

# RECLAMATION

*Managing Water in the West*

## **Final Environmental Assessment South Canal Hydropower Project**

**Western Colorado Area Office  
Upper Colorado Region**





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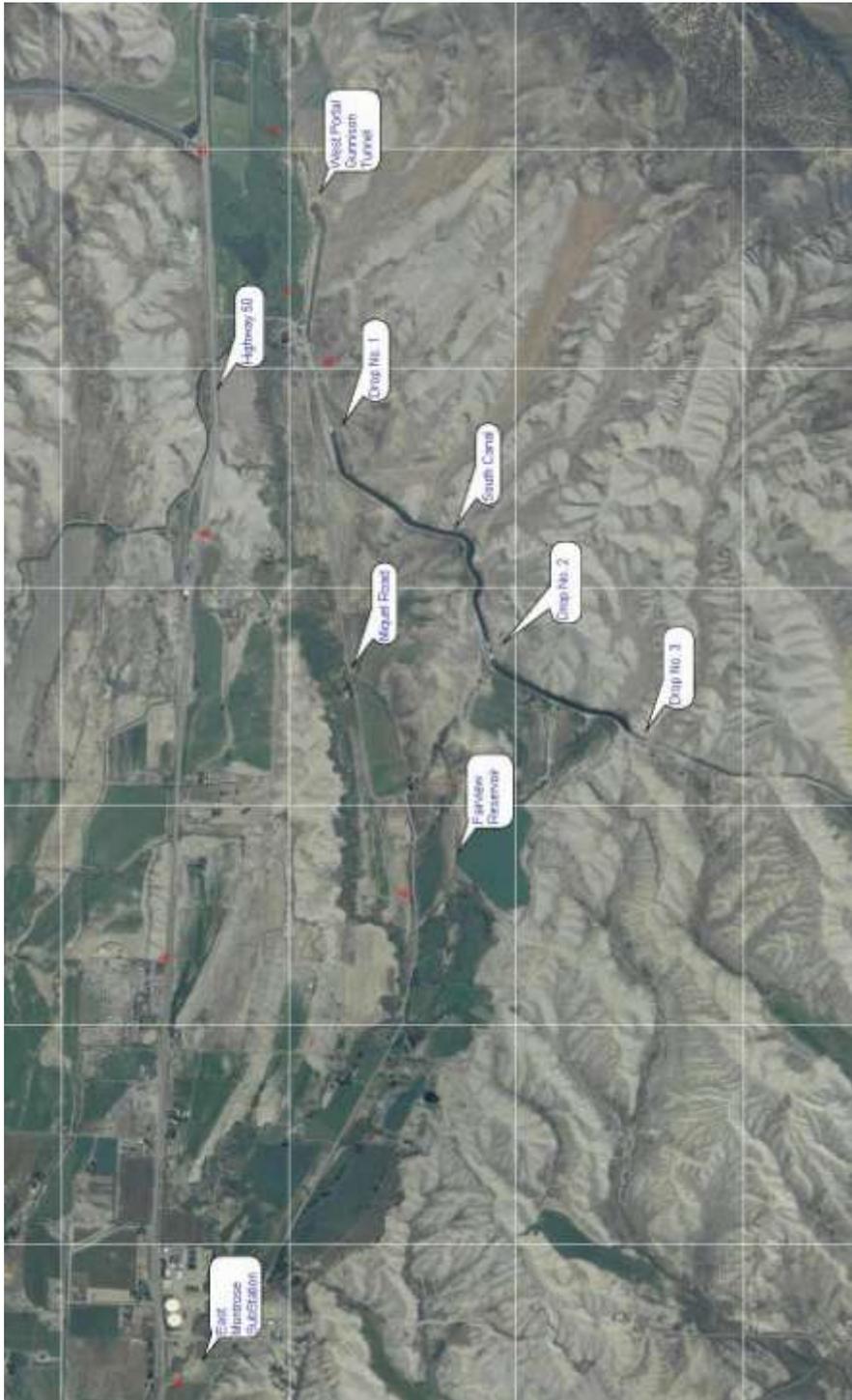


Figure 1 Project Area

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# CHAPTER 1-- INTRODUCTION

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## PROPOSED ACTION

The proposed action is to permit hydropower development on a portion of the South Canal in Montrose County, Colorado. The South Canal is a major feature of the Bureau of Reclamation's Uncompahgre Irrigation Project and the Federal action would be issuance of a "Lease of Power Privilege" (LOPP) allowing a non-Federal party to develop the hydropower resource. The LOPP would allow use of the South Canal to generate electricity. The Uncompahgre Valley Water Users Association (UVWUA) and the Delta-Montrose Electric Association (DMEA) have applied for the LOPP at the South Canal.

This Environmental Assessment (EA) is prepared in accordance with the National Environmental Policy Act, the Council on Environmental Quality Regulations for Implementing the Procedural Provisions of NEPA (40 CFR 1500-1508), and the U.S. Department of the Interior's regulations (43 CFR Part 46). The EA evaluates the environmental effects of issuing a LOPP.

## NEED FOR AND PURPOSE OF ACTION

A LOPP is needed to develop hydropower along the South Canal. Current Federal policy encourages non-Federal development of environmentally sustainable hydropower potential on Federal water resource projects. The LOPP would ensure that the development of hydropower would be implemented consistent with established authorities, purposes, and water operation plans of the Uncompahgre Project.

The purpose of the South Canal Hydropower Project (Project) is to provide a clean, renewable energy source that is locally controlled. The electricity generated by the Project would provide the UVWUA and DMEA a source of revenue that can be used to defray annual operating expenses. It would assist in funding the maintenance and improvement of the Uncompahgre Project. The Project also may provide DMEA an opportunity to help diversify its generating portfolio and to meet legislatively-mandated requirements for renewable energy sources.

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## BACKGROUND INFORMATION

**Uncompahgre Project**—The Uncompahgre Project is an irrigation project in west-central Colorado developed by the Bureau of Reclamation (Reclamation) and operated by the UVWUA. Irrigated lands surround the town of Montrose and extend 34 miles along both sides of the Uncompahgre River to Delta, Colorado. Project features include Taylor Park Dam and Reservoir in Gunnison County, the Gunnison Tunnel, 7 diversion dams, 128 miles of main canals, 438 miles of laterals, and 216 miles of drains. The systems divert water from the Uncompahgre and Gunnison rivers to serve over 76,000 acres of irrigated land.

The Uncompahgre Project was authorized by the Secretary of the Interior on March 14, 1903, under the provisions of the Reclamation Act. Construction began in July 1904, and the first water for irrigation was available during the season of 1908 from the Uncompahgre River. The Gunnison Tunnel was completed in 1909 and the Gunnison Diversion Dam was completed in January 1912 allowing delivery of water to the Uncompahgre Valley. Taylor Park Dam, built from funds allotted under the National Industrial Recovery Act, was completed in 1937. The project was transferred to the UVWUA for operation and maintenance in 1932.

The Uncompahgre Project plan provides for water storage in Taylor Park Reservoir on the Taylor River, which is a part of the Gunnison River Basin. The Gunnison Diversion Dam on the Gunnison River, about 12 miles east of Montrose, diverts Gunnison River direct flows, as well as releases from the Taylor Park Dam into the Gunnison Tunnel and then into the South Canal. The tunnel is 5.8 miles long and has a capacity of approximately 1,150 cubic feet per second (cfs). The South Canal extends from the end of the Gunnison Tunnel generally southwest 11.4 miles to the Uncompahgre River. Part of the canal is concrete lined; the remainder is unlined.

**Delta Montrose Electric Association--** DMEA is a Rural Electric Cooperative owned by the customers it serves. DMEA purchases power from Tri-State Generation and Transmission and distributes it to users. DMEA would distribute and sell power produced under the South Canal Hydropower Project.

**Lease of Power Privilege--**On August 26, 2009, a “Notice of Intent To Contract for Hydroelectric Power Development on the South Canal, Uncompahgre Project, and to accept proposals, select lessee, and contract for hydroelectric power development on the South Canal” was published in the Federal Register. Proposals were accepted until February 2010. Based on the recommendation from a review team, Reclamation determined that the proposal submitted by the UVWUA and DMEA should be accepted and that negotiations should proceed for the LOPP on the South Canal.

A LOPP is an alternative to Federal hydroelectric power development. The LOPP is a contractual right given to a non-Federal entity to use a Reclamation facility for electric power generation consistent with the Reclamation project authorized purposes. A LOPP has terms of 40 years and the general authority includes, among others, the Town Sites and Power Development

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Act of 1906 (43 U.S.C. 522), and the Reclamation Project Act of 1939 (43 U.S.C. 485h(c)) (1939 Act).

A LOPP on the South Canal must accommodate existing contractual, water delivery, and environmental commitments related to operation and maintenance of the South Canal and the Uncompahgre Project. All costs incurred by the United States related to development and operation and maintenance under the LOPP, including NEPA compliance, engineering reviews, and development of the LOPP, are the expense of the lessee. In addition, the lessee would be required to make annual payments to the United States for the use of the Government facility. Depending on the economic capability of the proposed hydropower development, this amount will be not less than 3 mills per kilowatt-hour of generation. If conditions provide opportunity for substantial benefits to accrue to the lessee, then the United States will benefit proportionally. Also, under the LOPP, provisions will be included for inflation of the annual payment with time. Such annual payments to the United States would be deposited as a credit to the Upper Colorado River Basin Fund.

A draft of the LOPP contract is included in Attachment A.

Pursuant to a Memorandum of Agreement<sup>1</sup> between Reclamation and the Bureau of Land Management (BLM), Reclamation has been delegated full jurisdictional responsibility to issue and administer a LOPP, including authorization for all hydroelectric power facilities and associated rights-of-way, on all public lands including those lands under BLM's jurisdiction.

A map showing Reclamation and BLM land jurisdiction is found in Attachment C. The project features along the South Canal are located in portions of Sections 26, 27, 28, and 33 of Township 49 N, Range 8 W, New Mexico PM. In the project impact area, approximately 1,400 feet of the South Canal is located on BLM administered land in the SW1/4SW1/4 Section 27, Township 49 N, Range 8 W New Mexico PM. As discussed later in this EA, a powerline would be buried in the South Canal maintenance road in this 1,400 feet of BLM administered land.

## **DRAFT EA REVIEW AND SCOPING**

The draft EA was distributed for review on December 20, 2011 with a review period extending to January 30, 2012 as shown in Chapter 4 of this final EA, and availability of the EA was announced through news releases in local papers. In addition to agencies, organizations, and interested individuals, availability of the EA was announced to landowners along the South Canal.

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<sup>1</sup> Contract No. 10-LM-4A-00020 between Bureau of Land Management Uncompahgre Field Office and Bureau of Reclamation, January 12, 2010.

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Chapter 4 of the final EA contains a summary of comments received on the draft EA and responses to the comments. Where appropriate, changes have been made in the EA and in the environmental commitments in response to comments received.

Scoping is an early and open process to determine the issues and alternatives to be addressed in the EA. A public scoping process was conducted including a meeting held March 9, 2011 in Montrose. Letter and email notification and information on the meeting and on scoping was provided to over 50 local, state, and federal agencies and interested organizations. A news release concerning the meeting was provided to local media and an article was published in the Montrose Daily Press and in the Delta County Independent prior to the meeting. In addition, there was a paid public notice advertisement for LOPP negotiations in the Daily Press and the Delta paper, and there were updates on the Project in DMEA and UVWUA mailings.

The scoping meeting was attended by an estimated 40-50 people. The Project was described along with the EA process, and questions and concerns were discussed and answered at the meeting. Public input was provided at the meeting or later by email and letter.

Input was requested concerning:

- Questions or concerns with the proposal
- Significant issues that should be addressed in the EA
- Information or data available that could help in review of the proposal

The following is a summary listing of issues brought up during scoping by individuals, organizations, and agencies:

- Visual impacts of new powerlines are a concern.
- Existing water deliveries of the South Canal need to be priority over hydropower.
- Rainbow and brown trout are diverted from the Gunnison River through the Gunnison Tunnel into the South Canal. People fish in the canal and the fish ultimately are caught, enter the Uncompahgre River, or perish when the canal is shut down for the winter. How will all of this be affected? Will fish be lost through turbines? Will fishing continue in the canal? Does project offer opportunity to correct this wasteful situation?
- Consider screening fish from entering Gunnison Tunnel; provide stocking of Uncompahgre River to offset losses from South Canal activities.
- Will there be increased diversions from the Gunnison River? Existing diversions need to be quantified. What are impacts on Gunnison Gorge and Black Canyon if increased diversions were to occur? How can increased diversions be prevented, need explicit sideboards. Need assurance that irrigation season won't be "extended".
- Now is opportune time to develop renewable energy from irrigation water; it is long overdue. General support for renewable energy.

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- Feasibility of project needs to be addressed. What are costs and benefits? Risky venture could harm Uncompahgre Project. Socio-economic aspects of the project need to be analyzed—employment, tax revenues, effects on community, etc.
  - How are DMEA and UVWUA members affected financially?
  - LOPP should call for trained operators to manage hydropower plants to assure safe operations.
  - Need to protect against interruptions in South Canal flows during power outages, penstock filling, etc.
  - Effect on endangered plants in the area need to be addressed.
  - Cultural resources need to be protected.
  - What are terms of the LOPP?

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## CHAPTER 2 -- PROPOSED ACTION AND ALTERNATIVES

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Alternatives evaluated in this EA include the No Action and variations of Proposed Action Alternatives.

### NO ACTION ALTERNATIVE

Under this alternative, Reclamation would not issue a LOPP and the proposed hydropower development on the South Canal would not be constructed at this time.

### PROPOSED ACTION

Under the Proposed Action, Reclamation would execute a LOPP to permit construction, operation, and maintenance of powerplant facilities along the South Canal. Various alternatives were considered during planning for the proposed action, including development of one, two, or three powerplants along the reach of the South Canal being studied. Each alternative would divert water from the canal at the top of a drop structure<sup>2</sup>, run the water downhill through a buried penstock to a powerplant, and return the water to the canal. Alternative powerline locations and designs and alternatives to address fishery issues were also considered.

**Preferred Alternative** The preferred alternative includes two powerplants; one would be located near the bottom of Drop No. 1 on the South Canal and one near the bottom of Drop No. 3 (see figures 2-5 and frontispiece map).

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<sup>2</sup> There are several locations along the South Canal where the canal “drops” down a short, steep hill. The elevation change in the canal can be used to produce hydropower.

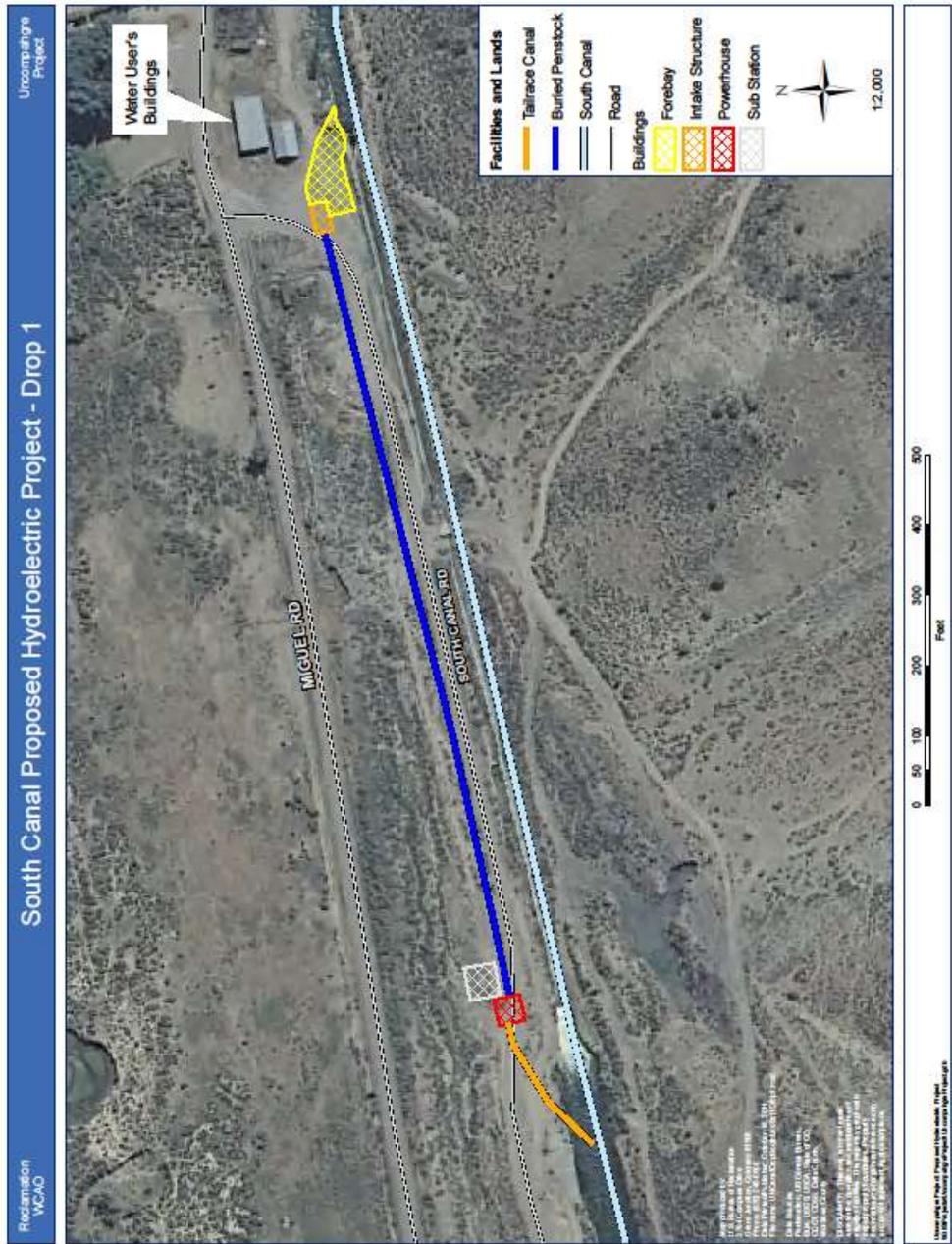


Figure 2. Drop No. 1 power development location on South Canal.



**Figure 3. Drop No. 1 on South Canal. The penstock would be located near the road on the left side of picture. Water would return to the canal near the bottom of the picture.**

### **Design**

A diversion structure and forebay would be constructed in the South Canal near the top of Drop No. 1. The concrete structure would include a roller gate with electrical hoist which would be used to direct water to the powerplant when closed or back into the canal when opened in case of powerplant shutdown or maintenance. The forebay would have an intake structure leading to a buried steel penstock (pipe), approximately 11 feet in diameter and 1,130 feet in length. The center line of the penstock would be located 70 feet north of the canal and buried with approximately 3 feet of cover.

The penstock would carry water to a powerhouse which would be approximately 40 feet square and would be located at the bottom of Drop No. 1 (Figure 3). The powerhouse would hold an adjustable blade Kaplan Turbine coupled to a synchronous generator. From the powerhouse, water would return to the canal via a riprap-lined tailrace approximately 150 feet in length. The powerplant and substation would be fenced.

The second powerplant would be constructed 1.5 miles downstream at Drop No. 3 on the South Canal. The design would be similar to that described for Drop No. 1; however, the penstock would be much shorter at approximately 290 feet in length. This penstock would be located





**Figure 5. Drop No. 3 along South Canal. Penstock would be buried to the left of the road.**

40 feet from the canal. The centerline would fall on approximately the western edge of the existing canal maintenance road. The diversion structure would be constructed on the South Canal near the top of Drop No. 3. This would divert water into a concrete lined forebay leading to the penstock and powerplant. Water would then return to the canal via a tailrace at the bottom of Drop No. 3.

A picture of a typical powerhouse building that would be located at both sites is included in Attachment C. A small substation would be constructed adjacent to each powerplant and these would step-up the generation voltage of 4,160V to the transmission voltage of 34.5/19.9 kV. The powerplant and substation areas would be fenced.

Table 1 summarizes information on the two powerplant sites.

Table 1. South Canal powerplant sites

|                          | Drop No. 1 Site   | Drop No. 3 Site   |
|--------------------------|---|---|
| Rated head               | 53 feet   | 49 feet   |
| Penstock                 | 1,130 feet steel, 11-foot diameter                        | 290 feet steel, 11-foot diameter                          |
| Max. generator output    | 4.0 MW  | 3.5 MW  |
| Turbine Type             | Vertical Shaft Double Regulated Kaplan Turbine            | Vertical Shaft Double Regulated Kaplan Turbine            |
| Average efficiency       | 92% +   | 92% +   |
| Rated discharge          | 900 cubic feet per second                                 | 900 cubic feet per second                                 |
| Minimum operational flow | 300 cubic feet per second                                 | 300 cubic feet per second                                 |
| Maximum operational flow | 1,000 cubic feet per second                               | 1,000 cubic feet per second                               |
| Substation               | At site, steps generation voltage to transmission voltage | At site, steps generation voltage to transmission voltage |
| Land ownership           | Reclamation   | Reclamation   |

Power would be transmitted to the DMEA East Montrose substation being built on the west end of Miguel Road (Figures 1 and 6). Power from the powerplants would be carried via a buried line in the South Canal maintenance road between Drop No. 1 powerplant and Drop No. 3 powerplant.

An overhead powerline starting near Drop No. 1 would be used to carry the power from Drop No. 1 and Drop No. 3 to the East Montrose substation. This overhead powerline route would run from the Drop No. 1 substation to the east end of Miguel Road, then north on Miguel Road to U.S. Highway 50, west on Highway 50 to the western end of Miguel Road, and then south to the East Montrose substation. In the construction of the overhead portion of the powerline, the section of powerline that parallels along Highway 50 to the eastern extent of Miguel Road would be an upgrade of an existing powerline and would use an existing powerline right of way.

The existing line along U.S. Highway 50 would be upgraded to accommodate two powerline circuits – the existing 12,470 V distribution lines and the 34.5 kV distribution feeder from the hydroelectric facilities to the substation. The upgrade would consist of new, slightly taller poles

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and appropriate insulators for the double circuit construction. In addition, an existing 12,470 V powerline which runs from Highway 50 along the eastern extent of Miguel Road would either be upgraded to a double circuit configuration or left in place and a separate 34.5 kV distribution feeder would be added. From the southern extent of the existing 12,470 V powerline to slightly beyond the Drop No. 1 powerhouse, a 34.5kV overhead powerline would be constructed. This new line would be located on Reclamation land or within the existing Miguel Road easement. This portion of the 34.5 kV powerline would be tied to the underground portion of the 34.5 kV powerline. This connection would be located in the vicinity of the Drop No. 1 powerhouse.

An alternative for transmission was also considered. The alternative line would be buried for the most part in existing roadways, for example the South Canal maintenance road, lateral maintenance roads or Miguel Road. A short segment of approximately 0.6 mile would be buried outside of roadways in the vicinity of Fairview Reservoir.

Figure 6 shows proposed and alternative powerline locations.

The preferred alternative would include installation of an electronic fish barrier at the entrance to the Gunnison Tunnel to reduce the number of fish lost from the Gunnison River to the Gunnison Tunnel and South Canal. The barrier would be located at the point where water is diverted from the river into the tunnel inside the existing floating debris boom. Vertical steel electrodes would be hung from catenary cables to deter fish from entering the Gunnison Tunnel. The system would include the use of DC pulse generators and computer control equipment which would be housed in an existing building at the site. The system would be operated during the irrigation season and would be funded and maintained by DMEA and UVWUA. DMEA would provide funding to reduce impacts to the local fishery through access or habitat improvement. Additional information is included in chapter 3 of this report.

Facility construction is expected to take 18 months at a cost of approximately \$22 million. This estimated cost includes feasibility and other studies, design and construction of the generation facilities, and construction of the powerlines and electrical substation interconnections. Mountain States Hydro, LLC has been selected by DMEA and UVWUA to construct the Project. The contract would result in a firm fixed price for construction and provide for a bonded, guaranteed electricity generation performance standard.

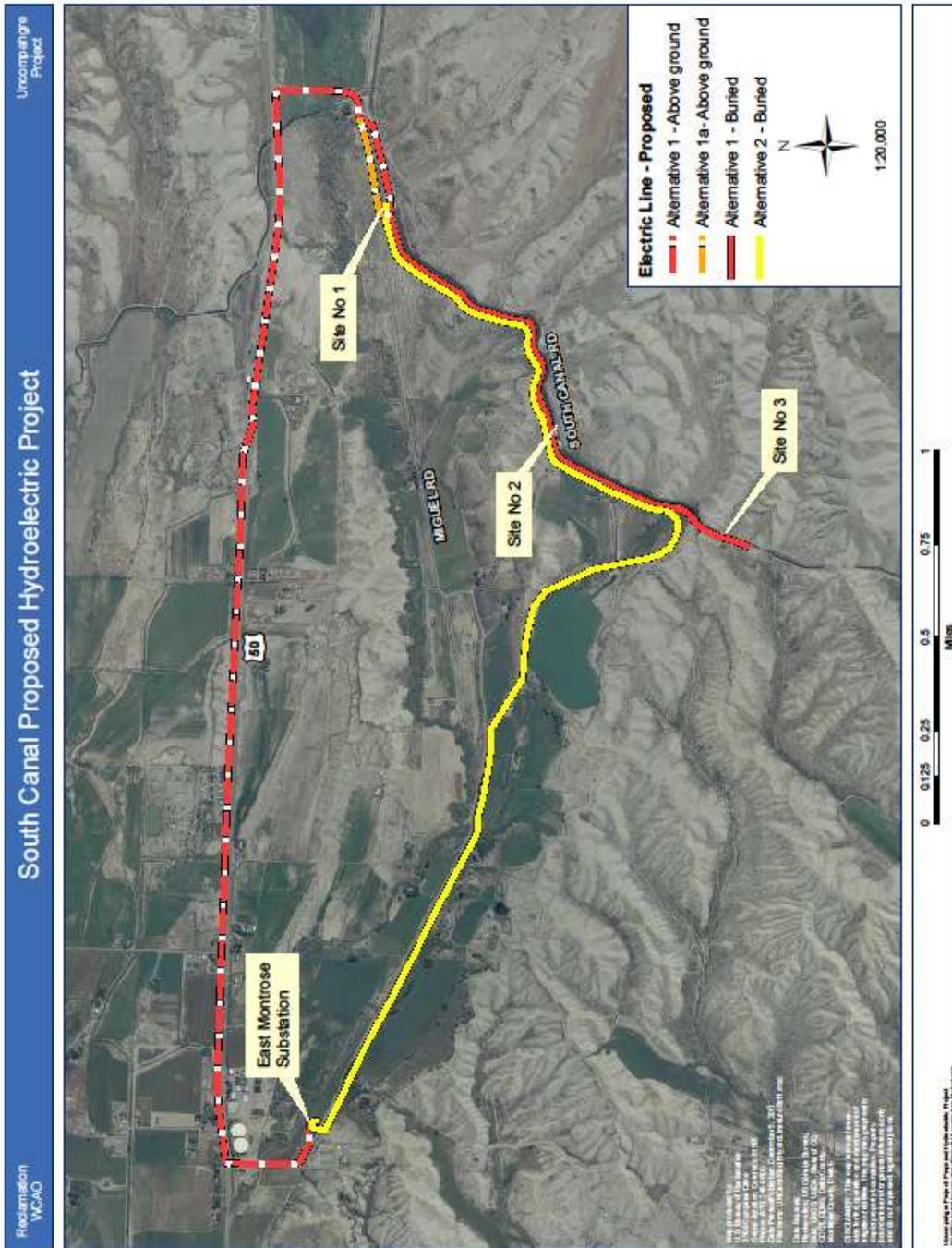


Figure 6. Alternative powerline locations.

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Funding for the Project is expected to involve issuing “Clean Renewable Energy Bonds”. DMEA is approved to issue the bonds and has IRS approval to issue up to \$28 million in these bonds. These bonds are a low cost financing option made available to qualified non-income tax paying entities to encourage the development of renewable energy projects.

Construction activities would be staged so as to minimize interference with on-going canal operations. Normal canal flows would be maintained throughout construction and the ability to fill Fairview Reservoir would not be interfered with. Penstock construction could occur during the irrigation season; however, construction directly involving the South Canal would be limited to the non-irrigation season.

Storage areas and staging areas during construction would be along the South Canal. The existing maintenance road along the South Canal would be used for construction access. Construction of the buried penstock would require an area approximately 170 feet in width for excavation, access, and temporary pipe and material storage.

Powerlines along the South Canal would be buried in the maintenance road and “plowed in” using the ripper on a bulldozer. This method uses a bulldozer with a ripper attachment to create a narrow path that is simultaneously filled with the powerline conduit. The depth of the ripper and conduit is about 4 feet. The greatest disturbance to the land occurs from the two tracks on the bulldozer (approximately 2 paths at 2 feet in width, each). The “plowed in wire” leaves the ground heaved; therefore, the bulldozer drives over the heaved ground to smooth the land to original contours.

DMEA would be responsible for obtaining any required Federal, state, or local permits to construct and operate the Project, including permits under the Clean Water Act (Section 402 and 404 permits) which may be needed for dewatering or other activities. Montrose County permits will be acquired for portions of the powerline.

Disturbed land would be contoured, topsoil replaced, and treated to prevent erosion prior to reseeded. A seeding mix specifically designed for the impact area would be used and long-term weed control would be implemented. The BLM has furnished revegetation and weed control guidelines for the type of lands impacted by the Project. Additional information is found in Chapter 3 under Environmental Commitments and in Attachment D. At the end of construction, DMEA would conduct start-up testing to ensure that all systems are operating properly and within the specified ranges and tolerances. This testing would be conducted to test the installation to ensure that all systems are working according to specifications.

## **Operation**

DMEA anticipates that the units would be operated remotely, with power dispatched to the local grid from its operating center. Project operations would be coordinated with the UVWUA to prevent interference with irrigation operations.

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At the beginning of each irrigation season, water would be discharged through the existing canal to exercise the gates and make certain all normal systems are in working order.

The facilities would be designed and equipped with structures to protect canal and irrigation flows. When the hydropower facility went off-line, flows would be immediately diverted back into the canal to prevent any disruption to the irrigation supplies.

The powerplants would only use normal irrigation flows in the South Canal<sup>3</sup>. The Uncompahgre Project was constructed as an irrigation project and irrigation remains its primary purpose with all other uses playing secondary roles. The hydropower project would have no control over operation of the canals and would be operated as a run-of-canal plant. During the irrigation season, the Project would divert irrigation flows from the canal, pass them through the powerplants, and return the water to the canal immediately below the powerplants. There would be no increases in diversions from the Gunnison River through the Gunnison Tunnel to the South Canal permitted under the LOPP for the hydropower project. No hydropower production would occur in the November through February period. Water available for hydropower is discussed further in Chapter 3 and under Environmental Commitments.

The electricity generated by the Project would provide UVWUA a source of revenue that can be used to defray annual operating and maintenance expenses and would provide DMEA electricity to market as well as an opportunity to help diversify its generating portfolio and to meet legislatively-mandated requirements for renewable energy sources.

**Alternatives to Preferred Alternative-** An alternative was studied that called for a single powerplant. Water would be diverted at the top of Drop No. 1 and carried to a powerplant at the bottom of Drop No. 3. The penstock would be located north and east of the canal. This alternative would begin with construction of 680 feet of concrete lined open-channel headrace extending downstream from the top of Drop No. 1, and concluding with a powerplant and tailrace at the bottom of Drop No. 3. The headrace and powerplant would be connected by approximately 8,100 feet of 13-foot diameter steel penstock. This alternative is no longer being considered. An alternative for an additional powerplant at Drop No. 2 was also considered.

As indicated previously and shown in Figure 6, an alternative powerline route was considered that involved a buried line around Fairview Reservoir and along Miguel Road.

Concerning fishery planning, an alternative would be to not install and operate the electronic fish barrier at the entrance to the Gunnison Tunnel. Under this alternative, the fish losses from the Gunnison River to the tunnel and South Canal would continue. This is further discussed in Chapter 3.

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<sup>3</sup> Municipal water delivered to Fairview Reservoir during the irrigation season would also be used. The Drop One powerplant could possibly produce winter hydropower from municipal water delivered intermittently to Fairview Reservoir through the Gunnison Tunnel although this is unlikely.

## SUMMARY

Table 2. Summary of alternatives

| Resource                                       | No Action Alternative | Two Unit Hydropower Development   |
|--|-----------------------|---|
| Energy production-average annual               | None                  | 26,900 megawatt-hours (MWh) of energy per year.   |
| Wetlands and riparian resources                | No effect             | Wetlands avoided.   |
| Recreation use                                 | No effect             | Reduced fishing use of South Canal; benefits to the Gunnison River  |
| Fisheries                                      | No effect             | Benefits to Gunnison River as fish entrainment in South Canal reduced; reduced number of fish in South Canal and reduced numbers of fish entering Uncompahgre River via South Canal. Management changes and mitigation planned for Uncompahgre River. |
| Water rights/streamflows                       | No effect             | No effect; increased diversion from the Gunnison River for hydropower generation not permitted.   |
| Endangered species                             | No effect             | No effect   |
| Wildlife and vegetation                        | No effect             | No significant effect   |
| Water supply for irrigation and municipal uses | No effect             | No effect   |
| Cultural resources                             | No effect             | Effects mitigated   |
| Air quality                                    | No change             | Offset emissions of carbon dioxide (estimated 47,000,000 pounds per year) and other green house gases   |
| Noise  | No change             | Temporary increase of noise levels during construction; no significant long-term effect   |
| Socio-economics                                | No effect             | Assist in meeting power needs; temporary benefit of increased construction jobs. Increased employment/tax revenues. Long-term benefit to DMEA/UVWUA members resulting from sale of power.   |

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## CHAPTER 3 -- AFFECTED ENVIRONMENT AND ENVIRONMENTAL CONSEQUENCES

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This chapter discusses resources that may be affected by actions taken to construct and operate hydropower plants on the South Canal. For each resource, existing conditions and impacts are described. This chapter is concluded with a list of environmental commitments.

### UNCOMPAHGRE PROJECT OPERATIONS AND WATER RESOURCES

*Existing Conditions:* The Uncompahgre Project is authorized and operated to provide water supplies for irrigation in the Uncompahgre Valley. Irrigation supplies are developed from four sources: direct flow diversions from the Uncompahgre River; storage water from Ridgway Reservoir; direct flow diversions from the Gunnison River; and storage water from Taylor Park Reservoir.

Taylor Park and Gunnison River water is diverted through the Gunnison Tunnel to the South Canal. Diversions generally begin in March and end in October. During peak irrigation months, approximately 1,050 cfs is diverted through the tunnel. Laterals carry water from the South Canal to portions of the eastern Uncompahgre Valley, but the majority of the South Canal water is carried to the Uncompahgre River or the West Canal south of Montrose. A series of diversions downstream from the South Canal-Uncompahgre River confluence then direct water from the Uncompahgre River to serve much of the Uncompahgre Valley.

Diversions are also made from the South Canal to periodically fill Fairview Reservoir which supplies municipal and industrial water to Ouray, Montrose, and Delta Counties. When these diversions are made in the non-irrigation season, the Gunnison Tunnel is opened for approximately 50 to 100 cfs for one to two days.

Figure 7 shows the range of Gunnison Tunnel diversions based on daily diversion data from 1991 through 2010. The average daily diversion rate during this 20 year period is portrayed by the green line. The average annual diversion volume between 1991 and 2010 was 360,600 acre-feet. The maximum daily diversion during this 20 year period is shown by the blue line and the minimum daily diversion during this same period is shown by the red line. The maximum and minimum daily diversion lines do not portray any historical diversion patterns but simply show the maximum and minimum daily diversion rate that occurred on that particular day during the period between 1991 and 2010.

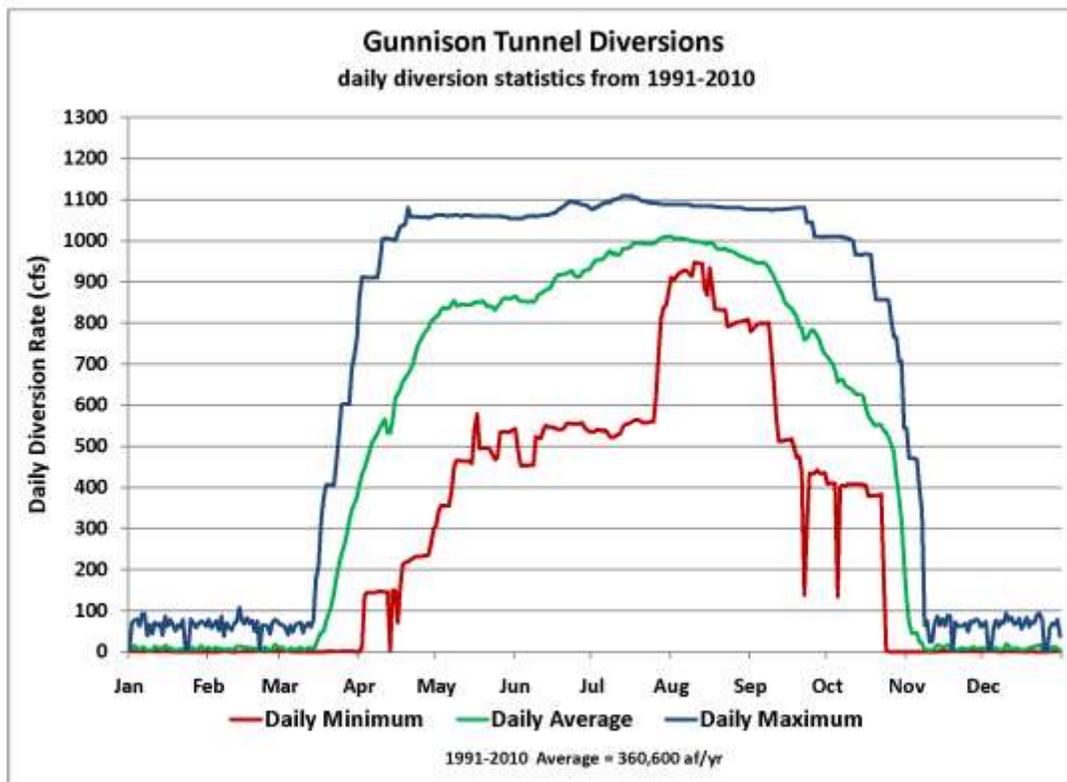


Figure 7. Gunnison Tunnel diversions, 1991-2010

As can be seen, irrigation diversions generally begin increasing in mid-March, peak in the May through August period, and gradually decrease until the end of October or early November. Diversions in non-irrigation months are for filling Fairview Reservoir as discussed previously. Total diversions by year are shown in Table 3. It can be seen that there is variability between years based on crop and weather patterns, reservoir storage, and basin water conditions.

*Impacts:* In general, there are no changes to water operations predicted under the No Action alternative for the Uncompahgre Project. Irrigation diversions from the Gunnison River vary from year to year due to water availability, weather patterns, crop and land use patterns, and other factors; and this variability would continue with or without the hydropower project. In the long-term, changes in climate or major changes in cropping or land use patterns may affect irrigation diversions and water use patterns.

Table 3. Annual diversions from the Gunnison River to the Gunnison Tunnel (acre-feet)

| Year | Gunnison Tunnel Diversion (af) | Year | Gunnison Tunnel Diversion (af) |
|------|--------------------------------|------|--------------------------------|
| 1991 | 315,077                        | 2001 | 393,227                        |
| 1992 | 343,567                        | 2002 | 357,643                        |
| 1993 | 324,774                        | 2003 | 350,644                        |
| 1994 | 364,291                        | 2004 | 351,961                        |
| 1995 | 288,192                        | 2005 | 364,778                        |
| 1996 | 383,994                        | 2006 | 396,624                        |
| 1997 | 266,965                        | 2007 | 355,401                        |
| 1998 | 364,829                        | 2008 | 358,592                        |
| 1999 | 369,467                        | 2009 | 408,867                        |
| 2000 | 391,541                        | 2010 | 399,553                        |

Under the hydropower project alternative, water in the South Canal diverted for irrigation would also be used for hydropower production. There would be no increase in diversions from the Gunnison River solely for hydropower use permitted under the LOPP, and hydropower production would not be permitted from November through February. In addition, a new environmental commitment has been developed and included in the project plan: During the early and late irrigation seasons, in order to prevent an increase in diversion volumes exclusively for hydropower production, guidelines have been developed to limit the volume of water diverted through the Gunnison Tunnel during the early and late season months but still allow flexibility for irrigation needs. These guidelines were developed by determining the one-half month volumes that would not be greater than the 10 percent level of exceedence for the 1991-2010 period of diversions through the Gunnison Tunnel. The volume guidelines were developed for one-half month periods between March 1 and April 15 and between October 1 and October 31. In other words for each of these half month periods, the guidelines state the volume diverted by the Gunnison Tunnel would not be greater than what has historically occurred in the highest 10 percent of the time between 1991 and 2010. A graphical representation of these volume guidelines is shown in Figure 8.

For example as shown in Figure 8, diversions in the second half of March would be limited to a volume of 12,000 acre-feet which is approximately equal to the volume produced by a constant diversion rate of 370 cfs. For the first half of April the diversion volume would be limited to 23,000 acre-feet which corresponds to a constant diversion rate of 780 cfs.

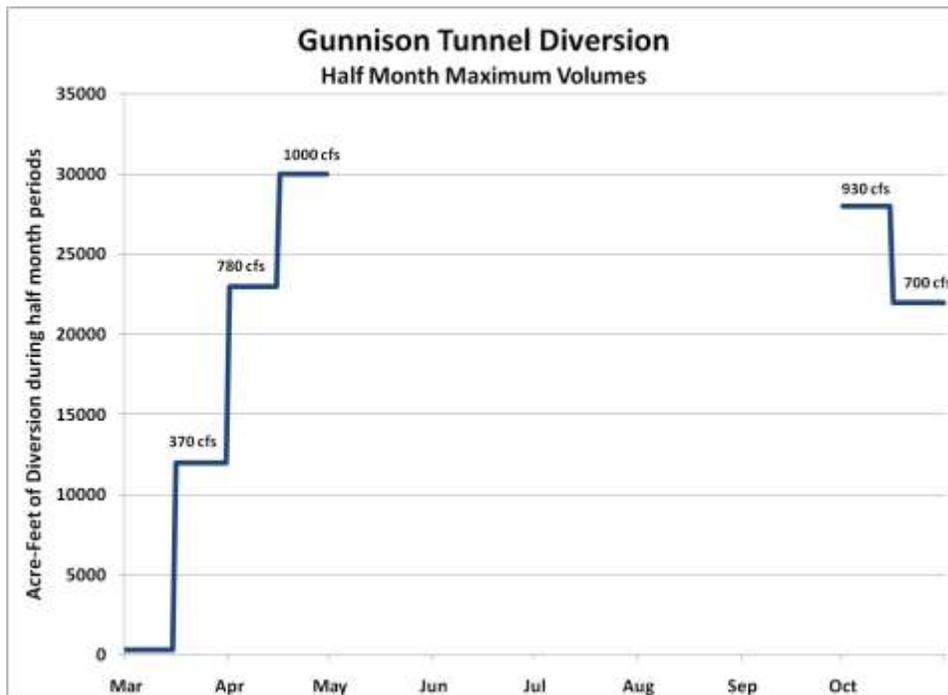


Figure 8. Half-Month Gunnison Tunnel diversion volume guidelines (based on the 10 percent exceedence volumes for times during the 1991-2010 period of record).

It is not the intent of these environmental commitments to limit diversions for irrigation purposes, as there may be a need to increase irrigation diversions in the future if cropping patterns change or if climate conditions become warmer or drier. However, diversions during the time periods mentioned above will be evaluated by Reclamation after each irrigation season to determine whether the one-half month volumes were exceeded. If diversions during these time periods cannot be justified as for irrigation purposes only, the lessee will be considered in default of the LOPP as described in Section 20 (a) (1) of the LOPP.

Additional information is found in the “Summary and Environmental Commitments” section of this report. Included are commitments to assure that diversions would not increase from the Gunnison River for hydropower purposes.

There would be no effect on irrigation supplies to the Uncompahgre Project or on water supplies for Fairview Reservoir during construction and operation of the hydropower project.

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## ENERGY AND SOCIOECONOMIC CONDITIONS

*Existing Conditions:* Hydropower potential on the Uncompahgre Project has not been developed. The Project area is located in the Northwest Power Pool Area of the Western Electric Coordinating Council region of the North American Electric Reliability Council. The peak demand and annual energy requirements for the area are projected to increase at an average annual compound rate of 1.9 to 2.0 percent over the 10-year planning period of 2007 through 2017 (Tri-County 2010).

The Project would be used to help fulfill a portion of the future electricity demand in DMEA's service territory. Demand for electricity in DMEA's service territory has been on an ever increasing trend for decades. Two major factors have contributed to this trend – increased per capita demand and an increase in population. The economic recession has impacted this trend the past couple of years; nevertheless, after a single year of reduced electricity sales, DMEA has again experienced increasing annual electricity sales. Additionally, the Project would meet a portion of the State Renewable Energy Standard mandate which requires that rural electric cooperatives provide 10 percent of electricity sales from qualified energy sources by 2020.

Water supplies from the Gunnison River and the South Canal are critical to the economies of Delta and Montrose Counties as well as westcentral Colorado. Irrigation water supports over 76,000 acres of irrigated agriculture through a series of over 500 miles of canals and laterals. Up to 23,000 acre-feet (af) of water is also diverted from the South Canal to Project 7 Water Authority's Fairview Reservoir for municipal and industrial water in Ouray, Montrose and Delta Counties. Project 7 Water Authority provides treatment of the water supplied by a water exchange from Ridgway Reservoir. Because of the physical location of the Project 7 Water Authority's water treatment plant east of Montrose and because the quality of water in the Gunnison River is superior to that of the Uncompahgre River, an exchange of Ridgway Reservoir storage water with direct flow water from the Gunnison River via the Gunnison Tunnel and South Canal has been established with the UVWUA. Gunnison Tunnel water is thus treated for drinking in exchange for municipal and industrial water from Ridgway to be used for irrigation.

*Impacts:* The hydropower project would produce an estimated 26,900 megawatt-hours (MWh) of energy per year and would help meet regional power demands in the future. Power from the proposed Project would be distributed through DMEA facilities to over 27,000 members in Montrose, Delta, and Gunnison Counties.

Positive cash flows would be equally shared between DMEA and UVWUA.

Based on a projected generation range of 25,000 – 27,000 megawatt-hours during the Project's irrigation season operation, there would be an avoided cost of an estimated \$1.7 million (2011 dollars) annually in DMEA's purchased power expenses.

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The Project would provide several benefits:

1. The electricity generated by the Project would provide DMEA power to distribute and sell and would provide UVWUA a source of revenue that can eventually be used to defray annual operating expenses or costs of improvements to the irrigation system. It would provide DMEA an opportunity to help diversify its power sources and to meet legislatively-mandated requirements for renewable energy sources.
2. Estimated annual cash flows in excess of \$1 million (2011 dollars) after debt is paid.
3. Stabilized cost of wholesale electricity for approximately 4 to 5 percent of DMEA's power needs (based on 2010 DMEA electricity needs) for the Project life (well in excess of 50 years). The electricity produced from the facilities would offset power that DMEA would otherwise have purchased from Tri-State Generation and Transmission. Additionally, the cost of Project electricity is projected to be substantially less than projected electricity costs of DMEA's purchased power from Tri-State Generation and Transmission (after debt is paid).

The life of the Project is expected to extend well beyond 50 years and could thus provide UVWUA and DMEA a long-term reliable revenue stream. According to initial estimates, revenues could be relatively small at first dependent on financial terms of interest and amortization schedule but the Project should produce positive cash flow once operations start. The projections are highly dependent on interest rates and actual operation and maintenance costs. However, after the Project debt is paid (15 – 20 years), the long term life for which the Project will be designed results in revenues to the UVWUA to help pay for Uncompahgre Project operation and maintenance costs and enable DMEA to avoid purchased power expenses.

There would be construction employment (Table 4) and spending on goods, services, and materials during the construction period with an overall increase in the level of income in the county during the construction phase. This would benefit local communities and businesses, as well as increase tax revenues from taxes collected on these purchases.

UVWUA and DMEA predict one full-time additional permanent staff to operate or maintain the new hydropower facilities and possibly 3 part time workers.

Water supplies and related economic benefits for irrigation or for filling Fairview Reservoir for municipal and industrial demands would not be affected by hydropower development during construction or operation.

Colorado Parks and Wildlife estimate that the reduction in fishing in the South Canal discussed below could have an "...economic impact of \$87,435 and an overall economic benefit (consumer surplus) to the community of \$208, 800" based on statewide expenditure information (Kowalski

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2011). Economic benefits should result from improved fisheries and fishery management in the Gunnison River.

Table 4. Estimate of construction employment.

| Job Category                   | Number of full time employees during construction | Number of Intermittent employees |
|--------------------------------|---|----------------------------------|
| Engineering                    | 1   | 7                                |
| Geotechnical                   | 3   |                                  |
| Electrical Interconnection     | 2   | 6                                |
| Penstock Construction          | 8   |                                  |
| Turbine Installation           | 4   |                                  |
| Earthwork & Civil Construction | 20  | 8                                |
| Ironwork                       | 4   |                                  |
| Total                          | 42  | 21                               |

## FISHERIES

*Existing Conditions:* The Gunnison River, the water source for the South Canal, is an important fishery. Water is diverted from the river by the Gunnison Diversion Dam through the Gunnison Tunnel to the canal to provide irrigation water to Montrose and Delta Counties. The Gunnison River has been designated a Gold Medal fishery, and the river upstream from the Gunnison Diversion Dam supports the highest biomass of wild rainbow trout of any reach of the river. This section of the river serves as an important broodstock source for managing rainbow trout throughout Colorado (CDOW 2011). Downstream from the Gunnison Diversion Dam, the river flows through the Black Canyon of the Gunnison National Park and the Gunnison Gorge National Conservation Area and is managed as a Gold Medal and wild trout fishery.

There is a loss of fish from the Gunnison River through the Gunnison Tunnel and into the South Canal during each irrigation season. For example, in October of 2011, Colorado Parks and Wildlife inventoried one 0.72 mile long section of the canal between Drop Nos. 1 and 2 that is earth-lined with relatively low velocity flows. This reach held an estimated 3,061 trout over 5 inches in length per mile and the population consisted of approximately 80 percent brown trout and 20 percent rainbow. There were an estimated 17 browns and 18 rainbows over 14 inches per acre in the sampled reach. Numerous young-of-the-year rainbow fry were sampled but not included in the population estimate. It is not known if the fry result from spawning in the canal or in the Gunnison River (Kowalski 2011).

There are about 7.7 miles of similar reaches of the South Canal, and if similar densities of trout occurred in downstream suitable portions of the canal, there could be about 23,570 trout over 5 inches in length in the South Canal (Kowalski 2011).

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Fish lost from the Gunnison River to the South Canal are diverted to laterals or the West Canal, move through the canal to the Uncompahgre River, are caught or snagged in the canal, or perish when the canal is dewatered.

A local annual fishery has developed over the years in the South Canal and some of the major laterals fed by the canal. Based on a 2011 survey, use occurs throughout the irrigation season and then peaks as the canal is dewatered in the fall. Approximately one half of the canal is on private land and permission is required to fish legally, although some sections of the canal cross public lands. Public land reaches include tunnel segments and high velocity areas that do not provide fishing opportunities. CDOW (2011) reported that fish losses in the canal are significant enough that “emergency public salvage regulations” are issued to allow anglers to harvest stranded fish in the fall by snagging and fishing without a limit.

Angler use of the South Canal has not been quantified in the past; however, in 2011 Colorado Parks and Wildlife conducted a creel survey in July, August, and November and estimated total irrigation season angler hours, number of anglers, and number of fish caught. The survey showed low angler use in the summer with high use in the late fall as the canal was dewatered. An estimated 1,305 anglers spent 2,459 hours fishing in the canal in 2011. Catch rates varied from 0.48 fish per hour in the summer to 1.42 fish per hour as the canal was dewatered. The month of November had 35 percent of all fishing use, including snagging, due to the canal dewatering and emergency fish salvage regulations (Kowalski 2011).

Fish that enter the Uncompahgre River from the South Canal add to a recreation resource in that river. Habitat in the Uncompahgre River has improved in recent years due to water quality improvements resulting from the upstream construction of Ridgway Reservoir and mine drainage improvements in the headwaters. In addition habitat structures have been developed on private and public reaches, winter diversions reduced, and trout stocking increased.

Downstream from the point the South Canal discharges to the Uncompahgre, there are 2.6 miles of private water before the river is diverted into the 550 cfs M&D Canal. Between the M&D Canal Diversion and the city of Montrose, the Loutzenhizer Canal (120 cfs) also diverts from the river. There are several reaches of public access for fishing between the Loutzenhizer Canal and into Montrose. There is stocking of catchable trout and fingerlings near Montrose as well as upstream at Ridgway State Park and Billy Creek State Wildlife Area.

*Impacts:* The Project is designed to operate using only the irrigation flows of the Uncompahgre Project. Diversions from the Gunnison River would not change due to the hydropower project and, in addition, hydropower production would not be permitted in the November through February period. Additional information on avoiding increased diversions due to hydropower development is found in the Environmental Commitment section of this EA. Based on these plans and commitments, habitat conditions in the Gunnison River should not change.

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With the installation of the electronic fish barrier at the entrance to the Gunnison Tunnel, positive impacts would occur to the Gunnison River as loss of brown and rainbow trout from the river would be reduced although probably not eliminated. This type of barrier would deter rather than stun fish. When fish swim into the electrical field, they would become increasingly uncomfortable and would return toward the river in the direction they came. This reduction of fish diverted into the tunnel and South Canal would benefit both the recreational fishery in the Gunnison River upstream and downstream from the Gunnison Tunnel and the fishery management programs supported by the reach of the river above the Gunnison Diversion Dam because fewer fish, estimated to be numbering in the thousands, would be lost to the tunnel. Rainbow trout are collected annually upstream from the tunnel for broodstock to support rainbow trout fisheries statewide.

These benefits are part of a tradeoff as can be seen below because there will be an accompanying loss of fishing success in the South Canal and there will also be effects on the Uncompahgre River.

Recreational fishing and snagging in the South Canal would be correspondingly reduced or lost as the number of fish diverted into the canal would be reduced. It is predicted that some fish would continue to be diverted into the canal; however, there would be a percentage of mortality to fish that might enter the canal and go through the turbines at Drop No. 1 and Drop No. 3. There is fish survival through turbines (Odeh 1999) and this would allow some fish to survive in the canal during the irrigation season.

The number of fish that eventually travel through the canal to the Uncompahgre River or West Canal would also be reduced and this would affect fish numbers in the Uncompahgre River, particularly between the South Canal and the M&D Canal. Colorado Parks and Wildlife plans to increase stocking of whirling disease resistant subcatchable rainbow trout in the Uncompahgre River in response to the hydropower project.

Colorado Parks and Wildlife estimate that the reduction in fishing in the South Canal could have an "...economic impact of \$87,435 and an overall economic benefit (consumer surplus) to the community of \$208, 800" based on statewide expenditure information (Kowalski 2011). Economic benefits of reduced losses of fish from the Gunnison River would occur but have not been estimated. In addition to the recreation value of the fishery, the resource values can be estimated by calculation the cost of replacement of the fish in the cans. Using 2008 fish production information, it would cost an estimated \$34,500 annually to replace the fish in the canal (Kowalski 2011). Economic benefits to the Gunnison River fishery and rainbow trout fishery management have not been estimated.

DMEA is working with Colorado Parks and Wildlife to mitigate the angling losses by improving access or fisheries at other local locations. DMEA will fund up to \$300,000 towards the purchase of a perpetual fishing access lease of local river frontage that is deemed by Colorado Parks and Wildlife as suitable for fishing and recreation or towards habitat improvement

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recommended by Parks and Wildlife. Additional information is found in the Environmental Commitment section of this final EA.

In summary, the Gold Medal fishery in the Gunnison River will be enhanced with more fish available for recreation and fish management. A corresponding reduction of fish in the South Canal will reduce fishing in the canal itself and also will reduce the number of fish moving to the Uncompahgre River. New access combined with new management by Colorado Parks and Wildlife should help reduce angling losses in the Uncompahgre.

## **WILDLIFE AND VEGETATION**

*Existing Conditions:* In the general Project area, non-irrigated lands include areas of adobe hills of eroded Mancos shale. Soils are often highly alkaline with little organic material. Low precipitation, high rates of erosion, and adobe soils create a harsh environment with sparse and limited, although in some cases rare or unique, vegetation.

The BLM has designated or proposed several Areas of Critical Environmental Concern (Fairview, South Fairview) on public lands to the north and south of the Project area. These designations are based primarily on the presence of rare endemic vegetation on the adobe hill areas.

Native vegetation in the study area consists of salt desert shrub communities dominated by species of saltbush, with generally sparse vegetation. Mancos shale hills have mat saltbush, shadscale, Gardner saltbush, and black sagebrush. Grasses include bottlebrush squirreltail, galleta, Salina wildrye, Indian rice grass, annual wheatgrass, and cheatgrass. Other species include winterfat, pricklypear cactus, yellow milkvetch, woody aster and Canada thistle. Greasewood occurs in areas with elevated groundwater along the canal and areas with salt grass and sea-blight occur in swales.

The South Canal introduced a water supply to the area approximately 100 years ago. Seepage from the canal supports patches of greasewood and tamarisk and, in wetter areas, willows and cattails. Road sides and other disturbed areas support rabbitbrush, Russian knapweed, halogeton, cheatgrass, and annual mustards. Where not concrete-lined, banks of the South Canal support a narrow strip of canary reedgrass, willows, and cattails.

The locations of hydropower project features have all been disturbed in the past with significant earth moving due to the original construction of the South Canal, canal rehabilitation projects over the years, access roads and storage areas, disposal of spoil material and development of borrow areas. In addition at Drop No. 3, outdoor engineering laboratory facilities in the 1930's were constructed. Figures 9 through 12 show construction areas.



**Figure 9. Vegetation along penstock route at Drop No. 1. Area is spoil pile from previous construction.**



**Figure 10. Drop No. 1 penstock route.**



**Figure 11. Vegetation along penstock route at Drop No. 3.**



**Figure 12. Drop No. 3 penstock location; powerplant at bottom of hill adjacent to canal.**

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There are topographic depressions that periodically retain water and support alkaline-tolerant species such as saltgrass. There is one large wetland complex between the South Canal and Fairview Reservoir that is probably supported by canal and lateral seepage in addition to groundwater fed from Fairview. Plant species include cattail, tamarisk, coyote willow, and cottonwoods. Adjacent lands have concentrations of greasewood, Russian knapweed and other weedy species (HDR 2009).

The Drop No. 1 impact area consists of several roads and parking areas as well as spoil piles from previous construction projects. Vegetation, where developed, is dominated by shrubs including greasewood, big sagebrush, saltbush, and rabbitbrush.

At the upper end of the Drop No. 3, the impact area is cleared for access roads, borrow sites, work staging, and other uses. Vegetation along the penstock route is dominated by greasewood, probably supported by seepage from the South Canal, and scattered desert shrubs.

The Project area provides limited winter range for mule deer and occasionally elk. There are no prairie dog towns or known raptor nests in the hydropower impact area. Waterfowl make occasional use of the low velocity sections of the South Canal outside of the “Drop Areas” during the fall and for nesting and brood habitat.

Appendix B includes a listing of plant and animal species of special concern developed by the BLM for the general region and includes species potentially occurring in the Project area.

*Impacts:* Vegetation and wildlife impacts would occur due to construction of the hydropower facilities and portions of the buried powerline.

Approximately 4-5 acres of land as shown in Figures 9 and 10 would be disturbed during construction of the hydropower facilities at Drop No. 1. Much of this area is spoil from previous construction but supports species such as rabbitbrush, greasewood and sagebrush. Approximately 0.20 acres of an open drain adjacent to the spoil pile presently supports cattails and tamarisk and will be avoided by construction. Following construction, disturbed areas would be recontoured and covered with stockpiled topsoil, treated to prevent erosion, and reseeded with desert shrubs and grasses. At Drop No. 3 approximately 1 to 2 acres of desert shrubland, often dominated by greasewood, would be disturbed during construction. This area had been excavated and filled years earlier but now supports native and introduced vegetation. This area would be reclaimed in a similar manner to the Drop No. 1 area. Attachment D includes additional information on revegetation and seed mixtures.

The large wetland complex above Fairview Reservoir would not be affected.

An erosion control plan and reclamation/reseeding/weed control plan would be prepared and implemented on disturbed areas.

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The powerline would have little or no effect on vegetation and would be designed raptor-proof.

Wildlife impacts should be minor and due primarily to temporary and permanent losses of vegetation due to penstock and powerplant construction. In the long-term, with revegetation and erosion control, impacts would be minor. Appendix B includes potential impacts on species of concern in the area.

## **RECREATION**

*Existing Conditions:* In addition to fishery related recreation discussed previously, other recreation occurs on lands around the South Canal. For example, waterfowl hunting occurs along the South Canal. The canal road is used for hiking and walking and off-highway vehicle use occurs on adjacent public and private lands. Much of the South Canal is on private land and permission is needed from private landowners before using.

Areas adjacent to any canal are dangerous, but portions of the South Canal are exceptionally dangerous due to concrete drops and chutes, tunnels, and high velocity flows. The maintenance road along the canal is steep and narrow in places and dangerous, especially when wet. For these reasons, recreation is not encouraged.

*Impacts:* Fishery related recreation impacts were discussed previously. There should be no effect on other recreation uses other than short-term closures of construction areas for public safety reasons.

## **THREATENED AND ENDANGERED SPECIES**

*Existing Conditions:* Table 5 includes species potentially occurring in Montrose County or in downstream rivers that are listed under the Endangered Species Act as endangered, threatened, or are a candidate for listing.

The clay-loving wild buckwheat is found in specific microhabitats in the adobe hill areas along the eastern side of the Uncompahgre Valley near the project area and is endemic to Delta and Montrose Counties, Colorado. The species occurs on both private and public lands; and in the past its habitat was fragmented and lost due to agricultural, road, and housing development. Currently habitat is threatened by off-road vehicle use and expansion of housing areas (Lyon et al, 1999). Vegetation surveys of the Project direct and indirect impact area did not record this species (HDR 2009 and Graff 2011). Graff (2011) concluded: “No occurrences of clay-loving wild buckwheat were found inside the survey area. The vegetation communities in the survey area are only marginally suitable for this species.” The survey area included a buffer zone beyond the potential construction impact area.

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**Table 5. Special status species in Montrose County**

| Common Name                | Scientific Name                    | Status     | General habitat                                   |
|----------------------------|------------------------------------|------------|---|
| Bonytail                   | <i>Gila elegans</i>                | Endangered | Colorado River and major tributaries              |
| Canada lynx                | <i>Lynx canadensis</i>             | Threatened | High elevation forest                             |
| Colorado hookless cactus   | <i>Sclerocactus glaucus</i>        | Threatened | River benches, xeric slopes with cobbles, pebbles |
| Clay-loving wild buckwheat | <i>Eriogonum pelinophilum</i>      | Endangered | Adobe hills                                       |
| Colorado pikeminnow        | <i>Ptychocheilus lucius</i>        | Endangered | Colorado River and major tributaries              |
| Greenback cutthroat trout  | <i>Oncorhynchus clarki stomias</i> | Threatened | Small, high elevation streams                     |
| Humpback chub              | <i>Gila cypha</i>                  | Endangered | Colorado River and major tributaries              |
| Razorback sucker           | <i>Xyrauchen texanus</i>           | Endangered | Colorado River and major tributaries              |
| Black-footed ferret        | <i>Mustela nigripes</i>            | Endangered | Prairie dog towns                                 |
| Mexican spotted owl        | <i>Strix occidentalis lucida</i>   | Threatened | Closed-canopy forests or rocky canyons            |
| Yellow-billed cuckoo       | <i>Coccyzus americanus</i>         | Candidate  | Riparian, cottonwood woodland                     |
| Skiff milkvetch            | <i>Astragalus microcymbu</i>       | Candidate  | Sagebrush parks                                   |
| North American wolverine   | <i>Gulo gulo luscus</i>            | Candidate  | Mountainous wilderness areas                      |
| Gunnison prairie dog       | <i>Cynomys gunnisoni</i>           | Candidate  | Western Montrose County                           |

Generated by the Information, Planning, and Conservation (IPaC) System of Fish and Wildlife Service on 10/06/2011

The endangered bonytail, Colorado pikeminnow, humpback chub, and razorback sucker are found in the Gunnison and/or Colorado rivers downstream from the Project area and are influenced by water use activities in the basin that affect both the quantity of flows and quality of water.

In accordance with section 7 of the Endangered Species Act (ESA) of 1973, as amended (16 U.S.C. 1531 et seq.), and the Interagency Cooperation Regulations (50 CFR 402); the Fish and Wildlife Service (2009) issued a Programmatic Biological Opinion (PBO) for the Gunnison River and effects on the endangered Colorado pikeminnow, humpback chub, bonytail, and razorback sucker and their critical habitats. Consultation for the Gunnison River basin includes operation and depletions associated with existing Reclamation projects including the Uncompahgre Project, other Federal projects and existing non-federal water depletions.

Potential habitat for other listed species does not occur in areas affected by the hydropower project.

*Impacts:* There should be no effect on endangered or threatened species or their habitat due to the development of any of the features of the hydropower project. There are no species present in

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areas that would be affected by construction and there would be no changes in river flows or water quality that could affect the downstream endangered fish.

## **INDIAN TRUST ASSETS & ENVIRONMENTAL JUSTICE**

Indian trust assets (ITAs) are legal interests in property held by the United States for Indian Tribes or individuals. Reclamation and other Federal agencies share the responsibility to protect these assets. There are no potentially affected ITA's in the Project area and therefore no impacts are projected.

Executive Order 12898 on Environmental Justice provides that Federal agencies analyze programs to assure that they do not disproportionately adversely affect minority or low income populations or Indian Tribes. There are no potentially affected minorities or low income populations or Indian Tribes affected by the Project; therefore no impacts are predicted under alternatives.

## **CULTURAL RESOURCES**

*Existing Conditions:* The Project impact area has been inventoried for cultural resources (Horn 2011). There were no prehistoric sites located; however, several historic sites are within the Project area as shown in Table 6. The State Historic Preservation Officer has reviewed the eligibility of historic sites to the National Register of Historic Places (NRHP) (State Historic Preservation Officer 2011).

Several segments of the Denver & Rio Grande railroad grade are visible along Miguel Road near Drop No. 1 on the South Canal. The segments are on private land or county road right-of-way. This section of railroad between Montrose and Gunnison operated between 1882 and 1949. Features of the railroad are outside of the hydropower project impact area. The railroad has previously been recommended as eligible to the National Register of Historic Places (NRHP).

The South Canal is a key feature of the Uncompahgre Irrigation Project, one of the first large-scale federal irrigation projects carried out by the Reclamation Service early in the 20<sup>th</sup> century. The canal has been previously determined as eligible to the NRHP. While many of the engineering features of the canal have been replaced over the years, the canal still functions as originally designed and is key to water supplies in Delta and Montrose Counties.

Table 6. Cultural resources recorded during inventory of project area (Horn 2011).

| Site & Site Number                               | Description   | Eligible to National Register of Historic Places |
|--|---|--|
| Denver & Rio Grande Railroad Grade 5MN1608.11-14 | Four segments of the abandoned grade of this narrow gauge line are in vicinity of Drop 1 hydropower facilities. | Yes  |
| South Canal 5MN1851.5                            | South Canal constructed early in 20 <sup>th</sup> century. Important in settlement of the Uncompahgre Valley.   | Yes  |
| UVWUA Garage 5MN2347                             | Adobe/wood frame building constructed in 1940 for maintenance work on Gunnison Tunnel and South Canal           | No   |
| AB Lateral 5MN8058.8                             | Lateral constructed in late 19 <sup>th</sup> century and incorporated into Uncompahgre Project                  | Yes  |
| Settlement attempt 5MN9727                       | Short-term farm settlement attempt near South Canal   | No   |
| Montrose Hydraulic Laboratory 5MN9728            | Reclamation outdoor hydraulic laboratory operated in the 1930's along the South Canal                           | Yes  |

The UVWUA garage was constructed around 1940 for maintenance of the Gunnison Tunnel and the South Canal. The garage is still used for maintenance. The location is near the Drop No. 1 penstock location.

The AB Lateral predates the South Canal and in the late 1800's diverted water from Cedar Creek and was designated the Cedar Valley High Line Ditch. The AB Lateral now diverts out of the South Canal upstream from the Drop No. 1 hydropower facility location. As with the South Canal, the AB Lateral has previously been recommended as eligible to the NRHP.

The "settlement attempt" site appears to be an abandoned home site near the South Canal that was estimated to have been used between the 1890's and 1910's. No structures have survived although fragments of cans, glass, metal, wire and other elements can be found.

Site MN9728 is the location of Reclamation's "Montrose Hydraulic Laboratory" that was operated along the South Canal between 1931 and 1936. Large scale outdoor engineering models were built at the site to test the design of features of projects such as Hoover Dam, Grand Coulee Dam, and Imperial Dam. For example, a 1:20 scale model for the spillway at Hoover Dam was constructed using the elevation change at Drop No. 3 as shown in Figure 13. The use of spillway tunnels to carry spill water around Hoover Dam was studied in detail in the early 1930's and was an innovation in design at the time. The site is eligible to the NRHP.

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Very little evidence of the laboratory exists on the west or south side of the South Canal where facilities have been removed, fill material brought in, and canal maintenance roads constructed. On the east or north side of the canal there are remnants of the models, an example is shown in Figure 14.

*Impacts:* Of the six historic sites recorded during cultural resource inventories, two would be affected by the hydropower project: the South Canal and the Montrose Hydraulic Laboratory.

At Drop No. 1 and Drop No. 3 hydropower sites on the South Canal, gates would be constructed to divert flows from the canal to a penstock and powerplant and finally a tailrace that returned the water to the canal. For example, at Drop No. 3 (Figure 15) flows would be diverted from the canal at the top of the hill and returned to the canal at a location near the bottom of the photograph.

Reclamation is coordinating with the State Historic Preservation Officer on evaluating cultural sites and mitigating impacts to the South Canal; current plans are for recording information through photographs and other documentation. The Preservation Officer (Colorado State Historic Preservation Officer 2011) concluded: “We concur that the proposed project will result in an adverse effect on the South Canal (5MN1851.5). As such, we find the proposed actions to mitigate the adverse effect to the South Canal using Level II documentation satisfactory and anticipate further consultation regarding the development of a Memorandum of Agreement (MOA) to mitigate this adverse effect, as stipulated in 36 CFR 800.6.” The MOA has been drafted and is being finalized with the State Historic Preservation Officer.

The Drop No. 3 hydropower facilities would impact the portion of the Montrose hydraulic laboratory site on the west and south sides of the South Canal but not on the east side where most remnants of the laboratory remain. According to Horn (2011):

“However, extensive previous ground disturbance has obliterated nearly all evidence of the models and other buildings that were present at one time within the site on the west side of the South Canal. It is possible that the patched diversion from the west side of the South Canal, the two concrete structures that probably anchored portions of the wooding flume that delivered water to the Hoover dam model, and tow bolts on the edge of the canal will be impacted by the Project. A late 1940’s artifact scatter that is not associated with the laboratory and a displaced concrete ice box are the only other elements of the site that may be impacted. None of these is considered to contribute to the significance of the site. No Project impacts are anticipated to take place on the east side of the South Canal, which is the contributing portion of the site.”

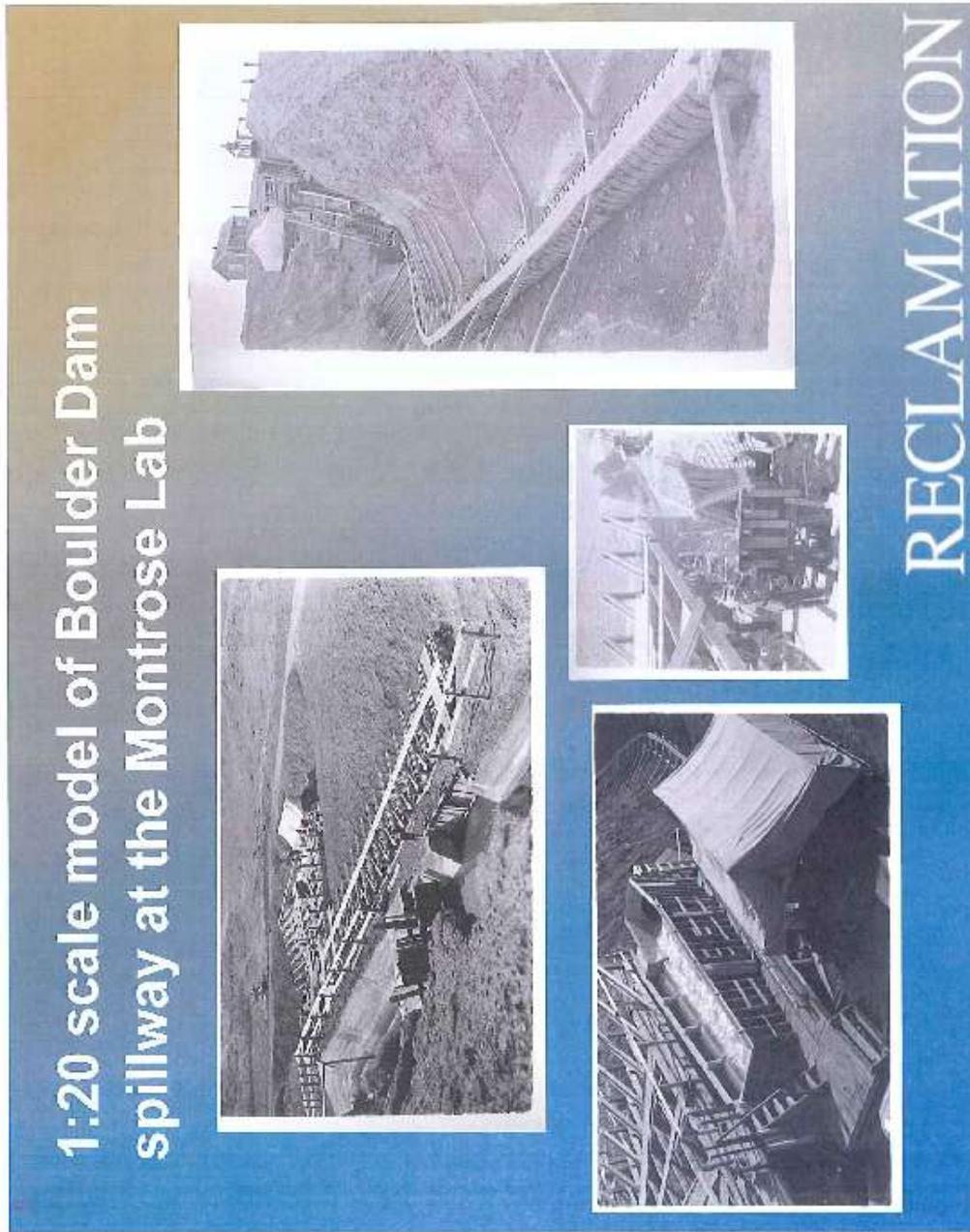


Figure 13. Montrose hydraulic laboratory along South Canal in 1930's. Hoover Dam spillway testing.



**Figure 14. Remnants of 1930's hydraulic laboratory north and east of the South Canal. Structure supported a pipeline or flume.**



**Figure 15. Water would be diverted from the South Canal, carried through a powerplant, and returned to the canal.**

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Figure 16 shows a photograph taken from the top of Drop No. 3. The Hoover Dam spillway model was located to the west (right looking downstream) of the canal drop; however, structures were removed and excavations filled in sometime after the 1930's.



**Figure 16. Traces of Hoover Dam Spillway model located to right side of canal have been obliterated over the years**

## **AIR QUALITY AND NOISE**

*Existing Conditions:* Air quality is generally excellent in the Project area and there are no air quality non-attainment areas in the vicinity. Agricultural operations, construction activities, and off-road vehicle use can be sources of dust pollution during wind events in the general region.

There are no significant noise sources or problems in the Project area. The primary sources of noise in the Project area are traffic along U.S. Highway 50 and the noise of flowing water in the South Canal.

*Impacts:* There would be short-term dust impacts during excavation work although this would be limited because dust control would be followed during construction. Construction specifications would require watering to minimize/control dust from cleared areas. There would be no long-term adverse impacts on air quality due to operation and maintenance of the hydropower facilities. As with other hydropower projects, there would be a beneficial offset of emissions of carbon dioxide and other green house gases. Carbon dioxide emissions would be reduced by an estimated 47,000,000 pounds per year (Table 7).

Table 7. CO<sub>2</sub> offset from South Canal electricity generation.

| South Canal Hydropower – Annual CO <sub>2</sub> Offset |                                 |                      |                              |                                      |
|--|---------------------------------|----------------------|------------------------------|--------------------------------------|
| Fuel Type  | Tri-State Generation percentage | CO <sub>2</sub> /kwh | CO <sub>2</sub> Offset (lbs) | CO <sub>2</sub> Offset (metric tons) |
| Coal   | 72                              | 2.1                  | 40,824,000                   |                                      |
| Nat Gas, Fuel Oil, Diesel                              | 1                               | 1.3                  | 351,000                      |                                      |
| Renewable  | 14                              | 0                    | 0                            |                                      |
| Purchased*   | 13                              | 1.9                  | 6,669,000                    |                                      |
| Total  |                                 |                      | 47,844,000                   | 21,747                               |

\*Assumptions: 27,000,000 kwh/year generated by South Canal Hydro. Assumes purchased electricity consists of 75% coal and 25% natural gas generation

There would be minor noise impacts during excavation for the powerplant and from construction traffic. During operation, the turbines and generators would produce machinery noise; however, such equipment would be fully enclosed and located a considerable distance from any dwellings and should have no discernible impact. The turbine/generator represents a new potential noise source. Turbine/generator noise analysis from similar projects indicates that turbine/generator noise would become indistinguishable above background sound levels at a distance of about 100 to 200 ft from the powerplants. The nearest residence to a powerplant is a UVWUA ditch rider residence 1,600 feet from the Drop One powerplant. Because of this, turbine/generator noise is expected to be inaudible from any nearby dwellings. Therefore, with the elimination of cascading water, the overall project effect would be to reduce noise levels compared to existing conditions.

## VISUAL RESOURCES

*Existing Conditions:* The BLM uses a Visual Resource Management (VRM) system to assess visual resources. BLM lands in the vicinity of Drops Nos. 1 and 3 are VRM Class IV, a category

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that accepts major modifications in the landscape. The visual appearance of the landscape along the South Canal is dominated by Mancos Shale adobe hills with irrigated land developed along flats below the canal. Lands west or downhill from the canal show considerable modification from ditches, roads, maintenance activities, and agricultural development. Lands east or uphill from the canal show less evidence of development and have a more natural appearance.

The powerline right-of-way along U.S. Highway 50 is used for an existing utility corridor and presently contains a powerline on single wooden poles.

*Impacts:* Power features would be constructed adjacent to the existing canal and concrete forebay and tailrace structures would have similar appearance to existing concrete structures at the canal drops. Powerhouses would be constructed at the bottoms of Drop Nos. 1 and 3. Near Drop No. 1 there are several buildings associated with the canal, and the powerhouse building would not be a significant new addition to the landscape. At Drop No. 3, there are no existing buildings and the new powerhouse building would be a noticeable new addition to the landscape. Both powerhouses would be painted with colors to blend with the existing landscape and to be non-reflective. Penstock routes and other disturbed areas would be contoured and revegetated. Construction material and existing debris from previous construction would be disposed of at designated landfills.

## **CUMULATIVE IMPACTS and PUBLIC LAND HEALTH**

Cumulative impacts are impacts on the environment, which result from the incremental impact of the action, when added to other past, present, and reasonably foreseeable future actions. Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time. Overall, the construction of the hydropower plant should not have significant cumulative impacts.

The Colorado BLM has approved the “Standards for Public Land Health” which describe conditions needed to sustain public land health and relate to all uses of the public lands. The only BLM lands affected by the hydropower project are an approximately 1,400-foot long segment of the South Canal maintenance road. A powerline will be buried within the road at this location. Thus there should be no potential positive or negative effect on public land health.

Land health for the entire project can still be considered, however. Table 8 provides information.

Table 8. Standards for Public Land Health

| Standard                          | Definition/Statement   | Project Effects   |
|-----------------------------------|--|---|
| Upland Soils                      | Upland soils exhibit infiltration and permeability rates that are appropriate to soil type, climate, land form, and geologic processes. Adequate soil infiltration and permeability allows for the accumulation of soil moisture necessary for optimal plant growth and vigor, and minimizes surface runoff.   | Disturbed areas will be recontoured and revegetated to reduce runoff and erosion. Compaction avoided. Approximately 7 acres affected. Overall effects neutral.  |
| Riparian Systems                  | Riparian systems associated with both running and standing water, function properly and have the ability to recover from major surface disturbances such as fire, severe grazing, or 100-year flows. Riparian vegetation captures sediment, and provides forage, habitat and biodiversity. Water quality is improved or maintained. Stable soils store and release water slowly.   | No natural riparian systems present. South Canal edges vegetated in some places with narrow strip of willows or other riparian species. Segment of canal on BLM lands is example. No effects on this resource.  |
| Plant and Animal Communities      | Healthy, productive plant and animal communities of native and other desirable species are maintained at viable population levels commensurate with the species and habitat's potential. Plants and animals at both the community and population level are productive, resilient, diverse, vigorous, and able to reproduce and sustain natural fluctuations, and ecological processes.   | Gunnison River (source of South Canal water) flows are protected at present levels. Small (< 7 acres) of desert shrub vegetation lost permanently due to project facilities. Other disturbed areas revegetated to minimize effects on plant and animal communities. |
| Threatened and Endangered Species | Special status, threatened and endangered species (federal and state), and other plants and animals officially designated by the BLM, and their habitats are maintained or enhance by sustaining healthy, native plant and animal communities.   | Adverse effects on species avoided. No benefit or adverse effect on habitat predicted.  |
| Water Quality                     | The water quality of all water bodies, including ground water where applicable, located on or influenced by BLM lands will achieve or exceed the Water Quality Standards established by the State of Colorado. Water Quality Standards for surface and ground waters include the designated beneficial uses, numeric criteria, narrative criteria, and anti-degradation requirements set forth under State law as found in (5 CCR 1002-8), as required by Section 303© of the Clean Water Act. | Erosion control and revegetation work should result in neutral effect on water quality resources.   |

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## SUMMARY AND ENVIRONMENTAL COMMITMENTS

In summary, the primary effect of the proposed action would be to develop a renewable energy resource. There would be short term economic benefits due to construction expenditures and employment. In the long-term, DMEA and UVWUA and their members would benefit from income generated from the Project. Fish losses to the South Canal would be reduced with beneficial effects to Gunnison River fishery management and angling and negative effects to fishing in the South Canal. Fish entering the Uncompahgre River from the South Canal would also be reduced.

### *Mitigation Measures and Environmental Commitments*

The following measures will be implemented and followed by DMEA and UVWUA and their contractors as required under the LOPP:

- The construction and operation of the hydropower project will not interfere with the irrigation supplies or maintenance of the Uncompahgre Project nor with water supplies for Fairview Reservoir.
- Existing access roads will be used. No new access roads constructed.
- Erosion-control Best Management Practices for drainage and sediment control will be implemented to prevent or reduce nonpoint source pollution during and following construction.
- All construction equipment shall be power washed and free of soil and debris prior to entering the construction sites to reduce the spread of noxious and unwanted weeds.
- Topsoil, where available, will be stockpiled during construction for later use in revegetation. Disturbed areas will be recontoured to reduce erosion and facilitate establishment of vegetation. Disturbed areas will be reseeded. The plan for revegetation and related erosion control/recontouring and implementation will require approval by Reclamation. Attachment D contains seeding recommendations.
- Dust control will be undertaken in all areas disturbed during construction.
- Fuel storage, equipment maintenance, and fueling procedures will be developed to minimize the risk of spills and the impacts from these incidents. A Spill prevention control, and countermeasure plan (SPCC) will be prepared prior to construction.
- DMEA will be responsible for obtaining any required Federal, state, or local permits to construct and operate the Project, including permits under the Clean Water Act (Section 402 and 404 permits) which may be needed for dewatering or other activities. Montrose County permits will be acquired for portions of the powerline.
- In the event of discovery of evidence of possible cultural or paleontological resources, the contractor shall immediately cease all ground-disturbing activities in the vicinity and notify Reclamation and work shall not be resumed until approved by Reclamation.
- Remnants of the Montrose Hydraulic Laboratory features on the north/east side of the canal will not be disturbed by the Project.

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- Cultural mitigation measures agreed to in a Memorandum of Agreement with the Colorado State Historic Preservation Officer will be completed by DMEA and UVWUA.
  - If any additional areas of impact (for example, access roads, borrow pits, or waste areas) are identified during the course of the undertaking, they will be inventoried for cultural resources. The results of such inventory will be forwarded to the SHPO according to standards of the Colorado SHPO and the Secretary of the Interior Standards and Guidelines. If no cultural resources are found during the inventory, the project may proceed within the area inventoried. If eligible historic properties are discovered, Reclamation will consult with the SHPO according to 36 CFR Part 800 on eligibility, effect, and resolution of effect. No construction work will occur at or near the historic property until this consultation is completed.
  - Powerhouses and substations will be non-reflective and painted to blend with background.
  - DMEA will fund and operate an electronic fish barrier to be constructed and operated at the entrance to the Gunnison Tunnel to deter fish from entering the tunnel from the Gunnison River. The barrier will be operational before the spring of 2014.
  - DMEA will work with Colorado Parks and Wildlife to fund access or habitat improvement to mitigate lost fishing opportunities along the South Canal and Uncompahgre River. DMEA will fund up to \$300,000 towards the fee purchase or perpetual fishing access leases of a local property that is deemed by Colorado Parks and Wildlife to be suitable for fishing and recreation or toward aquatic habitat improvement on the Uncompahgre River. If other funds become available to assist in the purchase or lease of a local property, the \$300,000 commitment can be reduced by the amount of other party funds and the commitment will be considered fulfilled. If a mitigation plan cannot be initiated within 30 months from the date of the final EA, DMEA will make a \$300,000 contribution to a mitigation fund as agreed to between Colorado Parks and Wildlife and DMEA.
  - Any new or upgraded powerlines will be designed and constructed “raptor proof”. Powerlines will be constructed in accordance to standards outlined in “Suggested Practices for Avian Protection on Powerlines: The State of the Art in 2006” (Avian Power Line Interaction Committee. 2006). See [http://www.aplic.org/SuggestedPractices2006\(LR-2watermark\).pdf](http://www.aplic.org/SuggestedPractices2006(LR-2watermark).pdf).
  - Under the hydropower project alternative, water in the South Canal diverted for irrigation will also be used for hydropower production. There will be no increase in diversions from the Gunnison River solely for hydropower use permitted under the LOPP, and hydropower production will not be permitted from November through February.

During the early and late irrigation seasons, in order to prevent an increase in diversion volumes exclusively for hydropower production, guidelines have been developed to limit the volume of water diverted through the Gunnison Tunnel during the early and late season months but still allow flexibility for irrigation needs. These guidelines were developed by determining the one-half month volumes that will not be greater than the 10 percent level of exceedence for the 1991-2010 period of diversions through the Gunnison

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Tunnel. The volume guidelines were developed for one-half month periods between March 1 and April 15 and between October 1 and October 31. In other words for each of these half month periods, the guidelines state the volume diverted by the Gunnison Tunnel will not be greater than what has historically occurred in the highest 10 percent of the time between 1991 and 2010. A graphical representation of these volume guidelines is shown in Figure 8 of this chapter.

As an example, diversions in the second half of March will be limited to a volume of 12,000 acre-feet which is approximately equal to the volume produced by a constant diversion rate of 370 cfs. For the first half of April the diversion volume will be limited to 23,000 acre-feet which corresponds to a constant diversion rate of 780 cfs. It is not the intent of this environmental commitment to limit diversions for irrigation purposes, as there may be a need to increase irrigation diversions in the future if cropping patterns change or if climate conditions become warmer or drier. However, diversions during the time periods mentioned above will be evaluated by Reclamation after each irrigation season to determine whether the one-half month volumes were exceeded. If diversions during these time periods cannot be justified as for irrigation purposes only, the lessee will be considered in default of the LOPP as described in Section 20 (a) (1) of the LOPP.

- The UVWUA will be responsible for noxious weed control within the limits of the facility for the life of the project. UVWUA is responsible for consultation with Reclamation for acceptable weed control methods, including pesticides/herbicides approved for use on public land. Use of pesticides/herbicides will comply with the applicable Federal and state laws. Pesticides/herbicides will be used only in accordance with their registered uses and within limitations imposed by the Secretary of the Interior.

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# CHAPTER 4- CONSULTATION AND COORDINATION

## GENERAL

Scoping was initiated in March, 2011 through news releases, mailings, and email contacts. A public scoping meeting was held in Montrose. Written and verbal comments were received from the public and interested agencies and local governments as discussed in Chapter 1. Information was also available through meetings and publications of UVWUA and DMEA.

Consultation is being conducted with the Colorado State Historic Preservation Officer under Section 106 of the National Historic Preservation Act and informal consultation has been conducted with the Fish and Wildlife Service under the Endangered Species Act. Colorado Parks and Wildlife has provided input concerning recommendations and potential effects of the proposal on fish and wildlife and recreation resources.

The draft EA was distributed for review on December 20, 2011 with a review period extending to January 30, 2012. Availability of the EA was announced through news releases in local papers. In addition to agencies, organizations, and interested individuals, availability of the EA was announced to landowners along the South Canal.

## COMMENTS ON THE DRAFT EA

Approximately 30 comment letters or emails were received on the draft EA. Comments were received from:

- National Park Service
- Fish and Wildlife Service
- Bureau of Land Management
- Colorado Parks and Wildlife
- Colorado River District
- High Country Citizens' Alliance
- Trout Unlimited
- RIGS Fly Shop
- Interested Individuals

Most comments were supportive of development of hydropower on the South Canal for economic and clean energy related reasons. Some of the comment letters were concerned, however, with the loss or reduction of the fishery and associated recreation in the South Canal

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and with the effects on the fishery of the Uncompahgre River. Some commentators believed fishing in the canal was not appropriate or not a concern.

Other comments were supportive of plans to reduce the movement of fish from the Gunnison River through the Gunnison Tunnel to the South Canal. Comment letters also supported commitments to not increase diversions from the Gunnison River for hydropower although the commitment should be better defined to avoid significant impacts.

Comments and Responses are summarized below:

**National Park Service:**

Comment: Supportive of the hydropower project but concerned on “what effects the proposed project might have on the delivery of the Black Canyon water right and the pattern of Gunnison River streamflow.” Asks Reclamation to better determine if the Black Canyon water right and Gunnison River flows could be affected and to explore mitigation strategies. The Service also encourages Reclamation “to include language in the final version of the LOPP stipulating that ten years prior to its renewal, Reclamation will complete an audit of operations and impacts to water rights and streamflows and to begin mitigation of adverse impacts that may have arisen.

Response: The concern is recognized that diversions from the Gunnison River should not increase as a result of the hydropower project. No increase in diversions from the Gunnison River through the Gunnison Tunnel to the South Canal will be permitted for the purpose of hydropower production. Historic hydrologic and climatic conditions are such that irrigation diversions normally take place in the March through October timeframe. As the Environmental Commitment section of the EA states, no hydropower production will occur outside of this period. Changes in climatic conditions may require changes in the timing of irrigation diversions. If this occurs, it would be reasonable to allow the use of the resource in the generation of hydropower if the purposes of diversions are strictly for irrigation. The term for the LOPP is 40 years and a renewal would require NEPA compliance (in whatever form that may be in at that time). Consequently, all environmental impacts would be reevaluated prior to issuance of a new Lease. Reclamation and other affected interests will monitor irrigation diversions; and if they appear unreasonable, the LOPP will be reviewed with the lessee to remind them of their environmental commitment.

The following environmental commitment is retained in the final EA: The hydropower facility will be operated based on irrigation diversion patterns. There will be no increases in diversions from the Gunnison River through the Gunnison Tunnel to the South Canal for the hydropower project. Nor will there be any extension of the diversion period due to the hydropower project. No hydropower production will occur in the November through February period.

In addition, a new environmental commitment has been developed and included in the project plan: During the early and late irrigation seasons, in order to prevent an increase in diversion

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volumes exclusively for hydropower production, guidelines have been developed to limit the volume of water diverted through the Gunnison Tunnel during the early and late season months but still allow flexibility for irrigation needs. These guidelines were developed by determining the one-half month volumes that will not be greater than the 10 percent level of exceedence for the 1991-2010 period of diversions through the Gunnison Tunnel. The volume guidelines were developed for one-half month periods between March 1 and April 15 and between October 1 and October 31. In other words for each of these half month periods, the guidelines state the volume diverted by the Gunnison Tunnel will not be greater than what has historically occurred in the highest 10 percent of the time between 1991 and 2010. A graphical representation of these volume guidelines is shown in Figure 8 of this chapter.

**Fish and Wildlife Service:**

Comment: Because Reclamation determined that the proposed action would not affect endangered species, consultation and concurrence are not necessary for the proposed project.

Response: Concur. Endangered species are discussed in the EA.

**Bureau of Land Management:**

Comment: EA should include map and description of public lands affected and should describe the Memorandum of Agreement (MOA) between BLM and Reclamation concerning authorization of facilities.

Additional information should be included concerning: dust control, noise impacts, and wetland impacts. Suggestions are provided concerning weed control, revegetation, and raptor proofing powerlines. BLM “standards for land health” should be addressed. It was suggested that a visual simulation of the powerplant building be provided. Recreation, in addition to fishing, should be addressed as should be hazardous material/waste.

Response: A map and legal description of public lands affected by the hydropower project has been included in the final EA. The MOA is now described in Chapter 1 of the EA. Additional information has been included on dust control and noise impacts. The effects on wetlands have been updated in the final EA.

Standards for public land health are now discussed in Chapter 3 of the EA. An example drawing of a powerplant building has been included in attachments to the EA. Suggestions concerning weed control, revegetation, and raptor proofing have been accepted and included in the project plan and environmental commitments.

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## **Colorado Parks and Wildlife:**

**Comment:** Supports plans to reduce or eliminate the loss of fish from the Gunnison River to the South Canal by use of the electronic barrier. However, concerned with impacts to recreational fisheries on the South Canal and the Uncompahgre River.

Commitments to mitigate for the loss of the canal fishery and impacts to the Uncompahgre River fishery are not firm. First preference is “for new local fishing access to be provided for anglers either on local rivers (i.e. Uncompahgre or Cimarron) or currently private lakes such as Fairview Reservoir, Montrose Reservoir, or other private waters. This could be in the form of access agreements, direct purchase of property, or the lease of fishing access from private landowners. Our second preference for mitigation would be to improve existing local fisheries through significant habitat improvements. We would like to partner with the project proponents to assist this process and facilitate matching money from other sources like the City of Montrose and grant programs like GOCO and Fishing is Fun. At a minimum, we request that the final EA identify a maximum dollar amount of mitigation money that the project partners will commit to. That mitigation should be able to provide a new fishing access to a commensurate amount of stream fishing being lost, 7.7 miles or 65.5 acres or a smaller amount that could provide similar levels of angling recreation. If a suitable mitigation site cannot be found or recommended, then a monetary amount should be identified for a mitigation fund to provide new fishing access or habitat improvement in the future, based on approximately 2 to 4 years worth of the estimated annual value of that fishery or \$486,598 to \$973,196. Given local land values, this is approximately the amount of money needed to purchase properties with fishing access in the Uncompahgre Valley.

**Response:** The project proponents, DMEA and UVWUA, have accepted Colorado Parks and Wildlife’s recommendation to fund, install, and operate an electronic fish barrier to prevent the loss of fish from the Gunnison River to the Gunnison Tunnel and South Canal. This represents a tradeoff: improvement of fisheries and fish management in the Gunnison River and reduction or elimination of fish in the South Canal and the movement of fish from the South Canal to the Uncompahgre River.

Project proponents have also agreed to a set level of mitigation to reduce the impacts of fewer fish in the canal and Uncompahgre River as a result of accepting Colorado Parks and Wildlife’s recommendation to fund, install, and operate an electronic fish barrier. The commitment is included in the Environmental Commitment section of Chapter 3. In addition, the Colorado Parks and Wildlife plans to modify their management plans for the Uncompahgre River by increasing stocking of trout to help offset reductions in fish entering from the South Canal.

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**Colorado River District:**

Comment: The River District supports the hydropower project and the project will help the long-term sustainability of the UVWUA. Will help DMEA defray operating expensed and assist in the maintenance and improvement of the Uncompahgre irrigation project.

The economic benefits should be stated more clearly and concisely and project revenue could be better defined. Unclear how and when the revenue accrues and how UVWUA benefits.

Sudden interruptions or shutdowns of the hydropower plant need to be addressed—how is canal and irrigation supply protected?

Response: The following table summarizes cost/generation information. Terms (years/interest rate) are not finalized yet. Performance guarantee from the contractor is for 24,633,000 kwh annually; however, expected generation is 27,403,000 kwh.

| Project Cost (\$) | Annual Generation(kwh) | Annual Expenses (\$) | Avoided Cost of Wholesale Power (\$) | Projected Cost per kwh (\$) |
|-------------------|------------------------|----------------------|--------------------------------------|-----------------------------|
| 22,000,000        | 26,033,000             | 1,600,000            | 1,800,000                            | 0.062                       |

Concerning canal equilibrium levels that should be maintained in the event of sudden shutdowns of the powerplant and effects of sudden surges of water in restarting the plant that may damage the canal prism, these concerns are certainly legitimate and are being addressed in the design process. An automatic bypass gate will be required as part of the design to maintain even canal flows. Riprap and prism armoring in the tailrace areas to protect the canal prism structure will also be required.

**High Country Citizens' Alliance:**

Comment: Supports the hydropower project under the assumption of no increases in diversions from the Gunnison River. Supports preventing loss of fish from the Gunnison River to the South Canal. Effectiveness of the deterrent should be monitored. Recreational fishing losses in South Canal should be mitigated by improved public fishing access at other nearby locations.

EA should address sensitive vegetation species, such as Colorado desert parsley and the Montrose bladderpod, in addition to endangered species.

Response: The final EA includes additional commitments not to increase diversions from the Gunnison River for the purposes of hydropower production. Agreed that monitoring of the fish barrier should be conducted to determine the effectiveness of the fish barrier. Plant species mentioned were not recorded in surveys of the immediate area. Revegetation and restoration plans would provide potential habitat for native plant species to return.

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### **Colorado Trout Unlimited:**

Comment: Primary concern is how to guarantee that hydropower development would not increase diversions from the Gunnison River to the Gunnison Tunnel and South Canal. Supports the intent of commitments in the draft EA but feels they can be improved to protect the Gunnison River. The final EA should define average historical diversions on a weekly basis, and the LOPP should limit hydropower diversion to these weekly averages. Hydropower diversions should be limited to historical averages on a weekly time-step. A LOPP should only be issued for this project if the environmental conditions limit annual diversions for hydropower use to no more than 360,000 acre-feet.

Supports the electronic fish barrier to prevent fish from being diverted from the Gunnison River. Plan will benefit the rainbow trout brood stock programs by increasing the yield of whirling disease resistant fish. Effectiveness should be monitored.

Loss of fishery in South Canal should be mitigated through public access and stocking to expand amount of and quality of local trout fisheries. Mitigation should be defined prior to issuance of the LOPP.

Response: While Reclamation agrees with the general intent of the comment, we do not believe the specific suggestion would be practical in the long term. Although water rights for the Uncompahgre Project are decreed for year round diversions with the use for hydropower included, the project proponents have committed to using only diversions for irrigation in the South Canal for the purpose of generating hydropower. It would be inefficient to limit maximum future diversions which could be used for hydropower generation to the average diversion of 360,000 ac-ft over the past 20 years as the average, by definition, includes higher diversions and lower diversions. As stated in the EA, the hydropower project would have no control over operation of the canal or diversions from the Gunnison River. Diversions will not be made for hydropower and hydropower production will not be permitted from November through February. Diversions will be strictly for irrigation or for Fairview Reservoir.

Reclamation has met with representatives of Trout Unlimited and had additional discussions with other parties on this question and as a result, additional environmental commitments have been developed and included in the project plan. Concerning the early and late irrigation season, volume diversions from the Gunnison River, calculated bi-monthly, from March 1 through April 15 and from October 1 through October 31, will not exceed the 10 percent exceedence level of 1990-2010 diversions. In other words, during those time periods, volumes diverted in each half of March and October and in the first half of April, will not be greater than what could have been expected to be exceeded 10 percent of the time. A graphical representation of this has been included in Figure 8 of Chapter 3 of the final EA.

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### **RIGS Fly Shop:**

Comment: Concerned with effects on the Uncompahgre River fishery. Will affect fishing related businesses and private anglers. Mitigation efforts and their appropriated revenues should be clearly defined before the project is approved. Access acquisition and alternative mitigation measures should be considered. Should be cooperative effort; Curecanti/Aspinall Unit mitigation funds should be used. Leasing access between Ridgway Dam and Montrose should be considered. Habitat improvement on existing public stream reaches could be part of the mitigation.

Effects on the Uncompahgre River fishery are not sufficiently evaluated. Monitoring should be funded. There are economic benefits to the project but there are also economic problems related to effects on fisheries. Pre-determined percentage of hydropower net revenues should be dedicated to mitigation fund for life of the project.

Response: See response to Colorado Parks and Wildlife letter. As indicated, the proponents have accepted Colorado Parks and Wildlife's recommendation to construct and operate a fish barrier on the Gunnison Tunnel to benefit the fisheries and fish management in the Gunnison River. This is a tradeoff with impacts to the South Canal and Uncompahgre River. DMEA has also agreed to mitigation work outside the Gunnison River as shown in Environmental Commitments in Chapter 3.

The comment letter mentions the "Curecanti/Aspinall Unit mitigation funds". This was a Reclamation program to mitigate fish and wildlife losses associated with Blue Mesa, Morrow Point, and Crystal Reservoirs. The program acquired and developed wildlife areas such as the Gunnison State Wildlife Area, the Cimarron State Wildlife Area, and portions of the Billy Creek State Wildlife Area. In addition fishing access was acquired upstream from Blue Mesa, on the Lake Fork of the Gunnison, on Cimarron and Beaver Creeks, and at and above the Gunnison River-North Fork confluence. Most recent acquisitions were on Tomichi Creek however adequate funding has not been available for large acquisitions in recent years.

### **Individuals:**

Twenty individuals provided comments on the draft EA, with most comments related to the South Canal and Uncompahgre River fishery. Thirteen were concerned with adverse effects on the fishery in the South Canal and/or Uncompahgre River, and 7 were not concerned or thought concerns with the canal fishery were inappropriate for a variety of reasons. Also several concerns expressed about the potential for increased diversions from the Gunnison River due to hydropower development.

There were also comments/questions on the project design, economic effects, and public safety.

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*Design and Economics*

Comments: Concerned that if reach of canal between Drop No. 1 and No. 2 is excavated to increase hydropower production, disposal of the sediment will lead to dust or other problems.

One commentor believed that DMEA is exempt from legislatively mandated regulations for renewable energy sources. Also use of a 34.5 kV distribution feeder from the hydropower plants to the substation is unique and should be explained. Costs of additional transformers and substation need to be included, and the total cost of the project and cost/unit of electricity should be provided.

One commentor believed that a cheaper alternative would be to purchase the power from Tri-State.

One estimated that hydropower benefits would outweigh any fishery losses while another thought that fishery losses outweighed any hydropower benefits. Another believed that the economy is in bad shape and the hydropower project would be a large economic benefit to the area.

Responses: Excavation of the canal prism, originally being considered, between Drop No. 1 and No.2 is no longer included in the plan.

According to DMEA, Colorado's renewable energy standard mandates distribution cooperatives (not Tri-State Generation and Transmission) provide an increasing percentage of their electricity sales from eligible energy sources. Article 4 Title 24 of CRS and/or CO HB 07-1281 states "...the electric resource standards shall require each cooperative electric association and municipally owned utilities that are qualifying retail utilities to generate, or cause to be generated, electricity from eligible energy resources in the following minimum amounts:

- (A) One percent of its electricity sales in Colorado for the years 2008 through 2010;
- (B) Three percent of its electricity sales in Colorado for the years 2011 through 2014;
- (C) Six percent of its electricity sales in Colorado for the years 2015 through 2019;
- (D) Ten percent of its electricity sales in Colorado for the years 2020 and thereafter."

Further, the same revised statutes clearly state that DMEA is required to meet the above provision as a qualified retail utility. This requirement is not voluntary.

Referring again to HB 07-1281 and the CRS, the South Canal Hydropower Project does meet the definition of eligible energy resources "...Eligible Energy Resources means recycled and renewable energy resources." "Renewable Energy Resources" means solar, wind, geothermal, biomass, and new hydroelectricity with a nameplate rating of ten megawatts or less..."

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The selection of 34.5 kV as the voltage for the distribution powerline that will carry power from the hydroelectric facilities to the East Montrose substation was based on a number of factors. Most predominant in the economics of the 34.5 kV selection is the resistive losses that occur with carrying power at a lower voltage. A net present value analysis of capital costs and line losses associated with various distribution voltages revealed the appropriateness of a 34.5 kV distribution powerline.

All necessary and appropriate components of the Project, including transformers, were included in DMEA's construction cost estimates.

The East Montrose substation facility was planned, has been approved, and is necessary to provide reliable service to DMEA's members independent of the South Canal Hydropower Project.

The total, estimated final cost of the Project is \$22 million. The estimated cost per kilowatt-hour (kwh) of electricity generated by the facilities is influenced by several factors including the following factors that will not be known with certainty until a future date – finance rate, volumetric water flow rate, duration of water flow, and operation and maintenance costs. The best current estimates of cost per kwh indicate the cost will be approximately equal to the current rates DMEA pays to Tri-State Generation and Transmission (TSGT). However, TSGT charges DMEA for the electricity it delivers based on two components – monthly demand and energy. This requires a computation to determine the cost per kwh DMEA pays to TSGT. The resultant variability possible in making estimates of costs for future purchased power from TSGT renders a direct comparison fraught with variation.

The projected cost of power generated from the South Canal Hydropower Project is cheaper than the projected cost of power purchased from TSGT (using TSGT's estimates of escalation of cost of power). The seasonal nature of water flows in the South Canal has been factored into the cost estimates. TSGT has a greater demand for electricity during much of the time the Project will generate electricity than the portion of the year in which irrigation water flows are absent in the South Canal. TSGT is aware of this fact and has entered into an agreement with DMEA that acknowledges the welcomed "load offset" the Project will provide to TSGT's demand.

### *South Canal Fishery*

Comments: Concerned with loss of fishing in the South Canal. Need to design project to maintain fish in canal; need to continue to divert fish from Gunnison River to the canal and screen powerplant penstocks and provide bypass flows around powerplants. Landowners along canal benefit from the fish in the canal; property values would be affected by loss of fishing. The canal fishery is important: local, close to people, has fewer restrictions, and is good fishery. Year-round flows should be provided in the canal for the fish.

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Other comments indicated that the fish barrier is needed to keep fish out of canal. Fish in the canal perish every winter or are snagged. Present loss of fish from the Gunnison River to the canal is appalling.

Even with electronic fish barrier, fish will continue to be diverted into the canal when diversions begin in the spring.

Fishing in canal is a safety concern; canal should be fenced.

Responses: More comments were received concerning the loss of fishing in the South Canal than any other concern. During planning, two alternatives were considered: 1) continue to divert fish into the Gunnison Tunnel and South Canal or 2) provide some type of barrier to prevent or reduce losses of fish from the river to the tunnel and canal.

DMEA worked with Colorado Parks and Wildlife and accepted the recommendation to construct and operate the electronic fish barrier to keep fish in the Gunnison River. This is included in the present plan and will reduce the number of fish diverted from the Gunnison River through the tunnel to the South Canal.

Some fish would still be expected to be diverted. For example, in March when irrigation diversions first begin, there would be fish between the fish barrier and the tunnel gate (the electronic barrier would not function during the non-irrigation season). Also, no fish barrier is fully efficient, and some fish would continue to enter the tunnel and canal although at significantly reduced numbers.

Fish that did enter the canal would go through the turbines (or around the turbines when the canal was first filled, when canal flows were exceeding the turbine capacity as would occur sometimes in the summer, or when powerplant was offline). As indicated in the EA there is survival of fish through Kaplan type turbines, with smaller fish having higher survival rates.

In summary, there would continue to be fish in the South Canal although numbers are expected to be greatly reduced and fishing success would be correspondingly reduced. Fish populations in the Gunnison River would benefit from the electronic barrier in turn benefitting angling in the Gunnison and also benefitting other Colorado fisheries because of the Gunnison role in providing brood stock for whirling disease resistant rainbow trout.

There are no plans to fence the South Canal although the new powerplant buildings will be fenced. The canal is located on either Reclamation lands, public (BLM) lands, or private lands. To avoid trespass, permission is needed by people using private lands along the canal. Safety concerns due to deep, swift water; concrete drops, tunnels, and other hazards are very real. In addition, the canal road is very dangerous when wet or icy. Recreation along the canal is not encouraged.

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### *Uncompahgre River*

Comments: Concerns expressed that with the electronic barrier in place, fewer fish would enter the Uncompahgre River via the South Canal. These fish are an important source of fish and related fishing recreation in the Uncompahgre River between the end of the South Canal and the city of Montrose. Property values along the river enhanced by fishing opportunities. The Uncompahgre River has improved as a fishery and recreation asset in recent years due to construction of upstream Ridgway Reservoir, mine drainage remediation in the headwaters, and habitat improvements on public and private segments of the river.

Responses: The Uncompahgre River has benefitted in recent years from upstream water quality and habitat improvements, increased stocking of trout, and reduced winter diversions. Public fishing is available in several locations including parks developed in the city of Montrose.

The South Canal is one source of fish for the Uncompahgre. Fish that presently enter the South Canal from the Gunnison River either are lost to other ditches and the West Canal that flow out of the South Canal, are caught or snagged, perish when the canal is dewatered, or enter the Uncompahgre River (majority of the water in the South Canal is discharged into the Uncompahgre River). The Uncompahgre River flows 2.6 miles downstream from the South Canal to the M&D Diversion, a large 550 cfs irrigation diversion. With a reduction in the fish in the South Canal, there will also be a reduction in fish entering the Uncompahgre River. As with fish in the canal itself, this is a tradeoff of reducing losses of fish from the Gunnison River. The habitat of the river itself would not be affected.

Colorado Parks and Wildlife has indicated that they will adjust management plans for the Uncompahgre River, including increasing stocking of whirling disease resistant subcatchable rainbow trout between the South Canal and the city of Montrose.

## **DISTRIBUTION LIST**

News Releases announced the availability of the draft and final EA, and the EAs were placed on Reclamation's website at: [www.usbr.gov/uc/](http://www.usbr.gov/uc/) under environmental documents. The final EA was distributed by mail and the EA was also distributed electronically to email addresses collected during the scoping process and during the review of the draft EA.

The final EA has been distributed to an updated mailing and email list as shown below:

Colorado State Representatives  
Colorado State Senator  
Delta County Commission, Delta CO

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Montrose County Commission, Montrose CO  
Colorado Division of Water Resources, Montrose CO  
Colorado Parks and Wildlife, Montrose CO  
Colorado State Historic Preservation Officer, Denver CO  
Tri County Water Conservancy District, Montrose CO  
DMEA, Montrose CO  
Uncompahgre Valley Water Users, Montrose CO  
Project 7 Water Authority, Montrose CO  
Montrose Daily Press, Montrose CO  
Telluride Watch, Telluride CO  
Ouray Plain Dealer, Ouray CO  
Daily Sentinel, Grand Junction CO  
Trout Unlimited, Delta, Boulder, Grand Junction, and Montrose CO  
Western Resource Advocates, Boulder CO  
High Country Citizens Alliance  
Southern Ute Indian Tribe, Ignacio CO  
Ute Mountain Ute Indian Tribe, Towaoc CO  
Fish and Wildlife Service, Grand Junction CO  
Corps of Engineers, Grand Junction CO  
U.S. Environmental Protection Agency, Denver CO  
Bureau of Land Management, Montrose CO  
U.S. Geological Survey, Grand Junction CO  
Individuals and Landowners

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## Attachment A: Draft Lease of Power Privilege

UNITED STATES  
DEPARTMENT OF THE INTERIOR  
BUREAU OF RECLAMATION  
SOUTH CANAL HYDROPOWER PROJECT  
LEASE OF POWER PRIVILEGE  
BETWEEN  
THE UNITED STATES OF AMERICA,  
AND

UNCOMPAHGRE VALLEY WATER USERS AND DELTA MONTROSE ELECTRIC ASSOCIATION

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THIS Lease of Power Privilege is made this \_\_\_\_ day of \_\_\_\_\_, 2012 (the “Effective Date”), pursuant to the Act of June 17, 1902 (32 Stat. 388) and acts amendatory thereof or supplementary thereto, and particularly the Act of August 4, 1939 (53 Stat. 1189) as amended, and the Act of June 22, 1938 (52 Stat. 941) among the UNITED STATES OF AMERICA (“United States”), acting by and through the Bureau of Reclamation; the UNCOMPAHGRE VALLEY WATER USERS ASSOCIATION (“Association”), a corporation organized and existing under laws of the State of Colorado, having its principal place of business at Montrose, Colorado; and

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DELTA-MONTROSE ELECTRIC ASSOCIATION (“DMEA”), a rural electric cooperative organized and existing under the laws of the State of Colorado, having its principal place of business at Montrose, Colorado.

1. PREAMBLE

- a. WHEREAS, the United States has constructed the Uncompahgre Project, a Federal Reclamation Project, residing in two Counties (Delta and Montrose), Colorado, hereinafter called the “Project”, which was authorized by the Secretary of the Interior on March 14, 1903, under the provisions of the Reclamation Act of June 17, 1902; and
- b. WHEREAS, construction of the Project, which include, but is not limited to, the Gunnison Diversion Dam and Tunnel, the East and West Canals, the South Canal, and various laterals, were completed in 1925; and
- c. WHEREAS, the Project provides for storage in Taylor Park Reservoir located on the Taylor River, which is a part of the Gunnison River Basin, and diversion of water from the Gunnison River by the Gunnison Diversion Dam through the Gunnison Tunnel and the South Canal to the Uncompahgre River; and
- d. WHEREAS, the initial contract between the United States and the Association was dated December 3, 1904. The Project was transferred to the Association for operation and maintenance in 1932 and is operated and maintained pursuant to Amendatory Contract No. Ilr-1530, dated December 13, 1948; and
- e. WHEREAS, in accordance with the Memorandum of Understanding, dated November 6, 1992, between the Federal Energy Regulatory Commission and the Department of the Interior, it has been determined that authority for licensing hydroelectric power on the Uncompahgre Project rests with the Bureau of Reclamation; and
- f. WHEREAS, the request for proposals for hydroelectric power development on the Project was published in the Federal Register on August 26, 2009 (Volume 74, No. 164. Page 43153); and
- g. WHEREAS, based on the recommendation from the proposal review team, the Bureau of Reclamation has determined the proposal jointly submitted by the Association and the DMEA be accepted and that negotiations should proceed for this Lease of Power Privilege on the South Canal.

NOW, THEREFORE, in consideration of the mutual and dependent stipulations and covenants herein contained, the parties to this Lease of Power Privilege agree as follows:

2. DEFINITIONS

For the purpose of this Lease, the following definitions shall apply:

- (a) “Reclamation” means the Bureau of Reclamation, Department of the Interior.
- (b) “Facility” means a hydroelectric power facility or facilities, to be constructed on the leased premises, consisting of the complete unit for a hydroelectric power generation feature associated with the South Canal and including, but not limited to, structures, turbines, generators, and corresponding water conduits, valves, transformers, circuit breakers, fences, poles, wires, and control and protection devices to the DMEA interconnection point (DMEA substation) for transportation, distribution and marketing of the Facility’s output.
- (c) “Leased Premises” means any interest in lands, roads, dam, and structures which the United States may hold, the use or occupancy of which are concurred by the Department of the Interior as reasonably necessary or appropriate for the construction, operation, or maintenance of the Facility, as depicted in the site plan, and attached hereto and incorporated by reference as Exhibit A. The Leased Premises also includes United States land under the jurisdiction of the Bureau of Land Management (BLM) who has delegated to Reclamation the responsibility of issuing and administering a lease of power privilege on public domain lands pursuant to a Memorandum of Agreement (Contract No. 10-LM-4A-00020) attached hereto as Exhibit B.
- (d) “Lease of Power Privilege” or “Lease” means the total agreement embodied in the combined terms and conditions of this Lease.
- (e) “Lessee” means the Association and the DMEA.
- (f) “Project Water Rights” means:
  - (1) The rights of the Association adjudicated under Decree No. 110, Priority No. 111 ¼, on June 1, 1901, in the amount of 1,300 cubic feet per second (cfs). The South Canal hydroelectric power project will rely upon these existing water rights held by the United States for the sole use and benefit of the

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Association, as defined below: In Case No. CA1945 in Water Division 4, 1,300 cfs absolute was decreed “for the sole use, diversion, and benefit of the [Uncompahgre] project.” The water right has an appropriation date of June 1, 1901, and an adjudication date of May 8, 1913. The priority number for the water right is 111 ¼.

a. In 1984, the Division Engineer placed 250 cfs of the 1,300 cfs on the abandonment list. In Case No. 84CW142, the Association protested the abandonment of the 250 cfs, and in a stipulation, agreed to have 239 cfs designated as conditional in return for the Division Engineer’s withdrawal of the 250 cfs from the abandonment list.

b. In Case No. 86CW01, 61 cfs of the 239 cfs was made absolute. In Case No. 87CW231, 13 cfs was made absolute. In Case No. 94CW33, 40 cfs was made absolute. As of January 2010, 1,175 cfs absolute and 125 cfs conditional comprise the Association’s 1,300 cfs right.

(2) No new rights will be appropriated for the operation of this Facility.

(3) Any water from other sources that may from time to time be available for power generation.

(g) “South Canal” means the canal location beginning at the end of the Gunnison Tunnel generally south-southwest to the Uncompahgre River.

(h) “Uncompahgre Project” or “Project” means those features and operation of the Project authorized for construction by the Secretary of the Interior on March 14, 1903, under the provisions of the Reclamation Act of June 17, 1902.

### 3. LEASE OF POWER PRIVILEGE

(a) Subject to the conditions and terms herein set forth, the United States leases to the Lessee:

(1) The opportunity or privilege to utilize the Leased Premises for the purpose of developing the Facility for generation and use and/or sale of hydroelectric power, and

(2) The right to use the Project Water Rights appropriated for hydropower purposes as defined in Article 2.(f)(1) herein.

(b) No Federal funds will be provided by Reclamation to develop, construct, operate, or maintain the Facility pursuant to this Lease.

### 4. TERM OF CONTRACT

This Lease shall be effective for forty (40) years from the date the Lease is executed unless terminated by mutual consent among the parties hereto or by default or cancellation under provisions of this Lease.

### 5. USE OF POWER

The Lessee will use or market the power generated at the Facility.

### 6. LEASE PAYMENTS TO THE UNITED STATES

(a) The Lessee shall make annual lease payments in the amount of 3 mills per kilowatt-hour of gross energy produced by the Facility, measured at the generator, to the United States for the use of the Leased Premises. Calculation of said payments will begin after the initial successful startup and testing of the generating equipment, or within twenty (20) days from the commencement of initial startup and testing of the generating equipment, whichever comes first. . In addition, during initial startup and testing, the Lessee shall make said annual lease payments for that portion of gross energy produced by the Facility that is sold and which results in a payment made for the energy produced. Lease payments shall be adjusted on an annual basis as provided in Article 6.(e) herein.

(b) Each payment shall be made on or before April 1 in each year for the total generation during the prior calendar year as reported in Article 13.(d) herein. Reclamation will send an invoice for lease payments to the DMEA at least thirty (30) days prior to their due date.

(c) Lease payments to the United States shall reference this Lease by title and number. Reclamation will provide a billing document to the Lessee. Payment will be made payable to the “Bureau of Reclamation,” and payment instructions will be followed as stated in the billing document, unless directed otherwise by the United States.

(d) Lease payments will be credited to the Reclamation Fund.

(e) Lease payment mill rate shall be increased annually by 1.5 percent simple as shown in the following table:

| Generation Year | Increase - 1.5 Percent Simple (Mills) | Lease Payment (Mills) |
|-----------------|---------------------------------------|-----------------------|
| 1               | 0                                     | 3.000                 |
| 2               | 0.045                                 | 3.045                 |
| 3               | 0.045                                 | 3.090                 |
| 4               | 0.045                                 | 3.135                 |
| 5               | 0.045                                 | 3.180                 |
| 6               | 0.045                                 | 3.225                 |
| 7               | 0.045                                 | 3.270                 |
| 8               | 0.045                                 | 3.315                 |
| 9               | 0.045                                 | 3.360                 |
| 10              | 0.045                                 | 3.405                 |
| 11              | 0.045                                 | 3.450                 |
| 12              | 0.045                                 | 3.495                 |
| 13              | 0.045                                 | 3.540                 |
| 14              | 0.045                                 | 3.585                 |
| 15              | 0.045                                 | 3.630                 |
| 16              | 0.045                                 | 3.675                 |
| 17              | 0.045                                 | 3.720                 |
| 18              | 0.045                                 | 3.765                 |
| 19              | 0.045                                 | 3.810                 |
| 20              | 0.045                                 | 3.855                 |
| 21              | 0.045                                 | 3.900                 |
| 22              | 0.045                                 | 3.945                 |
| 23              | 0.045                                 | 3.990                 |
| 24              | 0.045                                 | 4.035                 |
| 25              | 0.045                                 | 4.080                 |
| 26              | 0.045                                 | 4.125                 |
| 27              | 0.045                                 | 4.170                 |
| 28              | 0.045                                 | 4.215                 |
| 29              | 0.045                                 | 4.260                 |
| 30              | 0.045                                 | 4.305                 |
| 31              | 0.045                                 | 4.350                 |
| 32              | 0.045                                 | 4.395                 |
| 33              | 0.045                                 | 4.440                 |
| 34              | 0.045                                 | 4.485                 |
| 35              | 0.045                                 | 4.530                 |
| 36              | 0.045                                 | 4.575                 |
| 37              | 0.045                                 | 4.620                 |
| 38              | 0.045                                 | 4.665                 |
| 39              | 0.045                                 | 4.710                 |
| 40              | 0.045                                 | 4.755                 |

(f) The obligation for lease payments to the United States is independent of the obligation of the Lessee for Reclamation expenses under Article 7 herein and is not a general obligation guaranteed by other Lessee's revenues.

## 7. RECLAMATION EXPENSES

(a) The Lessee shall advance funds in minimum increments of \$10,000 (Incremental Advance) to Reclamation to pay for future expenses which may be incurred by Reclamation under this Lease. Expenses shall include an hourly rate, travel, materials, mailing, copying costs, and administration overhead costs at the then current rate, as incurred by Reclamation's personnel, contractors or consultants; provided, however, that no charge shall be assessed for information, services, or relationships that would normally be provided by Reclamation to the public at no charge. Reclamation expenses under this Lease may include, but are not limited to, the following:

- (1) Environmental compliance.

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- (2) Inspections of the Facility called for by the United States, either routine or based upon a unique problem, major rehabilitation, or a reasonable concern for the integrity of a Federal structure or operation of other Facility features.
  - (3) Preparation or review of technical studies.
  - (4) Review of designs, specifications, legal and other documents.
  - (5) Site visits and participation in meetings.
  - (6) Copies of reports, drawings, and similar data.
  - (7) Consultation, observation, review, and comment on tests of piping, valving, automated equipment, supervisory control systems, and any and all other aspects of construction, operation, maintenance and replacement that might impact the integrity of a Federal structure or environmental commitments.
  - (8) Work necessitated by non-performance of the Lessee.
  - (9) The expenses incurred in the event of failure of Federal structures resulting from operations and/or maintenance of the Facility.
  - (10) All administrative costs incurred in the execution of the above-listed activities.
- (b) Reclamation will establish a non-interest bearing account for the funds advanced by the Lessee; an initial advance of \$10,000 will be required upon execution of this Lease. At such time when funds in the account are anticipated to be reduced to or below \$5,000, Reclamation will request an Incremental Advance of funds as provided in Article 7.(a) herein. Reclamation will not pay or credit the Lessee for any interest. When performing work identified in Article 7.(a) herein, Reclamation will furnish the Lessee, not less than on a quarterly basis prior to completion of the activity, an accounting of activity, an itemization of all expenses incurred under this Article, and a reconciliation of such expenses billed with the amounts requested under this Article. After completion of the activity an accounting of expenses will be furnished to the Lessee on an annual basis or upon request of further Incremental Advances.
- (c) Each request for an Incremental Advance of funds under this Article shall be in writing and shall include a statement describing the anticipated use of the requested funds. Reclamation will discuss with the Lessee in advance of requesting funds to identify anticipated activities related to the Facility. The Lessee shall advance the requested funds within 30 days after receiving the request.
- (d) Following the expiration, cancellation or termination of this Lease, Reclamation will determine its expenses associated with the Facility and submit a final accounting report to the Lessee within sixty (60) days after the date of expiration, cancellation or termination. Reclamation will refund to the Lessee any surplus in the account within 60 days after submitting the final accounting report. The Lessee shall pay any deficit in the account within 60 days after receipt of the final accounting report.

## 8. DISTRIBUTION OF REVENUES

All power revenues received by the Lessee from the Facility shall be applied in the following priority:

- (1) To lease payments to the United States.
- (2) To Reclamation expenses as outlined in Article 7.
- (3) To the annual operation and maintenance cost of the Facility.
- (4) To the recovery of costs and/or the payment of debts associated with construction of the Facility.
- (5) To the reserve fund (Article 23 herein).
- (6) All additional power revenues received by the Association and/or DMEA shall be available to the Lessee for their use.

## 9. ENVIRONMENTAL COMPLIANCE

- (a) Reclamation will be the lead federal agency for compliance with the National Environmental Policy Act (NEPA), as amended.
- (b) The Lessee agrees to comply with the applicable terms and conditions, including environmental commitments and mitigation measures, resulting from the completion of NEPA and Endangered Species Act compliance.

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(c) Reclamation will complete an Environmental Commitment Plan prior to approving final designs for the Facility; this plan will provide specific details on environmental commitments and other environmental documents required under law. The Lessee shall implement and comply with the Environmental Commitment Plan during design, construction and operation phases of the Facility.

#### 10. WATER AND LAND USE

(a) The Water Rights described herein for power development shall be non-consumptive, and the Facility shall be developed, operated, and maintained consistent with applicable Federal and State law.

(b) Reclamation does not guarantee either the quality or quantity of water for the Facility and has no obligation to alter operations of the South Canal or other Federal projects for the benefit of power generation at the Facility. The Lessee shall not be entitled to compensation for loss of generation due to changes in operations at the Uncompahgre Project so long as such changes are consistent with all applicable laws.

(c) The operation of the Facility shall not interfere or conflict with the purpose and operations of the Uncompahgre Project, including, but not limited to, the South Canal.

(d) The Lessee shall be responsible to be sure that land rights, as necessary, are available for the construction and operation of the Facility. The Leased Premises and all rights hereunder shall be held by the Lessee at all times subject to the rights of the United States. Jurisdiction and supervision of the United States over the Leased Premises are not surrendered or subordinated by issuance of this Lease. The United States reserves the right to issue licenses, rights-of-way, or permits for compatible uses of the Leased Premises. Said issuance will be made consistent with existing laws and in consultation with the parties to this Lease.

(e) There is also reserved the right of the United States, its officers, agents, and employees, at all times to reasonable unrestricted ingress to, passage over, and egress from all of said Leased Premises for the purpose of exercising, enforcing, and protecting the rights reserved herein provided the United States notifies Lessee in advance and does not interfere with operations of the Facilities. In addition, the United States reserves the right of its officers, agents, and employees at all times to have reasonable unrestricted access and ingress to, passage over, and egress from all of said Leased Premises, to make investigations of all kinds, dig test pits and drill test holes, to survey for and construct reclamation and irrigation works and other structures incident to Federal Reclamation Projects, or for any purpose whatsoever. Ingress and egress to the hydroelectric facilities by the United States, its officers, agents, and employees, will be granted when supervised by qualified DMEA–UVWUA personnel or when adequate safety training to access the facility is verified. There is a reserved right to ingress and egress, without the requisite prior notice, in an emergency situation.

(f) The Lessee shall reimburse the United States for all costs and expenses incurred in the defense of any action which challenges the Lessee's use of the Leased Premises under this Lease.

(g) Any existing survey markers shall not be changed or destroyed. In the event that any survey markers are moved or destroyed, inadvertently or otherwise, by construction or any other activity of the Lessee, they shall be replaced by a licensed land surveyor in consultation with the Bureau of Reclamation and Bureau of Land Management.

#### 11. PRECONSTRUCTION REQUIREMENTS

(a) The following Plans for the Facility are subject to approval by Reclamation, not to be unreasonably withheld, before construction of the Facility begins:

(1) Plans, specifications, and schedules(s) for construction and operation, including site restoration plans. Upon approval, such plans, specifications, and schedules, shall be deemed the "Plans and Specifications" as used in this Lease.

(2) Construction agreement between the Lessee and the contractor selected for construction of the Facility.

(3) Operations plans in harmony with the Association's contracts and agreements for the operation and maintenance of the Project.

(4) Environmental Commitment Plan and Environmental Commitment Checklist (Checklist). The Checklist will include, but not be limited to, environmental commitments contained in the documentation completed under NEPA for execution of this Lease.

(5) Test plan describing tests to be performed prior to acceptance of construction as complete.

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(6) Emergency Action Plan, developed in harmony with the current Emergency Action Plan for the Project, setting forth the procedures to be followed in case of accident to, or failure of, the Facility.

(7) Security Plan. The Lessee shall meet with representatives from Reclamation to develop a security plan that will be consistent with and integrated into Reclamation's security program for the Project. Security measures from the security plan will be included in construction of the Facility. The Lessee shall be responsible for any additional security costs incurred by Reclamation related to construction, operation and maintenance of the Facility subject to Article 7 herein.

The Lessee shall submit four (4) copies of the above documents to Reclamation.

(b) The Lessee shall require its contractor to submit to the Lessee and Reclamation, prior to construction, evidence of the existence of a payment bond and a performance bond, as required by Article 12.(b) herein, and certificates of insurance as required by the construction agreement. Any such insurance certificate shall name the Lessee and United States as additional insured parties.

(c) The Lessee must receive written approval from Reclamation prior to beginning construction. Such approval shall be based upon approval of the documents identified in Article 11.(a) and in compliance with Article 12.(b) herein, and shall not be unreasonably withheld.

## 12. CONSTRUCTION

(a) The Lessee shall construct the Facility in accordance with the approved Plans and Specifications, construction agreement, and the approved Environmental Commitment Plan and the Checklist, as identified in Article 11.(a)(4) herein.

(b) The Lessee shall provide evidence of a payment bond and a performance bond, held by the contractor constructing the Facility, for the benefit of the United States and the Lessee in the full amount of the construction contract, securing the faithful performance of its contractual obligations under its construction agreement. The performance bond shall remain in effect a minimum of one (1) year after completion of construction of the Facility, or such additional warranty period as provided in the construction agreement. The date of completion of construction shall be as defined in Article 12.(l) herein. The bonds shall be issued by a Surety Company satisfactory to Reclamation.

(c) In the event of an emergency at the Facility or Project, Reclamation, the Lessee, or the Lessee's agent(s) may take appropriate action pursuant to the Emergency Action Plan, or may take such further action as necessary to prevent or minimize damage to Project structures or Facility.

(d) The Lessee shall obtain and comply with any and all necessary Federal, State, and local permits and licenses. The Lessee agrees to comply with all applicable codes, ordinances, and regulations.

(e) The Lessee agrees to notify Reclamation of the Lessee's intent to begin construction at least ten (10) days before commencement of such work or delivery of materials. Reclamation shall have the right to post and maintain on the Leased Premises notices authorized under applicable law.

(f) Reclamation shall have reasonable access to the Facility for the purpose of assuring compliance with the terms and conditions of this Lease and to monitor the effects of the Facility on the South Canal. The Lessee shall cooperate with Reclamation in such reviews and inspections. If during construction of the Facility Reclamation determines that such construction poses a threat to the structural and operational integrity of the South Canal, Reclamation may order corrective action be taken by the Lessee at the Lessee's sole cost and expense. If such action is not promptly undertaken by the Lessee, and if Reclamation determines the threat is real and imminent, Reclamation may order the Lessee to stop work on or operation of the Facility and may perform the necessary work at the Lessee's expense notwithstanding the dispute resolution provisions of Article 24 herein.

(g) Construction of the Facility includes site restoration to reasonably approximate the conditions of the site prior to construction. If, for any reason, site restoration is not completed by the Lessee in accordance with the Plans and Specifications, the work may be done by Reclamation at the Lessee's expense upon thirty (30) days prior notice to Lessee.

(h) The Lessee shall exercise reasonable care to preserve the natural landscape and shall conduct its construction operations to prevent any unnecessary destruction or scarring or defacing of the natural surroundings in the vicinity of the work. Movement of crews and equipment shall be within the areas defined in the Plans and Specifications.

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(i) The Facility shall not interfere with reasonable and safe access to Project structures on the South Canal, including, but not limited to, the operation and maintenance road.

(j) The Lessee shall require all contactors to accomplish onsite construction in accordance with all applicable Occupational Safety and Health Administration (OSHA) rules and regulations.

(k) The Lessee shall commence construction within three (3) years from the date of this Lease. Once any work affecting the Project is begun, the Lessee shall, with diligence, pursue construction to completion of the Facility. The Facility shall be constructed as shown in the approved Plans and Specifications or as shown in written change orders approved by Reclamation in writing. The Lessee's failure to complete construction within five (5) years from the date of this Lease, in accordance with the terms and conditions of this Lease, shall be considered a default under Article 20 herein.

(l) Unless otherwise agreed to, the Lessee shall give Reclamation no less than two (2) weeks notice prior to commencement of testing of the Facility. Testing will be harmonious with the approved test plan and operations plan. Reclamation shall have the opportunity to review and observe the testing. If, because of the addition of the Facility, Reclamation believes additional tests are reasonably required to ensure that the structural and operational integrity of the South Canal is preserved, it shall outline such tests for the review and reasonable approval of the Lessee. If the Lessee approves of the additional testing, the Lessee shall provide such additional test as Reclamation may prescribe. If the Lessee objects to the requested additional testing, the question over whether to conduct additional testing shall be resolved pursuant to Article 24 herein. The Lessee shall provide written official test reports within 30 days after completion of the tests. Reclamation will accept or reject the test results, in writing, within 30 days after receipt of the test reports. Testing shall be considered complete upon acceptance of the test report by Reclamation. The Lessee may use or sell power generated during the test period.

(m) At such time as the Lessee determines that construction, testing, and site restoration of the Facility are complete, the Lessee shall arrange a joint inspection with Reclamation. Any remaining work, testing, or modification needed on the Facility, identified in writing by the parties during the inspection, will be completed as soon as practical by the Lessee. For the purpose of this Lease, construction of the Facility shall be complete as of the later date of either the date of the final inspection or the date the Lessee complete the tasks, if any, identified in the final inspection to the satisfaction of Reclamation. Within 60 days of completion of the Facility, the Lessee shall provide Reclamation with electronic copies of the drawings in a format reasonably acceptable to Reclamation; and electronic copies of operation and maintenance manuals for Facility equipment that could have an impact on the operational and structural integrity of the South Canal.

(n) Revisions required to the Standing Operating Procedures (SOP) for the Project as a result of construction and operation of the Facility shall be recommended by the Lessee and submitted to Reclamation for its review and approval. Such revisions will be completed at the Lessee's expense. Final copies and revisions of the Project's SOP will be distributed by Reclamation to the Association.

### 13. OPERATION AND MAINTENANCE OF THE FACILITY

(a) Throughout the term of the Lease, the Lessee shall, at the Lessee's sole cost and expense, operate, and maintain the Facility in good condition and repair and in accordance with all applicable laws, rules, ordinances, orders, and regulations. The Facility shall be operated and maintained in accordance with the operations plans, the Emergency Action Plan, and the Checklist as each may be amended. No material alterations in the Facility or its operation, as depicted in the record drawing and operations plan, shall be undertaken by the Lessee without the written approval of Reclamation, which shall not be unreasonably withheld. Reclamation will withhold such approval only to (i) ensure the structural and operational integrity of the South Canal or (ii) ensure that the operations of the Project are not otherwise interfered with. After modification to the Facility, the Lessee shall perform testing, related to such modification, as may be required by Reclamation to ensure the structural and operational integrity of the South Canal. The Lessee assumes full responsibility for any pollution caused by its operations of the Facility and agrees to indemnify the United States for damages caused by any such pollution.

(b) If the Facility or operation thereof interferes with or threatens to interfere with the Project, the Lessee shall correct the interference immediately and, if necessary, as determined by Reclamation, shut down the

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Facility notwithstanding the dispute resolution provision of Article 24 herein. Upon notice, the Lessee shall modify the Facility or its operation of the Facility to correct any problem and shall repair any damage in a manner acceptable to Reclamation, or the Lessee shall bear the complete cost for Reclamation to repair any damage to the Project caused by the Facility notwithstanding the dispute resolution provisions of Article 24 herein.

(c) Reclamation shall have reasonable access to the Facility for the purpose of assuring compliance with the terms and conditions of this Lease and to monitor the effects of the Facility on the South Canal. The Lessee shall cooperate with Reclamation in such reviews and inspections.

(d) Daily water flows and energy generation data shall be made available to Reclamation on a monthly basis or as otherwise reasonably specified by Reclamation to calculate annual payments.

#### 14. RECLAMATION REVIEWS AND APPROVALS

Reclamation reserves the right to review and reasonably approve schedules, designs, specifications, inspections, inspection reports, tests and reports, and construction and construction reports of the Facility, but only for the express purpose of determining any impacts to the structural and operational integrity of the Project.

#### 15. FUTURE WORK

(a) The implementation of this Lease does not in any way restrict Reclamation, in discussion with the Association, from making any future changes to the Project consistent with all applicable laws. For any proposed changes that may affect the Facility or its operation, Reclamation will first confer with the Lessee.

(b) The costs of any future changes to the Project shall be in accordance with the then existing contracts and agreements between Reclamation and the Association. The costs of any future structural or operational changes to the Facility, necessitated as the result of changes to the Project or otherwise, will be assumed by the Lessee.

#### 16. OWNERSHIP

Title to the Facility will remain in the name of the Lessee except as provided under Article 21 or Article 22.

#### 17. LIABILITY

(a) The Lessee hereby acknowledges that Reclamation will not be responsible for making sure the Facility is technically or economically feasible. Inspections, reviews, and approvals by Reclamation do not relieve the Lessee of its responsibilities under the terms of this Lease or otherwise.

(b) The Lessee agrees to indemnify the United States for any injury, loss or damage incurred by any person or entity, resulting from any action performed hereunder, and any negligent act or omission of the Lessee in connection with its performance under this Lease.

(c) The Lessee shall have no claim against the United States for loss of generation caused by the normal or extraordinary operation and maintenance of the Project including, but not limited to, the quantity or quality of water delivered through the South Canal.

#### 18. INSURANCE

(a) The Lessee shall maintain workmen's compensation insurance on their own employees as may be necessary to comply with current applicable law.

(b) The Lessee shall, at their sole cost and expense, keep or cause the Facility to be kept insured for the mutual benefit of the United States, the Lessee, against loss or damage by fire, flood, and such other risks as are now or hereafter included in an extended coverage endorsement in common use for hydroelectric powerplants. Insurance proceeds shall be used by the Lessee to replace or repair the compensated loss, subject to review and concurrence by Reclamation.

(c) Throughout the term of this Lease, the Lessee shall, at their sole cost and expense, keep or cause to be kept in force, for the benefit of the United States, the Lessee, comprehensive broad form general public liability insurance in the amount of at least \$2,000,000 against claims and liability for personal injury, death,

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or property damage arising from the use, occupancy, disuse, or conditions of the Facility and, adjoining areas or ways, providing coverage for bodily injury or death to any person or persons for each accident or occurrence; and for property damage for each accident or occurrence.

(d) The amount of insurance coverage shall be adjusted annually by the insurance company based upon accepted standard adjustment practices.

(e) For each policy or certificate evidencing insurance, the Lessee shall instruct the insurance company to notify Reclamation not less than 30 days prior to the effective date of any cancellation, termination, or assignment of the policy or certificate or any modification of the policy or certificate. The notice shall be sent to Reclamation and shall identify this Lease, the policy and the insured.

(f) The Lessee agrees to maintain insurance coverage as stated in this Article herein throughout the term of this Lease in substantially the same form and amounts as are provided for in the attached certificates of insurance identified in Exhibit C and made a part thereof.

(g) Any insurance proceeds remaining after complying with the provisions of this Lease shall be the Lessee's sole property.

#### 19. FAILURE TO MAKE PAYMENTS

Upon failure of the Lessee to pay any sum of money when due as provided in this Lease, that amount past due will be assessed the following:

(1) Interest per annum on the unpaid balance from the due date of the bill through the date of the payment. The interest charged will be based on the "Treasury Current Value of Funds Rate" in effect at the time the debt becomes overdue.

(2) An administrative charge of \$5.00 per month.

(3) Penalty charge of 6% per annum on the unpaid balance computed after 90 days of delinquency, from the due date to the date of payment.

Further collection efforts will be consistent with the Debt Collection Improvement Act of 1996.

#### 20. DEFAULT

(a) Each or any of the following events shall constitute default under this Lease:

(1) Failure of the Lessee to comply with each and every material condition of this Lease.

(2) Abandonment of the Facility by the Lessee for twelve (12) consecutive months.

(b) In the event of default by the Lessee, Reclamation will give written notice to the Lessee and the Lessee shall then have 60 days to correct the default condition specified in the notice. However, in the event action to correct a default requires more than 60 days, the Lessee shall have a reasonable time to correct the default if the Lessee commences the action within 30 days after written notice and diligently pursues it to full correction in a manner satisfactory to Reclamation.

(c) Failure of the Lessee, without just cause, to initiate construction of the Facility within three (3) years of the date of this Lease or to complete construction within five (5) years of the date of this Lease shall be considered to be abandonment of the Facility. Failure to operate the Facility, without just cause, for a period of twelve (12) consecutive months or to maintain the Facility in good condition and repair shall be considered to be abandonment of the Facility. Failure of the Lessee to generate electricity with the Facility, in and of itself, shall not constitute a failure to operate the Facility, provided that the Lessee maintains the Facility in good condition and repair and provides justification to Reclamation as their failure to generate electricity.

(d) Any prevention, delay, nonperformance, or stoppage due to an act of nature or inability to obtain labor or materials or reasonable substitutes or any court or regulatory order enjoining, or restricting performance under this Lease shall excuse nonperformance, or stoppage, except obligations imposed by this Lease for the payment of monies due under this Lease.

(e) Each party hereto may use any remedy available either at law or in equity against a party in default hereof. The waiver of a default or a provision of this Lease shall not be deemed to be a waiver of any other provision, or of a subsequent default of the same provision.

(f) Any excessive delay resulting from compliance with the provisions of Federal environmental laws or administrative review by a Federal agency, pertaining to the Facility, may extend the time periods provided in

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this Article and Article 4 herein for a period equal to that of the delay. In the event of judicial review of environmental studies prepared in compliance with NEPA, or litigation arising out of this Lease, time periods provided in this Article and Article 4 herein will be extended for a period equal to that of the delay, provided such review or litigation was initiated by parties other than the Lessee.

21. CANCELLATION

(a) In the event of any default by the Lessee that is not corrected as provided in Article 20 herein, Reclamation shall have the right to cancel this Lease and pursue either of the following actions:

(1) Assume possession of the Facility for its own use, or lease the Facility to someone other than the Lessee. In either event, all right to use the Leased Premises and hydropower water rights for hydroelectric power purposes shall automatically revert to the United States and the Lessee shall be compensated for any un-depreciated value remaining in the Facility, based upon a 20-year straight line depreciation method of the construction cost of the Facility. Any new lessee assuming possession of the Facility will be required to enter into a contract with the Association to coordinate operation and maintenance of the Facility with the Project.

(2) Reclamation may require the Lessee to remove all or part of the Facility and restore the Leased Premises to their original condition at the Lessee's expense. In this event, the Lessee shall be entitled to salvage, for its own benefit, any features or equipment so removed. Any features or equipment left in place under this Article shall automatically become the property of the United States.

(b) The Lessee shall make payments due Reclamation under this Lease as of the date of cancellation within 60 days after cancellation. The Lessee shall be responsible for any other debts associated with the Facility unless otherwise provided in this Lease.

22. EXPIRATION OF LEASE

(a) Upon expiration of the lease term pursuant to Article 4 herein, Reclamation shall have the right to:

(1) Enter into a new lease with the Lessee;

(2) Assume title and possession of the Facility for its own use;

(3) Assume title possession and thereafter transfer ownership of the Facility and use the water rights for the hydroelectric power generation to any other party subject to terms and conditions of a new lease of power privilege; or

(4) Discontinue operation of the Facility. In the event Reclamation determines the Facility should no longer be operated, Reclamation may require the Lessee, at its expense, to remove the Facility and restore the Leased Premises to their original condition, as far as practical. Such features and equipment, or parts thereof, including piping and control devices installed on the South Canal that are necessary for the unimpaired operation of the Project, shall be left in place and shall become the property of the United States.

(b) If Reclamation elects to assume title and possession of the Facility or assume possession and transfer its ownership to another party, the United States shall either compensate the Lessee, or obligate a new lessee to compensate the Lessee, in an amount equal to the value of the Facility on the date of expiration as determined by an independent appraiser and appraisal methods to be jointly selected and determined by the Lessee and Reclamation. Reclamation shall not transfer ownership of the Facility to any third party until such compensation has been paid pursuant to a new contract. Any new lessee assuming possession of the Facility will be required to enter into a contract with the Association to coordinate operation and maintenance of the Facility with the Project.

23. RESERVE FUND {USBR to determine if letters of credit will suffice for (a) & (b)}{DMEA to supply a sample letter of credit. The letter should state specifically the amount of funds}

(a) Commencing one year after operation of the Facility and continuing during the life of this Lease, the Lessee shall maintain a reserve fund equal to one year's anticipated operation and maintenance expenses and one year's annual lease expense to Reclamation, for use in the manner, for the purposes and the circumstances agreed upon by Reclamation and the Lessee. The reserve fund will be established and maintained through

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annual deposits in the amounts stated to a segregated account created by the Lessee. Deposits shall be derived from funds obtained from revenues received pursuant to Article 8 herein or from other revenues of the Lessee. The annual deposit shall be made in the month of May in each year. The reserve fund shall be used for the following purposes:

- (1) To cure any financial default under this Lease to Reclamation.
  - (2) For extraordinary repair or replacement of the Facility, subject to agreement by Reclamation.
  - (3) To reimburse the Association for annual operation and maintenance costs for the Facility to the extent that power revenues are not sufficient therefore and to reimburse the costs encountered or created by emergency conditions.
- (b) The Lessee shall deposit its reserve fund in an account in accordance with the Lessee's investment policy and practices, provided, any interest paid on the reserve funds shall be and become a part of the fund from which interest was accrued. Interest that caused the fund to exceed the reserve fund maximum may be withdrawn by the Lessee to bring the fund balance back down to the maximum or disbursed in accordance with Article 8 herein, at the sole discretion of the Lessee
- (c) Upon expiration of the term of this Lease, any amounts then remaining in a reserve fund shall be disbursed and applied in accordance with Article 8 herein.
- (d) The maximum annual deposits and reserve fund amounts may be adjusted from time to time as mutually agreed to by both Reclamation and the Lessee.

#### 24. DISPUTE RESOLUTION

- (a) In the event of a dispute between the parties, the decision of Reclamation must be appealed to the Assistant Secretary – Water and Science for his/her determination prior to review by the federal court. The decision of the Assistant Secretary will be final for Reclamation and will be binding upon all parties hereto unless determined otherwise by a federal court. In the event that any action is filed in federal court, following a determination of the Assistant Secretary, in relation to this Lease, the unsuccessful party in the action shall pay to the successful party, in addition to all sums that either party may be ordered to pay, a reasonable sum, as determined by the court, for the successful party's attorney's fees and court costs. This provision shall not waive any right of the lessee or Reclamation under Federal Law.
- (b) This article shall not apply to any action or inaction by the Lessee during construction, operation and maintenance of the Facility that may impair the structural integrity of the South Canal.

#### 25. AUDIT

- (a) The Lessee and Reclamation shall maintain accurate records and books of account in accordance with generally accepted accounting principles and consistent with this Lease. Said books and records shall present fairly all costs and expenses utilized either directly or indirectly in computing any charges or payments to the other parties to this Lease.
- (b) Upon 30 days written notice each party to this Lease shall afford the other party or its independent auditor's reasonable access to the relevant records and books of account during the term of the Lease, and for a period of twenty-four months thereafter.
- (c) The party to this Lease that requests the audit under this Article will be solely responsible for its own costs incurred to perform the audit.

#### 26. NOTICES

- (a) Any notice authorized or required to be given to the Association shall be delivered to or mailed postage prepaid to the Manager, Uncompahgre Valley Water Users Association, P.O. Box 69, Montrose, Colorado 81402-0069. Any notice authorized or required to be given to the DMEA shall be delivered to or mailed postage prepaid to the President General Manager, Delta-Montrose Electric Association, P.O. Box 910, Montrose, Colorado 81402. Any notice authorized or required to be given to the United States shall be delivered to or mailed postage prepaid to the Area Manager, Bureau of Reclamation, 2764 Compass Drive Suite 106, Grand Junction, Colorado 81506. Notice shall be effective on the date of delivery or mailing.

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(b) The designation of the addresses or the addresses given above may be changed by notice given in the same manner as provided in this Article for other notices.

27. ASSIGNMENT LIMITED – SUCCESSORS IN INTEREST OBLIGATED

The provisions of this Lease shall apply to and bind the successors and assigns of the parties to this Lease, but no assignment or transfer of this Lease or any right or interest therein shall be valid until approved in writing by Reclamation. Said approval shall not be unreasonably withheld. {If the LoPP is required as collateral for the CREB's bonds, does this impact USBR's intent in this section?} {DMEA to verify that our bankers are okay with this article}

28. RULES, REGULATIONS AND DETERMINATIONS

(a) The parties to this Lease agree that the delivery of water or the use of Federal facilities pursuant to this Lease is subject to Reclamation law, as presently amended and supplemented, and the rules and regulations promulgated by the Secretary of the Interior under Reclamation law

(b) Reclamation shall have the right to make determinations necessary to administer this Lease that are consistent with the laws of the United States of America and the State of Colorado, and the express and implied provisions of this Lease, and the rules and regulations promulgated by the Secretary of the Interior. Such determinations shall be made in discussion with the parties to this Lease.

29. OFFICIALS NOT TO BENEFIT

No member of or delegate to Congress or Resident Commissioner or officer of the Lessee shall be admitted to any share or part of this Lease or to any benefit that may arise herefrom, other than as a water user or landowner in the same manner as other water users or landowners or as a shareholder in the company.

30. LIAISON OFFICER

Each party shall provide the name of a Liaison Officer and the address and telephone number through which contacts are to be made during the term of this Lease. Changes in the appointment of the Liaison Officers shall be made by written notice to the other parties. At all times, the Lessee shall provide qualified personnel to inspect the work, to ensure compliance with the Plans and Specifications, and to represent the Lessee in the ongoing construction, operation and maintenance work.

31. COVENANT AGAINST CONTINGENT FEES

The Lessee warrants that no person selling agency has been employed or retained to solicit or secure this Lease upon an agreement or understanding for a commission, percentage, brokerage, or contingent fee, excepting bona fide employees or bona fide established commercial or selling agencies maintained by the Lessee for the purpose of securing business. For breach or violation of the warranty, Reclamation shall have the right to cancel this Lease without liability.

32. AMENDMENT

This Lease may be amended, altered, or modified only in writing and signed by all of the parties.

## Attachment B: Plant and Wildlife Species

Species of concern in the general region as identified by the Bureau of Land Management.

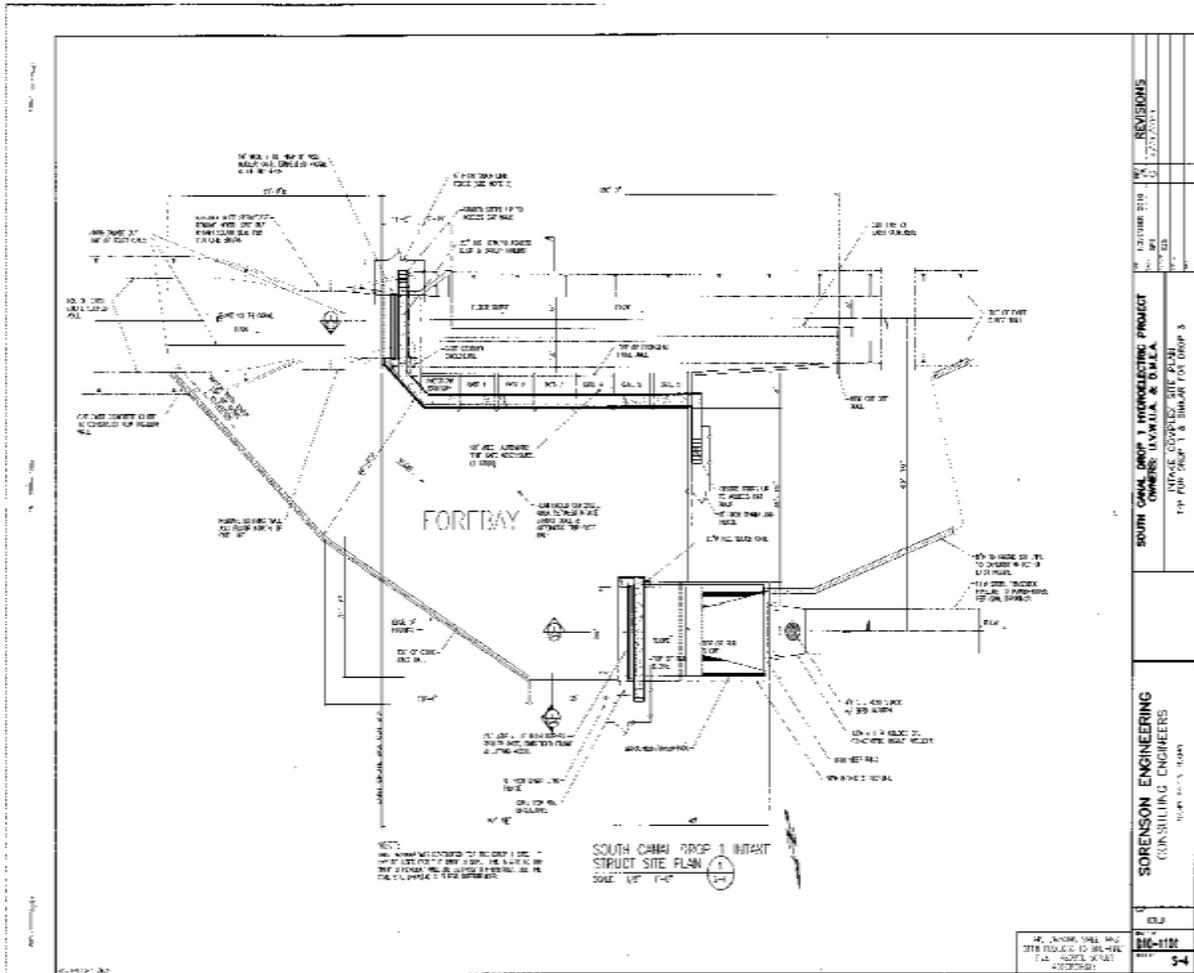
| <b>Species</b>       | <b>Habitat</b>   | <b>Range and Status</b>                                     | <b>Potential Effects of Hydropower Project</b>    |
|----------------------|--|---|---|
| Gunnison sage grouse | Sagebrush communities; meadows; sagebrush grass mix  | Year round  | Habitat not affected                              |
| American bittern     | Marshes and wetlands   | May occur in spring summer; breeding not confirmed in basin | Habitat not affected                              |
| Bald eagle           | Nests in riparian forest areas; winters along rivers and in upland areas   | Winter resident with potential for breeding                 | Insignificant effect on potential hunting habitat |
| Ferruginous hawk     | Nests on cliffs/outcrops; utilizes grassland/cropland type areas   | Fall and winter resident                                    | Insignificant effect on potential hunting habitat |
| Golden eagle         | Nests on cliffs/large trees; utilizes open country   | Year round  | Insignificant effect on potential hunting habitat |
| Peregrine falcon     | Nests on ledges/cliffs; utilizes open country often near water   | Spring-summer   | Insignificant effect on potential hunting habitat |
| Prairie falcon       | Nests in holes/cliffs/embankments  | Year round  | Insignificant effect on potential hunting habitat |
| Long-billed curlew   | Lakes and wetland and adjacent grass and shrub communities   | Spring-fall migrant   | Habitat not affected                              |
| Snowy plover         | Sparsely vegetated sand flats associated with pickleweed, greasewood, and saltgrass                                    | Spring-fall migrant   | Habitat not affected                              |
| Mountain plover      | High plain, cultivated fields, desert shrub and sagebrush often in association with heavy grazing and short vegetation | Spring-fall migrant   | Habitat not affected                              |

|                               |  |                            |  |
|-------------------------------|--|----------------------------|--|
| Yellow-billed cuckoo          | Riparian woodlands   | Summer resident            | Habitat not affected                           |
| Long-billed curlew            | Lakes/wetlands and adjacent grass-shrublands   | Migrant                    | Habitat not affected                           |
| White-faced ibis              | Marshes, swamps, ponds and rivers  | Migrant, potential nesting | Habitat not affected                           |
| American white pelican        | Large reservoirs   | Migrant                    | Habitat not affected                           |
| Brewers sparrow               | Sagebrush areas or other shrublands; utilizes wooded, brushy, riparian, agricultural and urban areas | Summer resident            | Habitat affected would be poor to not suitable |
| Black swift                   | Nests on cliffs; forages montane/lowland areas   | Summer resident            | Habitat not affected                           |
| Burrowing owl                 | Level, slightly sloping grassland/semidesert areas; prairie dog towns                                | Summer resident            | Habitat not affected                           |
| Columbian sharp-tailed grouse | Grasslands/shrublands above desert areas   | Resident                   | Habitat not affected                           |
| Mexican spotted owl           | Mixed coniferous forest; canyon areas  | Potential resident         | Habitat not affected                           |
| Flammulated owl               | Montane forest   | Summer resident            | Habitat not affected                           |
| Lewis woodpecker              | Riparian forest, other forested areas  | Year round                 | Habitat not affected                           |
| Gray vireo                    | Pinon juniper; open juniper grassland  | Summer resident            | Habitat not affected                           |
| Pinon jay                     | Pinon juniper areas  | Year round                 | Habitat not affected                           |
| Juniper titmouse              | Pinon juniper areas  | Year round                 | Habitat not affected                           |
| Veery                         | Deciduous forests, riparian, shrubs  | Possible summer resident   | Habitat not affected                           |
| Bendires thrasher             | Desert area; outside of region   | ----                       | Habitat not affected                           |
| Graces warbler                | Coniferous forest  | Summer resident            | Habitat not affected                           |
| Grasshopper sparrow           | Open grasslands; fields outside of region  | -----                      | Habitat not affected                           |
| Chestnut-collared longspur    | Open grasslands and cultivated fields  | Migrant                    | Habitat not affected                           |
| Black rosy-finch              | Mountain meadows; high desert areas; alpine areas  | Winter resident            | Habitat not affected                           |
| Brown-capped rosy-finch       | Alpine meadows, cliffs; high elevation parks   | Summer resident            | Habitat not affected                           |

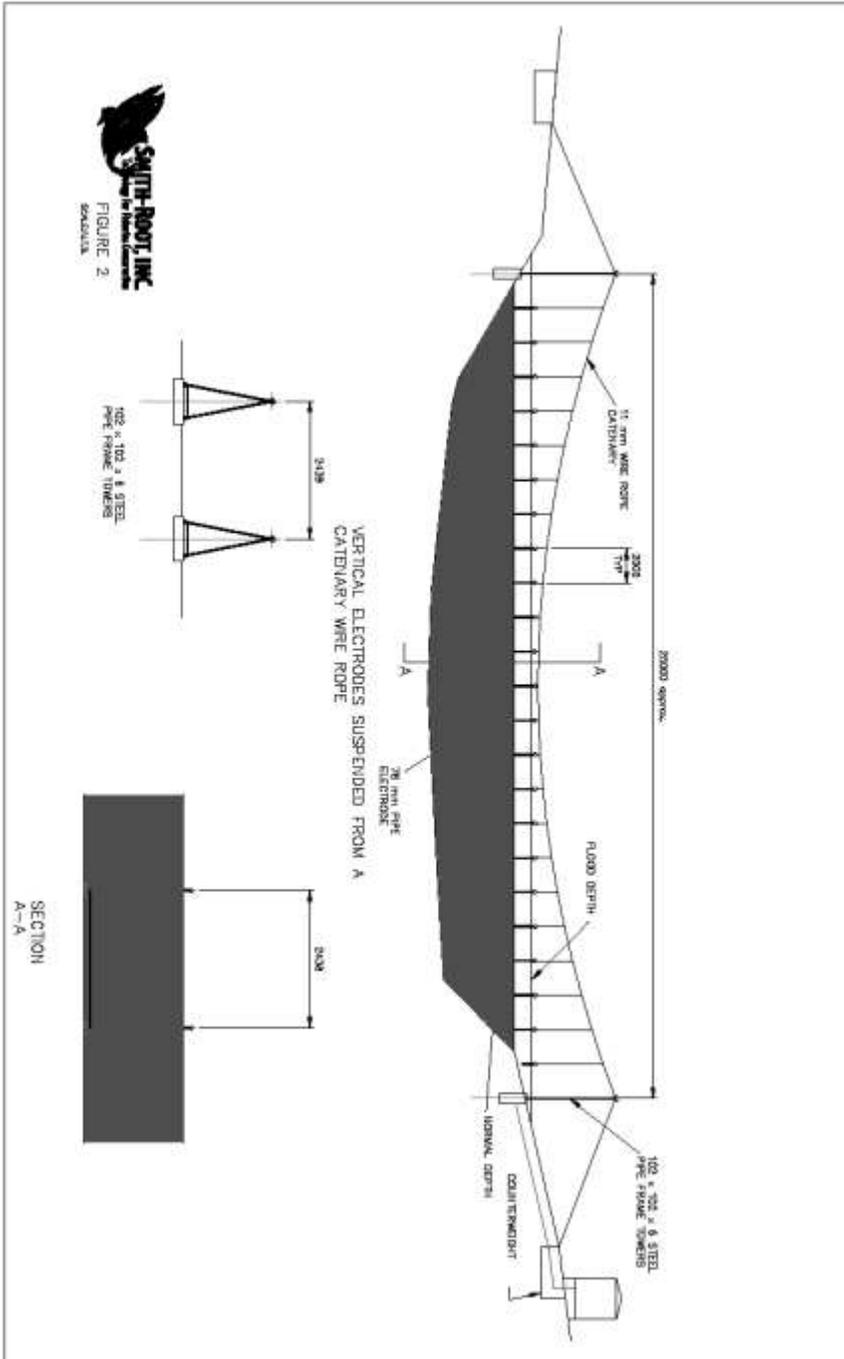
|  |  |            |   |
|--|--|------------|---|
| Cassin's finch                                 | Open montane coniferous forests  | Year round | Habitat not affected                            |
| Desert bighorn sheep                           | Steep, rugged terrain in canyon country  |            | Habitat not affected                            |
| Gunnison prairie dog                           | Grasslands, semi-desert shrublands, montane shrublands   |            | Habitat not affected                            |
| White-tailed prairie dog                       | Level to gently sloping grasslands and semi-desert grasslands                                      |            | None observed in impact area                    |
| Kit fox  | Semi-desert shrubland including saltbush and greasewood  |            | Insignificant loss of potential habitat         |
| Allens big-eared bat                           | Ponderosa/pinon-juniper-oak brush-riparian areas near rocky areas; often near streams/ponds        |            | Habitat not affected                            |
| Big free-tailed bat                            | Rocky areas and rugged terrain in desert and woodland habitats; utilizes crevices in cliffs, caves |            | Insignificant loss of potential feeding habitat |
| Spotted bat                                    | Desert shrub, ponderosa/pinon-juniper areas, canyons, fields/crevices in cliffs near water         |            | Insignificant loss of potential feeding habitat |
| Townsend's big-eared bat                       | Mesic areas; coniferous/deciduous forest   |            | Habitat not affected                            |
| Fringed myotis                                 | Desert, grassland and woodland areas; caves/mines/rock crevices                                    |            | Insignificant loss of potential feeding habitat |
| Black footed ferret                            | Prairie dog colonies   |            | Habitat not affected                            |
| Canada lynx                                    | Coniferous forest; aspen-mountain shrub  |            | Habitat not affected                            |
| Longnose leopard lizard                        | Desert and semidesert areas; prefer abundant rodent burrows; typically below 5000 feet             |            | Not recorded in impact area.                    |
| Midget faded rattlesnake                       | Rocky outcrops; often near riparian  |            | Habitat not affected                            |
| Milk snake                                     | Shrublands, ponderosa pine-pinon juniper; river valleys  |            | Habitat not affected                            |
| Northern leopard frog                          | Springs, slow moving waters, ponds, canals   |            | Habitat not affected                            |
| Canyon tree frog                               | Rocky canyon bottoms along streams   |            | Habitat not affected                            |
| Boreal toad                                    | Mountain lakes/ponds/wetlands  |            | Habitat not affected                            |
| Roundtail chub                                 | Warm water rivers; large streams   |            | Habitat not affected                            |
| Bonytail, pikeminnow, razorback, humpback chub | Large river endangered fishes  |            | Habitat not affected                            |
| Native cutthroat trout                         | Cold water streams   |            | Habitat not affected                            |
| Paradox breadroot                              | Open pinon juniper woodlands   |            | Habitat not affected                            |
| Grand Junction milkvetch                       | Sparsely vegetated habitats in pinon-juniper and sagebrush communities; often within Chinle and    |            | Habitat not affected                            |

|                                  |  |                            |
|----------------------------------|--|----------------------------|
|                                  | Morrison formations and selenium soils, 4800-6200 feet   |                            |
| Naturita milkvetch               | Cracks and ledges of sandstone cliffs and flat bedrock area typically with shallow soils within pinon-juniper areas  | Habitat not affected       |
| San Rafael milkvetch             | Banks of sandy clay gulches and gills; at the foot of sandstone outcrops or among boulders along dry creeks in selenium soils; 4500-5300 feet  | Habitat not affected       |
| Sandstone milkvetch              | Sandstone rock ledges; talus areas; slickrock fissures   | Habitat not affected       |
| Gypsum Valley cateye             | Gypsum outcrop and grayish-white soils of the Paradox Member of the Hermosa formation  | Habitat not affected       |
| Fragile rockbrake                | Cool, moist, sheltered cliff crevices and ledges   | Habitat not affected       |
| Kachina daisy                    | Saline soils in alcoves and seeps in canyon walls  | Habitat not affected       |
| Montrose bladderpod              | Sandy-gravel soil mostly of sandstone fragments over Mancos Shale mainly in pinon-juniper woodlands or in ecotone between it and salt desert scrub; also in sandy soils derived from Jurassic sandstones and in sagebrush steppe communities | Potential habitat affected |
| Colorado desert parsley          | Adobe hills and plains on rocky soils derived from Mancos Formation; shrub communities dominated by sagebrush, shadscale, greasewood, or oak.  | Potential habitat affected |
| Paradox Valley lupine            | Pinon-juniper woodlands or clay barrens from Chinle or Mancos formations; often in draws and washes with sparse vegetation   | Habitat not affected       |
| Dolores skeleton plant           | Sandy alluvium and colluviums of the Cutler Formation between canyon walls and the river in juniper, shadscale, and sagebrush communities  | Habitat not affected       |
| Eastwoods monkey-flower          | Shallow caves and seeps on steep canyon walls  | Habitat not affected       |
| Clay-loving wild buckwheat       | Mancos shale badlands in salt desert shrub communities; often with shadscale, black sagebrush and mat saltbush-endangered  | No effect                  |
| Colorado hookless cactus         | Salt desert shrub communities in clay soils on alluvial benches and breaks; toe slopes and deposits often with cobbled rocky or graveled surfaces-threatened   | Habitat not affected       |
| Uncompahgre fritillary butterfly | Alpine areas   | Habitat not affected       |

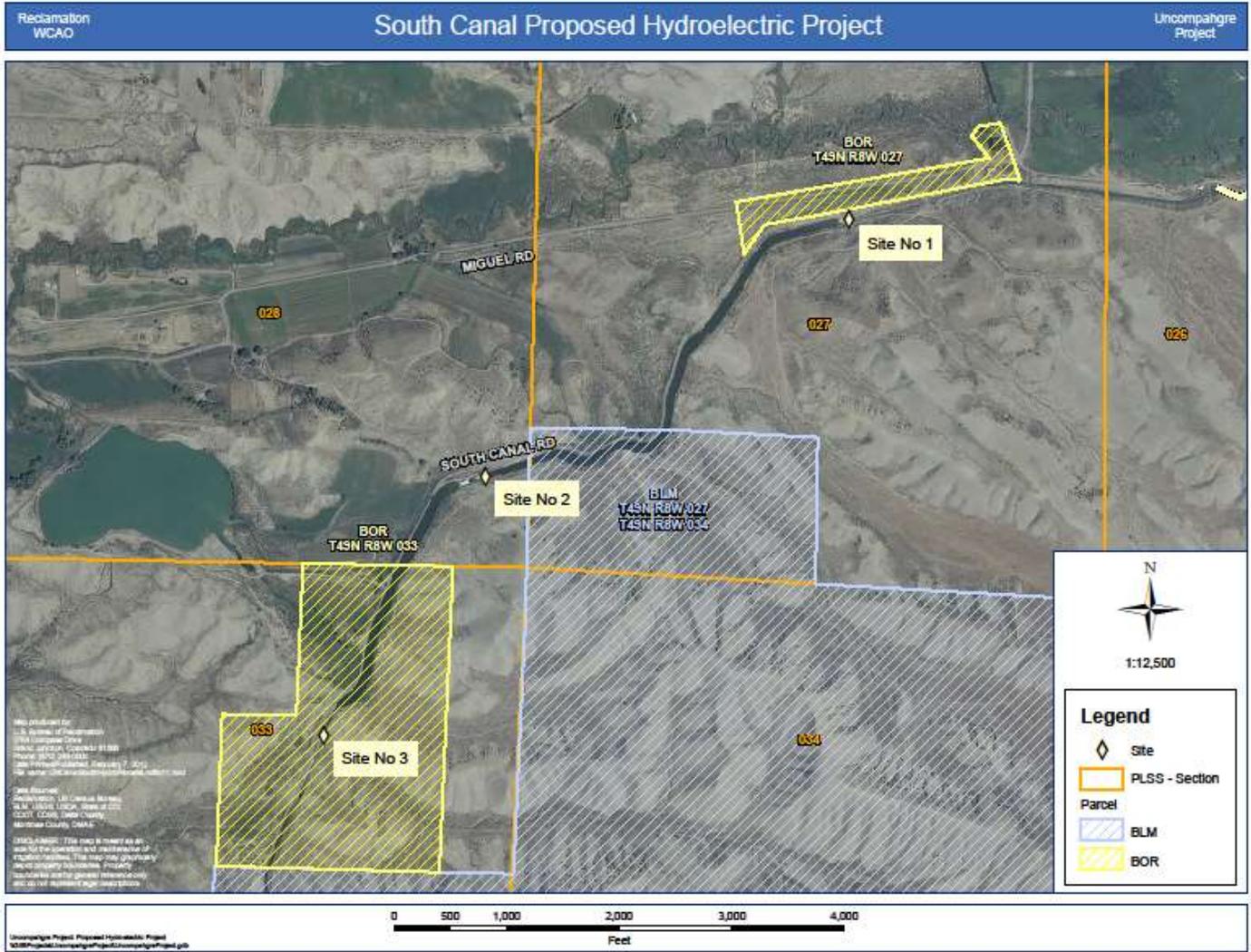
# Attachment C: Drawings



Canal diversion.



Electronic fish barrier example.



Map showing Public (BLM) lands, Reclamation lands (BOR) and private lands in project area.



Example of Powerplant Building. Coloration will be selected to blend with background.

## Attachment D Revegetation Commitments

- Disturbed areas will be reseeded as approved by Reclamation. Only State Certified weed free mulch, erosion blankets, and/or waddles shall be used. The holder shall seed all disturbed areas with the following seed mix. There shall be no primary or secondary noxious weed seed in the seed mixture. In addition, there should be no more than 0.5% total weed seed, less than 2% other seed, and no trash larger than ¼ inch in length. Seed shall not be stored in burlap bags.
- Seed going on projects less than 20 acres or less than 200 lbs. shall be tested, and the viability testing of seed shall be done in accordance with State law(s). Seed tests shall be less than one year old and can be from the company's seed test. Seed test documents can be from: a) certified "blue" tag(s); b) an independent seed lab test; or c) a seed lab analysis either by seed lot or by seed mix. Copies of the seed test documents shall be forwarded to the authorized officer. Commercial seed shall be either certified or registered pure live seed (PLS). The seed container shall be tagged in accordance with State law(s) and available for inspection by the authorized officer.
- The seed shall be evenly and uniformly planted over any disturbed areas. Seed shall be broadcast and the area shall be raked or chained to cover the seed. The seeding will be repeated until a satisfactory stand is established as determined by the authorized officer. Evaluation of growth will not be made before completion of the second growing season after seeding. The authorized officer is to be notified a minimum of two days prior to seeding of the project. Seeding shall be completed at a time of optimum soil moisture content, i.e., early spring or the fall.

### Seed Mix

| Species  | PLS lbs per acre needed for mix |
|--|---------------------------------|
| Bottlebrush squirreltail<br>( <i>Elymus elemoides</i> )              | 2                               |
| Western wheatgrass-variety Arriba<br>( <i>Pascopyrum smithii</i> )   | 3                               |
| Galleta Grass<br>( <i>Hilaria</i> or <i>Pleuraphis jamesei</i> )     | 1                               |
| Indian ricegrass-variety rimrock<br>( <i>Acnatherum hymenoides</i> ) | 3                               |
| Salina Wildrye<br>( <i>Leymus salinus</i> )                          | 1                               |
| Annual sunflower<br>( <i>Helianthus annuus</i> )                     | 0.3                             |
| Winterfat<br>( <i>Eurotia</i> or <i>Krascheninnikovia lanata</i> )   | 0.25                            |
| Shadscale<br>( <i>Atriplex confertifolia</i> )                       | 0.25                            |
|  |                                 |

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|  |       |
|--|-------|
| Four-Wing Saltbush<br>( <i>Atriplex canescens</i> ) from western Colorado or<br>eastern Utah | 0.3   |
| Basin Big Sagebrush<br>( <i>Aremisia tridentata tridentata</i> )                             | 0.05  |
| Totals   | 13.85 |

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