Environmental Assessment
Application for 10 MW Exemption

Strontia Springs Hydroelectric Project
FERC No. 6916-011
Colorado

Federal Energy Regulatory Commission
Office of Energy Projects
Division of Hydropower Administration and Compliance
888 First Street, NE.
Washington, D.C. 20426

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1.0 APPLICATION

On January 4, 2019, the City and County of Denver, Colorado (Denver Water) filed an application[1] for a small hydropower exemption (10 megawatt (MW) or less) to exempt its currently licensed Strontia Springs Hydroelectric Project (Strontia Project)[2] from the licensing requirements of Part I of the Federal Power Act (FPA). The current project license expires on December 31, 2023. The Strontia Project is located on the South Platte River, in Douglas and Jefferson counties, Colorado (Figure 1). The project occupies federal lands within Pike San Isabel National Forest, administered by the U.S. Forest Service (Forest Service). Denver Water proposes to increase the project generating capacity from 1,087 kilowatts (kW) to 1,250 kW. In addition, Denver Water proposes to construct a new switchyard adjacent to the powerhouse, and to adjust the existing project boundary to include the primary transmission line.

Denver Water's primary purpose for the project's facilities is for its municipal water supply system, not for hydroelectric generation. Denver Water states that the project's primary purpose has not changed and, as a result, Denver Water believes that a 10-MW exemption best reflects the principal water-supply use of the project's facilities while preserving the power production potential of the project. The exempted project would consist of the existing powerhouse containing one generating unit having an installed capacity of 1,250 kW and appurtenant facilities. Denver Water estimates that the project would have an average annual generation of 7,500,000 kilowatt-hours that would be sold to a local utility.

[1] Denver Water supplemented its application on March 25, 2019; April 2, 2019; May 7, 2019; July 19, 2019; and May 1, 2020.

[2] *City and County of Denver, Colorado*, 26 FERC ¶ 62,006 (1984).

2.0 PURPOSE OF ACTION AND NEED FOR POWER

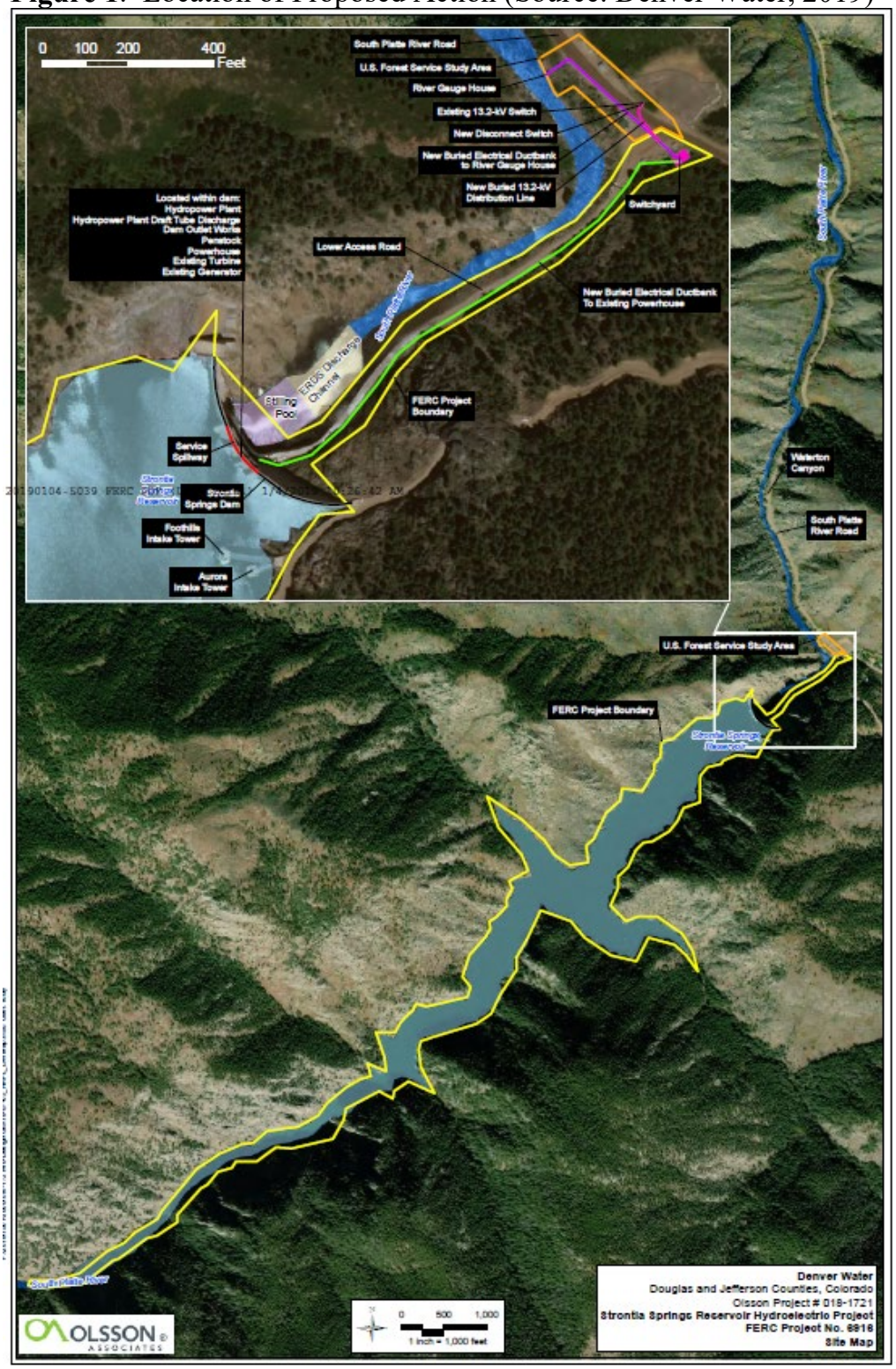
2.1 Purpose of Action

The Commission must decide whether to grant an exemption from licensing for the project and what conditions, if any, should be included in any exemption issued. Issuing an exemption from licensing for the Strontia Project would allow Denver Water to generate electricity, making about 7,500,000 kilowatt-hours of electric power from a renewable resource available to the region annually. In this environmental assessment (EA), Commission staff assess the effects of operating the project as proposed by Denver Water, alternatives to the proposed project including a no-action alternative and recommend conditions to become a part of any exemption from licensing that may be issued.

2.2 Need for Power

Under section 213 of the Public Utility Regulatory Policies Act (PURPA), the authority of the Commission to grant an exemption from licensing is not limited by a determination of the need for power. *See Briggs Hydroelectric*, 32 FERC ¶ 61,399 (1985). *See also David Cereghino*, 35 FERC ¶ 61,067 (1986).

Figure 1. Location of Proposed Action (Source: Denver Water, 2019)



3.0 PROPOSED ACTION AND ALTERNATIVES

3.1 Proposed Action

3.1.1 Project Description

The project consists of: (a) a 292-foot-high, 560-foot-long concrete dam (Strontia Springs Dam); (b) a 98-acre reservoir with a capacity of 7,863 acre-feet (Strontia Springs Reservoir); (c) a 42-inch-diameter steel intake structure, (d) a 20-foot long, 42-inch-diameter conduit, (e) a 4-foot-long, 42-inch-diameter branch conduit, (f) a 1,087 kilowatt (kW) turbine generator unit,[3] (g) a 100-foot-long transmission line, and (h) appurtenant facilities.

Denver Water proposes to upgrade its turbine generator unit, which would increase the total installed capacity of the project from 1,087 kW to 1,250 kW. Denver Water is also proposing to construct a new switchyard adjacent to the powerhouse, and to adjust the existing project boundary to include the primary transmission line. Denver Water states that no repair, reconstruction, or other modification of the Strontia Springs Dam will occur in association with construction of the new switchyard.

3.1.2 Project Operation

Strontia Springs Reservoir and Dam are owned and operated by Denver Water to divert and store water from the South Platte River. This water is conveyed by pipeline to Denver Water's Foothills Water Treatment Plant. The Strontia Springs Reservoir area is 98 acres, with a storage capacity of 7,863 acre-feet, corresponding to a normal maximum pool at elevation 6,002 feet above sea level. Denver Water maintains the reservoir elevation between 5,985 and 6,000 feet above sea level and operates the project in a run-of-river mode using release of flow and the head provided by the dam. Water flows from Strontia Springs Reservoir to the turbine through a 42-inch diameter penstock that tees from the 4-foot high by 4-foot wide Emergency Reservoir Drainage System channel to the turbine within the powerhouse. Water exits the turbine runner and is discharged through the vertically oriented draft tube which conducts the water from the turbine to the tailrace at elevation 5,780 feet above sea level. A stilling pool at the downstream base of the dam, located below the draft tube of the turbine, functions in part as a tailrace and extends downstream.

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[3] *City and County of Denver, Colorado*, 70 FERC ¶ 62,162 (1995) (order amending license to reflect change in installed capacity).

Denver Water releases 60 cubic feet per second (cfs) minimum flow from May 15th to September 15th, and 30 cfs at all other times. Strontia Springs Reservoir will continue to operate normally during the construction of the proposed switchyard, with no changes to the surface area, surface elevation, or existing impoundment.

3.1.3 Proposed Measures

Denver Water proposes the following environmental measures:

- Continue to comply with the project's Section 401 Water Quality Certification (WQC), issued by Colorado Department of Public Health and Environment (Colorado Department of Health) on April 2, 1979 and incorporated into the project license. [4] The April 2, 1979 WQC requires that Denver Water comply with the general conditions of the certification, meet current Water Quality Standards for Colorado, conduct daily water quality monitoring for turbidity and suspended solids during dredging or filling operations at the project[5] and use best management technology over the life of the project.

- Continue to provide releases to the South Platte River of 60 cfs from May 15th to September 15th, and 30 cfs at all other times in order to maintain and enhance fish habitat downstream of the project, as required by the August 16, 1978 easement from the Forest Service for the project.

- Maintain recreation uses and facilities pursuant to the Waterton Canyon Management Plan and Memorandum of Understanding (MOU),[6] as it may be amended from time to time.

- Restrict ground-disturbing activities from April 15th to June 30th, to minimize the effects on the bighorn sheep during lambing season.

- Perform geological and surface investigations at the new proposed switchyard and along the Lower Access Road downstream of the right abutment of the dam (to determine bedrock dept for the placement of the electrical ductbank and for soil

[4] By letter filed November 15, 2019, Colorado Department of Health's Water Quality Control Division stated that the project's existing certification is valid.

[5] The proposed action does not include dredging or filling operations.

[6] Waterton Canyon Management Plan and MOU is further discussed in section 5.3.6, *Recreation and Land Use.*

bearing properties at the new switchyard) and submit a geotechnical work plan for approval by the Commission's Division of Dam Safety and Inspection-San Francisco Regional Office prior to commencement of construction.

- Implement soil erosion and sedimentation control measures for minimizing soil erosion and sedimentation during project construction. These measures, at a minimum, include installation and maintenance of silt fencing, sediment control logs and construction fencing.

- Should unidentified archaeological resources be discovered in the course of the construction, work will be interrupted until the resources have been evaluated in terms of the National Register of Historic Places eligibility criteria (36 CFR 60.4) in consultation with the Colorado Office of Archaeology and Historic Preservation pursuant to 36 CFR 800.13.

3.2 Section 30(C) Conditions

Pursuant to section 30(c) of the FPA, 16 U.S.C. § 823a(c), federal and state fish and wildlife agencies have mandatory conditioning authority on exempted projects. No entities filed conditions.

3.3 Additional Staff-recommended Measures

The staff alternative includes Denver Water's proposed measures and the following additional staff-recommended measures:

- Develop an operation compliance monitoring plan to document run-of-river operation and maintenance of the minimum flow releases.

- Stop all work, consult with the Colorado State Historic Preservation Officer (Colorado SHPO) and implement the necessary measures to protect cultural resources, including the preparation of a Historic Properties Management Plan (HPMP), if necessary, to protect any newly discovered cultural resources during project operation, or maintenance; in addition to the applicant's proposed stop work measure discussed above during construction.

- Consult with the Colorado SHPO prior to conducting any maintenance, land-clearing, or land-disturbing activities, or implementing any changes to project operation or facilities not specifically authorized by the Commission that may affect cultural resources to minimize adverse effects on any previously undiscovered cultural resources from project activities.

3.4 No-Action Alternative

Under this alternative, the project license expires, the exemption would not be issued, and the project would be subject to an annual license and all applicable license requirements, until a new license is issued, or the project is otherwise disposed. The project boundary would stay the same, the project facilities would remain within the project boundary and under Commission jurisdiction.

4.0 CONSULTATION AND COMPLIANCE

4.1 Agency Consultation

The Commission's regulations require that applicants consult with appropriate state and federal agencies, tribes, and the public before filing an exemption application. This consultation is required to comply with the Endangered Species Act, the National Historic Preservation Act, and other federal statutes. Pre-filing (or initial) consultation must be completed and documented in accordance with Commission regulations.

4.2 Public Outreach and Scoping

On July 11, 2018, Denver Water conducted a pre-filing meeting and site visit at the project location. Denver Water invited federal, state, and local agencies, Indian tribes, and the general public to participate in the meetings and site visit. Colorado Parks and Wildlife, the City of Aurora, and the Forest Service attended the on-site meeting.

On January 4, 2019, Denver Water filed its application for exemption from licensing. On February 19, 2019, the Commission issued public notice accepting the exemption application, soliciting motions to intervene, stating that the application was ready for environmental analysis, and requesting comments, recommendations, and terms and conditions. On April 3, 2019, the Forest Service filed a timely, unopposed notice of intervention, but did not outline any mandatory terms and conditions with its intervention.

4.3 Endangered Species Act

Section 7 of the Endangered Species Act (ESA), 16 U.S.C. § 1536, requires federal agencies to ensure that their actions are not likely to jeopardize the continued existence of any endangered or threatened species or result in the destruction or adverse modification of the critical habitat of such species.

During its prefiling consultation, Denver Water consulted with the U.S. Fish and Wildlife Service (FWS) regarding threatened and endangered species. In a letter dated September 25, 2018, the FWS indicated that it has no concerns with Denver Water's proposal, noting that there would be no change in the amount of water released, no additional disturbance of new areas, and no impacts to threatened and endangered species.

In June 2020, staff accessed the FWS's Information, Planning, and Conservation (IPaC) System to determine which federally listed species might occur at or near the project. According to the IPaC database, 11 federally listed species have the potential to occur in the project area. Our analysis of the project impacts on these species is presented in section 5.3.3, *Rare, Threatened, and Endangered Species*. We conclude that issuing an exemption from licensing for the Strontia Project, as proposed with the staff-recommended measures, would result in no effect on threatened or endangered species.

4.4 National Historic Preservation Act

Section 106 of the National Historic Preservation Act (NHPA), 54 U.S.C. § 306108 requires that a federal agency "take into account" how its undertakings could affect historic properties. Historic properties are districts, sites, buildings, structures, traditional cultural properties, and objects significant in American history, architecture, engineering, and culture that are eligible for inclusion in the National Register of Historic Places (National Register).

On March 26, 2019, Denver Water initiated consultation with the Colorado SHPO, appropriate local, state, and federal agencies, and relevant Indian Tribes. The letter enclosed a cultural resource survey that assessed potential adverse effects on historic properties within an area of potential effect (APE) for the project. Denver Water's proposal includes installation of a new switchyard and electrical ductbank installed below the switchyard and routed underground to the outlet works. This work results in an APE of approximately two acres, which includes the footprint of the switchyard, the length of the Lower Dam Access Road between the proposed switchyard and the dam outlet works, and Waterton Canyon Road between the proposed switchyard and a gauge house.[7] One

[7] Although the area between the proposed switchyard and gauge house was included as part of the APE, this area will not be added to the project by Denver Water's proposal. Denver Water surveyed this area in April 2018 and recommended a no historic properties affected determination to the Forest Service in June 2018. The Forest Service agreed with that finding and obtained concurrence from the Colorado SHPO on August 21, 2018.

previously documented segment of the Denver, South Park & Pacific (DSP&P) Railroad (Site 5DA26.1)[8] is within the APE. The DSP&P Railroad has been determined eligible for listing in the National Register.

The report found that the segment of Site 5DA26.1 within the APE had been widened and improved for use as an automobile road and that its historic integrity had been adversely affected. As a result, the segment of Site 5DA26.1 within the APE is no longer eligible for listing in the National Register. Denver Water sought concurrence from the Colorado SHPO's concurrence with the APE and finding that the project would have no adverse effect on historic properties within the APE.

In its May 7, 2019 filing, Denver Water provided documentation of its consultation results. The filing included an April 4, 2019 letter from the Colorado SHPO concurring with the recommended finding of no historic properties affected. The filing also included concurrence from the Council Preservation Office, Hopi Tribe with Denver Water's findings. In addition, the filing included an April 26, 2019 letter from Douglas County, Colorado that stated that its Historic Preservation Board had conducted a search of the subject site and determined there are no concerns for impact to cultural resources.

Our analysis of project effects on cultural resources is presented in section 5.3.7., *Cultural Resources*.

5.0 ENVIRONMENTAL ANALYSIS

In this section, the general environmental setting in the project area and cumulative effects are described. An analysis of the environmental effects of the proposed action and action alternatives is also included. Sections are organized by resource area (aquatic resources, cultural resources, etc.). Under each resource area, historic and current conditions are first described. The existing condition is the baseline against which the environmental effects of the proposed action and alternatives are compared, including an assessment of the effects of proposed mitigation, protection, and enhancement measures. Staff conclusions and recommended measures are discussed in section 6.0 of the EA.

Unless otherwise noted, the information in the following Affected Environment sections is derived from the Environmental Report (Exhibit E) of Denver Water's

[8] Denver Water's March 26, 2019 letter initially stated that site 5DA22.1 was the previously documented segment of the DSP&P Railroad within the APE; however, Denver Water notified the consulting parties by a written postcard on April 3, 2019 to correct this error.

application and its supplemental filings.

5.1 General Description of the Area

The project is located on the South Platte River, in Douglas and Jefferson Counties, Colorado. Strontia Springs Dam is 6.5 miles upstream of the mouth of Waterton Canyon on the South Platte River (about 25 miles southwest of Denver, Colorado) and diverts water from a the Strontia Springs Reservoir into a 3.4-mile-long tunnel under the mountains to the Foothills Water Treatment Plant near Denver. Completed in 1983, the Strontia Dam is 243 feet above the South Platte River streambed, forming the Strontia Reservoir, which is a 1.7-mile-long lake with 98 surface acres. The entire South Platte River watershed has a drainage area of about 24,300 square miles and is located in parts of three States - Colorado (79 percent of the basin), Nebraska (15 percent of the basin), and Wyoming (6 percent of the basin). The South Platte River originates in the mountains of central Colorado at the Continental Divide and flows about 450 miles northeast across the Great Plains to its confluence with the North Platte River at North Platte, Nebraska. Altitude in the basin ranges from 14,286 feet (ft.) at Mt. Lincoln on the Continental Divide to 2,750 ft. at the confluence of the South Platte and North Platte rivers. The project area is within the Colorado Foothills Life Zone and the Southern Rockies Crystalline Mid-Elevation and Foothill Shrubland U.S. Environmental Protection Agency (EPA) Level IV Ecoregions (EPA 2003; Chapman et. al. 2006), with elevations ranging from 7,000 ft. down to 5,500 ft. These areas are composed of a diverse array of landforms including steep slopes, cliffs, canyons, mesas, and plateaus.

5.2 Scope of Cumulative Effects Analysis

According to the Council on Environmental Quality's regulations for implementing the National Environmental Policy Act (40 C.F.R., section 1508.7), an action may cause cumulative impacts on the environment if its impacts overlap in time and/or space with the impacts of other past, present, and reasonably foreseeable future actions, regardless of what agency or person undertakes such actions. Cumulative effects can result from individually minor but collectively significant actions taking place over a period of time, including hydropower and other land and water development activities.

Based on our review of Denver Water's application for an exemption from licensing, agency and public comments, and our independent analysis, we have identified no resources that could be cumulatively affected by constructing and operating the Strontia Project.

5.3 Proposed Action and Alternatives

Only resources that would be affected, or about which comments have been received, are addressed in this EA and discussed in this section. Because the proposed action does not include any changes to project operations, and the proposed work would take place within existing structures, in previously disturbed areas, or be buried underground, the proposed action will have no effects on wetland and riparian habitats, scenic and aesthetic resources, or socioeconomic issues. Therefore, we do not assess effects on these resources in this EA.

5.3.1 Water Resources

Water Quantity

Affected Environment

Strontia Springs Reservoir is operated by Denver Water for municipal water supply purposes and generation of power is an ancillary benefit when water is released to meet municipal water demands. Because of this, Denver Water's streamflow and water regime are solely determined by the operation of Denver Water's water supply system and the reservoir does not experience seasonal lowering or large fluctuations in storage. Strontia Springs Reservoir has a surface area of 98 acres, with a storage capacity of 7,863 acre-feet. This corresponds to a normal maximum pool at elevation 6,002 ft. above sea level; though Denver Water states that the reservoir typically remains between 5,985 ft. above sea level and 5,996 ft. above sea level.

The drainage area of Strontia Springs Reservoir is 2,590 square miles. The hydrology of the South Platte River at Strontia Springs Dam is highly modified due to the additions of water upstream resulting from the diversion of water from Dillon Reservoir through the Roberts Tunnel, storage in existing upstream reservoirs (i.e., Cheesman, Eleven Mile, Spinney Mountain, and Antero reservoirs), and withdrawal of water for irrigation and water supply uses. Denver Water provided monthly data for both inflow and outflow at the project for the period of 1983 to 2019, based on data collected by its stream gauging stations.[9] Monthly average inflow to Strontia Springs Reservoir ranges from 214 cfs to 999 cfs, with an average annual inflow of 477 cfs. The lowest inflows

[9] The location of Denver Water's stream gauging stations upstream and downstream of the project are detailed in Denver Water's May 1, 2020 filing with the Commission and would remain the same under the proposed action. These stations are operated by the Colorado Division of Water Resources.

occur during the winter months, with February having the lowest monthly inflow, and the highest inflows occur in the summer months, peaking in June as a result of snowmelt.

The same seasonal flow trend applies to outflows from Strontia Springs Dam to the South Platte River, with monthly average outflow ranging from 76 cfs to 653 cfs, with an average annual outflow of 234 cfs. Denver Water currently releases a minimum of 60 cfs downstream to the South Platte River between May 15th and September 15th and a minimum of 30 cfs at all other times in order to maintain compliance with the average daily minimum streamflow required by easements and right-of-way agreements administered by Forest Service and the project license.

Environmental Effects

Denver Water is not proposing any changes to project operation that would affect water quantity at the project. That is, Denver Water would operate the project in the same way that it currently does, using release of flow for water supply purposes and the head provided by the dam to generate power. Based on flow data provided by Denver Water, the minimum flow requirements have been consistently met since the project began operation, with very few exceptions. Based on this, we would not expect Denver Water's ability to satisfy the minimum flow requirements of 60 cfs minimum flow requirements from May 15th to September 15th and 30 cfs requirements at all other times, including during construction, to change under the proposed action.

Operation of the uprated turbine and generator would allow Denver Water to generate under a wider range of flows than what have historically been, and currently are, released for water supply purposes. The turbine itself would be equipped with an automated bypass system so that when the generator trips, or there is no flow through the draft tube to the tailrace, a minimum seasonal-based flow rate would be released through the existing discharge valve(s) in the outlet works, thus ensuring a more reliable means of flow release to the tailrace compared to the current equipment when generator trips occur.

Currently, Denver Water discharges water to the tailrace from two locations at the dam when releases are being made for water supply purposes: 1) the outlet works; and 2) the vertical draft tube. Both structures are located at the dam, with the outlet works and vertical draft tube located at elevations of 5,845 ft. and 5,780 ft. above sea level, respectively. Water discharged from the outlet works is excess water not used for generation when flows are being released for water supply purposes. Water discharged from the vertical draft tube is water that is used for generation. This would not change under the proposed action; however, because the uprated turbine could operate under a wider range of flows compared to the current turbine, it could result in more water being discharged from the vertical draft tube to the tailrace and less from the outlet works. To

be clear, this would not require, nor is Denver Water proposing, to use more water from Strontia Springs Reservoir than what is released for water supply for generation purposes; rather, it would change the proportion of water being discharged at each location when Denver Water is generating. Therefore, it is not expected that the proposed action would affect water quantity at the project.

Water Quality

Affected Environment

The South Platte River within the project area is designated as Recreation Class 1, Aquatic Life Class 1 Cold, by the Colorado Department of Public Health and the Environment (Colorado DPHE) - Water Quality Control Division. Colorado DPHE defines Aquatic Life Class 1 Cold as waters that: (1) currently are capable of sustaining a wide variety of coldwater biota, including sensitive species, or (2) could sustain such biota but for correctable water quality conditions. Waters in this class are considered capable of sustaining such biota where physical habitat, water flows or levels, and water quality conditions result in no substantial impairment of the abundance and diversity of species (Colorado DPHE, 2017).

The project's WQC requires Denver Water to meet the current Water Quality Standards for Colorado at all times. Additionally, the project's WQC requires Denver Water to conduct daily monitoring for turbidity and suspended solids during any periods of dredging or filling, use best management technology, and comply with the general conditions of the certification. The general conditions are related to erosion and sediment control, chemical storage, spill prevention for contaminants, and disposal of dredge spoils.

Denver Water monitors water quality in the Strontia Springs Reservoir and the South Platte River downstream of the project to ensure the waters support the designated use and to track potential sources of pollution or identify treatment needs. These stations collect data for the following water quality parameters: pH; specific conductance; water temperature; turbidity; dissolved oxygen (DO); chlorophyll A; total alkalinity, calcium, chloride, total Kjeldahl nitrogen, plankton, phosphorous, and zinc; total and dissolved arsenic, cadmium, magnesium, manganese, nitrate, nitrite, sodium, and uranium; dissolved copper, iron, lead selenium, and silver; E. coli; hardness; sulfate; total suspended solids, and fluoride.

Denver Water provided water quality data for the project. Water column profiles in the reservoir indicate that DO concentrations have historically ranged from 6.44 milligrams per liter (mg/L) to 11.79 mg/L, with an average of 8.6 mg/L. Water

temperatures have historically ranged from 0.25 degrees Celsius (°C) to 19.38°C, with an average of 10.9°C. And, pH has historically ranged from 8.03 to 9.02, with an average of 8.4.

With regard to downstream water quality, DO concentrations have historically ranged from 7.1 mg/L to 12.2 mg/L, with an average of 9.1 mg/L; the average water temperature is 8.8°C; and pH has ranged from 7.5 to 8.7, with an average of 8.1.

Environmental Effects

Denver Water would continue to comply with the project's WQC and is not proposing any in-water construction work; however, construction of the new switchyard and installation of the primary power line would require ground disturbance that could result in soil erosion and sedimentation. Although this work would occur in a previously disturbed upland area, if soil erosion occurs, it could potentially impact water quality in the South Platte River. Given the numerous best management practices (BMPs) Denver Water would implement during construction (including, at a minimum, installation and maintenance of silt fencing, sediment control logs and construction fencing), the potential for adverse effects to water quality as a result of construction associated with the proposed action is low. It is expected that if any adverse effects occur, they would be minor and short-term.

Because Denver Water is not proposing any changes to its current operations, no changes to water quality are expected once the new uprated turbine is operational. The penstock within Strontia Springs Dam is relatively short, and any increase in water temperature resulting from the time for water to pass through the turbine as opposed to flowing directly to the outlet works is negligible and does not appear to inhibit the ability of this reach of the South Platte River to maintain its Aquatic Life Class 1 Cold designation. Denver Water is not proposing an increase in penstock length; therefore, this trend should remain the same under the proposed action. Using this same logic, DO concentrations should remain consistent with current operations. Therefore, it is not expected that the proposed action would adversely affect water quality at the project.

5.3.2 Aquatic Resources

Affected Environment

As mentioned above, the South Platte River within the project area is designated as Recreation Class 1, Aquatic Life Class 1 Cold by Colorado DPHE. The stream and reservoir fishery are managed by Colorado Parks and Wildlife (Colorado PW). In April 2018, Denver Water obtained fishery stocking and composition data from Colorado PW

for Strontia Springs Reservoir and segment #3A of the South Platte River immediately downstream of the reservoir. According to Denver Water's Fishery Data Analysis Report, which was based on the period of 1986 to 2000, the following fish species have been documented through various survey efforts in Strontia Springs Reservoir: white sucker, yellow perch, longnose sucker, brown trout, rainbow trout, cutthroat trout, northern pike, and tiger muskie. Additionally, while not captured during survey efforts, kokanee salmon and splake are also present in the reservoir based on stocking data provided by Colorado PW. These species are two of five species stocked in the reservoir. The remaining species include cutthroat trout, tiger muskie and rainbow trout.

Segment #3A of the South Platte River below Strontia Springs Reservoir is a Colorado PW-designated Gold Medal Water. This designation reflects the state's highest quality trout streams and rivers that are accessible to the public and produce and sustain a minimum of 12 "quality trout" (i.e., trout that is 14 inches or larger) per acre and 60 pounds of fish biomass per acre. In this stream reach, rainbow trout and brown trout comprise the sportfish biomass, though the trout biomass changes substantially from year to year. In segment #3A of the South Platte River below Strontia Springs Reservoir, Colorado PW surveys have documented 16 fish species, including brown trout, rainbow trout, longnose dace, fathead minnow, creek chub, cutthroat trout, green sunfish, Johnny darter, largemouth bass, longnose sucker, smallmouth bass, spottail shiner, white sucker, yellow perch, bigmouth shiner, and brook stickleback.

Environmental Effects

There is no evidence on the record that project operation entrains resident fish and subjects them to turbine passage. No dead or injured fish have been observed by Denver Water downstream of the tailrace since the project was licensed in 1984. The fish species known to exist in Strontia Springs Reservoir prefer to utilize the upper portion of the water column for preferred habitat, particularly the uppermost 30 ft., with the exception of yellow perch, which have been documented in depths up to 150 ft. (U.S. Fish and Wildlife Service, 1982 and 1986; Scott and Crossman, 1973). The inlet works, where water is withdrawn for water supply (and hydropower generation) is located at 5,796 ft. above sea level, near the bottom of Strontia Springs Reservoir. Denver Water operates Strontia Springs Reservoir between 5,985 ft. and 6,000 ft., with a normal maximum pool elevation of 6,002 ft. above sea level. The depth of the inlet works where water is withdrawn for water supply and generation is between 192 ft. and 206 ft. deep, depending on the reservoir level. Denver Water proposes no changes to the outlet works where water is withdrawn for generation. Resident fish species would typically occupy only the upper 30 feet of the reservoir water column and would not likely be entrained by operation of the upgraded project turbines.

There are no proposed changes to project operation, including the minimum flow requirement. Therefore, Denver Water would continue to provide releases downstream for protection of aquatic resources of the South Platte River, immediately downstream of the dam. It appears that this reach of the South Platte River continues to meet the criteria for the Recreation Class 1, Aquatic Life Class 1 Cold water classification and maintain its Gold Medal Water status. While there is the potential that periodic sedimentation could occur during construction, it is expected any impacts to aquatic resources downstream of Strontia Springs Dam to be minor and short-term. Given that Denver Water is not proposing to change operations, including its minimum flow releases, and no effect on water quality is expected once construction has been completed, it is not expected that the proposed action would adversely affect aquatic resources in the project area.

5.3.3 Rare, Threatened, and Endangered Species

Affected Environment

Of the 11 listed species located within Douglas and Jefferson counties, 4 federally listed species and/or their habitat may occur in the project area: the Preble's Meadow jumping mouse, Mexican spotted owl, Pawnee montane skipper, and Ute ladies'-tresses. The effects on these species will be discussed further below. Suitable habitat for 2 of the species (i.e., the Canada lynx and greenback cutthroat trout) does not exist within the project boundary and so those species will not be further discussed. The remaining 5 listed species (i.e., the least tern, piping plover, whooping crane, pallid sturgeon, and western prairie fringed orchid) are listed for water-related activities that would affect locations farther downstream from the project and so those species will not be further discussed.

Environmental Effects

Denver Water is not proposing any construction-related activities in the South Platte River channel. The proposed work would occur in previously disturbed, non-woodland areas with limited ground cover, and does not entail the clearing of any areas with native grasses. For these reasons, Denver Water's proposal, including the ground-disturbing activities associated with the proposed construction and granting of the exemption, will have no effect on any of the listed species that may occur in the project area (i.e., the Preble's Meadow jumping mouse, Mexican spotted owl, Pawnee montane skipper, and Ute ladies'-tresses).

Denver Water consulted with the FWS, and the FWS indicated that it has "no concerns" with Denver Water's proposal. Staff reviewed the environmental analysis included in Denver Water's application, the comments from the FWS, the FWS'

Endangered Species list for Jefferson and Douglas counties, and the FWS Information for Planning and Conservation website and have determined that Denver Water's proposal would result in no effect on threatened or endangered species.

5.3.4 Wildlife

Affected Environment

Wildlife within the project area includes bighorn sheep, elk (summer range), mule deer (summer and winter range), wild turkey (summer and winter range), black bear, cavity-nesting birds, and raptors. Denver Water proposes to bury the primary line within an existing roadway following construction and has proposed to locate the switchyard within a previously disturbed area adjacent to the roadway; minimizing the projects overall effects. The turbine and generator will be located in the existing powerhouse, will have a grounding system to prevent electromagnetic interference, and will not generate more noise than the existing turbine.

Environmental Effects

There will be noise impacts associated with the proposed construction of the new switchyard, which will likely cause wildlife to relocate temporary. Specifically, the Colorado Parks and Wildlife expressed concern for the resident bighorn sheep herd indigenous to the Waterton Canyon, consisting of approximately 48 ewes and 25 rams. The Colorado Parks and Wildlife recommended Denver Water restrict and/or limit ground-disturbing activities from April 15 to June 30, to minimize the effects on the bighorn sheep during lambing season. Denver Water included this provision within its application. Given the limited outside construction activities, and Denver Water's proposal to restrict ground-disturbing activities from April 15 to June 30, any negative effects on native wildlife during the proposed construction will be minimal and short in duration; no long-term negative effects are expected.

5.3.5 Vegetation

Affected Environment

The proposed switchyard location is minimally vegetated, consisting primarily of mountain grass species including rabbitbrush, blue grama grass, and little bluestem, as well as a native shrub, common chokecherry. The proposed switchyard area is located adjacent to the intersection of the Lower Access Road and South Platte River Road, on Denver Water fee owned land. Some land clearing is required to construct the

switchyard and will include clearing an area slightly larger than the switchyard's 25-foot by 50-foot concrete pad.

Environmental Effects

Denver Water proposes to route the ductbank along the Lower Access Road on both Denver Water and Forest Service property. Denver Water proposes to trench an area of 36-inches wide and 20-inches deep, by 1,170-feet long for the electrical ductbank. The construction associated with the routing of the ductbank will cause temporary but minor effects on vegetation.

5.3.6 Recreation and Land Use

Affected Environment

The existing project offers only limited recreational opportunities. Recreation at the Strontia Springs Reservoir is limited due to the lack of shoreline access and steep canyon walls, and no formal recreation facilities are provided in the project boundary. Biking, hiking, fishing, horseback riding, and wildlife viewing are recreational uses along South Platte River Road, and fishing and hiking opportunities are limited at the Strontia Springs Reservoir given the strenuous hike required to access the reservoir and fishing locations. Denver Water is bound by the Waterton Canyon Management Plan and MOU, which addresses recreation and other issues in the broader project area beyond, but including, the project boundary.[10] This MOU requires Denver Water to allow certain low-impact recreation opportunities (e.g., hiking, horseback riding, etc.), restrict boating in the reservoir, and maintain signs around the project works that warn visitors of hazards posed by the constructed facilities.

Environmental Effects

If Denver Water temporarily closes or restricts access the South Platte River Road and/or Waterton Canyon, it would be for a short period of time and the closure(s) would be for public safety purposes (which are allowable under its MOU). The potential effect on recreation would be minimal and short-term only related to the temporary closures.

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[10] The MOU was signed in 1983 by Denver Water, the Bureau of Land Management, and the Forest Service. The MOU established the types of public use and access allowed at Waterton Canyon, the construction and maintenance of recreation facilities, and responsibilities of the parties, including law enforcement and fire suppression. Zone D of the Waterton Canyon Management Plan covers Strontia Springs Dam and Reservoir and includes lands within 0.25 mile of the shoreline.

There would be no long term or lasting effects on recreation from the proposed construction and/or the issuance of an exemption, as Denver Water's recreation management obligations will continue under the MOU.

5.3.7 Cultural Resources

Affected Environment

Section 106 of the NHPA requires that the Commission evaluate the potential effects on properties listed or eligible for listing in the National Register. Such properties listed or eligible for listing in the National Register are called historic properties. In this document, we also use the term "cultural resources" for properties that have not been evaluated for eligibility for listing in the National Register. Cultural resources represent things, structures, places, or archaeological sites that can be either prehistoric or historic in origin. In most cases, cultural resources less than 50 years old are not considered historic. Section 106 also requires that the Commission seek concurrence with the Colorado SHPO on any finding involving effects or no effects on historic properties and allow the Advisory Council on Historic Preservation an opportunity to comment on any finding of effects on historic properties. If Native American (i.e., aboriginal) properties have been identified, section 106 requires that the Commission consult with interested Indian tribes that might attach religious or cultural significance to such properties.

Denver Water conducted a cultural resource survey to identify existing and potential cultural resources that could be affected by the project. Denver Water identified one previously documented segment of the DSP&P Railroad (Site 5DA26.1). The DSP&P Railroad had been determined eligible for listing in the National Register.

Environmental Effects

We designated Denver Water as our non-federal representative for the purpose of informal consultation with the Colorado SHPO, appropriate Indian Tribes, and other consulting parties pursuant to Section 106 of the NHPA for the proposed conversion and change to the project boundary. Although Denver Water found a segment of an eligible site within the APE, the site had been widened and improved for use as an automobile road and it no longer retained its historic integrity. As a result, the segment of 5DA26.1 within the APE is no longer eligible for listing in the National Register and a determination of no historic properties affected is appropriate. The Colorado SHPO, the Council Preservation Office, Hopi Tribe, and the Historic Preservation Board of Douglas County concurred with this determination.

Additionally, in an April 4, 2019 letter, the Colorado SHPO said that if Denver Water discovers any previously unidentified cultural resources during the proposed work,

the work should be interrupted until the resources have been evaluated in terms of the National Register eligibility criteria (36 C.F.R. § 60.4) in consultation with the Colorado SHPO pursuant to 36 C.F.R. § 800.13. Therefore, to ensure protection of unidentified cultural resources during operation of the project, a condition should be added to the exemption to require the Denver Water to notify and consult with the appropriate parties in the event of an unanticipated discovery.

5.3.8 Geology and Soils

Affected Environment

Precambrian intrusive igneous rocks dominate the geology in the Project area. These rocks include granites associated with the Pikes Peak batholith, biotite gneiss, schist, and quartzite. Most soils within the Project area have a high erosion hazard due to the steepness of slopes. Rockfall from outcrops occurs periodically.

Denver Water will perform geological and subsurface investigations at the new proposed switchyard and along the Lower Access Road downstream of the right abutment of the dam. The investigations are necessary to determine bedrock depth for the placement of the electrical ductbank, and for soil bearing properties at the proposed switchyard. Due to the proximity of this work to the right dam abutment, Denver Water must coordinate and obtain approval from the Commission's Division of Dam Safety and Inspections-San Francisco Regional Engineer. Denver Water included a draft Geotechnical Work Plan with its application (Appendix H). This plan must be approved before the proposed activities can begin. Denver Water submitted a Drilling Program Plan with the San Francisco Regional Office for its review and approval. Denver Water anticipates that it will complete the Geotechnical Report within three months after it receives approval of the Drilling Program Plan.

Environmental Effects

Although the soils in the project area have a high erosion hazard, the proposed exemption area has been previously disturbed during the original construction of the project. Therefore, no significant effects to soils are expected. Denver Water will implement BMPs (as outlined above) to minimize soil erosion and sedimentation during construction activities for the switchyard and primary transmission line. These proposed measures will minimize soil erosion and sedimentation during construction. Once in operation, the project should have little or no effect on geology and soils.

5.4 No Action Alternative

Under this alternative, the project license expires, the exemption would not be issued, and the project would be subject to an annual license and all applicable license requirements, until a new license is issued, or the project is otherwise disposed. The project boundary would stay the same, the project facilities would remain within the project boundary and under Commission jurisdiction; therefore, there would be no effects on environmental resources.

6.0 CONCLUSION AND RECOMMENDATIONS

Based on our independent review and evaluation of the environmental effects of the proposed action, and a no-action alternative, we recommend all of Denver Water's proposed measures, and some additional staff-recommended measures as the preferred alternative. Additional measures recommended by staff include: (1) Stop all work, consult with the Colorado SHPO and implement the necessary measures to protect cultural resources, including the preparation of a HPMP, if necessary, to protect any newly discovered cultural resources during project operation, or maintenance; (2) Consult with the Colorado SHPO prior to conducting any maintenance, land-clearing, or land-disturbing activities, or implementing any changes to project operation or facilities not specifically authorized by the Commission that may affect cultural resources to minimize adverse effects on any previously undiscovered cultural resources from project activities; (3) Develop an operation compliance monitoring plan for run-of-river operation and maintaining minimum flow releases.

We recommend this alternative because: (1) issuing an exemption from licensing for the Strontia Project would allow Denver Water to construct the additional facilities and continue to operate its project as a beneficial and dependable source of electrical energy; and (2) the recommended measures would protect aquatic resources, terrestrial resources, recreational resources, and previously unidentified cultural resources.

Operation Compliance Monitoring Plan

An operation compliance monitoring plan would define the means by which Denver Water would document compliance with the operational provisions of any exemption and provide a mechanism for reporting flow deviations. An operation compliance monitoring plan would also help the Commission verify that the project is operating in a run-of-river mode and maintaining the required minimum flow releases into the South Platte River, thereby facilitating administration of the exemption and assisting with the protection of resources that are sensitive to deviations from normal operating conditions. Therefore, we recommend that Denver Water develop an operation

compliance monitoring plan which includes, at minimum, provisions for: (1) monitoring run-of-river operation and minimum flows to document compliance with the operational conditions of any exemption; (2) reporting deviations to the Commission; and (3) maintaining a log of project operations.

Cultural Resources

As we discuss in section 5.3.7., the proposed action would not adversely affect historical properties; however, there is a possibility that project-related activities during construction and maintenance could uncover previously unidentified cultural resources. In such an event, Denver Water would need to halt all land-clearing and land-disturbing activities and consult with the Colorado SHPO. If previously undiscovered cultural resources are determined to be eligible for listing on the National Register, then Denver Water would need to prepare and file for Commission approval, a HPMP prepared in consultation with the Colorado SHPO. It is also possible that future project modifications not requiring prior Commission authorization could uncover previously unknown cultural resources; therefore, prior to conducting such modifications, Denver Water would need to consult with the Colorado SHPO. Following such protocols and procedures would ensure that cultural resources are protected.

7.0 FINDING OF NO SIGNIFICANT IMPACT

If the Strontia Project is exempted from licensing as proposed with the additional staff-recommended measures, the project would be constructed and would continue to operate while protecting aquatic resources, terrestrial resources, recreational resources, and any previously unidentified cultural resources in the project area.

Based on the information and analyses contained in this EA, issuance of an exemption from licensing for the Strontia Project, as proposed with the additional staff-recommended measures, would not constitute a major federal action significantly affecting the quality of the human environment.

8.0 REFERENCES

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