TAC Meeting Notes 3/23/05

In Attendance: Jim Bartolino, Helen Harrington, Allan Wylie, Michael Barber, Gary Stevens, Sue Kahle, John Covert, Guy Gregory, Mark Savoca, Dale Ralston, John Tracy, Lloyd Brewer

Agenda Items

TAC Meeting Agenda Items (Workplan Task updates provided by project staff, followed by open discussions)

- FY05 Workplan Overview (10:00-11:00)
- Status of FY05 Work
  - Task 1 - compile and evaluate published data (11:00 11:30)
  - Task 2 - monthly monitoring and synoptic gw and sw measurements (11:30-12:00)
  - Task 3 - evaluate potential methods for additional data collection (12:00-12:30)
    - overview and discussion of geophysical methods (12:30-1:30)
  - Task 4 - model design objectives (1:30-2:00)
    - overview and discussion of numerical modeling concepts (2:00-3:00)
    - numerical model development activities (3:00-3:30)

After discussion, Project Budget was added to the agenda.

Project Budget

USGS received an FY05 Congressional Appropriation of $500K.

USEPA will provide a grant of $1.5M for WADOE and IDWR. The grant application deadline is end of April, and funds should be available by July 1st. This will be multi-year funding. WADOE and IDWR will minimize overhead taken from grant.

Washington legislature has removed SVRP funding from it's budget, however, WADOE is committed to continue providing FTE support.

Idaho legislature is still in session and may allocate funds to SVRP project.

USEPA also will provide a grant to the local Chambers of Commerce ($150K or $300K). PTLT is not sure how they are planning to use the funds - MAC may know.

FY06 Congressional Appropriation ($500K) is not currently in the President's budget. PTLT may need to consider effects of reduced funding on project tasks and timelines.

FY05 Workplan

Discussion of "rules" governing decision making for additional data collection (Task 3). There is flexibility in the workplan Task 3; some decisions will be based on the location

of current data gaps and or model sensitivity. TAC understands this (adaptive management) but suggests PTLT needs to be more specific on how new data will 1) benefit project (model), and 2) be used to guide additional data collection activities.

TAC suggests the inclusion of "decision Tree" in workplan and other info describing financial and project status. PTLT is working on budget and will place other project related info on FTP site for TAC consideration and possible inclusion in workplan.

Communication between project team members is inadequate - needs to be improved - and the "Forum" hosted by IDWR is not being used as much as expected. Concern expressed that individual answers to posted questions may not reflect team consensus. Mark Savoca will email (monthly) all project team and committee meeting notes to all project staff.

There needs to be agreement (by all signatory agencies) on subject matter presented at public meetings - PTLT will coordinate this info.

A progress report was given for FY05 project tasks:

- Task 1 - compile and evaluate published data

  Project team members have been assigned specific tasks and significant progress has been made compiling and evaluating published data. A draft report summarizing this info is being prepared.

- Task 2 - monthly monitoring and synoptic gw and sw measurements

  Monthly gw-level measurements continue to be collected and data from instrumented wells continue to be downloaded from monitoring network wells. A second seepage run is likely later this summer with additional streamflow measurement sites in upstream and downstream reaches of the Spokane River. A second "complete" gw synoptic is less likely but could include a subset of wells.

- Task 3 - evaluate potential methods for additional data collection

  - overview and discussion of geophysical methods

  A Geophysics Working Group has been formed to evaluate potential methods and guide geophysical data collection. Group members include: Jim Bartolino, Guy Gregory, Gary Stevens, and Sue Kahle. The notes from their March 14, 2005 conference call are attached to the end of this document. The project budget will help determine the scale of geophysical investigations and deep borehole drilling. The PTLT will prepare a budget, the Modeling Team and Geophysics Working Group will provide locations and suggest methods for investigation.

  The TAC discussed the usefulness of geophysical surveys and deep boreholes for model development. Will these methods enable us to identify important geologic contacts (eg. flood deposits and the underlying Latah)? Are basin

geometry and sediment stratigraphy critical to the model? Modelers suggest focusing data collection in "active " portions of the aquifer (recharge, discharge, gw-sw exchange); others acknowledge determining the storage of the aquifer also is important.

- Task 4 - model design objectives
  - overview and discussion of numerical modeling concepts
  - numerical model development activities

  The Modeling Team has the Buchanan model up and running; this has been a useful exercise to get everyone working with MODFLOW. The Team will begin to develop a new preliminary model (steady state) using the best available data. Models will be calibrated to gw elevations and streamflows. The Team is considering the use of synoptic and/or time averaged data for steady state model calibration. The transient model calibration period will be 1995-2005.

  The completed SVRP aquifer model will provide a basic framework for future water quality investigations. The TAC discussed if data should be collected that would be useful to a future water quality investigation. It was agreed that 1) models with too many objectives often do a poor job of accomplishing any one objective, 2) the current study should continue to focus on hydrogeology and the ground and surface water flow system, and 3) planning should begin for a phase II study focusing on water quality; prepare a proposed project scope and budget document, and begin discussions with potential project partners (WADOH, IDEQ, EPA, Chambers of Commerce, etc…). PTLT should present this to the MAC.

- Task 5 - Public Outreach

  The public meeting (1/27/05) was very well attended. Many in the audience asked questions about water quality issues. The updated SVRP Atlas and SVRP informational brochures have been printed and distributed.

Geophysics Working Group Meeting Notes 3/14/05

Participants:

Jim Bartolino
Sue Kahle
Gary Stevens
Guy Gregory

Design objectives

Geophysics will be done in the SVRPA study to economically answer the following questions:

1. What is the shape of the basin?

An understanding of the shape of the basin is critical to understanding the volume of storage available in the aquifer system. Where bedrock units intrude into dynamic portions of the aquifer system, they constrain quantities and flowpaths for available water and wellhead protection purposes.

2. What is the base of the aquifer?

Well logs reveal unexpected variability in stratigraphy within the SVRPA area. Latah Formation (and texturally similar materials) are found in wells near the edges of the perceived aquifer area; textural variations are mapped on the Idaho side varying from sand to boulders; and in the Hillyard Trough a relatively thick silt and clay layer separates aquifer materials into upper and lower units. Geophysics may assist in discriminating these units.

Relationship to Flow Model

The numerical model under development may not require an estimate of dead storage to adequately represent flow and surface water/ground water interactions. That numerical model is one of several elements necessary for management of the aquifer. Estimates of storage are necessary to provide flexibility to managers over the long term.

Criteria for use:

1. The methods must be tied to reality. Borehole geology shall be used to orient geophysical information.
2. No single method need be chosen for the entire aquifer. Multiple methods employed in different area may add significant power to the decision.
3. Methods should be chosen with respect to ability to achieve design objective, balanced by cost and implementability. All methods are compromises.

Method Discussion

Perhaps the biggest challenge are cultural factors. Methods requiring an energy source are problematic in urban or developed areas. At the depths of interest, fairly significant energy sources are desirable to increase data quality. Dynamite or big thumper trucks for seismic; electrical sources for many EM units, etc. can create significant problems. Electrical transmission lines and other field generating phenomena must be accounted for in measurements for mag or EM methods.

Reflection seismic is most desirable, can provide unique solutions, may require large line spacing, and can resolve multiple layers. Seispulse method used in the Spokane Wellhead protection study assumes a constant velocity of the energy wave, that assumption not necessary for other survey types.

Refraction seismic somewhat less desirable because of logistics and energy involved to discriminate between likely geologic media.

Gravity methods are non-invasive (no energy source) but suffer because they present non-unique solutions. Gravity data existing in Idaho is gridded data, original stations not acquired yet. Gravity is the traditional basement definition method, but may not resolve stratigraphy.

DC/Resistivity and Time Domain EM methods are also non-unique, but require an energy source, TDEM may require a several hundred meter loop; DCR requires an electrode to induce a voltage. Both also provide non-unique solution datasets.

We didn't really talk about using other EM methods, i.e. VLF, to resolve stratigraphy.

Locations for survey and drilling:

- Idaho:
  - State line;
  - the Coeur d'Alene "Bowl Area" between CDA and Rathdrum. Guy Adema modeled cross sections on Hayden Avenue, Idaho Rd. (ID), and Highway 41. His max (356 meters) modeled sediment thickness is along Hwy 41 about 2.5 miles NE of Post Falls;
  - the Hoodoo/Spirit channel area

- Washington:
  - Do not have a complimentary gravity survey that Idaho has,
  - Hillyard trough clay unit extent;
  - Liberty Lake knoll confirmation,
  - Rutter Parkway/9 mile lower aquifer discharge area.

Costs/Level of Effort

Data density is an important consideration.

Remote areas may be quite amenable to seismic Reflection/5-8K per line mile; Refraction somewhat less than that…..3-5K estimate

Drilling costs decrease if it accomplishes more than one task…geologic, vertical gradient, recharge/discharge studies, etc.

General consensus is that contracting through the states is the most economical way to do this.