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Electronically Filed
Jun 02 2022 04:45 p.m.
Elizabeth A. Brown
Clerk of Supreme Court

IN THE SUPREME COURT OF THE STATE OF NEVADA

ADAM SULLIVAN, P.E., NEVADA STATE ENGINEER, DIVISION OF WATER RESOURCES, DEPARTMENT OF CONSERVATION AND NATURAL RESOURCES; LAS VEGAS VALLEY WATER DISTRICT; SOUTHERN NEVADA WATER AUTHORITY; and CENTER FOR BIOLOGICAL DIVERSITY,

Appellants,

vs.

LINCOLN VALLEY WATER DISTRICT; VIDLER WATER COMPANY, INC.; COYOTE SPRINGS INVESTMENT, LLC; NEVADA COGENERATION ASSOCIATES NOS 1 AND 2; APEX HOLDING COMPANY, LLC; DRY LAKE WATER LLC; GEORGIA-PACIFIC GYPSUM, LLC; REPUBLIC ENVIRONMENTAL TECHNOLOGIES, INC.; MUDDY VALLEY IRRIGATION COMPANY; SIERRA PACIFIC POWER COMPANY, d/b/a NV ENERGY; NEVADA POWER COMPANY, d/b/a

Supreme Court No. 84739

Docket 84739 Document 2022-17617

NV ENERGY; THE CHURCH OF JESUS CHRIST OF LATTER-DAY SAINTS; MOAPA VALLEY WATER DISTRICT; WESTERN ELITE ENVIRONMENTAL, INC.; BEDROC LIMITED, LLC; and CITY OF NORTH LAS VEGAS, Respondents.	
CENTER FOR BIOLOGICAL DIVERSITY; SOUTHERN NEVADA WATER AUTHORITY; LAS VEGAS VALLEY WATER DISTRICT; MUDDY VALLEY IRRIGATION COMPANY; COYOTE SPRINGS INVESTMENT, LLC; LINCOLN COUNTY WATER DISTRICT; APEX HOLDING COMPANY, LLC; DRY LAKE WATER, LLC; NEVADA COGENERATION ASSOCIATES NOS. 1 AND 2; GEORGIA-PACIFIC GYPSUM, LLC; REPUBLIC ENVIRONMENTAL TECHNOLOGIES, INC; and VIDLER WATER COMPANY, INC.; Appellants, vs. NEVADA STATE ENGINEER; THE CHURCH OF JESUS CHRIST OF LATTER-DAY SAINTS; SIERRA PACIFIC POWER COMPANY d/b/a NV ENERGY AND NEVADA POWER COMPANY d/b/a NV ENERGY; MOAPA VALLEY WATER DISTRICT; CITY OF NORTH LAS VEGAS; WESTERN	**Supreme Court No. 84742**

ELITE ENVIRONMENTAL, INC.; and BEDROC LIMITED, LLC,

Respondents.

SOUTHERN NEVADA WATER AUTHORITY,

Appellant,

vs.

COYOTE SPRINGS INVESTMENT, LLC; APEX HOLDING COMPANY, LLC; NEVADA COGENERATION ASSOCIATES NOS. 1 AND 2; GEORGIA-PACIFIC GYPSUM, LLC; DRY LAKE WATER, LLC; REPUBLIC ENVIRONMENTAL TECHNOLOGIES, INC.; LINCOLN COUNTY WATER DISTRICT; VIDLER WATER COMPANY, INC.; MUDDY VALLEY IRRIGATION COMPANY; THE CENTER FOR BIOLOGICAL DIVERSITY; SIERRA PACIFIC POWER COMPANY d/b/a NV ENERGY AND NEVADA POWER COMPANY d/b/a NV ENERGY; MOAPA VALLEY WATER DISTRICT; THE CHURCH OF JESUS CHRIST OF LATTER-DAY SAINTS; CITY OF NORTH LAS VEGAS; WESTERN ELITE ENVIRONMENTAL, INC.; BEDROC LIMITED, LLC, and ADAM SULLIVAN, P.E. NEVADA STATE ENGINEER,

Respondents.

Supreme Court No. 84741

MUDDY VALLEY IRRIGATION COMPANY,

Appellant,

vs.

ADAM SULLIVAN, P.E., NEVADA STATE ENGINEER, DIVISION OF WATER RESOURCES, DEPARTMENT OF CONSERVATION AND NATURAL RESOURCES; LAS VEGAS VALLEY WATER DISTRICT; SOUTHERN NEVADA WATER AUTHORITY; COYOTE SPRINGS INVESTMENT, LLC; APEX HOLDING COMPANY, LLC; DRY LAKE WATER, LLC; CENTER FOR BIOLOGICAL DIVERSITY; NEVADA COGENERATION ASSOCIATES NOS. 1 AND 2; GEORGIA-PACIFIC GYPSUM, LLC; REPUBLIC ENVIRONMENTAL TECHNOLOGIES, INC.; LINCOLN COUNTY WATER DISTRICT; VIDLER WATER COMPANY, INC.; SIERRA PACIFIC POWER COMPANY, d/b/a NV ENERGY AND NEVADA POWER COMPANY, d/b/a NV ENERGY; MOAPA VALLEY WATER DISTRICT; THE CHURCH OF JESUS CHRIST OF LATTER-DAY SAINTS; CITY OF NORTH LAS VEGAS; WESTERN ELITE ENVIRONMENTAL, INC.; AND BEDROC LIMITED, LLC,

Respondents.

Supreme Court No. 84809

VOLUME ONE OF EXHIBITS IN SUPPORT OF EMERGENCY MOTION FOR STAY UNDER NRAP 27(E) AND JOINDER

Appellant, the Center for Biological Diversity, by and through counsel, submits Volume One of its exhibits in support of its Emergency Motion for Stay Under NRAP 27(e) and Joinder pursuant to NRAP 8(a)(2).

Affirmation: The undersigned do hereby affirm that the preceding document and/or attachments do not contain the social security number of any person.

Dated this 2nd day of June, 2022.

/s/ Scott Lake

SCOTT LAKE, NV Bar No. 15765
CENTER FOR BIOLOGICAL DIVERSITY
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CERTIFICATE OF SERVICE

I certify that I am an employee of the Center for Biological Diversity, and that on this 2nd day of June, 2022 I served a true and correct copy of the foregoing by electronic service to the participants in this case who are registered with the Nevada Supreme Court's efiling system to this matter.

/s/ Scott Lake
Scott Lake

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[1] This technical report published by the Nevada Division of Water Resources and the U.S. Geological Survey was not designated by the State Engineer as part of the Record on Appeal, but was introduced in briefing by Appellant Coyote Springs Investment, LLC, and appears to have been implicitly relied upon by the District Court. *See* Order at 24-26.

Exhibit 1

FFCO

DISTRICT COURT
CLARK COUNTY, NEVADA

LAS VEGAS VALLEY WATER DISTRICT, and SOUTHERN NEVADA WATER AUTHORITY, Petitioners, vs. TIM WILSON, P.E., Nevada State Engineer, DIVISION OF WATER RESOURCES, DEPARTMENT OF CONSERVATION AND NATURAL RESOURCES, Respondent. And All Consolidated Cases.	Case No. A-20-816761-C Dept. No. I Consolidated with Cases: A-20-817765-P A-20-818015-P A-20-817977-P A-20-818069-P A-20-817840-P A-20-817876-P A-21-833572-J

FINDINGS OF FACT, CONCLUSIONS OF LAW, AND ORDER GRANTING PETITIONS FOR JUDICIAL REVIEW

This matter comes before this Court on consolidated petitions for judicial review of State Engineer's Order 1309 filed by Petitioners:

- Southern Nevada Water Authority and Las Vegas Valley Water District
- Coyote Spring Investment, LLC
- Apex Holding Co. and Dry Lake Water, LLC
- The Center for Biological Diversity
- Muddy Valley Irrigation Company
- Nevada Cogeneration Associates Nos. 1 and 2
- Georgia-Pacific Gypsum LLC and Republic Environmental Technologies, Inc.
- Lincoln County Water District and Vidler Water Company.

Bita Yeager
Eighth Judicial District Court
Clark County, Nevada
Department 1

The parties stipulated to permit the following Intervenors into this matter:

- Sierra Pacific Power Company d/b/a NV Energy and Nevada Power Company d/b/a NV Energy
- Moapa Valley Water District
- The Church of Jesus Christ of Latter-Day Saints
- City of North Las Vegas
- Western Elite Environmental, Inc. and Bedroc Limited, LLC.

In addition, some Petitioners intervened to respond to other petitions for judicial review. The Parties appeared by and through their respective counsels of record. The Court held oral argument from February 14, 2022 to February 17, 2022.

The Court having considered the evidence, the pleadings, together with opening and closing arguments presented at the hearing for these matters, and good cause appearing therefor, makes the following Findings of Fact, Conclusions of Law, and Order:

I.

PROCEDURAL HISTORY

On June 15, 2020, the Nevada State Engineer issued Order No. 1309 as his latest administrative action regarding the Lower White River Flow System ("LWRFS")[1].

On June 17, 2020, the Las Vegas Valley Water District and the Southern Nevada Water Authority (collectively, "SNWA") filed a petition for judicial review of Order 1309 in the Eighth Judicial District Court in Clark County, Nevada.[2] Subsequently, the following petitioners filed petitions for judicial review in the Eighth Judicial District Court: Coyote Spring Investments, LLC ("CSI"); Apex Holding Company, LLC and Dry Lake Water LLC (collectively, "Apex"); the Center Biological Diversity ("CBD"); Muddy Valley Irrigation Company ("MVIC"); Nevada

[1] SE ROA 2 – 69. The LWRFS refers to an area in southern Nevada made up of several hydrological basins that share the same aquifer as their source of groundwater. The Nevada State Engineer determined that this encompasses the area that includes Coyote Spring Valley, Muddy River Springs Area, California Wash, Hidden Valley, Garnet Valley, Kane Springs Valley and the northwest portion of the Black Mountains Area.

[2] LVVWD and SNWA Petition for Judicial Review, filed June 17, 2020.

Cogeneration Associates Numbers 1 and 2 ("Nevada Cogen"); and Georgia-Pacific Gypsum LLC, and Republic Technologies, Inc. (collectively, "Georgia-Pacific"). All petitions were consolidated with SNWA's petition.[3]

Later, Sierra Pacific Power Company d/b/a NV Energy ("Sierra Pacific") and Nevada Power Company d/b/a NV Energy ("Nevada Power" and, together with Sierra Pacific, "NV Energy"), Moapa Valley Water District ("MVWD"), the Church of Jesus Christ and of Latter-Day Saints (the "Church"), the City of North Las Vegas ("CNLV"), and Western Elite Environmental, Inc. and Bedroc Limited (collectively, "Bedroc") [4] were granted intervention status in the consolidated petitions for judicial review of Order 1309.

On July 13, 2020, Lincoln County Water District and Vidler Water Co. (collectively, "Vidler") timely filed their Petition for Judicial Review of State Engineer Order 1309 in the Seventh Judicial District Court in Lincoln County, Nevada, identified as Case No. CV-0702520. On August 26, 2020, the Seventh Judicial District Court issued an Order Granting Motion to Change Venue, transferring this matter to the Eighth Judicial District Court in Clark County, Nevada. Vidler appealed the Order Granting Motion to Change Venue to the Nevada Supreme Court, and on April 15, 2021, the Nevada Supreme Court entered its Order of Affirmation. On May 27, 2021, per verbal stipulation by the parties, the Court ordered this matter consolidated into Case No. A-20-816761-C. When transferred to the Eighth Judicial District Court, Vidler's action was assigned Case No. A-21-833572-J. Notwithstanding the consolidation of all of the cases, each case retained its individual and distinct factual and legal issues.

Petitioners in all the consolidated actions filed their Opening Briefs on or about August 27, 2021. Respondents State Engineer, Intervenors, and Petitioners who were Respondent-Intervenors filed their Answering Briefs on or about November 24, 2021. Petitioners filed their Reply Briefs on or about January 11, 2022.

[3] Stipulation for Consolidation, A-20-816761-C, May 26, 2021.

[4] Bedroc and CNLV did not file briefs and did not participate in oral argument.

II.

FACTUAL HISTORY

A. The Carbonate Groundwater Aquifer and the Basins

Much of the bedrock and mountain ranges of Eastern Nevada are formed from a sequence of sedimentary rocks lain down during the Paleozoic Era. These formations are limestones or dolomites, commonly referred to as "carbonates," due to the chemical composition of the minerals composing the rocks. These formations have been extensively deformed through folding and faulting caused by geologic forces. This deformation has caused extensive fracture and fault systems to form in these carbonate rocks, with permeability enhanced by the gradual solution of minerals. The result is an aquifer system that over time has accumulated large volumes of water with some apparent degree of connection throughout the much of area.[5] The valley floors in the basins of Eastern Nevada are generally composed of alluvium comprised largely of relatively young (<5 million years) unconsolidated sands, gravels, and clays. This sequence is loosely referred to as the "Alluvial Aquifer," the aquifer for most shallow wells in the area. Most of the water in the Carbonate Aquifer is present due to infiltration of water thousands of years ago; recent recharge from present day precipitation may represent only a fraction of the water stored.

Approximately 50,000 square miles of Nevada sits atop of this geologic layer of carbonate rock, which contains significant quantities of groundwater.[6] This carbonate-rock aquifer system contains at least two major "regional flow systems" - continuous, interconnected, and transmissive geologic features through which water flows underground roughly from north to south: the Ash Meadows-Death Valley regional flow system; and the White River-Muddy River Springs system.[7] These flow systems connect the groundwater beneath dozens of topographic valleys across distances exceeding 200 miles.[8] The White River-Muddy River Springs flow system, stretching approximately

[5] State Engineer Record on Appeal ("SE ROA") 36062-67, Ex. 14; SE ROA 661, Ex. 8.

[6] SE ROA 659.

[7] SE ROA 661.

[8] SE ROA 661.

240 miles from southern Elko County in the north to the Muddy River Springs Area in the south, was identified as early as 1966.[9] The area designated by Order 1309 as the LWRFS consists generally of the southern portion of the White River-Muddy River Springs flow system.[10].

The Muddy River runs through a portion of the LWRFS before cutting southeast and discharging into Lake Mead.[11] Many warm-water springs, including the Muddy River Springs at issue in this litigation, discharge from the regional carbonate groundwater aquifer.[12] The series of springs, collectively referred to as the "Muddy River Springs" in the Muddy River Springs Area hydrographic basin form the headwaters of the Muddy River and provide the only known habitat for the endangered Moapa dace.[13]

The Muddy River Springs are directly connected to, and discharge from, the regional carbonate aquifer.[14] Because of this connection, flows from the springs are dependent on the elevation of groundwater within the carbonate aquifer, and can change rapidly in direct response to changes in carbonate groundwater levels.[15] As carbonate groundwater levels decline, spring flows decrease, beginning with the highest-elevation springs.[16]

As early as 1989, there were concerns that sustained groundwater pumping from the carbonate-rock aquifer would result in water table declines, substantially deplete the water stored in the aquifer, and ultimately reduce or eliminate flow from the warm-water springs that discharge from the aquifer.[17]

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[9] SE ROA 11349-59.

[10] *See* SE ROA 11350.

[11] SE ROA 41943.

[12] SE ROA 660-61, 53056, 53062.

[13] SE ROA 663-664, 41959, 48680.

[14] SE ROA 73-75, 34545, 53062.

[15] SE ROA 60-61, 34545.

[16] SE ROA 46, 34545.

[17] *See* SE ROA 661.

The general rule in Nevada is that one acquires a water right by filing an application to appropriate water with the Nevada Division of Water Resources ("DWR"). If the DWR approves the application, a "Permit to Appropriate" issues. Nevada has adopted the principle of "first in time, first in right," also known as "priority." The priority of a water right is determined by the date a permit is applied for. Nevada's water resources are managed through administrative units called "hydrographic basins," which are generally defined by topography, more or less reflecting boundaries between watersheds. Nevada is divided into 232 hydrographic basins (256 hydrographic basins and sub-basins, combined) based upon the surface geography and subsurface flow.

The priority of groundwater rights is determined relative to the water rights holder within the individual basins. If there is not enough water to serve all water right holders in a particular basin, "senior" appropriators are satisfied first in order of priority: the rights of "junior" appropriators may be curtailed. Historically, The Nevada State Engineer has managed hydrographic basins in a basin-by-basin manner for decades,[18] and administers and manages each basin as a discrete hydrologic unit.[19] The State Engineer keeps and maintains annual pumping inventories and records on a basin-by-basin basis.[20]

This administrative structure has worked reasonably well for basins where groundwater is pumped from "basin fill" aquifers or alluvium, where the annual recharge of the groundwater historically has been estimated based upon known or estimated precipitation data - establishing the amount of groundwater that is recharged annually and can be extracted sustainably from a basin, known as the "perennial yield." In reality, many hydrographic basins are severely over-appropriated, due to inaccurate estimates, over pumping, domestic wells, changing climate conditions, etc.

Administration of groundwater rights is made particularly complex when the main source of

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[18]SE ROA 654, 659, 699, 726, 755.

[19] SE ROA 949-1069.

[20] SE ROA 1070-1499.

groundwater is not "basin fill" or alluvium, but aquifers found in permeable geologic formations lying beneath the younger basin fill, and which may underlie large regions that are not well defined by the present-day hydrographic basins. This is the case with Nevada's "Carbonate Aquifer."

When necessary, the State Engineer may manage a basin that has been designated for administration. NRS 534.030 outlines the process by which a particular basin can be designated for administration by the State Engineer. In the instant case, six of the seven basins affected by Order No. 1309 had already been designated for management under NRS 534.030, including:

a. Coyote Spring Valley Hydrographic Basin ("Coyote Spring Valley"), Basin No. 210, since 1985;

b. Black Mountains Area Hydrographic Basin ("Black Mountains Area"), Basin No. 215, since November 22, 1989;

c. Garnet Valley Hydrographic Basin ("Garnet Valley"), Basin No. 216, since April 24, 1990;

d. Hidden Valley Hydrographic Basin ("Hidden Valley"), Basin No. 217, since October 24, 1990;

e. California Wash Hydrographic Basin ("California Wash"), Basin No. 218, since August 24, 1990; and

f. Muddy River Springs Area Hydrographic Basin ("Muddy River Springs Area"), Basin No. 219, since July 14, 1971.[21]

Kane Springs Valley ("Kane Springs Valley"), Basin 206, which was also affected by Order No. 1309, had not been designated previously for administration.[22]

[21] *See* SE ROA 2-3, 71-72.

[22] The Court takes judicial notice of Kane Springs Valley Basin's status of not being designated for administration per NRS 534.030. http://water.nv.gov/StateEnginersOrdersList.aspx (available online at the Division of Water Resources. "Mapping& Data" tab, under "Water Rights" tab, "State Engineer's Orders List and Search"). Facts that are subject to judicial notice "are facts in issue or facts from which they may be inferred." NRS 47.130(1). To be judicially noticed, a fact must be "[g]enerally known" or "capable of accurate and ready determination by resort to sources whose accuracy cannot reasonably be questioned." NRS 47.130(2); *Andolino v. State*, 99 Nev. 346, 351, 662 P.2d 631, 633-34 (1983) (courts may take judicial notice of official government publications); *Barron v. Reich*, 13 F.3d 1370, 1377 (9th Cir. 1994) (courts may take judicial notice of documents obtained from administrative agencies); *Greeson v. Imperial Irr. Dist.*, 59 F.2d 529, 531 (9th Cir.1932) (courts may take judicial notice of "public documents").

B. The Muddy River Decree

Over one hundred years ago, this Court issued the Muddy River Decree of 1920 (sometimes referred to herein as the "Decree" or "Muddy River Decree"), which established water rights on the Muddy River.[23] The Muddy River Decree recognized specific water rights,[24] identified each water right holder on the Muddy River, and quantified each water right.[25] MVIC specifically owns certain rights ". . . to divert, convey, and use all of said waters of said River, its head waters, sources of supply and tributaries, save and except the several amounts and rights hereinbefore specified and described . . . and to divert said waters, convey and distribute the same to its present stockholders, and future stockholders, and other persons who may have acquired or who may acquire temporary or permanent rights through said Company. . ."[26]. The Decree appropriates all water of the Muddy River at the time the Decree was entered, which was prior to any other significant development in the area. The predevelopment flow averaged approximately 33,900 acre feet per annum ("afa").[27] The rights delineated through The Muddy River Decree are the oldest and most senior rights in the LWRFS.

C. The Moapa Dace

The Moapa dace (*Moapa coriacea*) is a thermophilic minnow endemic to the upper spring-fed reaches Muddy River, and has been federally listed as endangered since 1967.[28] Between 1933

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[23] *See* Judgment and Decree, *Muddy Valley Irrigation Co. v. Moapa and Salt Lake Produce Co.* (the "Muddy River Decree" or "Decree") (March 11, 1920) (SE ROA 33770-33816).

[24] SE ROA 33770-816. Specifically, the Muddy River Decree finds "[t]hat the aggregate volume of the several amounts and quantities of water awarded and allotted to the parties . . . is the total available flow of the said Muddy River and consumes and exhausts all of the available flow of the said Muddy River, its headwaters, sources of supply and tributaries." SE ROA 33792-33793.

[25] SE ROA 33798-806.

[26] SE ROA 33775.

[27] *See* SNWA Report (June 2019) (SE ROA 41930 – 42072) at § 3.4.1 (SE ROA 41962) describing the predevelopment flows as measured in 1946 as 33,900 afa and the average flow measured from July 1, 1913 to June 30, 1915 and October 1, 1916 to September 30, 1917 as 34,000 afa. The NSE further recognizes 33,900 afa as the predevelopment flow. *See* Order 1309 (SE ROA 2-69) at p. 61 (SE ROA 62).

[28] SE ROA 5.

and 1950, the Moapa dace was abundant in the Muddy River and was estimated to inhabit as many as 25 individual springs and up to 10 miles of stream habitat. However, by 1983, the species only occurred in springs and two miles of spring outflows. Currently, approximately 95 percent of the total Moapa dace population occurs within 1.78 miles of one major tributary system that flows from three high-elevation spring complexes within the Muddy River Springs Area.[29]

Threats to the Moapa Dace include non-native predatory fishes, habitat loss from water diversions and impoundments, wildfire risk from non-native vegetation, and reductions to surface spring-flows resulting from groundwater development.[30] Because the Moapa dace is entirely dependent on spring flow, protecting the dace necessarily involves protecting the warm spring sources of the Muddy River.[31]

D. Order 1169

Significant pumping of the Carbonate Aquifer in the LWRFS began in the 1980s and 1990s. Initial assessments of the water available in the Aquifer suggested it would provide a new abundant source of water for Southern Nevada. Because the prospective water resources of the LWRFS carbonate appeared to be substantial, nearly 100 water right applications for over 300,000 acre feet were filed in State Engineer's office.[32]

By 2001, the State Engineer had granted more than 40,000 acre feet of applications in the LWRFS. The State Engineer considered additional applications for groundwater in Coyote Spring Valley and adjacent hydrographic basins. However, concerned over the lack of information regarding the sustainability of water resources from the Carbonate Aquifer, the State Engineer began hearings in July and August 2001 on water right applications.[33]

[29] SE ROA 47169.

[30] SE ROA 47160.

[31] SE ROA 42087.

[32] SE ROA 4, Ex. 1.

[33] *Id.*

On March 8, 2002, the State Engineer issued Order 1169 to delay consideration of new water right applications and require the pumping of existing groundwater to determine what impact increased groundwater pumping would have on senior water rights and the environment at the Muddy River ("Aquifer Test").[34] Order 1169 held in abeyance all applications for the appropriation of groundwater from the carbonate-rock aquifer system located in the Coyote Spring Valley Basin (Basin 210), Black Mountains Area Basin (Basin 215), Garnet Valley Basin (Basin 216), Hidden Valley Basin (Basin 217), Muddy River Springs aka Upper Moapa Valley Basin (Basin 210), and Lower Moapa Valley Basin (Basin 220).[35] California Wash (Basin 218) was subsequently added to this Order.[36]

Notably, Kane Springs was not included in the Order 1169 study area. In Ruling 5712, the State Engineer specifically determined Kane Springs would not be included in the Order 1169 study area because there was no substantial evidence that the appropriation of a limited quantity of water in Kane Springs would have any measurable impact on the Muddy River Springs that warranted the inclusion of Kane Springs in Order 1169.[37] The State Engineer specifically rejected the argument that the Kane Springs rights could not be appropriated based upon senior appropriated rights in the down gradient basins.[38]

Order 1169A, issued December 21, 2012, set up a test to "stress" the Carbonate Aquifer through two years of aggressive pumping, combined with examination of water levels in monitoring wells located throughout the LWRFS.[39] Participants in the Aquifer test were Southern Nevada Water Authority ("SNWA"), Las Vegas Valley Water District ("LVVWD"), Moapa Valley Water District, Coyote Springs Investments, LLC ("Coyote Springs"), Moapa Band of Paiutes, and Nevada

[34] SE ROA 654-669.

[35] *See* SE ROA 659, 665.

[36] SE ROA 659-69, Ex. 8; *see also* SE ROA 654, Ex. 7.

[37] SE ROA 719.

[38] SE ROA 713.

[39] SE ROA 654-58, Ex. 7.

Power Company. Pumping included 5,300 afa in Coyote Spring Valley, 14,535 afa total carbonate pumping, and 3,840 afa alluvial pumping.[40] Pumping tests effects were examined at 79 monitoring wells and 11 springs and streamflow monitoring sites.[41] The Kane Springs basin was not included in the Order 1169 aquifer testing, and Kane Springs basin water right holders were not involved, not provided notice, and did not participate in the aquifer testing, monitoring or measurements, submission of reports, proceedings and actions taken by the State Engineer pursuant to Order 1169.[42]

The State Engineer's conclusions from the pump test found an "unprecedented decline" in high-altitude springs, an "unprecedented decline" in water levels, and that additional pumping in the central part of Coyote Spring Valley or the Muddy River Spring Area could not occur without conflict with existing senior rights, including decreed surface water rights on the Muddy River, or the habitat of the Moapa Dace. The State Engineer attributed observed decreases in water levels in other areas of the basins to the pumping during the Order 1169 test and concluded that the test demonstrated connectivity within the Carbonate Aquifer of the LWRFS. On this basis, the State Engineer determined that the five basin LWRFS should be jointly managed.

In 2014, and based on the results of the Aquifer Test, the State Engineer issued Rulings 6254–6261 on January 29, 2014 denying all the pending groundwater applications in Coyote Springs Valley, Muddy River Springs Area, California Wash, Hidden Valley, Garnet Valley, and certain portions of the Black Mountains Area.[43] His rationale in each ruling was the same: "because these basins share a unique and close hydrologic connection and share virtually all of the same source and supply of water, unlike other basins in Nevada, these five basins will be jointly managed."[44]

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[40] The Order uses the term acre-foot per year (afy), but for consistency with common usage, this Court uses the equivalent term acre feet per annum.

[41] SE ROA 6, Ex. 1.

[42] SE ROA 36230 - 36231.

[43] SE ROA 726 – 948.

[44] *See e.g.*, SE ROA 479.

E. Interim Order 1303 and proceedings

On January 11, 2019 -- nearly 17 years after issuing Order 1169, then-State Engineer Jason King issued Interim Order 1303 to start a two-phased administrative process to resolve the competing interests for water resources in the LWRFS.[45] He created the LWRFS as a joint administrative unit and invited stakeholders to participate in an administrative hearing to address the factual questions of what the boundary of the LWRFS should be, and what amount of groundwater could be sustainably pumped in the LWRFS.[46] The LWRFS is the first multi-basin area that the Nevada State Engineer has designated in state history. The ordering provisions in Interim Order 1303 provide in pertinent part:

> 1. The Lower White River Flow System consisting of the Coyote Spring Valley, Muddy River Springs Area, California Wash, Hidden Valley, Garnet Valley, and the portion of the Black Mountains Area as described in this Order, is herewith designated as a joint administrative unit for purposes of administration of water rights. All water rights within the Lower White River Flow System will be administered based upon their respective date of priorities in relation to other rights within the regional groundwater unit.
>
> Any stakeholder with interests that may be affected by water right development within the Lower White River Flow System may file a report in the Office of the State Engineer in Carson City, Nevada, no later than the close of business on Monday, June 3, 2019.
>
> Reports filed with the Office of the State Engineer should address the following matters:
>
> a. The geographic boundary of the hydrologically connected groundwater and surface water systems comprising the Lower White River Flow System;
>
> b. The information obtained from the Order 1169 aquifer test and subsequent to the aquifer test and Muddy River headwater spring flow as it relates to aquifer recovery since the completion of the aquifer test;
>
> c. The long-term annual quantity of groundwater that may be pumped from the Lower White River Flow System, including the relationships between the location of pumping on discharge to the Muddy River Springs, and the capture of Muddy River flow;

[45] SE ROA 635-53, Ex. 6.

[46] SE ROA 82-83.

> d. The effects of movement of water rights between alluvial wells and carbonate wells on deliveries of senior decreed rights to the Muddy River; and,
>
> e. Any other matter believed to be relevant to the State Engineer's analysis.

SE ROA 647-48, Ex. 6.

The State Engineer identified the LWRFS as including the following hydrographic basins: Coyote Spring Valley, a portion of Black Mountains Area, Garnet Valley, Hidden Valley, California Wash, and the Muddy River Springs Area.[47] Kane Springs continued to be excluded as part of the LWRFS multi-basin area in Interim Order 1303.[48]

In July and August 2019, reports and rebuttal reports were submitted discussing the four matters set forth in Interim Order 1303. On July 25, 2019, the State Engineer issued a Notice of Pre-Hearing Conference, and on August 9, 2019, the State Engineer held a prehearing conference. On August 23, 2019, the State Engineer issued a Notice of Hearing (which it amended on August 26, 2019), noting that the hearing would be "the first step" in determining how to address future management decisions, including policy decisions, relating to the LWRFS.[49] He also indicated that the legal question of whether groundwater pumping in the LWRFS conflicts with senior water rights would be addressed in Phase 2 of the LWRFS administrative process.[50]

The Hearing Officer made it clear that "any other matter believed to be relevant" as specified in ordering paragraph 1(e) of Order 1303 would not include discussion of the administrative impacts of consolidating the basins or any policy matters affected by its decision. The State Engineer conducted a hearing on the reports submitted under Order 1303 between September 23, 2019, and October 4, 2019. At the start of the administrative hearing, the State Engineer reminded the parties the public administrative hearing was not a "trial-type" proceeding,

[47] SE ROA 70-88.

[48] *Id.*

[49] SE ROA 263, Ex. 2 (Notice); SE ROA 285, Ex. 3 (Amended Notice).

[50] SE ROA 522.

not a contested adversarial proceeding.[51] Cross-examination was limited to between 4-17 minutes per participant depending on the length of time given to a participant to present its reports.[52]

Following the submission by the participating stakeholders of closing statements at the beginning of December 2019, the State Engineer engaged in no additional public process and solicited no additional input regarding "future management decisions, including policy decisions, relating to the Lower White River Flow System basins."[53]

F. Order 1309

On June 15, 2020, the State Engineer issued Order 1309.[54] The first three ordering paragraphs state as follows:

> 1. The Lower White River Flow System consisting of the Kane Springs Valley, Coyote Spring Valley, Muddy River Springs Area, California Wash, Hidden Valley, Garnet Valley, and the northwest portion of the Black Mountains Area as described in this Order, is hereby delineated as a single hydrographic basin. The Kane Springs Valley, Coyote Spring Valley, Muddy River Springs Area, California Wash, Hidden Valley, Garnet Valley and the northwest portion of the Black Mountains Area are hereby established as sub-basins within the Lower White River Flow System Hydrographic Basin.
>
> 2. The maximum quantity of groundwater that may be pumped from the Lower White River Flow System Hydrographic Basin on an average annual basis without causing further declines in Warm Springs area spring flow and flow in the Muddy River cannot exceed 8,000 afa and may be less.
>
> 3. The maximum quantity of water that may be pumped from the Lower White River Flow System Hydrographic Basin may be reduced if it is determined that pumping will adversely impact the endangered Moapa dace.

SE ROA 66, Ex. 1.

The Order does not provide guidance about how the new "single hydrographic basin" will be administered and provided no clear analysis as to the basis for the 8000 afa number for the maximum sustainable yield.

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[51] SE ROA 52962, Transcript 6:4-6, 24 to 7:1 (Sept. 23, 2019) (Hearing Officer Fairbank).

[52] SE ROA 52962, Transcript 7:5-7 (Sept. 23, 2019) (Hearing Officer Fairbank).

[53] *See* SE ROA 285, Ex. 3.

[54] SE ROA 2-69.

In its Order, the State Engineer indicated that it "considered this evidence and testimony [regarding basin inclusion and basin boundary] on the basis of a common set of criteria that are consistent with the original characteristics considered critical in demonstrating a close hydrologic connection requiring joint management in Rulings 6254-6261."[55] However, the State Engineer did not disclose these criteria to the stakeholders before or during the Order 1303 proceedings. Instead, he disclosed them for the first time in Order 1309, after the stakeholders had engaged in extensive investigations, expert reporting, and factual hearing requested by Order 1303. The criteria are:

> 1. Water level observations whose spatial distribution indicates a relatively uniform or flat potentiometric surface are consistent with a close hydrologic connection.
>
> 2. Water level hydrographs that, in well-to-well comparisons, demonstrate a similar temporal pattern, irrespective of whether the pattern is caused by climate, pumping, or other dynamic is consistent with a close hydrologic connection.
>
> 3. Water level hydrographs that demonstrate an observable increase in drawdown that corresponds to an increase in pumping and an observable decrease in drawdown, or a recovery, that corresponds to a decrease in pumping, are consistent with a direct hydraulic connection and close hydrologic connection to the pumping location(s).
>
> 4. Water level observations that demonstrate a relatively steep hydraulic gradient are consistent with a poor hydraulic connection and a potential boundary.
>
> 5. Geological structures that have caused a juxtaposition of the carbonate-rock aquifer with low permeability bedrock are consistent with a boundary.
>
> 6. When hydrogeologic information indicate a close hydraulic connection (based on criteria 1-5), but limited, poor quality, or low resolution water level data obfuscate a determination of the extent of that connection, a boundary should be established such that it extends out to the nearest mapped feature that juxtaposes the carbonate-rock aquifer with low-permeability bedrock, or in the absence of that, to the basin boundary.

[55] SE ROA 48-49, Ex. 1.

After consideration of the above criteria, the State Engineer decided to finalize what was preliminarily determined in Interim Order 1303, and consolidated several administrative units into a single hydrographic basin, designated as the "Lower White River Flow System" or "LWRFS." The State Engineer also added the previously excluded Kane Springs Hydrographic Basin to the LWRFS,[56] and modified the portion of the Black Mountains area that is in the LWRFS. Although Order 1309 did not specifically address priorities or conflict of rights, as a result of the consolidation of the basins, the relative priority of all water rights within the seven affected basins will be reordered and the priorities will be considered in relation to all water rights holders in the consolidated basins, rather than in relation only to the other users within the original separate basins.

G. <u>Petitioners and Their Respective Water Rights or Interests</u>

a. Southern Nevada Water Authority and Las Vegas Valley Water District are government agencies serving Southern Nevada's water needs, and own water rights in Coyote Springs Valley, Hidden Valley, Garnet Valley, and a significant portion of the Muddy River decreed rights.

b. Coyote Spring Investments, LLC is a developer who owns water rights in Coyote Spring Valley, Kane Springs Valley, and California Wash;

c. Apex Holding Company, LLC and Dry Lake Water LLC own real estate and water rights to the area of land commonly referred to as the Apex Industrial Park, in Garnet Valley and Black Mountains Area;

d. The Center Biological Diversity is a national nonprofit conservation organization which does not hold any water rights, but has educational, scientific, biological, aesthetic and spiritual interests in the survival and recovery of the Moapa Dace;

e. Muddy Valley Irrigation Company is a private company that owns most of the decreed rights

[56] The Court notes that the Nevada State Engineer determined that Kane Springs should be included in this joint management area, even though the Kane Springs Basin had not been designated previously for management through the statutory process delineated in under NRS 534.030.

in the Muddy River;

f. Nevada Cogeneration Associates Numbers 1 and 2, who operate gas-fired facilities at the south end of the LWRFS and have water rights in the Black Mountain Area;

g. Georgia-Pacific Gypsum LLC, and Republic Technologies, Inc. are industrial companies that have water rights in the Garnet Valley Hydrographic Basin;

h. Lincoln County Water District and Vidler Water Co. are a public water district and a private company, respectively, and own water rights in Kane Springs Valley.

III.

DISCUSSION

STANDARD OF REVIEW

An aggrieved party may appeal a decision of the State Engineer pursuant to NRS 533.450(1). The proceedings, which are heard by the court, must be informal and summary, but must afford the parties a full opportunity to be heard. NRS 533.450(2). The decision of the State Engineer is considered to be prima facie correct, and the burden of proof is on the party challenging the decision. NRS 533.450(10).

A. Questions of Law

Questions of statutory construction are questions of law which require de novo review. The Nevada Supreme Court has repeatedly held courts have the authority to undertake an independent review of the State Engineer's statutory construction, without deference to the State Engineer's determination. *Andersen Family Assoc. v. Ricci*, 124 Nev. 182, 186, 179 P.3d 1201, 1203 (2008) (citing *Bacher v. State Engineer*, 122 Nev. 1110, 1115, 146 P.3d 793, 798 (2006) and *Kay v. Nunez*, 122 Nev. 1100, 1103, 146 P.3d 801, 804 (2006).

Any "presumption of correctness" of a decision of the State Engineer as provided by NRS 533.450(10), "does not extend to 'purely legal questions,' such as 'the construction of a statute,' as to which 'the reviewing court may undertake independent review.'" *In re State Engineer Ruling No. 5823*, 128 Nev. 232, 238-239, 277 P.3d 449, 453 (2012) (quoting *Town of Eureka v. State Engineer*, 108 Nev. 163, 165, 826 P.2d 948, 949 (1992)). At no time will the State

Engineer's interpretation of a statute control if an alternative reading is compelled by the plain language of the statute. *See Andersen Family Assoc.*, 124 Nev. at 186, 179 P.3d at 1203.

Although "[t]he State Engineer's ruling on questions of law is persuasive… [it is] not entitled to deference." *Sierra Pac. Indus. v. Wilson*, 135 Nev. Adv. Op. 13, 440 P.3e 37, 40 (2019). A reviewing court is free to decide legal questions without deference to an agency determination. *See Jones v. Rosner*, 102 Nev. 215, 216-217, 719 P.2d 805, 806 (1986); *accord Pyramid Lake Paiute Tribe v. Ricci*, 126 Nev. 521, 525, 245 P.3d 1145, 1148 (2010) ("[w]e review purely legal questions without deference to the State Engineer's ruling.").

B. Questions of Fact

The Court's review of the Order 1309 is "in the nature of an appeal" and limited to the record before the State Engineer. *Revert v. Ray*, 95 Nev. 782, 786, 603 P.2d 262, 264 (1979). On appeal, a reviewing court must "determine whether the evidence upon which the engineer based his decision supports the order." *State Engineer v. Morris*, 107 Nev. 699, 701, 819 P.2d 203, 205 (1991) (citing *State Engineer v. Curtis Park*, 101 Nev. 30, 32, 692 P.2d 495, 497 (1985)).

As to questions of fact, the State Engineer's decision must be supported by "substantial evidence in the record [.]" *Eureka Cty. v. State Engineer*, 131 Nev. 846, 850, 359 P.3d 1114, 1117 (2015) (quoting *Town of Eureka*, 108 Nev. at 165, 826 P.2d at 949). Substantial evidence is "that which a reasonable mind might accept as adequate to support a conclusion." *Bacher*, 122 Nev. at 1121, 146 P.3d at 800 (finding that a reasonable person would expect quantification of water rights needed and no evidence of such quantification or calculations by the State Engineer is included in the record). The Court may not substitute its judgment for that of the State Engineer, "pass upon the credibility of the witness nor reweigh the evidence." *Revert*, 95 Nev. at 786, 603 P.2d at 264.

Where a decision is arbitrary and capricious it is not supported by substantial evidence. *See Clark Cty. Educ. Ass'n v. Clark Cty. Sch. Dist.*, 122 Nev. 337, 339-40, 131 P.3d 5, 7 (2006) (concluding that an arbitrator's award was "supported by substantial evidence and therefore not arbitrary, capricious, or unsupported by the arbitration agreement").

In *Revert*, 95 Nev. at 787, 603 P.2d at 264–65, the Nevada Supreme Court noted:

> The applicable standard of review of the decisions of the State Engineer, limited to an inquiry as to substantial evidence, presupposes the fullness and fairness of the administrative proceedings: all interested parties must have had a 'full opportunity to be heard,' *See* NRS 533.450(2); the State Engineer must clearly resolve all the crucial issues presented, *See Nolan v. State Dep't. of Commerce*, 86 Nev. 428, 470 P.2d 124 (1970) (on rehearing); the decisionmaker must prepare findings in sufficient detail to permit judicial review, *Id.*; *Wright v. State Insurance Commissioner*, 449 P.2d 419 (Or.1969); *See also* NRS 233B.125. When these procedures, grounded in basic notions of fairness and due process, are not followed, and the resulting administrative decision is arbitrary, oppressive, or accompanied by a manifest abuse of discretion, this court will not hesitate to intervene. *State ex rel. Johns v. Gragson*, 89 Nev. 478, 515 P.2d 65 (1973).

Thus, in order to survive review, Order 1309 must be statutorily authorized, resolve all crucial issues presented, must include findings in detail to permit judicial review, and must be based on substantial evidence.

CONCLUSIONS OF LAW

A. The State Engineer Did Not Have the Authority to Jointly Administrate Multiple Basins by Creating the LWRFS "Superbasin," Nor Did He Have the Authority to Conjunctively Manage This Superbasin.

The powers of the State Engineer are limited to those set forth in the law. *See, e.g.,City of Henderson v. Kilgore*, 122 Nev. 331, 334, 131 P.3d 11, 13 (2006); *Clark Cty. School Dist. v. Clark Cty. Classroom Teachers Ass'n*, 115 Nev. 98, 102, 977 P.2d 1008, 1011 (1999) (*en banc*) (An administrative agency's powers "are limited to those powers specifically set forth by statute."); *Clark Cty. v. State, Equal Rights Comm'n*, 107 Nev. 489, 492, 813 P.2d 1006, 1007 (1991)); *Wilson v. Pahrump Fair Water, LLC*, 137 Nev. Adv. Op. 2, 481 P.3d 853, 856(2021) (The State Engineer's powers thereunder are limited to "only those . . . which the legislature expressly or implicitly delegates."); *Andrews v. Nevada State Bd. of Cosmetology*, 86 Nev. 207, 208, 467 P.2d 96, 97 (1970) ("Official powers of an administrative agency cannot be assumed by the agency, nor can they be created by the courts in the exercise of their judicial function. The grant of authority to an agency must be clear.") (*internal citation omitted*).

The Nevada Supreme Court has made clear that the State Engineer is a creature of statute and his or her actions must be within a statutory grant of authority. *Pahrump Fair Water LLC*, 481 P.3d

at 856 (explaining that "[t]he State Engineer's powers thereunder are limited to 'only those . . . which the legislature expressly or implicitly delegates'" (quoting *Clark Cty.*, 107 Nev. at 492, 813 P.2d at 1007)); *see also Howell v. Ricci*, 124 Nev. 1222, 1230, 197 P.3d 1044, 1050 (2008) (holding that the State engineer cannot act beyond his or her statutory authority).

The State Engineer's authority is outlined in NRS Chapters 532, 533 and 534. Chapter 533 deals generally with "water rights," which addresses surface water as well as groundwater, and chapter 534 is limited to groundwater, dealing specifically with "underground water and wells."

In the instant case, the State Engineer relied on the following specific statutes as authority for combining prior independently designated basins as a superbasin newly named the LWRFS, and then conjunctively managing[57] this superbasin:

- NRS 533.024(1)(c), which is a legislative declaration "encourag[ing] the State Engineer to consider the best available science in rendering decisions concerning the available surface and underground sources of water in Nevada."[58]
- NRS 534.024(1)(e), another legislative declaration that states the policy of Nevada is "[t]o manage conjunctively the appropriation, use and administration of all waters of this State, regardless of the source of the water." [59]
- NRS 534.020, which provides that all waters of the State belong to the public and are subject to all existing rights.[60]
- NRS 532.120, which allows the State Engineer to "make such reasonable rules and regulations as may be necessary for the proper and orderly execution of the powers conferred by law.[61]

[57] The Nevada Water Words Dictionary, defines "Conjunctive (Water) Use" in part, as "the integrated use and management of hydrologically connected groundwater and surface water." *Water Words Dictionary, Nevada Division of Water Planning* (2022) (available online athttp://water.nv.gov/WaterPlanDictionary.aspx) The same dictionary separately defines "Conjunctive Management" as, "the integrated management and use of two or more water resources, such as a (groundwater) aquifer and a surface body of water." *Id.*

[58] SE ROA 43.

[59] *Id*.

[60] *Id*.

[61] SE ROA 44.

- NRS 534.110(6), which allows the State Engineer to conduct investigations into any basin where average annual replenishment is not adequate for the needs of all water rights holders, and then subsequently restrict withdrawals to conform to priority rights.[62]

- NRS 534 and specifically NRS 534.120, which allows the State Engineer to make such rules, regulations and orders as are deemed essential for the welfare of an area where the groundwater basin is being depleted."[63]

However, as further discussed below, the State Engineer's reliance on these statutes for authority is misplaced, and his actions upend the bedrock principles of the prior appropriation doctrine.

1. *The Prior Appropriation Doctrine*

The doctrine of prior appropriation has been part of Nevada's common law since the 1800's, and is a fundamental principle of water law in Nevada. *See Lobdell v. Simpson*, 2 Nev. 274, 277-78 (1866). "An appropriative right 'may be described as a state administrative grant that allows the use of a specific quantity of water for a specific beneficial purpose if water is available in the source free from the claims of others with earlier appropriations.'" *Desert Irr., Ltd. v. State*, 113 Nev. 1049, 1051 n.1, 944 P.2d 835, 837 (1997) (quoting Frank J. Trelease & George A. Gould, *Water Law Cases and Materials 33* (4th ed. 1986)).

"Water rights are given 'subject to existing rights,' NRS 533.430(1), given dates of priority, NRS 533.265(2)(b), and determined based on relative rights, NRS 533.090(l)-(2)." *Mineral Cty. v. Lyon Cty.*, 136 Nev. 503,513, 473 P.3d 418, 426 (2020). Thus, "[i]n Nevada, the doctrine of prior appropriation determines the priority of both pre-1905 vested water rights and modern statutory water law." *Rand Properties, LLC v. Filippini*, 484 P.3d 275, Docket 78319 at 2 (Nev. 2021) (unpublished disposition). It is universally understood that the priority of a water right is its most valuable component. *See* Gregory J. Hobbs, Jr., *Priority: The Most Misunderstood Stick in the Bundle*, 32 Envtl. L. 37, 43 (2002) ("Priority determines the value of a water right").

"A priority in a water right is property in itself"; therefore, "to deprive a person of his

[62] *Id.*

[63] *Id.*

priority is to deprive him of a most valuable property right." *Colorado Water Conservation Bd. v. City of Cent.*, 125 P.3d 424, 434 (Colo. 2005) (internal quotation marks omitted). "A loss of priority that renders rights useless 'certainly affects the rights' value' and 'can amount to a de facto loss of rights.'" *Wilson v. Happy Creek, Inc.*, 135 Nev. 301, 313, 448 P.3d 1106, 1115 (2019) (quoting *Andersen Family Assocs.*, 124 Nev. at 190-1, 179 P.3d at 1201).

Nevada's statutory water law reflects the importance of priority. Not only did the Legislature choose not to bestow the State Engineer with discretion to alter priority rights, but it also affirmatively requires the State Engineer to preserve priority rights when performing the State Engineer's statutory duties. *See, e.g.*, NRS 534.110(6) (providing that any curtailment "be restricted to conform to priority rights"); NRS 534.110(7) (same); NRS 533.040(2) ("If at any time it is impracticable to use water beneficially or economically at the place to which it is appurtenant, the right may be severed from the place of use and be simultaneously transferred and become appurtenant to another place of use, in the manner provided in this chapter, without losing priority of right.").

The prior appropriation doctrine in Nevada, "the driest state in the Nation"[64] becomes particularly critical when, as in the instant case, there is not enough water to satisfy all of the existing rights of the current water right holders, and the threat of curtailment looms ominously in the near future. One of the greatest values of a senior priority right is the assurance that the holder will be able to use water even during a time of water shortage because junior water right holders will be curtailed first. Thus, senior right holders rely on their senior priority rights when developing businesses, entitling and permitting land development, negotiating agreements, making investments, obtaining permits and various approvals from State and local agencies, and generally making financial and other decisions based on the relative certainty of their right.

Priority in time of a right is only as valuable as where the holder stands in relation to others in the same situation, or more specifically in this case, in the same basin. As the statutes are written,

[64] *United States v. State Engineer*, 117 Nev. 585, 592, 27 P.3d 51, 55 (2001)(Becker, J., concurring in part and dissenting in part).

water right holders only compete in time for their "place in line" with other water right holders in their same basin. Therefore, the year that one acquires a priority right is only as important as the year that other water right holders in your basin acquired theirs. It is in this setting that State Engineer has issued Order 1309.

2. *Joint Administration*

The State Engineer's position is that the "best available science" demonstrates that the seven[65] named hydrographic basins are so hydrologically interconnected that science dictates they must be managed together in one superbasin. However, NRS 533.024(1)(c) is a policy declaration of the Legislature's intent that simply "encourages" the State Engineer "to consider the best available science in rendering decisions" that concern water he has authority to manage. NRS 533.024(1)(c).

Statements of policy from the Legislature do not serve as a basis for government action, but rather inform the interpretation of statutes that authorize specific action. *See, Pawlik v. Deng*, 134 Nev. 83, 85, 412 P.3d 68, 71 (2018). In *Pawlik*, the Nevada Supreme Court expressed the relevance of statements of policy in terms as follows: "if the statutory language is subject to two or more reasonable interpretations, the statute is ambiguous, and we then look beyond the statute to the legislative history and interpret the statute in a reasonable manner 'in light of the policy and the spirit of the law.'" *Id*. (quoting *J.E. Dunn Nw., Inc. v. Corus Constr. Venture, LLC*, 127 Nev. 72, 79, 249 P.3d 501, 505 (2011)).

While such statements of policy are accorded deference in terms of statutory interpretation, the Nevada Supreme Court has specifically held that they are not binding. *See McLaughlin v. Hous. Auth. of the City of Las Vegas*, 227 P.2d 206, 93 (1951) ("It has often been said that the declaration of policy by the legislature, though not necessarily binding or conclusive upon the courts, is entitled to great weight, and that it is neither the duty nor prerogative of the courts to interfere in such legislative finding unless it clearly appears to be erroneous and without reasonable foundation."); *see*

[65] More accurately, the LWRFS is comprised of six hydrographic basins and a portion of a seventh.

also Clean Water Coal. v. M Resort, LLC, 127 Nev. 301, 313, 255 P.3d 247, 255 (2011) ("The State acknowledges that when legislative findings are expressly included within a statute, those findings should be accorded great weight in interpreting the statute, but it points out that such findings are not binding and this court may, nevertheless, properly conclude that section 18 is a general law despite the Legislature's declaration to the contrary.").

Statements of policy set forth by the Legislature are therefore not operative statutory enactments, but rather tools to be used in interpreting operative statutes—and only then where such statutes are ambiguous on their face. *See Pawlik*, 134 Nev. at 85, 412 P.3d at 71; *see also Cromer v. Wilson*, 126 Nev. 106, 109-10, 225 P.3d 788, 790 (2010) (if the plain language of a statute "is susceptible of another reasonable interpretation, we must not give the statute a meaning that will nullify its operation, and we look to policy and reason for guidance").

This statement of policy is not, in and of itself, a grant of authority that allows the State Engineer to change boundaries of established hydrographic basins as science dictates. This Court certainly acknowledges that since the time the 256 hydrographic basins and sub-basins were delineated, that science and technology have made great strides. While certain navigable waters and topography were more easily identifiable at the time the basins were established, the complexity lies in the less obvious interconnectivity and formations of sub-surface structures that were more difficult to detect at that time. There is no doubt that scientific advancements allow experts to more accurately assess sub-surface formations and groundwater than they have in the past, and certainly technology will continue to improve accuracy in the future. However, this Court notes that the Legislature specifically used the word "encourages" to describe how the Nevada State Engineer should utilize the best available science. NRS 533.024(1)(c). The statute does not declare that the best available science should dictate the decisions.

Indeed, if science was the sole governing principle to dictate the Nevada State Engineer's decisions, there would be a slippery slope in the changes that could be made in the boundaries of the basins and how they are managed; each time scientific advancements and discoveries were made regarding how sub-surface water structures are situated or interconnected, under this theory of

authority, the Nevada State Engineer could change the boundaries of the existing basins. Each boundary change would upend the priority of water right holders as they relate to the other water right holders in the new, scientifically-dictated "basin." This would lead to an absurd result as it relates to the prior appropriation doctrine. Every water right holder would be insecure in their priority, as their relative priority could change at any moment that science advances in determining further interconnectivity of water below the surface. In the administration of water rights, the certainty of those rights is particularly important and prior appropriation is "largely a product of the compelling need for certainty in the holding and use of water rights." *Mineral Cty. v. Lyon Cty.*, 136 Nev. at 518, 473 P.3d at 429 (quoting *Arizona v. California*, 460 U.S. 605, 620 (1983)). Science in and of itself cannot alter common law and statutes. Thus, the State Engineer's reliance on NRS 533.024(1)(c) for giving him authority to create a superbasin out of seven existing basins is misplaced.

While NRS 532.120 allows the State Engineer to make reasonable rules and regulations as may be necessary for proper and orderly execution, this authority is not without its limits, and is only authorized for those "powers conferred by law." Nothing in Chapters 532, 533 or 534 gives the State Engineer direct authority to eliminate, modify, or redraw the boundaries of existing hydrographic basins, or to consolidate multiple, already established, hydrographic basins into a single hydrographic superbasin. For at least 50 years, holders of groundwater rights in Nevada have understood a "hydrographic basin" to be an immutable administrative unit. This has been the case regardless of whether the boundaries of the unit accurately reflected the boundaries of a particular water resource. The Nevada Legislature has adopted a comprehensive scheme that provides the framework for the State Engineer to administer surface water and groundwater. Moreover, the State Engineer has, for decades, administered water on the basis of hydrographic basins identified, described, and released to the public and relied upon by the Legislature, former State Engineers, and the public. Applications to appropriate water are and have been on the basis of each hydrographic basin. Protests, agreements, and resolutions of water applications have been on the basis of each basin. Furthermore, statutes require that the State Engineer consider available water and

appropriations based on the basins already defined.

It is interesting to note that in the statutes that *do* confer authority on the Nevada State Engineer to manage water, they specifically mention the management as being done on a basin-by-basin (or a sub-basin within a basin) basis. NRS 534.030 is the original source of authority for the State Engineer's designation of an "administrative area" by "basin." NRS 534.030. Through NRS 534.030 and NRS 534.011, the State Engineer has authority to designate "any groundwater basin, or portion therein" an "area of active management," which refers to an area "[i]n which the State Engineer is conducting particularly close monitoring and regulation of the water supply because of heavy use of that supply." Under the statute's plain meaning, a *basin* is intended to be an *administrative unit*, defined by boundaries described by "legal subdivision as nearly as possible." NRS 534.030(1)(b). In other words, a hydrographic basin so designated was synonymous with an administrative unit—a *legal* construct, defined thereafter by a *geographic* boundary. Water rights within these basins are to be administered according to the laws set forth in NRS Chapters 533 and 534, and the principles of prior appropriation are applied to water uses *within* each basin.

Moreover, the Legislature consistently refers to a singular basin throughout the statute. *See, e.g.,* 534.030(1) (describing a petition under NRS Chapter 534 as one that requests the State Engineer "to administer the provisions of this chapter as relating to designated areas, … in any particular basin or portion therein"); NRS 534.030(2) ("a groundwater basin"); NRS 534.030(2) ("the basin"). In fact, in the State Engineer's prior rulings and orders, including Order 1169, Order 1169A, and Rulings 5712 and 6455, the State Engineer employs a basin-by-basin management approach.

NRS 534.110(6) sets forth the State Engineer's ability to make basin-specific determinations and provides the authority to curtail water rights where investigations into specific basins demonstrate that there is insufficient groundwater to meet the needs of all permittees and all vested-right claimants. NRS 534.110 plainly applies to investigations concerning administration and designation of critical management areas within a basin. If the State Engineer conducts an investigation as set forth in NRS 534.110(6) and determines that the annual replenishment to the

groundwater supply is not adequate for the permittees and vested-right claimants, he has the authority to either (1) order that withdrawals from domestic wells be restricted to conform to priority rights, or (2) designate as a critical management area the basin in which withdrawals of groundwater consistently exceed the perennial yield. NRS 534.110(6)-(7). It is important to note, however, that the statute does not provide authority to change the boundaries of established basins, combine multiple basins into one unit or superbasin, and then modify or curtail groundwater rights based upon restructured priority dates in this newly created superbasin.

The Court acknowledges that the State Engineer can and should take into account how water use in one basin may affect the water use in an adjoining or closely related basin when determining how best to "actively manage" a basin. However, this is much different than how the State Engineer defines "joint management": erasing the borders of seven already established legal administrative units and creating one legal superunit in the LWRFS superbasin. If the Legislature intended for the State Engineer to designate areas across multiple basins for "joint administration," it would have so stated. *See Slade v. Caesars Entm't Corp.*, 132 Nev. 374, 380-81, 373 P.3d 74, 78 (2016) (citing Antonin Scalia & Bryan A. Garner, *Reading Law: The Interpretation of Legal Texts*, 107 (2012) ("The expression of one thing implies the exclusion of others.")). Thus, under NRS 534.030, while the State Engineer can administer basins individually, the statute does not allow the State Engineer to combine basins for joint administration, nor do NRS 532.120, NRS 533.024, or NRS 534.110(6) confer express authority on the State Engineer to do so.

3. *Conjunctive Management*

The Nevada State Engineer relies on NRS 534.024(1)(e), as the source of authority that allows him to manage both surface and groundwater together through "conjunctive management."[66] Historically, surface water and ground water have been managed separately. In fact, the term "conjunctive management" was only introduced in the statutes in the 2017 session of the Nevada Legislature when it added subsection 1(e) to NRS 533.024. However, as discussed previously, this

[66] SE ROA 43.

statute is a declaration of legislative intent, and as a statement of policy, it does not constitute a grant of authority to the State Engineer, nor is it a water management tool in and of itself.

In fact, there is no authority or guidance whatsoever in the statutes as to how to go about conjunctively managing water and water rights. While the Court agrees that it makes sense to take into account how certain groundwater rights may affect other surface water rights when managing water overall, as this Court noted previously, the powers of the State Engineer are limited to those set forth in the law. While Nevada law provides certain tools for the management of water rights in, for example, over appropriated basins, *e.g.*, NRS 534.110(7) (authorizing the State Engineer to "designate as a critical management area any basin in which withdrawals of groundwater consistently exceed the perennial yield of the basin"), nothing in Chapters 532, 533 or 534 gives the State Engineer express authority to conjunctively manage, in this proceeding, both the surface and groundwater flows he believes are occurring in the LWRFS superbasin.

This Court finds that as a result of the consolidation of the basins, the relative priority of all water rights within the seven affected basins will be reordered and the priorities will be considered in relation to all water rights holders in the consolidated basins, rather than in relation only to the other users within the original separate basins.[67] By redefining and combining seven established basins for "joint administration," and "conjunctive management," the State Engineer essentially strips senior right holders of their priority rights by deciding that all water rights within the LWRFS superbasin should be administered based upon their respective dates of priority in relation to other rights "within the regional groundwater unit."

The State Engineer's position is that the determination of conflicts and priorities has not yet occurred since that is to occur in the second step of the proceeding. However, by the very nature of erasing the existing basins and putting all of the water rights holders in one superbasin, he has

[67] This Court rejects the State Engineer's argument that Order 1309 did not change priorities merely because it did not change priority dates. His argument conflates the meaning of *priority* as defined by the date of a water right application, and the common meaning of *priority*, as defined by one's "place in line." While it is true that the Order does not change priority dates, this Court finds that it *does* change the relative priorities, as petitioners who previously held the most senior rights within their singular basin may now be relegated to more junior status within the "superbasin."

already reprioritized certain rights as they relate to one another, even if their priority dates remain the same.[68] As a result of creating this superbasin, water rights holders with some of the most senior priority rights within their basin are now relegated to a much a lower priority position than some water right holders in basins outside of their own. Such a loss of priority would potentially render certain water rights valueless, given the State Engineer's restrictions on pumping in the entire LWRFS. The Court concludes that the State Engineer does not have authority to redefine Nevada basins so as to reorder the priority rights of water right holders through conjunctive management within those basins. Accordingly, Order 1309 stands at odds with the prior appropriation doctrine.

The Court determines that the question of whether the State Engineer has *authority* to change the boundaries of basins that have been established for decades, or subject that newly created basin to conjunctive management, or not, is a legal question, not a factual one. The State Engineer has failed to identify a statute that authorizes him to alter established basin boundaries or engage in conjunctive management. Based upon the plain language of the applicable statutes, the Court concludes that the State Engineer acted outside the scope of his authority in entering Order 1309.

B. The State Engineer Violated Petitioners' Due Process Rights in Failing to Provide Notice to Petitioners or an Opportunity to Comment on the Administrative Policies Inherent in the Basin Consolidation.

The Nevada Constitution protects against the deprivation of property without due process of law. Nev. Const. art. 1, § 8(5). "Procedural due process requires that parties receive notice and an opportunity to be heard." *Eureka Cty. V. Seventh Jud. Dist. Ct.*, 134 Nev. 275, 279, 417 P.3d 1121, 1124 (2018)(internal quotation marks omitted). "In Nevada, water rights are 'regarded and protected as real property.'" *Id.*(quoting *Application of Filippini*, 66 Nev. 17, 21-22, 202 P.2d 535,

[68] Although this Court refrains from analyzing whether or not 1309 is supported by substantial evidence, the Court notes that part of the State Engineer's 1309 decision of limiting use to 8,000afa or less is based on the concern of adversely impacting the endangered Moapa Dace, located in the Muddy River Springs. This decision does not appear to take into account more nuanced effects of how pumping in each separate basin affects the Muddy River flows, no matter how far away the basin is from the river. In other words, reprioritization of each water rights holder in relation to the other (by prioritization date in the newly created superbasin) means that their standing (and more importantly, their potential for curtailment) is only by date. Water use in one basin may not have the same effect as another in reducing Muddy River flows; however, these distinguishing factors are all erased by combining all of the basins together for joint administration.

537 (1949)). Therefore, holders of water rights in Nevada are entitled to constitutional protections regarding those property rights, including procedural due process. *See id.*

The Nevada Supreme Court has held that "[a]lthough proceedings before administrative agencies may be subject to more relaxed procedural and evidentiary rules, due process guarantees of fundamental fairness still apply." *Dutchess Bus. Serv.'s, Inc. v. Nev. State Bd. of Pharmacy*, 124 Nev. 701, 711, 191 P.3d 1159, 1166 (2008). In *Dutchess*, the Nevada Supreme Court noted further that "[a]dministrative bodies must follow their established procedural guidelines and give notice to the defending party of 'the issues on which decision will turn and . . . the factual material on which the agency relies for decision so that he may rebut it." *Id*.

With respect to notice and hearing, the Nevada Supreme Court has held that "[i]nherent in any notice and hearing requirement are the propositions that the notice will accurately reflect the subject matter to be addressed and that the hearing will allow full consideration of it." *Public Serv. Comm'n of Nev. v. Southwest Gas Corp.*, 99 Nev. 268, 271, 772 P.2d 624, 626 (1983). "Notice must be given at an appropriate stage in the proceedings to give parties meaningful input in the adjudication of their rights." *Seventh Jud. Dist. Ct.,* 134 Nev. at 280-81, 417 P.3d at 1125-26 (citing *Hamdi v. Rumsfeld*, 542 U.S. 507, 533, 124 S.Ct. 2633, 159 L.Ed.2d 578 (2004) ("It is equally fundamental that the right to notice and an opportunity to be heard must be granted at a meaningful time and in a meaningful manner."). A party's due process rights attach at the point at which a proceeding holds the *possibility* of curtailing water rights, and due process necessitates notice of that possibility to the party potentially affected.[69]

For the reasons that follow, this Court concludes that (a) the notice and hearing procedure employed by the State Engineer failed to satisfy the requirements of due process because the notice failed to put the parties on notice that the State Engineer would decide on a management protocol for

[69] "[B]ecause the language in the show cause order indicates that the district court may enter an order forcing curtailment to begin, junior water rights holders must be given an opportunity to make their case for or against the option of curtailment. Notice must be given at an appropriate stage in the proceedings to give parties meaningful input in the adjudication of their rights…Thus, junior water rights holders must be notified before the curtailment decision is made, even if the specific "how" and "who" of curtailment is decided in a future proceeding." *Seventh Jud. Dist. Ct.,* 134 Nev. 275, 280–81, 417 P.3d 1121, 1125 (2018).

the LWRFS at the conclusion of the proceeding; (b) the hearing itself failed to satisfy due process because the parties were not afforded a full and complete opportunity to address the implications of the State Engineer's decision to subject the LWRFS to conjunctive management and joint administration, and (c) the State Engineer's nondisclosure, before or during the Order 1303 proceedings of the six criteria he would use in evaluating the connectivity of the basins and determining the new consolidated basin boundary, failed to satisfy the requirements of due process.

Specifically, the notice of hearing and amended notice of hearing ("Notice") noticed an opportunity for the parties that submitted Order 1303 reports to explain their positions and conclusions with respect to the questions posed for consideration in Order 1303.[70] [71] But the questions posed in Order 1303 did not relate to management of the LWRFS, such as issues of conjunctive or joint administration, but rather related to factual inquiries. Instead, Order 1303 specifically authorized stakeholders to file reports addressing four specific areas, none of which related to the management of the LWRFS.[72]

In noticing the hearing to consider the reports submitted pursuant to Order 1303, there was no mention of consideration of the prospective management of the LWRFS, *i.e.*, whether it would be appropriately managed conjunctively and as a joint administrative unit. Indeed, this was consistent with the Hearing Officer's opening remarks at the August 8, 2019, prehearing conference in which

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[70] *See* SE ROA 262-82, Ex. 2; SE ROA 284-301, Ex. 3

[71] The Notice included the following summary:

> On August 9, 2019, the State Engineer held a pre-hearing conference regarding the hearing on the submission of reports and evidence as solicited in Order 1303…. The State Engineer established that the purpose of the hearing on the Order 1303 reports was to provide the participants an opportunity to explain the positions and conclusions expressed in the reports and/or rebuttal reports submitted in response to the Order 1303 solicitation. The State Engineer directed the participants to limit the offer of evidence and testimony to the salient conclusions, including directing the State Engineer and his staff to the relevant data, evidence and other information supporting those conclusions. ***The State Engineer further noted that the hearing on the Order 1303 reports was the first step in determining to what extent, if any, and in what manner the State Engineer would address future management decisions, including policy decisions, relating to the Lower White River Flow System basins. On that basis, the State Engineer then addressed other related matters pertaining to the hearing on the Order 1303 reports, including addressing the date and sequence of the hearing, as set forth in this Notice of Hearing.*** SE ROA 285, Ex. 3 (emphasis added).

[72] SE ROA 647-48. Ex. 6.

the State Engineer actively discouraged participants from providing input regarding that very question. The hearing officer stated as follows at the August 8 prehearing conference:

> And so, and I'm going to talk about this and we've spoken about this before, is that really this is a threshold reporting aspect, that this is part of a multi-tiered process in terms of determining the appropriate management strategy to the Lower River Flow System.
>
> This larger substantive policy determination is not part of the particular proceeding. That's part of later proceedings….

SE ROA 522, Ex. 5 (Hr'g Tr. at 10:6-20).

The hearing officer gave additional consistent guidance at the outset of the September 23 hearing, further directing the parties not to address policy issues even in relation to the fact that Order 1303 authorized stakeholders to include in their reports "[a]ny other matter believed to be relevant to the State Engineer's analysis."[73] Specifically, the Hearing Officer directed as follows:

> And while that fifth issue is [as set forth in Ordering Paragraph 1(e) of Order 1303] not intended to expand the scope of this hearing into making policy determinations with respect to management of the Lower White River Flow System basin's individual water rights, those different types of things**,** because those are going to be decisions that would have to be made in subsequent proceedings should they be necessary.

SE ROA 52962, Ex. 26 (Hr'g Tr. 6:4-15).

Not only did the notice not adequately notify the parties of the possibility of the consideration and resolution of policy issues, but the Hearing Officer consistently directed the parties to avoid the subject, compounding the due process violation.

Notwithstanding the Hearing Officer's admonitions and the plain language of the notice, the State Engineer ultimately issued a dramatic determination regarding management of the LWRFS. In doing so, the State Engineer precluded the participants from providing input that would have allowed for the full consideration of the issue. Specifically, participants and experts did not have the opportunity to, and were actively discouraged from addressing policy issues critical to the

[73] SE ROA 648, Ex. 6.

management of the LWRFS.[74] The refusal to consider these issues ensured that the State Engineer's decision was not based on a fully developed record.

The State Engineer acknowledged as much in Order 1309 itself. There, the State Engineer noted the fact that Georgia-Pacific and Republic raised concerns over the sufficiency of the scope of the proceedings at hearing but inexplicably asserted that a to-be-determined management scheme would be developed to address "management issues" in the LWRFS:

> Georgia-Pacific and Republic asserted that boundaries are premature without additional data and without a legally defensible policy and management tools in place. They expressed concern that creating an administrative unit at this time inherently directs policy without providing for due process. The State Engineer has considered these concerns and agrees that additional data and improved understanding of the hydrologic system is critical to the process. He also believes that the data currently available provide enough information to delineate LWRFS boundaries, and that an effective management scheme will provide for the flexibility to adjust boundaries based on additional information, retain the ability to address unique management issues on a sub-basin scale, and maintain partnership with water users who may be affected by management actions throughout the LWRFS.
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> SE ROA 54, Ex. 1.

This language reflects a serious misunderstanding of the effect of Order 1309. Insofar as Order 1309 subjects the LWRFS to conjunctive management and joint administration, resulting in effectively reordering of priority of water rights in the LWRFS superbasin, the order effectuates a management scheme with far reaching consequences. Thus, agreeing on the one hand that an "effective management scheme" will be necessary to address challenges in the LWRFS, but

[74] These issues include, but are not limited to: whether Nevada law allows the State Engineer to conjunctively manage multiple hydrographic basins in a manner that modifies the relative priority of water rights due to the administration consolidation of basins; whether the State Engineer would establish a "critical management area" pursuant to NRS 534.110 and, if so, whether he would develop a groundwater management plan or defer to the stakeholders to develop one; whether Nevada law gives the State Engineer authority to designate a management area that encompasses more than one basin; whether "safe-yield" discrete management areas should be established within the proposed administrative unit; whether water rights holders enjoy a "property right" in the relative priority of their water rights such that impairing that right may constitute a "taking"; whether unused (or only sporadically used) senior water rights take precedence over certificated or fully used junior rights, particularly where these junior rights are in continuous use to support economically significant enterprises; whether States compel quantification of federal reserved rights by a date certain; and whether the State Engineer should approach the legislature to seek different or additional management tools or authority. *See* SE ROA 52801-8, Ex. 25 (Georgia Pacific and Republic Closing Argument, outlining policy questions for consideration by the State Engineer at later proceedings, proceedings that never took place).

contending it will be developed in the future, reveals a lack of appreciation of the implications of the order to the detriment of not only the participants but all water rights holders in the LWRFS basins. Without consideration of the implications of the management decision contained in the order, it cannot be based on a full consideration of the issues presented. In affirmatively limiting the scope of the proceeding to include a full consideration of the issues, the State Engineer violated the stakeholders' due process rights. Both the notice and the hearing procedures employed failed to comport with due process.

Finally, as noted above, the State Engineer did not give notice or disclose before or during the Order 1303 proceedings, the six specific criteria that he would use in evaluating the connectivity of the basins and determining the new consolidated basin boundary. Although the State Engineer asserted that he considered the evidence and testimony presented in the public hearing "on the basis of a common set of criteria that are consistent with the original characteristics conserved critical in demonstrating a close hydrologic connection requiring joint management in Rulings 6254-6261,"[75] a review of these rulings reveals that none of the six criteria or characteristics were previously identified, examined in the hydrological studies and subsequent hearing that followed the completion of the Order 1169 aquifer test, or expressly disclosed in Rulings 6254-6261.[76] These criteria were instead explicitly disclosed for the first time in Order 1309, which means the participants had no opportunity to directly address these criteria in their presentations, or critically, to address the appropriateness of these criteria.

This Court is unpersuaded by the State Engineer's argument that it could develop the criteria only after it heard all the evidence at the hearing. Even if it did, this does not justify a deprivation of the right to due process. In order to provide the parties due process and a meaningful opportunity to present evidence on these issues, the State Engineer should have included these factors in the Notice of Pre-Hearing Conference. *See Eureka Cty.*, 131 Nev. at 855, 359 P.3d at 1120; *Revert,* 95 Nev. at 787, 603 P.2d at 265 (criticizing the state engineer for engaging in post hoc rationalization). This

[75] *See* SE ROA 48.

[76] SE ROA 726-948.

due process violation is particularly harmful to water rights holders in Kane Springs, the sole basin that had not been previously designated for management under NRS 534.030, had not been included in the Order 1169 aquifer test, and had not been identified as a basin to be included in the LWRFS superbasin in Order 1303.

Accordingly, this Court concludes that revealing the criteria only after stakeholders had engaged in the extensive investigations, expert reporting, and the intense factual hearing requested by Order 1303 further violates the participants' due process rights.

As this Court has determined that the Nevada State Engineer exceeded his statutory authority and violated the participants' due process rights in issuing Order 1309, it declines to reach further analysis on whether his factual findings in Order 1309 were supported by substantial evidence.

IV.

CONCLUSION

The Court FINDS that the Nevada State Engineer exceeded his statutory authority and had no authority based in statute to create the LWRFS superbasin out of multiple distinct, already established hydrographic basins. The Nevada State Engineer also lacked the statutory authority to conjunctively manage this LWRFS superbasin.

The Court ALSO FINDS that the Nevada State Engineer violated the Petitioners' Constitutional right to due process by failing to provide adequate notice and a meaningful opportunity to be heard.

As a result, Order 1309 is arbitrary, capricious, and therefore void.

Good cause appearing, based upon the above Findings of Fact and Conclusions of Law, the Court ORDERS, ADJUDGES AND DECREES as follows:

IT IS HEREBY ORDERED that the petition for review of the Nevada State Engineer's Order No. 1309 filed by Petitioners Lincoln County Water District and Vidler Water Company, Inc. is GRANTED.

IT IS FURTHER ORDERED that the petition for review of the Nevada State Engineer's Order No. 1309 filed by Petitioners Coyote Springs Investment, LLC is GRANTED.

IT IS FURTHER ORDERED that the petition for review of the Nevada State Engineer's Order No. 1309 filed by Petitioners Apex Holding Company, LLC and Dry Lake Water, LLC is GRANTED.

IT IS FURTHER ORDERED that the petition for review of the Nevada State Engineer's Order No. 1309 filed by Petitioners Nevada Cogeneration Associates Nos. 1 and 2 is GRANTED.

IT IS FURTHER ORDERED that the petition for review of the Nevada State Engineer's Order No. 1309 filed by Petitioners Georgia-Pacific Gypsum LLC, and Republic Environmental Technologies, Inc. is GRANTED.

IT IS FURTHER ORDERED that the State Engineer's Order 1309 is VACATED in its entirety.

IT IS SO ORDERED.

Dated this 19th day of April, 2022

Bita Yeager

66B 24A E875 2549
Bita Yeager
District Court Judge

Bita Yeager
Eighth Judicial District Court
Clark County, Nevada
Department 1

CSERV

DISTRICT COURT
CLARK COUNTY, NEVADA

Southern Nevada Water Authority, Plaintiff(s) vs. Nevada State Engineer, Division of Water Resources, Defendant(s)	CASE NO: A-20-816761-C DEPT. NO. Department 1

AUTOMATED CERTIFICATE OF SERVICE

This automated certificate of service was generated by the Eighth Judicial District Court. The foregoing Findings of Fact, Conclusions of Law and Order was served via the court's electronic eFile system to all recipients registered for e-Service on the above entitled case as listed below:

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EXHIBIT 2

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

#1309

ORDER

DELINEATING THE LOWER WHITE RIVER FLOW SYSTEM HYDROGRAPHIC BASIN WITH THE KANE SPRINGS VALLEY BASIN (206), COYOTE SPRING VALLEY BASIN (210), A PORTION OF BLACK MOUNTAINS AREA BASIN (215), GARNET VALLEY BASIN (216), HIDDEN VALLEY BASIN (217), CALIFORNIA WASH BASIN (218), AND MUDDY RIVER SPRINGS AREA (AKA UPPER MOAPA VALLEY) BASIN (219) ESTABLISHED AS SUB-BASINS, ESTABLISHING A MAXIMUM ALLOWABLE PUMPING IN THE LOWER WHITE RIVER FLOW SYSTEM WITHIN CLARK AND LINCOLN COUNTIES, NEVADA, AND RESCINDING INTERIM ORDER 1303

Table of Contents

I. BACKGROUND OF THE ADMINISTRATION OF THE LOWER WHITE RIVER FLOW SYSTEM BASINS

WHEREAS, the State Engineer has actively managed and regulated the Coyote Spring Valley Hydrographic Basin (Coyote Spring Valley), Basin 210, since August 21, 1985; the Black Mountains Area Hydrographic Basin (Black Mountains Area), Basin 215, since November 22, 1989; the Garnet Valley Hydrographic Basin (Garnet Valley), Basin 216, since April 24, 1990; the Hidden Valley Hydrographic Basin (Hidden Valley), Basin 217, since April 24, 1990; the California Wash Hydrographic Basin (California Wash), Basin 218, since April 24, 1990; and the

Muddy River Springs Area Hydrographic Basin (Muddy River Springs Area), Basin 219, since July 14, 1971.[1]

WHEREAS, in 1984, the United States Department of Interior, Geological Survey (USGS), Water Services Division, proposed a ten-year investigation into carbonate-rock aquifers that underlay approximately 50,000 square miles of eastern and southern Nevada.[2] In 1985, a program for the study and testing of the carbonate-rock aquifer system of eastern and southern Nevada was authorized by the Nevada Legislature. In 1989, a report was published by the USGS summarizing the first phase of the study.[3] Included in the summary was a determination that:

> Large-scale development (sustained withdrawals) of water from the carbonate-rock aquifers would result in water-level declines and cause the depletion of large quantities of stored water. Ultimately, these declines would cause reductions in the flow of warm-water springs that discharge from the regional aquifers. Storage in other nearby aquifers also might be depleted, and water levels in those other aquifers could decline. In contrast, isolated smaller ground-water developments, or developments that withdraw ground water for only a short time, may result in water-level declines and springflow reductions of manageable or acceptable magnitude.
>
> Confidence in predictions of the effects of development, however, is low; and it will remain low until observations of the initial hydrologic results of development are analyzed. A strategy of staging developments gradually and adequately monitoring the resulting hydrologic conditions would provide information that eventually could be used to improve confidence in the predictions.[4]

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[1] *See* NSE Ex. 9, *Order 905*, Hearing on Interim Order 1303, official records of the Division of Water Resources. *See* NSE Ex. 8, *Order 1018*, Hearing on Interim Order 1303, official records of the Division of Water Resources. *See* NSE Ex. 5, *Order 1025*, Hearing on Interim Order 1303, official records of the Division of Water Resources. *See* NSE Ex. 6, *Order 1024*, Hearing on Interim Order 1303, official records of the Division of Water Resources. *See* NSE Ex. 4, *Order 1026*, Hearing on Interim Order 1303, official records of the Division of Water Resources. *See* NSE Ex. 7, *Order 1023*, Hearing on Interim Order 1303, official records of the Division of Water Resources; NSE Ex. 11, *Order 392*, Hearing on Interim Order 1303, official records of the Division of Water Resources.

[2] Memorandum dated August 3, 1984, from Terry Katzer, Nevada Office Chief, Water Resources Division, United States Department of Interior Geologic Survey, Carson City, Nevada to Members of the Carbonate Terrane Study.

[3] Michael D. Dettinger, *Distribution of Carbonate-Rock Aquifers in Southern Nevada and the Potential for their Development, Summary of Findings, 1985-1988*, Summary Report No. 1, U.S. Geological Survey, Department of Interior and Desert Research Institute, University of Nevada System, 1989, p. Forward. *See also* NSE Ex. 3, *Order 1169*, Hearing on Interim Order 1303, official records of the Division of Water Resources.

[4] *Id.*, p. 2.

WHEREAS, beginning in 1989 and through the early 2000s, numerous groundwater applications were filed in Coyote Spring Valley, Black Mountains Area, Garnet Valley, Hidden Valley, California Wash, and Muddy River Springs Area Hydrographic Basins seeking to appropriate more than 300,000 acre-feet annually (afa) of groundwater from the carbonate-rock aquifer underlying these basins.[5] The State Engineer held a hearing on July 12-20, 23-24, and August 31, 2001, for pending Applications 54055–54059, filed by Las Vegas Valley Water District (LVVWD) to appropriate 27,510 afa of water in Coyote Spring Valley.[6] The State Engineer conducted a hearing on Coyote Springs Investments LLC (CSI) Applications 63272–63276 on August 20-24, 27-28, 2001.[7]

WHEREAS, following the conclusions of these hearings, the State Engineer issued Order 1169 on March 8, 2002, requiring all pending applications in Coyote Spring Valley, Black Mountains Area, Garnet Valley, Hidden Valley, Muddy River Springs Area, and Lower Moapa Valley Hydrographic Basin (Basin 220), be held in abeyance pending an aquifer test of the carbonate-rock aquifer system to better determine whether the pending applications and future appropriations could be developed from the carbonate-rock aquifer.[8]

WHEREAS, in Order 1169, the State Engineer found that he did not believe that it was prudent to issue additional water rights to be pumped from the carbonate-rock aquifer until a significant portion of the then existing water rights were pumped for a substantial period of time to determine whether the pumping of those water rights would have a detrimental impact on existing water rights or the environment.[9]

WHEREAS, Order 1169 required that at least 50%, or 8,050 afa, of the water rights then currently permitted in Coyote Spring Valley be pumped for at least two consecutive years.[10] On April 18, 2002, the State Engineer added the California Wash to the Order 1169 aquifer test basins.[11]

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[5] *See* NSE Exs. 14–20, *Ruling 6254–Ruling 6260*, Hearing on Interim Order 1303, official records of the Division of Water Resources.
[6] *See* NSE Ex. 14.
[7] *Id.*
[8] *See* NSE Ex. 3.
[9] *Id.*
[10] *Id.*
[11] *See* State Engineer's Ruling 5115, dated April 18, 2002, official records of the Division of Water Resources.

WHEREAS, subsequent to the issuance of Order 1169, the United States Fish and Wildlife Service (USFWS) expressed concern that current groundwater pumping coupled with additional groundwater withdrawals in Coyote Spring Valley and California Wash may cause reduction of spring flow to the Warm Springs area, tributary thermal springs in the upper Muddy River, which serves as critical habitat to the Moapa dace (*Moapa corciacea*), an endemic fish species federally listed as endangered in 1967.[12] Due to these concerns, on April 20, 2006, the Southern Nevada Water Authority (SNWA), USFWS, CSI, the Moapa Band of Paiute Indians (MBOP) and the Moapa Valley Water District (MVWD) entered into a Memorandum of Agreement (MOA).[13]

WHEREAS, the MOA stated that all the parties shared "a common interest in the conservation and recovery of the Moapa dace and its habitat." The MOA established certain protections to the Moapa dace, including protocols relating to pumping from the regional carbonate-rock aquifer that may adversely impact spring flow to the dace habitat in the Warm Springs area. Specifically, the MOA identified conservation measures, which included protections for minimum instream flows in the Warm Springs area with trigger levels set at 3.2 cubic feet per second (cfs) at the Warm Springs West gage requiring initial action by the MOA parties, and the most stringent action required at a flow rate of 2.7 cfs.[14]

WHEREAS, the MBOP raised concerns that pumping 8,050 afa from the Coyote Spring Valley as part of the aquifer test would adversely impact the water resources at the Warm Springs area, and consequently the Moapa dace, and that the impacts would persist such that protective measures established in the MOA would be inadequate to protect the dace.[15] As a result, the Order 1169 study participants, which included the LVVWD, SNWA, CSI, Nevada Power Company,[16] MVWD, Dry Lake Water Company, LLC, Republic Environmental Technologies, Inc. (Republic),

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[12] USFWS, *Fish and Aquatic Conservation - Moapa dace*, https://bit.ly/moapadace (last accessed June 3, 2020). *See also* SNWA Ex. 8, p. 1-1.

[13] *See* NSE Ex. 236, *2006 Memorandum of Agreement between the Southern Nevada Water Authority, United States Fish and Wildlife Service, Coyote Springs Investment LLC, Moapa Band of Paiute Indians and Moapa Valley Water District*, Hearing on Interim Order 1303, official records of the Division of Water Resources.

[14] *Id.*

[15] *See* May 26, 2010, letter from Darren Daboda, Chairperson, Moapa Band of Paiutes, to Jason King, Nevada State Engineer, official records of the Division of Water Resources.

[16] Nevada Power Company, following the merger with Sierra Pacific Power Company and Sierra Pacific Resources subsequently began doing business as NV Energy. *See, e.g.*, NV Energy, *Company History*, https://bit.ly/NVEhistory (last accessed April 20, 2020).

Chemical Lime Company, Nevada Cogeneration Associates, and the MBOP, or their successors, agreed that even if the minimum 8,050 afa was not pumped, sufficient information would be obtained to inform future decisions relating to the study basins.[17]

WHEREAS, on November 15, 2010, the Order 1169 aquifer test began, whereby the study participants began reporting to the Nevada Division of Water Resources (Division) on a quarterly basis the amounts of water pumped from wells in the carbonate-rock and alluvial aquifers during the pendency of the aquifer test.

WHEREAS, on December 21, 2012, the State Engineer issued Order 1169A declaring the completion of the Order 1169 aquifer test to be December 31, 2012, after a period of 25½ months. The State Engineer provided the study participants the opportunity to file reports with the Division until June 28, 2013, to present information gained from the aquifer test in order to estimate water to support applications in the Order 1169 study basins.[18]

WHEREAS, during the Order 1169 aquifer test, an average of 5,290 acre-feet per year (afy) was pumped from carbonate-rock aquifer wells in Coyote Spring Valley, and a cumulative reported total of 14,535 afy of water was pumped throughout the Order 1169 study basins. Of this total, approximately 3,840 afy was pumped from the Muddy River Springs Area alluvial aquifer with the balance pumped from the carbonate-rock aquifer.[19]

WHEREAS, during the aquifer test, pumpage was measured and reported from 30 other wells in the Coyote Spring Valley, Muddy River Springs Area, Garnet Valley, California Wash, Black Mountains Area, and Lower Meadow Valley Wash Hydrographic Basin (Lower Meadow Valley Wash). Stream diversions from the Muddy River were reported, and measurements of the natural discharge of the Muddy River and from the Warm Springs area springs were collected daily. Water-level data were collected from a total of 79 monitoring and pumping wells within the Order 1169 study basins. All of the data collected during the aquifer test were made available to each of the study participants and the public.[20]

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[17] *See* July 1, 2010, letter from Jason King, Nevada State Engineer, to Order 1169 Study Participants, official records of the Division of Water Resources.
[18] *See* NSE Ex. 2, *Order 1169A*, Hearing on Interim Order 1303, official records of the Division of Water Resources.
[19] *See, e.g.*, NSE Ex. 1, Appendix B.
[20] *See* Division, *Water Use and Availability – Order 1169*, https://bit.ly/Order1169

WHEREAS, during the Order 1169 aquifer test, the resulting water-level decline encompassed 1,100 square miles and extended from southern Kane Springs Valley, northern Coyote Spring Valley through the Muddy River Springs Area, Hidden Valley, Garnet Valley, California Wash, and the northwestern portion of the Black Mountains Area.[21] The water-level decline was estimated to be 1 to 1.6 feet throughout this area with minor drawdowns of 0.5 foot or less in the northern portion of Coyote Spring Valley north of the Kane Springs Wash fault zone.[22]

WHEREAS, results of the two-year aquifer test demonstrated that pumping 5,290 afa from the carbonate-rock aquifer in Coyote Spring Valley, in addition to the other carbonate-rock aquifer pumping in Garnet Valley, Muddy River Springs Area, California Wash and the northwest portion of the Black Mountains Area, caused sharp declines in groundwater levels and flows in the Pederson and Pederson East springs, two springs considered to be sentinel springs for the overall condition of the Muddy River due to being higher in altitude than other Muddy River source springs, and therefore are proportionally more affected by a decline in groundwater level in the carbonate-rock aquifer.[23] The Pederson spring flow decreased from 0.22 cfs to 0.08 cfs and the Pederson East spring flow decreased from 0.12 cfs to 0.08 cfs. Additional headwater springs at lower altitude, the Baldwin and Jones springs, declined approximately 4% in spring flow during the test.[24] All of the headwater springs contribute to the decreed and fully-appropriated Muddy River and are the predominant source of water that supplies the habitat of the endangered Moapa dace.

WHEREAS, Order 1169A provided the study participants an opportunity to submit reports addressing three specific questions presented by the State Engineer: (1) what information was obtained from the study/pumping test; (2) what were the impacts of pumping under the pumping test; and, (3) what is the availability of additional water resources to support the pending applications. SNWA, USFWS, National Park Service (NPS) and Bureau of Land Management

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[21] USFWS Ex. 5, *Report in Response to Order 1303*, Hearing on Interim Order 1303, official records of the Division of Water Resources, pp. 21, 67. *See, e.g.*, NSE Ex. 14. *See also* NSE Ex. 256, *Federal Bureaus Order 1169A Report*, Hearing on Interim Order 1303, official records of the Division of Water Resources. There was no groundwater pumping in Hidden Valley, but effects were still observed in the Hidden Valley monitor well.

[22] *See, e.g.*, NSE Ex. 14. *See also* NSE Ex. 256.

[23] *See* NSE Ex. No. 236.

[24] NSE Ex. 256, pp. 43–46, 50–51. *See also,* USGS, *Water Data for Nevada,* https://bit.ly/nvwater.

(BLM), MBOP, MVWD, CSI, Great Basin Water Network (GBWN) and Center for Biological Diversity (CBD) submitted either reports or letters.

WHEREAS, in its report, SNWA addressed water levels throughout the Order 1169 basins. SNWA acknowledged that hydrologic connectivity supported the potential need for redistribution of existing pumping, and indirectly acknowledged the limitation on availability of water to satisfy the pending applications.[25] SNWA further acknowledged declines to spring flow in the Pederson and Pederson East springs as a result of the aquifer test, but characterized the decline in spring flow at the Warm Springs West location as minimal. SNWA further correlated the declining trends as associated with climate but opined that Muddy River flow did not decline as a result of the aquifer test and carbonate-rock aquifer pumping; rather, impact to Muddy River flows were due to alluvial aquifer pumping.[26]

WHEREAS, CSI, through a letter, agreed with SNWA's report and asserted that additional water resources could be developed within the Coyote Spring Valley north of the Kane Springs Fault, which supported granting new appropriations of water.[27]

WHEREAS, the United States Department of Interior Bureaus (USFWS, NPS and BLM) concluded that the aquifer test provided sufficient data to determine the effects of the aquifer drawdown as well as identify drawdown throughout the region and was sufficient to project future pumping effects on spring flow. Based upon their analysis, the Department of Interior Bureaus concluded that water-level declines due to the aquifer test encompassed 1,100 square miles throughout the Order 1169 study basins. Additionally, the Department of Interior Bureaus' analysis found a direct correlation between the aquifer test pumping and flow declines at Pederson, Plummer and Apcar units and Baldwin Spring, all springs critical to the Moapa dace habitat, and asserted that pumping at the Order 1169 rate at well MX-5 in Coyote Spring Valley could result in both of the high-altitude Pederson and Pederson East springs going dry in 3 years or less.[28]

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[25] *See* NSE Ex. 245, *Southern Nevada Water Authority Order 1169 Report*, Hearing on Interim Order 1303, official records of the Division of Water Resources, pp. 23–25.
[26] *Id.*
[27] NSE Ex. 247, *Coyote Springs Investments, LLC Order 1169 Report*, Hearing on Interim Order 1303, official records of the Division of Water Resources.
[28] *See, e.g.*, NSE Ex. 14, pp.15–18. *See also* NSE Ex. 256.

WHEREAS, the Department of Interior Bureaus further found that the groundwater withdrawals that occurred in Coyote Spring Valley during the Order 1169 aquifer test represented approximately one-third of the then existing water rights within Coyote Spring Valley, concluding that even one-third of the existing water rights could not be developed without adversely impacting spring flow to the headwaters of the Muddy River and habitat for the Moapa dace.[29] Ultimately, the Department of Interior Bureaus concluded that there was insufficient water available for the pending applications, and that the area that was subject to the Order 1169 aquifer test behaved as one connected aquifer and pumping in one basin would have similar effects on the whole aquifer.[30]

WHEREAS, MBOP's report disagreed with the magnitude of drawdown resulting from the Order 1169 aquifer test, but ultimately concluded carbonate-rock aquifer pumping in Coyote Spring Valley and the Muddy River Springs Area would have a one-to-one impact on Muddy River flows.[31] MBOP opined to the existence of a southern flow field, which included California Wash, Hidden Valley, Garnet Valley, and the northwest portion of the Black Mountains Area, that could be developed without depleting spring flows. MBOP also argued that changes in the groundwater levels were directly tied to water level declines in Lake Mead.[32]

WHEREAS, MVWD's report was limited to water levels and flows within the Muddy River Springs Area. In its report, MVWD acknowledged the groundwater level declines resulting from the aquifer test, including decreased spring flow at the Pederson springs, Warm Springs West gage and Baldwin Spring, but not at Jones Spring or Muddy Spring.[33] Ultimately, MVWD concluded that additional water was available in the Lower Moapa Valley, as that aquifer did not appear hydrologically connected to the regional carbonate-rock aquifer.

WHEREAS, GBWN presented a report that recognized the decline in the groundwater levels in Coyote Spring Valley and discharge to the Muddy River Springs Area resulting from the

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[29] *Id.*
[30] *Id.*
[31] *See* NSE Ex. 252, *Moapa Band of Paiute Indians Order 1169 Report*, Hearing on Interim Order 1303, official records of the Division of Water Resources, p. 25.
[32] *Id.*
[33] NSE Ex. 250, *Moapa Valley Water District Basin 220 Well Site Analysis*, Hearing on Interim Order 1303, official records of the Division of Water Resources; NSE Ex. 251, *Moapa Valley Water District Evaluation of MX-5 Pumping Test on Springs and Wells in the Muddy Springs Area,* dated June 24, 2013, Hearing on Interim Order 1303, official records of the Division of Water Resources.

aquifer test.[34] However, GBWN believed that the aquifer test failed to provide sufficient data to determine water availability throughout the other study basins. GBWN did assert that pumping of existing rights within all of the study basins would unacceptably decrease spring discharge.[35]

WHEREAS, CBD, relying on GBWN's technical report, opined that pumping existing water rights within the Order 1169 study basins would result in unacceptable decline in spring flow, ultimately threatening the Moapa dace and the habitat necessary for the species survival.[36]

WHEREAS, based upon the findings of the Order 1169 aquifer test, in denying the pending applications the State Engineer found: (1) that the information obtained from the Order 1169 aquifer test was sufficient to document the effects of pumping from the carbonate-rock aquifer on groundwater levels and spring flow and that the information could assist in forming opinions regarding future impacts of groundwater pumping and availability of groundwater in the study basins; (2) that the impacts of aquifer test pumping in Coyote Spring Valley was widespread throughout the Order 1169 aquifer test study basins and that the additional pumping in Coyote Spring Valley was a significant contributor to the decline in the springs that serve as the headwaters of the Muddy River and habitat for the Moapa dace; and, (3) that additional pumping from the then pending applications would result in significant regional water-level decline, and decreases in spring and Muddy River flows.[37]

WHEREAS, the basins that were included in the Order 1169 aquifer test were acknowledged to have a unique hydrologic connection and share the same supply of water.[38] The State Engineer further went on to find that the total annual supply to the basins could not be more than 50,000 acre-feet, that the perennial yield is much less than that because the Muddy River and the springs in the Warm Springs area utilize the same supply, and that the quantity and location of

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[34] NSE Ex. 246, *Great Basin Water Network Order 1169 Report*, Hearing on Interim Order 1303, official records of the Division of Water Resources.
[35] *Id.*
[36] NSE Ex. 248, *Center for Biological Diversity Order 1169 Report*, Hearing on Interim Order 1303, official records of the Division of Water Resources.
[37] NSE Exs. 14–21. The study basins include Coyote Spring Valley, Garnet Valley, Hidden Valley, Muddy River Springs Area, California Wash, and that portion of the Black Mountains Area lying within the LWRFS was defined as those portions of Sections 29, 30, 31, 32, and 33, T.18S., R.64E., M.D.B.&M.; Section 13 and those portions of Sections 1, 11, 12, and 14, T.19S., R.63E., M.D.B.&M.; Sections 5, 7, 8, 16, 17, and 18 and those portions of Sections 4, 6, 9, 10, and 15, T.19S., R.64E., M.D.B.&M.
[38] *See, e.g.*, NSE Ex. 14, p. 24.

any groundwater that could be developed without conflicting with senior rights on the Muddy River and the springs was uncertain.[39]

II. INTERIM ORDER 1303

WHEREAS, on January 11, 2019, the State Engineer issued Interim Order 1303 designating the Lower White River Flow System (LWRFS), a multi-basin area known to share a close hydrologic connection, as a joint administrative unit for purposes of administration of water rights. The Interim Order defined the LWRFS to consist of the Coyote Spring Valley, Muddy River Springs Area, California Wash, Hidden Valley, Garnet Valley, and the portion of the Black Mountains Area Hydrographic Basins as described in the Interim Order.[40] Pursuant to Interim Order 1303, all water rights within the LWRFS were to be administered based upon their respective dates of priority in relation to other rights within the regional groundwater unit.

WHEREAS Interim Order 1303 recognized the need for further analysis of the LWRFS because the pre-development discharge of 34,000 acre-feet of the Muddy River system plus the more than 38,000 acre-feet of existing groundwater appropriations within the LWRFS greatly exceed the total water budget, which was determined to be less than 50,000 acre-feet.[41] Stakeholders with interests in water right development within the LWRFS were invited to file a report with the Office of the State Engineer addressing four specific matters, generally summarized as: 1) The geographic boundary of the LWRFS, 2) aquifer recovery subsequent to the Order 1169 aquifer test, 3) the long-term annual quantity and location of groundwater that may be pumped from the LWRFS, and 4) the effect of movement of water rights between alluvial and carbonate wells within the LWRFS. Stakeholders were also invited to address any other matter believed to be relevant to the State Engineer's analysis.

WHEREAS, on May 13, 2019, the State Engineer amended Interim Order 1303 modifying the deadlines for the submission of reports and rebuttal reports by interested stakeholders. Reports

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[39] *Id.*

[40] *See* NSE Ex. 1, *Order 1303 and Addendum to Interim Order 1303*, Hearing on Interim Order 1303, official records of the Division of Water Resources.

[41] *Id.*, p. 7.

submitted by interested stakeholders were intended to aid in the fact-finding goals of the Division.[42]

WHEREAS, a public hearing was held in Carson City, Nevada between, September 23, 2019, and October 4, 2019. The purposes of this hearing were to afford stakeholder participants who submitted reports pursuant to the solicitation in Interim Order 1303 an opportunity to provide testimony on the scientific data analysis regarding the five topics within the Interim Order and to test the conclusions offered by other stakeholder participants.

WHEREAS, during the Interim Order 1303 hearing, testimony was provided by expert witnesses for the participants CSI, USFWS, NPS, MBOP, SNWA and LVVWD[43], MVWD, Lincoln County Water District and Vidler Water Company (LC-V), City of North Las Vegas (CNLV), CBD, Georgia Pacific Corporation (Georgia Pacific) and Republic, Nevada Cogeneration Associates Nos. 1 and 2 (collectively "NCA"), Muddy Valley Irrigation Company (MVIC), Western Elite Environmental, Inc. and Bedroc Limited, LLC (collectively "Bedroc"), and NV Energy.

WHEREAS, following the conclusion of the Interim Order 1303 hearing, stakeholder participants were permitted to submit written closing statements no later than December 3, 2019. The specific area evaluated, data analyzed, and methodology used varied by participant. Generally, participants relied on spring and streamflow discharge, groundwater level measurements, geologic and geophysical information, pumping data, climate data, and interpretations of aquifer hydraulics. Methodologies applied ranged from conceptual observations to statistical analysis to numerical and analytical models; the level of complexity and uncertainty differing for each.

WHEREAS, each of the participants' conclusions with respect to the topics set forth in Interim Order 1303 are summarized as follows:

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[42] *Id.*, pp. 16–17.

[43] SNWA is a regional water authority with seven water and wastewater agencies, one of which is LVVWD. References to SNWA include its member agency, LVVWD, which too retains water rights and interests within the LWRFS.

Center for Biological Diversity

The primary concern of the CBD was to ensure adequate habitat for the survival and recovery of the Moapa dace. CBD felt "that the Endangered Species Act is the primary limiting factor on the overall quantity of allowable pumping within the [LWRFS] and thus [...] geared [the] analysis toward that goal of protecting the dace." The Moapa dace primarily resides in the springs and pools of the Muddy River; protecting those areas of habitat are of the utmost importance to CBD's goal and have the collateral benefit of protecting the Muddy River decreed rights. Furthermore, CBD "believe[d] that withdrawals from the carbonate aquifer that cause a reduction in habitat quantity for the dace are a take under the Endangered Species Act and thus prohibited."[44]

CBD urges that Kane Springs Valley Hydrographic Basin (Kane Springs Valley) be included and managed as part of the LWRFS; otherwise CBD did not dispute the boundary as presented in Interim Order 1303. The inclusion of Kane Springs Valley was based on a shallow hydraulic gradient between Coyote Spring Valley and Kane Springs Valley; propagation of water level decline into Kane Springs Valley during the Order 1169 aquifer test; and a finding that the carbonate-rock aquifer extends into Kane Springs Valley. In CBD's opinion, adequate management of the LWRFS does not require that the administrative boundary include the White River Flow System north of Coyote Spring Valley.[45]

CBD identified a long-term, declining trend commencing in the 1990s in carbonate-rock aquifer water levels within the Muddy River Springs Area, which was accelerated by the Order 1169 aquifer test. Although CBD observed a partial, immediate recovery in the carbonate-rock aquifer water levels and spring flows, CBD finds that full recovery to pre-Order 1169 aquifer test conditions were never realized. Concurring with multiple other participants, CBD identified higher water levels in response to wet years despite the continued decline in the overall trend in the hydrographs. However, with regards to long-term drought, in their review of the Climate Division Data for southern Nevada, CBD saw no indication of a 20-year drought and disagreed with the conclusions and analysis presented by MBOP. Decreased spring flows in conjunction with

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[44] *See* CBD Ex. 3, *CBD Order 1303 Report by Dr. Tom Myers; 27 pp.*, Hearing on Interim Order 1303, official records of the Division of Water Resources, p. 1; Transcript 1504–1505.
[45] *See* CBD Ex. 3, pp. 1, 2, 12, 17, 19; *See* CBD Ex. 4, *CBD Order 1303 Rebuttal in Response to Stakeholder Reports by Dr. Tom Myers; 30 pp.*, Hearing on Interim Order 1303, official records of the Division of Water Resources, pp. 17–21; Tr. 1516; 1520–1521; 1526–1527; 1538–1539; CSI Ex. 2, p. 38; LC-V Ex. 2, pp. 11–14.

increased carbonate-rock aquifer pumping, led the CBD to infer the dependency of spring flows on carbonate-rock aquifer water supply.[46]

Again, with emphasis on protecting spring flows, and thus the Moapa dace habitat, CBD did not support any pumping of the carbonate-rock aquifer. CBD's desired outcome would be to avoid decreases in spring flow in the Warm Springs area attributed to continued carbonate-rock aquifer pumping. CBD postulated that surface water rights on the Muddy River will be protected by limiting carbonate-rock aquifer pumping.

Alternatively, CBD speculated that some alluvial aquifer pumping, within the Muddy River Springs Area and Coyote Spring Valley, could be sustained without significantly impacting the Warm Springs area. A preliminary estimate of 4,000 afa of sustainable alluvial aquifer pumping was proposed, based on the existing pumping within the Muddy River Springs Area and considering pumping in the 1990s near 5,000 afa when alluvial aquifer water levels were stable.[47]

Church of Jesus Christ of Latter-day Saints

The Church of Jesus Christ of Latter-day Saints (the Church) chose not to directly participate in the hearing but joined the evidentiary submissions of CNLV.[48] In response to the directives set forth in Interim Order 1303 and considering the testimony provided, the Church requests the continued administration and management of the LWRFS as identified in Interim Order 1303, and to allow for change applications throughout the LWRFS basins that move pumping of groundwater further away from the Muddy River Springs Area and from the alluvial aquifer to the carbonate-rock aquifer. The Church further requests that the testimony and recommendation of Dwight Smith, PE, PG on behalf of CNLV be considered and adopted.[49]

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[46] *See* CBD Ex. 3, pp. 1, 24; *See* CBD Ex. 4, p. 8–10, 21–25; Tr. 1508–1525; LC-V Ex. 2, p. 12, GP-REP Ex. 2, p. 3; CBD's expert suggest that the Palmer Drought Severity Index is more robust to evaluate for drought rather than using precipitation.
[47] *See* CBD Ex. 3, pp. 20–26; *See* CBD Ex. 4, p. 28–29; Tr. 1525-1528.
[48] *See* Letter from the Church, received August 15, 2019, Hearing on Interim Order 1303, official records of the Division of Water Resources.
[49] *See Closing Brief of the Church of Jesus Christ of Latter-Day Saints* (Church closing), Hearing on Interim Order 1303, official records of the Division of Water Resources.

City of North Las Vegas

In CNLV's report submissions and closing statement it addressed four questions set forth in Interim Order 1303.[50] CNLV generally urges for more analysis and study of the LWRFS before administrative decisions are made due to lack of agreement on fundamental interpretations of the water availability and basin connectivity. It was agreed to by CNLV that most of Garnet Valley and a small portion of the Black Mountains area were within the larger carbonate-rock aquifer underlying the LWRFS basins, but that there is uncertainty in the boundaries of Garnet Valley with California Wash and Las Vegas Valley Hydrographic Basin (Las Vegas Valley).[51] With respect to the recovery of the groundwater aquifer following the Order 1169 aquifer test, CNLV concluded that the record and evidence demonstrates a long-term declining trend in the groundwater level since the late 1990s and that pumping responses can propagate relatively quickly through the carbonate-rock aquifer and drawdown is directly related to the pumping.[52]

While CNLV did consider the long-term quantity of groundwater that may be developed without adversely impacting discharge to the Warm Springs area, its opinions were limited to the sustainability of pumping within Garnet Valley.[53] CNLV concluded that the safe yield concept should be applied to the management of pumping within the LWRFS and that pumping between 1,500 afa to 2,000 afa does not appear to be causing regional drawdown within the LWRFS carbonate-rock aquifer and that pumping this quantity of water may be sustainable within the APEX Industrial Park area of Garnet Valley.[54] Finally, CNLV asserted that movement of alluvial water rights from the Muddy River Springs Area along the Muddy River would reduce the capture

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[50] *See* CNLV Ex. 5, *City of North Las Vegas Utilities Department: Interim Order 1303 Report Submittal from the City of North Las Vegas – July 2, 2019*, Hearing on Interim Order 1303, official records of the Division of Water Resources. *See* CNLV Ex. 6, *Rebuttal Document submitted on behalf of the City of North Las Vegas, to Interim Order 1303 Report Submittals of July 3, 2019 – Prepared by Interflow Hydrology – August 2019*, Hearing on Interim Order 1303, official records of the Division of Water Resources. *See* Tr. 1416–66, and *City of North Las Vegas' Closing Statement* (CNLV Closing), Hearing on Interim Order 1303, official records of the Division of Water Resources.

[51] *See* CNLV Ex. 5, pp. 2–3. *See also* CNLV Ex. 3, *Garnet Valley Groundwater Pumping Review for APEX Industrial Complex, City of North Las Vegas, Clark County, Nevada- Prepared by Interflow Hydrology, Inc.- July 2019*, pp. 7–8, 38.

[52] *Id.*, p. 3, Technical Memo, pp. 14–16.

[53] *Id.*, pp. 3–4.

[54] *Id.*, p. 4., Technical Memo, p. 45.

of Muddy River flow, move more senior water rights into Garnet Valley to support a secure water supply for the municipal uses within the APEX area, and would support overall objectives relating to the management of the LWRFS.[55] CNLV advocated that transferring water rights between alluvial aquifer and carbonate-rock aquifer should be considered on a case-by-case basis with consideration given as to location, duration, and magnitude of pumping.[56]

CNLV disagreed with certain conclusions of the NPS relating to the inclusion of the entirety of the Black Mountains Area within the LWRFS boundaries and had concerns relating to the reliability of the Tetra Tech model for future water resource management within the LWRFS.[57] CNLV further disagreed with stakeholder conclusions that movement of groundwater withdrawals from the alluvial aquifer along the Muddy River to the carbonate-rock aquifer in Garnet Valley will not alleviate the conflicts to Muddy River flow, rather concluding that there may be benefits for overall management of the LWRFS.[58] Further, CNLV disagreed with certain findings regarding water flow through the carbonate-rock aquifer, finding that it is likely that some groundwater can be pumped within Garnet Valley without capturing groundwater that would otherwise discharge to the Warm Springs area and the Muddy River.[59] Finally, in its rebuttal the CNLV joined other stakeholders in supporting the conclusion that there is a quantity of water that may be sustainably developed within the LWRFS and that use of carbonate-rock aquifer groundwater in Garnet Valley is critical to the short-term and long-term management and development of the APEX Industrial Complex.[60]

Coyote Springs Investments

In presenting its opinions and conclusions CSI's focus was primarily on climate as the foundation for groundwater elevation declines after the Order 1169 aquifer test, and additional geophysical research that provided evidence of a structural block isolating the west side of Coyote Spring Valley.

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[55] *Id.*, Technical Memo, p. 48–49.
[56] *Id.*
[57] *See* CNLV Ex. 6, pp. 1–2.
[58] *Id.*, p. 2.
[59] *Id.*, pp. 2–3.
[60] *Id.*, p. 3.

CSI did a statistical analysis of climate data, and determined from the results that 1998, 2004, 2005, and 2010 were wetter than normal, with a drying trend from 2006 to 2017.[61] The Order 1169 aquifer test took place toward the end of an extended dry period when all water resources throughout the LWRFS were negatively affected.[62] Additionally, annual cyclical patterns of groundwater pumping should not be confused with long-term climate variability.[63]

CSI challenged the basic assumption that the LWRFS, as proposed in Interim Order 1303, is a homogenous unit.[64] CSI could not duplicate the results of the SeriesSEE, and its own Theis solution modeling concluded that a greater impact occurred from pumping at a well closer in proximity to Pederson Spring than pumping from a well further away, or the combined effect of both wells.[65] CSI also acknowledged that due to the fragmented nature of the LWRFS, the Theis solution is of limited utility.[66]

CSI presented geologic and geophysical information in support of the idea that the LWRFS administrative unit is a geophysically and hydrogeologically heterogenous area, characterized by multiple flow paths defined by faults and structural elements that control the occurrence and movement of regional and local groundwater along the western side of Coyote Spring Valley, the eastern side of Coyote Spring Valley, and from Lower Meadow Valley Wash into the LWRFS.[67] CSI stated that the LWRFS does not include Kane Springs Valley.[68]

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[61] CSI Ex. 1, *CSI July 3, 2019 Order 1303 Report*, Hearing on Interim Order 1303, official records of the Division of Water Resources, pp. 4–5; Tr. 53.
[62] CSI Ex. 1, p. 5.
[63] CSI Ex. 2, *CSI August 16, 2019 Rebuttal Report*, Hearing on Interim Order 1303, official records of the Division of Water Resources, pp. 2, 7.
[64] CSI Ex. 1, p. 7.
[65] CSI Ex. 1, p. 7; Tr. 131–132.
[66] Tr. 154.
[67] CSI Ex. 2, p. 2; *CSI Closing Statement* (CSI Closing), Hearing on Interim Order 1303, official records of the Division of Water Resources; CSI recommended including Lower Meadow Valley Wash in its Rebuttal report. See CSI Ex. 2, p. 12; Mr. Herrema said Lower Moapa Valley, but the report said Lower Meadow Valley 10:10.
[68] CSI Ex. 1, p. 15; the outflow from Kane Springs Valley is included in the water budget, but due to isolating geologic features, groundwater elevations in Kane Springs Valley are not impacted by pumping in the LWRFS, Tr. 135:7–137:3, 160:2–12.

CSI engaged a geophysicist to conduct a CSAMT survey at multiple points in the valley.[69] CSI's CSAMT study showed evidence of a prominent carbonate block bounded on either side by normal faults.[70] CIS asserts that the carbonate block isolates recharge from the zone west of the block, such that it eliminates or limits contribution of local recharge to the Warm Springs area.[71] Faulting has created a preferred path for groundwater flow "from the east side Coyote Spring Valley to the Muddy River Springs Area".[72]

CSI relied on a water budget as the best method to determine available water in the LWRFS, accounting for recharge and subsurface flow as well as climatic variations.[73] Comparing several models of recharge, CSI estimated recharge at 5,280 afy from the Sheep Range to the western side of Coyote Spring Valley.[74] CSI stated that 30,630 afa can be pumped from the LWRFS, but there would be impacts from pumping the water, and that the Coyote Spring Valley can sustain 5,280 afa of pumping from the western side without impact to the Warm Springs area or the Muddy River.[75]

As asserted by CSI, groundwater pumping from the carbonate-rock aquifer in the Muddy River Springs Area affects flow in the carbonate-rock aquifer to the alluvial aquifer, which then affects flow from the alluvial aquifer to the Muddy River.[76] CSI argues that effects are dependent on well location, geologic formations, hydraulic gradients, and elevation.[77] Transfers between carbonate and alluvial pumping should be made on a case-by-case basis, analyzing place of use, points of diversion, and quantity of groundwater.[78] Movement of water rights between alluvial wells and carbonate-rock aquifer wells will only serve to shift the timing and location of impacts and not the amount of the impact.[79]

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[69] CSI Ex. 1, p. 25
[70] CSI Ex. 1, p. 25.
[71] CSI Ex. 1, p. 29; evidence of impermeability, Tr. 181.
[72] CSI Ex. 1, p. 29.
[73]CSI Closing.
[74] CSI Ex. 1, pp. 31–40.
[75] Tr. 221–223; CSI Closing, pp. 8–9.
[76] CSI Closing.
[77] CSI Closing, p. 19.
[78] CSI Closing.
[79] CSI Ex. 1, p. 58.

As a consequence of the heterogenous nature of the LWRFS, CSI recommended sustainable management of the LWRFS through the creation of "Management Areas" that recognize flow paths and their relative contributions to spring flow, surface flow, evapotranspiration, and sub-surface outflow.[80] For example, though pumping in the Muddy River Springs Area near the Warm Springs area would have a direct impact on available surface water resources, structural blocks and faults isolate the effect of groundwater pumping in other areas of the LWRFS.[81] Thus CSI does not recommend a blanket ban on carbonate-rock aquifer pumping, or a decrease in carbonate-rock aquifer pumping in exchange for alluvial aquifer pumping.

Georgia Pacific and Republic

Dry Lake Water, LLC, Georgia Pacific and Republic submitted initial and rebuttal responses to Interim Order 1303 and offered testimony during the hearing.[82] In their response, Georgia Pacific and Republic acknowledged impacts to groundwater elevations throughout the LWRFS, including wells in the Black Mountains Area and Garnet Valley, which does demonstrate a degree of hydraulic connectivity throughout the carbonate-rock aquifer. However, Georgia Pacific and Republic called for collection of more scientific evidence to further understand the LWRFS and its boundaries. Further, it was their opinion that climate, seasonal fluxes and pumping within Garnet Valley and the Black Mountains Area resulted in the groundwater declines observed during the Order 1169 aquifer test.[83] Ultimately, Georgia Pacific and Republic do not believe sufficient information exists to draw distinct conclusions as to the cause of the groundwater declines during the Order 1169 aquifer test and whether carbonate-rock aquifer pumping within

[80] CSI Closing.
[81] CSI Ex. 2, p. 17.
[82] The initial response was submitted on behalf of Dry Lake Water, LLC, Georgia Pacific, and Republic. *See* GP-REP Ex. 1, *Broadbent July 2, 2019 Initial Report*, Hearing on Interim Order 1303, official records of the Division of Water Resources. The rebuttal response was submitted on behalf of Dry Lake Water, LLC, Georgia Pacific Gypsum LLC, and Republic. *See* GP-REP Ex. 2, *Broadbent August 16, 2019 Rebuttal Report*, Hearing on Interim Order 1303, official records of the Division of Water Resources. However, the expert only appeared at the Hearing on Interim Order 1303 on behalf of Georgia Pacific and Republic. *See* Tr. 1588-91.
[83] *See* GP-REP Ex. 01, GP-REP Ex. 02, and *Closing Argument of Georgia Pacific Corporation and Republic Environmental Technologies, Inc.* (Closing GP-REP), Hearing on Interim Order 1303, official records of the Division of Water Resources.

the Garnet Valley and the Black Mountains Area has a measurable impact to spring flow in the Warm Springs area.[84]

Great Basin Water Network

GBWN elected to pose procedural suggestions relating to public involvement, availability of documents and data, transparency, and decision making, and did not submit a report with an independent analysis addressing the questions in Interim Order 1303.[85] GBWN advocates for sustainable management of the entirety of the White River Flow System as one unit based on the interconnected nature of all of the hydrologically connected basins, although no analysis to support which areas this would include was provided. GBWN relies on conclusory statements to establish the interconnected nature of the system as support for its position. Later, GBWN chose not to participate in the hearing nor submit a rebuttal report, closing arguments, or public comment.

Lincoln County Water District and Vidler Water Company

LC-V's participation in the LWRFS hearing was driven by their existing and pending groundwater rights in Kane Springs Valley, and an interest in excluding Kane Springs Valley from the LWRFS management area.[86] They disputed that Kane Springs Valley should be included within the LWRFS boundary based on their assertion of: prior decisions of the State Engineer that acknowledged the separate nature of the basin from the rest of the LWRFS, groundwater elevation comparisons, precipitation and recharge data, groundwater chemistry, and geophysical study results. In general, Kane Springs Valley should be managed based on its perennial yield, recognizing that there is groundwater flow to the LWRFS as there are from other basins into the LWRFS, but where they are excluded from the proposed management area.[87]

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[84] *See* Closing GP-REP.
[85] *GBWN Report on Order 1303*, (GBWN Report), Hearing on Interim Order 1303, official records of the Division of Water Resources.
[86] LC-V Ex. 1, *Lower White River Flow System Interim Order #1303 Report Focused on the Northern Boundary of the Proposed Administrative Unit, prepared by Lincoln County Water District and Vidler Water Company in Association with Zonge International Inc., dated July 3, 2019*, Hearing on Interim Order 1303, official records of the Division of Water Resources, p. 2-1.
[87] LC-V Ex. 2, *Rebuttal Submittal to Reports Submitted in Response to Interim Order #1303, dated August 16, 2019 and Attachments A, B, C, D and E containing the reports or technical memorandums of Greg Bushner, Peter Mock, Thomas Butler, Todd Umstot and Norman Carlson.*, Hearing on Interim Order 1303, official records of the Division of Water Resources, pp. 7, 14–15.

Various rulings of the State Engineer have previously addressed whether appropriation of groundwater from Kane Springs Valley would affect the Muddy River Springs Area.[88] LC-V states that these findings have not been challenged by any of the Order 1169 participants.[89] However, to the extent that SNWA relied on multiple linear regression models to establish groundwater flow from Kane Springs Valley to the LWRFS, LC-V do not agree.[90]

LC-V identified a distinct "break," or local increase, in water levels in the regional hydraulic gradient between wells drilled in the LWRFS versus wells drilled in Kane Springs Valley and northern Coyote Spring Valley.[91] It attributed the break to geologic structures located throughout the carbonate-rock aquifer. Although wells within the LWRFS exhibit very consistent groundwater levels, indicative of high transmissivity values across the area, the gradient between well KPW-1 and down-basin wells is much steeper, implying an impediment to groundwater flow near the mouth of Kane Springs Valley.[92]

In a 2006 hearing for protested water rights applications, LC-V presented an analysis of the regional geochemistry data including stable isotopes, temperature, and carbon-14 data.[93] That analysis found that the groundwater pumped from Kane Springs Valley could not be identified in the source water for the Big Muddy Spring, nor other springs farther south and outside the boundaries of the LWRFS.[94] LC-V concluded that groundwater pumped from production well KPW-1 is on a different groundwater flow path from the springs, consistent with the differences in hydraulic gradients, groundwater levels, and geophysical data.[95] CSVM-4, a well located in Coyote Spring Valley, and KPW-1, in Kane Springs Valley, have similar temperatures compared to the other wells in the basin, and a lower percentage difference on other markers tracked throughout groundwater in the basin.[96] LC-V argues that the water from these wells is chemically

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[88] LC-V Ex. 1, pp. 2-2 through 2-3, citing State Engineer's Rulings 5712, 6254, 5712.
[89] LC-V Ex. 1, p. 2-3.
[90] Testimony generally at Tr. 1311–1318. "... simply having correlation is not proof of causation. Causation is neither proved nor evaluated in a regression analysis." Tr. 1303.
[91] LC-V Ex. 1, p. 3-1.
[92] LC-V Ex. 1, pp. 1-1, 3-1 through 3-4. LC-V went on to conclude that local groundwater recharge occurs in Kane Springs Valley that does not flow to the LWRFS, and therefore there is available unappropriated water in the basin. LC-V Ex. 1, p. 3-5.
[93] LC-V Ex. 1, Appendix C, pp. 111–153.
[94] *Id.*, pp. 124–125.
[95] "Gradient alone does not mean flow." Thomas Butler, witness on behalf of LC-V, Tr. 1281.
[96] Tr. 1281–1282; LC-V Ex. 1, pp. 3-7 through 3-11.

unique and does not appear in any other wells in the LWRFS.[97] LC-V concludes carbon isotope data also confirmed that the water from Kane Springs Valley does not appear in the Muddy River Springs area.[98]

LC-V engaged a geophysical company to perform a CSAMT survey across the boundary line between Kane Springs Valley and Coyote Spring Valley, and identified significant geologic structures in southern Kane Springs Valley and northern Coyote Spring Valley.[99] Several transect lines were conducted perpendicular to the axis of the Kane Springs Valley, and one was also conducted along the axis of the southern part of the basin.[100] Additional transects were run in Coyote Spring Valley.[101] The results of the geophysical data validated concealed faulting indicated on existing maps, and was ground-truthed with observations in the field.[102] Results indicated a previously unmapped fault at the mouth of Kane Springs Valley, which LC-V named the Northern Boundary LWRFS fault, with a potentially 2,500-foot offset of materials with different resistivities.[103] LC-V argues that the extensive faulting that occurs in southern Kane Springs Valley and northern Coyote Spring Valley form the basis for the exclusion of Kane Springs Valley from the LWRFS.[104]

LC-V gave no opinion on the long-term annual quantity of groundwater that could be pumped from the LWRFS.[105] LC-V attributes all reduction in flows of the Muddy River and its associated springs to carbonate-rock aquifer pumping within the Muddy River Springs Area, and finds no discernable effect from carbonate-rock aquifer pumping occurring in Coyote Springs

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[97] Tr. 1284.
[98] Tr. 1286.
[99] LC-V Ex. 1, pp. 1-1, 4-1 through 4-10.
[100] LC-V Ex. 1, p. 4-3.
[101] LC-V Ex. 1, p. 4-3.
[102] LC-V Ex. 1, p. 4-8, Tr. 1322.
[103] Tr. 1271–1272; LC-V Ex. 1, p. 4-9.
[104] LC-V Ex. 1, p. 7-1 through 7-2; Tr. 1408. Questions from the National Park Service and the State Engineer inquired whether the areas of high resistivity in the CSAMT necessarily implied low transmissivity, low permeability of the rock. LC-V conceded that the resistivity information alone does not provide data about the hydraulic properties of either side of the resistive area, but when considered with all available information, LC-V concluded that the fault is likely an impediment to groundwater flow. Tr. 1327–1328, 1363–1364.
[105] LC-V Ex. 1, p. 5-2.

Valley.[106] As a result, LC-V finds that the efforts to protect the Warm Springs area must focus on groundwater pumping within the Muddy River Springs Area itself.[107]

Moapa Band of Paiutes

The MBOP participated in the administrative hearing due to their interest in the outcome of the proceedings and how it may affect their pending water right applications within California Wash. A regional approach, spanning a large aerial expanse, was taken by MBOP; the analysis and modeling efforts extended into central Nevada and Utah. MBOP stands apart from other participants with their interpretation of the data.[108] MBOP opposed management of the LWRFS as one basin and argues the scientific consensus is lacking amongst participants.[109] Regarding the interpretation of other participants, MBOP disagreed with the methodology and application of the 2013 USFWS SeriesSEE analysis and SNWA's multiple linear regression and requests repudiation of both.[110]

While not agreeing with the proposed boundaries of the LWRFS, MBOP did not provide a clear suggestion for which basins or portions therein should be included or excluded. MBOP suggested that pumping in California Wash has little to no impact on the Warm Springs area.[111] MBOP further suggested there are two capture zones, separated by a hydrodynamic and hydrochemical divide, which transects the Moapa River Indian Reservation area and results in south-flowing groundwater into the Las Vegas Valley through the LWRFS, bypassing the Muddy

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[106] LC-V Ex. 1, p. 5-3.
[107] LC-V Ex. 1, p. 5-3.
[108] Tr. 772– 773; 839.
[109] *See Closing Statement by the Moapa Band of Paiute Indians for Order 1303 Hearing* (MBOP Closing), Hearing on Interim Order 1303, official records of the Division of Water Resources, pp. 1–2, 6.
[110] *Id.*, pp. 7–12, 15–16; *See* MBOP Ex. 3, *Johnson, C., and Mifflin, M. Rebuttal Report of the Moapa Band of Paiutes in Response to Stakeholder Technical Reports Filed under Order #1303: unpublished report and appendices, August 16, 2019. 27 p.*, Hearing on Interim Order 1303, official records of the Division of Water Resources.
[111] *See* MBOP Ex. 2, *Johnson, C., and Mifflin, M. Water Level Decline in the LWRFS: Managing for Sustainable Groundwater Development. Initial Report of the Moapa Band of Paiutes in Response to Order #1303: unpublished report and appendices, July 3, 2019. 84 p.*, Hearing on Interim Order 1303, official records of the Division of Water Resources, pp. 2, 4, 14, 35; Tr. 819.

River Springs Area.[112] This hydrodynamic divide theory was not shared by SNWA, CBD, CSI, and NPS.[113]

Several participants agree that climate impacts were observed in the hydrographs, e.g., periods of wet and dry; however, MBOP interpreted the existing data to show that climate-driven decline, specifically drought, as the primary response observed in the long-term declining groundwater levels.[114] Thus, MBOP concluded that no reduction in pumping will restore high-elevation spring flows.[115] MBOP did not agree with other participants that decreasing groundwater levels and spring flows were attributed to increased carbonate-rock aquifer pumping beginning in the early 1990s.[116]

A quantity available for sustainable pumping was not proposed, but MBOP presumed more water is available in California Wash than previously thought.[117] A flux of approximately 40,000 afy of south-flowing groundwater into the Las Vegas Valley, bypassing the Muddy River Springs Area, was postulated in the initial report as possible with the hydrodynamic divide; however, during the hearing this quantity was given a range of plus or minus an order of magnitude based on assumptions for calculations.[118]

MBOP acknowledged that the Muddy River is connected to the alluvial aquifer and thus pumping from the alluvial and carbonate-rock aquifers in the Muddy River Springs Area impact the Muddy River flows.[119] Therefore, to mitigate impacts to the Muddy River, MBOP proposed that alluvial aquifer pumping, specifically between Arrow Canyon and White Narrows, can be moved to the carbonate-rock aquifer in basins to the south, such as California Wash, with minimal anticipated impacts to the Muddy River flows, rather than moving alluvial aquifer pumping from the Muddy River Springs Area to the carbonate-rock aquifer in connected areas, where impacts

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[112] *See* MBOP Ex. 2, pp. 2, 4, 12, 14, 20, 35, 55; Tr. 812; 845.
[113] SNWA Ex. 9, pp. 12–13; CBD Ex. 4, p. 15; CSI Ex. 2, p. 23; NPS Ex. 3, *National Park Service's Response to July 2019 Interim Order 1303 Reports, Waddell, August 16, 2019*, Hearing on Interim Order 1303, official records of the Division of Water Resources, p. 4.
[114] *See* MBOP Ex. 2, pp. 3, 26–32, 35; Tr. 764–771; 805.
[115] *See* MBOP Ex. 2, pp. 3, 35; Tr. 821–826.
[116] *See* MBOP Ex. 2, p. 29; Tr. 775, 838–840; 848.
[117] *See* MBOP Ex. 2, pp. 2, 20, 35.
[118] *See* MBOP Ex. 2, pp. 6, 19, 35; Tr. 850–851.
[119] *See* MBOP Ex. 2, pp. 23–24, 35; Tr. 836.

proportional to pumping may be expected.[120] Thus, MBOP proposed favoring temporary over permanent uses and transferring of rights between the carbonate-rock and alluvial aquifers on a case-by-case basis.[121]

Moapa Valley Water District

MVWD was created by the Nevada legislature in 1983, pursuant to NRS Chapter 477, to provide water service "vital to the economy and well-being of Moapa Valley."[122] MVWD provides municipal water service to approximately 8,500 people with 3,250 metered service connections, including service to the MBOP.[123]

MVWD supported the inclusion of Kane Springs Valley within the LWRFS boundary.[124] Data indicated a direct connection between Kane Springs Valley and Coyote Spring Valley. This data included observations that the water level in KMW-1/KSM-1 decreased 0.5 foot over the duration of the Order 1169 aquifer test.[125] State Engineer's rulings have concluded that geochemical evidence and groundwater gradient data indicate that groundwater flows from the Kane Springs Valley into Coyote Spring Valley, and MVWD supports LVVWD's 2001 calculation of that quantity of water at approximately 6,000 afy.[126] MVWD performed its own calculations of the groundwater gradients from Kane Springs Valley at KMW-1 to EH-4, and concluded that the gradient was "an uninterrupted, continuous, exceptionally flat gradient," unlike gradients commonly seen in the western U.S., especially in highly fractured areas.[127] MVWD also

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[120] *See* MBOP Ex. 2, pp. 23, 35.
[121] *See* MBOP Closing.
[122] Tr. 1172.
[123] MVWD Ex. 3, *District July 1, 2019 Report in response to Interim Order 1303*, p.5, Hearing on Interim Order 1303, official records of the Division of Water Resources; MVWD Ex. 4, *District August 16, 2019 Rebuttal Report*, p, 1, Hearing on Interim Order 1303, official records of the Division of Water Resources. MVWD has 3,147 afa of water rights in Arrow Canyon. Tr. 1169–1170.
[124] MVWD Ex. 3, p. 1; Tr. 1175.
[125] MVWD Ex. 3, p. 1; MVWD Ex. 4, p. 2.
[126] MVWD Ex. 3, pp. 1–2, referring to State Engineer's Ruling 5712 (*see*, NSE Ex. 12, *Ruling 5712*, Hearing on Interim Order 1303, official records of the Division of Water Resources) and MVWD Ex. 8, *Las Vegas Valley Water District, Water Resources and Ground-Water Modeling in the White River and Meadow Valley Flow Systems, Clark, Lincoln, Nye, and White Pine Counties, Nevada (2001)*, Hearing on Interim Order 1303, official records of the Division of Water Resources, p. 6-3.
[127] Tr. 1177–1178.

introduced evidence of a stipulation between LC-V and the USFWS that bases a reduction in pumping in Kane Springs Valley on a lowering of spring discharges in the Warm Springs area, and introduced a letter from SNWA to the State Engineer, as additional support that the participants to the Interim Order 1303 hearing have previously recognized Kane Springs Valley is part of the LWRFS.[128]

MVWD disagreed that a hydrologic barrier exists between Coyote Springs Valley and Kane Springs Valley.[129] Relying on a 2006 report prepared by another consultant, MVWD said the evidence indicated that the fault at the mouth of Kane Springs Valley was not an impediment to flow, and that there was no evidence of having encountered hydraulic barriers to groundwater flow during a seven-day aquifer test.[130] Additionally, the "highly transmissive fault zone" is continuous across the basin boundary between Kane Springs Valley and Coyote Spring Valley.[131] MVWD found further support for its position from evidence that KMW-1 showed drawdown during both the seven-day aquifer test on KPW-1, as well as from the Order 1169 aquifer test pumping that occurred from MX-5.[132] MVWD considered the water level data collected before, during and after the Order 1169 aquifer test, and Warm Springs area spring discharge to support its finding that the fault is not interrupting groundwater flow.[133] MVWD found it "questionable" that the first suggestion of a fault that impedes southward groundwater flow would be prepared by LC-V for this hearing.[134]

Although water levels and spring discharge did not recover to the levels measured before the Order 1169 aquifer test, MVWD believed that the LWRFS is at or near steady-state conditions

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[128] Tr. 1195–1197.
[129] Tr. 1176–1177.
[130] Tr. 1181–1182. MVWD also quoted from the report that "the fracturing was so extensive that the fractured aquifer system really behaved as an equivalent porous media." *Id.* MVWD later agreed that this would behave like a sandy aquifer. Tr. 1224.
[131] Tr. 1185.
[132] Tr. 1250.
[133] Tr. 1219.
[134] *Post-Hearing Brief of Moapa Valley Water District* (MVWD Closing), Hearing on Interim Order 1303, official records of the Division of Water Resources, p. 5.

regarding aquifer recovery.[135] MVWD viewed this as being consistent with the State Engineer's statements in Interim Order 1303.[136]

Finally, MVWD did not provide a specific quantity of available water but did acknowledge that the "actual safe pumpage" is less than current pumping rates, and recognized a direct relationship between pumping from the carbonate-rock aquifer, spring and Muddy River flows, and alluvial aquifer pumping.[137] The timing and magnitude of carbonate-rock aquifer pumping effects on spring discharge is dependent on the volume of water pumped and the proximity of a pumping center to the springs; however, all cumulative carbonate-rock aquifer pumping in the seven interconnected basins will eventually cause depletions on the Warm Springs area springs.[138] Further, if carbonate rights are transferred to the alluvial aquifer there will be depletions to Muddy River flows and impacts to senior Muddy River water right owners.[139]

MVWD raised additional matters that they believed relevant to the analysis under Interim Order 1303. First, they stressed the importance of municipal water rights, and the necessity for a reasonably certain supply of water for future permanent uses without jeopardizing the economies of the communities that depend on the water supply, and to protect the health and safety of those who rely on the water supply.[140] To that end, MVWD requested that the State Engineer consider designating municipal use as the most protected and highest use of water, and to give MVWD the perpetual right to divert 6,791 afa of permitted and certificated rights from its carbonate-rock aquifer wells.[141] Second, MVWD stated that it had already satisfied its obligation to protect Moapa dace habitat and senior water rights when it dedicated 1cfs/724 afa, or approximately 25% of the MVWD current diversions, from its most senior water right, to the enhancement of the Moapa dace habitat.[142]

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[135] Tr. 1198, MVWD Ex. 3, p. 4.
[136] Tr. 1199.
[137] Tr. 1199–1200; MVWD Closing, pp. 9–10.
[138] MVWD Ex. 3, p. 5.
[139] *Id.*
[140] MVWD Ex. 3, p. 5.
[141] MVWD Ex. 3, p. 6; Tr. 1203–1204; 6,791 afa constitutes an increase in the carbonate-rock aquifer pumping for MVWD. Tr. 1228.
[142] MVWD Ex. 3, pp. 6–7; Tr. 1202–1203.

Muddy Valley Irrigation Company

The MVIC is a non-profit Nevada corporation with the senior decreed water rights to the Muddy River, who provided testimony that SNWA is a majority shareholder while other participants such as CSI, LC-V, and MVWD are minority shareholders of the decreed rights.[143] MVIC concurred with SNWA's conclusions regarding aquifer recovery, long-term quantity of groundwater, and movement of water between the alluvial and the carbonate-rock aquifers.[144] Specifically, that any groundwater pumping, from both alluvial or carbonate-rock aquifers, within the Muddy River Springs Area impacts Muddy River flows, thus violating the Muddy River Decree.[145] MVIC did not dispute the geographic boundaries as identified in Interim Order 1303.[146] MVIC argued that the Muddy River and all of its sources are fully appropriated and emphasized the decreed seniority to groundwater rights, and further asserts that these surface water rights are protected by the Muddy River Decree and the prior appropriation doctrine.[147]

United States Department of the Interior, National Park Service

NPS submitted both an initial and rebuttal report in response to the Interim Order 1303 solicitation and presented testimony during the hearing.[148] Based upon NPS's evaluation of the evidence relating to the Order 1169 aquifer test, the use of an updated numerical groundwater flow model previously developed to predict conditions within the LWRFS, data compiled since the conclusion of the Order 1169 aquifer test, and review of other available data, NPS came to multiple conclusions relating to the delineation and management of the LWRFS. NPS advocates for the

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[143] Tr. 1693–1696, 1705.
[144] MVIC Ex. 1, *MVIC Rebuttal Report dated August 15, 2019*, Hearing on Interim Order 1303, official records of the Division of Water Resources. MVIC identified sections from the SNWA report, but the references do not correspond with sections in SNWA's report. The State Engineer assumes that these section numbers correspond to page numbers of the SNWA report; *See also*, SNWA Ex. 7, *Burns, A., Drici, W., Collins, C., and Watrus, J., 2019, Assessment of Lower White River Flow System water resource conditions and aquifer response, Presentation to the Office of the Nevada State Engineer: Southern Nevada Water Authority, Las Vegas, Nevada*, Hearing on Interim Order 1303, official records of the Division of Water Resources.
[145] MVIC Ex. 1, p. 5; Tr. 1698.
[146] *See* MVIC Ex. 1, p. 3; Tr. 1697–1968.
[147] *Muddy Valley Irrigation Company Post Hearing Closing Statement* (MVIC Closing), Hearing on Interim Order 1303, official records of the Division of Water Resources; Tr. 1967, 1700–1708. *See also*, NSE Ex. 333, *Muddy River Decree*, Hearing on Interim Order 1303, official records of the Division of Water Resources.
[148] *See* NPS Ex. 2, *Prediction of the Effects of Changing the Spatial Distribution of Pumping in the Lower White River Flow System, Waddell, July 3, 2019*; Tr. 494–597.

inclusion of the entirety of the Black Mountains Area within the geographic boundary of the LWRFS based upon its review of geologic conditions that facilitate flow from the southern portion of the LWRFS through the Muddy Mountains thrust sheet and discharging in Rogers Spring and Blue Point Spring.[149] Further supporting this opinion, NPS cites to spring chemistry and isotopic composition of the water discharging from Rogers Spring and Blue Point Spring and the hydraulic head conditions that NPS believes supports the flow of groundwater beneath the Muddy Mountains from the carbonate-rock aquifer to those springs.[150] NPS acknowledge that there is a weak hydraulic connection between Rogers Spring and Blue Point Spring to the LWRFS based upon the geologic conditions within the Muddy Mountains, but argues that the entirety of the Black Mountains Area should be included to allow for management of the regional carbonate-aquifer to protect against diminished discharge to those springs.[151]

In addition to advocating for the inclusion of the entirety of the Black Mountains Area, the NPS provided evidence and analysis to support its conclusion that Kane Springs Valley too should be included within the geographic boundary of the LWRFS.[152] Based upon a review of the hydrologic data, geology of the Kane Springs Valley and basin boundaries, Coyote Spring Valley, and data from the Order 1169 aquifer test, NPS concludes that there is a clearly established hydrological connection between Kane Springs Valley and the other LWRFS basins, including discharge to the Warm Springs area.[153] While NPS advocates for the inclusion of the entire Black Mountains Area and Kane Springs Valley, it did not find any evidence to support the inclusion of the Las Vegas Valley within the LWRFS based upon a similar review of the geology and hydrological data.[154]

In interpreting data since the conclusion of the Order 1169 aquifer test, NPS reviewed the available data, concluding that the decades long decline of groundwater levels is not attributable to climate, but rather that the groundwater pumping within the LWRFS is the contributing

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[149] *See* NPS Ex. 2, p. 22. *See also*, Tr. 569–70; NPS, *Closing Statements Interim Order 1303 Hearing Testimony* (NPS Closing), Hearing on Interim Order 1303, official records of the Division of Water Resources, p. 2.
[150] NPS Ex. 2, p. 22; NPS Closing, pp. 2–4.
[151] *Id.*
[152] NPS Ex. 2, p. 22; NPS Ex. 3, pp. 5–11; Tr. 550–551; NPS Closing, pp. 4–5.
[153] NPS Ex. 2, p. 22; NPS Ex. 3, pp. 5–11; Tr. 550–551; NPS Closing, pp. 5–6.
[154] NPS Ex. 2, p. 22; Tr. 552–554.

factor.[155] NPS opined that if recent pumping withdrawals continued, the current declining trend would be accelerated, adversely impacting spring discharge in the Warm Springs area and Muddy River flow.[156] Further, NPS's review of the data lead to its conclusion that it will take many years, if not decades for the LWRFS carbonate-rock aquifer to reach equilibrium, particularly at the current groundwater pumping withdrawals and even longer if pumping withdrawals occurred at Order 1169 aquifer test levels.[157] However, NPS did not provide an opinion as what rate of groundwater withdrawals would be sustainable within the LWRFS.

Finally, NPS concluded that the movement of groundwater withdrawals from the alluvial aquifer within the Muddy River Springs Area to the carbonate-rock aquifer within the LWRFS would ultimately have little impact on capture of Muddy River flow. Specifically, NPS found that while there may be near-term benefits to the Warm Springs area and Muddy River flow, those benefits would eventually disappear, as the impact would only be delayed and not eliminated.[158]

Nevada Cogeneration Associates

NCA submitted a Rebuttal Report Pertaining to Interim Order 1303 and provided testimony at the Interim Order 1303 hearing.[159] NCA objected to the inclusion of certain non-profit organizations on the basis that those organizations were not stakeholders and did not have an interest to protect as the non-governmental organizations did not have water rights within the LWRFS basins effected by the proceedings.[160]

With respect to the geographic boundary of the LWRFS, in its Rebuttal Report, NCA is of the opinion that the northwestern portion of the Black Mountains Area, as identified by the State Engineer, should be within the LWRFS basins, but expressed its disagreement with other opinions advocating for the inclusion of the entire Black Mountains Area based upon NCA's analysis of the geology and groundwater elevations.[161] During the Interim Order 1303 hearing and in its Post-Hearing Brief, NCA's opinion shifted to advocate for the boundary of the LWRFS to be adjusted

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[155] NPS Ex. 2, pp. 7, 22–23. *See also* NPS Closing, pp. 5–6.
[156] *Id.*
[157] *Id.*
[158] NPS Ex. 2, p. 23. *See also* NPS Closing, p. 6, and Tr. 593–594.
[159] NCA Ex. 1, *NCA Rebuttal Report Pertaining to Interim Order 1303 August 16, 2019*, Hearing on Interim Order 1303, official records of the Division of Water Resources; Tr. 1602–50.
[160] NCA Ex. 1, pp. 1, 23.
[161] *Id.*, pp. 2, 23.

to exclude its production wells in the Black Mountains Area; however, NCA did not alter its opinion regarding the remaining portion of the Black Mountains Area staying within the LWRFS.[162]

NCA further expressed that the Lower Meadow Valley Wash should not be included in the LWRFS boundaries based upon the fact that observed groundwater levels do not indicate a hydrologic response to carbonate-rock aquifer pumping and that insufficient data supports a finding of continuity between water level trends to support its inclusion in the LWRFS.[163] However, NCA advocated for the inclusion of the Kane Springs Valley within the LWRFS based upon its opinion that the groundwater data demonstrated hydrologic connectivity between Coyote Spring Valley and Kane Springs Valley, acknowledging that the data is slightly attenuated resulting from the Kane Springs fault.[164] Ultimately, NCA concluded that Kane Springs Valley is tributary to the Coyote Spring Valley and the other LWRFS basins, which justify its inclusion within the boundary of the LWRFS.[165]

Similarly, based upon the groundwater data from the northern portion of Coyote Spring Valley demonstrating similar water level responses as other wells throughout the LWRFS and pumping data demonstrating high hydrologic connectivity across all the LWRFS basins, NCA concluded that there was no basis to exclude the northern portion of Coyote Spring Valley.[166] Finally, NCA rejected a suggestion that the entirety of the White River Flow system, which extends into northeastern Nevada, be included within the management area.[167] Specifically, NCA concluded that the Pahranagat Shear Zone creates a significant barrier to the northwestern portion of the LWRFS and that review of groundwater levels does not support a finding that groundwater level declines propagate into the northern reaches of the White River Flow System.[168] NCA concluded, advocating that proper management of the LWRFS is appropriate and sufficient for the

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[162] *Post-hearing brief of Nevada Cogeneration Associates Nos. 1 and 2 pertaining to Amended Notice of Hearing Interim Order #1303 following the hearing conducted September 23, 2019, through October 4, 2019, before the Nevada State Engineer* (NCA Closing), Hearing on Interim Order 1303, official records of the Division of Water Resources, pp. 2–10. *See also* Tr. 1619–22.
[163] NCA Ex. 1 pp. 3–7, 23. *See also* NCA Closing, pp. 15–16.
[164] NCA Ex. 1, pp. 8–17, 23. *See also* NCA Closing, pp. 10–14, and Tr. 1629–44.
[165] NCA Ex. 1, pp. 11–16.
[166] *Id.*, pp. 17–18, 23.
[167] *Id.*, pp. 19, 24.
[168] *Id.*

purpose of managing discharge of groundwater to the Warm Springs area to support habitat for the Moapa dace and serve senior Muddy River decreed rights.[169]

In addressing the annual amount of groundwater that could be developed within the LWRFS without adversely impacting senior decreed rights on the Muddy River or Warm Springs area discharge supporting the habitat for the Moapa dace, NCA supported a target of 9,318 afa, a recent three-year average of annual pumping within the LWRFS,[170] as it did not believe there to be sufficient data to support either an increase or decrease from this amount.[171] However, in its post-hearing brief, NCA opined that if their production wells located within the northwestern portion of the Black Mountains Area were excluded from the LWRFS boundary, then the annual amount of water that could be sustainably developed was less than the 9,318 afa.[172]

Finally, NCA did not support movement of water rights from the Muddy River Springs Area alluvial aquifer to the carbonate-rock aquifer, as it was of the opinion that the movement of those rights would not mitigate impact to the Warm Springs area.[173] Rather, NCA concluded that movement of those rights would compound the impact of pumping from the carbonate-rock aquifer.[174] However, NCA did express some support for movement of senior alluvial water rights as a management tool to offset existing junior carbonate-rock aquifer pumping within the LWRFS.[175]

NV Energy

NV Energy submitted a rebuttal report outlining its responses to the five matters the State Engineer solicited in Interim Order 1303 and presented its opinions and conclusions during the Interim Order 1303 hearing.[176] In its rebuttal report, NV Energy opined that the geographic boundary of the LWRFS should be as established in Interim Order 1303.[177] NV Energy further

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[169] *Id.*
[170] NCA Ex. 1, p. 19. *See, e.g.* Draft order of the State Engineer distributed to LWRFS stakeholders at the LWRFS Working Group meeting, September 19, 2018, official records of the Division of Water Resources.
[171] *Id.*, pp. 18, 24.
[172] NCA Closing, pp. 14–15.
[173] NCA Ex. 1, pp. 19–23, 24.
[174] *Id.*
[175] *Id.*
[176] NVE Ex. 1, *NV Energy Rebuttal Report to State Engineer's Order 1303 Initial Reports by Respondents*, Hearing on Interim Order 1303, official records of the Division of Water Resources.
[177] *Id.*, pp. 1–2.

opined that the existence of subsurface outflow from Kane Springs Valley into the LWRFS basins was insufficient to support its inclusion.[178]

NV Energy, in its rebuttal report, disagreed with MBOP's conclusion that the groundwater level declines observed during and after the Order 1169 aquifer test were primarily caused by drought. Rather, NV Energy agreed with SNWA's and MVWD's conclusions that the groundwater recovery occurred between 2–3 years following the conclusion of the aquifer test, but that continued pumping within the carbonate-rock aquifer has inhibited recovery to pre-Order 1169 aquifer test groundwater levels, and that at the current rate of carbonate-rock aquifer pumping the aquifer has nearly reached steady-state conditions and discharge to the Warm Springs area has reached equilibrium.[179]

NV Energy further agreed in its rebuttal report with MBOP's and CNLV's conclusions that some groundwater flowing within the carbonate-rock aquifer bypassed the Muddy River Springs Area, and ultimately the Muddy River. NV Energy also agreed that groundwater development within the southern boundary of the LWRFS would likely have less of an effect on discharge to the Warm Springs area and the river. NV Energy did not opine as to the quantity of water that bypassed the springs, but inferred that the current 7,000–8,000 afy of carbonate-rock aquifer pumping appeared to support the conclusion that steady-state conditions had been reached.[180] NV Energy also opined that movement of senior certificated alluvial water rights in the Muddy River Springs Area to carbonate-rock aquifer wells located in the southern portion of the LWRFS may be considered acceptable as Nevada law allows for the reasonable lowering of the groundwater table, and such movement would not necessarily result in a conflict to existing rights.[181] NV Energy further concluded that, contrary to the conclusions of MBOP, drought was not a significant cause for the groundwater level declines observed.[182] Finally, NV Energy concluded with suggestions that the State Engineer either: (1) combine the LWRFS basins into a single hydrographic basin and declare the new basin to be a Critical Management Area pursuant to NRS 534.037 and 534.110; or, (2) for the State Engineer to, under his authority in NRS 534.020 and

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[178] *Id.*
[179] *Id.*, pp. 2–7.
[180] NVE Ex. 1, p. 8.
[181] *Id.*, pp. 8–9; *Nevada Energy's Closing Statements* (NV Energy Closing), Hearing on Interim Order 1303, official records of the Division of Water Resources, pp. 4–5.
[182] *Id.*, pp. 9–12.

534.120, require the water right holders within the LWRFS to develop a conjunctive management plan.[183]

After considering all of the evidence and testimony presented at the Interim Order 1303 hearing, NV Energy ultimately altered its opinion and found compelling arguments to both support the inclusion of Kane Springs Valley in the LWRFS as well as its exclusion.[184] Ultimately, NV Energy changed its opinion with respect to the geographic boundary of the LWRFS and in its closing statement expressed support for the inclusion of Kane Springs Valley within the LWRFS boundary due to the connection with Coyote Spring Valley and thus the potential for impacts to LWRFS from pumping within Kane Springs Valley.[185] NV Energy proposes that the current pumping regime of 7,000 to 8,000 afy be maintained to evaluate the potential for steady-state conditions and the continued monitoring of the Warm Springs West gage and agrees that moving pumping further south may reduce impact to the Muddy River and springs. With regards to moving water between the alluvial and carbonate-rock aquifers, similar to others, NV Energy agrees with the evaluation of change applications on a case-by-case basis with demonstration that impacts are reduced or unchanged by the proposed point of diversion compared to the existing point of diversion. NV Energy supports an agreement that would include all water users within the LWRFS for the purposes of not exceeding stresses within system and protecting the Moapa dace.[186]

Southern Nevada Water Authority and Las Vegas Valley Water District

The SNWA and LVVWD submitted multiple reports in response to the Interim Order 1303 solicitation.[187] SNWA and LVVWD supported the boundary of the LWRFS as identified in Interim Order 1303, and argued that there was a general consensus of the participants regarding the

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[183] *Id.*, p. 12.
[184] Tr. 1761–1762.
[185] NV Energy Closing, pp. 2–3.
[186] *Id.*, pp. 3–6.
[187] SNWA Ex. 7; SNWA Ex. 8, *Marshall, Z.L., and Williams, R.D., 2019, Assessment of Moapa dace and other groundwater- dependent special status species in the Lower White River Flow System, Presentation to the Office of the Nevada State Engineer: Southern Nevada Water Authority, Las Vegas, Nevada*, Hearing on Interim Order 1303, official records of the Division of Water Resources; SNWA Ex. 9, *Burns, A., Drici, W., and Marshall Z.L., 2019, Response to stakeholder reports submitted to the Nevada State Engineer with regards to Interim Order 1303, Presentation to the Office of the Nevada State Engineer: Southern Nevada Water Authority, Las Vegas, Nevada*, Hearing on Interim Order 1303, official records of the Division of Water Resources.

boundaries based upon the hydraulic connectivity within the identified basins.[188] Further, SNWA and LVVWD argued against the exclusion of the northern and western portions of Coyote Spring Valley, that management of adjoining basins should be done in a manner recognizing an impact on pumping from those basins on water availability in the LWRFS basins, and that the Las Vegas Valley should be excluded from the LWRFS.[189]

With respect to the evaluation of the carbonate-rock aquifer recovery since the conclusion of the Order 1169 aquifer test, SNWA and LVVWD concluded that the aquifer has not returned to pre-Order 1169 levels, and that the evidence demonstrates a continued declining trend within the carbonate-rock aquifer as a result of continued groundwater pumping.[190] SNWA and LVVWD concluded that the current pumping continues to capture groundwater storage and that based upon the current rate of groundwater withdrawals, water levels within the carbonate-rock aquifer will continue to decline for the foreseeable future.[191] Further, SNWA and LVVWD rejected the premise that climate was a significant factor over groundwater withdrawals for the observed groundwater level decline.[192]

Based upon a review of the evidence, SNWA and LVVWD concluded that current rate of groundwater withdrawals were not sustainable without adversely impacting senior Muddy River water rights and Moapa dace habitat.[193] Based upon the analysis performed by SNWA and LVVWD, examining the discharge from the Muddy River Springs Area and groundwater production within the carbonate-rock aquifer within the LWRFS, SNWA and LVVWD concluded that any groundwater development within the carbonate-rock aquifer resulted in a one-to-one (1:1) ratio of capture of Muddy River flow, and that regardless of where that pumping occurred, it still resulted in a 1:1 ratio of capture, only that the period of time that the capture was realized was longer.[194] Ultimately, SNWA and LVVWD concluded that while any amount of pumping results

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[188] SNWA Ex. 7, pp. 5-1 through 5-18, 8-1. *See also*, Tr. 953.
[189] *Closing Brief of Southern Nevada Water Authority and Las Vegas Valley Water District* (SNWA Closing), pp. 4–9, Hearing on Interim Order 1303, official records of the Division of Water Resources. *See also* SNWA Ex. 9 at sections 6, 7 and 12.
[190] SNWA Closing, pp. 9–12. *See also* SNWA Ex. 7, pp. 5-1 through 5-18, and SNWA Ex. 9, pp. 15–20.
[191] SNWA Closing, pp. 11–12. *See also* Tr. 932.
[192] SNWA Closing, pp. 12–14. *See also* SNWA Ex. 9, pp. 15–17.
[193] SNWA Ex. 7, pp. 6-3 through 6-4, 8-2 through 8-4.
[194] *Id.*, pp. 6-4 through 6-11, 8-2 through 8-4; SNWA Ex. 9, pp. 22–27.

in a conflict with senior decreed Muddy River rights, approximately 4,000 to 6,000 afa could be sustainably pumped from the aquifer.[195] In conjunction with SNWA and LVVWD's evaluation of the quantity of water that may be sustainably developed within the LWRFS, SNWA and LVVWD reviewed the interrelationship between discharge from the carbonate-rock aquifer underlying the LWRFS, groundwater pumping and the impact on the habitat and recovery of the Moapa dace.[196] SNWA and LVVWD ultimately concluded that the flow required to sustain the Moapa dace from adverse effects, including habitat loss and fish population declines was a minimum 3.2 cfs at the Warm Springs West gage.[197]

Finally, it was SNWA and LVVWD's opinion that movement of water rights from the Muddy River Springs Area alluvial aquifer to the carbonate-rock aquifer within the LWRFS may delay the capture of water serving senior decreed rights on the Muddy River, but that movement of water from the alluvial aquifer to the carbonate-rock aquifer would adversely impact the habitat of the Moapa dace.[198] Thus, SNWA and LVVWD concluded transfer of water rights from the Muddy River Springs Area alluvial aquifer to the LWRFS carbonate-rock aquifer would result in further depletion of flow to the Warm Springs area.[199]

Technichrome

Technichrome submitted a response and additional response to the Interim Order in July 2019 but did not participate in the hearing.[200] Technichrome stated that it had no objection to a "joint administrative basin" consisting of Coyote Spring Valley, Black Mountain Area, Garnet Valley, Hidden Valley, Muddy River Springs Area, and Lower Moapa Valley, expressed no comment regarding the inclusion of Kane Springs Valley, but questioned whether the entirety of the White River Flow System should be included in the State Engineer's analysis.[201] However,

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[195] Tr. 921–22. *See also* SNWA Ex. 7, pp. 8-1 through 8-5; SNWA Ex. 9, p. 27.
[196] *See* SNWA Ex. 8.
[197] *Id.*, pp. 8-1 through 8-2. *See also* SNWA Closing, pp. 17–19.
[198] *See* SNWA Closing, pp. 19–20. *See also* SNWA Ex. 7, pp. 6-3 through 6-11, 8-4; SNWA Ex. 9, pp. 21–22.
[199] SNWA Closing, p. 20. *See also* Tr. 904–05.
[200] *Response to Interim Order #1303 Submitted [sic] by Technichrome* (Technichrome Response), Hearing on Interim Order 1303, official records of the Division of Water Resources, and *Additional Comments from Technichrome* (Technichrome Addendum), Hearing on Interim Order 1303, official records of the Division of Water Resources.
[201] Technichrome Response, pp. 1–3.

Technichrome did note that it believed that combining all water rights into a single management structure reduced the State Engineer's ability to control groundwater withdrawals. Technichrome stated that it believed that the State Engineer should have the ability to control withdrawals in small areas to best manage the discharge to the Warm Springs area, and that more targeted control over the groundwater withdrawals would be more effective in managing the discharge.[202] Technichrome supported this opinion with some analysis of the results of the Order 1169 aquifer test and its opinion that pumping farther from the Warm Springs area had little to no impact on discharge to Pederson Spring.[203]

In Technichrome's additional comments, Technichrome addressed concerns regarding the injury that would result from a system-wide reduction of groundwater rights throughout the LWRFS.[204] Finally, Technichrome addressed concerns regarding reliance on the priority system, as utilization of the prior appropriation system would benefit senior irrigation uses over the junior industrial uses, and that removal of basin boundaries would remove limitations on movement of water rights between the existing hydrographic basins, which would disrupt junior uses in areas where senior rights may be moved.[205]

U.S. Fish and Wildlife Service

USFWS holds several water rights within the LWRFS and its mission is consistent with the scientific and management aspects of the LWRFS and the management area as established in Interim Order 1303.[206] USFWS opted to participate in the proceeding by submitting initial and rebuttal reports and providing testimony during the administrative hearing.[207] The approach of

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[202] *Id.*
[203] *Id.*, and Technichrome Addendum.
[204] Technichrome Addendum.
[205] *Id.*
[206] The USFWS' mission is to work with others to conserve, protect and enhance fish, wildlife and plants and their habitats for the continuing benefit of the American people. *See also,* USFWS, *About the U.S. Fish and Wildlife Service*, https://bit.ly/aboutusfws (last accessed June 4, 2020).
[207] USFWS Ex. 5, *Report in Response to Order 1303*, Hearing on Interim Order 1303, official records of the Division of Water Resources; USFWS Ex. 7, *Rebuttal to: Water Level Decline in the LWRFS: Managing for Sustainable Groundwater Development by Cady Johnson and Martin Mifflin* [sic], *Mifflin & Associates, Inc., submitted by the Moapa Band of Paiutes in accordance with Order 1303*, Hearing on Interim Order 1303, official records of the Division of Water Resources.

USFWS was to review available data, develop a hydrogeologic conceptual model, and answer the specific questions posed in Interim Order 1303.

USFWS proposed that the boundary be based on geologic breaks rather than the surface drainage areas. The boundary would then encompass all Muddy River Springs Area, Hidden Valley, Garnet Valley, most of Coyote Spring Valley, most of California Wash, the northwest portion of the Black Mountains area, Kane Springs Valley, and most of Lower Meadow Valley Wash. The extent to which Kane Springs Valley and Lower Meadow Valley Wash are included would depend on the data from an aquifer test that has not yet been performed.[208]

Although, USFWS did not directly opine their view on recovery, their report discusses a conceptual model with insight into lag times and hydraulic connections, and how current conditions relate to sustainable pumping. An "undiminished state of decline" in water levels and spring flows indicated that the system was not in equilibrium at the end of the Order 1169 aquifer test. USFWS postulated there was generally good connectivity within the aquifer system with areas of higher and lower transmittivity. Trends in water levels and spring flows allude to the connection between high elevation springs and carbonate-rock aquifer pumping, with a time lag observed in the recovery of carbonate-rock aquifer water levels and spring flows following the cessation of the Order 1169 aquifer test. The exception is Big Muddy Spring where surface water level trends appeared to be unrelated to the carbonate-rock aquifer water levels.[209]

USFWS determined that the optimum method currently available to estimate the maximum allowable rate of pumping in the LWRFS is the average annual rate of pumping from 2015–2017.[210] USFWS considered the period from 2015 to 2017 because it found that the groundwater withdrawals, the discharge of the Muddy River Springs, and the flow of the Muddy River were all relatively constant; flow rates from Plummer, Pederson, Jones and Baldwin springs, though generally lower than before the Order 1169 aquifer test, were reasonably stable compared to earlier

[208] *See* USFWS Ex. 5, pp. 2, 28–36.
[209] USFWS Ex. 5, pp. 3, 32–33, 35, 37–45; Tr. 266–270, 273–281, 299-301, 433-435.
[210] USFWS Ex. 5, p. 3.

periods.[211] Using the pumpage inventories for this time period, USFWS estimated the sustainable groundwater withdrawals to be 9,318 afa.[212]

Even if total carbonate-rock and alluvial aquifer pumping is maintained at a "sustainable" overall level, USFWS did not support increased carbonated-rock aquifer pumping in exchange for reductions in alluvial aquifer pumping, nor did USFWS support increased alluvial aquifer pumping in exchange for reductions in carbonate-rock aquifer pumping. USFWS suggested that carbonate-rock aquifer pumping should not be moved closer to the springs or the river. Similarly, USFWS suggests that alluvial aquifer pumping in the vicinity of the river should not be moved closer to the river. USFWS opines that any movement of water nearer to the springs or the river is anticipated to decrease the lag time for observing responses from pumping and shorten the time to respond to unfavorable impacts.[213]

Moving forward with management of the LWRFS, USFWS supported the use of the triggers at the Warm Springs West gage, as established under the 2006 MOA. Continuing to use these Warm Springs West flows as a trigger for management will protect and provide habitat for the Moapa dace; a reduction in the flow translates to a reduction in habitat.[214]

USFWS did not deny that water levels were independent of a climate response signal. Using observed data for Nevada Climate Divisions, USFWS visually inspected hydrographs for climate signals. USFWS opined that response to wet periods are observed for wells in both the carbonate-rock and alluvial aquifers and springs that discharge from the carbonate-rock aquifer but stated that response to dry periods cannot be separated from the impacts of pumping. USFWS did not observe these same climate signals in the hydrographs for Jones and Baldwin Springs or the Big Muddy Spring. USFWS disagreed with the conclusion of the MBOP regarding long-term, regional drought, as well as the analytical methods.[215]

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[211] USFWS Ex. 5, pp. 3, 37; Tr. 269–270, 433–435.
[212] USFWS Ex. 5, pp. 3, 36–38; Tr. 268–270.
[213] *See* USFWS Ex. 5, pp. 3–4, 38–39; Tr. 272–273.
[214] *See* USFWS Ex. 5, pp. 4, 39–45; Tr. 273–282; *See also*, NSE Ex. 256; NSE Ex. 244, *2006 Memorandum of Agreement Trigger Levels agreed to by the Southern Nevada Water Authority, Moapa Valley Water District, Coyotes Springs Investments LLC and Moapa Band of Paiute Indians*, Hearing on Interim Order 1303, official records of the Division of Water Resources.
[215] *See* USFWS Ex. 5, pp. 24–28, 34–35; *See* USFWS Ex. 7, pp. 2–16; Tr. 258–260, 299–322, 429–432.

Western Elite Environmental/Bedroc

Bedroc is the land holding and water-right holding entity for Western Elite Environmental, Inc., a provider of construction and recyclable waste collection and disposal in Southern Nevada.[216] Bedroc submitted an undated rebuttal report signed by Derek Muaina, General Counsel, and a closing statement.[217] Bedroc presented Jay Dixon as its expert to give a presentation and to discuss the rebuttal report.[218] Mr. Dixon stated that he contributed to the report, and that he agreed with it, but he did not sign the report because he was working for another participant in the hearing (NCA).[219] Mr. Dixon did provide testimony consistent with the report, and adopted the findings of that report, and both the testimony and the report will be considered in this Order.[220]

Bedroc presented testimony and evidence that its source of groundwater is hydraulically disconnected from the regional carbonate aquifer of the LWRFS and that additional groundwater may be available for pumping in their part of Coyote Spring Valley. Bedroc also argued that its basin fill alluvial groundwater pumping should be managed outside of the proposed LWRFS joint administrative unit.[221]

To show the hydraulic disconnect, Bedroc presented geologic information demonstrating its unique location.[222] Bedroc showed that a confining shelf of sedimentary rock was noticeably absent in the vicinity of the Bedroc site where recharge from the Sheep Range rises toward the surface between two faults, which results in shallow groundwater that is subject to ET and capture from shallow groundwater wells at the Bedroc site.[223] Recharge from the Sheep Range was estimated to be 750 afy, an average of the high and low estimates of the maximum recharge

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[216] Bedroc Ex. 2, *Interim Order 1303- Rebuttal Report- Prepared by Bedroc and Dixon Hydrologic, PLLC- August 2019*, Hearing on Interim Order 1303, official records of the Division of Water Resources.
[217] Bedroc Ex. 2; *Western Elite Environmental Inc.'s and Bedroc Limited, LLC's Closing Statement* (Bedroc Closing), Hearing on Interim Order 1303, official records of the Division of Water Resources.
[218] *See* Tr. 1718–1719.
[219] Tr. 1719, 1741.
[220] Tr. 1718–1757, 1749–1750.
[221] Bedroc Closing, pp. 13–14. Bedroc offered summary responses to the first four questions posed by Order 1303 but did no independent analysis. *See* Bedroc Closing, p. 12.
[222] Bedroc Closing, p. 2.
[223] *Id*; Tr. 1726–1733.

available.[224] SNWA challenged this calculation, pointing out that the estimated recharge could be as low as 130 acre-feet.[225]

Bedroc believes that it is capturing the recharge that would otherwise be lost to evapotranspiration.[226] Groundwater conditions at Bedroc's site show a rise in water levels between 2003 and 2006.[227] Bedroc attributed this rise in part to the installation of an unlined storage pond upgradient from the well, but also to the 2005 recharge event that was discussed by many participants to the proceeding.[228] Between 2006 and 2011, Bedroc showed that groundwater levels had been relatively stable even though pumping by Bedroc was fairly constant.[229] Bedroc showed photo evidence of evapotranspiration occurring around the Bedroc site, pointing to areas of white surface soils and green occurring in the photo as evidence of salt residue and phreatophytes, both occurring as a result of shallow groundwater evaporation.[230] The area is estimated to be about 2,200 acres, and the ET range is estimated to be 0.2 to 0.3 feet per year.[231] This results in an estimate of 400 to 600 afa of groundwater that potentially could be captured every year without pulling groundwater from storage.[232] If pumping in this area exceeded ET, water levels to the east of Bedroc would be dropping.[233]

Bedroc considered the alluvial system at its location to be a separate aquifer from the carbonate-rock aquifer in the LWRFS.[234] CBD in its report also supports this conclusion, suggesting that some groundwater can be withdrawn from the Coyote Spring Valley alluvial aquifer system because that system is disconnected from and not responsible for substantial recharge to the carbonate-rock aquifer.[235] SNWA testified similarly during the hearing.[236]

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[224] Tr. 1724–1725, 1755.
[225] Tr. 1755.
[226] Bedroc Closing, pp. 5–9.
[227] Tr. 1735.
[228] *Id.*
[229] Tr. 1735–1736.
[230] Tr. 1734, 1738.
[231] Tr. 1739.
[232] Tr. 1739.
[233] Tr. 1739. *See also* Bedroc Closing, p. 8.
[234] Tr. 1746.
[235] Bedroc Ex. 2, p. 5.
[236] Tr. 1024.

Relying on a lack of connection between pumping at Bedroc and the carbonate-rock aquifer, Bedroc asserted that there is no likely impact to the Warm Springs area caused by Bedroc.[237] Bedroc compared groundwater elevations over time in two alluvial wells, CSV-3009M and CSVM-7, and showed an upward trend in groundwater elevations.[238] But, when comparing groundwater elevations of two monitoring wells in different sources, CSVM-7 in the alluvium and CSVM-4 in the carbonate-rock aquifers, the carbonate-rock aquifer well elevations showed a decline during the Order 1169 aquifer test, but the alluvial well elevation rose during the same period and leveled off after the conclusion of the test.[239] Bedroc concluded that these data illustrate 1) the hydraulic disconnect between the local alluvial aquifer and carbonate-rock aquifer and 2) if historical alluvial pumping at Bedroc has not impacted water levels in nearby alluvial wells, then there is likely no impact to spring or streamflow in the Muddy River Springs Area.

Finally, Bedroc stated that managing all users in the region under the same system would arbitrarily impact users whose water neither comes from the regional carbonate-rock aquifer system nor impacts the springs of concern downstream.[240] It urged caution in allowing transfer of water rights between alluvial and carbonate-rock aquifers due to potential impacts on senior users that are using local recharge that may not sustain pumping from additional users.[241] Transfers of senior alluvial rights from the Muddy River Springs Area to the area near Bedroc should be considered on a case-by-case basis to protect Bedroc's senior water rights.[242]

III. PUBLIC COMMENT

WHEREAS, following the conclusion of the Interim Order 1303 hearing, opportunity for public comment was offered, including the opportunity to submit written public comment, which was due to be submitted to the Division no later than December 3, 2019. Lincoln County Board of

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[237] Bedroc Closing, p.11. *See also* SNWA testimony of Andrew Burns that pumping at Bedroc wells is not likely to impact the carbonate system or the Muddy River. Tr. 1024–1025.
[238] Bedroc Closing, p. 12. *See also* Tr. 1736–1737, 1752.
[239] Tr. 1737–1738.
[240] Bedroc Ex. 2, pp. 2–4.
[241] *Id.*, p. 6.
[242] Tr. 1740.

County Commissioners submitted written public comment in addition to the closing argument submitted by LC-V.[243]

IV. AUTHORITY AND NECESSITY

WHEREAS, NRS 533.024(1)(c) directs the State Engineer "to consider the best available science in rendering decisions concerning the availability of surface and underground sources of water in Nevada."

WHEREAS, in 2017 the Nevada Legislature added NRS 533.024(1)(e), declaring the policy of the State to "manage conjunctively the appropriation, use and administration of all waters of this State regardless of the source of the water."

WHEREAS, NRS 534.020 provides that all waters of the State belong to the public and are subject to all existing rights.

WHEREAS, as demonstrated by the results of the Order 1169 aquifer test and in the data collected in the years since the conclusion of the aquifer test, the LWRFS exhibits a direct hydraulic connection that demonstrates that conjunctive management and joint administration of these groundwater basins is necessary and supported by the best available science.[244]

WHEREAS, the pre-development discharge of 34,000 acre-feet of the fully appropriated Muddy River system plus the more than 38,000 acre-feet of groundwater appropriations within the LWRFS greatly exceed the total water budget that may be developed without impairment of senior existing rights or proving detrimental to the public interest.

WHEREAS, the available groundwater supply within the LWRFS that can be continually pumped over the long-term is limited to the amount that may be developed without impairing existing senior rights, rights on the Muddy River or adversely affecting the public interest in

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[243] *See* Board of County Commissioners, Lincoln County, Nevada, *Public Comment to Interim Order #1303 Hearing, Reports, and Evidence on the Lower White River Flow System,* Hearing on Interim Order 1303, official records of the Division of Water Resources.

[244] *See, e.g.,* NSE Ex. 245; NSE Ex. 248; NSE Ex. 256; NSE Ex. 252; NSE Ex. 282, *Federal Bureaus Order 1169 Report Selected References: Comparison of Simulated and Observed Effects of Pumping from MX-5 Using Data Collected to the Endo of the Order 1169 Test, and Prediction of the Rates of Recovery from the Test, TetraTech, 2013,* Hearing on Interim Order 1303, official records of the Division of Water Resources. *See also, e.g.,* CBD Ex. 3; MVWD Exs. 3– 4; MVIC Ex. 1; NCA Ex. 1, SNWA Exs. 7–9; USFWS Exs. 5–6; NPS Exs. 2–3.

protection of the endangered Moapa dace and the habitat necessary to support the management and recovery of the Moapa dace.

WHEREAS, pursuant to NRS 532.120, the State Engineer is empowered to make such reasonable rules and regulations as may be necessary for the proper and orderly execution of the powers conferred by law.

WHEREAS, pursuant to NRS 534.110(6) the State Engineer is directed to conduct investigations in groundwater basins where it appears that the average annual replenishment of the groundwater is insufficient to meet the needs of all water right holders, and if there is such a finding, the State Engineer may restrict withdrawals to conform to priority rights.

WHEREAS, within an area that has been designated by the State Engineer, as provided for in NRS Chapter 534, and specifically, NRS 534.120, where, in the judgment of the State Engineer, the groundwater basin is being depleted, the State Engineer in his or her administrative capacity may make such rules, regulations and orders as are deemed essential for the welfare of the area involved.[245]

WHEREAS, the State Engineer has the authority to hold a hearing to take evidence and the interpretation of the evidence with respect to its responsibility to manage Nevada's water resources and to allow willing participants to present evidence and testimony regarding the conclusions relating to the questions presented in Interim Order 1303. The State Engineer recognizes that the MBOP is a federally recognized tribe, and that its participation in the hearing was to facilitate the understanding of the interpretation of data with respect to the Interim Order 1303 solicitation.

V. ENDANGERED SPECIES ACT

WHEREAS, the Endangered Species Act (ESA), 16 U.S.C. §1531 et seq. is a federal law designed to serve the purpose of identifying, conserving and ultimately recovering species declining toward extinction.[246] Specifically, while the ESA is primarily a conservation program, a critical element of the conservation component seeks to encourage cooperation and coordination

[245] *See also* NRS 534.030, NRS 534.110.
[246] 16 U.S.C. § 1531(a)–(b).

with state and local agencies.[247] The responsibility of enforcement and management under the ESA rests predominately with the federal government; however, the ultimate responsibility is shared.[248]

WHEREAS, the ESA makes it unlawful for any person to "take" an endangered species – or to attempt to commit, solicit another to commit, or cause to be committed, a taking.[249] The term "person" is broadly defined to include the State and its instrumentalities.[250] "Take" encompasses actions that "harass, harm" or otherwise disturb listed species, including indirect actions that result in a take.[251] For example, a state regulator is not exempted from the ESA for takings that occur as a result of a licensee's regulated activity. States have been faced with the impediment of their administrative management actions being subservient to the ESA. For example, the Massachusetts Division of Marine Fisheries was subject to an injunction prohibiting it from issuing commercial fishing licenses because doing so would likely lead to the taking of an endangered species.[252] In *Strahan v. Coxe*, the court's decision relied on reading two provisions of the ESA— the definition of the prohibited activity of a "taking" and the causation by a third party of a taking— "to apply to acts by third parties that allow or authorize acts that exact a taking and that, but for the permitting process, could not take place."[253] Although Massachusetts was not the one directly causing the harm to the endangered species, the court upheld the injunction because "a governmental third party pursuant to whose authority an actor directly exacts a taking of an endangered species may be deemed to have violated the provisions of the ESA."[254] At least three other circuits have held similarly.[255] In each case, "the regulatory entity purports to make lawful an activity that allegedly violates the ESA."[256] Thus the action of granting the permit for the regulated activity has been considered an indirect cause of a prohibited taking under the ESA.

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[247] 16 U.S.C. § 1531(c); 16 U.S.C. § 1536.
[248] 16 U.S.C.A. § 1536.
[249] 16 U.S.C.A. § 1538(g).
[250] 16 U.S.C.A. § 1532(13).
[251] 16 U.S.C.A. § 1532(19). The term "harm" is defined by regulation, 50 C.F.R. § 17.3 (1999).
[252] *Strahan v. Coxe*, 127 F.3d 155 (1st.Cir.1997), *cert denied* 525 U.S. 830 (1998).
[253] *Id.*, p. 163.
[254] *Id.*
[255] *See Sierra Club v. Yeutter*, 926 F.2d 429 (5th Cir.1991); *Defenders of Wildlife v. EPA*, 882 F.2d 1294 (8th Cir. 1989); *Loggerhead Turtle v. County Council*, 148 F.3d 1231 (11th Cir.1998); *Palila v. Hawaii Dept. of Land & Natural Resources*, 852 F.2d 1106 (9th Cir.1988).
[256] *Loggerhead Turtle*, 148 F.3d at 1251.

WHEREAS, the use of water in Nevada is a regulated activity.[257] It is the responsibility of the State to manage the appropriation, use and administration of all waters of the state.[258] Based on *Strahan* and similar decisions, the act of issuing a permit to withdraw groundwater that reduces the flow of the springs that form the habitat of the Moapa dace and were to result in harm to the Moapa dace exposes the Division, the State Engineer and the State of Nevada to liability under the ESA.

WHEREAS, a USFWS biological opinion for the MOA found that the reduction in spring flow from the warm springs could impact the dace population in multiple ways. First, the USFWS found that declines in groundwater levels will reduce the flow to the Warm Springs area and allow for cooler groundwater seepage into streams. With reduced spring flow, Moapa dace habitat is reduced.[259] Additionally, USFWS determined that the reduced flows of warm water from the springs will also result in cooler water available throughout the dace habitat, reducing spawning habitat and resulting in a population decline.[260]

WHEREAS, based upon the testimony and evidence offered in response to Interim Order 1303, it is clear that it is necessary for spring flow measured at the Warm Springs West gage to flow at a minimum rate of 3.2 cfs in order to maintain habitat for the Moapa dace.[261] A reduction of flow below this rate may result in a decline in the dace population. This minimum flow rate is not necessarily sufficient to support the rehabilitation of the Moapa dace.[262]

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[257] NRS 533.030; 533.325; 534.020.
[258] NRS 533.325; 533.024(1)(e); 534.020.
[259] USFWS Ex. 5, pp. 50–52.
[260] SNWA Ex. 8, pp. 6-2 through 6-3; SNWA Ex. 40, *Hatten, J.R., Batt, T.R., Scoppettone, G.G., and Dixon, C.J., 2013, An ecohydraulic model to identify and monitor Moapa dace habitat. PLoS ONE 8(2):e55551, doi:10.1371/journal.pone.0055551.*, Hearing on Interim Order 1303, official records of the Division of Water Resources; SNWA Ex. 41, *U.S. Fish and Wildlife Service, 2006a, Intra-service programmatic biological opinion for the proposed Muddy River Memorandum of Agreement regarding the groundwater withdrawal of 16,100 acre-feet per year from the regional carbonate aquifer in Coyote Spring Valley and California Wash basins, and establish conservation measures for the Moapa Dace, Clark County, Nevada. File No. 1-5-05 FW-536, January 30, 2006.*, Hearing on Interim Order 1303, official records of the Division of Water Resources.
[261] Tr. 1127–1128.
[262] Tr. 401–402, 1147, 1157–1158.

WHEREAS, the ESA prohibits any loss of Moapa dace resulting from actions that would impair habitat necessary for its survival. Some groundwater users are signatories to an MOA that authorizes incidental take of the Moapa dace; however, the State Engineer and many other groundwater users are not covered by the terms of the MOA.[263] Not only would liability under the ESA for a "take" extend to groundwater users within the LWRFS, but would so extend to the State of Nevada through the Division as the government agency responsible for permitting water use.

WHEREAS, the State Engineer concludes that it is against the public interest to allow groundwater pumping from the LWRFS that will reduce spring flow in the Warm Springs area to a level that would impair habitat necessary for the survival of the Moapa dace and could result in take of the endangered species.

VI. GEOGRAPHIC BOUNDARY OF THE LWRFS

WHEREAS, the geographic boundary of the hydrologically connected groundwater and surface water systems comprising the LWRFS, as presented in Interim Order 1303, encompasses the area that includes Coyote Spring Valley, Muddy River Springs Area, California Wash, Hidden Valley, Garnet Valley and the northwest portion of the Black Mountains Area.[264] The rationale for incorporating these areas into a single administrative unit included the presence of a distinct regional carbonate-rock aquifer that underlies and uniquely connects these areas; the remarkably flat potentiometric surface observed within the area; the diagnostic groundwater level hydrographic pattern exhibited by monitoring wells distributed across the area; and the area-wide diagnostic water level response to pumping during the Order 1169 aquifer test. Each of these characteristics were previously identified and examined in the hydrological studies and subsequent hearing that followed the completion of the Order 1169 aquifer test. Indeed, these characteristics were the foundational basis for the State Engineer's determination in Rulings 6254–6261 that the

[263] NSE Ex. 236; SNWA Ex. 8, pp. 5-1 through 5-8.
[264] *See* NSE Ex. 1, p. 6.

close hydrologic connection[265] and shared source and supply of water in the LWRFS required joint management.[266]

WHEREAS, evidence and testimony presented during the Interim Order 1303 hearing indicated a majority consensus among stakeholder participants that this originally defined area is appropriately combined into a single unit.[267] Evidence and testimony was also presented on whether to add adjacent basins, or parts of basins to the administrative unit; to modify boundaries within the existing administrative unit; or to eliminate the common administrative unit boundaries. The State Engineer has considered this evidence and testimony on the basis of a common set of criteria that are consistent with the original characteristics considered critical in demonstrating a close hydrologic connection requiring joint management in Rulings 6254–6261 and more specifically, include the following:

1) Water level observations whose spatial distribution indicates a relatively uniform or flat potentiometric surface are consistent with a close hydrologic connection.

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[265] The State Engineer notes that the terminology "***hydrologic*** connection" and "***hydraulic*** connection" have been used by different parties sometimes interchangeably, and commonly with nearly the same meaning. The State Engineer considers a hydraulic connection to be intrinsically tied to the behavior and movement of water. With regard to aquifers, it may be thought of as the natural or induced movement of water through permeable geologic material. The degree of hydraulic connection can be considered a measure of the interconnection between locations as defined by a cause and effect change in potentiometric surface or a change in groundwater inflow or outflow that reflects characteristics of both the aquifer material and geometry, and groundwater behavior. It is commonly characterized by a response that is transmitted through the aquifer via changes in hydraulic head, ie., groundwater levels. Hydrologic connections may include hydraulic connections but can also represent more complex system interactions that can encompass all parts of the water cycle, and in some cases may focus on flow paths, water budgets, geochemical interactions, etc. The State Engineer's use of the term "***close*** hydrological connection" is intended to encompass and include a direct hydraulic connection that is reflected in changes in groundwater levels in response to pumping or other fluxes into or out of the aquifer system within a matter of days, months, or years. The closeness, strength, or directness of the response is indicated by timing, with more distinct and more immediate responses being more "close".

[266] *See* NSE Ex. 14, p. 12, 24.

[267] *See* Participant testimony from SNWA (Tr. 875–876), CNLV (Tr. 1418), and CSI (Tr. 95–96). Several other participants agreed, too, that the State Engineer's delineation of the LWRS as defined in Interim Order 1303 was acceptable. *See also* Bedroc Closing, p. 12, Church Closing, p. 1; Technichrome Response, p. 1. Other participants recommended larger areas be included within the LWRFS boundary. *See* Tr. 261–266 (USFWS), 1571–1572 (CBD), 1697–1698 (MVIC). *See also* NV Energy Closing, pp. 2–3; NPS Closing pp. 2–5.

2) Water level hydrographs that, in well-to-well comparisons, demonstrate a similar temporal pattern, irrespective of whether the pattern is caused by climate, pumping, or other dynamic is consistent with a close hydrologic connection.

3) Water level hydrographs that demonstrate an observable increase in drawdown that corresponds to an increase in pumping and an observable decrease in drawdown, or a recovery, that corresponds to a decrease in pumping, are consistent with a direct hydraulic connection and close hydrologic connection to the pumping location(s).

4) Water level observations that demonstrate a relatively steep hydraulic gradient are consistent with a poor hydraulic connection and a potential boundary.

5) Geological structures that have caused a juxtaposition of the carbonate-rock aquifer with low permeability bedrock are consistent with a boundary.

6) When hydrogeologic information indicate a close hydraulic connection (based on criteria 1-5), but limited, poor quality, or low resolution water level data obfuscate a determination of the extent of that connection, a boundary should be established such that it extends out to the nearest mapped feature that juxtaposes the carbonate-rock aquifer with low-permeability bedrock, or in the absence of that, to the basin boundary.

WHEREAS, some testimony was presented advocating to include additional areas to the LWRFS based principally on water budget considerations and/or common groundwater flow pathways.[268] Indeed, some participants advocate to include the entire White River Flow System, or other basins whose water may ultimately flow into or flow out of the system.[269] Other participants used, but did not rely on, water budget and groundwater flow path considerations to support their analysis. Like those participants, the State Engineer agrees that while water budget and groundwater flow path analysis are useful to demonstrate a hydrologic connection, additional information is required to demonstrate the relative strength of that connection. Thus, the State

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[268] *See e.g.*, CNLV Ex. 3, p. 33, Tr. 1430; NPS Closing, p. 2. *See also* Tr. 253–257; Sue Braumiller, *Interpretations of available Geologic and Hydrologic Data Leading to Responses to Questions Posed by the State Engineer in Order 1303 regarding Conjunctive Management of the Lower White River Flow System* (USFWS Braumiller presentation), slide 11, Item 6., bullet 1, official records of the Division of Water Resources; MBOP Ex. 2, p. 11.
[269] *See e.g.*, GBWN Report, pp. 1–2.

Engineer recognizes that while any hydrologic connection, weak or strong, needs to be considered in any management approach, many of the connections advocated based principally on a water budget or flow path analysis, including those between nearby basins like Las Vegas Valley and Lower Meadow Valley Wash, are not demonstrated to provide for the uniquely close hydraulic connection that require joint management.

WHEREAS, in their closing statement, NPS proposes that all adjacent hydrographic areas to the original Interim Order 1303 administrative unit where a hydraulic interconnection exists, whether weak or strong, be included in the LWRFS.[270] It does so to alleviate the need for developing new management schemes for the excluded remnants and to provide for appropriate management approaches based on new information and improved understanding of differing degrees of hydraulic interconnection in various sub-basins. The State Engineer agrees with this logic, up to a point, and has applied these concepts to the extent practical as demonstrated in his criteria for determining the extent of the LWRFS. However, the State Engineer also finds that there must be reasonable and technically defensible limits to the geographic boundary. Otherwise, if management were to be based on the entire spectrum of weak to strong hydraulic interconnection, then exclusion of an area from the LWRFS would require absolute isolation from the LWRFS; every sub-basin would have its own management scheme based on some measure of its degree of connectedness; and proper joint management would be intractable.

WHEREAS, evidence and testimony was also presented by the NPS regarding the specific inclusion of the entirety of the Black Mountains Area in the LWRFS.[271] The State Engineer recognizes that there may be a hydrologic connection between the Black Mountains Area and upgradient basins that are sources of inflow, and that outflow from the LWRFS carbonate-rock aquifer may contribute to discharge from Rogers and Blue Point Springs. However, the State Engineer does not find that this supports inclusion of the entirety of the Black Mountains Area. This determination is made based on the lack of contiguity of the carbonate-rock aquifer into this

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[270] NPS Closing, pp. 3–5.

[271] NPS Closing pp. 3–4. *See also* Tr.534, 555–569; Richard K. Waddell, Jr., *Testimony of Richard K. Waddell on behalf of the National Park Service*, presentation during hearing for Interim Order 1303 (NPS Presentation), slides 32–46, official records of the Division of Water Resources.

area,[272] the difference in observed water level elevations compared to those in adjacent carbonate-rock aquifer wells to the north and west,[273] and the absence of observed diagnostic hydrographic patterns and responses that define the uniquely close hydraulic connection that characterizes the LWRFS.[274]

WHEREAS, evidence and testimony presented by USFWS relied principally on SeriesSEE analysis of water level responses submitted by the Department of Interior Bureaus following the Order 1169 aquifer test to establish the general extent of the LWRFS. This was supported by the application of hydrogeology and principles of groundwater flow to define specific boundary limits to the LWRFS. It proposed that most of the Lower Meadow Valley Wash be considered for inclusion in the LWRFS based on the potential geologic continuity between carbonate rocks underlying the Lower Meadow Valley Wash and the carbonate-rock aquifer underlying Coyote Spring Valley, the Muddy River Springs Area, and California Wash.[275] Additionally, it asserted that the alluvial aquifer system in Lower Meadow Valley Wash contributes to and is connected to both the Muddy River and the alluvial aquifer system in California Wash. The State Engineer finds that while carbonate rocks may underlie the Lower Meadow Valley Wash and be contiguous with carbonate rocks to the south and west, data are lacking to characterize the potential hydraulic connection that may exist. Regarding the hydraulic connection between the Lower Meadow Valley Wash alluvial aquifer and the LWRFS, the State Engineer agrees with USFWS that a connection exists, but finds that any impacts related to water development in the Lower Meadow Valley Wash alluvial aquifer are localized, and unrelated to the carbonate-rock aquifer, and can be appropriately managed outside the LWRFS joint management process.

WHEREAS, NCA advocated for the exclusion of the portion of the Black Mountains Area from the LWRFS that contains their individual production wells. NCA premise this primarily on testimony and analysis performed by SNWA with respect to the impact of pumping from this area

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[272] *See* CSI Ex. 14, Plate 2, Map and Plate 4, Cross section K–K', in Peter D. Rowley et. al., *Geology and Geophysics of White Pine and Lincoln Counties, Nevada and Adjacent Parts of Nevada and Utah: The Geologic Framework of Regional Groundwater Flow Systems*, Nevada Bureau of Mines and Geology Report 56.
[273] *See, e.g.*, USFWS Ex. 5, p. 30.
[274] *Id.*, p. 17.
[275] *Id.*, pp. 19–24.

on discharge to the Warm Springs area.[276] It also used hydrogeologic and water level response information to conclude that strike-slip faulting and a weak statistical correlation between water levels at NCA well EBM-3 and EH-4 in the Warm Springs area support a boundary to the north of the NCA production wells. While the State Engineer finds logic in NCA's position, other testimony describing flaws in the SNWA analysis make for a compelling argument against relying on SNWA's statistically-based results.[277] The substantial similarity in observed water level elevation and water level response at EBM-3 compared to EH-4[278] and limitations in relying on poor resolution water level measurements for statistical or comparative analysis[279] requires a more inclusive approach that places the boundary to the south of the NCA production wells to a geological location that coincides with the projection of the Muddy Mountain Thrust. This more closely coincides with the measurable drop in water levels recognized to occur south of the NCA wells, between EBM-3 and BM-ONCO-1 and 2, that is indicative of a hydraulic barrier or zone of lower permeability.[280] It also better honors the State Engineer's criteria by acknowledging the uncertainty in the data while reflecting a recognized physical boundary in the carbonate-rock aquifer. Specifically, this shall be defined to include that portion of the Black Mountains Area lying within portions of Sections 29, 30, 31, 32, and 33, T.18S., R.64E., M.D.B.&M.; portions of Sections 1, 11, 12, 14, 22, 23, 27, 28, 33, and 34 and all of Sections 13, 24, 25, 26, 35, and 36, T.19S., R.63E., M.D.B.&M.; portions of Sections 4, 6, 9, 10, and 15 and all of Sections 5, 7, 8, 16, 17, 18, 19, 20, 21, 29, 30, and 31, T.19S., R.64E., M.D.B.&M.[281]

WHEREAS, numerous participants advocated to include Kane Springs Valley in the LWRFS basins.[282] Other participants advocated to exclude Kane Springs Valley.[283] Several expert witnesses recommended the exclusion of Kane Springs Valley based on their characterization of water level elevation data, temporal hydrographic response patterns, geochemistry, and/or the

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[276] *See,* Tr. 1622, 1624; NCA Closing.
[277] *See, e.g.,* Tr. 1467–1469 CNLV presentation, slides 21–23; Tr. 1784–1786; NV Energy presentation, slides 32–33.
[278] NCA Closing, p. 18, Figure 3.
[279] NCA Closing, p. 8.
[280] *See e.g.,* USFWS Ex. 5.
[281] See map of the LWRFS Hydrographic Basin as defined by this Order, Attachment A.
[282] *See, e.g.,* NV Energy Closing, p. 2; NCA Closing, p. 10–14; MVWD Closing, p. 2–8.
[283] *See e.g., Written Closing Statement of Lincoln County Water District and Vidler Water Company, Inc.* (LC-V Closing), Hearing on Interim Order 1303, official records of the Division of Water Resources, p. 3–6; CSI Closing, p. 2.

geophysically-inferred presence of structures that may act as flow barriers. Others recommended inclusion based on the same or similar set of information. Water level elevations observed near the southern edge of Kane Springs Valley are approximately 60 feet higher than those observed in the majority of carbonate-rock aquifer wells within the LWRFS to the south; consistent with a zone of lower permeability.[284] Some experts suggested that the hydrographic response pattern exhibited in wells located in the southern edge of Kane Springs Valley is different compared to that exhibited in wells in the LWRFS, being muted, lagged, obscured by climate response, or compromised by low-resolution data.[285] In this regard, the State Engineer recognizes these differences. However, he finds that the evidence and testimony supporting a similarity in hydrographic patterns and response as provided by expert witnesses, like that of the NPS, to be persuasive.[286] Namely, that while attenuated, the general hydrographic pattern observed in southern Kane Springs Valley reflects a response to Order 1169 pumping, consistent with a close hydraulic connection with the LWRFS. The State Engineer also finds that occurrence of the carbonate-rock aquifer in the southern Kane Springs Valley indicates that there is no known geologic feature at or near the southern Kane Springs Valley border that serves to juxtapose the carbonate-rock aquifer within the LWRFS with low permeability rocks in Kane Springs Valley.[287] He also finds that while geologic mapping[288] indicates that the carbonate-rock aquifer does not extend across the northern portion of the Kane Springs Valley, there is insufficient information available to determine whether the non-carbonate bedrock interpreted to underlie the northern part of the Kane Springs Valley represents low-permeability bedrock that would define a hydraulic boundary to the carbonate-rock aquifer.[289] After weighing all of the testimony and evidence relative to his criteria

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[284] LC-V Closing, p. 7.

[285] *See, e.g.*, LC-V Closing, pp. 5–6; LC-V Ex. 1, pp. 3-3–3-4; CSI Closing, pp. 5–6.

[286] *See* Tr. 524–55. *See, e.g.*, NPS presentation, slides 23–27.

[287] Pursuant to the criteria requiring joint management of hydrographic basins and the sixth criteria establishing that the boundary should extend to the nearest mapped feature that juxtaposes the carbonate-rock aquifer with low-permeability bedrock, or where a mapped feature cannot be adequately identified, to the basin boundary, the State Engineer includes the entirety of Kane Springs Valley.

[288] *See, e.g.*, NSE Ex. 12; Page, W.R., Dixon, G.L., Rowley, P.D., and Brickey, D.W., 2005, *Geologic Map of Parts of the Colorado, White River, and Death Valley Groundwater Flow Systems, Nevada, Utah, and Arizona*: Nevada Bureau of Mines and Geology Map 150, Plate plus text.

[289] *See, e.g.*, SNWA Ex. 7, pp. 2-4, 2-5, 2-10, 2-11, and 4-1, that describe volcanic rocks as important aquifers, and calderas as both flow paths and barriers depending on structural controls

for inclusion into the LWRFS, the State Engineer finds that the available information requires that Kane Springs Valley be included within the geographic boundary of the LWRFS.

WHEREAS, limited evidence and testimony were provided by participants advocating to either include or exclude the northern portion of Coyote Spring Valley. The State Engineer finds that while information such as that provided by Bedroc is convincing and supports a finding that local, potentially discrete aquifers may exist in parts of the northern Coyote Springs Valley, his criteria for defining the LWRFS calls for the inclusion of the entirety of the basin in the LWRFS. However, the State Engineer also acknowledges that there may be circumstances, like in the northern Coyote Spring Valley, where case-by-case considerations for proper management are warranted.

WHEREAS, evidence and testimony from Georgia-Pacific and Republic, and MBOP advocated against creating a single LWRFS administrative unit. Their arguments were principally based on concerns that there was insufficient consensus on defining the LWRFS geographic boundaries and that there were inherent policy implications to establishing an LWRFS administrative unit. MBOP recommended continuing to collect data and focusing on areas of scientific consensus. Georgia-Pacific and Republic asserted that boundaries are premature without additional data and without a legally defensible policy and management tools in place. They expressed concern that creating an administrative unit at this time inherently directs policy without providing for due process. The State Engineer has considered these concerns and agrees that additional data and improved understanding of the hydrologic system is critical to the process. He also believes that the data currently available provide enough information to delineate LWRFS boundaries, and that an effective management scheme will provide for the flexibility to adjust boundaries based on additional information, retain the ability to address unique management issues on a sub-basin scale, and maintain partnership with water users who may be affected by management actions throughout the LWRFS.

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to flow, citing Peter D. Rowley, and Dixon, G.L., 2011, *Geology and Geophysics of Spring, Cave, Dry Lake, and Delamar Valleys, White Pine and Lincoln Counties, and Adjacent Areas, Nevada and Utah: The Geologic Framework of Regional Flow Systems*,.

WHEREAS, evidence and testimony support the delineation of a single hydrographic basin as originally defined by the State Engineer in Interim Order 1303, with the adjustment of the Black Mountain Area boundary and the addition of Kane Springs Valley. The State Engineer acknowledges that special circumstances will exist with regard to both internal and external management. Water development both inside and outside of the perimeter of the LWRFS will continue to be evaluated on the best available data and may become subject to or excluded from the constraints or regulations of the LWRFS.

WHEREAS, the geographic extent of the LWRFS is intended to represent the area that shares both a unique and close hydrologic connection and virtually all of the same source and supply of water, and therefore will benefit from joint and conjunctive management. In that light, the State Engineer recognizes that different areas, jointly considered for inclusion into the LWRFS, have been advocated both to be included and to be excluded by the different hearing participants based on different perspectives, different data subsets, and different criteria. For the Muddy River Springs Area, California Wash, Garnet Valley, Hidden Valley, Coyote Spring Valley, and a portion of the Black Mountain Area, there is a persuasive case previously laid out in Rulings 6254–6261, and the consensus amongst the participants support their inclusion in the LWRFS. For other sub-basins such as Kane Springs Valley and the area around the NCA production wells in the Black Mountain Area, there is persuasive evidence to support their inclusion or exclusion; however, the State Engineer's criteria and available data mandate their inclusion. Their inclusion in the LWRFS provides the opportunity for conducting additional hydrologic studies in sub-basins such as these, to determine the degree to which water use would impact water resources in the LWRFS and to allow continued participation by holders of water rights in future management decisions. Thus, these sub-basins, and any other portions of the LWRFS that may benefit from additional hydrological study, can be managed more effectively and fairly within the LWRFS. For other basins whose inclusion was advocated, such as the northern portion of Las Vegas Valley and the Lower Meadow Valley Wash, the State Engineer finds that data do not exist to apply his criteria, and therefore they cannot be considered for inclusion into the LWRFS. These types of areas may require additional study and special consideration regarding the potential effects of water use in these areas on water resources within the LWRFS.

VII. AQUIFER RECOVERY SINCE COMPLETION OF THE ORDER 1169 AQUIFER TEST

WHEREAS, during the Order 1169 aquifer test an average of 5,290 afa were pumped from the carbonate-rock aquifer wells in Coyote Spring Valley and a cumulative total of 14,535 afa were pumped throughout the Order 1169 study basins. A portion of this total, approximately 3,840 acre-feet per year, was pumped from the alluvial aquifer in the Muddy River Springs Area.[290] In the years since completion of the Order 1169 aquifer test, pumping from wells in the LWRFS has gradually declined.[291] Pumping in 2013-2014 averaged 12,635 afa; pumping in 2015-2017 averaged 9,318 afa.[292] Pumpage inventories for 2018 that were published after the completion of the hearing report a total of 8,300 afa.[293] Pumping from alluvial aquifer wells in the Muddy River Spring Area has consistently declined since closure of the Reid Gardner power plant beginning in 2014, while pumping from the carbonate-rock aquifer since the completion of the aquifer test has consistently ranged between approximately 7,000 and 8,000 afa.

WHEREAS, the information obtained from the Order 1169 aquifer test and in the years since the conclusion of the test demonstrates that while, following conclusion of the aquifer test, there was a recovery of groundwater levels, the carbonate-rock aquifer has not recovered to pre-Order 1169 test levels.[294] Evidence and testimony submitted during the 2019 hearing does not refute the conclusions made by the State Engineer in Rulings 6254–6261 regarding interpretations of the Order 1169 aquifer test results, which were based on observations and analysis by multiple technical experts. Groundwater level recovery reached completion approximately two to three years after the Order 1169 aquifer test pumping ended.[295]

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[290] NSE Ex. 1, p. 4.
[291] *See, e.g.* NSE Ex. 50, *Pumpage Report Coyote Spring Valley 2017*; NSE Ex. 67, *Pumpage Report Black Mountains Area 2017*; NSE Ex. 84, *Pumpage Report Garnet Valley Area 2017*; NSE Ex. 86, *Pumpage Report California Wash Area 2017*; Ex. 88, *Pumpage Report Muddy River Springs Area 2017*, Hearing on Interim Order 1303, official records of the Division of Water Resources.
[292] *Id.*
[293] *Id.*
[294] *See, e.g.*, SNWA Ex. 7, pp. 5-17–5-18, 8-2; NPS Closing, p. 4; MVWD Closing, p. 8. *See also* Tr. 1807; NV Energy presentation, p. 11.
[295] SNWA Ex, 7, pp. 5-17–5-18; NVE Ex. 1, p. 2

WHEREAS, several participants testified about the effects of drought and climate on the recovery of groundwater levels and spring discharge after the Order 1169 aquifer test. Droughts, or periods of drier than normal conditions that last weeks, months, or years can lead to declines in groundwater levels.[296] The LWRFS is within National Oceanic and Atmospheric Administration's Nevada Climate Division 4 (Division 4). Precipitation records for Division 4 from 2006 to the 2019 season records indicate that 10 of those 14 seasons received lower than average precipitation.[297] Despite low precipitation, several participants submitted evidence that water levels continue to rise under current climate conditions in other areas with a relative lack of pumping that are tributary to the LWRFS, such as Dry Lake Valley, Delamar Valley, Garden Valley, Tule Desert, Dry Lake Valley, and other areas.[298] These rises have been attributed to efficient winter recharge that has occurred despite low cumulative precipitation.[299] Based on these observations, it was argued that the continued stress of pumping in the LWRFS carbonate-rock aquifer is limiting the recovery of water levels.[300] The State Engineer acknowledges that spring discharge is affected by both pumping and climate, and finds that groundwater levels remain a useful tool for monitoring the state of the aquifer system in the LWRFS regardless of the relative contribution of climate and drought to the measured groundwater levels. The State Engineer only has the authority to regulate pumping, not climate, in consideration of its potential to cause conflict or to be detrimental to the public interest and must do so regardless of the relative contributing effects of climate.

WHEREAS, evidence and testimony during the 2019 hearing was divided on whether water levels in the Warm Springs area and carbonate-rock aquifer indicate the system has reached or is approaching equilibrium,[301] or is still in a state of decline.[302] Hydrographs and evidence presented show that water levels at well EH-4 near the Warm Springs area have been relatively stable for several years following recovery from the Order 1169 aquifer test.[303] However, other

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[296] *See* USGS, 1993, *Drought,* US Geological Survey Open File Report 93-642, accessible at https://bit.ly/93-642, (last accessed June 6, 2020).
[297] SNWA Ex. 7, pp. 4-1–4-4.
[298] Tr. 577, 304–307.
[299] NPS Ex. 3, Appendix A.
[300] *See, e.g.*, SNWA Closing, p. 11. NPS Closing, p. 4. *See also* Tr. 642, 644–45, 1545.
[301] MVWD Closing, pp. 8–9. *See also* NV Energy Closing, p. 3; CNLV Closing, pp. 5–7.
[302] SNWA Closing, pp. 11–12. NPS Closing, pp. 4–5.
[303] SNWA Ex. 7, pp. 5–7.

carbonate-rock aquifer wells located further away from the Warm Springs area such as CSVM-1, TH-2, GV-1, and BM-DL-2 appear to have reached peak recovery from the Order 1169 aquifer test in 2015-2016 and have exhibited downward trends for the past several years.[304] The State Engineer agrees that water levels in the Warm Springs area may be approaching steady state with current pumping conditions. However, the trend is of insufficient duration to make this determination with absolute assurance and continued monitoring is necessary to determine if this trend continues or if water levels are continuing to decline slowly.

VIII. LONG-TERM ANNUAL QUANTITY OF WATER THAT CAN BE PUMPED

WHEREAS, the evidence and testimony presented at the 2019 hearing did not result in a consensus among experts of the long-term annual quantity of groundwater that can be pumped. Recommendations range from zero to over 30,000 afa, though most experts agreed that the amount must be equal to or less than the current rate of pumping. There is a near consensus that the exact amount that can be continually pumped for the long-term cannot be absolutely determined with the data available and that to make that determination will require more monitoring of spring flows, water levels, and pumping amounts over time.

WHEREAS, evidence and testimony were presented arguing that the regional water budget demonstrates that far more groundwater is available for development within the LWRFS than is currently being pumped. CSI argues that the total amount of groundwater available for extraction from the LWRFS may be up to 30,630,[305] which is an estimate of the entirety of natural discharge from the system that occurs through groundwater evapotranspiration and subsurface groundwater outflow. Nearly all other experts disagreed that pumping to that extent could occur without causing harm to the Moapa dace or conflict with senior Muddy River decreed rights. The disagreement is not about the amount of the water budget, but rather the importance of the water budget in determining the amount of groundwater in the LWRFS that can continually be pumped,[306] not the amount of inflow and outflow to the system. In addition, availability of groundwater for pumping based on water budget should consider whether the same water is appropriated for use in upgradient and downgradient basins, and CSI did not account for this.

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[304] *Id.*
[305] CSI Closing, p. 2.
[306] *See e.g.*, SNWA Ex. 9, p. 24.; MVWD Ex. 3, p. 4; NPS Ex. 3, p. 23.

The State Engineer recognizes that the water budget is important to fully understand the hydrology of the regional flow system but also agrees with nearly all participants that the regional water budget is not the limiting measure to determine water available for development in the LWRFS. The potential for conflict with senior rights and impacts that are detrimental to the public interest in the LWRFS is controlled by aquifer hydraulics and the effect of pumping on discharge at the Warm Springs area rather than the regional water budget.

WHEREAS, evidence and testimony were presented arguing that the location of pumping within the LWRFS is an important variable in the determination of the amount that can be pumped. Participants representing groundwater users in Garnet Valley and the APEX area at the south end of the LWRFS testified that pumping within Garnet Valley does not have a discernable signal at wells near the Warm Springs area and that the hydraulic gradient from north-to-south within the LWRFS indicates that there is a component of groundwater flow in Garnet Valley that does not discharge to the Warm Springs area.[307] Several participants agreed that moving pumping to more distal locations within the LWRFS will lessen the effect of that pumping on spring flows. NV Energy testified that there would be a lesser effect because pumping areas around the periphery of the main carbonate-rock aquifer are less well-connected to the springs, and because of the likelihood that some amount of subsurface outflow occurs along and southern and southeastern boundary of the LWRFS and it is possible to capture some of that subsurface outflow without a drop-for-drop effect on discharge at the Warm Springs area[308] Others drew the same conclusion based on their review of the data and characterization of a heterogeneous system[309] or on weak connectivity between peripheral locations and the Warm Springs area.[310]

CSI argues that more groundwater development can occur in the LWRFS because subsurface fault structures create compartmentalization and barriers to groundwater flow that reduce the effects of pumping on discharge at the Warm Springs area.[311] They rebut the contention by others that spring flow is affected homogeneously by pumping within the LWRFS.[312] CSI used geophysical data to map a north-south trending subsurface feature that bisects Coyote Spring

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[307] *See* CNLV Ex. 3, pp. 45–47; GP-REP Ex. 1, pp. 2–3.
[308] NVE Ex. 1, pp. 8–9.
[309] *See e.g.* MBOP Ex. 2, p. 23; GP-REP Ex. 2, pp. 4–5. *See also* Technichrome Response.
[310] *See e.g.* NCA Closing, pp. 2–10; LC-V Closing, pp. 4–6; Bedroc Closing, pp. 9–11.
[311] CSI Closing, pp. 2–5.
[312] CSI Ex. 2, pp. 40–41.

Valley. They hypothesize that this structure is an impermeable flow barrier that creates an isolated groundwater flow path on the west side of Coyote Spring Valley from which pumping would capture recharge from the Sheep Range without spring flow depletion at the Warm Springs area.[313] MBOP also contends that the system is far too complex to characterize it as a homogeneous "bathtub" and that preferential flow paths within the region mean that pumping stress will greatly differ within the LWRFS depending on where the pumping occurs.[314] Rebuttals to MBOP and CSI contend that an emphasis on complexities in geologic structure is a distraction from the question at hand, and that the hydraulic data collected during and after the Order 1169 aquifer test clearly demonstrate close connectivity and disproves CSI's hypothesis.[315]

The State Engineer finds that the data support the conclusion that pumping from locations within the LWRFS that are distal from the Warm Springs area can have a lesser impact on spring flow than pumping from locations more proximal to the springs. The LWRFS system has structural complexity and heterogeneity, and some areas have more immediate and more complete connection than others. For instance, the Order 1169 aquifer test demonstrated that pumping 5,290 afa from carbonate-rock aquifer wells in Coyote Spring Valley caused a sharp decline in discharge at the springs, but distributed pumping since the completion of the aquifer test in excess of 8,000 afa has correlated with a stabilization of spring discharge. The data collected during and after the Order 1169 aquifer test provide substantial evidence that groundwater levels throughout the LWRFS rise and fall in common response to the combined effects of climate and pumping stress, which controls discharge at the Warm Springs area.[316] The State Engineer finds that the best available data do not support the hypotheses that variable groundwater flow paths and heterogeneous subsurface geology are demonstrated to exist that create hydraulically isolated compartments or subareas within the LWRFS carbonate-rock aquifer from which pumping can occur without effect on the Warm Springs area. However, there remains some uncertainty as to the extent that distance and location relative to other capturable sources of discharge either delay, attenuate, or reduce capture from the springs.

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[313] *Id. See also* CSI Ex. 1, pp. 31–40.
[314] MBOP Closing, p. 7.
[315] *See e.g.*, SNWA Ex. 9, pp. 23–24.
[316] NSE Exs. 15–21.

WHEREAS, evidence and testimony were presented to argue that no amount of groundwater can be pumped from the carbonate-rock aquifer or from the LWRFS without conflicting with the Muddy River decree or causing harm to the Moapa dace habitat. This argument is predicated on the interpretation that lowering of groundwater level anywhere within the LWRFS, whether caused by climate or pumping, eventually has an effect on spring discharge, and that any reduction in spring discharge caused by pumping conflicts with senior decreed rights or harms the Moapa dace or both.[317] MVIC and SNWA agree that capturing discharge from the Warm Springs area springs and the Muddy River are a conflict with the Muddy River decree, which appropriates "all of the flow of the said stream, its sources of supply, headwaters and tributaries."

The Muddy River Decree was finalized in 1920, decades before any significant amount of groundwater development within the Muddy River springs area or the LWRFS. The statement quoted above, or something similar to it, is a common conclusion in decrees to establish finality to the determination of relative priority of rights. By including this statement, the decreed right holders are afforded the assurance that no future claimants will interject a new priority right. However, it is also common on decreed systems for junior rights to be appropriated for floodwater or other excess flows, provided that no conflict occurs with the senior priorities. Similarly, groundwater development almost always exists in the tributary watersheds of decreed river systems, even though groundwater in a headwater or tributary basin is part of the same hydrologic system. There is no conflict as long as the senior water rights are served.

The State Engineer disagrees with SNWA and MVIC that the above quoted statement in the decree means that any amount of groundwater pumped within the headwaters that would reduce flow in the Muddy River conflicts with decreed rights. The State Engineer finds that capture or potential capture of the waters of a decreed system does not constitute a conflict with decreed right holders if the flow of the source is sufficient to serve decreed rights. Muddy River decreed rights were defined by acres irrigated and diversion rates for each user.[318] The sum of diversion rates greatly exceeds the full flow of the River, but all users are still served through a rotation schedule managed by the water master. The total amount of irrigated land in the decree is 5,614 acres.[319]

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[317] *See, e.g.*, CBD Ex. 3, p. 23; SNWA Ex. 7, p. 8-4; MVIC Ex. 1, p. 3.
[318] NSE Ex. 333.
[319] *Id.*

Flow in the Muddy River at the Moapa Gage has averaged approximately 30,600 afa since 2015,[320] which is less than the predevelopment baseflow of about 33,900.[321] If all decreed acres were planted with a high-water use crop like alfalfa, the net irrigation water requirement would be 28,300 afa, based on a consumptive use rate of 4.7 afa.[322] Conveyance loss due to infiltration is an additional consideration to serve all decreed users; however, this is limited in the Muddy River because the alluvial corridor is narrow and well defined so water stays within the shallow groundwater or discharges back to the river. The State Engineer finds that the current flow in the Muddy River is sufficient to serve all decreed rights in conformance with the Muddy River Decree, and that reductions in flow that have occurred because of groundwater pumping in the headwaters basins is not conflicting with Decreed rights.

WHEREAS, the majority of experts agree that there is an intermediate amount of pumping approximated by recent pumping rates that can continue to occur in the LWRFS and still protect the Moapa dace and not conflict with decreed rights. USFWS and NCA endorsed the use of average pumping over the years 2015-2017 (9,318 afa as reported by State Engineer pumpage inventories) as a supportable amount that can continue to be pumped, because the system appears to have somewhat stabilized.[323] CSI also endorsed this approach as an initial phase, though they suggested 11,400 afa, which was the average pumping reported by State Engineer inventories over the years 2010-2015 that included the period of the Order 1169 aquifer test.[324] CNLV makes a rough estimate that no more than 10,000 afa can be supported throughout the entire region, based on their professional judgment and review of the data.[325] NV Energy concludes that 7,000–8,000 afa can continue to be pumped, based on the amount of pumping in recent years from carbonate-rock aquifer wells and the observation that steady-state conditions in Warm Springs area spring

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[320] NSE Ex. 211, *USGS 09416000 Muddy River Moapa 1914-2013*, Hearing on Interim Order 1303, official records of the Division of Water Resources.
[321] SNWA Ex. 7, p. 5-4.
[322] *See, e.g.*, Huntington, J.L. and R. Allen, (2010), *Evapotranspiration and Net Irrigation Water Requirements for Nevada*, Nevada State Engineer's Office Publication, accessible at https://bit.ly/etniwr, (last accessed June 7, 2020), official records of the Division of Water Resources.
[323] USFWS Ex. 5, p. 3; NCA Ex. 1, p. 19.
[324] CSI Closing, p. 2.
[325] CNLV Ex. 3, p. 2.

flow are being reached.[326] SNWA estimates that only 4,000–6,000 afa of carbonate-rock aquifer pumping can continually occur within the LWRFS.[327]

WHEREAS, the State Engineer finds that the evidence and testimony projecting continual future decline in spring flow at the current rate of pumping is compelling but not certain. Several participants pointed out rising trends in groundwater levels at many locations in Southern Nevada, outside of the LWRFS, that are distant from pumping[328] even though total precipitation has been below average and since 2006 has been described as a drought.[329] This suggests that climate and recharge efficiency may have actually buffered the full effect of pumping on discharge at the Warm Springs area, and that the system could not support the current amount of groundwater pumping during an extended dry period with lesser recharge. In addition, slight declining trends that are observed in Garnet Valley monitoring wells are not evident in wells close to the Warm Springs area.[330] If drawdown in Garnet Valley has not yet propagated to the Muddy Springs area, then the resilience of the apparent steady state of spring flow is in doubt. Projections of continued future decline in spring discharge suggests that the current amount of pumping in the LWRFS is a maximum amount that may need to be reduced in the future if the stabilizing trend in spring discharge does not continue.

WHEREAS, there is an almost unanimous agreement among experts that data collection is needed to further refine with certainty the extent of groundwater development that can be continually pumped over the long term. The State Engineer finds that the current data are adequate to establish an approximate limit on the amount of pumping that can occur within the system, but that continued monitoring of pumping, water levels, and spring flow is essential to refine and validate this limit.

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[326] NVE Ex. 1, p. 8.
[327] SNWA Ex. 7, p. 8-4.
[328] NPS Ex. 3, Appendix A. *See also* Tr. 304–307, 577.
[329] Tr. 1292–1300. *See, also* LC-V Ex. 11, *PowerPoint Presentation of Todd G. Umstot, entitled Drought and Groundwater*, Hearing on Interim Order 1303, official records of the Division of Water Resources, slides 3–10.
[330] CNLV Ex. 3, pp. 45–46.

WHEREAS, pumping from wells in the LWRFS has gradually declined since completion of the Order 1169 aquifer test and is approaching 8,000 afa. This coincides with the period of time when spring discharge may be approaching steady state. The State Engineer finds that the maximum amount of groundwater that can continue to be developed over the long term in the LWRFS is 8,000 afa. The best available data at this time indicate that continued groundwater pumping that consistently exceeds this amount will cause conditions that harm the Moapa dace and threaten to conflict with Muddy River decreed rights.

IX. MOVEMENT OF WATER RIGHTS

WHEREAS, the data and evidence are clear that location of pumping within the LWRFS relative to the Warm Springs area and the Muddy River can influence the relative impact to discharge to the Warm Springs area and/or senior decreed rights on the Muddy River. The transfer of groundwater pumping from the Muddy River Springs Area alluvial wells to carbonate-rock aquifer wells may change the timing of any impact to Muddy River flows and amplify the effect on discharge to the Warm Springs area, thus potentially adversely impacting habitat for the Moapa dace. And the transfer of groundwater withdrawals from the carbonate-rock aquifer into the Muddy River alluvial aquifer may reduce the impact to the Moapa dace habitat but increase the severity of impact to the senior decreed rights on the Muddy River. The State Engineer recognizes that the LWRFS is fundamentally defined by its uniquely close hydrologic interconnection and shared source and supply of water. However, the State Engineer also recognizes that there can be areas within the LWRFS that have a greater or lesser degree of hydraulic connection due to distance, local changes in aquifer properties, or proximity to other potential sources of capturable water.

WHEREAS, Rulings 6254–6261 acknowledge that one of the main goals of Order 1169 and the associated pumping test at well MX-5 was to observe the effects of increased pumping on groundwater levels and spring flows. Coyote Spring Valley carbonate-rock aquifer pumping during the Order 1169 aquifer test was the largest localized carbonate-rock aquifer pumping in the LWRFS. In addition, concurrent carbonate-rock aquifer and alluvial aquifer pumping in Garnet Valley, Muddy River Springs Area, California Wash, and the northwest portion of the Black Mountains Area occurred during the test period. Rulings 6254–6261 described the data and analysis used to determine that additional pumping at the MX-5 well contributed significantly to decreases in high elevation springs (Pederson Springs) and other springs that are the sources to the

Muddy River. Evidence and reports provided under Interim Order 1303 do not challenge the findings in Rulings 6254–6261 that pumping impacts were witnessed. There is a strong consensus among participants that pumping during the Order 1169 aquifer test along with concurrent pumping caused drawdowns of water levels throughout the LWRFS.[331] However, the effects of pumping from different locations within the LWRFS on discharge at the Warm Springs area is not homogeneous.[332] The State Engineer finds that movement of water rights that are relatively distal from the Warm Springs area into carbonate-rock aquifer wells that have a closer hydraulic connection to the Warm Springs area is not favorable.

WHEREAS, evidence and testimony provided by participants during the Interim Order 1303 hearing provides a strong consensus that alluvial aquifer pumping in the Muddy River Springs Area affects Muddy River discharge.[333] There is also strong evidence that carbonate-rock aquifer pumping throughout the LWRFS affects spring flow but can also be dependent on proximity of pumping to springs.[334] No participant is a proponent of moving additional water rights closer to the headwaters of the Muddy River within the Muddy River Springs Area, and most participants agree that carbonate-rock aquifer and alluvial aquifer pumping in the Muddy River Springs Area captures Muddy River flow. The State Engineer finds that any pumping within close proximity to the Muddy River could result in capture of the Muddy River. The State Engineer also finds that any movement of water rights into carbonate-rock aquifer and alluvial aquifer wells in the Muddy River Springs Area that may increase the impact to Muddy River decreed rights is disfavored.

WHEREAS, the Order 1169 aquifer test demonstrated that impacts from the test along with concurrent pumping was widespread within the LWRFS encompassing 1,100 square miles and supported the conclusion of a close hydrologic connection among the basins.[335] While the effects of movement of water rights between alluvial aquifer wells and carbonate-rock aquifer wells on deliveries of senior decreed rights to the Muddy River or impacts to the Moapa dace may not be uniform across the entirety of the LWRFS, the relative degree of hydrologic connectedness

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[331] *See* SNWA Closing, pp. 10, 16; MVIC Closing, p. 6.
[332] *See, e.g.*, SNWA Closing, p. 10.
[333] CNLV Closing, p. 8; Tr. 1456–1457, 1458. *See also* SNWA Closing, p. 16; MVWD Closing, p. 11; MVIC Closing, p. 6.
[334] CNLV Closing, pp. 8–10; Tr. 1457, 1458; NV Energy Closing, p. 4; MVIC Closing, p. 6.
[335] NSE Ex. 256. *See also* NSE Ex. 14, pp. 20–21; NSE Ex. 17, p. 19; SNWA Closing pp. 2, 3.

in the LWRFS will be the principle factor in determining the impact of movement of water rights. The State Engineer recognizes that there may be discrete, local aquifers within the LWRFS with an uncertain hydrologic connection to the Warm Springs area. Determining the effect of moving water rights into these areas may require additional scientific data and analysis. Applications to move water rights under scenarios not addressed in this Order will be evaluated on their individual merits to determine potential impact to existing senior rights, potential impact to the Warm Springs area and Moapa dace habitat, and impacts to the Muddy River.

X. ORDER

NOW THEREFORE, the State Engineer orders:

1. The Lower White River Flow System consisting of the Kane Springs Valley, Coyote Spring Valley, Muddy River Springs Area, California Wash, Hidden Valley, Garnet Valley, and the northwest portion of the Black Mountains Area as described in this Order, is hereby delineated as a single hydrographic basin. The Kane Springs Valley, Coyote Spring Valley, Muddy River Springs Area, California Wash, Hidden Valley, Garnet Valley and the northwest portion of the Black Mountains Area are hereby established as sub-basins within the Lower White River Flow System Hydrographic Basin.

2. The maximum quantity of groundwater that may be pumped from the Lower White River Flow System Hydrographic Basin on an average annual basis without causing further declines in Warm Springs area spring flow and flow in the Muddy River cannot exceed 8,000 afa and may be less.

3. The maximum quantity of water that may be pumped from the Lower White River Flow System Hydrographic Basin may be reduced if it is determined that pumping will adversely impact the endangered Moapa dace.

4. All applications for the movement of existing groundwater rights among sub-basins of the Lower White River Flow System Hydrographic Basin will be processed in accordance with NRS 533.370.

5. The temporary moratorium on the submission of final subdivision or other submission concerning development and construction submitted to the State Engineer for review established under Interim Order 1303 is hereby terminated.

6. All other matters set forth in Interim Order 1303 that are not specifically addressed herein are hereby rescinded.

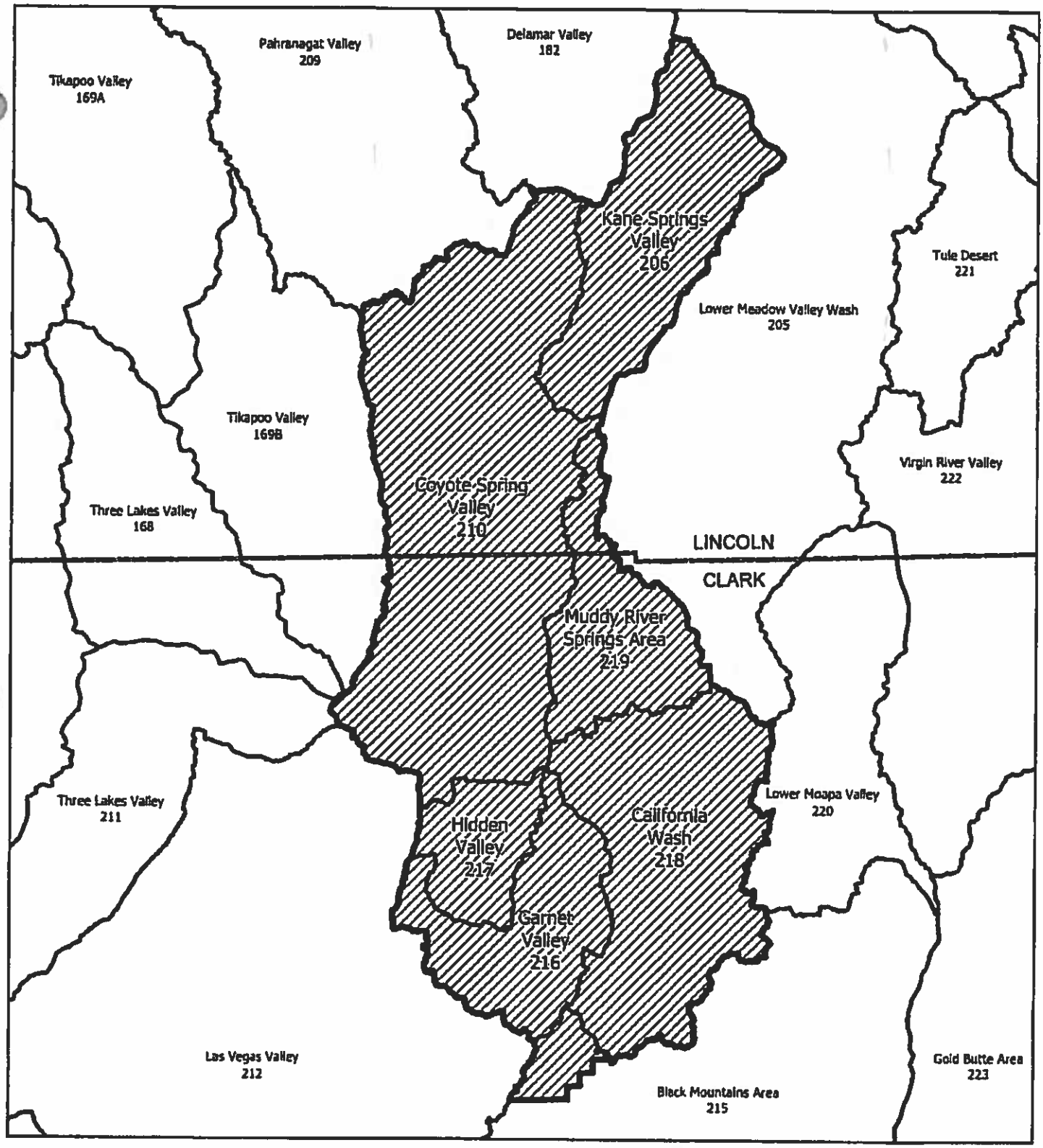
Tim Wilson, P.E.

TIM WILSON, P.E.
State Engineer

Dated at Carson City, Nevada this

15th day of June, 2020.

ATTACHMENT A



Location and Extent of LWRFS Hydrographic Basin, Clark and Lincoln Counties, Nevada

LWRFS Boundary
Hydrographic Basin Boundary
County Boundary

N
W
E
S

0 10 Miles

State of Nevada
Department of Conservation and Natural Resources
Office of the State Engineer
Division of Water Resources

Tim Wilson, P.E.
State Engineer

June 2020

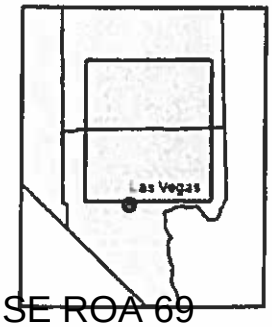


Exhibit 3

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

INTERIM ORDER **#1303**

DESIGNATING THE ADMINISTRATION OF ALL WATER RIGHTS WITHIN COYOTE SPRING VALLEY HYDROGRAPHIC BASIN (210), A PORTION OF BLACK MOUNTAINS AREA BASIN (215), GARNET VALLEY BASIN (216), HIDDEN VALLEY BASIN (217), CALIFORNIA WASH BASIN (218), AND MUDDY RIVER SPRINGS AREA (AKA UPPER MOAPA VALLEY) BASIN (219) AS A JOINT ADMINISTRATIVE UNIT, HOLDING IN ABEYANCE APPLICATIONS TO CHANGE EXISTING GROUNDWATER RIGHTS, AND ESTABLISHING A TEMPORARY MORATORIUM ON THE REVIEW OF FINAL SUBDIVISION MAPS

I. PURPOSE

WHEREAS, the purpose of this Interim Order is to designate a multi-basin area known to share a close hydrologic connection as a joint administrative unit, which shall be known as the Lower White River Flow System (LWRFS).

WHEREAS, an adequate and predictable supply of groundwater within the LWRFS supports the health, safety and welfare of the area, and this Interim Order aims to protect existing senior rights and the public interest in an endangered species, recognize existing beneficial use, and limit development actions that are dependent on a supply of water that may not be available in the future.

WHEREAS, during the interim period that this Order is in effect, holders of existing rights and other interested parties are encouraged to submit reports to the Nevada Division of Water Resources (NDWR) analyzing the data available regarding sustainable groundwater development in the LWRFS, the geographic extent of the LWRFS, and considerations relating to groundwater pumping within the LWRFS and its effects on the fully decreed Muddy River. This collected and analyzed data is an essential step to optimize the beneficial use of the available water supply in the LWRFS.

WHEREAS, concurrent with this interim order, holders of existing rights and other interested parties are encouraged to participate in the public process to develop a conjunctive management plan.

I. BASIN DESIGNATIONS PURSUANT TO NRS § 534.030

WHEREAS, the Coyote Spring Valley Hydrographic Basin was designated pursuant to Nevada Revised Statute (NRS) § 534.030 by Order 905 dated August 21, 1985, which also declared municipal, power, industrial and domestic uses as preferred uses of the groundwater resource pursuant to NRS § 534.120.

WHEREAS, the Black Mountains Area Hydrographic Basin was designated pursuant to NRS § 534.030 by Order 1018 dated November 22, 1989, which also declared municipal, industrial, commercial and power generation purposes as preferred uses of the groundwater resource pursuant to NRS § 534.120, declared irrigation of land using groundwater to be a non-preferred use, and ordered that applications to appropriate groundwater for irrigation purposes would be denied.

WHEREAS, the Garnet Valley Hydrographic Basin was designated pursuant to NRS § 534.030 by Order 1025 dated April 24, 1990, which also declared municipal, quasi-municipal, industrial, commercial, mining, stockwater and wildlife purposes as preferred uses pursuant to NRS § 534.120, and declared irrigation of land using groundwater to be a non-preferred use, and ordered that applications to appropriate groundwater for irrigation purposes would be denied.

WHEREAS, the California Wash Hydrographic Basin was designated pursuant to NRS § 534.030 by Order 1026 dated April 24, 1990, which also declared municipal, quasi-municipal, industrial, commercial, mining, stockwater and wildlife purposes as preferred uses pursuant to NRS § 534.120, and declared irrigation of land using groundwater to be a non-preferred use, and ordered that applications to appropriate groundwater for irrigation purposes would be denied.

WHEREAS, the Hidden Valley Hydrographic Basin was designated pursuant to NRS § 534.030 by Order 1024 dated April 24, 1990, which also declared municipal, quasi-municipal, industrial, commercial, mining, stockwater and wildlife purposes as preferred uses pursuant to NRS § 534.120, and declared irrigation of land using groundwater to be a non-preferred use, and ordered that applications to appropriate groundwater for irrigation purposes would be denied.

WHEREAS, the Muddy River Springs Area was partially designated pursuant to NRS § 534.030 by Order 392 dated July 14, 1971, and was fully designated by Order 1023 dated April 24, 1990, which also declared municipal, quasi-municipal, industrial, commercial, mining, stockwater and wildlife purposes as preferred uses pursuant to NRS § 534.120, and declared irrigation of land using groundwater to be a non-preferred use, and ordered that applications to appropriate groundwater for irrigation purposes would be denied.

II. ORDERS 1169 AND 1169A

WHEREAS, on March 8, 2002, the State Engineer issued Order 1169 holding in abeyance carbonate-rock aquifer system groundwater applications either pending or to be filed in Coyote Spring Valley (Basin 210), Black Mountains Area (Basin 215), Garnet Valley (Basin 216), Hidden Valley (Basin 217), Muddy River Springs Area (Basin 219), and Lower Moapa Valley (Basin 220) and ordering an aquifer test of the carbonate-rock aquifer system, which was not well understood, to determine whether additional appropriations could be developed from the carbonate-rock aquifer system. The Order required that at least 50%, or 8,050 acre-feet annually (afa), of the water rights then currently permitted in Coyote Spring Valley be pumped for at least two consecutive years.

WHEREAS, on April 18, 2002, in Ruling 5115, the State Engineer added the California Wash (Basin 218) to the Order 1169 aquifer test basins.

WHEREAS, prior to the Order 1169 aquifer test beginning, there were significant concerns that pumping 8,050 afa from the Coyote Spring Valley as part of the aquifer test would adversely impact the water resources at the Muddy River Springs, and consequently the Muddy River. Ultimately, the Order 1169 study participants agreed that even if the minimum 8,050 afa was not pumped, sufficient information would be obtained to inform future decisions relating to the study basins.

WHEREAS, on November 15, 2010, the Order 1169 aquifer test began, whereby the study participants began reporting to NDWR on a quarterly basis the amounts of water being pumped from wells in the carbonate and alluvial aquifer during the pendency of the aquifer test.

WHEREAS, on December 21, 2012, the State Engineer issued Order 1169A declaring the completion of the aquifer test to be December 31, 2012, after a period of 25½ months. The

State Engineer provided the study participants the opportunity to file reports with NDWR until June 28, 2013, addressing the information gained from the aquifer test and the water available to support applications in the aquifer test basins.

WHEREAS, during the Order 1169 aquifer test, an average of 5,290 acre-feet per year was pumped from carbonate wells in Coyote Spring Valley, and a cumulative total of approximately 14,535 acre-feet per year of water was pumped throughout the LWRFS. Of this total, approximately 3,840 acre-feet per year was pumped from the Muddy River Springs Area alluvial aquifer.[1]

WHEREAS, during the aquifer test, pumpage was measured and reported from 30 other wells in the Muddy River Springs Area, Garnet Valley, California Wash, Black Mountains Area, and Lower Meadow Valley Wash. Stream diversions from the Muddy River were reported, and measurements of the natural discharge of the Muddy River and several of the Muddy River's headwater springs were collected daily. Water-level data were collected from a total of 79 monitoring and pumping wells within the LWRFS. All of the data collected during the aquifer test was made available to each of the study participants and the public.

WHEREAS, during the Order 1169 aquifer test, the resulting water-level decline encompassed 1,100 square miles and extended from northern Coyote Spring Valley through the Muddy River Springs Area, Hidden Valley, Garnet Valley, California Wash, and the northwestern part of the Black Mountains Area.[2,3] The water-level decline was estimated to be 1 to 1.6 feet in this area with minor drawdowns of 0.5 feet or less in the northern part of Coyote Spring Valley north of the Kane Springs Wash fault zone.

WHEREAS, results of the two-year test demonstrated that pumping 5,290 acre-feet annually from the carbonate aquifer in Coyote Spring Valley, in addition to the other carbonate pumping in Garnet Valley, Muddy River Springs Area, California Wash and the northwest part

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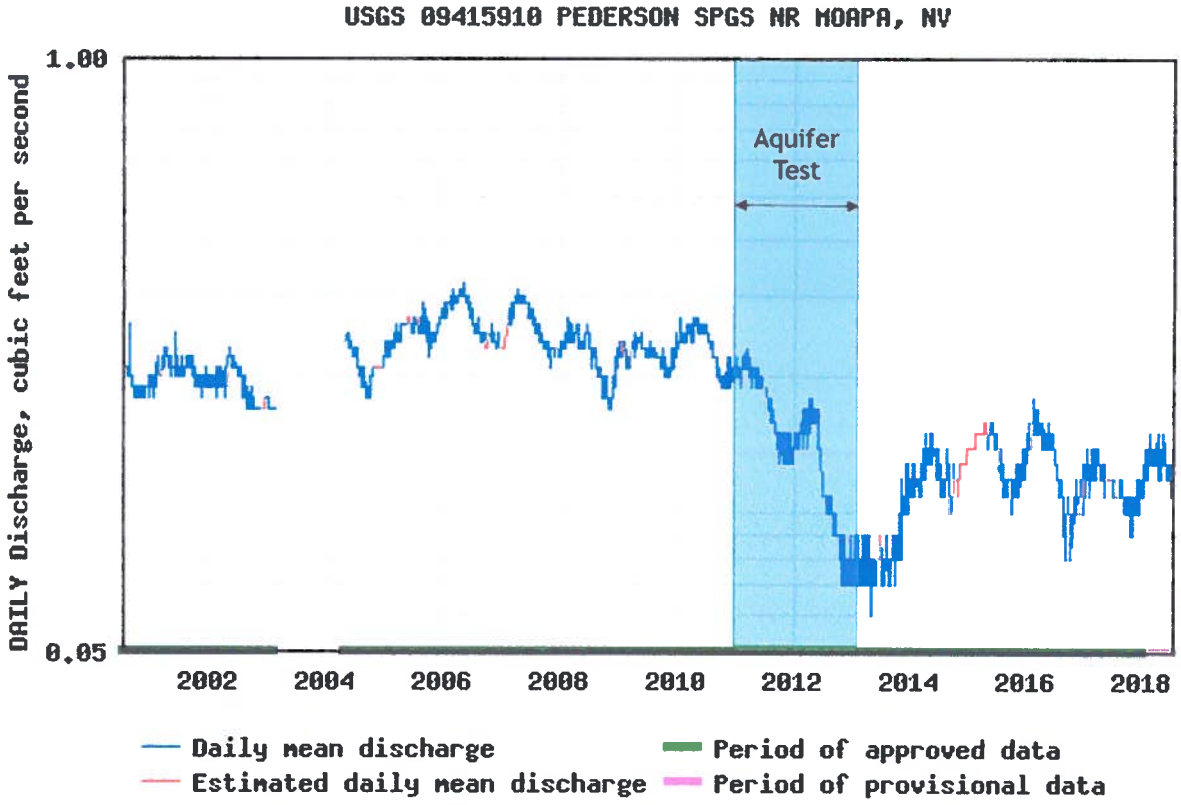
[1] *See, e.g.*, Ruling 6254, p. 17; Appendix B.
[2] *See, e.g.*, Ruling 6254. *See also* U.S. Fish and Wildlife Service, U.S. Bureau of Land Management and U.S. National Park Service Order 1169A Report, *Test Impacts and Availability of Water Pursuant to Applications Pending Under Order 1169*, June 28, 2013, official records in the Office of the State Engineer.
[3] There was no groundwater pumping in Hidden Valley but effects were still observed in the Hidden Valley monitor well.

of the Black Mountains Area, caused sharp declines in groundwater levels and flows in the Pederson and Pederson East springs. These two springs are considered to be sentinel springs for the overall condition of the Muddy River because they are at a higher altitude than other Muddy River source springs, and therefore are proportionally more affected by a decline in groundwater level in the carbonate aquifer.[4] The Pederson spring flow decreased from 0.22 cubic feet per second (cfs) to 0.08 cfs and the Pederson East spring flow decreased from 0.12 cfs to 0.08 cfs. The following hydrograph at Pederson spring illustrates the decline in discharge during the aquifer test and also demonstrates that in the five years since the end of the aquifer test, spring flow has not recovered to pre-test flow rates.



[4] *See* the 2006 Memorandum of Agreement among the Southern Nevada Water Authority, United States Fish and Wildlife Service, Coyote Springs Investments, Moapa Band of Paiutes, and the Moapa Valley Water District.

Additional headwater springs at lower altitude, the Baldwin and Jones springs, declined approximately 4% during the test.[5] All of the headwater springs contribute to the decreed and fully appropriated Muddy River and are the predominant source of water that supplies the habitat of the endangered Moapa dace, a fish federally listed as an endangered species since 1967.

WHEREAS, based upon the analysis of the carbonate aquifer test, it was asserted that pumping at the Order 1169 rate at well MX-5 in Coyote Spring Valley could result in both of the high-altitude Pederson and Pederson East springs going dry in 3 years or less.[6]

WHEREAS, based upon the findings of the aquifer test, the carbonate aquifer underlying Coyote Spring Valley, Garnet Valley, Hidden Valley, Muddy River Springs Area, California Wash and the northwest part of the Black Mountains Area[7] (the LWRFS as depicted in Appendix A) was acknowledged to have a unique hydrologic connection and share the same supply of water.[8]

III. RULINGS 6254, 6255, 6256, 6257, 6258, 6259, 6260, AND 6261

WHEREAS, on January 29, 2014, the State Engineer issued Ruling 6254 on pending applications of the Las Vegas Valley Water District (LVVWD) and Coyote Springs Investment, LLC (CSI) in the Coyote Spring Valley; Ruling 6255 on pending applications of Dry Lake Water, LLC (Dry Lake), and CSI in Coyote Spring Valley; Ruling 6256 on pending applications of Bonneville Nevada Corporation, Nevada Power Company (Nevada Power), Dry Lake, and the Southern Nevada Water Authority (SNWA) in the Garnet Valley; Ruling 6257 on pending applications of Nevada Power, Dry Lake, and SNWA in the Hidden Valley; Ruling 6258 on

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[5] U.S. Fish and Wildlife Service, U.S. Bureau of Land Management and U.S. National Park Service Order 1169A Report, *Test Impacts and Availability of Water Pursuant to Applications Pending Under Order 1169*, pp. 43-46, 50-51, June 28, 2013, official records in the Office of the State Engineer. *See also,* http://waterdata.usgs.gov/nv/nwis/.

[6] *See, e.g.*, Ruling 6254. *See also* U.S. Fish and Wildlife Service, U.S. Bureau of Land Management and U.S. National Park Service Order 1169A Report, *Test Impacts and Availability of Water Pursuant to Applications Pending Under Order 1169*, p. 85, June 28, 2013, official records in the Office of the State Engineer.

[7] That portion of the Black Mountains Area lying within the Lower White River Flow System is defined as those portions of Sections 29, 30, 31, 32, and 33, T.18S., R.64E., M.D.B.&M.; Section 13 and those portions of Sections 1, 11, 12, and 14, T.19S., R.63E., M.D.B.&M.; Sections 5, 7, 8, 16, 17, and 18 and those portions of Sections 4, 6, 9, 10, and 15, T.19S., R.64E., M.D.B.&M.

[8] *See, e.g.,* State Engineer Ruling 6254, p. 24, official records in the Office of the State Engineer.

pending applications by LVVWD, Nevada Power, Dry Lake, and the Moapa Band of Paiute Indians in the California Wash; Ruling 6259 on pending applications by the Moapa Valley Water District in the Muddy River Springs Area; and Ruling 6260 on pending applications by Nevada Cogeneration Associates #1, Nevada Cogeneration Associates #2, and Dry Lake, in the Black Mountains Area, upholding in part the protests to said applications and denying the applications on the grounds that there was no unappropriated groundwater at the source of supply, the proposed use would conflict with existing rights, and the proposed use of the water would threaten to prove detrimental to the public interest because it would threaten the water resources upon which the endangered Moapa dace are dependent.

IV. LOWER WHITE RIVER FLOW SYSTEM

WHEREAS, the total long-term average water supply to the LWRFS, from subsurface groundwater inflow and local precipitation recharge, is not more than 50,000 acre-feet annually.[9]

WHEREAS, the Muddy River, a fully appropriated surface water source, has its headwaters in the Muddy River Springs Area and has the most senior rights in the LWRFS. Spring discharge in the Muddy River Springs Area is produced from the regional carbonate aquifer. Prior to groundwater development, the Muddy River flows at the Moapa gage were approximately 34,000 acre-feet annually.[10]

WHEREAS, the alluvial aquifer surrounding the Muddy River ultimately derives virtually all of its water supply from the carbonates, either through spring discharge that infiltrates into the alluvium or through subsurface hydraulic connectivity between the carbonate rocks and the alluvium.[11]

WHEREAS, the State Engineer has determined that pumping of groundwater within the LWRFS has a direct interrelationship with the flow of the decreed and fully appropriated Muddy River, which has the most-senior rights.[12]

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[9] *Id.*
[10] United States Geological Survey Surface-Water Annual Statistics for the Nation, USGS 09416000 MUDDY RV NR MOAPA, NV, accessed at https://waterdata.usgs.gov/nwis/annual/?search_site_no=09416000&agency_cd=USGS&referred_module=sw&format=sites_selection_links.
[11] *See, e.g.,* State Engineer Ruling 6254, p. 24, official records in the Office of the State Engineer.
[12] *Id.*

WHEREAS, since the conclusion of the Order 1169 aquifer test, the State Engineer has jointly managed the groundwater rights within LWRFS.

WHEREAS, the State Engineer, under the joint management of the LWRFS, has not distinguished pumping from wells in the Muddy River Springs Area alluvium from pumping carbonate wells within the LWRFS.

WHEREAS, within the LWRFS, there exist more than 38,000 acre-feet of groundwater appropriations. Groundwater pumping from 2007 forward is included in Appendix B and is significantly less than the total appropriations.

WHEREAS, groundwater levels within the LWRFS have been relatively flat in the five years since the end of the Order 1169 aquifer test, but groundwater levels have not recovered to pre-test levels.[13]

IV. PUMPAGE INVENTORIES

WHEREAS, annual groundwater pumpage inventories in the Coyote Spring Valley have been published by the State Engineer since 2005. In the years 2005 through 2017 pumping has ranged from 665 acre-feet to 5,606 acre-feet, averaging 2,605 acre-feet. The average pumping in Coyote Spring Valley, excluding the years 2011 and 2012 when the aquifer test was being conducted, is 2,068 acre-feet.[14]

WHEREAS, annual groundwater pumpage inventories in the Black Mountains Area have been published by the State Engineer since 2001. In the years 2001 through 2017 pumping in the northwest portion of the basin has ranged from 1,137 acre-feet to 1,591 acre-feet, with an average of 1,476 acre-feet.[15]

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[13] *See, e.g., USGS water level data for Site 364650114432001 219 S13 E65 28BDBA1 USGS CSV-2.* waterdata.usgs.gov/nwis.

[14] *See, e.g., Nevada Division of Water Resources, Coyote Spring Valley Hydrographic Basin 13-210 Groundwater Pumpage Inventory*, 2017.

[15] *See, e.g., Nevada Division of Water Resources, Black Mountains Area Hydrographic Basin 13-215 Groundwater Pumpage Inventory*, 2017.

WHEREAS, annual groundwater pumpage inventories in the Garnet Valley have been published by the State Engineer since 2001. In the years 2001 through 2017 pumping has ranged from 797 acre-feet to 2,181 acre-feet, averaging 1,358 acre-feet.[16]

WHEREAS, the State Engineer does not conduct annual groundwater pumpage inventories in the Hidden Valley basin because there is no groundwater pumping in the basin.

WHEREAS, annual groundwater pumpage inventories in the California Wash have been published by the State Engineer since 2016. In the years 2016 and 2017 pumping has ranged from 88 acre-feet to 252 acre-feet, averaging 170 acre-feet.[17] Groundwater pumpage data have been reported by water right holders since 2009.

WHEREAS, annual groundwater pumpage inventories in the Muddy River Springs Area have been published by the State Engineer since 2016. In the years 2016 and 2017 pumping has ranged from 3,553 acre-feet to 4,048 acre-feet, with an average of 3,801 acre-feet.[18] Groundwater pumpage data have been reported by water right holders since 1976.

WHEREAS, total groundwater pumpage in Coyote Spring Valley, Muddy River Springs Area (MRSA), California Wash, Hidden Valley, Garnet Valley, and the northwest portion of the Black Mountains Area in calendar years 2007 through 2017, ranged from 9,090 acre-feet to 14,766 acre-feet. Pumpage in years 2011-2012 during the aquifer test averaged 14,535 afa. Pumpage in years 2015 through 2017, when alluvial pumping in the MRSA was greatly reduced because of the Reid Gardner Generating Station closure, ranged from 9,090 afa to 9,637 afa.

V. AUTHORITY AND NECESSITY

WHEREAS, NRS § 533.024(1)(c) directs the State Engineer "to consider the best available science in rendering decisions concerning the availability of surface and underground sources of water in Nevada."

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[16] *See, e.g., Nevada Division of Water Resources, Garnet Valley Hydrographic Basin 13-216 Groundwater Pumpage Inventory*, 2017.
[17] *See, e.g., Nevada Division of Water Resources, California Wash Hydrographic Basin 13-218 Groundwater Pumpage Inventory*, 2017.
[18] *See, e.g., Nevada Division of Water Resources, Muddy River Springs Area (AKA Upper Moapa Valley) Hydrographic Basin 13-219 Groundwater Pumpage Inventory*, 2017.

WHEREAS, NRS § 533.024(1)(e) was added in 2017 to declare the policy of the State to "manage conjunctively the appropriation, use and administration of all waters of this State regardless of the source of the water."

WHEREAS, given that the State Engineer must use the best available science and manage conjunctively the water resources in the LWRFS, consideration of any development of long-term, permanent, uses that could ultimately be curtailed due to water availability will be examined with great caution.

WHEREAS, as demonstrated by the results of the aquifer test, Coyote Spring Valley, Muddy River Springs Area, Hidden Valley, Garnet Valley, California Wash, and the northwestern part of the Black Mountains Area have a direct hydraulic connection, and as a result must be administered as a joint administrative unit, including the administration of all water rights based upon the date of priority of such rights in relation to the priority of rights in the other basins.[19]

WHEREAS, the pre-development discharge of 34,000 acre-feet of the Muddy River system, which is fully appropriated, plus the more than 38,000 acre-feet of groundwater appropriations within the LWRFS greatly exceed the total water budget within the flow system.

WHEREAS, the results from the aquifer test, the data from groundwater level recovery and spring flow, and climate data indicate to the State Engineer that the quantity of water that may be pumped within the LWRFS without conflicting with senior rights on the Muddy River or adversely affecting the habitat of the Moapa dace is less than the quantity pumped during the aquifer test.

WHEREAS, the current amount of pumping corresponds to a period of time in which spring flows have remained relatively stable and have not demonstrated a continuing decline.

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[19] *See, e.g.,* Southern Nevada Water Authority, *Nevada State Engineer Order 1169 and 1169A Study Report*, June 2013; Tom Meyers, Ph.D., *Technical Memorandum Comments on Carbonate Order 1169 Pump Test Data and Groundwater Flow System in Coyote Springs and Muddy River Springs Valley, Nevada*, June 25, 2013; U.S. Fish and Wildlife Service, U.S. Bureau of Land Management and U.S. National Park Service Order 1169A Report, *Test Impacts and Availability of Water Pursuant to Applications Pending Under Order 1169*, June 28, 2013; Johnson and Mifflin, *Summary of Order 1169 Testing Impacts, per Order 1169A*, June 28, 2013; Tetra Tech, *Comparison of Simulated and Observed Effects of Pumping from MX-5 Using Data Collected to the End of the Order 1169 Test, and Prediction of Recovery from the Test*, June 10, 2013, official records in the Office of the State Engineer.

WHEREAS, the precise extent of the development of existing appropriations of groundwater within the LWRFS that may occur without conflicting with the senior rights of the fully decreed Muddy River has not been determined.

WHEREAS, recognizing that there exists a need for further analysis of the historic and ongoing groundwater pumping data, the relationship of groundwater pumping within the LWRFS to spring discharge and flow of the fully decreed Muddy River, the extent of impact of climate conditions on groundwater levels and spring discharge, and the ultimate determination of the sustainable yield of the LWRFS, the State Engineer finds that input by means of reports by the stakeholders in the interpretation of the data from the aquifer test and from the years since the conclusion of the aquifer test is important to fully inform the State Engineer prior to setting a limit on the quantity of groundwater that may be developed in the LWRFS or to developing a long-term Conjunctive Management Plan for the LWRFS and Muddy River.

WHEREAS, the State Engineer finds that it is necessary to carefully monitor the effects of groundwater development within the LWRFS under current conditions, toward the goal of collaboratively (with stakeholders) evaluating the amount of groundwater that may ultimately be developed within the LWRFS without conflicting with senior decreed rights on the Muddy River or adversely affecting the public interest in maintaining the habitat of the endangered Moapa dace. The evaluation process will include public meetings, meetings of a stakeholder representative working group, and coordination with the Hydrologic Review Team (HRT) developed under the 2006 Memorandum of Agreement among the Southern Nevada Water Authority, United States Fish and Wildlife Service, Coyote Springs Investments, Moapa Band of Paiutes, and the Moapa Valley Water District. The process will provide the opportunity for the stakeholders to engage in the development of a conjunctive management plan that will be informed by the determination of the total quantity of groundwater that may be developed within the LWRFS and that will facilitate the continued use of groundwater by junior priority groundwater rights holders whom have perfected their water rights while protecting the senior decreed rights on the Muddy River.

WHEREAS, recognizing that an amount less than the full quantity of the appropriated groundwater rights within the LWRFS may be developed in a manner that will provide for a reasonably certain supply of water for future permanent uses without jeopardizing the economies of the communities reliant on the water supply within the LWRFS, the health and safety of those

whom are either presently reliant the water, existing public interests, or those who may in the future become reliant on a reliable and sustainable source of supply, the State Engineer, with the following exception, finds that it is necessary to issue a temporary moratorium on the review and decision by the Division of Water Resources regarding any final subdivision map or other construction or development submission requiring a finding that adequate water is available to support the proposed development. During the pendency of this Interim Order, the State Engineer may review and grant approval of a subdivision or other submission if a showing of an adequate and sustainable supply of water to meet the anticipated life of the subdivision, other construction or development can be made to the State Engineer's satisfaction.

WHEREAS, through continued monitoring of the LWRFS during the effective period of this Interim Order, the State Engineer seeks to maintain recent groundwater pumping amounts, while providing time for the submission of additional scientific data and analysis regarding the total quantity of water that may be sustainably withdrawn from the LWRFS over the long-term without conflicting with senior Muddy River decreed rights or jeopardizing the communities, water users, or public interests identified above.

WHEREAS, the State Engineer is empowered to make such reasonable rules and regulations as may be necessary for the proper and orderly execution of the powers conferred by law.[20]

WHEREAS, within an area that has been designated by the State Engineer, as provided for in NRS Chapter 534, where, in the judgment of the State Engineer, the groundwater basin is being depleted, the State Engineer in his or her administrative capacity may make such rules, regulations and orders as are deemed essential for the welfare of the area involved.[21]

WHEREAS, the State Engineer finds that additional data relating to the impacts of groundwater pumping from the LWRFS coupled with the public process will allow his office to make a determination as to the appropriate long-term management of groundwater pumping that may occur in the LWRFS by existing holders of water rights without conflicting with existing senior decreed rights or adversely affecting the endangered Moapa dace.

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[20] NRS § 532.120.
[21] *Id.*

VI. ORDER

NOW THEREFORE, the State Engineer orders:

1. The Lower White River Flow System consisting of the Coyote Spring Valley, Muddy River Springs Area, California Wash, Hidden Valley, Garnet Valley, and the portion of the Black Mountains Area as described in this Order, is herewith designated as a joint administrative unit for purposes of administration of water rights. All water rights within the Lower White River Flow System will be administered based upon their respective date of priorities in relation to other rights within the regional groundwater unit.

2. Any stakeholder with interests that may be affected by water right development within the Lower White River Flow System may file a report in the Office of the State Engineer in Carson City, Nevada, no later than the close of business on Monday, June 3, 2019.[22] Reports filed with the Office of the State Engineer should address the following matters:

    a. The geographic boundary of the hydrologically connected groundwater and surface water systems comprising the Lower White River Flow System;
    b. The information obtained from the Order 1169 aquifer test and subsequent to the aquifer test and Muddy River headwater spring flow as it relates to aquifer recovery since the completion of the aquifer test;
    c. The long-term annual quantity of groundwater that may be pumped from the Lower White River Flow System, including the relationships between the location of pumping on discharge to the Muddy River Springs, and the capture of Muddy River flow;

[22] For any stakeholder affected by the shut-down of the United States government beginning in December 2018, upon a request and showing of good cause to the satisfaction of the State Engineer, an extension of time may be granted to those affected parties.

d. The effects of movement of water rights between alluvial wells and carbonate wells on deliveries of senior decreed rights to the Muddy River; and,

e. Any other matter believed to be relevant to the State Engineer's analysis.

3. Any stakeholder with interests that may be affected by water right development within the Lower White River Flow System may file with the Office of the State Engineer no later than the close of business on Thursday July 18, 2019, a rebuttal to the Reports filed on June 3, 2019.

4. The State Engineer will schedule an administrative hearing within the month of September 2019 to take comment on the submitted reports.

5. During the pendency of this Interim Order:

a. Permanent applications to change existing groundwater rights shall be held in abeyance pending the submission of the reports as required by Paragraph 2 of this Order and as authorized by NRS §§ 532.165(1), 533.368 and 533.370(4)(d). Temporary applications to change existing groundwater rights will be processed pursuant to NRS § 533.345.

b. A temporary moratorium is issued regarding any final subdivision or other submission concerning development and construction submitted to the State Engineer for review, and such submissions shall be held in abeyance pending the conclusion of the public process to determine the total quantity of groundwater that may be developed within the Lower White River Flow System. The State Engineer may review and grant approval of a subdivision or other submission if a showing of an adequate and sustainable supply of water to meet the anticipated life of the subdivision, other construction or development can be made to the State Engineer's satisfaction.

c. Holders of water rights who maintain their water rights in good standing by filing all required applications for extension of time in conformity with the requirements of NRS §§ 533.390, 533.395 and 533.410 may cite this order in support of their applications for extension of time.

d. Holders of water rights who file all required applications for extension of time in conformity with the requirements of NRS § 534.090 may cite this order in support of their applications for extension of time to prevent the working of a forfeiture.

JASON KING, P.E.
State Engineer

Dated at Carson City, Nevada this
11TH day of JANUARY, 2019.

Order 1303, Appendix A : LOWER WHITE RIVER FLOW SYSTEM

Coyote Spring Valley, Muddy River Springs Area, Hidden Valley, Garnet Valley, California Wash, and a portion of Black Mountains Area

Summer 2017 imagery from the
National Agriculture Imagery Program

Nevada Division of Water Resources
Office of the State Engineer
Jason King, P.E.
State Engineer

Order 1303, APPENDIX B: Groundwater Pumping in the Lower White River Flow System, 2007–2017

Basin No.	219				215		210	216	218	217	Total pumping in the LWRFS
Basin Name	Muddy River Springs Area				Black Mountains Area		Coyote Spring Valley	Garnet Valley	California Wash	Hidden Valley	
Year	Carbonate pumping (reported by MVWD)	Alluvial pumping (reported by NV Energy)	All other Alluvial Pumping[1]	Total Pumping in Basin 219[1]	Carbonate pumping in the Northwest Portion of Basin 215	Total Pumping in Basin 215					
2007	2,079	4,744	253	7,076	1,585	1,732	3,147	1,412	27[2]	0	**13,247**
2008	2,272	4,286	253	6,811	1,591	1,759	2,000	1,552	27[2]	0	**11,981**
2009	2,034	4,092	253	6,379	1,137	1,159	1,792	1,427	21[3]	0	**10,756**
2010	1,826	4,088	253	6,167	1,561	1,572	2,923	1,373	26[3]	0	**12,050**
2011	1,837	4,212	253	6,302	1,398	1,409	5,606	1,427	33[3]	0	**14,766**
2012	2,638	2,961	253	5,852	1,556	1,564	5,516	1,351	28[3]	0	**14,303**
2013	2,496	3,963	253	6,712	1,585	1,776	3,407	1,484	66[3]	0	**13,254**
2014	1,442	4,825	253	6,520	1,429	1,624	2,258	1,568	241[3]	0	**12,016**
2015	2,396	1,249	253	3,898	1,448	1,708	2,064	1,520	460	0	**9,390**
2016	2,795	941	312	4,048	1,434	1,641	1,722	2,181	252	0	**9,637**
2017	2,824	535	194	3,553	1,507	1,634	1,961	1,981	88	0	**9,090**

The LWRFS includes basins 210, 216, 217, 218, 219 and the northwest portion of 215.

All values in this table are from State Engineer basin pumpage inventory reports except as noted in the footnotes below:

1. Alluvial Pumping not reported by NV Energy for years 2007–2015 estimated as the average of inventoried years 2016–2017.
2. Estimated as the average of groundwater pumping in years 2009–2012.
3. Reported to the State Engineer but not published in a basin inventory report.

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

ADDENDUM TO INTERIM ORDER #1303

DESIGNATING THE ADMINISTRATION OF ALL WATER RIGHTS WITHIN COYOTE SPRING VALLEY HYDROGRAPHIC BASIN (210), A PORTION OF BLACK MOUNTAINS AREA (BASIN 215), GARNET VALLEY (BASIN 216), HIDDEN VALLEY (BASIN 217), CALIFORNIA WASH (BASIN 218), AND MUDDY RIVER SPRINGS AREA (AKA UPPER MOAPA VALLEY) (BASIN 219) AS A JOINT ADMINISTRATIVE UNIT, HOLDING IN ABEYANCE APPLICATIONS TO CHANGE EXISTING GROUNDWATER RIGHTS, AND ESTABLISHING A TEMPORARY MORATORIUM ON THE REVIEW OF FINAL SUBDIVISION MAPS

WHEREAS, the purpose of this Addendum is to modify the schedule for the submission of reports and rebuttal reports of interested stakeholders analyzing the data available regarding sustainable groundwater development in the Lower White River Flow System (LWRFS), the geographic extent of the LWRFS, and considerations relating to the movement of groundwater pumping between the alluvial wells and carbonate wells and its effects on the fully decreed Muddy River.

WHEREAS, NRS § 533.024(1)(c) directs the State Engineer "to consider the best available science in rendering decisions concerning the availability of surface and underground sources of water in Nevada."

WHEREAS, NRS § 533.024(1)(e) was added in 2017 to declare the policy of the State to "manage conjunctively the appropriation, use and administration of all waters of this State regardless of the source of the water."

WHEREAS, based upon the recognition that a need exists for further analysis of the groundwater pumping data, the relationship of groundwater pumping within the LWRFS to spring discharge and flow of the fully decreed Muddy River, the extent of impact of climate conditions on groundwater levels and spring discharge, and the ultimate determination of the sustainable yield of the LWRFS, and the interest in the stakeholders having sufficient time to prepare reports, the State Engineer finds that it is reasonable and appropriate to modify the schedule originally established in Interim Order 1303.

WHEREAS, the State Engineer is empowered to make such reasonable rules and regulations as may be necessary for the proper and orderly execution of the powers conferred by law.[1]

WHEREAS, within an area that has been designated by the State Engineer, as provided for in NRS Chapter 534, where, in the judgment of the State Engineer, the groundwater basin is being depleted, the State Engineer in his or her administrative capacity may make such rules, regulations and orders as are deemed essential for the welfare of the area involved.[2]

ORDER

NOW THEREFORE, the State Engineer orders:

1. The deadline for any stakeholder with interests that may be affected by water right development within the Lower White River Flow System to file a report in the Office of the State Engineer in Carson City, Nevada, is extended to no later than the close of business on Wednesday, July 3, 2019. The substance of the reports should include the same elements as established originally in Interim Order 1303.
2. Any rebuttal report to the Reports filed on July 3, 2019, to be submitted by a stakeholder with interests that may be affected by water right development within the Lower White River Flow System shall be submitted to the Office of the State Engineer no later than the close of business on Friday August 16, 2019.
3. All other matters contained in Interim Order 1303 remain unaltered.

Tim Wilson, P.E.

TIM WILSON, P.E.
State Engineer

Dated at Carson City, Nevada this 13th day of May, 2019.

[1] NRS § 532.120.
[2] *Id.*

EXHIBIT 4

IN THE OFFICE OF THE STATE ENGINEER

OF THE STATE OF NEVADA

1169

ORDER

HOLDING IN ABEYANCE CARBONATE-ROCK AQUIFER SYSTEM GROUNDWATER APPLICATIONS PENDING OR TO BE FILED IN COYOTE SPRINGS VALLEY (BASIN 210), BLACK MOUNTAINS AREA (BASIN 215), GARNET VALLEY (BASIN 216), HIDDEN VALLEY (BASIN 217), MUDDY RIVER SPRINGS aka UPPER MOAPA VALLEY (BASIN 219), LOWER MOAPA VALLEY (BASIN 220), AND FOR FURTHER STUDY OF THE APPROPRIATION OF WATER FROM THE CARBONATE-ROCK AQUIFER SYSTEM, LINCOLN AND CLARK COUNTIES, NEVADA.

WHEREAS, the Nevada State Engineer is designated by the Nevada Legislature to perform the duties related to the management of the water resources belonging to the people of the State of Nevada.[1]

WHEREAS, the State Engineer is empowered to make such reasonable rules and regulations as may be necessary for the proper and orderly execution of the powers conferred by law.[2]

WHEREAS, the State Engineer is empowered to conduct such studies as are necessary.[3]

WHEREAS, a large portion of the State of Nevada consisting of approximately 50,000 square miles of sparsely populated land is underlain by significant carbonate-rock sequences.[4]

WHEREAS, the carbonate-rock sequences contain groundwater aquifers, which are believed to contain significant, but undetermined, quantities of ground water.

WHEREAS, many persons or entities have filed water right applications requesting permission to appropriate substantial quantities of underground water from the carbonate-rock aquifer system.

WHEREAS, in 1984, the Water Resources Division of the United States Department of Interior, Geological Survey proposed a 10-year investigation of the entire Carbonate Terrane, which includes the carbonate-rock aquifers of the areas referenced above. This study was proposed because the water resources of the Carbonate Terrane were not well defined, the hydrology and geology of the area are complex, and data was sparse.[5]

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[1] See, Nevada Revised Statutes chapters 532, 533, 534, 535 and 536.

[2] NRS § 532.120.

[3] NRS § 532.165(1), 533.368 and 533.370(2).

[4] Michael D. Dettinger, Distribution of Carbonate-Rock Aquifers in Southern Nevada and the Potential for their Development, Summary of Findings, 1985-1988, Summary Report No. 1, United States Geological Survey, Department of Interior and Desert Research Institute, University of Nevada System, p. 3, 1989. See also, Memorandum dated August 3, 1984, from Terry Katzer, Nevada Office Chief, Water Resources Division, United States Department of Interior Geologic Survey, Carson City, Nevada, to Members of the Carbonate Terrane Study, Attachment p. 8, which indicates that the area underlain by significant carbonate-rock sequences in Nevada is over 40,000 square miles of sparsely populated land, and includes 106 hydrographic areas and basins.

[5] Memorandum dated August 3, 1984, from Terry Katzer, Nevada Office Chief, Water Resources Division, United States Department of Interior Geologic Survey, Carson City, Nevada, to

WHEREAS, it has been known since 1984 that to arrive at some reasonable understanding of the carbonate-rock aquifer system, substantial amounts of money would be required to develop the science, a significant period of study would be required, and that "unless this understanding is reached, the development of carbonate water is risky and the resultant effects may be disastrous for the developers and current users."[6]

WHEREAS, the United States Geological Survey has indicated that given the multiple possible avenues of hydrologic connection between the various aquifers and flow systems, and the uncertainties of recharge and discharge mechanisms and processes, an investigation of the hydrology of the carbonate-rock aquifer system in Nevada is undoubtedly a difficult undertaking.

WHEREAS, an investigation of the carbonate-rock aquifer system is additionally complicated by factors including:[7]

- basic hydrologic data such as groundwater levels in the basin-fill aquifers and the carbonate-rock aquifers, and reliable flow measurements for important springs and major streams are scarce or infrequently obtained in much of the area;
- secondary hydrologic and other data, such as hydraulic parameters, geophysical and geochemical, are lacking in many areas;
- the geometry, properties, and boundaries of the carbonate-rock and basin-fill reservoirs are generally unknown, and definition of these properties can be expensive and difficult;
- climatic conditions today are inadequately defined (particularly at higher altitudes) and conditions during the development of the flow paths within the deep-rock aquifers and flow paths within the carbonate-rock aquifer are even more uncertain;
- uncertainties and inaccuracies exist in current methods of estimating precipitation;
- uncertainties and inaccuracies exist in current methods of estimating groundwater inflow and recharge;
- uncertainties and inaccuracies exist in current methods of estimating groundwater outflow and evaporative discharge;
- only a small number of wells tap the deep carbonate-rock aquifer system;
- because there has been no significant historical pumping of ground water from the carbonate-rock aquifer system, groundwater models can only be used as a limited predictive tool for estimating the principle location and magnitude of the impacts of pumping ground water from the system;
- limited stresses on the water resources of the area under current development conditions allow hydrologists information only on the narrow band of system responses to natural conditions; and
- the relationship between geothermal systems and the deep carbonate-rock aquifers and groundwater flow systems is not well understood.

WHEREAS, in 1985, the Nevada Legislature authorized a program for the study and testing of the carbonate-rock aquifer system of eastern and southern Nevada. The program was a cooperative effort between the State of Nevada and the Federal Government. The overall plan for the program was to study the carbonate-rock aquifers of southern, east-central, and northeastern Nevada as separate phases of work, with a summary of findings to be prepared at the end of each

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Members of the Carbonate Terrane Study.

[6] Ibid.

[7] Id., Attachment p. 7.

phase. A report, Distribution of Carbonate-Rock Aquifers in Southern Nevada and the Potential for their Development, Summary of Findings, 1985-1988,[8] summarized the findings of the first phase of the study, which assessed the resources of the carbonate-rock aquifers of southern Nevada. The summary brought together results from more than 20 technical reports produced during the study. The summary indicated that:

> The rocks that compose the carbonate-rock aquifers are layers of limestone and dolomite that were deposited hundreds of millions of years ago in much of the eastern Great Basin. Subsequently, the carbonate rocks were much deformed; as a result, they no longer exist as continuous layers beneath the region. Instead, they have been pulled apart to form a few large areas of thick and relatively continuous carbonate rocks. Separating these areas are noncarbonate rocks, within which are isolated mountain-sized blocks of carbonate rock.
>
> Beneath southern Nevada, the thick carbonate-rock layers are continuous enough to transmit ground water at regional scales only beneath a north-south "corridor" 60-90 miles wide that extends southward from east-central Nevada to and beyond the Spring Mountains area west of Las Vegas. Within this corridor are the two major regional flow systems of southern Nevada: the Ash Meadows-Death Valley system and the White River-Muddy River Springs system. These flow systems link the ground water beneath dozens of valleys and over distances exceeding 200 miles. Flow in these systems probably is concentrated along highly transmissive zones associated with (1) recently active faults and (2) confluences of flow near major warm-water springs. Outside of the corridor, the carbonate rocks are present primarily as isolated blocks that form aquifers of limited extent, recharged mostly by local precipitation.
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> * * *
>
> Large-scale development (sustained withdrawals) of water from the carbonate-rock aquifers would result in water-level declines and cause the depletion of large quantities of stored water. Ultimately, these declines would cause reductions in the flow of warm-water springs that discharge from the regional aquifers. Storage in other nearby aquifers also might be depleted, and water levels in those other aquifers could decline. In contrast, isolated smaller ground-water developments, or developments that withdraw ground water for only a short time, may result in water-level declines and springflow reductions of manageable or acceptable magnitude.
>
> Confidence in predictions of the effects of development, however, is low; and it will remain low until observations of the initial hydrologic results of development are analyzed. A strategy of staging developments gradually and adequately monitoring the resulting hydrologic conditions would provide information that eventually could be used to improve confidence in the predictions.[9]

WHEREAS, because assurances that the adverse effects of development will not overshadow the benefits cannot be made with a high degree of confidence, development of the carbonate-rock aquifer system must be undertaken in gradual stages together with adequate

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[8] Michael D. Dettinger, Distribution of Carbonate-Rock Aquifers in Southern Nevada and the Potential for their Development, Summary of Findings, 1985-1988, Summary Report No. 1, United States Geological Survey, Department of Interior and Desert Research Institute, University of Nevada System, Forward, 1989.

[9] Id, pp. 1-2.

monitoring in order to predict, through the use of a calibrated model, the effects of continued or increased development with a higher degree of confidence.

WHEREAS, staging development gradually means not developing the resources in one large step, but rather starting with small projects that are possibly augmented gradually if conditions and confidence warrant. This approach allows the effects of development to be observed and analyzed continually, so that the benefits and adverse effects of development can be judged and the effects reversed or mitigated if they prove to be detrimental to existing rights and the environment. This approach would hopefully avoid the havoc that could be created by the curtailment of water use by those who have come to rely on it if impacts occur requiring curtailment of the water use.

WHEREAS, the 1995 Water-Resources Investigations Report 91-4146[10] estimates the total water budget of all southern Nevada aquifers from the natural recharge to the mountains and subsurface inflow to the study area[11] to be about 160,000 acre-feet annually, and discharges from major discharge areas to be about 77,000 acre-feet annually.[12]

WHEREAS, it is believed that all of the recharge and subsurface inflow cannot be captured for use.

WHEREAS, in July and August of 2001 nearly four weeks of public administrative hearings were conducted on applications filed by the Las Vegas Valley Water District (Applications 54055 - 54059, inclusive) and Coyote Springs Investment, LLC (Applications 63272 - 63276, inclusive, and 63867 -63876, inclusive), which together request to appropriate approximately 135,000 acre-feet of water annually from the carbonate-rock aquifer system within the Coyote Springs Valley Hydrographic Basin.[13]

WHEREAS, testimony and evidence from the administrative hearing on the Las Vegas Valley Water District's applications indicates that using the standard Maxey-Eakin technique for estimation of groundwater recharge from precipitation, the recharge for the Coyote Springs Valley, Muddy River Springs, Hidden Valley, Garnet Valley, Black Mountains and Lower Moapa Valley

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[10] Michael D. Dettinger, et al., Distribution of Carbonate-Rock Aquifers and the Potential for Their Development, Southern Nevada and Adjacent Parts of California, Arizona and Utah, U.S. Geological Survey, Water-Resources Investigations Report 91-4146, p. 50, 1995.

[11] The study area is defined on p. 5 of Water-Resources Investigations Report 91-4146 to be most of southern Nevada south of Tonopah and Pioche.

[12] Discharge areas are identified as Muddy River Springs 36,000 acre-feet annually (afa) of spring flow, Blue Point Spring 240 afa of spring flow, Rogers Spring 920 afa of spring flow, Frenchman Mountain 2,100 afa of underflow toward Colorado River, Pahrump Valley 18,000 afa of underflow to California, Ash Meadows 17,000 afa of spring flow and evapotranspiration, Amargosa Desert 3,000 afa of underflow to Death Valley, and Grapevine Canyon 400 afa of underflow to Death Valley. Water-Resources Investigations Report 91-4146 at 53.

[13] It is noted that at the administrative hearing on Coyote Springs Investment, LLC Applications 63272 - 63276, inclusive, and 63867 -63876, inclusive, the applicant indicated they are requesting the State Engineer "to issue the permits as requested but limit their full use until the monitoring and mitigation program is in effect." Transcript, public administrative hearing before the State Engineer, August 20, 2001, p. 58. However, the applicant further indicated that it requested that a minimum of four permits be issued, two in each county, with the second permit in each county to be used to stress the aquifer. Two permits for a total amount of 14,478 afa would be for development, two permits for a total amount of 14,478 afa would be to stress the aquifer under some temporary development. Transcript, public administrative hearing before the State Engineer, August 20, 2001, pp. 91-96. This is after the 27,504 afa requested by the Las Vegas Valley Water District.

areas combined is approximately 3,550 acre-feet annually. Using the modified Maxey-Eakin technique introduced at the administrative hearing (known as the Donovan-Katzer 2000 technique), the recharge is estimated at approximately 6,761 acre-feet annually for the combined areas.[14]

WHEREAS, testimony and evidence from the administrative hearing on the Las Vegas Valley Water District's applications indicates that approximately 50,000 acre-feet of groundwater inflow comes into the Coyote Springs Valley from northern groundwater basins and approximately 53,000 acre-feet annually outflows[15] from Coyote Springs Valley of which a portion may be available for capture from that groundwater underflow. While testimony presented indicated a belief that significant quantities of water may be available for capture from storage, it is unknown what quantity that would be and if any underground water could be appropriated without unreasonable and irreversible impacts.[16]

WHEREAS, testimony and evidence from the administrative hearing on the Las Vegas Valley Water District's applications indicates that a portion of the ground water outflow from Coyote Springs Valley is believed to discharge at a rate of approximately 37,000 acre-feet annually at the Muddy River Springs area and approximately 16,000 to 17,000 acre-feet annually flows to groundwater basins further south.[17] This 37,000 acre-feet is counted as part of the 53,000 acre-feet outflow from Coyote Springs Valley resulting in 16,000-17,000 acre-feet annual flow that by-passes the Muddy River Springs area.

WHEREAS, these referenced large springs located near the central part of the Upper Moapa Valley, which that collectively discharge approximately 37,000 acre-feet annually of underground water, are fully appropriated pursuant to the Muddy River Decree.[18] It is believed that the source of water discharged originates mainly from the carbonate-rock aquifer system, but it is unknown if the discharge originates solely from the White River Flow System or is also influenced by discharge from the Meadow Valley Flow System or if there is influence from the alluvial aquifer.

WHEREAS, listed endangered and/or potential threatened species exist in the Muddy Springs/Muddy River area.

WHEREAS, testimony and evidence from the administrative hearing on the Las Vegas Valley Water District's applications indicates that their own expert witnesses are unable to make a suggestion to the State Engineer as to what part of the water budget could be captured without a great deal of uncertainty, and that the question cannot be resolved without stressing the system.[19]

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[14] See, testimony of Terry Katzer and David Donavan; Exhibit 54, p. 4-25, public administrative hearing before the State Engineer, July 16-24, 2001.

[15] Taking into account for 4,000 afa of in-basin recharge and 1,000 afa of evapotranspiration.

[16] See, testimony of Terry Katzer and David Donavan, public administrative hearing before the State Engineer, July 16-24, 2001.

[17] See, testimony of Terry Katzer and David Donavan, public administrative hearing before the State Engineer, July 16-24, 2001.

[18] Judgment and Decree, In the Matter of the Determination of the Relative Rights In and To the Waters of the Muddy River and Its Tributaries in Clark County, State of Nevada, March 12, 1920, Tenth Judicial District Court of the State of Nevada, In and For the County of Clark.

[19] See, testimony of Terry Katzer and David Donavan, public administrative hearing before the State Engineer, June 16-24, 2001.

WHEREAS, testimony and evidence from the administrative hearing on the Las Vegas Valley Water District's applications indicates that the State Engineer's ability to determine if development of the carbonate-rock aquifer system will impact existing rights is dependent on how the water rights are brought "on-line" and monitored.[20]

WHEREAS, testimony and evidence from the administrative hearing on the Las Vegas Valley Water District's applications indicates that little is known about the hydrologic connectivity between the groundwater basins, that virtually nothing is known about the mountain blocks, estimates of recharge to the area can vary by a factor of two, there is probably some connectivity between the water in the carbonate-rock aquifers and the alluvial groundwater basins,[21] there is still little data available and not much has changed from the information known in 1984.

WHEREAS, the State Engineer has been provided several different models, which though based on little pumping data, all provide the State Engineer with different analyses, and which all indicate that the pumping of substantial amounts of carbonate-rock aquifer water will likely impact the sources of the Muddy River.

WHEREAS, the State Engineer has previously granted groundwater permits, which authorize use of underground water in the area underlain by the carbonate-rock aquifer system or directly from the carbonate-rock aquifer system in the following quantities:

Coyote Springs Valley (Basin 210)	16,300	acre-feet
Black Mountain (Basin 215)	10,216	acre-feet
Garnet Valley (Basin 216)	3,380	acre-feet
Hidden Valley (Basin 217)	2,200	acre-feet[22]
Muddy River Springs aka Upper Moapa Valley (Basin 219)	14,756	acre-feet
Lower Moapa Valley (Basin 220)	5,813	acre-feet
	50,465	acre-feet

WHEREAS, of all the water rights issued from the carbonate-rock aquifer system, to date very few have actually been pumped.

WHEREAS, if 16,000 to 17,000 acre-feet is believed to by-pass the Muddy River Springs area, the water right permits already issued in Coyote Springs Valley alone equal the estimate of the amount of carbonate flow that by-passes the region and is not part of the flow discharged from the Muddy River Springs area.

WHEREAS, Nevada Revised Statute § 533.370(2)(b) provides that the State Engineer may postpone action on an application in areas where studies of water supplies are necessary.

WHEREAS, Nevada Revised Statute § 533.368 provides that if the State Engineer determines that a hydrological study, an environmental study or any other study is necessary before he makes a final determination on an application, 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.

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[20] Ibid.

[21] Ibid.

[22] This 2,200 acre-feet is combined with 2,200 acre-feet issued in Garnet Valley for a total of 2,200 afa between the two basins.

WHEREAS, Nevada Revised Statute § 533.368(4) provides that the State Engineer shall consult with the applicant and the governing body of the county or counties in which the point of diversion and place of use are located concerning the scope and progress of the study.

WHEREAS, the State Engineer believes it is prudent to work with a model, and the appropriate model will be determined in conjunction with the parties identified below who are responsible for participating in the study.

WHEREAS, the State Engineer does not believe it is prudent to issue any additional water rights to be pumped from the identified portions of the carbonate-rock aquifer until a significant portion of the water rights which have already been issued are pumped for a substantial period of time in order to determine if the pumping of those water rights will have any detrimental impacts on existing water rights or the environment.

NOW THEREFORE, the State Engineer orders:

1. All applications pending and any new filings for the appropriation of water from the carbonate-rock aquifer system in Coyote Springs Valley (Basin 210), Black Mountains Area (Basin 215), Garnet Valley (Basin 216), Hidden Valley (Basin 217), Muddy River Springs aka as Upper Moapa Valley (Basin 219), and Lower Moapa Valley (Basin 220) will be held in abeyance until further information is obtained by stressing the aquifer by those water right permits already issued to appropriate water from the carbonate-rock aquifer system.

2. While the studies proposed in 1985 were a beginning, those studies indicated that large-scale developments with sustained withdrawals of water from the carbonate-rock aquifers would result in water-level declines and depletion of stored water, but that isolated smaller groundwater developments or developments of limited duration may result in water-level declines and springflow reductions of manageable and acceptable magnitudes. However, very little additional information based on hard science has been produced since that time. Nevada Revised Statute § 533.368 provides the State Engineer with the authority to withhold action on pending applications and to advise the applicant of the need for additional study. The State Engineer finds that further hydrological study is needed before a final determination can be made on carbonate-rock aquifer system water right applications in the referenced basins.

3. The State Engineer, in conjunction with those identified below as applying for additional water rights and already having an interest in water rights permitted from the carbonate-rock aquifer system, or their successors in interest, will conduct a study to provide information on the effect of pumpage of those water rights which have already been issued from the carbonate-rock aquifer. The entities that shall participate in the study must at a minimum include:

Las Vegas Valley Water District
Southern Nevada Water Authority
Coyote Springs Investment, LLC
Nevada Power Company
Moapa Valley Water District.

The study must cover a 5-year minimum period during which at least 50% of the water rights currently permitted in the Coyote Springs Valley groundwater basin are pumped for at least 2 consecutive years.

4. These referenced applicants or permittees shall bear the cost of the study, and a cash deposit divided pro rata among them will be required as set forth in NRS § 533.368(3) after a determination of the estimate of cost to complete the study.

5. The State Engineer will arrange meetings between the State Engineer and the Las Vegas Valley Water District, Southern Nevada Water Authority, Coyote Springs Investment, LLC, Nevada Power Company, and Moapa Valley Water District, or their successors, and the governing bodies of the counties in which there are proposed points of diversion and places of use under their pending applications concerning the scope of the study.

6. The State Engineer orders the Las Vegas Valley Water District, Southern Nevada Water Authority, Coyote Springs Investment, LLC, Nevada Power Company, Moapa Valley Water District, Dry Lake Water Company, LLC, Republic Environmental Technologies, Inc., Chemical Lime Co., Nevada Cogeneration Associates, or their successors, who presently hold water rights authorized for appropriation from the carbonate-rock aquifer, to provide the other parties to the study and the State Engineer with data on a quarterly basis as to the rate at which water was diverted under the specific water right permits issued, total acre-feet diverted per month, and monthly water level measurements

7. After the study period, the Las Vegas Valley Water District; Southern Nevada Water Authority; Coyote Springs Investment, LLC; Nevada Power Company; and Moapa Valley Water District are ordered to file with the State Engineer, within 180 days of the end of the fifth consecutive year, a report as to the information obtained and any impacts seen to the groundwater or surfacewater resources of the carbonate-rock aquifer or alluvial aquifer systems from the pumping of those rights presently permitted.

8. At the end of the study period, the Las Vegas Valley Water District/Southern Nevada Water Authority will update Exhibit 54 from the July 2001 hearings in order to show the State Engineer the effects, if any, of the water it requested for appropriation under Applications 54055 - 54059, inclusive, as they are filed. The State Engineer will then make a determination if he has sufficient information to proceed with ruling on those applications for which hearings have already been conducted, i.e., Las Vegas Valley Water District (Applications 54055 - 54059, inclusive) and Coyote Springs Investment, LLC (Applications 63272 - 63276, inclusive, and 63867 -63876, inclusive), and other applications pending for the appropriation of water from the carbonate-rock aquifer system.

HUGH RICCI, P.E.
State Engineer

Dated at Carson City, Nevada,

this 8th day of March, 2002

CERTIFICATE OF SERVICE

I, the undersigned, declare under penalty of perjury, that I am an employee of the Nevada Division of Water Resources, that I am over the age of eighteen (18) years, and that I am not a party to, nor interested in, this action. On this date, I mailed a true and correct copy of Nevada Division of Water Resources' Order No. 1169, addressed to the following:

Las Vegas Valley Water District
Attn: Kay Brothers
1001 S. Valley View
Las Vegas, NV 89153
Cert. Mail #7000 0520 0023 8555 9034

Coyote Springs Investment, L.L.C.
7755 Spanish Springs Road
Sparks, NV 89436
Cert. Mail #7000 0520 0023 8555 9041

C.S. Inc.
Judy Kuban
1625 Wendy Way
Reno, NV 89509
Cert. Mail #7000 0520 0023 8555 9058

Dry Lake Water, LLC
2701 North Tenaya Way, Suite 200
Las Vegas, NV 89128
Cert. Mail #7000 0520 0023 8555 9065

Bonneville Nevada Corp.
257 East 200 South, Suite 800
Salt Lake City, UT 84111
Cert. Mail #7000 0520 0023 8555 9072

C.O. Myers, Exec. Dir.
Nevada Cogeneration Ass.
P.O. Box 81378
Bakersfield, CA 93380
Cert. Mail #7000 0520 0023 8555 9089

Nevada Power Co.
Attn: Craig York
P.O. Box 230
Las Vegas, NV 89151-0001
Cert. Mail #7000 0520 0023 8555 9096

Oxford Energy of Nevada, Inc.
3510 Unocal Place
Santa Rosa, CA 95403
Cert. Mail #7000 0520 0023 8555 9102

James W. Adams
7439 La Palma Ave., Suite 234
Buena Park, CA 90620
Cert. Mail #7000 0520 0023 8555 9119

Stallion Sand & Gravel, LLC
624 Casa del Norte
North Las Vegas, NV 89031
Cert. Mail #7000 0520 0023 8555 9126

Moapa Band of Paiute Indians
P.O. Box 340
Moapa, NV 89025
Cert. Mail #7000 0520 0023 8558 4562

Moapa Valley Water District
P.O. Box 257
Logandale, NV 89021
Cert. Mail #7000 0520 0023 8558 4579

Three Kids Enterprises
4055 S. Spencer St., Suite 106
Las Vegas, NV 89119
Cert. Mail #7000 0520 0023 8558 4586

Sandia Construction Inc.
c/o Cameron Adams
Box 1297
Susanville, CA 96103
Cert. Mail #7000 0520 0023 8558 4593

Nevada Cogneration Associates
420 N. Nellis Blvd., #A3-148
Las Vegas, NV 89110
Cert. Mail #7000 0520 0023 8558 4609

N. Burgess
420 N. Nellis Blvd., #A3-117
Las Vegas, NV 89110
Cert. Mail #7000 0520 0023 8558 4616

North Valley Holdings
500 Damonte Ranch Parkway, Suite 1056
Reno, NV 89511
Cert. Mail #7000 0520 0023 8558 4623

Michael Buschelman
P.O. Box 51371
Sparks, NV 89435
Cert. Mail #7000 0520 0023 8558 4630

William Penn
CMS Generation Co.
330 Town Center Drive, Ste. 1100
Dearborn, MI 48126
Cert. Mail #7000 0520 0023 8558 4647

Thomas Shelton
CMS Generation Co.
2154 Hastings Ct.
Santa Rosa, CA 95495-8577
Cert. Mail #7000 0520 0023 8558 4654

Wyman Engineering Consultants
P.O. Box 60473
Boulder City, NV 89006-0473
Cert. Mail #7000 0520 0023 8558 4661

John E. Hiatt
8180 Placid St.
Las Vegas, NV 89123
Cert. Mail #7000 0520 0023 8558 4678

City of Caliente
Attn: George T. Rowe, Mayor
P.O. Box 158
Caliente, NV 89008
Cert. Mail #7000 0520 0023 8558 4685

County of Nye
P.O. Box 1767
Tonopah, NV 89049
Cert. Mail #7000 0520 0023 8558 4692

Ely Shoshone Tribe
16 Shoshone Circle
Ely, NV 89301
Cert. Mail #7000 0520 0023 8558 4708

Lincoln County, Board of Commissioners
P.O. Box 90
Pioche, NV 89043
Cert. Mail #7000 0520 0023 8558 4715

Clark County Commissioners
500 S. Grand Central Parkway
Las Vegas, NV 89106-4506
Cert. Mail #7000 0520 0023 8558 4807

Muddy Valley Irrigation District
P.O. Box 160
Logandale, NV 89021
Cert. Mail #7000 0520 0023 8558 4722

U.S. Bureau of Indian Affairs
Attn: Barry Welch
P.O. Box 10
Phoenix, Az. 85001
Cert. Mail #7000 0520 0023 8558 4739

U.S.D.I., B.L.M.
Attn: Ben F. Collins, District Manager
P.O. Box 26569
Las Vegas, NV 89126
Cert. Mail #7000 0520 0023 8558 4746

U.S. Fish and Wildlife Service
911 NE 11th Ave.
Portland, OR 97232-4184
Cert. Mail #7000 0520 0023 8558 4753

U.S. National Park Service
Dan McGlothlin
1201 Oak Ridge Drive, Suite 250
Fort Collins, CO 80525
Cert. Mail #7000 0520 0023 8558 4760

Republic Environmental Technologies, Inc.
770 E. Sahara Ave.
Las Vegas, NV 89104
Cert. Mail #7000 0520 0023 8558 4777

Chemical Lime Co.
P.O. Box 3609
North Las Vegas, NV 89036
Cert. Mail #7000 0520 0023 8558 4784

Nevada Cogeneration Associates
420 N. Nellis Blvd., A3-148 and 117
Las Vegas, NV 89110
Cert. Mail #7000 0520 0023 8558 4791

Richard Berley/Mark Slonim
Ziontz, Chestnut, Varnell, Berley and Slonim
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Seattle, WA 98121

Robert Johnston
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Ross de Lipkau
Marshall Hill Cassas & de Lipkau
P.O. Box 2790
Reno, NV 89505

Peter Fahmy
U.S. Dept. of Interior
755 Parfet St., Suite 151
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Robert Marshall
Marshall Hill Cassas & deLipkau
P.O. Box 2790
Reno, NV 89505

Byron Mills
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Las Vegas, NV 89101

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U.S. Dept. of Interior
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Allison, MacKenzie, Hartman, et. al.
P.O. Box 646
Carson City, NV 89702

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Frank Flaherty
Dyer, Lawrence, Cooney & Penrose
2805 N. Mountain St.
Carson City, NV 89703

Harvey Whittemore
Carl Savely
Lionel, Sawyer & Collins
50 West Liberty St. Suite 1100
Reno, NV 89501

Don Winter
Agent C.S. Inc.
P.O. Box 35136
Las Vegas, NV 89133

Charles Cave
2325 W. Charleston Blvd.
Las Vegas, NV 89102

Dale Ferguson
Woodburn & Wedge
6100 Neil Road, Ste. 500
Reno, NV 89511

Mark Stock
Global Hydrologic Services, Inc.
561 Keystone Ave. #200
Reno, NV 89503

Linda Bowman
540 Hammil Lane
Reno, NV 89511

George Benesch
P.O. Box 3498
Reno, NV 89505

Dated this 8 day of March, 2002.

Sandra Allen

Exhibit 5

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

IN THE MATTER OF APPLICATIONS 54055, 54056, 54057, 54058, 54059, 63272, 63273, 63274, 63275, 63276, 63867, 63868, 63869, 63870, 63871, 63872, 63873, 63874, 63875 AND 63876 FILED TO APPROPRIATE THE UNDERGROUND WATERS OF THE COYOTE SPRING VALLEY HYDROGRAPHIC BASIN (210), CLARK COUNTY AND LINCOLN COUNTY, NEVADA.

RULING

#6254

GENERAL

I.

Applications 54055, 54056, 54057, 54058 and 54059 were filed on October 17, 1989, by the Las Vegas Valley Water District (LVVWD) to appropriate 6.0 cubic feet per second (cfs) under Applications 54055, 54056 and 54057 and 10 cfs under Applications 54058 and 54059 for a total of 27,510 acre-feet annually (afa) of groundwater from the Coyote Spring Valley Hydrographic Basin for municipal and domestic purposes. The proposed points of diversion are described as being located as follows:

Application 54055 within the SE¼ SW¼ of Section 5, T.13S., R.63E., M.D.B.&M.

Application 54056 within the SE¼ SE¼ of Section 32, T.13S., R.63E., M.D.B.&M.

Application 54057 within the SE¼ NW¼ of Section 16, T.14S., R.63E., M.D.B.&M.

Application 54058 within the NE¼ NE¼ of Section 1, T.13S., R.63E., M.D.B.&M.

Application 54059 within the NW¼ NW¼ of Section 19, T.13S., R.64E., M.D.B.&M.

The proposed place of use is described as being located within Clark, Lincoln, Nye and White Pine counties as more specifically described and defined in Nevada Revised Statutes (NRS) §§ 243.035-243.040 (Clark County), NRS §§ 243.210-243.225 (Lincoln County), NRS §§ 243.275-243.315 (Nye County), and NRS §§ 243.365-243.385 (White Pine County). Item 12 of the applications indicates that the water would be used within the LVVWD service

area and may also be served to users within Lincoln County, Nye County and White Pine County.[1]

II.

Applications 54055, 54056, 54057, 54058 and 54059 were timely protested by many people or entities.[2]

Application 54055 was timely protested by the Muddy Valley Irrigation Company, U.S. Department of Interior Bureau of Land Management, Las Vegas Fly Fishing Club, City of Caliente, Moapa Band of Paiute Indians, County of White Pine and City of Ely, U.S. Department of Interior Fish and Wildlife Service, County of Nye, U.S. Department of Interior National Park Service, Unincorporated Town of Pahrump, Lincoln County Board of Commissioners, and Christopher Brown.[3]

Application 54056 was timely protested by the Muddy Valley Irrigation Company, U.S. Department of Interior Bureau of Land Management, Las Vegas Fly Fishing Club, City of Caliente, Moapa Band of Paiute Indians, County of White Pine and City of Ely, U.S. Department of Interior Fish and Wildlife Service, County of Nye, U.S. Department of Interior National Park Service, Unincorporated Town of Pahrump, Lincoln County Board of Commissioners, Aerojet Nevada, and Charles F. Hilfenhaus, Jr.[4]

Application 54057 was timely protested by the Muddy Valley Irrigation Company, U.S. Department of Interior Bureau of Land Management, Las Vegas Fly Fishing Club, City of Caliente, Moapa Band of Paiute Indians, County of White Pine and City of Ely, U.S. Department of Interior Fish and Wildlife Service, County of Nye, U.S. Department of Interior National Park Service, Unincorporated Town of Pahrump, Lincoln County Board of Commissioners, and Paula Engel.[5]

Application 54058 was timely protested by the Muddy Valley Irrigation Company, Las Vegas Fly Fishing Club, City of Caliente, Moapa Band of Paiute Indians, County of White Pine and City of Ely, U.S. Department of Interior Fish and Wildlife Service, County of Nye, U.S.

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[1] File Nos. 54055 through 54059, official records in the Office of the State Engineer. Exhibit Nos. 2, 3, 4, 5 and 6, Public Administrative Hearing before the State Engineer, July 16-20, 23-24, August 31, 2001, official records in the Office of the State Engineer (LVVWD Hearing).
[2] File Nos. 54055 through 54059, official records in the office of the State Engineer and Exhibit Nos. 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21 and 22 LVVWD Hearing.
[3] The Las Vegas Fly Fishing Club and Christopher Brown did not appear or participate in the hearing.
[4] The Las Vegas Fly Fishing Club, Aerojet Nevada, and Charles F. Hilfenhaus, Jr. did not appear or participate in the hearing.
[5] The Las Vegas Fly Fishing Club and Paula Engel did not appear or participate in the hearing.

Department of Interior National Park Service, Unincorporated Town of Pahrump, Lincoln County Board of Commissioners, James H. Fincher, and Debra Richardson.[6]

Application 54059 was timely protested by the Muddy Valley Irrigation Company, Las Vegas Fly Fishing Club, City of Caliente, Moapa Band of Paiute Indians, County of White Pine and City of Ely, U.S. Department of Interior Fish and Wildlife Service, County of Nye, U.S. Department of Interior National Park Service, Unincorporated Town of Pahrump, Lincoln County Board of Commissioners, James H. Fincher, Ely Shoshone Tribe, and Carolyn Morrison.[7]

The protests filed by the Federal agencies U.S. Department of Interior Bureau of Land Management, Fish and Wildlife Service and National Park Service were withdrawn by stipulation with the Applicant LVVWD.[8] The protests by the Muddy Valley Irrigation Company were withdrawn,[9] as were the protests by the Lincoln County Board of Commissioners, and White Pine County and the City of Ely, Nye County and Unincorporated Town of Pahrump.[10]

III.

The protests to Applications 54055, 54056, 54057, 54058 and 54059 by the Moapa Band of Paiute Indians are summarized as follows:[11]

1. The applications seek to extract and export water from federal lands to which the LVVWD holds no interest; therefore, the State Engineer has no authority to issue a permit.
2. There are insufficient descriptions in the applications of the proposed works of diversion, costs of such works, time required to construct said works, and number of persons to be served.
3. It would be detrimental to the public interest to approve the applications before careful consideration of the environmental and socio-economic issues they raise. The State Engineer should require an independent assessment of these issues and obtain additional information on a water resource plan for the Las Vegas Valley.

[6] The Las Vegas Fly Fishing Club, James H. Fincher, and Debra Richardson did not appear or participate in the hearing.
[7] The Las Vegas Fly Fishing Club, James H. Fincher, Ely Shoshone Tribe and Carolyn Morrison did not appear or participate in the hearing.
[8] Exhibit No. 24 LVVWD Hearing.
[9] Exhibit No. 25 LVVWD Hearing.
[10] File Nos. 54055 through 54059, official records in the Office of the State Engineer.
[11] Exhibit No. 10 LVVWD Hearing.

4. The proposed use, in combination with the other LVVWD applications, will conflict with existing rights, including the rights of the Moapa Band of Paiute Indians to the waters of the Muddy River and to groundwater under the Moapa Indian Reservation.
5. The proposed use is unlawful and threatens to prove detrimental to the public interest because the LVVWD lacks the financial resources and rights of entry to construct the necessary works and transport the water to the intended place of use.
6. Granting applications for massive amounts of water would conflict with federal law and policy regarding use or disposition of federal lands.
7. The quantities applied for exceed the annual recharge and safe yield and will result in groundwater mining resulting in adverse impacts on the location and quantity of water resources.
8. The use of the water will affect water quality and thus impair existing uses.
9. The use of the water will degrade wetlands and riparian habitats, including those on public lands in Death Valley National Monument, Great Basin National Park, Lake Mead National Recreation Area and national wildlife refuge units.
10. The use of the water will damage wetlands, springs, seeps and phreatophytes, which provide water and habitat for migratory species, other wildlife, grazing livestock and other existing uses.
11. The use of the water will jeopardize the existence of endangered and threatened species including, but not limited to, the desert tortoise, prevent or interfere with the conservation of such species, and take or harm such species.
12. The use of the water will impair environmental, scenic and recreational values that the State holds in trust for all of its citizens.
13. The use of the water will encourage waste and discourage reasonable conservation measures within the LVVWD's service area.
14. The use of the water will lead to regional air pollution (particularly carbon monoxide and particulates) in violation of law.

IV.

The protests to Applications 54055, 54056, 54057, 54058 and 54059 by the City of Caliente are summarized as follows:[12]

[12] Exhibit No. 9 LVVWD Hearing.

1. These applications, combined with the others filed at the same time, seek a combined appropriation of 804,195 acre-feet of groundwater and the diversion and the exportation of such a quantity of water will lower the static water level in Coyote Spring Valley, adversely affect the quality of the remaining groundwater and threaten springs, seeps and phreatophytes, which provide water and habitat critical to the survival of wildlife and grazing livestock.
2. There is insufficient water to support the applications.
3. The diversion and export of the water in the applied for quantity will deprive the area of origin of water needed to protect and enhance its environment and economic well being, and destroy environmental, ecological, scenic and recreational values the State holds in trust for all its citizens.
4. It would threaten to prove detrimental to the public interest to grant the applications in absence of comprehensive planning including, but not limited to, environmental impacts, costs and socio-economic considerations, and a water resource plan.
5. The use of the water will conflict with existing rights because it will exceed the safe yield of the basin and unreasonably lower the static water level and sanction water mining. The use of water under the applications will cause a drop in the water table and degrade water quality.
6. The use of the water will threaten to prove detrimental to the public interest in that it will likely jeopardize the continued existence of endangered and threatened species, will prevent and interfere with the conservation of those species, take or harm those species, and interfere with the purposes for which federal lands are managed under federal statutes including, but not limited to, the Federal Land Use Policy Act of 1976 [sic].
7. The approval of the applications will sanction and encourage the willful waste of water that has been allowed by the LVVWD.
8. The applications should be denied because the LVVWD has not obtained the necessary legal interest in the federal lands to extract, develop and transport the water from the proposed points of diversion to the place of use.
9. The use of the water will perpetuate and increase inefficient use of water in the LVVWD service area.
10. The LVVWD lacks the financial ability to develop the resource and transport it to the intended place of use.

11. The applications are deficient in that they fail to include a description of the place of use, works of diversion, estimated cost of the works and estimated time to place the water to beneficial use.
12. The use of the water will exceed the safe yield of the basin thereby adversely affecting phreatophytes and creating air pollution in violation of State and Federal laws.
13. The applications should not be granted as the LVVWD has failed to provide information for the State Engineer to sufficiently guard the public interest. The adverse effects cannot be properly evaluated without an independent, formal and publically-reviewable assessment of the cumulative impacts of the proposed extraction, mitigation measures, alternatives to the project and implementation of water management strategies.
14. The applications should be denied because the population projections are unrealistic and ignore constraints to growth.
15. The applications should be denied because the conservation programs instituted by the LVVWD are ineffective.
16. The applications should be denied because the cost of the project will result in rate increases that will reduce demand thereby rendering the project unnecessary.
17. The applications should be denied because it will allow the LVVWD to lock-up water resources for use beyond current planning horizons.
18. The applications should be denied because current trends in housing, plumbing fixtures standards and demographic patterns all suggest that simplistic water demand forecasts overstate future need.
19. The applications should be denied because the current per capita water consumption rate for LVVWD is too high and there are most cost-effective alternatives.

V.

Applications 63272, 63273, 63274, 63275, 63276, 63867, 63868, 63869, 63870, 63871, 63872, 63873, 63874, 63875 and 63876 were filed on July 24, 1997, and February 24, 1998, by Aerojet General Corporation and assigned to Coyote Springs Investment, LLC (CSI) to appropriate 10.0 cfs, not to exceed 7,239 afa under each application of groundwater from the Coyote Spring Valley Hydrographic Basin for quasi-municipal purposes. The proposed points of diversion are described as being located as follows:

Application 63272 within the SW¼ SW¼ of Section 12, T.12S., R.63E., M.D.B.&M.
Application 63273 within the NW¼ NW¼ of Section 12, T.12S., R.63E., M.D.B.&M.
Application 63274 within the NE¼ NW¼ of Section 15, T.13S., R.63E., M.D.B.&M.
Application 63275 within the NE¼ NE¼ of Section 11, T.13S., R.63E., M.D.B.&M.
Application 63276 within the SW¼ SE¼ of Section 13, T.11S., R.63E., M.D.B.&M.
Application 63867 within the NW¼ SW¼ of Section 12, T.13S., R.63E., M.D.B.&M.
Application 63868 within the NW¼ SW¼ of Section 13, T.13S., R.63E., M.D.B.&M.
Application 63869 within the SW¼ SW¼ of Section 11, T.13S., R.63E., M.D.B.&M.
Application 63870 within the SE¼ SE¼ of Section 12, T.13S., R.63E., M.D.B.&M.
Application 63871 within the SE¼ SE¼ of Section 13, T.13S., R.63E., M.D.B.&M.
Application 63872 within the SE¼ SW¼ of Section 11, T.12S., R.63E., M.D.B.&M.
Application 63873 within the SW¼ SW¼ of Section 25, T.12S., R.63E., M.D.B.&M.
Application 63874 within the SW¼ SW¼ of Section 13, T.12S., R.63E., M.D.B.&M.
Application 63875 within the SW¼ SW¼ of Section 36, T.11S., R.63E., M.D.B.&M.
Application 63876 within the NE¼ NE¼ of Section 22, T.11S., R.63E., M.D.B.&M.

The proposed place of use is described as being located within the S½ of Section 13, Sections 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 32, 33, 34 and 35 and W½ of Section 36, T.11S., R.63E., M.D.B.&M.; Lots 3 and 4, S½ NW¼ and SW¼ of Section 1, Lots 1, 2, 3 and 4, S½ N½ and S½ of Section 2, Lots 1, 2, 3 and 4, S½ N½ and S½ of Section 3, Sections 8, 10 and 11, and W½ W½ of Section 12, W½ of Section 13, Sections 14, 17, 20, N½ and SE¼ of Section 23, W½ of Section 24, Section 25, E½ of Section 26 and Section 36, T.12S., R.63E., M.D.B.&M.; Lot 1, E½ SW¼ NE¼, SE¼ NE¼, E½ W½ SE¼ and E½ SE¼ of Section 1 and Sections 9 and 16, T.13S., R.63E., M.D.B.&M. The remarks section of Applications 63272 through 63276 indicate that the total duty of water sought under Applications 63272 through 63276 is 36,195 afa. The remarks section of Applications 63867, 63868, 63869, 63870, 63871, 63872, 63873, 63874, 63875 and 63876 indicate that the total duty of water sought under the applications is in addition to and non-supplemental to any water sought under Applications 63272 through 63276, which equates to an additional 72,390 afa for a total duty of 108,585 afa.[13]

[13] Exhibit Nos. 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15 and 16, Public Administrative Hearing before the State Engineer, August 20-24, 27-28, 2001, official records in the Office of the State Engineer (CSI Hearing).

VI.

Applications 63272, 63273, 63275, and 63276 were timely protested by the following people or entities: U.S. Department of Interior National Park Service and Nevada Power Company.[14]

Applications 63273 and 63274 were timely protested by the U.S. Department of Interior National Park Service.[15]

Applications 63867, 63868, 63869, 63870, 63871, 63872, 63873, 63874, 63875 and 63876 were timely protested by the following people or entities: U.S. Department of Interior National Park Service, Nevada Power Company, U.S. Department of Interior Bureau of Indian Affairs, U.S. Department of Interior Fish and Wildlife Service, Las Vegas Valley Water District and Moapa Valley Water District.[16]

Applications 63272, 63274, 63275, 63276, 63867, 63868, 63869, 63870, 63871, 63872, 63873, 63874, 63875 and 63876 were protested on various grounds summarized as follows:

1. The perennial yield of Coyote Spring Valley is about 2,000 afa from precipitation recharge. Groundwater inflow to Coyote Spring Valley is about 35,000 afa and originates from basins upgradient from the valley. Discharge from the valley is primarily by subsurface outflow (about 37,000 afa) to the Muddy River Springs Area and the Muddy River. Rights to the water in the Muddy River were decreed by the Tenth Judicial District Court of the State of Nevada. The committed resources in the area of Coyote Spring Valley and the Muddy River Springs Area nearly equal the estimated groundwater underflow in the area and recharge; thus, there is no water available for appropriation in Coyote Spring Valley or the Muddy River Springs Area.
2. Coyote Spring Valley is already over-appropriated.
3. The use of the water will impair the water rights of the United States by reducing the discharge of the Muddy River from which others hold senior water rights.
4. The use of the water will reduce the discharge of springs at Lake Mead National Recreation Area and impair water rights of the United States on those spring sources.

[14] Exhibit Nos. 17, 18 and 19 CSI Hearing.
[15] Exhibit No. 17 CSI Hearing.
[16] Exhibit Nos. 20, 21, 22, 23, 24 and 25 CSI Hearing.

5. The use of the water will threaten to prove detrimental to the public interest in that the groundwater resources of Coyote Spring Valley will be mined and the water and water-related resources of the Lake Mead National Recreation Area will be impaired.
6. No further permits should be issued in the Coyote Spring Valley until an approved monitoring plan has been established.
7. The use of the water could impair the senior water rights of the Moapa Valley Water District in the downgradient basin (Muddy River Springs Area - Basin 219). The Moapa Valley Water District provides public water supplies from springs (Baldwin Spring Permit 28791, and Pipeline Jones Spring Permit 22739), and wells (MX well Permit 46932 and Arrow Canyon Well Permits 52520, 55450, and 58269) and use of water under the applications has the potential to impact the quantity and quality of these rights.
8. Granting the applications would not be in the public interest.
9. Model simulations suggest there may be an immediate and substantial impact on spring discharge from the proposed withdrawals with the effect especially pronounced at the Muddy River Springs. The results from the model suggest that even the current level of pumping of already permitted rights (8,600 afa permitted to Aerojet) will affect spring discharge at the Muddy River Springs.
10. The use of the water could impair the senior water rights of the U.S. Fish and Wildlife Service at the Moapa Valley National Wildlife Refuge, which is 10 to 20 miles east of the proposed points of diversion and at the Pahranagat National Wildlife Refuge, which is 20 to 30 miles north of the proposed points of diversion. The springs that emerge at these national wildlife refuges are part of the White River Flow System, which is the same source of water the Applicant CSI proposes to appropriate and Coyote Spring Valley is physically and hydrologically connected to these regional springs.
11. The use of the water may damage habitat for species that are endangered or threatened under the Endangered Species Act or other species of concern; therefore, the use of the water would threaten to prove detrimental to the public interest. This includes the endangered Moapa dace, a minnow that is endemic to the headwaters of the Muddy River system, on the Moapa Valley National Wildlife Refuge, the endangered southwest willow flycatcher and the threatened bald eagle found at the Pahranagat National Wildlife Refuge.

12. The use of the water could impact groundwater resources beneath the Moapa Indian Reservation and the surface waters of the Muddy River.
13. The use of the water will impair the rights of the U.S. National Park Service to the Muddy River and to the springs at the Lake Mead National Recreation Area.
14. The use of the water is not in the public interest because it would result in groundwater mining.
15. The use of the water is not in the public interest given the potential sale of existing water rights by the Applicant only to apply for new water rights is speculative and indicates the Applicant has no intention of applying the water to beneficial use.

VII.

By Notice of Pre-hearing Conference dated September 15, 2000, the State Engineer held a pre-hearing conference on October 25, 2000, in the matter of the above-referenced applications.

VIII.

After notice to all parties, the State Engineer held two separate hearings on the above-referenced applications. In the matter of the LVVWD Applications 54055 through 54059, the State Engineer held a public administrative hearing on July 16-20, 23-24, and August 31, 2001. In the matter of the CSI's Applications 63272, 63273, 63274, 63275, 63276, 63867, 63868, 63869, 63870, 63871, 63872, 63873, 63874, 63875, and 63876, the State Engineer held a public administrative hearing on August 20-24, 27 and 28, 2001.

FINDINGS OF FACT

I.

Order 1169 and 1169A

After the close of the above-referenced hearings, the State Engineer issued State Engineer's Order No. 1169 (Order 1169) on March 8, 2002. In that order, the State Engineer addressed what is known as the carbonate-rock aquifers, which are groundwater aquifers that exist underneath a significant portion of eastern and southern Nevada. The carbonate-rock aquifers have long been recognized as a potential water resource, but for which the water resources are not well defined, the hydrology and geology of the area are complex and data is sparse. The State Engineer noted that since 1984 it has been known that to arrive at some reasonable understanding of the carbonate-rock aquifer system, substantial amounts of money would be required to develop the science, that a significant period of study would be required,

and "unless this understanding is reached, the development of carbonate water is risky and the resultant effects may be disastrous for the developers and current users."[17]

The State Engineer noted that previous studies suggested that confidence in predictions regarding the effect of development was low and would remain low until observations of the initial hydrologic results of development were analyzed. The State Engineer was concerned that the adverse effects of development would overshadow the benefits and found that the development of the carbonate-rock aquifer system must be undertaken in gradual stages together with adequate monitoring. The State Engineer noted that it is unknown what additional quantity, if any, of groundwater could be appropriated in the Coyote Spring Valley Hydrographic Basin without unreasonable and irreversible impacts. The State Engineer pointed out that the Applicants' own experts were unable to make a suggestion as to what part of the water budget could be captured without a great deal of uncertainty and that the question could not be resolved without stressing the system.

Order 1169 noted that testimony and evidence indicated approximately 50,000 afa of underflow comes into the Coyote Spring Valley from northern groundwater basins and approximately 53,000 afa of subsurface water flows out of the Coyote Spring Valley. Of that 53,000 afa that flows out of Coyote Spring Valley, approximately 37,000 afa of water discharges at the Muddy River Springs, which is appropriated under the Muddy River Decree.[18] Testimony and evidence indicated another approximately 16,000-17,000 afa is believed to flow to the groundwater basins farther south. Additionally, the State Engineer found that another 50,465 afa of groundwater was already appropriated in Coyote Spring Valley and the surrounding basins identified as Black Mountains Area, Garnet Valley, Hidden Valley, Muddy River Springs Area (a.k.a. Upper Moapa Basin) and Lower Moapa Valley Hydrographic Basins. Because very few of these groundwater rights had actually been pumped, and water rights already issued in Coyote Spring Valley alone equaled the estimate of the amount of flow that by-passes the region, the State Engineer ordered additional study before consideration of granting any additional water rights in Coyote Spring Valley.

Order 1169 ordered that all applications for new appropriations from the carbonate-rock aquifer system in Coyote Spring Valley (Basin 210), Black Mountains Area (Basin 215), Garnet

[17] State Engineer's Order No. 1169, dated March 8, 2002, p. 2, official records in the Office of the State Engineer.
[18] Judgment and Decree, *In the Matter of the Determination of the Relative Rights In and To the Waters of the Muddy River and Its Tributaries in Clark County, State of Nevada*, March 12, 1920, Tenth Judicial District Court of the State of Nevada, In and For the County of Clark.

Valley (Basin 216), Hidden Valley (Basin 217), Muddy River Springs Area a.k.a. Upper Moapa Valley (Basin 219) and Lower Moapa Valley (Basin 220) would be held in abeyance until further information could be gathered by stressing the aquifer system by way of a pumping test. *See*, Attachment 1, Location Map of the Order 1169 Hydrographic Basins, Clark County and Lincoln County, Nevada. Unlike other basins in Nevada, the above listed basins were tied together in Order 1169 because it was well established that the spring discharge in the Muddy River Springs Area was produced from a distinct regional carbonate-rock aquifer that underlies and uniquely connects the basins. There is a very high hydraulic transmissivity found in most of this area of the carbonate-rock aquifer which results in a flat potentiometric surface in these basins. Changes in the potentiometric surface in any one of these basins occur in lockstep directly affecting the other basins, further demonstrating the regional nature of the aquifer across these basins.

In Order 1169, the State Engineer ordered a study under the provisions of NRS § 533.368 that required at least 50% (8,050 afa) of the water rights then currently permitted in Coyote Spring Valley be pumped for at least two consecutive years, and that data be gathered from others who currently held water rights in the Order 1169 area. At the end of the study, the study participants, which included the Las Vegas Valley Water District, Southern Nevada Water Authority, Coyote Springs Investment, LLC, Nevada Power Company, Moapa Valley Water District, Dry Lake Water Company, LLC, Republic Technologies, Inc., Chemical Lime Company, Nevada Cogeneration Associates or their successors, were required to submit reports identifying the information obtained and any impacts seen to the groundwater or surface water resources of the carbonate-rock aquifer system or alluvial system from the pumping. The State Engineer also ordered the LVVWD to update a model it had presented during the course of its case-in-chief at the LVVWD hearing with the new data. The State Engineer indicated that he would then decide whether sufficient information had been gathered to act on the pending applications. By State Engineer's Ruling No. 5115, dated April 18, 2002, the California Wash Hydrographic Basin (Basin 218) was included in Order 1169 because of its hydrologic connection.

By letter dated May 26, 2010, the Moapa Band of Paiute Indians indicated their concern that the pumping test itself was likely to impact water resources at the Muddy River Springs, which are the source of water for the Muddy River.

At a meeting of the Order 1169 study participants on June 22, 2010, each of the participants agreed that the pumping test would provide sufficient information even if the minimum 8,050 afa was not pumped. In response to that meeting, in a letter dated July 1, 2010, the State Engineer expressed his concern that it had been eight years since the pumping test was ordered, that the pumping requirements of the study had not even begun, and found that decisions regarding future appropriations in the basins subject to the order could not be deferred indefinitely. The State Engineer ordered that the test was to go forward even if the 8,050 afa minimum amount of pumping designated in Order 1169 was not pumped.

On December 21, 2012, the State Engineer issued Order 1169A, wherein he revised the requirements of Order 1169, indicating his belief that sufficient information had been obtained and declaring the pumping test completed as of December 31, 2012. Order 1169A provided the study participants the opportunity to address the information obtained from the study/pumping test, the impacts of pumping, and to opine as to the availability of additional water resources to support the pending applications. These reports were due in the Office of the State Engineer by June 28, 2013. The State Engineer finds that reports were submitted in a timely manner and that all the requirements of Order 1169 and 1169A have been satisfied.

II.

Order 1169 and 1169A Pumping Test

The Order 1169 pumping test originally required the participants to pump 8,050 afa from wells in Coyote Spring Valley for two years. As stated above, the State Engineer ordered on July 1, 2010, that the test go forward with reduced pumping. The test officially began on November 15, 2010. Water pumped from the MX-5 well was piped to the Moapa Valley Water District municipal infrastructure, and ultimately piped to Bowman Reservoir in Lower Moapa Valley. This water was released from Bowman Reservoir in an open channel to Lake Mead. Water pumped from wells operated by CSI was put to beneficial use in Coyote Spring Valley.

The pumping test officially ended on December 31, 2012, after a period of 25½ months. The total amount pumped between the CSI wells and the MX-5 well during the test period was 11,249 acre-feet, which translates to about 5,290 acre-feet per year, well short of the intended amount to be pumped in the study. There were a number of mechanical problems encountered during the test that required the MX-5 well to shut down. Even without the mechanical issues, the maximum pumping rate would not have resulted in a total pumpage from Coyote Spring Valley of 8,050 afa.

In addition to measuring pumping from wells in Coyote Spring Valley, pumpage was also measured and reported from 30 other wells in the Muddy River Springs Area, Garnet Valley, California Wash, Black Mountains Area, and Lower Meadow Valley Wash. Stream diversions from the Muddy River to the Reid Gardner power plant were reported by NV Energy. Measurements of the natural discharge of the Muddy River and of several of the Muddy River's headwater springs were collected daily. Water-level data were collected for 79 monitoring and pumping wells. Barometric data were collected at three sites; two sites in Coyote Spring Valley and one site in California Wash. The State Engineer finds the pumping test proceeded as required and all of the required data was collected and made available to each of the parties and the public.

III.

Pumping Test Reports

Order 1169A provided the study participants the opportunity to file reports and requested they address three questions: (1) what information was obtained from the study/pumping test; (2) what were the impacts of pumping under the pumping test; and (3) what is the availability of additional water resources to support the pending applications. Reports or letters were submitted by the Southern Nevada Water Authority (SNWA), the U.S. Department of Interior Bureaus of Fish and Wildlife Service, National Park Service and Land Management (DOI Bureaus), Moapa Band of Paiute Indians (MBOP), Moapa Valley Water District (MVWD), Coyote Springs Investment, LLC (CSI), Great Basin Water Network (GBWN) (who was not a party to the hearings or a protestant) and Center for Biological Diversity (CBD) (who also was not a party to the hearings or a protestant).

1. Southern Nevada Water Authority

SNWA prepared a comprehensive report that discusses water levels in monitoring wells throughout the Order 1169 basins and stream flows in the Muddy River Springs Area. As to Question 2, SNWA did not differentiate water-level decline due to pumping at the MX-5 well from other pumping in the area.

SNWA recognized that declines in spring flow occurred at Pedersen and Pederson East springs, and that the spring flows declined as a result of new pumping at the MX-5 well. Decline in flow at Warm Springs West was characterized as minimal, and it did not recognize any other surface flow reductions caused by groundwater pumping at the MX-5 well. SNWA provided figures that illustrate how groundwater levels and some spring flows are highly correlated with

climate. Figure 12 of SNWA's report clearly shows how the long-term declining trend in groundwater levels recovered after the wet winter of 2005.[19] A similar correlation is noted for flows at the Warm Springs West gage, where a declining trend in spring discharge reversed after the winter of 2005.[20] SNWA points out that the flows of the Muddy River at Moapa did not decline during the period of the pumping test and asserts that the river flows are primarily impacted by valley fill pumping, primarily by NV Energy, and not carbonate pumping.

As to the availability of additional water for appropriation, SNWA states that:

> It remains unclear if additional resource development beyond existing permitted rights could take place in Coyote Spring Valley at locations north of the Kane Spring fault in the area near CSMV-3. However, the presence of boundaries and variations in hydraulic conductivity suggest that, at a minimum, these areas may have the potential to be used for redistributing development of existing rights. Whether pending applications in Coyote Spring Valley are approved or denied, in whole or in part, they should be considered in order of priority with all other groundwater applications held in abeyance by Order 1169.[21]

2. Coyote Springs Investment, LLC

CSI submitted a letter in which they stated that they agree with the SNWA report. CSI believes water can be developed in Coyote Spring Valley north of the Kane Springs fault without impacting the Muddy River Springs and that pending applications of both CSI and SNWA should be granted in whole or part.

3. U.S. Department of Interior Bureaus

DOI Bureaus provided documentation and interpretations of the effects of the pumping test as well as predictions of the effects of various pumping scenarios. They analyzed water levels, spring and stream flows, and climate in the Order 1169 basins and some adjacent areas.

DOI Bureaus found the pumping test was sufficient to document the effects of the pumping, identify regional drawdown, predict future effects of pumping on water levels and spring flow, and to determine the availability of water pursuant to the applications. Their analyses of impacts under the test were extensive. They used SeriesSEE[22] to discern and partition the effects of pumping at the MX-5 well from pumping at other locations. Their

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[19] Southern Nevada Water Authority, *Nevada State Engineer Order 1169 and 1169A Study Report*, pp. 23 – 25, June 2013, official records in the Office of the State Engineer.
[20] *Id.* at 26.
[21] *Id.* at 57 - 58.
[22] Halford, K., Garcia, C.A., Fenelon, J., and Mirus, B., 2012, *Advanced methods for modeling water-levels and estimating drawdowns with SeriesSEE, an Excel add-In, U.S. Geological Survey Techniques and Methods 4–F4*, 29 pp.

reported findings are that water-level decline due to MX-5 pumping (drawdown) encompasses 1,100 square miles and extends from northern Coyote Spring Valley through the Muddy River Springs Area, Hidden Valley, Garnet Valley, California Wash, and the northwestern part of the Black Mountains Area. Drawdown due to MX-5 pumping is estimated to be 1 to 1.6 feet in this area. They also found minor drawdown of 0.5 feet or less in the northern part of Coyote Spring Valley north of the Kane Springs Wash fault zone, in disagreement with SNWA. They found that water-level decline did not extend into Lower Moapa Valley. They estimate 80-90% of the pumped groundwater was derived from storage (hence the drawdown) and the remainder from capture of spring flow or from reductions in the flow of the Muddy River.[23]

They completed an in-depth analysis of spring flows in relation to nearby carbonate water levels and found a direct correlation. Measurable flow decline at Pedersen, Plummer and Apcar units and Baldwin Spring are highly correlated with water levels in adjacent carbonate wells. If linear trends continue, spring flow can be estimated as a function of water levels in the adjacent carbonate aquifer. They argue that all pumping from carbonate aquifers will ultimately capture spring flow.

They also compared observed water level changes to water levels simulated in a groundwater flow model of the region.[24,25] The model was updated to include pumping through 2012.[26] If the applications, which are the subject of this ruling, were pumped along with current water rights, they predict springs in the headwaters of the Muddy River, and the Muddy River itself above Moapa, would cease to flow in less than 200 years. The effects would occur much sooner if all of the pending applications held in abeyance pursuant to Order 1169 were granted and pumped. They report that the model under-predicts drawdown, and also would therefore under-predict flow losses in the springs. After analyzing model results and observations made from monitor wells and springs, they believe that pumping at current (Order 1169) rates of less

[23] U.S. Fish and Wildlife Service, U.S. Bureau of Land Management and U.S. National Park Service Order 1169A Report, *Test Impacts and Availability of Water Pursuant to Applications Pending Under Order 1169*, June 28, 2013, official records in the Office of the State Engineer.
[24] Tetra Tech, *Development of a Numerical Groundwater Flow Model of Selected Basins within the Colorado Regional Groundwater Flow System, Southeastern Nevada,* September 28, 2012. References provided along with the DOI Report, official records in the Office of the State Engineer.
[25] Tetra Tech, *Predictions of the Effects of Groundwater Pumping in the Colorado Regional Groundwater Flow System Southeastern Nevada,* September 28, 2012. References provided along with the DOI Report, official records in the Office of the State Engineer.
[26] Tetra Tech, *Comparison of Simulated and Observed Effects of Pumping from MX-5 Using Data Collected to the End of the Order 1169 Test, and Prediction of the Rates of Recovery from the Test,* June 10, 2013. References provided along with the DOI Report, official records in the Office of the State Engineer.

than one-half of existing permits, will result in both of the Pedersen springs going dry in 3 years or less.[27]

The overall conclusions of the DOI Bureaus' report are that the effects of pumping from the MX-5 well are spread out over a 1,100 square-mile area. They suggest that five basins within that area, Coyote Spring Valley, Muddy River Springs Area, Hidden Valley, Garnet Valley, and California Wash should be managed as one hydrographic area because of their uniquely immediate hydrologic connection. Pumping within any of these five basins, with the possible exception of the northernmost part of Coyote Spring Valley, will have substantially similar effects on groundwater levels throughout the area because of the hydrologic connection, and will eventually capture water that discharges in the Muddy River Springs Area.[28]

As to the availability of water pursuant to the pending applications, the DOI Bureaus indicated that their review of the water budget and perennial yield information for Coyote Spring Valley leads to the conclusion that there is no water available for new appropriation within the five-basin area delineated through their groundwater analyses. The five-basin area that the DOI Bureaus referenced includes Coyote Spring Valley, Muddy River Springs Area, Hidden Valley, Garnet Valley and California Wash. They assert that the water budget information and pumping test results suggest that all available water in Coyote Spring Valley is appropriated and that the basin may currently be over-appropriated. Additionally, the groundwater modeling simulation results, which examined progressively greater pumping of pending water right applications in these five basins, provide supporting evidence of the wide-ranging effects that can be expected in these five basins with increased pumping in a very short period of time.

The DOI Bureaus point out that groundwater that was withdrawn in the Coyote Spring Valley over the period of the pumping test is only one-third of the groundwater rights that already exist in the basin. The DOI Bureaus assert that the pumping test provides evidence that even this reduced volume of groundwater pumping cannot be developed long-term without adverse impacts to springs, endangered fish, Federal trust resources, and downstream senior water rights. They argue that the five-basin area uniquely behaves as one connected aquifer, and pumping in any of the basins will have similar effects on the whole. Consequently, they conclude that no additional groundwater is available for appropriation to satisfy the pending

[27] U.S. Fish and Wildlife Service, U.S. Bureau of Land Management and U.S. National Park Service Order 1169A Report, *Test Impacts and Availability of Water Pursuant to Applications Pending Under Order 1169*, p. 85, June 28, 2013, official records in the Office of the State Engineer.
[28] *Id.* at 84.

water right applications that are currently being held in abeyance for this portion of the carbonate-rock aquifer.[29]

4. Moapa Band of Paiute Indians

MBOP provided a report that analyzed varying lines of evidence in addition to data collected during the pumping test. They analyzed water budgets, climatic effects, stream base flow identification, water demand for power generation, and water temperature-electrical conductivity and mixing models. MBOP argues that the drawdown due to MX-5 pumping was significantly less than that cited by the DOI Bureaus, and that the limit of detection of drawdown due to MX-5 pumping extended only five miles from the MX-5 well.[30] Nevertheless, they contend that carbonate pumping in Coyote Spring Valley and Muddy River Springs Area will have a 1:1 impact on Muddy River flows. They interpret total flux of the system in the Muddy River Springs Area as variable, ranging from about 35,000 afa to 42,000 afa, with the average being about 38,000 afa. Their average annual estimate is similar to Eakin's estimate of 36,000 afa.[31] MBOP asserts that some of the regional water-level decline during the period of the pumping test, and much of the annual fluctuation, is attributed to changes in the water level in Lake Mead. MBOP argues that crustal loading and deformation is associated with the rising and falling Lake Mead surface, which in turn causes pore-pressure changes and pore-volume reductions in the carbonate aquifer. They argue that these crustal effects cause carbonate water levels to rise and fall in near tandem with lake levels. They assert that these conditions have resulted in the water-level decline on the MBOP reservation that others have attributed to MX-5 pumping. They also argue for the existence of a southern carbonate aquifer flow field separated from Coyote Spring Valley and the Muddy River Springs Area by a northeasterly-trending barrier. MBOP argues this southern flow field, which includes California Wash, Hidden and Garnet valleys, and portions of the Black Mountains Area, is hydrologically isolated and could be developed without impacting spring flows. They estimate that groundwater supply to the southern flow field is 15,000 to 20,000 afa.[32]

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[29] *Id.* at 5.
[30] Johnson and Mifflin, *Summary of Order 1169 Testing Impacts, per Order 1169A*, p. 25, June 28, 2013, official records in the Office of the State Engineer.
[31] T.E. Eakin, *A Regional Interbasin Ground-water System in The White River Area, Southeastern Nevada,* Water Resources Bulletin No. 33, (Department of Conservation and Natural Resources, Division of Water Resources and U.S. Department of Interior, Geological Survey), p. 264, 1966.
[32] Johnson and Mifflin, *Summary of Order 1169 Testing Impacts, per Order 1169A*, p. 26, June 28, 2013, official records in the Office of the State Engineer.

As to the availability of additional water resources, the MBOP asserts that the Order 1169 test results indicate that the 1989 LVVWD applications for approximately 27,000 afa should be denied. Their rationale is that these applications equal about 72% of the flux in the carbonate-rock aquifer that discharged as pre-development base flows of the Muddy River and that all the hydrogeological evidence indicates such production would reduce the flux to the discharge area by a similar amount over a relatively short time. They assert that almost one-third of pre-development Muddy River flows are currently consumed before reaching the Moapa gage, and these applications should be denied on the grounds that they would impact senior rights by the full amount.[33]

The MBOP argues for the creation of a new water management unit that would include upgradient basins including at least the Muddy River Springs Area, Coyote Spring Valley and Kane Springs Valley. They assert to prevent future desiccation of the headwater springs, the currently undeveloped permits within the proposed management unit must be largely revoked, restricted, or otherwise creatively managed because they total up to a similar order of magnitude as the current flow of the Muddy River.[34] They indicate that the water-resource potential of the southern flow field should be evaluated with a large interim pumping experiment in the northern portion of the southern flow field near the MBOP reservation.[35]

5. Moapa Valley Water District

MVWD evaluated only data for water levels and flows in the Muddy River Springs Area. MVWD's report recognizes that water-level declines are attributable to MX-5 pumping, as are spring flow decreases at the two Pedersen springs, Warm Springs West gage, and Baldwin Spring, but it does not recognize effects at Jones Spring or Muddy Spring at LDS.

As to the availability of additional water resources, MVWD did not provide a direct response. However, MVWD submitted a supplemental report analyzing its applications in the Lower Moapa Valley, coming to the conclusion that those applications could be developed without impacting the springs.

6. Great Basin Water Network

GBWN provided both a technical report by Dr. Tom Myers and a letter summarizing their position and interpretation of the test. Their report recognized a water-level decline in

[33] *Id.* at 30.
[34] *Ibid.*
[35] *Id.* at 31.

Coyote Spring Valley and the Muddy River Springs Area and decreases in spring flow that they assert are directly attributable to the MX-5 well pumping. The report states that the test did not provide adequate data to analyze water availability in the other Order 1169 basins. As to the availability of additional water resources for the pending applications, GBWN argues against granting any of the pending applications and states that pumpage of even the existing water rights in Coyote Spring Valley and the Muddy River Springs Area will result in spring flow reductions to rates that are insufficient to maintain a known endangered species.

GBWN somewhat contradicts their own report with a statement that the test did not provide adequate data to analyze water availability, and asserts that the information obtained was sufficient to make determinations on the effects of the pumping and of the availability of water not just in Coyote Spring Valley, but in all of the Order 1169 basins. The letter also argues that their report supports a conclusion that full pumping of existing rights in the Order 1169 basins will unacceptably decrease spring discharge.

7. Center for Biological Diversity

CBD used the same report from Dr. Myers that was filed by the GBWN. CBD believes that pumping of existing water rights will have unacceptable effects on the springs, and, therefore, all pending applications in the Order 1169 basins should be denied. Furthermore, they assert that all applications in the entire White River Flow System up to Cave Valley should be denied. CBD also recommends that the State Engineer take administrative action to reduce permits in the Order 1169 basins to sustainable levels.

Based on the responses received and the State Engineer's own interpretations of the test, the State Engineer finds that sufficient information has been obtained from the Order 1169 pumping test to rule on the pending applications.

Based on reports filed pursuant to Orders 1169 and 1169A and the State Engineer's analysis of the pumping test, the State Engineer finds:

1. The information obtained from the pumping test satisfied the goal of the test and is sufficient to document the effects of pumping on water levels and spring flows in the Order 1169 basins. The information obtained from the test and reports is adequate to formulate an informed opinion as to the future impacts from groundwater pumping and the availability of groundwater in Coyote Spring Valley pursuant to the applications.
2. The impacts of pumping from the MX-5 well, and other existing wells, during the pumping test are widespread, and extend north in Coyote Spring Valley at least to Kane

Springs Valley, south to Hidden Valley and Garnet Valley, and southeast to the Muddy River Springs Area and California Wash. Pumping effects were seen in a small part of the Black Mountains Area, but were not observed in Lower Moapa Valley. Groundwater-level declines attributable to MX-5 pumping range from less than one foot in northern Coyote Springs Valley, two feet or more in central Coyote Spring Valley, and one foot or more in the carbonate aquifer in the Muddy River Springs Area and California Wash. The additional pumping at the MX-5 well contributed significantly to decreases in spring flow at high-elevation spring (Pedersen Springs) sources of the Muddy River, and contributed to measurable decreases in flow at Baldwin and Jones Springs and to the numerous springs whose combined flows are measured at the Warm Springs West and Iverson gages. The pumping test effects documented in Coyote Spring Valley, Muddy River Springs Area, Hidden Valley, Garnet Valley, California Wash, and part of Black Mountains Area provide clear proof of the close hydrologic connection of the basins that distinguishes these basins from other basins in Nevada.

3. Most of the groundwater in Coyote Spring Valley flows to the Muddy River Springs Area, whose surface waters are fully appropriated. After pumping approximately 5,300 afa in the Coyote Spring Valley basin for just over two years, flows in some of the Muddy River springs decreased significantly, and the decrease in flow continued through the end of pumping. The results of the pumping test and opinions provided by the DOI Bureaus, the MBOP, GBWN and CBD are persuasive, and therefore the State Engineer finds that any additional pumping from the pending applications in addition to existing rights would result in a significant regional water-level decline and an associated decrease in spring and river flows, and would conflict with existing rights at the headwater springs to the Muddy River in a few years or less. There is no unappropriated water available in Coyote Spring Valley to satisfy the subject applications.

IV.

Perennial Yield

Nevada Revised Statute § 533.370(2) requires that the State Engineer reject an application to appropriate water where there is no unappropriated water at the source of supply. For groundwater appropriations, the State Engineer uses the perennial yield of a basin as the measure of the amount of water available for appropriation. The perennial yield is based on water budgets for the basin in question. Water budgets and perennial yield were significant issues raised in the 2001 hearings on the pending applications that needed additional information.

The perennial yield of a groundwater basin has been defined in numerous State Engineer rulings. It can be defined as the maximum amount of groundwater that can be withdrawn each year over the long-term without depleting the groundwater reservoir. Perennial yield is ultimately limited to the maximum amount of natural discharge that can be utilized for beneficial use. The perennial yield cannot be more than the natural recharge to a groundwater basin and in some cases is less. If the perennial yield is exceeded, groundwater levels will decline and steady state conditions will not be achieved, a situation commonly referred to as groundwater mining. Additionally, withdrawals of groundwater in excess of the perennial yield may contribute to adverse conditions such as water quality degradation, storage depletion, diminishing yield of wells, increased pumping costs, and land subsidence.

In the eleven years since Order 1169 was issued, much additional hydrologic information has been made available, including publications by the U.S. Geological Survey and others. There have also been hearings before the Office of the State Engineer for water rights in nearby hydrographic basins. Technical exhibits and expert testimony in those hearings include hydrological analyses of the carbonate aquifers and water budgets in the Order 1169 basins. This information significantly expands on the available knowledge of the hydrology and water resources of the Lower White River Flow System in Coyote Spring Valley, the Muddy River Springs Area and the surrounding basins. In hearings held in the fall of 2011 concerning SNWA applications in Delamar Valley, Dry Lake Valley, and Cave Valley, several exhibits and expert testimony were presented that revise and update information presented at the Coyote Spring Valley water rights hearings.[36]

[36] SNWA Exhibit Nos. 258 and 452, In the Matter of Applications 53987 through 53992 filed by the SNWA to Appropriate the Groundwater in Spring Valley, Cave Valley, Dry Lake Valley and Delamar Valley Hydrographic Basins (180, 181, 182, 184), September 26 through October 14 and October 31 through November 18, 2011, official records in the Office of the State Engineer.

SNWA Exhibit No. 452 from the 2011 hearing on Delamar, Dry Lake and Cave valleys is an Excel workbook that is designed to estimate groundwater recharge for all of the basins contributing to the White River Flow System from the Muddy River Springs Area northward. The exhibit was accepted by the State Engineer with some revisions,[37] and basin recharge and interbasin flows are specified for both Coyote Spring Valley and the Muddy River Springs Area hydrographic basins. From that exhibit, the supply of water to the Coyote Spring Valley is estimated to be approximately 41,000 afa, of which, 39,000 is subsurface inflow from upgradient basins and 2,000 afa is derived from in-basin recharge. Prior to groundwater pumping in the region, all of this water flowed in the subsurface to the Muddy River Springs Area.

The total pre-development supply of water to the Muddy River Springs Area is estimated to be approximately 49,000 afa. The basin receives roughly 41,000 afa from subsurface inflow from Coyote Spring Valley, and an estimated 8,000 afa from the Lower Meadow Valley Wash. In-basin recharge is minimal. Discharge from the basin by surface flow is estimated to be 33,600 afa, evapotranspiration is approximately 6,000 afa, and subsurface outflow to downgradient basins is an estimated 9,900 afa.[38] It is noted here that during periods of flood, inflows and outflows can be significantly greater than average. Flood flows are not included in these calculations, in part because these sources are transitory and not amenable to capture and long-term supply.

For basins similar to Coyote Spring Valley, where there is no groundwater evapotranspiration and all of the groundwater flows in the subsurface to an adjacent basin, recent rulings have limited the perennial yield to the portion of recharge from precipitation in that basin that was not needed to satisfy rights in the immediate downgradient basin.[39] In State Engineer's Ruling Nos. 6165, 6166, and 6167, there was a consideration for how long it might take for an existing water right to be impacted, and the State Engineer found that where no significant effects would be felt for hundreds of years, the upgradient groundwater could be appropriated. Other early decisions of the State Engineer had allowed one-half of the total subsurface groundwater discharge to be appropriated as the perennial yield of such basins. State of Nevada

[37] State Engineer's Ruling No. 6166, dated March 22, 2012, pp. 72 – 73, official records in the Office of the State Engineer.
[38] SNWA Exhibit Nos. 258 and 452, In the Matter of Applications 53987 through 53992 filed by the SNWA to Appropriate the Groundwater in Spring Valley, Cave Valley, Dry Lake Valley and Delamar Valley Hydrographic Basins (180, 181, 182, 184), September 26 through October 14 and October 31 through November 18, 2011, official records in the Office of the State Engineer.
[39] State Engineer's Ruling Nos. 6165, 6166, and 6167, dated March 22, 2012, official records in the Office of the State Engineer.

Water Planning Report No. 3 lists the perennial yield of Coyote Spring Valley as 18,000 acre-feet, approximately one-half of the basin subsurface discharge.[40] One of the goals of the Order 1169 test was to determine the perennial yield of Coyote Spring Valley.

The vast majority of the scientific literature supports the premise that, unlike other separate and distinct basins in Nevada that do not feature carbonate-rock aquifers, all of the Order 1169 basins share virtually all of the same supply of water. The Order 1169 pumping test further supports the conclusion that pumping from any of the five basins with a close hydrologic connection (Coyote Spring Valley, Muddy River Springs Area, Hidden Valley, Garnet Valley and California Wash) will have a similar impact on water levels in the five-basin area and on the Muddy River spring flows. Therefore, because these basins share a unique and close hydrological connection and share virtually all of the same source and supply of water, unlike other basins in Nevada, these five basins will be jointly managed. The perennial yield of these basins cannot be more than the total annual supply of 50,000 acre-feet. Because the Muddy River and Muddy River springs also utilize this supply, and are the most senior water rights in the region, the perennial yield is further reduced to an amount less than 50,000 acre-feet. The State Engineer finds that the amount and location of groundwater that can be developed without capture of and conflict with senior water rights on the Muddy River and springs remains unclear, but the evidence is overwhelming that unappropriated water does not exist.

V.

Recent rulings by the State Engineer for groundwater applications in other basins within the White River Flow System allowed for the appropriation of additional water.[41] These basins, Cave Valley, Dry Lake Valley, and Delamar Valley Hydrographic Basins, lie 40 to 100 miles north of the Muddy River Springs. Groundwater from both Dry Lake Valley and Delamar Valley is believed to contribute to discharge from the springs. Water rights were granted in the Cave Valley, Dry Lake Valley and Delamar Valley basins based on two critical points that do not exist in the basins in Order 1169. First, the groundwater appropriated in the Cave Valley, Dry Lake Valley and Delamar Valley basins is recharged within the basins. Water is available at the source and can be developed without depleting the supply. Second, the water can be developed without conflicting with any existing rights for hundreds of years. In contrast, neither of these conditions is met in the Order 1169 basins. Recharge in each of the Order 1169 basins is

[40] Office of the State Engineer, *Water for Nevada, State of Nevada Water Planning Report No. 3,* Oct. 1971.
[41] State Engineer's Ruling Nos. 6165, 6166 and 6167, dated March 22, 2012, official records in the Office of the State Engineer.

already appropriated. Subsurface inflow is appropriated as well. Development of additional water will conflict with existing rights in months to years. The State Engineer finds the basins of Order 1169 fail on both statutory requirements.

VI.

Existing Rights

Nevada Revised Statute § 533.370(2) requires that the State Engineer reject an application to appropriate water where the use of the water conflicts with existing rights or with protectable interests in existing domestic wells. There are 16,200 acre-feet of senior groundwater rights in Coyote Spring Valley as well as approximately 33,000 acre-feet of senior groundwater rights in the other Order 1169 basins. The Muddy River and springs, the discharge location of the bulk of the region's water, have approximately 30,000 afa of decreed and appropriative rights.

One of the main goals of Order 1169 and the associated pumping test was to observe the effects of increased pumping on groundwater levels and spring flows. The Pedersen and Pedersen East springs, the highest elevation springs in the area and which are considered to be the "canary in the coal mine" with respect to impacts from pumping, showed an unprecedented decrease in flow during the pumping test. Pedersen spring flow decreased to 0.08 cfs, down from its average of about 0.22 cfs prior to the test. Pedersen East decreased to 0.12 cfs, down from its average flow of 0.2 cfs prior to the test.[42,43] The Warm Springs West gage, the site at which trigger levels have been set among parties to a memorandum of agreement,[44] declined from 3.6 to 3.3 cfs during the test.[45] Baldwin and Jones Springs declined about 4% during the test.[46] The Muddy River at the Moapa gage did not display any decrease in flow,[47] although the

[42] U.S. Fish and Wildlife Service, U.S. Bureau of Land Management and U.S. National Park Service Order 1169A Report, *Test Impacts and Availability of Water Pursuant to Applications Pending Under Order 1169*, pp. 43 – 46, June 28, 2013, official records in the Office of the State Engineer.
[43] http://waterdata.usgs.gov/nv/nwis/.
[44] In 2006, a Memorandum of Agreement (MOA) was signed by the Southern Nevada Water Authority, U.S. Fish and Wildlife Service, Coyote Springs Investment, LLC, Moapa Band of Paiute Indians, and Moapa Valley Water District pursuant to which, the parties agreed to certain conservation measures for the protection and recovery of the Moapa dace, an endangered species found in the Moapa Valley National Wildlife Refuge.
[45] http://waterdata.usgs.gov/nv/nwis/.
[46] U.S. Fish and Wildlife Service, U.S. Bureau of Land Management and U.S. National Park Service Order 1169A Report, *Test Impacts and Availability of Water Pursuant to Applications Pending Under Order 1169*, pp. 50 – 51, June 28, 2013, official records in the Office of the State Engineer.
[47] Southern Nevada Water Authority, *Nevada State Engineer Order 1169 and 1169A Study Report*, p. 41, June 2013, official records in the Office of the State Engineer.

MBOP report points out that total flux of the system is variable, and argues that flows in the river would have been even higher if Order 1169 pumping had not occurred.[48]

The State Engineer finds that pumping under the Order 1169 test measurably reduced flows in headwater springs of the Muddy River, and it is clear that if pending water right applications were permitted and pumped in addition to existing groundwater rights in Coyote Spring Valley and the other Order 1169 basins, headwater spring flows would be reduced in tens of years or less to the point that there would be a conflict with existing rights. The State Engineer finds the Muddy River and the Muddy River springs, the discharge location of the bulk of the region's water, is fully appropriated. As for the Muddy River, the State Engineer finds that evidence submitted by the DOI Bureaus and MBOP is convincing that pumping of groundwater under the pending applications in addition to existing rights would reduce the flow of the Muddy River in tens of years or less to the point where there would be a conflict with existing rights.

VII.

Public Interest

Nevada Revised Statute § 533.370(2) requires the State Engineer reject an application if the use of the water threatens to prove detrimental to the public interest. The State Engineer views this requirement in terms of Nevada water law and management of the public's water, but not to areas that are outside of his purview. The State Engineer finds to approve applications that will within a short period of time conflict with existing water rights threatens to prove detrimental to the public interest.

The Moapa dace is an endangered species that lives only in the headwater springs of the Muddy River. The USFWS holds water rights on some of the springs in the Muddy River Springs Area that were appropriated specifically for the protection of the dace. The State Engineer finds to permit the appropriation of additional groundwater resources in the Coyote Spring Valley, which is directly connected to the regional aquifer in the Order 1169 area, would impair protection of these springs and the habitat of the Moapa dace and therefore threatens to prove detrimental to the public interest.

[48] Johnson and Mifflin, *Summary of Order 1169 Testing Impacts, per Order 1169A*, pp. 5 - 8, June 28, 2013, official records in the Office of the State Engineer.

CONCLUSIONS

I.

The State Engineer has jurisdiction over the parties and the subject matter of this action and determination.[49]

II.

The State Engineer is prohibited by law from granting a permit under an application to appropriate the public water where:[50]

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 protectable 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 that there is no additional groundwater available for appropriation in the Coyote Spring Valley Hydrographic Basin without conflicting with existing water rights in the Order 1169 basins.

IV.

The State Engineer concludes that approval of the applications would threaten to prove detrimental to the public interest by removing water that in the past has been available for the endangered species in the Order 1169 basins. The State Engineer concludes that while the use of the water under these applications may have a public benefit, removing the water from the springs would threaten to prove detrimental to the public interest in that it would threaten the water resources upon which the endangered Moapa dace are dependent.

RULING

The protests to Applications 54055, 54056, 54057, 54058, 54059, 63272, 63273, 63274, 63275, 63276, 63867, 63868, 63869, 63870, 63871, 63872, 63873, 63874, 63875, and 63876 are hereby upheld in part and the applications are hereby denied on the grounds that there is no unappropriated groundwater at the source of the supply, the proposed use would conflict with existing rights in the Order 1169 basins and the proposed use of the water would threaten to prove detrimental to the public interest in that it would threaten the water resources upon which

[49] NRS Chapters 533 and 534.
[50] NRS § 533.370(2).

the endangered Moapa dace are dependent. No ruling is made on the merits of the remaining protest grounds.

Respectfully submitted,

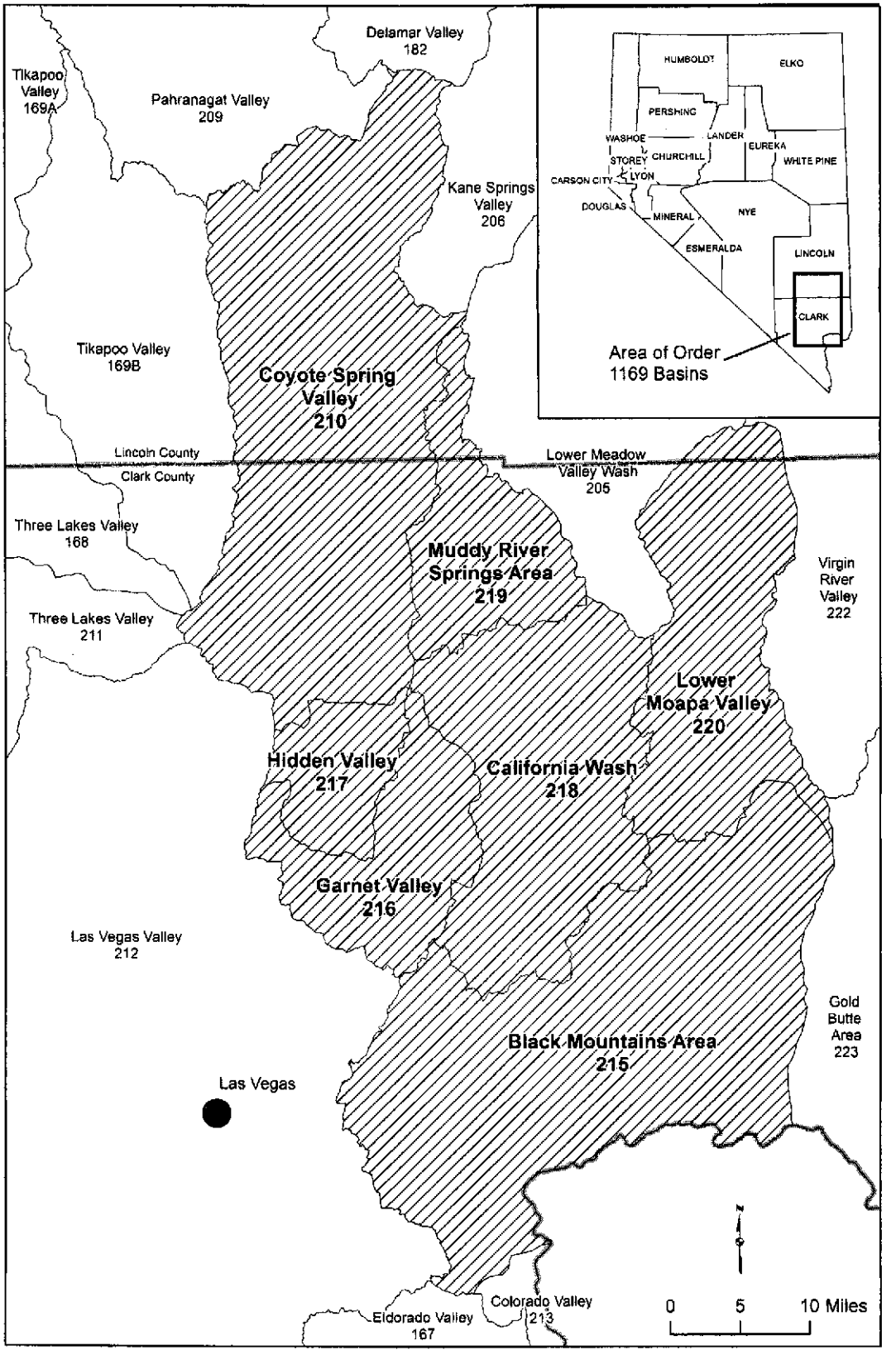
P.E.

JASON KING, P.E.
State Engineer

Dated this 29th day of

January, 2014.

ATTACHMENT 1



Location Map of the Order 1169 Hydrographic Basins, Clark County and Lincoln County, Nevada.