Alluvial Aquifer and River Interactions

The Customer

Colorado Water Conservation Board (CWCB) and Division of Water Resources (DWR) [2013]

The Challenge

The drought of the early 2000s led to curtailment of well pumping in the South Platte River Basin and subsequent court cases have led to strict administration to ensure full augmentation of depletions from well pumping. Consequently, many water users in the South Platte have constructed or plan to construct recharge facilities in order to meet augmentation requirements. Reporting requirements for augmentation plans are defined in decrees and a challenge to DWR staff who administer the river is that data supplied by users for augmentation plans often is provided later than is needed to administer the river. There is a need for a tool that provides timely information about river and aquifer interactions to help water users and administrators ensure that adequate flow is maintained in the river to meet senior water rights.

The Solution

Alluvial Aquifer Accretion and Depletion Analysis Tool (AAADAT).

The Impact

AAADAT will provide real-time estimates of the amounts and timing of lagged well depletion and augmentation, allowing for better real-time river administration and operational decisions.

Alluvial river system and adjoining irrigated agriculture (source: USGS, Michael Collier)

The Implementation

A team led by Leonard Rice Engineers is developing the AAADAT software tool to meet the needs of DWR and water users. AAADAT translates off-stream diversions (well pumping) and recharge to offset such diversions into a daily stream impact, which enables water administrators to integrate the information into daily administration of the stream. The Open Water Foundation is providing the following services in a supporting role:

- Providing expertise in using the State of Colorado's HydroBase database and data contained in the database, including working with Colorado Division of Water Resources staff to troubleshoot database and software issues
- Providing input on software design and implementation
- Implementing components of the software and helping with testing

The AAADAT project will be completed in 2014.