

Water Policy Interim Committee
CSKT Compact Technical Working Group
DRAFT Response to questions posed by Representatives Balance and Regier

Introduction

In its April 28, 2014 letter to the Water Policy Interim Committee (WPIC), Representatives Nancy Ballance and Keith Regier requested a review of three areas of the Confederated Salish and Kootenai Tribes water rights compact (Compact): 1) Economic, 2) Environmental, and 3) Legal. In its May 12-13 meeting, the WPIC assigned the questions related to environments to a Technical Working Group (TWG) to be led by the Montana Bureau of Mines and Geology. In addition, the TWG was assigned review of the technical aspects of the compacts with particular effort on the data and related modeling effort used to determine allocation of water described in the CSKT Compact. Upon approval of the work plan, the TWG will present a draft report of findings to WPIC at its August 2014 meeting; meanwhile, the TWG has reviewed the questions posed by Representatives Balance and Regier and presents a draft response herein. The questions and subordinate questions are presented verbatim in bold type; the TWG response follows and any materials used to reference are cited at the end of each response.

The TWG welcomes revision, clarification, or restatement of any questions, particularly those deemed by the TWG as outside its scope or expertise.

1. Water Use Agreement

a. What are the physical and economic impacts of a change of use from irrigation to in-stream flow on shallow ground water levels and water wells?

TWG Response with regard to the physical impacts:

The Compact assumes a reduction of river diversions resulting from increased efficiency of irrigation and elimination of diversions for stock at the start and end of the irrigation season (referred to as shoulder flows); the change in irrigation practices (for example, reduction/elimination of shoulder flows and improvements in water conveyance) does not change the beneficial use of the water. The reductions of the diversion amounts that result from the improvements in conveyance and increases in the efficiency of application will simply not be diverted; these savings simply increase in-stream flow.

There are many published and unpublished reports that describe the various physical impacts of diverting surface water for irrigation for areas throughout western Montana. In general, most of the main stem river valleys in Montana are subject to artificial groundwater recharge from irrigation canals and flood irrigation. For example, groundwater levels in the lower Beaverhead River area below Dillon are 40 feet higher when the East Bench Irrigation Canal is in operation (Metesh, 2012). Similar or smaller responses are documented in the Helena area (Waren and others, 2012), the Bitterroot valley (Smith 2006), and the Stillwater River valley (Kuzara and others, 2012). Groundwater studies within the Compact area documented fluctuations on the order of 20 feet in response to irrigation canals, but as much as 40 feet of fluctuation on a seasonal basis (Patton and others, 2003; Smith and others, 2000). Hydrogeologic conditions of the Mission and Jocko valley-fill aquifers are locally complex, but in general there is a shallow and deep aquifer available for development. Groundwater response to changes in irrigation practices should be evaluated with site-specific information related to aquifer properties and

canal bed properties that affect seepage loss. It is equally true when evaluating potential mitigation/offset such as local aquifer storage/recovery projects. Although not available for review by the TWG, groundwater flow models constructed by CSKT would likely provide at least a preliminary assessment.

TWG Response with regard to the economic impacts:

The TWG cannot directly address the question of economic impacts. The conservation of water through increased efficiency is a common effort of late throughout Montana; however, the cost-benefit analysis is very likely site specific.

References

Kuzara, S., Meredith, E., Gunderson, P., 2012, Aquifers and Streams of the Stillwater–Rosebud Watersheds, Montana Bureau of Mines and Geology: Open-File Report 611, 130 p.

Metesh, J., 2012, Hydrogeology related to exempt wells in Montana: A Report to the 2010–2012 Water Policy Interim Committee of the Montana legislature: Montana Bureau of Mines and Geology Open-File Report 612, 24 p.

Patton, T.W., Smith, L.N., and LaFave, J.I., 2003, Ground-water resources of the Flathead Lake area: Flathead, Lake, Sanders, and Missoula counties, Montana: Montana Bureau of Mines and Geology Information Pamphlet 4, 4 p.

Smith, L.N., LaFave, J.I., Carstarphen, C.A., Mason, D.J., and Richter, M.G., 2000, Ground-water resources of the Flathead Lake Area: Flathead, Lake, and parts of Missoula and Sanders counties. Part B- Maps (open-file versions): Montana Bureau of Mines and Geology Montana Ground-water Assessment Atlas 2B, 11 sheets.

Smith, L.N., 2006, Patterns of water-level fluctuations, Lolo-Bitterroot area, Mineral, Missoula, and Ravalli counties, Montana (open-file version), Montana Bureau of Mines and Geology: Ground-Water Assessment Atlas 4B-10, 1 sheet(s), 1:350,000.

Waren, K., Bobst, A., Swierc, J., Madison, J.D., 2012, Hydrogeologic Investigation of the North Hills Study Area, Lewis and Clark County, Montana, Interpretive Report, Montana Bureau of Mines and Geology: Open-File Report 610, 99 p.

i. How are wetlands (to) be maintained?

TWG Response:

The general relationship between groundwater and wetlands is well understood and wetlands are defined and inventoried under narrow criteria for groundwater, surface water and biotic conditions. In a manner similar to wells, irrigation systems throughout the western part of the state have created artificial wetlands as well as enhanced natural wetlands. The glacial history and geomorphology of the Flathead basin is especially suitable for shallow groundwater-fed depressions that support wetlands. Inventories of natural and artificial wetlands have been conducted using National Wetland Inventory protocols under contract with CSKT.

As with the impact of irrigation changes on shallow groundwater, increased efficiency of irrigation and the resultant reduction of stream diversions have the potential to affect wetlands hydrology. Development of site-specific data and models provide for sound evaluation of alternatives and their effects on local wetlands; as noted, CSKT has developed groundwater-flow models for the Mission and Jocko River areas, but the TWG was not provided details of those models.

b. What is a 'robust river' standard?

i. What are the impacts of a 'robust river' (page compact) standard for fish survival, stream bank stability, erosion, and integrity of irrigation structures? Increasing quadrupling instream flow in compact

TWG Response:

The TWG finds no reference to the term "robust river standard" in the compact documents, nor is the term in general use by hydrologists or fisheries scientists. The concept of a healthy [robust?] river is often described in terms of stream morphology (e.g. Rosgen's Stream Classification) and biota health; these are the apparent objectives of the adaptive management policy in the compact.

The CSKT Compact operates on the application of a 3-part plan:

- 1) determination of current use by irrigation,
- 2) improvement of the irrigation system which will lead to
- 3) reduction of river diversions that meet current demands but provide increased in-stream flow.

The benchmark for the Compact is maintaining current irrigation beneficial use, not in-stream flow requirements based on any standard. The TWG group and attendees discussed several aspects of water-right compacts with other tribes in other states, potential application of fisheries-based in-stream flows in this Compact, as well as the origin for the current interim in-stream flow standard that is in practice. The TWG and attendees also discussed methods for determining in-stream flow levels and the implication of applying methods aimed at "fish survival" versus those that provide for a healthy functioning fishery. Clearly, application of in-stream flow methodologies to all of the stream involved is far outside the present design, but in the interest of assessing the proposed in-stream flow levels, TWG member, Mr. Andrew Brummond, (FWP) prepared a draft analysis of in-stream flow for South Crow, Mission, and Big Knife Creeks within the Compact area on the basis of one recognized hydrology-based in-stream flow methodology (Brummond, 2014). In short, application of comprehensive in-stream flow methodologies would lead to a closer relationship between the Minimum Enforceable Flow (MEF) and the natural (pre-irrigation) hydrograph. The MEF are based on existing stream flow below diversions plus additional stream flow derived from operational improvements to the management of the irrigation systems. On whole, the MEF values are lower than in-stream flow values that would be derived using recognized in-stream flow methodologies which would yield in-stream flow levels nearer to the natural hydrograph.

In some months MEFs and Target In-stream Flow values are considerably higher than the current interim in-stream flow values. However, stream flow levels considerably higher than the interim in-stream flow values as well as the proposed in-stream flow values are already occurring. The proposed in-stream flow values are not higher than those already occurring or that occurred naturally and would not negatively impact fish survival, stream bank stability, erosion or the integrity of irrigation structures.

References

Brummond, A., July 1, 2014 Memorandum to CSKT TWG, Draft Evaluation of CSKT In-stream Flow Levels.

c. What is the standard for instream flow cited in the water abstracts? Is the standard focused on fish survival, habitat maintenance, or something else?

TWG Response with regard to first question:

“In-stream flow” is defined as: “CSKT water right recognized in Article III.C.1.d.ii (the FIIP Nodes) of the Compact that is allocated here in this Agreement to stream flows reserved for fish and wildlife purposes, with a time immemorial priority date.” Specific values have been declared in Minimal Enforceable Flows (MEF) and Target Instream Flows (TIF) in AppendixA1 of the WUA.

The term in-stream flow has several qualifiers:

The interim in-stream flow was established at 27 sites in the FIIP in the late 1980s and are a single, year-round value at each site.

Minimum Enforceable Flows (MEF) are part of the proposed WUA and incorporate seasonal variability at each site. They are comprised of existing stream flow below diversions plus additional stream flow derived from operational improvements to the management of the irrigation systems. Operational improvements are defined as improved management of FIIP facilities, including the incorporation of measurement of on-farm deliveries, implementation of water management accounting, management of stockwater deliveries, improved adherence to in-stream Flows, dedicated efforts to reduce flows in FIIP waste ways, enhanced efficiencies, and upgraded measurement and management.

Target Instream Flows (TIF) are applied in wet or normal years. MEF and TIF were determined from the HDYROSS modeling effort in a 3-step process: 1) establish water supply required for existing crop irrigation consumptive use, 2) identify potential improvements to current system that would reduce diversion requirements while maintaining current crop irrigation consumptive use, and 3) establish the new increased (?) in-stream flow (TIF and MEF) resulting from the improvements in step 2. TIF and MEF sites were established at sites that will be monitored as part of the Adaptive Management program.

Thus, no standard or in-stream flow methodology was used to establish MEF or TIF, both are described as the in-stream flow remaining after improvement of efficiency that results from operational and physical improvements to the irrigation system.

TWG Response with regard to second question:

Although interim in-stream flows were based on fisheries criteria, neither fish survival nor habitat maintenance was to be used as standards in the CSKT Compact. If however, improvements to the irrigation system yield in-stream flows sufficient to meet the proposed in-stream flow levels, excess stream flow could be available for additional diversion – again, this is within the adaptive management plan and would require monitoring/measurements.

References:

Presentation to TWG by CSKT and RWCC,
Online presentations by CSKT and RWCC,
Compact
WUA

d. What are the growth inducing or socioeconomic growth inhibiting impacts of the on reservation “robust river” standard for instream flow (economic)

TWG Response:

As noted, the term “robust river” is not an applicable standard within the experience of the TWG, nor is it defined in the CSKT Compact documents. Regardless of any standard applied or, as stated in the Compact, the increased in-stream flow from improvements, the question of socioeconomic growth induction/inhibition impacts is well outside the discussion of the TWG.

The Compact implies that there will be no reduction in production from irrigated lands, but there will be increased in-stream flow beneficial to fish habitat. The overall objective of the TWG is to determine the level of confidence in the values used as consumption by irrigated lands.

e. Is there enough information available to definitively determine the 'water savings' components of irrigation rehabilitation?

TWG Response:

The HYDROSS model constructed by CSKT and the management model constructed by RWCC made estimates of water savings based on specific assumptions. For example, the increased in-stream flow from reducing or eliminating shoulder water returns by replacing early/late canal operation for stockwater with groundwater wells was estimated for several areas. Other examples provided included lining canals to reduce loss, improvement of diversion structures etc. were also provided. Although the CSKT Compact outlines several projects, no details are provided; however, implementation of these projects is to be addressed in the adaptive management plan.

Thus, definitive determinations of water savings has not been made; as noted in the discussion of shallow groundwater levels and wetlands, site specific information will provide the basis for sound, if not definitive, estimates of water savings in a given project.

- f. Is there a process to ensure that extra duty water will be received by those who apply for it?**
- i. Does or will the time period for this application for extra duty water (5 years) risk the economic viability of his/her agricultural operation?**
 - ii. Could there be an added charge for this water?**

TWG Response:

These questions cannot be addressed directly by the TWG they refer to issues within management of the Compact and are certainly negotiable by parties to the Compact. As such, a negotiable value or procedure is outside the scope of the TWG. On that note, the TWG did discuss the issue of extra duty water as it was included in the Hydross model effort. As noted in the question, there is a deferral period during which extra-duty water "shall be continued as practiced by CME management". Section XV.41 of the Water Use Agreement:

XV. DEFERRAL FOR IMPLEMENTATION OF THE FARM TURNOUT ALLOWANCE (FTA) AND MINIMUM INSTREAM FLOW (MEF)

41. The implementation of the FTA and MEFs, along with the delivery of the other priorities in Section 22 shall be deferred. During the deferral period the following conditions shall apply:

- (a) The annual quota and extra-duty water delivery systems shall be continued as practiced by CME management;
- (b) On-farm measurement systems to measure irrigation water delivered under the FIIP shall be installed;
- (c) The on-farm efficiency fund established by this Agreement shall prioritize improvements which upgrade irrigation systems from flood irrigation to sprinkler irrigation, and irrigation efficiency improvements to extra-duty water users;
- (d) Measurement of FIIP irrigation water delivery by the Project Operator and measurement of on-farm surface water runoff by the CSKT shall occur with the permission of the land owner in accordance with Section 6 when such measurement requires access to private property;

The TWG also notes that Sections VIII.25.e and f of the WUA outline the procedures for on-farm measured water use allowances for sites that require more water. Although this section outlines the general criteria to be used in determining whether or not a measured water use allowance would be granted, it leaves undefined the specific criteria values that would be applied. This leaves uncertainty for individual water users as to whether or not they would ultimately qualify for a measured water use allowance.

Taken at face value by the TWG, there is no apparent risk as proposed in the subordinate question because the project in question would receive its current duty during the deferral period. Again, outside the expertise of the TWG, but appears to be addressed in the Compact. The TWG notes here, and will again in several issues, there is a difference between the concept of current crop consumptive use and current water delivery volumes/rates. This difference is not always clear to various other groups that have reviewed the Compact.

2. Off-reservation instream flow claims

a. What are the growth inducing or growth inhibiting impacts of the off-reservation instream flow claims?

- i. Is there enough information to assess this question, including the aspects of basin closure, call results?**
- ii. How many times in 20 years will an irrigator be called on its water rights?**

TWG Response:

As noted in the response to questions related to growth, these questions are outside the knowledge of the TWG. However, with respect to the number of “calls” on the water rights of any irrigator, the TWG discussed the number of calls under current interim in-stream rights. Under the terms of the proposed Compact, calls are limited to surface water irrigation rights and groundwater irrigation rights diverting over 100 gpm.

TWG member, Mr. Andrew Brummond (FWP) provided an evaluation of water demand in the presence of the Compact (Brummond, 2014a). His analysis compared median and varying percentile flow to the Compact in-stream values for the Lower Clark Fork, the Swan, the Kootenai (Libby Dam removed). Based on the period of record flows and the existing water right claims outside the Compact, flows on these rivers would fall below the CSKT Compact in-stream flow value:

1 year in 20 on the Lower Clark Fork, but outside the normal irrigation season
2 years in 10 on the Swan

Other rights would be held in co-ownership with Montana Fish, Wildlife and Parks (FWP); because these are existing water rights held by FWP the legal demand for water remains unchanged.

Under the proposed Compact, the existing hydropower rights for the Milltown Dam would be changed to in-stream flow to benefit the fishery. The Tribes and FWP would be co-owners of these rights as well. If the Compact is not approved, these rights would most likely be changed to in-stream flow by FWP and/or the Natural Resource Damage Program. Such a change would likely result in in-stream flow levels higher than that proposed in the Compact based on a review of the historic hydropower water use and the in-stream flow needs of the fishery. The net result is the proposed Compact would result in a decreased demand on existing water users in comparison to a change to in-stream flow outside of the Compact.

Brummond, A. July 1, 2014a, Memorandum to WPIC CSKT Technical Working Group, Draft Changes in legal water demand due to CSKT Compact.

3. Compact

- a. What precedential components of the proposed Compact would commit the state to future actions with significant impacts or a decision in principle about such future actions?**
- b. What are the growth inducing or growth inhibiting impacts of the proposed Compact?**
- c. Does the proposed Compact or any part thereof restrict the use of private property, or impose undue governmental regulation that would prohibit the use and enjoyment of private property?**
- d. Are there alternatives to the proposed CSKT Compact that were not considered which would minimize or eliminate impacts to the human environment?**

TWG Response:

Question 3 and its subordinate questions were discussed at length by the TWG and meeting attendees. Although important questions, clearly a technical review of future commitments, the impact on growth, and the impact on private property rights are beyond the experience of a technical working group. The TWG has and will focus its efforts on developing a level of confidence for the modeling effort, evaluation of historic irrigation use, the background data, and some of the direct applications of the model.