

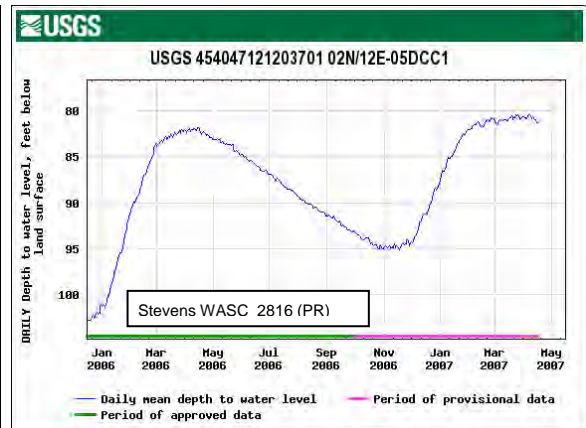
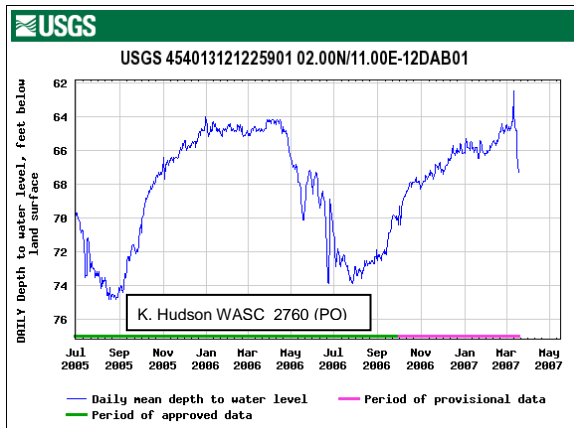
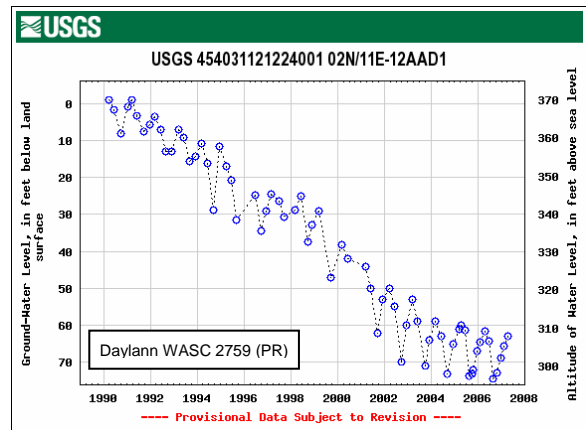
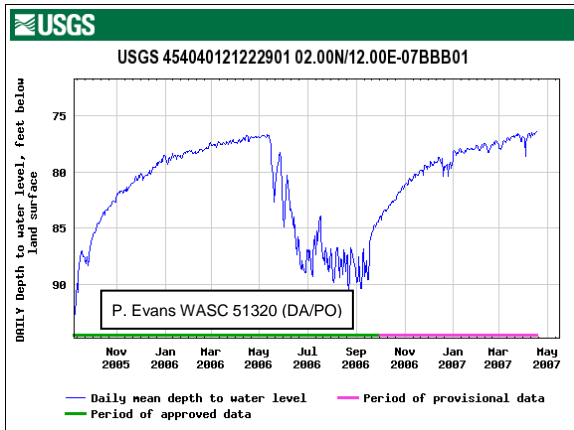
# Mosier Ground-Water Project Update

## Mosier Watershed Council Meeting, May 17, 2007

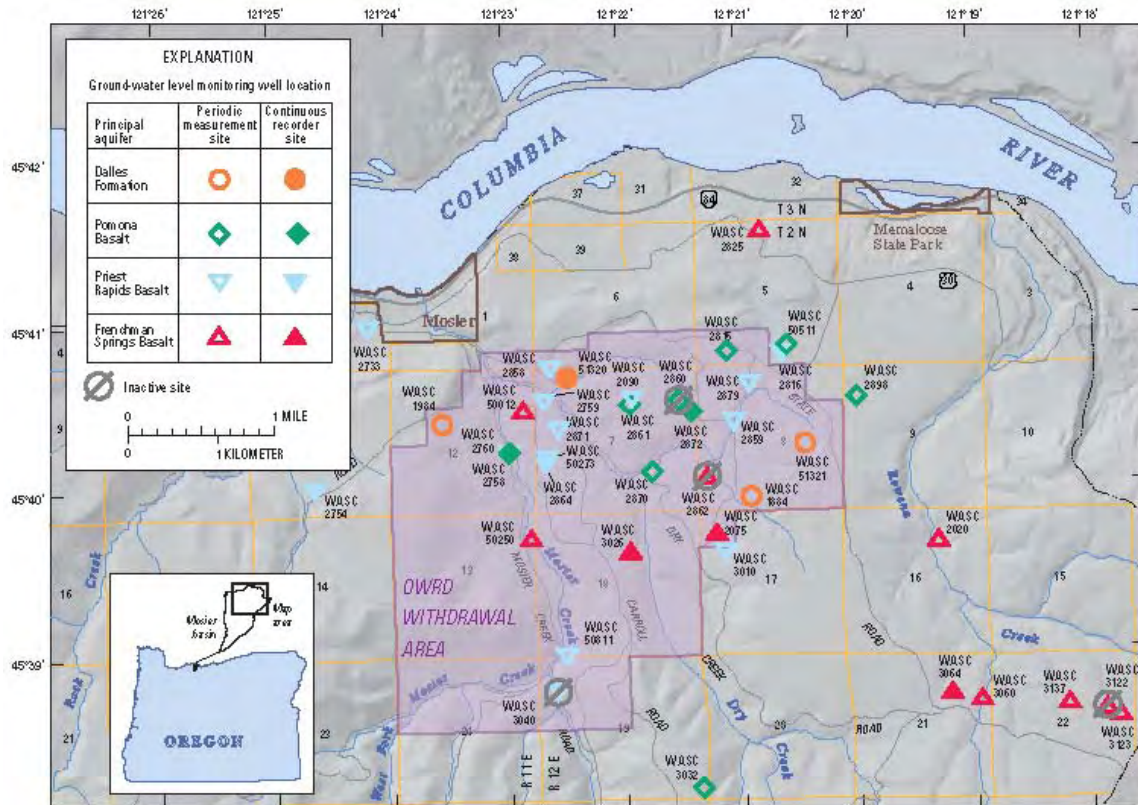
### Ground-Water Conditions

April ground-water levels in the Pomona had recovered to April 2006 levels in WASC 51320 and 2760. Declines in the Priest Rapids (WASC 2759) were only 1.2 ft from April 2006 to April 2007; the average decline for the last 3 years is only about 1 ft/year.

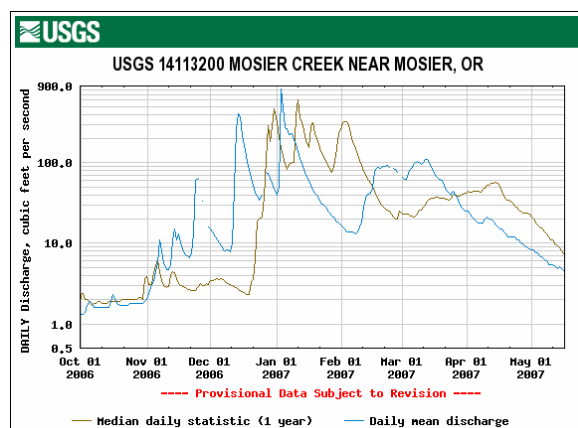
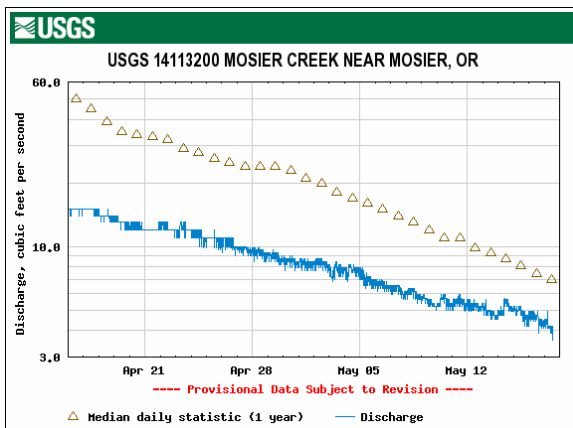
Ground-water monitoring will be discontinued after September 30 (except for wells monitored by OWRD).



## Location map for monitoring wells



## Stream Flow Conditions

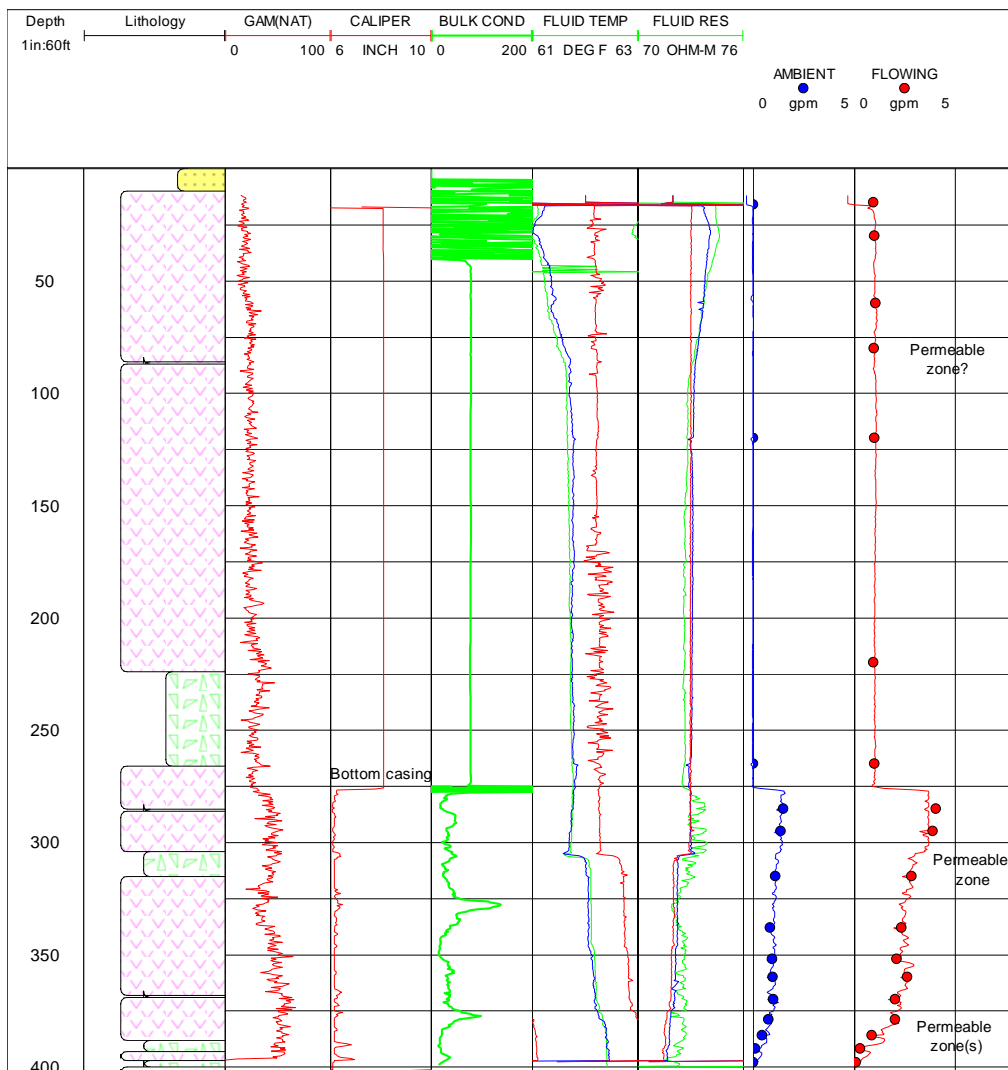


Recent streamflow (blue line) is less than last year (gold) due to relatively dry conditions in January. Appears that summer low flows will be normal range of 1-2 cfs.

## Well logging

Goals: 1) Collect information on geology and water-bearing properties of aquifers, 2) measure leakage through boreholes of comingling wells.

Progress: We were able to run a full set of geophysical logs on the City's #3 well in early March. The tests were run after the pump, packer and liner were removed, but before the leaking seal was repaired. The video log showed clear leakage from the borehole upward into the annular space at the broken seal at the base of the casing (275 ft). This flow was entering the overlying Pomona aquifer. Pomona monitoring well WASC 2760 (see hydrograph) clearly shows the effect of repairing well #3—water levels dropped 4-5 feet within days after the well repairs were completed. The flow meter data clearly show that flow to the well comes primarily from vesicular zones from about 380-400 ft and 305-315 ft.



## ***Estimate Ground-Water Pumping***

Goals: Measure and/or estimate ground-water withdrawals irrigation, municipal, and domestic wells in the basin from 1960-2006

Progress: A preliminary estimate of annual irrigation pumping for 1960-2006 has been compiled using information from growers, data from the State water rights database, aerial photos, and measured pumping in 2006 at 12 wells. Total pumping for irrigation has increased from about 100 AFY in 1966 to about 750 AFY in 2006.

Application rates have been estimated for orchards where pumping was measured in 2006. Rates ranged from 10 to 20 acre-inches. Growers using drip applied less water, but we need more data to explore the relation between application method and water use. We plan to interview growers to get the proportions of each orchard irrigated with impact, micro-spray, or drip.

Jennifer Clark has taken on the field work for monitoring pumping this season. We re-installed the meters at the same 12 sites that were monitored in 2006. Jennifer will visit the sites monthly through October to download the pumping data and forward to the USGS.

## ***Ground-Water Model Development***

Several tasks are underway in development of the computer simulation model of the ground-water system:

1. A simplified version of the model is nearly ready. This preliminary model will be used to test some basic ideas, such as: how effectively do faults restrict ground-water flow? How much does geology influence the distribution of recharge? Are topographic divides formed by the Columbia Hills and Bingen anticlines also ground-water divides? The answers to these questions will help us make decisions on how much detail is needed in the model.
2. A detailed subsurface geologic model is being constructed. A 3-D model of each hydrogeologic unit is being constructed. Geologic maps, well data and geologic sections are used to define the thickness and extent of each unit.
3. Hydraulic conductivity and storage coefficients are two properties of rocks that determine how an aquifer responds to stresses like pumping and recharge. There is a lot of uncertainty in these properties and they often changed during the calibration process. We are compiling information from other studies to estimate initial values for the model.
4. Historical water level and stream flow data are being selected and prepared to be used for model calibration targets—these are the conditions that we simulate during the calibration process.

### ***Model Advisory Committee (MAC)***

- Purpose: Advise Watershed Council and USGS on development of management scenarios to be evaluated using the simulation model.
- Become familiar with the model and its capabilities and limitations.
- Bring knowledge or expertise related to water management, planning, policy making, regulation, or agriculture.
- Share knowledge or resources to help design appropriate management scenarios that can be simulated using the ground-water model.
- Advise USGS on effective methods of communicating results to stakeholders.
- Time commitment: MAC will meet 2-3 times between September and November (2-3 hours per meeting). There may be some homework also. One or two more meetings may be needed in January-February 2008 to review results and suggest changes or new scenarios.