STATE OF COLORADO

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TO: Colorado Water Conservation Board Members

FROM: Chris Sturm, Stream Restoration Coordinator

SUBJECT: **Agenda Item 18a, July 12 - 13, 2011 Board Meeting**
Fish and Wildlife Mitigation Plan
Windy Gap Firming Project

Background

The Municipal Subdistrict of the Northern Colorado Water Conservancy District (Subdistrict) is proposing to construct the Windy Gap Firming Project for the benefit of 13 project participants on the Front Range. The existing Windy Gap Project delivers water to Lake Granby from Windy Gap Reservoir via a 6 mile pipeline. Windy Gap units (each unit yields up to 100 acre-feet) are delivered to Windy Gap unit holders on the Front Range through the Colorado-Big Thompson Project infrastructure. The Windy Gap Firming Project (WGFP) preferred alternative identifies the 90,000 acre-foot Chimney Hollow Reservoir as the receiving body for Windy Gap units pumped to the east slope. The east slope storage will firm the yield of the existing Windy Gap Project. Total project cost is estimated at $273,000,000.

Discussion

On June 8, 2011, the Colorado Wildlife Commission unanimously approved the Windy Gap Firming Project Fish and Wildlife Mitigation Plan (Plan) prepared by the Subdistrict to comply with provisions of C.R.S. 37-60-122.2. The Plan addresses impacts on the west and east slopes. The west slope portion of the Plan addresses impacts to aquatic resources from increased diversions of historic water rights held in the Colorado River. West slope mitigation measures include maintenance of water levels in Lake Granby; improvements of flushing flows in the Colorado River; participation in the Upper Colorado River Recovery Program; and curtailment of WGFP pumping to maintain water temperature thresholds and nutrient load reductions. The east slope portion of the Plan addresses impacts from the construction of Chimney Hollow Reservoir. East slope mitigation measures include re-vegetation, weed control, wetlands mitigation, and wildlife habitat restoration/enhancement. Total mitigation costs are approximately $5,000,000 (less than 2% of the total project cost). The Subdistrict is coordinating its mitigation efforts with Denver Water's Moffat Collection System Project. Both parties will also cooperate in the implementation of an enhancement plan to improve aquatic resource conditions in the Upper Colorado River watershed.

Staff Recommendation

Staff recommends that the Board adopt the Fish and Wildlife Mitigation Plan for the Windy Gap Firming Project as the official State position on the mitigation actions required for the WGFP.

Windy Gap Firming Project

Fish and Wildlife Mitigation Plan

Prepared for:
The Colorado Wildlife Commission
In accordance with CRS 37-60-122.2

Prepared by:
Municipal Subdistrict
Northern Colorado Water Conservancy District

June 9, 2011

Contents

EXECUTIVE SUMMARY

The Municipal Subdistrict of the Northern Colorado Water Conservancy District (Subdistrict), on behalf of 13 East Slope Windy Gap Project participants, is pursuing a project that will improve the reliability of the water supplies and deliveries from the existing Windy Gap Project. The purpose of this Fish and Wildlife Mitigation Plan (FWMP) for the Windy Gap Firming Project (WGFP) is to comply with the requirements of Colorado State law (CRS 37.60.122.2), including the Procedural Rules for the Wildlife Commission (Chapter 16).

The WGFP is also required to comply with the National Environmental Policy Act (NEPA) by preparing a Final Environmental Impact Statement (FEIS) and with Section 404(b) (1) of the Clean Water Act by applying for a "404 Permit." As part of the 404 permit process, a 401 certification from the Colorado Department of Public Health and Environment is required.

The WGFP participants are committed to comply with all mitigation measures required by the FWMP, the FEIS (and associated Record of Decision), the 404 Permit, and the 401 Certification.

The Subdistrict is also submitting a separate Fish and Wildlife Enhancement Plan (Enhancement Plan) in cooperation with Denver Water to enhance fish and wildlife resources over and above the levels existing without the WGFP and Moffat Project.

In addition to the required mitigation measures in the FWMP and enhancements in the Enhancement Plan, the Subdistrict is participating with several East Slope and West Slope water users, numerous state and federal agencies, and West Slope private entities to enhance the flows in the Colorado River in Grand County by managing and coordinating the release of approximately 5,400 AF of water (1/2 of 10825 Water) that will benefit the Upper Colorado River Endangered Fish Recovery Program.

The goal of the Subdistrict and the WGFP participants is to mitigate for environmental impacts of the WGFP through the measures identified in this Fish and Wildlife Mitigation Plan and to improve the aquatic and riparian habitat of the Colorado River in Grand County with measures identified in the separate Enhancement Plan, while at the same time improving the reliability of the Windy Gap Project water supplies.

This FWMP for the WGFP addresses two main impact areas. On the East Slope the proposed action primarily consists of the construction and operation of a new 90,000 AF water storage facility, Chimney Hollow Reservoir. Although there will be no new construction on the West Slope and all future operations of the Windy Gap Project will be within historic water rights limitations, there will be increased diversions of Colorado River water over the actual amounts historically diverted.

The associated impacts to the Colorado River stream and aquatic resources are addressed in this plan.

With respect to the Colorado River below the Windy Gap diversion, both the WGFP and Denver Water's Moffat Collection Project (Moffat Project) diversions can sometimes have cumulative, or combined, impacts to the river. Since the Moffat Project is also seeking approval through the state and federal regulatory processes, both the Subdistrict and Denver Water have agreed to cooperate in a process of simultaneous development of the mitigation and enhancement plans pursuant to CRS 37-60-122.2. The WGFP Enhancement Plan is being provided to the Wildlife Commission concurrently with this FWMP in a separate document.

WINDY GAP FIRMING PROJECT
FISH AND WILDLIFE MITIGATION PLAN

1.0 INTRODUCTION

The Windy Gap Firming Project (WGFP) is a proposed water supply project that would provide more reliable water deliveries to Front Range and West Slope communities and industries. The Municipal Subdistrict, Northern Colorado Water Conservancy District, acting by and through the WGFP Water Activity Enterprise (Subdistrict) is seeking to construct the project on behalf of the 13 WGFP Participants. Project Participants include the City and County of Broomfield; the towns of Erie and Superior; the cities of Evans, Fort Lupton, Greeley, Lafayette, Longmont, Louisville, and Loveland; the Little Thompson Water District; the Central Weld County Water District; and the Platte River Power Authority.

This Fish and Wildlife Mitigation Plan (FWMP) was developed to satisfy the requirements of Colorado Revised Statute (CRS) 37-60-122.2 and outlines the actions that Project Participants will implement to mitigate the impacts that the WGFP may have on fish and wildlife. The FWMP also addresses concerns regarding WGFP impacts that were identified by CDOW staff in a detailed review of the DEIS impacts. The Subdistrict has also prepared a separate Fish and Wildlife Enhancement Plan (Enhancement Plan), pursuant to CRS 37-60-122.2 to address issues raised by Colorado Division of Wildlife and other stakeholders regarding the current condition of the aquatic environment on the Colorado River, which includes proposed enhancement measures to enhance fish and wildlife resources over and above levels existing without the WGFP.

2.0 PROJECT BACKGROUND

2.1 COLORADO-BIG THOMPSON PROJECT

The Colorado-Big Thompson Project was developed by the U.S. Bureau of Reclamation on behalf of the Northern Colorado Water Conservancy District between 1938 and 1957. The project was designed to provide water for agricultural, municipal, and industrial beneficial uses. The C-BT Project provides supplemental water to 33 cities and towns and is used to help irrigate more than 600,000 acres of northeastern Colorado farmland. On average, about 220,000 AF of water is delivered to northeast Colorado.

Twelve reservoirs, 35 miles of tunnels, 95 miles of canals, and 700 miles of power transmission lines comprise the complex C-BT collection, distribution, and power systems. Willow Creek Reservoir, Shadow Mountain Reservoir, Grand Lake, and

Lake Granby on the west of the Continental Divide collect and store C-BT water from the upper Colorado River basin. Water is pumped from Lake Granby into Shadow Mountain Reservoir where it flows by gravity into Grand Lake. From there, the 13.1-mile Adams Tunnel transports the water under the Continental Divide to the East Slope.

Once the water reaches the East Slope, it is used to generate electricity as it descends almost one-half mile through five power plants on its way to Colorado's Front Range. Carter Lake, Horsetooth Reservoir, and Boulder Reservoir store the water. C-BT water is delivered as needed via canals and pipelines to supplement native water supplies in the South Platte River Basin.

2.2 WINDY GAP PROJECT

During the 1960s, the cities of Boulder, Greeley, Longmont, Loveland, Fort Collins, and the Town of Estes Park determined that additional water supplies were needed to meet their projected municipal demands. The Municipal Subdistrict, Northern Colorado Water Conservancy District, consisting of the incorporated areas of the six entities, was formed in 1970 to develop the Windy Gap Project. Prior to project construction, the Platte River Power Authority acquired all of the City of Fort Collins' allotment contracts, as well as one-half of the City of Loveland's and one-half of the Town of Estes Park's contracts. Allotment contracts are used to allocate 480 units of Windy Gap Project water. Each Windy Gap unit represents a yield of up to 100 AF and, similar to C-BT units, can be bought and sold. The Windy Gap unit holders have changed since the original project was completed.

The Windy Gap Project consists of a diversion dam on the Colorado River, a 445-AF reservoir, a pumping plant, and a 6-mile pipeline to Lake Granby. Currently, Windy Gap Project water is stored and conveyed through C-BT Project facilities prior to delivery to Windy Gap Project allottees. Middle Park Water Conservancy District contractees on the West Slope use Windy Gap water to replace out-of-priority diversions by release of water directly from Lake Granby to the Colorado River.

2.2.1 Windy Gap Project Environmental Impact Statement

In April 1981, Reclamation completed the Final EIS on the effects of using C-BT Project facilities for the "storage, carriage and delivery" of Windy Gap Project water. The 1981 Record of Decision (ROD) for the original Windy Gap Project EIS allowed Reclamation to negotiate a contract with the Subdistrict and the NCWCD for the storage, conveyance, and delivery of Windy Gap Project water using facilities of the C-BT Project.

The original EIS determined that about 56,000 AF of water could be diverted annually from the Colorado River and that about 48,000 AF would be available for delivery to East Slope Windy Gap unit holders after subtracting 3,000 AF for MPWCD and allowances for various storage and conveyances losses. Windy Gap diversions are limited to a rate of 600 cfs and occur primarily during the months of

April to July. Total Windy Gap diversions are measured at the Adams Tunnel and are limited to a maximum of 90,000 AF in any one year and a maximum of 650,000 AF during any consecutive 10-year period pursuant to the *Agreement Concerning the Windy Gap Project and Azure Reservoir and Power Project*, dated April 30, 1980 and the Windy Gap water rights.

2.2.2 Mitigation Measures Included in the Original Windy Gap EIS

The 1981 Windy Gap Project EIS and ROD, as well as subsequent agreements, included a variety of mitigation measures to compensate and offset the effects associated with construction of the Windy Gap Project and its water diversions. Operational mitigation measures are still in place and funding and compensatory mitigation measures have been paid. Mitigation measures are summarized below.

Minimum Streamflow. A Memorandum of Understanding between the Municipal Subdistrict, Northern Colorado Water Conservancy District, NCWCD, and Colorado Division of Wildlife (June 23, 1980) established the following minimum streamflows on a 24-mile reach of the Colorado River downstream of the Windy Gap Project to the mouth of the Blue River that apply when the Windy Gap Project is pumping:

- From the Windy Gap Diversion Point to the mouth of the Williams Fork River: 90 cfs
- From the mouth of the Williams Fork River to the mouth of Troublesome Creek: 135 cfs
- From the mouth of Troublesome Creek to the mouth of the Blue River: 150 cfs

If flows are less than those specified above, Windy Gap must curtail diversions except that the project cannot be required to bypass more than the natural inflow. Additionally, bypass of at least 450 cfs for at least 50 hours during the period of April 1 through June 30 is required at least once every 3 years**.**

Endangered Species. Endangered Species Act Section 7 consultation with the U.S. Fish and Wildlife Service concluded with a Biological Opinion (March 13, 1981) determination that Windy Gap depletions, with the conservation measures listed below is not likely to jeopardize the existence of the endangered squawfish or humpback chub. The Subdistrict agreed to payment of $100,000 for a habitat project and $450,000 for biological investigations on the Colorado River as conservation measures to compensate for the adverse effects of the Windy Gap Project. Specific conservation and recovery measures included:

- The establishment of backwater habitat areas along the mainstem of the Colorado River
- Support of a field research team for 3 years to evaluate habitat improvement techniques for endangered fish
- Bypass flow agreements with CDOW for trout habitat to benefit Colorado River endangered fish downstream of the project area

Azure Agreement. Western Slope objections to the Windy Gap project were resolved in the *Agreement Concerning the Windy Gap Project and the Azure Reservoir and Power Project* dated April 30, 1980, entered into by the Subdistrict and several West Slope entities that had been opposed to the project because of anticipated West Slope impacts. Following negotiations between the Subdistrict and the Colorado River Water Conservation District (CRWCD), a settlement was reached and mitigation measures acceptable to the parties were identified. Other parties to this agreement included: the Northwest Colorado Council of Governments (NWCCOG), Grand County, MPWCD, Three Lakes Water and Sanitation District, the towns of Granby and Hot Sulphur Springs, Winter Park Water and Sanitation District, and 30 ranchers. The purpose of this agreement was to provide compensation to West Slope entities from the transbasin diversion of water and associated impacts. Principal agreements included:

- A commitment by the Subdistrict to fund the construction of the Azure Reservoir and Power Plant, or if infeasible, fund an alternative project or a cash payment to the CRWCD
- Payment of $25,000 to Grand County for salinity studies of the Colorado River
- Payment of $150,000 to the Town of Hot Sulphur Springs for assistance in improving its water treatment facility and $270,000 for improving its wastewater treatment facility
- Payment of $500,000 to plan, construct, and design facilities needed for ranchers to maintain their diversion structures on the Colorado River
- An agreement by the Subdistrict to subordinate its Windy Gap decrees to all present and future in-basin irrigation, domestic, and municipal uses, excluding industrial uses, on the Colorado and Fraser rivers and their tributaries above the Windy Gap Reservoir site
- An agreement by the Subdistrict to volumetric limits on diversions, which included a maximum single-year diversion of 90,000 AF/year and a maximum of 650,000 AF during any consecutive 10-year period. Per the 1985 *Supplement to the 1980 Azure Settlement Agreement*, these diversion limitations apply to deliveries through the Adams Tunnel, as opposed to diversions at Windy Gap Reservoir
- An agreement by the Subdistrict to bypass flows necessary to meet senior downstream water rights
- An agreement by the NCWCD to allow Grand County's use of a rock and gravel quarry on their property
- An agreement by the Subdistrict to cooperate with CDOW and others to allow public use for recreation at Windy Gap Reservoir

In return for these mitigation measures, West Slope interests agreed to drop objections to the Windy Gap conditional water right decrees and cooperate with all the necessary permitting requirements to allow construction of the project.
The 1985 *Supplement to the 1980 Azure Settlement Agreement* was later signed on March 29, 1985 by the Subdistrict, CRWCD, NWCCOG, Grand County

commissioners, and the MPWCD. This agreement was implemented after the planned Azure Reservoir was determined infeasible. The 1985 agreement included the following compensation to West Slope entities:

- Payment of $10.2 million, which was used to fund construction of Wolford Mountain Reservoir on Muddy Creek north of Kremmling, and release of obligations for funding of the Azure Project
- The Subdistrict's agreement to set aside annually, but non-cumulatively, at no cost to the MPWCD, 3,000 AF of water in Lake Granby that is produced each year from Windy Gap supplies, for beneficial use without waste in the MPWCD for all beneficial uses, except instream uses and industrial uses
- Subordination of Windy Gap water rights to either Rock Creek or Wolford Mountain projects; Wolford Mountain Reservoir was completed in 1996

The 1980 and 1985 agreements were incorporated as integral parts of the Windy Gap water rights decrees.

2.3 WINDY GAP FIRMING PROJECT

The proposed WGFP would entail construction of a new water storage reservoir that would provide more reliable water deliveries to Front Range and West Slope communities and industry. Due to limitations and constraints with the existing system, the current Windy Gap facilities, which were completed in 1985, are unable to deliver the anticipated firm yield of water. Water deliveries from the West Slope are limited by storage capacity in Lake Granby and by the delivery capacity of the Adams Tunnel, which delivers water from Grand Lake to the East Slope. As a result, a group of the Windy Gap Project unit holders, working through the Subdistrict, have initiated the proposed WGFP which will firm all or a portion of their individual Windy Gap units to meet a portion of existing and future municipal and industrial water requirements. The proposed action is to add water storage and related facilities to the existing Windy Gap operations that would be capable of delivering a firm annual yield of about 30,000 AF to Project Participants.

The intent of the WGFP is to improve the reliability of the Windy Gap Project and the existing Windy Gap water rights by increasing the firm yield from the existing Windy Gap Project water supply. The Subdistrict's Proposed Action is the construction of Chimney Hollow Reservoir to store Windy Gap Project water. To improve yield, the Subdistrict also is requesting integration of the Colorado-Big Thompson Project (C-BT) and Windy Gap Project operations so that C-BT water can be stored in Chimney Hollow Reservoir. The Proposed Action would require new connections to C-BT East Slope facilities and continued use of C-BT storage and conveyance systems and other existing pipelines, canals, and diversions to deliver Windy Gap water to Project Participants.

The Preferred Alternative includes construction of the 90,000-AF Chimney Hollow Reservoir with a surface area of about 740 acres. This alternative includes

prepositioning, which is the storage of C-BT water, as well as Windy Gap water, in the new reservoir. Water would be conveyed to Chimney Hollow Reservoir via a new pipeline connection to existing East Slope C-BT facilities at the upper end of the existing Flatiron Penstocks, where a new buried pipeline would deliver water to Chimney Hollow Reservoir or Carter Lake. Connections between Chimney Hollow Reservoir and Carter Lake would allow delivery of water to Participants using existing infrastructure. Reservoir construction would require relocation of about 3.8 miles of an existing 115-kV transmission line.

The new Chimney Hollow Reservoir would be located on Subdistrict land, and these lands, along with adjacent Larimer County open space lands, would be managed by Larimer County for recreation. Combined Subdistrict and Larimer County lands would provide about 3,400 acres including the reservoir for recreation and fish and wildlife habitat. Anticipated recreation features include a parking area, trails, boat dock and ramps, picnic facilities, and vault toilets. No overnight camping would be allowed.

2.3.1 Relationship of the Original Windy Gap EIS to Current Firming Project EIS

The WGFP EIS evaluates the potential effects of alternatives associated with firming the yield of the water diverted under the terms of the original Windy Gap Project EIS. The proposed WGFP would not exceed the average annual diversion of 56,000 AF evaluated in the 1981 EIS and ROD or any other diversion-related limitations or water rights. Additional reservoir storage capacity is needed in the WGFP because of the limitations in the C-BT system to store Windy Gap water when it is available. The WGFP EIS evaluates the direct, indirect, and cumulative effects of any new physical disturbances or changes in operation needed by the WGFP. As described above, the original EIS included a number of mitigation measures to offset impacts, several of which are ongoing.

3.0 OTHER CONCURRENT OR RELATED ACTIVITIES

3.1 MOFFAT COLLECTION SYSTEM PROJECT

The Moffat Collection System Project is currently proposed by Denver Water (Denver) to develop 18,000 AF/year of new annual yield to the Moffat Treatment Plant to meet future raw water demands on the East Slope. This project is anticipated to result in additional diversions, primarily from the upper Fraser River and Williams Fork River basins. Denver's proposed additional Fraser River diversions would be located upstream of the Windy Gap Project diversion site on the Colorado River and would directly affect the availability of water for the WGFP. The Moffat Collection System Project Draft EIS prepared by the Corps was released for public review in 2009.

Diversions for the WGFP and Moffat Project would result in changes to flows in the Colorado River below the Windy Gap dam. Denver Water and the Subdistrict have

agreed to cooperate with each other and with the Colorado Department of Natural Resources (DNR) and CDOW in concurrent development of the mitigation plans required under CRS 37-60-122.2 for the two projects. They have jointly developed stream temperature monitoring stations as mitigation (refer to Section 5.3.3 of this FWMP). Additionally, Denver Water and the Subdistrict have proposed enhancement with significant resources and funding to improve current conditions in the river. The WGFP Enhancement Plan is being provided to the Wildlife Commission concurrently with this FWMP in a separate document.

3.2 UPPER COLORADO RIVER ENDANGERED FISH RECOVERY PROGRAM

Reclamation is preparing an Environmental Assessment (EA) to assess the effects of proposed contracts that would provide for permanent release of 10,825 AF/yr of water to the 15-Mile Reach of the upper Colorado River. As a condition of a 1999 Programmatic Biological Opinion (PBO) (U.S. Fish and Wildlife Service 1999), a group of East and West Slope water users is committed to make releases of "10825 water" in late summer and fall in support of the recovery of endangered fish species in the 15-Mile Reach near Grand Junction. The EA will document whether a Finding of No Significant Impact (FONSI) can be issued for the proposed contracts.

The Proposed Action Alternative would use releases from Ruedi Reservoir and Lake Granby, and to a limited extent, storage in and releases from Green Mountain Reservoir when excess capacity is available, to provide 10,825 AF/yr of water for the 15-Mile Reach.

The Proposed Action Alternative involves release of 5,412.5 AF/year from Lake Granby. Releases from Lake Granby would range from 20 to 50 cfs during the period from July 15 to September 30, depending upon the hydrologic year type. This alternative was not included in the hydrologic analyses for either the WGFP or Moffat Project. Accordingly, the flows in the Colorado River below Lake Granby would be increased over flows shown in the Draft EIS for each project.

3.2.1 Coordination of 10825 Project Releases from Lake Granby

Each year, a total of 5,412.5 AF of water is to be released from Lake Granby. The water will be released to benefit the 15-Mile Reach on a fixed delivery schedule to be agreed upon by the parties in the future, and pursuant to applicable federal and state laws. The parties anticipate that the release pattern will depend on the type of hydrologic year (dry, average, or wet) and will be based on the target stream flow in the Colorado River between Lake Granby and Kremmling during late summer and early fall. Releases from Lake Granby will be pursuant to a municipal-recreation contract with a Grand Valley municipal entity within or downstream of the 15-Mile Reach.

Under some hydrologic conditions, releases from Lake Granby made to meet targeted stream flow in the Colorado River downstream of Lake Granby may not coincide with the FWS requirements for the 10825 water at the 15-Mile Reach. In these instances, water released from Lake Granby will be stored in Green Mountain

Reservoir by exchange or substitution pursuant to a contract with Reclamation (subject to availability of storage capacity and exchange potential). This water will then be released at the request of the Service to benefit the 15-Mile Reach.

An Operations Group will be established, consisting of representatives from the water users, FWS, Reclamation, and the State of Colorado Division 5 Engineer. The Operations Group will meet each spring to develop a plan for releasing the 10,825 AF of water during the coming 12 months, and at other times as necessary to fulfill the purposes of this Project. The Subdistrict will propose that CDOW be added as a member of the Operations Group.

4.0 REGULATORY PROCESS

The WGFP is required to obtain numerous federal and state permits, licenses, and approvals. The primary regulatory processes related to the C.R.S. 37-60-122.2 requirement for fish and wildlife mitigation are described below.

4.1 NATIONAL ENVIRONMENTAL POLICY ACT (NEPA) REVIEW

The Subdistrict is seeking approval from Reclamation for approval of a physical connection to C-BT Project facilities and for operations of the Chimney Hollow Reservoir in order to implement the project. As the lead federal agency, Reclamation prepared a Draft Environmental Impact Statement (Reclamation 2008) for the proposed project. The U.S. Army Corps of Engineers (Corps), Western Area Power Administration (Western), and Grand County are cooperating agencies. A Final EIS is expected to be published in mid-2011. If impacts to fish and wildlife are identified in the FEIS that were not identified in the DEIS, Reclamation will coordinate with CDOW and other state agencies as required under the Fish and Wildlife Coordination Act and will make adjustments to project mitigation as appropriate.

4.2 SECTION 404 PERMIT

Because the proposed WGFP would involve the discharge of dredged and fill material into wetlands or other waters of the U.S., a permit is required from the Corps under Section 404 of the Clean Water Act. The Subdistrict, acting by and through the Windy Gap Firming Project Water Activity Enterprise, has notified the Corps that it will seek a Section 404 permit for the WGFP. Issuance of a permit would be a Corps federal action.

4.3 COLORADO FISH AND WILDLIFE MITIGATION PLAN

This FWMP is prepared to satisfy the requirements of C.R.S. 37-60-122.2. The first portion of this statute states:

> (1)(a) The general assembly hereby recognizes the responsibility of the state for fish and wildlife resources found in and around state waters which are affected by the construction, operation, or maintenance of water diversion, delivery, or storage facilities. The general assembly hereby declares that such

> fish and wildlife resources are a matter of state-wide concern and that impacts on such resources should be mitigated by the project applicants in a reasonable manner. It is the intent of the general assembly that fish and wildlife resources that are affected by the construction, operation, or maintenance of water diversion, delivery, or storage facilities should be mitigated to the extent, and in a manner, that is economically reasonable and maintains a balance between the development of the state's water resources and the protection of the state's fish and wildlife resources.

FWMPs for water projects considered under C.R.S. 37-60-122.2 are to be developed by the project applicant, working in cooperation with CDOW, and submitted to the Colorado Wildlife Commission (CWC). If the CWC and applicant agree on the mitigation plan, the CWC forwards the mitigation plan to the Colorado Water Conservation Board (CWCB) for adoption as the official state position on the mitigation actions required of the applicant.

4.3.1 Mitigation and Enhancement Plans

C.R.S. 37-60-122.2 makes a specific distinction between mitigation of impacts caused by the proposed project, and enhancing fish and wildlife resources over existing conditions. This distinction is further defined in the Procedural Rules for the Wildlife Commission (Chapter 16), and clarified in a memorandum dated December 9, 2010 to the Director of the Colorado Division of Wildlife and the Wildlife Commission from the First Assistant Attorney General, Natural Resources and Environment Section. Accordingly, this FWMP includes mitigation measures to address the direct impacts that have been identified for the proposed project. The Subdistrict has also prepared a separate Enhancement Plan, in accordance with CRS 37-60-122.2 to address issues raised by Colorado Division of Wildlife and other stakeholders regarding the current condition of the aquatic environment on the Colorado River, which includes proposed enhancement measures to enhance fish and wildlife resources over and above levels existing without the WGFP. The Subdistrict, as an applicant for one or more federal permits, or licenses, is required by C.R.S. 37-60-122.2 to submit a proposed mitigation plan, but submittal of an enhancement plan is voluntary.

4.3.2 Consultation, Coordination and Public Input

The Subdistrict consulted with Colorado Division of Wildlife (CDOW) U.S. Fish and Wildlife Service (FWS) representatives during preparation of this Plan. In addition, CDOW and FWS were provided an opportunity to review and comment on the Wildlife Resource Technical Report (ERO 2008) and Aquatic Resource Technical Report (Miller Ecological 2008) prepared as part of the EIS process. Both of these reports provide additional details on the impacts of the alternatives evaluated in the EIS. The CDOW and FWS also were given an opportunity to review and comment on the draft EIS.

CRS 37-60-122.2 requires CDOW and Colorado Water Conservation Board review and input on mitigation for fish and wildlife impacts resulting from a federally

approved water project. The review process is intended to provide a balanced review between fish and wildlife protection and water development.[1] Although the procedures for CRS 37-60-122.2 do not require public review and input, the Subdistrict and CDOW have been involved in extensive efforts to allow for public participation. To date, the Wildlife Commission has provided the following public meetings to solicit input on the potential impacts and mitigation for the Moffat Project:

- Wildlife Commission Workshop, October 7, 2010, Las Animas – CDOW presented the proposed fish and wildlife impacts of the WGFP
- Wildlife Commission Public Meetings ("1313" Meetings), October 13, 2010 in Loveland and October 21, 2010 in Granby – Wildlife Commissioners solicited public comment on the potential impacts of the WGFP
- Stakeholder Workshops, January 24-25, 2011, Winter Park – CDOW solicited input on enhancement options for fixing the upper Colorado River between Windy Gap and the Kemp-Breeze State Wildlife Area to ensure a functioning river that supports fish and wildlife resources given anticipated future flows. (Refer to the *WGFP Enhancement Plan* for details.)
- Public Comment Period on Draft Enhancement and Mitigation Plans, Feb. 10-24, 2011 – CDOW invited public review and comment on the February 9th draft plans. The input will be reviewed by CDOW, Denver Water and the Subdistrict while preparing the final plans.
- Wildlife Commission Meeting, March 10, 2011 – Member of the public provided comments on the February 9th draft plans and review process.
- Wildlife Commission Meeting, May 6, 2011 – Members of the public provided comments on the April 7th plans submitted to the Wildlife Commission.

Input from all of these processes has been used to help prepare this plan.

5.0 PROPOSED FISH AND WILDLIFE MITIGATION PLAN

This section constitutes the Mitigation Plan for fish and wildlife impacts that are expected to be caused by the proposed WGFP. Mitigation measures have been developed to address impacts identified in the Draft EIS. The mitigation measures are also intended to address concerns regarding WGFP impacts that were identified by CDOW staff in a detailed review of the DEIS impacts. The impacts are based on a comparison of the existing conditions scenario to the Preferred Alternative, which consists of a 90,000 AF reservoir at the Chimney Hollow site. A detailed description of existing conditions in the project area and the analysis and identification of project impacts are included in the Draft EIS. The Draft EIS and associated Technical Reports prepared in conjunction with the DEIS are the only studies that

[1] See Testimony of Clyde Martz, Direction of the Department of Natural Resources, Senate Testimony HB 87-1158, April 9, 1987

have been conducted that specifically analyze the incremental impacts of the WGFP.

5.1 WGFP PROJECT AREA

The WGFP would have effects on both the east and west sides of the Continental Divide. The West Slope project area shown on Figure 1 includes the Colorado River below Lake Granby, which is affected by changes in Lake Granby spills and increased Windy Gap diversions at the existing Windy Gap Reservoir. Willow Creek below Willow Creek Reservoir is also included in the project area because of small changes in Willow Creek Feeder Canal diversions. Lake Granby is included because water levels would decrease as a result of storage of a portion of Windy Gap water in Chimney Hollow Reservoir. Shadow Mountain Reservoir and Grand Lake are included in the project area because of potential water quality effects, but there would be no change in lake levels.

The East Slope project area shown in Figure 2 includes the Chimney Hollow Reservoir site located west of Carter Lake, which is also shown on Figure 3. Hydrologic changes would occur in the Big Thompson River below Lake Estes from the import of additional Windy Gap water and from slight increases in flow that would occur below Participant wastewater treatment plants (WWTPs) on the Big Thompson River, St. Vrain Creek, Big Dry Creek, and Coal Creek. Carter Lake and Horsetooth Reservoir would experience a change in reservoir levels with the WGFP.

Proposed mitigation measures for the West Slope (Colorado River) area and the East Slope (South Platte Tributaries and Chimney Hollow Reservoir) are described below in separate sections.

5.2 AVOIDANCE AND MINIMIZATION

The Preferred Alternative for the WGFP was selected to minimize environmental impacts as a result of a detailed alternatives analysis conducted by Reclamation and a Section 404(b)(1) alternatives analysis prepared in coordination with the Corps. The alternatives analysis evaluated over 170 project elements which included both structural and non-structural alternatives. The Preferred Alternative consists of a 90,000 AF reservoir at the Chimney Hollow site and has been designed to minimize direct effects to wetlands and other waters of the U.S.

As part of the federal and state permits and approvals, the Subdistrict will implement a variety of best management practices (BMPs) during design and construction to reduce impacts to the environment, including fish and wildlife. Some of the environmental permits and approvals with BMPs and environmental protection measures include:

- Migratory Bird Treaty Act Compliance
- CDPHE Fugitive Dust Control Plan

- CDPHE Stormwater Management Plan
- CDPHE Section 401 Water Quality Certification

The CDOW has developed BMPs and actions to minimize adverse impacts to wildlife resources. The BMPs were specifically developed for the oil and gas industry; however, they can also be applicable to other major construction projects. These BMPs will be considered by the Subdistrict when preparing final design and construction plans. The Subdistrict will consult with the CDOW to implement the appropriate BMPs to avoid or minimize impacts on fish and wildlife resources.

5.3 PROPOSED MITIGATION MEASURES FOR WEST SLOPE (COLORADO RIVER) IMPACTS

Table 1 summarizes West Slope impacts and the proposed mitigation measures for each identified impact. The table also includes a column that outlines issues and concerns regarding WGFP impacts that were identified by CDOW staff in a detailed review of the DEIS impacts. The mitigation measures identified in the table are described in more detail in this section.

5.3.1. Modified Prepositioning to Maintain Higher Water Levels in Lake Granby

This measure addresses Impact CR-3, as well as CR-16, CR-23, ES-1, ES-2, and ES-29.

In any year when Lake Granby is projected to fall below an elevation of 8,250 feet, modified prepositioning, which reduces the delivery of C-BT water from Lake Granby to Chimney Hollow Reservoir, will be implemented to maintain higher water levels in Lake Granby.

Details of this measure will be developed by the Subdistrict and incorporated into a proposed agreement between Reclamation and the Subdistrict with a concurrence by the Corps. The objective is to minimize the adverse effects of prepositioning on water levels in Lake Granby. This measure will minimize any potential negative effects on aquatic resources and recreation in Lake Granby that may be caused by reduced water levels from prepositioning.

5.3.2 Improvements to Flushing Flows in the Colorado River

This measure addresses Impact CR-6, as well as CR-2, CR-14, CR-15 and CR-17.

The Windy Gap Project is currently required to bypass 450 cfs for 50 hours once in every 3 years, if such flows are naturally available in accordance with the *Memorandum of Understanding Between Municipal Subdistrict, Northern Colorado Water Conservancy District and Division of Wildlife, Colorado Department of Natural Resources, Relating to Minimum Stream Flow in Association with the Windy Gap Diversion Project*, dated June 23, 1980. The Subdistrict will modify project operations as follows:

- The flushing flow provision of the 1980 MOU will be modified to increase the required flushing flow from 450 cfs to 600 cfs.
- In any year when flows below Windy Gap have not exceed 600 cfs for at least 50 consecutive hours in the previous two years, and total Subdistrict water supplies in Chimney Hollow and Granby Reservoirs exceed 60,000 AF on April 1, the Subdistrict will cease all Windy Gap pumping for at least 50 consecutive hours to enhance peak flows below Windy Gap.

The intent of this measure is to enhance peak flows below Windy Gap . The Subdistrict will coordinate with CDOW and other water suppliers, including Denver Water, to maximize benefits of the higher flows and minimize any potential negative impacts to aquatic resources.

5.3.3 Temperature Mitigation

This measure addresses Impact CR-9, as well as CR-11 and CR-24.

- Monitoring Stations. The Subdistrict will work with Denver Water to install, operate and maintain two continuous real-time temperature-monitoring stations on the Colorado River; one at the Windy Gap gage and one upstream of the confluence with the Williams Fork River.

- Temperature Thresholds. For the purposes of this mitigation plan, the threshold temperatures will be the following, as measured at the temperature monitoring stations identified above:

    1. MWAT Chronic Threshold: 18.2^{o}C (64.8^{o} F), based on current Maximum Weekly Average Temperature (MWAT) Chronic Standard
    2. DM Acute Threshold: 23.8^{o}C (74.8^{o} F), based on current Daily Maximum (DM) Acute Standard

- MWAT Chronic Threshold Exceedances - Reduction or Curtailment of WGFP Pumping . For the period after July 15th of each year:

    1. At such times as the Weekly Average Temperature (WAT) exceeds the MWAT Chronic Threshold,, the Subdistrict will reduce or curtail WGFP pumping at the Windy Gap diversion to the extent necessary to maintain temperatures within the MWAT Threshold. Reduced pumping may not be sufficient to maintain temperatures below the threshold.

2. Pumping for the original Windy Gap Project, now and after the WGFP is in operation, may occur at any time that the Windy Gap water rights are in priority and sufficient space is available in Lake Granby that such water pumped will not be reasonably expected to spill from the reservoir. Therefore, WGFP pumping will be defined as pumping that occurs at such times as the Northern Colorado Water Conservancy District determines, based on its most probable forecasts of inflows to Lake Granby, that a spill of water from Lake Granby is reasonably foreseeable. All other pumping will be considered to be for the original Windy Gap Project.

- DM Acute Threshold Exceedances - Reduction or Curtailment of Pumping for the WGFP and the original Windy Gap Project .

  1. At such times as the Daily Maximum temperature is within 1 ^{o}C of the DM Acute Threshold, the Subdistrict will reduce or curtail pumping for the original Windy Gap Project or the WGFP at the Windy Gap diversion to the extent necessary to maintain temperatures within the DM Threshold. Reduced pumping may not be sufficient to maintain temperatures below the threshold. In the future, the 1 degree buffer may be altered, based on experience, to maintain compliance with the DM Threshold.

- Limitations on Reduction or Curtailment of Windy Gap pumping. The temperature mitigation measures identified above will be suspended in the event that and at such times as there is no material causal relationship between Windy Gap Project or Windy Gap Firming Project operations and any exceedence of the MWAT Chronic threshold or DM Acute threshold at the monitoring stations identified above. For the purposes of this Paragraph a “material causal relationship” is defined as either an actual measureable impact on temperature using readily available monitoring technology or a modeled impact on temperature that is not *de minimus* and is based on a computer model or studies accepted by the Colorado Division of Wildlife. The Subdistrict will cooperate with future studies to determine what factors, other than flow changes, have effects on water temperatures in the Colorado River below Windy Gap.

- Use of the Windy Gap Bypass Valve and Auxiliary Outlet. The Subdistrict will use the Windy Gap Project Bypass Valve and Auxiliary Outlet to the maximum extent practicable, without causing adverse effects to the Windy Gap Project facilities or operations for the bypass of water that is otherwise bypassed from the Windy Gap Project. This measure is intended to make releases of water from these outlets deeper in the reservoir that may be colder than water bypassed over the spillway.

5.3.4 Nutrient Mitigation to Offset Impacts to Grand Lake Water Quality

This measure addresses Impact CR-10, as well as CR-12, CR-13, CR-26, and ES-8.

The Subdistrict will develop a proposed nutrient reduction mitigation plan for Reclamation and Corps approval. The plan includes point source nutrient reductions from WWTP discharges in the Fraser River and nonpoint source nutrient reductions from agricultural land in the Willow Creek watershed. Other nutrient reduction measures would be implemented as necessary to meet the requirement to provide a documented nutrient reduction credit factor of 1:1 to satisfy Reclamation and the Corps mitigation requirements.

5.3.5 Participation in Upper Colorado River Recovery Program

This measure addresses Impact CR-20.

The Subdistrict will complete Section 7 consultation and compliance consistent with the requirements of the Programmatic Biological Opinion (PBO). The Service issued a Biological Opinion on February 12, 2010 for the Preferred Alternative indicating WGFP coverage under the PBO with Participation in Upper Colorado River Recovery Program and payment of a depletion fee for additional depletions attributable to the WGFP.

Documentation of Section 7 consultation will be submitted to the Corps in order to meet requirements for the Fish and Wildlife Coordination Act.

5.3.6 Curtailment of Windy Gap Diversions during Gore Race

This measure addresses Impact CR-22 and CR-25.

WGFP diversions would be suspended during the Gore Race in August if flows drop below preferred range (1,250 cfs).

5.4 PROPOSED MITIGATION MEASURES FOR EAST SLOPE (SOUTH PLATTE TRIBUTARIES AND CHIMNEY HOLLOW RESERVOIR) IMPACTS

Table 2 summarizes East Slope impacts and the proposed mitigation measures for each identified impact. The table also includes a column that outlines issues and concerns regarding WGFP impacts that were identified by CDOW staff in a detailed review of the DEIS impacts. The mitigation measures identified in the table that are relevant to fish and wildlife resources are described in more detail in this section.

5.4.1 Revegatiation and Weed Control on Areas Impacted by Construction

This measure addresses Impact ES-11.

Revegetation and weed control on all disturbed areas in accordance with an erosion control plan to be developed by the Subdistrict and approved by Reclamation and the Corps. Plan will be developed in coordination with CDOW and incorporate CDOW Oil & Gas BMPs where appropriate.

5.4.2 Wetlands Mitigation

This measure addresses Impact ES-13, ES-14, and ES-15.

Avoid, minimize and mitigate wetland impacts as specified in the 33 CFR Part 332 (Mitigation Rule, 10-Apr-08) and as approved by the Corps. Wetlands would be mitigated by contribution to an approved wetland mitigation bank.

5.4.3 Wildlife Habitat Mitigation at Chimney Hollow Reservoir Site

This measure addresses Impact ES-16 and ES-17.

Subdistrict will develop a plan to replace the values provided by habitat lost or altered by construction of Chimney Hollow Reservoir. Mitigation of impacts to wildlife resources will involve a combination of mitigation strategies and tools, including:

- Restoring habitats temporarily disturbed during reservoir and facility construction
- Working with Larimer County to restore or enhance degraded habitat surrounding Chimney Hollow Reservoir
- Working with CDOW and Larimer County to establish hunting access on the Chimney Hollow property
- Conducting management and education activities to minimize human-wildlife conflicts
- Implementing a migratory bird management plan
- Implementing seasonal restrictions and buffer zones

Details of this plan will include:

Restoration of Temporary Disturbances. The temporary loss of 123 acres of wildlife habitat will be mitigated through reclamation and revegetation of all habitats disturbed during construction and relocation of the transmission line and towers. Temporary loss of vegetation communities due to construction of dams, pipelines, staging, and access roads will be restored with plantings and seed mixes that replicate the vegetation cover types. Vegetation restoration of the transmission line corridor will involve working closely with Western to incorporate strategies for maintenance of stable low-growing vegetative communities that include mechanical cutting, removal of timber, on-site treatment of slash, and planting sustainable, low-growing shrubs and grasses. Plantings and seed mixes will focus on restoring diverse vegetation communities that provide wildlife forage, particularly during fall and winter. A reclamation plan will be developed as part of the construction program and the Stormwater Management Plan.

Habitat Enhancement. Subdistrict will work with Larimer County to develop a land management plan that will include habitat enhancement of vegetation communities surrounding Chimney Hollow Reservoir, which involves planting native species beneficial to wildlife where appropriate. The Subdistrict will provide $50,000 to Larimer County to use in their ongoing habitat management plan. A weed control plan would be developed in cooperation with Larimer County prior to implementing habitat enhancement to improve the quality of lands not specifically within the areas of vegetation enhancement. Weed management will focus on monitoring restored habitats and implementing an integrated weed management approach of mechanical, chemical, and biological control strategies. Integrated weed management strategies also will be used to control existing areas of noxious and invasive species, particularly large patches of thistle and cheatgrass. The weed management plan will be developed prior to construction disturbances and updated periodically through implementation of wildlife enhancement.

Hunting Opportunities. Larimer County will develop a management plan for the Chimney Hollow area. As part of this process, the Subdistrict and Larimer County will work with CDOW and Larimer County to explore opportunities to provide seasonal hunting on portions of the Chimney Hollow Reservoir site and open space to assist with game management and provide additional recreation.

Minimization of Human-Wildlife Conflicts. The displacement of elk and bear into surrounding residential areas as they search for lost food resources will be offset by the habitat enhancement activities and hunting opportunities described above. Additionally, the Subdistrict will work with Larimer County and CDOW to reduce/eliminate wildlife attractants from recreation facilities and establish education/outreach programs and information kiosks/signs informing the public on the dangers of close interactions with wildlife, and methods to avoid and minimize potentially dangerous encounters.

Implementing Migratory Bird Avoidance Plan. The active nesting season for most migratory bird species in Colorado is between April 1 and August 15. Over the past few years, FWS and CDOW have suggested that the best way to avoid a violation of the Migratory Bird Treaty Act (MBTA) is to remove vegetation outside of the active breeding season. The Subdistrict will develop BMPs in accordance with CDOW guidance to avoid disturbing active bird nests at the Chimney Hollow Reservoir site. *Note: Implementing these BMPs demonstrates a good faith effort to avoid incidental violation of the MBTA, but does not guarantee that migratory birds will not still nest in some areas despite these efforts.*

Seasonal Restrictions and Buffer Zones for Raptors. Avoidance and mitigation options for nesting raptors at the Chimney Hollow Reservoir site consists of: 1) conducting nest surveys prior to construction, 2) establishing

reasonable site-specific buffers and seasonal restrictions, 3) implementing seasonal restrictions to avoid and minimize disturbance, and 4) removing inactive nests from the transmission line corridor, construction footprints, reservoir pool area, or other areas of permanent impacts. Currently, there are no expected permanent impacts to existing raptor nests; however, there is the possibility that a new active raptor nest could be established in areas slated for disturbance or inundation. The intent of any mitigation is to encourage individual raptor pairs to nest at selected and more secure locations. BMPs will be developed in accordance with CDOW guidance to avoid, minimize and mitigate potential impacts.

5.4.4 Air Quality Mitigation

This measure addresses Impact ES-23 and ES-24.

Subdistrict will develop a fugitive particulate emissions control plan and BMPs to minimize air quality and noise impacts to wildlife.

5.5 MITIGATION COSTS AND SCHEDULE

Estimated mitigation costs are shown in the following table. Total project costs are estimated to be $273,000,000, which includes construction costs of about $237,000,000. The mitigation schedule will be contingent on the issuance of permits and licenses, construction timetables, project completion, and the ability of the Subdistrict to fill the reservoir. The schedule provided in the following table provides a timetable based on these contingencies.

Mitigation Insurance Policy - The mitigation listed above is based on the Draft EIS for the WGFP that was released for public comment in August of 2008. Since that time and based on comments to the Draft EIS, Reclamation has conducted additional studies related to the preparation of the Final EIS, that in part are designed to further refine the analysis of environmental impacts of the proposed action. If new impacts to fish and wildlife resources are identified in the Final EIS that were not discussed in the Draft EIS and not addressed in this mitigation plan, the Subdistrict will propose mitigation for these new impacts. The additional mitigation will be developed in cooperation with the CDOW prior to submittal to Reclamation for its consideration as a permit condition. The Subdistrict will reserve $600,000 for any new impacts to fish and wildlife resources identified by the Final EIS and required by Reclamation. If Reclamation does not identify new impacts requiring mitigation, the Subdistrict will have no further obligation to reserve this money.

West Slope

Mitigation Measure	Scheduled Start	Scheduled End	Estimated Cost
Modified prepositioning to reduce Lake Granby fluctuations	Concurrent with project start up	Permanent change in WGFP operation	$0 May have minor effect project yield
Improvements to flushing flows in Colorado River	Concurrent with project start up	No end date	May have effects on project yield but cost cannot be estimated.
Temperature mitigation	Temperature monitoring would begin within one year after issuance of permits. Curtailed diversions occur when Chimney Hollow Reservoir is completed and diversions increase	Diversion curtailments per the established criteria would continue as long as the WGFP is in operation	$50,000 for monitoring stations May have effects on project yield but cost cannot be estimated.
Nutrient mitigation to offset impacts to Grand Lake water quality – will also improve water quality in Colorado River below Windy Gap	Monitoring of baseline conditions will begin in 2011 and nutrient removal will begin concurrent with project start up	Monitoring will continue until 1:1 nutrient offset has been verified. Operation of nutrient reduction projects will continue as long as the WGFP is in operation	$4.3 million (estimated)
Participation in Upper Colorado River Recovery Program	Payment upon issuance of permits; expected by 2011	One time upfront fee	$405,000 (estimated)
Curtailed diversions for annual Gore Race, if needed	Concurrent with project start up	Permanent change in WGFP operation	

East Slope

Mitigation Measure	Scheduled Start	Scheduled End	Estimated Cost
Revegetation and weed control on areas impacted by construction	Immediately upon completion of specific habitat-disturbing activity	Three years post-restoration or until success criteria are met	$25,000
Wetland mitigation	Within one year of issuance of permit	One time upfront fee	$115,000
Wildlife habitat mitigation at Chimney Hollow Reservoir site	Concurrent or following construction depending on location	Three years post-construction or until success criteria are met	$50,000 (estimated)
Air quality mitigation	Concurrent or following construction depending on location	Until completion of construction	$0

6.0 CONCLUSIONS

The FWMP presents a broad range of mitigation actions to address the potential fish and wildlife impacts of the WGFP. If accepted by the Colorado Wildlife Commission and CWCB, this mitigation plan will represent the official state position on mitigation for the WGFP. Since the state-adopted FWMP is not enforceable by itself, the Subdistrict anticipates that Reclamation and the Corps will determine these mitigation measures are adequate and will impose them within their regulatory requirements for Reclamation's approvals and the Section 404 Permit, respectively.

REFERENCES

AMEC (AMEC Earth & Environmental, formerly Hydrosphere Resource Consultants). 2008a. Windy Gap Firming Project Lake and Reservoir Water Quality Technical Report. Prepared for U.S. Bureau of Reclamation.

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ERO (ERO Resources Corporation). 2000. Preble's Meadow Jumping Mouse Trapping Survey for Chimney Hollow; Larimer County, Colorado. Prepared for Northern Colorado Water Conservancy District. October 9.

ERO (ERO Resources Corporation). 2003. Preble's Meadow Jumping Mouse Habitat Assessment for the proposed Chimney Hollow Reservoir Site. Prepared for U.S. Bureau of Reclamation and Municipal Subdistrict, Northern Colorado Water Conservancy District.

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Reclamation (U.S. Bureau of Reclamation). 2008. Windy Gap Firming Project Draft EIS.

Table 1: WEST SLOPE - Colorado River

Item No.	EIS Impacts	CDOW Issues	Proposed Mitigation	Mitigation Agency
Surface Water Hydrology				
CR-1	Reduced spills from Lake Granby to the Colorado River as a result of fewer Windy Gap spills.	Fewer spills may mean decreased sediment transport in the Colorado River downstream to the Fraser River confluence	None Reclamation minimum flow releases below Lake Granby would be maintained.	
CR-2	Reduced flows in Colorado River below Windy Gap diversion.	Reduced flows impact other resources: -Stream Morphology and Sediment Transport -Surface Water Quality -Aquatic Resources (habitat) -Recreational Fishing -Riparian Health	See Proposed Mitigation for Stream Morphology and Surface Water Quality. Note: Current minimum bypass flows below Windy Gap Reservoir will continue per existing agreements. To assure that water diverted from the Colorado River is used as efficiently as possible, Reclamation will require that all participants in the Windy Gap Firming Project have Water Conservation Plans in accordance with the requirements of CRS 37-60-126 prior to the initial delivery of any water after construction of the WGFP.	Reclamation
CR-3	Lower water levels in Lake Granby as a result of prepositioning.	Lower water levels in Granby (when fisherman access to water is considered) reduce mysid impacts on kokanee growth - a beneficial impact.	In any year when Lake Granby is projected to fall below an elevation of 8,250 feet, modified prepositioning, which reduces the delivery of C-BT water from Lake Granby to Chimney Hollow Reservoir, will be implemented to maintain higher water levels in Lake Granby. Details of this measure will be developed by the Subdistrict and incorporated into a proposed agreement between Reclamation and the Subdistrict with a concurrence by the Corps. The objective is to minimize the adverse effects of prepositioning on water levels in Lake Granby.	Reclamation
Groundwater				
CR-4	Small changes in Colorado River and Willow Creek stream stage would not significantly impact alluvial groundwater levels.	Addressed in terms of stage change as percentage of total flow. Negligible impact on fisheries and riparian zone	None	
CR-5	Small changes in surface water quality in West Slope streams and reservoirs would have minor effect on groundwater quality.	Addressed in terms of stage change as percentage of total flow. Negligible impact on fisheries and riparian zone. Corrected by NPDES permits	None	
Stream Morphology and Floodplain				
CR-6	Decrease in frequency of 2-year peak discharge and in channel maintenance flows in the Colorado River.	Effects of lower flows on stream morphology and sediment transport and potential impacts on aquatic ecosystem, including riparian vegetation, fish and macroinvertebrates.	Note: Mitigation from the original Windy Gap Project would be modified (current flushing flow of 450 cfs below Windy Gap Reservoir for 50 hours from April 1 to June 30 every 3 years would be increased to 600 cfs). At any time when flushing flows have not occurred in previous 2 years, and total Subdistrict water supplies available in Granby and Chimney Hollow Reservoirs exceed 60,000 acre-feet, the Subdistrict will, in coordination with CDOW, cease pumping for 50 hours to enhance peak flows below Windy Gap.	CDOW, Reclamation
CR-7	Small decrease in frequency of 2-year peak discharge and in channel maintenance flows in Willow Creek.		None	CDOW, Reclamation
CR-8	Potential for flooding along the Colorado River and Willow Creek would decrease.		None	

Table 1: WEST SLOPE - Colorado River

Item No.	EIS Impacts	CDOW Issues	Proposed Mitigation	Mitigation Agency
Surface Water Quality				
CR-9	Colorado River temperature between Windy Gap Reservoir and Williams Fork may exceed 18.2 degree centigrade chronic maximum weekly average temperature (MWAT) or 23.8 degree centigrade daily maximum (DM) acute state standard as a result of WGFP diversions that lower flows in the Colorado River. Impact is most likely in the occasional years when WGFP diversions occur after July 15.	Add DM (daily maximum) temperature to the list of monitored statistics. Criteria for use of MWAT and DM; associated decision tree needs to be developed.	1. Install and maintain, for the life of the WGFP, two real time temperature gages in the Colorado River. One will be located downstream of WG Reservoir and one immediately upstream of the Williams Fork at locations agreed to by Reclamation, the Corps, and the Colorado Division of Wildlife. 2. After July 15 if the MWAT temperature threshold (18.2^{o}C, 64.8^{o} F) is exceeded at either station, WGFP pumping will be reduced or curtailed as necessary to maintain temperatures below the threshold. 3. If the DM temperature is within 1^{o}C of the threshold (23.8^{o}C, 74.8^{o} F) at either station, WG and WGFP pumping will be reduced or curtailed as necessary to maintain temperatures below the threshold. 4. The Subdistrict will use the Windy Gap Project Bypass Valve and/or Auxiliary Outlet, to the maximum extent practicable, to release colder water for required project bypasses.	CDOW, Reclamation
CR-10	Additional WGFP pumping would increase nutrient (nitrogen and phosphorus) loading in Lake Granby, Shadow Mountain Reservoir, and Grand Lake, resulting in increased chlorophyll a, and manganese (Mn)		The Subdistrict will develop a proposed nutrient reduction mitigation plan for Reclamation and Corps approval. The plan includes point source nutrient reductions from WWTP discharges in the Fraser River and nonpoint source nutrient reductions from agricultural land in the Willow Creek watershed. Other nutrient reduction measures would be implemented as necessary to meet the requirement to provide a documented nutrient reduction credit factor of 1:1 to satisfy Reclamation and the Corps mitigation requirements.	Reclamation, Corps
CR-11	Decrease in Colorado River DO below Windy Gap Reservoir. DO concentrations predicted to remain above 6.0 mg/L standard. DO could fall below fish spawning standard of 7.0 mg/L between Windy Gap Reservoir and Williams Fork at low flows.		Mitigation for temperature (CR-9) and aquatic resources effects should improve and maintain DO levels above state standard.	CDOW, Reclamation
CR-12	Higher concentration of nutrients in the Colorado River below Windy Gap Reservoir as a result of WGFP pumping that reduces dilution flows.		Nutrient mitigation described in CR-10 in the Windy Gap watershed will reduce nutrient loading to the Colorado River below Windy Gap. The nutrient mitigation plan required by CR-10 must be reviewed and approved by Reclamation and the Corps.	Reclamation, Corps
CR-13	Slight increase in nutrient and metal concentrations in Willow Creek.		Nutrient mitigation described in CR-10 in the Willow Creek watershed will reduce nutrient loading to the creek. The nutrient mitigation plan required by CR-10 must be reviewed and approved by Reclamation and the Corps. Metal concentrations will remain within state standards.	Reclamation, Corps
Aquatic Resources				
CR-14	Decrease in the amount and frequency of available fish habitat in the Colorado River and an increase in stream temperature.	Decrease in habitat during pumping may not be limiting - the decrease is probably related to forgone changes in channel morphology and other factors (upstream development, water quality, other factors in addition to Windy Gap). Concerns about current condition of fishery, including recent trend of lower fish populations, loss of pteronarcys, sculpin, and other aquatic life.	See proposed mitigation for Surface Water Quality (CR-9).	Reclamation, Corps, CDOW
CR-15	Decrease in the amount and frequency of available fish habitat in Willow Creek.		None	
CR-16	Lower water levels in Lake Granby would slightly reduce available fish habitat.	Negligible impact under expected operations.	See proposed mitigation for Surface Water Hydrology (CR-3)	Reclamation

Table 1: WEST SLOPE - Colorado River

Item No.	EIS Impacts	CDOW Issues	Proposed Mitigation	Mitigation Agency
Vegetation				
CR-17	Effects to riparian vegetation along Colorado River from reduced streamflow.		None.	Reclamation, Corps, CDOW
Wetlands				
CR-18	Effects on wetlands adjacent to the Colorado River and downstream of the Windy Gap diversion.		None	
Wildlife				
CR-19	Change in streamflow in the Colorado River and Willow Creek is unlikely to affect terrestrial wildlife resources.		None	
Threatened and Endangered Species				
CR-20	Depletion to Colorado River impacts T&E fish.		Section 7 consultation and compliance consistent with the requirements of the Programmatic Biological Opinion (PBO). The Service issued a Biological Opinion on February 12, 2010 for the Preferred Alternative indicating WGFP coverage under the PBO with participation in Upper Colorado River Recovery Program (UCRRP) and payment of depletion fee for additional depletions attributable to the WGFP. Documentation of Section 7 consultation will be submitted to the Corps in order to meet requirements for the Fish and Wildlife Coordination Act.	Continued participation in the Upper Colorado River Endangered Fish Recovery Program per the USFWS Biological Opinion.
Recreation				
CR-21	Reduction in preferred kayaking flow days in Byers Canyon. In 29 of 47 years in the period of record there would be no change. In other years there would be a slight decrease in average number of days per year with preferred kayaking flows.		None	
CR-22	Preferred rafting and kayaking flows in Big Gore and Pumphouse would decrease. A decrease and increase in the number of days within preferred flow range that averages less than 3 days per year.		None , except WGFP diversions would be suspended during Gore Race in August if flows drop below preferred range (1,250 cfs).	Reclamation
CR-23	Access to Lake Granby boat ramps at Arapaho Bay, Stillwater, and Sunset could diminish in some months.	Proposed change in project operation in dry years will keep Granby higher.	None. Modified prepositioning discussed in CR-3 would maintain higher water levels in Lake Granby during years when the reservoir is anticipated to fall below elevation 8,250 msl thereby improving boat ramp access.	Reclamation
CR-24	Effects on recreational fishing in the Colorado River downstream of the Windy Gap diversion from habitat loss and temperature impacts between Windy Gap and the Blue River.	Includes float fishing.	Proposed mitigation for Surface Water Quality should reduce effects on recreational fishing.	Reclamation, Corps, CDOW

Table 1: WEST SLOPE - Colorado River

Item No.	EIS Impacts	CDOW Issues	Proposed Mitigation	Mitigation Agency
Socioeconomics				
CR-25	Lost recreational boating value in the Colorado River in some years due to lower flows. Although preferred boating flows are not always met, rafting and kayaking opportunities would remain (i.e. flows would rarely drop below minimum flows needed for boating).			
CR-26	Reduction in aesthetic value in Grand Lake if algae concentrations increase.	Additional issues in Shadow Mountain.	Nutrient mitigation measures discussed in CR-10 would offset nutrient loading from increased WGFP pumping.	Reclamation, Corps

Table 2: EAST SLOPE - South Platte Tributaries and Chimney Hollow Reservoir

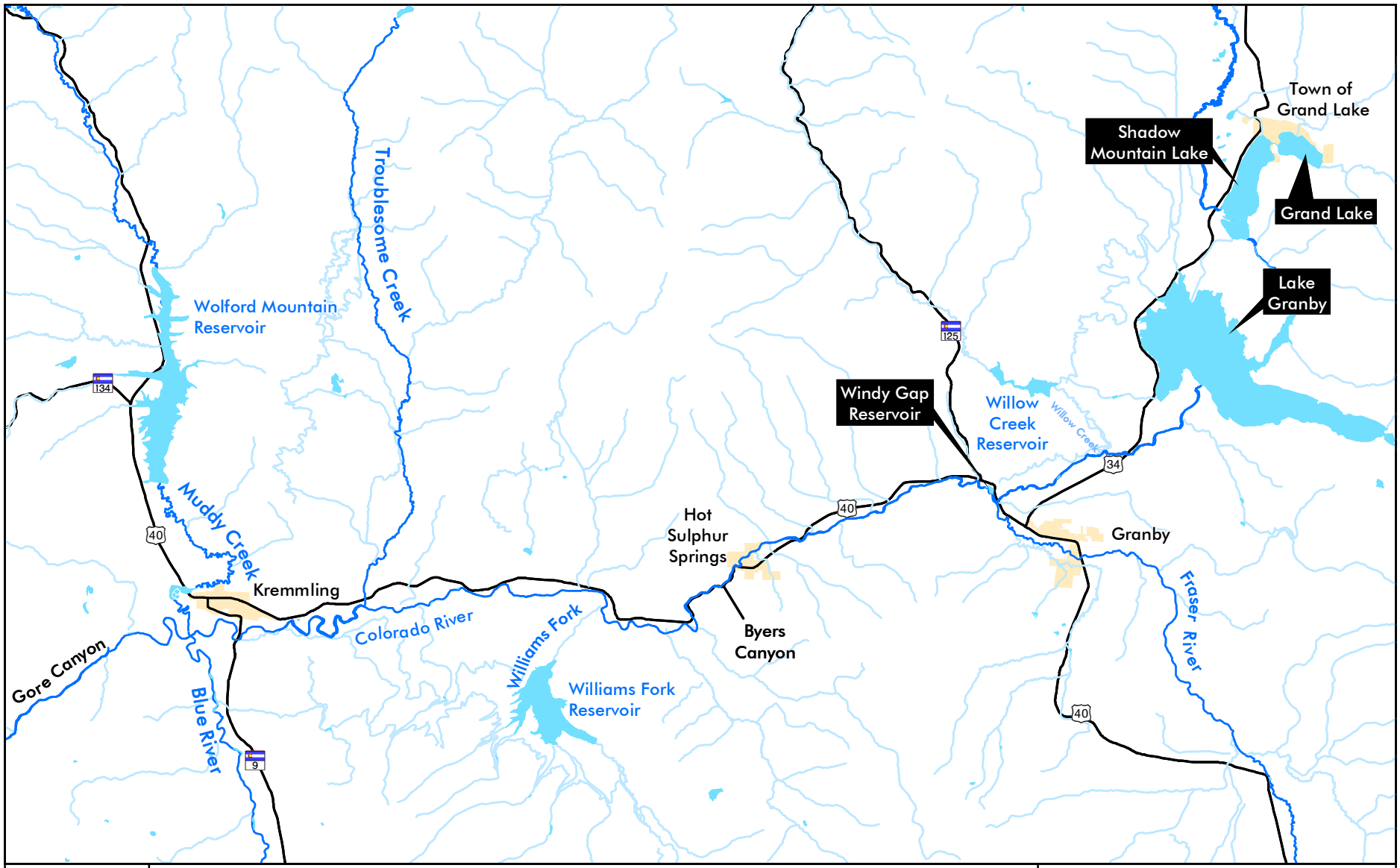
Item No.	EIS Impacts	CDOW Issues/Concerns	Proposed Mitigation	Mitigation Agency
Surface Water Hydrology				
ES-1	Lower water levels in Carter Lake (~1').	Earlier fill is better for walleye.	None. However, modified prepositioning as discussed in CR-3 would result in smaller changes in water levels (<1' lower).	Reclamation
ES-2	Lower water levels in Horsetooth Reservoir (6' lower on avg.).	Higher nutrients and lower DO may complicate 303D listing status.	None. However, modified prepositioning as discussed in CR-3 would result in smaller changes in water levels (<2' lower).	Reclamation
Groundwater				
ES-3	Small changes in East Slope stream stage that would not significantly impact alluvial groundwater levels.	Addressed in terms of stage change as percentage of total flow. Negligible impact on fisheries and riparian zone.	None	
ES-4	Small changes in surface water quality in East Slope streams and reservoirs would have minor effect on groundwater quality.	Addressed in terms of stage change as percentage of total flow. Negligible impact on fisheries and riparian zone. Corrected by NPDES permits.	None	
Stream Morphology and Floodplain				
ES-5	Increased flows on East Slope streams below WWTPs could have slight effect on channel morphology.		None	
ES-6	Flows in East Slope streams would increase slightly.		None	
Surface Water Quality				
ES-7	Increased ammonia concentrations in St. Vrain Creek, Big Dry Creek, Coal Creek as a result of increased discharges from Participant WWTP's.	Based on standards and NDPES permits. Participants must meet ammonia discharge limitations in accordance with Colorado water quality standards and as part of their NPDES Permit for WWTP discharges.	None	
ES-8	Nutrient increases (TP, TN) resulting in higher chlorophyll *a* concentrations and a decrease in DO in Carter Lake and Horsetooth.		None. In accordance with CR-10, plans to monitor and mitigate nutrient increases in the Three Lakes system should address this issue and the plans must be approved by Reclamation and the Corps.	Reclamation, Corps
Aquatic Resources				
ES-9	Construction of Chimney Hollow Reservoir would create potential flat water fishing opportunities if a fishery is established in Chimney Hollow.	Construction of reservoir will replace terrestrial environment with aquatic environment, displacing terrestrial wildlife and allowing the replacement by aquatic wildlife.	None	
ES-10	Lower water levels in Carter Lake and Horsetooth Reservoir would slightly reduce available fish habitat.	Negligible impact under expected operations.	None. However, modified prepositioning as discussed in CR-3 would result in smaller changes in water levels.	

Table 2: EAST SLOPE - South Platte Tributaries and Chimney Hollow Reservoir

Item No.	EIS Impacts	CDOW Issues/Concerns	Proposed Mitigation	Mitigation Agency
Vegetation				
ES-11	Temporary impact to 123 acres of vegetation during construction of Chimney Hollow Reservoir.	Includes pipeline ROW and contractor staging area. Reveg with wildlife friendly seed mixes. 1298 Final BMPs	Revegetation, and weed control on all disturbed areas in accordance with an erosion control plan to be developed by the Subdistrict and approved by Reclamation and the Corps. Plan will be developed in coordination with CDOW and incorporate CDOW Oil & Gas BMPs where appropriate.	Reclamation, Corps, CDOW
ES-12	Permanent loss of 788 acres of vegetation from inundation and dam at Chimney Hollow.	Hunting Access	None. Larimer County maintains land management plan for Chimney Hollow open space area which includes forestry, vegetation management, and weed control.	CDOW
Wetlands				
ES-13	Temporary disturbance of about 0.2 acres of wetlands during Chimney Hollow Reservoir construction.	Corps issue-compensatory mitigation.	Avoid, minimize and mitigate wetland impacts as specified in the 33 CFR Part 332 (Mitigation Rule, 10-Apr-08) and as approved by Reclamation and the Corps.	Corps
ES-14	Permanent impact to about 2 acres of wetlands at Chimney Hollow Reservoir.	Corps issue-compensatory mitigation.	Avoid, minimize and mitigate wetland impacts as specified in the 33 CFR Part 332 (Mitigation Rule, 10-Apr-08) and as approved by the Corps. Wetlands would be mitigated by contribution to an approved wetland mitigation bank.	Corps
ES-15	Permanent impact to about 0.5 acres of waters of the U.S. along Chimney Hollow.	Corps issue-compensatory mitigation.	Avoid, minimize and mitigate wetland impacts as specified in the 33 CFR Part 332 (Mitigation Rule, 10-Apr-08) and as approved by Reclamation and the Corps.	Corps
Wildlife				
ES-16	Loss of 810 acres of elk winter range, mule deer winter range and concentration area, and black bear foraging area at Chimney Hollow.	Access for hunting; improve vegetation to draw elk and/or bears.	Subdistrict will work with CDOW and Larimer County to allow hunting access on property to minimize displacement of game animals to other areas.	
ES-17	General loss of habitat for other terrestrial species, birds, amphibians, reptiles, and butterflies at Chimney Hollow.	Includes reservoir inundation area and pipeline ROW. ≈ 2 mile loss of riparian habitat in inundated stream channel.	Revegetation and weed control on all disturbed areas in accordance with an erosion control plan to be developed by the Subdistrict and approved by Reclamation and the Corps. Plan will be developed in coordination with CDOW and incorporate CDOW Oil & Gas BMPs where appropriate. Implement migratory bird mananagement plan and seasonal restrictions and buffer zones.	
ES-18	Loss of 7 acres of bald eagle winter range at Chimney Hollow. This effect is minor as there is sufficient bald eagle wintering habitat in the area. New reservoir would provide open water foraging habitat for bald eagles.		None	
Threatened and Endangered Species				
ES-19	No impact at Chimney Hollow.		None	
Geology				
ES-20	Potential for uncovering fossils during Chimney Hollow Reservoir construction.		Paleontological survey would be conducted prior to construction and the Denver Museum contacted if important fossils discovered. Paleontological resources will be dealt with in accordance with the programmatic agreement or memorandum of agreement between Reclamation, the State Historic Preservation Officer, the Subdistrict, and possibly the Advisory Council.	Reclamation
Soils				
ES-21	Temporary and permanent loss of soil during Chimney Hollow Reservoir construction.	BMPs for pipelines, dam construction. SWMP (CDPHE) by contractor.	Erosion control and revegetation.	Reclamation
ES-22	Shoreline erosion at Chimney Hollow Reservoir.		None	
Air Quality				
ES-23	Dust and vehicle emissions during Chimney Hollow Reservoir construction.	Adaptive management, blasting for three years.	A fugitive particulate emissions control plan and BMPs would be developed and must be approved by the Corps in order to meet requirements for Colorado Air Quality Control Standards.	Reclamation
ES-24	Increased ambient noise from construction of Chimney Hollow Reservoir.	Displacement of wildlife.	BMPs to minimize noise.	

Table 2: EAST SLOPE - South Platte Tributaries and Chimney Hollow Reservoir

Item No.	EIS Impacts	CDOW Issues/Concerns	Proposed Mitigation	Mitigation Agency
Land Use				
ES-25	A portion of Chimney Hollow would be located on private property or Larimer County property.	Near CH dam - toes of 35 acre parcels on ridge, purchase of horizontal land on edge of CH.	Private land acquisition or the necessary access rights and easements.	Reclamation
ES-26	A portion of Chimney Hollow Reservoir facilities would be located on Reclamation property.	Facilities around Flatiron Reservoir on USBR land - easement w/USBR.	Easements or appropriate permits from Reclamation would be acquired.	Reclamation
ES-27	Sandstone quarry operations could be affected by southern access road to Chimney Hollow Reservoir.	Road uncertain, could be used for hunting access; seasonal closure?	Quarry access would be maintained.	Reclamation
ES-28	Increased construction traffic on CR 18E and CR 31 and impacts to roads during reservoir construction and from recreation access to Chimney Hollow Open Space managed by Larimer County.	Potential for elk/car/truck encounters- add signing.	The Subdistrict would comply with all County road and permitting requirements.	Reclamation
Recreation				
ES-29	Access to the South Bay-South boat ramp in Horsetooth could be impacted.		None. Modified prepositioning discussed in CR-3 would maintain higher water levels in Lake Granby during years when the reservoir is anticipated to fall below elevation 8,250 msl thereby improving boat ramp access.	Reclamation
Cultural Resources				
ES-30	Twenty-four eligible or potential eligible cultural resources could be impacted by construction of Chimney Hollow Reservoir.		Compliance with Section 106 of the National Historic Preservation Act including additional evaluation and mitigation will be conducted in coordination with Reclamation, the Corps of Engineers, and SHPO. Cultural resources will be dealt with in accordance with a Programmatic Agreement or MOA to be developed and signed by Reclamation, the SHPO, and the Subdistrict.	Reclamation, Corps, SHPO
Visual Quality				
ES-31	Temporary impacts from construction of Chimney Hollow Reservoir.	Mostly human, not wildlife.	Revegetation and BMPs.	Reclamation
ES-32	Permanent changes in landscape.		Revegetation, weed control, maintenance.	Reclamation
ES-33	Relocation of transmission line.	115KV line, inline construction, tall poles - raptor protection included in WAPA design standards.	Visual sensitivity analysis conducted in siting relocated transmission line. , Nonspecular, nonreflective wire would be used and possibly nonreflective steel poles. All site disturbances would be revegetated following construction.	Reclamation
Socioeconomics				
ES-34	Property Acquisition.		None Any properties required to be purchased for the project would be purchased for just compensation following an appraisal in accordance with the Water Conservancy Act (CRS 27-45-101 to 153) and other applicable state laws.	



ERO Resources Corp.
1842 Clarkson Street
Denver, CO 80218
(303) 830-1188
Fax: (303) 830-1199

City
Lake or Reservoir
Major Streams
Minor Streams
Highway

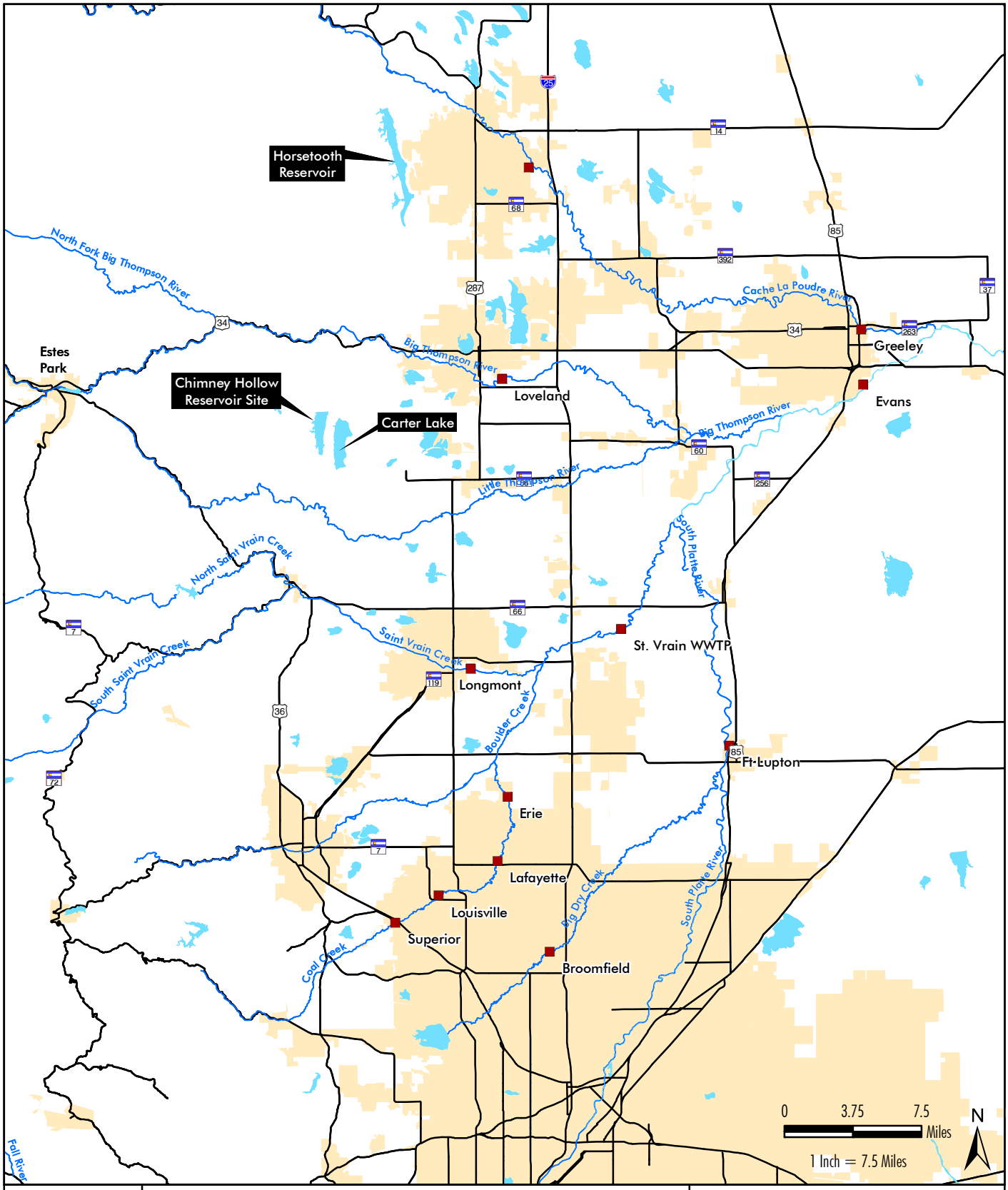
0 2 4 Miles

1 Inch = 4 Miles

N

Figure 1
West Slope Project

Prepared for: Windy Gap Firming Project
File: 2390 EIS\WM_WestSlopeWaterResource.mxd (JP)
July 2009

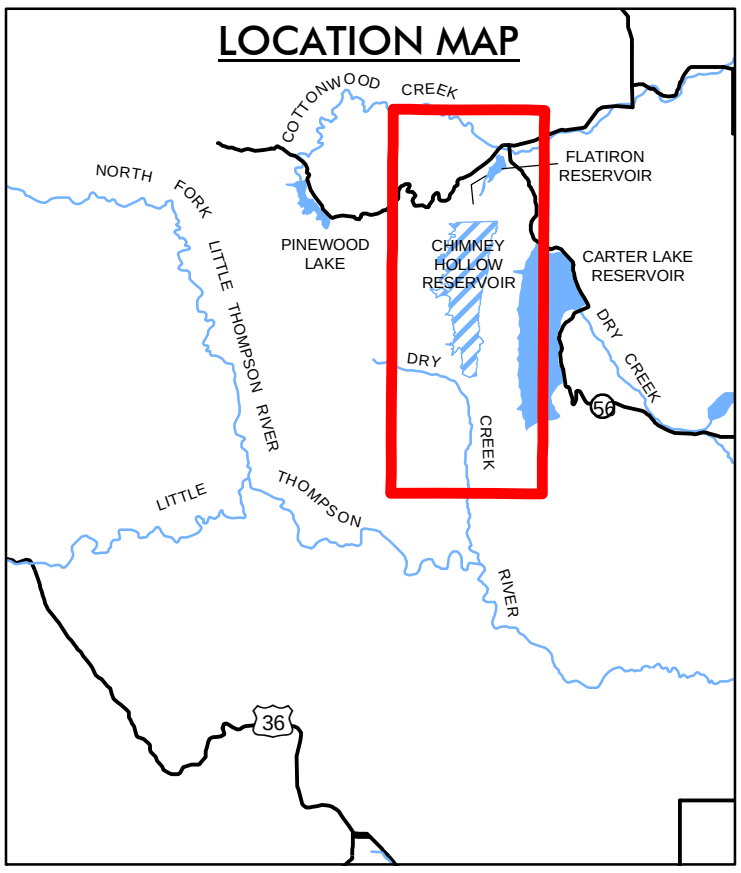


ERO
ERO Resources Corp.
1842 Clarkson Street
Denver, CO 80218
(303) 830-1188
Fax: (303) 830-1199

- Waste Water Treatment Plant
- Lake or Reservoir
- Highway
- Major Streams
- City

Figure 2
East Slope Project

Prepared for: Windy Gap Firming Project
File: 2390 EIS\WM_EastSlopeWaterResource.mxd (JP)
June 2009



Inlet - Outlet Tunnel

Spillway and Channel

New Pipeline

Potential Disturbance Area

Transmission Line Corridor

Chimney Hollow Reservoir

Dam

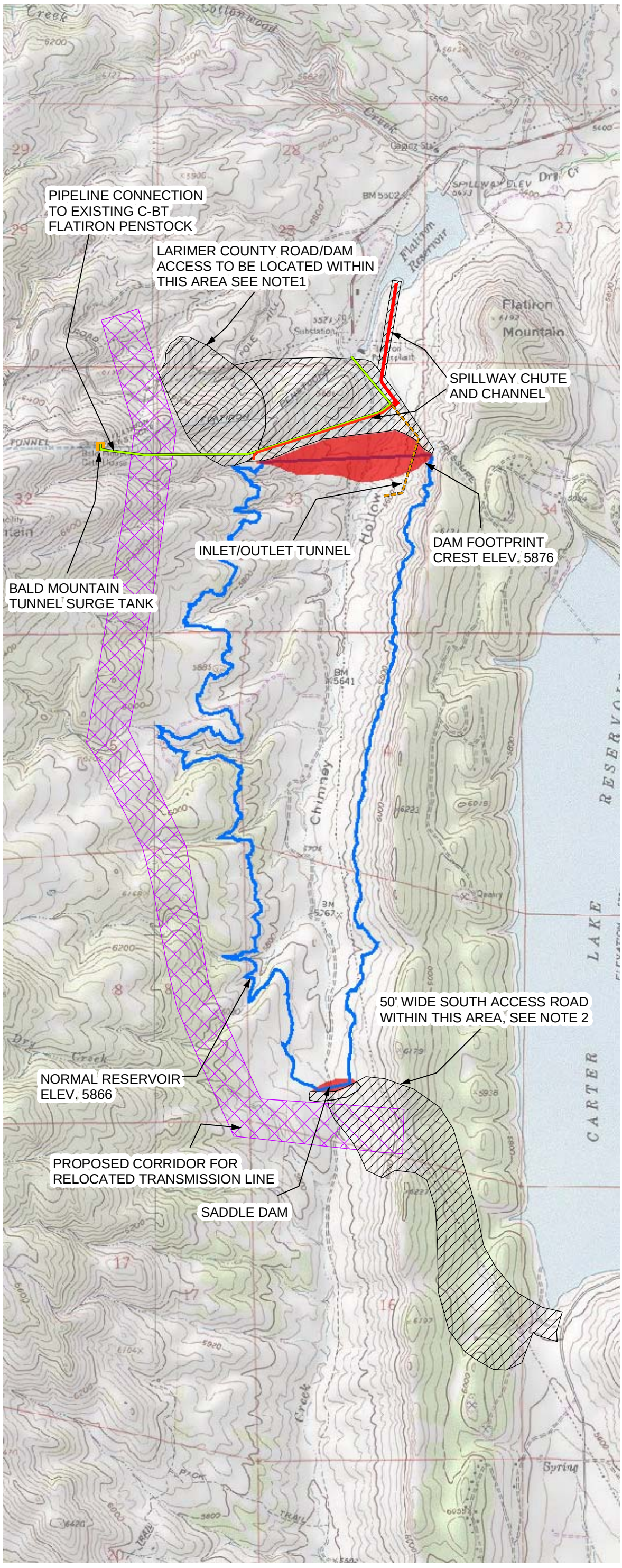
NOTES:

1. FINAL LOCATION OF DAM CREST ACCESS ROAD TO BE DETERMINED THROUGH LARIMER COUNTY PARK PLANNING PROCESS.
2. SOUTH ACCESS ROAD DURING CONSTRUCTION - GATED WITH NO PUBLIC ACCESS FOLLOWING CONSTRUCTION.

0 2,000 4,000 Feet

N

"USGS MAP OF THE CARTER LAKE RESERVOIR QUADRANGLE, BOULDER AND LARIMER COUNTIES, COLORADO"
SITE SPECIFIC TOPOGRAPHY BASED ON AERIAL SURVEY, APRIL 2003



WINDY GAP FIRMING PROJECT

Figure 3
Chimney Hollow Reservoir (90,000 AF)

Windy Gap Firming Project