FILED
MAY 14 2010
STATE ENGINEER'S OFFICE

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

IN THE MATTER OF APPLICATION NUMBER 79688
FILED BY Nevada Power Co.
ON March 15, 2010
TO APPROPRIATE WATER

PROTEST

Comes now Charles Pettee, on behalf of the United States Department of the Interior, National Park Service, whose post office address is 1201 Oak Ridge Drive, Suite 250, Fort Collins, Colorado, 80525, whose occupation is Chief, Water Rights Branch, Water Resources Division, National Park Service, and protests the granting of Application Number 79688, filed on March 15, 2010, by Nevada Power Co. to appropriate water, situated in Clark County, State of Nevada, for the following reasons and on the following grounds, to wit:

See Exhibit A attached.

THEREFORE the protestant requests that the application be denied.

RECEIVED
2010 MAY 14 AM 10: 21
STATE ENGINEER'S OFFICE

Signed: _____
Agent or protestant

Charles W. Pettee
Printed or typed name, if agent

FLORA B. ROMERO NOTARY PUBLIC STATE OF COLORADO

Address: 1201 Oak Ridge Dr., Suite 250
Street No. or P.O. Box No.

Fort Collins, CO 80525
City, State and Zip Code

Subscribed and sworn to before me this 12th day of May, 2010.

Flora B. Romero
Notary Public

State of Colorado
County of Larimer

My Commission expires Flora B. Romero, Notary Public State of Colorado My Commission Expires 7/31/2010.

IN THE MATTER OF APPLICATION 79688
EXHIBIT A

Protest by Charles W. Pettee on behalf of
the United States Department of the Interior,
National Park Service

GENERAL

I. The mission of the National Park Service (NPS) may be paraphrased from 16 U.S.C. 1, as conserving scenery, natural and historic objects, and wildlife, and providing for enjoyment of the same in such a manner and by such means as will leave them unimpaired for the enjoyment of future generations.

II. Since 1936, the NPS has managed the recreational activities within the Boulder Canyon Project area, now known as Lake Mead National Recreation Area (Lake Mead NRA). Lake Mead NRA was established on October 8, 1964 (78 Stat. 1039) to be administered for "...general purposes of public recreation, benefit, and use, and in a manner that will preserve, develop, and enhance, so far as practicable, the recreation potential, and in a manner that will preserve the scenic, historic, scientific, and other important features of the area.... The Secretary shall permit hunting, fishing, and trapping on the lands and waters under his jurisdiction within the recreation area."

III. The NPS is entitled to Federal reserved water rights for reserved lands within Lake Mead NRA. The priority dates for these reserved rights are the dates when the lands were reserved and are senior to the proposed appropriation. These rights have not been judicially quantified.

IV. The Muddy River, which originates from large discharge springs located northwest of Moapa, Nevada, flows into Lake Mead NRA at the north end of Lake Mead's Overton Arm. The State of Nevada, Department of Wildlife, is leasing part of Lake Mead NRA adjoining the Muddy River for the purposes of the Overton Wildlife Management Area. This area supports a variety of waterfowl and vegetation. The United States has a State appropriative water right to water in the Muddy River, Certificate No. 5126. The point of diversion is located in the NW¼ SE ¼, Sec. 19, T. 16 S., R. 68 E., M.D.B.M.

V. Springs and water-related resource attributes are important features of Lake Mead NRA. The springs provide water for vegetation and wildlife habitat and create an environment that many visitors use and enjoy. Several of these springs are fed by the regional carbonate-rock groundwater flow system and could be affected by upgradient diversions.

Springs include Rogers, Blue Point, Corral, and Kelsey's Springs, and other smaller, unnamed springs. Visitation to Rogers and Blue Point Springs has been estimated at 5,000 visitors per year. Desert bighorn sheep are also dependent upon the springs in Lake Mead NRA. A herd of approximately 150 use springs in the northern part of the National

Recreation Area. The relict Las Vegas Valley leopard frog, *Rana onca*, has been found at Rogers, Corral, and Blue Point Springs. Current taxonomic studies indicate a high potential for listing of this relict population, previously believed extinct, as protected under the Endangered Species Act.

VI. The United States has State appropriative water rights to two springs near the mouth of the Muddy River, which could be impaired by the appropriation and diversion proposed by this application: Kelsey's Springs, located in the SW¼ NW¼, Sec 20, T.16 S., R.68 E., M.D.B.M., Certificate No. 296; and Rogers Spring, located in SE¼ SE ¼, Sec. 12, T.18 S., R.67 E., M.D.B.M., Certificate No. 4476.

VII. Nevada Power Company dba NV Energy filed Application No. 79688 to withdraw 8.35 cubic feet per second (cfs) or up to 6,049 acre-feet per year (afy), of water from an underground source (Carbonate Aquifer) in Garnet Valley (Hydrographic Basin #216). In addition, Nevada Power Company has filed three associated applications (Nos. 79687, 79689 and 79691) in Garnet Valley. Application No. 79691 also seeks to withdraw 8.35 cfs, or up to 6,049 afy, while Application Nos. 79687 and 79689 each seek to withdraw 1.11 cfs, or up to 807 afy. Combined, these four applications seek to withdraw a total of 18.92 cfs, or up to 13,706 afy for industrial cooling and other uses associated with power production and coal gasification. In 1997 and 1998, Nevada Power Company filed four similar applications (Nos. 62996, 62998, 64222, and 64223) in Garnet Valley seeking the identical amounts as current applications 79688, 79691, 79687, and 79689, respectively. In 1999, the Nevada State Engineer denied applications 62996 and 62998 after concluding that approval would threaten to prove detrimental to the public interest.

VIII. The NPS reserves the right to amend this exhibit as more information becomes available.

FINDINGS

I. Rush (1968) estimated that 400 afy of water recharges Garnet Valley from precipitation falling on local mountain ranges, and that an additional 400 afy enters the valley as subsurface inflow from Hidden Valley (North). The Nevada Department of Conservation and Natural Resources (2010): (1) reports the perennial yield for Garnet Valley is 400 afy; and (2) estimates currently there are about 3,413 afy of committed groundwater resources in the valley. Therefore, the proposed withdrawal would exceed both the

estimated recharge and perennial yield of the basin. As a result, there is no groundwater available for appropriation in Garnet Valley.

II. Nevada Power Company's proposed withdrawal under this application and their three associated applications would substantially increase the amount of water already appropriated from Garnet Valley. The withdrawal proposed by this application and the associated applications is not sustainable and would exacerbate groundwater mining that likely is already occurring in Garnet Valley.

III. Under natural conditions, it is estimated that approximately 400 afy of groundwater flows from Hidden Valley (North) to Garnet Valley. Groundwater is believed to flow eastward from Garnet Valley to California Wash (about 800 acre-feet per year) and eventually to the Muddy River (Rush, 1968; Harrill and others (1988); Prudic and others, 1995).[1] Synoptic discharge measurements conducted by the USGS (Beck and Wilson, 2006) along the Muddy River suggested that as much as 1,800 afy of groundwater may be discharging from the California Wash basin into the Muddy River.

IV. Rights to water in the Muddy River were decreed by the Tenth Judicial Court of the State of Nevada in the case entitled *Muddy Valley Irrigation Company vs. Moapa and Salt Lake Produce Company*. According to the January 21, 1920, Order of Determination and the March 11, 1920, Further and Supplemental Order of Determination of the Nevada State Engineer, there is no water available for appropriation in the Muddy River, its headwaters, sources of supply, and tributaries (Muddy Valley Irrigation Company, 1938).

V. This application and the associated applications, if approved and developed, could eventually reduce the discharge of the Muddy River and thus impair existing water rights to the Muddy River, including that of the NPS, because the associated groundwater pumping likely would capture water tributary to the Muddy River.

VI. Eakin (1964) stated that the perennial yield of a groundwater system "...is limited ultimately by the amount of natural discharge of suitable quality that can be salvaged for beneficial use from the groundwater system." DeMeo (2008) provided several basin-wide "estimates of annual discharge from ground- and surface-water evapotranspiration," which in many areas of Nevada is the principal natural discharge considered by Eakin

[1] See Burbey (1997) for further detail regarding the geology and hydrology of Hidden and Garnet valleys and Prudic and others (1995) for a description of the regional ground-water flow system.

(1964). DeMeo (2008) listed the estimates for Coyote Spring Valley, Kane Springs Valley, Hidden Valley (North), and Garnet Valley all as zero. Therefore, there is no natural discharge from the regional aquifer system to be captured in Garnet Valley. Instead, groundwater withdrawals from Garnet Valley will remove water from aquifer storage at first, and eventually capture groundwater that naturally discharges as evapotranspiration or surface-water flow at other discharge locations within the regional groundwater flow system, such as at the Muddy River Springs, along the Muddy River, and/or at Rogers Spring, Blue Point Spring, and associated springs in Lake Mead NRA.

VII. A summary of existing committed groundwater resources and a comparison with estimates of the renewable groundwater resources (as indicated by the groundwater recharge and by estimates of the perennial yield) for other nearby hydrographic areas that likely are tributary to the Muddy River shows that for each area, the total of committed groundwater appropriations exceeds the local recharge. Groundwater withdrawals larger than the recharge rate to these valleys would come from aquifer storage and constitute groundwater mining, or would induce surface water in the fully appropriated Muddy River to be withdrawn. Therefore, there is no water available for appropriation in these nearby basins either that could be claimed under this application or the associated applications.

VIII. Rush (1968) postulated that groundwater flows from California Wash northeastward towards the Muddy River and southeastward towards Lake Mead NRA. Groundwater flow beneath California Wash may contribute to spring discharge at Rogers, Blue Point, Corral, and Kelsey's Springs within Lake Mead NRA. The withdrawal proposed by this application and the associated applications would divert flow that could eventually contribute to spring flow at Rogers, Blue Point, Corral and Kelsey's Springs.

IX. Page and others (2005) developed a geologic map for this area, and Page and others (2006) constructed several generally west-to-east geologic cross sections, including one section through Garnet Valley. These geologic cross sections show that there is a potential continuous flow path in carbonate rocks of Paleozoic Age extending from Garnet Valley, beneath fine-grained, basin-fill deposits in California Wash, all the way to the Paleozoic rocks that comprise the Muddy Mountains, from which Rogers and Blue Point Springs in Lake Mead NRA emanate.

X. Van Liew (2006) presented a potentiometric-surface map of the regional carbonate-rock aquifer that indicates that Rogers and Blue Point Springs are down-gradient from Garnet Valley along the potential hydrogeologic flow path delineated by Page and others (2006).

Further, Van Liew (2008) summarized the characteristics of Rogers, Blue Point, and associated springs in Lake Mead NRA that lead to the conclusion that much of their flow emanates from the regional carbonate-rock aquifer system, and that they likely are the terminal discharge from the regional groundwater flow system that also supplies the Muddy River Springs and is likely hydraulically continuous with the aquifer beneath Garnet Valley. Thus, groundwater withdrawals from Garnet Valley have the potential to not only deplete the Muddy River, but also to lower the hydraulic head in the regional carbonate-rock aquifer, from which Rogers, Blue Point, and associated warm springs within Lake Mead NRA emanate. In combination with existing committed resources in Garnet Valley and nearby basins, these withdrawals will likely cause depletion of the discharge of these springs, if pumping continues for a long time.

XI. Nevada Power Company seeks approval of four applications in Garnet Valley, two applications in Hidden Valley (North) and one application in California Wash to withdraw a total of 50.27 cfs, or up to 36,418 afy for industrial cooling and other uses associated with power production and coal gasification. The total withdrawal represented by these applications exceeds the current annual discharge from the Muddy River Springs which are the source of water for the Muddy River. The need for such large quantities of water for industrial cooling purposes suggests plans of cooling these power plants using traditional water-cooled technology. In 2002, the State Engineer issued Ruling 5115 pertaining to water rights applications in California Wash seeking water for a water-cooled power plant. Ruling 5115 stated that "the State Engineer does not believe it is prudent to use substantial quantities of newly appropriated ground water for water-cooled power plants in one of the driest places in the nation, particularly with the uncertainty as to what quantity of water is available from the resource, if any."

XII. The State Engineer found that further hydrologic study is needed in Coyote Spring Valley and other identified basins (including Garnet Valley) before pending and new applications may be granted (Order 1169, Office of the State Engineer, 2002). In this order, the State Engineer found that it would not be prudent to issue additional water rights from the identified basins, until a significant portion of water rights already issued are pumped for a substantial period of time, to determine what impacts, if any, those water rights may have.

XIII. The water and water-related resources of Lake Mead NRA are locally and nationally important.

IN THE MATTER OF APPLICATION 79688
EXHIBIT A - CONTINUED

Protest by Charles W. Pettee on behalf of
the United States Department of the Interior,
National Park Service

CONCLUSIONS

I. There is no water available for appropriation because the total of existing committed resources alone exceeds both the perennial yield and the groundwater recharge rate for Garnet Valley.

II. The approval and development of the appropriation proposed by this application will impair the federal and state water rights of the United States, because:

A. The proposed appropriation will reduce the discharge of the Muddy River. The United States' senior water right and other existing rights to the Muddy River would be injured, if the appropriation is approved and developed.

B. Nevada Power Company's proposed appropriation in Garnet Valley along with their associated proposed appropriations in Hidden Valley (North) and California Wash, if approved and developed, in combination with other existing appropriations in the regional, carbonate-rock groundwater flow system, could reduce the discharge of Lake Mead NRA springs. The cumulative drawdown caused by large withdrawal volumes would extend to capture or re-direct groundwater that naturally discharges from the springs.

III. The public interest would not be served by granting this application, because the water rights and water-related resources in the nationally important Lake Mead NRA would be diminished or impaired, as a result of the appropriation proposed by this application.

IN THE MATTER OF APPLICATION 79688
EXHIBIT A - CONTINUED

Protest by Charles W. Pettee on behalf of
the United States Department of the Interior,
National Park Service

LITERATURE CITED

Beck, D.A. and Wilson, J.W., 2006, Synoptic Discharge, Water Property, and pH Measurements for Muddy River Springs Area and Muddy River, Nevada, February 7, 2001: U.S. Geological Survey Scientific Investigations Report 2006-5237, 19 p.

Burbey, T.J., 1997, Hydrogeology and potential for ground-water development, carbonate-rock aquifers, southern Nevada and southeastern California: U.S. Geological Survey Water-Resources Investigations 95-4168, 65 p.

DeMeo, G.A., Smith, J.L., Damar, N.A., and Darnell, J., 2008, Quantifying Ground-Water and Surface-Water Discharge from Evapotranspiration Processes in 12 Hydrographic Areas of the Colorado Regional Ground-Water Flow System, Nevada, Utah, and Arizona: U.S. Geological Survey Scientific Investigations Report 2008-5116, 22 p. and 1 plate.

Eakin, T.E., 1964, Ground-water appraisal of Coyote Spring and Kane Springs valleys and Muddy River Springs area, Lincoln and Clark Counties: Nevada: Nevada Department of Conservation and Natural Resources Ground-Water Resources-Reconnaissance Series Report 25, 40 p.

Harrill, J.R., Gates, J.S., and Thomas, J.M, 1988, Major ground-water flow systems in the Great Basin region of Nevada, Utah, and adjacent States: U.S. Geological Survey Hydrologic Investigations Atlas HA-694-C, 2 sheets.

Muddy Valley Irrigation Company, 1938, Protest of the Muddy Valley Irrigation Company in the Matter of Application No. 10188 by the United States Department of Agriculture, Bureau of Biological Survey, for Permission to Appropriate Water From Muddy Creek, Filed March 9, 1938: Nevada State Engineer's Office, Carson City, Nevada, 2 p.

Nevada Department of Conservation and Natural Resources, 2010, Division of Water Resources, Water Rights Database, Hydrographic Area Summary, Hydrographic Area 217: Online information at <http://water.nv.gov/water> as of April 2010.

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, 1 sheet and 23 pg report.

IN THE MATTER OF APPLICATION 79688
EXHIBIT A - CONTINUED

Protest by Charles W. Pettee on behalf of
the United States Department of the Interior,
National Park Service

Page, W.R., Scheirer, D.S., and Langenheim, V.E., 2006, Geologic cross sections of parts of the Colorado, White River, and Death Valley regional ground-water flow systems, Nevada, Utah, and Arizona: U.S. Geological Survey Open-File Report 2006-1040, 23 p. & 1 plate

Prudic, D.E., Harrill, J.R., and Burbey, T.J., 1995, Conceptual evaluation of regional ground-water flow in the carbonate-rock province of the Great Basin, Nevada, Utah, and adjacent states: U.S. Geological Survey Professional Paper 1409-D, pp. D1-D102.

Rush, F.E., 1968, Water-resources appraisal of the Lower Moapa-Lake Mead Area, Clark County, Nevada: Nevada Department of Conservation and Natural Resources Ground-Water Resources-Reconnaissance Series Report 50, 66 p.

Van Liew, W.P., 2006, Hydrogeology of Kane Springs Wash, Coyote Spring Valley, the Muddy River Springs Area, and Vicinity: National Park Service, Water Resources Division, Fort Collins, CO. Expert-witness evidentiary submittal to the Nevada State Engineer on behalf of Lake Mead National Recreation Area in an administrative hearing regarding water-rights applications by Lincoln County Water District and Vidler Water Company in Kane Springs Valley Hydrographic Area, March 16, 2006, 16 figures, 4 tables.

Van Liew, W.P., 2008, Hydrogeology of Rogers and Blue Point Springs *in* Coache, R., *editor*, Regional Carbonate System Terminus Tour Guidebook: Nevada Water Resources Association, pgs. 21-22.

RECEIVED
2010 MAY 14 AM 10: 21
STATE ENGINEERS OFFICE