FILED
APR 14 2010
STATE ENGINEER'S OFFICE

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

IN THE MATTER OF APPLICATION NUMBER 79498
FILED BY COYOTE SPRINGS WATER RESOURCES GID
ON February 11, 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 79498, filed on February 11, 2010, by COYOTE SPRINGS WATER RESOURCES GID 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 APR 14 PM 12:44
STATE ENGINEERS OFFICE

FLORA B. ROMERO
NOTARY
PUBLIC
STATE OF COLORADO

Signed: _____
Agent or protestant

Charles W. Pettee
Printed or typed name, if agent

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 8th day of April, 2010.

_____
Notary Public

State of Colorado
County of Larimer

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

My Commission expires _____.

IN THE MATTER OF APPLICATION 79498
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 National Park Service has managed the recreational activities within the Boulder Canyon Project area now known as 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. The Clark County – Coyote Springs Water Resources General Improvement District (Coyote Springs GID) filed Application No. 79498 to withdraw 2.5 cubic feet per second (cfs) of groundwater, for a total annual duty not to exceed 1,250 acre-feet per year (afy), from Coyote Spring Valley (Hydrographic Basin 210) for municipal and domestic purposes.

VIII. The Coyote Springs GID also filed Application No. 79497 to withdraw up to 1.5 cfs of groundwater, not to exceed 750 afy, from Coyote Spring Valley for municipal and domestic purposes. Thus, the total annual duty sought by the Coyote Springs GID is 2,000 afy.

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

FINDINGS

I. The proposed appropriation is located in Coyote Spring Valley. Eakin (1964) estimated that about 2,000 afy of water from precipitation recharges the ground-water reservoir beneath the valley. Groundwater underflow into Coyote Spring Valley is about 35,000 afy and enters the valley from basins generally to the north, and possibly northwest and northeast of the valley (Harrill and others, 1988; Prudic and others, 1995). Discharge from the valley is primarily by subsurface outflow (about 37,000 afy) to the Muddy River Springs Area and the Muddy River (Burbey, 1997; Harrill and others, 1988; and Eakin, 1964).

II. Waddell (2001) used a preliminary calibrated numerical groundwater flow model to show that groundwater pumping in Coyote Spring Valley would likely deplete the discharge of

the Muddy River Springs and thus the Muddy River. Mayer and Congdon (2008) provided further evidence of the propagation of pumping effects between Coyote Spring Valley and the Muddy River Springs Area. Thus, the Muddy River and the ground-water reservoir in Coyote Spring Valley are hydraulically connected, and this reservoir is tributary to the Muddy River.

III. 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).

IV. Ground water from the aquifers in Hidden Valley, Garnet Valley, California Wash and the Muddy River Springs Area is also tributary to the Muddy River (Rush, 1968; Prudic and others, 1995). Synoptic discharge-measurement runs were conducted on the Muddy River in 2001 (Beck and Wilson, 2006), which indicate that the Muddy River receives almost all its flow in the Muddy River Springs Area, in the first 1½ miles from the uppermost spring. Evidence indicates that this water likely comes predominantly from Coyote Spring Valley.

V. The application by itself, if approved and developed, could reduce the discharge of the Muddy River by 750 afy and thus impair existing water rights to the Muddy River, including that of the National Park Service, because it would capture water tributary to the Muddy River.

VI. Eakin (1964) estimated that the perennial yield of groundwater in Coyote Spring Valley and Kane Spring Valley combined may be on the order of 2,600 afy. Committed groundwater resources in Coyote Spring Valley currently are 16,200 afy (Nevada Division of Water Resources, 2010). In addition, there are prior pending applications to withdraw groundwater in Coyote Spring Valley that total roughly 200,000 afy. Thus, there is no groundwater available for appropriation in Coyote Spring Valley.

VII. Eakin (1964) also 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 ground-water system." DeMeo (2008) provided "estimates of annual discharge from ground- and surface-water evapotranspiration" by hydrographic basin, which is the natural discharge that Eakin (1964) describes. DeMeo (2008) lists the

estimates for Coyote Spring Valley as zero. Therefore, there is no natural discharge to be captured in these valleys, and thus no perennial yield in any of these valleys. Instead, groundwater withdrawals from these basins will capture groundwater that discharges as evapotranspiration 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, Blue Point, and associated springs in Lake Mead NRA).

VIII. In addition, DeMeo (2008) estimated that annual discharge by evapotranspiration in Kane Springs Valley, Hidden Valley (North), and Garnet Valley also is zero. Therefore, there is no natural discharge available to be captured in these basins either.

IX. 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 the six hydrographic areas down-gradient of Coyote Spring Valley that are tributary to the Muddy River (including the Black Mountains Area) shows that for each valley, the total of committed ground-water appropriations exceeds the local recharge. Groundwater withdrawals larger than the recharge rate to these valleys would come from 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 captured by the subject application.

X. Dettinger and others (1995) indicated that east of the Muddy River Springs were thick basin-fill deposits of Tertiary Age that "may impede or divert regional flow." Schierer and others (2007) delineated the extent and thickness of these basins in California Wash and Lower Meadow Valley Wash. Using this information, 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 through Coyote Spring Valley and adjacent areas. These geologic cross sections show that there is a potential continuous flow path in carbonate rocks of Paleozoic Age beneath the Tertiary-aged basin-fill deposits in California Wash all the way to the Paleozoic rocks that comprise the Muddy Mountains and from which Rogers and Blue Point Springs in Lake Mead NRA emanate.

XI, Van Liew (2006) showed a potentiometric-surface map of the regional carbonate-rock aquifer that indicated that Rogers and Blue Point Springs are down-gradient of Coyote Spring 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 they emanate

from the regional carbonate-rock aquifer system, and likely are the terminal discharge from the regional groundwater flow system that also supplies the Muddy River Springs. Thus, groundwater withdrawals from Coyote Spring Valley will not only deplete the Muddy River, but will also lower the hydraulic head in the regional carbonate-rock aquifer, from which Rogers, Blue Point, and associated warm springs within Lake Mead NRA emanate, thus likely causing depletion of the discharge of these springs, if pumping continues for a long time.

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

CONCLUSIONS

I. There is no water available for appropriation because committed water resources exceed the total of groundwater underflow into Coyote Spring Valley and groundwater recharge from precipitation within Coyote Spring 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, if approved and developed, in combination with existing appropriations and prior pending applications in Coyote Spring Valley, 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. The proposed appropriation, if approved and developed, in combination with existing appropriations and prior pending applications in Coyote Spring Valley and nearby downgradient basins, could reduce the discharge of several Lake Mead NRA springs, because of the large potential withdrawal rate. The drawdown caused by such large withdrawals would extend to capture ground water 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 79498
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, 12 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 Report 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.

Dettinger, M.D., Harrill, J.R., Schmidt, D.L., and Hess, J.W., 1995, 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, 100 p. and 2 plates.

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.

Mayer, T.D., and Congdon, R.D., 2008, Evaluating climate variability and pumping effects in statistical analyses: GROUND WATER, Journal of the Association of Ground Water Scientists and Engineers, National Ground Water Association, Vol. 46, No. 2, p 212-227.

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.

IN THE MATTER OF APPLICATION 79498
EXHIBIT A - CONTINUED

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

Nevada Division of Water Resources, 2010, Water Rights Database, Hydrographic Abstract, and Hydrographic Area Summary: Online 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.

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.

Scheirer, D.S., Page, W.R., and Miller, J.J., 2007, Geophysical studies based on gravity and seismic data of Tule Desert, Meadow Valley Wash, and California Wash basins, southern Nevada: U.S. Geological Survey Open-File Report 2006-1396, 42 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.

Waddell, R.K., 2001, Ground-water modeling of the Muddy River Springs Area and surrounding basins with emphasis on evaluating pending water-rights applications in Coyote Spring Valley: Prepared by GeoTrans, Inc., Westminster, CO, for the U.S. Fish & Wildlife Service and the National Park Service, July 2001, 20 p. plus 27 figures.