GILA CONSERVATION COALITION
Saving New Mexico's Last Wild River

June 23, 2014

Jim Dunlap, Chairman
Interstate Stream Commission
PO Box 25102
Santa Fe, NM 87504-5102

RE: RJH Technical Review of BHI Final PER for Gila River Diversion, Conveyance and Storage Alternatives

Dear Mr. Dunlap:

As you know, the Interstate Stream Commission contracted with RJH Consultants Inc. (RJH) to provide an independent technical review of the Bohannan Huston *Preliminary Engineering Report (PER) Gila River Diversion, Conveyance and Storage Alternatives*. Although the Gila Diversion work plan approved by Commissioners on June 12 claimed that an appropriate level of investigation, data collection and analyses was conducted by BHI, the professional engineers found that "several project components were not adequately addressed in the PER and it is currently unknown if these components represent significant technical challenges or potential fatal flaws….for storage reservoirs and dams, project water availability, and Gila River sediment."

The feedback provided by RJH corroborates the technical input provided to you by former ISC director Norm Gaume. Ignoring the recommendations of the professional engineers at RJH Consultants is irresponsible and unprofessional and could result in millions of dollars in wasted Arizona Water Settlements Act (AWSA) funding on a Gila River diversion project that is fatally flawed.

The Gila Conservation Coalition is very concerned that the ISC is moving forward with a BHI Phase II work plan for $700,000 that does not fully address RJH's recommendations. Moreover, ISC commissioners approved on June 12 a FY2015 work plan that makes serious errors of omission in characterizing the follow-up work recommended by RJH to determine if the Gila River diversion project is fatally flawed. The work plan states only that "the RJH evaluation recommended additional geotechnical studies at diversion and storage sites," and did not mention that major project elements were not included or underestimated. Over $1 million was approved by the ISC for "technical evaluation and further engineering of diversion and storage proposals and optimizations" for the first half of FY2015. It is unclear what the ISC will do with this funding and if answers to key questions raised by RJH will be addressed.

In comparing RJH's recommendations with the BHI Phase II work plan, it is evident that ISC staff is not proceeding with additional work as RJH recommends in order to determine if the Gila River diversion proposal is fatally flawed. RJH recommends five major tasks in priority order that should be performed to

address their primary concerns with the PER. They also recommend "after each task is complete the technical and economic feasibility should be evaluated before moving on to other tasks." This methodology does not appear to be incorporated into either the Phase II BHI work plan or the FY2015 work plan.

The following summary outlines the major findings and areas of additional work recommended by RJH.

Dam and Reservoir Site Geology Not Evaluated

RJH identifies a number of potential fatal project flaws related to dam site geology from either a technical or financial standpoint that were not adequately addressed in the BHI PER, including the following:

- Highly permeable soils in the reservoir basins could result in significant seepage losses that could exceed evaporative losses;
- Permeability of bedrock and abutment soils could lead to high cost and significant dam safety risk;
- Lack of suitable onsite material for low permeable dam core represents a significant technical challenge and project cost. No quantity of material necessary to construct the dams was developed. It is therefore unknown if there is enough material at the borrow site 15 miles away to construct the dams;
- "The expected seepage losses, when combined with the evaporative losses could easily equal or exceed the planned minimum annual diversion yield of 10,000 acre-feet, which would result in no available usable water from the project."

RJH recommends that "typical concept plans and sections for the Alternate 2B dams be developed including developing appropriate quantities required to construct zoned earthfill dams, which were not included in the conceptual-level cost estimate." Because this could be such a significant cost, RJH identifies this task as a top priority as it could make the project infeasible.

The Phase II BHI work plan and FY2015 work plan do not include tasks to address this key element.

Project Water Availability and Yield Not Assessed

RJH states that the annual diversion yield is needed in order to correctly size reservoirs and conveyance facilities and determine the project safe yield. In addition the PER did not include a quantification of projected annual net yield that is, according to RJH, "the foundation for justifying the project. When estimating the net project yield, Gila River historical flow and diversion records, past and projected future hydrologic cycles of drought and higher than average precipitation should be compared to computed system losses to evaluate long-term project viability." As you know, Norm Gaume also made this recommendation to the Commissioners at the April 30 Tucumcari meeting.

This fundamental task is not included in either the BHI Phase II work plan or in the FY2015 work plan.

Project Cost Estimates for Dams "Substantially Understated"

RJH identified 12 major elements required to safely design and construct zoned embankment dams that were not included or substantially understated. RJH's opinion is that "the total cost for the project may be significantly low. There is considerable uncertainty in many geological and design concepts for the dam and some of the required elements of the dams were not included. In additional some of the unit costs are unrealistically low. When all of these elements are considered, it is our opinion that the cost of the dams could be underestimated by more than 100 percent. Therefore it is our opinion that the overall project costs may be 25 – 50 percent higher than the current estimate."

It is unclear from the BHI Phase II work plan if RJH's recommendations to revise the conceptual level cost estimate for the project will be implemented.

Sediment Control Was Not Addressed

RJH states that "sedimentation could have a significant impact on design, sizing, and feasibility of the diversion, conveyance and storage reservoirs….This potentially important issue does not appear to have been addressed. Depending on the results of this evaluation, this could become a significant project feasibility issue."

It is unclear from review of the BHI Phase II work plan and FY2015 work plan if sedimentation will be adequately addressed.

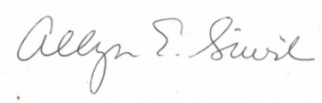
Diversion Structure Design Not Adequate

RJH explains that "in a natural stream channel with ever-changing channel geometry, changing deposited sediment levels, and changes in available head due to variable river state, we question the ability of the proposed diversion system to operate within the very limited project range, and over time, may either begin to divert too little flow or too much flow." They also explain that the coanda screens will not be effective at removing sediment particles less than 0.10 mm in diameter and based on the ISC's own data much of the Gila River sediment was finer than 0.0625 mm.

The BHI Phase II work plan includes further study of coanda screens despite RJH recommendations that this structure will not work. It is unclear if the Phase II work plan will include redesign of the diversion structure to address RJH's concerns regarding changing geomorphology of the river channel.

Given that the Phase II BHI PER will not address all of the potential fatal project flaws identified by RJH Consultants' assessment, the Gila Conservation Coalition believes that the ISC must conduct additional work to determine if the Gila River diversion is fatally flawed. By ignoring its own independent engineering review, the ISC risks millions of dollars in AWSA funding and taxpayer dollars to continue to pursue a project that is potentially technically and financially infeasible.

Sincerely,



Allyson Siwik
Executive Director

Cc: Estevan López, Director
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