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October 21, 1996

TO: File

THRU: Joe Helfrich, Permit Supervisor DRH for

FROM: Sharon Falvey, Senior Reclamation Hydrologist SF

RE: Siaperas Ditch Designs, Amendment 96-C #2, Nevada Electric Investment Company, Wellington Preparation Plant, ACT/007/012, Folder #2, Carbon County, Utah

SUMMARY:

The Permittee submitted amendment 96-C at the Price Field Office on June 28, 1996, additional information was received on October 7, 1996, at the Salt Lake City Office. The submittal of this amendment was prompted by issues raised during site inspection. The permittee was requested by, DOGM inspector Steve Demczak, to remove vegetation and restore drainage in the Siaperas ditch because it was ponding water. However, the ditch continued to pond water following removal of the vegetation. Steve was concerned that this was not the purpose of the ditch and because the ditch impounds water it may be required to meet impoundment rules.

The review memo completed in August, 1996, identified a need for demonstrating that this ponded water did not adversely influence water quality since it is ponding water adjacent to the slurry pond. The October 7, 1996, submittal did not provide adequate information to address the issue. Therefore, the permittee is requested to provide an additional commitment in text to allow a determination of potential for hydrologic impact in addition to the information provided to date.

TECHNICAL ANALYSIS:

OPERATION PLAN
HYDROLOGIC INFORMATION
Regulatory Reference: R645-301-742.300.

Diversions

According to the plan, in section 7.42, the Siaperas ditch was an irrigation canal prior to construction of the refuse dikes. The ditch collects runoff from agricultural lands and undisturbed drainage adjacent to the slurry impoundments. The permittee has presented designs

which demonstrate the channel can handle the 100 year- 6 hour event. The maximum depth of ponded water in this channel is approximately 3.3 feet. The length of ponding is approximately 400 feet with varying depths. In the October submittal, the permittee provided engineering certification for the design.

The Siaperas ditch is an ephemeral drainage that is supplemented with flows received from up gradient irrigation practices. The ponding in the channel has created a vegetated channel system. The pool does not appear to be creating instability and may have increased stability over a evenly graded channel. In natural systems, generally intermittent and perennial streams, pools are common and occur as part of the system. Therefore, it is not believed that the ponding in the Siaperas ditch should be considered an impoundment and the ditch should not be subject to the impoundment requirements. However, R645-742.300, requires the diversions to be designed to minimize adverse impacts to the hydrologic balance. Because the water is ponding, the water could potentially be moving into the alluvium. This may increase the connection of water with the fine slurry and cause increased contact of groundwater with the slurry cells either through subsurface and capillary flow or through evaporative processes.

The applicant was requested to demonstrate that the ditch does minimize adverse impacts to the hydrologic balance. To make the demonstration the permittee collected water quality samples on August 26, 1996, while the ditch was near its maximum ponding elevation and collected water quality samples in GW-2 and GW-3. Unfortunately, the water was not representative of irrigation return flows which tend to be high in total dissolved solids. Because there was significant rainfall occurring in the area prior to obtaining the sample, it is believed this sample describes rainfall runoff rather than irrigation return flows. Additionally, the description of water elevation from the wells was questionable, as it was identified as, "12 feet below surface". This description does not provide clear reference to the ground or to the top of casing. (The sampling plan indicates depth measurements will be conducted from the top of the casing.) No surface water elevation was presented for the water in the Siaperas ditch. The results of the data submitted were inconclusive.

Findings:

Information provided in the proposed amendment is not considered adequate to meet the requirements of this section. Prior to approval, the permittee must provide the following accordance with:

R645-301-742.300: The permittee must provide a commitment, in the text of the plan, to monitor the Siaperas ditch water quality which will demonstrate to the satisfaction of the Division, that the design does minimize adverse impacts to the hydrologic balance. See also: R645-301- 731.100.

blb
cc: Paul Baker
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