The Nature Conservancy
Colorado

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April 10, 2018

Anna Mauss, P.E.
Water Project Loan Program
Finance Section
Colorado Water Conservation Board

Dear Ms. Mauss,

This letter provides you with the March 2018 progress report on the WSRF Grant – POGG1 2017-494 –Wines Ditch #1 Diversion Structure & Conveyance System Improvement, Phase I Preliminary Design, Alternatives Analysis & Construction Cost Opinion. This progress report is organized by task under the approved scope of work for the project.

TASK 1 – Project kick-off meeting

The Nature Conservancy reported on the project kick-off meeting in its April 2017 progress report (first progress report), and subsequent coordination with project partners (and especially the Bureau of Land Management (BLM)) to allow those partners to weigh in on the project scope and design considerations in the September 2017 progress report (second progress report).

The Nature Conservancy considered this task complete as of the second reporting period, and billing on this task was completed during this third reporting period.

TASK 2 – Site Visit Kickoff

On August 22, 2017, a site visit meeting was held for the Wines Diversion Rehabilitation Project at the project location in Gateway, Colorado. Representatives of the following project stakeholders were present at the meeting: The Nature Conservancy (TNC), Colorado Parks and Wildlife (CPW), American Whitewater (AW), the diversion structure owner, BLM, and Wright Water Engineers, Inc. (WWE). Prior to the site visit, WWE provided copies of three conceptual alternative schematics (developed as part of Task 11) to the project stakeholders. During the site visit, the group discussed each conceptual alternative in detail and discussed the pros and cons of each alternative presented. The outcome of the meeting provided a general consensus on which alternative was the group's preferred approach.

After the August 22, 2017 meeting, WWE prepared a memorandum documenting this site visit and the discussion associated with each alternative presented. The outcome of this site visit facilitated the selection of the project team's preferred alternative approach to the project.

The Nature Conservancy considers this task complete as of the third reporting period.

TASK 3 – Bathymetric & topographic mapping by surveyor

The Nature Conservancy reported on Task 3 in the April 2017 progress report. The bathymetric and topographic mapping has been completed by the surveyor and the payments were processed in the second reporting period.

The Nature Conservancy considered this task complete as of the second reporting period, and billing on this task was completed during this third reporting period.

TASK 4 – Fishery evaluation by BLM, CPW, and fish biologist

During the first and second reporting periods, documentation provided by CPW and BLM staff related to the fishery aspects of the project was incorporated into the basis of design report for the project. This included documentation of design parameters for a non-native fish barrier and design considerations to reduce the potential for fish predation below the barrier. Considerations for inclusion of a selective fish bypass structure, such as a manual fish sorting pen, were also recommended to facilitate passage of native species in the future. This basis of design report was also reviewed by an independent fish biologist (an approved sub-consultant under WWE's contract) who confirmed the recommendations provided by CPW and BLM.

During this reporting period, CPW was consulted during the preliminary design development phase for the project team's preferred alternative, and CPW provided specific recommendations for fish passage structure, and stream restoration approaches which were incorporated into the preliminary design. CPW also reviewed the Alternatives Analysis Report and associated preliminary design for the preferred alternative and provided final recommendations which were incorporated into the report.

Additionally, WWE's independent fish biologist peer reviewed the Alternatives Analysis Report and associated preliminary design for the preferred alternative. The biologist provided a memorandum documenting their final recommendations for the project teams preferred alternative.

The Nature Conservancy considers this task complete as of the third reporting period.

TASK 5 – Hydrology Analysis

During the second reporting period, a hydrology analysis was completed as part of the basis of design report to provide a recommended design flow range for which the fish barrier function needs to be maintained. Based on information provided by AW, an optimal boater flow range was also established in consideration of potential recreational users.

This hydrology analysis resulted in the following recommendations:

1. The structure should maintain fish barrier function between 100 and 5,000 cfs. The low flow value of 100 cfs is approximately equal to the 90 percent exceedance probability based on the annual average daily flow duration curve. The high flow value of 5,000 cfs is approximately equal to the calculated 10-year flood value. Additionally, this high flow value is less than the 1% exceedance probability for flow during the peak white sucker migration season.
2. The structure should maintain boater passage function between 500 and 5,000 cfs, which according to AW, is the flow range during which boaters should be expected on the Dolores River.

The Nature Conservancy considered this task complete as of the second reporting period, and billing on this task was completed during this third reporting period.

TASK 6 – Water Surface Profiles

During the second reporting period, water surface profiles were prepared based on the topographic data collected by the surveyor. The hydraulic model (HEC-RAS) created to develop these profiles was calibrated based on known water surface elevations and streamflow using water surface elevation data collected in the field and stream gage data from the USGS gage downstream of the project location, respectively. This calibrated HEC-RAS model was used to inform the preliminary design of the preferred structure alternative (Task 16).

The Nature Conservancy considered this task complete as of the second reporting period, and billing on this task was completed during this third reporting period.

TASK 7 – Develop possible recreational uses

During the second reporting period, information provided by AW was used to incorporate boater recreation considerations into the basis of design report. These considerations included:

- Preventing the formation of a low head dam.
- Locating a portage trail to provide an opportunity for boaters to bypass the structure if necessary.
- Optimum boater passage conditions should be considered between 1,900 cfs and 2,700 cfs which are considered to be optimum boating flows on this section of the Dolores River.

The Nature Conservancy considered this task complete as of the second reporting period, and billing on this task was completed during this third reporting period.

TASK 8 – Coordinate with BLM and CPW on conceptual design alternatives

During the second reporting period, BLM and CPW were engaged to provide design considerations for fish passage and recreational aspects of potential design alternatives. This information is summarized in the basis of design report. Conceptual alternative schematics for the diversion structure were discussed with all project stakeholders, including BLM and CPW, during the August 22nd site visit. During this meeting both CPW and BLM provided feedback and recommendations for each alternative.

The Nature Conservancy considered this task complete as of the second reporting period, and billing on this task was completed during this third reporting period.

TASK 9 – Coordinate with USACE and BLM on permitting considerations

During the second reporting period, a meeting took place with USACE to discuss permitting considerations. The objective of this meeting was to determine if the Wines Ditch Rehabilitation Project could be considered agriculturally exempt under CWA Section 404(f). A letter was drafted and sent to the USACE which summarized the basis for this agricultural exemption and concluded that the project will not require authorization from USACE because it is an agriculturally exempt activity.

During this reporting period, coordination with the BLM on the pre-FLMPA footprint determination of the structure continued and culminated with the BLM indicating that they would not

need to issue a formal authorization for the project teams preferred alternative if constructed. BLM also requested continued project engagement during the final design and construction phases of the project. This determination from the BLM allowed the project team to move forward with the preliminary design phase of the project teams preferred alternative.

The Nature Conservancy considered this task complete as of the second reporting period, and billing on this task was completed during this third reporting period.

TASK 10 – Review historical documentation

During the second reporting period, historical aerial imagery information was collected and reviewed in context with the historical structure footprint. Illustrative figures depicting the maximum upstream and downstream extent of the structure were developed to provide BLM with an estimate of the historical structure footprint. Historical diversion amount information has also been collected and summarized from the CDSS database.

The Nature Conservancy considered this task complete as of the second reporting period, and billing on this task was completed during this third reporting period.

TASK 11 – Alternative Schematics

During the second reporting period, three conceptual alternative schematics were developed and provided to project stakeholders. While each alternative incorporated elements of boater passage, boater safety, a non-native fish barrier, and riparian values, each alternative had a long list of pros and cons associated with each of these elements which was evaluated by the project stakeholders. After this evaluation and subsequent discussion during the site visit meeting, the group arrived at a general consensus for a preferred alternative.

During this third reporting period, additional project stakeholder comments and recommendations were incorporated into the preliminary design drawings for the preferred alternative. One specific item of note was the development of a preliminary bankfull analysis to inform the typical channel cross-section for stream restoration purposes. WWE conducted a more in-depth analysis of bankfull hydrology and evaluated existing conditions cross-sections through the project extents to determine how floodplain restoration and bank stabilization practices could be incorporated into the preliminary design phase.

The Nature Conservancy considers this task complete as of the third reporting period.

TASK 12 – Project partner review of alternatives designs

As part of the preliminary design phase, WWE developed two options associated with the project team's preferred alternative in order to evaluate potential construction cost savings between the two options. Each preferred option incorporated the comments and recommendations discussed by the project team and project partners were given an opportunity to review and comment on each option. Any final recommendations were incorporated into the project Alternatives Analysis Report.

The Nature Conservancy considers this task complete as of the third reporting period.

TASK 13 – Evaluate water rights implications

WWE spoke with the Division 4 Engineer to discuss water rights implications as a result of potentially relocating the Wines Ditch point of diversion as part of this project. Based on WWE's discussion with the Division Engineer and subsequent investigation into Colorado Revised Statutes, WWE does not anticipate the need to address any significant water rights issues as a result of implementing the preferred alternative identified in the Alternatives Analysis Report. WWE did note that the potential solutions identified for relocating the Wines Ditch point of diversion can only be confirmed once a more detailed design and a specific diversion location are presented to the Division Engineer.

The Nature Conservancy considers this task complete as of the third reporting period.

TASK 14 – Develop conceptual construction costs

Detailed preliminary/conceptual design level construction costs were developed for two options associated with the project team's preferred alternative. Since the project team was in general agreement on a preferred alternative after the August 22, 2017 site visit, the group considered it more beneficial to the project to evaluate potential cost savings associated with the preferred alternative.

Preferred Alternative Option 1 consists of three grouted boulder drop structures engineered to serve as fish velocity barriers and provide safer navigational passage through the project extents over a wide range of flow conditions. The preliminary / conceptual level construction cost for this option was estimated at approximately $3.6 million. Final Engineering Design, Permitting and Construction Services costs were estimated at $366K.

Preferred Alternative Option 2 consists of two grouted boulder drop structures and one long constructed riffle engineered to serve as fish velocity barriers and provide safer navigational passage through the project extents over a wide range of flow conditions. The preliminary / conceptual level construction cost for this option was estimated at approximately $3.4 million. Final Engineering Design, Permitting and Construction Services costs were estimated at $366K.

The Nature Conservancy considers this task complete as of the third reporting period.

TASK 15 – Stakeholder meetings

Various stakeholder meeting and coordination took place throughout the third reporting period. Specific meetings and coordination items included the following:

- Meetings with CPW to discuss preliminary design approaches for stream restoration approaches, optional fish passage, and habitat enhancement.
- Onsite meeting with the diversion structure owner to identify specific locations for Wines Ditch improvements and rehabilitation.
- Coordination with BLM on revegetation recommendations.
- Meetings with diversion structure owner representatives to discuss water rights implications as a result of constructing the preferred alternative.
- Coordination with all project stakeholders on comments and recommendations associated with the Alternatives Analysis Report.

The Nature Conservancy considers this task complete as of the third reporting period.

TASK 16 – Preliminary design and cost estimate

As discussed in the Task 14 summary, two preliminary design options associated with the project team's preferred alternative were developed by WWE. Each preliminary design considered the following components:

- Development of a proposed conditions hydraulic model (HEC-RAS) to evaluate the fish barrier performance of each option under a wide range of flow conditions.
- Evaluated the ability of each option to deliver water to the Wines Ditch headgate under low flow conditions.
- Hydraulic evaluation of the ability for native fish to successfully utilize the optional fish passage structure.
- Proposed grading and proposed channel profile for each option.
- Typical channel cross-section with details for bank stabilization and floodplain enhancement.
- Typical elevation profile for the optional fish passage structures.
- Elevation profile and grading for the secondary side channel to deliver water to the Wines Ditch headgate.
- Callouts for appurtenances such as a sluice gate to facilitate cleaning of the secondary side channel, a mechanism for allowing or inhibiting fish passage through each structure, signal boulders for boaters, boulder clusters for improved habitat, and areas in need of restoration / stabilization.

As discussed in the Task 14 summary, two preliminary design level cost estimates were developed for the preferred alternative.

The Nature Conservancy considers this task complete as of the third reporting period.

TASK 17—Administration

The Nature Conservancy provided grant administration, including maintenance of the budget and the preparation of this progress report.

Please do not hesitate to contact The Nature Conservancy with any questions about our progress on the Wines Ditch Project. Because I anticipate starting maternity leave in April of 2018, you may try to contact me at (970) 739-8624 or celene.hawkins@tnc.org. or you may also contact Laura Wilkins at (720) 974-7027 or laura.wilkins@tnc.org.

Sincerely,

Celene Hawkins
Western Colorado Water Project Director
The Nature Conservancy