EXHIBIT 68

Greg Pohll

Outline of Expert Witness Testimony

Walker River Basin Decision Support Tool

Groundwater Model Development

Dr. Pohll, with the Desert Research Institute, was the lead scientist and developer for the Walker River Basin groundwater models. Two separate MODFLOW models were developed for the Smith and Mason Valley. MODFLOW provides important feedback to the Decision Support Tool (DST) modeling system in the form of stream accretions and depletions. The pattern and magnitude of these fluxes reflects the impact of natural and anthropogenic process occurring over the historical period. Specifically, the DST water balance model provides the forcings (i.e. groundwater pumping, agricultural recharge, and ditch leakage) and MODFLOW calculates the accretions and depletions for use in the water rights model MODSIM.

The Mason Valley Groundwater Model (MVGM) and Smith Valley Groundwater Model (SVGM) were developed in phase 1 (DST 1.0) of the project. A detailed description of these models is provided in the Walker Basin Project 2010 Final Report (Boyle et al., 2010) and in a peer-reviewed journal article (Carroll, et al., 2010). Both of the models were developed in two steps. Steady-state models were initially developed to test the validity of the conceptual model in producing appropriate basin-wide water balances and to establish initial values of hydraulic conductivity. After validation of the conceptual approach with steady-state models, transient models were constructed.

The Smith and Mason Valley MODFLOW models in version 2.0 of the DST have remained mostly unchanged from the phase 1 versions. However, there were some noteworthy changes in both models. The NDOW properties, located on the east and west side of the Walker River, are now included in the Mason Valley MODFLOW model using the General Head Boundary (GHB) package. In the Smith Valley MODFLOW model, the starting head values were adjusted to yield better agreement between simulated and observed water table elevations.

Dr. Pohll's responsibilities included, and therefore his testimony at the evidentiary hearing could include, the following:

- General construction (grid size, temporal resolution, etc) for the Smith and Mason Valley groundwater models
- Mountain block recharge
- Hydraulic conductivity distribution
- Phreatophyte evapotranspiration
- SFR routing and groundwater/surface water interaction calculations
- Interbasin flow
- Calibration process and results

- Model accuracy
- Hydraulic head distribution
- Groundwater budget
- Generalized stream accretions and depletions (e.g. general locations of losing and gaining stream reaches within the Walker River Basin)
- Groundwater model sensitivity
- Groundwater model limitations

It is important to note that the DST is a tightly integrated set of models that include water rights calculations (MODSIM) and water budget calculations to determine groundwater pumping and agricultural recharge. In fact, these models are used in an iterative fashion to ensure that all models are synchronized. For the purposes of the evidentiary hearing, Dr. Boyle and Mr. Garner will answer questions regarding water budget terms in the larger DST modeling environment. Therefore, they will be responsible the following DST items:

- Amount and location of groundwater pumping
- Amount and location of agricultural recharge
- Surface water discharge
- Amount and location of accretions and depletions along the Walker River

References

Boyle, D..P., G. Pohll, S. Bassett, T.B. Minor, C. Garner, R. Carroll, D. McGraw, A. Knust, C. Barth, 2010. Project F: Development of a Decision Support Tool in Support of Water Right Acquisitions in the Walker River Basin, 2010 Walker River Project Final Report, Callopy and Thomas editors, University of Nevada System.

Carroll, R.W.H, G. Pohll, D. McGraw, C. Garner, A. Knust, D. Boyle, T. Minor, S. Bassett, K. Pohlmann, 2010. Mason Valley Groundwater Model: Linking Surface Water and Groundwater in the Walker River Basin, Nevada, Journal of the American Water Resources Association, vol 46, No. 3.