Water Law in Nevada:
The Example of Mines at the Surface-Water/Groundwater Interface

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The history of water law in Nevada is closely tied to the state's mining history. Nevada's first water law, in the form of custom and practice, arose in conjunction with mining activities on the Comstock Lode and other gold and silver camps. The doctrine of prior appropriation, or "first in time, first in right," became the guiding principle for both surface water and groundwater. The customs of the miners, as well as ranchers, were formalized in the General Water Law Act of 1913 with the creation of a permit system supervised by the Office of the State Engineer (OSE). The OSE now administers all surface water and groundwater in the state and is responsible for its appropriation, adjudication, distribution, and management.

The statutes, as set forth in Chapters 533 and 534 of the Nevada Revised Statutes, declare all waters to be the property of the State of Nevada and specify that a person can acquire water only through application to the OSE. The application is reviewed carefully to determine 1) if unappropriated water is available in the proposed source, 2) whether the proposed use would impact existing rights, and 3) if the proposed use would prove detrimental to the public interest. Public interest is not defined in the statutes, giving the OSE flexibility to consider the issues unique to any given application. After a permit is issued, the permittee must commence and complete diversion works within a specified period of time, and proof of beneficial use must generally be filed within seven years of the permit being issued. A permit is cancelled if the permittee fails to comply with the filing deadlines established by the OSE. After the proof of beneficial use has been verified, the OSE issues a Certificate of Appropriation to the permit holder. A certificated water right can be lost through five years of non-use, but the Nevada Supreme Court has held that there can be no forfeiture without a showing of intent to abandon.

Curiously, although surface and underground waters are both administered by the same agency, there is a regulatory disconnection between the two regimes. Most of Nevada is divided into distinct hydrographic basins by its unique Basin and Range geology. There are few rivers that flow continuously during the year, and the water resources of most basins are concentrated in groundwater recharged by intermittent streams. In central and eastern Nevada, water is drawn from a deep carbonate aquifer which is not directly connected to surface streams. The water supplies of Reno and Las Vegas depend primarily on the surface flows of the Truckee and Colorado rivers, respectively, but elsewhere in the state, water is derived primarily from underground pumping. This may explain why the OSE tends to evaluate and treat surface and subsurface waters within a hydrographic basin as separate resources, as though there were minimal interaction between them.

The Impact of Mines

The complex relationship between surface water and groundwater and water quality is brought into sharp focus by Nevada's gold mining industry. In the central and northeastern regions of Nevada, open pit and underground mines produced 7.7 million ounces of gold in 2002. A typical open pit mine can be 1.5 miles across, half a mile wide, and 500 feet deep. Some underground mines penetrate 2,000 feet below the surface. Almost every large mine in Nevada intersects the water table.

An open pit mine such as Newmont's Twin Creeks Mine is authorized to pump 3.14 billion gallons per year to keep the pit dry enough for mining activities. A dewatering operation of this magnitude poses several technical problems, including conflicts with existing surface and groundwater rights, disposal of mine waters, and long-term environmental impacts.

Mine dewatering and consumptive uses (such as dust control, evaporation from ponds, and loss of process fluids) can have a substantial impact on existing users within the same hydrologic basin. The cone of depression can reach two miles in diameter. The OSE is required by law to evaluate the impacts of these often huge groundwater withdrawals on prior appropriators before issuing permits. Since many basins in Nevada are "designated" – that is, fully appropriated or over-appropriated – a new mine may be forced to purchase and transfer existing surface and groundwater rights in order to obtain a permit for consumptive use and dewatering. However, not all of the water diverted by dewatering is consumed; for example, the permit for dewatering the Lone Tree Mine allows diversion of 79,682 acre-feet annually (AFA), but the total combined consumptive duty is 6,047 AFA. If an application is protested, and particularly if the protestant is a Native American tribe or environmental group, the hearing and appeal process that follows can take years. Water appropriation, therefore, becomes one of the critical paths for large-scale mine development.

Another important issue involves the disposal of waters produced from an open pit or underground mine. The waters may be discharged to a stream or river, returned to the groundwater system by way of infiltration basins, reinjected directly into the subsurface, or substituted for other permitted uses, such as irrigation. Each of these disposal

techniques poses unique challenges to the mining company not only because of the oftentimes large quantities of water involved, but also because of water-quality issues. Mine waters are sometimes contaminated with sulfates, arsenic, and other undesirable minerals, requiring compliance with the Clean Water Act and Safe Drinking Water Act (NRS Chapter 445A).

Each new mine must also be considered in relation to an overall river or hydrologic system. For example, there are now 25 major gold mines operating in Nevada's Humboldt River system. For environmental groups, this raises concerns regarding the long-term impacts of dewatering on the river system and the springs and seeps on which wildlife depends. According to the Great Basin Mine Watch, there may be three significant impacts following cessation of mining operations and dewatering: (1) approximately 1.5 million acre-feet of water will be permanently diverted to pit lakes, (2) the groundwater deficits created by pumping will be slowly recharged over a long period, perhaps as long as 200 years, and (3) there will be evaporative losses from the pit lakes. These factors will result in less water available to the Humboldt River, but the estimated impact varies widely between industry and environmental models. Ironically, the present level of dewatering has caused a surfeit of water in the Humboldt River, and new springs have been created through infiltration and reinjection.

An Urban Example: Las Vegas

Finally, it should be noted that conflicts regarding water appropriation arise in other contexts besides mining in Nevada. The City of Las Vegas, in an effort to develop additional water supplies for its fast-growing population, filed 126 applications over a two-year period to appropriate water in central and eastern Nevada. After contentious hearings that lasted for years, eight of the applications were approved, and one of these will involve an interbasin transfer. It should be noted that interbasin transfers are extremely rare and difficult to obtain in Nevada.

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