IN THE OFFICE OF THE STATE ENGINEER
OF THE STATE OF NEVADA

IN THE MATTER OF APPLICATIONS)
70947, 70948, 70949 AND 70950)
FILED TO CHANGE THE PLACE OF USE)
OF THE PUBLIC WATERS OF A SURFACE)
WATER SOURCE WITHIN THE CARSON)
DESERT HYDROGRAPHIC BASIN (101),)
CHURCHILL COUNTY, NEVADA.)

RULING

#5506

GENERAL

I.

Application 70947 was filed on March 16, 2004, by the United States of America, Fish and Wildlife Service to change the place of use of 85.22 acre-feet annually (28.50 acres at 2.99 acre-feet per acre), a portion of the water previously appropriated under Truckee-Carson Irrigation District (TCID) Serial No. 223-1-C, Claim No. 3 *Orr Ditch* Decree, and *Alpine* Decree.[1] The proposed point of diversion is described as being located at Lahontan Dam. The existing place of use is described as being located within the NW¼ NE¼, NE¼ NE¼, SW¼ NE¼ and SE¼ NE¼ of Section 8, T.18N., R.29E., M.D.B.&M. The proposed place of use is described as all lands within the approved boundary of the Stillwater National Wildlife Refuge, further described in Exhibit "1" attached to this ruling.[2] The proposed manner of use is described as the maintenance of wetlands for recreation and wildlife/storage with the existing manner of use being identified as being "as decreed." Under the remarks set forth in Item 15 of the application, the applicant indicates that it expressly reserves the right to transfer, in a later proceeding, the remaining 0.51 acre-feet per acre for each of the 28.50 acres from which the 2.99 acre-feet per acre are transferred under this application.

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[1] Final Decree, U.S. v. Orr Water Ditch Co., In Equity A-3 (D.Nev. 1944) (*Orr Ditch* Decree); and Final Decree, U.S. v. Alpine Land and Reservoir Co., Civil No. D-183 (D.Nev. 1980) (*Alpine* Decree).

[2] File No. 70947, official records in the Office of the State Engineer.

II.

Application 70948 was filed on March 16, 2004, by the United States of America, Fish and Wildlife Service to change the place of use of 74.66 acre-feet annually (24.97 acres at 2.99 acre-feet per acre), a portion of the water previously appropriated under TCID Serial Nos. 64, 64-A, 64-B, 64-C and 64-D, Claim No. 3 *Orr Ditch* Decree, and *Alpine* Decree. The proposed point of diversion is described as being located at Lahontan Dam. The existing place of use is described as being located within the SW¼ SW¼ of Section 3, T.18N., R.28E., M.D.B.&M. The proposed place of use is described as all lands within the approved boundary of the Stillwater Wildlife Refuge, further described in Exhibit "1" attached to this ruling.[3] The proposed manner of use is described as the maintenance of wetlands for recreation and wildlife storage with the existing manner of use being identified as being "as decreed." Under the remarks set forth in Item 15 of the application, the applicant indicates that it expressly reserves the right to transfer, in a later proceeding, the remaining 0.51 acre-feet per acre for each of the 24.97 acres from which the 2.99 acre feet per acre are transferred under this application.

III.

Application 70949 was filed on March 16, 2004, by the United States of America, Fish and Wildlife Service to change the place of use of 96.52 acre-feet annually (32.28 acres at 2.99 acre-feet per acre), a portion of the water previously appropriated under TCID Serial Nos. 204-1-A, and 204-A-1, Claim No. 3 *Orr Ditch* Decree, and *Alpine* Decree. The proposed point of diversion is described as being located at Lahontan Dam. The existing place of use is described as being located within the SW¼ NE¼ and SE¼ NE¼ of Section 5, T.18N., R.29E., M.D.B.&M. The proposed place of use is described as all lands within the approved boundary of the Stillwater Wildlife Refuge, further described in Exhibit "1"

[3] File No. 70948, official records in the Office of the State Engineer.

attached to this ruling.[4] The proposed manner of use is described as the maintenance of wetlands for recreation and wildlife/storage with the existing manner of use being identified as being "as decreed." Under the remarks set forth in Item 15 of the application, the applicant indicates that it expressly reserves the right to transfer, in a later proceeding, the remaining 0.51 acre-feet per acre for each of the 32.28 acres from which the 2.99 acre-feet per acre are transferred under this application.

IV.

Application 70950 was filed on March 16, 2004, by the United States of America, Bureau of Indian Affairs, c/o U.S. Fish and Wildlife Service to change the place of use of 54.87 acre-feet annually (18.35 acres at 2.99 acre-feet per acre), a portion of the water previously appropriated under TCID Serial No. 668, Claim No. 3 *Orr Ditch* Decree, and *Alpine* Decree. The proposed point of diversion is described as being located at Lahontan Dam. The existing place of use is described as being located within the SE¼ SW¼ of Section 23, T.19N., R.29E., M.D.B.&M. The proposed place of use is described as all lands within the boundary of the Fallon Indian Reservation, further described in Exhibit "2" attached to this ruling.[5] The proposed manner of use is described as the maintenance of wetlands for recreation and wildlife/storage with the existing manner of use being identified as being "as decreed." Under the remarks set forth in Item 15 of the application, the applicant indicates that it expressly reserves the right to transfer, in a later proceeding, the remaining 0.51 acre-feet per acre for each of the 18.35 acres from which the 2.99 acre-feet per acre are transferred under this application.

V.

Applications 70947, 70948, 70949 and 70950 were timely protested by the City of Fallon on the following grounds.[2, 4, 6, 8]

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[4] File No. 70949, official records in the Office of the State Engineer.

[5] File No. 70950, official records in the Office of the State Engineer.

1. Granting this application would conflict with, injure, and impair existing permitted water rights owned by the City of Fallon which supply its municipal water system upon which its 8,300 residents rely for their drinking water, specifically Permit No.(s) 19859, 19860, 26168, 40869 and 55507.

2. The application, if granted, would be detrimental to the public interest of the State of Nevada because it would remove water resources from areas of the Lahontan Valley which the United States Geological Survey has determined recharges the groundwater aquifer, identified as the Carson Desert Basin 101 by the State Engineer, consequently impairing the existing groundwater system upon which the City of Fallon relies to supply its residents drinking water.

3. The application, if granted, would present a hazard and danger to the health, safety and welfare of the residents of the City of Fallon and the surrounding community at large because it would jeopardize the sole drinking water supply of the City's 8,300 residents, said result being directly contrary to the public interest of the State of Nevada to enhance public municipal drinking water supplies. Pyramid Lake Pauite [sic] Tribe of Indians v. Washoe County, 112 Nev. 743, 918 P.2d 699 (1996).

4. The application, if granted, would violate the Safe Drinking Water Act as enforced by the State of Nevada through the Nevada Department of Environmental Protection and the Nevada Bureau of Health Protection Services because its depletion of groundwater quantity would have a corresponding negative affect on groundwater quality upon which the City of Fallon's municipal water supply relies.

5. Consistent with the above, and with the open court representation by counsel for the Nevada State Engineer before the United States Ninth Circuit Court of Appeals concerning State Engineer Ruling 4979, in United States v. Alpine Land + Reservoir Company, 341 F.3d 1172 (9th Cir., 2003), Nevada law at NRS 533.368, requires hydrologic and environmental studies to determine the cumulative consequences of this application and those applications related thereto to the City's existing public water system and the City's existing water rights and Nevada's public interest.

6. The State Engineer issued Order No. 1116 on August 22, 1995 which curtails groundwater appropriations within Carson Desert Basin 101, which constitutes a moratorium on all groundwater development (above 4,000 G.P.D. for preferred uses), for the reason that of the cumulative impacts of water right acquisitions under the Truckee-Carson Pyramid Lake Settlement Act, Public Law 101-618 specifically under the Wetlands Acquisition Program render uncertain the

> level or amount of recharge and make a sustained yield analysis impossible. The moratorium will continue until further study by the State Engineer, thus approval of this application is inconsistent with the moratorium policy of the State Engineer. Its approval without first knowing the affects upon recharge only adds to the uncertainty which underwrites the moratorium and intensifies the need for extending the moratorium, which confirms the necessity of a prerequisite hydrologic and environmental study under NRS 533.368.

Therefore, the protestant requested that the applications be denied.

VI.

After all parties of interest were duly noticed by certified mail, a public administrative hearing was held on December 8-9, 2004, at Carson City, Nevada, before representatives of the Office of the State Engineer regarding the protest to Applications 70947, 70948, 70949 and 70950.[6]

FINDINGS OF FACT

I.

At the conclusion of the testimony, the applicant moved to strike all of the protestant's claims on the grounds that they failed to present evidence or testimony necessary to carry their burden of proving their claims.[7] The applicant also previously made a motion to dismiss protest claim number 4 and to limit protest claim number 5.[8] The State Engineer finds that the points of the motions are addressed in the various sections that follow, addressing the specific protest issues.

II.

The first three protest issues, in brief, indicate that the approval of the applications would conflict with, injure, and impair existing permitted water rights owned by the City of

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[6] Exhibit No. 1, and Transcript and Exhibits of the public administrative hearing before the State Engineer, Dec. 8-9, 2004. Hereinafter, the transcript will be referred to by page number and exhibits from the hearing by exhibit number, as appropriate.
[7] Transcript, p. 284.
[8] Transcript, pp. 24-30,283-284.

Fallon, would threaten to prove detrimental to the public interest by impairing the existing groundwater system upon which the City of Fallon relies to supply its residents drinking water, and would present a hazard and danger to the health, safety and welfare of the residents of the City of Fallon and the surrounding community at large. The basis of these claims is that the approval of the change applications will remove surface water from irrigation in the Lahontan Valley via the transfer of the place of use from the current locations to areas within the Stillwater Wildlife Refuge and the Fallon Indian Reservation thus precluding any secondary recharge to the basalt aquifer that may be occurring at the existing irrigated places of use. In this regard, the protestant offered two witnesses to provide evidence and testimony in support of the protest claims. The first witness was the City Engineer for the City of Fallon. He provided testimony on the City of Fallon's municipal water system, permits and certificates, and water quality issues.[9] The second witness was a hydrogeologist, who gave testimony, in part, regarding the effect of the transfers on the City of Fallon's water rights through the impact on the basin aquifer.[10]

The City Engineer testified that he is responsible for the oversight of the City's municipal water system (including the water utility), waste water system, electrical distribution system, streets and roads, and landfill. The City has approximately 2,500 service connections serving a population of approximately 8,500 people. The City is served by four wells, all of which withdraw water from the basalt aquifer within the Carson Desert Hydrographic Basin. The wells are located within the boundaries of the City of Fallon. The oldest well was drilled about 1941 and the most recent well was drilled about 1991. Three wells, located north of City Hall, are each 500 feet in depth and the fourth well, located to the east, is 400 feet in depth. As of April 2004, a water treatment plant removes the

[9] Transcript, pp. 10-23.
[10] Transcript, pp. 61-123.

arsenic from the drinking water as ordered by the EPA to meet the requirements of the Safe Drinking Water Act.[11]

The hydrogeologist testified on the potential impact of the applications and opined on the need for additional studies. In preparation for his testimony, the witness ordered publications from the U.S. Geological Survey and obtained publications from the local U.S. Geological Survey office. Also, an Environmental Impact Statement[12] was obtained from protestant's counsel and a Nevada Division of Water Resources paper by Glancy and Katzer was obtained from the library at UNR.[13] The applications were reviewed and the location of the existing place of use for each parcel was plotted onto topographic maps. A site visit was made to each existing place of use and to the City of Fallon's municipal wells.[14]

Hydrographic Basin 101 was described as consisting of a shallow aquifer, intermediate aquifer, deep aquifer and basalt aquifer. The shallow aquifer is zero to fifty feet in depth and the intermediate aquifer goes from the bottom of the shallow aquifer down to depths between five hundred and one thousand feet. Both are sedimentary aquifers. Below the intermediate aquifer is the deep aquifer, which is primarily sedimentary but also has fractured rock.[15] The basalt aquifer is an area near Fallon that has been mapped to a certain extent by the U.S. Geological Survey and is approximately ten miles long and four miles wide.[16]. The basalt aquifer is further described in the U.S. Geological Survey publication, *Hydrology and Geochemistry of the Fallon Basalt and Adjacent Aquifers, and Potential Sources of Basalt Recharge, in Churchill County, Nevada.*

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[11] Transcript, pp. 11-19.
[12] Exhibit No. 20.
[13] Transcript, p. 63.
[14] Transcript, pp. 63-64.
[15] Transcript, pp. 66-67.
[16] Transcript, p. 66.

> Glancy (1986) delineates the extent of the basalt aquifer using lithologic descriptions from drillers' logs and surface electrical resistivity soundings. He describes it as an asymmetrical, mushroom-shaped body of basalt exposed at Rattlesnake Hill, with the bulk of the basalt surrounded by the sedimentary aquifers (fig. 4; Glancy, 1986, p. 13-14). In planimetric view the basalt is about 10 mi long in a southwest to northeast direction and about 4 mi wide (fig.5). Drillers' logs show the basalt to be 400 to 600 ft below land surface near its southwestern extent about 2 mi southwest of Rattlesnake Hill, and about 200 to 300 ft below land surface near its northeastern extent 5-7 mi northeast of Rattlesnake Hill (fig.5). Electrical resistivity data suggests that at depths greater than 1,000 ft below land surface, the basalt narrows to a thin neck that is approximately centered beneath Rattlesnake Hill. Thus the basalt is surrounded by, and in contact with, all three sedimentary aquifers.[17]

The witness then testified on the location of the existing places of use of the applications in relation to the basalt aquifer. The existing place of use of Application 70947 is approximately one-half mile to the south of the southern edge of the basalt aquifer, as it exists in the subsurface about 600 feet deep. However, it was emphasized that the extent of the aquifer is approximate.[18] The existing place of use of Application 70948 is approximately two and a half miles to the west, southwest of the southwestern edge of the basalt aquifer, as it exists in the subsurface.[19] The existing place of use of Application 70949 is approximately on top of or immediately adjacent to the southern edge of the basalt aquifer, as it exists in the subsurface.[20] The existing place of use of Application 70950 is approximately either on top of or immediately adjacent to the eastern edge of the basalt aquifer, as it exists in the subsurface.[21]

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[17] Exhibit No. 27, p. 10.
[18] Transcript, pp. 72-73.
[19] Transcript, p. 84.
[20] Transcript, p. 77.
[21] Transcript, p. 79.

The witness emphasized that his description of the locations of the existing places of use in reference to the edges of the basalt aquifer are approximate and that the extent of the basalt aquifer is not precisely defined. The witness stated, "[B]asically, it would be nice if the basalt aquifer were further defined, to get some additional information as to where the edges of it are more precisely."[22]

The witness was asked whether water removed from the existing places of use for the pending applications would reduce recharge to the basalt aquifer. The witness responded, "[I]t would potentially be reduced. One would expect that if you change the head in the shallow aquifer, that would reduce the gradient toward the basalt aquifer, and that could - that would reduce the recharge to the basalt."[23] Also, hydraulic gradients have been changed from their natural conditions by pumping of the basalt aquifer and irrigation practices.[24] The witness implied that the continued pumping and drawdown of the basalt aquifer has or may increase the hydraulic gradient between the basalt and the shallow aquifer thus causing a change in the quantity of recharge and in the direction of recharge.[25] The witness went on to describe the time it would take an individual molecule of water from the existing places of use to recharge the basalt aquifer.[26]

Using a variation of Darcy's Law and some assumptions regarding hydraulic gradient, permeability, and effective porosity, the travel time for a water molecule to reach the basalt aquifer was calculated.[27] For Applications 70947 and 70949, the travel time for a water molecule to reach the basalt aquifer is approximately 750 years. For Application 70950, the travel time is 1,250 years and for Application 70949 the travel time is longer than 750 years but was not specifically

[22] Transcript, p. 79.
[23] Transcript, p. 93.
[24] Transcript, p, 100.
[25] Transcript, p. 101.
[26] Transcript, p. 101-105.
[27] Transcript, p. 101-105.

calculated.[28] The time for an individual water molecule to reach the basalt aquifer from the application of irrigation water to the existing place of use was estimated at 750 to 1,250 years, but it was emphasized that changes in pumping and irrigation practices cause an almost immediate change in the gradient regime.[29]

In regards to the potential degradation in water quality in the basalt, the potential change in the hydraulic head, "...could have an impact on the water chemistry, because the water would be coming from a slightly different direction under the changed hydraulic head conditions that would exist."[30]

While the expert witnesses for the applicant generally concurred with the hydrogeologist's assessments, a fundamental disagreement arises regarding whether increased pumping of the basalt aquifer will change the existing hydraulic gradients. Under current hydraulic gradients, ground water at the existing places of use flows away from the basalt aquifer.[31] The applicant's witnesses described in greater detail recharge to the basalt aquifer.

The senior author of the report titled *Hydrology and Geochemistry of the Fallon Basalt and Adjacent Aquifers, and Potential Sources of Basalt Recharge, in Churchill County, Nevada*[32] briefly described the groundwater flow in the Lahontan Valley and basalt recharge. On the western side of the valley, water flows laterally with a downward component. Seepage from irrigated fields and canals flows downward to the shallow aquifer, then laterally to the basalt, through and around the basalt towards the eastern side. Near the discharge areas, the vertical gradient changes to an upward flow to discharge to the

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[28] Transcript, p. 104-105.
[29] Transcript, p. 107.
[30] Transcript, p. 99.
[31] Exhibit No. 33.
[32] Exhibit No. 27.

shallow aquifer and thence to the wetlands where evapotranspiration occurs. Recharge to the basalt does occur from the shallow aquifer just south of Rattlesnake Hill.[33]

Chemical composition evidence shows a distinct difference between water in the shallow aquifer and water in the intermediate and basalt aquifers.[34] This demonstrates the lack of recharge from the shallow aquifer to the intermediate and basalt aquifers near the center of the valley.[35] This is significant in that the protestant's witness predicated his conclusion of impacts on the basalt aquifer based on a change in the hydraulic regime that will cause an increase in the vertical gradient through the City of Fallon's pumping of the basalt aquifer. The isotopic analysis does not indicate that this is occurring; rather it demonstrates that the flow of water in the shallow aquifer is lateral and away from the basalt aquifer. This analysis is consistent with previous work, which concluded:

> Water in the intermediate and basalt aquifers in the Fallon area is generally lighter in hydrogen isotopes than water in the present-day Carson and Truckee Rivers. Evaporation makes water isotopically heavier, thus, present-day Carson and Truckee River water cannot evolve into the water now found in the intermediate and basalt aquifers. It follows that water supplied for irrigation is not the principal source of water presently in the intermediate and basalt aquifers.[36]

In regards to the specific existing places of use of the applications, monitor wells sampled by the U.S. Geological Survey show the lack of a downward recharge, which in turn shows that water from the shallow aquifer beneath those parcels does not provide recharge for the intermediate aquifer.[37]

In summary, the applicant's witness stressed the following points in testimony regarding recharge to the basalt and the potential impact of the pending change applications.

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[33] Transcript, pp. 172-173 and Exhibit No. 27, Figure 4.
[34] Exhibit No. 27, Figure 15.
[35] Transcript, p. 175.
[36] Exhibit No. 29, p. 15.
[37] Transcript, p. 178.

> Well, it [Exhibits 27, 29, and 33] basically shows that ground water in the shallow and intermediate aquifer beneath the parcel does not flow near the basalt aquifer.[38]
> Water rights are transferred from parcels down gradient from the basalt. There is basically no way they can be recharge to the basalt.[39]

The senior author of the report titled Hydrology and Geochemistry of the Fallon Basalt and Adjacent Aquifers, and Potential Sources of Basalt Recharge, in Churchill County, Nevada[40] also described changes in water quality that have occurred in the basalt aquifer. The report shows changes in chloride concentration in water pumped from the basalt. Samples taken in the early 1960's versus samples taken in the late 1990's show a consistent increase in chloride concentrations. The increase closely follows the increase in pumpage and corresponding declines in the basalt aquifer over the same time period.[41]

The witness also participated in drilling two test wells into the basalt aquifer, the results of which are published in a fact sheet titled, Results of Test Drilling in the Basalt Aquifer Near Fallon, Nevada.[42] The study was started because of concern about the continued viability of the basalt aquifer system as a source of municipal water supply. Increased pumping for municipal use has risen from about 1,700 acre-feet per year in the 1970's to over 3,000 acre-feet per year in the late 1990's and has caused water levels in the basalt to decline by as much as 12 feet. Over this same period of time concentrations of dissolved chloride have steadily increased. It is noted that although the chloride concentrations have increased they are still within the U.S. Environmental Protection Agency's drinking water standards and it would take decades to exceed the present

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[38] Transcript, p. 181.
[39] Transcript, p. 183.
[40] Exhibit No. 27.
[41] Transcript, pp. 181-182.
[42] Exhibit No. 31.

standard at the present rate of increase. Arsenic concentrations in the aquifer exceed the drinking water standards but have shown no apparent change over time.[43] The tests show high concentrations of chloride in the underlying deep aquifer and that is the likely source of increasing chloride in water pumped by the City of Fallon from the basalt aquifer.[44] When asked if water from the existing places of use of the applications could cause an increase in dissolved solids in the basalt aquifer, the witness responded:

> No, because the ground water beneath the parcels does not flow towards the basalt aquifer. Changes in irrigation on those parcels are not likely to cause any change in water quality in the basalt aquifer.[45]

Additional testimony and evidence provided by the applicant demonstrated that if fields overlying the existing places of use are removed from irrigation, water quality in the shallow aquifer improves due to increased seepage of higher quality water from the canals and reduced concentration of salts by irrigation and flushing.[46]

After a thorough review of the evidence and testimony offered, the State Engineer finds that the protestant failed to provide substantial evidence in support of protest claims 1, 2 and 3. The State Engineer further finds that the evidence shows approval of the applications will cause no significant impact on the quantity or quality of water used by the City of Fallon from the basalt aquifer.

III.

Protest claim 4 indicates that the approval of the applications would violate the Safe Drinking Water Act.

> The application, if granted, would violate the Safe Drinking Water Act as enforced by the State of Nevada through the Nevada Department of Environmental

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[43] Exhibit No. 31.
[44] Transcript, p. 183.
[45] Transcript, p. 183.
[46] Transcript, p. 265 and Exhibit No. 25.

> Protection and the Nevada Bureau of Health Protection Services because its depletion of groundwater quantity would have a corresponding negative affect on groundwater quality upon which the City of Fallon's municipal water supply relies.[47]

In regards to the potential degradation in water quality in the basalt aquifer, the protestant's witness testified that the potential change in the hydraulic head, "…could have an impact on the water chemistry, because the water would be coming from a slightly different direction under the changed hydraulic head conditions that would exist."[48] However, no direct testimony addressed exactly what the "negative affect" alluded to in the protest is or of any specific violations of the Safe Drinking Water Act that would occur if the applications were approved.

The applicant provided some testimony and evidence regarding potential water quality changes. Specifically, the U.S. Geological Survey began a study with the Bureau of Reclamation to estimate the potential effects on water levels, flow, and water quality in the shallow aquifer from changing irrigation practices in the Newlands Project area. The results of the study are published in a report titled *Conceptual Evaluation of Ground-Water Flow and Simulated Effects of Changing Irrigation Practices on the Shallow Aquifer in the Fallon and Stillwater Areas, Churchill County, Nevada.*[49] Numerical models of ground-water flow were used, among other things, to estimate the effect on water quality if recharge is reduced. The results of the report, regarding water quality, were summarized in testimony by co-author Dr. Siler, a hydrologist with the U.S Geological Survey. The witness testified, "…if you stop applying water to the fields, that in the shallow ground water below it, there would be a general improvement in the water quality."[50] In explanation, surface water infiltrating to the shallow groundwater aquifer comes from canals, the Carson River or applied irrigation all of

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[47] Exhibit Nos. 3, 6, 9 and 12.
[48] Transcript, p. 99.
[49] Exhibit No. 25.
[50] Transcript, pp. 206-207.

which is generally high quality water. For water that is applied for irrigation, evapotranspiration consumes a large portion of the water leaving behind a buildup of salts. This salt is detrimental to the root zone of the crops; therefore, the farmer applies additional water to the crop to flush the salts from the root zone downward into the water table. Water seeping directly from the river or from canals is deeper and cooler and has a lower level of evaporation. Therefore, it is generally good quality water that migrates to the water table from these sources.[51]

The predicted reduction in salt concentration down gradient from fields where irrigation has ceased, but the delivery canals remain unchanged, was based on the groundwater models in *Conceptual Evaluation of Ground-Water Flow and Simulated Effects of Changing Irrigation Practices on the Shallow Aquifer in the Fallon and Stillwater Areas, Churchill County, Nevada.* Bolstering these predictions were actual monitoring well samples taken from wells down gradient from fields where irrigation has ceased. The data show a marked improvement in two wells in particular, Well 39 and Well 64, where 260 acres and 1,100 acres, respectively were removed from irrigation near the wells. Measurements of specific conductance, a measurement of salinity, show that Well 39 went from about 6,000 microsiemens per centimeter to about 1,500 microsiemens per centimeter and Well 64 went from about 20,000 microsiemens per centimeter to about 2,000 microsiemens per centimeter.[52]

The State Engineer's authority in the review of water right applications is limited to considerations identified in Nevada's water policy statutes, *County of Churchill, et al. v. Ricci*, 341 F.3d 1172 (9th Circuit 2003) citing to *Pyramid Lake Paiute Tribe of Indians v. Washoe County*, 918 P.2d 697 (Nev. 1996), and the issue as to water quality is relegated to another agency of government.

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[51] Transcript, pp. 207-208.
[52] Exhibit No. 26, Figure 8, p. 18.

The State Engineer finds that the protestant failed to provide substantial evidence to support protest claim 4 and the issue of water quality is relegated to another agency of government. The State Engineer further finds that in regards to salinity, the evidence shows water quality will improve below the fields taken out of production.

IV.

The protestant suggested in its closing brief that in the alternative to denying the applications outright the State Engineer should invoke NRS § 533.368 and require the applicant to conduct a study. Expressed in protest claim 5, the protestant has stated that "... Nevada law at NRS § 533.368, requires hydrologic and environmental studies to determine the cumulative consequences of this application and those applications related thereto to the City's existing public water system and the City's existing water rights and Nevada's public interest."[2,4,6,8]

Nevada Revised Statute § 533.368 provides that if the State Engineer determines that a hydrological study, environmental study or any other study is necessary before he makes a final determination on an application pursuant to NRS § 533.370 and the applicant, a governmental agency or other person has not conducted such a study or the required study is not available, the State Engineer shall advise the applicant of the need for the study and the type of study required.

In examining NRS § 533.368, it is apparent that protest claim 5 clearly misstates NRS § 533.368 when stating, "... Nevada law at NRS § 533.368, *requires* [emphasis added] hydrologic and environmental studies..." The discretionary authority to order a study is provided in the plain reading of the statute which begins "...*If the State Engineer determines...*" [emphasis added]

Upon examination of the evidence, in particular Exhibit Numbers 20, 25, 26, 27, 28, 29, 30 and 31, the State Engineer finds that, in his determination, additional hydrological, environmental or other studies are not necessary to make a final determination on Applications 70947, 70948, 70949 and 70950.

V.

Protest claim 6 alleges, that the applications are inconsistent with State Engineer's Order No. 1116, which the protestant refers to as a moratorium.

Order No. 1116 is a further designation order issued by the State Engineer that provides for additional curtailments of groundwater appropriation within the Carson Desert Hydrographic Basin (101). Preceding Order No. 1116, is Order No. 716, dated July 6, 1978, and Order No. 722, dated October 4, 1978, designating and curtailing groundwater appropriation for irrigation purposes. Order No. 1116 further curtails groundwater appropriations by ordering that with the exception of those applications filed for any purpose except irrigation and which seek to appropriate 4,000 gallons per day or less, applications filed to appropriate water from the groundwater source will be denied.[53]

Order 1116 was a recognition that in general, the additional appropriation of ground water in the hydrologic basin had to be curtailed because existing water rights exceed the natural recharge. The order, while noting that secondary recharge occurs from irrigation and noting that such recharge was on the decline, was not intended as a mechanism to order that surface water irrigation must continue and the State Engineer finds he has no authority to order one to continue to irrigate. The State Engineer finds the evidence does not indicate there will be any negative impact on the natural recharge to the aquifer from which the protestant draws its water. The State Engineer finds the cumulative impacts of future water right acquisitions under the Truckee-Carson Pyramid Lake Settlement Act, Public Law 101-618 specifically under the Wetlands Acquisition Program, is not the subject of this ruling, but rather the State Engineer has under consideration only Applications 70947, 70948, 70949 and 70950 and

[53] State Engineer's Order No. 1116, August 22, 1995, official records in the Office of the State Engineer.

the State Engineer cannot consider hypothetical change applications that may or may not be filed at some unspecified time in the future.

VI.

The protestant's witness testified that he relied, in part, on reviewing existing reports and studies[54] to reach his conclusion that Applications 70947, 70948, 70949 and 70950 would potentially reduce recharge to the basalt aquifer, because if you change the head in the shallow aquifer it would reduce the gradient toward the basalt aquifer, and that could - would reduce the recharge to the basalt.[55] The applicant offered three witnesses from the U.S. Geological Survey that authored or co-authored several of these reports. These witnesses provided a contrary conclusion to that of the protestant's witness.

For the applicant, the flow of ground water in the shallow and intermediate aquifers in the areas below the existing places of use of the applications was described. It was concluded that the water in the shallow and intermediate aquifers beneath the existing places of use of the applications does not flow near the basalt aquifer but instead flows away from the basalt towards the Carson Lake and Stillwater National Wildlife Refuge areas as illustrated in Exhibit No. 33.[56] Further, geochemical evidence indicates that the shallow aquifer below the existing places of use does not recharge the intermediate aquifer.[57] The only place where recharge to the basalt aquifer is occurring from the shallow aquifer is near Rattlesnake Hill, which has been confirmed based on tritium data.[58]

When expert witnesses offer conflicting testimony, the State Engineer must evaluate the testimony based on the evidence presented and his own expertise and experience. In this case, the expert witnesses for both the applicant and protestant relied

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[54] Transcript. pp. 68-70.
[55] Transcript, p. 93.
[56] Transcript, p. 179-181.
[57] Transcript, p. 175.
[58] Transcript, p. 178.

upon many of the same published reports but came to opposite conclusions on whether water applied at the existing places of use would provide or reduce recharge to the basalt aquifer. On the applicant's side the expert witnesses authored or co-authored most of the reports and often times directly participated in the scientific work forming the basis for these reports.[59] In contrast, the protestant's witness indicated that his opinions were primarily based upon reviewing these existing reports, preparing a topographic map of the existing places of use and of field visits to the wells and existing places of use.[60]

Based on the evidence and testimony and the State Engineer's own expertise and experience, the State Engineer finds that the existing places of use of Applications 70947, 70948, 70949 and 70950 are not significant recharge areas for the basalt aquifer.

VII.

As to Application 70947, the existing place of use is southeast of the City of Fallon and the southern edge of the basalt aquifer and the general direction of groundwater flow is to the southeast towards Carson Lake. The existing place of use was last irrigated during the 2001 irrigation season and has lain fallow since then.[61] As to Application 70948, the existing place of use is southwest of the City of Fallon and the southwestern edge of the basalt aquifer and the general direction of groundwater flow is to the southeast towards Carson Lake. The existing place of use was last irrigated during the 2001 irrigation season and has lain fallow since then.[60] As to Application 70949, the existing place of use is southeast of the City of Fallon and near the eastern edge of the basalt aquifer and the general direction of groundwater flow is to the southeast towards Carson Lake. The existing place of use was last irrigated during the 2001 irrigation season but the land has been leased for hay and pasturing during the 2002, 2003, and 2004 seasons.[60] As to Application 70950, the existing place of use is northeast of the

[59] Exhibit Nos. 25, 26, 27, 29, 30, 31, 32, 33.
[60] Transcript, pp. 61-64, 69-70.

City of Fallon and the general direction of groundwater flow is to the northeast towards the Stillwater Wildlife Management Area. The existing place of use was last irrigated during the 2002 irrigation season but has been used for occasional grazing during the 2003 and 2004 season.[60]

At the existing places of use, the land has not been irrigated since 2001 (2002 for Application 70950). A review of the evidence shows the protestant was unable to show any impact on its existing water rights due to the cessation of surface water irrigation.

The protestant's witness testified that it would take around 750 to 1,250 years for a single molecule of water to travel from the shallow aquifer in the area of the existing places of use of the applications to the basalt aquifer and that the current hydraulic gradient will change as a result of the City of Fallon pumping from the basalt aquifer.[62] Since the Newlands project has only existed since approximately 1902 or just over 100 years, it is apparent that the City of Fallon has never relied on recharge from the existing places of use of the applications even if the State Engineer were to accept the change in hydraulic gradient argument of the protestant.

The applicant's witness testified that simulations using numeric models[63] indicate that there is as much recharge to the shallow aquifer from canals as from the application of water to the irrigated places of use.[64] This result occurs because the water that would have been applied to the fields stays in the canal for transport to the new places of use, which are down gradient. The increased amount of water in the canals will increase the seepage from the canals, which in turn offsets the lack of recharge from irrigating the existing places of use.[65]

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[61] Transcript, pp. 125-126 and Exhibit No. 33.
[62] Transcript, pp. 101-105.
[63] Exhibit No. 25.
[64] Transcript, p. 227.
[65] Transcript, p. 227 and Exhibit No. 25.

The State Engineer finds that approval of Applications 70947, 70948, 70949 and 70950 will have no significant affect, if any, on recharge to the shallow aquifer. The State Engineer finds that any recharge that may be reduced by approval of the applications is recharge to the shallow aquifer in areas where groundwater flow in the shallow aquifer is primarily lateral and down gradient from the basalt aquifer. The State Engineer finds that water removed from irrigation will be transported to the new places of use through existing canals, which will minimize any reduction in recharge to the shallow aquifer and therefore, potential declines in water levels in the shallow aquifer at the existing places of use is reasonable.

VIII.

The protestant has continued to argue the position that the approval of the applications will cause a reduction in secondary recharge and any reduction in secondary recharge will impair the existing rights of the City of Fallon. Under the basis of this argument, a surface water user must continue to irrigate and may not transfer his water if the current irrigation practices somehow recharge the groundwater source used by the City of Fallon.[66] The State Engineer previously addressed this issue in Ruling No. 4979, which has been upheld in the 9th Circuit Court of Appeals, in stating the following:

> These protestants are arguing that a senior-surface water appropriator must continue to irrigate his land because a junior ground-water appropriator has come to rely on that senior surface-water irrigator applying water to his land which in some fashion may recharge the ground-water source. If this were true, this argument could be extended so far as to say that a farmer may never abandon his surface-water right and give up farming because someone else drilled a ground-water well which depends on the farmer applying water to his land. The State Engineer does not believe this position can be supported in law.[67]

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[66] Transcript, pp. 285-292.
[67] Exhibit No. 14, pp. 22-23.

The State Engineer finds that the protestant's argument has no basis in Nevada water law and surface water irrigators that are a part of the Newlands Project have no obligation to irrigate their land for the purpose of providing secondary recharge to the City of Fallon.

CONCLUSIONS

I.

The State Engineer has jurisdiction over the parties and the subject matter of this action and determination.[68]

II.

The State Engineer is prohibited by law from granting a permit under an application to change the public waters where:[69]

A. there is no unappropriated water at the proposed source;
B. the proposed use or change conflicts with existing rights;
C. the proposed use or change conflicts with protectible interests in existing domestic wells as set forth in NRS § 533.024; or
D. the proposed use or change threatens to prove detrimental to the public interest.

III.

The State Engineer concludes the protestant did not prove its protest claims that the applications if granted would conflict with, injure, and impair existing permitted water rights owned by the City of Fallon.

IV.

The State Engineer concludes the protestant did not prove its protest claim that the applications if granted would be detrimental to the public interest.

V.

The State Engineer concludes the protestant did not prove its protest claim that the applications if granted would present a hazard and danger to the health, safety and welfare of the

[68] NRS chapter 533.
[69] NRS § 533.370(4).

residents of the City of Fallon and the surrounding community at large.

VI.

The State Engineer concludes the protestant did not prove its protest claim that the applications if granted would violate the Safe Drinking Water Act and such review is not a matter for consideration under the State Engineer's statutory duties.

VII.

The State Engineer concludes the protestant did not prove its protest claim that Nevada Revised Statute § 533.368 requires hydrologic and environmental studies, and the determination of whether a study is needed is discretionary with the State Engineer.

VIII.

The State Engineer concludes that Order No. 1116 does not apply to surface water change applications and was issued to curtail new appropriations of ground water because existing groundwater rights exceed the natural recharge of the basin. The State Engineer concludes that while in 1995 recharge from irrigation was a concern, evidence is indicating that the recharge from the canals is more important than that from irrigated fields. The State Engineer further concludes that the cumulative impacts of hypothetical change applications cannot be considered in this ruling; only Applications 70947, 70948, 70949 and 70950 can be considered. The State Engineer concludes the moratorium on new groundwater appropriations is not inconsistent with approval of these applications. The State Engineer concludes that groundwater flow in the shallow aquifer, at the existing places of use of Applications 70947, 70948, 70949 and 70950, flows away from the basalt aquifer. In addition, any reduction in recharge to the shallow aquifer will be offset by increased recharge of better quality water from existing canals.

IX.

The State Engineer concludes that the granting of these applications will not conflict with existing rights or threaten to prove detrimental to the public interest.

RULING

The protests to Applications 70947, 70948, 70949 and 70950 are hereby overruled and the applications are granted subject to:

1. the payment of statutory permit fees;
2. existing water rights.

Respectfully submitted,

HUGH RICCI, P.E.
State Engineer

HR/TW/jm

Dated this 9th day of September, 2005.

EXHIBIT No. 1

Exhibit 1 describes the Stillwater National Wildlife Refuge, as consisting of all Federally-owned or Federally-controlled lands within:

In T.21N., R.32E., M.D.B.& M. - Sections 2 through 11, Sections 14 through 22, Sections 27 through 34.

In T.21N., R.31E., M.D.B.& M. - all Sections.

In T.20N., R.32E., M.D.B.& M. - Sections 3 through 10, Sections 16 through 21, Sections 29 and 30.

In T.20N., R.31E., M.D.B.& M. - all Sections.

In T.19N., R.31E., M.D.B.& M. - Sections 2 through 11, Sections 14 through 22, Sections 27 through 33.

In T.19N., R.30E., M.D.B.& M. - Section 13 - all those portions of the NE¼ NE¼, SE¼ NE¼, NE¼ SE¼ and SE¼ SE¼ lying east of Stillwater Slough; Section 24 - NE¼ NE¼, NW¼ NE¼, NE¼ NW¼, SE¼ NW¼ and SW¼ NE¼.

Exhibit No. 2

Exhibit 2 describes the Carson Lake Area as consisting of:

In T.16N., R.29E., M.D.B.& M. - tract 37; Section 1 lots 3 to 6, inclusive, S½ SW¼ and SE¼; Section 2 lots 1, 2 and 5 to 10, inclusive, S½ SE¼; Section 3 lots 3, 4, and 6 to 9, inclusive, S½ NW¼, SW¼ and SE¼; Section 4 lots 1, 2 and 5 to 7, inclusive, NE¼ SW¼, S½ SW¼ and SE¼; Section 5 lots 1 to 4, inclusive, S½ SW¼ and S½ SE¼; Section 6 lots 1 to 3, inclusive, and lots 8, 11, 12, 14 and 17, S½ SE¼.

In T.17N., R.29E., M.D.B.& M. - tract 37; tract 38; tract 40; Section 9 lots 4, 6, 8 and 10; Section 19 lots 1 to 4, inclusive.

In T.18N., R.29E., M.D.B.& M. - Section 35, S½ SE¼.

In T.16N., R.30E., M.D.B.& M. - Section 5 lots 3 to 6, inclusive, and lots 11 and 12, SW¼; Section 6, lots 1 to 21, inclusive, and SE¼.

In T.17N., R.30E., M.D.B.& M. - tract 37; Section 5 lots 3 and 4, S½ NW¼ and SW¼; Section 6 lots 1 to 5, inclusive, and lots 9 to 12, inclusive, S½ NE¼ and SE¼; Section 7 lot 4, and lots 7 to 12, inclusive, NW¼ NE¼ and E½ NE¼; Section 8 W½; Section 17 W½; Section 18 lots 1 to 4, inclusive; Section 19 lot 1; Section 20 lots 1 to 4, inclusive; E½ NW¼ and E½ SW¼; Section 29 lots 1 to 4, inclusive, E½ NW¼ and E½ SW¼; Section 30 lot 1; Section 31 lots 1, 2, and 6 to 9, inclusive; Section 32 W½.