STATE OF COLORADO

Colorado Water Conservation Board
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TO: Colorado Water Conservation Board Members

FROM: Anna Mauss, P.E., Project Manager
Kirk Russell, P.E., Chief
Finance Section

DATE: May 9, 2014

SUBJECT: **Agenda Item 34b, May 21-22, 2014 Board Meeting**
Water Project Loans
Northern Colorado Water Conservancy District – Granby Hydropower Project

Introduction

Northern Colorado Water Conservancy District (Northern Water), acting by and through its hydropower enterprise, is applying for a loan for the construction of the 1.2 Megawatt Granby Hydropower Project (Project). The Project is located at the existing Colorado – Big Thompson Project Granby Dam and will utilize the existing releases from Lake Granby to the Colorado River, without changing the historic flow regime. The total Project cost is estimated at $5,669,340. The Company is applying for a loan to cover 90% of the project cost with a 30-year CWCB loan. See attached Project Data Sheet for a location map and a Project summary.

Staff Recommendation

Staff recommends the Board approve a loan not to exceed $5,135,183 ($5,084,340 for Project costs and $50,843 for the 1% Loan Service Fee) to the Northern Colorado Water Conservancy District, acting by and through its hydropower enterprise, for costs associated with the design and construction of the Granby Hydropower Project from the Severance Tax Fund. The loan terms shall be 30 years at the hydroelectric interest rate of 2.0% per annum. Security for the loan shall a pledge of power revenues.

Staff further recommends that no funds be disbursed until the following contract conditions have been satisfied:

1) Execution of the Lease of Power Privilege
2) Execution of the Power Purchase Agreement

Background
Northern Water, in partnership with the Bureau of Reclamation (Reclamation), operates and maintains the Colorado-Big Thompson (C-BT) Project facilities including 700 miles of transmission lines, 95 miles of canals, 35 miles of tunnels, seven hydropower plants, and 12 reservoirs including Granby Dam and Reservoir. On average, the C-BT Project collects and delivers more than 210,000 acre feet (AF) of water annually. Most of the water is collected in the upper Colorado River basin, west of the Continental Divide. Water is delivered to the East Slope via a 13-mile tunnel beneath Rocky Mountain National Park. Northern Water's service area includes 640,000 acres of irrigated farm land and 860,000 people located in portions of Boulder, Broomfield, Larimer, Weld, Morgan, Washington, Logan and Sedgwick counties.

Northern Water is planning on adding an additional hydropower plant to the system by constructing a plant at the base of Granby Dam in Grand County. Lake Granby, located five miles northeast of the Town of Granby, is the largest storage reservoir in the C-BT Project. It was constructed between 1942 and 1949 and has a capacity of 539,758 AF. The Colorado River flows from Shadow Mountain Reservoir into Lake Granby and exits the lake at Granby Dam.

The Granby Dam is a 225-foot earthfill dam. The outlet consists of a pressurized tunnel leading to a gate chamber that regulates discharges into a non-pressurized tunnel. The non-pressurized tunnel discharges to the Colorado River downstream of the dam.

The C-BT Project has minimum streamflow obligations below Lake Granby ranging from 20 cubic feet per second (cfs) during the winter to 75 cfs during the summer. During times when Lake Granby is near maximum water surface levels, the valves can release up to 440 cfs.

Northern Water proposes to install a hydropower station that will use the minimum streamflow obligations and a portion of additional releases to generate power through a 1.2-megawatt facility.

Loan Feasibility Study
Carl Brouwer, P.E., PMP, of Northern Water prepared the Loan Feasibility Study, titled "*Granby Hydro Project Loan Feasibility Study,*" dated April 1, 2014. The Study was prepared in accordance with CWCB guidelines and includes preliminary engineering, an engineer's estimate of probable cost that were used in determination of the total Project cost, and two years of audited financial statements. Northern Water also submitted a supplemental report prepared by CH2MHill, titled "*Feasibility Design Report Granby Hydropower Project,*" dated August 2011.

Borrower - Northern Colorado Water Conservancy District
Northern Water is a quasi-municipal entity and a political subdivision of the state of Colorado organized under the Water Conservancy Act, C.R.S. 37-45-101 et seq. Northern Water was created by decree of the Weld County District Court, dated September 20, 1937.

In accordance with its Repayment Contract with Reclamation, Northern Water collects a 1.00 mill levy property tax on real property located within its boundaries. These taxes are assessed by the individual counties and submitted to Northern Water. In addition, Northern Water collects water assessments from water allotment contract holders.

Northern Water has the authority to generate, distribute, sell, or contract to sell electric energy at wholesale rates through the operation of the facilities of Northern Water. The electric power may be used both within and outside the boundaries of Northern Water (C.R.S. 37-45-118(2)).

Northern Water will own, maintain, and operate Granby power facilities through its hydropower enterprise. The enterprise was established in 2011 for the purpose of acquiring, constructing, operating, and maintaining hydropower plants; and generating, distributing, selling or contracting to sell electric energy. The governing body of the enterprise is the Northern Water Board of Directors.

Water Rights

Northern Water's water rights portfolio includes West Slope reservoirs: Grand Lake, Green Mountain Reservoir, Lake Granby, Shadow Mountain Reservoir, and Willow Creek Reservoir. Its East Slope reservoirs include: Boulder Reservoir, Carter Lake, Flatiron Reservoir, Horsetooth Reservoir, Lake Estes, Mary's Lake, and Pinewood Reservoir.

The C-BT Project was designed to deliver 310,000 AF annually. Typically 210,000 AF are delivered depending on the quota (the amount of C-BT water established by the Northern Water Board makes available to alotees).

Lake Granby has a storage right of 543,758 AF with an adjudication date of October 12, 1955 and an appropriation date of August 1, 1935.

Project Description

The proposed Project will utilize the existing outlet flows from Granby Dam to the Colorado River and will act as a run-of-river plant, meaning the plant operations will not change existing flows or dam releases. Alternatives were analyzed for both the powerhouse location and turbine sizing. The powerhouse locations evaluated were:

Alternative No. 1 – Tunnel Outlet: This option placed the powerhouse directly at the mouth of the tunnel and was initially considered the preferred option. A single 54-inch diameter penstock would have been included. However, due to concerns by Reclamation regarding potential future work at Granby Dam and the possible impacts that work might have on the powerhouse, this alternative was removed from consideration.

Alternative No. 2 – Downstream: This option would place the powerhouse approximately 300 feet downstream of the tunnel. A new bifurcation would be installed within the tunnel and a 36-inch pipeline would be extended from that point. The main outlet valve would remain within the tunnel. Due to slope stability concerns with the hillside behind the powerhouse, this alternative was removed from consideration.

Selected Alternative No. 3 –Streamside: This option is similar to Alternative 2 except the powerhouse would be located along the bank of the outlet channel and would be approximately 200 feet from the tunnel mouth. This is the preferred alternative upon which final design is underway.

An analysis was also made for turbine sizing. The goal was to cover a flow range from 20 to 75 cfs. Scenarios analyzed included a single Francis turbine, a single Turgo unit, and a two-Francis unit configuration. The optimal configuration weighing cost and revenue was the two-Francis configuration.

Selected Alternative: The Project components will include:

- Connection to the existing outlet within the Granby outlet tunnel.
- 500 feet of 36-inch diameter penstock supported within the existing tunnel.
- 200 feet of additional penstock outside the tunnel.
- Two 600 kilowatt Francis turbines with associated generators and electrical gear.
- A 70 foot by 26 foot powerhouse located along the bank of the existing tunnel.
- 1,000 feet of overhead powerline and associated switchgear to connect to Mountain Parks Electric, Inc.

Permitting: The Project is being performed under Reclamation's Lease of Power Privilege (LOPP) process. The LOPP is a permitting process that allows for the development of new hydropower at existing Reclamation facilities. The process is similar to the Federal Energy Regulatory Commission process but is administered by Reclamation.

A preliminary LOPP was granted by Reclamation in September 2011. The environmental permitting process is presently underway and is led by Reclamation. Reclamation is seeking a Categorical Exclusion for the Project since the area was previously disturbed, is not changing project operations, and is not changing the water release location back to the Colorado River. Following obtaining the Categorical Exclusion (anticipated in the summer of 2014), Northern Water will finalize the LOPP with Reclamation.

The LOPP term is 40 years from the time power generation begins. Payment is made annually to Reclamation based upon the capacity of the site and the kilowatt-hours produced.

Northern Water is in the process of finalizing a 30-year Power Purchase Agreement (PPA) with Mountain Parks Electric, Inc.

TABLE 1: PROJECT COST

Design Engineering	$ 530,000
Project Management (Northern Water)	$200,000
Construction Management Engineering	$30,000
Mountain Parks Electric Interconnection	$340,000
Construction	$ 3,938,000
LOPP Review (paid by Northern Water to Reclamation)	$55,000
Contingency	$ 576,340
TOTAL PROJECT COST	$5,669,340

Schedule: The anticipated Project schedule is to finalize the LOPP and finalize the PPA with Mountain Parks Electric, Inc. by October 2014. The turbine equipment will be ordered by the end of 2014. Construction will occur in the summer/fall of 2015 and is expected to be operational by May 2016.

Financial Analysis

The District qualifies for the hydroelectric interest rate of 2.0% for a 30-year term. The District is requesting 90% of the Project costs be funded by the CWCB. The Colorado Water Resources and Power Development Authority (CWRPDA) also has a hydroelectric loan program and was considered as a loan source; however, its terms are 20-years at a 2.0%. Due to the shorter repayment period, the CWRPDA funding terms made the Project financially infeasible. CWRPDA has agreed to allow the CWCB to be the sole lender on this Project. (See attached letter from Michael Brod, CWRPDA Executive Director, dated May 7, 2014.)

TABLE 2: FINANCIAL SUMMARY

Total Project Cost	$5,669,340
Borrower Contribution (approximately 10%)	$585,000
CWCB Loan Amount (90%)	$5,084,340
CWCB Loan Amount (Including 1% Service Fee)	$5,135,183
Annual CWCB Loan Payment	$229,286
Annual CWCB Loan Obligation (Including 10% Reserve)	$252,214
Project Cost per kilo-watt hour (5.0 MW/year)	$1.13

Creditworthiness: Northern Water's hydropower enterprise has two existing loans for the Carter Lake Hydropower Project as shown in Table 3.

TABLE 3: EXISTING ENTERPRISE DEBT

Loan	Maturity Date	Remaining Balance	Annual Payment	Collateral
CWRPDA – Carter Hydro Project	2032	$1,918,000	$122,313	Pledge of power revenues
Northern Water	2032	$4,539,000	$289,516	Pledge of power revenues
TOTAL		$6,457,000	$411,829	

Project Revenues and Expenses: Northern Water's PPA with Mountain Parks Electric, Inc. is a 30-year contract. The Project is designed to generate 4,800,000 to 5,000,000 kilowatt-hours per year. Therefore, revenues are projected to be approximately $350,000 to $390,000 annually. Project expenses include a Mountain Parks Electric, Inc. capacity charge of $2 per kilowatt per month ($13,000 annually), Reclamation LOPP charge of 2 mills per kilowatt-hour (beginning at $11,774 annually and escalating at 1.5% per year) and operations and maintenance estimated at $50,000 annually (escalating at 1.5% per year).

TABLE 4: ENTERPRISE FINANCIAL RATIOS

Financial Ratio	Average 2012 - 2013	Future w/ Project
Operating Ratio (revenues/expenses) weak: <100% - average: 100% - 120% - strong: >120%	133% (Strong) $555K/$416K	101% (Average) $925K/$918K
Debt Service Coverage Ratio (revenues-expenses)/debt service weak: <100% - average: 100% - 120% - strong: >120%	157% (1) (Strong) $555K-174K/ $242K	101% (Average) $925K-254K/ $664K
Cash Reserves to Current Expenses weak: <50% - average: 50% - 100% - strong: >100%	210% (Strong) $872K/$416K	68% (2) (Average) $622K/$918K

Notes: (1) Existing Debt from Table 3 was not fully into repayment in 2012, so average debt service was used in the 2012-2013 ratio. (2) Northern Water has paid $335,000 to date and expects to contribute $250,000 towards final engineering as part of the 10% borrower match requirement.

Collateral: As security for the loan, Northern Water, acting by and through its hydropower enterprise, will pledge power revenues and will provide annual financial reporting. Because of the lack of a rate covenant, this is a variance from the CWCB Financial Policy #5 (Collateral). However, since the borrower is a well established Water Conservancy District with a history of a successful hydroelectric project, staff is recommending a variance from the policy.

cc: Carl Brouwer, Project Management Department, Northern Water
Susan Schneider/Jennifer Mele, Colorado Attorney General's Office

Attachment: Project Data Sheet
Letter from Michael Brod, CWRPDA Executive Director

CWCB Water Project Loan Program
Project Data Sheet

C150396

Borrower: Northern Colorado Water Conservancy District, hydropower enterprise

County: Grand

Project Name: Granby Hydropower Project

Project Type: Hydroelectric

Drainage Basin/ District: Colorado / 51

Water Source: Colorado River

Total Project Cost: $5,669,340

Funding Source: Severance Tax PBF

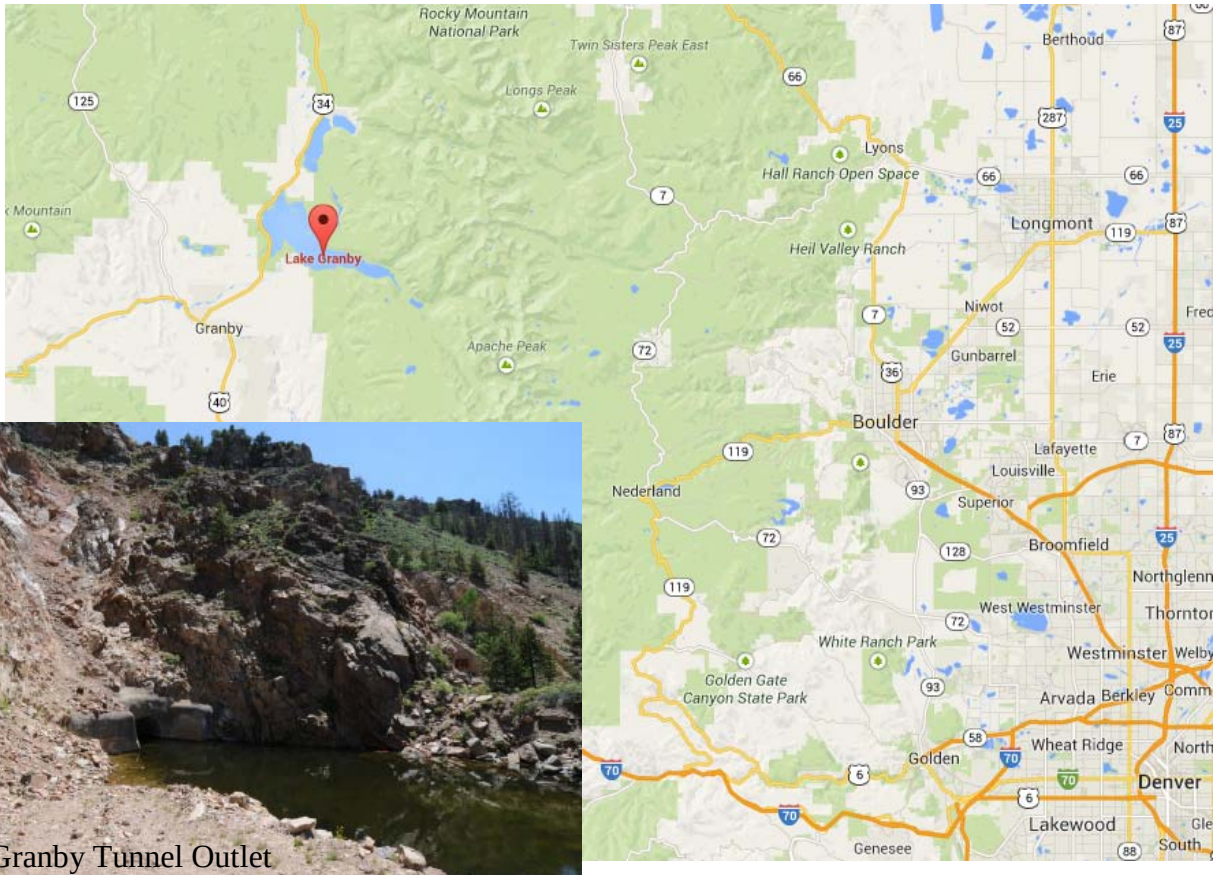
Type of Borrower: Hydroelectric

Average Annual Diversion: 210,000 AF

CWCB Loan: $5,135,183
(with 1% service fee)

Interest Rate: 2.0% **Term:** 30 years

Northern Water, acting by and through its hydropower enterprise, is applying for a loan for the construction of the Granby Hydropower Project. The Project is located at the existing Colorado – Big Thompson Project Granby Dam and will utilize the existing releases to the Colorado River without changing the flow regime. The hydro station will use the minimum streamflow obligations and a portion of additional releases to generate power through a 1.2-megawatt facility. The Project is being performed under the U.S. Bureau of Reclamation's Lease of Power Privilege (LOPP) process. Power generated will be purchased by Mountain Parks Electric, Inc. per a 30-year Power Purchase Agreement (PPA). The anticipated Project schedule is to finalize the LOPP and PPA by October 2014. Construction will occur in the summer/fall of 2015 and is expected to be operational by May 2016.



Lake Granby Tunnel Outlet

COLORADO WATER RESOURCES &
POWER DEVELOPMENT AUTHORITY

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May 7, 2014

Anna Mauss
Finance and Administration Section
Colorado Water Conservation Board
1580 Logan Street, Suite 600
Denver, CO 80203

Re: Letter of Support for Financing to the Northern Colorado Water Conservancy District from the Colorado Water Conservation Board ("CWCB")

Dear Ms. Mauss:

We understand the CWCB is considering a loan application from the Northern Colorado Water Conservancy District in the approximate amount of $5.2 million for the District's Granby Hydropower Project (Project). In speaking with the staff of the District and staff of the CWCB, the Project relies upon a payback period of 30 years to have a break-even/positive cash flow. The Authority's small hydropower loan program currently provides loans of up to $2 million for up to 20 years. Because the Project requires more than $2 million and a 30-year payback period, the Authority's small hydropower program would not be a feasible alternative financing source for the District.

Therefore, the Authority is in full support of the District's funding request from the CWCB and of the Project. If you have any questions or we can be of further assistance, please let me know.

Sincerely,

Michael Brod
Executive Director

cc: Carl Brouwer, District (via email)