STATE OF COLORADO

Colorado Water Conservation Board
Department of Natural Resources
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TO: Colorado Water Conservation Board

FROM: Steve Miller, Interstate and federal Section

DATE: September 13, 2010

RE: **Agenda Item 23 September 13-15, 2010, Board Meeting**
Interstate and Federal Section – Gunnison Selenium Management Program ("SMP").

Introduction: This agenda item is to provide an overview of the SMP being formulated for the Gunnison River basin between the Aspinall Unit and Grand Junction. A Memorandum of Understanding ("MOU") has been negotiated between the US Bureau of Reclamation ("USBR") and key interested parties, including the CWCB. Director Gimbel will be signing the MOU shortly, and while Board authorization to execute the MOU is not necessary, Board understanding and concurrence in the goals of the SMP is important.

Background: Staff has advised the Board of the need for, and progress in, developing an SMP for a significant portion of the Gunnison basin in several Director's Report items over the last year. Selenium is a naturally occurring element, pervasive in Mancos Shale geological units and mobilized by irrigation return flows. There is considerable biological evidence from other regions in the country that high concentrations of selenium can be harmful to aquatic species, and in the opinion of the US Fish and Wildlife Service, selenium in the Gunnison River is likely impeding recovery of the endangered Colorado River fish. Attachment 1 to this memo is an excerpt from the DEIS for the Aspinall Unit which explains the concept of the SMP and its relationship to the Unit. Representatives from the USBR's Grand Junction Project Office will making a brief presentation to address background of the Aspinall EIS, the need for a SMP, their leadership on the SMP, and what must be accomplished. In addition, the Colorado River Water Conservancy District ("CRWCD") which played a significant role in the Aspinall EIS process and negotiation of the SMP will discuss the importance of this program to the region and local water users. One of the first elements of the SMP is a commitment by Federal, State, and local water users to develop the specific elements the SMP will use to achieve reductions in selenium loads in the Uncompahgre and Gunnison Rivers. Attachment 2 is a copy of the MOU which has been negotiated with key interested parties. The CWCB will be a signatory to the MOU and by doing so is committing to use staff resources to develop implementation plans and schedules that address selenium loading. One of the key aspects of the CWCB's role will be our ability to coordinate selenium reduction strategies with the existing Colorado River Basin Salinity Control Program. The CWCB will also coordinate with other State agencies on funding and science related issues.

Staff Recommendation: This item is informational only. If there are concerns with or questions about the proposed MOU they can be discussed and resolved.

In addition, private, local, and state water projects and uses in the Gunnison Basin would continue. As with the Aspinall Unit, construction and past operations of facilities for these water uses is part of the environmental baseline and non-discretionary.

It is estimated that depletions from the Gunnison River above the Whitewater gage averaged 428,348 af over the 1975-2005 period (Reclamation 2008). Approximately 95% of these depletions result from irrigation and 5% from domestic and industrial water use and reservoir evaporation.

In this assessment, new depletions of 3,500 af, primarily in the North Fork Basin, are also addressed along with full development of the Dallas Creek Project (17,200 af) and use of 30,800 af of subordination water in the Upper Gunnison Basin. The new depletions of 3,500 af are not specifically identified but will most likely be related to residential development in the basin. Additional information on other water uses is found in Section 3.3.

In total, depletions under the proposed action would range in the 450,000-500,000 af. Table 5 summarizes the depletions under the proposed action.

Table 5. Estimated average annual depletions in the environmental baseline.

Project	Estimated average annual depletion (af)
Aspinall Unit	10,000
Uncompahgre Project	155,000
Dallas Creek Project	17,200
Paonia Project	10,000
Smith Fork Project	6,000
Bostwick Park Project	4,000
Fruitgrowers Project	4,100
Other water uses	210,000-260,000
Dolores Project	99,200*
Upper Gunnison Subordination	30,800 (maximum rather than average depletion)
Total for Gunnison Basin (excludes Redlands)	450-500,000 af

*The original Dolores Project ESA consultation addressed a 131,000 af depletion. Updated information indicates actual depletions are approximately 99,200 af. For ESA purposes, return flows to the San Juan Basin were considered depletions.

2.6 Conservation Measures

In addition to re-operating the Aspinall Unit, Reclamation will continue to support the Recovery Program and will continue to support efforts to improve water quality in the Gunnison River and downstream.

Public Law 106-392 authorizes the Bureau of Reclamation to provide up to $6 million per year (adjusted for inflation) of CRSP power revenues to partially meet the base funding needs of the Recovery Program and the San Juan River Recovery Program. Additional funding is provided by the participating States and the Service. Base funding provides for operation and maintenance of capital projects, implementation of recovery actions other than capital projects, monitoring and research to evaluate the need for or effectiveness of recovery actions, and program management to carry out the Programs. Reclamation will continue to support these activities as authorized by P.L. 106-392 as amended as well as subsequent legislation.

Adaptive management (Section 2.2) is considered a conservation measure and will allow flexibility in operations to respond to new information on the species.

A Selenium Management Program will also be developed that addresses potential selenium impacts on endangered fish species in the Gunnison and Colorado rivers (see Section 3.4.3 for potential effects). The Selenium Management Program will incorporate and continue ongoing selenium reduction efforts in the Uncompahgre Valley and other areas of the Gunnison Basin and will add several new elements to ensure the future effectiveness of the program. The overall long-term goal of the program is to assist in species recovery per the Recovery Goals. Elements of the Selenium Management Program include:

- Accelerated implementation of salinity/selenium control projects for irrigated agriculture
- Reduction of other non-point source selenium loading
- Technology development
- Water quality monitoring
- Monitoring of endangered fish populations
- Coordination with lower Gunnison River Basin watershed management plan
- Regulatory support
- Public information and education
- Adaptive management
- Institutional support

A final Selenium Management Program, including timeframes and goals, will be developed within 18 months of issuance of the programmatic biological opinion. This timeframe allows monitoring data and other information collected in the first year to be used to refine the plan. During this period, ongoing projects that reduce selenium will continue.

Reclamation's vision for the program involves a cooperative effort with the substantial involvement of stakeholders. Reclamation will request annual Federal funding subject to appropriations (in addition to existing Salinity Control Program funding under the Colorado River Basin Salinity Control Project [CRBSCP] Act). Keys to success are the support and participation of basin water users for selenium reduction measures and

improved management of water and land resources. With limited Federal budgets, local support and participation are critical elements to achieving success.

The development of the Selenium Management Program will focus on the lower Gunnison River and will pay particular attention to the Uncompahgre Valley. The Selenium Management Program will involve the established Selenium Task Force participants, federal agencies, water users, and state, county, and local government agencies. Because the Program will involve many interests and parties, formal documentation and funding mechanisms will be developed over the 18 month period following issuance of the programmatic biological opinion by the Service. Implementation will begin immediately with completion of the programmatic biological opinion, and implementation of all aspects of the Selenium Management Program not already underway will begin within 5 years of issuance of the opinion for the Gunnison River Basin in accordance with a Long Range Plan to be prepared.

The Selenium Management Program Long Range Plan will include identification of specific cost effective selenium reduction measures, high priority implementation locations, implementation schedule, benchmarks, responsible entities, monitoring needs, and coordination with ongoing Recovery Program activities. The Selenium Management Program will define funding and other resources needed for implementation, including commitments by Reclamation, the State of Colorado, water users, local governments and other parties. The Long Range Plan will be formatted similar to the Recovery Program's Recovery Action Plan and will be updated annually. Progress in implementing the Long Range Plan will serve as the benchmark for evaluating progress in implementing the Selenium Management Program.

Implementation of a Selenium Management Program in the Lower Gunnison River basin will be based on the best available information that focuses actions toward the recovery of razorback sucker and Colorado pikeminnow. Initially, this means that efforts will be made to reduce selenium loading in a timeframe complimentary to Recovery Goal timelines for razorback sucker and Colorado pikeminnow.

The ultimate objective of this Program is to meet the Recovery Goals for razorback sucker and Colorado pikeminnow (2002; currently being updated by the FWS); thus, additional selenium reduction efforts may continue and expand per the Program timelines. Once self-sustaining, recovered populations per the Recovery Goals have been attained, further selenium reduction efforts could be discontinued as long as new agreements are developed to maintain the selenium remediation measures that had contributed to the recovery of the subject species.

The Selenium Management Program will include the elements described below:

A. Accelerated Implementation of Salinity/Selenium Control Projects for Irrigated Agriculture: The salinity/selenium control projects implemented to date are described in Section 3.4.3. Future implementation is described below.

It is anticipated that the majority of reductions in selenium loading will be accomplished via the CRBSCP, NRCS Environmental Quality Incentives Program (EQIP) and grant-funded Task Force activities. Continuing implementation of CRBSCP projects is dependent on a competitive selection process. Uncompahgre Project proposals in the area of most concern are expected to remain cost competitive; however, more costly projects may require supplemental funding.

In the past, supplemental funding for Uncompahgre Project irrigation system improvement proposals was provided by the National Irrigation Water Quality Program (NIWQP), Congressional "write-ins" for selenium control, and EPA Section 319 funding. As shown in Table 5 in Section 3.4.3, supplemental funding provided about $1 for every $2 from the CRBSCP for initial irrigation system improvements (Phases 1-4). Although this amount of supplemental funding has traditionally been required to make Uncompahgre Project lateral piping projects more competitive under CRBSCP, the Program's current competitive cost range is increasing and recent Uncompahgre Project proposals have been found to be cost effective absent supplemental funding.

In the future, supplemental funding to augment CRBSCP funding for the more costly canal lining and pipe replacement of large laterals will be provided by Reclamation, subject to appropriations, and may be further complimented by state funds and various grant funding opportunities. Reclamation will seek supplemental funding (subject to appropriation) to assist in implementing all facets of the Selenium Management Program. Portions of this funding will be used to implement agriculture-related projects as well as the other activities as described in items B through J below.

Three phases of salinity/selenium control projects have been implemented or are underway in the Uncompahgre Valley. The recently funded Phase 4 includes an additional 11.4 miles of lateral lining in high priority selenium reduction areas, bringing the total length of laterals completed or under contract to 51 miles. This phase is presently scheduled to be completed by 2012. Approximately $2.8 million will be available for implementation of Phase 4, $2 million from the Salinity Control Program and $800,000 from the Environmental Protection Agency's (EPA) 319 grant program. Phase 4 is expected to reduce salinity loading by 3,650 tons/years and selenium loading by 70 to 360 pounds/year.

It is anticipated that the development of the Selenium Management Program will include advanced planning to outline future CRBSCP proposals involving larger scale lateral piping and possibly canal lining projects in the Uncompahgre Valley that should provide more rapid selenium loading reductions to the lower Gunnison River. With approximately $2 million/year (in current dollars) for lateral piping, Uncompahgre Project managers estimate that they could install approximately 10 miles of laterals each year on the east side of the Uncompahgre Valley. This commitment, subject to appropriations, exceeds current average construction rate of 5 miles/year. With more dependable funding, equipment could be purchased and a crew could be working year around on installation of pipe. Given sufficient resources, it is estimated that all remaining laterals and small canals in the planned East Side (of Uncompahgre Valley)

Laterals Project could be piped in approximately 15 years or by 2024 if the biological opinion is completed in 2009. This additional 151 miles of pipeline will reduce salt loading by approximately 50,000 tons/year and selenium loading by 1,000 to 5,000 pounds/year at a total cost of $35 to $40 million (in current dollars). Canal lining in the highest selenium loading sub-basins will also be investigated in the development of the Selenium Management Program. Lining a major delivery canal such as the Selig Canal through the Loutzenhizer Arroyo drainage could be expected to reduce salinity loading by an additional 400 to 500 tons/mile/year and associated selenium loading by an additional 10 to 50 pounds/mile/year.

Other Lower Gunnison basin salinity/selenium projects, outside the Uncompahgre Project service area will be incorporated into the Selenium Management Program if determined to be viable and necessary.

In addition to increasing water delivery system efficiency by piping laterals and lining of canals, future salinity/selenium control measures will focus on a) increasing near-farm water delivery system efficiency by installing pipelines, b) increasing on-farm irrigation efficiency by installing high efficiency systems such as sprinkler and drip systems and c) encouraging other more efficient irrigation practices and measures to reduce deep percolation of water that results in reductions of selenium loading to the lower Gunnison River. This component will be accomplished via the NRCS EQIP and the recently created Basin States Salinity Control Program.

Reclamation will work with water providers, conservation districts and NRCS to promote on-farm salinity control projects to reduce seepage losses and deep percolation from irrigation practices in areas with known high selenium loading rates. To the extent possible, Reclamation will work with NRCS to prioritize the funding of EQIP projects in high selenium loading areas of the basin. Such targeted efforts have been documented to result in more cost effective non-point source control proposals by controlling 'two contaminates for the price of one'. Utilizing this approach may further improve Lower Gunnison projects cost effectiveness under the CRBSCP.

Reclamation will support funding from any source that might accelerate selenium control efforts, consistent with applicable federal, state and local laws.

B. Reduction of Non-Point Source Selenium Loading from Developing Areas: To accelerate efforts to reduce selenium loading from urbanizing areas, Federal and State agencies and basin water users will enhance their level of participation in the Task Force. Reclamation and others will provide additional technical, financial, and administrative assistance so that the Task Force can achieve the following:

- identify and encourage implementation of Best Management Practices to minimize selenium loading to the lower Gunnison River associated with urban and suburban development activities;
- discourage the construction of unlined ponds and/or water features in pervious selenium rich soils;

- work with local governments, responsible for land use planning, to minimize new selenium loading by avoiding housing and industrial developments which utilize leach fields or outdoor irrigation in areas with high selenium loading potential, such as previously unirrigated lands;
- support local government requirements to convert irrigation delivery systems from open channel to piped systems in urbanizing areas;
- support local government implementation of development codes which encourage native landscaping, limit irrigated landscape areas, and/or require efficient landscape irrigation systems on selenium rich lands;
- increase educational programs for better understanding of selenium issues and acceptance of appropriate solutions; and
- support general water conservation programs for all outdoor water uses (lawns, golf courses, septic systems, etc.), including public education efforts to promote more efficient water use and minimization of deep percolation.

C. Technology Development: Reclamation will utilize its Science and Technology Program, to the extent possible, to explore new technologies for reducing selenium loading and/or remediating drainage water with elevated selenium concentrations. The technologies to be reviewed for feasibility include development of approved flocculating agents that can potentially be extremely cost effective and can be implemented quickly to reduce seepage and selenium loading, bioreactors, and other technologies to cost effectively treat selenium-rich waters.

D. Water Quality Monitoring: Federal, state and local entities will partner to monitor selenium concentrations in the lower Gunnison River and its tributaries in order to better understand selenium loading mechanisms, quantify selenium loading reductions and establish selenium loading trends over time.

Although, selenium concentrations in the lower Gunnison Basin have been monitored for years, current water quality monitoring for selenium on a regular basis is occurring only at two stations: Uncompahgre River at Delta (Colorado Department of Public Health and Environment, quarterly sampling) and Gunnison River near Grand Junction (USGS and Colorado Department of Public Health and Environment). Water quality monitoring for selenium has previously occurred at Gunnison River at Delta, Gunnison River below the Gunnison Tunnel, Uncompahgre River at Colona, and North Fork of the Gunnison River near Somerset.

The Colorado River Water Conservation District is working on a proposal to expand selenium and flow monitoring by installing real-time specific conductance monitors and gage stations to help define relationships between selenium and total dissolved solids. Proposed monitoring includes samples for major ions and dissolved selenium, as well as flow. The sites under discussion include:

- Gunnison River below Gunnison Tunnel (above selenium loading areas)
- North Fork of the Gunnison River at its mouth
- Gunnison River at Delta

- Uncompahgre River at Colona (above selenium loading areas)
- Uncompahgre River at Delta

Depending on the level of monitoring, cost estimates, exclusive of initial gage installation costs, range from $40,500-$118,000/year.

The Colorado River Water Conservation District is developing cost sharing arrangements. The resulting final monitoring program will be included in the Selenium Management Program.

E. Monitoring of Endangered Fish Populations: The Recovery Program experimentally stocked razorback sucker in the lower Gunnison River (i.e., downstream of Delta) during the mid-1990's and initiated an integrated stocking plan in 2003. Operation of the fish ladder at the Redlands Diversion Dam on the lower Gunnison River began in 1996 and restored access to 50 miles of critical habitat for the endangered fishes. The Recovery Program periodically conducts fish surveys in the lower Gunnison River. Over the past several years, those surveys have included sampling to determine if razorback sucker and Colorado pikeminnow are reproducing in the lower Gunnison River. Larvae of both species have been found, and survival of razorback sucker larvae through the first year is evidenced by collections of juveniles (it is uncertain whether these juveniles were stocked as larvae or produced from reproduction by stocked adults). The Recovery Program monitors the Colorado pikeminnow population in the Upper Colorado River Subbasin to develop population estimates for the purpose of tracking progress toward achieving the Subbasin demographic Recovery Goal criteria. This monitoring includes the Gunnison River downstream of the Redlands Diversion Dam and incorporates fish using the fish ladder.

The Recovery Program is developing a basin-wide razorback sucker monitoring program that will include monitoring of all life stages. Design of the monitoring program is expected to be completed in fiscal year 2009. Implementation will begin in 2010. It will include multi-life stage monitoring on the lower Gunnison River. Eventually, population estimates will be developed for razorback sucker that will include fish in the lower Gunnison River.

Results of future fish surveys, ongoing population estimates for Colorado pikeminnow, and the future monitoring program for the razorback sucker will provide the basis for determining the status of Colorado pikeminnow and razorback sucker in the lower Gunnison River. This information will be used to measure the success of recovery efforts and perhaps the effects of the Selenium Management Program and will be incorporated into the adaptive-management process to determine factors limiting recovery of Colorado pikeminnow and razorback sucker

F. Coordination with Lower Gunnison River Basin Watershed Management Plan: The Selenium Task Force is developing a Watershed Management Plan (WMP) for the lower Gunnison River Basin. The WMP will focus on remediation of selenium with the goal of meeting the 4.6 parts per billion (ppb) water quality standard. Any organization

addressing remediation planning within the watershed may utilize the WMP for planning purposes. The objective of the WMP, once adopted, is to guide, direct, and prioritize 319 Grants from EPA to specific projects within the watershed. The WMP will identify causes and sources of water quality impairment, estimate load reductions, and describe nonpoint source management measures, identify technical and financial assistance needed to carry out the WMP, provide an implementation schedule, define an education and outreach program, develop milestones for determining progress, set criteria to measure selenium load reductions, and develop a monitoring program to determine effectiveness of implementation efforts.

The Task Force will complete the watershed management plan by September 1, 2010. WMP development is supported by 319 Grant funds ($32,479) and local matching funds ($23,020). Development of the WMP will guide and direct future 319 Grants to high priority selenium reduction areas in the Gunnison Basin and provide a source of funding for a number of activities in the Selenium Management Program.

G. Regulatory Support: Reclamation will consider selenium loading as a factor in its NEPA/ESA review of any proposed new irrigated lands associated with Reclamation projects in the basin. The Bureau of Land Management will be encouraged to fully consider possible ramifications of any land transfers or exchanges on selenium loading and implement restrictions where any increases are possible.

H. Public Information and Education: Reclamation will provide staff support for implementation of a public information and education element as part of the Selenium Management Program.

I. Adaptive Management: An adaptive-management component will be described in the final Selenium Management Program. It will include annual review of progress and reporting to the Service, annual updating of the Long Range Plan, a periodic review of the effectiveness of ongoing selenium reduction measures, water quality monitoring data, and status of endangered fish, followed by adjustments in the Selenium Management Program as needed. To ensure transparency, the process will be formalized in terms of timing of reviews, procedures, and development of reports for publication that include recommendations for modification of the Selenium Management Program as needed.

J. Institutional Support: Development and implementation of the Selenium Management Program and its associated Long Range Plan is a significant responsibility. There will be a need for oversight of the implementation of the Selenium Management Program and the Long Range Plan, annual update of the Long Range Plan, coordination of activities, reporting of progress on Selenium Management Program implementation, and coordination of the adaptive management process. It is recommended that the Task Force assume a significant share of responsibilities, with substantial institutional and financial assistance from Reclamation, Colorado River Water Conservation District, State of Colorado, the Service, and other parties involved in the Task Force.

Reclamation will have primary responsibility for development of the Selenium Management Program and the Long Range Plan. Coordinating implementation of the Selenium Management Program and Long Range Plan is recommended to be the responsibility of the Task Force. The Task Force would have ongoing responsibilities for tracking implementation of the Long Range Plan, agreements and attainment of funding. The Task Force – and its staff – would not be responsible for implementation of the Selenium Management Program, but would have responsibilities for oversight, monitoring, and reporting. In addition, the Task Force would be responsible for facilitating modifications to the Selenium Management Program and the Long Range Plan, based on recommendations developed through an adaptive management process.

Reclamation will be responsible for implementation of the piping of laterals, subject to appropriations. Reclamation will also be responsible for implementation of more costly canal lining and pipe replacement of large laterals should the Selenium Management Program determine these methods effective. Reclamation will implement effective selenium reduction subject to appropriations and supplemental funding provided by state and grant programs.

2.7 Authority

The PBA is prepared in accordance with Section 7 of the ESA of 1973, as amended (16 U.S.C. 1531et seq.).

The following paragraphs describe the Department of the Interior's basis and authority for implementing the new operations at the Aspinall Unit. The authority to implement the operations is found in Section 1 of CRSPA. This section states:

> In order to initiate the comprehensive development of the water resources of the Upper Colorado River Basin, for the purposes, among others, of regulating the flow of the Colorado River, storing water for beneficial consumptive use, making it possible for states of the Upper Basin to utilize, consistently with the provisions of the Colorado River Compact, the apportionments made to and among them in the Colorado River Compact and the Upper Colorado River Basin Compact, respectively, providing for the reclamation of arid and semi-arid land, for the control of floods, and for the generation of hydroelectric power, as an incident of the foregoing purposes, the Secretary of the Interior is hereby authorized (1) to construct, operate, and maintain the following initial units of the Colorado River storage project, consisting of dams, reservoirs, powerplants, transmission facilities and appurtenant works…

The Colorado River Compact of 1922 established an Upper Basin and a Lower Basin within the Colorado River system and apportioned the exclusive beneficial consumptive use of Colorado River water in perpetuity to the Upper and Lower Basins. The Upper Colorado River Basin Compact of 1948 apportioned the Upper Basin's share of the Colorado River system among the states of Colorado, Utah, Arizona,

IN REPLY REFER TO

United States Department of the Interior

BUREAU OF RECLAMATION
Upper Colorado Region
Western Colorado Area Office
2764 Compass Drive, Suite 106
Grand Junction, CO 81506-8785

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ADM-13.00

AUG 26 2010

Ms. Jennifer Gimbel
Director
Colorado Water Conservation Board
1313 Sherman Street, Room 721
Denver CO 80203
Subject: Memorandum of Understanding (MOU): Selenium Management Program

Dear Ms. Gimbel:

Attached for your signature is the MOU that essentially encourages agencies and organizations to participate in developing a selenium management program for the Gunnison River Basin. The MOU reflects changes made to address suggestions from various parties since the first draft was reviewed in January.

As background, the December, 2009 "Gunnison River Basin Programmatic Biological Opinion" supports Endangered Species Act compliance for existing public and private water depletions in the basin as well as limited future new depletions. One condition in the opinion is development of the selenium management program to reduce selenium concentrations in the river to assist in recovery of endangered fish. The opinion also calls for the subject MOU to be completed in August, 2010.

We request that you sign the MOU on the signature page and return the signed copy to:

Carol DeAngelis
Area Manager
Bureau of Reclamation
2764 Compass Drive
Suite 106
Grand Junction CO 81506

Work continues on developing the program through the Selenium Management Group and the Selenium Task Force and your efforts to develop a successful program are much appreciated.

We will provide you a copy of the MOU with all signatures when they are received. If you have any questions on this MOU, please contact Steve McCall at 970-248-0638 or smccall@usbr.gov.

Sincerely,

Carol DeAngelis
Area Manager

Enclosure

cc: Mr. Steve Miller
Colorado Water Conservation Board
1313 Sherman Street, Room 721
Denver CO 80203

Memorandum of Understanding
Concerning Development of a Selenium Management Program

The United States of America, Bureau of Reclamation ("Reclamation"); Fish and Wildlife Service ("FWS"); Bureau of Land Management ("BLM"); Natural Resource Conservation Service ("NRCS"); the Colorado Water Conservation Board; Colorado River Water Conservation District ("Colorado River District"); Upper Gunnison River Water Conservancy District; and the Uncompahgre Valley Water Users Association ("UVWUA"), (collectively referred to herein as the "Parties"), hereby enter this Memorandum of Understanding (MOU) regarding the development of a Selenium Management Program

RECITALS

A. The Parties desire to facilitate the development of a cooperative Selenium Management Program ("SMP") in a manner consistent with the conservation measure contemplated by the 2009 Gunnison River Basin Programmatic Biological Opinion ("PBO").

B. The Fish and Wildlife Service (Service) describes the selenium issue in the PBO as follows: *"The ongoing operation of irrigation projects and other water uses in the basin will continue to contribute selenium to the Gunnison and Colorado Rivers at levels that adversely affect the endangered fishes and their designated critical habitat and are inhibiting the survival and recovery of the endangered fishes. Reclamation will develop and implement a Selenium Management Program (SMP), in cooperation with the State of Colorado and Gunnison River basin water users to reduce adverse effects of selenium on endangered fish species in the Gunnison and Colorado rivers (see Effects of the Proposed Action section). The SMP will incorporate and accelerate ongoing selenium reduction efforts in the Uncompahgre Valley and other areas of the Gunnison Basin and will add several new elements. The overall long-term goal of the program is to assist in species recovery per the Recovery Goals. The SMP will use the best available scientific information for all elements of the program. Elements of the SMP will include:*

- *Accelerated implementation of salinity/selenium control projects for irrigated agriculture*
- *Reduction of other non-point source selenium loading*
- *Technology development*
- *Water quality monitoring*
- *Monitoring of endangered fish populations*
- *Coordination with lower Gunnison River Basin watershed management plan*
- *Regulatory support*
- *Public information and education*
- *Adaptive management*
- *Institutional support"*

C. Under Section 2 (c) (2) of the Endangered Species Act (ESA), "the policy of Congress is that Federal agencies shall cooperate with State and local agencies to resolve water resource issues in concert with conservation of endangered species." The ESA does not infer any additional statutory authority on Federal agencies, but rather directs them to exercise existing authorities to conserve listed species. In addition, the National Environmental Policy Act of 1969 encourages cooperation of different levels of government in protecting and improving the environment.

D. The Parties anticipate that many of the projects that control selenium loading associated with irrigation will be accomplished in cooperation with the Colorado River Basin Salinity Control Program (CRBSCP), the NRCS Environmental Quality Incentives Program (EQIP), and other water quality programs.

Now therefore, in recognition of the following mutual consideration, the Parties hereby agree as follows:

1. All provisions of this MOU are subject to the applicable authority of each Party, the annual appropriation of funds, and each Party's respective direction to its staff as that may change from time to time.

2. The Parties agree to cooperate in the development of a Selenium Management Program Formulation Plan ("Formulation Plan") which will further define the cooperative SMP. A workgroup appointed by the Parties will develop the Formulation Plan in order to document SMP alternative projects and define potential funding and other resources necessary to implement the SMP. Funding alternatives may include commitments by the Parties. The Formulation Plan will:

   a. Assist the Parties in the identification of specific cost effective selenium reduction measures and high priority implementation locations.

   b. Assist the Parties in the development of implementation schedules, benchmarks, cooperating entities, monitoring needs, including coordination with Recovery Program activities.

3. In furtherance of the development of the SMP and Formulation Plan, the Parties further agree:

   a. To actively participate in public outreach activities in their area of expertise or authority (including, but not limited to, the explanation of related federal and private actions covered by the PBO, the benefits of selenium control, potential solutions to selenium loading, and related information).

   b. Provide personnel and contribute funding on a voluntary basis toward the development of the Formulation Plan.

c. Provide timely input, data, and review of information developed for the Formulation Plan.

d. Participate in the Work Group to cooperatively develop and evaluate remediation options.

e. Provide technical assistance as needed to develop and review alternatives and assist in selecting the Formulation Plan.

f. Promote SMP objectives and Best Management Practices for selenium control to the extent possible.

4. The Parties agree to the individual commitments outlined below. It is recognized that additional tasks and resource commitments may develop on a voluntary basis during the development of the Formulation Plan

a. Reclamation will:
- Serve as the lead facilitator in developing the Formulation Plan, coordinate activities of the Work Group and subcommittees, and provide periodic updates to the Service and interested parties.
- Provide technical assistance as needed to develop and review alternatives and assist in selection of preferred alternatives for the Formulation Plan.
- Request adequate annual federal funding for the SMP (subject to and potentially limited by appropriations and authorities).
- Cooperate in advanced planning to outline future CRBSCP proposals involving larger scale implementation projects (e.g., lateral piping and canal lining projects and comprehensive planning activities) to optimize selenium load reductions.
- Utilize its Science and Technology Program, to the extent possible, to explore new technologies to reduce selenium loading and to remediate selenium impacted waters.

b. The Colorado Water Conservation Board will:
- Provide potential funding opportunities through appropriate budget appropriations and competitive grant programs.
- Coordinate and promote integrated planning with other state agencies and with the CRBSCP Forum.
- Coordinate with the Gunnison Basin Round Table on potential use of funds to assist local governments and agencies in studies to better define their roles in meeting SMP objectives.

c. The Colorado River District will:
- Continue to cooperate with the USGS, Reclamation, and the Work Group on selenium concentration, flow monitoring, and scientific studies that refine the understanding of fate, transport, trends, and loading of selenium to the Lower Gunnison River.

- Continue to cooperatively assist in funding and managing the Selenium Task Force activities commensurate to, and along with other participants and subject to budget and Board directed priorities.
- Provide potential funding opportunities to entities that contribute to selenium control through budget appropriations and competitive grant programs as available and appropriate.

d. The UVWUA will:
- Participate in the Work Group to evaluate remediation options that involve its facilities and actions.
- Pursue appropriate grant funding proposals for water delivery system improvements that reduce selenium loading.
- Continue to implement ongoing funded projects under the CRBSCP.
- Continue to pursue CRBSCP funding opportunities for additional salinity control through water delivery system improvements.

e. The FWS will:
- Participate in the Work Group to provide expertise on the biological effects of selenium on aquatic organisms.
- Assist in monitoring fish populations and selenium levels in fish tissue and organs in the lower Gunnison River in cooperation with the Upper Colorado River Recovery Program and provide appropriate biological data as called for in the PBO.

f. The BLM will:
- Evaluate options to conform to a goal of "no net new selenium loading" from land exchanges, sales, and other actions involving public lands.

g. The NRCS will:
- Provide incentives to private landowners to implement conservation practices to address water quality concerns, within legislated authorities, funding, and workload priorities.
- Assist with appropriate technical and financial support and technical standards for on-farm conservation practice implementation for NRCS assisted projects that may reduce selenium.
- Provide support and assistance to the Work Group in planning the SMP within the context of the potential for on-farm irrigation improvement options and opportunities.

h. The Upper Gunnison River Water Conservancy District will:
- Provide timely input, data, and review of information developed as appropriate and help support the Selenium Work Group.

5. Following development of the Formulation Plan, the Parties may participate as appropriate in the implementation of the SMP according to the Formulation Plan within legislated authorities, annual appropriation and funding allocations. The Parties understand that

additional agreements may be needed to define roles and responsibilities related to SMP implementation.

6. The MOU shall remain in effect until completion of the Formulation Plan, which is anticipated to be in December, 2011.

7. Additional Provisions:

a. Officials Not to Benefit. No Member of or Delegate to Congress or Resident Commissioner or official of the United States or the State of Colorado shall benefit from this MOU other than as a water user or landowner in the manner as other water users or landowners.

b. No Improper Payments. The parties hereto warrant that they have not employed any person to solicit this MOU upon any contract for a commission, percentage, brokerage, or contingent fee, except those disclosed. Breach of this warranty shall give any of the parties hereto the right to annul the MOU. This warranty shall not apply to commissions payable by contractors upon contracts or sales secured or made through bona fide established commercial or selling agencies maintained by the parties hereto for the purpose of securing this MOU.

c. Appropriations. Nothing contained in this MOU shall be construed as binding the United States to expend in any one fiscal year any sum in excess of appropriations made by Congress for the purposes of this MOU for that fiscal year or as involving the United States in any contract or other obligation for the further expenditure of money in excess of such appropriations.

d. Termination. Any party may withdraw from this agreement with written notice to the other parties at least 30 days in advance of the effective date of termination.

e. Modification. Other entities may become party to this agreement at anytime during development of the SMP without the necessity of existing Parties re-executing the entire agreement.

Carol DeAngelis, Area Manager
Bureau of Reclamation

8/25/10
Date

Jennifer Gimbel, Director
Colorado Water Conservation Board

Date