

MEMORANDUM

To: ESHMC
Fr: Bryce Contor
Date: 31 July 2007

Re: Proposed methodology for assessing fraction of supply on mixed-source lands that is provided from ground water.

Two current IWRRI contracts require assessment of mixed-source lands. One is a contract with the Idaho Water Resourcd Board (IWRB) for technical evaluation of potential management alternatives, and the other is a contract with Idaho Department of Water Resources (IDWR) that includes tasks for refinement of methodology for ESPAM 2.0. This memo reports the details of work included in those two contracts and requests input from the ESHMC on the methods, assumptions and approaches.

IWRB Contract

The IWRB has requested IWRRI to evaluate the potential of "soft conversions" to increase net recharge to the aquifer. In essence, a "soft conversion" involves the delivery of additional surface water (above the status-quo) to lands that are already nominally mixed-source lands; that is, to lands that currently have both a valid surface-water right and a valid ground-water right. This evaluation focuses on the existence of infrastructure to facilitate delivery of both water sources to the place of use. The draft work plan includes the following elements:

"Task 4: SOFT CONVERSION PROJECTS

a) Evaluate ability of infrastructure to accept additional water..."

(This evaluation involves assessing canal capacity for "shoulder" and "mid-season" delivery of additional water to current mixed-source lands, which is not central to the source-fraction question addressed here.)

b) "Map areas that can be served by this method:

- 1) Create a uniform grid of points in GIS with sequential random numbers. Of the points that lie on mixed-source parcels in entities supplied from the Snake River, select the 100 points with the lowest random numbers.
- 2) For points that lie within the Idaho Department of Water Resources Eastern Region, use IDWR online data query tools to identify an underlying ground-water right. At the Eastern Regional Office, examine Water Measurement District and Snake River Basin Adjudication files for these rights. After one day of review, assess the effectiveness of this activity in determining the infrastructure status of sample parcels. In consultation with IWRB personnel, determine whether to assess the remainder of the parcels using these data, and follow up appropriately at Eastern Region and Southern Region IDWR

- offices and Ground-water District Offices.
- 3) Perform field inspections on the ten parcels nearest Idaho Falls, to assess the time and level of effort required. Field inspections will be used to determine the existence of both ground-water and surface-water infrastructure, and to qualitatively assess the infrastructure improvements that might be needed to facilitate delivery of surface water. Assessments will include GPS locations and digital photographs, with field notes and sketches. All inspections will be performed from public roads or rights-of-way; no entry will be made onto private lands.
 - 4) Based on the effort required for the first ten parcels, determine (in consultation with IWRB personnel) how many of the remaining parcels to inspect. The project scope anticipated the ability to inspect all 100 sites but there is uncertainty in the actual effort required to perform the inspections. If fewer than 100 sites are selected for inspection, the selection will be in ascending order of random number, with the order of site visits planned to accommodate travel distance and efficiency of personnel time.
 - 5) Using GIS tools, construct the deliverable maps."

The IWRB work will primarily improve our knowledge of the physical ability to deliver both surface water and ground water to nominal mixed-source parcels.

IDWR CONTRACT

The IDWR contract includes provision for a "refinement of methods" task to improve the methods used to assign the mixed-source fraction. It will extend the methods used in the IWRB work (described above) to non-Snake irrigation entities, and additionally will attempt to quantify the ratio of water actually delivered from surface- and ground-water sources. The IDWR contract includes the following bulleted list describing the proposed approach:

"GW Fraction of Supply on Mixed-source Lands

- Evaluate water district, ground-water district and water-measurement district pumpage data.
- Evaluate individual canal-company or irrigation-district headgate delivery records.
- Explore w/ ESHMC various calculation alternatives given status of available data.
- Perform calculations to obtain refined GW fraction estimates for each Irrigation Entity where mixed-source lands occur.
- Explore concepts and methodology for estimating user response to various potential administrative actions and the effect these may have on GW fraction on mixed-source lands."

IWRRI has not formulated options for the "explore concepts and methodology..." task. One possibility is to consider an economic evaluation of supply and demand on the individual user level. It may be that potential administrative actions can be evaluated as changes in the supply faced by the individual producer, and this may facilitate prediction of user response. It

also may be that wide-scale administrative actions (such as curtailment of large numbers of water rights) may affect underlying commodity prices, modifying individual producer demand and thereby producing a change in water utilization. IWRRI has access to economics experts to guide such an evaluation, if adopted.

INPUT REQUESTED

IWRRI requests the following input from the ESHMC, by 1 September 2007:

1. Comments on the approaches outlined above.
2. Suggestions for alternate approaches to assess the actual fraction of supply delivered from ground water to mixed-source lands.
3. Suggestions for methodology to approach the task "Explore concepts and methodology for estimating user response to various potential administrative actions..."

Later in 2007 or early in 2008, IWRRI will provide the ESHMC with a review of the pumpage and surface-water delivery data obtained and request input on calculation methods to derive current source fractions from these data.