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December 28, 2006

Representative Debby Barrett, Co-Chair
Representative Christopher Harris, Co-Chair
Environmental Quality Council
Legislative Environmental Policy Office
P.O. Box 201704
Helena, MT 59620-1704

Re: HJ 3 Report

Dear Representatives Barrett and Harris:

According to House Joint Resolution No. 3 passed by the 2005 Montana Legislature, the Montana Department of Natural Resources and Conservation was urged to "enter into negotiations with the United State Bureau of Reclamation to determine the availability and cost of water stored behind Hungry Horse Dam". The Department has initiated the process with the Bureau of Reclamation. The resolution further mandated that the department report to EQC and the Clark Fork Task Force "the results of these negotiations." I am enclosing a report in response to this requirement. Please find that report enclosed. Please contact me if you want further information or assistance.

Sincerely,

Mary Sexton
Director, MTDNRC

REPORT TO THE ENVIRONMENTAL QUALITY COUNCIL AND THE CLARK FORK RIVER BASIN TASK FORCE ON THE AVAILABILITY AND COST OF WATER FROM HUNGRY HORSE RESERVOIR

DEPARTMENT OF NATURAL RESOURCES AND CONSERVATION

DECEMBER 2006

House Joint Resolution No. 3, passed by the 2005 Montana Legislature, urged the Department of Natural Resources and Conservation (DNRC) "to enter into negotiations with the United States Bureau of Reclamation to determine the availability and cost of water stored behind Hungry Horse Dam for which the State of Montana might contract to support existing water use and future water development in the Clark Fork River basin" and to "report to the Environmental Quality Council and the Clark Fork River basin task force the results of these negotiations prior to January 1, 2007." A copy of House Joint Resolution No. 3 is attached. Initiation of negotiations between DNRC and the United States Bureau of Reclamation (Reclamation) was among the recommendations included in *Clark Fork Basin Watershed Management Plan* prepared by the Clark Fork Task Force.[1]

This report provides a summary of the results of those negotiations to date, an overview of the issues prompting those negotiations, a presentation of the process required for contracting for water from Hungry Horse Reservoir, and information regarding the potential availability and cost of water from Hungry Horse Reservoir.

NEGOTIATIONS

On September 25, 2006, DNRC Director Mary Sexton along with Bruce Measure, Montana Northwest Power and Conservation Council member, and DNRC staff met with Pacific Northwest Regional Director Bill McDonald and Reclamation staff to discuss the process of obtaining water from Hungry Horse Reservoir for use in Montana.

A letter dated October 17, 2006 from Mary Sexton to Bill McDonald followed the meeting and requested that Reclamation confirm information conveyed at the meeting and provide estimates of the "expected costs and schedules for each of the various processes required to seek Hungry Horse water." A copy of the letter is attached. Reclamation was asked to base its estimates on potential annual contracted volumes ranging between 50,000 and 250,000 acre-feet. Additionally, Reclamation was asked to provide estimates of the likely costs of water for municipal and industrial (M&I) and for irrigation uses. Reclamation's response dated December 6, 2006 is attached.

[1] Clark Fork Task Force. 2004. "Clark Fork Basin Watershed Management Plan." The Plan is the source for much of the information regarding the Clark Fork basin presented in this report. A copy of that report can be obtained through DNRC.

The information provided by Reclamation at the meeting, through the letter dated December 6, 2006, and through discussions among staff are the primary sources for the information pertaining to contracting for Hungry Horse water contained in this report.

BACKGROUND

Geographic and Hydrologic Setting

The Clark Fork basin drains most of Montana's watersheds west of the Continental Divide and, along with the Kootenai, provides Montana's contribution to the Columbia basin. Originating near Butte, the Clark Fork generally flows northwest and includes tributaries such as Flint Creek, Rock Creek, the Little Blackfoot and Blackfoot Rivers, Bitterroot River, St. Regis River, Flathead River, Thompson River, Trout Creek, and Bull River. Tributaries of the Blackfoot include the Clearwater and the North Fork Blackfoot Rivers, Landers Fork, and Nevada Creek. The Bitterroot River is formed by the West and East Forks of the Bitterroot and is fed by several smaller tributaries. The Flathead River arises upstream of Columbia Falls at the confluence of its North, Middle, and South Forks and includes the Swan, Jocko, Stillwater, and Whitefish Rivers among its tributaries. The drainage area for the basin encompasses over 50,000 square miles.

The Clark Fork basin contains many lakes, ponds, and reservoirs featuring most prominently Hungry Horse Reservoir, Flathead Lake, and Noxon Rapids but including as well Seely and Salmon Lakes in the Blackfoot, Painted Rocks Lake and Lake Como in the Bitterroot, Whitefish and Swan Lakes in the Flathead, and Georgetown Lake and East Fork Reservoir in Flint Creek. In all, tweny-one reservoirs with capacities greater than 5,000 acre-feet are in the basin.

Some of the wettest areas of Montana are found in the Clark Fork basin with average annual precipitation ranging from 28.11 inches for the upper and middle Clark Fork watersheds to 37.55 inches for the Flathead watershed. Annual flows downstream of Noxon Rapids have averaged 20,504 cfs or 14.8 million acre-feet over a forty-year period of record with a low of 11,380 cfs occurring in 1971 and a high of 31,979 cfs in 1997.

The Clark Fork basin includes all or parts of Deer Lodge, Flathead, Granite, Lake, Lewis and Clark, Mineral, Missoula, Powell, Ravalli, Sanders, and Silver Bow Counties. Cities in the basin include: Anaconda, Butte, Columbia Falls, Corvallis, Deer Lodge, Florence, Hamilton, Kalispell, Lincoln, Lolo, Missoula, Philipsburg, Polson, Ronan, Stevensville, Superior, Thompson Falls, and Whitefish.

The Flathead Indian Reservation is located in the Flathead basin. The Clark Fork basin also includes a considerable amount of federally owned land.

About one-third of Montana's people live in the Clark Fork basin. Between 1990 and 2000, the population in the basin increased 19 percent to 316,188. Continuation of this trend would result in a basin population of 375,826 by 2010 and 446,712 by 2020. In recent decades, most of the growth has occurred in Flathead, Lake, Missoula, and Ravalli

Counties. These four counties and Silver Bow County contain approximately ninety percent of the basin's residents.

Water Use

In spite of the apparent abundance of water in the basin, prospects for growth in the basin are likely to be constrained by the limited, legal availability of water. Water has been appropriated in the basin for many, varied uses, most notably for hydropower, agriculture, domestic, municipal, and instream uses.

The five major hydropower facilities in the basin and their generation capacities are: Hungry Horse; Kerr; Thompson Falls; Noxon Rapids; and Cabinet Gorge with 428; 180; 40; 554; and 230 Megawatts of capacity, respectively. The plants' turbine capacities are, respectively: 8,900; 14,540; 23,420; 50,000; and 36,000 cfs. Most prominent among these plants in terms of its potential impact upon water use in the basin is Noxon Rapids near the Idaho border. The owner of the project, Avista Corporation, holds water rights for the project totaling over 50,000 cfs with priority dates of 1951, 1959, and 1974. These rights are located at the bottom of the basin in Montana, are senior to 30 percent of basin water rights, and are exceeded by flows in the Clark Fork River only 6 to 8 percent of the time over the period of record. In short, the limited, legal availability of water posed by the Noxon Rapids water rights threatens much of the recent development in the basin and constrains future development in this rapidly growing part of the state.

Irrigated lands in the basin total 471,000 acres with nearly 40 percent occurring in the Flathead River watershed. Of the basin's 92,800 water rights, irrigation accounts for 28,182 with more than half of those for groundwater. Nearly all of the 11,067 rights for lawn and garden irrigation are for groundwater. Of the traditional irrigation rights, 9,100 are senior to Noxon Rapids and 6,850 are dated prior to 1910.

Of the 42,865 water rights for municipal uses in the basin, 38,500 rely on groundwater as their primary source of water. Of these, 31,800 are for domestic use served by groundwater with priority dates later than 1970. Industrial uses with priority dates later than 1970 total 157.

Various methods are available to appropriate water for instream flows in the basin. Water right records specifying a variety of fish and wildlife uses total 1,647 and five stream reaches have Murphy Rights with 1970 priority dates. Twelve leases for instream flows have been identified in the basin.

Generally and with limited exceptions, a basin closure precludes the issuance of new permits in a basin. Fourteen areas in the basin are under basin closures of various specification.

Basin water use may also be constrained through the resolution of federal and tribal water rights. Current and future basin water use may be affected by a tribal water right for the Confederated Salish and Kootenai Tribes that is yet to be quantified.

The Columbia Basin[2]

The Clark Fork River leaves Montana just upstream from the Cabinet Gorge Dam in Idaho and eventually flows into the Columbia River. The Columbia River is 1,214 miles long with average annual runoff of 198 million acre-feet. Runoff is snow-charged with highest flows occurring between April and September and lowest flows occurring between December and February.

The Columbia Basin is shared mainly by the states of Montana, Idaho, Washington, Oregon, numerous Native American tribes, and the Canadian province of British Columbia. These entities seek to meet the many and diverse demands of their growing populations, in part, through various, often competing uses of water resources in the basin.

Of the region's 50,700 Megawatts (MW) of generating capacity, 20,200 MW is produced by the Federal Columbia River Power System. This system is comprised of 31 dams and includes Hungry Horse and Libby Dams in Montana. The greatest generating capacity in the system is at Grand Coulee and Chief Joseph Dams with 6,494 MW and 2,457 MW of capacity, respectively. Power from the Federal Columbia River Power System is marketed by the Bonneville Power Administration (BPA).

Idaho, Oregon, and Washington irrigate 3.0 million, 1.9 million, and 1.8 million acres, respectively. The Columbia also supports thirty-six deep and shallow water ports with a forty-feet deep channel between Portland and the Pacific Ocean. For 2003, 37 percent of U.S. wheat exports were transported on the Columbia and the value of waterborne cargo on the river totaled $15 billion.

The listing of anadromous fish stocks under the Endangered Species Act has significantly influenced Columbia River system operations. A Biological Opinion issued by the National Oceanic & Atmospheric Administration Fisheries Service (NOAA Fisheries), formerly the National Marine Fisheries Service (NMFS), may constrain consumptive uses and alter release patterns for the river system.

Water management in the basin involves numerous entities at the federal, state, local, and tribal levels. The Army Corps of Engineers (Corps), Reclamation, NOAA Fisheries, the U.S. Fish and Wildlife Service, the Federal Energy Regulatory Commission (FERC), and BPA share various federal management responsibilities in the basin. State, local, and tribal water management and fish and wildlife agencies are also charged with various duties within their respective jurisdictions. Montana, Idaho, Oregon, and Washington participate in basin management through the Northwest Power and Conservation Council.

[2] The source for much of this section is: Northwest Power and Conservation Council. 2005. "Pocket Guide: Fast Facts About the Columbia River Basin." Council Document 2004-16; 2005 Edition. www.nwcouncil.org/library/2004/2004-16/guide.pdf.

Clark Fork Task Force

In response to the challenges facing current and future water use in the Clark Fork basin, the 2001 Montana Legislature created the Clark Fork Task Force through House Bill 397 for the purpose of preparing a basin water management plan. The Task Force was charged with producing a plan that "(1) identifies options to protect the security of water rights; (2) provides for the orderly development of water; and (3) provides for the conservation of water in the future." The Task Force was convened on July 23, 2002 with the assistance of the Montana Consensus Council. Ultimately, the Task Force produced the *Clark Fork Basin Watershed Management Plan* which included among its recommendations initiating discussions with Reclamation regarding the cost and availability of water from Hungry Horse Reservoir. An update on the status of those discussions is the subject of this report.

HUNGRY HORSE

Hungry Horse Reservoir is located on the South Fork of the Flathead River upstream of Columbia Falls and Flathead Lake and its waters flow through the Flathead to the Clark Fork and, eventually, to the Columbia River. The project was authorized by Congress in 1944 for the purposes of irrigation, flood control, navigation, hydropower production, and "for other beneficial uses primarily in the State of Montana but also for downstream uses" in the Columbia River basin. While fish and wildlife is not an authorized purpose, salmon recovery efforts pursuant to the Endangered Species Act may constrain other project uses.

The project was constructed between 1945 and 1953 at a cost of $23 million. The reservoir is capable of storing 3.5 million acre-feet of water available for future sales with a water right dated 1947.

Operations of Hungry Horse by Reclamation and the Corps are determined by the project's Congressionally authorized purposes and by priorities of the Federal Columbia River Power System. Drawdown is determined by snowpack in the South Fork drainage in the Flathead National Forest with the aim of diminishing flooding at Columbia Falls. Flood control for the project is managed by the Corps. Hydropower generating capacity is 428 MW and Hungry Horse is used for peaking production. The project is managed to avoid spilling because spilling is harmful to the spillway and causes gas problems for fish. Hungry Horse operations may be affected by demands lower in the Columbia basin for salmon, hydropower, and consumptive uses.

Due to its location in the Clark Fork basin, its storage volume, Congressionally authorized uses, and the priority date of its water right, Hungry Horse Reservoir may provide solutions to the water management challenges facing the Clark Fork basin. The potential for obtaining Hungry Horse water, however, may be limited by its role in the Columbia River system and the many issues facing the Columbia River basin.

CONTRACTING FOR HUNGRY HORSE WATER

While no contracts for water from Hungry Horse are in effect, contracting for water from Reclamation projects is rather common. Long-term allocations of less than 1,000 acre-feet and five-year allocations of less than 10,000 acre-feet are subject to the discretion of the Regional Director. Long-term contracts for greater volumes require a more extensive process and according to Reclamation, contracting for water from Hungry Horse is "doable" and "routine" but "the devil is in the details."

One important factor in contracting for water is the treatment of repayment obligations for various project uses with respect to capital costs for the project. Project uses are deemed to be reimbursable or non-reimbursable and interest-bearing or non-interest-bearing. For Hungry Horse, hydropower is a reimbursable use with an interest-bearing repayment obligation for 70 percent of project costs. Flood control is non-reimbursable and has been allocated 30 percent of project costs that are borne by the federal government. M&I use is reimbursable and interest-bearing but currently has no allocation for project costs. Irrigation is reimbursable with no interest obligation and currently has no cost allocation. Costs greater than irrigators' payment capacity are to be paid by the hydropower system. Fish and wildlife and recreation are non-reimbursable and have no allocation of project costs. Project costs associated exclusively with a particular use are allocated to that particular use. The 1958 Water Supply Act allows for the deferral of capital cost repayment and interest payments until development occurs.

A cost reallocation analysis is required to assign project costs to authorized, new purposes under the new operation criteria. Pursuant to the 1977 McGovern Amendment, Congressional approval is required either through an affirmative act or through no opposition to allocate costs to a new purpose. Reclamation would anticipate performing the analysis with existing resources and no Congressional approval would be needed to proceed with contracting. The analysis is expected to conform to the National Economic Development (NED) benefit and cost framework as delineated in the U.S. Water Resources Council's "Economic and Environmental Principles and Guidelines for Water and Related Land Resources Implementation Studies."[3] The analysis is estimated to take about two years and cost $260,000.

Reclamation expects that a water needs assessment would be required, taking an estimated 40 hours and costing $2,600. For irrigation water, land classification and ability-to-pay studies would be required. The land classification study is estimated to take four to eight months with a cost ranging from $9,500 to $58,000. The ability-to-pay study is estimated to take 240 hours at a cost of $25,000.

Subsequent to the completion of the cost reallocation analysis, a Basis of Negotiation (BON) Development Process would be initiated. This process involves data collection,

[3] U.S. Water Resources Council (1983). Economic and Environmental Principles and Guidelines for Water and Related Land Resources Implementation Studies. Washington, D.C.: U.S. Government Printing Office. This methodology provides the basis for National Environmental Policy Act (NEPA) studies and other analyses for federal projects. The "P&G's" lays out the steps for conducting such studies and identifies particular economic methods for estimating NED benefits and costs including those for various Columbia River system uses.

notification, technical discussions, and participation by the public and leads to a BON Approval Process that includes approval by several levels of Reclamation officials. The BON Approval Process is followed by the Contract Execution Process. Reclamation estimated that preparation of the contract approval request and the draft contract, contract negotiations, and public participation would take approximately 90 hours and cost $5,850.

Concurrent with the BON processes are federal compliance processes mandated by the Endangered Species Act, the Fish and Wildlife Coordination Act, NEPA, and the National Historic Preservation Act. These processes would involve public and tribal participation and consultation with NOAA Fisheries and the U.S. Fish and Wildlife Service. Reclamation anticipates that compliance with NEPA would include an Environmental Impact Statement. Charts detailing these processes are attached. Reclamation estimates that these compliance activities would take between 2 and 4 years and cost between 1 and 2 million dollars.

The cost of a request for a contract is typically borne by the requester and paid at the time of the request. The request for a contract for Hungry Horse water was estimated by Reclamation to take between 2 to 5 years and cost between 2 and 3 million dollars. It is expected that opposition might arise from environmental interests and downstream states.

POTENTIAL COST OF HUNGRY HORSE WATER

One outcome of the meeting with Reclamation was that an informal assessment of the potential cost of Hungry Horse water would be appropriate to determine whether obtaining project water might be worth the cost of proceeding with the processes required to execute a contract. The cost of Hungry Horse water is likely to be comprised of the cost of obtaining a contract, the project repayment obligation, and charges for annual operation and maintenance (O&M) for the project.

Cost of Obtaining a Contract

The cost of obtaining a contract would be a one-time cost that would make contracting for Hungry Horse water possible for decades to come. Amortized over 40 years at an annual interest rate of 5 percent, the annual cost of the estimated $3 million cost of obtaining a M&I contract would be $174,834. On a per acre-foot basis, this annual cost would be $3.50, $1.75, and $.87, respectively, for allocations of 50,000, 100,000, and 200,000 acre-feet.

Cost of Repayment Obligation

The annual repayment obligation for a particular project use would be a function of the share of project capital costs allocated to the use, the repayment period, and the interest rate assigned to the particular use. Estimating the repayment obligation for a purpose without a current cost allocation is problematic because the estimate relies upon the results of a cost allocation study which is yet to be performed. Nevertheless, potential repayment obligation amounts may be estimated under varying assumptions. For example, assuming a cost allocation to M&I water of 10 percent, indexed construction

costs of $120 million with 60 percent of project costs repaid to date, a 40-year repayment period, and an interest rate of 7.625 percent, the annual M&I repayment obligation based on an allocation of 50,000 acre-feet would be $19 per acre-foot. While this estimate is based on information provided by Reclamation, it must be considered to be preliminary. Further consultation with Reclamation staff will be necessary to produce estimates that are likely to provide a sound basis on which to determine whether to pursue a contract for Hungry Horse water.

Cost of Annual Operation and Maintenance
Reclamation staff estimated that O&M costs for M&I for Reclamation projects in the region tend to be less than $5 per acre-foot.

For the example of an allocation of 50,000 acre-feet, the total of these annual costs would be $28 per acre-foot. Again, this estimate is based on assumptions that would need to be refined through additional consultation with Reclamation staff. Reclamation reported at the meeting of September 25, 2006 that other Reclamation projects in the region pay between $28 and $70 per acre-foot for M&I water. Charges for irrigation water would be expected to be substantially lower given that irrigators' repayment obligation bears no interest and charges to irrigators are limited to irrigators' ability to pay.

SUMMARY

Several factors prompted the 2005 Legislature to pass House Joint Resolution No. 3 which urged DNRC to determine with Reclamation the cost and availability of water stored behind Hungry Horse Dam. Those factors include:

- The basin contains one-third of the state's population, is growing rapidly, and is likely to continue to grow;
- A large, senior hydropower water right exists near the state line;
- Future basin water use may be affected by a tribal water right that is yet to be quantified;
- Acquisition of water from Hungry Horse may help in addressing current and future water management challenges in the Clark Fork; and
- Access to Hungry Horse water may be constrained in the future by its role in the Columbia River system and, potentially, by the many, complicated issues confronting the Columbia basin.

To date, DNRC has met with the regional leadership of Reclamation, exchanged correspondence, held discussions with Reclamation staff, and gathered information regarding the pursuit of obtaining Hungry Horse water. That effort has revealed that 3.5 million acre-feet of water is available and that contracting for Hungry Horse water would involve the following steps:

- A new cost reallocation study requiring Congressional approval would need to be completed to determine the repayment obligation of new project purposes;

- For irrigation water, land classification and ability-to-pay studies would be required;
- Compliance with federal environmental mandates would need to be completed;
- Negotiation with and approval of Reclamation with respect to contract terms would be required.

Reclamation estimates that completing this process would take between 2 to 5 years and cost between 2 and 3 million dollars. The annual cost of project water is estimated to be between $28 and $70 per acre-foot depending on the volume of water under contract.

Difficulties in securing a contract for Hungry Horse water could potentially arise through obtaining Congressional approval for the cost reallocation study and through opposition based on concern for endangered anadromous fish and downstream consumptive uses.