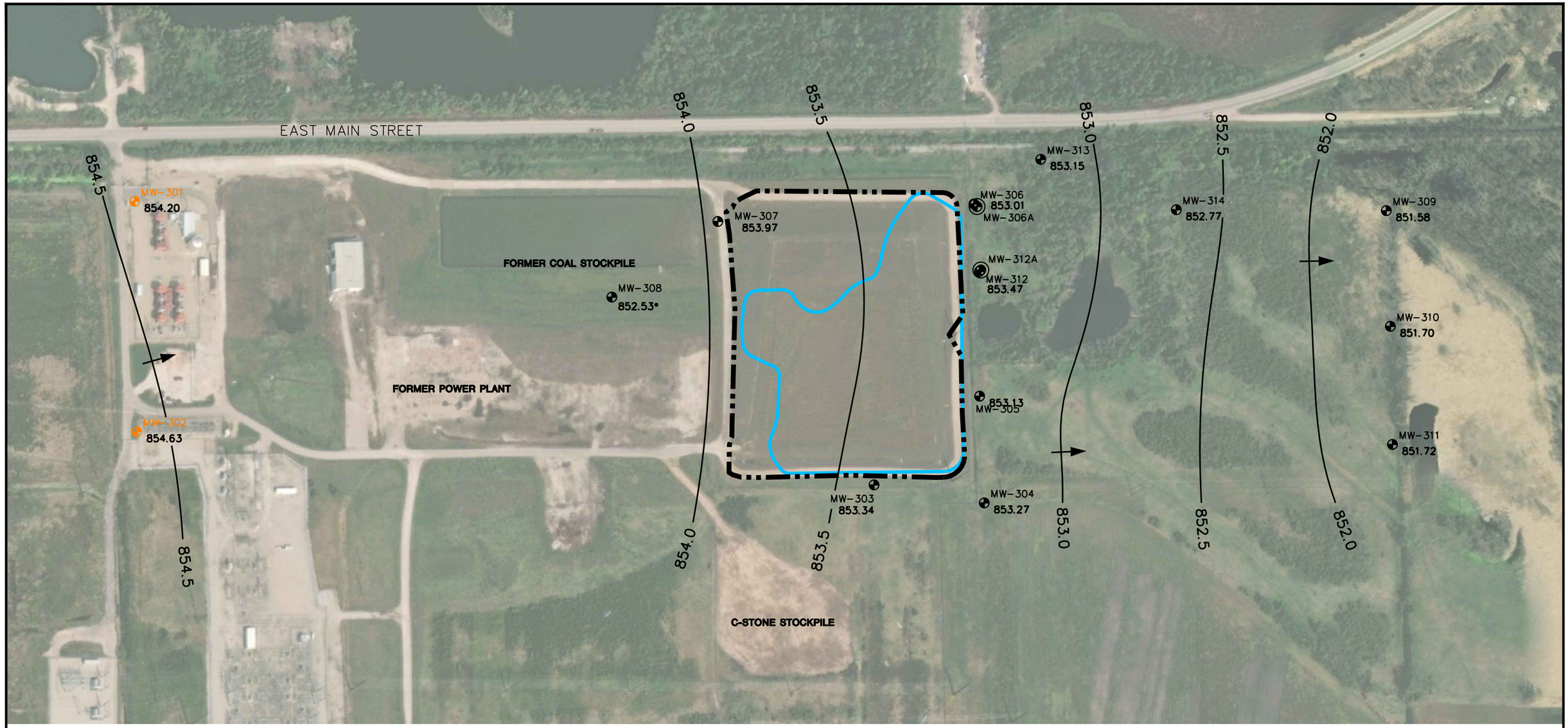
CLIENT: ALLIANT ENERGY
4902 N. BILTMORE LANE
MADISON, WI 53718

SITE: ALLIANT ENERGY
SUTHERLAND GENERATING STATION
MARSHALLTOWN, IOWA

WATER TABLE MAP
OCTOBER 2022

FIGURE 8

I:\25222189.00\Drawings\2025 Selection of Remedy Report\07-08_2022 Wtbl Maps.dwg, 7/8/2025 4:19:48 PM



LEGEND

- CCR MONITORING WELL
- CCR BACKGROUND MONITORING WELL
- CCR UNITS
- FINAL CLOSURE AREA LIMITS (LIMITS OF ASH DISPOSAL)
- 854.38 WATER TABLE ELEVATION
- WATER TABLE CONTOUR CONTOUR 0.5' INTERVAL (DASHED WHERE INFERRED)
- APPROXIMATE GROUNDWATER FLOW DIRECTION

NOTES:

1. SEE FIGURE 2 FOR BASE MAP NOTES.
2. THE BACKGROUND MONITORING WELLS FOR THE SUTHERLAND GENERATING STATION ARE MW-301 AND MW-302.
3. WATER TABLE CONTOURS ARE ESTIMATED BASED ON DATA OBTAINED ON APRIL 10-13, 2023.
4. * NOT USED IN INTERPRETATION.

N

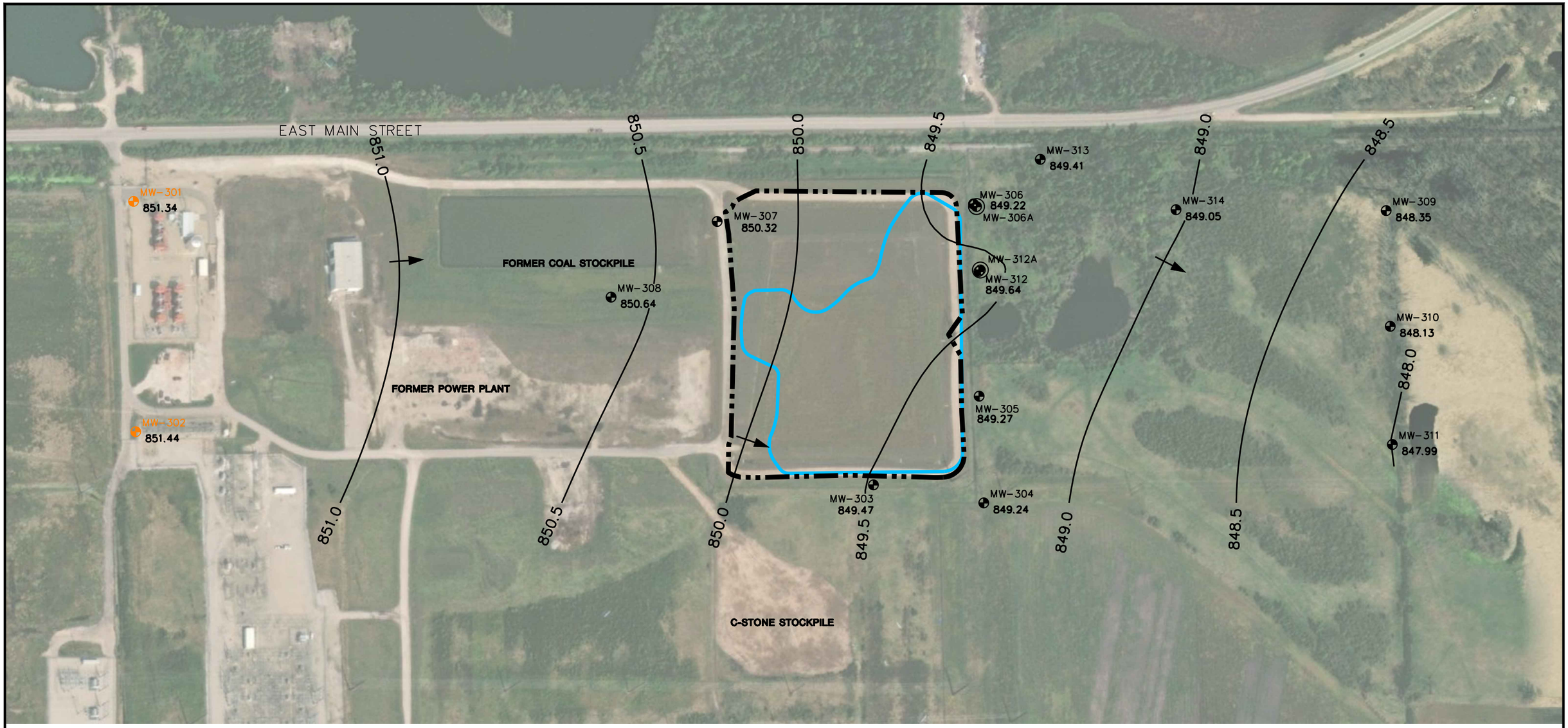
300 0 300

SCALE: 1" = 300'

PROJECT NO.	25224076.00	DRAWN BY:	KP/SB	ENGINEER	SCS ENGINEERS 2830 DAIRY DRIVE MADISON, WI 53718-6751 PHONE: (608) 224-2830	CLIENT	ALLIANT ENERGY 4902 N. BILTMORE LANE MADISON, WI 53718
DRAWN:	05/05/2023	CHECKED BY:	NLB				
REVISED:	07/30/2024	APPROVED BY:	TK 9/11/2025				

SITE		
ALLIANT ENERGY SUTHERLAND GENERATING STATION MARSHALLTOWN, IOWA	WATER TABLE MAP APRIL 2023	FIGURE 9

I:\25222189.00\Drawings\2025 Selection of Remedy Report\09-10_2023 Wtbl Maps.dwg, 7/8/2025 4:23:14 PM



LEGEND

◓	CCR MONITORING WELL	854.38	WATER TABLE ELEVATION
◓	CCR BACKGROUND MONITORING WELL	——— – – –	WATER TABLE CONTOUR CONTOUR 0.5' INTERVAL (DASHED WHERE INFERRED)
	CCR UNITS		
	FINAL CLOSURE AREA LIMITS (LIMITS OF ASH DISPOSAL)	→	APPROXIMATE GROUNDWATER FLOW DIRECTION

NOTES:

1. SEE FIGURE 2 FOR BASE MAP NOTES.
2. THE BACKGROUND MONITORING WELLS FOR THE SUTHERLAND GENERATING STATION ARE MW-301 AND MW-302.
3. WATER TABLE CONTOURS ARE ESTIMATED BASED ON DATA OBTAINED ON OCTOBER 18-20, 2023.

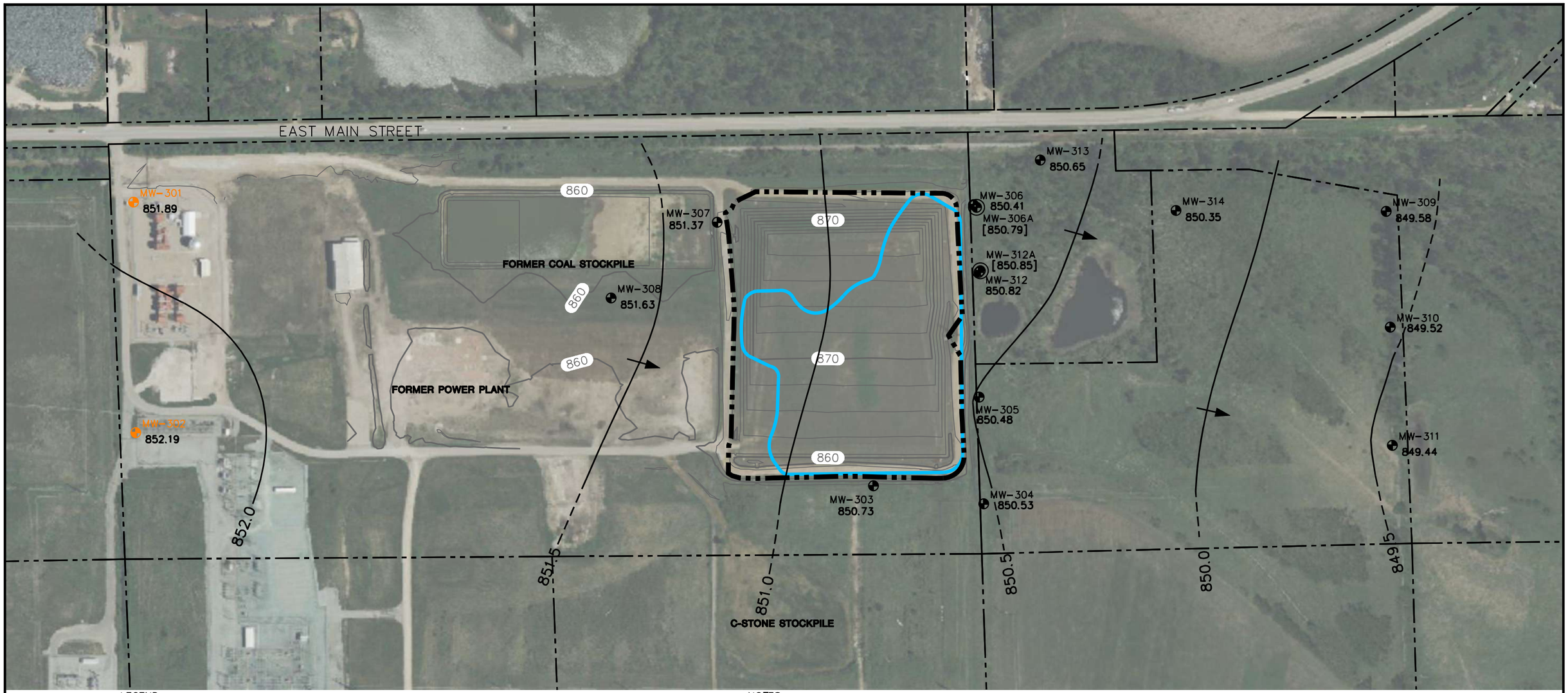
N

300 0 300

SCALE: 1" = 300'

PROJECT NO.	25224076.00	DRAWN BY:	KP/SB	ENGINEER	SCS ENGINEERS 2830 DAIRY DRIVE MADISON, WI 53718-6751 PHONE: (608) 224-2830	CLIENT	ALLIANT ENERGY 4902 N. BILTMORE LANE MADISON, WI 53718	SITE	ALLIANT ENERGY SUTHERLAND GENERATING STATION MARSHALLTOWN, IOWA	WATER TABLE MAP OCTOBER 2023	FIGURE 10
DRAWN:	12/04/2023	CHECKED BY:	NLB								
REVISED:	07/30/2024	APPROVED BY:	TK 9/11/2025								

I:\25222189.00\Drawings\2025 Selection of Remedy Report\09-10_2023 Wtbl Maps.dwg, 7/8/2025 4:23:28 PM



LEGEND

- MAJOR EXISTING CONTOUR (10FT INTERVAL)
- MINOR EXISTING CONTOUR (2FT INTERVAL)
- FINAL CLOSURE AREA LIMITS (LIMITS OF ASH DISPOSAL)
- CCR UNITS
- APPROXIMATE PROPERTY LINE
- CCR MONITORING WELL
- CCR BACKGROUND WELL
- DEEP PIEZOMETER WELL
- **852.19** WATER TABLE OR POTENTIOMETRIC ELEVATION
- **[852.19]** WATER ELEVATION OR POTENTIOMETRIC ELEVATION (NOT USED IN CONTOURING)
- WATER TABLE OR POTENTIOMETRIC ELEVATION CONTOUR (X-FT CONTOUR INTERVAL – DASHED WHERE INFERRED)
- ESTIMATED GROUNDWATER FLOW DIRECTION ARROW

NOTES:

1. WATER LEVELS WERE MEASURED ON APRIL 9–11, 2024.
2. WELL INSTALLATION AND SURVEY INFORMATION, SEE SITE PLAN FIGURE 2 NOTES.
3. CCR BACKGROUND MONITORING WELLS: MW–301 AND MW–302.
4. CCR MONITORING WELLS: MW–303, MW–304, MW–305, MS–306, MW–306A, MW–307, MW–308, MW–309, MW–310, MW–311, MW–3012, MW–312A, MW–313, AND MW–314.
5. THERE WERE NO DRY MONITORING WELLS OR LEACHATE HEADWELLS IN APRIL, 2024.
6. VERTICAL DATUM IS REFERENCED TO THE USGB MEAN SEAL LEVEL (MSL).
7. AERIAL PHOTOGRAPH IMPORTED FROM BING MAPS USING AUTOCAD GEOLOCATION MAP TOOL.

N

300 0 300

SCALE: 1" = 300'

PROJECT NO.	25225076.00	DRAWN BY:	SB
DRAWN:	06/02/2025	CHECKED BY:	NLB 06/04/2025
REVISED:	06/03/2025	APPROVED BY:	TK 9/11/2025

ENGINEER: SCS ENGINEERS
2830 DAIRY DRIVE MADISON, WI 53718-6751
PHONE: (608) 224-2830

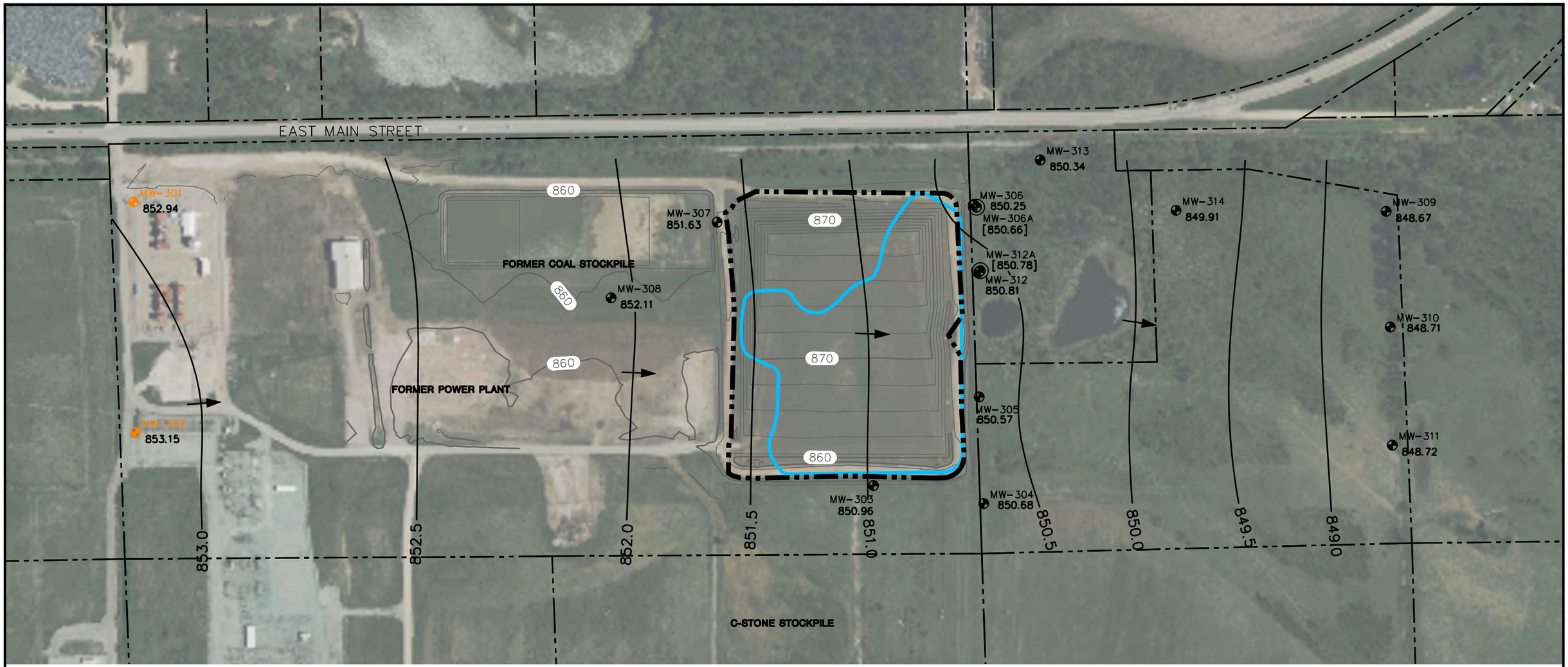
CLIENT: ALLIANT ENERGY
4902 N. BILTMORE LANE
MADISON, WI 53718

SITE: ALLIANT ENERGY
SUTHERLAND GENERATING STATION
MARSHALLTOWN, IOWA

WATER TABLE CONTOUR MAP
APRIL 9–11, 2024

FIGURE 11

I:\25222189.00\Drawings\2025 Selection of Remedy Report\11_April 2024 WTBL Map.dwg, 7/8/2025 4:24:45 PM



LEGEND

- MAJOR EXISTING CONTOUR (10FT INTERVAL)
- MINOR EXISTING CONTOUR (2FT INTERVAL)
- FINAL CLOSURE AREA LIMITS (LIMITS OF ASH DISPOSAL)
- CCR UNITS
- APPROXIMATE PROPERTY LINE
- CCR MONITORING WELL
- CCR BACKGROUND WELL
- DEEP PIEZOMETER WELL
- **852.19** WATER TABLE OR POTENTIOMETRIC ELEVATION
- **[852.19]** WATER ELEVATION OR POTENTIOMETRIC ELEVATION (NOT USED IN CONTOURING)
- WATER TABLE OR POTENTIOMETRIC ELEVATION CONTOUR (X-FT CONTOUR INTERVAL – DASHED WHERE INFERRED)
- ESTIMATED GROUNDWATER FLOW DIRECTION ARROW

NOTES:

1. WATER LEVELS WERE MEASURED ON OCTOBER 14–17, 2024.
2. WELL INSTALLATION AND SURVEY INFORMATION, SEE SITE PLAN FIGURE 2 NOTES.
3. CCR BACKGROUND MONITORING WELLS: MW–301 AND MW–302.
4. CCR MONITORING WELLS: MW–303, MW–304, MW–305, MS–306, MW–306A, MW–307, MW–308, MW–309, MW–310, MW–311, MW–3012, MW–312A, MW–313, AND MW–314.
5. THERE WERE NO DRY MONITORING WELLS IN OCTOBER, 2024.
6. VERTICAL DATUM IS REFERENCED TO THE USGB MEAN SEAL LEVEL (MSL).
7. AERIAL PHOTOGRAPH IMPORTED FROM BING MAPS USING AUTOCAD GEOLOCATION MAP TOOL.

N

300 0 300

SCALE: 1" = 300'

PROJECT NO.	25225076.00	DRAWN BY:	SB
DRAWN:	06/02/2025	CHECKED BY:	NLB 06/04/2025
REVISED:	07/02/2025	APPROVED BY:	TK 9/11/2025

ENGINEER: SCS ENGINEERS
2830 DAIRY DRIVE MADISON, WI 53718-6751
PHONE: (608) 224-2830

CLIENT: ALLIANT ENERGY
4902 N. BILTMORE LANE
MADISON, WI 53718

SITE: ALLIANT ENERGY
SUTHERLAND GENERATING STATION
MARSHALLTOWN, IOWA

WATER TABLE CONTOUR MAP
OCTOBER 14–17, 2024

FIGURE 12

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Appendix A

Historical Groundwater Quality Data

Single Location
Name: IPL - Sutherland Generating Station

Location ID: MW-301
Number of Sampling Dates: 22

Parameter Name	Units	3/27/2018	5/23/2018	6/26/2018	7/26/2018	9/11/2018	11/28/2018	1/9/2019	2/12/2019	4/2/2019	10/16/2019	12/11/2019	2/3/2020	4/7/2020	10/13/2020	4/6/2021	10/26/2021	4/22/2022	10/12/2022	4/11/2023	10/18/2023
Boron	ug/L	246	189	274	212	234	188	82.7	97.3	<110	170	<110	120	<100	370	76	62	<58	71	77	<76
Calcium	mg/L	71.2	85.9	59.5	83.1	89.8	78.8	88.7	84.2	82	82	75	82	78	100	70	81	50	55	69	63
Chloride	mg/L	15.5	46.2	6	58.6	38.2	37.5	51.4	42.1	39	37	16	28	21	71	85	9	2.4	8.9	18	11
Field pH	Std. Units	6.84	7.62	7.5	6.46	6.82	6.6	6.83	6.85	7.16	6.97	6.69	6.79	6.87	6.66	6.69	6.21	6.23	6.5	6.59	6.12
Fluoride	mg/L	0.15	0.22	0.26	0.27	0.2	0.2	<0.19	<0.19	0.5	0.27	<0.23	--	0.41	<0.23	2.5	<0.28	<0.22	<0.22	<0.38	<0.38
Sulfate	mg/L	79	78.1	46.9	73.4	71.9	61.9	60.9	63	46	28	29	32	17	98	160	83	33	22	46	28
Total Dissolved Solids	mg/L	399	489	326	433	439	426	418	420	400	340	360	380	330	540	260	200	150	260	290	270
Antimony	ug/L	0.13	0.18	0.27	<0.15	0.78	<0.078	0.33	0.2	--	--	<0.53	--	<0.58	--	<1.1	<1.1	<0.69	<0.69	<1	<1
Arsenic	ug/L	0.45	2.4	1.6	1.4	16.2	0.84	0.95	1.6	--	--	<0.75	<0.88	<0.88	<0.88	<0.75	<0.75	<0.75	<0.75	0.77	<0.53
Barium	ug/L	98	254	137	324	1110	140	135	132	--	--	130	120	240	110	59	130	86	45	56	43
Beryllium	ug/L	0.014	0.3	<0.12	0.48	1.3	<0.089	0.17	0.16	--	--	<0.27	--	0.33	<0.27	<0.27	<0.27	<0.27	<0.27	<0.33	<0.33
Cadmium	ug/L	0.037	0.11	<0.07	0.28	0.6	0.053	0.11	0.11	--	--	0.086	0.047	0.17	0.077	<0.051	0.08	<0.055	0.081	0.18	<0.1
Chromium	ug/L	2.2	3.5	2.6	1.7	20.8	0.5	0.9	2	--	--	<0.98	--	1.1	<1.1	<1.1	<1.1	<1.1	<1.1	<1.1	<1.1
Cobalt	ug/L	0.43	3.8	1.6	3.5	21.7	1.1	0.93	2.6	--	--	0.99	0.75	1.6	0.28	0.18	0.24	0.63	0.25	0.47	0.24
Lead	ug/L	0.33	2.5	1.5	1.6	19.1	0.58	0.73	2	--	--	0.46	0.34	0.5	<0.11	<0.21	0.52	0.26	<0.24	0.38	<0.24
Lithium	ug/L	6.5	<4.6	6.2	11.4	12.6	<4.6	<4.6	7.7	--	--	3.5	2.7	3.4	3.2	2.5	2.8	3	3.3	2.8	3.1
Mercury	ug/L	<0.09	<0.09	<0.09	<0.09	<0.09	<0.09	<0.09	<0.037	--	--	<0.1	--	<0.1	--	<0.15	<0.15	<0.11	--	<0.14	<0.14
Molybdenum	ug/L	4.4	1.4	8.5	0.44	13.6	<0.57	0.99	3.6	--	--	<1.1	<1.1	<1.1	2.5	<1.3	<1.3	<1.2	<1.2	1.9	<0.91
Selenium	ug/L	2.7	3.3	2.3	5.8	8.3	1.8	1.2	0.81	--	--	<1	--	<1	--	<0.96	2.8	1.3	11	6.8	3.8
Thallium	ug/L	<0.036	<0.14	<0.14	<0.14	0.43	<0.099	<0.099	0.11	--	--	<0.27	--	<0.26	--	<0.26	<0.26	<0.26	<0.26	0.97	<0.26
Total Radium	pCi/L	0.18	0.429	0.637	3.32	2.53	0.875	1.79	1.1	--	--	1.06	0.388	0.291	0.463	0.256	1.07	0.244	0.739	0.00562	0.957
Radium-226	pCi/L	-0.171	0	0.342	0.713	1.58	0.51	0.915	0.462	--	--	0.083	0.0951	0.291	0.0851	0.168	0.427	0.136	-0.00272	0.00562	0.044
Radium-228	pCi/L	0.18	0.429	0.295	2.61	0.949	0.365	0.876	0.638	--	--	0.973	0.293	-0.02	0.378	0.0882	0.642	0.107	0.739	-0.123	0.913
pH at 25 Degrees C	Std. Units	7	6.8	7.4	6.8	6.7	7	6.9	7.2	7.1	7.2	7	7.3	6.8	6.8	7	6.2	6.4	7.1	7	6.7
Field Specific Conductance	umhos/cm	645.7	738	518	673	688	459	417	601	618	642	550	651	583.7	906	502	485	282.4	388.3	461.5	498.5
Field Temperature	deg C	7.1	10.8	14.6	14.9	19.2	13.61	8.88	5.8	4.89	17.84	12.4	9.54	11	17.8	9.9	14.3	8.9	15.6	8.8	17.5
Oxygen, Dissolved	mg/L	0.32	0.57	3.07	0.29	0.24	0.37	0.48	0.37	1.48	0.16	0.34	3.24	0.13	0.11	0.16	1.44	0.98	-0.04	0.38	1.52
Collected By		--	0	0	0	0	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Collected Date		--	--	--	--	9	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Collected Time		--	--	--	--	9	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Field Oxidation Potential	millivolts	62.7	185	227	159	117.4	-76.2	74.1	75.8	58.7	34.7	84.1	61.7	143.1	30	180.2	148.3	139.7	172.5	134.1	128.6
Groundwater Elevation	ft	855.23	855.45	856.24	855.96	857.41	856.99	856.85	856.59	857.33	856.15	857.05	856.24	856.16	854.44	854.38	852.42	853.87	851.98	854.2	851.34
Turbidity	NTU	11.6	73.98	35.03	240.2	410.3	112	172	56.09	65	11.4	51.94	19.1	68.5	19.1	25.1	110	40.7	0	36.2	17.97
Bicarbonate Alkalinity as CaCO3	mg/L	--	--	--	--	--	--	--	--	--	--	--	--	--	--	250	220	--	190	--	--
Carbonate Alkalinity as CaCO3	mg/L	--	--	--	--	--	--	--	--	--	--	--	--	--	--	<4.6	<4.6	--	<4.6	--	--
Iron, total	ug/L	--	--	--	--	--	--	--	--	--	--	--	--	--	--	120	170	--	150	340	220
Magnesium, total	ug/L	--	--	--	--	--	--	--	--	--	--	--	--	--	--	21000	16000	--	15000	--	--
Potassium, total	ug/L	--	--	--	--	--	--	--	--	--	--	--	--	--	--	1700	1600	--	1800	--	--
Sodium, total	ug/L	--	--	--	--	--	--	--	--	--	--	--	--	--	--	7900	13000	--	12000	--	--
Total Alkalinity as CaCO3	mg/L	--	--	--	--	--	--	--	--	--	--	--	--	--	--	250	220	--	190	--	--
Manganese, total	ug/L	--	--	--	--	--	--	--	--	--	--	--	--	--	--	2000	1000	--	2400	--	--
Iron, dissolved	ug/L	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	<36	--	--
Magnesium, dissolved	ug/L	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	16000	--	--
Manganese, dissolved	ug/L	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	2200	--	--

Single Location
Name: IPL - Sutherland Generating Station

Location ID: MW-301
Number of Sampling Dates: 22

Parameter Name	Units	4/11/2024	10/17/2024
Boron	ug/L	<76	160
Calcium	mg/L	64	41
Chloride	mg/L	13	6.2
Field pH	Std. Units	6.55	6.6
Fluoride	mg/L	<0.38	<0.38
Sulfate	mg/L	28	16
Total Dissolved Solids	mg/L	270	220
Antimony	ug/L	<1	<1
Arsenic	ug/L	<0.53	<0.53
Barium	ug/L	58	36
Beryllium	ug/L	<0.33	<0.33
Cadmium	ug/L	<0.1	<0.1
Chromium	ug/L	<1.2	<1.2
Cobalt	ug/L	<0.17	0.2
Lead	ug/L	<0.26	<0.26
Lithium	ug/L	3.7	3.3
Mercury	ug/L	<0.11	<0.11
Molybdenum	ug/L	<1.3	<1.3
Selenium	ug/L	2.2	1.6
Thallium	ug/L	<0.57	<0.57
Total Radium	pCi/L	--	1.15
Radium-226	pCi/L	--	0.114
Radium-228	pCi/L	--	1.04
pH at 25 Degrees C	Std. Units	7	7.2
Field Specific Conductance	umhos/cm	475.8	521
Field Temperature	deg C	13.2	18
Oxygen, Dissolved	mg/L	2.52	1.99
Collected By		--	--
Collected Date		--	--
Collected Time		--	--
Field Oxidation Potential	millivolts	116.2	145.4
Groundwater Elevation	ft	851.89	852.94
Turbidity	NTU	33.51	19.88
Bicarbonate Alkalinity as CaCO3	mg/L	--	--
Carbonate Alkalinity as CaCO3	mg/L	--	--
Iron, total	ug/L	92	140
Magnesium, total	ug/L	--	--
Potassium, total	ug/L	--	--
Sodium, total	ug/L	--	--
Total Alkalinity as CaCO3	mg/L	--	--
Manganese, total	ug/L	--	--
Iron, dissolved	ug/L	--	--
Magnesium, dissolved	ug/L	--	--
Manganese, dissolved	ug/L	--	--

Single Location

Name: IPL - Sutherland Generating Station

Location ID: MW-302

Number of Sampling Dates: 22

Parameter Name	Units	3/27/2018	5/23/2018	6/26/2018	7/26/2018	9/11/2018	11/28/2018	1/9/2019	2/12/2019	4/2/2019	10/16/2019	12/12/2019	2/3/2020	4/7/2020	10/13/2020	4/6/2021	10/26/2021	4/22/2022	10/10/2022	4/10/2023
Boron	ug/L	58.4	53.7	65.3	53.8	22.4	36.6	36.7	31.5	<110	<110	<110	<100	<100	<80	67	<58	71	<58	<76
Calcium	mg/L	67.4	67.3	69.9	80.3	77.9	65	65.4	61.7	63	57	58	56	71	71	80	95	77	68	87
Chloride	mg/L	14	9.4	12.4	10.7	10.1	5.5	4.5	5.3	5.6	5.5	4.7	3.8	5.2	5.6	85	7.2	17	5.8	22
Field pH	Std. Units	7.2	7.31	7.3	6.99	7.3	7.2	7.34	7.21	7.5	7.22	6.98	7.31	7.36	7.43	6.96	7.3	7.11	7.17	7.03
Fluoride	mg/L	0.24	0.24	0.21	0.24	0.24	0.22	0.2	0.21	0.6	0.28	<0.23	--	0.55	0.3	2.5	<0.28	<0.22	<0.22	<0.38
Sulfate	mg/L	68.5	41.3	56	58.7	52.5	25.5	21.9	21.2	20	19	14	17	14	12	180	43	91	16	110
Total Dissolved Solids	mg/L	309	322	352	360	356	272	255	256	270	200	240	250	250	260	300	270	320	270	380
Antimony	ug/L	0.41	2.8	0.68	0.29	0.31	0.26	0.59	0.22	--	--	<0.53	--	<0.58	--	<1.1	<1.1	0.69	<0.69	<1
Arsenic	ug/L	1.4	5.8	8.5	10.2	8.5	5.9	10.8	2.8	--	--	6.1	19	5.3	4.6	3	7.4	21	4.5	3.9
Barium	ug/L	93.6	105	124	132	117	112	108	83.7	--	--	81	100	97	100	130	140	170	88	110
Beryllium	ug/L	<0.012	<0.12	0.19	<0.12	<0.12	<0.089	<0.089	<0.089	--	--	<0.27	--	<0.27	<0.27	<0.27	<0.27	<0.27	<0.27	<0.33
Cadmium	ug/L	0.028	<0.07	<0.07	<0.07	<0.07	<0.033	0.054	<0.033	--	--	<0.039	<0.039	<0.039	<0.049	<0.051	<0.051	<0.055	<0.055	0.11
Chromium	ug/L	0.35	<0.19	0.26	0.25	0.26	0.22	0.45	0.14	--	--	<0.98	--	<1.1	<1.1	<1.1	<1.1	<1.1	<1.1	<1.1
Cobalt	ug/L	1.8	3.5	5.7	3.4	4.2	8.4	5	6.2	--	--	1.3	3.7	1.7	0.77	4.7	1.6	6.3	1.8	1.5
Lead	ug/L	0.19	<0.12	<0.12	0.15	<0.12	0.34	0.17	<0.13	--	--	<0.27	<0.27	<0.27	<0.11	<0.21	0.31	<0.24	<0.24	<0.24
Lithium	ug/L	5.2	<4.6	<4.6	7.8	<4.6	<4.6	<4.6	7.5	--	--	2.8	<2.3	<2.3	2.8	2.8	2.9	2.5	2.8	2.8
Mercury	ug/L	<0.09	<0.09	<0.09	<0.09	<0.09	<0.09	<0.09	<0.037	--	--	<0.1	--	<0.1	--	<0.15	<0.15	<0.11	--	<0.14
Molybdenum	ug/L	1.2	1.2	0.68	1	1.2	<0.57	1.3	0.76	--	--	<1.1	<1.1	<1.1	<1.1	<1.3	<1.3	<1.2	<1.2	0.91
Selenium	ug/L	8	1	3.9	0.56	0.58	0.73	0.88	0.67	--	--	<1	--	<1	--	2.5	1.3	22	<0.96	12
Thallium	ug/L	<0.036	<0.14	<0.14	<0.14	<0.14	<0.099	<0.099	<0.099	--	--	<0.27	--	<0.26	--	<0.26	<0.26	<0.26	<0.26	1.3
Total Radium	pCi/L	0.304	0.926	0.68	0.856	1.59	1.47	1.96	0.943	--	--	0.828	0.808	0.547	0.58	0.6	0.614	0.663	1.14	0.548
Radium-226	pCi/L	0	0.392	-0.084	0.341	0.758	1.03	0.926	0.196	--	--	0.294	0.299	0.171	0.214	0.294	0.331	0.124	0.194	0.0634
Radium-228	pCi/L	0.304	0.534	0.68	0.515	0.829	0.436	1.03	0.747	--	--	0.534	0.509	0.376	0.365	0.306	0.283	0.539	0.945	0.485
pH at 25 Degrees C	Std. Units	7.4	7.5	7.5	7.1	6.9	7.6	7.3	7.4	7.5	7.6	7.5	7.5	7.3	7.4	7.2	7.2	7.1	7.6	7.3
Field Specific Conductance	umhos/cm	546.5	527	603	623	593	319	302	393.6	437	431	394	464	456.2	463.6	581	624	538.8	472.6	571.1
Field Temperature	deg C	7.4	9.9	11.8	12.4	13.9	11.96	10.73	9.7	9.53	12.8	11	9.42	11.3	13.2	9.3	13.2	8.2	13.2	8.9
Oxygen, Dissolved	mg/L	2.39	0.1	0.3	0.16	0.26	0.21	0.17	0.13	0.79	0.24	0.46	0.95	0.14	0.11	0.49	1.34	3.76	-0.1	1.99
Collected By		--	0	0	0	0	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Collected Date		--	--	--	--	9	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Collected Time		--	--	--	--	8	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Field Oxidation Potential	millivolts	79.3	-89	-51	-102	-58.3	-98	5.8	-42.7	10	-32.9	-45.9	5.6	-80.4	-103.6	161.9	146.4	123.3	2.6	59.7
Groundwater Elevation	ft	855.97	855.32	856.55	855.75	857.06	856.74	856.82	856.43	857.12	855.3	856.11	856.59	856.23	854.38	854.85	852.68	855.04	851.94	854.63
Turbidity	NTU	5.9	17.12	2.85	10.83	3.03	31.7	22.5	4.7	12.9	4.9	5.12	2.87	6.32	3.7	2.69	23.2	16.3	83.99	5.39
Bicarbonate Alkalinity as CaCO3	mg/L	--	--	--	--	--	--	--	--	--	--	--	--	--	--	280	400	--	380	--
Carbonate Alkalinity as CaCO3	mg/L	--	--	--	--	--	--	--	--	--	--	--	--	--	--	<4.6	<4.6	--	<4.6	--
Iron, total	ug/L	--	--	--	--	--	--	--	--	--	--	--	--	--	--	210	1000	--	650	370
Magnesium, total	ug/L	--	--	--	--	--	--	--	--	--	--	--	--	--	--	25000	26000	--	20000	--
Potassium, total	ug/L	--	--	--	--	--	--	--	--	--	--	--	--	--	--	320	440	--	330	--
Sodium, total	ug/L	--	--	--	--	--	--	--	--	--	--	--	--	--	--	12000	9200	--	4300	--
Total Alkalinity as CaCO3	mg/L	--	--	--	--	--	--	--	--	--	--	--	--	--	--	280	400	--	380	--
Manganese, total	ug/L	--	--	--	--	--	--	--	--	--	--	--	--	--	--	590	1000	--	970	--
Iron, dissolved	ug/L	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	270	--
Magnesium, dissolved	ug/L	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	23000	--
Manganese, dissolved	ug/L	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	910	--

Single Location

Name: IPL - Sutherland Generating Station

Location ID: MW-302

Number of Sampling Dates: 22

Parameter Name	Units	10/18/2023	4/11/2024	10/17/2024
Boron	ug/L	<76	<76	<76
Calcium	mg/L	71	79	70
Chloride	mg/L	6.1	7.3	10
Field pH	Std. Units	7.03	7.07	7.13
Fluoride	mg/L	<0.38	<0.38	<0.38
Sulfate	mg/L	18	23	18
Total Dissolved Solids	mg/L	270	320	260
Antimony	ug/L	<1	<1	<1
Arsenic	ug/L	3.8	6.2	6.2
Barium	ug/L	96	120	110
Beryllium	ug/L	<0.33	<0.33	<0.33
Cadmium	ug/L	<0.1	<0.1	<0.1
Chromium	ug/L	<1.1	<1.2	<1.2
Cobalt	ug/L	1.8	4.8	1.4
Lead	ug/L	<0.24	<0.26	<0.26
Lithium	ug/L	2.8	4.3	3
Mercury	ug/L	<0.14	<0.11	<0.11
Molybdenum	ug/L	<0.91	<1.3	<1.3
Selenium	ug/L	<1.4	<1.4	<1.4
Thallium	ug/L	<0.26	<0.57	<0.57
Total Radium	pCi/L	0.788	0.722	0.994
Radium-226	pCi/L	0.0592	0.215	0.535
Radium-228	pCi/L	0.729	<0.654	0.46
pH at 25 Degrees C	Std. Units	7.1	7.4	7.7
Field Specific Conductance	umhos/cm	525	534	642
Field Temperature	deg C	14.4	10.7	14.9
Oxygen, Dissolved	mg/L	0.65	0.25	0.33
Collected By		--	--	--
Collected Date		--	--	--
Collected Time		--	--	--
Field Oxidation Potential	millivolts	10.7	-13.1	67.6
Groundwater Elevation	ft	851.44	852.19	853.15
Turbidity	NTU	8.67	19.65	27.64
Bicarbonate Alkalinity as CaCO3	mg/L	--	--	--
Carbonate Alkalinity as CaCO3	mg/L	--	--	--
Iron, total	ug/L	410	860	690
Magnesium, total	ug/L	--	--	--
Potassium, total	ug/L	--	--	--
Sodium, total	ug/L	--	--	--
Total Alkalinity as CaCO3	mg/L	--	--	--
Manganese, total	ug/L	--	--	--
Iron, dissolved	ug/L	--	--	--
Magnesium, dissolved	ug/L	--	--	--
Manganese, dissolved	ug/L	--	--	--

Single Location
Name: IPL - Sutherland Generating Station

Location ID: MW-303
Number of Sampling Dates: 22

Parameter Name	Units	3/27/2018	5/23/2018	6/26/2018	7/26/2018	9/11/2018	11/28/2018	1/9/2019	2/12/2019	4/2/2019	10/16/2019	12/12/2019	2/3/2020	4/7/2020	10/13/2020	4/6/2021	10/26/2021	4/22/2022	10/10/2022	4/10/2023	10/20/2023
Boron	ug/L	619	799	989	852	597	696	609	737	730	740	570	440	530	710	360	400	130	410	240	360
Calcium	mg/L	265	116	106	113	109	134	206	160	140	120	130	160	110	120	80	87	28	79	79	93
Chloride	mg/L	22.8	25.5	24	29.6	32.9	29.2	25.8	28	28	12	15	12	11	14	81	3.8	<2.3	12	4.6	11
Field pH	Std. Units	7.19	8.92	7.89	7.33	7.82	7.2	6.96	7.02	7.29	6.97	6.82	6.84	7.17	7.12	7.04	6.84	7.3	7.44	7.1	7.28
Fluoride	mg/L	0.49	0.54	0.46	0.56	0.51	0.56	0.41	0.5	0.85	0.55	<0.23	--	0.68	0.44	2.7	<0.28	<0.22	<0.22	0.39	<0.38
Sulfate	mg/L	745	208	185	474	195	348	482	377	330	310	270	350	210	190	250	160	33	55	150	89
Total Dissolved Solids	mg/L	1360	658	658	597	628	797	1080	852	800	660	740	830	570	610	340	300	100	350	430	410
Antimony	ug/L	0.072	<0.15	<0.15	<0.15	0.18	<0.078	0.16	0.1	--	--	<0.53	--	<0.58	--	<1.1	<1.1	<0.69	<0.69	<1	<1
Arsenic	ug/L	0.11	1.3	2.5	2	2.2	1.3	0.91	1.1	--	--	0.82	<0.88	<0.88	1.6	0.96	4.8	1.9	2.5	0.58	2
Barium	ug/L	66.9	31.7	32.6	37.4	33.9	48.4	63.4	57.7	--	--	47	55	41	65	39	91	36	48	46	53
Beryllium	ug/L	<0.012	<0.12	0.83	<0.12	<0.12	<0.089	<0.089	<0.089	--	--	<0.27	--	<0.27	<0.27	<0.27	<0.27	<0.27	<0.27	<0.33	<0.33
Cadmium	ug/L	0.14	<0.07	0.073	<0.07	0.093	<0.033	0.084	0.037	--	--	<0.039	<0.039	0.2	<0.049	0.086	0.16	0.29	0.062	<0.1	<0.1
Chromium	ug/L	0.086	<0.19	0.23	<0.19	0.29	<0.078	0.36	0.62	--	--	<0.98	--	<1.1	<1.1	<1.1	<1.1	<1.1	<1.1	<1.1	<1.1
Cobalt	ug/L	0.54	0.42	0.48	0.65	0.58	0.89	1.2	1.4	--	--	0.95	1.3	0.53	1	0.31	0.66	1.4	1.1	0.21	0.69
Lead	ug/L	0.1	<0.12	0.13	<0.12	0.22	<0.13	0.32	0.35	--	--	<0.27	<0.27	0.31	<0.11	<0.21	0.5	0.73	0.34	<0.24	<0.24
Lithium	ug/L	38.4	35.9	37.9	37.3	35.3	30.7	28.2	36.5	--	--	27	22	23	26	17	20	7.8	19	16	21
Mercury	ug/L	<0.09	<0.09	<0.09	<0.09	<0.09	<0.09	<0.09	<0.037	--	--	<0.1	--	<0.1	--	<0.15	<0.15	<0.11	--	<0.14	<0.14
Molybdenum	ug/L	12.9	32.7	22.6	30.8	26.3	32.6	18.4	20.9	--	--	19	11	23	22	11	5.9	2.4	5.3	4.7	16
Selenium	ug/L	1.6	<0.16	0.61	<0.16	0.18	<0.085	0.18	0.097	--	--	<1	--	<1	--	<0.96	26	1.4	<0.96	9	<1.4
Thallium	ug/L	<0.036	<0.14	<0.14	<0.14	<0.14	<0.099	<0.099	<0.099	--	--	<0.27	--	<0.26	--	<0.26	<0.26	<0.26	<0.26	<0.26	<0.26
Total Radium	pCi/L	0.618	0.699	0.941	0.744	0.317	0.921	1.25	1.19	--	--	0.931	0.159	1.18	0.531	0.268	0.666	2.04	0.623	0	0.393
Radium-226	pCi/L	0.0803	0.115	0.381	0.316	0.0751	0.389	0.459	0.12	--	--	0.078	0.0473	0.0691	0.19	0.094	0.194	0.574	0.0805	-0.0324	0.0255
Radium-228	pCi/L	0.538	0.584	0.56	0.428	0.242	0.532	0.788	1.07	--	--	0.852	0.111	1.11	0.342	0.174	0.472	1.47	0.543	-0.0206	0.368
pH at 25 Degrees C	Std. Units	7.1	7.7	8.1	7.7	7.7	6.8	7	7.2	7.3	7.2	7.2	7.2	7.1	7.3	7.3	7.2	7.3	7.8	7.4	7.6
Field Specific Conductance	umhos/cm	1806	923	921	914	921	710	835	1087	1077	1037	1004	1173	814	888	601	576.6	240.8	546	560	741
Field Temperature	deg C	7.2	11.9	13.1	13.8	16	11.38	8.11	8.9	10.57	15.23	10.4	7.99	11.3	14.4	8	13.5	7	15.7	7.7	15
Oxygen, Dissolved	mg/L	0.39	0.05	0.24	0.21	0.24	0.28	0.61	0.11	0.78	0.24	1.02	1.89	0.13	0.2	0.15	2.57	3.23	0.01	-0.08	1.22
Collected By		--	0	0	0	0	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Collected Date		--	--	--	--	9	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Collected Time		--	--	--	--	15	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Field Oxidation Potential	millivolts	81.4	24	74	15	106.5	12.9	66.1	39.2	61	35	52.8	60.1	124.3	-74.2	68.5	167.1	83.7	-8.5	193.1	8.9
Groundwater Elevation	ft	854.35	854.07	854.97	854.14	855.96	855.01	855.11	854.58	855.6	854.9	854.47	854.57	854.63	851.7	853.21	850.54	852.35	849.96	853.34	849.47
Turbidity	NTU	3.27	3.19	3.04	0.51	1.77	1.16	14.6	5.96	2.44	3.16	15.07	5.25	3.58	2.38	3.55	110	34.7	0	0.02	5.33
Bicarbonate Alkalinity as CaCO3	mg/L	--	--	--	--	--	--	--	--	--	--	--	--	--	--	240	230	--	280	--	--
Carbonate Alkalinity as CaCO3	mg/L	--	--	--	--	--	--	--	--	--	--	--	--	--	--	<4.6	<4.6	--	<4.6	--	--
Iron, total	ug/L	--	--	--	--	--	--	--	--	--	--	--	--	--	--	420	2900	--	410	84	150
Magnesium, total	ug/L	--	--	--	--	--	--	--	--	--	--	--	--	--	--	23000	21000	--	20000	--	--
Potassium, total	ug/L	--	--	--	--	--	--	--	--	--	--	--	--	--	--	3300	3900	--	4700	--	--
Sodium, total	ug/L	--	--	--	--	--	--	--	--	--	--	--	--	--	--	19000	18000	--	19000	--	--
Total Alkalinity as CaCO3	mg/L	--	--	--	--	--	--	--	--	--	--	--	--	--	--	240	230	--	280	--	--
Manganese, total	ug/L	--	--	--	--	--	--	--	--	--	--	--	--	--	--	930	700	--	1500	--	--
Iron, dissolved	ug/L	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	62	--	--
Magnesium, dissolved	ug/L	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	20000	--	--
Manganese, dissolved	ug/L	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	1200	--	--

Single Location
Name: IPL - Sutherland Generating Station

Location ID: MW-303
Number of Sampling Dates: 22

Parameter Name	Units	4/11/2024	10/17/2024
Boron	ug/L	340	450
Calcium	mg/L	94	100
Chloride	mg/L	3.4	20
Field pH	Std. Units	7.05	7.27
Fluoride	mg/L	<0.38	0.63
Sulfate	mg/L	180	110
Total Dissolved Solids	mg/L	460	460
Antimony	ug/L	<1	<1
Arsenic	ug/L	0.64	1.8
Barium	ug/L	67	61
Beryllium	ug/L	<0.33	<0.33
Cadmium	ug/L	<0.1	<0.1
Chromium	ug/L	<1.2	<1.2
Cobalt	ug/L	<0.17	0.59
Lead	ug/L	<0.26	<0.26
Lithium	ug/L	20	21
Mercury	ug/L	<0.11	<0.11
Molybdenum	ug/L	<1.3	15
Selenium	ug/L	42	<1.4
Thallium	ug/L	<0.57	<0.57
Total Radium	pCi/L	<0.702	1.88
Radium-226	pCi/L	0.291	0.727
Radium-228	pCi/L	<0.702	1.15
pH at 25 Degrees C	Std. Units	7.4	7.6
Field Specific Conductance	umhos/cm	714	996
Field Temperature	deg C	11.6	14.2
Oxygen, Dissolved	mg/L	3.64	0.58
Collected By		--	--
Collected Date		--	--
Collected Time		--	--
Field Oxidation Potential	millivolts	91.8	35.5
Groundwater Elevation	ft	850.73	850.96
Turbidity	NTU	10.1	4.43
Bicarbonate Alkalinity as CaCO3	mg/L	--	--
Carbonate Alkalinity as CaCO3	mg/L	--	--
Iron, total	ug/L	40	370
Magnesium, total	ug/L	--	--
Potassium, total	ug/L	--	--
Sodium, total	ug/L	--	--
Total Alkalinity as CaCO3	mg/L	--	--
Manganese, total	ug/L	--	--
Iron, dissolved	ug/L	--	--
Magnesium, dissolved	ug/L	--	--
Manganese, dissolved	ug/L	--	--

Single Location
Name: IPL - Sutherland Generating Station

Location ID: MW-304
Number of Sampling Dates: 22

Parameter Name	Units	3/26/2018	5/23/2018	6/26/2018	7/26/2018	9/11/2018	11/28/2018	1/9/2019	2/12/2019	4/2/2019	10/16/2019	12/12/2019	2/3/2020	4/7/2020	10/13/2020	4/6/2021	10/26/2021	4/21/2022	10/11/2022	4/11/2023	10/20/2023
Boron	ug/L	575	604	736	795	715	751	665	649	590	840	660	560	580	830	570	480	630	470	440	430
Calcium	mg/L	155	145	121	138	151	149	164	174	180	170	150	150	150	150	130	110	130	110	120	90
Chloride	mg/L	30.8	35.1	32.1	31.2	29.7	27.4	24.6	28.3	29	23	17	21	15	11	80	15	3.7	12	7	8.7
Field pH	Std. Units	7.08	7.64	7.24	7.6	7.04	6.6	6.71	6.27	6.85	6.72	6.47	6.71	6.68	6.64	6.61	7.04	6.77	6.64	6.72	7.19
Fluoride	mg/L	0.33	0.46	0.62	0.56	0.55	0.31	0.22	0.26	0.67	0.6	<0.23	--	0.49	<0.23	2.5	<0.28	<0.22	0.26	<0.38	0.4
Sulfate	mg/L	371	366	339	363	405	375	372	442	450	400	360	360	350	330	430	170	310	160	310	150
Total Dissolved Solids	mg/L	820	785	782	791	860	853	841	902	910	840	840	800	750	800	600	450	580	530	620	460
Antimony	ug/L	0.041	<0.15	<0.15	<0.15	0.28	<0.078	0.13	0.11	--	--	<0.53	--	<0.58	--	<1.1	<1.1	<0.69	<0.69	<1	<1
Arsenic	ug/L	<0.052	0.23	0.37	0.39	0.64	0.46	0.45	0.26	--	--	<0.75	<0.88	<0.88	<0.88	<0.75	<0.75	<0.75	<0.75	<0.53	<0.53
Barium	ug/L	21.3	18.7	24.3	24.5	24.1	29	24.6	23	--	--	28	24	22	21	16	23	21	26	25	22
Beryllium	ug/L	<0.012	<0.12	0.69	<0.12	0.19	<0.089	<0.089	<0.089	--	--	<0.27	--	<0.27	<0.27	<0.27	<0.27	<0.27	<0.27	<0.33	<0.33
Cadmium	ug/L	0.08	0.14	0.19	0.1	0.3	0.085	0.12	0.078	--	--	<0.039	0.36	0.079	0.075	0.15	0.24	0.073	0.068	<0.1	<0.1
Chromium	ug/L	0.28	<0.19	0.6	<0.19	0.36	0.11	0.44	0.24	--	--	<0.98	--	<1.1	<1.1	<1.1	<1.1	<1.1	<1.1	<1.1	<1.1
Cobalt	ug/L	0.093	<0.15	0.22	<0.15	0.35	0.45	0.27	0.23	--	--	0.41	0.19	0.28	0.11	<0.091	0.3	<0.19	<0.19	<0.17	<0.17
Lead	ug/L	0.094	<0.12	0.35	<0.12	0.32	0.17	0.2	<0.13	--	--	<0.27	<0.27	<0.27	<0.11	<0.21	0.75	<0.24	<0.24	<0.24	<0.24
Lithium	ug/L	10.1	6.9	15.6	11	10.9	<4.6	<4.6	5.7	--	--	2.9	<2.3	<2.3	2.8	<2.5	6.8	<2.5	6.8	<2.5	6.3
Mercury	ug/L	<0.09	<0.09	<0.09	<0.09	<0.09	<0.09	<0.09	<0.037	--	--	<0.1	--	<0.1	--	<0.15	<0.15	<0.11	--	<0.14	<0.14
Molybdenum	ug/L	1.6	2	17.2	7.8	6.6	1.2	1	0.82	--	--	1.3	1.5	<1.1	1.4	<1.3	<1.3	<1.2	2.5	<0.91	3.8
Selenium	ug/L	0.18	<0.16	0.5	<0.16	0.32	<0.085	0.21	0.12	--	--	<1	--	<1	--	1.1	<0.96	<0.96	<0.96	3.3	<1.4
Thallium	ug/L	<0.036	<0.14	<0.14	<0.14	0.26	<0.099	<0.099	<0.099	--	--	<0.27	--	<0.26	--	<0.26	<0.26	<0.26	<0.26	<0.26	<0.26
Total Radium	pCi/L	0.48	0.523	0.466	0.556	0.201	1.56	1.17	0.404	--	--	0.373	0.0516	0.494	0.606	0.0369	0.721	0.35	0.772	0.462	0.975
Radium-226	pCi/L	0	0.174	0.0806	0.165	0.125	0.57	0.461	0.225	--	--	0.0285	0.043	0.0606	0.0947	0.0369	0.281	0.0884	0.0641	0.0319	0.0592
Radium-228	pCi/L	0.48	0.349	0.385	0.391	0.0761	0.993	0.706	0.179	--	--	0.344	0.00857	0.433	0.511	-0.0801	0.44	0.261	0.708	0.43	0.915
pH at 25 Degrees C	Std. Units	7.1	7.2	7.5	7.1	6.9	7.7	6.7	6.8	6.8	7.1	6.7	7	6.7	6.8	6.8	7.1	7	7.3	7.1	7.4
Field Specific Conductance	umhos/cm	1166	1084	1076	1131	1175	731	690	1057	1170	1158	1083	1149	1016	1033	957	831	874	732	816	775
Field Temperature	deg C	8.5	10.5	11.2	14	16.3	11.28	8.65	8.2	7.59	14.12	10.5	8.09	10.4	14.5	8.4	13.8	7.2	13	6.7	12.2
Oxygen, Dissolved	mg/L	0.47	0.1	0.17	0.15	0.08	0.37	0.43	0.14	1.35	0.87	0.37	1.87	0.28	6.2	5.83	1.58	0.77	0	2.62	0.99
Collected By		--	0	0	0	0	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Collected Date		--	--	--	--	9	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Collected Time		--	--	--	--	11	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Field Oxidation Potential	millivolts	114.3	107	121	98	53.4	-39.3	76	59.5	57.1	39.1	75.1	62.5	95.1	39.1	182.1	152.1	98.9	218.8	195.7	107.6
Groundwater Elevation	ft	853.79	853.92	854.64	853.86	855.66	854.79	854.93	854.41	855.47	854.78	854.29	854.35	854.54	851.3	853.15	850.13	851.97	849.7	853.27	849.24
Turbidity	NTU	6.71	0.6	3.68	3.62	1.35	22.7	15.5	6.27	1.18	1.58	0.19	1.59	2.12	1.68	0.79	19.8	4.72	0	0.02	5.09
Bicarbonate Alkalinity as CaCO3	mg/L	--	--	--	--	--	--	--	--	--	--	--	--	--	--	230	350	--	290	--	--
Carbonate Alkalinity as CaCO3	mg/L	--	--	--	--	--	--	--	--	--	--	--	--	--	--	<4.6	<4.6	--	<4.6	--	--
Iron, total	ug/L	--	--	--	--	--	--	--	--	--	--	--	--	--	--	<36	71	--	61	<36	<36
Magnesium, total	ug/L	--	--	--	--	--	--	--	--	--	--	--	--	--	--	34000	29000	--	29000	--	--
Potassium, total	ug/L	--	--	--	--	--	--	--	--	--	--	--	--	--	--	<150	600	--	620	--	--
Sodium, total	ug/L	--	--	--	--	--	--	--	--	--	--	--	--	--	--	38000	33000	--	33000	--	--
Total Alkalinity as CaCO3	mg/L	--	--	--	--	--	--	--	--	--	--	--	--	--	--	230	350	--	290	--	--
Manganese, total	ug/L	--	--	--	--	--	--	--	--	--	--	--	--	--	--	180	270	--	66	--	--
Iron, dissolved	ug/L	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	<36	--	--
Magnesium, dissolved	ug/L	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	29000	--	--
Manganese, dissolved	ug/L	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	14	--	--

Single Location
Name: IPL - Sutherland Generating Station

Location ID: MW-304
Number of Sampling Dates: 22

Parameter Name	Units	4/9/2024	10/17/2024
Boron	ug/L	440	760
Calcium	mg/L	100	140
Chloride	mg/L	8.8	10
Field pH	Std. Units	7.05	6.71
Fluoride	mg/L	<0.38	<0.38
Sulfate	mg/L	180	320
Total Dissolved Solids	mg/L	510	720
Antimony	ug/L	<1	<1
Arsenic	ug/L	<0.53	<0.53
Barium	ug/L	29	29
Beryllium	ug/L	<0.33	<0.33
Cadmium	ug/L	<0.1	<0.1
Chromium	ug/L	<1.2	<1.2
Cobalt	ug/L	<0.17	<0.17
Lead	ug/L	<0.26	<0.26
Lithium	ug/L	7.8	2.8
Mercury	ug/L	<0.11	<0.11
Molybdenum	ug/L	5.8	<1.3
Selenium	ug/L	<1.4	<1.4
Thallium	ug/L	<0.57	<0.57
Total Radium	pCi/L	0.813	0.132
Radium-226	pCi/L	0.127	-0.0359
Radium-228	pCi/L	0.686	0.132
pH at 25 Degrees C	Std. Units	7.3	7.5
Field Specific Conductance	umhos/cm	770	1361
Field Temperature	deg C	13.1	14.2
Oxygen, Dissolved	mg/L	1.49	0.46
Collected By		--	--
Collected Date		--	--
Collected Time		--	--
Field Oxidation Potential	millivolts	65.5	137.3
Groundwater Elevation	ft	850.53	850.68
Turbidity	NTU	4.4	3.82
Bicarbonate Alkalinity as CaCO3	mg/L	--	--
Carbonate Alkalinity as CaCO3	mg/L	--	--
Iron, total	ug/L	<36	<36
Magnesium, total	ug/L	--	--
Potassium, total	ug/L	--	--
Sodium, total	ug/L	--	--
Total Alkalinity as CaCO3	mg/L	--	--
Manganese, total	ug/L	--	--
Iron, dissolved	ug/L	--	--
Magnesium, dissolved	ug/L	--	--
Manganese, dissolved	ug/L	--	--

Single Location
Name: IPL - Sutherland Generating Station

Location ID: MW-305
Number of Sampling Dates: 23

Parameter Name	Units	3/26/2018	5/23/2018	6/26/2018	7/26/2018	9/11/2018	11/28/2018	1/9/2019	2/12/2019	4/2/2019	10/16/2019	12/12/2019	2/3/2020	4/7/2020	5/11/2020	10/13/2020	4/6/2021	10/26/2021	4/21/2022	10/11/2022	4/11/2023
Boron	ug/L	815	741	1110	1200	992	920	847	809	660	1100	760	930	850	--	1400	1400	1800	1100	1100	910
Calcium	mg/L	173	124	96.4	108	124	152	166	139	160	140	160	140	170	--	140	150	110	140	110	150
Chloride	mg/L	21.9	31.5	29.5	26.9	25.3	17.4	17.5	19.9	15	23	15	17	12	--	17	91	24	20	27	21
Field pH	Std. Units	6.99	7.93	7.61	7.22	7.1	6.63	6.71	6.82	6.9	6.94	6.52	6.61	6.7	5.97	7.33	6.68	7.58	6.99	7.58	6.93
Fluoride	mg/L	0.54	0.63	0.64	0.74	0.72	0.53	0.44	0.6	1.4	0.77	<0.23	--	0.69	--	0.46	2.7	<0.28	<0.22	0.36	<0.38
Sulfate	mg/L	495	365	317	315	407	445	482	387	490	410	450	440	450	--	410	470	240	280	200	390
Total Dissolved Solids	mg/L	893	742	667	647	734	935	965	777	990	790	960	850	900	--	790	800	500	590	540	840
Antimony	ug/L	0.075	<0.15	<0.15	<0.15	<0.15	0.27	0.13	0.092	--	--	<0.53	--	<0.58	--	--	<1.1	<1.1	<0.69	<0.69	<1
Arsenic	ug/L	5.9	8.6	6.9	8.6	9.1	65.9	12.9	6.9	--	--	7.6	6.3	8.8	--	11	6.4	7.4	7.1	8.4	5.8
Barium	ug/L	34.8	32.2	36.1	35.7	42.2	167	49	27.9	--	--	45	32	41	--	52	32	47	35	41	39
Beryllium	ug/L	0.012	<0.12	0.78	<0.12	<0.12	0.1	<0.089	<0.089	--	--	<0.27	--	<0.27	--	<0.27	<0.27	<0.27	<0.27	<0.27	<0.33
Cadmium	ug/L	0.071	<0.07	<0.07	<0.07	<0.07	0.1	0.07	0.043	--	--	<0.039	<0.039	<0.039	--	<0.049	0.052	<0.051	0.061	<0.055	0.1
Chromium	ug/L	0.69	0.62	0.45	<0.19	1.3	0.25	0.32	0.52	--	--	<0.98	--	<1.1	--	<1.1	<1.1	<1.1	2.8	<1.1	<1.1
Cobalt	ug/L	2.7	1.4	0.74	0.83	1.6	2.8	2.2	2	--	--	1.5	1.6	2.1	--	0.6	1.7	0.63	1.4	0.62	1.1
Lead	ug/L	0.39	0.43	0.19	0.16	0.76	0.58	0.17	0.35	--	--	0.38	<0.27	0.48	--	<0.11	<0.21	<0.21	<0.24	<0.24	<0.24
Lithium	ug/L	21.3	14.2	21.8	17.8	16.2	16.9	8.3	18.6	--	--	16	10	12	--	22	29	35	32	37	22
Mercury	ug/L	<0.09	<0.09	<0.09	<0.09	<0.09	<0.09	<0.09	<0.037	--	--	<0.1	--	<0.1	--	--	<0.15	<0.15	<0.11	--	<0.14
Molybdenum	ug/L	25.8	32.5	29.3	38	35.3	21.5	23.8	27.3	--	--	24	18	20	--	36	41	55	42	48	27
Selenium	ug/L	0.34	0.3	0.59	<0.16	1.1	0.44	0.24	0.31	--	--	<1	--	<1	--	--	<0.96	<0.96	<0.96	<0.96	<1.4
Thallium	ug/L	<0.036	<0.14	<0.14	<0.14	<0.14	<0.099	<0.099	<0.099	--	--	<0.27	--	<0.26	--	--	<0.26	<0.26	<0.26	<0.26	<0.26
Total Radium	pCi/L	0.0087	1.05	0	1.27	1.15	2.23	1.33	0.852	--	--	1.54	0.51	3.1	0.557	0.986	0.34	1.02	0.349	0.703	0.545
Radium-226	pCi/L	-0.344	0.59	0	0.942	0.638	1.08	0.564	0.459	--	--	0.167	0.119	0.84	0.226	0.42	0.102	0.268	0.21	0.24	0.187
Radium-228	pCi/L	0.0087	0.458	-0.116	0.33	0.516	1.15	0.764	0.393	--	--	1.37	0.39	2.26	0.332	0.567	0.238	0.752	0.139	0.464	0.358
pH at 25 Degrees C	Std. Units	7	7.4	7.7	7.3	6.9	7	6.9	7	6.9	7.2	6.9	6.9	6.7	--	7.4	7	7.8	7.2	7.8	7.3
Field Specific Conductance	umhos/cm	1262	1012	939	935	1029	773	817	939	1168	1061	1178	1200	1198	1215	1029	1171	807	938	786	1044
Field Temperature	deg C	9.7	11	12.1	13.3	17.9	12.24	10.3	9.4	8.49	13.81	11.4	9.9	10.2	9.1	14.8	10.9	14.8	10	14.7	9.4
Oxygen, Dissolved	mg/L	0.1	0.08	0.21	0.12	0.08	0.23	0.17	0.08	0.96	0.4	0.27	1.09	0.2	0.12	0.12	0.15	1.15	0.14	-0.1	0.13
Collected By		--	0	0	0	0	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Collected Date		--	--	--	--	9	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Collected Time		--	--	--	--	12	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Field Oxidation Potential	millivolts	11.9	-134	-102	-116	-77.2	-117.7	60.9	23.6	47	24.7	50.5	57.8	-6.6	20.2	-79.3	69.8	134.7	120.5	17.5	140
Groundwater Elevation	ft	853.64	853.99	854.55	854	855.94	854.87	854.94	854.56	855.67	854.99	854.33	854.28	854.64	853.78	851.32	853.02	850.12	851.91	849.73	853.13
Turbidity	NTU	11.12	14.96	4.69	8.39	15.83	119	3.64	12.33	6.46	2.17	78.41	4.9	8.14	2.98	3.75	3.44	19.9	11.1	0	0.02
Bicarbonate Alkalinity as CaCO3	mg/L	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	200	230	--	230	--
Carbonate Alkalinity as CaCO3	mg/L	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	<4.6	<4.6	--	<4.6	--
Iron, total	ug/L	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	250	230	--	240	350
Magnesium, total	ug/L	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	40000	25000	--	26000	--
Potassium, total	ug/L	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	3900	5900	--	5700	--
Sodium, total	ug/L	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	48000	38000	--	38000	--
Total Alkalinity as CaCO3	mg/L	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	200	230	--	230	--
Manganese, total	ug/L	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	1400	520	--	620	--
Iron, dissolved	ug/L	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	<36	--
Magnesium, dissolved	ug/L	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	<150	--
Manganese, dissolved	ug/L	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	<3.6	--

Single Location
Name: IPL - Sutherland Generating Station

Location ID: MW-305
Number of Sampling Dates: 23

Parameter Name	Units	10/20/2023	4/9/2024	10/17/2024
Boron	ug/L	1100	1100	890
Calcium	mg/L	100	110	98
Chloride	mg/L	36	31	30
Field pH	Std. Units	7.48	7.51	7.6
Fluoride	mg/L	0.45	<0.38	0.39
Sulfate	mg/L	200	200	180
Total Dissolved Solids	mg/L	530	100	520
Antimony	ug/L	<1	<1	<1
Arsenic	ug/L	10	8.3	7.2
Barium	ug/L	41	41	50
Beryllium	ug/L	<0.33	<0.33	<0.33
Cadmium	ug/L	<0.1	<0.1	<0.1
Chromium	ug/L	<1.1	<1.2	<1.2
Cobalt	ug/L	0.69	0.84	0.65
Lead	ug/L	<0.24	<0.26	<0.26
Lithium	ug/L	36	38	42
Mercury	ug/L	<0.14	<0.11	<0.11
Molybdenum	ug/L	48	39	36
Selenium	ug/L	<1.4	<1.4	<1.4
Thallium	ug/L	<0.26	<0.57	<0.57
Total Radium	pCi/L	0.853	<0.594	0.674
Radium-226	pCi/L	0.0891	<0.106	0.126
Radium-228	pCi/L	0.764	<0.594	0.548
pH at 25 Degrees C	Std. Units	7.7	7.8	8
Field Specific Conductance	umhos/cm	911	878	1066
Field Temperature	deg C	14.2	10.7	15
Oxygen, Dissolved	mg/L	0.64	0.27	0.39
Collected By		--	--	--
Collected Date		--	--	--
Collected Time		--	--	--
Field Oxidation Potential	millivolts	29.3	43.1	117.2
Groundwater Elevation	ft	849.27	850.48	850.57
Turbidity	NTU	6.19	4.37	8.71
Bicarbonate Alkalinity as CaCO3	mg/L	--	--	--
Carbonate Alkalinity as CaCO3	mg/L	--	--	--
Iron, total	ug/L	310	240	120
Magnesium, total	ug/L	--	--	--
Potassium, total	ug/L	--	--	--
Sodium, total	ug/L	--	--	--
Total Alkalinity as CaCO3	mg/L	--	--	--
Manganese, total	ug/L	--	--	--
Iron, dissolved	ug/L	--	--	--
Magnesium, dissolved	ug/L	--	--	--
Manganese, dissolved	ug/L	--	--	--

Single Location
Name: IPL - Sutherland Generating Station

Location ID: MW-306
Number of Sampling Dates: 25

Parameter Name	Units	3/27/2018	5/23/2018	6/26/2018	7/26/2018	9/11/2018	11/28/2018	1/9/2019	2/12/2019	4/2/2019	10/16/2019	12/12/2019	2/3/2020	4/7/2020	5/11/2020	10/13/2020	2/24/2021	4/6/2021	7/14/2021	10/26/2021	4/21/2022	10/12/2022
Boron	ug/L	1100	1790	2090	2120	2160	2990	3260	3350	3200	2500	2400	2500	2500	--	3800	--	3400	--	4400	4400	3400
Calcium	mg/L	213	201	172	199	201	166	194	183	130	200	210	220	220	--	230	--	210	--	150	170	140
Chloride	mg/L	30.8	35.1	30.2	32	29.7	14.1	18.9	18	16	13	11	12	14	--	21	--	95	--	20	19	16
Field pH	Std. Units	7.94	9.46	7.74	7.38	7.68	7.41	7.44	7.61	7.81	7.38	7.5	7.61	7.72	7.08	7.62	7.61	7.64	8.11	7.44	7.71	7.68
Fluoride	mg/L	0.46	0.5	0.5	0.56	0.63	0.53	0.44	0.48	0.93	0.38	<0.23	--	0.75	--	0.65	--	2.5	--	<0.28	<0.22	0.25
Sulfate	mg/L	622	709	639	824	736	87.4	533	597	220	460	480	550	560	--	400	--	710	--	440	470	340
Total Dissolved Solids	mg/L	1160	1160	1110	1160	1170	955	1090	1020	750	1000	1100	1100	1100	--	1200	--	1200	--	690	780	720
Antimony	ug/L	0.056	<0.15	<0.15	<0.15	<0.15	<0.078	0.11	0.09	--	--	<0.53	--	<0.58	--	--	--	<1.1	--	<1.1	<0.69	<0.69
Arsenic	ug/L	3.6	3.1	3.3	3.4	3.8	5.2	4.7	3.9	--	--	4.3	4.6	3.6	--	4.4	--	4	--	4.1	4	4.1
Barium	ug/L	91.7	93.4	88.6	95.9	87.4	78.3	88	75	--	--	98	100	99	--	110	--	110	--	74	80	66
Beryllium	ug/L	<0.012	<0.12	0.49	<0.12	<0.12	<0.089	<0.089	<0.089	--	--	<0.27	--	<0.27	--	<0.27	--	<0.27	--	<0.27	<0.27	<0.27
Cadmium	ug/L	0.027	<0.07	<0.07	<0.07	<0.07	0.041	0.056	0.036	--	--	<0.039	<0.039	0.045	--	<0.049	--	<0.051	--	<0.051	<0.055	<0.055
Chromium	ug/L	0.1	<0.19	<0.19	<0.19	<0.19	<0.078	0.26	0.23	--	--	<0.98	--	<1.1	--	<1.1	--	<1.1	--	<1.1	<1.1	<1.1
Cobalt	ug/L	0.66	0.81	0.6	0.64	0.57	0.57	0.68	0.72	--	--	0.75	0.85	0.66	--	0.68	--	0.71	--	0.59	0.54	0.42
Lead	ug/L	0.063	<0.12	<0.12	<0.12	<0.12	<0.13	<0.13	<0.13	--	--	<0.27	<0.27	<0.27	--	<0.11	--	<0.21	--	0.58	<0.24	<0.24
Lithium	ug/L	37.1	28.6	29.9	32.2	31.5	36.8	35.6	43.7	--	--	40	39	40	42	52	55	48	59	55	52	63
Mercury	ug/L	<0.09	<0.09	<0.09	<0.09	<0.09	<0.09	<0.09	<0.037	--	--	<0.1	--	<0.1	--	--	--	<0.15	--	<0.15	<0.11	--
Molybdenum	ug/L	35.8	36.4	36.1	44.5	38.2	45.6	39.6	40.6	--	--	40	38	36	--	42	--	59	--	66	83	81
Selenium	ug/L	<0.086	<0.16	0.38	<0.16	<0.16	<0.085	0.13	<0.085	--	--	<1	--	<1	--	--	--	<0.96	--	<0.96	<0.96	<0.96
Thallium	ug/L	<0.036	<0.14	<0.14	<0.14	<0.14	<0.099	<0.099	<0.099	--	--	<0.27	--	<0.26	--	--	--	<0.26	--	<0.26	<0.26	<0.26
Total Radium	pCi/L	0.996	0.0586	0.86	0	0.982	1.12	1.4	0.966	--	--	1.58	0.214	0.36	--	0.51	--	0.261	--	0.307	0.194	0.75
Radium-226	pCi/L	-0.074	0.0586	0.351	0	0.361	0.515	0.324	0.376	--	--	0.0272	0.0568	-0.0459	--	0.224	--	0.0888	--	0.145	0.0542	-0.0579
Radium-228	pCi/L	0.996	-0.195	0.509	-0.435	0.621	0.605	1.08	0.59	--	--	1.56	0.157	0.36	--	0.286	--	0.172	--	0.162	0.139	0.75
pH at 25 Degrees C	Std. Units	7.7	7.8	7.8	7.6	7.4	6.7	7.7	7.7	7.9	7.9	7.8	7.8	7.6	--	7.8	--	7.8	--	7.8	7.7	7.9
Field Specific Conductance	umhos/cm	1509	1432	1395	1468	1469	814	871	1140	907	1294	1329	1446	1428	1557	1445	1479	1464	1178	1038	1100	915
Field Temperature	deg C	10.3	11.9	12.9	14	15.7	12.53	10.73	10.7	10.79	13.09	11.6	10.86	11.1	10.7	15	11.5	12	14.1	15.7	11.2	14.2
Oxygen, Dissolved	mg/L	0.1	0.06	0.08	0.05	0.03	0.32	0.29	0.08	1.37	0.28	0.32	1.46	0.12	0.1	0.09	0.09	0.11	0.13	1.22	0.25	-0.08
Collected By		--	0	0	0	0	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Collected Date		--	--	--	--	9	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Collected Time		--	--	--	--	14	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Field Oxidation Potential	millivolts	0.3	-17	5	12	-172.7	2.1	39.8	-113.1	25.7	43.4	30.8	72.7	209.2	123.2	-97.4	-38.8	-29.2	57.7	161	110.2	118.8
Groundwater Elevation	ft	853.49	854.11	854.57	853.94	856.48	854.91	854.94	854.75	855.96	852.16	854.39	854.14	854.7	853.71	851.13	850.56	852.79	850.67	850	851.82	849.62
Turbidity	NTU	1.09	1.82	0.72	3.29	1	1.75	0.64	4.78	0.78	1.81	0.78	0.74	0.58	1.43	0.02	0.02	0.02	0.78	19.8	4.6	0
Bicarbonate Alkalinity as CaCO3	mg/L	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	170	--	100	--	150
Carbonate Alkalinity as CaCO3	mg/L	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	<4.2	--	<4.6	--	<4.6
Iron, total	ug/L	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	61	--	220	--	85
Magnesium, total	ug/L	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	55000	--	26000	--	25000
Potassium, total	ug/L	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	7000	--	7400	--	7500
Sodium, total	ug/L	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	46000	--	41000	--	34000
Total Alkalinity as CaCO3	mg/L	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	170	--	100	--	150
Manganese, total	ug/L	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	3400	--	1900	--	1800
Iron, dissolved	ug/L	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	<36
Lithium, dissolved	ug/L	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	62
Magnesium, dissolved	ug/L	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	25000
Manganese, dissolved	ug/L	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	1900

Single Location
Name: IPL - Sutherland Generating Station

Location ID: MW-306
Number of Sampling Dates: 25

Parameter Name	Units	4/12/2023	10/19/2023	4/9/2024	10/16/2024
Boron	ug/L	3400	4000	3600	3400
Calcium	mg/L	150	120	140	150
Chloride	mg/L	18	18	18	16
Field pH	Std. Units	7.69	7.72	7.7	7.62
Fluoride	mg/L	<0.38	0.39	<0.38	0.43
Sulfate	mg/L	400	320	350	330
Total Dissolved Solids	mg/L	720	600	1200	940
Antimony	ug/L	<1	<1	<1	<1
Arsenic	ug/L	3.5	4.5	4.4	4.4
Barium	ug/L	63	57	100	71
Beryllium	ug/L	<0.33	<0.33	<0.33	<0.33
Cadmium	ug/L	<0.1	<0.1	<0.1	<0.1
Chromium	ug/L	<1.1	<1.1	<1.2	<1.2
Cobalt	ug/L	0.38	0.29	0.5	0.35
Lead	ug/L	<0.24	<0.24	<0.26	<0.26
Lithium	ug/L	59	62	58	66
Mercury	ug/L	<0.14	<0.14	<0.11	<0.11
Molybdenum	ug/L	76	100	86	89
Selenium	ug/L	<1.4	<1.4	<1.4	<1.4
Thallium	ug/L	<0.26	<0.26	<0.57	<0.57
Total Radium	pCi/L	0.474	1.26	<0.471	0.863
Radium-226	pCi/L	0.0722	-0.0346	0.145	0.0794
Radium-228	pCi/L	0.402	1.26	<0.471	0.784
pH at 25 Degrees C	Std. Units	7.9	7.9	6.2	7.7
Field Specific Conductance	umhos/cm	988	933	1003	1279
Field Temperature	deg C	11.4	13.6	17	14.7
Oxygen, Dissolved	mg/L	0.14	0.6	0.25	0.41
Collected By		--	--	--	--
Collected Date		--	--	--	--
Collected Time		--	--	--	--
Field Oxidation Potential	millivolts	-8.9	27.1	-33.4	114.2
Groundwater Elevation	ft	853.01	849.22	850.41	850.25
Turbidity	NTU	0.02	6.6	8.98	3.97
Bicarbonate Alkalinity as CaCO3	mg/L	--	--	--	--
Carbonate Alkalinity as CaCO3	mg/L	--	--	--	--
Iron, total	ug/L	49	<36	140	44
Magnesium, total	ug/L	--	--	--	--
Potassium, total	ug/L	--	--	--	--
Sodium, total	ug/L	--	--	--	--
Total Alkalinity as CaCO3	mg/L	--	--	--	--
Manganese, total	ug/L	--	--	--	--
Iron, dissolved	ug/L	--	--	--	--
Lithium, dissolved	ug/L	--	--	--	--
Magnesium, dissolved	ug/L	--	--	--	--
Manganese, dissolved	ug/L	--	--	--	--

Single Location
Name: IPL - Sutherland Generating Station

Location ID: MW-306A
Number of Sampling Dates: 4

Parameter Name	Units	4/12/2023	10/18/2023	4/9/2024	10/15/2024
Calcium	mg/L	170	160	170	150
Chloride	mg/L	21	--	--	--
Field pH	Std. Units	7.48	7.35	7.4	7.34
Sulfate	mg/L	210	--	--	--
Lithium	ug/L	38	39	43	36
Field Specific Conductance	umhos/cm	940	1016	972	1107
Field Temperature	deg C	12.6	14.1	12.8	13.6
Oxygen, Dissolved	mg/L	0.11	0.69	0.12	0.21
Field Oxidation Potential	millivolts	-69	-59.2	-104	-58.3
Groundwater Elevation	ft	853.37	849.6	850.79	850.66
Turbidity	NTU	4.53	15.2	2.94	4.77
Bicarbonate Alkalinity as CaCO3	mg/L	340	280	300	260
Carbonate Alkalinity as CaCO3	mg/L	<2.5	<2.5	<5	<2.5
Iron, total	ug/L	510	1000	640	570
Magnesium, total	ug/L	14000	14000	14000	14000
Potassium, total	ug/L	9900	9600	9100	7800
Sodium, total	ug/L	29000	27000	25000	21000
Total Alkalinity as CaCO3	mg/L	340	280	300	260
Manganese, total	ug/L	740	770	680	610

Single Location
Name: IPL - Sutherland Generating Station

Location ID: MW-307
Number of Sampling Dates: 7

Parameter Name	Units	12/9/2021	4/21/2022	10/10/2022	4/10/2023	10/18/2023	4/10/2024	10/14/2024
Boron	ug/L	460	500	420	--	--	--	--
Calcium	mg/L	150	180	170	--	--	--	--
Chloride	mg/L	19	21	17	--	--	--	--
Field pH	Std. Units	6.53	6.62	6.64	6.56	6.58	6.41	6.41
Fluoride	mg/L	<0.28	<0.22	<0.22	--	--	--	--
Sulfate	mg/L	320	350	270	--	--	--	--
Total Dissolved Solids	mg/L	700	750	760	--	--	--	--
Antimony	ug/L	<1.1	<0.69	<0.69	--	--	--	--
Arsenic	ug/L	2.6	4.4	5.9	--	--	--	--
Barium	ug/L	47	46	44	--	--	--	--
Beryllium	ug/L	<0.27	<0.27	<0.27	--	--	--	--
Cadmium	ug/L	0.18	0.35	0.24	--	--	--	--
Chromium	ug/L	<1.1	1.3	<1.1	--	--	--	--
Cobalt	ug/L	6.8	6.8	4.6	--	--	--	--
Lead	ug/L	<0.21	0.92	0.8	--	--	--	--
Lithium	ug/L	22	26	22	24	11	37	22
Mercury	ug/L	<0.15	<0.11	--	--	--	--	--
Molybdenum	ug/L	6.5	4.1	5.8	--	--	--	--
Selenium	ug/L	<0.96	<0.96	<0.96	--	--	--	--
Thallium	ug/L	<0.26	<0.26	<0.26	--	--	--	--
Total Radium	pCi/L	1.83	0.568	0.873	--	--	--	--
Radium-226	pCi/L	0.138	0.0677	0.109	--	--	--	--
Radium-228	pCi/L	1.69	0.5	0.764	--	--	--	--
pH at 25 Degrees C	Std. Units	6.8	6.9	7	--	--	--	--
Field Specific Conductance	umhos/cm	1137	1104	1025	1686	991	1756	1532
Field Temperature	deg C	14.3	10.6	17.3	10.7	14.2	12.3	14.2
Oxygen, Dissolved	mg/L	2.37	0.12	0	-0.06	0.71	0.32	0.33
Field Oxidation Potential	millivolts	52.5	81.3	22.9	136.4	29.8	76	107.1
Groundwater Elevation	ft	--	852.76	850.79	853.97	850.32	851.37	851.63
Turbidity	NTU	13	26.3	44.77	1.27	10.82	17.97	5.33
Bicarbonate Alkalinity as CaCO3	mg/L	--	--	350	--	--	--	--
Carbonate Alkalinity as CaCO3	mg/L	--	--	<4.6	--	--	--	--
Iron, total	ug/L	--	--	2300	620	280	430	790
Magnesium, total	ug/L	--	--	40000	--	--	--	--
Potassium, total	ug/L	--	--	5200	--	--	--	--
Sodium, total	ug/L	--	--	29000	--	--	--	--
Total Alkalinity as CaCO3	mg/L	--	--	350	--	--	--	--
Manganese, total	ug/L	--	--	5500	--	--	--	--
Iron, dissolved	ug/L	--	--	560	--	--	--	--
Lithium, dissolved	ug/L	--	--	21	--	--	--	--
Magnesium, dissolved	ug/L	--	--	39000	--	--	--	--
Manganese, dissolved	ug/L	--	--	5200	--	--	--	--

Single Location
Name: IPL - Sutherland Generating Station

Location ID: MW-308
Number of Sampling Dates: 7

Parameter Name	Units	12/9/2021	4/21/2022	10/10/2022	4/13/2023	10/18/2023	4/10/2024	10/14/2024
Boron	ug/L	330	370	400	--	--	--	--
Calcium	mg/L	96	120	130	--	--	--	--
Chloride	mg/L	17	14	14	--	--	--	--
Field pH	Std. Units	6.96	7.12	6.91	6.73	6.8	6.7	6.74
Fluoride	mg/L	<0.28	<0.22	0.26	--	--	--	--
Sulfate	mg/L	89	120	130	--	--	--	--
Total Dissolved Solids	mg/L	390	390	540	--	--	--	--
Antimony	ug/L	<1.1	<0.69	<0.69	--	--	--	--
Arsenic	ug/L	<0.75	0.9	<0.75	--	--	--	--
Barium	ug/L	69	81	64	--	--	--	--
Beryllium	ug/L	<0.27	<0.27	<0.27	--	--	--	--
Cadmium	ug/L	<0.051	<0.055	<0.055	--	--	--	--
Chromium	ug/L	<1.1	<1.1	<1.1	--	--	--	--
Cobalt	ug/L	2	2.8	2.5	--	--	--	--
Lead	ug/L	0.21	0.34	<0.24	--	--	--	--
Lithium	ug/L	11	15	14	12	16	17	14
Mercury	ug/L	<0.15	<0.11	--	--	--	--	--
Molybdenum	ug/L	<1.3	<1.2	<1.2	--	--	--	--
Selenium	ug/L	<0.96	<0.96	<0.96	--	--	--	--
Thallium	ug/L	<0.26	<0.26	<0.26	--	--	--	--
Total Radium	pCi/L	1.67	0.517	0.763	--	--	--	--
Radium-226	pCi/L	0.0914	-0.031	0.172	--	--	--	--
Radium-228	pCi/L	1.58	0.517	0.591	--	--	--	--
pH at 25 Degrees C	Std. Units	7.2	7.3	7.2	--	--	--	--
Field Specific Conductance	umhos/cm	739	726	780	1160	981	1139	1023
Field Temperature	deg C	13.3	8.9	15	9.3	13.8	11.1	13.7
Oxygen, Dissolved	mg/L	6.33	0.15	-0.1	0.11	0.61	0.14	0.43
Field Oxidation Potential	millivolts	-37.3	105.7	-23.9	47.9	28.5	63.6	129.1
Groundwater Elevation	ft	--	853.08	851.18	852.53	850.64	851.63	852.11
Turbidity	NTU	14	26.9	77.91	40	4.96	18.25	14.38
Bicarbonate Alkalinity as CaCO3	mg/L	--	--	310	--	--	--	--
Carbonate Alkalinity as CaCO3	mg/L	--	--	<4.6	--	--	--	--
Iron, total	ug/L	--	--	710	4700	580	190	1100
Magnesium, total	ug/L	--	--	29000	--	--	--	--
Potassium, total	ug/L	--	--	4800	--	--	--	--
Sodium, total	ug/L	--	--	21000	--	--	--	--
Total Alkalinity as CaCO3	mg/L	--	--	310	--	--	--	--
Manganese, total	ug/L	--	--	1700	--	--	--	--
Iron, dissolved	ug/L	--	--	660	--	--	--	--
Magnesium, dissolved	ug/L	--	--	30000	--	--	--	--
Manganese, dissolved	ug/L	--	--	1700	--	--	--	--

Single Location
Name: IPL - Sutherland Generating Station

Location ID: MW-309
Number of Sampling Dates: 7

Parameter Name	Units	5/12/2022	8/11/2022	10/11/2022	4/11/2023	10/20/2023	4/10/2024	10/15/2024
Boron	ug/L	--	--	1400	--	--	--	--
Calcium	mg/L	--	--	170	140	95	130	120
Chloride	mg/L	--	--	17	19	--	--	--
Field pH	Std. Units	7.42	7.4	7.17	7.25	7.41	7.19	7.11
Fluoride	mg/L	--	--	0.22	--	--	--	--
Sulfate	mg/L	--	--	350	400	--	--	--
Total Dissolved Solids	mg/L	--	--	800	--	--	--	--
Antimony	ug/L	--	--	<0.69	--	--	--	--
Arsenic	ug/L	--	--	2.2	--	--	--	--
Barium	ug/L	--	--	170	--	--	--	--
Beryllium	ug/L	--	--	<0.27	--	--	--	--
Cadmium	ug/L	--	--	0.25	--	--	--	--
Chromium	ug/L	--	--	2.5	--	--	--	--
Cobalt	ug/L	--	--	5.8	--	--	--	--
Lead	ug/L	--	--	2	--	--	--	--
Lithium	ug/L	17	26	24	21	17	26	19
Molybdenum	ug/L	--	--	<1.2	--	--	--	--
Selenium	ug/L	--	--	<0.96	--	--	--	--
Thallium	ug/L	--	--	<0.26	--	--	--	--
Total Radium	pCi/L	--	--	2.39	--	--	--	--
Radium-226	pCi/L	--	--	0.107	--	--	--	--
Radium-228	pCi/L	--	--	2.28	--	--	--	--
pH at 25 Degrees C	Std. Units	--	--	7.6	--	--	--	--
Field Specific Conductance	umhos/cm	937	1065	1017	1017	1128	1028	1184
Field Temperature	deg C	9.5	13.3	11.7	9.7	11.5	10.3	12.1
Oxygen, Dissolved	mg/L	7.66	0.25	0.09	0.44	0.92	0.35	1.04
Field Oxidation Potential	millivolts	191.4	22.3	193.6	96.7	83.8	46.6	115.2
Groundwater Elevation	ft	853.95	849.47	848.44	851.58	848.35	849.58	848.67
Turbidity	NTU	0.08	36.6	653.34	1.69	36.02	12.08	2.71
Bicarbonate Alkalinity as CaCO3	mg/L	--	--	240	220	190	200	190
Carbonate Alkalinity as CaCO3	mg/L	--	--	<4.6	<2.5	<2.5	<5	<2.5
Iron, total	ug/L	--	--	4800	360	950	220	<36
Magnesium, total	ug/L	--	--	51000	41000	30000	39000	36000
Potassium, total	ug/L	--	--	4900	4700	3500	4600	4000
Sodium, total	ug/L	--	--	42000	43000	33000	42000	34000
Total Alkalinity as CaCO3	mg/L	--	--	240	220	190	200	190
Manganese, total	ug/L	--	--	990	98	180	57	97
Iron, dissolved	ug/L	--	--	83	--	--	--	--
Magnesium, dissolved	ug/L	--	--	44000	--	--	--	--
Manganese, dissolved	ug/L	--	--	35	--	--	--	--

Single Location
Name: IPL - Sutherland Generating Station

Location ID: MW-310
Number of Sampling Dates: 7

Parameter Name	Units	5/12/2022	8/11/2022	10/11/2022	4/11/2023	10/20/2023	4/10/2024	10/15/2024
Boron	ug/L	--	--	920	--	--	--	--
Calcium	mg/L	--	--	140	170	130	150	130
Chloride	mg/L	--	--	20	43	--	--	--
Field pH	Std. Units	7.44	7.37	7.1	6.96	7.3	7.16	7.03
Fluoride	mg/L	--	--	<0.22	--	--	--	--
Sulfate	mg/L	--	--	290	460	--	--	--
Total Dissolved Solids	mg/L	--	--	710	--	--	--	--
Antimony	ug/L	--	--	<0.69	--	--	--	--
Arsenic	ug/L	--	--	1.2	--	--	--	--
Barium	ug/L	--	--	55	--	--	--	--
Beryllium	ug/L	--	--	<0.27	--	--	--	--
Cadmium	ug/L	--	--	0.11	--	--	--	--
Chromium	ug/L	--	--	<1.1	--	--	--	--
Cobalt	ug/L	--	--	2.7	--	--	--	--
Lead	ug/L	--	--	2.6	--	--	--	--
Lithium	ug/L	20	19	18	4	20	25	21
Molybdenum	ug/L	--	--	<1.2	--	--	--	--
Selenium	ug/L	--	--	<0.96	--	--	--	--
Thallium	ug/L	--	--	<0.26	--	--	--	--
Total Radium	pCi/L	--	--	1.99	--	--	--	--
Radium-226	pCi/L	--	--	0.499	--	--	--	--
Radium-228	pCi/L	--	--	1.49	--	--	--	--
pH at 25 Degrees C	Std. Units	--	--	7.5	--	--	--	--
Field Specific Conductance	umhos/cm	1044	1001	937	1189	1123	1172	1356
Field Temperature	deg C	9.6	13.3	13.7	7.7	12.3	10.3	12.6
Oxygen, Dissolved	mg/L	4.81	0.14	1.07	2.83	1.81	0.23	0.91
Field Oxidation Potential	millivolts	190.7	29	178.5	88.2	82.1	32.9	115.1
Groundwater Elevation	ft	853.71	849.49	848.31	851.7	848.13	849.52	848.71
Turbidity	NTU	2.91	36.4	217.88	0.02	8.17	2.05	4.02
Bicarbonate Alkalinity as CaCO3	mg/L	--	--	260	260	200	260	200
Carbonate Alkalinity as CaCO3	mg/L	--	--	<4.6	<2.5	<2.5	<5	<2.5
Iron, total	ug/L	--	--	1900	<36	97	<36	<36
Magnesium, total	ug/L	--	--	43000	64000	41000	47000	43000
Potassium, total	ug/L	--	--	4100	220	4100	4300	4200
Sodium, total	ug/L	--	--	39000	36000	41000	45000	40000
Total Alkalinity as CaCO3	mg/L	--	--	260	260	200	260	200
Manganese, total	ug/L	--	--	600	6.6	360	320	170
Iron, dissolved	ug/L	--	--	250	--	--	--	--
Magnesium, dissolved	ug/L	--	--	40000	--	--	--	--
Manganese, dissolved	ug/L	--	--	240	--	--	--	--

Single Location
Name: IPL - Sutherland Generating Station

Location ID: MW-311
Number of Sampling Dates: 7

Parameter Name	Units	5/12/2022	8/11/2022	10/11/2022	4/11/2023	10/20/2023	4/10/2024	10/15/2024
Boron	ug/L	--	--	1400	--	--	--	--
Calcium	mg/L	--	--	150	120	130	120	110
Chloride	mg/L	--	--	19	21	--	--	--
Field pH	Std. Units	7.17	7.27	7.05	7.17	7.16	7.19	6.77
Fluoride	mg/L	--	--	0.33	--	--	--	--
Sulfate	mg/L	--	--	310	260	--	--	--
Total Dissolved Solids	mg/L	--	--	760	--	--	--	--
Antimony	ug/L	--	--	<0.69	--	--	--	--
Arsenic	ug/L	--	--	1.2	--	--	--	--
Barium	ug/L	--	--	120	--	--	--	--
Beryllium	ug/L	--	--	<0.27	--	--	--	--
Cadmium	ug/L	--	--	0.092	--	--	--	--
Chromium	ug/L	--	--	<1.1	--	--	--	--
Cobalt	ug/L	--	--	1.1	--	--	--	--
Lead	ug/L	--	--	0.27	--	--	--	--
Lithium	ug/L	25	31	29	20	33	29	26
Molybdenum	ug/L	--	--	<1.2	--	--	--	--
Selenium	ug/L	--	--	<0.96	--	--	--	--
Thallium	ug/L	--	--	<0.26	--	--	--	--
Total Radium	pCi/L	--	--	0.541	--	--	--	--
Radium-226	pCi/L	--	--	-0.0307	--	--	--	--
Radium-228	pCi/L	--	--	0.541	--	--	--	--
pH at 25 Degrees C	Std. Units	--	--	7.5	--	--	--	--
Field Specific Conductance	umhos/cm	1017	952	977	847	1075	898	1100
Field Temperature	deg C	7.9	15	14.9	6.9	13.9	8.4	15.1
Oxygen, Dissolved	mg/L	5.15	0.71	0.16	1.88	1.62	0.54	1.13
Field Oxidation Potential	millivolts	199.6	39.7	160.3	112.9	93.7	38.7	154.1
Groundwater Elevation	ft	853.56	849.46	848.21	851.72	847.99	849.44	848.72
Turbidity	NTU	0.67	32	4.89	0.02	7.5	31.96	6.6
Bicarbonate Alkalinity as CaCO3	mg/L	--	--	250	240	220	200	210
Carbonate Alkalinity as CaCO3	mg/L	--	--	<4.6	<2.5	<2.5	<5	<2.5
Iron, total	ug/L	--	--	1400	<36	47	<36	<36
Magnesium, total	ug/L	--	--	37000	31000	34000	30000	29000
Potassium, total	ug/L	--	--	5200	3600	5100	3900	3800
Sodium, total	ug/L	--	--	45000	39000	43000	36000	33000
Total Alkalinity as CaCO3	mg/L	--	--	250	240	220	200	210
Manganese, total	ug/L	--	--	510	45	87	33	67
Iron, dissolved	ug/L	--	--	<36	--	--	--	--
Magnesium, dissolved	ug/L	--	--	36000	--	--	--	--
Manganese, dissolved	ug/L	--	--	100	--	--	--	--

Single Location
Name: IPL - Sutherland Generating Station

Location ID: MW-312
Number of Sampling Dates: 4

Parameter Name	Units	4/11/2023	10/19/2023	4/9/2024	10/16/2024
Boron	ug/L	--	1400	1300	1300
Calcium	mg/L	140	120	130	120
Chloride	mg/L	17	17	17	17
Field pH	Std. Units	7.7	7.52	7.45	7.64
Fluoride	mg/L	--	<0.38	<0.38	<0.38
Sulfate	mg/L	240	250	230	270
Total Dissolved Solids	mg/L	--	560	570	550
Antimony	ug/L	--	<1	<1	<1
Arsenic	ug/L	--	1.2	1.1	1
Barium	ug/L	--	56	48	54
Beryllium	ug/L	--	<0.33	<0.33	<0.33
Cadmium	ug/L	--	<0.1	<0.1	<0.1
Chromium	ug/L	--	<1.1	<1.2	<1.2
Cobalt	ug/L	--	0.96	0.91	0.83
Lead	ug/L	--	<0.24	<0.26	<0.26
Lithium	ug/L	58	66	75	58
Mercury	ug/L	--	<0.14	<0.11	<0.11
Molybdenum	ug/L	--	33	31	31
Selenium	ug/L	--	<1.4	<1.4	<1.4
Thallium	ug/L	--	<0.26	<0.57	<0.57
Total Radium	pCi/L	--	1.02	<0.532	0.212
Radium-226	pCi/L	--	0.00562	<0.109	0.088
Radium-228	pCi/L	--	1.02	<0.532	0.124
pH at 25 Degrees C	Std. Units	--	7.8	7.8	8
Field Specific Conductance	umhos/cm	848	934	870	1108
Field Temperature	deg C	10.5	14.4	11.7	15.3
Oxygen, Dissolved	mg/L	0.1	1.3	0.13	0.22
Field Oxidation Potential	millivolts	19.4	7.5	-49.3	-0.9
Groundwater Elevation	ft	853.47	849.64	850.82	850.81
Turbidity	NTU	0.02	10	3.78	2.75
Bicarbonate Alkalinity as CaCO3	mg/L	260	170	240	180
Carbonate Alkalinity as CaCO3	mg/L	<2.5	<2.5	<5	<2.5
Iron, total	ug/L	72	90	65	<36
Magnesium, total	ug/L	22000	23000	23000	24000
Potassium, total	ug/L	7500	7700	7900	7300
Sodium, total	ug/L	26000	26000	25000	25000
Total Alkalinity as CaCO3	mg/L	260	170	240	180
Manganese, total	ug/L	1400	1200	1100	1200

Single Location
Name: IPL - Sutherland Generating Station

Location ID: MW-312A
Number of Sampling Dates: 2

Parameter Name	Units	4/9/2024	10/16/2024
Calcium	mg/L	140	140
Field pH	Std. Units	7.28	7.46
Lithium	ug/L	38	34
Field Specific Conductance	umhos/cm	983	1220
Field Temperature	deg C	12.8	13.9
Oxygen, Dissolved	mg/L	0.59	0.26
Field Oxidation Potential	millivolts	-102.3	-78.1
Groundwater Elevation	ft	850.85	850.78
Turbidity	NTU	15.25	13.92
Bicarbonate Alkalinity as CaCO3	mg/L	250	260
Carbonate Alkalinity as CaCO3	mg/L	<5	<2.5
Iron, total	ug/L	1200	1000
Magnesium, total	ug/L	24000	25000
Potassium, total	ug/L	7500	6800
Sodium, total	ug/L	28000	25000
Total Alkalinity as CaCO3	mg/L	250	260
Manganese, total	ug/L	760	700

Single Location
Name: IPL - Sutherland Generating Station

Location ID: MW-313
Number of Sampling Dates: 4

Parameter Name	Units	4/12/2023	10/19/2023	4/10/2024	10/15/2024
Calcium	mg/L	150	130	140	140
Chloride	mg/L	15	--	--	--
Field pH	Std. Units	7.03	7.21	7.04	6.96
Sulfate	mg/L	290	--	--	--
Lithium	ug/L	25	44	44	43
Field Specific Conductance	umhos/cm	1013	1076	1015	1222
Field Temperature	deg C	9.7	12.7	10.8	13.8
Oxygen, Dissolved	mg/L	0.07	1.3	0.06	1.89
Field Oxidation Potential	millivolts	61.1	39	2.5	81.4
Groundwater Elevation	ft	853.15	849.41	850.65	850.34
Turbidity	NTU	4.45	13.24	6.39	2.33
Bicarbonate Alkalinity as CaCO3	mg/L	340	180	290	270
Carbonate Alkalinity as CaCO3	mg/L	<2.5	<2.5	<5	<2.5
Iron, total	ug/L	200	110	55	46
Magnesium, total	ug/L	37000	31000	32000	33000
Potassium, total	ug/L	4100	5500	5400	5300
Sodium, total	ug/L	30000	34000	32000	27000
Total Alkalinity as CaCO3	mg/L	340	180	290	270
Manganese, total	ug/L	4100	3200	3100	3200

Single Location
Name: IPL - Sutherland Generating Station

Location ID: MW-314
Number of Sampling Dates: 4

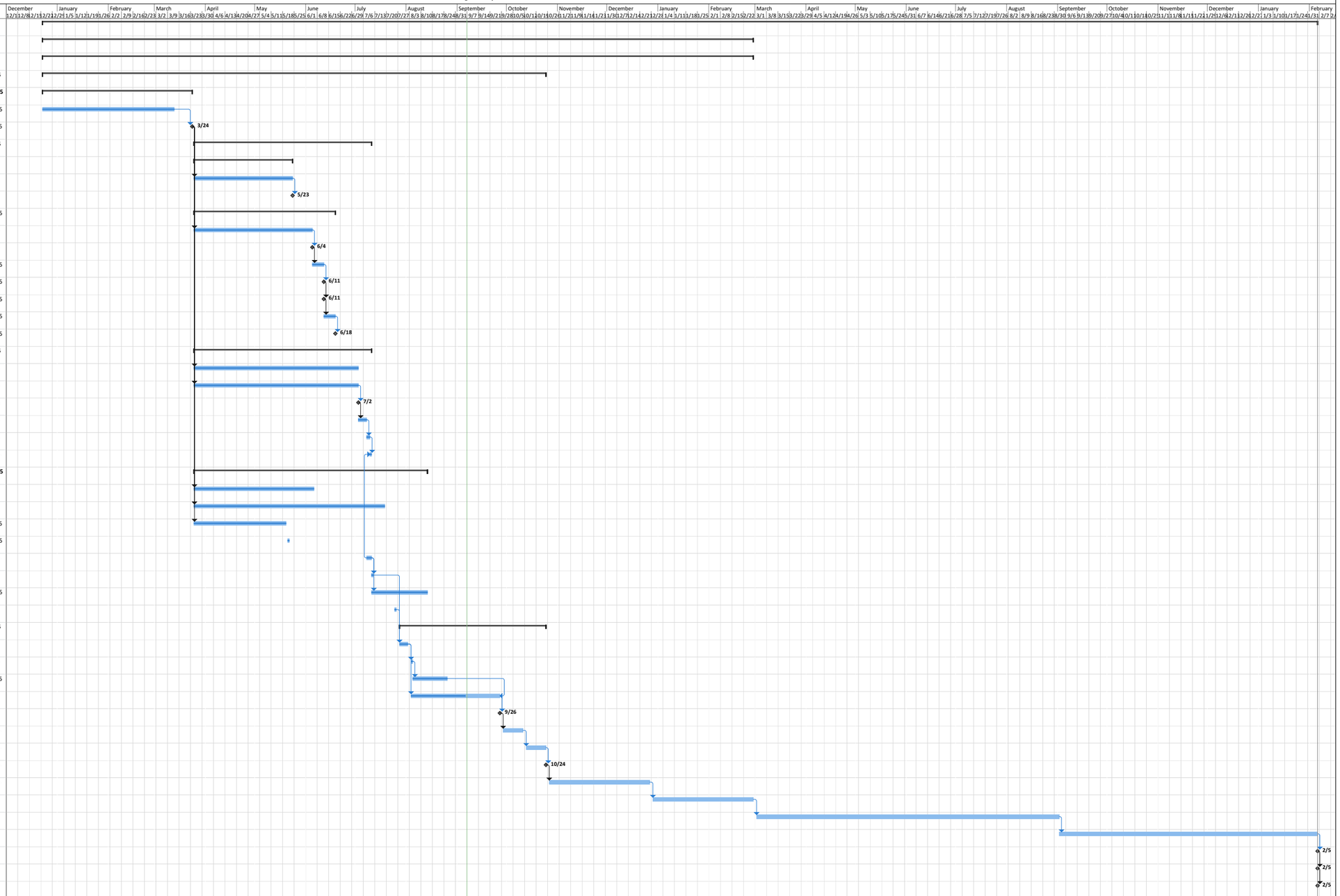
Parameter Name	Units	4/13/2023	10/19/2023	4/10/2024	10/15/2024
Calcium	mg/L	130	140	140	140
Chloride	mg/L	18	--	--	--
Field pH	Std. Units	7.26	7.15	7.15	7
Sulfate	mg/L	310	--	--	--
Lithium	ug/L	32	35	37	44
Field Specific Conductance	umhos/cm	967	1195	1102	1319
Field Temperature	deg C	7.4	13.4	9	14.7
Oxygen, Dissolved	mg/L	0.22	2.14	0.53	1.72
Field Oxidation Potential	millivolts	55.4	78.3	46.9	123.2
Groundwater Elevation	ft	852.77	849.05	850.35	849.91
Turbidity	NTU	30	26.17	6.11	4.4
Bicarbonate Alkalinity as CaCO3	mg/L	250	210	250	250
Carbonate Alkalinity as CaCO3	mg/L	<2.5	<2.5	<5	<2.5
Iron, total	ug/L	790	620	<36	<36
Magnesium, total	ug/L	37000	40000	40000	35000
Potassium, total	ug/L	4900	5900	5000	5800
Sodium, total	ug/L	38000	47000	38000	38000
Total Alkalinity as CaCO3	mg/L	250	210	250	250
Manganese, total	ug/L	640	800	540	640

Appendix B

Estimated Groundwater Corrective Action Schedule

Groundwater Corrective Action
Former Sutherland Generating Station (SGS)
SCS Engineers Project #25222189.00

ID	Task Name	Duration	Start	Finish
1	**Remedy Design**	**539 days**	**Mon 12/23/24**	**Fri 2/5/27**
2	**Groundwater Collection System Design**	**301 days**	**Mon 12/23/24**	**Fri 2/27/26**
3	**Extraction System Design**	**301 days**	**Mon 12/23/24**	**Fri 2/27/26**
4	**72-Hour Pumping Test**	**215 days**	**Mon 12/23/24**	**Fri 10/24/25**
5	Prep Scope & Cost for 72-Hr Pumping Test	**63 days**	**Mon 12/23/24**	**Mon 3/24/25**
6	Submit Scope & Cost for 72-Hr Pumping Test to Alliant	56 days	Mon 12/23/24	Wed 3/12/25
7	PO Issued for 72-Hr Pumping Test	0 days	Mon 3/24/25	Mon 3/24/25
8	**Permit 72-Hr Pumping Test**	**76 days**	**Tue 3/25/25**	**Thu 7/10/25**
9	City of Marshalltown Floodplain Permit	44 days	Tue 3/25/25	Fri 5/23/25
10	Email to City of Marshalltown inquiring About Floodplain Permit Need	44 days	Tue 3/25/25	Fri 5/23/25
11	City No Permit Required Letter Issued	0 days	Fri 5/23/25	Fri 5/23/25
12	Marshall County Well Permits	61 days	Tue 3/25/25	Wed 6/18/25
13	Draft County Well Permit Application	51 days	Tue 3/25/25	Wed 6/4/25
14	Submit Draft County Well Permit Application to Alliant	0 days	Wed 6/4/25	Wed 6/4/25
15	Alliant Review/Comment on Draft County Well Permit Application	5 days	Thu 6/5/25	Wed 6/11/25
16	Finalize County Well Permit Application	0 days	Wed 6/11/25	Wed 6/11/25
17	Submit County Well Permit Application	0 days	Wed 6/11/25	Wed 6/11/25
18	County Review of Well Permit Application	5 days	Thu 6/12/25	Wed 6/18/25
19	County Well Permits Issued	0 days	Wed 6/18/25	Wed 6/18/25
20	GP#6	**76 days**	**Tue 3/25/25**	**Thu 7/10/25**
21	Draft WWPPP	71 days	Tue 3/25/25	Wed 7/2/25
22	Draft Field Office Notification Form	71 days	Tue 3/25/25	Wed 7/2/25
23	Submit Draft WWPPP and FO Notification Form to Alliant	0 days	Wed 7/2/25	Wed 7/2/25
24	Alliant Review of Draft WWPPP and FO Notification Form	2 days	Thu 7/3/25	Mon 7/7/25
25	Finalize WWPPP Updates	2 days	Tue 7/8/25	Wed 7/9/25
26	Finalize/Submit Field Office Notification Form	1 day	Thu 7/10/25	Thu 7/10/25
27	**Install 72-Hr Pumping Test Wells**	**100 days**	**Tue 3/25/25**	**Wed 8/13/25**
28	Drilling Subcontracting	52 days	Tue 3/25/25	Thu 6/5/25
29	Surveying Subcontracting	82 days	Tue 3/25/25	Fri 7/18/25
30	Utility Locate Subcontracting	40 days	Tue 3/25/25	Mon 5/19/25
31	Utility Locate	1 day	Wed 5/21/25	Wed 5/21/25
32	Drilling (6" Pumping Well, 2 x 2" Observations Wells)	3 days	Tue 7/8/25	Thu 7/10/25
33	Well Development	1 day	Fri 7/11/25	Fri 7/11/25
34	Well Documentation	24 days	Fri 7/11/25	Wed 8/13/25
35	Survey Well Locations/TOCs	1 day	Fri 7/25/25	Fri 7/25/25
36	**72-Hr Pumping Test**	**64 days**	**Mon 7/28/25**	**Fri 10/24/25**
37	Execute 72-Hr Pumping Test	5 days	Mon 7/28/25	Fri 8/1/25
38	Submit 72-Hr Pumping Test Samples to Lab	1 day	Mon 8/4/25	Mon 8/4/25
39	Lab Analysis of 72-Hr Pumping Test Samples	15 days	Tue 8/5/25	Mon 8/25/25
40	Prepare Draft 72-Hr Pumping Test Results Memo	39 days	Mon 8/4/25	Fri 9/26/25
41	Submit Draft 72-Hr Pumping Test Results Memo to Alliant	0 days	Fri 9/26/25	Fri 9/26/25
42	Alliant Review of Draft 72-Hr Pumping Test Results Memo	10 days	Mon 9/29/25	Fri 10/10/25
43	Finalize 72-Hr Pumping Test Results Memo	10 days	Mon 10/13/25	Fri 10/24/25
44	Submit Final 72-Hr Pumping Test Results Memo to Alliant	0 days	Fri 10/24/25	Fri 10/24/25
45	Well Layout and Design	42 days	Mon 10/27/25	Fri 12/26/25
46	Pump Selection	44 days	Mon 12/29/25	Fri 2/27/26
47	Treatment System Design	130 days	Mon 3/2/26	Tue 9/1/26
48	Facilities, Process and Control Design	108 days	Wed 9/2/26	Fri 2/5/27
49	Remedy Implementation	0 days	Fri 2/5/27	Fri 2/5/27
50	Remedy O&M	0 days	Fri 2/5/27	Fri 2/5/27
51	Ending Corrective Action	0 days	Fri 2/5/27	Fri 2/5/27



Project: SGS Corrective Action
Date: Sun 9/7/25

Task | Split | Milestone | Summary | Project Summary | External Tasks | External Milestone | Inactive Task | Inactive Milestone | Inactive Summary | Manual Task | Duration-only | Manual Summary Rollup | Manual Summary | Start-only | Finish-only | Deadline | Baseline | Baseline Milestone | Baseline Summary | Progress | Manual Progress