# Attachment A – Responses to Questions in February 26, 2024 AIR

| **AIR:** 1 |
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| **Request:** *Exhibit A does not describe the recreation facilities you propose to maintain or the access roads you propose to include within your proposed project boundary. These facilities are described in Exhibit E but should also be described in Exhibit A. Therefore, please revise Exhibit A to include descriptions of these proposed facilities.* |
| **Response:** Recreation Facilities – At a meeting with FERC staff on March 12, 2024, NorthWestern was told that recreation facilities do not need to be described in Exhibit A since they are fully described in the Recreation Management Plan.<br>Access Roads – NorthWestern has revised Exhibit A to include a description of the Project's access roads. These revisions appear in Exhibit A, Section 5.3. An updated version of Exhibit A appears in Attachment B. |
| **AIR:** 2 |
| ***Request:*** *While section 1.3.7 of Exhibit E states that the project is not located within a protected area, we nevertheless need to understand how the project would or would not be consistent with Appendix B of the Northwest Power Planning Council's (Council) Program as required by the Pacific Northwest Electric Power Planning and Conservation Act. The license application does not include any evidence that you consulted with the Council and the Council does not appear on the distribution list for either the draft license application or the final license application. Therefore, please provide a copy of your license application to the Council and allow them 30 days to respond to your request for comments. Please provide evidence of this consultation along with an updated description of how the proposed project would or would not be consistent with the Columbia River Basin Fish and Wildlife Program based on any feedback received from the Council.* |
| **Response:** NorthWestern submitted a request to the Northwest Power and Planning Council (Council) on April 8, 2024, requesting its review and comment on the Final License Application.<br>The Council responded by letter dated April 25, 2024. The Council's comment letter confirmed that the Project is not located in a protected area, and states that, "From the Council's perspective, NorthWestern is working appropriately to address the development standards in the Council's fish and wildlife program."<br>NorthWestern's letter to the Council seeking comment on the Final License Application, together with the Council's response letter, appear in Attachment E.<br>NorthWestern has updated the description of how the project would be consistent with the Columbia River Basin Fish and Wildlife Program in Exhibit E, Table 18-1. |
| **AIR:** 3 |
| **Request:** *Section 2.2.4 and 5.4.2 of Exhibit E states that you propose to develop a "drawdown management plan" within two years of license issuance which is characterized as a geology and soils measure. Staff assume the plan would include measures intended to reduce erosion and shoreline slumping caused by deep drawdowns that are periodically needed for maintenance or repairs at the project. However, you do not elaborate on what types of measures you considering. Table 4-3 of Exhibit D, Estimated costs for proposed PM&E environmental measures, identifies a $12,000 capital cost for developing the plan and $1,600 in annual costs for implementing the plan. Please describe the types of measures you are considering that would make up the basis for the $1,600 annual cost. We understand it may be your preference to finalize these types of plans post-licensing; however, we cannot evaluate the adequacy of your proposed measure at minimizing effects on aquatic and soil resources at the project, the relationship of the measure to project effects, or the estimated cost of implementing the plan without knowing what measures would likely be included in the plan.* |
| **Response:** NorthWestern estimates that it will cost $12,000 in capital costs to develop a Drawdown Management Plan, and $1,600 annually to implement the Drawdown Management Plan. NorthWestern's proposal is to develop the Drawdown Management Plan within 2 years of issuance of the new license. Development of the Drawdown Management Plan will involve work internally and with consultants to review the data collected during previous drawdowns in order to develop appropriate drawdown rates, monitoring plans, and emergency response protocols.<br>The annual expenditure is an annualized cost based on the expectation that drawdowns may need to occur approximately once every five years. This expenditure would be to implement the procedures and monitoring that would be described in the Drawdown Management Plan, if a drawdown were to occur during a given water year. The monitoring measures are likely to include visual monitoring during the drawdown, installation and monitoring of |

temporary arrays of monitoring pins during the drawdown, and monitoring of slope stability by boat. The Drawdown Management Plan will include specific measures to be implemented at different elevations, with more intensive monitoring at elevations that are more likely to result in slope instability.

**AIR:** 4

**Request:** *Section 2.1.1.1 of Exhibit E, Project Upstream Fish Passage Facility, states "the sampling/pool crowder (also referred to as the work station) has 3 cubic feet per second (cfs) flowing and the ladder has 6 cfs flowing pool-to-pool. Attractant flows include options of 20 cfs from the high velocity jet (HVJ) and maximum of 54 cfs from the auxiliary water system. Thus, the passage facility may utilize between 9 and 83 cfs. In addition to these operating and attractant flows at the ladder, part of one Main Channel Dam spill panels near the upstream fish passage facility may be opened to provide an additional fish attractant flow of approximately 100 to 125 cfs." We will need to understand how NorthWestern Energy has been operating these various attraction flow sources under existing conditions and how you intend to operate them under your proposal. For instance, do you typically provide attraction flows of 20 cfs via the high velocity jet and 54 cfs through the auxiliary system at all times as flows allow while operating the fish passage facility or do you adjust attraction flow via each of these sources based on the season or based on river flow conditions? What conditions trigger opening the spill panel nearest the fish passage facility to provide additional attraction flows? Please describe how all these attraction flow mechanisms are utilized throughout the year both under current conditions and under your proposed operation.*

**Response:** An attractant flow study began in 2011 for the first three years of ladder operations (2011, 2012, 2013) to test variable attraction flows and learn best fish passage facility operational protocols. Based on observations in the first two years of study (2011, 2012), the Licensee, USFWS, FWP, and CSKT determined that during non-spill periods the high velocity jet and auxiliary water supply should be operated at maximum capacity in order to provide sufficient attraction flow and flow through the natural falls, immediately downstream of the Main Channel Dam[1]. Attraction flows have been operated at or near the maximum throughout the operating season (March-October) since 2013.

Beginning in 2013, additional attraction flow was added by partially opening a spill panel to provide more flow through the natural falls, immediately below the Main Channel Dam. This flow facilitates fish movement during periods of non-spill. This additional attractant discharge has been variably located from gate 4 to gate 16. From 2019 to 2023 the location of the half panel has been gates 3, 4, or 5.

During 2020 NorthWestern, in cooperation with FWP, tested and evaluated the impact of the additional attractant flow on fish collection at the ladder. The results were dependent on fish species, but the data indicate the addition of attraction flow via the installation of the half panel along the right bank does not provide a significant increase in fish captured at the ladder during non-spill period (streamflow less than 23,000 cfs)[2]. This information regarding current attraction flow operations has been added to Section 2.1.1.1 of Exhibit E.

Regarding proposed future attraction flow operations at the fish passage facility under the new license, that is a subject of ongoing and active settlement negotiations between NorthWestern, U.S. Fish and Wildlife Service (FWS), U.S. Forest Service (USFS), Montana Fish, Wildlife and Parks (FWP), and the Confederated Salish and Kootenai Tribes (CSKT). For that reason, NorthWestern is not in a position to provide an accurate response to Commission staff at this time, as these proposals are still under development as part of the settlement process.

NorthWestern is requesting a 180-day extension (i.e., until November 19, 2024) to submit its response regarding future attraction flows at the upstream fish passage facility.

**AIR:** 5

***Request:*** *Sections 2.2.4 and 7.2.2 of Exhibit E states that you propose to develop a "Fisheries and Aquatic Resources PM&E Plan" plan for improving upstream fish passage for native fish. You state that the plan would include the following measures, at a minimum: (1) during the first five years of implementation, deploy up to 8 submersible PIT antenna below the Main Channel Dam to evaluate the finer scale fish movements in the near field of the fish passage facility; (2) prepare a summary report discussing the results of the 5-year study period; (3) develop an "upstream passage improvement plan" during the next 5-year period based on the study results that includes evaluations to improve capture efficiencies of the upstream fish passage facility, any proposed operational changes, and a plan and schedule to complete any facility modifications that are determined necessary to improve upstream passage efficiency; and (4) improvements to downstream fish passage of bull trout at the project. Table 4-3 of Exhibit D, Estimated costs for proposed PM&E environmental measures, identifies a $200,000 annual cost for implementing this plan. However, because this plan has not yet been developed, there should be a capital cost associated with developing the plan and an annual cost for implementing measures contained in the plan. Please provide an*

[1] PPL Montana, LLC. 2014. 2013 Annual Activity, Fish Passage, and Bull Trout Take Report. Thompson Falls Hydroelectric Project. Filed with FERC March 20, 2014.

[2] NorthWestern Energy, 2021. 2020 Annual Activity, Fish Passage and Bull Trout Take Report. Thompson Falls Hydroelectric Project. Filed with FERC March 23, 2021.

*estimated capital cost for developing the plan. Additionally, for the $200,000 annual cost, please include an itemized breakdown of costs for each of the associated measures such as a cost for deploying the PIT antenna array and monitoring fish movements for the first five years and a cost for developing an upstream passage improvement plan based on the study results. Please revise Table 4-3 in Exhibit D to include these costs.*

*Additionally, your measure for making "improvements to downstream fish passage of bull trout at the project" is too vague for staff to evaluate. Please include a list of conceptual measures you are considering for improving downstream fish passage for bull trout along with their associated costs in your response.*

**Response:** Details to be included in the Fisheries and Aquatic Resources PM&E Plan are still under negotiation as part of the settlement process with FWS, USFS, FWP and CSKT. Therefore, no estimate for capital costs to develop the Fisheries and Aquatics PM&E Plan have been included at this time. NorthWestern is requesting a 180-day extension in order to allow sufficient time to reach settlement on these matters. NorthWestern will submit a revised Table 4-3 of Exhibit D following the conclusion of settlement negotiations.

Costs for environmental measures for fisheries included in Section 2.2.4 and 7.2.2 of Exhibit E of the FLA have been itemized and are included in Table 4-3, below. Costs were estimated to implement the proposed PM&E measures on a recurring annual basis and for one-time capital costs to purchase submersible PIT tag arrays. The capital costs were annualized over a 30-year period and added with the annual costs of implementation, resulting in a total annualized costs for the Project PM&E as proposed, rounded to the nearest $1,000. Project PM&E costs for the fisheries and aquatics are for those measures included in the FLA and may change in response to NorthWestern reaching settlement.

**Exhibit D – Table 4-3, Estimated costs for proposed PM&E environmental measures, Revised.**

| PM&E Measure | Capital Cost | Annual Cost | Annualized Cost[3] |
|---|---|---|---|
| **Fisheries** | | | |
| Implement Fisheries and Aquatic Resources PM&E Plan (mitigation and continued operation of the TAC) | | $200,000 | $200,000 |
| Annual staffing for upstream fish passage facility | | $100,000 | $100,000 |
| Operate and maintain the upstream fish passage facility | $1,500,000[4] | $100,000 | $150,000 |
| Fisheries monitoring staffing (annual population monitoring, PIT arrays, telemetry) | | $150,000 | $150,000 |
| Submersible PIT tag arrays - equipment | $100,000 | | $3,000 |
| Minimum instream flows | | $5,000 | $5,000 |
| **Water Quality** | | | |
| Implement Thompson Falls Water Quality Monitoring Plan | | $40,000 | $40,000 |
| Implement the TDG Control Plan | | $13,100 | $13,000 |
| **Terrestrial Resources** | | | |
| Implement annual noxious weed control measures | | $35,000 | $35,000 |
| Manage the shoreline pursuant to FERC's Standard Land Use Articles | | $25,000 | $25,000 |
| **Geology** | | | |
| Develop and implement a Drawdown Management Plan | $12,000 | $1,600 | $2,000 |
| **Recreation** | | | |
| Implement Recreation Management Plan - Project Management | | $66,000 | $66,000 |
| Power Park Operation and Maintenance | | $26,900 | $27,000 |
| Island Park - Operation and Maintenance | | $33,200 | $33,000 |
| South Shore Dispersed Area - Operation and Maintenance | | $17,600 | $18,000 |
| Wild Goose Landing Park - Operation and Maintenance | | $44,900 | $45,000 |
| Cherry Creek Boat Launch - Operation and Maintenance | | $23,750 | $24,000 |
| Wild Goose Landing Park - Bathroom and dock improvements | $200,000 | | $7,000 |
| Cherry Creek Boat Launch Site - boat launch improvements | $125,000 | | $4,000 |
| **Cultural Resources** | | | |
| Implement HPMP | | $55,000 | $55,000 |
| **Total** | $1,937,000 | $937,050 | $1,002,000 |

Regarding measures under consideration to be included in the PM&E Plan and for improving downstream fish passage for Bull Trout, both are the subject of ongoing and active settlement negotiations between NorthWestern, FWS, USFS, FWP, and the CSKT. For that reason, NorthWestern is not in a position to provide an accurate response to Commission staff at this time, as these proposals are still under development as part of the settlement process.

NorthWestern is requesting a 180-day extension (i.e., until November 19, 2024) to submit its response regarding downstream fish passage PM&E measures and costs.

**AIR:** 6

**Request:** *Sections 2.2.4 and 7.2.2 of Exhibit E states that you propose to develop "an engineered solution to provide adequate flow to the upstream fish passage facility at all water surface elevations down to 2.5 feet below full pool. This work will be completed prior to NorthWestern's implementation of flexible generation between 2.0-2.5 feet below full pool during periods when the fish passage facility is operating." This measure is too vague for staff to evaluate. Please identify what conceptual "engineering solution" options are being considered for maintaining adequate flow to the upstream fish passage facility under your proposed operation as well as their associated costs.*

[3] Rounded to nearest $1,000

[4] NorthWestern has included the high cost estimate for modifications to the fish passage facility, but intends to work to reduce costs as possible.

**Response:** Conceptual engineering solutions to provide adequate flow to the upstream fish passage facility are described in Attachment J, Technical Memorandum, Conceptual Modifications to the Upstream Fish Passage Facility.

**AIR:** 7

**Request:** *Sections 2.2.4.2 and 6.8.2 of Exhibit E states that you propose within 1 year of license issuance to consult with Montana Department of Environmental Quality (Montana DEQ) and update the 2010 Total Dissolved Gas (TDG) Control Plan submitted with the license application to "incorporate data that have been collected during the recently completed relicensing studies." You state that the plan would include at a minimum: (1) a requirement to monitor TDG at the project for three consecutive years to validate the updated TDG Control Plan and (2) a monitoring and reporting schedule in years where the most probable (50 percent) April 1 Natural Resources Conservation Service runoff forecast for the U.S. Geological Survey Clark Fork River near Plains stream gage no. 12389000) is at or above 125 percent. Earlier in section 2.1.3.3 of Exhibit E, you state that "the typical spillway opening sequence may be modified to optimize the use of the radial gates and minimize TDG as defined in the TDG Control plan." Again, we understand it may be your preference to finalize this plan post-licensing. However, given that you completed a two-year study evaluating TDG under various sequencing options for operating your radial gates at the Main Channel Dam, you should be able to provide draft proposals for addressing TDG based on the results of your prefiling study now. Therefore, please develop your proposed procedures for addressing TDG based on the results of your prefiling TDG study (including any revised sequencing procedures for operating your radial gates on the Main Channel Dam) and provide these proposals to the Montana DEQ for review and comment before filing them with the Commission. Please allow Montana DEQ 30 days to review your draft procedures. Your response should include documentation of the consultation, any recommendations and comments provided by Project No. 1869-060 Appendix B A-4 the Montana DEQ on your proposal, and any recommendations you have considered but rejected and the basis for such rejection.*

**Response:** NorthWestern has prepared a TDG Control Plan, which was submitted to DEQ for review and comment on April 5, 2024. On May 6, 2024, DEQ responded. NorthWestern revised the TDG Control Plan in response to DEQ's comments, and the final TDG Control Plan, together with the consultation record between NorthWestern and DEQ, appear in Attachment G.

Now that the TDG Control Plan has been finalized, NorthWestern requests the Commission to approve it as part of its relicensing order. NorthWestern proposes an article in the new license that provides as follows:

*Article ___. Total Dissolved Gas Control Plan. The Total Dissolved Gas Control Plan, filed on May 23, 2024, is approved. Upon the effective date of the license, the licensee shall implement the Total Dissolved Gas Control Plan. Any changes to the approved Total Dissolved Gas Control Plan require Commission approval prior to implementation of such change.*

**AIR:** 8

**Request:** *Your proposed Recreation Management Plan in Appendix D of Exhibit E outlines various measures, including (1) maintenance and operation of additional and expanded recreation facilities and (2) a recreation report that will be filed every 12 years that includes visitor monitoring, visitor surveys, and condition assessments. In table 4-3 in Exhibit D, you provide a $200,000 capital cost for the Recreation Management Plan and an annual implementation cost of $189,000. Please explain what the $200,000 capital cost entails. Please also explain what measures are reflected in your $189,000 annual costs for implementing the plan.*

**Response:** The $200,000 in capital costs are for facility upgrades for a new bathroom and replacement docks at Wild Goose Landing Park. In addition, NorthWestern is estimating $125,000 in capital costs for boat launch improvements at Cherry Creek Boat Launch Site. These costs have been itemized in Table 4-3 of Exhibit D. An updated version of Table 4-3 of Exhibit D appears in the response to AIR #5.

The $189,000 in annual implementation costs are for NorthWestern's recreation management responsibilities, including administration, staffing, supplies, and site maintenance, for each recreation site identified in the Recreation Management Plan. Annual maintenance at the Cherry Creek Boat Launch Site adds an additional $24,000 in annual expenses. These costs are itemized for each site in a revised Table-4-3 of Exhibit D, found in the response to AIR#5.

NorthWestern notes that since its filing of the Final License Application in December 2023, it has worked with Sanders County, Montana, in resolving issues related to the Cherry Creek Boat Launch Site. To date, this has not been a Project recreation site. Going forward, under the new license for the Project, NorthWestern has acquired necessary land use rights and agreed to add Cherry Creek Boat Launch Site as a Project-sponsored recreational facility under the Recreation Management Plan. To accommodate this change, NorthWestern has updated:

- Exhibit E Section E Section 11.2 (an updated version appears in Attachment C).
- Exhibit G (an updated version appears in Attachment D).
- Recreation Management Plan (an updated version appears in Attachment H)

Additional text has been added to Exhibit H Section 2.10 – Additional Lands Notification, to include, "*The Cherry Creek Boat Launch recreation site. Under the current license, Cherry Creek Boat Launch is not a recreation site and is outside of the Project boundary. NorthWestern seeks to add Cherry Creek Boat Launch as a project recreation site under the new license. Therefore, NorthWestern proposes to modify the Project boundary to include the recreation site. The land to be added to the proposed Project boundary is owned by Sanders County. NorthWestern met with representatives of the Sanders County to discuss the proposed Project boundary and acquiring appropriate land use rights for the area (see consultation record in Exhibit E Section 19). NorthWestern has acquired an easement from Sanders County to operate and maintain the entire recreation site.*"

NorthWestern respectfully requests the Commission, as part of its relicensing order, to approve the now-final Recreation Management Plan and adopt it as an article in the new license. NorthWestern proposes an article in the new license that provides as follows:

*Article ___. Recreation Management Plan. The Recreation Management Plan, filed on May 23, 2024, is approved. Upon the effective date of the license, the licensee shall implement the Recreation Management Plan. Any changes to the approved Recreation Management Plan require Commission approval prior to implementation of such change.*

**AIR:** 9

**Request:** *Section 12.4.2 of Exhibit E states that a "new" Area of Potential Effect (APE) is proposed based on your project boundary modifications. Your responses to comments in Table 19-2 in Exhibit E states that the Montana State Historic Preservation Officer (Montana SHPO) concurred with the "new" APE on December 20, 2023. In section 2.4 of the revised Historic Properties Management Plan (HPMP), which was filed as privileged as Appendix F of Exhibit E, you define the APE as "lands within the project boundary as proposed in the relicensing application" which would be 1,536 acres. However, the cultural resources inventory study report filed with the license application indicates the APE as 946.7 acres (see section 2.1 on page 2-1 of the cultural resources inventory study report). Please explain this discrepancy and confirm if there are any areas of the new APE that were not surveyed as part of the cultural resources inventory.*

**Response:** The APE encompasses all "lands within the project boundary as proposed in the relicensing application," now noted as 1,526 acres. The acreage includes lands permanently inundated, those within the fluctuation zone, and those on dry land. Only those in the fluctuation zone and on dry land were included within the cultural resource inventory area, totaling 597 acres. (Note that the difference between this 597 acres, and the 946.7 reported in Section 2.1 paragraph 2, is the number of acres in the existing license boundary that were examined but lay outside of the proposed Project boundary.)

To address these clarifications, Appendices A and B of the HPMP have been changed to illustrate the updated APE and the extent of the cultural resource inventory. An updated version of the entire HPMP appears in Attachment I. Likewise, Exhibit E Figures 12-1-12-4 now include the revised maps.

The updates to HPMP Appendix B and Exhibit E Figures 12-1 and 12-2 illustrate all dry lands and those within the fluctuation zone of the APE that were inventoried for cultural resources.

Finally, with regard to the Montana SHPO's concurrence of the APE, Attachment F includes correspondence from the Montana SHPO dated May 1, 2024, in which the agency states that it concurs with the updated, final APE.

NorthWestern respectfully requests the Commission, as part of its relicensing order, to approve the now-final HPMP and adopt it as an article in the new license. NorthWestern proposes an article in the new license that provides as follows:

*Article ___. Historic Properties Management Plan. The Historic Properties Management Plan, filed on May 23, 2024, is approved. Upon the effective date of the license, the licensee shall implement the Historic Properties Management Plan. Any changes to the approved Historic Properties Management Plan require Commission approval prior to implementation of such change.*

**AIR:** 10

**Request:** *Section 19.7.3 of Exhibit E states that the Montana SHPO provided comments on the revised draft HPMP on November 3, 2023, and that the SHPO concurred with the APE on December 20, 2023; however, it is unclear if the Montana SHPO has also concurred with the National Register eligibility determinations for the previously identified cultural properties listed in table 12-2 of Exhibit E, Previously recorded cultural properties. To fulfill the requirements of section 106, please seek Montana SHPO concurrence on your eligibility determinations and file evidence of that consultation with the Commission.*

**Response:** The revised HPMP Appendix D.8 (included as Attachment I) includes correspondence from the Montana SHPO, dated December 15, 2023, in which the agency states that it concurs with the National Register eligibility determinations as stated in the Cultural Resources Final Study Report. The correspondence is also included in Attachment F.

**AIR:** 11

**Request:** *Section 12.4.2 of Exhibit E states that fluctuating the reservoir and modifying the project boundary will have no effect on cultural resources. However, the analysis makes no mention of the potential effects of proposed environmental enhancement measures or continued operation and maintenance activities on the identified eligible or undetermined/unevaluated cultural resources listed in table 12-2 of Exhibit E. What effects would project operation and maintenance have on the undetermined/unevaluated sites?*

**Response:** Project operation and maintenance activities and environmental enhancement measures will not impact the four sites whose eligibility is undetermined (Table 12-2 of Exhibit E "Previously recorded cultural properties"). Site 24SA130 could not be relocated and Sites 24SA291, 593, and 690 lay outside of the APE, as noted on Section 12.1.3 "2021-2022 Cultural Resource Inventory" of Exhibit E. Because these sites are outside of both the APE and proposed Project boundary, no Project-related effects to these sites are expected. No Project operations, including proposed environmental enhancement measures and continued operation and maintenance activities at the Project, are expected to affect these sites that are outside both the APE and Project boundary.

**AIR:** 12

**Request:** *Section 12.4.2.1 of Exhibit E states that precontact and/or historic archaeological properties could be affected by fisheries and recreation environmental measures implemented outside of the APE. You do not describe these potential effects, nor do you specify which cultural resources may be affected. Please provide this information.*

**Response:** The potential fisheries and environmental measures mentioned in Section 12.4.2.1 of Exhibit E is a general reference to measures that NorthWestern may implement over the license term—for example, by license amendment and/or adaptive management measures in the future. Because those specific measures and their specific locations (if any) have not been identified at this time, NorthWestern cannot identify the cultural resources that might be impacted nor the potential effects. However, the HPMP identifies procedures for cultural resource inventory, evaluation, and avoidance or impact mitigation that NorthWestern will follow for any proposed recreation or environmental measures that may be proposed during the new license term that would occur beyond the boundary of the FERC license (*refer to* the HPMP, Section 4.3 "Project Actions Outside the Project APE").

**AIR:** 13

**Request:** *The Thompson Falls Hydroelectric Dam Historic District, which is described in your HPMP and cultural resources inventory study report, is eligible and listed with the National Register of Historic Places. It encompasses 21 resources, including two dams, a forebay and intake structure, two powerhouses, three bridges, two dwellings and a garage, several smaller auxiliary structures, and a powerhouse ruin. You state in table 3-2 of the cultural resources inventory study report that the "majority of the district's boundary and most of its contributing elements are within the APE"; however, table 2-1 of the HPMP says that the district is "entirely within the APE." Please provide a map of the district boundary that identifies all sites/elements of the district, and overlay it with the APE boundary, so that staff can identify which parts of the district boundary and which of its elements fall within the APE.*

**Response:** Four elements of the Thompson Falls Hydroelectric Dam Historic District are wholly or partially outside the FERC boundary. The figure appearing in Attachment K illustrates the relative positions of the APE, the district boundary, and elements within that boundary.

Three buildings stand outside of the APE–Feature 1, former Saint Luke's Hospital, Feature 5, former Foreman's Apartment/Office, and Feature 5a, Two-Car Garage. All are residential properties owned by third parties. The fourth element of the district that lies partially outside the district boundary is Feature 14, Tailrace Wall. The wall was built on a bedrock ledge and made by pouring concrete over and into a timber crib wall. Most of the far end of the wall that stands outside of the APE is just the bedrock ledge.

Table 2-1 of the HPMP has been corrected to reflect this updated information. An updated version of the entire HPMP appears in Attachment I.

**AIR:** 14

**Request:** *In staff's comments on the draft license application, we reminded you that your Exhibit G needs to conform to section 4.41(h) of the Commission's regulations which requires that the Exhibit G include: (1) project boundary data in a geo-referenced electronic format (i.e., ArcView shapefile or similar format), (2) electronic boundary data that is positionally accurate to ±40 feet, and (3) a text file describing the map projection used for the Exhibit G data. We asked that you include this information with your final license application. In table 19-2 in Exhibit E containing your response to comments on the draft application, you state that "the electronic project boundary files are being submitted with this filing." However, the shapefiles do not appear in any of your final license application exhibits or any subsequent filing. Please file the project boundary shapefiles in the above format.*

**Response:** NorthWestern has made revisions to the Project boundary and Exhibit G maps since submitting the Final License Application in December of 2024. Thus, revised Exhibit G maps and Project boundary information are being submitted in response to the AIR. The revisions are as follows:

- Cherry Creek Boat Launch Site was added as a Project recreation site, which increases the Project boundary by 3 acres. The Cherry Creek Boat Launch Site is shown on Exhibit G-3.
- NorthWestern corrected a map projection issue, resulting in a decrease in the acreage in Project boundary of 13 acres.
- Therefore, there is a net decrease of 10 acres, and the Project boundary is now 1,526 acres.
- The metes and bounds table on Exhibit G-1 and G-3 has been populated.
- There are no metes and bounds segments on G-2, G-4 and G-5, and thus no metes and bounds tables on those maps.
- The line segments noted in the metes and bounds table (e.g. “L1”, “L2”) are also labeled on Exhibit G-1 and Exhibit G-3.
- The beginning and ending points of a metes and bounds area (e.g. Power Park) are tied back to surveyed reference points, and those ties are shown and labeled on the Exhibit G maps.
- On each Exhibit G drawing, a label was added that says “Contour Elevation 2397’ At The Dam To 2399.5’ At Upstream End of Project” and this label points to areas where the Project boundary is the Contour Elevation instead of where it is metes and bounds.

A complete set of the updated Exhibit G drawings appears in Attachment D.

An ESRI shapefile of the revised proposed Project boundary is being submitted as a separate filing in our response to the AIR. As required by FERC’s regulations, this ESRI shapefile is electronic boundary data that is positionally accurate to plus/minus 40 feet and thus also satisfies the second point. The map projection used is Montana State Plane Coordinate system, North American Datum 1983 (NAD 83) meters, and this is described in the text document that accompanies the revised Exhibit G maps that are being submitted.

# Attachment B – Revised Exhibit A

Filed separately, in both redline and clean versions.

# Attachment C – Revised Exhibit E

Filed separately, in both redline and clean versions.

# Attachment D – Revised Exhibit G

Filed separately, in both redline and clean versions.

# Attachment E – Consultation with the Northwest Power and Conservation Council

NorthWestern Energy
Delivering a Bright Future

Bill Edmonds
Executive Director
Northwest Power and Conservation Council
851 SW 6th Avenue, Suite 1100
Portland, OR 97204
bedmonds@nwcouncil.org

April 08, 2024

**Re: Thompson Falls Hydroelectric Project, FERC Project No. 1869-066; Request for Review and Comment on Final License Application**

Dear Mr. Edmonds:

On December 29, 2023, NorthWestern Energy (NorthWestern) filed a Final License Application (Application) with the Federal Energy Regulatory Commission (Commission or FERC) to relicense the existing Thompson Falls Hydroelectric Project, FERC Project No. 1869 (Project). The Project is located on the Clark Fork River, in Sanders County, Montana. With this letter, NorthWestern seeks comments from the Northwest Power and Conservation Council (Council), within 30 days of the date of this letter, on NorthWestern's relicensing Application for the Project, which is available on NorthWestern's relicensing website. For Volume I of the Application, https://www.northwesternenergy.com/docs/default-source/default-document-library/clean-energy/environmental-projects/thompson-falls/thompson-falls-relicensing/p-1869-fla-vol-1-is-ex-a-b-c-d-g-h.pdf. For Volume II of the Application, https://www.northwesternenergy.com/docs/default-source/default-document-library/clean-energy/environmental-projects/thompson-falls/thompson-falls-relicensing/p-1869-fla-vol-ii-exhibit-e.pdf.

Pursuant to section 4(h) of the Pacific Northwest Power Planning and Conservation Act,[1] the Council developed the Columbia River Basin Fish and Wildlife Program (Program) to protect, mitigate, and enhance the operation of hydroelectric projects within the Columbia River Basin. Section 4(h) states that responsible federal and state agencies should provide equitable treatment for fish and wildlife resources, in addition to other purposes for which hydropower is developed, and that these agencies shall take the Program into account, to the fullest extent practicable.[2] As part of the Program, the Council has designated over 40,000 miles of river in the Pacific Northwest as not being suitable for hydroelectric development (protected area). Appendix F of

[1] 16 U.S.C. § 839b(h).
[2] *Id.* § 839b(h)(11).

the Program also outlines general implementation measures that the Commission must consider when deciding whether to relicense an existing hydroelectric Project.[3]

The Project in this case is an existing facility, not located in a protected area, which is being considered by the Commission for relicensing. For the following reasons, NorthWestern believes that its relicensing proposal[4] is consistent with Appendix F of the Program:

- The Project is an existing hydroelectric facility, licensed by the Commission, and which is not located within a protected area.

- NorthWestern consulted with state and federal fish and wildlife agencies and tribes in development of the licensing proposal as documented Volume II Exhibit E Section 19 in the Application.

- NorthWestern's relicensing proposal does not increase the area of inundated lands, maintains existing minimum instream flows downstream of the Project of 6,000 cfs or inflow, whichever is less, and does not propose any new development or infrastructure in the new license term.

- Pursuant to a 1988 Mitigation Agreement with Montana Fish, Wildlife and Parks (FWP), NorthWestern paid $250,000 to FWP to provide full and complete mitigation as required under section 903(e)(6) of the Council's Program for impacts caused by the construction and maintenance of the Project. FWP uses these funds to annually purchase 10,000 acre-feet of water from Painted Rocks Reservoir to enhance summer and fall flows for resident fish in the Bitterroot River as well as to implement other mitigation measures.

- In 1990 NorthWestern incorporated into its license a wildlife management plan, prepared by FWP, which required NorthWestern to fund $123,000 for implementation of the plan.

- In 2009, the Commission issued a license amendment approving construction and operation of fish passage facilities for Bull Trout, which are federally listed under the Endangered Species Act as threatened. NorthWestern has complied with the fish passage requirements of the U.S. Fish and Wildlife Service (USFWS) and FERC. NorthWestern currently operates the upstream fish passage facility from mid-March through mid-October. NorthWestern also has a fisheries population and monitoring program within the reservoir and portions of the Clark Fork River.

- Pursuant to a Memorandum of Understanding to collaboratively implement measures for Bull Trout with USFWS, FERC, the Confederated Salish and Kootenai Tribes

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[3] Appendix F. Future Hydropower Electric Development and Licensing, and Protected Areas, Columbia River Basin Fish and Wildlife Program (Dec. 20, 2014), https://www.nwcouncil.org/reports/appendix-f-future-hydropower-electric-development-and-licensing-and-protected-areas/.

[4] For a full description of existing and proposed environmental measures being proposed by NorthWestern, all of which are consistent with the Council's Program, please see Volume II Exhibit E of the Application.

(CSKT), and FWP, NorthWestern provides $100,000 in annual funding to conduct offsite habitat restoration or acquisition in important upstream Bull Trout spawning and rearing tributaries to boost recruitment of juveniles. The funding mitigates incidental take of Bull Trout caused by downstream passage through the turbines and spillways.

- In 2020, NorthWestern completed a shoreline stabilization pilot project to revegetate the vertical bank to a slope less than or equal to 3:1 and utilize native willow and dogwood cuttings to develop deep-binding root mass to stabilize the newly constructed bank.

- NorthWestern implements annual noxious weed control measures in high-use areas.

- NorthWestern is proposing to implement several environmental measures upon relicensing, including improvements to upstream passage for native species, and preparing a Fisheries and Aquatic Resources Protection, Mitigation, and Enhancement Plan in consultation with USFWS, U.S. Forest Service, FWP, and CSKT.

NorthWestern appreciates the Council's consideration of this request for review and comment. Please submit your comments to:

Andy Welch
Manager, Hydropower License Compliance
NorthWestern Energy
208 N. Montana Ave., Suite 200
Helena, MT 59601

Debbie-Anne A. Reese
Acting Secretary
Federal Energy Regulatory Commission
888 First Street, N.E.
Washington, DC 20426

We look forward to receiving any comments the Council may have on the Application. Should you have any questions or require further information, please contact me at 406-444-8115, or by email at Andrew.Welch@NorthWestern.com.

Sincerely,

**Andy Welch**
*Manager, Hydropower License Compliance*
Andrew.Welch@NorthWestern.com
**O** 406-444-8115

Northwest **Power** and **Conservation** Council



April 25, 2024

Andy Welch
Manager, Hydropower License Compliance
NorthWestern Energy
208 N. Montana Ave., Suite 200
Helena, MT 59601

Debbie-Anne A. Reese
Acting Secretary
Federal Energy Regulatory Commission
888 First Street, N.E.
Washington, DC 20426

**Re: Thompson Falls Hydroelectric Project, FERC Project No. 1869-066: Comment on Final Relicense Application**

Dear Mr. Welch and Acting Secretary Reese:

By letter dated April 8, 2024, Mr. Welch of NorthWestern Energy made the Northwest Power and Conservation Council aware of the filing by NorthWestern Energy of its final relicense application for the Thompson Falls Hydroelectric Project on the Clark Fork River in Montana. He asked that the Council review the application and the letter and comment back if possible.

The Council is an interstate compact agency authorized by Congress in the Northwest Power Act of 1980 and by the state legislatures of Idaho, Montana, Oregon and Washington. The governors of the four states appoint members to the Council, which has its main offices in Portland, Oregon, and other offices around the four states. The Council develops a power plan to add cost-effective new conservation and generating resources to the region's electrical power supply, and a program to protect, mitigate and enhance fish and wildlife affected by the hydroelectric facilities on the Columbia River and its tributaries, with the fish and wildlife program then becoming one element of the power plan. A number of federal agencies have responsibilities to the Council's power plan and fish and wildlife program under the same Northwest Power Act. Most relevant here is that FERC has a responsibility under Section 4(h)(11)(A)(ii) of the Act to exercise its statutory responsibilities taking into account the Council's Columbia River Basin Fish and Wildlife Program "at each relevant stage of decisionmaking processes to the fullest extent practicable." FERC also recognizes the Council's power plan and fish and wildlife program as comprehensive plans for the relevant waterways in the states of Montana, Idaho, Oregon and Washington, including

for the Clark Fork River, sparking similar responsibilities at FERC under the Federal Power Act.

The current version of the Council's fish and wildlife program is the *2014 Columbia River Basin Fish and Wildlife Program*, which can be found here: https://www.nwcouncil.org/reports/2014-columbia-river-basin-fish-and-wildlife-program/. Relevant to this application, the program includes provisions on hydroelectric power development and licensing as part of the ecosystem function and habitat strategy. *See* Part Three, Section IV(A)(5) and Appendix F. Some of these provisions relate to areas that have not been developed for hydropower and contain important fish or wildlife resources and thus are on a Protected Areas list. But as the letter from NorthWestern makes clear, the Thompson Falls project and the stretch of the Clark Fork River in which it sits is not within a designated Protected Area, so those particular protections do not apply.

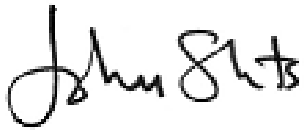
This part of the Council's fish and wildlife program also contains a set of fish and wildlife protection standards that we ask FERC to apply to the development and licensing of hydroelectric facilities – including relicensing - outside of protected areas. The standards can be found in Appendix F at pp. 163-65 of the 2014 Program. We have also excerpted those standards out of the program and attached them at the end of this letter. Note also that the program has a subbasin management plan for the Pend Oreille subbasin, including a portion of the Clark Fork, a subbasin plan integrated into a broader plan for the Intermountain region of the basin in the northeast corner of Washington and northern Idaho panhandle extending into a portion of Montana. The subbasin plan contains measures and objectives to protect and improve habitat conditions and fish and wildlife populations affected by the development and operation of hydroelectric power development. The subbasin plan recognizes both issues and actions at the dams in the Clark Fork, including at Thompson Falls, relative to native salmonid connectivity and bull trout passage, as well as the general need to address impacts to riparian and terrestrial habitats. https://www.nwcouncil.org/sites/default/files/pend.pdf. The subbasin plan does not contain specific measures for the reach of the Clark Fork in which the Thompson Falls project sits. So for the purposes here, the protection standards in the hydropower licensing section of the Program are most relevant.

The Council very much appreciates that NorthWestern has taken the time and effort, in the Thompson Falls license application and in the letter to the Council, to explain how it is considering and addressing the program's protection standards particularly relevant to this relicensing, including in areas relating to fish passage facilities for bull trout, habitat improvements for spawning and rearing, instream flow protection, mitigation for habitat impacts, and more. The Council also appreciates the extent to which NorthWestern has consulted and worked with, and in some areas reached agreements with, relevant state and federal fish and wildlife agencies and tribes in the region, including the Confederated Salish and Kootenai Tribes, Montana Fish, Wildlife and Parks, and the US Fish and Wildlife Service. From the Council's perspective, NorthWestern is working appropriately to address the development standards in the Council's fish and wildlife program. Our thanks to NorthWestern staff for these efforts.

Because the Council is not as familiar with the project details as others, importantly from the Council's perspective are the following: We ask that FERC itself, in its consideration of the license application, take an independent look at the information provided by NorthWestern and make sure that these protection standards are adequately addressed. And in doing so, we ask that FERC consider carefully the comments of especially the fish and wildlife agencies and tribes in the docket on these details.

Thank you for your consideration of these comments.

Sincerely,



John Shurts
General Counsel

## Attachment

## Northwest Power and Conservation Council
## 2014 Columbia River Basin Fish and Wildlife Program

### Fish and wildlife protection standards excerpted from program provisions regarding hydropower development and licensing (App F, at 163-65)

General Measures - Standards for new hydroelectric development and licensing:

**Potential effects on fish**

The Federal Energy Regulatory Commission, Corps of Engineers, Bureau of Reclamation and Bonneville shall not license, exempt from license, relicense, propose, recommend, agree to acquire or wheel power from, grant billing credits for, or otherwise support any hydroelectric development in the Columbia River Basin without specifically providing for these development conditions:

- Consultation with the fish and wildlife agencies and tribes and the Council throughout study, design, construction, and operation of the project
- Development of specific plans for flows and fish facilities prior to construction
- Use of the best available means for aiding downstream and upstream passage of anadromous and resident fish
- Provision of Columbia and Snake river flows and reservoir levels of sufficient quantity and quality to protect spawning, incubation, rearing, and migration
- Full compensation for unavoidable fish losses or fish habitat losses through habitat restoration or replacement, appropriate production, or similar measures consistent with the provisions of this program
- Assurance that the project will not inundate the usual and accustomed, traditional, or contemporary fishing places of any tribe without tribal approval
- Assurance that the project will not degrade fish habitat or reduce numbers of fish in such a way that the exercise of treaty or executive-order tribal rights will be diminished
- Assurance that all fish protection measures are fully operational at the time the project begins operation
- Assurance that the project developer will collect data needed to monitor and evaluate the results of the fish protection efforts

- Assurance that the project will not degrade water quality beyond the point necessary to sustain sensitive fish species (as designated in consultation with the fish and wildlife agencies and tribes).

**Potential effects on wildlife**

o The Federal Energy Regulatory Commission, Corps of Engineers, Bureau of Reclamation and Bonneville shall not license, relicense, exempt from license, propose, recommend, agree to acquire or wheel power from, grant billing credits for, or otherwise support any hydroelectric development in the Columbia River Basin without specifically providing for these development conditions:

- Consulting with fish and wildlife agencies and tribes and the Council throughout study, design, construction and operation of the project

- Avoiding inundation of wildlife habitat, insofar as practical

- Timing construction activities, insofar as practical, to reduce adverse effects on nesting and wintering grounds

- Locating temporary access roads in areas to be inundated

- Constructing sub-impoundments and using all suitable excavated material to create islands, if appropriate, before the reservoir is filled

- Avoiding all unnecessary or premature clearing of land before filling the reservoir

- Providing artificial nest structures when appropriate

- Avoiding construction, insofar as practical, within 250 meters of active raptor nests

- Avoiding critical riparian habitat (as designated in consultation with the fish and wildlife agencies and tribes) when clearing, rip-rapping, dredging, disposing of spoils and wastes, constructing diversions, and relocating structures and facilities

- Replacing riparian vegetation if natural revegetation is inadequate

- Creating sub-impoundments by diking backwater slough areas, creating islands and nesting areas

- Regulating water levels to reduce adverse effects on wildlife during critical wildlife periods (as defined in consultation with the fish and wildlife agencies and tribes)

- Improving the wildlife capacity of undisturbed portions of new project areas (through such activities as managing vegetation, reducing disturbance, and

supplying food, cover and water) as compensation for otherwise unmitigated harm to wildlife and wildlife habitat in other parts of the project area

- Acquiring land or management rights, such as conservation easements, where necessary to compensate for lost wildlife habitat at the same time other project land is acquired and including the associated costs in project cost estimates

- Funding operation and management of the acquired wildlife land for the life of the project

- Granting management easement rights on the acquired wildlife lands to appropriate management entities

- Collecting data needed to monitor and evaluate the results of the wildlife protection efforts

- Assuring that the project will not inundate the usual and accustomed, traditional or contemporary hunting places of any tribe without tribal approval

- Assuring that the project will not degrade wildlife habitat or reduce numbers of wildlife in such a way that the exercise of treaty or executive order tribal rights will be diminished

- Ensure that all licenses for hydroelectric projects or documents that propose, recommend, or otherwise support hydroelectric development explain in detail how the provisions of this section will be accomplished or the reasons why the provisions cannot be incorporated into the project.

# Attachment F – Consultation with Montana State Historic Preservation Office

MONTANA
HISTORICAL SOCIETY

Montana State Historic Preservation Office
225 N. Roberts St.
P.O. Box 201201
Helena, MT 59620-1201

December 15, 2023

Mr. Andy Welch
NorthWestern Energy
208 N Montana Ave., Suite 200
Helena, MT 59620-1201

Re: Thompson Falls Relicensing Cultural Resource Inventory Final Study Report

Dear Mr. Welch.

Thank you for your letter and associated materials (received December 06, 2023) regarding the Cultural Resource Inventory Final Study Report. We concur with the following eligibilities:

24SA0756 – Not Eligible

We agree that the following sites still reflect the eligibility that was previously concurred on: 24SA0131, 24SA0165, 24SA0199, 24SA0352, 24SA0674, 24SA0719.

We have no further comments on this report.

Please note that our concurrence does not substitute for a good faith effort to consult with interested parties, local government authorities, and American Indian tribes. If you receive a comment that substantially relates to a historic property located within or adjacent to the Area of Potential Effect, please submit it to our office for review. Include documentation of how the comment was addressed. If you have any questions or concerns, do not hesitate to contact me at (406) 444-6485 or Samantha.Gilk@MT.gov. Thank you for consulting with us.

Sincerely,

Samantha Gilk

Samantha Gilk, M.S.
Compliance Officer
Montana State Historic Preservation Office

FILE: DOE/FERC – 2023 – 2023120607

NorthWestern Energy
Delivering a Bright Future

Mr. Pete Brown
State Historic Preservation Office
225 N. Roberts St.
P.O. Box 201201
Helena, MT 59620-1201

April 3, 2024

RE: Thompson Falls Relicensing – Request SHPO Concurrence with Updated Project APE

Dear Mr. Brown,

NorthWestern is actively working to fulfill an additional information request (AIR) issued by the Federal Energy Regulatory Commission's (FERC or Commission) on February 26, 2024, as part of the relicensing process for the Thompson Falls Hydroelectric Project No. 1869-060 (Thompson Falls Project or Project).

As part of NorthWestern's response to the AIR, we plan to propose a slight modification to the Project Boundary. The modification is being made to incorporate an additional recreation site, the Cherry Creek Boat Launch.

NorthWestern anticipated the potential to add Cherry Creek Boat Launch to our Recreation Management Plan and also to incorporate this recreation site into the Project Boundary. Therefore, we included this site in the Area of Potential Effect (APE) for the Cultural Resource Inventory Study. Findings from the inventory of the Cherry Creek Boat Launch recreation site were included in the Final Study Report – Cultural Resource Inventory dated November 2023. No historic archeological and engineering properties were identified nor were any precontact and historic cultural resources identified at the Cherry Creek Boat Launch site.

NorthWestern consulted with the State Historic Preservation Office (SHPO) and received concurrence on December 20, 2023 with the Project APE included in the Final License Application filed with FERC on December 29, 2023. The proposed change to the Project Boundary also changes the Project APE as documented in the Historic Properties Management Plan (HPMP). NorthWestern produced the two attached maps representing the updated Project Boundary and Project APE. These updated maps will replace the Project APE maps included in Appendix A of the HPMP.

NorthWestern respectfully requests SHPO concurrence with the updated Project APE which now incorporates Cherry Creek Boat Launch.

If there are any questions, please reach out directly to me.

Regards,

**Andy Welch**
*Manager, Hydropower License Compliance*
Andrew.Welch@NorthWestern.com
**O** 406-444-8115

**Figure A-1: Thompson Falls FERC License APE, west end. Red line identifies Lolo National Forest boundary.**

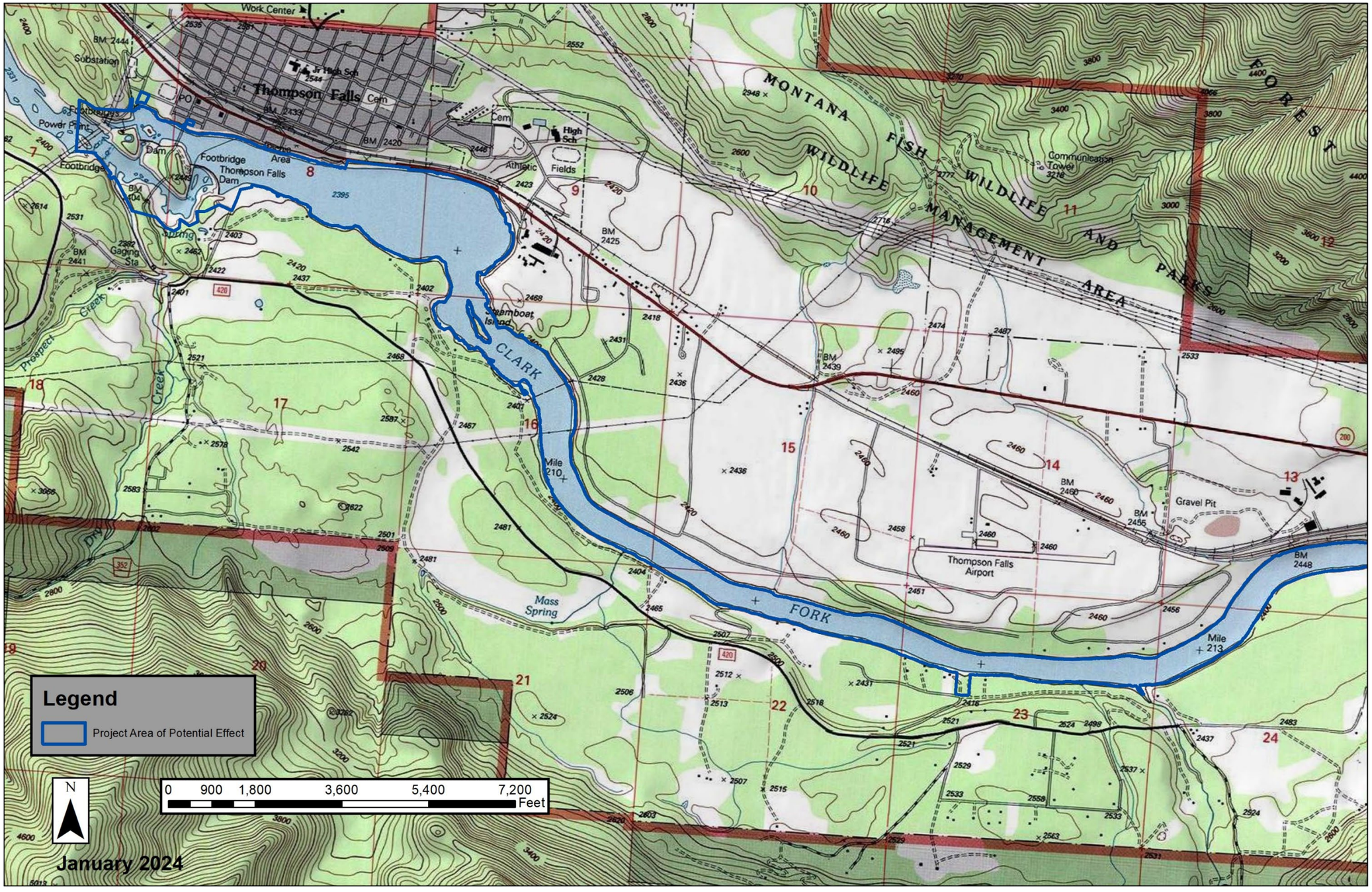
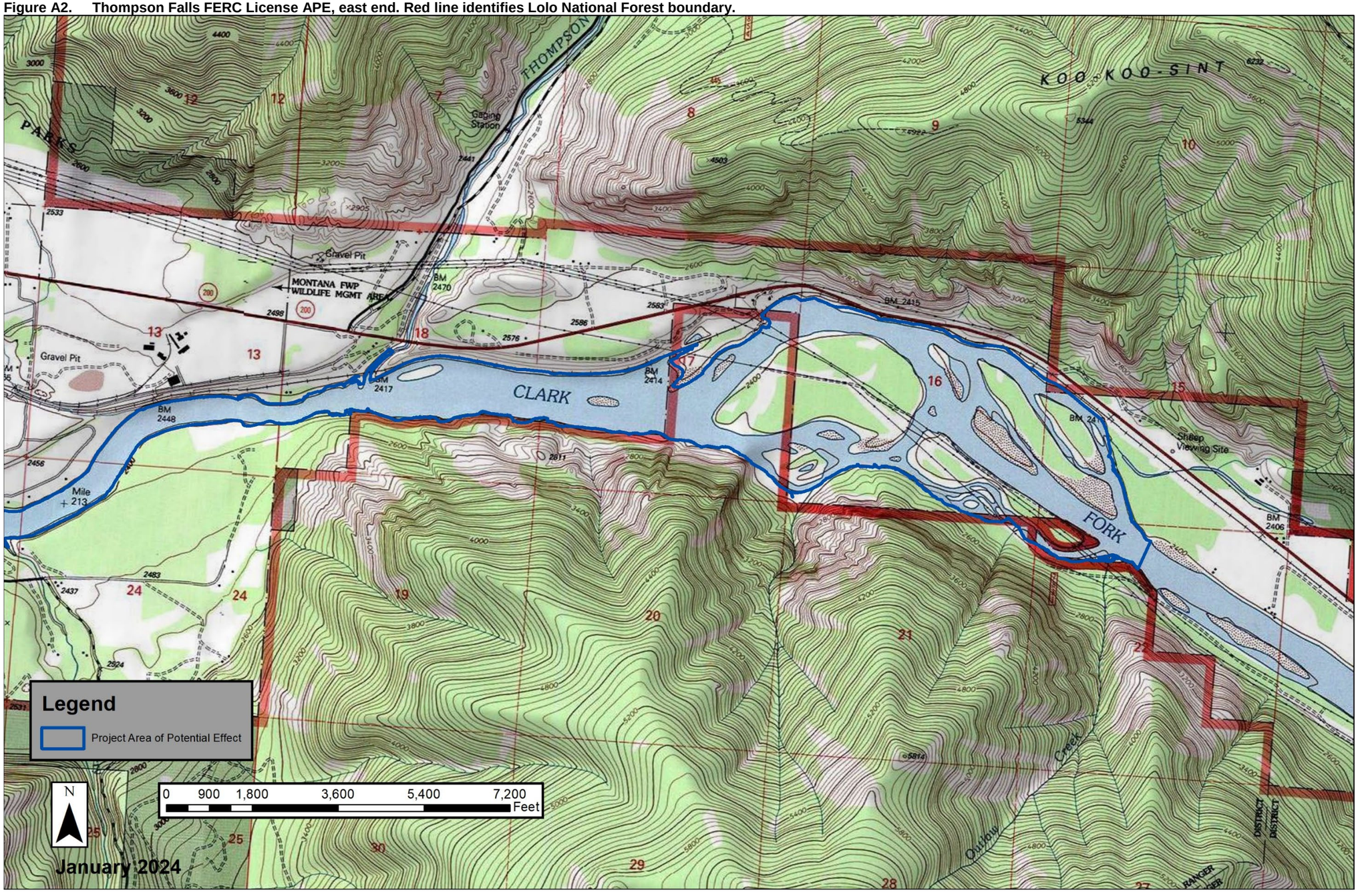


**Figure A2. Thompson Falls FERC License APE, east end. Red line identifies Lolo National Forest boundary.**



Montana State Historic Preservation Office
225 N. Roberts St.
P.O. Box 201201
Helena, MT 59620-1201

May 01, 2024

Mr. Andy Welch
NorthWestern Energy
208 N Montana Ave.
Suite 200
Helena, MT 59601

Re: Thompson Falls Relicensing – Updated Project APE

Dear Mr. Welch,

Thank you for your letter and associated materials (received April 09, 2024) regarding the proposed APE update for the Thompson Falls Hydroelectric Project. We concur with the expansion of the project APE to include the Cherry Creek Boat Launch.

Please note that our concurrence does not substitute for a good faith effort to consult with interested parties, local government authorities, and American Indian tribes. If you receive a comment that substantially relates to a historic property located within or adjacent to the Area of Potential Effect, please submit it to our office for review. Include documentation of how the comment was addressed. If you have any questions or concerns, do not hesitate to contact me at (406) 444-6485 or Samantha.Gilk@MT.gov. Thank you for consulting with us.

Sincerely,

Samantha Gilk, M.S.
Compliance Officer
Montana State Historic Preservation Office

FILE: DOE/FERC – 2024 – 2024040910

# Attachment G – Final Total Dissolved Gas Control Plan and Related Consultation

Filed separately

# Attachment H – Final Recreation Management Plan

Filed separately

# Attachment I – Final Historic Properties Management Plan and Related Consultation – filed as Privileged.

Filed separately.

# Attachment J – Technical Memorandum Conceptual Modifications, Upstream Fish Passage Facility

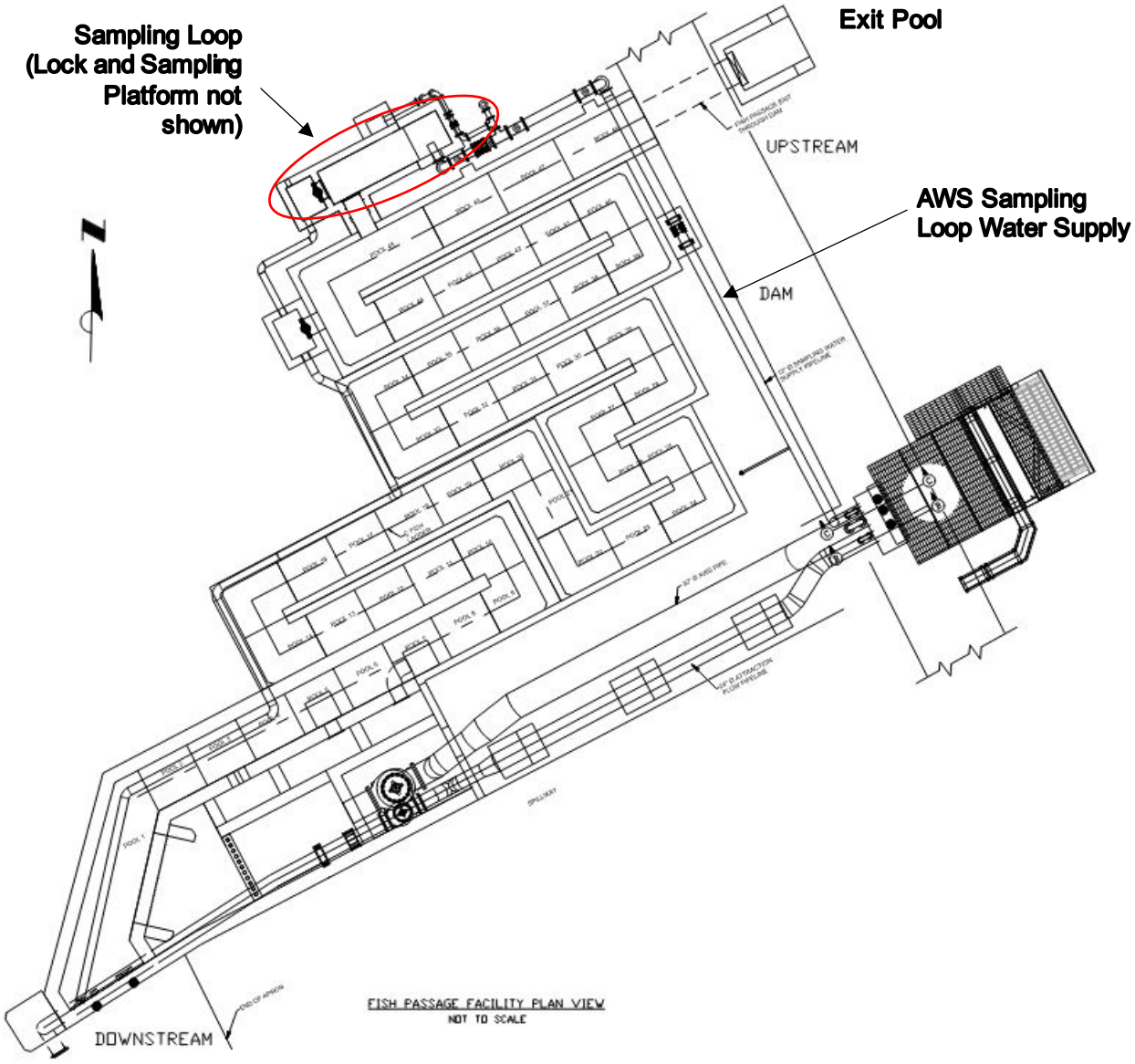
This memorandum has been prepared in response to FERC's Additional Information Request regarding an engineered solution to provide adequate flow to the upstream fish passage facility at all water surface elevations down to 2.5 feet below full pool. Northwestern will complete modifications prior to implementation of flexible generation between 2.0-2.5 feet below full pool during periods when the fish passage facility is operating. The memorandum describes conceptual engineering solutions that are being considered for maintaining adequate flow to the upstream fish passage facility for the proposed operation, and an estimated cost.

## Project Background

The Thompson Falls Hydroelectric Project is a hydropower facility on the Clark Fork River in northwestern Montana. The Project includes the original powerhouse with six Francis turbines with a maximum operating head of about 62 feet and a generating capacity of 40 megawatts (MWs). A second powerhouse was constructed in the 1990s and includes one Kaplan unit with a generating capacity of 52.6 MWs. The Main Channel Dam and Dry Channel Dams along with the powerhouse facilities impound the Clark Fork River at the project, creating the operational forebay for the generating facilities.

The Main Channel Dam includes upstream fish passage facility (fish passage facility), which was constructed on the right abutment in 2011 to provide upstream passage of bull trout and other upstream migrant, non-anadromous fish species in the Clark Fork River. The fish passage facility is a reinforced concrete "pool and weir" type structure, which includes 48 ladder pools each designed to induce a 1-foot pool-to-pool drop. The fish passage facility also includes attraction flows via the auxiliary water system (AWS), a sampling loop with holding, crowding and sampling facilities, and an exit pool. Figure 1 shows the layout of the fish passage facilities.

**Figure 1. General Upstream Fish Passage Facility Configuration**




The ladder section of the fish passage facility was designed to pass 6 cubic feet per second (cfs) pool-to-pool, with gravity flows initiating from a 42-inch diameter bore through the non-overflow concrete gravity section of the Main Channel Dam. The invert of the tunnel is at El. 2393.0. An assumed operating pool of at El. 2396.0 was utilized for design, with the potential of increasing the forebay pool to El. 2397.0.

# Ladder Flow Issues with Reduced Forebay Pool

### *Ladder Flow*

Based on NorthWestern Operations' observed fish passage facility function with reduced forebay elevations, once the forebay has been lowered to 2 feet below the normal operating pool (El. 2394 to El. 2394.2), flow within the ladder is reduced for fish passage. With the invert elevation of the exit pool at El. 2393.0, drawdown to El. 2393.5, the anticipated flow through the ladder exit tunnel is 3 cfs.

### *Sampling Loop Water Supply*

The fish passage facility was designed with a 1 cfs inflow potential for the sampling loop. This flow provides the ability to run attraction flow water through the horizontal crowder, provide pumped water into the vertical crowder to lift fish approximately 10 feet from the horizontal crowder onto the sampling platform, and water to operate hose bibs on the sampling platform. Inflows for the sampling loop are controlled by a 12-inch sluice gate located behind the automatic trash rack. The invert for the sampling loop water supply gate is at El. 2392.3. The sampling loop water supply is anticipated to require a forebay pool elevation of approximately 2394.0 or higher to operate.

# Fish Passage Facility Modification Alternatives

Three conceptual fish passage facility modification alternatives to operate the fish passage facility at a forebay elevation greater than 2 feet below the normal operating pool were identified. These alternatives are described below:

### *Alternative 1. Pumped Flows into Pool 47 with Operational Sample Loop*

This option includes providing a pump to discharge water into Pool 47 or 48. Modifications to the ladder would include:

- Screened pumped intake from forebay with 4000 gpm capacity discharging into Pool 47
- An additional diffuser plate within pool 46 to provide better flow characteristics for Pool 45 (sampling loop entrance).
- A fish screen near the orifice plate in Pool 48 to prevent handled fish from entering Pool 47
- A 12-inch tap and tee with butterfly valve (BFV) through the Pool 47 concrete wall to connect to the AWS Sample Loop Pipe for providing horizontal crowder attraction flows (1/2 cfs), vertical lock pump supply flows, and hose bib use for the sampling facilities.

During this operation, the 12-inch AWS Sampling Loop gate and 42-inch Ladder Exit Gate would be closed as water is pumped into Pool 47. Fish sampling would occur under existing sampling protocol, with fish being returned directly to the forebay. Figures 2 and 3 show profile and plan schematics of the proposed modifications.

**Figure 2. Alternative 1 Modifications**

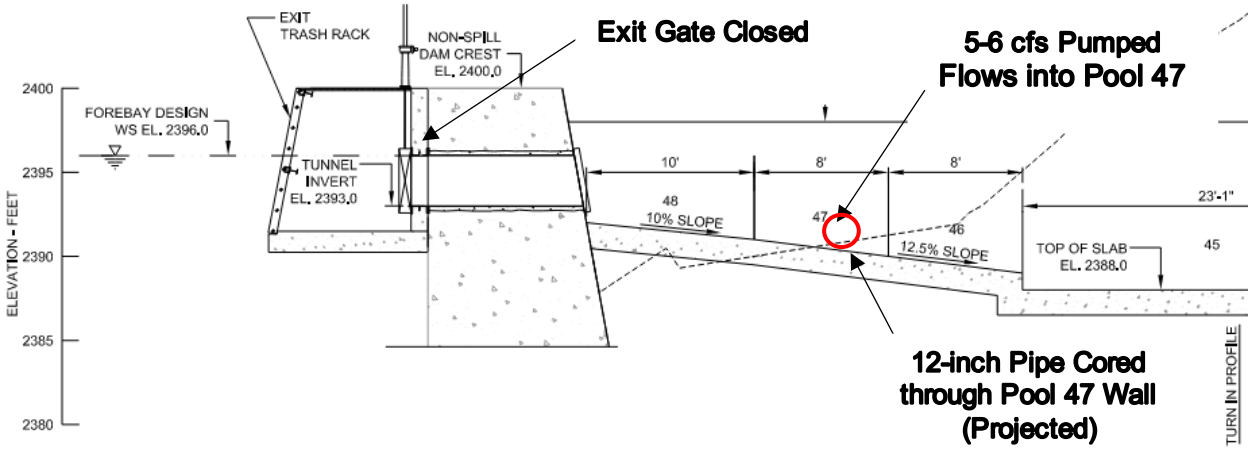
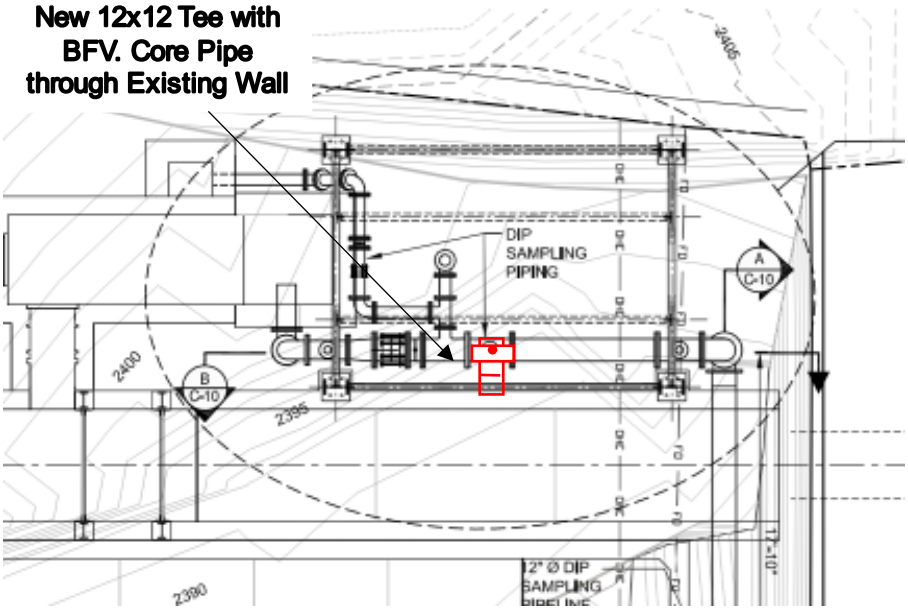



**Figure 3. Alternative 1 Modifications**



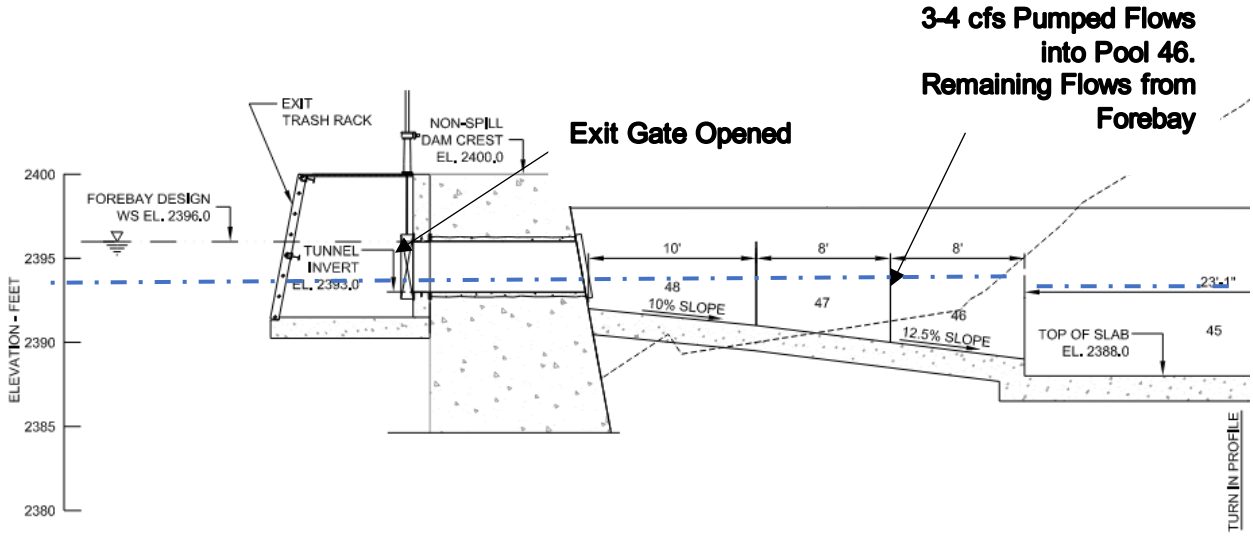
### *Alternative 2 Pumped Flows into Pool 46 without Sampling Capabilities*

This option includes providing a pump to discharge water into Pool 46 to maintain ladder flows. Modifications to the fish passage facility would include:

- Screened pumped intake from forebay with variable output, 2500 gpm capacity discharging into Pool 46
- An additional diffuser plate within pool 46 to provide better flow characteristics for Pool 45 (sampling loop entrance).

During this operation, the variable speed pump would turn on and discharge into pool 46 when forebay water levels reach approximately El. 2394.2. Contributing ladder flows through the tunnel will decrease as the forebay level continues to lower, with pumped flows increasing to provide a ladder flow of 5 to 6 cfs. A finger weir or V-Trap weir would be installed at the Pool 44/45 weir plate to minimize fish fall back. Pool 45 and the horizontal crowder would act as holding pools until the forebay returns to El. 2394.2 or greater. Figure 4 shows a schematic summary of the modifications.

**Figure 4. Alternative 2 Modifications**



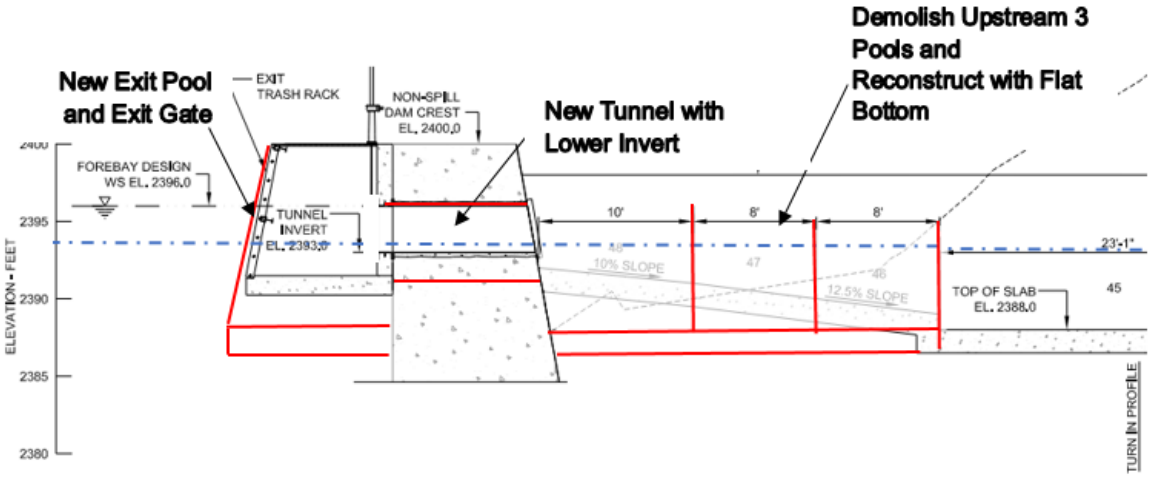
### *Alternative 3 Reconstruction of Pools 46-48 and Exit Pool*

This option includes demolition and reconstruction of the upper 3 ladder pools and exit pool. Modifications to the fish passage facility would include:

- Demolition of Pools 46, 47, 48 and reconstructing these pools with a horizontal bottom.
- Demolition of the ladder Exit Pool and Exit Pool Gate and reconstructing approximately 2 feet lower.
- Increasing the bore diameter and/or depth of the Exit Tunnel to lower the tunnel invert by 1 to 2 feet.
- Modification of orifice plate sizes for Pools 46, 47, and 48 may be required.
- Additional water supply for the Sample Loop may be required and would likely include a cistern with filled with water from a variable speed pump with a 1500 gpm capacity.

Figure 5 shows a schematic summary of the modifications.

**Figure 5. Alternative 3 Modifications**

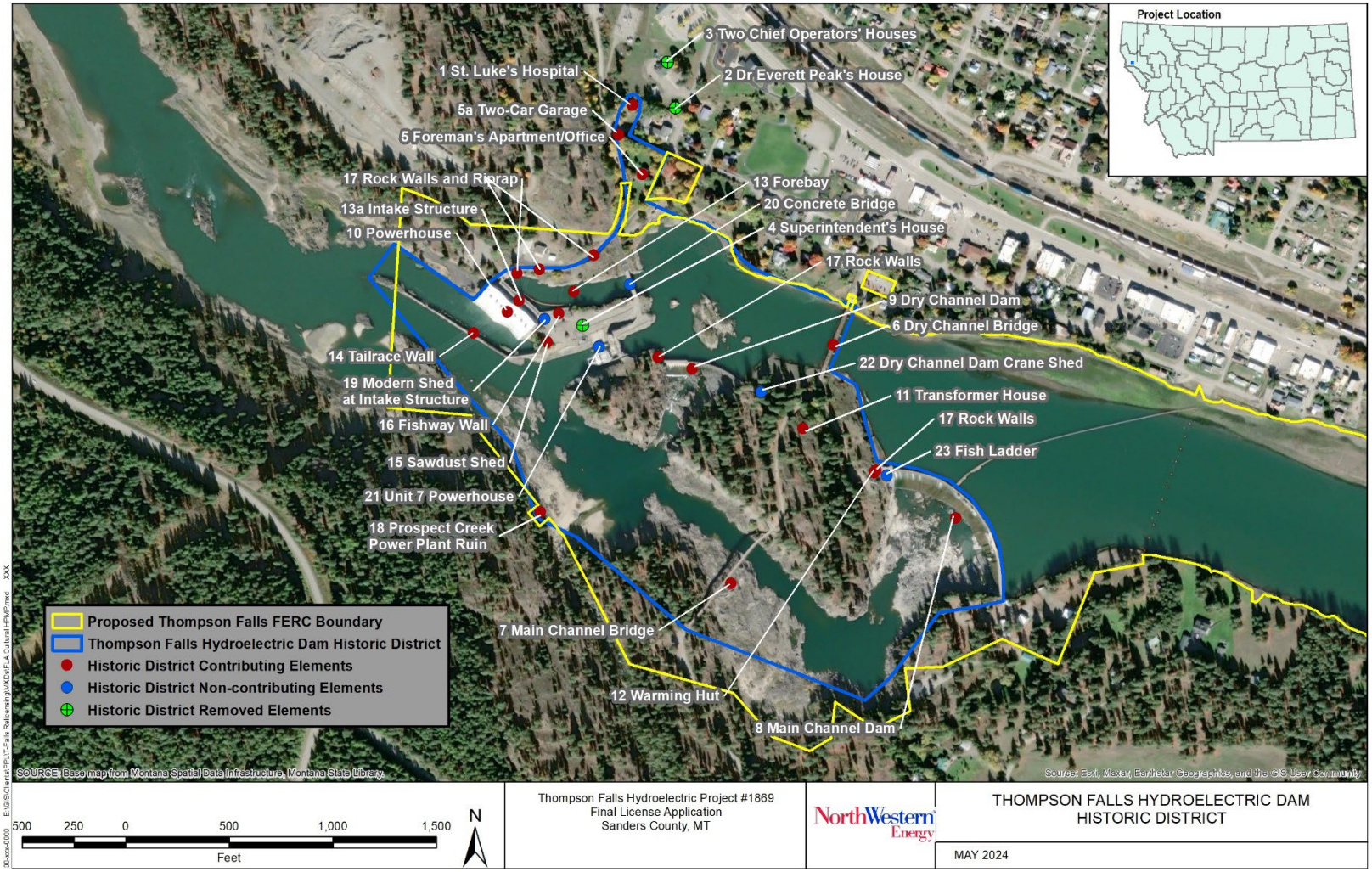


Estimated costs are provided in Table 1.

**Table 1. Estimated Cost of Alternatives**

| Alternative | Estimated Cost |
|---|---|
| 1. Pumped Flows into Pool 47 with Sample Loop | $300,000 |
| 2. Pumped Flows into Pool 46 without Sampling Capabilities | $210,000 |
| 3. Reconstruction of Pools 46-48 and Exit Pool | $1,500,000 |

# Attachment K – Figure illustrating the proposed Project boundary and the Historic District.


Project Location
3 Two Chief Operators' Houses
1 St. Luke's Hospital
2 Dr Everett Peak's House
5a Two-Car Garage
5 Foreman's Apartment/Office
17 Rock Walls and Riprap
13 Forebay
20 Concrete Bridge
13a Intake Structure
10 Powerhouse
4 Superintendent's House
17 Rock Walls
9 Dry Channel Dam
6 Dry Channel Bridge
14 Tailrace Wall
22 Dry Channel Dam Crane Shed
19 Modern Shed at Intake Structure
11 Transformer House
16 Fishway Wall
17 Rock Walls
15 Sawdust Shed
23 Fish Ladder
21 Unit 7 Powerhouse
18 Prospect Creek Power Plant Ruin
Proposed Thompson Falls FERC Boundary
Thompson Falls Hydroelectric Dam Historic District
Historic District Contributing Elements
Historic District Non-contributing Elements
Historic District Removed Elements
7 Main Channel Bridge
12 Warming Hut
8 Main Channel Dam
SOURCE: Base map from Montana Spatial Data Infrastructure, Montana State Library
Source: Esri, Maxar, Earthstar Geographics, and the GIS User Community
500 250 0 500 1,000 1,500
Feet
N
Thompson Falls Hydroelectric Project #1869
Final License Application
Sanders County, MT
NorthWestern Energy
THOMPSON FALLS HYDROELECTRIC DAM
HISTORIC DISTRICT
MAY 2024